MIELOO & ALEXANDER

External audit report of the UPU-agreed measurement systems GMS and UNEX™ 2013

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1 EXTERNAL UPU AUDIT HEADER INFORMATION

This document describes the results of the external audit of the UPU-agreed measurement systems GMS and UNEX™ 2013. In the section below organisational information is provided with regards to the audit team and the responsible representatives of the UPU-agreed measurement systems GMS and UNEX™ 2013.

1.1 Mieloo & Alexander's auditing service representative

Mr. Joseph P. Owusu (MSc.)
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1.2 Mieloo & Alexander's auditing team

The following representatives of Mieloo & Alexander performed the external audit of the UPU-agreed measurement systems GMS and UNEX™ 2013.

Mr. Joseph P. Owusu MSc.
Program Manager (Partner Mieloo & Alexander)

Mrs. Angela W.M. Langeveld MSc.
Senior Business Consultant and Project Manager

Mr. Thomas De Vos MSc.
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1.3 UPU Management of the systems

1.3.1 UPU GMS is managed by:

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2 EXECUTIVE SUMMARY

In April 2014 the contract for the external audit of the UPU-agreed measurement systems GMS and UNEX™ 2013 was awarded to Mieloo & Alexander. Within Mieloo & Alexander an audit team of three consultants was formed to perform the external audit. In a period of approximately 8 weeks the external audit was performed. The audit team visited the 2 MSP's: IPC and UPU as well as the two contractors: TNS and Quotas.

In this document the results of the external audit are described in detail.

The main results and conclusions of the audit are described below.

In the RFP the following areas were specified as areas to be audited:

- Understanding of GMS Technical Design v.1.1;
- Execution against the GMS Technical Design v.1.1 (which is further specified below);
    1. To what extent was the measurement provider successful in setting up a panel in the various receiving cities/countries in order to be able to receive test mail items?
    2. To what extent was the measurement provider successful in injecting sufficient valid mail items according to the GMS Technical Design v1.1?
    3. To what extent can the results achieved be used (linking QS results) for Terminal Dues calculations for the reporting period 2013?
- Reporting outputs;
- Contingency Planning.

MSP: IPC

The assessment of the auditor is, that there is a good understanding of the GMS Technical Design v.1.1 by IPC. Furthermore the UNEX™ teams at IPC and the UNEX™ project team at TNS, demonstrated well-organised professional working practices and motivated teams working on the UNEX™ Solution.

In 2013 due to transition issues the panel management performance did not comply with the requirements as specified in the GMS Technical Design. Also the number of valid mail items injected in the GMS measurement study wasn't in compliance, as they were too low.

However taking in to account the recalculated accuracy in comparison to the 'minimum accuracy', as specified according to the GMS Technical Design v1.1, the conclusion of the auditor is, that the measurement provider in 2013 performed in compliance with the GMS Technical Design v1.1, with the exception of 3 countries. The QS results achieved by the MSP can be used for TD purposes.

Reporting outputs were found to be in compliance with the GMS Technical Design v1.1. Various contingencies were found as being in place however no comprehensive contingency approach is implemented.

MSP: UPU

The assessment of the auditor is, that there is a good understanding of the GMS Technical Design v.1.1 by UPU. The GMS team at UPU and the GMS project team at Quotas have demonstrated well-organised professional working practices and motivated teams working on the GMS Solution.

In 2013 the panel management performance exceeded the minimum requirements as defined by the GMS Technical Design. Also the number of allocated (i.e. to be produced by the contractor) was significantly higher than according to the GMS Technical Design v.1.1.
The valid mail items injected in the GMS measurement study were lower than specified in the design and therefore was not in compliance.

However taking in to account the recalculated accuracy in comparison to the 'minimum annual statistical accuracy', as specified according to the GMS Technical Design v1.1, the conclusion of the auditor is that the measurement provider in 2013 performed in compliance with the GMS Technical Design v1.1, with the exception of 2 countries. The QS results achieved by the MSP can be used for TD purposes. The reason the results of the 2 countries were not in compliance was due to internal issues.

Reporting outputs were found to be in compliance with the GMS Technical Design v1.1. Various contingencies were found as being in place however no comprehensive contingency approach is implemented.

3 INTRODUCTION MIELOO & ALEXANDER

3.1 Company Profile

Mieloo & Alexander is a *System Integrator* that specializes in technology enabled supply chain improvement, with a focus on supply chain management & logistics and visibility through the use of innovative automatic identification technologies such as RFID.

We successfully design, plan and implement technology solutions and transform your organisation to achieve operational excellence and sustainable competitive advantage.

The company was founded in 2000 and has a background in ERP consulting (SAP) and project- & change management in supply chain and logistics environments. Mieloo & Alexander started with innovative Auto-ID technologies such as e.g. RFID as a spearhead technology in 2003.

Mieloo & Alexander is organised in three business units:

- ***Consulting:*** supply chain improvement, programme, project and change management and ERP consulting;
- ***Auto-ID integration:*** full service delivery & managed operations;
- ***Auto-ID Business Solutions*****:** "TracEye™" smart shelf solutions, Luggage Identification and Singulation Engine, ScanTrack (RFID based asset management), Scan Green initiative and others.

Mieloo & Alexander's company values:

- We manage risk and take responsibility for results;
- We are clear, systematic and determined;
- We focus on long lasting client relationships.

Our professionals work from our offices in Hoofddorp – The Netherlands and Ratingen – Germany on projects across Europe (EMEA) and deliver outstanding client service, measurable results and satisfied customers.

3.2 Mieloo & Alexander's Postal Experience

Mieloo & Alexander have an extensive experience and track record in working for the International Postal Industry, with references for postal companies such as e.g.: TNT Post / PostNL, BPost and La Poste. Mieloo & Alexander have a proven track record in assessing (audit) and in deploying various Auto-ID solutions within the Postal Industry. Mieloo & Alexander have also deployed various Auto-ID (RFID) Track & Trace solutions within the Postal Sector.

Furthermore Mieloo & Alexander have experience in the assessment and audit of the UNEX™ based Quality Letter Solution for PostNL.

4 INTRODUCTION AND BUSINESS BACKGROUND

4.1 Introduction

The Universal Postal Union (UPU) based in Berne, Switzerland, awarded the contract to Mieloo & Alexander for the external audit of the two UPU-agreed measurement systems used in the UPU terminal dues (TD) system to measure the quality of service (QS) of international letter-post items.

The UPU TD system is built on a number of basic principles, with a prime focus on ensuring the provision of high quality universal postal services.

Improving the quality of international letter-post items is a core UPU objective and important element of the UPU TD system. The relevant regulatory provisions include incentives (bonuses) for good quality and penalties for insufficient quality. This linking of remuneration to QS performance results is known as the QS Link.

(source: RFP document UPU)

4.2 About the Universal Postal Union (UPU)

Established in 1874, the Universal Postal Union (UPU), with its headquarters in the Swiss capital Berne, is the second oldest international organization worldwide.

With its 192 member countries, the UPU is the primary forum for cooperation between postal sector players. It helps to ensure a truly universal network of up-to-date products and services.

In this way, the organization fulfils an advisory, mediating and liaison role, and provides technical assistance where needed. It sets the rules for international mail exchanges and makes recommendations to stimulate growth in mail, parcel and financial services volumes and improve quality of service for customers.

(source: website UPU)

4.3 About Global Monitoring System

Quality can be improved only if measured. The Global Monitoring System is a state-of-the-art measurement system managed by the UPU International Bureau. Its primary objective is to provide each participant with accurate, high-quality operational results. This information can be used to determine UPU terminal dues remuneration, according to a performance bonus system established within the UPU, and to contribute to informed decisions on operational and quality improvement.

(source: website UPU)

The need to improve the overall end-to-end quality of international mail was recognized by the 1999 Beijing Congress, which decided on the need for a link between the quality of service that designated postal operators (DOs) offered each other and terminal dues payments.

A mail measurement system, designed with the needs of industrialised countries (ICs) in mind and based on existing monitoring systems, was introduced in January 1995. The 2004 Bucharest Congress reaffirmed this need for a link between quality of service and terminal dues. A team was set up responsible for developing an affordable global quality of service monitoring system that could accommodate the needs of all the many different Universal Postal Union (UPU) members. The Global Monitoring System (GMS) Development Group was also set up to formulate a proposal on the technical specifications of such an all-encompassing system. The team carried out its work in line with its mandate and proposed a solution, the UPU GMS Technical Design that balances the need for high accuracy and affordability for all UPU member countries.

The 24th Congress approved the UPU GMS Technical Design through resolution C 45/2008 and consequently instructing the Post Operations Council (POC) to develop and create the GMS as the UPU measurement system (Articles 215 and 216 of the Letter Post Regulations) for quality of service link to terminal dues. The UPU GMS Technical Design (2008) – this Document – was adopted as the source of the technical specifications for the measurement design for the UPU-agreed measurement systems. Further, POC approved the creation of other relevant bodies within Committee 1 with the responsibilities of, among others, to ensure the implementation of GMS as well as to ensuring the compliance of the UPU-agreed measurement systems with the UPU GMS Technical Design.

The GMS measurement design envisages a monitoring system based on the use of test letters, which simulate real mail flows between DOs. A radio frequency identification (RFID) transponder is inserted in each test letter and automatically recorded passing through RFID gates or by readers installed at the office of exchange (OE) or airmail units (AMUs) of each receiving DO. The data read at the OE signals the start of the test. The test letters are then processed with all other mail and sent to anonymous receiver panellists. Externally, the letters are indistinguishable from the other items, thus minimizing the chance of special treatment by the receiving DO. The panellists then record key data concerning the test letter, such as time of receipt, physical condition, etc. These data from the panellist, when compared with the OE reading, makes it possible to determine the duration or quality of service of the inbound segment.

The GMS design is driven by inbound mail volumes. The underlying principle here is that the larger the inbound mail volumes, the greater the risk to terminal dues and therefore the greater the accuracy required for the results.

As with real mail, DOs receive the test letters from countries all over the world. This test mail is organized into permanently measured flows and pools. Permanently measured flows represent large flows for the DO. Pool flows represent largely marginal flows and are broken down further into two pools (Pool 1 and Pool 2). The pool mechanisms ensure that the volume of the flows is taken into account and that, from a global perspective, marginal flows from smaller countries are pooled so that the total volume has sufficient significance. These pools offer some protection to low-volume DOs, whose mail might otherwise be disregarded as being insignificant when compared with the larger flows from high-volume countries.

(source: GMS Technical Design)

4.3.1 How does GMS work?

External panellists to the Post exchange test items for the participating countries. The test items, containing a radio frequency identification (RFID) transponder, are read by RFID antennae installed at operational facilities where the postal traffic is received and processed. This process generates the main portion of information required to determine the quality of service.

A reporting system called GMS Statistical system for Analysis and Reports (GMS STAR) has been put into place for the provision of the above information. Thanks to this newly developed IT platform and industry open-standard RFID technology, GMS is very affordable.

4.3.2 How to join GMS?

GMS is open to all UPU members, including those taking part in UPU continuous testing, that wish take a step forward in monitoring their quality of service and operations on the basis of a state-of-the-art measurement system. An application form can be found under "Key documents". Once it has been filled out and sent to the UPU International Bureau, a contact will be made to initiate the practical arrangements for installing GMS. UPU member countries needing help to finance their participation costs are eligible for funding from a Quality of Service Fund (QSF) Global Project that will be prepared on their behalf by the International Bureau.

4.4 Background on GMS and UNEX™

Measuring quality with a UPU-agreed system is a requirement for the bonus in relation to the achievement of the targets set by the UPU Postal Operations Council (POC). The UPU-agreed system is defined in the GMS Technical Design approved by the POC (see Annex 1). The performance results arising from the UPU-agreed system are used to check the achievement of targets in the TD/QS Link and to apply bonuses and penalties. The UPU Global Monitoring System (GMS) has been developed by the UPU International Bureau to satisfy the requirements under the UPU Acts for a UPU-agreed QS measurement system for QS Link purposes.

A module of the UNEX™ system, run by International Post Corporation (IPC), is used by a number of UPU member countries for UPU QS Link purposes. To the extent that the requirements of the UPU GMS Technical Design requirements are fulfilled, this system is also considered a UPU-agreed system. The systems measure service performance in terms of the time it takes letter-post items to travel from the entry point in the destination country through to the final delivery point. Test letters containing RFID transponders simulate the actual letter-post traffic between the participating countries. The measurement systems are sampling systems that rely on sending and receiving panellists.

(source: RFP document UPU)

4.5 Scope of the external audit

The external audit as described in this document will cover both the UPU GMS and the IPC UNEX™ systems used for QS Link purposes.
The main objective of the external audit is to assess whether the methodology, its implementation and the calculation of QS measurement results by the two UPU-agreed QS measurement system providers are consistent with the UPU GMS Technical Design.

The audit report will be used to prepare a proposal for the POC, which will decide on the adequacy of using the results produced by the two systems for the QS Link for TD purposes. As measurement systems that have an impact on financial revenue (terminal dues), GMS and UNEX require a high degree of transparency and accountability to ensure correct data for all participants. Chapter 17.1 of the UPU GMS Technical Design (Annex 1) states that because TD based on GMS results are calculated on a yearly basis, an external audit is required once a year.

(source: RFP document UPU)

5 EXECUTION OF EXTERNAL AUDIT OF THE UPU-AGREED MEASUREMENT SYSTEM UNEX™ 2013 BY IPC AND TNS

5.1 Introduction Measurement Service Provider: IPC and Contractor: TNS UK Limited

5.1.1 Introduction: International Postal Corporation (IPC)

IPC's UNEX™ system is used to measure international letter service performance between around 40 postal operators with test mail sent from more than 50 countries on four continents. UNEX™ test letters posted in one country; pass through the world's postal networks until delivered to the addressee in the destination country. Most of these letters contain an active Radio Frequency Identification RFID) tag. At specific reading points in postal facilities, the RFID tag transmits its identity, anonymously, from the processing facility to IPC's Network Centre in Brussels.

The UNEX™ system is used by IPC for various measurement applications:

1. **GMS measurement solution module (Global Monitoring System)**
   This UNEX™ module measures inbound performance for terminal dues (payment for delivery by one postal operator to another), which is linked to quality of service specified within the Universal Postal Union Target Terminal Dues System.
2. **Reims TD (Terminal Dues) measurement solution module**
   This UNEX™ module measures inbound performance for terminal dues (payment for delivery by one postal operator to another), which is linked to quality of service specified, with the European REIMS Terminal Dues Agreement and with bilateral agreements.
3. **Internal operations measurement solution module of specific postal operators**
   This UNEX™ module measures performance between countries and cities within the IPC member countries for operational improvement purposes.
4. **CEN measurement solution module**
   This UNEX™ module provides the performance on cross-border mail flows, which is required for annual publication under the European Union Postal Directive.

Scope of external audit:
The scope of this external audit is to assess the performance of the UNEX™ system in 2013 for the GMS measurement solution.

The UNEX™ System uses the transmitted data, with the date of posting and receipt, to calculate the transit time between specific points in the mail pipeline, allowing postal operators to manage the international mail pipeline in accordance with their delivery commitments to customers, regulators and postal partners. Postal operators can identify where bottlenecks may occur and where corrective actions are necessary.

UNEX™ began in 1994 with just 18 postal operators in 18 countries in Europe. In 2014 there are 37 postal operators worldwide participating in the UNEX™ system.

The UNEX™ system is based on a network of volunteer "panellists" – over 4,500 individuals, of which 3,000 in Europe – who send and receive test letters according to a weekly plan, and who enter the posting or delivery time on a central computer system. About 500,000 international first class/priority mail test letters are sent and tracked each year in the system, of which 200,000 in Europe. Test mail mirrors real mail geographical patterns and physical characteristics.

Once the RFID-transmitted data is sent to IPC's Network Centre, the system identifies the progress or delays of the test letter from the sender in the origin country to the addressee in the destination country. UNEX™ provides measures on both end-to-end and domestic segments of the international mail pipeline.

Source: website International Postal Corporation

A dedicated team supports the UNEX™ Solution within IPC.

5.1.2 Introduction: TNS UK Ltd.

TNS are a global market research firm with extensive experience in the international postal sector. Since January 1st 2013 TNS have been engaged as the designated contractor by IPC and have been working together with IPC on the UNEX™ 2013 Solution. Also in the period before 2013, TNS have been involved with IPC on the UNEX™ Solution.

The responsibility of TNS is focused on the following main areas:

- Panel Management
- Production

The TNS UK operation is organised in 3 different departments with the following responsibilities, see the chart below:

Central Team	PAC	TNS West Bromwich
▪ Contact with IPC ▪ Contact with LPO ▪ Obtain recruitment sample via panel providers ▪ Recruit GMS senders ▪ Manage incentives & reimbursements ▪ Manage panel activity in relation to panel and client requirements ▪ Manage panellist training ▪ Manage member query process ▪ Support for panel activity hub staff	▪ Panel management in local language ▪ Panel recruitment ▪ Panellist training and nursery calls ▪ Make query calls ▪ Recruit and maintain a 'super panellist' to distribute inbound packs ▪ Manage the GMS senders ▪ Input panellist responses into UMMS systems ▪ Contact with Central Team	▪ Prepare the test items from the print files provided by IPC ▪ Despatch the panellist packs to the super panellists ▪ Envelope Data Entry ▪ Archiving envelopes ▪ Stock Control incl. stamps ▪ Manage the RFID's ▪ QA pattern queries ▪ Contact with Central Team

Figure 5.1: Overview TNS departments / source: document TNS-02 "Introduction – GMSAuditslides.pptx"

The TNS Central Team is located in London (6 More London Place, London SE1 2QY, United Kingdom) and the Panel Activity Centre (PAC) is located in Westgate London (Westgate, Hanger Lane, London W5 1UA, United Kingdom). The TNS production facility is located in West Bromwich.

TNS are engaged on all the UNEX™ modules mentioned above except for the UNEX™ CEN measurement solution module, which is subcontracted to IPSOS.

TNS UK are ISO certified with the following certificates:

- ISO 9001:2008 - Market Research Services excluding the UNEX™ project which is certified separately;
- ISO 20252:2012 - Market Research Services excluding the UNEX™ project which is certified separately;
- ISO/IEC 27001:2005 – Information Security Management System;
- ISO 9001:2008 – Quality Management System for the UNEX Project.

5.2 Audit approach / Audit review topics (ART's)

After preparation and analysis of the GMS Technical Design v1.1, an overview of the audit review topics was prepared together with a digital questionnaire. The digital questionnaire was sent to IPC as well as TNS prior to the visits in order to allow for preparation.

As part of the external audit, the audit team visited the Measurement Service Provider: IPC and the contractor: TNS.
The following meetings were scheduled with IPC and TNS:

- IPC in Brussels – 10th, 11th and 12th of June 2014
- TNS (Central Team/PAC) in Westgate, London: 18th of June 2014
- TNS in West Bromwich: 19th of June 2014

During the meetings the following representatives were present:

International Postal Corporation (IPC)

- Bert Seghers – Head of UNEX™
- Ingrid De Roover – UNEX™ Contract Manager
- Ana Cejalvo – Reporting & Systems Manager
- Yannick Merckx – Data Analyst
- Kristof Demesure – RFID Technology Manager
- Koen Denayer – Developer

TNS (Central Team/PAC)

- Bert Seghers – Head of UNEX™ (IPC)
- Christiyana Georgieva – Client Lead
- Melanie Wymer – UNEX Operations Manager
- Haiete el Babili – Member Queries / Quality Management
- Martin Ritson – Associate Director
- Dagur-Eriksson Moerk – Team Leader

TNS West Bromwich

- Bert Seghers – Head of UNEX™ (IPC)
- Martin Ritson - Associate Director
- Richard Ormond – Operations Manager TNS West Bromwich
- Nicola Munroe - Production Team Manager
- William Hussey - Inbound & Resourcing Team Manager
- Various operational representatives of TNS in West Bromwich

5.3 General topics reviewed during audited (IPC/TNS)

5.3.1 Availability of documentation, operational procedures, working instructions and manuals, technical design, etc.

Within IPC various GMS related documentation is available for employees within the UNEX™ team. The GMS Technical Design v1.1 is available through a shortcut on the network.
The Q-drive is the common drive and contains the GMS technical design v.1.1as well as other relevant GMS information. The Q-drive is accessible only for the UNEX™ team and contains the following documents:

- Operational procedures UMMS
- UNEX™ project manuals separated per year
  i. Contact details, the document contains all contact details and for what specific purpose.
  ii. Communication channels guide: for specific topics in relation to specific employees within IPC. The same is applicable for TNS. Document is updated on a continuous basis.
- Agreement and contacts

Within TNS various documents relevant for the UNEX™ project were seen to be available. As TNS essentially are required to execute their operation according to the instructions of IPC with regards to panel and test letters, the GMS Technical Design v1.1 as such is not relevant. Within TNS various operational manuals, such as letter production manuals were seen to be available for employees.

5.3.2 Validate existence of personnel access control and authorisation procedures with regards to confidential information

Within IPC and TNS a personnel access control system is in place for employees entering the premises. Furthermore procedures are in place within IPC ensuring that only authorised personnel have access to UNEX™ related information on the network, i.e. only members of the UNEX™ team have access to UNEX™ related information. Within IPC only the UNEX™ team members (QSM department) have access to specific sections on the network (Q-drive), which contains confidential information. This section of the network is password protected and is not accessible to other IPC employees outside of the QSM department, thus ensuring that only a limited group of authorised employees have access to confidential information. This is applicable for example for the real mail volume information of the various IPC members.

Within TNS similar personnel access control systems are in effect. Also in terms of access to UNEX™ related information on the network, restrictions are in place to ensure that only authorised employees are provided access. Furthermore in the event confidential information is shared (e.g. via e-mail) additional security measures are implemented, e.g. with password protection. Furthermore the distribution of print files for letter production at TNS is provided in secure manner by IPC.

5.3.3 Validate the application of decisions on force majeure

In case of force majeure cases, these are decided on by UPU and communicated formally to IPC. No relevant force majeure cases are discussed for the period 2013. In the event of force majeure cases, IPC would document the decisions reached as well as the systematic changes implemented with the 'new' results. Thus ensuring such events would be auditable.

5.3.4 Validate whether adjustments to data or QS results have been made following decisions by UPU bodies

In 2013 IPC experienced transition issues, which resulted in lower volumes than planned. This issue was formally reported to UPU. Also a formal decision was made by UPU regarding the steps to be taken. This issue is reported on extensively in later sections of this report (see paragraph 6.7: GMS design for UNEX™ / Transition issues – measurement period 2013).

5.3.5 Implementation of (previous) audit recommendations

The last external audit was performed in 2012, auditing the GMS period 2011. Last year no audit was performed. During previous UNEX™ GMS User Group meetings, IPC confirmed that previous recommendations have indeed been implemented.

5.3.6 Contingency planning

Although no actual *Contingency Planning* document is in place describing various 'what if' scenarios, however several measures are in place. The RFID infrastructure for example is set up in such a way that in the event data connection to the central IPC network is lost, the RFID data is stored locally and can be processed at a later stage when the connection is re-established.

Another example is the fact that due to the lower mail volumes (as a result of the panel issues in 2013), IPC were able to re-use mail items from another measurement study (REIMS measurement).

5.3.7 Summary of results

In summary IPC and TNS have demonstrated well-organised professional working practices and motivated teams working on the UNEX™ Solution. Relevant documents are available throughout the organisations and good practices in terms of access control; authorisation procedures and the use of confidential information are in place.

In terms of Contingency Planning, various examples were provided to the audit team of practical measures taken during 2013.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.3.8 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.1:

Although examples of practical contingency measures were provided, it could be recommended to draft a *Contingency Plan*, describing pro-actively which measures could be taken in the event of various 'what if' scenario's.

5.4 Working procedure (IPC) in determining the GMS design

In order to determine the GMS (statistical) design IPC developed their own templates to apply the statistical design according to the GMS Technical Design (V1.1). For each country the GMS design is calculated in a separate file (Excel) to avoid that county specific delays could result in overall delays. Furthermore, the folder containing the template master file is kept empty for "controlling" purposes.

The GMS (statistical) design per country is determined in the following 3 main steps:

i. **Step 1**: in this step the data of the various IPC members (GMS) is inserted in the design templates;
ii. **Step 2**: during this step the permanent flows and pool 1 and pool 2 countries are flagged;
iii. **Step 3**: In this final step the specific countries are selected as permanent flows, pool 1 or pool 2.

In the section below the GMS design procedure is clarified in more detail, based on the Excel file:

i. Every Country specific GMS (statistical) design file (Excel) consists of the GMS design table (table 4.1 in the GMS Technical Design v1.1) to guarantee the UPU requirements can be consulted at all times during the design process.

ii. In other worksheets the sources and used rules are specified as well as the relevant city codes with the demographic information such as population per city. In determining the cities per country the calculation rules as specified in the GMS Technical Design v1.1 (chapter 4 and 5) are applied. In order to determine the cities, information about city population is used with the exception of USA and France where real mail volume information per city is used.

iii. In the *inbound & links* worksheet the real mail volume is specified by the DO. This information is provided by the DO's (postal organisation. The real mail data used for the design of the measurement period 2013 was provided by the postal organisations in 2012 and was based on actual data of 2011. IPC have indicated that this timeline does not correspond with the timeline adopted by UPU. Data is gathered by means of a real mail questionnaire, which is submitted by IPC to the respective postal organisations. The real mail volume is specified based on mail weight (i.e. kg.). In some cases IPK's (items per kilogram) can be used if necessary. If IPK's are used instead of weight in kilograms the conversion ratio must be provided by the respective postal organisation and not by IPC. In this worksheet the countries making up the permanent links, pool 1 and pool 2 are determined based on the rules as defined in table 4.1 in the GMS Technical Design v1.1. In some cases a rounding-up rule is applied where more countries for pool 2 are determined than based on the expected coverage percentages of permanent + pool 1.

iv. In the worksheet *P&P1 check* potential adjustments of valid mail target items are calculated for permanent links and pool 1. This is particularly relevant for countries where for example the permanent flow is so large that few or no mail flows would remain for pool 1. For example in the case of New Zealand and Canada. IPC have implemented 4 checks in the template GMS (statistical) design file (Excel) with the support of Tom Ryall. The formulae used for these calculations are identical to the ones specified in Annex B. of the GMS Technical Design v1.1. In this worksheet the valid mail target items are calculated for permanent links and pool 1 for the respective DO within the template of IPC. The final individual adjustments made per country are not discussed and/or approved by UPU.

v. In a subsequent worksheet *Permanent Link* the allocation of the valid mail target items (as determined in the P&P1 step) for the permanent links is calculated per country. The calculation is based on the real mail volumes of the selected permanent link countries. The percentage of the real inbound mail volumes of each selected permanent link country is determined in relation to the total inbound mail volumes of the selected countries. The valid mail target items are allocated to the permanent links accordingly and if required adjusted for example if the minimum number of items per link is not met. In the allocation rounding-up rules are applied in the calculation sheet. In the event that after the initial allocation the valid mail target items fall below the specified minimum values according to the GMS Technical Design v1.1, the total 'shortages' are distributed and allocated to the permanent links with the highest mail volumes according to the real mail volume distribution. In some cases distributing these 'shortages' according to this distribution logic might not be sufficient. In this case the final missing items are allocated to the biggest permanent link country.

vi. In the worksheet *Pool 1* the allocation of valid mail target items for the pool 1 links is determined. According to the GMS Technical Design v1.1, 'the ideal solution would be to rotate the DO's over the period between the congresses, which is currently four years". As a result of the suggested rotation, the number of pool 1 countries is divided by 4 and rounded up. Subsequently the UNEX™ team selects the pool 1 countries randomly. Currently no formal and systematic rotation procedure is applied annually. Also in selecting the pool 1 countries no reference to the previous years' design is made.

vii. In the worksheet *Pool 2* the allocation of valid mail target items for the pool 2 links is determined. The number of valid mail items is determined by deducting the permanent link items and the pool 1 items from the total number of valid mail items. These remaining pool 2 valid items are then theoretically distributed over the remaining countries. Finally 1 country per continent (Europe, Africa, the Pacific, Asia and the Americas) is selected and the pool 2 valid items are divided by the 5 selected countries not taking any form of weighting into account. No formal rotation procedure is performed, taking into account the selected countries from previous years' design.

viii. In the following worksheet *Allocation* the valid mail target items for permanent, pool 1 and pool 2 flows is allocated to the selected cities of the inbound DO. The allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also during this allocation a rounding-up procedure is applied in order to take appropriate safety measures with regard to volume.

ix. In the final worksheet *Panellist*, the required panellists are determined for the selected cities of the inbound DO. The panellists are determined based on the required total number of panellists as specified in the GMS Technical Design v1.1 and the minimum number of panellists per city. The panellists are initially allocated based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO. If based on this allocation the number of panellists of specific cities fall below the minimum required panellists, the minimum number of panellists for that city is selected. Subsequently the corrected number of panellists is compensated, i.e. deducted from the largest city.

5.5 Realisation of statistical design according to GMS Technical Design v1.1

In order to assess the GMS design procedure (execution against the GMS Technical Design v1.1) at IPC (UNEX™) 3 different statistical designs were reviewed, in collaboration with the UNEX™ team in some detail as part of the external audit. The audit team selected the 3 different statistical designs at random. The following statistical designs were reviewed as part of the audit:

- New Zealand (level B)
- Israel (level B)
- Germany (level A) / specific report

As describing the specific details of these respective designs or adding the designs to this audit report, would reveal sensitive and confidential information, the section below provides a summarised and condensed assessment of the reviewed designs against the GMS Technical Design v1.1.

5.5.1 Statistical design review New Zealand (Level B)

For the calculation of the statistical design the (internal) GMS template of IPC is used as described above. In the selection of the cities the minimum of 5 cities are selected and are cross-checked with the 25% rule. The calculation for city selection is based on population info.
Real mail data is provided to IPC by the New Zealand postal organisation. This information is not verified by IPC (for any of the IPC members) and for the GMS measurement module. IPC has no reason the check the provided data.

Inbound calculation & links
The inbound calculation is based on the same real mail data as mentioned above and provides an overview of the postal volumes in kilograms. In the list of countries of origin the permanent link, pool 1 and pool 2 countries are selected. The selected permanent link countries are 10 (minimum) in total. The cumulative volume of the 10 selected permanent link countries exceeds the *Expected coverage* threshold of the GMS Technical Design v1.1. Subsequently the pool 1 countries are selected. The total cumulative volume of the permanent- and pool 1 links exceeds 93%, which is consistent with the GMS technical Design v1.1. If the previous country (of pool 1) would have been selected, the cumulative volume would have been below 93% and would have been inconsistent with the design. As this stage of the design 5 countries are selected for pool 1.

P&P1 check
Based on the cumulative volumes of the permanent and pool 1 flows the *P&P1 check* is performed. As the permanent flows exceed the expectation of 70% (level B) according to the GMS technical Design v1.1, a new calculation is made determining the final permanent- and pool 1 valid mail items. As a result the valid items for the permanent links are higher and the valid items for pool 1 are lower.

Permanent- / pool 1- / pool 2 links
In this step the *Permanent Link Items* are calculated per (outbound) country based on the (adjusted) valid mail items for permanent links calculated in the *P&P1 check*. The calculation is based on the real mail volumes of the selected permanent link countries. The percentage of the real inbound mail volumes of each selected permanent link country is determined in relation to the total inbound mail volumes of the selected countries. The valid mail target items are allocated to the permanent links accordingly and if required adjusted in order to ensure that the minimum of 100 items (see GMS Technical Design v1.1) is adhered to.
For the allocation of valid mail target items for the *Pool 1* countries an initial list of 5 (potential) *Pool 1* countries was determined. Based on the rotation rule (4 years rotation period) 2 *Pool 1* countries are selected. The selection is done randomly with no explicit reference to earlier *Pool 1* countries selected. Every year this process is repeated, with the risk of reselecting the same countries again. The valid target mail items (calculated in the P&P1 check) are allocated evenly over the 2 selected *Pool 1* countries. For the selection of the *Pool 2* countries, a selection of a country per continent is made out of the list of remaining countries. The valid target mail items are divided evenly over the 5 selected *Pool 2* countries. The *Pool 2* countries are systematically selected, taking into account practical and cost considerations.

Allocation to cities
In the next step the valid mail target items for permanent, pool 1 and pool 2 flows are allocated to the selected cities of the inbound DO. The allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also during this allocation a rounding-up procedure is applied, which results in more items being allocated than were determined during the *P&P1* check.

Panellist allocation
In the final step the required minimum numbers of panellists are proportionally allocated to the selected cities of the inbound DO. The minimum total number of panellists is determined in accordance with the GMS Technical Design v1.1 and allocated based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO. If based on this allocation the number of panellists of specific cities fall below the minimum required panellists per city, this is compensated.

In the case of New Zealand this is the case for 2 cities. At this stage the workload of mail items per panellist is assessed.

5.5.2 Statistical Design Israel (Level B)

For the calculation of the statistical design of Israel the same template is used as in the case of New Zealand. In the selection of the cities the IPC UNEX™ team indicated that a discussion took place regarding the final selection of the cities.

The cities selected for the design of 2013 are Jerusalem, Tel Aviv, Haifa, Rishon le Zhion and Petah-Tikva.

Inbound calculation & links
The inbound calculation is based on data from the postal organisation and provides an overview of the postal volumes in kilograms. In the list of countries of origin the permanent link, pool 1 and pool 2 countries are selected. The selected permanent link countries are 10 in total. The cumulative volume of the 10 selected permanent link countries exceeds the *Expected coverage* threshold of the GMS Technical Design v1.1. Subsequently the pool 1 countries are selected. The total cumulative volume of the permanent- and pool 1 links exceeds 93%. The remaining countries of origin are selected as pool 2 countries.

P&P1 check
Based on the cumulative volumes of the permanent and pool 1 flows the *P&P1 check* is performed. As the permanent flows exceed the expectation of 70% (level B) according to the GMS technical Design v1.1, a new calculation is made determining the final permanent- and pool 1 valid mail items. The valid items for the permanent links are higher and the valid items for pool 1 are lower than according to the expected coverage.

Permanent- / pool 1- / pool 2 links
In a subsequent step the *Permanent Link Items* are calculated per (outbound) country. The calculation is based on the real mail volumes of the selected permanent link countries. The percentage of the real inbound mail volumes of each selected permanent link country is determined in relation to the total inbound mail volumes of the selected countries. The valid mail target items are allocated to the permanent links accordingly and if required adjusted according to the procedure as described above.
For the allocation of valid mail target items for the *Pool 1* countries an initial list of 12 (potential) *Pool 1* countries is determined. The list of 12 countries could have been reduced to 10 (potential) *Pool 1* countries as the 10 countries together with the 10 permanent link countries already would have exceeded 93%. Based on the rotation rule (4 years rotation period) 3 *Pool 1* countries are selected. The selection is done randomly with no explicit reference to earlier *Pool 1* countries selected. The valid target mail items are divided evenly over the 3 selected *Pool 1* countries.

For the selection of the *Pool 2* countries, a selection of a country per continent is made out of the list of remaining countries. The valid target mail items are divided evenly over the 5 selected *Pool 2* countries. The *Pool 2* countries are systematically selected, taking into account practical and cost considerations. During the audit it was determined that certain Pool 2 countries were systematically used in various designs.

Allocation to cities
In the next step the valid mail target items for permanent, pool 1 and pool 2 flows are allocated to the selected cities of the inbound DO. The allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also during this allocation a rounding-up procedure is applied, which results in more items being allocated than were determined during the *P&P1* check.

Panellist allocation

In the final step the required minimum number of panellists is proportionally allocated to the selected cities of the inbound DO. The minimum total number of panellists is determined in accordance with the GMS Technical Design v1.1 and allocated based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO. If based on this allocation the number of panellists of specific cities fall below the minimum required panellists per city, this is compensated.
In the case of Israel this is not the case. At this stage the workload of mail items per panellist is assessed. A balance is required between a relative low workload per panellist (in order to prevent potential integrity issues) and sufficient workload per panellist to ensure routine handling of the tasks by the panel members. As a target between 100 and 150 items per panellist per year is considered practically feasible.

In the discussion of the GMS design for Israel it was also mentioned that in the case of Israel also a specific report had been drafted. However in 2013 this specific report was not used.

5.5.3 Statistical Design Germany (Level A)

For the calculation of the statistical design of Germany the same template is used as in the case of New Zealand and Israel. Germany is a level A country. Even though the maximum number (15) of cities is selected according to the design, the total population in the selected cities is around 20%. Berlin only represents 4 percent of total population. The distribution of the population in the selected cities is "flat lined".

Inbound calculation & links
The inbound calculation is based on data from German Post and provides an overview of the postal volumes in kilograms. In the list of countries of origin the permanent link, pool 1 and pool 2 countries are selected. The selected permanent link countries are 16 in total and are according to the GMS technical Design v1.1. The cumulative volume of the 16 selected permanent link countries exceeds the *Expected coverage* threshold of the GMS Technical Design v1.1 by a few percentage points. Subsequently the pool 1 countries are selected. The total cumulative volume of the permanent- and pool 1 links exceeds 95% by 0.88%. The explanation provided is that 3 additional *Pool 1* countries were added beyond the 95% threshold as an extra buffer due to the very small difference in mail volume of the last group of *Pool 1* countries.
The remaining countries of origin are selected as pool 2 countries.

P&P1 check
Based on the cumulative volumes of the permanent and pool 1 flows the *P&PL check* is performed. As the permanent flows exceed the expectation of 80% (level A) according to the GMS technical Design v1.1, a new calculation is made determining the final permanent- and pool 1 valid mail items. The permanent valid mail items are increased, as the expected coverage of the 16 permanent links also exceeds 80%. The remaining valid mail items are Pool 1 items

Permanent- / pool 1- / pool 2 links
In a subsequent step the *Permanent Link Items* are calculated per (outbound) country. The calculation is based on the real mail volumes of the selected permanent link countries. The percentage of the real inbound mail volumes of each selected permanent link country is determined in relation to the total inbound mail volumes of the selected countries. The valid mail target items are allocated to the permanent links accordingly and if required adjusted according to the procedure as described above. A minor adjustment is made for the last permanent flow, as this flow initially falls below the minimum number of 125 items per link.

For the allocation of valid mail target items for the *Pool 1* countries an initial list of 19 (potential) *Pool 1* countries is determined. Based on the rotation rule (4 years rotation period) 5 *Pool 1* countries are selected. The selection is done randomly with no explicit reference to earlier *Pool 1* countries selected. The valid target mail items are divided evenly over the 5 selected *Pool 1* countries.
For the selection of the *Pool 2* countries, a selection of a country per continent is made out of the list of remaining countries. The valid target mail items of 500, is divided evenly over the 5 selected *Pool 2* countries.

Allocation to cities
In the next step the valid mail target items for permanent, pool 1 and pool 2 flows are allocated to the selected cities of the inbound DO. The allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also during this allocation a rounding-up procedure is applied, which results in more items being allocated than were determined during the *P&P1* check. The total number of permanent items allocated to the 16 cities is 8774, the total number of *Pool 1* items is 900 and *Pool 2* is 500. The *Pool 2* countries are systematically selected, taking into account practical and cost considerations. During the audit it was determined that certain Pool 2 countries were systematically used in various designs.

Panellist allocation
In the final step the required minimum number of panellists of 50 is proportionally allocated to the selected cities of the inbound DO. The minimum total number of panellists is determined in accordance with the GMS Technical Design v1.1 and allocated based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO. Based on this allocation the number of panellists in 6 cities fell below the minimum number of 3 per city. In this case the minimum number is set for the 6 cities and compensated in other cities. Overall a total number of 57 panellists are allocated instead of 50.

Specific report
Some IPC members have requested to use a Specific Report for the calculation of Terminal Dues. In the case of Germany also a specific report is used for the calculation of Terminal Dues. In 2013 the following countries opted for a specific report: Germany, Canada, United States of America, United Kingdom and France.
In the specific report only (sending) countries are selected who participate in the Terminal Dues arrangement. For the calculation of the corresponding design for the specific report the template as described above is modified and finally combined with the base design.

Inbound calculation & links
For the inbound calculation an additional column is added to the worksheet: *QS-link* (Quality of Service Link to Terminal Dues). In this column only the terminal dues countries are selected.
The procedure to select is the same as described above, the only difference is that only terminal dues countries are taken into consideration. The selected (sending) countries are ranked based on real mail volume and the selected permanent link countries are 16 (according to the GMS technical Design v1.1). In this selection only the QS-link countries are taken into account and are ranked according to their respective real mail volume. The other countries are disregarded.
The cumulative volume of the 16 selected permanent link countries exceeds the *Expected coverage* threshold of the GMS Technical Design v1.1 by more than 10%.

Subsequently the pool 1 countries are selected. The total cumulative volume of the permanent- and pool 1 links exceeds 95% by 0.49%. The Pool 1 countries are reduced considerably to 5 countries with the specific report. The remaining countries of origin are selected as pool 2 countries.

P&P1 check
The P&P1 check is performed in a similar manner as described above. As the permanent flows exceed the expectation of 80% (level A) according to the GMS technical Design v1.1, a new calculation is made determining the final permanent- and pool 1 valid mail items. The permanent valid mail items are increased to 9288, as the expected coverage of the 16 permanent links also exceeds 80%. The remaining valid mail items for Pool 1 are 212.

Permanent- / pool 1- / pool 2 links
The *Permanent Link Items* are calculated per (outbound) QS-link country in a similar manner as described above. Also adjustments are made in a similar manner in the event that after distributing the mail items over the countries a specific flow falls below the minimum number of 125 items per link.

For the allocation of valid mail target items for the *Pool 1* countries an initial list of 5 (potential) *Pool 1* countries is determined. Based on the rotation rule (4 years rotation period) 2 *Pool 1* countries are selected. The selection is done randomly with no explicit reference to earlier *Pool 1* countries selected. The valid target mail items are divided evenly over the 2 selected *Pool 1* countries.

For the selection of the *Pool 2* countries, a selection of a country per continent is to be made. However only for 3 out of 5 continents a country can be selected out of the list of QS-link countries. The valid target mail items of 500, is divided evenly over the 3 selected *Pool 2* countries.

Allocation to cities
The allocation of valid mail items to the cities is done in a similar manner as with the base design.

Panellist allocation
The panellist allocation to the cities is done in a similar manner as with the base design.

The Specific Report is considered a boost. The Specific Report is compared to the Base Design of Germany for each flow and the highest number if items are selected. Each country decides on an annual basis to use a Specific Report for the calculation of Terminal Dues.

5.5.4 Summary of results

In summary the UNEX™ team at IPC have a clear understanding of the requirements as specified in the GMS Technical Design v.1.1. Although the manner in which the designs are calculated by IPC differs from Quotas (UPU) it is the assessment of the audit team that the designs calculated are compliant with the GMS Technical Design v1.1. Particularly the use of rounding-up rules and the fact that no systematic rotation procedure is applied for pool 1 countries are 2 differences in approach with respect to the calculation performed by UPU/Quotas. It should be noted that for the rotation procedure adopted by IPC, particularly for level C, D and E countries this could have some effect based on the relative volume of the pool items.

5.5.5 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.2:
Align the timelines with respect to the real mail data used as a basis for the design calculations between IPC and UPU, in order to assure that the designs are consistent and on time.

Recommendation 5.3:
Institutionalise a Quality Review Group (between UPU and IPC) with the responsibility to assess the proposed designs (of IPC and UPU) prior to the year of measurement. This would ensure an approval process 'before the fact' rather than 'after the fact'.

Recommendation 5.4:
Institutionalise a formal meeting structure between IPC and UPU, which could be used to discuss and decide on specific potential deviations or interpretations during the design process.

Recommendation 5.5:
It could be considered for consistency purposes to centralise the procedure of calculating the GMS designs.

Recommendation 5.6:
It would be recommended to harmonise the adopted procedure for the rotation of *Pool 1* member countries. The selection by IPC is currently done randomly with no explicit reference to earlier *Pool 1* countries selected. Although the audit team verified that the Pool 1 countries of the reviewed designs were not 100% identical to the *Pool 1* countries of the previous years' design, there is a risk that the same countries could be selected.

5.6 Main UNEX™ workflow and operational procedure

5.6.1 Audit observations

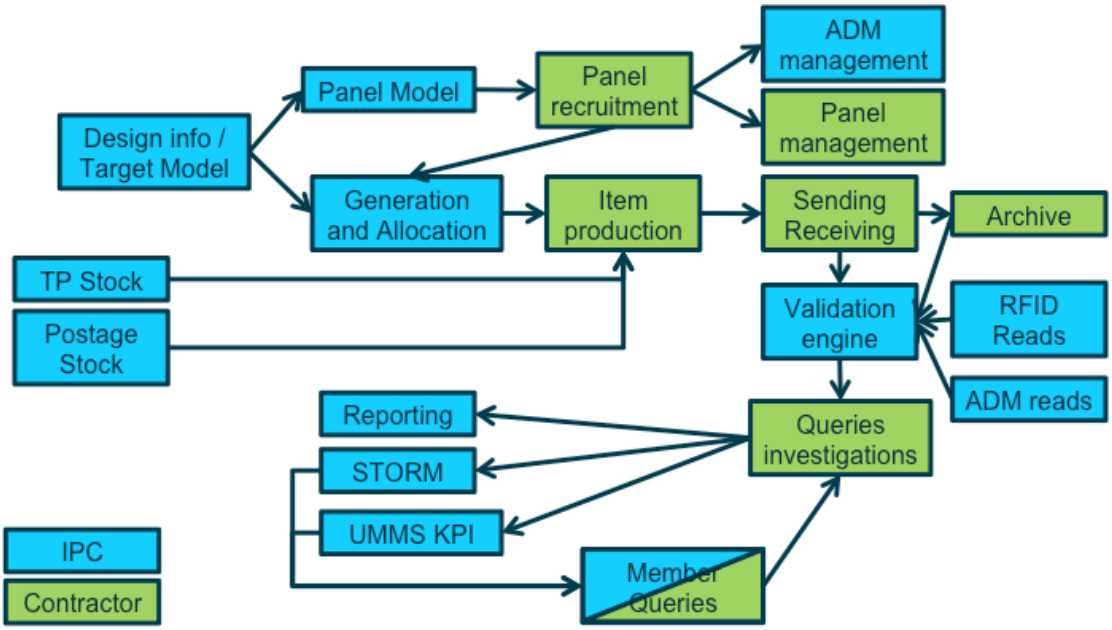


Figure 5.2: UNEX™ workflow and application overview / source: document IPC-59 "UNEX Introduction to IPC staff – May 2014 – version Audit GMS MA"

UMMS is the overall IT-application used for the UNEX™ measurement system. UMMS is used by different stakeholders and is divided in several "zones", which can be accessed by the corresponding user. Each zone is described in the following paragraphs.

UNEX™ design zone

In UMMS, the design info/target models (statistical designs) are uploaded by IPC for specific periods (different versions apply). IPC is able to see the uploaded design, but has to log-in as a DO, as all members have access to their specific section. In the design zone of UMMS, IPC maintains the measurement systems and certain activities are performed (e.g. maintenance of the DO related to a module/lot, DO related to which country, the time zones of DO's, the date indication, currency, etc.). If all required information is available, the designs can be uploaded. Without this information, an alert is generated when a new country (sender or receiver) is added as UMMS does not recognize the DO. The settings of the systems are also maintained in this section just like the validation settings (patterns queries) and other specific checks.

A percentage of extra mail items is allocated per country to city link and can be changed upon request. By means of a weekly allocation run, the details are presented for produced test items and bundling is checked. The specific flow between a country and city can be filtered and the characteristics of that specific flow are presented.

Contractor zone (TNS)

Upload of the panel model cannot be seen by IPC, but can be accessed from the contractor zone by means of the recruitment panel overview (main dashboard). Panel model can be selected per lot (e.g. GMS). The sender and receiver (including the back-up panellists) are included, together with their profile and status (e.g. holidays, etc.), time zone, which collection unit (e.g. postal code), etc. The activity plan ensures that TNS follows up pre-determined actions and if applicable, the panellists

are contacted (panellist are not contacted by IPC). Also panel recruitment is performed in UMMS. In the section panel management, TNS has a complete data overview of all panellists and is able to measure panellist' performance. The activity history indicates the number of contact moments and sums up the activities and comments made concerning those activities. In 2013, each country had a dedicated panel coordinator from the same country of origin, so it is determined which panellists are allowed to be accessed/contacted.

Logistics activities are included, providing TNS the possibility to track envelopes in the archived test items, which are stored at the TNS production facility. During the archiving process, checks are performed with regards to "missing priority stickers" or address labels.

Incentives for panellists are maintained in UMMS by TNS as well. Incentives are country specific as panellists in some countries receive cash deposits, in other countries panellists receive gift vouchers, (movie) tickets or fuel vouchers (amounts of incentives are maintained).

Test items are validated or dudded. In case of an integrity case (panel discovered), all test items related to the discovery of panellists for a specific period can de dudded (by TNS only). Decisions regarding valid items, is the responsibility of TNS.

"Transponder management" allows TNS to manage the transponder stocks and in user management, the super user is able to manage the profile and passwords of new panellists that are added.

Panel zone
Just like IPC is able to log in UMMS as a member DO, TNS is able to log in as a panellist for supporting reasons. The panellists provide data regarding the receipt of test items and provide the personal holidays in UMMS. Panellists can indicate if a back-up panellist is available during a holiday. Other options for the panellist is to change passwords, indicate any address changes, recommend (back-up) panellists and have insight in the status of the incentives.

Member zone
Postal holidays, NWD's and postal information is provided in this section by the DO's. Because it is an end-to-end system, a specific DO is able to see a general overview of all public and regional holidays, NWD's and NPD's of all (GMS) members on Office of Exchange (OE) level. Characteristics of the statistical design can be viewed by the DO's, except for GMS designs. Passwords are maintained as well. The member zone provides access to the STORM application (used by DO's to run country specific reports).

Validated items are used as input for the generation of reports and KPI's.

5.6.2 Summary of results

The IT-application landscape within IPC/TNS consists mainly of UMMS which is used by various stakeholders. STORM is used for reporting purposes. In 2013 the IT-applications were introduced, which caused operational- and transition issues. The current IT-applications are modern and well suited to support the GMS measurement solution.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	n.a.

EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	n.a.

5.6.3 Recommendations

n.a.

5.7 GMS Design for UNEX™ / transition issues – measurement period 2013

5.7.1 Audit observations

In 2013 IPC experienced transition and implementation issues regarding the introduction of the (new) UNEX™ 2013 Solution. These transition issues had a disruptive effect on the UNEX™ Solution during the initial months of 2013. As one of the objectives of this external audit is to assess the execution of the GMS and UNEX™ Solution against the GMS Technical Design v1.1, this section describes the transition issues and the extent to which they have had an impact on the overall operational performance of the UNEX™ Solution in 2013.

On the 26th of March 2013 IPC formally reported to the UPU IB, that the quality measurement results of the UNEX™ GMS Solution were not compliant with the requirements of the UPU GMS Technical Design v1.1 during Q1 of 2013. On the 5th of April 2013 IPC issued a memorandum to the POC Committee 3 with further clarification of the issues.

Subsequently a presentation was provided by IPC (UNEX™) (d.d. 15 April 2013) to the user groups:

- UPU GMS QLUG (Quality Link to Terminal Dues User Group), on the 15th of April
- UPU GMS IG (GMS Implementation Group)

In this presentation titled: 'UNEX GMS Status report', IPC elaborated on the operational issues encountered after the transition of the new UNEX™ 2013 Solution.
The following operational issues were encountered by IPC after the introduction of the new UNEX™ 2013 Solution:

- Receiver panel shortfalls due to late design changes requested by some participating UNEX™ members;
- Shortfalls of test mail items in key flows, largely as a result of receiver panel shortfalls (possibly also due to allocation issues which were IT-related). The required outbound flows of Great Britain, Hong Kong and Japan as well as the inbound volumes of Malta and Jamaica have been absent in Q1 2013;
- IT-related issues as a result of the introduction of new IT infrastructure for panel management and production functionalities;
  i. issues with postcode formats in UMMS
  ii. data migration issues after migrating operational data to the new IT solution
  iii. issues within the allocation module/functionality
- GMS Specific Report (only) available from Q2 2013
  i. IPC decided to freeze design changes communicated after 15th of August 2013
  ii. Approximately 8 GMS QLUG had indicated an interest in using the specific report in 2013. The specific report would in this case only cover 9 months, which would be a deviation from the GMS Technical Design v1.1.
- Country specific issues within specific UNEX™ members, resulting in low test mail volumes

In the presentation mentioned above IPC also prepared 4 possible options to be considered by GMS QLUG. The 4 possible options and corresponding consequences and considerations are described below:

1. "As is"	• Bias in geography at start of year and limited seasonal effect • Lower accuracy than expected
2. Boost missing volumes	• Challenging recruitment for TNS and lead time of about 8-10 weeks (so earliest start only in Q3) • Deteriorate temporal effect: 70% of test volume in Q3/4 • Additional cost for boost
3. Remove period of data in case of bias	• Analysis needed for each inbound country to decide on bias • Lower yearly accuracy than expected • Limited temporal effect: no full year report but length depending on specific country bias noticed
4. 12 month measurement	• No temporal effect • GMS criteria of 12 month measurement • Either overall decision on Q1 or country specific decision on period

Figure 5.3: possible options / Source: document IPC-54 "UNEX 2013 status report for UNEX GMS module – GMS QLUG April 2013.pdf"

In order for the GMS QLUG members to assess the issues, their respective impacts and for the POC to take an informed decision, an *Ad Hoc Expert Group* of the *LP QMIG* was formed to assess the situation and make recommendations to the POC chair.

Based on information provided by IPC to the *Ad Hoc Expert Group* and after extensive consultation between various UPU bodies, the following decision was reached by the POC Chair and communicated on the 28th of June 2013.

Decision by POC Chair (letter reference: 0426(DER.PAE), d.d. 28 June 2013)

Decision

Following this comprehensive process, the POC Chair decided that IPC, the measurement system provider, should "calculate the monthly and year-to-date on–time performances using the current data as is within the standard and specific report."

For both the standard and the specific report, the decision implies that the actual volumes of test items sent during the period from January to March 2013 are to be used for calculating the results corresponding to that period. Those results will be used as such for the calculation of the whole year results, without any additional weights or temporal adjustments.

Please note that this decision is based on the assumption of a return to prescribed testing levels that should be sufficient to drive full year –results that ultimately satisfy the annual accuracy levels specified in the GMS technical design.

The date agreed by the POC for implementation of this decision is Monday, 1 July 2013. I understand that the timeline is short, but please confirm that IPC will implement this decision by that date.

Figure 5.4: decision made by the POC / Source: document IPC-43 "Letter 0426(DER.PAE) – 28062013.PDF"

In short the decision was made to opt for the possible option listed as the 1st option by IPC (see above). Besides this decision additional measures were put into effect in order to monitor and manage the situation (see below) and to report an overview of the UNEX™ member queries related to GMS.

Measures going forward (letter reference: 0426(DER.PAE), d.d. 28 June 2013)

Measures going forward

To ensure optimal application of this solution, the following additional measures were approved for reporting year 2013. These measures will allow the International Bureau (IB) to provide the POC with information regarding the continued compliance of the UNEX module for 2013, and to ensure that there is no potential to introduce bias throughout the balance of 2013. These measures are as follows:

– IPC will, on a monthly basis, provide the IB with the latest data using the templates that were used for the assessment by the ad hoc group;

– The IB will monitor and report to the POC on the continued compliance of the UNEX module with the GMS technical design;

– In the event of deviations similar to those observed, the matter will be brought to the attention of the Co-Chairs of Committee 3 and the Chair of the LPQMIG as soon as possible;

– UNEX module users will be given the opportunity to challenge the data for the first quarter;

– The IB will monitor the outcomes of any challenges as well as UNEX user forums and processes such as part stretch validation, where the status of items is subject to change.

Figure 5.5: measures going forward / Source: document IPC-43 "Letter 0426(DER.PAE) – 28062013.PDF"

On the 13th of September 2013, IPC provided another *Status report on the UNEX™ GMS module for 2013*. In this status report the following issues and mitigating measures were elaborated by IPC:

1. Due to IT-related issues of the allocation program, systematic under-allocation of test letters had a negative effect on flows with a high target. To overcome the volume shortages on these major flows, IPC decided to re-use test letters from other UNEX™ measurement modules. In this case IPC decided to re-use mail items from the REIMS measurement module. Even though the REIMS mail flow is 'country' to 'country' IPC were able, as a contingency measure, to isolate relevant mail items, which could be re-used for GMS purposes. The audit team were provided with a comprehensive overview of mail items (document IPC-61 *"Re-use matrix 2013 QLMS.csv"*), which were re-used. The list specified, among other the following details: sending country, receiving country, receiving postal code (i.e. city), letter format, etc. The re-use of test letters took place until 1st of October 2013. From this date this issue was resolved.
2. Country specific issues regarding panel shortages in specific UNEX™ countries and/or cities remained in Q2/Q3.
3. As a result of shortages in sender panellists in the non-UNEX™ countries during the summer period, lower volumes could have an adverse effect on the UNEX GMS Specific Report.

In order to assess the overall impact of the issues described above on the execution of the UNEX™ Solution against the GMS Technical Design v1.1 as part of this external audit, an operational report has been drafted for the entire period of 2013, see paragraph 5.17 Operational Performance of Measurement Service Provider IPC / TNS in 2013.

In this operational report a comparison is made, based on data obtained from IPC, of ***'planned'*** (i.e. specified according to the GMS Technical Design v1.1) versus ***'actual'*** (i.e. valid items and valid items

on-time). The operational report is specified in section 5.17 Operational Performance of Measurement Service Provider IPC / TNS in 2013.

5.7.2 Summary of results

In 2013 IPC experienced transition issues, which had a negative effect on the number of valid mail items injected in the GMS measurement study. The issues were reported to UPU and various operational measures were taken to mitigate the impact.

5.7.3 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.7:
In order to prevent potential issues due to 'late' designs it would be recommended to implement and communicate the collection and update procedure with clear time schedules to all participating GMS member countries for making data available and for deciding to opt for specific reports.

Recommendation 5.8:
Institutionalise operational meeting structures between IPC (UNEX™) and UPU IB as a control framework for monitoring progress of the GMS measurement solution.

Recommendation 5.9:
It is recommended to adopt thorough integration tests prior to the delivery of significant new IT business applications in order to prevent disruption to productive business operations.

Recommendation 5.10:
In could be considered to pursue more operational flexibility from the contractor TNS in order to make it possible to assume the implementation of finalised designs even though not all designs are completed.

5.8 Panel Management

In this section the panel management provided by TNS is further described.

5.8.1 Recruitment of panellists

5.8.1.1 Recruitment of sender panellists

It should be noted that the term "dropper panellists" is replaced by the term "sender panellists". Except for Norway (individual sender panellist) the majority of the sender panellists are professional senders, as organisations are considered to be more stable and better able to manage the back-up procedure for senders. As TNS prepares the test letters and distributes the test items among the professional senders and the Norwegian individual, no preparation of test letters by sender panellists is applicable.

In UMMS, the sending schedule for week 29 is presented to the audit team and demonstrates no shortfalls for any of the 43 countries. The type of panellist is also indicated (professional vs individual), together with the corresponding country and status.

The logic behind the allocation of test items to sender panellists prevents bundling of items to assure no items are received at the same day (city and individual panellists are taken into account). The panellist does not show up twice in the allocation process as a specific day of next week and the previous week are considered to be the current day. For example, if the Wednesday in week 30 is the sending date, the Wednesdays in week 29 and 31 are blocked in the system.

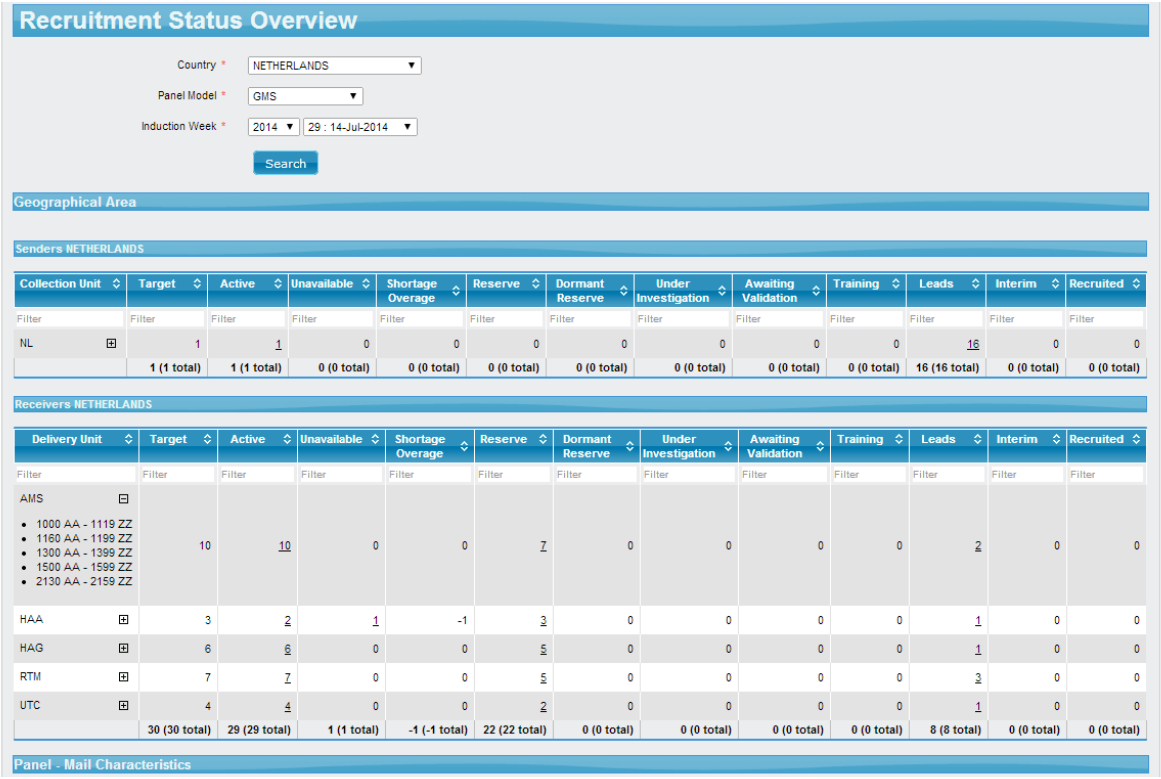
At least once a week, TNS contacts the sender panellist to confirm that the packages of test items are received in good shape and condition.

5.8.1.2 Recruitment of receiver panellists

Until May 2013 there was a shortage of panellists as explained in paragraph 6.7 GMS Design for UNEX™ / transition issues – measurement period 2013
In order to compensate the shortfall of items, various measures were taken as e.g. the re-use of REIMS measurement items.

In STORM, a country specific overview of the status of the sender and receiver panellist can be generated for a specific week. The “snapshot” provides information about sender as well as receiver panellists with regards to the target number of panellists, status being “active” or “unavailable” (unavailable for the current week means that the panellists will be considered unavailable for the next week). An indication of the number of receivers (3 to 50) per level for various DO's is available, as well as the contact details of panellists.

The postal codes are visible and checked when entered, as receiver panellists cannot be recruited outside a specific postal range. The “shortfall coverage” indicates the actual shortage. Below figure provides the “Recruitment Status Overview” as generated in STORM (document TNS-07 “Recruitment”.



Recruitment Status Overview

Country * NETHERLANDS
Panel Model * GMS
Induction Week * 2014 | 29 : 14-Jul-2014
Search

Geographical Area

Senders NETHERLANDS

Collection Unit	Target	Active	Unavailable	Shortage Overage	Reserve	Dormant Reserve	Under Investigation	Awaiting Validation	Training	Leads	Interim	Recruited
NL	1	1	0	0	0	0	0	0	0	16	0	0
	1 (1 total)	1 (1 total)	0 (0 total)	0 (0 total)	0 (0 total)	0 (0 total)	0 (0 total)	0 (0 total)	0 (0 total)	16 (16 total)	0 (0 total)	0 (0 total)

Receivers NETHERLANDS

Delivery Unit	Target	Active	Unavailable	Shortage Overage	Reserve	Dormant Reserve	Under Investigation	Awaiting Validation	Training	Leads	Interim	Recruited
AMS • 1000 AA - 1119 ZZ • 1160 AA - 1199 ZZ • 1300 AA - 1399 ZZ • 1500 AA - 1599 ZZ • 2130 AA - 2159 ZZ	10	10	0	0	7	0	0	0	0	2	0	0
HAA	3	2	1	-1	3	0	0	0	0	1	0	0
HAG	6	6	0	0	5	0	0	0	0	1	0	0
RTM	7	7	0	0	5	0	0	0	0	3	0	0
UTC	4	4	0	0	2	0	0	0	0	1	0	0
	30 (30 total)	29 (29 total)	1 (1 total)	-1 (-1 total)	22 (22 total)	0 (0 total)	0 (0 total)	0 (0 total)	0 (0 total)	8 (8 total)	0 (0 total)	0 (0 total)

Panel - Mail Characteristics

Figure 5.6: Recruitment status overview as generated in STORM

Holidays are entered by the panellists in UMMS and the total holiday plan for 2013 is captured in UMMS. The instructions for data entry are at least three weeks in advance and reminders are sent before the start of the holiday season. The reason for this deadline is to guarantee the correct application of back-up panellists. If no back-ups are in place, panellists from other measurement systems are deployed or new panellists are recruited and trained, to cover the shortage. Preferred is to deploy panellists from other systems, as new panellists are considered a higher risk. The procedure of the allocation of back-up panellists is all based on experience of the panel coordinators and country specific, which is not documented!
When a panellist has the status “unavailable”, the panellist is either on holiday or allocated to reserve (poor performance and re-assessment is required to put the panellist back to active). If a panellist is “on reserve” longer than 6 months, dummy training becomes required again. In case the holiday is a short break, it can be decided that the rest of the panel might cover for items instead of deploying reserves.

All receiver panellists are individuals with normal postal addresses, with a mailbox attached to the front door or at the front of the garden. IPC does not allow the use of P.O. Boxes. In Norway, mail items are delivered by means of “van delivery”, as this is a country specific method to deliver mail due to the enormous spread of civilian areas.

An exclusion list of receiver panellists does not exist. A panellist that has been dropped, either by IPC or by TNS, is not allowed to be recruited anymore.

5.8.1.3 Recruitment process of receiver panellists

According to IPC, the setup of a panel is estimated to take at least 10 weeks, considering recruitment, training and the preparation of test letters of 3 weeks in advance.

The recruitment process consists of several activities and tools that are in place. First step in the process is done via cold calling or by advice of an existing panellist. After contacting, the potential panellist is considered as a lead. The leads gathered are uploaded in UMMS (mass upload, separated in correct zones or individual).

The lead is contacted by phone and the panel coordinator goes through a questionnaire together with the lead, (in UMMS) to see if the lead is eligible. The questionnaire is used during the recruitment phone call and entered by a TS employee. The process can be terminated at any time or section of the questionnaire, due to possible reasons (the questionnaire holds several checks for selection):

- If the postal code cannot be found by the system, it means already a panellist is in place with this specific postal code;
- The questionnaire allows selection for the type of home. Mobile homes or boats are not allowed as these are not perceived as legitimate addresses;
- The panellist lives above a shop and mail is delivered through the shop instead of directly into the panellist' mailbox;
- Panellist uses a shared mailbox as stated in the GMS Technical Design.

The questionnaire is country specific and country specific questions are included (for example: the mailman has a key for main entrance of apartments?).

If the lead is considered eligible, the questionnaire is finished. In this step some administrative questions are run through for confirmation of the contact details, address specification and validation (address and postal code check with Google Maps as agreed with IPC in 2013), call windows, etc. When the lead is confirmed, the status is changed to interim and an email is sent for confirmation.

The next step is the validation of screen training. This is performed on the phone, while both the panel coordinator and the interim have the same screen (dummy environment, not disrupting anything) to practice tasks as entering data, etc.

Followed is an introduction mail how to use the system (pre-requisite is administrative access to perform an online training, etc.).

During the dummy training, the panellist' performance is measured while dummy items are used. In this period the capacity of the panellist is assessed. More information with regards to dummy training is described in paragraph 5.8.2.2 Training of receiver panellists.

The recruitment process is finished with the decision "pass" or "no pass". If the panellist passes dummy training, the panellist is provided access to the live system.

5.8.2 Training of panellists

For both sender and receiver panellists, a documented training programme (instructions) is available in UMMS, which can be found and consulted by means of the panellist log-on details. The available information consists of clear documented instructions for sending and receiving test items and a

FAQ section. The instructions are mainly written documentation and barely any visuals are used. All instruction- and training documentation is provided in the native language for the website, manuals/FAQ, instructions mail, panellist's specific online area, etc. The default language is English.

Proficiency levels are in place and are determined by parameter thresholds. The following parameter thresholds are in place for TNS:

- Sender Data Entry (SDE): 80%
- Receiver Data Entry (RDE): 80%
- Send to plan: 90%
- Recency: 3 days
- Envelope data entry (EDE): No real thresholds during training

Control measures to ensure comprehension and performance of panellists are in place by means of dummy training, pattern queries and nursery calls.

5.8.2.1 Training of sender panellists

The guidelines for sender panellists clearly describes the policy with regards to the test items, the posting plan, posting procedure how to enter the data in the UMMS application, etc. The document TNS –10 *"UNEX™ GMS Panellist Guidelines V3"* describes the sender instructions.

An SLA is in place in which the availability of panellists, description of the roles and activities and the replacement obligation with regards to holidays and sickness is clearly stated. The document is password protected and only a template was provided to the auditors.

As the production of test mail items is done by TNS in West Bromwich, no clear instructions are applicable for the sender panellists for quality checks and possible irregularities. The sender panellists do not perform in-depth quality checks, however a visual check is performed, like the address label, postage (if already franked), the correct amount, etc.

5.8.2.2 Training of receiver panellists

The guidelines for receiver panellists are available in the corresponding section in UMMS and available for receiver panellists. The document was provided to the auditors, but not added as an appendix (confidential information). The document TNS-06 *"Panellist instructions RO V4"* describes the instructions for receiver panellists.

TNS provides integrated training as part of the overall recruitment process to determine if a potential panellist can be considered as capable. Dummy training is performed for 3 items for a period of maximum 6 weeks. Status changes to e.g. "training" are not disclosed to panellists in order to avoid any behavioural changes. In this training period, the performance is measured against the entered data, the errors made, the posted to plan rate and other indicators. If the panel coordinator decides the panellist is capable of performing the job after only one week, the panellist is activated in the system three weeks in advance before receiving real test mail items (receives nursery status). During the dummy training periods in 2013, four nursery calls (guidelines are in place) are planned by the panel coordinator:

1. Remind and refresh the duties of the panellist

2. This call aims to check the performance (in nursery training, three more test items are used in the live environment, with the panellist being aware)
3. This call is also aimed at performance measurement, including the measurement of the return item flow
4. Idem as "call 3"

The training schedule is carefully planned. TNS is daily operational from 6am until 7pm to take into account the time and cultural differences of the panellist' countries of origin.

5.8.3 Duties of panellists

5.8.3.1 Duties of sender panellists

The fulfilment of duties concerning the sender panellists are measured by means of the data entry report. In this report, data entry is measured against the sending schedule (demonstration showed the data entry process together with the schedule) that includes for example the date, time and mailbox (a mailbox can be selected based on a specific area).

According to the sending instructions, data must be entered within 7 days and at least 3 times a week.

5.8.3.2 Duties of receiver panellists

The Panellist login section enables the receiver panellist to enter data concerning the received test items. The items are checked against the online receiving plan (real-time validated), in which the data for items is entered. Also a visual check is performed, like the address label, postage (if already franked), and the correct amount, etc. and reported in case of an irregularity. Once the data is entered, it cannot be changed anymore. The system allows the panellist to provide a status with regards to the entered date, which is either: *Confirm, amend or unsure*. If the sent- and receive date are incompatible (e.g. same date), the item is tracked. If the item is dudded that means that the item is excluded from the measurement.

Two additional registrations are in place, the date on the envelope is circled and the date and time is registered in a hardcopy form. In 2013, the envelopes were returned to TNS once a week where the date as stated on the envelope is entered in the system (in West Bromwich). Receiver panellists are required to return the transponders in a so-called "chicken bag" (a bag with aluminium foil inside to avoid return reads are measured), no more than 4 transponders per bag are allowed.

Panellists are required to enter their holiday plans and unavailability (as described in above paragraph) in the system, as well as in the case of an address change.

5.8.4 Panel maintenance

TNS manages their panels by means of three team leaders, who manage a team of senior panel and panel coordinators. In the system "Kantar projects" guidelines for panellist management with topics covering panellist hotline, reimbursements, super panellists, etc. are available. A detailed activity plan (weekly to-do list) prescribes the team leaders and panel coordinators what activities to perform. The activity plan can be selected per week and divided into activities for specific countries

or survey. The screen shots below illustrate the activities plan as available in UMMS (document TNS-01 *"Activities"*):

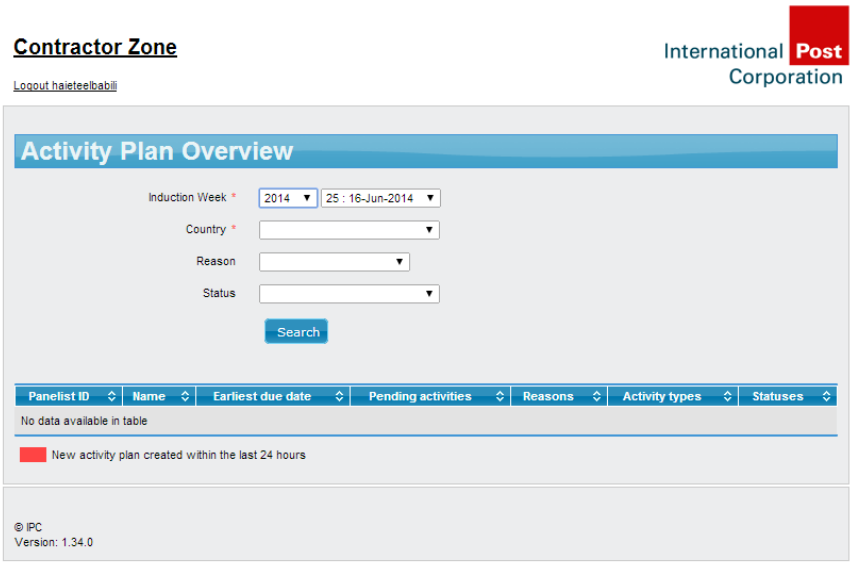


Figure 5.7: activity plan overview per country / Source: TNS-01 "Activities"

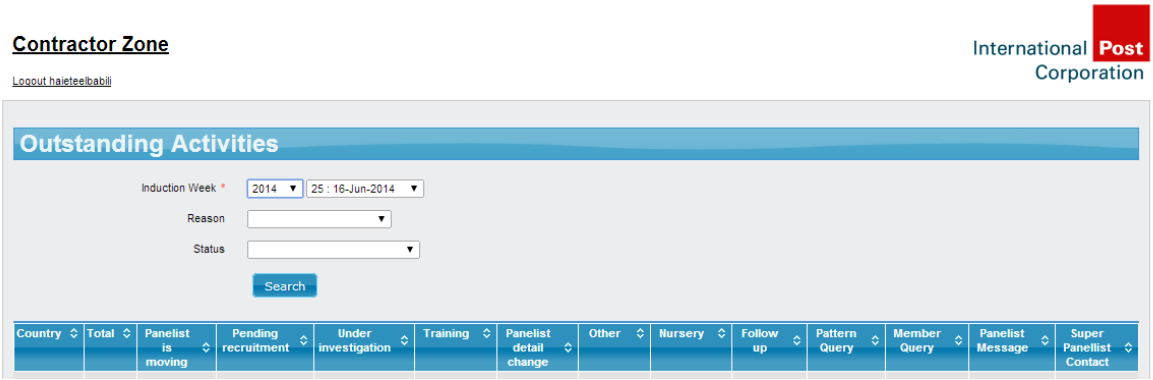


Figure 5.8: outstanding activities selected per survey / Source: TNS-01 "Activities"

Once a week sender panellists are flagged for questioning specific topics ("Was the envelope with test item components received well?" etc.)

Procedures for continuous standardised assessments of panellist' performance are in place and is assessed by means of pattern queries. The following examples of automated pattern queries are provided by TNS:

- On time/off time sender/receiver
- Low data entry
- Not returned items
- Other system queries

Query procedures and guidelines describing the background of each query are available in UMMS and must be followed to drill down the issue. The procedures to determine re-training of failing panellists are based on history and pattern- or user queries.

In case a panellist is not performing appropriately, it is considered to re-train or drop the panellist. The panel leader recommends whether or not to drop a panellist (they cannot decide, as the team leader needs to build up a case). With 3 consecutive failures (3 hits in a pattern query), the panellist will be dropped.
An individual panellist evaluation report can be generated from the online performance report tool in UMMS. In this report, performance can be displayed in different time intervals (yearly, monthly, weekly and daily):

- Dudd rate
- Query rate
- On Time Rate
- Date Entry Rate
- Date recency of the panellist measured against the country's level average

Another internal report can be generated to compare individual performance of the panellist on a higher level (overall and per country). The report generated and presented for 2013, demonstrated a target performance of 85% and a VMR at 85-88% (an additional 20% of mail items is allocated on top of target).

Although the panel size was a big issue in 2013, panel performance seems to be good.

The rules and procedures when a panellist is no longer part of the measurement is integrated in UMMS, as the system (based on status history) avoids to re-recruit panellists. An additional follow-up check is set-up, to assure all the transponders are sent back according to the items originally entered.

As part of panel maintenance, an incentive and reward procedure is in place per country. The rewards are more or less a token of gratification, for example small payments or vouchers/thank-you gift cards. The rewards are not based on the number of items received or activities performed.

IPC claims that many panellist just want to read the manual, which is really self-explanatory, so no need exists for a high-tech training programme.

No strict procedures are in place with regards to feedback from panellists. Currently, data is used to improve communication, instructions, etc., as IPC is moving away from calling. To attain a lower level of maintenance and follow up by the panel coordinator, this can only be met with clear and easy instruction mails and manuals. Questionnaires are provided to panellists in order to gather information how to improve the training, the overall way of their tasks or the communication with TNS. The response rate of the questionnaires is determined at 90%.

In the case panel requirements are not met against the design, the contingency measure is to raise as many panellists as possible to fill up the gap ASAP in the following sequence:

1. Activating reserves
2. Getting leads (find as much resources to find panellists, even other lots/modules are considered to be a solution)
3. As a third option, TNS will approach local service providers to deliver extra panellists

In the case of a shortage of panellists, TNS is required to discover the reasons why people are not taking part (method of approach like cold calling could be a cause).

With regards to the strategy of back-up panellists, TNS has no fixed procedures documented for having reserves, as it might be different in countries and flows. This is assessed per country (e.g. target is one per country, otherwise it would become too costly). The coverage of the summer shortage is based on experience and historical data.

Integrity risks are documented for panel team leaders.

On top level, IPC and TNS have a monthly update meeting to discuss changes and issues, current risks and which priorities to set.

Lower level meetings are held on a weekly basis and three different meetings are in place:

- Telco between two teams (representatives) dedicated bi-weekly to either "actions and updates" or "recruitment performance";
- Change projects between experts to coordinate the weekly changes (e.g. to stop dummy training) or the UNEX™ Methodology Change (UMC) to set thresholds or change internal process for example;
- UMMS calls to discuss features and questions with the IT coordinator(s).

5.8.5 Summary of results

As a result of the central production of test items, sender panellists are only required to follow the schedule for sending the items and hence less attention to training sender panellists is necessary.

Panel management is performed in a structured way. Three teams are daily managing the teams of panel coordinators who in their turn are managing the panels in case of irregularities (damaged envelope, address label missing, only transponder received), reimbursements, panellist training or other topics.

A clear and complete recruitment process of receiver panellists is in place, integrated with several checks to avoid that panellists are selected in the same area (e.g. street address or zip code), having illegitimate street addresses (e.g. boat or above restaurant) or being reselected when dropped-out in an earlier phase.

Some of the country specific snapshots for 2013 demonstrated shortages in the recruitment status overview. The GMS Technical Design allows the MSP to continuously use back-up panellists for a receiving DO or a city where the panellist's situation is not yet stable.

With regards to receiver panellists, no instructions or guidelines are available (on-line in UMMS) in case of irregularities (for example, the mail man tells the panellist that something might be inside or blinks his eye upon delivery!). Although it is trained for panellists not to talk about their activities for postal activities, instruction would be recommended.

Contact details, holiday plans and training materials of panellists are all maintained and available in UMMS and managed by TNS panel management. Panellists have access to UMMS to enter data by means of a dedicated panellist section.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	n.a.

EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.8.6 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.11:
The adoption of reserves or back-up panellist is currently based on the experience and assessment of panel coordinators and not on historic- and/or seasonal patterns. Currently no systematic procedure seems to be in place with respect to back-up panellists. It would be recommended to manage back-up panellists with a more pro-active approach in order to be able to accommodate potential shortfalls and as part of a contingency plan.

Recommendation 5.12:
Currently no specific information is provided to receiver panellists in the on-line tool or as FAQ, describing how to deal with potential irregularities. Scripts with detailed scenarios describing specific situations as reference material for receiver panellists could be recommended.

Recommendation 5.13:
The current training documents and guidelines in place contain a lot of textual instructions. A recommendation could be to provide such information in a more visual manner. The use of less text and more visuals and/or more video instructions could improve the training programme and potentially reduce the effort required to provide training instructions by panel coordinators on the phone. Also e-learning or other online tools could be a option.

5.9 Test mail characteristics and production of test letters

5.9.1 Audit observations

TNS (commissioned by IPC) prepares and produces the GMS test letters centrally at the TNS location in West Bromwich (UK).

5.9.1.1 Printing test items

TNS receives the test letters (PDF files) sent by IPC on Wednesday every day of the week. An email notification is received in advance, containing different files:

- A snapshot of the allocated items including information as item-ID, receiver-ID and sender-ID;
- Breakdown of allocated items including data of item-ID, sender-ID, receiver-ID, type of panellist, destination country, planned send date, etc.;
- Monthly pack for return items to be received.

The PDF files are saved on the local server and are accessible by 3 pre-determined TNS employees, who are responsible for printing the test letters. For printing purposes, two printers are available to ensure the continuous production process, although production can be performed by a single printer. A print tool is used to efficiently print the pack all at once and to avoid human errors. Each print pack that is despatched, consists of a front page (summary sheet in specific colour representing

the type of lot) containing information with regards to envelope size/weight, value, quantity per country, etc. Other elements of the pack are:

- the addresses where to send from;
- the receiver addresses;
- the item-ID's as barcodes and human readable;
- "Bundle pack plan";
- "Bundle posting plan" (used for receiving panellist to forecast the expected items).

If, for any reason, specific sections of the pack are required to be printed, separate PDF files can be selected and printed.

All pack files for specific countries are collected in a designated box and stored in a rack at the picking department.

5.9.1.2 Pre-packing (picking the items)

An extra summary sheet is printed for internal use, which is used for the picking process. Items are picked by two employees per country, according to a Bill of Material (BOM). The BOM contains records of what has to be picked (e.g. short description of the components, amount of stamps required, etc.). The average time to pick all the allocated items in 2013 took 1.5 to 2 days, due to the huge variation in items. The work instructions can be consulted easily as they are available on –site. For the large countries, pre-packing is performed on a weekly basis, for the smaller countries pre-packs are prepared on a less frequent basis, preferably quarterly. Priority is given to those countries that have a long lead time with regards to specific items that are picked. The items picked are put in a box with the summary sheet attached to it and stored on a designated shelf.

A QA process is implemented between pre-packing and production, to check the address stickers, priority level, and required value of stamps to guarantee items are not kept at customs for example. For new countries, a 100% quality check is performed. For countries already served, the 20% check is applied. The QA results are recorded and discussed in the weekly operational meetings. The results may be used for training purposes.
The same ratio for quality checks is applied with regards to the performance of new employees (100%) and experienced employees (20%).

Every 4 weeks the pre-packed items are stock-counted. Stock levels of the individual components are maintained and thresholds are set. By means of a traffic light indicator, it can be easily determined when stock levels reach the minimum required stock level (or go below this threshold) to trigger replenishment actions.

5.9.1.3 Production of test letters - Production phase

Before actual production starts, the required stock per country is counted and documented. The packs are produced and afterwards signed-off. A time and date stamp is noted and the items are counted and cross-checked against the summary sheet. The production process consists of the following steps:

1. Item barcode label is placed inside the envelope;
2. The barcode is scanned, after which the transponder is scanned to associate the item-ID with the receiving panellist;

3. The typed-written address label is attached to the envelope according to the instructions in the GMS Technical Design;
4. If required, the correct number of stamps are attached to the envelope (only for those countries for which TNS provides stamps from the central location in West Bromwich;
5. The mail item is stored in a box;
6. When a specific country has been completed, the box is moved to the QA department.

Each production working location is provided with the UNEX™ guidelines (including GMS instructions) describing the use of envelope layers, amount of stamps, etc. The guidelines are considered crucial due to the high variety of test items to be produced.

If an irregularity occurs during the production process (for example when an address label does not match the summary sheet), the item is transferred to QA and checked.
All packs are checked and the minimum level of items allowed not to pass QA is set to 3%. QA guidelines (UNEX™ QA Form) are in place, consisting of:

- Checklist of checks to be performed for test items;
- Panellist-ID;
- Posting plan.

In UMMS a report is generated to determine the completeness of items. A specific year and week is selected and all items not produced at that moment are presented per lot. The items that are not associated with a receiving panellist, are shown on the list and corrective action is taken accordingly. The remaining items are printed and sent to production for (re)production of the item. The QA report is generated 5 times a day. In general, TNS claims that yearly 5 items are discovered not to be associated with an address during this QA check.

Multiple QA checks are in place, which seems adequate to manage the quality of production. Furthermore, proficiency of the operators in the production is measured based on individual employee level and irregularities are monitored, documented and compared with pre-determined proficiency levels.

5.9.1.4 Despatch mail items

The items to be despatched are checked based on the country specific requirements and the details are retrieved accordingly by means of entering a code into the system. The packs are sealed, a report is checked and ticked off. This report consists of an item checklist per country together with a RFID report. Each box containing test letters to be sent to the sending panellist undergoes a final QA check before entering the loading dock (documented in TNS-08 *"UNEX™ Courier QA Despatch Allocation Week 48"*). Finally, a tracking label is printed and attached to the box.

A weekly "UNEX™ despatch report" (document TNS-09 *"UNEX™ Despatch Report Allocation Week 48 2013"*) is maintained that includes the latest allowable despatch date, name of the carrier, future receive date and more details. The document serves as a (manual) track and trace document, maintained by the quality department as the tracking number is entered when available.

Almost all boxes with mail items that are presented are delivered on-time or earlier than the expected date of arrival at the panellist. A carrier is used for transport of the test letters.

UNEX™ instruction tracker is used to keep track of changes regarding labels (e.g. address changes, etc.), provided by panel managers. QA is responsible for the documentation of the changes.

5.9.1.5 Management of transponders

The transponders are returned to TNS by the receiving panellists directly, in a so called “chicken bag” and not more than 4 items per bag is allowed.

IPC measures the readability of the transponders with the RFID system and when an insufficient number of reads is captured, the transponder will be recalled. The recalls are tested at TNS, where several tests are performed. If all tests fail, the transponders are sent back to the supplier for maintenance or repair.

Barcode handhelds are used to de-associate the transponder from the item-ID, by means of a barcode scan. The results are sent to UMMS, through a local pc and server. A number of between 7 or 8 scanners are used in operations, an equal number is present as back up’s.

For programming and status checks with regards to the transponders, TNS uses software from the RFID supplier. For each new or recalled transponder a unique ID is created and simultaneously a barcode is printed and attached to it. IPC’s UMMS software determines this unique ID. Depending on the type of envelope used, the transponders are attached to a C4 or C5 format to “stick” in the middle of the envelope.

The transponder stocks are counted in Excel and the actual levels are kept in UMMS (a manual back-up process is in place), in which the following status apply:

- Transponder for use (present in TNS building with status ok)
- Active in field (transponders already associated to a mail item)
- Confidence testing (in building with status recall)

Per week, 7500/8000 transponders are used and TNS keeps a 6 weeks buffer supply in house. A transponder loss rate of 0.5% is determined by TNS.

5.9.1.6 Provision of stamps

Only stamps are applicable for TNS, as all the sending panellists are business-panellists. For most countries, stamps are bought by the sending panellists and can be reimbursed by TNS afterwards, which is a topic included in the SLA that TNS has with the panellists. The following eight countries are an exception where TNS provides stamps: Austria, Belgium, Germany, Denmark, France, Ireland, Sweden and the United Kingdom. The purchase of stamps in managed in a dedicated system (not integrated with UMMS) in which the types and value of all possible stamps of that particular country are maintained and, if necessary, updated. The composition of stamps is also managed in the system (e.g. required is a total value of 0.60ct, which can be 1 stamp worth 0.60ct or 2 stamps worth 0.50ct and 0.10ct).

Stamps are stored in a vault, which is partially secured against theft, but not against fire. Buffer levels regarding stamps are maintained for 8 weeks and replenishment cycles of 3 weeks is the standard maintained by TNS.

TNS reports no irregularities or problems with the provision or purchase of stamps. In case of country specific changes with regards to stamps, IPC notifies TNS in advance as soon as the information becomes available (documents IPC –53 *"Late postage tariffs or stamps – contingency actions and fees"* and IPC-38 *"DCPF_FI20140326 FI price increase(s) - approved by IPC"*).

5.9.1.7 Archiving test letters

In 2013, TNS archived all returned test items, according to country and date. During the audit three countries were evaluated in terms of the archiving procedure. The following items were selected by the audit team to be retrieved from the archive.

Germany: week 27

Item – ID	*Batch Number*	*Box Number*
1329 102 854 AR-DE-HAM	20130801-1301-102	2013313709
1329 102 00742 AT-DE-BER	20130729-1357-107	2013303649

Israel: week 49

Item – ID	*Batch Number*	*Box Number*
1349 102 00 767 HK-IL-HF	20140108-1203-145	2014020529
1349 102 01 652 FR-IL-JRS	20140107-1044-168	2014010389

New Zealand: week 38

Item – ID	*Batch Number*	*Box Number*
1338 102 0 1270 IE-NZ-WEL	20131008-1521-197	2013415769
1338 102 0 1258 US-NZ-AUC	20131017-1520-113	2013426229

In 2013, panellists are required to keep the envelope and items for at least 3 months. Returned items are kept in the envelope, hedging the risk of losing the transponder. In UMMS, the item overview is generated by the data entered by the sender, receiver and transponder. A visibility report is included, showing the CTT at the OE.
In UMMS, 25 items are entered each time and associated to a batch-ID. A summary sheet contains the 25 items printed and wrapped around, representing 1 batch. 15 to 20 batches are stored in a box. All batches are attached to the specific box-ID and a label is printed.

Data entry:

- Receive date (back of the envelope) or unsure if more than one date or no indication;
- item characteristics: address check; stamp(payment) method; envelope size; address method; priority sticker; postage amount; originating postmark present; illegible; originating postmark date; item issues.

In addition to the EDE, this activity also requires people (i.e. time) to open and sort the items returned by the receiving panellist.

For cost saving reasons, IPC decided to terminate the archiving process as per 2014.

5.9.1.8 Contingency planning

TNS indicated that contingency measures are in place in terms of ensuring the central operation in West Bromwich. Also the availability of a 'Business Continuity Plan' was brought to the attention of

the audit team. This plan however was not specific in terms of alternative plans, fall back scenarios, etc. should contingency measures be required to ensure business operations.

The business continuity plan that is in place, consist mainly of an overview of communication- and escalation levels.

5.9.2 Summary of results

Documentation with regards to preparation and production instructions are in place on site.
The UNEX™ transponder guidelines are documented and include a section describing how to scan a transponder.

The characteristics of test mail are in accordance with the GMS Technical Design as for example, correct envelope formats are applied and address labels are machine-typed.

Multiple QA checks are implemented across the production process, which seems to provide an adequate level of quality with regards to the test items. The proficiency levels maintained by TNS assure a constant guarantee of the required quality levels. Irregularities are monitored and documented and compared with pre-determined proficiency levels.

Methods implemented by TNS for risk reduction are:

- A dedicated colour for the cover sheet (summary sheet) to easily recognize the GMS/UNEX™ test item packages;
- Service contracts for both printers are in place, with a guaranteed support within 4 hours after failure;
- Ability to print PDF files separately, in case the printing tool cannot be used.

The central production of test letters seems to be well organised, as all of the produced test items meet the requirements of the GMS technical design and are received on-time or even before the expected date by the sending panellists.

Management of transponders is considered a serious task and the auditors are convinced the process is well organised. Stamps are stored at a central place, which is accessible by a certain number of employees only, however the storage area has some risks.

Test items are kept at the receiver for a minimum amount of time, which is in accordance to the GMS Technical Design. In 2013 test items were archived by TNS.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	n.a.
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.9.3 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.14:

Particularly because of the central operation were TNS produce a considerable number of test mail items every year and the high volume of items produced for the GMS measurement study, it would be recommended to develop a detailed 'Business Contingency Plan' (BCP). This BCP should describe contingency measures and fall back scenarios in detail ensuring that should calamities occur the disruption to business operations will be limited.

Recommendation 5.15:
Although the stamps are stored centrally and a limited number of employees have access, it is recommended to reconsider the effectiveness of the vault. It appears that the vault currently in place is partially theft proof under the conditions of normal circumstances. However, the vault is built against a thin wall and didn't seem to be fireproof. Particularly considering the high value of the goods it might be worth considering additional security measures.

Recommendation 5.16:
Further notice could be given to the fact that currently no sprinkler installation is in place as a preventive measure against fire.

Recommendation 5.17:
The manual scanning process to de-associate transponders from the item-ID could be considerably improved if the process would be re-designed. If the identification technology could be replaced with RFID technology, the process could be improved to automatically include the battery check and stock count. Another option could be to omit the de-association process until the tags are associated again (software based solution).

Recommendation 5.18:
Integrate despatch information from carriers with "UNEX™ Courier Report", so data with regards to validated deliveries to sending panellists can be automated, resulting in the avoidance of manual data entry.

Recommendation 5.19:
The decision to terminate the archiving activities of returned mail items (from 2014 onwards) is considered a good decision, as the auditors perceive this a limited value added activity in relation to the effort it requires. Furthermore the GMS Technical Design does not require archiving.

5.10 Data collection and updates

5.10.1 Audit observations

This paragraph describes the data collection and the required updates of data of the MSP.

Relevant data is gathered from different sources and systems. Below a general overview of the data collection by IPC UNEX™.

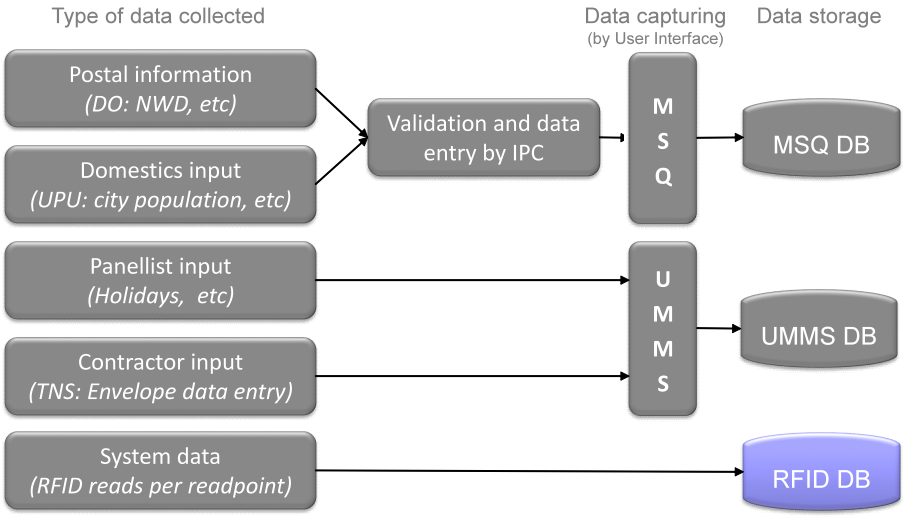


Figure 5.9: Data collection by IPC UNEX™

Postal information
The DO's are expected to give input to IPC for the national and organizational data:

- Non-working days (NWD): Public holidays and non-processing days for data collection, DO inbound processes, DO outbound processed, delivery.
- Total volume of inbound mail, volume of mail from other DO's.
- Domestic service standard.
- CTT (agreed critical tag time between DO and UPU).

IPC does not have PO boxes included in the measurement system, hence PO uptimes are not requested.
As the DO's don't have a tool to enter the data directly, they inform IPC via mail and IPC will enter the data in to the UMMS and MSQ system.

IPC requests changes to design parameters, like CTT and boosting options, to be communicated by and agreed with DO's at least once a year and well in advance to the next calendar and reporting year.
This enables IPC to setup or change panels in various countries.
If no updates of design parameters are indicated by DO's, IPC continues design for next year based on existing data, including current boosting options (i.e. specific reports) for the various countries.

If updates of NWD's are communicated with delay (even during reporting year), the adjustment can result in correction to data and reports afterwards (e.g. an unknown non-working day for DO, caused mail items to be considered as *not* on-time, after validation it might show that the non-processing days were not updated by DO's; this NWD is then updated in the system and the report is corrected).

UPU domestics input
The DO's provide a list of cities in order of inhabitants and the real mail volume information to IPC. IPC uses this data for the statistical design in excel formats. This data is required to be updated annually. If the data is not updated before the statistical design calculations, IPC uses the most recent data for the statistical design.

Panellist input
The panellist provides two types of data:

- Holidays and absence (i.e. dates the panellist is not available to participate)
- Date entry of sending or receiving a test item.

The panellist uses the UMMS system to communicate this directly to IPC.

The panellist availability is requested to be updated at least 3 weeks in advance, because of test mail production and preparations lead-time. The panellist can also indicate if a replacement is already available (e.g. partner), during entry of holidays and absence. Also if the absence of a panellist was not updated on-time or not planned (e.g. illness), they are requested to communicate this using the UMMS system, as the mail items from that period will be excluded.

When test items are received, it is expected that the receipt information is entered as soon as possible (i.e. entry recency, see paragraph 5.13 Quality control & validation).

Contractor input (TNS):
In 2013 TNS also registered all mail items returned by receiver panellists. All mail items were archived by TNS, so with receiving the items TNS also entered the Envelope Date Entry (EDE) directly in the UMMS system. In addition to the date validation, this also enables the quality assessment of the mail item, e.g. correct positioning of labels and stamps. The GUI enables quick and efficient entry of data, by the real time validation during entering of EDE the items are considered as a "valid mail item" for the measurement system. This entry is not a requirement of the GMS technical design.

System data
Input by RFID diagnostic system is required to calculate the performance of DO's. The terminal dues gates worldwide collect RFID reads, this data is captured and stored as raw data. Only after application of business rules, the data can be processed further (e.g. it is checked if the reads for the item came from the correct (expected) RFID gate, only then it is considered for valid mail).

The terminal dues gates collect the RFID reads real-time, this data is sent and stored (near) real-time at central server(s).

5.10.2 Summary of results

All relevant data for performance calculation and parameters for statistical design are requested and provided by the correct stakeholders.

Updates of design parameters were late for the statistical design 2013, causing issues for in time preparations and performance measurements in the first quarters of the year.

No strict deadlines and consequences were documented and communicated to the DO's, which made it possible to delay the process for statistical design completion before start of calendar year 2013.

IPC decided to stop the archiving activities after 2013. This decision is supported as it is not requested by the GMS Technical Design and is labour intensive.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.10.3 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.20:
To make the data gathering (first collection and updates) more efficient, it could be considered to implement an easy tool for DO's to enter or upload the required data themselves. By enabling the DO to enter data directly in to UMMS via simple application or tool, any human mistakes during entry by IPC or interpretation risks by IPC are limited.

With the application for DO's, a (real-time) validation during entry or request for additional or update of data can be easily achieved (e.g. quarterly).

5.11 Calculations of inbound performance results

5.11.1 Audit observations

The inbound performance results are calculated with "Valid Test Mail Items". This is the volume of mail items which are delivered on time and seen by the correct (expected) terminal dues gates (RFID).

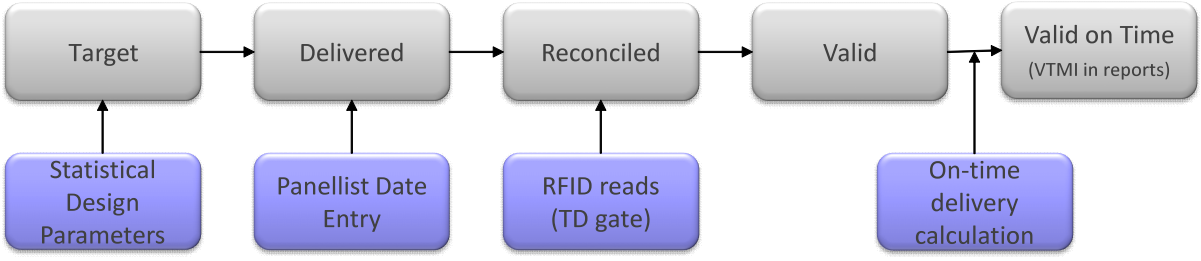


Figure 5.10: Valid Test Mail Items used for performance calculation

5.11.1.1 Calculation of inbound performance results UNEX™ 2013

The performance per DO is calculated by using the VTMI:

- Actual delivery time of each inbound item
- Inbound delivery time is calculated by QMS based on CTT and NWD's. Belgium and Sweden are assessed by the audit team and are correct.

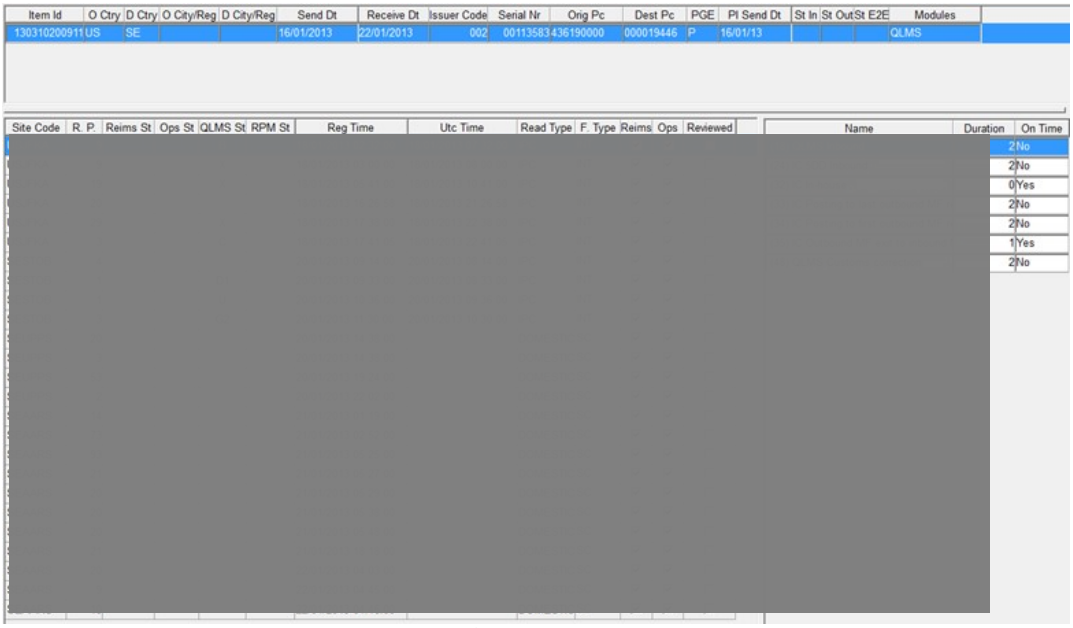


Figure 5.11: Screenshot of Sweden with a NOT on-time delivery

- On-time delivery standard for each inbound item
- On-time inbound delivery is calculated by QMS based on domestic service standard, CTT and NWD's. Read point registrations are included in the calculation.
- Examples shown (Belgium, Sweden) were ok.

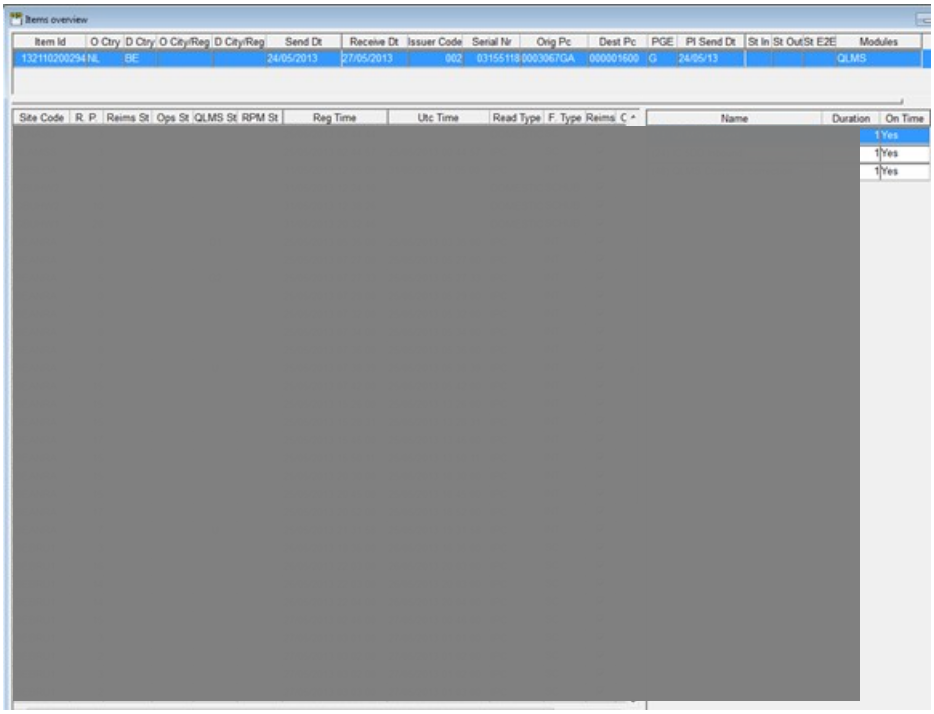


Figure 5.12: Screenshot of Belgium with an on-time delivery

- Also custom corrections of Canada are evaluated by the audit team and are ok. QMS shows adequately yes or no in the “on-time” column.

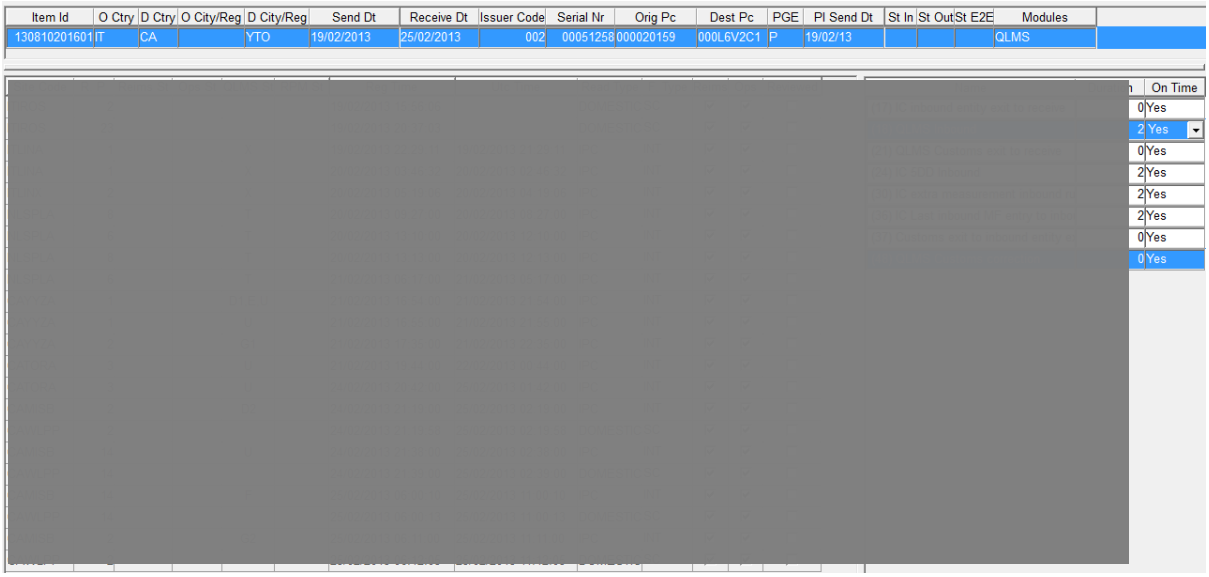


Figure 5.13: Screenshot of Canada, including border control correction with one on-time

- Percentage of on-time (POT) inbound deliveries
- POT Inbound delivery is calculated by QMS based on domestic service standard, CTT and NWD’s. Read point registrations are included in calculation.
- Weighted at format, city and flow level: calculations shown for Austria in excel template and are ok. City weight input is collected from IPC members.

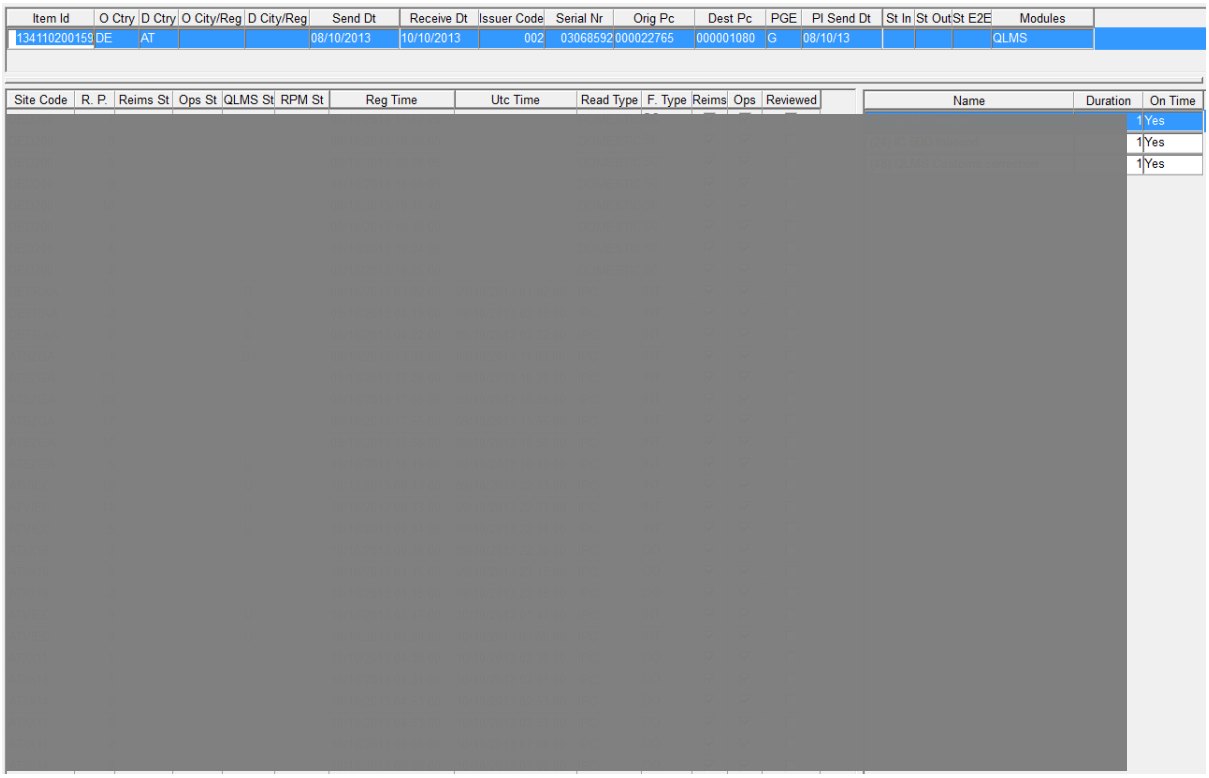


Figure 5.14: Screenshot of Austria with an ON-time delivery

All the above calculations are done in MSQ. Results are shown in simple but sufficient layout, all is based on RFID reads and UMMS DB input.

The inclusion of the RFID terminal dues read point check, makes it possible that valid test items are not reported, as they are not read at the correct gate, i.e. making them invalid. Below the IPC reconciliation flow is visualized

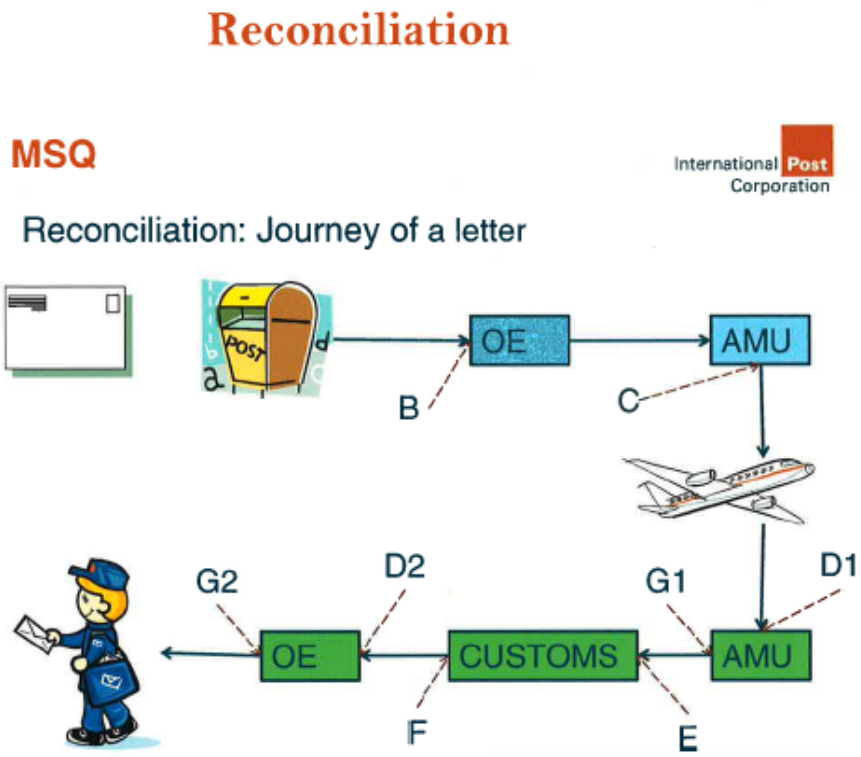


Figure 5.15: Reconciliation flow of IPC / source: document IPC-23 "List of reconciliation codes.doc"

With regards to the weighted format-city-flow, the calculation sheet for Austria has been received and added to the document list (*"IPC-63 QLMS 2013 AT"*).

5.11.2 Summary of results

RFID reads are provided to QMS, only reads at the correct gates are reconciled to valid mail. The inbound delivery time is calculated by QMS based on the domestic service standard, CTT and NWD's. Also custom corrections were evaluated by the audit team and are ok.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	✓
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	✓

5.11.3 Recommendations

n.a.

5.12 Reporting

This paragraph describes the periodic generation and distribution of various reports to DO's.

Query procedures and validations of the figures are described in paragraph 5.13 Quality control & validation.

5.12.1 Audit observations

The outcome of the data collection, measurement study and the diagnostic monitoring system is captured in different periodic reports. All reports are generated based on MSQ data and presence of valid RFID reads, (e.g. reconciliation of RFID reads is only done when tags are read at the correct location by the expected gate, more details about reconciliation and mail validity are described in paragraph 5.11 Calculations of inbound performance results).

The periodicity, the receiver(s) and the methods to generate and distribute the reports are described below for every report mentioned in the GMS Technical Design v1.1.

5.12.1.1 GMS monthly summary report

The main report used by IPC is the Monthly Summary Report. This report is generated each month and distributed per mail to the UPU and the IPC members (in general halfway each month, reporting the previous month). The report is considered a preliminary report, as decisions by UPU may impact the monthly figures for one or more countries.

The reason(s) for adjustment of previous monthly performances are always requested to and agreed with UPU and confirmed in written communication. During the QLUG-meetings the requested adjustment is discussed, e.g. force majeure, changes because of terminal dues gate installations. After acceptance of requests, which are confirmed by mail, the UPU is able to validate with IPC that the adjustments are taken into account.

The distribution to members of the latest report with monthly and year-to-date aggregated results, is according to a standard PDF format:

1. On every report a note states that:
   "Please note that this report is based on the decisions taken by UPU GMS-QLUG on border agency gates, instances of force majeure and other specific cases".
   In accompanying text in distribution mail, it is listed which changes are implemented in the last period.

2. The issue date is clearly mentioned on the report to prevent any ambiguities or potential discussions as DO's can generate the Monthly Summary Report at different dates via the online reporting tool (STORM), e.g. just before the corrections are applied. The target percentage is set by UPU per country.

Executive Management Summary

UPU Quality Link Measurement System report
YTD December 2013
Customs Corrected

Confidential

Issue Date 14 April 2014

Postal Operator	Target %	Year-to-Date On-time % Performance	Year-to-Date Precision Range	Monthly Performance % against country-specific delivery standards Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AT Österreichische Post	88.0	90.7	1.3	89.8	91.4	91.9	80.7	94.0	89.2	96.2	89.7	91.0	93.7	91.3	89.0
BE bpost	88.0	93.3	0.8	95.6	94.4	94.8	94.7	93.6	90.9	93.6	91.5	91.8	94.7	93.8	94.1
CA Canada Post	88.0	90.2	0.8	91.2	87.0	94.0	88.3	94.9	93.8	89.6	90.5	93.6	91.6	89.1	84.8
DE Deutsche Post DHL	88.0	90.4	0.7	90.3	92.3	89.0	88.1	92.0	91.2	90.8	91.0	91.1	91.5	91.3	88.3
DK Post Danmark	88.0	90.2	1.4	96.0	94.7	96.3	92.3	93.1	94.1	91.8	91.3	86.7	84.3	83.0	86.7
FI Itella	88.0	89.6	1.1	89.4	96.0	90.9	84.5	88.4	91.1	93.9	91.8	93.2	91.6	77.7	91.2
FR La Poste	88.0	89.9	0.7	87.6	86.2	81.1	89.0	93.1	90.0	91.5	91.0	88.6	91.7	90.4	87.9
GB Royal Mail	88.0	86.5	0.8	90.8	86.2	80.8	89.0	91.5	90.8	90.9	88.1	87.8	85.8	87.6	65.5
IE An Post	88.0	92.1	1.0	97.6	96.8	87.7	93.4	90.1	87.9	93.6	92.3	93.7	95.8	93.7	87.6
IL Israel Postal Company	88.0	95.3	0.8	92.7	96.6	97.1	99.6	98.0	95.4	96.3	97.8	98.5	96.1	95.2	87.1
IS Iceland Post	88.0	83.1	3.2	75.9	72.7	90.6	85.6	85.4	85.3	71.3	85.5	88.5	87.0	85.8	87.1
IT Poste Italiane	88.0	74.0	1.4	81.9	74.4	78.8	81.2	78.1	75.7	69.7	66.4	72.9	79.7	75.6	59.9
LU P&T	88.0	92.7	0.9	93.9	91.2	91.5	92.6	95.6	94.4	92.8	92.8	92.5	92.7	89.1	92.6
NL PostNL	88.0	93.9	0.7	94.2	95.3	92.5	95.6	94.1	97.2	92.4	94.0	90.1	94.4	94.5	91.4
NO Posten Norge	88.0	87.8	1.4	81.1	78.3	92.5	89.9	91.1	93.4	91.7	83.0	84.7	87.9	87.6	79.5
NZ New Zealand Post	88.0	89.8	1.1	95.0	93.2	92.2	91.5	91.0	90.6	92.5	90.9	89.8	89.5	86.6	81.7
PT CTT Correios de Portugal	88.0	88.6	1.1	86.1	85.2	90.4	93.4	91.8	87.7	90.8	93.6	90.3	85.2	85.3	80.9
SE Posten Sverige	88.0	90.7	1.0	87.1	93.1	93.4	90.0	90.6	87.7	91.6	90.9	92.3	90.9	90.5	88.0
US USPS	88.0	75.7	1.1	72.6	76.6	78.5	75.3	78.2	77.7	78.7	77.7	75.8	73.7	76.5	66.5
ES Correos y Telégrafos	88.0	97.3	0.7	96.0	99.5	97.6	99.6	96.8	96.6	96.0	94.8	99.0	99.1	99.2	94.6
GR Hellenic Post ELTA	85.0	72.9	1.8	84.0	74.8	80.6	82.9	83.6	69.7	66.3	64.7	79.3	74.5	72.6	56.3
LV Latvijas Pasts	88.0	91.0	1.6	96.8	96.6	99.0	95.8	92.4	91.4	87.7	92.2	86.5	88.3	92.0	97.2
MT MaltaPost	88.0	98.1	0.8			98.4	95.9	99.6	99.1	99.1	98.8	100.0	95.5	98.7	99.6
EE Eesti Post	75.0	92.0	1.9	77.9	93.9	91.0	89.3	87.3	96.3	87.0	97.3	90.7	93.4	97.6	83.3
JM Jamaica Post	75.0	60.6	5.6			50.0	51.6	52.3	62.7	72.5	33.0	59.1	63.9	79.4	67.3

Please note that this report is based on the decisions taken by UPU GMSQLUG on border agency gates, instances of force majeure and other specific cases.

QSM Data Systems | In commercial confidence - based on UPU QLMS CTTs | Version 1 - Page 1

Figure 5.16: GMS Monthly Summary Report YTD 2013 / source: document IPC-15 "QLMSMMYTD December 201348"

In the report above no performance figures for Malta and Jamaica are included for the months January and February, this is caused by the issues in determining the statistical design for 2013. This is described in more detail in paragraph 5.7 GMS Design for UNEX™ / transition issues – measurement period 20135.5. The operational performance results present the same issue, as described in paragraph 5.16 Updates and annual review of essential design parameters

5.12.1.2 GMS monthly inbound DO report

IPC provides the members the STORM tool to generate online reports calculating the inbound performance. This enables the DO's to run their report at any time for selected links and pools. This report is not actively distributed by IPC per month.

5.12.1.3 GMS monthly and YTD inbound city report

IPC provides the members the STORM tool to generate online reports calculating the inbound performance per city. This enables the DO's to run their report at any time for selected data. This report is not actively distributed by IPC per month.

5.12.1.4 GMS monthly outbound DO report

IPC considers the objective for UNEX™ 2013 to be an inbound measurement system for DO's. Therefore no outbound report is available.

5.12.1.5 GMS monthly inbound item report

The STORM system enables IPC members to run Inbound Item Reports online. IPC does not distribute this report, as the DO's are able to create an overview for any chosen period and mail characteristics for valid and/or invalid items. Member queries can be raised based on this level of detail. A result of a member query might be the exemption of a mail item, causing changes in the GMS monthly summary report subsequently, therefore impacting performance results of a different report.

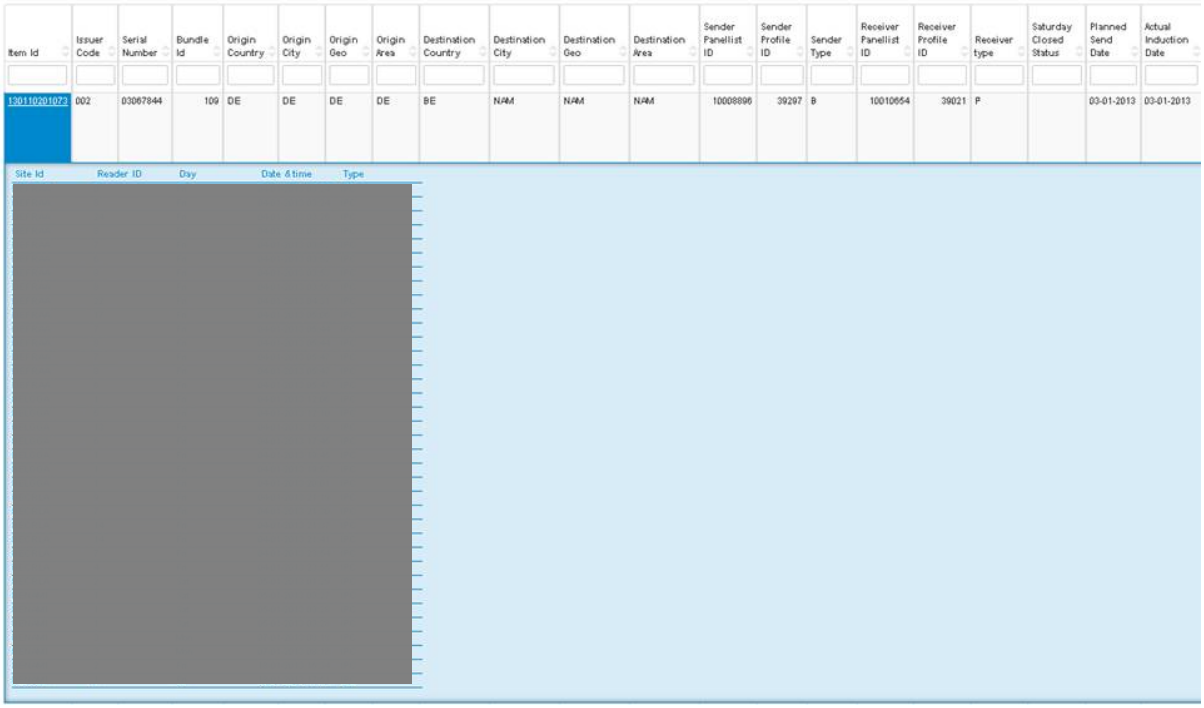


Figure 5.17: example of a GMS monthly inbound item report / source: document IPC-60 "Screenshot from reporting"

5.12.1.6 GMS Data confidentiality

The STORM system ensures that confidential information (e.g. panellists contact data, sending DO information) is not shown in any report. The assessment by the audit team shows, that none of the confidential information is displayed in the reports for DO's.

In addition, the items registered via RFID installations are withheld for 24 hours before they are included in details of the reports. This delay in information prevents any (suspected) intervention by the DO based on the knowledge about the presence of test items onsite.

5.12.2 Summary of results

The monthly distribution and the content of the GMS Summary Report is according to the GMS Technical Design v1.1.

All other inbound reports are available online for DO's (with restricted level of detail according to the GMS Technical Design).

The Monthly Outbound Report is not available, as IPC considers UNEX™ 2013 as a strictly inbound performance measurement system.

No other data than considered in the GMS Technical Design is available to the DO's by reporting, i.e. no confidential information is disclosed. In addition the items registered via RFID installations are withheld for 24 hours before they are included in the report.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.12.3 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.21:
The following recommendations all apply to the Monthly Summary Report:
1) Generate a clear overview for all requests for change: by country, request/consideration and decision. Currently, this is only stored by IPC in mails (QLUG meetings) and separate files (item exclusion list), but no complete list per month or end of year is available.
2) At every report a standard note states that force majeure and any other specific adjustment is made. In addition, accepted requests are specified in accompanying mail. A clean overview of this data from these two sources, complementing the decisions with the impact they have had for the figures would enable the members to oversee the changes better.
3) Exempted items are not documented in a clear overview or report, requests for exemption is stored on a local IPC drive. The impact can be checked per month, however no impact check or accuracy change is assessed by IPC.

Recommendation 5.22:
Monthly Outbound Report: reporting on outbound DO performance would enable the outbound DO's to contact inbound DO's and discuss potential improvements for the permanent links and thus improving the overall system.

5.13 Quality control & validation

5.13.1 KPI's & Data sources

IPC decided together with their contractor TNS not to supply the KPI reports to the UNEX™ members as hardcopy documents (e.g. PDF). Instead, an online application, called STORM, is offered to generate UNEX™ contractor reports. STORM, a customised application to track & trace real mail items, is divided into several different sections from which KPI reports can be generated, e.g.: panel management, system/panel performance and generation & allocation. STORM allows the users to select different criteria, such as country, period, type of panellist and type of measurement system (e.g. GMS). The application is fed with raw data originating from several data sources:

- UMMS processes
- UMMS panel interface

- RFID reads (after Reconciliation)
- Postal information (e.g. Non-Working Days, etc.)
- Also, data generated by receiver panellists is taken into consideration

The chart below describes the system landscape of applications uses as part of the UNEX™ Solution.

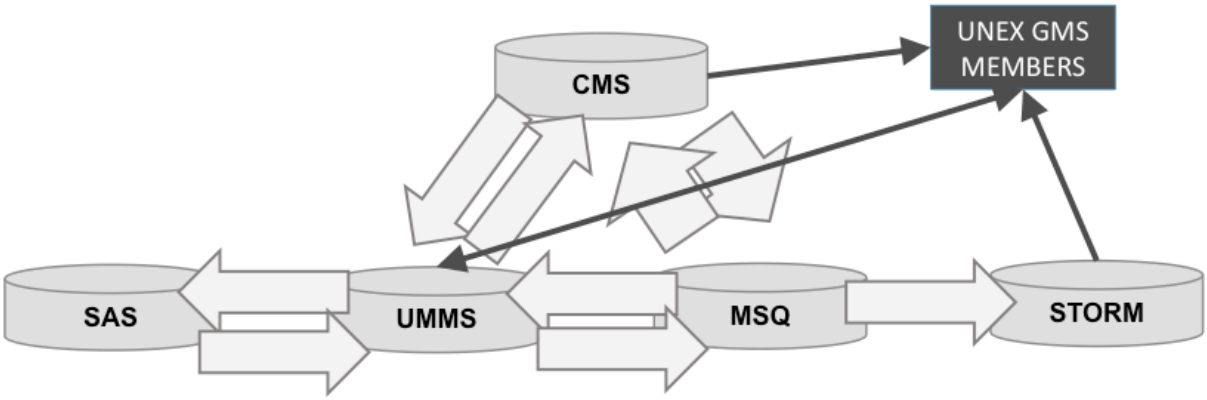


Figure 5.18: IPC UNEX™ system landscape / source: document IPC-12 "System landscape"

All these types of data input undergo a validation process resulting in the VALID and RECONCILED mail items. These items are sent to the STORM Database, which is used by the STORM application. Dudded items are included and are available for members.

The outbound KPI report that can be generated in STORM consists of the following elements:

KPI	Description	Status
Received vs allocated	RDE: Receiver data entry vs allocated plan	✓
Valid mail rate	Valid mail items on target	✓
Allocation on target	Allocated vs target / produced vs plan	✓
Transponder loss rate	Produced vs sent (given in absolute numbers)	✓
Receiving pattern by day of the week of delivery	Posting to plan, not measured by day of the week Receiving day per panellist for pattern detection	!
Posting to plan rate	In place, but not used.	✓
Valid mail on target	Allocation on target * percentage receiver valid x	✓
Data recency	Time it takes for panellist to enter data (in calendar days)	✓
Item return recency	Time it takes in West Bromwich to enter envelop entry	✓
Receiver queried	Against produced, i.e. including the 2 allocated but not received	✓
Receiver dudded	Against total produced (not received)	✓
Receiver valid	Produced against valid = valid mail rate	✓
Receiver exception	Force majeur or due to NWW and (public) holidays	✓
Receiver valid X	Contractor performance : exception + valid items	✓
On time	Items received on-time at receiving DO	✓
RFID measured KPI	Not in place	✗
Outbound KPI's	No applicable, as only inbound is measured	!
Panel turnover	Not seen by auditors	!

Figure 5.19: list of KPI's as generated by IPC/TNS

Below two figures display the KPI format that can be generated in Storm:

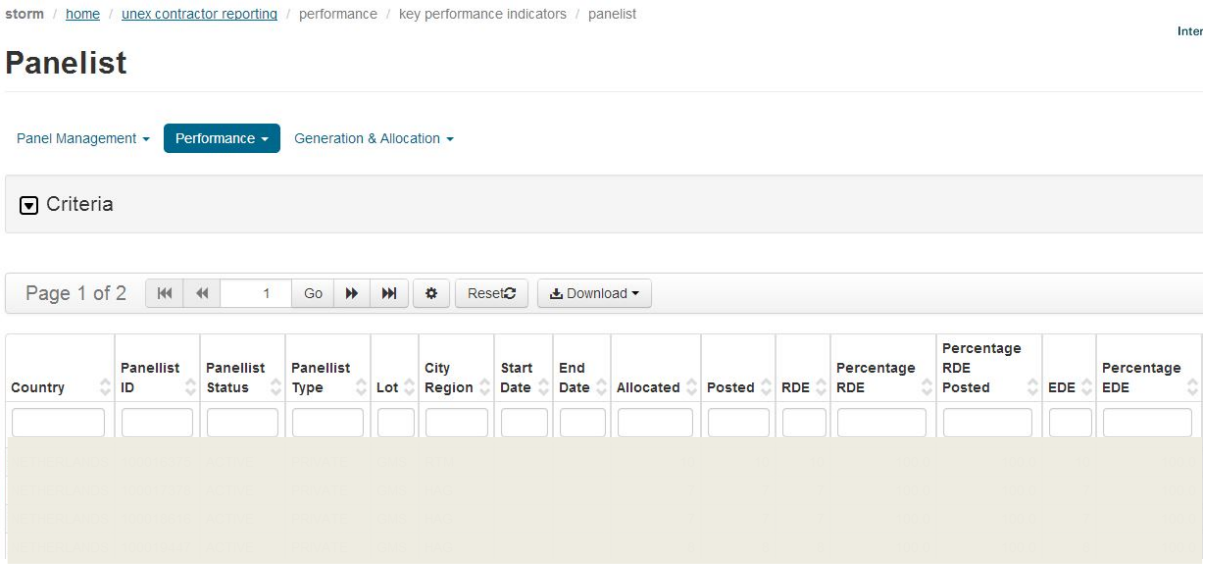


Figure 5.20: KPI panellist receiver / source: document IPC-21 "kpi panellist receiver - part 1.JPG"

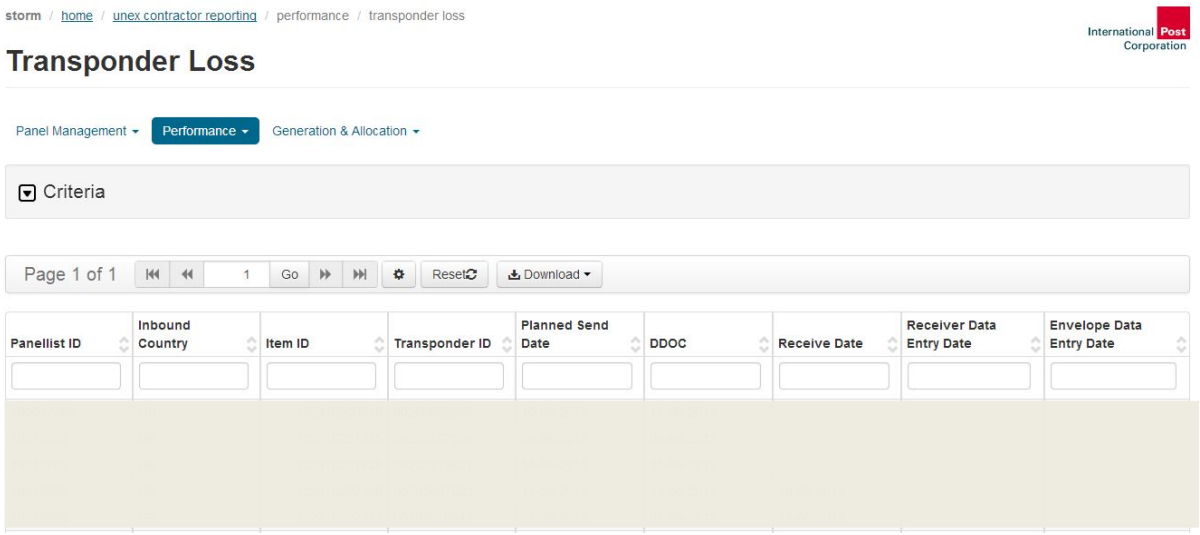


Figure 5.21: KPI transponder loss rate / Source: document IPC-27 "TP loss details.jpg"

5.13.2 Quality control of system management (measurement system)

According to IPC, the quality control of system management is covered by the Generation & Allocation (GA) reports, which can be consulted in STORM, as already described in the previous section. GA reports are generated on a weekly basis by IPC. As an example, a GA report for week 25 is presented, showing several indicators that are monitored, such as:

- allocation shortfalls/overages
- allocation not in accordance with system design of necessary mail characteristics
- valid volume vs target
- panellist workload per week (TNS checks spread between panellist and IPC for max. and min. items per panellist)
- panellist integrity analysis
- sender data entry (SDE); on time before collection time, sender recency on time, sender valid, sender valid exception)

Allocation file and clustering is checked by means of red cell markings. Panel coupling is forbidden, as two items sent to the same receiver at the same time will result in conflicting information. Furthermore, the total allocated items per week is shown.

As part of the contingency plan, receiving panellists receive a hardcopy schedule of the expected mail items every 4 weeks, which can be used for data registration.

5.13.3 Quality control of system integrity (panel management)

In 2013, IPC requested a statistician to develop a model that could be used to forecast panellist performance based on normal characteristics. The main conclusion was that it is difficult to measure quality or predict performance, as many factors are not directly related to the panellist. Therefore, IPC decided to perform comparisons based on post-performance increases or decreases and pattern checks (aggregates over time) to monitor performance stability and to discover trends and possible reorganisations. The comparisons and checks are conducted randomly in regions for the same

period last year (e.g. Oct. 2012 vs Oct. 2013) and are not planned or scheduled, conducted by interval and no documented procedure exists.

A strong case regarding integrity is the discovery of transponders by DO's (postal organisations). If the DO discovers a test letter, the DO will open it and might send it back to IPC. In this case, the receiving panellist has been discovered and is required by UPC to be replaced. If the DO does not return the item, the item is registered as "lost" only and IPC has no overview whether or not the Postal Organisation has discovered the panellist. Another example is when a letter received by a panellist who reports the envelope was opened, in this case IPC will DUD the item. In the case the receiver is discovered by a DO, the receiver panellist is left out as well. A third case is when a damaged envelope has been received. Also in this case the item will be Dudded. The procedure for integrity cases is documented.

Various countries report integrity cases. These cases are documented and corrective actions are taken by IPC (documented and communicated on a weekly basis by email)

During the transition issue, weekly reports were sent to members (PDF file, stamped, as an official document provided by IPC). At some stage IPC was asked to stop sending these status updates, as the frequency was too high. As a result, IPC decided to report on a quarterly basis only. The "country specific system report" for Portugal demonstrated that several indicators are included in the report (evaluated by audit team):

- AOT (Allocated On Time)
- VOT (Valid On Time and the most important indicator as target should remain about 100%
- VMR (Valid Mail Rate between 95% and 100%)

The report was sent by email and the definition of the abbreviations and a short summary is included in the cover letter (email). The chart below displays the *"UNEX™ 2013 Country Specific Scorecard"* (document IPC-50 *"PT_Country Specific Scorecard (GMS)_w41.pdf"*

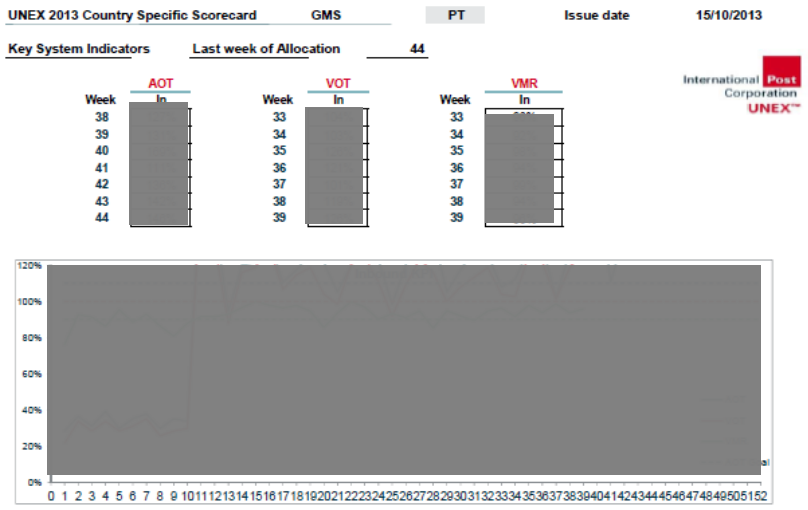


Figure 5.22: UNEX™ 2013 Country Specific Scorecard

5.13.4 Validation

IPC has 4 different validations in place. No written procedures exist, however meetings enable feedback and adjustments to system validations. The four types of validation are described in the sections below.

5.13.5 Real-time validation

Real-time or on-line validation indicates that data is validated during the actual entry of the data. E.g. when a user/panellist enters data in a web browser or other online tool, the real-time validation process runs during the actual data entry and the user sees the question for validation in front of him/her at the same time. IPC confirms that several filters or parameters are in place, so the user will be challenged in case of failures (e.g. no historical date of receiving the item can be entered). The real-time data validation runs in UMMS and the results of the validation are shown at IPC with the past data entry. Both IPC and TNS have access to results.

Active and de-active checks are in place upon data entry and at TNS. IPC has the possibility to de- or activate the real-time validation checks.

IPC demonstrated the procedure concerning data entered in the past. When the panellist is unsure about the validity of the item, the panellist has the possibility to indicate whether the item is valid or not, so the item is excluded from TVMI (items is Dudded).

5.13.6 Off-line validation

Off-line validation is explained by IPC when a user has entered the data, a validation check can be performed afterwards. An example for illustration purposes is when “sender A” states that an item has been sent on day X and “receiver B” states that the data has been received on day Y. If day X and Y are the same day and date, one of the two panellists has made a mistake. “Receiver B” enters the data as valid, so the same validation check will be requested to Sender A “please confirm the send date”. The system notifies inconsistencies and panellists will be challenged again if the entered data is still incorrect or has to be adjusted accordingly. IPC has this validation in place.
TNS demonstrated that the online tool has 3 options for validation:

- Amend
- Confirm
- Unsure

TNS is able to validate item characteristics and to decline an item if the error that is detected at the moment of receiving items for archiving (if the item has already been given the status “valid”).

5.13.7 Pattern query validation

For this type of validation, specific scenarios or patterns in panellist behaviour are discovered/followed. The validation is based on pattern query codes for which specific patterns are checked. The UNEX™ system has the ability to design thresholds for validation purposes. The rules, ranges/periods and thresholds etc. are set-up and agreed with TNS and IPC together and can be changed for certain weeks (i.e. Christmas). Different pattern queries can be selected in the system (e.g. on time, unresolved systemised item queries). Patterns are searched, “over coupling” the item

itself. Valid mail items are excluded, as the detected query can have a different source with regards to the issue. Pattern queries are also used for integrity cases.

5.13.8 User query validation

The user queries validation process is requested by a DO with specific items, because no patterns (yet) exist or the irregularity to be queried is too country specific. If a delay occurs, due to forwarding contracts for example, a user query can be requested to ask the specific panellist what the status is. Forwarding contracts with other postal organisations by panellists is not allowed and may not be used. In STORM, criteria can be selected in order to run a member query. The generation of a user query has been demonstrated during the audit.

The pattern queries are used for panellist performance and to set thresholds. The patterns functionality in the system will search actively for mistakes as the events are registered. The query patterns can lead to new pattern queries by input of country specific information.

5.13.9 Problem detection and follow-up procedures

Pattern queries are critical and the UMMS system error application generates alert notification mails (e.g. when GA stops, this is also generated) to certain members of the UNEX ™team, also when RFID data is received (not if RFID installations are down). In the case that nothing has triggered validation, this is still systematically done every hour. No statistics on system failures (e.g. breakdowns, interface disruptions, etc.) exist, as no reports are produced.

With regards to the follow-up procedures the following applies:

- For the panellists, communication and email templates via UMMS for messaging have been created. Error is notified, volume mail with message can be generated by TNS and this is fed back to IPC.
- Quarterly meeting (IPC-QSMC) in which TNS status and performance is discussed. Also member queries and outcomes (i.e. if escalation results in a new or adjusted query this will be confirmed in the meeting)
- TNS presents accountability: Survey performance, panel status update, summer panel preparation, member queries and resolutions/actions.
- Interaction exists and action points are defined as follow-up. Members are asked for the best decision to be made. Members determine the rules and procedures.

5.13.10 Summary of results

The IPC (GMS) members can generate several KPI reports by using the STORM application. The KPI's presented are in compliance with the GMS Technical design, except for RFID measured KPI's and outbound KPI's. The auditors did not see panel turnover performance reports.

Real structural meetings between UPU and IPC are not implemented, even though this be mutually beneficial for the quality of the GMS measurement solution.
Panel integrity is taken seriously as immediate action is taken when a receiver panellist is possibly detected. However, clear reporting procedures in case such an event occurs are missing (are retrieved via e-mail communication etc.).

No statistics or reports with regards to system failures exist (e.g. breakdowns, interface disruptions, etc.), only email messages are generated every 30 minutes about the system status. This makes it difficult to measure performance.

The validation tool and procedures seem to be applied correctly. Real-time validation has been demonstrated in the situation of a correct validation and in case of an irregularity. The offline validation, together with the validation of pattern queries and user queries are compliant with the GMS Technical Design.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.13.11 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.23:
It is recommended to standardize reports of panellists' errors recorded (numbers, cause and types of errors) including the pre-determined thresholds of errors. This method will provide an understanding of the most common errors and focus area can be determined for improvement projects.

Recommendation 5.24:
It is recommended to introduce and standardize reports relating to the RFID performance of the measurement system. KPI's related to the RFID performance of the infrastructure would provide the RFID technology team of IPC the possibility to proactively manage and improve the RFID system.

Recommendation 5.25:
It is recommended to implement standardised reports in the event of irregularities such as e.g. panellist integrity issues. Currently the information is available in the systems, however a central report for such events would provide more transparency.

5.14 Diagnostic Monitoring

5.14.1 RFID technology – standard and single-unit equipment implementation

The following sequence of activities is considered a standard approach for RFID technology implementation:

1) RFID equipment request: a country requests a RFID installation for domestic or terminal dues purposes;
2) Announcement of International site survey: a notification is sent to UPU informing them about the site survey (approximately 3 weeks in advance), inviting UPU stakeholders to attend. IPC considers an onsite survey as mandatory for terminal dues installations.
3) Conducting the site survey: this is executed by IPC and DO representatives (sometimes involving a Lyngsoe engineer)
4) Delivery of Site Survey Report: Results of the site survey are described in a site survey report template. This document is maintained and updated per site, i.e. all historical information and decisions are included. The site survey document covers installation decisions, like read point positions, and requirements in text and visuals (e.g. pictures, technical designs), in addition a Bill-Of-Material (BOM) and installation checklist is included for a successful implementation. (documents IPC-01 *"074.681.701_Marsa_OE.pdf"*, IPC-03 *"077.081.492 SS_Brussles EMC.PDF"* and IPC-04 *"077.081.581_SS_Roissy HUB.PDF"*).
5) On-site installations: Only after fulfilment of the checklist by the DO, an installation engineer (Lyngsoe) goes onsite to install the equipment according to the installation manual (document IPC-02 *"077 090 056 Installation Guide LS Portals.pdf"*)
6) Site acceptance test (SAT): this test is performed by IPC in the presence of a DO coordinator. After onsite testing, a *Read Point Report* is delivered, this document includes information about what equipment was installed, the person that performed the tests etc. Complementary to the *Read Point Report* also the confirmation of the DO is documented. Both the report and the agreement are sent to the local coordinator of the DO and the stakeholders (if attended SAT), to inform that the RFID equipment is ready for use.
7) User Group acceptance: Only after the acceptance of QLUG, the RFID reads from new installations will be used for reporting purposes.

With every RFID implementation the following documentation is delivered:

- Site Survey Report (single and standard);
- Installation guide for DO in German, English or French language (this document includes the needed preparations before installation engineer can come onsite);
- Integrity Sealing Report (with single units);
- TD Read point Report (grey zone indication).

The GMS Technical Design v1.1. describes standard and single unit solutions. IPC has only equipped AMU's and OE's, i.e. terminal dues gates, with standard units. Although cost effectiveness is considered a high priority in diagnostic monitoring, IPC has no experience in single unit equipment for terminal dues. The single-unit solution is currently not requested or used for terminal dues installations by any of the IPC members, for domestic use only. However if the request for a single-unit for terminal dues would reach the IPC, they have installations instructions available. As the equipment would be used for terminal dues, IPC would still go onsite. Although because of cost

effectiveness this visit by IPC would combine: site survey, integrity sealing of equipment and SAT. This will show in Site Survey Report, Integrity Sealing Report and TD Readpoint Report. The Integrity Sealing Report is obligatory for using a single-unit kit for terminal dues. Each reader is sealed (reader unit side and ceiling side) and the seal numbers are registered by IPC.

5.14.2 Basic principles and practical considerations

The terminal dues gate location
The handover point is the location to position the RFID equipment. IPC is not flexible in changing the location of the RFID gate as they have their responsibility towards the stakeholders. Only few times there has been a slight deviation from this handover point, this exception is always indicated in the TD Readpoint Report: "Grey zone". When Grey Zone is "no", the RFID equipment is optimally located at the handover point, when it is "yes" there is a deviation of the location of the RFID equipment. The cause for a grey zone can be physical restrictions, e.g. metal frames which have impact on RFID performance; or practical considerations, e.g. outside at metal fence handover point is not equipped, and this is moved to first "chokepoint", i.e. first doorway entering the building.

The audit team assessed an example with the RFID team at IPC. The assessment of a grey zone in the country showed that a deviation enables the DO to leave a minimal amount of mail volume, approximately 10-15 containers, before the RFID gate and is therefore possible to influence mail passing the gate just after CTT. The considerations to deviate from handover point seemed valid because of practical and cost considerations of not having RFID equipment outside at a security fence, with passing transports. The performance of the country did not show significant better results than other countries, nor were patterns are detected.

Responsibility for international mail
In addition to the grey zone indication, the report also shows a "push" or "pull" handover. With push the carrier or cargo handler transfers the items into the DO zone via the RFID gate, with pull the DO is responsible for this transfer.

RFID gates can also be installed as customs gates. For custom gates the same procedures and activities are executed as for the terminal dues installations. The TD Readpoint Report of Canada is covering the same topics by IPC (document IPC-08 *"read_rate_2013.xlsm"*).

Implementations in 3 countries: France, Belgium, Malta (reviewed by audit team)
The requested TD Readpoint Reports of France and Belgium illustrate the implementation results for standard units. The requested TD Readpoint Report for Malta was made available after the meeting at IPC. For these 3 requested countries, the RFID equipment has been installed at OE's with at least 0.5% of total annual and national inbound volume. For Belgium all 5 locations have terminal dues installations. In France, 2 AMU locations were equipped. Malta has no facility at the airport, however is considered as a domestic site (document IPC-01 *"074.681.701_Marsa_OE.pdf"*)

5.14.3 Onsite processes

A site survey and installation procedure for 3 countries were assessed by the audit team, including a table/checklist of what the site survey should include.

No specific report exists for continuous checks of integrity of the overall systems for IPC. During onsite visits by IPC or the engineer (Lyngsoe) general checks are performed, e.g. no change of equipment location or broken seals (single unit seals or standard reader box sealing) and reported.

Most recent installations include a PC with only 4 LED's indicating system status, this avoids the use of screens and keyboards by the DO to login to the system in case local support is requested. By the LED indication the local coordinator of the DO can easily inform IPC/Lyngsoe about status of the system when it is not accessible remotely.

1. Power supply to hardware
2. Windows is running
3. RFID software is running
4. Network is available

When the DO's are still requested to login to the system they are only able to see system status, they are not able to access other screens or parts of the system for integrity and confidentiality reasons.

5.14.4 Acceptance process

Official acceptance by UPU of the terminal dues gates is the responsibility of the QLUG. The Validation Review Committee (VRC) is the technical review group of the QLUG. The VRC assesses the provided documentation and generates an advice to the QLUG. The QLUG decides eventually if a terminal dues gate is accepted for diagnostic monitoring and from which date. This is included in the meeting notes of the QLUG. If no objections are raised based on the meeting notes, the notes are finalized and the acceptance is communicated by mail to UNEX™ members. No example could be given in which the QLUG did not follow the advice from the VRC.

5.14.5 Border control correction

IPC only apply border control corrections when custom gates are utilized.

5.14.6 User requirements expectations

The GMS Technical Design describes minimum user requirements.

- The weekly UPU read rate report is considered sufficiently transparent and flexible, for the UPU to assess whether the system status is stable and reliability. If a request comes in for more data, extra data will be sent.
- Stability: technical stability of the system is assumed, no KPIs are available. The data transfer possibilities can be problematic, as the ADSL connection is often the cause of instability. However no hard data is available.
- Accuracy and global applicability: the system is easily scalable in different continents and for all registration the time is checked against expected local times. Every connection that is set-up between systems, a time check is performed and adjusted if necessary (reports are produced of the numbers of time adjustments performed). For example, local time is calculated from the central server located at IPC.
- Costs effectives: limit the onsite visits, hence include local or national coordinator in the support and maintenance loop.

5.14.7 Maintenance and Support

A service agreement exists (according to IPC) with provider Lyngsoe. In this SLA the specific maintenance and support arrangements are described. The audit team did not receive nor review the SLA.

IPC acts as the contract manager, while Lyngsoe is the operational party. In general, most alerts go directly to Lyngsoe for support. In some cases, IPC receives emails that are to be forwarded to Lyngsoe. IPC does not receive incoming calls regarding support, but does receive an email after a support action has been performed by Lyngsoe (and entered in the system)

Reactive maintenance is performed in the following order:

1. Remote support (x3)
2. System reboot by local or national coordinator
3. Site visit is performed when inevitable, due to economic reasons

For DO actions (point 2 above) work instructions are available, like “Reset Procedures”. In case of a reset procedure, IPC will try to contact the Local Coordinator (LC) and National Coordinator (NC) in this order. The instructions are attached to an email in German, French or English. The instructions are supported with visuals in order to make the procedures as clear as possible.
In the accompanying text in the email to Local or National Coordinator, IPC asks for a standard reply to avoid any further issues.

Monitoring Tools and systems
The Central Monitoring System (CMS) is a shared system of IPC and Lyngsoe. This system monitors the RFID gates in real-time at all DO’s and displays results in a dashboard, CMS generates alerts with details (e.g. antenna, how many times) and notifications on which actions by Lyngsoe are needed.
CMS provides the ability to monitor the work of Lyngsoe by IPC, in addition all is stored in a database, enabling to generate overviews of errors per site.

WebService Monitoring (WebSMO) is a ticketing system. The WebSMO saves all individual cases by means of the “case Log Quick view”. Lyngsoe creates and maintains the cases in WebSMO, although IPC is able to log their own cases. Preventive hardware swaps and software updates, new installations, dismantling of gates for example are also marked as a case in the system. All is stored which makes historical data available. Cases can only be closed if for 12 hours no new issues or alerts are raised.

On a daily basis the alerts and notifications are discussed with Lyngsoe by phone.

Local DO’s can access the system to check if the system is running or with issues they can be contacted to check system status, e.g. connected with network, or to perform a reset.

Performance and reporting
Limited historical reports can be provided, for example the response time at a specific site is not available, however the time necessary to solve a problem is registered and documented and if necessary, actions planned accordingly in the Central Monitoring System (CMS). IPC can’t provide performance reports.

Only instance reports are generated by Lyngsoe and contain an overview of maintenance activities performed onsite. For each site, yearly remote maintenance and 2-yearly on-site maintenance used to be performed, but due to cost issues, in 2013 UNEX™ continued with remote maintenance only, except when a site-visit is inevitable.

Quarterly meetings are used to discuss support cases. Lyngsoe provides a report beforehand with support and maintenance actions per month.

Contingency planning
RFID read data is saved on the local systems, in order to avoid any loss of data in the case of an emergency (failed data connection). In addition the data is transferred to 2 different central servers: IPC and Lyngsoe. IPC saves the historical data, while Lyngsoe only saves the data of the last 3 months. IPC and Lyngsoe receive separate data transfer files, to reduce any risk of losing data in the scenario that data is lost at one or the other transfer. For example, if data is lost by IPC, Lyngsoe can be contacted to share the lost data. At the moment, the local sites are supplied with new 3G modems to ensure a better and safe data transfer and to improve security.

5.14.8 Reliability

Performance and reporting
The UPU Read Rate Report indicates if read points are stable and sending data on time. This report is sent on a weekly basis and contains the read data of the last 45 days, site code, readpoint, timestamps etc. The following status of data is used:

- OK – data from read point was received timely
- Data delayed – read point has been able to send data but some data is missing and will probably still be recovered
- Data lost – read point has been able to send data but some data is missing and cannot be recovered

No KPI's or thresholds are set.
IPC also provides UPU with GMS RFID data for specific DO's

5.14.9 Security / integrity

Data loss prevention
Security measures to ensure loss of data due to power outages are limited. A UPS was used for 2 years to manage power issues of the PC, but turned out to be too costly. It was decided to step away from the use of UPS as it was costly and force majeure covers these situations.

By taking the measures of local storage of data and two different transfers to respectively IPC and Lyngsoe, the risk of data loss is reduced and recovery is possible.

Data capture, transfer and visibility
DO's have read-only access to their local system and are only able to see system status. DO's have no access to data. Data on the local computer is saved encrypted and only accessible by the Lyngsoe and IPC engineers. During onsite visits required upgrades can be executed. The sites work with windows embedded with the minimal required services, so no remote (firewall) updates are performed. Remote access is restricted to 2 IPC RFID engineers and the Lyngsoe monitoring system.

Data transfer is encrypted and makes use of sequence numbering per data file, to detect any missing data.

Internally at IPC, data can only be accessed by IT specialists or members of the RFID department. PC's have a private network to prevent external access, i.e. hacking, viruses. Remote access is only possible from the IP ranges at IPC (limited number of people) and Lyngsoe systems (helpdesk).
The data is classified as restricted by IPC, therefore password protection is in place for different levels of the system to assure authentication control, e.g. PC, Windows, RFID software, database.

Physical access to the IPC server is password protected, approximately 20 people have access to the server room, and time restricted (e.g. not after 7PM). All entries to the server room are logged.

Terminal dues related data is separate and encrypted (UNEX™ en GMS).

No infrastructural separation exists between GMS and domestic systems (architecture). The data that is captured locally is sent (completely) to IPC. At IPC visibility rules and classifications methods are applied to the data, enabling separate data distribution back to domestic system. Checks are hardcoded that prevent combined data is sent back. IPC is responsible for the classification of the sites and application of the visibility rules. The visibility rules are determined by the user group and RFID team of IPC.

5.14.10 Technical requirements

Read performance
CMS provides high level read reports, which demonstrate a 95% (controlled) read rate performance is met during site acceptance testing. The majority of the results show a 100% read performance, for example in Austria. Test manuals are available describing the test methodology to validate that a site has a minimum read rate of 95%. For IPC the site acceptance test consists of a minimum of 4 cycles with 15 transponders per read point in different scenarios (tag positioning, tag orientations, etc), requiring at least 95% read performance. Experience within IPC (RFID team) show that a test performance below 98% will result in additional testing and measures if needed.

A 2nd report demonstrates that the minimum read rate of 85% for a live environment is achieved (document IPC-08 *"read_rate_2013.xlsm"*). This report is based on active and passive tags for various measurement systems of IPC, not UNEX™ 2013 only.

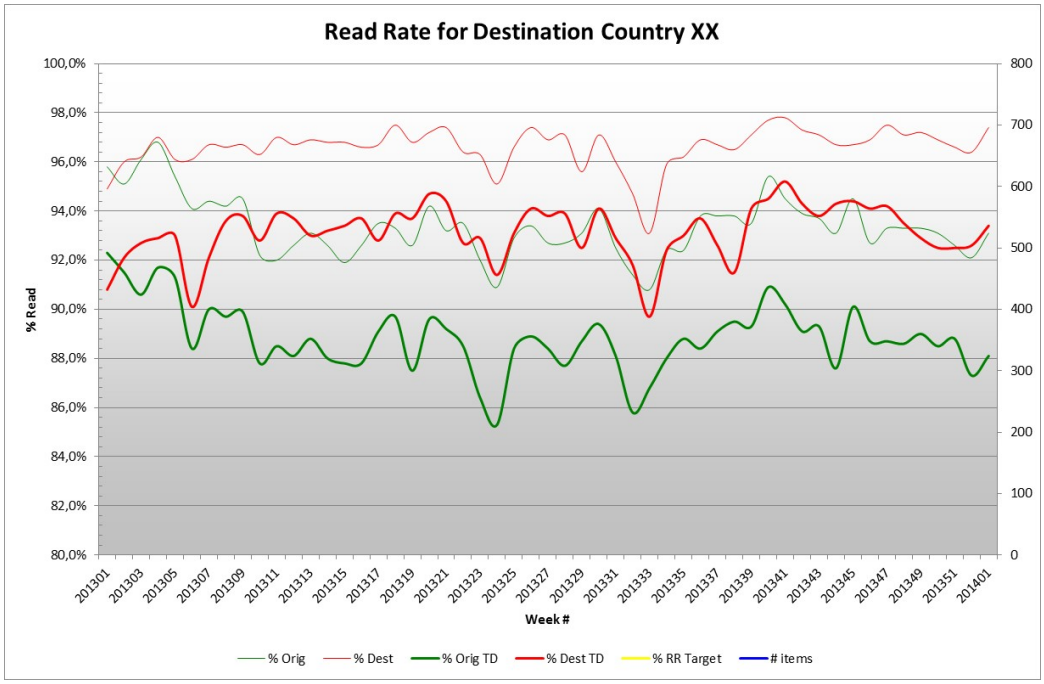


Figure 5.23: example of a read rate report above 85% in a live environment / source: document IPC-08 "read_rate_2013.xlsm")

Significant changes in performance are not always clearly explained or acted on as IPC cannot detect the exact causes. An example is the drop in a specific country in week 18 (see figure 6.24): below 80%.

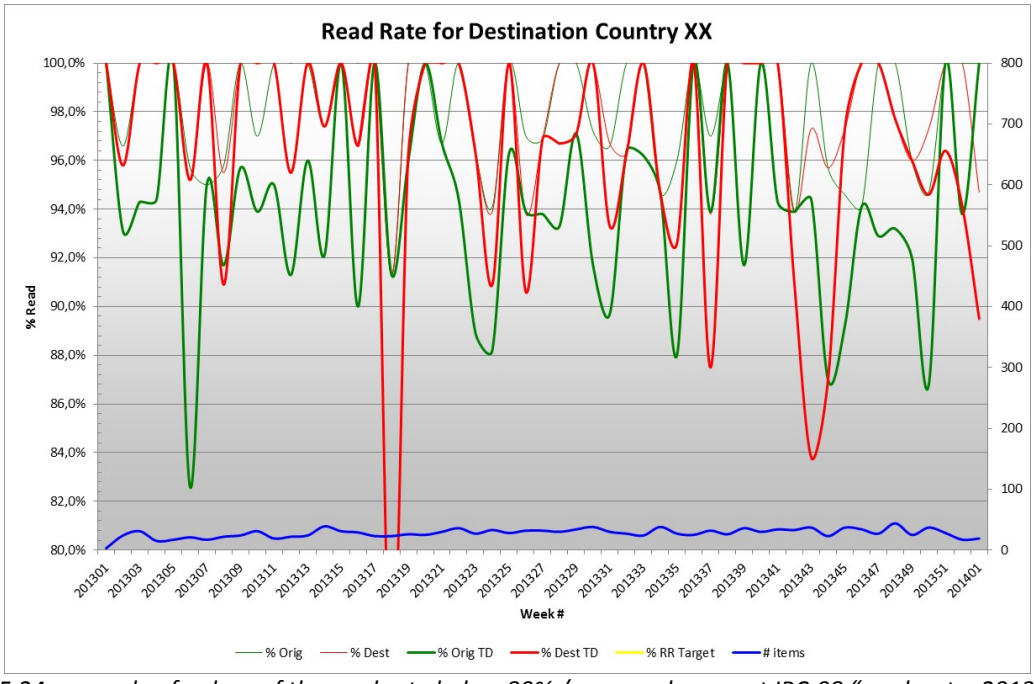


Figure 5.24: example of a drop of the read rate below 80% / source: document IPC-08 "read_rate_2013.xlsm")

This was caused by a transponders quality issue for active tags in a different survey than GMS: quality measures were taken and the performance improved. The data is shown at UNEX™ level and there is currently no UPU data input for data detection to separate between active and passive.

Airline compliances
IPC indicated that the active tags (used for the GMS measurement for IPC and UPU) are compliant with IATA airline regulations in terms of Dangerous Goods Regulations (use of lithium batteries), although no mention was made for the device as a whole.

5.14.11 Alternative method

No alternative methods for diagnostic monitoring are used for UNEX™ 2013.

5.14.12 Summary of results

An experienced technology group within IPC manages the diagnostic monitoring activities. Structured protocols are in place describing: site surveys, installations and configuration and system testing activities.

Documentation is widely available ensuring clear and structured instructions for different user groups. The system architecture is well thought through, ensuring data contingency measures and security are in place.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.14.13 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 5.26:
Currently no standardised KPI's or thresholds are set for monitoring the RFID performance across the architecture landscape. It would be recommended to implement KPI's in order to automate the performance measurement and prepare the basis for a condition based monitoring system.

Recommendation 5.27:
Currently no issues logged in CMS and WebSMO (on-line tool) don't seem to be linked. It would be recommended to be able to link these issues to expedite information gathering and issue analysis.

Recommendation 5.28:
Currently no standardised KPI's or thresholds are set for monitoring the RFID performance across the architecture landscape. It would be recommended to implement KPI's in order to automate the performance measurement and prepare the basis for a condition based monitoring system.

5.15 Confidentiality and integrity

5.15.1 Confidentiality and integrity - IPC

A special UNEX™ drive (Q-drive) is in place and is only accessible for the UNEX™ team. Data sharing is not allowed outside UNEX™ (USB sticks that are password protected are used).

The security of RFID data is validated as data on the local computer is only accessible by the users and saved locally (encrypted). Data transfer is encrypted and has a follow-up number to retrieve any missing data. Internally, IT specialists or members of the RFID department can only access data.

A private network must ensure that no external access is possible, this is the main measure against external security breaches (hacking). Password protection is in place for off-line systems to guarantee access control. PC's as well as the RFID software is protected. The data is classified as restricted. Remote access is only possible from the IP ranges at IPC (limited number of people) and Lyngsoe systems (helpdesk).
The sites work with windows embedded security measures with the minimal required services, so no remote firewall updates. Within IPC, a firewall is in place. Physical access to the network server is code protected and time restricted and approximately 20 people have access to the server room.

Other measure taken by IPC to secure confidential information:

- Printer; personnel is required to hold the personal badge in front of the printer to be able to print documentation
- Automatic lock of computers
- No categories for confidential information (confidential level 1, etc.)
- Network is also access controlled

IPC receives the real mail volumes directly from the member DO's and treats this information as confidential and uses the data for the calculation of the GMS statistical designs.

Only the GMS monthly summary report results are spread amongst all members. Members are able to generate the DO country specific reports in STORM. Performance results with regards to other DO's are not disclosed and Pool 1 and Pool 2 remain confidential by means of reporting the consolidated results of the pool 1 and pool 2 countries.

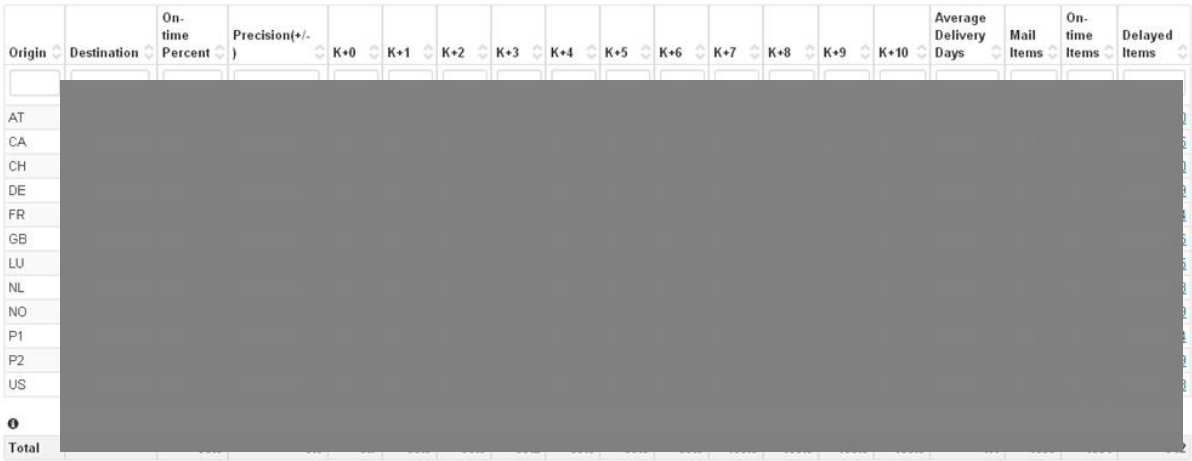


Figure 5.25: example of a country specific report in which Pool countries are remained confidential / source: document IPC-60 "Screenshots from reporting"

The TNS Tracking Document (a rolling document) is in place to track the integrity cases with regards to panellists. The document contains comments made by IPC and TNS. Panel integrity breaches are reported in the TNS Tracking Document (e.g. damaged envelopes, opened test items, transponders without envelopes, and reports for receiver panellists, etc.) and IPC and TNS jointly decide what appropriate action to take. An item is only closed if IPC confirms this.

In the case of a transponder discovery, it is the DO's responsibility to report the event. Not all DO's act appropriately, but IPC tries to control this as much as possible. The panellist of the sending pool country will be replaced accordingly.

As of November 2013 as a results of a QSMC meeting, IPC and TNS launched the possibility to raise ad-hoc queries with a minimum of 5 items to be investigated. A template (document IPC-45 *"Offline Adhoc Items Query Tool"*) and the corresponding guidelines (document IPC-44 *"Offline Adhoc Items Query Tool Guidelines"*) in the document list) were provided to all members.

As far as IPC is aware, no receiving DO is able to identify the delivery office in its inbound test cities receiving GMS test letters.

The STORM system ensures that confidential information (e.g. panellists contact data, sending DO information) are not shown in any report. Assessments shows that none of the confidential information is displayed in the reports for DO's. In addition, the items registered via RFID installations are withheld for 24 hours before they are included in details of the reports. This delay in information prevents any (suspected) intervention by the DO based on the knowledge about the presence of test items onsite.

The standard RFID kit is not hard sealed. IPC confirms that in 10 years no RFID equipment has been moved or altered. The reader box is sealed with a plastic seal, which should prevent the potential sabotage of readers. Per site, the installation of the RFID equipment is reported for integrity purposes and includes photos of the installation spots (document IPC-05 *"Integrity sealing – RFID Reading point report"*. During onsite visits by IPC or an engineer (Lyngsoe) general checks are performed, e.g. no change of equipment location or broken seals (single unit seals or standard reader box sealing) are reported.

Until now three countries have denied IPC access to perform local checks to the installation.

5.15.2 Confidentiality and integrity - TNS

Measures against confidential information are in place at location of TNS in Westgate. Data is given a specific status concerning the level of confidentiality (public, company, etc.). Data is protected by means of a password and when sent another check is performed. USB sticks are encrypted with a password. PC's are automatically locked as soon as the pc is left alone for a certain amount of time. Printing requires a code to be entered. All employees signed a confidentiality agreement in advance.

Panellist information is only stored in UMMS, not in other systems used by TNS. Only the central team has the same rights with regards to UMMS access, however different authorizations per role are in place. Passwords are not maintained or stored and is requested for each first log-in. With regards to the system Kantar project (e.g., activity plan for the TNS team), access is also restricted and password protected. In this system no panellist information is stored, as strict rules are in place to maintain panellist' information in UMMS only.

Documents sent between IPC and TNS are password protected as not everyone has access to open the document. Three levels of security are in place:

1. Data classification label: client restricted, company restricted, public
2. Password protection
3. "Accellion", for secure file transfer and password or token protected

TNS West Bromwich has more or less the same measures in relation to the activities performed. Furthermore paper waste is collected in secure container, which are collected and destroyed by a specialised 3rd party.

In case of the discovery of a receiver panellist, TNS will follow up IPC's order to replace the discovered panellist. With regards to pattern queries for example, no panellist names or addresses are disclosed, as only ID's are disclosed and communicated in the files.

5.15.3 Summary of results

Procedures and measures to conceal confidential information and to maintain the integrity of test mail items, panellists, etc. are in place.

Systems and databases are well protected against external access and RFID data transfer is encrypted.

Communicated and transfer of documents between IPC and TNS is well organised as clear rules and procedures are in place and followed.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

5.15.4 Recommendations

n.a.

5.16 Updates and annual review of essential design parameters

The annual update of statistical designs is a yearly returning activity that is processed by IPC. 2013 was the first year for IPC to actually update existing designs (the designs were prepared in 2012 for execution and updated in 2013 accordingly). The running statistical designs in 2012 were the continuation of the 2011 designs as it was assumed that the design from 2011 would be maintained until 2014.

Two examples with regards to boosting are the city boost for Jamaica and the request for a specific report for Germany. IPC is perfectly aware that the result of boosting will affect the statistical design, which means that generated reports and KPI's are based on the higher annual volumes. The target,

allocated and valid mail items originating from the specific report are used in calculations and analyses, as the specific report is the report used for Terminal Dues (reported volumes compared to the required volumes in the base report will obviously differ).

CTTs are yearly delivered to IPC by the member countries. The country level indication, permanent links and the pool 1 and pool 2 links are re-calculated annually and IPC does not allow the use of P.O. boxes, so updates concerning this topic are not applicable.

No documented procedures with regards to updates and the annual review of essential design parameters are in place, as GMS has been implemented only since 2013.

5.17 Operational Performance of Measurement Service Provider IPC / TNS in 2013

In this section the overall Operational Performance is assessed of the Measurement Service Provider IPC / TNS for the measurement period 2013. The audit team have decided to evaluate the overall performance based on the following three questions:

1. To what extent was the measurement provider successful in setting up a panel in the various receiving cities/countries in order to be able to receive test mail items?
2. To what extent was the measurement provider successful in injecting sufficient valid mail items according to the GMS Technical Design v1.1?
3. To what extent can the results achieved be used (linking QS results) for Terminal Dues calculations for the reporting period 2013?

The two questions are assessed below and the third question is discussed in paragraph 7.17.2.

5.17.1 KPI's monitored at IPC / TNS

Panel Management Performance
The chart below provides an overview per month of the Panel Management Performance for the measurement period 2013.

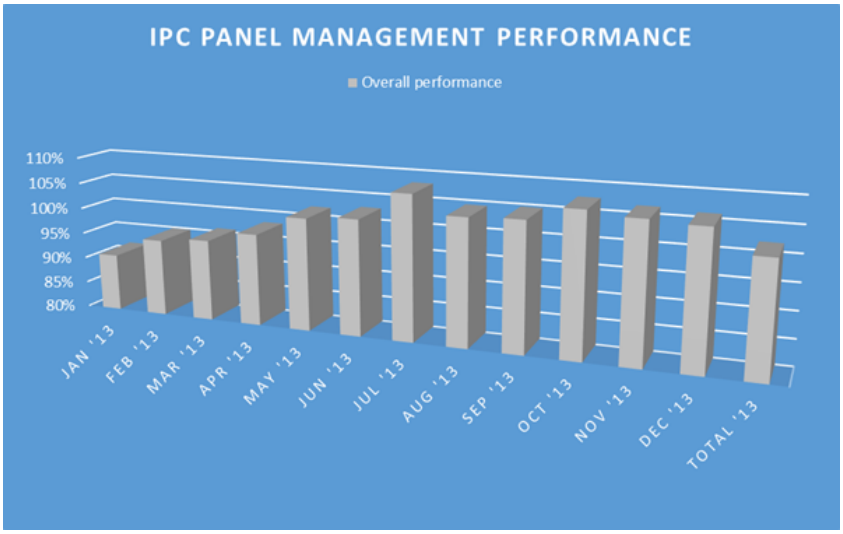


Figure 5.26: IPC Panel Management Performance - 2013

In the following chart the same information is displayed in a 2D chart. The two charts were derived from operational data obtained from IPC in which the 'expected' panel according to the design has been compared with the 'actual' achieved panel on a monthly basis. In these charts all the panels of the various IPC members have been combined in order to assess the overall performance. A percentage under 100% means less panel members were actually in place with respect to the design, hence indicating **'under performance'**. A percentage above 100% means more panel members were in place, hence indicating **'over performance'**.

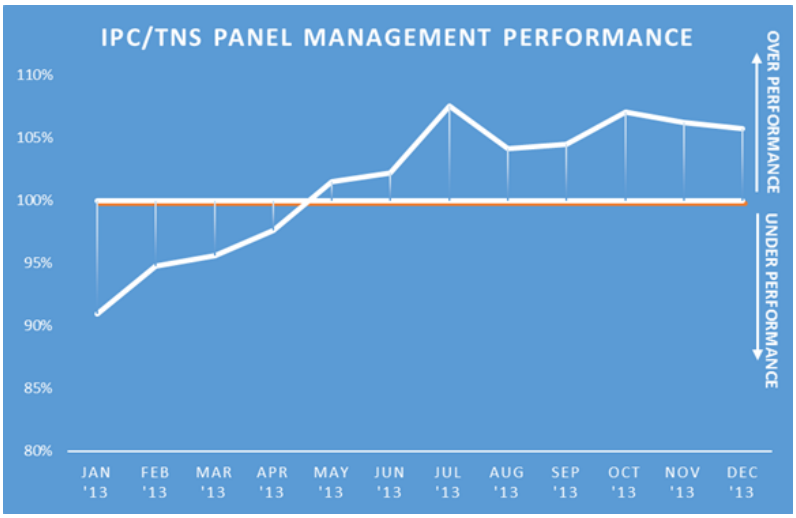


Figure 5.27: IPC Panel Management Performance – 2013 (2D version)

In the chart above a baseline of 100% has been added, which indicates the level at which the panel would have been fully in place according to the GMS Technical Design v1.1. The chart confirms the transition issues, which were raised by IPC. Until approximately May 2013 the panels were under the required levels, which had been specified in the design. Only after this period was IPC / TNS able to operationalise a full panel in the IPC member countries.

Valid Mail Item Performance

The next KPI is meant to assess whether sufficient Valid Mail Items have been included in the GMS Measurement System.

In terms of the mail items for the period 2013, the chart below provides the insight in the following parameters:

1. ***Valid Test Mail Item (VTMI) rate: target vs. allocated*** – this ratio compares the number of mail items which were allocated (i.e. planned for production) with the number of mail items according to the design;
2. ***Valid Test Mail Item (VTMI) rate: target vs. valid*** – this ratio compares the number of mail items which were considered valid* (i.e. mail items which are qualified to be part of the measurement study), with the number of mail items according to the design;

* Valid items in this sense means mail items which were:

- Produced;
- Registered (RFID reading) at an inbound OE;
- Received and registered by panellist at destination city/country;
- Item has been successfully validated according to the rules of the GMS Technical Design v1.1.

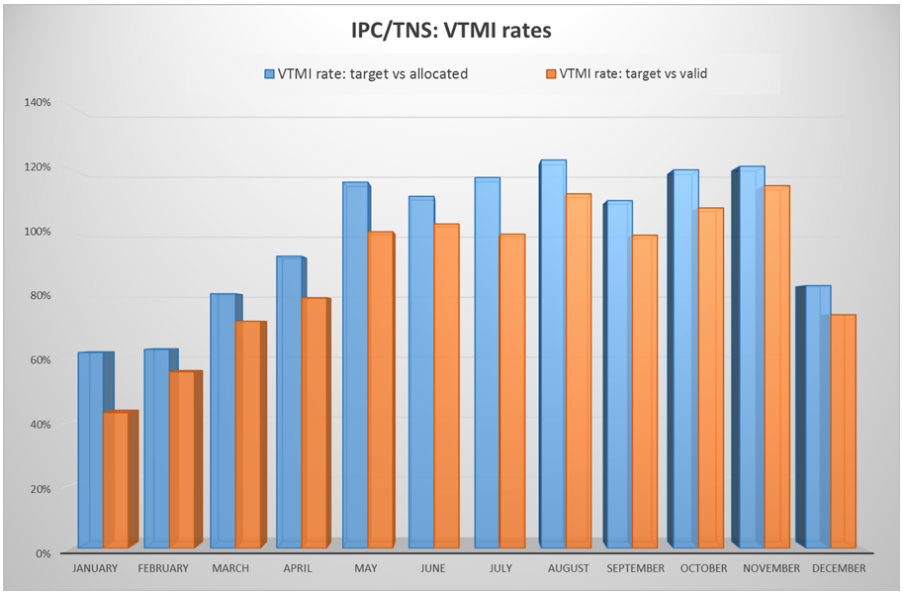


Figure 5.28: Overall Valid Mail Performance – 2013

In the chart below the VTMI rate: target vs. allocated is displayed in a 2D chart. In this chart also the 100% benchmark has been added. This illustrates that until approximately April 2013 less items were being allocated than should have been the case according to the design. Obviously if items are not allocated (i.e. planned for production), no items will be sent to panellists. The chart also shows that in June and September/October there was a slight dip in the allocation. In December 2013 the allocation again dropped below the target according to the design.

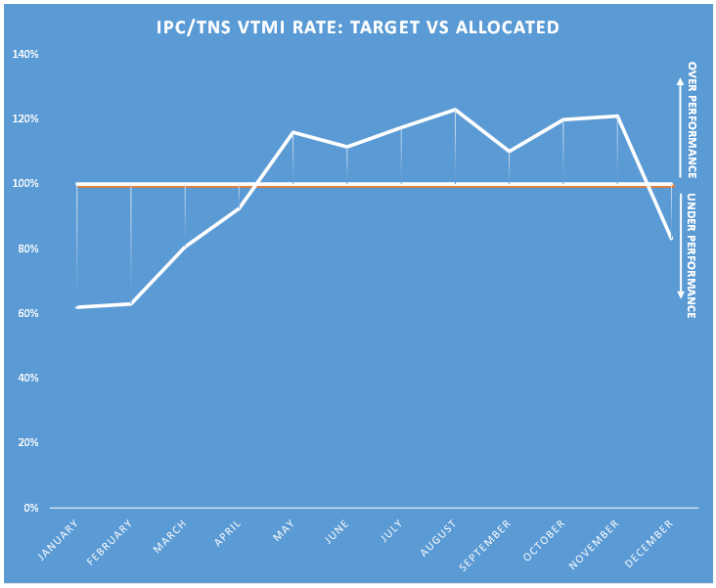


Figure 5.29: VTMI rate performance (target vs allocated) – 2013 (2D version)

The ultimate performance is displayed in the chart below the VTMI rate: target vs. valid (displayed in a 2D chart). In this chart also the 100% benchmark has been added.

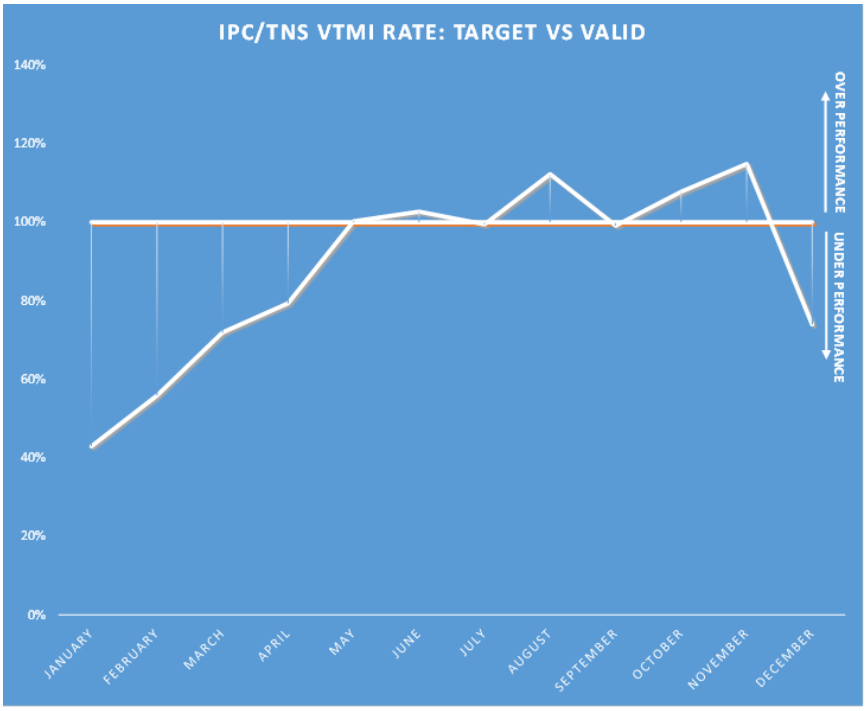


Figure 5.30: VTMI rate performance (target vs valid) – 2013 (2D version)

This chart illustrates the extent to which valid items for reporting purposes as part of the GMS Measurement Study have been created. The 100% benchmark illustrates that until June 2013 and in December 2013 there were less items than according to the design. And in the period between May and July and the period between July and August the valid items were just about enough. No significant compensation of the 'lost' items was achieved in 2013.

The table (below) provides an overview of the performance per country for the period 2013. In the last column the overall rates of 'target' vs. 'valid' are displayed per country for the entire period 2013. Percentages under 100% indicate that less valid items were achieved than should have been according to the design. These percentages are marked in 'red'.

Percentages above 100% indicate that more valid items were achieved than should have been according to the design. These percentages are marked in 'green'.

OPERATIONAL PERFORMANCE REPORT IPC/TNS 2013						
Level	Country	Target (design)	Allocated	Valid	Rate (target vs allocated)	Rate (target vs valid)
A	Country A.1	10071	6956	6937	69%	69%
	Country A.2	10553	10428	8134	99%	77%
	Country A.3	10077	8456	6395	84%	63%
	Country A.4	10752	7753	6357	72%	59%
	Country A.5	10297	10558	8330	103%	81%
B	Country B.1	3803	3519	3032	93%	80%
	Country B.2	3827	5154	4693	135%	123%
	Country B.3	3822	4111	3372	108%	88%
	Country B.4	3813	4433	4127	116%	108%
	Country B.5	3813	4215	3841	111%	101%
	Country B.6	3819	3618	3390	95%	89%
	Country B.7	3815	3521	3184	92%	83%
	Country B.8	3810	3651	3186	96%	84%
	Country B.9	3819	4728	4121	124%	108%
	Country B.10	3795	3854	3565	102%	94%
	Country B.11	3815	4755	4512	125%	118%
	Country B.12	3815	3379	2841	89%	74%
	Country B.13	3815	4373	3811	115%	100%
	Country B.14	3822	3632	3440	95%	90%
	Country B.15	3837	5096	4572	133%	119%
C	Country C.1	2096	1863	1665	89%	79%
D	Country D.1	903	1103	1012	122%	112%
	Country D.2	903	996	898	110%	99%
	Country D.3	2123	1445	1391	68%	66%
E	Country E.1	729	481	361	66%	50%
Total		115744	112078	97167	97%	84%

Figure 5.31: Operational performance report IPC/TNS 2013

Of the entire list of IPC countries and including Country B.13 (100%) and Country D.2 (99%) for a total number of 9 countries sufficient valid items were achieved as specified in the respective designs. This means that for 36% (9 out of 25) of all IPC countries the objective of the measurement study in terms of the number of valid items was achieved.

With the adjusted and in most cases lower number of 'valid mail items' the achieved accuracy (actual precision) of the GMS measurement study can be recalculated and compared to the 'minimum requirement'. The calculation method is described in the GMS technical Design v1.1 (section: C1.2 Estimation of accuracy), according to the following formula:

$$Accuracy(P) = \pm 1.96 * design\ factor * \sqrt{[P(1-P)/N]}$$

If the achieved accuracy (actual precision) (with the lower number of valid mail items) is equal or better than the defined 'minimum requirement', the results for the specific country can successfully be used for Terminal Dues calculation, as the results would be compliant with the GMS Technical Design v1.1.

In the POC document: *Use of quality of service reports by UNEX users for the UPU QS Link in 2013,* the actual accuracy calculations were calculated and reported, see the screen shots below. The values are provided in an anonymous manner per level of country.

Results of the IB assessment

Table 1: Accuracies of the 2013 UNEX measurements against the minimum requirements of the GMS Technical Design

	Minimum requirement	*Actual precision*	*Margin*
LEVEL A			
Country A.1	1.0	0.8	+ 0.2
Country A.2	1.0	0.7	+ 0.3
Country A.3	1.0	0.7	+ 0.3
Country A.4	1.0	0.7	+ 0.3
Country A.5	1.0	1.0	
LEVEL B			
Country B.1	1.5	1.3	+ 0.2
Country B.2	1.5	0.8	+ 0.7
Country B.3	1.5	1.4	+ 0.1
Country B.4	1.5	1.1	+ 0.4
Country B.5	1.5	1.8	- 0.3
Country B.6	1.5	0.8	+ 0.7
Country B.7	1.5	1.0	+ 0.5
Country B.8	1.5	1.4	+ 0.1
Country B.9	1.5	0.9	+ 0.6
Country B.10	1.5	0.7	+ 0.8
Country B.11	1.5	1.4	+ 0.1
Country B.12	1.5	1.1	+ 0.4
Country B.13	1.5	1.1	+ 0.4
Country B.14	1.5	0.7	+ 0.8
Country B.15	1.5	1.0	+ 0.5

	Minimum requirement	*Actual precision*	*Margin*
LEVEL C			
Country C.1	2.0	1.6	+ 0.4
Country C.2	2.0	0.8	+ 1.2
LEVEL D			
Country D.1	3.0	1.9	+ 1.1
Country D.2	3.0	3.2	- 0.2
LEVEL E			
Country E.1	5.0	5.6	- 0.6

Figure 5.32: Overview of actual accuracy compared to minimum requirement

5.17.2 Conclusion with regards to compliancy

Of the entire list of UNEX™ GMS countries the following countries are not compliant with the GMS Technical Design v1.1: (3 out of 25)

- Country B5
- Country D2
- Country E1

Based on the achieved 'valid' mail items as compared to the 'target' the conclusion of the audit team is, that the measurement provider failed to execute according to the GMS Technical Design.

However taking in to account the recalculated accuracy in comparison to the 'minimum accuracy', as specified according to the GMS Technical Design v1.1, the conclusion of the auditor is that the measurement provider in 2013 performed in compliance with the GMS Technical Design v1.1.

6 EXECUTION OF EXTERNAL AUDIT OF THE UPU-AGREED MEASUREMENT SYSTEM GMS BY UPU AND QUOTAS

6.1 Introduction Measurement Service Provider: UPU and Contractor: Quotas

6.1.1 Introduction: Universal Postal Union

Created in 1874, the Universal Postal Union (UPU), based in Berne (Switzerland), is an intergovernmental organization and the primary forum for cooperation between governments, Posts and other stakeholders of the worldwide postal sector. The UPU is a specialised agency of the United Nations.

In addition to maintaining a genuinely universal network that provides modern products and services, the UPU establishes the rules for international mail exchanges among its 192 members and makes recommendations to stimulate mail volume growth and to improve the quality of service for customers.

In 2012, some 5.5 million employees processed and delivered 350 billion domestic and international letter-post items and over 6 billion parcels internationally. Many postal services also offer expedited mail, financial and electronic services. Some 670,000 postal establishments make the postal network the largest physical distribution network in the world.
The UPU consists of 4 organisational bodies:

- The Congress
- The Council of Administration (CA)
- The Postal Operations Council (POC)
- The International Bureau (IB)

Source: website Universal Postal Union

The main characteristics of the Global Measurement System (GMS) are:

- A measurement system to track performance and quality improvement;
- The heart of GMS is accessibility – based on open standards technology;
- It is available to any UPU member country and its designated operator at an affordable price;
- The system is managed by the UPU International Bureau (IB) and is not operated on a profit basis.

Source: Presentation UPU GMS

The main objectives of the Global Measurement System are:

- Enable member countries to improve the quality of service;
- Link quality of service (QS) results to terminal dues (TD) (optional);
- Increase customer satisfaction and business revenue.

The Global Measurement System (GMS) currently consists of 3 different measurement modules. The module used for Terminal Dues calculations and in scope for this external audit is the GMS Inbound Module. The 3 different GMS measurement modules are further described below:

1. **GMS inbound:** current GMS system, which measures the quality performance of individual DO's using RFID technology and independent external panellists hired and managed by the external service provider.
2. **GMS end-to-end external (module 1):** this new module is designed to meet the changing needs of DO's requiring totally or partially diagnostic end-to-end measurement. It uses RFID technology and external panellists hired and managed by the external service provider.
3. **GMS end-to-end internal (module 2):** this module corresponds to the former UPU continuous testing system. It is less costly because the use of RFID technology is optional and internal panellists are used.

Source: Presentation UPU GMS

A diagram of the GMS project organisation (including stakeholders) and the GMS process is illustrated below.

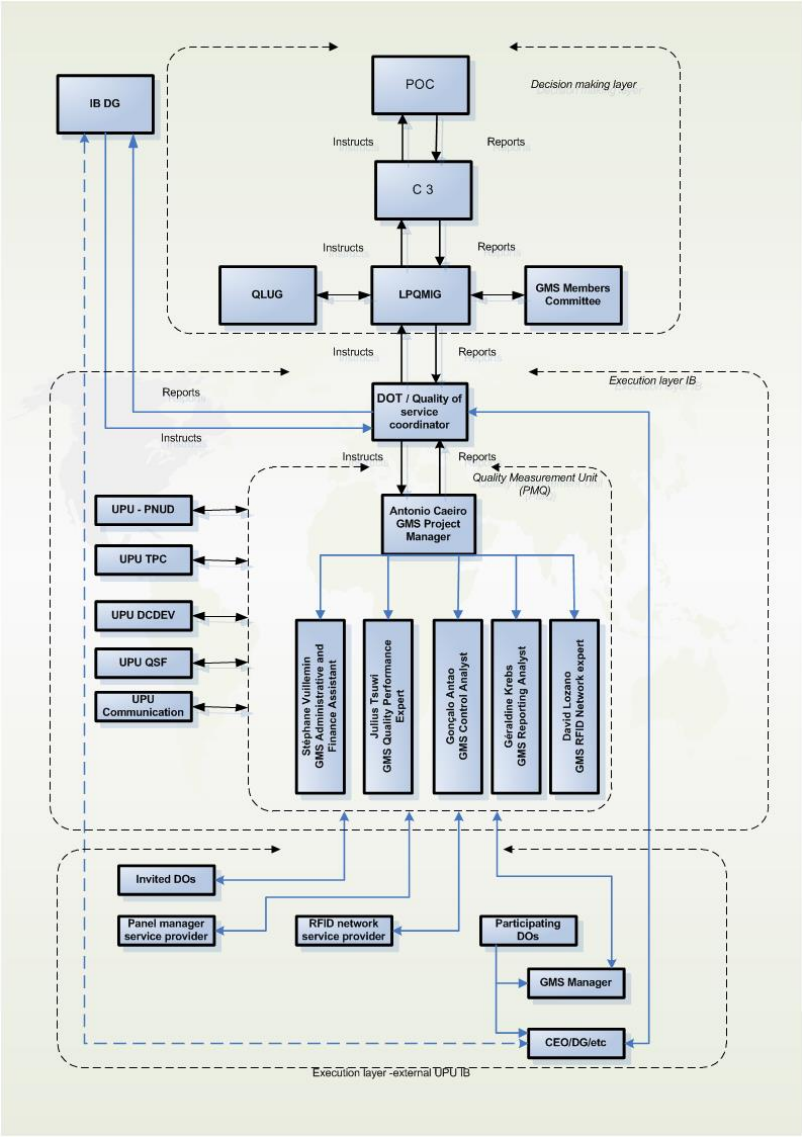


Figure 6.1: GSM project organisation /source: document UPU-31 GMS_project_organization_V5

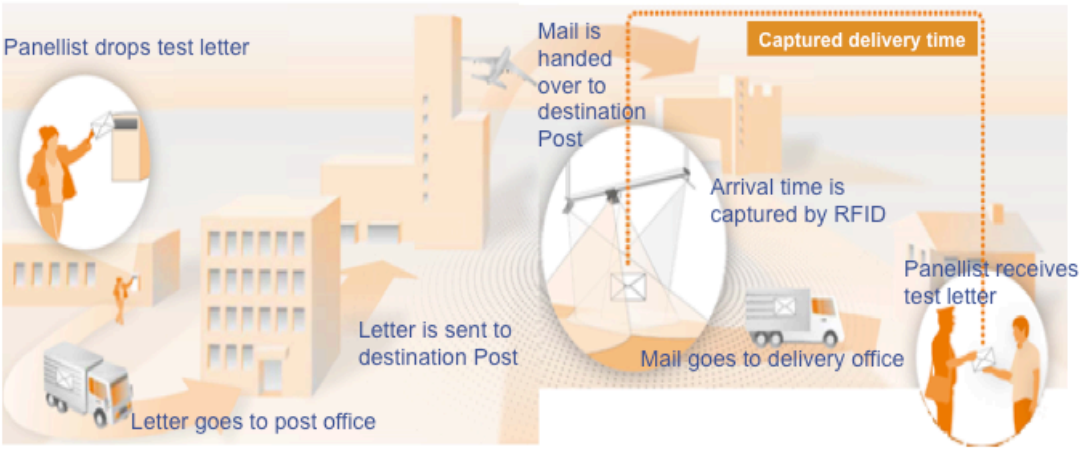


Figure 6.2: GMS quality monitoring process / source: document UPU-26 "GMS external Auditing 2014.pptm"

GMS Team (UPU, Bern CH)

1. Management
2. Quality Control, Performance & Analysis
3. Reporting
4. RFID Network: monitoring & maintanace
5. Administration & Finance

Panel Management Company (PMC)

QUOTAS GmbH (Hamburg, DE)

RFID system

1. GMS RFID Network (UPU, Bern CH)
2. International Post Corporation (Brussels, BE)
3. Lyngsoe Systems (Aars, DK)
4. Country specific

GMS IT system (GMS STAR)

Postal Technology Centre (UPU, Bern CH)

GMS members countries

UPU Designated postal operators (>100)

Figure 6.3: Stakeholders GMS measurement Solution / source: document UPU-27 "GMS system_Auditing_2-4 June 2014.pptx"

GMS Team

Antonio Caeiro **–** *Management*
Julius Tsuwi and Gonçalo Antão - *Quality Control, Performance & Analysis*
David Lozano - *RFID Network*
Geraldine Anne Krebs - *Reporting*
Stephane Vuillemin and - *Administration & Finance*

6.1.2 Introduction: Quotas

Quotas was founded in 2002 and is a market research company located in Hamburg – Germany. Quotas is specialized in the analysis of Quality of Service within the postal sector.
Quotas currently provides measurement services for the domestic operation of Deutsche Post. As part of this measurement study Quotas manages approximately 3000 panellists in Germany. Quotas further provides measurement studies for Danish Post, Royal Mail (UK), Norwegian Post, B-Post (Belgium), Swiss Post and La Poste (France). Currently Quotas employs approximately 60 employees.

In 2009 Quotas successfully competed in a tender process initiated by the Universal Postal Union (UPU) in order to participate as the contractor for the Global Monitoring System (GMS). Quotas is responsible for the management of the system, including the recruitment and training of participants sending and receiving test letters in more than 50 countries worldwide.

The measurement is based on RFID technology (active as well as passive). Each letter will contain a RFID tag – signalling the path of the letter through the world wide postal chain.

The pilot phase of the GMS measurement started at the beginning of August 2009, the full operational system was in place in 2010 – designed to be used to calculate terminal dues between the participating countries.

Besides working on the GMS Solution, Quotas have experience in other postal measurement systems, in some cases to measure (local) operational performance of postal organisations.

The responsibility of Quotas in the GMS Solution is focused on the following main areas:

- Panel set-up and management of panellists;
- Production of test mail, management of allocation and induction of test mail;
- Posting and arrival data for test mail;
- Validation and analysis of the implementation.

Source: Presentation UPU GMS

The GMS Solution is managed and operated by a dedicated team of Quotas.

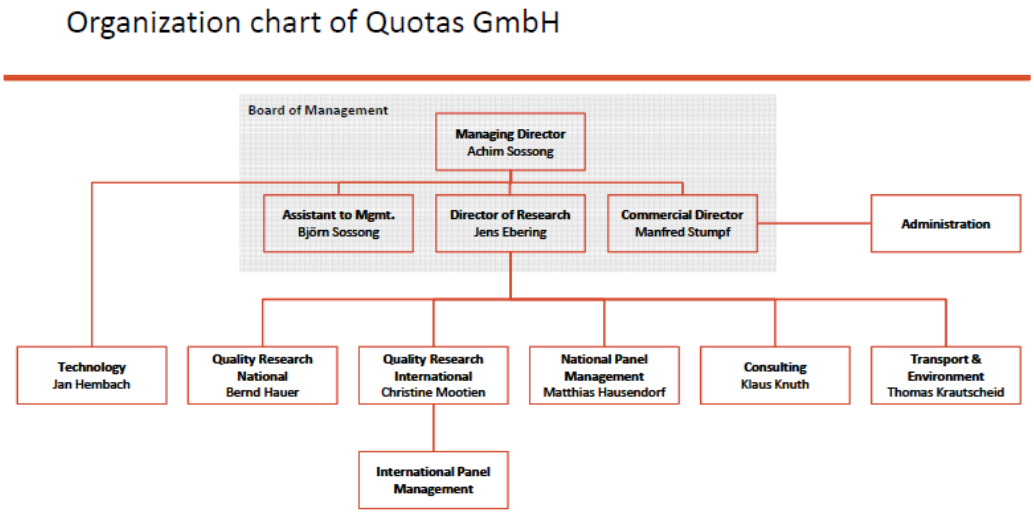


Figure 6.4: Quotas organisational chart / source: "Quotas-20 2014_Organization chart"

6.2 Audit approach / Audit review topics (ART's)

After preparation and analysis of the GMS Technical Design v1.1, an overview of the audit review topics was prepared together with a digital questionnaire (see appendix 11). The digital questionnaire was sent to UPU as well as Quotas prior to the visits in order to allow for preparation.

As part of the external audit, the audit team visited the Measurement Service Provider: UPU and the contractor: Quotas.

The following meetings were scheduled with UPU and Quotas:

- Quotas in Hamburg, Germany – 24th and 25th of June 2014
- Quotas in Hoistdorf, Germany – 25th of June 2014
- UPU in Berne, Switzerland: 2nd and 3rd of July 2014

During the meetings the following representatives were present:

Universal Postal Union (UPU)

- Antonio Caeiro – GMS Project Manager
- Julius Tsuwi – Quality Performance Expert GMS
- David Lozano – GMS RFID Network Expert
- Gonçalo Antão – Data Analyst GMS
- Geraldine Anne Krebs – GMS Reporting Analyst

Quotas (Hamburg / Hoistdorf)

- Jens Ebering – Director of Research
- Anja Seiffert – Quality Research Senior Project Manager International
- Susanne Tomaschewski - Quality Research Project Assistant
- Manfred Stumpf – Commercial Director Quotas GmbH / Executive Director BIP GmbH
- Bianca Moltzan – Head of the international department BIP GmbH
- Various operational representatives of Quotas in Hoistdorf - Germany

6.3 General topics reviewed during audited (UPU / Quotas)

6.3.1 Availability of documentation, operational procedures, working instructions and manuals, technical design, etc.

Within UPU various GMS related documentation is available for stakeholders within GMS. A binder was prepared, with various documentation, including manuals, procedures, the GMS Technical Design v1.1, etc. (in appendix 13, a document list of UPU and Quotas is included, indicating which documents were provided in hardcopy or shown in systems).
The following documents were illustrated to the audit team (hardcopy and via e-mail):

- Operational procedures manuals: received by email (not accessible online)
- GMS Technical Design: received in binder (hardcopy)
- STAR guidelines: accessible online (see Figure 6.5 below)
- Working instructions
- Contact information: available in GMS STAR
- Agreements and contacts

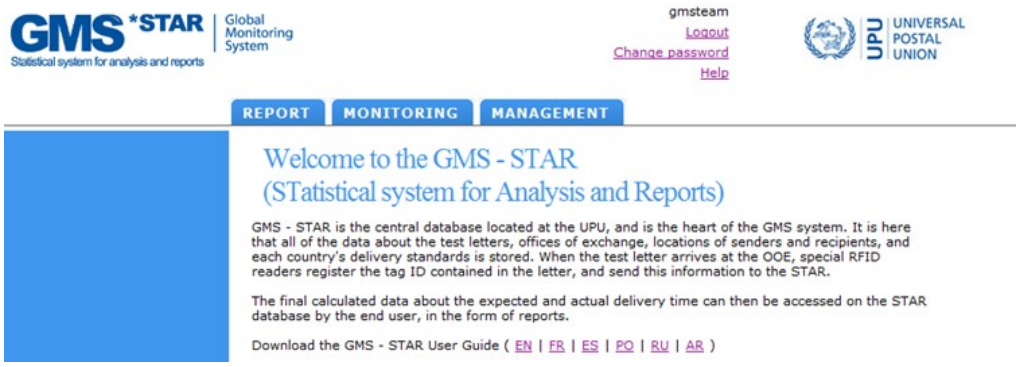


Figure 6.5: GMS-STAR User Guide accessible online in several languages

Within Quotas various documentation was provided at the site in Hamburg as well as in Hoistdorf (production location). At the production site operational procedures and manuals were available at the various workstations.
In the IT system: Quo WIKI all documentation is managed centrally and available for employees. An example demonstrated to the audit team is the procedure to order stamps for specific countries, validation procedures in case of long transit time, etc.
Other manuals are included, which are accessible for the Quotas GMS team.

6.3.2 Validate existence of personnel access control and authorisation procedures with regards to confidential information

All GMS team members within Quotas and people working on the GMS project have access to all information. The team working on the GMS project within Quotas is relatively small, approximately 2 – 3 employees. Employees from other projects within Quotas do not have access. Cost calculations, tenders, etc. are not accessible to the GMS team. The documentation is not separated between specific countries that people are working on, this is largely due to the scale of the team working on GMS.

No restrictions are in place with regards to printing procedures.
Quotas adopt strict procedures in terms of disposing confidential information. At the site in Hoistdorf confidential information is discarded in a metal, sealed container which is picked up by a specialised firm.

Within Quotas access control is managed through badges, providing access to the building.

Personnel access control and authorization procedures with regards to confidential information are managed within UPU. Different types of users have access to different applications.

The following IT-systems are accessible by the GMS team members. Different authorization roles are in place among the GMS team members.

- *NMS (Network Monitoring Measurement System)*
- *GMS STAR*
- *IT-network*

No procedures are in place for the disposal of 'confidential' paperwork. Allocation matrices (statistical design) cannot be printed. No print restrictions are in place, such as e.g. printing initiated by swiping a badge at the printer.
Country specific reports are printed for internal discussions. The confidential documents are locked and accessible on request to Antonio CAEIRO. These requests are subsequently documented in writing.

6.3.3 Validate the application of decisions on force majeure

Within UPU no force majeure cases were raised in the reporting period 2013.
Force majeure cases are notified to QS through the queries, after which UPU takes action. The cases and actions taken are documented in UPU MAX in the memo of the item. An example was provided to clarify the procedure, however this example was for the reporting period (2014) and not relevant for this audit.

6.3.4 Validate whether adjustments to data or QS results have been made following decisions by UPU bodies

Adjustments to data or QS results have been made (2013) following decisions of UPU for one specific country. The POC decision was to change the operational days and to recalculate the results. QLUG was the applicable user group. The request for the change (per email) was presented to the audit team and was documented sufficiently to be auditable.

Furthermore a sorting centre had been changed; as a result no items were processed for that specific centre. The items with a long lead-time were deleted from the measurement. No documentation is in place that describes procedures or actions to take, however the registration of this case was done in a memo.

6.3.5 Implementation of (previous) audit recommendations

UPU confirmed that previous recommendations have indeed been implemented.
One of the recommendations was provided as an example, which was to add contact details in site survey reports. Also Quotas confirmed to have followed up on previous recommendations.

6.3.6 Contingency planning

Although no actual *Contingency Planning* document is in place (at UPU or Quotas) describing various 'what if' scenarios, however several (individual) contingency measures were clarified.
The following contingency measures were explained by UPU in the event the MSP fails to meet the design parameters:

- In the implementation of the *Statistical Design* checks are built in to check if e.g. the minimum panelist rule is adhered to or a minimum of 1 - 2 items per week is received. Monitors are developed that indicate if a parameter is correctly in place.
- For *Panel Management* a reserve policy is explained by Quotas (based on turnover report).
- Sample shortfalls: if any disruption in the system exists action is taken immediately. Also overages (extra allocated items) are in place to mitigate risks.
- System recovery: the database and applications run at a datacenter.

- The RFID infrastructure for example is set up in such a way that in the event data connection to the central IPC network is lost, the RFID data is stored locally and can be processed at a later stage when the connection is re-established.

6.3.7 Summary of results

In summary UPU and Quotas have demonstrated well-organised professional working practices and motivated teams working on the GMS Solution. Relevant documents are available throughout the organisations and good practices in terms of access control; authorisation procedures and the use of confidential information are in place.

In terms of Contingency Planning, various (individual) examples were provided to the audit team of practical measures taken during 2013.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

6.3.8 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 6.1:
Although examples of practical contingency measures were provided, it could be recommended to draft a *Contingency Plan*, describing pro-actively which measures could be taken in the event of various 'what if' scenario's.

6.4 Working procedure (Quotas) in determining the GMS design

In order to determine the GMS (statistical) design Quotas developed their own template to apply the statistical design according to the GMS Technical Design (v1.1). The designs of all the relevant countries are calculated and integrated in one Excel file: *UPU Global Monitoring System Statistical Design & Manual 2014* (document Quotas-04 *"GMS Manual 2014 2.0.xlsx"*). Although the document states '2014' the excel file provides the statistical designs of 2013, which is the scope of this external audit.

The GMS (statistical) design is determined in the following 3 main steps:

1. **Step 1:** in the first step Quotas receives the following information from the UPU prior to the actual calculation of the design (documents UPU-35 *"GMS data collection"* and UPU-37 *"GMS questionnaire annual data"*). This input was received from UPU in August/September 2012;
    a. Real mail volumes per country;
    b. Questionnaire of the countries (relevant cities and information about population, national and regional holiday information, delivery standard information including CTT's and delivery method;

c. Information regarding the level of the respective countries.

2. **Step 2:** the information provided by UPU is checked by Quotas in order to validate the information provided by UPU;
3. **Step 3:** In the third step the actual statistical GMS design is calculated for all the countries.

In the section below the GMS design procedure is clarified in more detail, based on the Excel file. The GMS design procedure was developed by Quotas, based on the GMS Technical Design v1.1 and was validated with the UPU. This GMS design procedure was also validated with Tom Ryall prior to implementation.

i. For each country the number of permanent links (sending countries) are specified in the Excel file. The (cumulative) real mail volume of the sending countries is specified based on the information provided from the UPU. The total cumulative real mail volume is calculated for the total number of permanent links. If the coverage exceeds the 'expected coverage', the total number of valid items for all permanent links is increased accordingly. The total number of valid items is distributed according to the cumulative distribution of the real mail volume. If the number of items per link falls below the 'minimum number of items per link', this shortage is compensated and re-distributed according to the cumulative distribution of the real mail volume.

ii. After the permanent links the *Pool 1* countries and the distribution of items is calculated. This initial list of Pool 1 countries is determined taking into account the expected coverage of permanent links + Pool 1 countries. The result is an initial list of the Pool 1 countries. Subsequently the valid items are calculated by deducting the valid items for the permanent links from the total valid items for permanent links + Pool 1 (according to the GMS Technical Design v1.1). The remaining number of valid items are the items for *Pool 1*. In the final selection of the Pool 1 countries the following rules are applied:

   - A rotation rule of 4 years must be adhered to, i.e. the initial number of Pool 1 countries must be divided by 4;
   - The number of valid items per Pool 1 country may not exceed the minimum number of items per link

   As a result of the rules described above the Pool 1 countries are determined and the valid mail items are calculated by dividing the number of valid items for Pool 1 by the number of Pool 1 countries. The Pool 1 countries are selected annually taking into account a systematic procedure of rotation. This of course also depends on whether countries come up again as Pool 1 countries. The adjustment of valid mail targets for permanent links & Pool 1 is performed proportionally and not according to the formulae described in Annex B of the GMS Technical Design v1.1.

iii. The Pool 2 countries are selected by selecting 1 country per continent (Europe, Africa, the Pacific, Asia and the Americas) from the list of remaining countries. The allocation of valid mail target items for the pool 2 countries is determined by dividing the total number of valid items for Pool 2 by the 5 countries. No formal rotation procedure is performed, taking into account the selected countries from the previous years' design. In the selection of the Pool 2 countries efficiency- and cost management is taken into account.

iv. Subsequently the cities are selected according to the minimum number of cities to be covered according to the GMS Technical Design v1.1. Once the minimum number of cities is selected the 25% check is performed. This check determines whether the volume of population of the cities exceeds 25% of the national population. If this isn't the case another city should be added until either the threshold of 25% is exceeded or the maximum number of cities is reached.

v. Finally the total valid mail items and the total number of panellists per city are determined. This allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also the minimum number of panellists per city is respected and if required adjusted accordingly. Furthermore a rule is taken into account of a maximum number of items per panellist of 240 per year. Finally a structural number of reserve panellists are taken into account per country level of approximately 10% (level A: 5 reserves, level B: 4 reserve. Level C: 3 reserves, level D: 2reserves and level E: 1 reserve).

vi. Besides the designs, the following information is provided in the Excel file: *UPU Global Monitoring System Statistical Design & Manual 2014* :

   a. A matrix describing the valid mail items for all mail flows and a matrix of overages of all mail flows (gross sample sizes). The overages are calculated per link based on estimated values of the valid mail rate (based on historical or expected data);
   b. KPI reports (e.g. VMR, VOT, AOT, etc.);
   c. Contents of weekly status report;
   d. Overview of holidays per country;
   e. Sample design parameters;
   f. Data collection and control procedures;
   g. Allocation and test item production overview;
   h. Panellist instructions training.

vii. After the entire *UPU Global Monitoring System Statistical Design & Manual 2014* for all the countries has been completed the total design is provided to UPU and reviewed before being finalised.

6.5 Realisation of statistical design according to GMS Technical Design v1.1

In order to assess the GMS design procedure (execution against the GMS Technical Design v1.1) at UPU / Quotas 3 different statistical designs were reviewed, in collaboration with the Quotas team in some detail as part of the external audit. The audit team selected the 3 different statistical designs at random. The following statistical designs were reviewed as part of the audit:

- Australia (level A)
- Switzerland (level B) including *Specific Report*
- Brazil (level B)

As describing the specific details of these respective designs or adding the designs to this audit report, would reveal sensitive and confidential information, the section below provides a summarized assessment of the reviewed designs against the GMS Technical Design v1.1.

6.5.1 Statistical design review Australia (Level A)

For the calculation of the statistical design the Excel file: *UPU Global Monitoring System Statistical Design & Manual 2014* is used as described above.

i. Australia is a level A country, which requires 16 countries that represent the permanent links. The permanent link countries represent more than 80% of the total inbound mail volume. The total number of valid items is adjusted accordingly. The valid mail items are distributed over the permanent link countries and adjusted in case certain links fall below the minimum of 125.

ii. The *Pool 1* countries are selected by ensuring that the cumulative mail volume exceeds 95%. A total of 7 additional countries are required with a cumulative mail volume of 95,25% (permanent + Pool 1). Subsequently the valid items are calculated by deducting the valid items for the permanent links from the total valid items for permanent links + Pool 1 (according to the GMS Technical Design v1.1). The remaining number of valid items are the items for *Pool 1*. In the final selection of the Pool 1 countries the following rule is applied:

    - A rotation rule of 4 years must be adhered to, i.e. the initial number of Pool 1 countries must be divided by 4;
    - The number of valid items per Pool 1 country may not exceed the minimum number of items per link

    As a result 3 Pool 1 countries are selected. 2 countries would have resulted in more items per Pool 1 country than the minimum number of items for the permanent link countries (125). The Pool 1 countries are selected annually taking into account a systematic procedure of rotation. The adjustment of valid mail targets for permanent links & Pool 1 is performed proportionally and not according to the formulae described in Annex B of the GMS Technical Design v1.1.

iii. The Pool 2 countries are selected by selecting 1 country per continent (Europe, Africa, the Pacific, Asia and the Americas) from the list of remaining countries. The allocation of valid mail target items for the pool 2 countries is determined by dividing the total number of valid items for Pool 2 (500) by the 5 countries. No formal rotation procedure is performed, taking into account the selected countries from the previous years' design. In the selection of the Pool 2 countries efficiency- and cost management is taken into account.

iv. Subsequently the 7 cities are selected according to the GMS Technical Design v1.1. With the data regarding population of the cities with respect to the total population of Australia the 25% check is performed ensuring that only 7 cities are required as these 7 cities (minimum amount) represent far more than 25% of the population.

v. Finally the total valid mail items and the total number of panellists per city are determined. This allocation is performed based on the relative percentage of the

population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also the minimum number of panellists per city is respected (3 for level A) and if required adjusted accordingly. Furthermore a rule is taken into account of a maximum number of items per panellist of 240 per year.

6.5.2 Statistical design review Switzerland (Level B) / standard design

For the calculation of the statistical design the Excel file: *UPU Global Monitoring System Statistical Design & Manual 2014* is used as described above. For Switzerland the standard design is calculated as well as the design according to the specific report. In the section below the standard design will be described first, followed by the design according to the specific report.

i. Switzerland is a level B country, which requires 10 countries that represent the permanent links. The permanent link countries represent more than 70% of the total inbound mail volume. The total number of valid items is adjusted accordingly. The valid mail items are distributed over the permanent link countries and adjusted in case certain links fall below the minimum of 100.

ii. The *Pool 1* countries are selected by ensuring that the cumulative mail volume exceeds 93%. A total of 6 additional countries are required with a cumulative mail volume of 93,14% (permanent + Pool 1). Subsequently the valid items are calculated by deducting the valid items for the permanent links from the total valid items for permanent links + Pool 1 (according to the GMS Technical Design v1.1). The remaining number of valid items are the items for *Pool 1*. In the final selection of the Pool 1 countries the following rule is applied:
    - A rotation rule of 4 years must be adhered to, i.e. the initial number of Pool 1 countries must be divided by 4;
    - The number of valid items per Pool 1 country may not exceed the minimum number of items per link

    As a result 2 Pool 1 countries are selected. The Pool 1 countries are selected annually taking into account a systematic procedure of rotation. The adjustment of valid mail targets for permanent links & Pool 1 is performed proportionally and not according to the formulae described in Annex B of the GMS Technical Design v1.1.

iii. The Pool 2 countries are selected by selecting 1 country per continent (Europe, Africa, the Pacific, Asia and the Americas) from the list of remaining countries. The allocation of valid mail target items for the pool 2 countries is determined by dividing the total number of valid items for Pool 2 (285) by the 5 countries. No formal rotation procedure is performed, taking into account the selected countries from the previous years' design. In the selection of the Pool 2 countries efficiency- and cost management is taken into account.

iv. Subsequently the 7 cities are selected according to the GMS Technical Design v1.1. With 5 cities the population stayed below the 25% rule. Even with 7 cities the 25% rule was not met. However 7 cities are the maximum number of cities allowed.

v. Finally the total valid mail items and the total number of panellists per city are determined. This allocation is performed based on the relative percentage of the

population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also the minimum number of panellists per city is respected (3 for level A) and if required adjusted accordingly. Furthermore a rule is taken into account of a maximum number of items per panellist of 240 per year.

6.5.3 Statistical design review Switzerland (Level B) / Specific Report

As mentioned above Switzerland has opted for the use of a *Specific Report* in 2013 besides the use of the standard design. In the specific report only *Terminal Dues* members are selected (as sending countries). In 2013 UPU indicated that Switzerland and Japan opted to make use of the *Specific Report*.

i. For the permanent link countries no changes are made, as all permanent links for Switzerland already are Terminal Dues countries. However the cumulative percentages of the permanent links does increase because the base changes (non Terminal Dues countries are now left out). In this case the volume of the permanent links exceeds the threshold of permanent and pool 1 combined. The mail items are calculated taking the cumulative volume in to account and distributed over the permanent links (taking the minimum number of items per link in to account).

ii. For the specific report no *Pool 1* countries are selected.

iii. The Pool 2 countries are selected by selecting 1 country per continent (Europe, Africa, the Pacific, Asia and the Americas) from the list of remaining *Terminal Dues* countries. Because no African *Terminal Dues* country exists, only 4 *Pool 2* countries are selected. The allocation of valid mail target items for the pool 2 countries is determined by dividing the total number of valid items for *Pool 2* (285) by the 4 countries.

iv. Subsequently the 7 cities are selected according to the GMS Technical Design v1.1, similarly as with the standard design. With 5 cities the population stayed below the 25% rule. Even with 7 cities the 25% rule was not met. However 7 cities are the maximum number of cities allowed.

v. Finally the total valid mail items and the total number of panellists per city are determined. This allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also the minimum number of panellists per city is respected (3 for level A) and if required adjusted accordingly. Furthermore a rule is taken into account of a maximum number of items per panellist of 240 per year.

6.5.4 Boosted report Switzerland – Level B

In the case reviewed by the audit team the Boosted Report of Switzerland was evaluated. The Boosted Report is calculated by adding the *Standard Design* and the *Specific Report* together. The

result is the *Boosted Report.* In the case of Switzerland 6% of additional mail items were calculated according to this report.

6.5.5 Statistical design review Brazil (Level B)

For the calculation of the statistical design the Excel file: *UPU Global Monitoring System Statistical Design & Manual 2014* is used as described above.

i. Brazil is a level B country, which requires 10 countries that represent the permanent links. The permanent link countries represent more than 70% of the total inbound mail volume. The total number of valid items is adjusted accordingly. The valid mail items are distributed over the permanent link countries and adjusted in case certain links fall below the minimum of 100.

ii. The *Pool 1* countries are selected by ensuring that the cumulative mail volume exceeds 93%. A total of 5 additional countries are required with a cumulative mail volume of 93,03% (permanent + Pool 1). Subsequently the valid items are calculated by deducting the valid items for the permanent links from the total valid items for permanent links + Pool 1 (according to the GMS Technical Design v1.1). The remaining number of valid items are the items for *Pool 1*. In the final selection of the Pool 1 countries the following rule is applied:

   - A rotation rule of 4 years must be adhered to, i.e. the initial number of Pool 1 countries must be divided by 4;
   - The number of valid items per Pool 1 country may not exceed the minimum number of items per link

   As a result 3 Pool 1 countries are selected. 2 Pool 1 countries would have resulted in more items per Pool 1 country than the minimum number of items for a permanent flow. The Pool 1 countries are selected annually taking into account a systematic procedure of rotation. The adjustment of valid mail targets for permanent links & Pool 1 is performed proportionally and not according to the formulae described in Annex B of the GMS Technical Design v1.1.

iii. The Pool 2 countries are selected by selecting 1 country per continent (Europe, Africa, the Pacific, Asia and the Americas) from the list of remaining countries. The allocation of valid mail target items for the pool 2 countries is determined by dividing the total number of valid items for Pool 2 (283) by the 5 countries. No formal rotation procedure is performed, taking into account the selected countries from the previous years' design. In the selection of the Pool 2 countries efficiency- and cost management is taken into account.

iv. Subsequently the 6 cities are selected in order to satisfy the 25% rule according to the GMS Technical Design v1.1.

v. Finally the total valid mail items and the total number of panellists per city are determined. This allocation is performed based on the relative percentage of the population of a city with respect to the total population of the selected cities for the inbound DO (not with respect to the total population of the country). Also the minimum number of panellists per city is respected (3 for level B) and if required adjusted

accordingly. Furthermore a rule is taken into account of a maximum number of items per panellist of 240 per year.

6.5.6 Summary of results

In summary the UPU and Quotas team have a clear understanding of the requirements as specified in the GMS Technical Design v.1.1. Although there are differences in the calculation of the design between Quotas and UPU, it is the assessment of the audit team that the designs calculated by Quotas are compliant with the GMS Technical Design v1.1. Clear procedures are in place for the systematic rotation of countries in Pool 1.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

6.5.7 Recommendations

In the section below the following recommendations have been made by the audit team.

Recommendation 6.2:
In the assessment by the audit team a slight inconsistency was found between the calculated design (excel file from Quotas) and the uploaded design in the GMS STAR system of UPU. It would be recommended to ensure that the final version of the design is loaded and actualised in the operational GMS system.

6.6 Panel Management

6.6.1 Recruitment of panellists

Dropper and receiver panellists are recruited by Quotas.

6.6.1.1 Recruitment of dropper panellists

Quotas maintains three different levels (status) for dropper panellists, which are Professional-, Semi-professional- and Private dropper panellists with the following characteristics:

- Professional droppers are active in France, USA, UK and Germany and are responsible for the production of test items. For these countries 1 dropper per DO/OE is in place.
- Semi-professional droppers are active in for example Kuwait, Lebanon and Brazil with production activities as they are provided with PDF files (to be printed). Two droppers are in place per DO/OE due to the 6 letter limit.
- Ordinary (e.g. private) droppers are provided with test items by Quotas (production facility BIP where the items are produced centrally). Two droppers are in place per DO/OE due to the 6 letter limit. The stamps are either provided by Quotas together with the rest of the test items or bought by the droppers for which a payment in advance is made.

The figure below demonstrates the use of the different levels:

Final Version 2013	
Outbound	
Operator/Country	**Status**
Germany	Professional
Great Britain	Professional
France	Professional
Switzerland	Individual
Netherlands	Individual
Belgium	Individual
Sweden	Individual
Taiwan (Republic of China)	Individual
Viet Nam	Individual
Macao, China	Individual
Pakistan	Individual
UAE	Individual
Russian Federation	Individual
Kuwait	Semi-Professional
Bahrain	Semi-Professional
Lebanon	Semi-Professional
Egypt	Individual

Figure 6.6: list of dropper panellists and status/ source: document Quotas-01 "A3_Status Droppers.exe"

The test items are allocated on a weekly basis, which is checked on format (C4/C6), posting size (i.e. number of letters to post and distribution among panellists), etc. The schedule for the items to be sent is demonstrated, which shows the availability of the panellists that contains the panellist' ID for integrity purposes (panellists on holidays are excluded for a particular weekly allocation). As an example Belgium is presented with a total of 15 allocated droppers that each send 6-8 items per week (adding up to a total of 200 items sent per two weeks). By means of a pivot table in excel (based on allocation "tape"/log-file from UPUMAX yearly allocation), a check is performed with regards to bundling of items to assure receiver panellists do not receive two items from the same country at the same day and alerts are generated in case items are not allocated properly to a city.

The schedule is used to determine the availability of droppers and to check whether the droppers have sufficient items allocated. Data is generated from the system UPUMAX, which contains a sheet summarizing information such as item-ID, receiver, sender, planned receiving date, production date, etc.). Private and public holidays are taken into account.
With regards to test letter preparation, clear procedures per level of dropper are in place. For professional and semi-professional dropper panellists, PDF files are created and can be downloaded online. Except Germany, for which items are printed by means of an uploaded "tape" (not in scope for GMS). The procedures also includes the instructions for the purchase of stamps in case of central production (see the levels of droppers described above).
Lead times are taken into account of 1-6 weeks, depending on the geographical location of the dropper panellist.

6.6.1.2 Recruitment of receiver panellists

Receiver panellists recruited by Quotas are mostly private individuals. Business individuals are considered as private panellists receiving mail items at the workplace, due to practical considerations (e.g. Saudi Arabia). The pre-requisite is, that the mail is sent directly to the receiving panellist, without interference of a third party delivery company. If a colleague finds out that someone with the same company is receiving test items this is not considered to be a problem, while it could even increase the quality because the letter is given internal priority.

The number of receiver panellists (3 to 50) is demonstrated to the auditors for various countries and complies with the GMS Technical Design v1.1 (e.g. Brazil and Switzerland) and registered in the weekly status report delivered to UPU. If for a limited period of time a too small panel is in place, the shortage is covered by the other panellists. The diagram below presents figures about the panel overview for Australia in January and February 2013:

Level	Inbound DO	City	Target number of panellists (with Reserve Panel)	Target number of panellists (without Reserve Panel)	Jan	Feb
A	Australia	**Sydney**	15	14	16	16
		Melbourne	14	13	15	15
		Brisbane	8	7	8	8
		Perth	7	6	7	7
		Adelaide	5	4	5	5
		Gold Coast	3	3	3	3
		Canberra	3	3	3	3
		Total	55	50	57	57

Figure 6.7: a snapshot of the 2013 panel overview / source: document Quotas-13 "Panel Overview 2013.xlsx"

The spread of receivers in the city is demonstrated (e.g. Brazil) and seems to be correctly applied (UPU provides the spread analysis to Quotas). The city and regions are selected to ensure the different postal codes are applied. E.g. Japan is split into 10 delivery zones and only 5 are covered by Quotas as it is not required by UPU to cover each delivery zone with a panellist, as long as at least a certain number is represented in a specific city.

6.6.1.3 Recruitment process of receiver panellists

The recruitment process for receiver panellists is demonstrated by means of the presentation *"Receiver Panel Recruitment"*.

A potential panellist shows interest (by means of advertisements) in becoming a panellist by fulfilling the online registration, after which Quotas performs the first address check to validate the address is not a mobile home or vacation address. As soon as the address is approved, the potential panellist receives a confirmation by means of an invitation to fill in an online questionnaire, which is required to perform an eligibility and second address check (confirmation by panellist).

The questionnaire is provided in the languages English, German, French and Spanish and consists of several elements to determine eligibility of the panellist. The questionnaire kicks off with a notification if the potential panellist is willing to participate in this survey.

- The address is validated and the panellist must indicate the type of mail delivery applicable (e.g. front door, private- or company P.O. Box)
- Determination of the use of an home antenna, by means of the availability of a letterbox or slot in the front door (to hide the antenna)
- An indication of the frequency and expected time needed to empty the mail box has to be provided by the panellist ("I check my letter box daily"). A validation with regards to this question is integrated, as the panellist has to tick off those boxes that represent a specific day of the week ("I don't empty my letter box on Sunday's, there is no mail on Sunday") on which the letter box can be emptied or not

- The confidentiality of the personal data is challenged by an indication if a family member is working for a DO
- Personal data is provided (age >18, employed, etc.)
- The latest mail delivery time has to be indicated. Letter box must be emptied always at the end of the day, unless the postman has physically noticed dropping the mail
- In case of a professional P.O. Box, it must be indicated who empties the mailbox (self, colleague, another person (no colleague) or sorting centre and if other companies use the P.O. Box). A colleague is allowed and not considered a risk, a sorting centre on the other hand is not considered suitable

Upon receipt of the questionnaire, the panel management checks the address again (postal code and district). When a panellist is considered to be eligible, a manual (written document) is made available for passive as well as semi-active transponders. The manuals are used as a "dummy transponder" as the panellist is required to provide feedback when the manuals are received (first test). The manuals are also available on the panellist' personal website and available in the languages selected by Quotas. The results generated by the questionnaire can be extracted to Excel for analysis purposes.

After the panellist has confirmed the receipt of the manuals, the panellist is added and included in the panel. If irregularities occur, individual training is provided.

6.6.1.4 Panel management

The panel is maintained and managed with the help of the QuoPaint system by two panel managers, who are able to communicate in German, English, French, Spanish and partly Japanese (English is the main language for Arab countries). The panel managers are dedicated to GMS and manage a total of 76 countries for which approximately 120.000 GMS items (passive and semi-active) are distributed.

In QuoPaint, the detailed information of the panellist is available and demonstrated to the auditors. The following information elements are maintained in the system:

- The contact details of all panellists
- Holiday plans of the panellists
- Email conversations and calls are saved
- Notifications towards panellists
- Questions asked by panellist (for example; the request for bags to return transponders)

Back-up panellists are also maintained in QuoPaint and are treated as normal panellists as they receive test letters once in a while and are added to the holiday plan. A holiday plan is available for the overall panel management. QuoPaint shows a complete list of all individual panellists, including the provided holidays that panellists entered online and manually checked.

QuoPaint provides also access for the panellists for data entry purposes, which is provided by means of a web interface (personal website only visible for that specific panellist). Holiday notifications must be provided at least 6 weeks in advance. When a panellist forgets to enter the holiday data, the panellist is still required to do so. Although late registration is problematic for the process, it is still important for validation purposes. Public holidays are not in the same panel database, but taken into account for allocation. The procedure for back-up panellists is set at a pre-determined percentage, which is determined based on country specific level:

- Level A: 10% back-up ratio (5 back-up)
- Level B: 13% back-up ratio (4 back-up)
- Level C: 20% back-up ratio (3 back-up)
- Level D: 22% back-up ratio (2 back-up)
- Level E: 33% back-up ratio (1 back-up)

Email addresses and passwords are maintained per panellist. Also the language can be selected by the panellist to choose the preferred language for communication purposes. Parameters are demonstrated for checking purposes in the allocation programme. These rules help to fill in the correct information. Panellists with mobile homes are excluded from the measurement as this information is checked by Quotas.

A weekly check is performed if a panellist is providing data on time. If not, the panellist is contacted to confirm the data or test items. If the panellist still does not responds, he/she will get the status "under control" and is taken out of the allocation for the next period.
The database maintains panellists that are active, non-active/reserves (need to go to training and will receive all data as a newbie), deleted. Another list is maintained that lists all registered people.

The panel status report is a snapshot of a particular week and shows the number of target, allocated, active and controlled panellists. A comment column indicates when a recruitment process is ongoing. From the panel status report, an exclusion list of panellists can be generated by selecting the corresponding status 4. The status as maintained in the system are:

- Status 0: New Panellist, not included in any measurement yet;
- Status 1: New panellist, used for ad-hoc and non-GMS measurements;
- Status 2: Active panellist;
- Status 3: Reserve panellist, currently not taking part (requires re-training to become part again);
- Status 4: Deleted panellist, are flagged to NOT become a panellist (anymore);
- Status 5: Controlled panellist.

An example snapshot of a panel status report is shown in the diagram below:

1. Status Report - Panel Status Page 1

Panel Status

Inbound DO	City	Target number of panellists (with Reserve Panel)	Target number of panellists (without Reserve Panel)	Number of active panellists	Number of panellists currently under control	Total number of panellists	Percentage of currently active panellists	Comments
Italy	Roma	9	8	10	0	10	125%	
	Milano	6	5	6	0	6	120%	
	Napoli	5	4	5	0	5	125%	
	Torino	5	4	5	0	5	125%	
	Palermo	3	3	3	0	3	100%	
	Genova	3	3	3	0	3	100%	
	Bologna	3	3	3	0	3	100%	
	Total	34	30	35	0	35	117%	
Switzerland	Zürich	10	9	11	0	11	122%	
	Genève	5	5	5	1	6	120%	
	Basel	5	4	6	0	6	150%	
	Lausanne	4	3	4	0	4	133%	
	Bern	4	3	3	0	3	100%	current recruitment
	Winterthur	3	3	4	0	4	133%	
	Luzern	3	3	2	1	3	100%	current recruitment
	Total	34	30	35	2	37	123%	

Figure 6.8: Snapshot of a Panel status report UPU GMS 2013 / Source: document Quotas-17"Status Report UPU GMS 2013.xlsx"

Quotas mentions that for some countries it is difficult to properly recruit good performing and reliable panellists. The main "item drop point" is a (front) door mail box, but also P.O. Boxes are used (South Africa and Saudi Arabia use both methods to receive mail).

6.6.2 Training of panellists

No documented training programme exists, but rather manuals for active or passive tags that are available in different languages (documents Quotas-05 *"GMS Panel Training English passive transponders.pdf"* and Quotas-06 *"GMS Panel Training English semi-active transponders.pdf"* in the document list). In the case that during the validation of the training some issues are still unsolved, additional (individual) training will be provided by email or phone, i.e. based on irregularities (reactive training). Panellists are monitored based on the items entered relating to performance.

The manuals are available in the main languages (with the help of international students, manuals are made available in almost all languages of the member countries) and do not include instructions with regards to irregularities or integrity cases (only the "green flow" is described), but panellists are trained to contact Quotas in case of an irregularity (considered things or events that differ from normal posting activities) and are re-trained accordingly. An example explained by Quotas is that some of the receiver panellists were contacted by the dropper panellist to fill in the date correctly. Those receivers informed Quotas and got replaced. Irregularities in the data is followed-up by Quotas.

Pre-defined proficiency levels are not in place as panellists cannot be generally measured (country dependent). Instead, the minimum valid mail rate (VMR - percentage of confirmed received items vs. posted items) is used to measure the panellist, which depends on the country (document Quotas-02 *"A16 - panel proficiency levels.pdf"*). For a European country a VMR of 80% is considered sufficient, for developing countries a lower percentage is considered sufficient, as these countries just do not receive all items due to several reasons. VMR is compared with panellists in the same country or area, which also applies for the Return Rate (% of confirmed receipt against posted letters), the On-time Rate (% of items are delivered on time) and the amount of deleted items after receiving registration. A minimum level is required and panellists are not allowed to go under that level, which is compared to the average panellist performance in the same country or city. Time rates on city level and deleted items due to panellist' actions are taken into the measurement as well. The KPI "data recency" ratio is another measurement KPI used by Quotas.

General rules to measure panellists are hard to maintain due to the high variety of panellists and the risk of losing many panellists due to measurements not correctly performed.

Measurement of the panellist' understanding of the tasks is performed by continuously measuring performance (validation). Panellists are monitored carefully and special attention is given to new panellists. With regards to semi-active transponders, new panellists receive only dummy transponders in the first two weeks. The duration of this test depends on the country and receive/return performance of the panellist. If the panellist actually returns the dummy transponders, the panellist is included in the measurement.

Control measures to ensure comprehension and performance of panellists are in place and is also performed by means of validations (as part of panel management). Validations are run based on pre-

defined rules (wrong ID of test item, date of receipt is (not) equal to the sending date, etc.) and are used to determine if a panellist has a sufficient understanding of the tasks that have to be performed. If problems are detected on a frequent basis and patterns are becoming visible, panel management will decide to re-train the panellist. Panellist with bad behaviour can be put under the status "control" (Quotas team is allowed to take this measure). Validation codes are presented to the auditors, showing the criteria that leads to further investigation.

A second control measure performed by the panel managers is a manual process, which is performed on a weekly basis to check if the panellist is providing data. If not, the panellist will be contacted accordingly. The *"TN Kontrolle UPU GMS"* sheet is used and contains the necessary information to perform the controlling activities appropriately. It is planned to automate this process by adding a formula that compares specific dates.

User queries (panellist or item related) that are requested by DO's are also performed. An example was demonstrated to the auditors that includes data on item-ID, panellist, topic, receive day, last inbound read and actions taken (e.g. to exclude items or to maintain the items as valid in the system). The query is analysed and the DO is advised accordingly by Quotas. The validation process is described in paragraph 6.11 Quality control & validation.

6.6.2.1 Training of dropper panellists

The training materials (manual and FAQ in hardcopy) for the different type of dropper panellists is available, which includes instructions for letter preparation, dropping, recording test items and transmitting data (documents Quotas-07 *"Overview of survey details private droppers (a)"*, Quotas-08 *"Overview of survey details private droppers (b)"* and Quotas-09 *"Overview of survey details droppers (c"))*:

- Private droppers: biweekly posting supply (only to frank themselves);
- Private droppers: biweekly posting supply (all ready to be posted);
- Semi-professional droppers: have a smaller amount of letters, but produce their own letters;
- Professional droppers: produce the letters and the letter shops are visited by Quotas for training.

China requires special envelopes to be used, because normal ones are not accepted at the post office. Envelopes are important from China and ordered in advanced. The envelopes are provided by the local panellists and not by the DO.

With regards to the semi-professional droppers an example was provided. The Arab panellists were visited and selected after the visit (currently local training to new panellists applies without Quotas being present).

The posting date is entered on the website. The timestamp is the most important data required (location or mailbox is less important to report).

The downloadable files are only visible for the dropper panellist for whom the documents are mentioned. In case of irregularities, the panel management team is contacted. Droppers are obligated to assure that dropping of items is performed before the last possible dropping time, so the mail items are included in that particular day.

A quality check is in place to measure the performance of droppers. Upon confirmation of receipt of the test item, the receiver panellist has to indicate the address was correct and readable. The receiver panellists are requested to keep the letter for a period of at least three months, as photo's/scans are regularly requested from receivers across the panel. The results are registered.

The producers of test letters (semi- and professional senders) are in the possession of a scanner and software to associate the item-ID to the transponder-ID, which is described in the manual "QuoAssign". For semi-active and passive tags, the first digit of the barcode determines the type of transponder ("A" represents a passive transponder and "B" represents a semi-active transponder), which is automatically checked by the software "QuoAssign" and alerts are generated in case an item is associated to the wrong transponder. The results are real-time transferred to the main server. The receiver panellist needs to confirm that the linked tag is included in the envelope, if different the last 6 digits must be typed in.

6.6.2.2 Training of receiver panellists

The training programme for receiver panellists is available in the manuals described in the above section and available online and as a hardcopy (document Quotas-09 *"Overview of survey details private droppers"*). The manual describes that only semi-active tags have to be returned (2 per ordinary envelope, no use of "chicken-bags") on a regular basis, except for Morocco where problems are reported and transponders are returned under special conditions (in batches). The passive transponders can be disposed after three months. The systems registers the returns.

Sometimes an item is returned to the sender panellist, who will contact Quotas accordingly, upon the data and status of the receiving panellist (e.g. dropped out) is checked.

As described in the above paragraph, (receiver) panellists are required to communicate any irregularities with regards to integrity cases, but cases in relation to national issues (e.g. strike and unable to pick up mail items) have to be communicated as well (not provided in manual).

The contact list has been demonstrated already and all panellists have a dedicated person to contact, which is one of the two panel managers. Quotas can be contacted by means of a central email address (panel@quotas.de). In addition, a "WhatsApp" account is available to contact Quotas. Quotas also has a Facebook account for communicating purposes, but this is only used for ads and not for data reporting, FAQ's, etc.

Upon data entry regarding the receipt of a test items, the condition of the letter (damage) is indicated by the receiver panellist (which is a last question when the data is entered by means of the online tool).

6.6.3 Duties of panellists

6.6.3.1 Duties of sender panellists

Information regarding item number, transponders to be used, address and postage required are specific per country and documented in the instructions with the following details:

- Stamp (type and position)
- Priority/airmail sticker (yes/no and position)
- Receiver address label position

- Sender address (yes/no).

To ensure that the duties of dropper panellists are adequately performed, Quotas checks the data randomly and could request photo's/scans of the produced test items. A notification is sent if PDFs are not downloaded (applicable to (semi-)professional droppers). Validation of data is performed to discover irregularities.

The UPU GMS tape (QuoPrima) printer programme generates PDFs and posting lists. Download records of the PDF files are demonstrated to the auditors. In QuoPrima the latest “tape” is selected, followed by a download of all the items produced for that week. The sender number and a country is selected afterwards, and the files are printed, which means that the PDF files are generated. This process has been demonstrated. Several letters are included into one file. The posting list is demonstrated, that indicates the sending schedule and includes the planned date as well as the possibility to note the actual date and time. The address labels are included in the document as well. Zip-files are created and posted online for semi-professional panellists.

6.6.3.2 Duties of receiver panellists

The received item data is entered and captured online. The identification code is entered first and a (real-time) validation question is asked. Transponder data is entered afterwards. If no date is entered, an alert message is shown to the panellist. Also a message is generated when a date is entered that doesn’t correspond to the send date (real-time validation). The receiver panellists has to confirm that the linked tag is included in the envelope and in case of deviations, the panellist has to type in the last 6 digits of the item.

With regards to electronic data capturing, some of the receiver panellists have an antenna close to the mailbox to capture data from the transponder. The battery lasts for one year and once a day a SMS message containing the data is sent. The antenna is covered from sight in a secured box.

Passive transponders do not have to be returned by the receivers. Also the test letter does not have to be sent back to Quotas, but must be archived for at least three months at home. The exact date and time of receipt are written on the envelope as receivers do not have a registration list.

Daily checks are performed by the panel managers for item codes, etc. and are actively informed of follow-up actions to be taken. The experience of Quotas is that panellists normally respond adequately to emails. If something is urgent, the panellist is contacted by phone.

6.6.4 Panel maintenance

The validation for continued standardized assessment is sufficiently covered and is performed by means of the validation and control for irregularities (described in paragraph 6.6.2 Training of panellists). The standard procedure for detecting failing panellists is re-training (an individual email with specific instructions), which means informing the panellist about the failure and how to perform this action correctly in the future (example of a country was demonstrated of emptying the letter box too early).

No internal evaluation reports are in place, but system checks and memos are used. Feedback from panellists is used to improve the individual training (country specific) and not necessarily to update documentation.
The procedure to remove panellists from the measurement depends on the reason of exclusion. If, for example, a panellist is being removed due to being irresponsive or just stops communicating, nothing is done in particular. If a panellist informs Quotas to terminate participation in the measurement study, the panellist is ramped down. The reason for exclusion also determines the data removal or not.

An incentive programme is in place, based on the amount of items received, but can differ between country to country or city to city. Rewards are a token of gratitude and panellists may receive cash (7-20 dollar per month), gift certificates (Amazon.com for example) or can donate.
With regards to contingency planning, an escalation plan is in place for recruiting panellists:

1. Online adds as Facebook or Google is used to find panellists (e.g. “working from home”)
2. Recommendations of current panellists
3. Offline adds as local newspapers to advertise for panellists
4. Direct mailing (looking for emails and calling them) / expat contacts
5. Local field services are contacted to recruit panellists (use of experts)

6.6.5 Summary of results

Three types of dropper panellists are in place and, depending on the status, are responsible for the production of test letters. The receiver panellists are private. Business panellists are considered as private panellists receiving test items at their employer’s address.

Panel management and requirements seem to be performed according to the GMS Technical Design v1.1. The contact details are in place and receiver panellists are spread through the city. As the preference is to use normal (street) mail boxes, P.O. Boxes are used properly.

The training manuals for receiver panellists do not include instructions with regards to irregularities, but panellists are trained to contact Quotas in case of an irregularity (considered those things or events that differ from normal posting activities). Description of an irregularity is subjective.

Communication regarding panellists towards the UPU does not reveal names and addresses of the panellists for integrity purposes.

Documentation regarding instructions, questionnaires and information provided on the website is available in several languages. Also the panellist section of QuoPaint is available in a preferred language of the panellist.

Data input is gathered in QuoPaint, where panellists are able to enter data with regards to the test items, holidays and communication with panel management.

The items validation process and control measures applicable are performed manually in QuoPaint.

6.6.6 Recommendations

Recommendation 6.3:

Many droppers are in place for specific countries (i.e. 15 for a specific country was demonstrated). It could be recommended to reconsider the amount of droppers in order to improve manageability.

Recommendation 6.4:
It could be recommended to expand the manuals with irregular flows (FAQ or instructions) and not only the 'happy flows'.

Recommendation 6.5:
It could be recommended to document when panellists are no longer part of the measurement study and provide background information about the decision.

Recommendation 6.6:
Document the irregularities or reported issues in order to improve the training programme manuals per country or at least in "QuoWIKI".

6.7 Test mail characteristics and production of test letters

AlL the items produced by Quotas (BIP) have machine-typed labels, no windows and only stamps are used (franking is not applicable). By means of desk research, the lay-out of the test letter is determined for a specific country before the country is added to the survey. An example mentioned by Quotas is Sweden that has specific demands regarding address label, priority sticker, etc.

As described in chapter 6.6 Panel Management, professional and semi-professional dropper panellists produce the test letters locally. Clear instructions are present as countries may require different characteristics regarding letters.

6.7.1 Production of test letters

Printing
Five black/white printers are installed at the production site, where the GMS test letters and address labels are printed once a week. The test items (Tapes) to be printed are selected in the QuoPrima system (same application in which the PDF files are uploaded by Quotas Hamburg) and the items are printed in packages. Each package totals the number of test items to be sent in relation to a specific country and consists of:

- Summery sheet with the posting planning
- Address labels attached to the envelope
- Address labels of sender addresses included

The application allows to print individual test items, a selection of multiple items is not supported. The packages are directly printed at one of the five printers, while the packages for semi- and professional sending panellists are printed in PDF format.

Folding/Preparing/Cutting
The test letters are cut in the correct format of C4 or C6 and dropped in a designated gathering box.

Production of test items
At the production department, the transponder-ID is associated to a test item-ID by means of two barcode scans. An error message appears in case of:

- The wrong type of transponder is scanned
- The second scan is another test item-ID

At the background, a list containing the specific countries and the required number of test items according to the envelope format per country is presented. This list is used to cross-check against the items scanned (scans are counted in the scan application). According to Quotas, at least five different people are able to perform the production process.

After the association process, the actual test items are "assembled". The post list is used to cross-check against the printed address labels. As some of the sending countries require an address of the sender attached to the backside of the envelope, an extra address label is attached. Postage amounts are printed from QuoPrima to cross-check the correct amounts on the envelope. As soon as the posting list is completed, the items are collected in a covering envelope (posting supply) and ready to be shipped.

The instructions how to assemble the envelope and the general instructions are available per country. The priority stickers are sorted to country and available.

Stamps stock
Stock is kept in a designated vault, which is fire- and theft proof. In case of an emergency, security personnel is at the location within 10-15 minutes (production site and department in Hamburg). The stamps are transported directly by Quotas. In case the production facility runs out of stock, Quotas Hamburg is informed well in advance.

Sending of the posting supplies (envelope that contains the test items).
Every Monday the posting supplies are posted at the local post office, which is an activity performed by the production facility of Quotas. Upon posting, the envelopes are re-counted.

Team contingency is in place, as the members do not go on holiday at the same time.

6.7.2 Management of transponders

Transponders are prepared for semi- and professional sending panellists by Quotas. Professionals are supplied with big batches of transponders on a bi-weekly basis by courier (UPS), the semi-professionals are supplied by means of regular mail due to the smaller amounts on a monthly basis (used to be supplied by UPS). Transponders are not sent in special bags, so the reads are registered, but are filtered out. Around 10.000 semi-active transponders are committed to GMS.

The passive tags are supplied by Lyngsoe and are already prepared on a piece of paper to fit the format of the envelope (C5 and C6) and can be used immediately upon receipt. Passive tags are either Dogbones or Alien squiggle. For the passive tags no quality checks are performed by Quotas as this is the responsibility of Lyngsoe.

New semi-active transponders are programmed by Quotas upon receipt, which is indicated by the number on the sticker of the transponder.

Transponders are returned in designated "return transponder envelopes" and are either franked by Quotas or the corresponding DO pays for the postage (max. two transponders per envelope). The transponders are gathered all together and sorted according to the measurement system. With the

system QuoPrima, the transponders are checked-in stock by means of a barcode scan. Each particular scan is presented on a screen, including the item-ID. If no reads are registered, a test is performed by BIP. Missing reads of transponders are flagged by the system and upon a barcode scan the employee receives a message to test the transponder. If the test fails, the transponders are returned to Quotas where the tags are collected and sent in batches to Lyngsoe for maintenance or repair. After scanning a batch or returns, a pack is prepared which is sent to UPUmax (no real-time data transfer). Per week, 10-15 damaged items are discovered (not specific for GMS items).

A battery check is performed when required. A “toaster-like-device” is used, which needs to be calibrated first by means of two sample transponders. When the application does not show a read, the transponder is considered to have a dead battery.

The stock level of the GMS Semi-active transponders at the production facility adds up to 1000 pieces, which buffers a period of two weeks.

UPUMax is used for transponder inventory management (Form_TPond_liste). Mail item number indicates that a transponder is assigned. The list shows if a transponder has been returned to Quotas and is re-assigned. On a regular basis, the information is exported to excel to determine the amount of lost transponders. Status is provided in the system as “sent”, “assigned” or “returned”.

Average transponder loss rate for 2013 (for semi-final countries) is determined at 5.4%. Links are specified to determine specific loss rates of transponders. The TLR report is manually produced in Excel. A screenshot is presented below:

1. Transponder Loss Rate per destination country 2013

Transponder Loss Rate 2013			
Destination country	**Number of produced items***	**Number of lost transponders**	**TLR in %**
Australia (IC)			
Brazil (DC)**			
Italy (IC)			
Kenya (DC)			
Morocco (DC)			
Poland (DC)			
Romania (DC)			
Saudi Arabia (DC)**			
Slovakia (DC)			
South Africa (DC)			
	41.753	2.264	5,4%

* Items with working semi active transponders
** Temporarily/ Partially use of semi active transponder
IC = Industrialized country
DC = Developing country

Figure 6.9: Screenshot of the transponder loss rate report 2013 / source: document Quotas-19 "TLR GMS 2013.xlsx"

Broken transponders are not taken into account in determination of the transponder loss rate. Currently a project is running in order to easily produce the crucial KPI reports from the system. The manual creation of reports takes time and is produced twice a year. Analyses are based on status (e.g. returned, assigned, etc.).

Panellist not returning transponders are monitored by Quotas. Once a month the receiving panellists are contacted to return the transponders (control routine). Morocco returns by courier, which takes

more time as transponders are collected and sent in batches. Flagging of missing transponders is done manually by the Quotas team. Replacement transponders are ordered once a year.

6.7.3 Provision of stamps

Stamps are ordered quarterly from the country websites online. If this is not possible, the senior panellists are asked by the Quotas GMS team to locally order and deliver the stamps, while paid in advance. All stamps are ordered for the sending companies two months in advance. Stamps are received at Quotas in Hamburg, while stock is kept by the producers (semi- and professional sending panellists and BIP). Senders have to confirm what they have received. In the case when stamps are not received, senders have to notify Quotas at least one day in advance.

The professional senders in the UK and USA order their own stamps, for France the stamps are ordered by Quotas. For China, special envelopes are ordered which are used to send the test items.

Changes in stamps are advised by the sending panellists in advance, so Quotas is aware of value changes.

An inventory stock list is maintained by Quotas per country (e.g. recently Sweden changed the procedure for C6 format envelopes and Curacao has about 6-8 different stamps). Quotas is informed about changes and updates the list accordingly. An Excel is provided to the sending panellists which is used to indicate the stamps required by the senders. For France small denominations can be added up.

Actual allocated items are considered in the recalculation when changes in stamps occur. More stamps used than allocated is not the case. Stock is kept in a secure place at the production facility and 10% buffer is maintained for contingency measures.

Stock value is not known, but estimated at approximately 30.000 or 50.000 EUR for a years' quarter. The correct postage amount is crucial and special attention is given to the procedures. Orders of stamps are booked on the account of Quotas (in their books).

Stamp buffers of 3-4 weeks are maintained and no theft records are known.

Issues occurring with sending the stamps are with customs procedures and occur quite often (for example German customs), so delays are applicable. Delays are taken into consideration for the "sending" procedures. Time between ordering stamps and receipt is one month for European countries. Orders from Curacao, South Africa or New Zealand take much longer. In the case when new countries are added to the general pool, problems with the provision of stamps do not occur as those new countries have deadlines to deliver the questionnaire already in September.

Meter franking is not applicable.

6.7.4 Archiving test letters - UPU

Archiving of test mail items is not applicable for UPU. Receivers are requested to stock the items for three months.

6.7.5 Contingency planning

In 2-3 days, the production facility can be replaced to the Hamburg location, where printers are available. The stamps are secured by means of the vault. The transponders may become an issue, as they are not securely stocked. A written contingency plan is not in place, although Quotas is ISO-9001-2008 certified (only location Hamburg).

For the despatched items, no tracking number is provided to Quotas, meaning that the sender panellist and Quotas are unable to track the test items that are supposed to be sent in the coming period. Panellists are trained to contact Quotas in case they have not received the posting supplies. If delays occur (caused by lead-time and not at customs), the instruction is to send the items exactly one week later, to avoid bundling of the test items.

Documents are disposed in a secured disposal box and picked-up every two weeks.

6.7.6 Summary of results

The characteristics of test mail is in accordance with the GMS Technical Design v1.1 as correct envelope formats are applied and address labels are machine-typed, no windows on envelopes and only stamps are used. Test items weigh up to 20 or 50 gr.

120.000 test items are sent annually.

The production facility BIP produces all the GMS test items and seems to be operating well. However, the production process for GMS test items very much depends on a few persons who have many years of experience, however this is considered as a potential risk as hardly any documented knowledge is in place.

Provision of stamps seems to be well organised concerning the order procedure and transport to the production facility BIP.

Transponders are managed based on the status lists, which indicates the status by means of the registered reads. No designated inventory system is in place. A monthly check is performed and followed-up to trigger receiving panellists to return the transponders frequently. The transponder performance procedures are in place and managed by BIP.

Centrally archiving of test items is not performed, which is considered by the auditors as a good choice. However, the receiving panellists are requested to stock the received items for a least three months for analysis purposes, the envelopes can be disposed.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

6.7.7 Recommendations

Recommendation 6.7:

Risk reduction measures regarding knowledge transfer are recommended. Although the production instructions are available at the production site, no knowledge documentation with regards to the production process in general is available. It is therefore recommended by the auditors to consider getting the BIP production facility ISO certified.

Recommendation 6.8:
Introduction of a designated inventory management system for transponders for a clear overview of transponder statuses, locations and the reduction of manual analyses to determine the current level of returns or to calculate the transponder loss rate. The system could include an application to easily generate KPI's.

Recommendation 6.9:
A written process describing the business contingency rules and actions is currently not available. In order to guarantee an efficient fall-back scenario in case of an emergency, written documentation including specific scenarios might be very helpful in an efficient and effective replacement of physical operations.

Recommendation 6.10:
The stock of the semi-active transponder reaches an approximate level of 1.000 pieces and represents business continuity of 2 weeks in case the delivery of transponders is terminated for a specific reason. It is recommended to evaluate if this period is sufficient in case such an event occurs.

6.8 Data collection and updates

6.8.1 Collection of data in GMS STAR

This paragraph describes the data collection and the required updates of data. The figure below shows the activities performed per stakeholder of GMS, the interaction between the stakeholders, the main data collection flow and how the data will eventually become available for the GMS members.

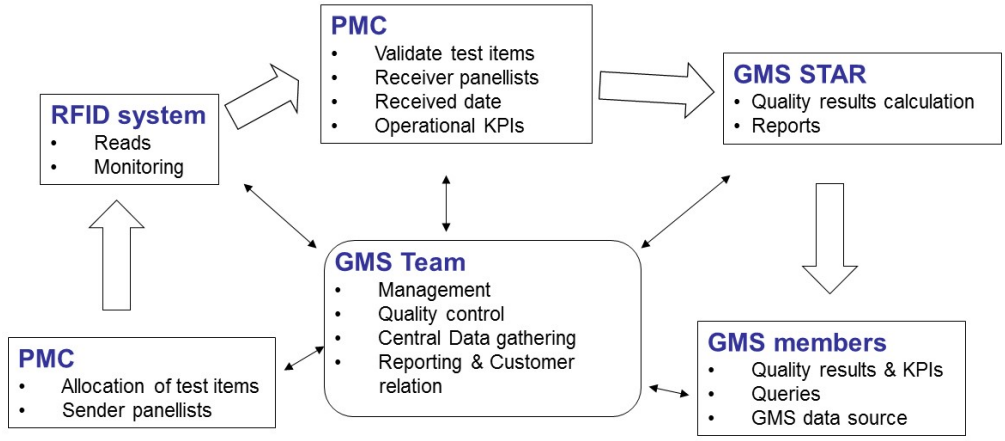


Figure 6.10: data flow and Interaction between the GMS stakeholders / source: document UPU-27 "GMS system_Auditing_2-4 June 2014.pptx"

The main responsibility of the UPU GMS team is the management of the system, validate quality control measures and enable the users to be able to generate several reports according to the GMS Technical design v1.1.

Relevant data is collected from different sources and systems and gathered in UPUMAX and the GMS STAR system, who transfer data amongst each other.

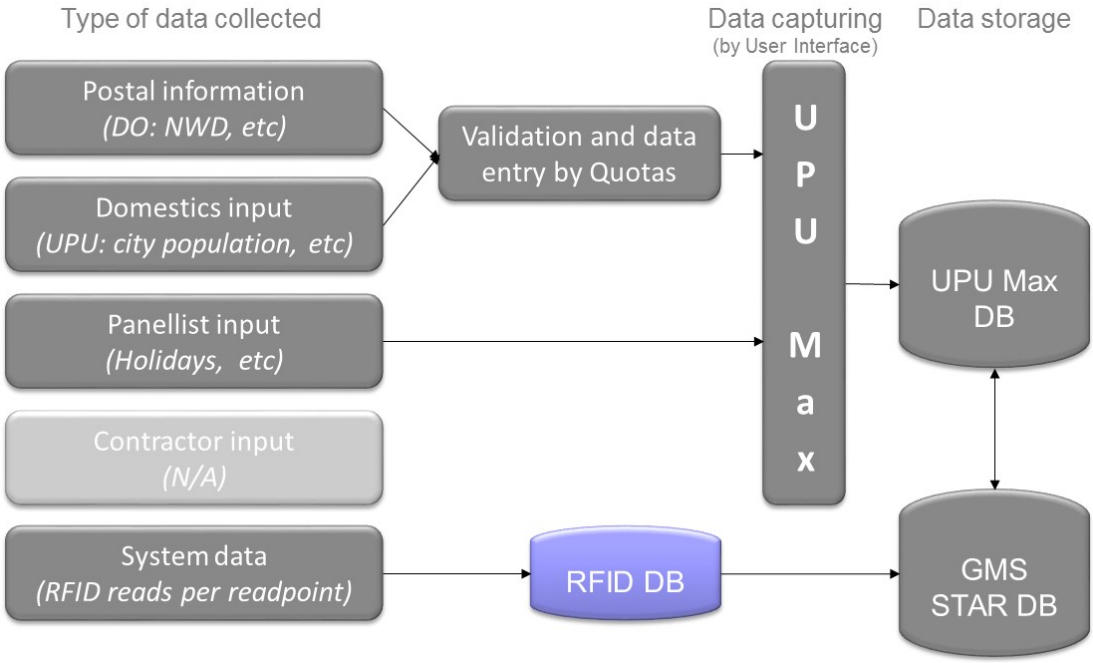


Figure 6.11: Data collection by UPUMAX and GMS STAR

Postal information

Questionnaires are sent and received by Quotas, upon which this data is validated and entered in UPUMAX with regards to the operational parameters (at each AMU/OE), once a year for QS Links (fixed) and, if applicable, three times per year for other parameters (flexible):

- Processing days for each OE, delivery days, special non-delivery days, special delivery days;
- Inbound mail volume (x1 per year) per country and cities;
- Domestic service standard;
- Critical Tag Time (CTT) (agreed critical tag time between DO and UPU)
- GMS country contacts (e-mail, Telephone) (x3 per year) for the GMS country manager and the Deputy GMS country manager

NON delivery days for 2013 are provided in the GMS STAR system, the delivering standards are included and the CTT is provided per OE. The data is provided by the DO to Quotas/UPU and changes in the system are applied accordingly. The DO is not able to change data in GMS STAR.

National and regional holidays are included in the questionnaire, if not this data is retrieved by means of desk research, performed by Quotas. The data is then validated against the input of the

DO's. Adjustments do apply, as for some countries the holidays change year to year, after which recalculation of transit times is applied.

UPU domestics input
Once a year, the DO's provide the population figures with regards to the country and a list of cities in order of inhabitants and the real mail volume information to Quotas by means of a questionnaire (document UPU-35 *"GMS data collection"*). Quotas uses this data for the statistical design in excel formats and UPU for the generation of reports in GMS STAR. This data is required to be updated annually.

Panel data
Quotas is responsible for the generation of the data gathered with regards to the valid mail items by the sender and receiver panellists and automatically feeds the GMS STAR systems at midnight, which is performed on a daily basis.

Mail Delivery method (street/door delivery, P.O.BOX/CMB's, latest delivery time) is provided by Quotas and the panellist' private holidays are captured as well.

Contractor input (Quotas)
N/A

RFID communication (system data)
Data input as generated by the RFID diagnostic system(s) is required to calculate the performance of DO's. The Terminal Dues gates worldwide collect RFID reads, this data is captured and stored as raw data (in a middleware application for the GMS RFID Network, directly into GMS STAR for the other systems). Data is captured from four different systems:

- GMS RFID Network (UPU, Bern CH)
- International Post Corporation (Brussels, BE)
- Lyngsoe Systems (Aars, DK)
- Country specific measurement systems

6.8.2 Summary of results

All relevant data and parameters for the performance calculations and the statistical designs are requested and provided by the correct stakeholders and seem to be compliant with the GMS Technical Design v1.1

Questionnaires are sent out well in advance to collect the required data from the DO's. However some DO's do not respond to the questionnaire, which requires Quotas to perform labour-intensive desk research to retrieve the missing data.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

6.8.3 Recommendations

Recommendation 6.11:
It could be recommended to enforce strict timelines with regards to the collection of data (NWD's, holidays, etc.) from the member countries, as this data should at all times be provided in the questionnaire. This saves Quotas to perform desk research and prevents potential delays.

6.9 Calculations of inbound performance results

This paragraph describes the calculation of the inbound performance results of UPU. The figure below demonstrates the central role of the GMS STAR, the system in which the relevant data is collected from Quotas (UPUMAX) and the RFID systems/middleware and where the calculations (and reporting) are performed:

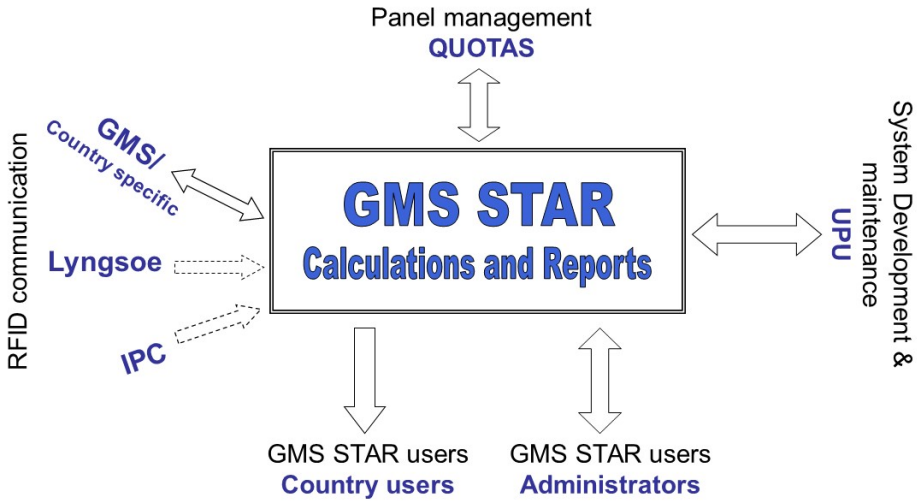


Figure 6.12: Data collection in GMS STAR / source: document UPU-27 "GMS system_Auditing_2-4 June 2014.pptx"

6.9.1 Data input

To be able to perform the calculations of the inbound performance results, data input is required. The following data elements are presented by UPU to be the basis of the calculations.

- GMS country contacts (e-mail, Telephone) (x3 per year)
  - GMS country manager
  - Deputy GMS country manager
- Inbound mail volume (x1 per year)
  - Country
  - Cities
- Population figures (x1 per year)
  - Cities
  - Country
- Holidays (x3 per year)

  - National
  - Regional
- Operational parameters (at each AMU/OE) (x1/year-QS Link/x3 per year-others)
  - Processing days for each OE
  - Critical Tag Time (CTT)
  - Delivery days
  - Special non-delivery days
  - Special delivery days
  - Domestic delivery standard
- Mail Delivery method (x1 per year)
  - Street/door delivery
  - P.O.BOX/CMB's
  - Latest delivery time

The inbound performance results are calculated with "Valid Test Mail Items". This is the volume of mail items, which is delivered according to the specified rules and seen by the correct (expected) hand-over Terminal Dues gates (RFID).

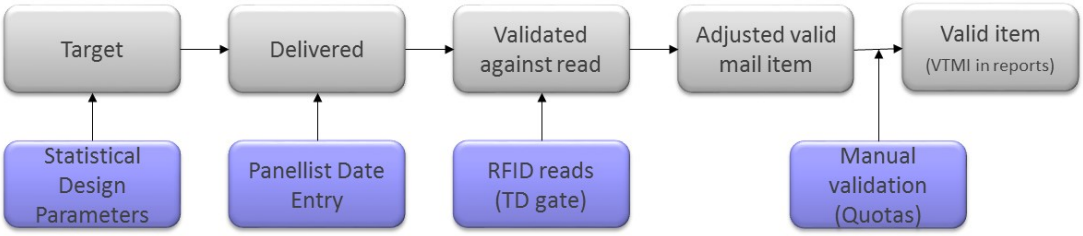


Figure 6.13: Valid Test Mail Items used for performance calculation

6.9.2 Calculation of inbound performance results GMS STAR

The inbound performance results are calculated in two steps, which are described in the following paragraphs of this chapter.

First step of the calculation (automatic; daily at midnight):
The first step in the calculation is the transit time, which is an automatic process performed every day at midnight. The calculations of the item transit time is based on the following parameters:

- Validated test items (described above)
- Mail process days
- CTT
- Delivery days/special delivery days/special non-delivery days (3rd Saturday of the month)
- Holidays (adjusted holidays are taken into account by means of the integrated obligation labels/rules, what is prompted by the user)

Second step of the calculation (prompted; generated real-time):
The second step is the calculation of the Percentage on-time performance (POT) (statistical weighting consideration), which is generated real-time upon a specific (GMS/KPI) report:

- Format weight (proportions of P and G items)
  - Fixed proportions: P = 80%, G = 20%
- City weight (proportions of city populations figures)

- Example for a country D population = 10.327.000
  - City 1 population = 2.344.000 ➔ Proportion weight: 22,70%
  - City 2 population: 894.200 ➔ Proportion weight: 8,66%

- Flow weight (proportions of mail volumes form inbound links)
  - Example: Country C total annual Inbound mail volume = 878.4 tonnes
    - Annual Inbound mail volume Flow 1 = 341.2 tonnes ➔Proportion Flow weight: 38.84%
    - Annual Inbound mail volume Flow 2 = 50.7 tonnes ➔Proportion Flow weight: 5.77%)

Explanation of the calculation provided by UPU, demonstrated that UPU has an understanding of the calculation of the inbound performance results. According to an example of an YTD inbound city report, it is demonstrated that countries check the calculation used in the report generation. The calculation behind the other reports are demonstrated accordingly.

$$POT\_Country = \frac{\sum_{i|n_{i..}>0} FlowW_i \left[\frac{\sum_{j|n_{ij.}>0} CityW_j \left[\frac{\sum_{k|n_{ijk}>0} FormatW_k \left(\frac{s_{ijk}}{n_{ijk}} \right)}{\sum_{k|n_{ijk}>0} FormatW_k} \right]}{\sum_{j|n_{ij.}>0} CityW_j} \right]}{\sum_{i|n_{i..}>0} FlowW_i}$$

Figure 6.14: formula used in the real-time calculation of performance results / source: document UPU-27 "GMS system_Auditing_2-4 June 2014.pptx"

The audit in 2012 demonstrated the same outcome, when the reports were reproduced by the auditors in a different system.

6.9.3 Quality control of system before calculations

Quality control of the system applies, consisting of 3 levels:

1. System Input:
   - Validation and correct application of data provided by countries.
   - Validation of design application by PMC (allocation matrix).
2. Calculations
   - Validation and correct application of calculation rules and formulas as stipulated in the UPU GMS Technical Design.
3. System Output
   - Reports: correct layout and information based on UPU GMS Technical Design and user requests.
   - KPI's: validation of design output

Multiple examples of the calculation of actual delivery time is demonstrated for Canada. City weighting is demonstrated, as well as the weighting for countries. The city weighting is done by the sum of the selected cities. Canada cannot be shown in 2013, as the country recently joined GMS.

6.9.4 Example calculations of on-time delivery standard:

Three examples are provided to demonstrate the calculation in GMS STAR, for which the following item numbers were used: 130800148, 142000620 and 131300740.

With regards to item number 130800148, the delivery was not on time and exceeded the delivery standard. The example shows that Saturday and Sunday are non-delivery-days. The figure below shows the results as presented in GMS STAR:

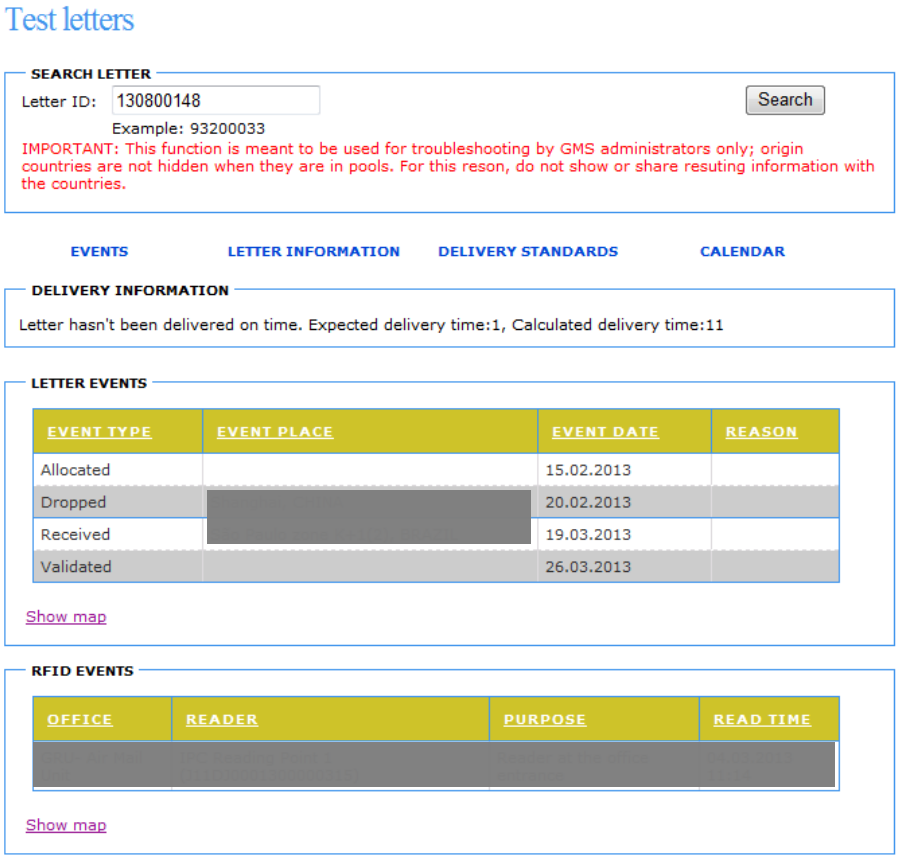
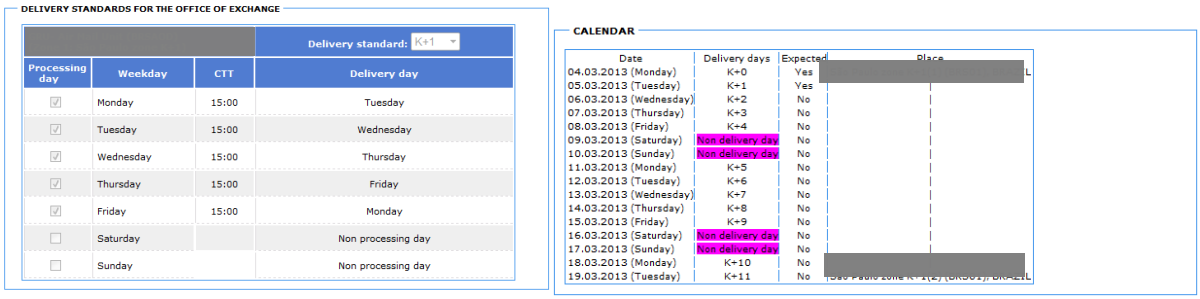


Figure 6.15: results of the delivery of test item 130800148 / source: document UPU-19 "Screen shots.xlsx"

The example according to the technical design shows a delivery at K+11, while it should have been delivered at a delivery standard of K+1. The figures below demonstrate the correct application of the delivery standard calculation, according to the GMS Technical Design v1.1.



DELIVERY STANDARDS FOR THE OFFICE OF EXCHANGE

Delivery standard: K+1

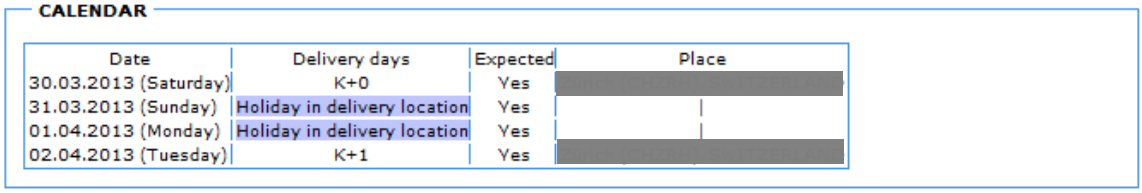
Processing day	Weekday	CTT	Delivery day
☑	Monday	15:00	Tuesday
☑	Tuesday	15:00	Wednesday
☑	Wednesday	15:00	Thursday
☑	Thursday	15:00	Friday
☑	Friday	15:00	Monday
☐	Saturday		Non processing day
☐	Sunday		Non processing day

CALENDAR

Date	Delivery days	Expected	Place
04.03.2013 (Monday)	K+0	Yes	
05.03.2013 (Tuesday)	K+1	Yes	
06.03.2013 (Wednesday)	K+2	No	
07.03.2013 (Thursday)	K+3	No	
08.03.2013 (Friday)	K+4	No	
09.03.2013 (Saturday)	Non delivery day	No	
10.03.2013 (Sunday)	Non delivery day	No	
11.03.2013 (Monday)	K+5	No	
12.03.2013 (Tuesday)	K+6	No	
13.03.2013 (Wednesday)	K+7	No	
14.03.2013 (Thursday)	K+8	No	
15.03.2013 (Friday)	K+9	No	
16.03.2013 (Saturday)	Non delivery day	No	
17.03.2013 (Sunday)	Non delivery day	No	
18.03.2013 (Monday)	K+10	No	
19.03.2013 (Tuesday)	K+11	No	

Figures 6.16 and 6.17 and: calculation of the on-time delivery standard (delayed) / results of the delivery of a test item 130800148 / source: document UPU-19 "Screen shots.xlsx"

With regards to items 130101004 and 131300740 is was demonstrated that the items are delivered on-time. All the relevant events (allocated, dropped, received and validated dates) are demonstrated. Also the reader data when the item left the facility is registered and the letter information is provided. The application of the NWD, holidays and delivery standard is correct and in compliance with the GMS Technical Design. The figures below show the calculation of the delivery standard.

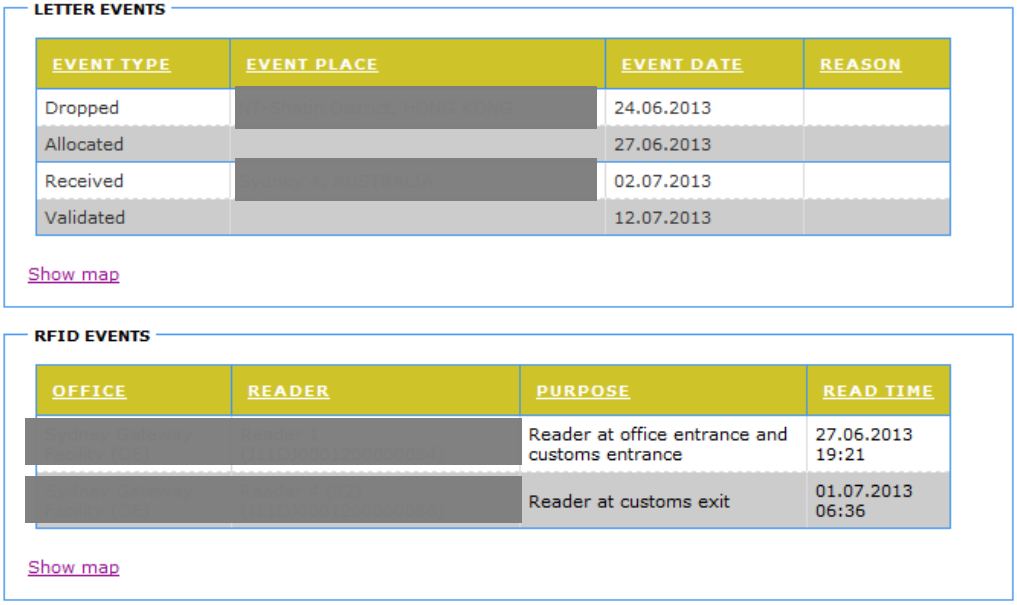


CALENDAR

Date	Delivery days	Expected	Place
30.03.2013 (Saturday)	K+0	Yes	
31.03.2013 (Sunday)	Holiday in delivery location	Yes	
01.04.2013 (Monday)	Holiday in delivery location	Yes	
02.04.2013 (Tuesday)	K+1	Yes	

Figure 6.18: processing days and calculation of the on-time delivery standard (delayed) / source: document UPU-19 "Screen shots.xlsx"

In one of the examples presented, the allocation date does not seem to be logical compared to the dropped date (resp. 27/6 and 24/6), as the items are allocated six weeks in advance. It turned out that in the schedule presented in GMS STAR, the allocation date actually represents the date of file transfer. The allocation date according to Quotas is the 26th of May. The figure below demonstrates the results in GMS STAR regarding the issue:



LETTER EVENTS

EVENT TYPE	EVENT PLACE	EVENT DATE	REASON
Dropped	[redacted]	24.06.2013	
Allocated		27.06.2013	
Received	[redacted]	02.07.2013	
Validated		12.07.2013	

Show map

RFID EVENTS

OFFICE	READER	PURPOSE	READ TIME
[redacted]		Reader at office entrance and customs entrance	27.06.2013 19:21
[redacted]		Reader at customs exit	01.07.2013 06:36

Show map

Figure 6.19: screenshot of the issue regarding the allocation- and dropped date / source: document UPU-19 "Screen shots.xlsx"

The issue does not have a major impact on the calculation of the inbound performance results.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

6.9.5 Summary of results

The data that is used as input, together with the two calculation steps and the quality control procedure are considered correct steps in the calculation of inbound performance results.

The valid mail items, NWD's and adjustments, CTT's and the rules for calculating the inbound delivery time are correctly applied according to the GMS Technical Design v1.1.

In one the examples, a problem with the interface between UPUMAX and GMS STAR was discovered with regards to the allocation- and dropped date of the test item.

6.9.6 Recommendations

Recommendation 6.12:
The actual allocation date is not received from Quotas, so the registration (file transfer) data from the GMS STAR is used. In the GMS STAR system, section "reporting", the allocation date is provided to the UPU users. It is recommended to either change the terminology of that data field into "event of data sent" or change the service definition of the interface and actually use the real 'allocation date' to be received from Quotas.

6.10 Reporting

This paragraph describes the periodic generation and distribution of various reports to DO's. UPU offers different categories for the generation of reports, which are:

- GMS reports (according to the GMS Technical Design)
- Operational reports (for analysis purposes)
- GMS KPI reports

Figure 6.20: welcome screen of the GMS STAR system / source: document UPU-19 "Screen shots.xlsx"

6.10.1 GMS STAR reports as output of the measurement system (TD calculation)

The outcome of the data collection, measurement study and the diagnostic monitoring system is captured in different periodic reports. All reports are generated based on data generated by Quotas and presence of valid RFID reads (e.g. data generated by the UPU RFID system, the systems of IPC and Lyngsoe and by those countries that maintain their own infrastructure).

Reports are not distributed to UPU members, as the STAR system allows members to generate their own reports. UPU does distribute reports to internal UPU bodies (as well as IPC) for the Terminal Dues countries. For audit purposes three countries were selected to demonstrate the use of the system and to analyse the data used. These countries are one Level A and two Level B countries.

Besides the reports as required in the GMS Technical Design, UPU allows their members to generate extra (operational) reports of which three are GMS related:

- GMS Monthly Inbound OE Linked City Report
- GMS Distribution of Transmission Times Report
- GMS Delivery Zone POT Report

The periodicity, the receiver(s) and the methods to generate and distribute the report are described below for every report mentioned in the GMS Technical Design.

6.10.1.1 GMS monthly summary report

Each third week of the following month, the data should be collected in the GMS STAR system (e.g. lead time of 7 weeks). All data has then already been validated by UPU and is ready to be used by

the members. In the report application of the GMS STAR, Terminal Dues should be selected first in order to generate the TD related reports. The results of the report generation is the document GMS Summery Report – Terminal Dues 2013 and includes all the countries that are linked to Terminal Dues in alphabetical order. No preliminary report, as the reports are based on validated data and considered as final. The figure below demonstrates an example of a monthly summary report as generated in the GMS STAR.

GMS Global Monitoring System

UPU UNIVERSAL POSTAL UNION

GMS Summary Report - Terminal Dues 2013

Country Name	Target	Precision	YTD	January	February	March	April	May	June	July	August	Septemb.	October	Novemb.	Decemb.
ARUBA	75.0%	+/- 6.7%	**41.2%**	18.9%	20.2%	100.0%	85.4%	37.6%	29.0%	39.0%	51.3%	53.9%	50.9%	4.6%	27.6%
AUSTRALIA	88.0%	+/- 0.5%	**93.7%**	95.3%	91.2%	94.0%	93.6%	96.9%	95.0%	96.4%	96.2%	93.1%	93.8%	88.4%	88.5%
BAHRAIN	75.0%	+/- 3.1%	**24.2%**	13.6%	21.6%	28.1%	33.0%	29.1%	31.4%	9.3%	25.2%	36.3%	26.0%	19.0%	18.7%
BRAZIL	75.0%	+/- 1.8%	**40.1%**	41.4%	41.7%	35.7%	39.4%	43.4%	36.8%	38.1%	45.2%	44.3%	40.5%	40.8%	34.2%
GIBRALTAR	78.0%	+/- 4.0%	**84.6%**	91.4%	89.4%	75.0%	62.2%	89.9%	69.7%	75.7%	92.2%	96.3%	96.3%	91.8%	89.4%
JAPAN	88.0%	+/- 0.8%	**93.4%**	95.1%	91.6%	90.8%	91.7%	95.4%	95.3%	94.4%	94.1%	94.5%	91.9%	92.6%	90.5%
MACAO	75.0%	+/- 4.7%	**68.3%**	69.1%	76.2%	87.2%	65.2%	89.5%	70.5%	70.4%	33.9%	37.8%	70.5%	47.2%	19.9%
SINGAPORE	78.0%	+/- 0.9%	**91.7%**	91.7%	89.2%	91.4%	89.7%	90.2%	92.5%	95.3%	93.9%	91.9%	95.6%	92.2%	81.7%
SLOVAKIA	78.0%	+/- 1.0%	**89.2%**	87.2%	87.0%	86.5%	89.5%	88.0%	83.2%	91.3%	89.4%	90.7%	93.0%	91.7%	90.4%
SWITZERLAND	88.0%	+/- 0.8%	**92.6%**	93.0%	89.3%	91.7%	93.5%	92.6%	90.9%	94.2%	92.9%	95.1%	94.0%	94.3%	92.2%
UKRAINE	75.0%	+/- 1.6%	**67.2%**	34.8%	37.7%	43.8%	52.0%	71.6%	77.9%	73.3%	83.9%	80.6%	80.9%	81.2%	72.6%
UNITED ARAB EMIRATES	75.0%	+/- 2.1%	**49.9%**	55.2%	57.8%	49.8%	53.1%	57.4%	51.7%	46.0%	47.9%	44.6%	44.0%	53.2%	51.2%

Figure 6.21: GMS Monthly Summary Report YTD 2013 / source: document UPU-17 "GMS_Summary_Report_TD_2013.pdf"

Aruba demonstrates fluctuation in performance, as it occurs that only three items are delivered a month (level E country). This report is not country specific and all TD linked countries have the functionality to generate identical reports. The other reports are country specific and thus confidential.

6.10.1.2 GMS monthly inbound DO report

UPU provides the members the GMS STAR report tool to generate online reports calculating the inbound performance. The example report is specific for Switzerland. Permanent links are separated and seem to be compliant with the GMS Technical Design v1.1. In the example presented, the pool 1 links are not reported in the report, but pool 2 are. The explanation provided, is that sometimes Pool 1 results do not appear in the report in case the permanent links already reach a specific percentage that normally should include pool 1 countries.

6.10.1.3 GMS monthly and YTD inbound city report

UPU provides the members the GMS STAR report tool to generate online reports calculating the inbound performance per city. UPU changed the original name of the report into ***"GMS monthly inbound OE linked city report"***, because UPU finds it important to indicate the specific performance of the Office of Exchange. Some countries have multiple Offices of Exchange and the option to pinpoint the exact OE that is over- or underperforming could be valuable for Terminal Dues purposes. An example for Switzerland presented, demonstrating the extra value that could be added. In the case that permanent links already reached a specific percentage (so Pool 1 countries are not selected for measurement), the Pool 1 links are not reported accordingly. The total items per OE linked to a city are reported as well.

6.10.1.4 GMS detailed year-to-date inbound city report

UPU provides the members the GMS STAR report tool to generate online reports calculating the inbound performance per city vs the country of origin of the received test items, separated in P and G items. The report consists of several pages, each page presents a city with the individual results. The GMS monthly and YTD inbound city report seem to be compliant with the GMS Technical Design v1.1. Per country of origin the results are presented.

6.10.1.5 GMS monthly outbound DO report

UPU provides the members the GMS STAR report tool to generate online reports calculating the outbound performance. In the example presented, five countries receive items originating from Switzerland and the reports show the performance results based on the moment the item is received at the destination country.

6.10.2 Operational reports

6.10.2.1 GMS monthly inbound item report

UPU provides the members the GMS STAR report tool to generate online reports calculating the inbound performance per item. The items report is generated and presented in excel (.csv file), divided in country of origin (Pool countries are presented as either "Pool1" or "Pool2"), the letter identifier, tag identifier, letter format, and more items, that are all compliant according to the GMS Technical Design v1.1. Extra information is also reported, such as the status of the test item upon receipt and the number of letters received per panellist. All the items included are valid items. The following items are part of the exported file presented in excel (see below).

Included items in the GMS monthly inbound item report (specific to each DO)		
Origin_country	Destination_city	Received_date_and_time
LetterIdentifier	Office_code_1	Calculation_status
Tag_identifier	Reader_identifier_1	OnTime
Letter_format	Reader_purpose_1	Calculated_delivery_time
Weight_step	First_read_date_and_time	Expected_delivery_time
Addressing_method	First_read_weekday	Letter_status
Franking_method	Office_code_2	Postmark_date
Induction_method	Reader_identifier_2	Delivery_method
Dropper_identifier	Reader_purpose_2	Bundle_identifier
Dropped_letters	Last_read_date_and_time	Receiver_identifier
Dropper_panelist_type	Last_read_weekday	Receiver_panelist_type
Planned_date	Number_of_reads	Received_letters
Sent_date_and_time		

Figure 6.22: items included in the GMS monthly item report (flat file) / source: document UPU-08 "GMS Item elements header.xlsx"

The items report can be used for analysis purposes, for example to query panellists, test items and other elements included. UPU provides the members with two additional operational reports for improvement purposes.

6.10.2.2 GMS distribution of Transmission Times

UPU provides the members the GMS STAR report tool to generate online reports calculating the distribution of transmission time performance per item. The items are shown per link and the delivery standard and deviations are reported (K+0, K+1, etc.) as when the items are received at the destination.

6.10.2.3 GMS delivery zone POT report

UPU provides the members the GMS STAR report tool to generate online reports calculating the inbound performance per delivery zone POT. Per city the zones are presented in the report to discover problems in specific zones or cities.

Three other operational reports can be generated in GMS STAR, but are not in scope as these are reports focused on the end-to-end measurement systems.

6.10.2.4 Adjustments of monthly reports

Adjusted monthly results (e.g.: as a result of irregularities) are not applicable for 2013. Adjustment do apply in some cases and two examples are presented to the auditors, based on the calculation of transit times and abbreviation:

- A first example is when the POC granted a request for a country concerning holiday's changes (UAE is an example as not having fixed holidays).
- Ramadan is another example when specific days are considered special, because the schedule and times may differ between countries. Calculations are made based on tentative dates (Quotas is informed accordingly) and recalculated upon receipt of the actual dates (when holidays took place in reality), so adjustments in reports are made afterwards. Quotas is informed about the actual dates for revalidation of test items.

6.10.3 KPI reports

Six different KPI reports can be generated by the DO's. The figure below shows the lists of the KPI reports.

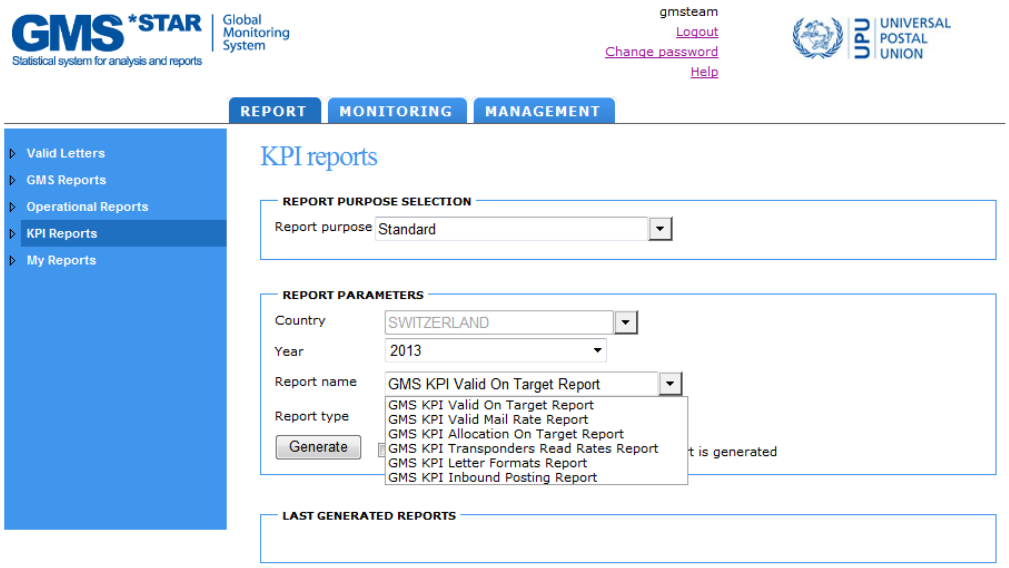
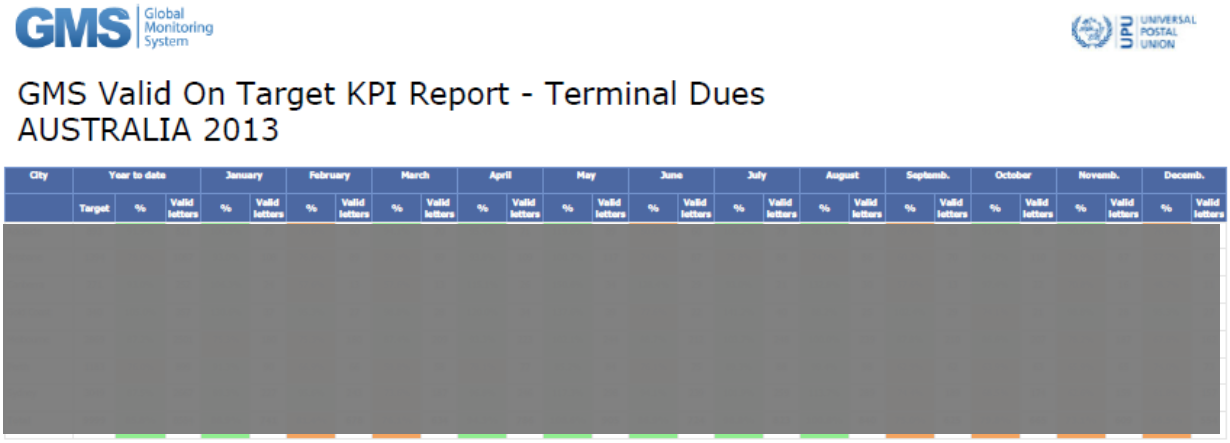


Figure 6.23: overview of the different KPI reports that can be generated in GMS STAR / source: document UPU-19 "Screen shots.xlsx"

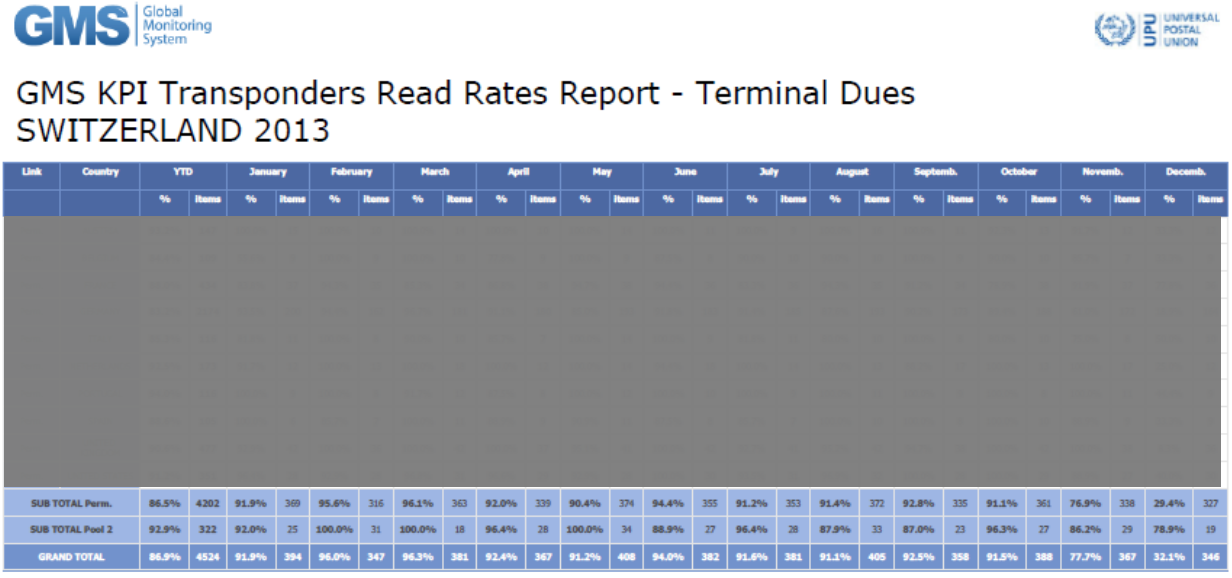
The transponder read rates report is picked as an example to demonstrate the generation of reports in the GMS STAR, as available for the members. Switzerland is presented again. The total items received per country and the percentage of those items read by the readers is presented as performance result, separated between permanent links, pool1 and pool2 links. The report shows the total items being more than the minimum required 3800, demonstrating extra items are allocated. Some examples of the KPI reports are displayed below:



GMS Valid On Target KPI Report - Terminal Dues
AUSTRALIA 2013

City	Year to date		January		February		March		April		May		June		July		August		Septemb.		October		Novemb.		Decemb.	
	Target	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters	%	Valid letters

Figure 6.24: KPI of the valid mail rate on target for Australia 2013 Source: document UPU-13 "GMS_KPI_Valid_On_Target_Report_TD_2013_AU.pdf"



GMS KPI Transponders Read Rates Report - Terminal Dues
SWITZERLAND 2013

Link	Country	YTD		January		February		March		April		May		June		July		August		Septemb.		October		Novemb.		Decemb.	
		%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items	%	Items
SUB TOTAL Perm.		86.5%	4202	91.9%	369	95.6%	316	96.1%	363	92.0%	339	90.4%	374	94.4%	355	91.2%	353	91.4%	372	92.8%	335	91.1%	361	76.9%	338	29.4%	327
SUB TOTAL Pool 2		92.9%	322	92.0%	25	100.0%	31	100.0%	18	96.4%	28	100.0%	34	88.9%	27	96.4%	28	87.9%	33	87.0%	23	96.3%	27	86.2%	29	78.9%	19
GRAND TOTAL		86.9%	4524	91.9%	394	96.0%	347	96.3%	381	92.4%	367	91.2%	408	94.0%	382	91.6%	381	91.1%	405	92.5%	358	91.5%	388	77.7%	367	32.1%	346

Figure 6.25: KPI of the transponder read rates for Switzerland 2013 / source: document UPU-12 "GMS_KPI_Transponders_Read_Rates_Report_CH.pdf"

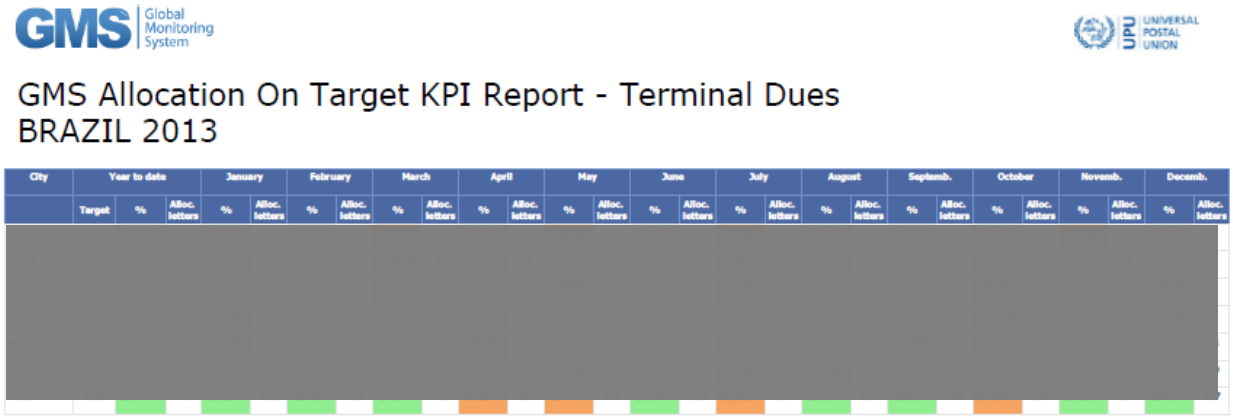


Figure 6.26: KPI of the allocation on target mail rate for Brazil 2013 / source: document UPU-11 "GMS_KPI_Allocation_On_Target_Report_TD_2013_BR.pdf"

6.10.4 Other tools in GMS STAR

UPU offers additional performance measurement tools in the GMS STAR system:

- Monitoring; for example the reader status is provided which can be used by DO's to check the number of operational readers and their corresponding statuses.
- System management; in the section of the GMS STAR system, the countries have the ability to cross-check the settings and changes made in the system. Also the NON delivery days, the delivery standards, and the CTT can be provided by the DO in this tool. The following figure shows a snapshot of the GMS STAR:

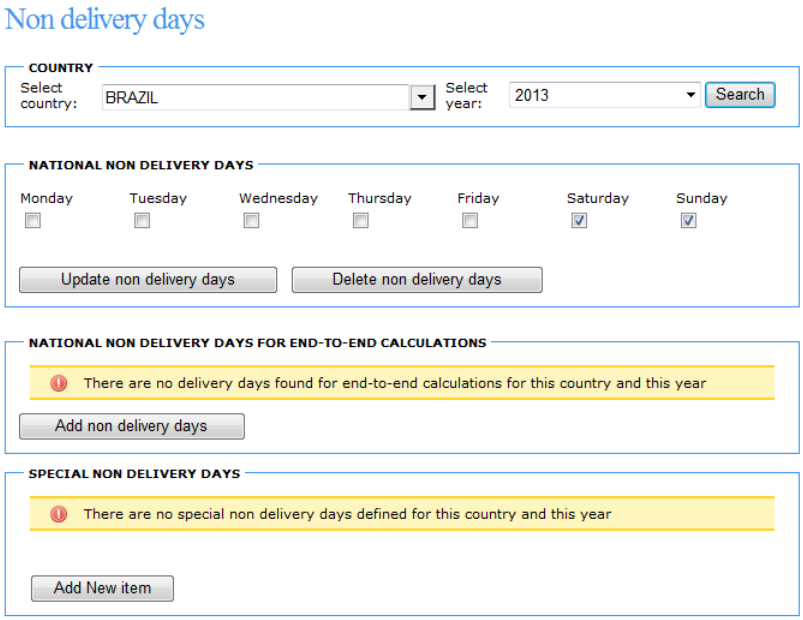


Figure 6.27: snapshot of the management tool in GMS STAR / source: document UPU-19 "Screen shots.xlsx"

6.10.5 GMS Data confidentiality

The GMS STAR system ensures that confidential information (e.g. panellist contact data, sending DO information, pool countries) is not shown in any report. Assessment by the auditors shows that none of the confidential information is displayed in the reports for DO's.

In addition, the items registered via RFID installations should be withheld for 24 hours before they are included in details of the reports. This delay in information prevents any (suspected) intervention by the DO based on knowledge about the presence of test items onsite. The auditor could not verify the details regarding this delay.

6.10.6 Summary of results

The monthly distribution and the content of the GMS Summary Report is according to the GMS Technical Design v1.1.

All other inbound reports are available online for DO's, including the extra operational and KPI reports (with restricted levels of detail according to the GMS Technical Design).

No other data than considered in the GMS Technical Design is available to the DO's by report, i.e. no confidential information is disclosed.

Version control for adjusted reports is not in place, due to the live systems that is used to generate reports.

6.10.7 Recommendations for reporting

Recommendation 6.13:
It is recommended to introduce version control in the provided reports. It offers the ability to track operational performance improvements in conjunction with a version increase.

Recommendation 6.14:
Another recommendation is to add a footnote in the reports with a time indication to communicate by when the reported results can be considered valid/final.

Recommendation 6.15:
Currently it is possible that events take place, which influence reported results (e.g. a holiday is communicated after the event has taken place, so UPU was not aware of this). It could be recommended to introduce a deadline to deliver the holidays so adjustments can be applied accordingly.

Recommendation 6.16:
The option to provide RFID status data in the "monitoring" section of the GMS STAR system is questioned by the auditors whether this tool "still" adds value to the members. It is therefore recommended to evaluate maintaining this option.

6.11 Quality control & validation

6.11.1.1 KPI's & Data sources

A weekly status report is generated by Quotas and delivered to UPU containing the following KPI's:

- Valid mail rate
- Allocation on target
- Posting to plan rate
- Data recency
- Status of the current active panellists
- Equipment rate of transponders (dummy or active transponders used in test items)

The transponder read rate is weekly reported (ytd). Issues with regards to network and/or power outages or non-equipped doors are discovered by this report (resolutions windows differ per cause). The responsibility for solving these issues lies with UPU, together with their contractor "Redbite" in 2014 and AIDA in 2013. Quotas only flags significant decreases in their generated read rate report.

In addition to the transponder read rate, two more files are weekly sent to UPU. These include the "read rate per link" and "read rate per sent item" and are issued for further analysis.

Other KPI's are reported on a monthly basis (for example VMR) and delivered in the third week (agreed with UPU) of the following month. The result is that all VMI data is validated and preliminary report figures are excluded from the KPI report.

The transponder loss rate report is reported twice a year, thus excluded from the weekly status report. The item return recency is not included in the status report, as the panellists are requested to keep the items at home. The possibility to analyse the time needed to return the transponder can be reported together with the loss rate report on demand.

Panel turnover ratio is not reported in the weekly status report, but is generated only on demand.

The KPI "receiving pattern by day of the week of delivery" is excluded from the status report. This KPI is reported when certain patterns of panellists are noticed during the data analysis process.

The Following table presents an overview of all KPI's generated by Quotas. The table also includes the KPI's that are generated for quality control of system management.

KPI	Description (if applicable)	Report frequency	Status
Valid mail rate	In compliance with GMS Technical Design	Weekly (status report)	
Allocation on target	In compliance with GMS Technical Design	Weekly (status report)	
Posting to plan rate	In compliance with GMS Technical Design	Weekly (status report)	
Data recency	In compliance with GMS Technical Design	Weekly (status report)	
Status of current active panellists	In compliance with GMS Technical Design	Weekly (status report)	
Equipment rate TRP	Dummy or active transponders used in test items	Weekly (status report)	
TRP read rate	Transponder read rate (per link/per items)	Weekly	
VMR		Monthly	
TRP loss rate	Transponder loss rate report	Half yearly	
Item return recency	Can be included in Transponder loss rate report	On demand	
Panel turnover	Panel turnover ratio report	On demand	
Receiving patterns	Receiving patterns of panellists	On notification	
Overages allocation	In compliance with GMS Technical Design	Weekly (status report)	
Allocation not in accordance	Calculated after every allocation run	After allocation	
Valid volume	Valid volume vs target volume	Weekly (status report)	
Data entry recency		Weekly (status report)	
Recency of query	Target is within thee next 5 working days is target		
Loss of transponder		At request	
Panellist workload per week	directly after allocation	directly after allocation	
Panellist integrity analysis	Only when panelist is informing Quotas	After panellist info	

Figure 6.28: overview of the generated KPI's in the weekly status report or on demand

Status reports are generated from the RouteList in UPUMAX. Colours indicate the status of the test items and items are not deleted on a monthly basis, as reads may come in 2 months afterwards. The read rate is calculated based on the received items that are checked against a registered read. The hand-over reads are managed by UPU and information is provided by UPU to Quotas. Designated Terminal Dues readers are marked by UPU that are relevant for Quotas to base the reports on. The first reads are marked and determined by Quotas, based on the information provided by UPU.

Status reports are based on the adjusted read rate, as read rates are taken into account in the generation of the reports. For some countries, low read rates are applicable causing a low VOT rate. The report indicates whether a low rate is caused by panel management or the RFID system by using the adjusted read rate. In summary:

- Target valid items = number of items according to GMS Technical Design v1.1
- Adjusted valid mail items = number of items including the read rate
- Valid items = received by panellists (data is entered) and including RFID read

Low read rates are checked with UPU.

6.11.1.2 The data sources used for quality control

The file for panellist control measure originates from UPUMAX as an export file and is used for pattern queries (no excel) as patterns of panellists are noticed during the validation process. The file contains the action(s) that panellist should take when the Quotas GMS team sends an email (for example, an email to confirm the date). If no item is received, this needs to be confirmed by the panellist as well. Information is added manually according to the follow-up action that has to be taken. The process is performed on a weekly basis as the list is weekly generated and contains around 100 panellists. In the case of no answers, panel management is informed. Emails are sent in bulk and the language is correctly adjusted to the receiving panellist.

Transponder control (for returns) are analysed by means of an export from the system UPUMAX, section "transponder overview".

6.11.1.3 Quality control of system integrity (panel management)

The process of the quality control of system integrity (information availability, integrity panellist) is "only" performed based on individual pattern control. No documentation is in place. System management quality control reports provided to the GMS governing bodies is not in place, however AOT, VOT and VMR and other KPI ratios are reported to UPU.

6.11.1.4 Validation

Real-time validation is in place, as the panellist' item is validated at the moment data is entered in the system. Two offline validations are in place by means of a manual process, processed by the Quotas team (Paragraph 6.6.2 Training of panellists describes part of this process):

- Data validation in the UPUMAX item screen (internal memo)
- Panel control (weekly) via Excel list for follow up (around 70-80 per week). Communication is performed by means of an email and if the panellist does not respond adequately, the panellist is removed from the survey

Test items are required to have at least a read rate, before going through validation. As the four elements of validation are in place, each type is described in more detail in the following sections.

6.11.1.5 Real-time validation

The validation upon data entry of incompatible combinations of information is in place by means of error messages generated by the data entry system. An example of these types of alerts that receiver panellists will experience is presented in the screenshot below. To assure correct data is entered as much as possible and stimulate correct usage, the system allows only data entry by dropdown lists to avoid free entry of data.

Figure 6.29: real-time validation / source: document Quotas-15 "Screenshot error messages website.jpg"

The contractor is only warned real-time during the linking (scanning) of item barcodes with the tag barcodes, in the case if semi-active or passive tags are associated to an incorrect test item or no link is generated at all.

6.11.1.6 Offline validation

The process of offline validation is performed in UPUMAX. By opening the route list with "vali" filter, a test mail item is considered as either a valid or a non-valid item, by checking the receiver info, read and posting date. By means of a colour indication in which the line is presented, the validation status is determined.

- Black indicates the test item has been validated
- Blue means still "open" and requires manual validation, upon the open item screen is required in order to validate the item (or delete the item and contact panel coordinator etc.)

All individual test mail items are validated manually by the two panel coordinators and approximately around a thousand items are currently open (at the moment of the audit). The items are checked against the send date, receipt date and address readability. In case of missing data, the test item is deleted from the measurement and considered as non-valid. Also certain patterns are discovered.

Monitoring of panellists is performed in UPUMAX, by means of the validation process, as presented below. The open item screen for validation is presented below.

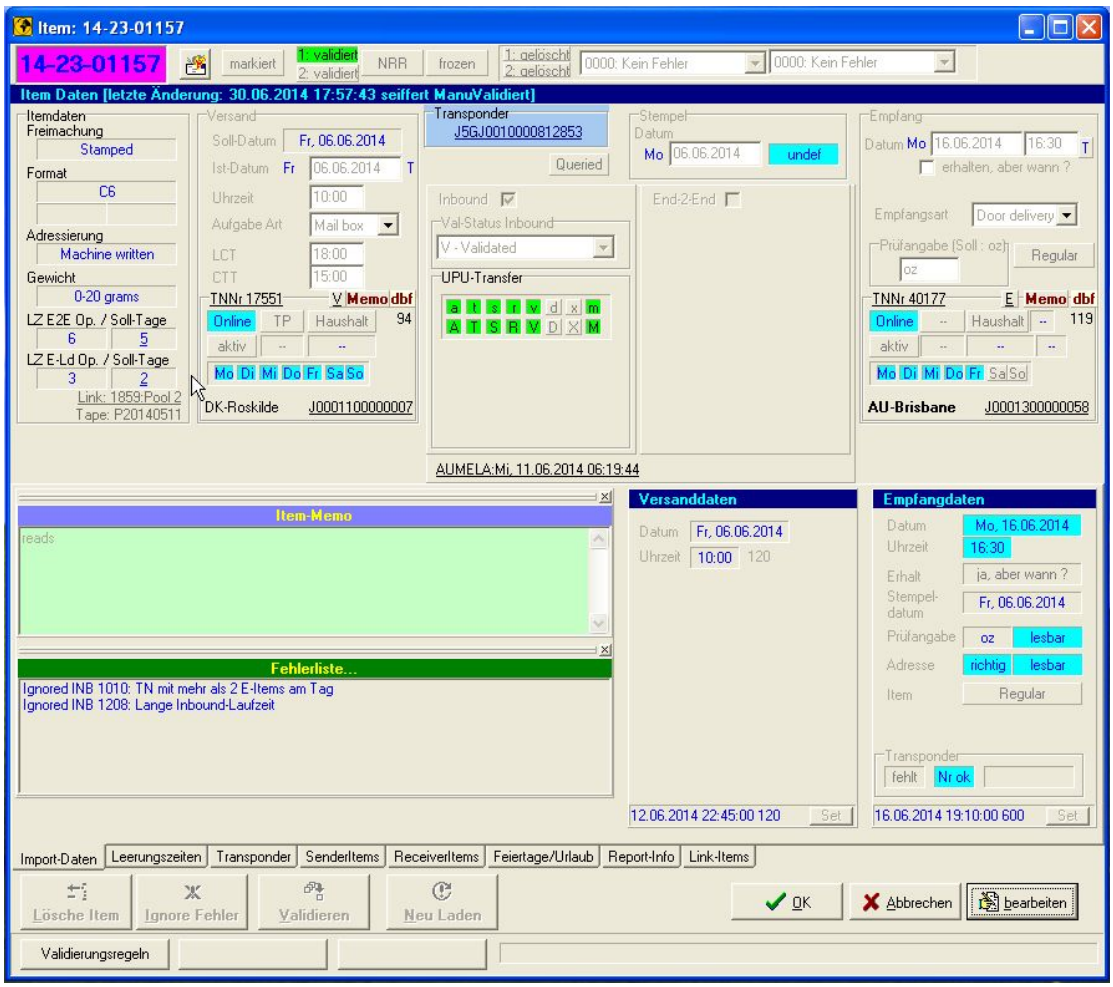


Figure 6.30: validation screen of a test item / source: document Quotas-16 "Screenshot Validation Screen.jpg"

In the item memo section, the memos are registered for control measurement purposes.

6.11.1.7 Pattern query validation

Irregularities are queried, but not in a report form. The panellist control file in UPUMAX is used for pattern queries, which is performed based on experience and some descriptions in the databank "QuoWiki". Real pattern query procedures are not in place. Valid queries trigger the panellist' statuses "under control" or "exclusion of panellist". A high level overview of generated queries is missing.

6.11.1.8 User query validation

A file template is in place for user queries and is provided directly to all Designated Postal Organisations or via UPU, which is shared between the DO's and Quotas. The query files are received from the DO directly, but not many countries are actively requesting user queries. In 2013, the only DO query requests came from 1 country. Panellist queries are stored in emails in the corresponding country folder.

6.11.1.9 Problem detection and follow-up procedures

Errors (numbers, cause and types of errors) caused by panellists are recorded in UPUMAX, as no dedicated panellist error reports are generated. This process results in little overview and no procedural thresholds of errors are in place. If a panellist should be removed from the panel, the reason for deletion is selected in the systems of UPU (few) and Quotas internally (more detail), whereas attention is given to the incorrect delivery date vs RFID read after receive date.

The problem detection facility is built into UPUMAX, as a flag procedure for validation is set and the determination of follow-up actions is done manually and communicated per email to the panel coordinators. The system rules are set and maintained by Quotas.

Panel control follows up problems on a weekly basis, by means of an Excel list for which around 70-80 problems per week are followed-up. Communication is done by means of emails and if the panellist does not respond adequately, the panellist is removed from the survey.

The follow-up procedures implemented, as part of the preventive measures to eliminate and/or minimize recurrence of errors, are entered in the memo field in UPUMAX. The validation process and the entered data could result in training and suggestions to panel management to define actions. Currently, this process is managed by the two panel managers within Quotas, without having any documented procedures, which is considered as “risky” by the auditors.

6.11.2 Summary of results

The KPI’s generated are compliant with the ones described in the GMS Technical Design v1.1. The most important and common applicable are included in the weekly status report. Those KPI’s that don’t measure weekly performance are reported in a less frequent time interval (monthly, twice a year or only on request).

Validation of test items is a manual process, performed by the two panel managers. The workload to perform this task seems to be high, as a snapshot presented more than a 1000 open items that need to be validated.

The follow-up procedures implemented as part of the preventive measures taken to eliminate and/or minimize recurrence of errors, are entered in the memo field in UPUMAX is a manual process and no documented procedures are in place. This indicates a risk with regards to contingency planning.

During the validation process, not only the test items are validated, but also patterns are discovered. As each item is individually validated, irregularities are registered in the memo field, which is used for discovery of patterns. Specific files with pattern queries are not in place.

6.11.3 Recommendations

Recommendation 6.17:
It could be recommended to automate the validation process by adding validation into UPUMAX, which is currently a manual process performed by Quotas and seems to be very labour-intensive.

Recommendation 6.18:
Patterns queries are not reported and collected in one document. Therefore, it could be recommended to use a dedicated document that collects all cases in order to provide a higher level overview. This could improve the efficiency and quality.

Recommendation 6.19:
The validation process could result in re-training of panellists. It could be recommended to document procedures containing the steps to take and a threshold to indicate when re-training is required.

Recommendation 6.20:
Besides automating the validation process (for efficiency reasons) it could be recommended to automate the detection of patterns, rather than doing this manually for test mail items and panellist behaviour.

6.12 Diagnostic Monitoring

6.12.1 RFID technology – standard and single-unit equipment implementation

As part of the GMS Measurement Solution operated by the MSP: UPU, various RFID solutions are used to provide identification information (RFID reads) to the system. The following RFID solutions provide data to the GMS Measurement Solution:

RFID system (input to GMS)

1.GMS RFID Network (UPU, Bern CH)
- RFID network installed and managed by UPU based on passive UHF RFID technology

2.International Post Corporation (Brussels, BE)
- RFID Network of countries who still have active RFID solutions, which were installed by IPC in place. IPC provides the RFID data to UPU.

3.Lyngsoe Systems (Aars, DK)
- RFID Network of countries who still have active RFID solutions, which were installed by Lyngsoe (provider) in place. Lyngsoe provides the RFID data to UPU.

4.Country specific
- RFID Network of specific countries who provide the data directly to UPU.

The RFID infrastructure of the GMS RFID Network is managed and controlled directly by UPU (see above). The remaining RFID infrastructure is not managed directly, however the output of these RFID solutions is monitored (e.g. read rates).

The central IT solution used for the GMS Measurement Solution is the **GMS STAR**.

6.12.2 Network Monitoring System (NMS)

For the RFID infrastructure directly managed by UPU (see above) a *Network Monitoring Solution* is used. This RFID infrastructure is based on passive UHF RFID technology.

In 2013 UPU selected a new technology provider for the Network Monitoring System. The new Network Monitoring System is based on *Redbite Solutions.* The installation of this solution started in Q4 2013.
In the remaining part of 2013, a System Integrator (AIDA) based in Spain provided the Network Monitoring Solution. This Network Monitoring Solution was based on REVA technology. In both cases with Redbite (current technology provider) and REVA the Network Monitoring System essentially provides the following 2 functionalities:

1. Remote infrastructure management functionality (device management);
2. Middleware functionality for data – filtering and management.

The diagram below provides an overview of the technology architecture with the REVA solution (operational during a large part of 2013).

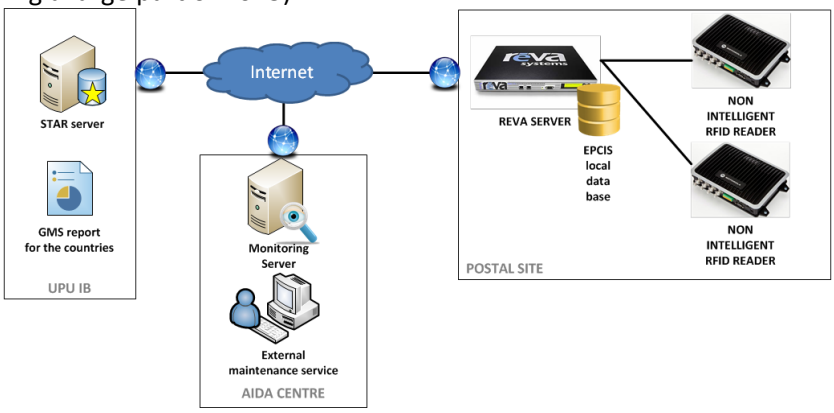


Figure 6.31: Technology architecture based on REVA / source: document UPU-20 "A. REVA DIAGRAM.png"

The diagram below provides an overview of the technology architecture with the Redbite solution (operational during 2014).

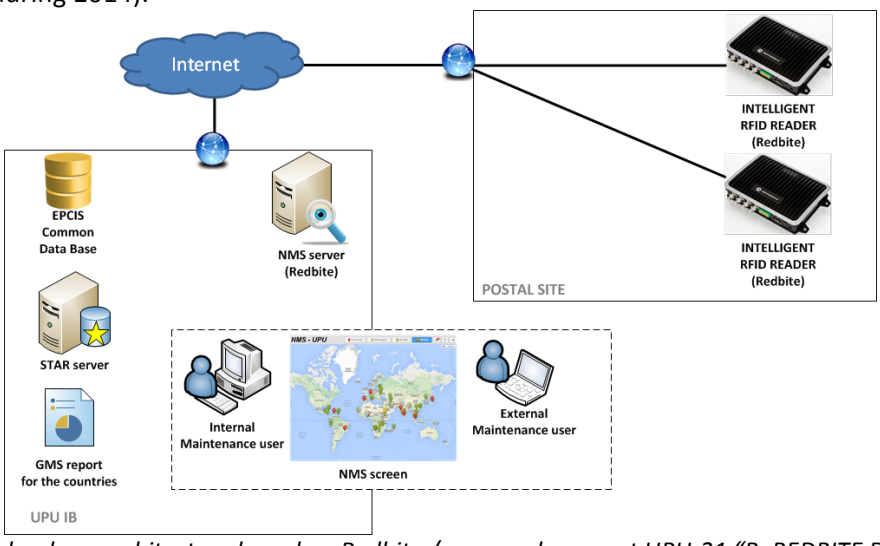


Figure 6.32: technology architecture based on Redbite / source: document UPU-21 "B. REDBITE DIAGRAM.png"

As part of the audit a demonstration was provided which illustrated the functionalities as mentioned above. A management dashboard illustrated the various Terminal Dues sites with RFID installations. A document was provided with an overview of all RFID infrastructure at the various sites managed by UPU (document UPU-01 *"F1 Terminal dues reader list.xlsx"*). Currently UPU have 3 different types

of passive UHF RFID readers operational: Motorola XR-480, Sirit Infinity 510 and Motorola 9500. Depending on the type of reader used, it could be required to have additional hardware on-site, such as e.g. raspberry pi to run local software applications. This is only the case for the XR-480. In Q1 of 2014 the migration to the new Network Monitoring System was performed. By March 2014 the migration was completed. The monitoring services by AIDA were completed in December 2013. As a result there could have been a certain period, during which no infrastructure monitoring was performed.

As the REVA solution is no longer operational, a screenshot was provided of the network monitoring system by REVA/AIDA.

Furthermore the RFID expert of UPU provided a demo about the device management functionality of Redbite. With this solution remote access can be achieved providing online information about the health of the infrastructure. The Redbite solution runs in the cloud in Switzerland and provides real-time status regarding read rates and data connectivity through a diagnostics tool.

In the current situation a tool developed in JIRA is used as a ticketing system to track issues. In the period 2013 issues were tracked by AIDA who used an overview in Excel. An example was provided to the audit team (document UPU-39 *"Report and diagnose tool"*.

The RFID team of UPU in collaboration with the local postal operators, currently manages hardware related issues. In 2013 these issues were managed directly by AIDA. The transition to the current arrangements have provided UPU with cost effectiveness.

In the case of new installations the infrastructure is prepared by the GMS team at UPU and subsequently shipped to and installed by the local postal operator.

The RFID solutions in place are setup to provide 'presence' detection for tags in mail items. In most cases multiple antennae are installed (standard is 4 antenna, locally or small gates have maybe 2 antennas and big gates have 8 antennas).

The existing technology vendor Redbite is focused primarily on software.

In terms of maintenance the following 3 levels of support are in place at UPU GMS:

1) Hardware related issues managed by UPU (restart, configuration change)
2) Otherwise the IT department of the DO is involved
3) 3rd level, local company is contacted who installed the equipment.

In discussing the installation overview, UPU clarified that the distinction between standard and single units are no longer relevant. Currently the same procedure in terms of installation is applied to all GMS countries (among UPU members).
The following examples were provided by UPU to evaluate previous installations and certifications and site pictures:

- Brazil (document UPU-02 *"F8 ON SITE SURVEY BRAZIL GUARULHOS INT_BRSAOD_120804.pdf"*
- Switzerland
- Australia

6.12.3 Basic principles and practical considerations

The procedure adhered to by UPU for adding a new country to the GMS Solution is described below:

1) Initially a country expresses interest in participating in the measurement study;
2) An invitation letter (application form) and Questionnaire is sent to the DO requiring various information to be provided, such, e.g.: is there already a system in place?
3) Furthermore additional information is requested, such as level of inbound traffic, selection of the measurement module, etc.
4) Also technical information is provided to clarify the concept of the GMS measurement solution.
5) After receiving the information and conducting further analysis, the DO is advised. A next step would be to conduct a site survey. Site surveys are conducted either remote or on site. In a lot of cases the remote site survey is sufficient and going on site at all times is no longer necessary. For specific countries, depending on the situation, it is decided to go on site.
6) After analysis of the site survey results, the installation takes place. Detailed installation manuals are provided to the postal operators to install the readers themselves. The infrastructure is pre-configured by the GMS team of UPU and if required configured remotely.

6.12.4 Handover terminal dues points

UPU provided examples of remote site survey reports (such as e.g. the site survey conducted at the Hong Kong Air Mail Centre). On these reports handover points for terminal dues gates are identified. The IMPC (International Mail Processing Centre) codes are included on the site surveys. The IMPC codes are required to determine the handover points. Hand-over points are determined after a remote-site survey.

The following information is documented in the remote site survey:

- General information incl. contact details on site;
- Description of local business processes and flows;
- Information concerning the RFID gates;
- Technical information (e.g.: power information, types of connectivity, etc.)
- Comments and observations;
- Map of the facility with the TD gates identified.

After the installation, an implementation report is generated (document UPU-41 *"UPU Global Monitoring System")*.
An example of an implementation report of Hong Kong is provided to the auditors for further assessment (document UPU-45 *"Site certification Hong Kong")*.

Read rate at handover points terminal dues gates (>95%)
After installation a certification is performed in order to validate whether the read rate performs above 95%. The certification tests are carried out under controlled conditions. The targets under operational conditions are lower than the 95% (the target read rate is 85% under operational conditions).

Procedure for 'Customs gate' installation

In 2013 no custom gate corrections were in place for the GMS measurement solution managed by UPU.
The GMS team illustrated examples of two specific cases describing the situation of an installation at a specific site in question. In the case provided special measures had to be taken due to the width of the specific gates in question (document UPU-44 *"Efficiency test report Madrid"* is one of the example provided). These specific cases are documented in an exception report.

6.12.5 Practical considerations

UPU indeed confirmed that OE's with at least 0.5% of total annual and national inbound volume have installed RFID equipment for Terminal Dues purposes.

Continues checks of integrity
Only the UPU GMS team can access the RFID and related infrastructure on site at the DO's. The status of the equipment is continually being monitored. In the event of irregularities, these will be monitored by the central system, e.g. in the event of tampering. Also if the power is cut from the local systems, this will be noticed. From a system perspective no (potential) integrity issues have been reported.
The tags are pre-programmed and are protected to make it impossible to rewrite the tags.

6.12.5.1 Acceptance process

The GMS team of UPU provided various examples, such as e.g. for Hong Kong the read rate percentage in presented (97%) in the site certification report. Further certification reports are presented for Australia, Switzerland, and Brazil (document UPU-43 *"Site certification Switzerland")*.

The following information is provided in the site certification report:

- General information (author, contact details, etc.)
- RFID Infrastructure information (site map with technical details, installation pictures)
- Certification process (installation architecture, certification test results, comments and conclusions)

After the certification report has been finalised, a visit or call is performed with the local postal operator to discuss the results. Finally the local postal operator accepts and confirms the results presented.

6.12.5.2 Border control correction

For the period 2013 border control corrections (by using RFID gates) were not applicable.

6.12.5.3 Maintenance and Support

Service Level Agreement
Currently UPU have a SLA with Redbite in place. In the period 2013 an SLA was in place with AIDA. A copy of the SLA with AIDA was provided to the audit team for review.
The SLA between UPU and AIDA for the period 2013 describes the following components:

- Scope of the services to be provided
- The following components were part of the SLA:

i. UPS system
ii. Electric switch
iii. Data switch
iv. ADSL router
v. Middleware system
vi. RFID reader, antennas and RF cabling and connectors

- Description of maintenance activities
  i. Reaction times
  ii. Preventive maintenance
  iii. Corrective maintenance
  iv. Spare parts
- Description of support procedures (call scripts, helpdesk, ticketing tool, etc.)

The SLA of AIDA includes a recovery plan.

In 2013 AIDA managed historical data on maintenance performance. The UPU GMS team provided reports to the audit team.

Real-time diagnostic monitoring
In the period 2013 REVA systems were used to manage and monitor the local installations at the DO's. Subsequently a separate management layer was developed by AIDA to be built to centrally manage the entire landscape. As this solution is no longer operational a screen shot was provided to the audit team to illustrate the concept.

The work instructions and procedures for first, second and/or third line support are documented and have been illustrated to the audit team. Also the user manual of the global monitoring system describes maintenance and support procedures (pag. 24).

Currently the reporting and diagnostic tool is used developed in JIRA. This tool was operational starting Q4 2013 / Q1 2014. The reporting tool provides standard reports, categorising the issues as a result of: networking, power, redagent, no component, reader, rededge or planned issues. Nearly 72% of the issues are due to network or power related issues.

Contingency planning and procedures in case of: hardware/system/disaster recovery
Although no overall contingency plan is in place, various contingency and/or incident recovery solutions were presented to the audit team.
The following contingency measures were discussed with the GMS team:

- Description of GMS backup systems (UPU-38 *"GMS backup systems"*)
- Hardware contingency measures as part of the maintenance & support agreement in place (document UPU-47 *"Maintenance Plan Definition"*)

Regular backup are made daily of the GMS System.
The GMS system is currently hosted at METANET, who are an ISO 9001 & 27001 certified data centre co-location company that delivers data centre services from a data centre in Zurich, Switzerland. METANET ensures availability of its network of 99.9%, measured in the interval of each calendar semester (6 months).

The company maintains certification for the following services:

- Data Centre Services

- Connectivity Services
- Disaster Recovery Services

A summary of the GMS Disaster Recovery procedure (document UPU-06 *"f18 GMS Disaster Recovery.pdf"*) was provided to the audit team.

6.12.5.4 Reliability

Performance and reporting
Read rates are monitored by UPU on a monthly basis and by Quotas on a weekly basis.

Quotas
Two servers are in place at Quotas, a webserver and a data server. Every hour the entered date is copied from the webserver to the data server. An in-house development team is in place. Redundant CPU and other hardware components as the server is of high importance. The hardware of the server is exchanged for new parts on a regular basis to reduce risk of losing data. A hard disk back up is in place.

Three times a week the data is coded and moved to an external location. The antennas are managed by QS (battery check, maintenance and repair, etc.). Data captured by the antennas are sent to the data server. For UPU 50 (mailbox) antennas are operational and are rented by UPU. Generated data by the QS antenna is made available to UPU.

No procedures were discussed regarding the archiving of data. Furthermore the system was on occasion 'slow' in performance.

UPU
Reliability of the GMS solution at UPU depends on the local infrastructure at DO's which has been described in previous sections and the reliability of the central applications running at METANET.
The service levels of METANET provide the according reliability.

6.12.5.5 Security/integrity

Data loss prevention
Data loss is prevented by several measures, described below:

- In order to prevent data loss as a result of connectivity issues, data is stored locally on the reader or on the local devices;
- To prevent data loss as a result of power failures a UPS is connected to the local infrastructure. Each site is equipped with a UPS attached to readers, routers and REVA.

The central IT applications are obviously also protected against power failures.

Strict separation between GMS and domestic monitoring systems
Domestic readers were not present in 2013, only the GMS system was in place. In the beginning of June 2014 the first 4 countries implemented domestic monitoring systems. All read data comes in the STAR, in 2013 the STAR was only used for Terminal Dues readers.
When domestic readers are considered to be national monitoring systems, these systems are completely separated from the GMS system.

Protection against external data access
Various obvious measures have been taken in order to prevent external data access: firewalls, secure VPN connections, secure routers, etc.

6.12.5.6 Technical requirements

Read performance
The hardware infrastructure deployed by the GMS team of UPU, consists of the following components:

- RFID reader infrastructure incl. cabling, antennas, etc.
- UPS
- Modem (optional)
- Switches
- Local PC or Redmini, etc.

Furthermore passive tags are used for the UPU GMS members. The quality assurance of the passive tags used can have an important effect on the readability performance of the solution. It is not clear to what extent 100% far field tests are provided by the vendor prior to shipment of the tags. Passive tags are commonly used for baggage handling and have been certified by IATA for such use.

Furthermore active tags are used for UPU GMS members who make use of active technology. The tags are provided through the vendor and/or IPC. No information could be provided with regards to airline compliancy. The GMS team referred to IPC/Lyngsoe.

Read performance

6.12.5.7 Alternative method

No alternative methods for diagnostic monitoring is used for UNEX™ 2013.

6.12.6 Summary of results

An experienced technology group within UPU manages the diagnostic monitoring activities. Structured protocols are in place describing: site surveys, installations and configuration and system testing activities. Recently a transition has been implemented with a new solution provider for parts of the technology landscape.

Documentation is widely available ensuring clear and structured.

UNDERSTANDING OF GMS TECHNICAL DESIGN V1.1	
EXECUTION AGAINST GMS TECHNICAL DESIGN V1.1	

6.12.7 Recommendations for Diagnostic Monitoring

Recommendation 6.21:
Although various contingency measures are in place in order to be able to manage irregularities or calamities, it could be recommended to describe a comprehensive (technical) contingency plan as

well as plan and execute 'disaster recovery' procedures to validate whether the plan meets the expectations. Particularly as different parties provide services to the entire GMS solution a 'dry run' of a contingency exercise could prove to be valuable.

Recommendation 6.22:
It could be recommended to ensure that 100% far field tests are performed on the passive tags (at the supplier) prior to shipment to the production facility at Quotas. This could ensure better readability performance.

Recommendation 6.23:
It could be recommended to first of all perform thorough analysis why a relative high number of mail items are lost in the process. The losses between allocated- and valid items are considerable. Potentially this could be the result of readability performance. It that case, it might be beneficial to monitor the performance more closely to ascertain whether the 85% operational read performance is achieved.

Recommendation 6.24:
It could be recommended to implement (historical) data archiving procedures (Quotas). This could have a positive effect on the performance of the system.

Recommendation 6.25:
It could be recommended to improve the IT solutions used at Quotas in order to prevent some of the manual work, e.g. to simplify the current validation process, which is currently done manually. This could be a pre-requisite if the GMS measurement continues to grow.

Recommendation 6.26:
It is recommended to remove the current reader status from the postal operator dashboard. The status is updated based either on a 6-hour heart beat signal or on actual tag reads. The colour status 'red' or 'green' is not entirely clear. Furthermore the postal operators are not able to take any relevant action. The current status indicator could lead to confusion.

Recommendation 6.27:
It is recommended to check the delays implemented between receiving tag read data and displaying the status of readers on the GMS system.

6.13 Confidentiality and integrity

6.13.1 Confidentiality and integrity – UPU

For the two main systems used by UPU (e.g. GMS STAR and the Network Monitoring System Redbite), strict access control is in place. Access to the GMS STAR system is only granted to the following UPU GMS team members:

- Antonio Caeiro
- Julius Tsuwi
- David Lozano
- Gonçalo Antão
- Stephane Vuillemin
- Geraldine Anne Krebs

Two different levels of administrative rights apply, namely super administrative users and administrative users. The whole team has administrative rights, and three members are super administrative users of the team and have extended rights with regards to changes to the statistical designs if applicable. Upon delivery of the statistical design from Quotas, the allocation matrixes are validated and uploaded by UPU. Access to the Network Monitoring Systems (NMS) is provided to the following team members, all having the administrative rights:

- Antonio Caeiro
- Gonçalo Antão
- David Lozano
- Julius Tsuwi

Sensitive and critical information such as the allocation matrixes and traffic volumes that are commercially sensitive for the postal operators is stored on a shared network within the UPU directories, avoiding access from outside. The data is encrypted and can only be accessed from an external network by means of a VPN channel and several firewalls are in place of which 90% of the member countries have the same firewall rules and routers. The following figure shows an example of the VPN firewall router *(*document UPU-22 *"F23 Billion 7402 firewall B.png")*.

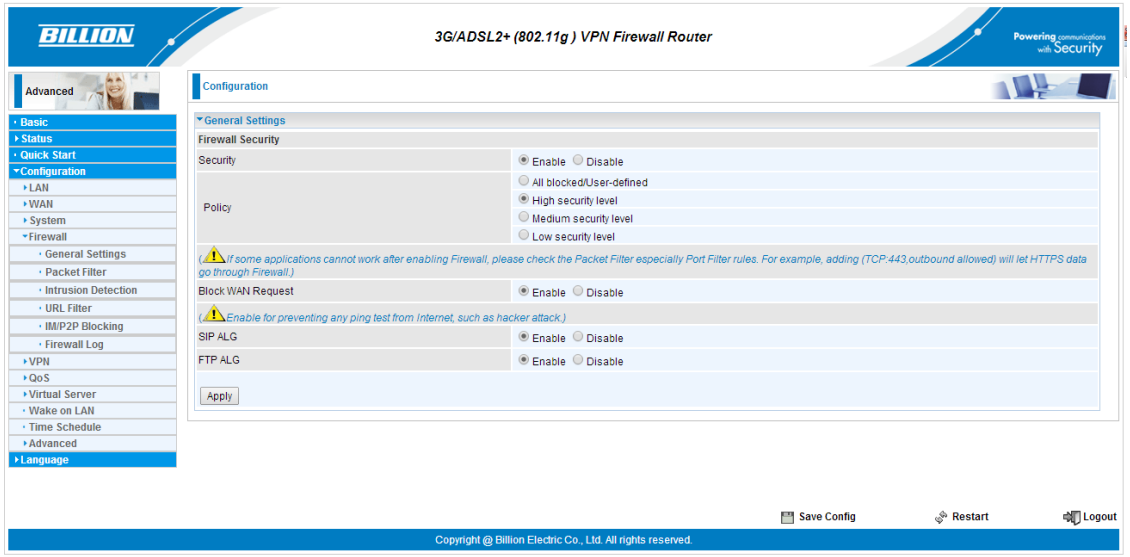


Figure 6.33: screenshot of a VPN firewall router

The directory for GMS is called DOT (Directory of Operations Technology) network and even within the DOT the GMS related data and files is limited to the GMS unit QMS (Quality Measurement

System). This unit is only accessible by the GMS full team and written requests to Antonio Caeiro are required for accessing or viewing data (requests for accessing confidential information are not applicable for 2013). Printing of documents is limited for internal discussions.

The security of generated RFID data is secured by means of the following measures:

- Rewrite of tags is not possible.
- Data on reader is saved in case of power outage for example.
- Countries have no configuration access. Only the UPU team can access data on the system.
- Each postal site has a UPS that is attached to the readers, routers and Reva server to assure a 2-hour operability.

Integrity cases with regards to this topic have not been experienced until this moment.

A strict separation between GMS and domestic monitoring systems are not applicable for 2013, as only the GMS system is in place. In the beginning of June 2014 the first four countries implemented domestic monitoring systems. Only readers for Terminal Dues were considered. All read data comes in the GMS STAR, in 2013 only used for Terminal Dues readers.

The delivery of mail volumes is gathered by means of the questionnaire with regards to the updates and annual review of essential design parameters.

The GMS STAR only provides relevant data for a specific member country requesting that data, as UPU is aware not to disclose any information with the regards to the identity of the Pool 1 and Pool 2 countries. As members countries have to log on in the GMS STAR with member specific credentials, each member is allowed to generate the monthly summary report that includes all names of the member countries related to the performance, but the other reports are country specific and can only be viewed by that particular country that is logged-on.

The allocation matrixes (statistical designs) within UPU are only accessed by the GMS team members.

UPU is not aware of any names or locations of panellists, indicating a complete separation in confidential information between UPU and Quotas. UPU deals directly with the member countries and queries are sent to UPU. A significant issue with regards to integrity of panellists occured in 2013, which will be described in the following paragraph.

6.13.2 Confidentiality and integrity - Quotas

UPUMAX is considered as the hart of the operation at Quotas, the central system that is used for all activities regarding the test mail items, allocation and data registration. UPUMAX is integrated with the panel management system QuoPacMan. The system is only accessible by Quotas employees of the GMS team and all GMS team members and people working for the project have access to all information. Employees from other projects (measurement studies) do not have access. Cost calculations, tenders, etc. are not accessible.

For security reasons and to maintain confidentiality two servers are in place. A webserver and the internal data server and every hour the entered date by the panellist from the webserver is transferred to the data server. Both servers are located at the Quotas office in Hamburg. An in-

house development team is in place for maintenance of the databases and to follow up alerts (24/7 availability).

For the webserver a second back-up is in place to immediately take over in case of irregularities with the first webserver to guarantee panellists can continue entering data, a stand-by server for the internal data server is also available. The stand-by server are “high availability type servers”,which means internal redundant components are integrated, like a redundant CPU, redundant power supply, redundant hard disk, redundant ventilators and other hardware components to take over. The hardware of the server is exchanged for new parts on a regular basis to reduce the risk of losing data. The server hard disk is mirrored and a daily multiple data back-up procedure on one tape and two external disks is performed.

Three times a week the data is coded and moved to an external location. The antennas, placed at panellists’ mailboxes, is managed by Quotas (battery check, maintenance and repair, etc.). Data captured by the antennas is sent by SMS to the data server. For UPU 50 antennas are operational and are rented by UPU. Generated data by the Quotas antenna is made available to UPU. Providing data: posting dates, receipt dates and status of the item.

With regards to the integrity of panellists, no detailed information is provided by Quotas and panellist queries are in place. When panellists are discovered, they are replaced. An example of a significant integrity case in 2013 was explained by Quotas, resulting in the replacement of half of the panel in one of the member countries.

Quotas was informed by the panellists from the member country and communicated this accordingly per mail to UPU. A query is presented in which the problem with the country involved was detected in May 2013. The panellists were invited to the country member’s post office to talk about delivery of mail items and biasing data (the information is saved in a query folder). An overview of the member’s post is presented where the panellists are deleted from the measurement.
In the document the status of 2 panellists is still ‘open’ as these panellists haven’t responded back. The panellists’ status was checked and a number of panellists were deleted and other panellists remained, as they were not discovered.

Due to the situation in the specific country, two conference calls took place. In the first call between UPU and the postal country it was confirmed by both parties that a breach in integrity of panelists in specific areas (not all areas) had taken place. Therefore, it was not considered a national issue. Measures were taken by replacing panelists and refreshing test items and the commitment of the top management was assured concerning the approach and to avoid such situations in the future. A second conference call took place between UPU and Quotas in which the next steps were discussed.

No minutes or other documents can be reproduced to substantiate the decisions made. Therefore currently this integrity breach is not fully auditable.

Another case was the discovery of a return envelope containing 2 transponders.

6.13.3 Summary of results

Both UPU and Quotas have taken sufficient measures against data confidentially and protection.

No reports or general overview documents of integrity cases are in place. Also no written procedures are in place.

A significant case of panel integrity took place in 2013. Although email communication is documented, the essential decisions were made during conference calls, making it impossible to audit.

6.13.4 Recommendations

Recommendation 6.28:
As irregularities are often first noticed by panellists, it is recommended to inform panellists on how to notice and deal with such events with manuals/instructions/FAQ on the panellist portal website.

Recommendation 6.29:
It is recommended to document integrity breaches in a much more structured manner than is currently the case at UPU and Quotas. All integrity breaches should be listed in a report (for management and auditing purposes). Furthermore per breach event a detailed document describing the event, measures taken and decisions, potential follow-up actions, etc. should be drafted.

6.14 Updates and annual review of essential design parameters

Updates of the statistical design are performed once a year according to the questionnaire that countries receive to confirm the correctness of the data. Annual review of the statistical designs is performed at the end of the year, based on the changes delivered in August/September by means of the questionnaires (the latest changes can be made in the beginning of November) and at the end of the year a check is performed with the already available information with regards to the statistical design parameters, such as:

- CTT's per Offices of Exchange
- NWD's, NPD's and NDD's (are marked in UPUMAX)
- Public holidays

Changes are applied accordingly. For countries not replying to the questionnaire and thus not delivering updated information (especially with the public holidays), desk research is performed by Quotas. Also for countries that did reply, desk research is performed for validation purposes and Quotas provides feedback in case of inconsistencies between the delivered and researched data.

In the case of requests for changes during the year, Quotas applies these accordingly. Basically, the only changes that are received during the year are related to holidays (e.g. Ramadan) or P.O. Boxes. The other parameters are fixed for the year (e.g. sample sizes, links, city coverage, population, delivery times, etc.).

Quotas adjusts both systems (UPUMAX and GMS STAR), as it could be that UPU does not receive any updated information. UPU changes the year to the current year, causing errors due to inconsistent dates.

An example provided by Quotas is the calculation of the transit time, for which NWD's and CTT's are required. UPU calculates the transit time themselves with their schedule or researched holidays. This can lead to differences in lead-times and (in)valid items, so validation is required again.

Panellist data with regards to holiday, etc. is entered directly by panellists in personal website which is one-to-one input for UPUMAX.

6.15 Operational Performance of Measurement Service Provider UPU / Quotas in 2013

In this section the overall *Operational Performance* is assessed of the Measurement Service Provider UPU / Quotas for the measurement period 2013. The audit team have decided to evaluate the overall performance based on the following three questions:

1. To what extent was the measurement provider successful in setting up a panel in the various receiving cities/countries in order to be able to receive test mail items?
2. To what extent was the measurement provider successful in injecting sufficient valid mail items in the measurement study according to the GMS Technical Design v1.1?
3. To what extent can the results achieved be used (linking QS results) for Terminal Dues calculations for the reporting period 2013?

The two questions are assessed below and the third question is discussed in paragraph 7.15.2.

6.15.1 KPI's monitored at UPU / Quotas

Panel Management Performance
The chart below provides an overview per month of the Panel Management Performance for the measurement period 2013.

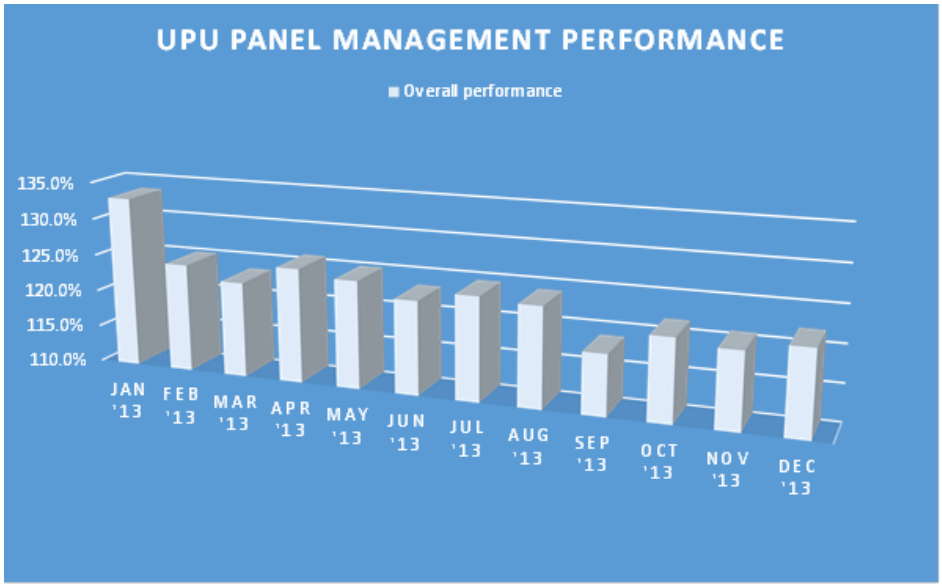


Figure 6.34: UPU/Quotas Panel Management Performance - 2013

In the following chart the same information is displayed in a 2D chart. The two charts were derived from operational data obtained from Quotas in which the 'expected' panel according to the design has been compared with the 'actual' achieved panel on a monthly basis. In these charts all the panels of the various UPU GMS members have been combined in order to assess the overall performance. A percentage under 100% means less panel members were actually in place with respect to the design, hence indicating **'under performance'**. A percentage above 100% means more panel members were in place, hence indicating **'over performance'**.

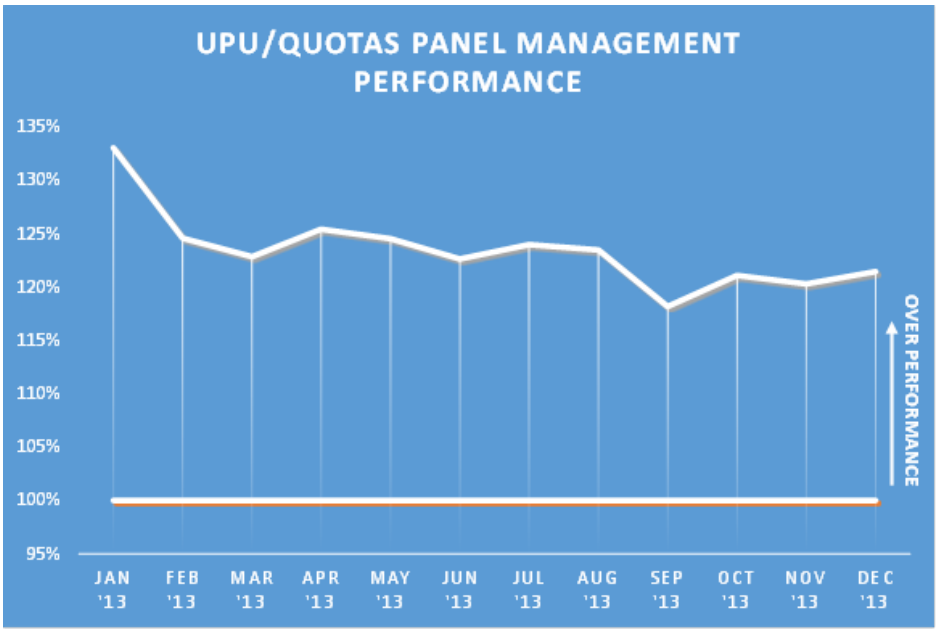


Figure 6.35: UPU / Quotas Panel Management Performance – 2013 (2D version)

In the chart above a baseline of 100% has been added, which indicates the level at which the panel would have been fully in place according to the GMS Technical Design v1.1. The chart illustrates that for the entire period 2013 more panel members were in place than would have been required according to the design. This can be explained as a result of the prudent and successful approach by Quotas in deploying 'reserve' panels and thus achieving higher levels of panel availability.

Valid Mail Item Performance

The next KPI is meant to assess whether sufficient Valid Mail Items have been included in the GMS Measurement System.

In terms of the mail items for the period 2013, the chart below provides the insight in the following parameters:

1. ***Valid Test Mail Item (VTMI) rate: target vs. allocated*** – this ratio compares the number of mail items which were allocated (i.e. planned for production) with the number of mail items according to the design;
2. ***Valid Test Mail Item (VTMI) rate: target vs. valid*** – this ratio compares the number of mail items which were considered valid* (i.e. mail items which are qualified to be part of the measurement study), with the number of mail items according to the design;

* Valid items in this sense means mail items which were:

- Produced;

- Registered (RFID reading) at an inbound OE;
- Received and registered by panellist at destination city/country;
- Item has been successfully validated according to the rules of the GMS Technical Design v1.1.

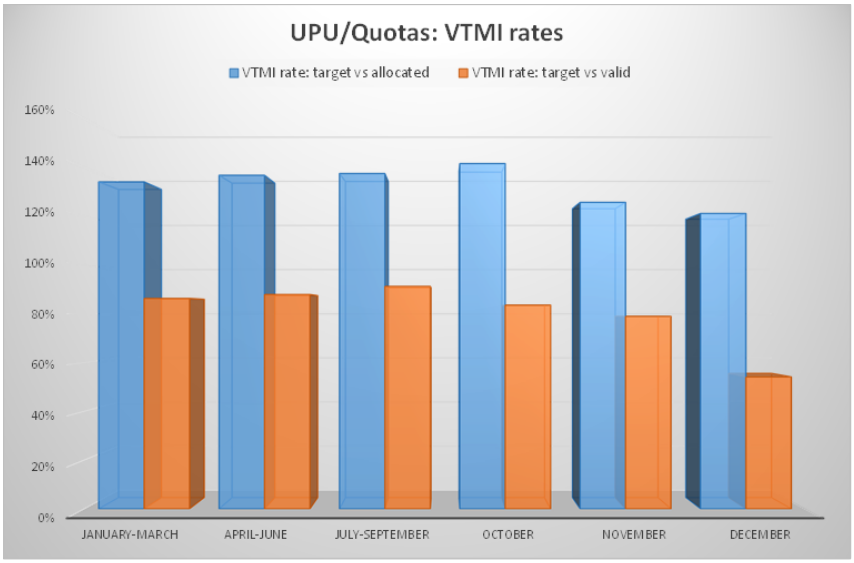


Figure 6.36: Overall Valid Mail Performance – 2013

In the chart below the VTMI rate: target vs. allocated is displayed in a 2D chart. In this chart also the 100% benchmark has been added. This chart illustrates that during the entire period 2013 a significant higher number of items were allocated with respect to the design. Obviously as items will have to be excluded for various reasons (e.g. due to missed RFID reads) this is good practice to allocate more items than the design prescribes. The chart also indicates that for the first 3 quarters the 'over performance' remained at a consistent level and that in Q4 this dropped slightly.

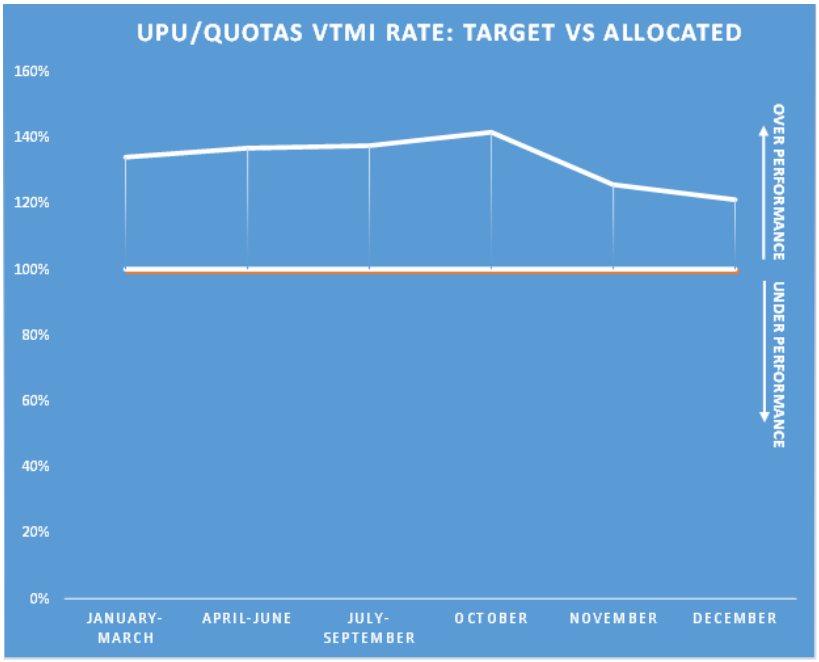


Figure 6.37: VTMI rate performance (target vs allocated) – 2013 (2D version)

The ultimate performance is displayed in the chart below the VTMI rate: target vs. valid (displayed in a 2D chart). In this chart also the 100% benchmark has been added.

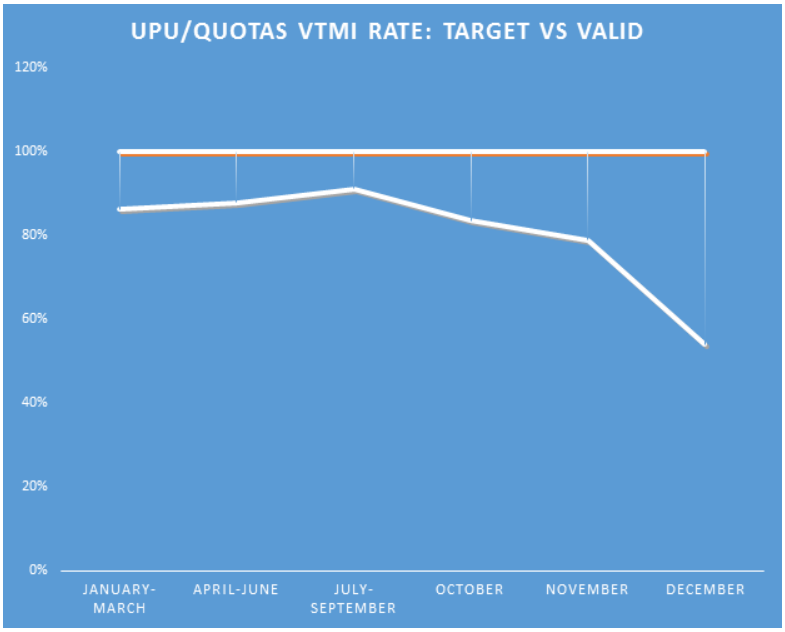


Figure 6.38: VTMI rate performance (target vs valid) – 2013 (2D version)

This chart illustrates the extent to which valid items for reporting purposes as part of the GMS Measurement Study have been created. With the 100% benchmark it is clear that during the entire period a significant number of items were lost. It would be interesting for operational purposes to further analyse what the main reasons are why items are lost in the study. In terms of the overall performance lower valid items were injected in the GMS measurement study than according to the GMS Technical Design v1.1.

In the next 2 tables an overview of operational performance is provided per country for the period 2013. In the first table this is provided for the list of countries that indeed link QS results to Terminal Dues. In the second table the remaining countries are listed who don't link QS results to Terminal Dues.

Countries linking QS results to TD

The table (below) provides an overview of the performance per country for the period 2013. In all cases the numbers of 'allocated' items are substantially higher than the number of 'target' items.

In the next column the 'target' vs. 'valid' rates are displayed per country for the entire period 2013. Percentages under 100% indicate that less valid items were achieved than should have been the case according to the design. These percentages are marked in 'red'.

Of the entire list of UPU GMS Terminal Dues countries and including, Country B.6 (92,5%) for a total number of 7 countries sufficient valid items were achieved as specified in the respective designs. This means that for 58% (7 out of 12) of all UPU GMS countries (linking QS results to TD) the objective of the measurement study was achieved.

OPERATIONAL PERFORMANCE REPORT UPU/QUOTAS 2013 TD COUNTRIES						
Level	Country	Design (target)	Allocated	Valid	Rate (target vs allocated)	Rate (target vs valid)
A	Country A.1	10000	13350	8584	133.50%	85.84%
B	Country B.1	3800	5303	3391	139.55%	89.24%
	Country B.2	3800	4573	3854	120.34%	101.42%
	Country B.3	3800	4909	4003	129.18%	105.34%
	Country B.4	3800	7256	4942	190.95%	130.05%
	Country B.5	3800	5607	3011	147.55%	79.24%
	Country B.6	3800	5523	3517	145.34%	92.55%
C	Country C.1	2100	3032	2236	144.38%	106.48%
D	Country D.1	900	1267	754	140.78%	83.78%
E	Country E.1	300	430	210	143.33%	70.00%
	Country E.2	300	362	310	120.67%	103.33%
	Country E.3	300	528	375	176.00%	125.00%

Figure 6.39: Operational performance report UPU/Quotas 2013

* Data used from Quotas file: "GMS Manual 2014 2.0.xlsx

With the adjusted and in most cases lower number of 'valid mail items' the achieved accuracy of the GMS measurement study can be recalculated and compared to the 'minimum annual statistical accuracy'. The calculation method is described in the GMS technical Design v1.1 (section: C1.2 Estimation of accuracy), according to the following formula:

$$Accuracy(P) = \pm 1.96 * design\ factor * \sqrt{[P(1-P)/N]}$$

If the achieved accuracy (with the lower number of valid mail items) is equal or better than the defined 'minimum annual statistical accuracy', the results for the specific country can successfully be used for Terminal Dues calculation, as the results would be compliant with the GMS Technical Design v1.1.

Testing compliance of results against the "minimum annual statistical accuracy" as specified in GMS technical design v1.1 was recalculated in a similar way as was the case with the UNEX results. This procedure was described in: POC 2013.2–Doc 5e document "Use of quality of service reports for the UPU QS link in 2013, the relating POC chair's decision and POC C 3 2014.1–Doc 6a).

RECALCULATED STATISTICAL ACCURACY UPU/QUOTAS				
Level	Country	* Estimated Accuracy	Min. annual Stat. accuracy	Compliant with GMS TD v1.1
A	Country A.1	0.46%	1.00%	✓
B	Country B.1	0.73%	1.50%	✓
	Country B.2	0.69%	1.50%	✓
	Country B.3	0.68%	1.50%	✓
	Country B.4	0.61%	1.50%	✓
	Country B.5	0.78%	1.50%	✓
	Country B.6	0.72%	1.50%	✓
C	Country C.1	0.90%	2.00%	✓
D	Country D.1	1.56%	3.00%	✓
E	Country E.1	2.95%	5.00%	✓
	Country E.2	2.43%	5.00%	✓
	Country E.3	2.21%	5.00%	✓

Figure 6.40: Recalculated statistical accuracy UPU/Quotas 2013 (linking QS results to TD)

In the table above the 'estimated accuracy' (based on the lower number of items) is compared with the 'minimum annual statistical accuracy'. The 'estimated accuracy' is calculated based on a POT of 95% instead of the actual POT. This data was provided by UPU.

The final column indicates whether the actual results comply with the GMS Technical Design v1.1 and can indeed be used for Terminal Dues calculation. The symbols in the last column indicate the following:

- : indicates that the results achieved are compliant with the GMS technical Design v1.1;
- : indicates that the variations to the GMS technical Design v1.1 are minimal, so that the results should be considered compliant to the GMS technical Design v1.1 ;
- : indicates that the results achieved are not compliant with the GMS technical Design v1.1.

Based on the recalculated accuracy (based on the lower valid mail items) for the entire list of UPU GMS countries linking QS results to Terminal Dues, the measurement study results would prove to be compliant with the GMS technical Design v1.1.

Countries not linking QS results to TD

The table (below) provides an overview of the performance per country for the period 2013 for countries that don't link QS results to Terminal Dues. In all cases the numbers of 'allocated' items are substantially higher than the number of 'target' items.

In the next column the 'target' vs. 'valid' rates are displayed per country for the entire period 2013. Percentages under 100% indicate that less valid items were achieved than should have been according to the design. These percentages are marked in 'red'.

OPERATIONAL PERFORMANCE REPORT UPU/QUOTAS 2013 NON TD COUNTRIES						
Level	Country	Design	Allocated	Valid	Rate (target vs allocated)	Rate (target vs valid)
B	Country B.1	4026	5399	3059	134.10%	75.98%
	Country B.2	3804	5342	3037	140.43%	79.84%
	Country B.3	3804	4908	3177	129.02%	83.52%
	Country B.4	3804	5624	2868	147.84%	75.39%
	Country B.5	3804	5456	3581	143.43%	94.14%
	Country B.6	3804	5510	4107	144.85%	107.97%
	Country B.7	3804	4650	4127	122.24%	108.49%
	Country B.8	3804	4610	3471	121.19%	91.25%
	Country B.9	3804	5612	3583	147.53%	94.19%
C	Country C.1	2268	3103	1946	136.82%	85.80%
	Country C.2	2100	3107	1904	147.95%	90.67%
D	Country D.1	900	1215	1039	135.00%	115.44%
	Country D.2	900	1318	1147	146.44%	127.44%
	Country D.3	900	1332	799	148.00%	88.78%
	Country D.4	1020	1441	1047	141.27%	102.65%
	Country D.5	900	1249	749	138.78%	83.22%
E	Country E.1	300	441	324	147.00%	108.00%
	Country E.2	300	409	329	136.33%	109.67%
	Country E.3	300	408	291	136.00%	97.00%
	Country E.4	300	414	175	138.00%	58.33%
	Country E.5	300	423	213	141.00%	71.00%
	Country E.6	300	420	224	140.00%	74.67%
	Country E.7	300	433	362	144.33%	120.67%
	Country E.8	300	432	259	144.00%	86.33%
	Country E.9	300	404	181	134.67%	60.33%
	Country E.10	300	424	288	141.33%	96.00%
	Country E.11	300	438	147	146.00%	49.00%
	Country E.12	300	413	232	137.67%	77.33%
	Country E.13	300	428	316	142.67%	105.33%
	Country E.14	300	413	224	137.67%	74.67%
	Country E.15	300	427	269	142.33%	89.67%
	Country E.16	300	411	171	137.00%	57.00%
	Country E.17	300	441	275	147.00%	91.67%
	Country E.18	300	414	286	138.00%	95.33%
	Country E.19	300	436	54	145.33%	18.00%
	Country E.20	300	414	271	138.00%	90.33%

Figure 6.41: Operational performance report UPU/Quotas 2013

With the adjusted and in most cases lower number of 'valid mail items' the achieved accuracy of the GMS measurement study can be recalculated and compared to the 'minimum annual statistical accuracy'. The calculation method is described in the GMS technical Design v1.1 (section: C1.2 Estimation of accuracy), according to the following formula:

$$Accuracy(P) = \pm 1.96 * design\ factor * \sqrt{[P(1-P)/N]}$$

If the achieved accuracy (with the lower number of valid mail items) is equal or better than the defined 'minimum annual statistical accuracy', the results for the specific country would be considered in compliance with the GMS Technical Design v1.1.

RECALCULATED STATISTICAL ACCURACY UPU/QUOTAS				
Level	Country	* Estimated Accuracy	Min. annual Stat. accuracy	Compliant with GMS TD v1.1
B	Country B.1	0.77%	1.50%	✓
	Country B.2	0.78%	1.50%	✓
	Country B.3	0.76%	1.50%	✓
	Country B.4	0.80%	1.50%	✓
	Country B.5	0.71%	1.50%	✓
	Country B.6	0.67%	1.50%	✓
	Country B.7	0.66%	1.50%	✓
	Country B.8	0.73%	1.50%	✓
	Country B.9	0.71%	1.50%	✓
C	Country C.1	0.97%	2.00%	✓
	Country C.2	0.98%	2.00%	✓
D	Country D.1	1.33%	3.00%	✓
	Country D.2	1.26%	3.00%	✓
	Country D.3	1.51%	3.00%	✓
	Country D.4	1.32%	3.00%	✓
	Country D.5	1.56%	3.00%	✓
E	Country E.1	2.37%	5.00%	✓
	Country E.2	2.36%	5.00%	✓
	Country E.3	2.50%	5.00%	✓
	Country E.4	3.23%	5.00%	✓
	Country E.5	2.93%	5.00%	✓
	Country E.6	2.85%	5.00%	✓
	Country E.7	2.25%	5.00%	✓
	Country E.8	2.65%	5.00%	✓
	Country E.9	3.18%	5.00%	✓
	Country E.11	2.52%	5.00%	✓
	Country E.12	3.52%	5.00%	✓
	Country E.13	2.80%	5.00%	✓
	Country E.14	2.40%	5.00%	✓
	Country E.15	2.85%	5.00%	✓
	Country E.16	2.60%	5.00%	✓
	Country E.17	3.27%	5.00%	✓
	Country E.18	2.58%	5.00%	✓
	Country E.19	2.53%	5.00%	✓
	Country E.20	5.81%	5.00%	✗
	Country E.21	2.59%	5.00%	✓

Figure 6.42: Recalculated statistical accuracy UPU/Quotas 2013 (non-linking QS results to TD)

In the table above the 'estimated accuracy' (based on the lower number of items) is compared with the 'minimum annual statistical accuracy'. The 'estimated accuracy' is calculated based on a POT of 95% instead of the actual POT. This data was provided by UPU.

The final column indicates whether the actual results comply with the GMS Technical Design v1.1.

The symbols in the last column indicate the following:

- : indicates that the results achieved are compliant with the GMS technical Design v1.1;
- : indicates that the variations to the GMS technical Design v1.1 are minimal, so that the results should be considered compliant to the GMS technical Design v1.1 ;
- : indicates that the results achieved are not compliant with the GMS technical Design v1.1.

Based on the recalculated accuracy (based on the lower valid mail items) for the entire list of UPU GMS countries not linking QS results to Terminal Dues except one, the measurement study results would prove to be compliant.

6.15.2 Conclusion with regards to compliancy

Countries linking QS results to TD
For 5 out of 11 participants the volumes of valid items were lower than target.
Testing compliance of results against the "minimum annual statistical accuracy" as specified in GMS technical design v1.1, by analogy with the process for the use of UNEX results (POC 2013.2–Doc 5e document "Use of quality of service reports for the UPU QS link in 2013, the relating POC chair's decision and POC C 3 2014.1–Doc 6a), for the entire list of UPU GMS countries linking QS results to Terminal Dues, the measurement study results would prove to be compliant.

Countries not linking QS results to TD
Participants not linking TDs to quality may be considered as measuring their quality on a trial basis, before joining the TD/QS UPU link system.
This multiplies risks affecting volumes of valid items.
In fact of the entire list of UPU GMS countries not linking QS results to Terminal Dues for 20 out of 36 countries the volumes of valid items were lower than the target set in the design.

Similarly, testing compliance of results against the "minimum annual statistical accuracy", by analogy with the process followed for the use of UNEX results (POC 2013.2–Doc 5e document "Use of quality of service reports for the UPU QS link in 2013, the relating POC chair's decision and POC C 3 2014.1–Doc 6a), for the entire list of UPU GMS countries not linking QS results to Terminal Dues except one, the measurement study results would prove to be compliant.

7 CONCLUSION OF EXTERNAL AUDIT OF UPU-AGREED MEASUREMENT SYSTEMS

In this section the overall conclusion of the external audit of the UPU-agreed GMS measurement system is described.

In the RFP the following areas were specified as areas to be audited:

- Understanding of GMS Technical Design v1.1;
- Execution against the GMS Technical Design v1.1 (which is further specified below);
  1. To what extent was the measurement provider successful in setting up a panel in the various receiving cities/countries in order to be able to receive test mail items?
  2. To what extent was the measurement provider successful in injecting sufficient valid mail items according to the GMS Technical Design v1.1?
  3. To what extent can the results achieved be used (linking QS results) for Terminal Dues calculations for the reporting period 2013?
- Reporting outputs;
- Contingency Planning.

MSP: IPC / UNEX

The assessment of the auditor is that there is a good understanding of the GMS Technical Design v.1.1 by IPC. Furthermore the UNEX™ teams at IPC and the UNEX™ project team at TNS, demonstrated well organised professional working practices and motivated teams working on the UNEX™ module.
In 2013 due to transition issues the panel management performance did not comply with the requirements as specified in the GMS Technical Design. Also the number of valid mail items injected in the GMS measurement study wasn't in compliance, as they were too low.

However, the issue on this non-compliance was tackled within the UPU/POC (Re: POC 2013.2–Doc 5e document "Use of quality of service reports for the UPU QS link in 2013, a POC chair's decision and POC C 3 2014.1–Doc 6a).
The accuracy has been calculated using 95% as P in the formula and then compared to the 'minimum accuracy', as specified according to the GMS Technical Design v1.1. showing higher accuracy in all but 3 cases.
The issue was examined by POC.

A technical assessment of the data revealed that the test volumes of the UNEX measurement in 2013 were sufficient to drive performance results that are acceptable in terms of the minimum annual statistical accuracy targets defined in the GMS Technical Design.
The technical conclusion was that the 2013 quality of service results of the UNEX measurements could be used for the calculation of the terminal dues rates.
Based on these considerations the POC considered that the QS results achieved by the MSP could be used for TD purposes.

Further, reporting outputs were found to be in compliance with the GMS Technical Design v1.1. Various contingencies were found as being in place however no comprehensive contingency approach is implemented.

MSP: UPU-IB / GMS

The assessment of the auditor is that there is a good understanding of the GMS Technical Design v.1.1 by UPU. The GMS team at UPU and the GMS project team at Quotas have demonstrated well organised professional working practices and motivated teams working on the GMS Solution.

In 2013 the panel management performance exceeded the minimum requirements as defined by the GMS Technical Design. Also the number of allocated (i.e. to be produced by the contractor) was significantly higher than according to the GMS Technical Design v.1.1.
Lower volumes of valid items, as compared to the target, were observed in a number of cases. This is analysed below.
The lower than the minimum required valid mail items and subsequent lower accuracy level observed was explained as being due to maintenance issues, related to electrical power supply and connectivity, which were out of the MSP's control.

Countries linking QS results to TD

For 5 out of 11 participants the volumes of valid items were lower than target.
Testing compliance of results against the "minimum annual statistical accuracy" as specified in GMS technical design v1.1, by analogy with the process for the use of UNEX results (POC 2013.2–Doc 5e document "Use of quality of service reports for the UPU QS link in 2013, the relating POC chair's decision and POC C 3 2014.1–Doc 6a), for the entire list of UPU GMS countries linking QS results to Terminal Dues, the measurement study results would prove to be compliant.

Countries not linking QS results to TD

Participants not linking TDs to quality may be considered as measuring their quality on a trial basis, before joining the TD/QS UPU link system.
This multiplies risks affecting volumes of valid items.
In fact of the entire list of UPU GMS countries not linking QS results to Terminal Dues for 20 out of 36 countries the volumes of valid items were lower than the target set in the design.

Similarly, testing compliance of results against the "minimum annual statistical accuracy", by analogy with the process followed for the use of UNEX results (POC 2013.2–Doc 5e document "Use of quality of service reports for the UPU QS link in 2013, the relating POC chair's decision and POC C 3 2014.1–Doc 6a), for the entire list of UPU GMS countries not linking QS results to Terminal Dues except one, the measurement study results would prove to be compliant.

Overall, reporting outputs were found to be in compliance with the GMS Technical Design v1.1. Various contingencies were found as being in place however no comprehensive contingency approach is implemented.

8 SUMMARY OF RECOMMENDATIONS

The section below summarises the recommendations made by the auditors regarding the MSP: IPC / TNS.

Recommendation 5.1:
Although examples of practical contingency measures were provided, it could be recommended to draft a *Contingency Plan*, describing pro-actively which measures could be taken in the event of various 'what if' scenario's.

Recommendation 5.2:
Align the timelines with respect to the real mail data used as a basis for the design calculations between IPC and UPU, in order to assure that the designs are consistent and on time.

Recommendation 5.3:
Institutionalise a Quality Review Group (between UPU and IPC) with the responsibility to assess the proposed designs (of IPC and UPU) prior to the year of measurement. This would ensure an approval process 'before the fact' rather than 'after the fact'.

Recommendation 5.4:
Institutionalise a formal meeting structure between IPC and UPU, which could be used to discuss and decide on specific potential deviations or interpretations during the design process.

Recommendation 5.5:
It could be considered for consistency purposes to centralise the procedure of calculating the GMS designs.

Recommendation 5.6:
It would be recommended to harmonise the adopted procedure for the rotation of *Pool 1* member countries. The selection by IPC is currently done randomly with no explicit reference to earlier *Pool 1* countries selected. Although the audit team verified that the Pool 1 countries of the reviewed designs were not 100% identical to the *Pool 1* countries of the previous years' design, there is a risk that the same countries could be selected.

Recommendation 5.7:
In order to prevent potential issues due to 'late' designs it would be recommended to implement and communicate the collection and update procedure with clear time schedules to all participating GMS member countries for making data available and for deciding to opt for specific reports.

Recommendation 5.8:
Institutionalise operational meeting structures between IPC (UNEX™) and UPU IB as a control framework for monitoring progress of the GMS measurement solution.

Recommendation 5.9:
It is recommended to adopt thorough integration tests prior to the delivery of significant new IT business applications in order to prevent disruption to productive business operations.

Recommendation 5.10:
In could be considered to pursue more operational flexibility from the contractor TNS in order to make it possible to assume the implementation of finalised designs even though not all designs are completed.

Recommendation 5.11:
The adoption of reserves or back-up panellist is currently based on the experience and assessment of panel coordinators and not on historic- and/or seasonal patterns. Currently no systematic procedure seems to be in place with respect to back-up panellists. It would be recommended to manage back-up panellists with a more pro-active approach in order to be able to accommodate potential shortfalls and as part of a contingency plan.

Recommendation 5.12:
Currently no specific information is provided to receiver panellists in the on-line tool or as FAQ, describing how to deal with potential irregularities. Scripts with detailed scenarios describing specific situations as reference material for receiver panellists could be recommended.

Recommendation 5.13:
The current training documents and guidelines in place contain a lot of textual instructions. A recommendation could be to provide such information in a more visual manner. The use of less text and more visuals and/or more video instructions could improve the training programme and potentially reduce the effort required to provide training instructions by panel coordinators on the phone. Also e-learning or other online tools could be a option.

Recommendation 5.14:
Particularly because of the central operation were TNS produce a considerable number of test mail items every year and the high volume of items produced for the GMS measurement study, it would be recommended to develop a detailed 'Business Contingency Plan' (BCP). This BCP should describe contingency measures and fall back scenarios in detail ensuring that should calamities occur the disruption to business operations will be limited.

Recommendation 5.15:
Although the stamps are stored centrally and a limited number of employees have access, it is recommended to reconsider the effectiveness of the vault. It appears that the vault currently in place is partially theft proof under the conditions of normal circumstances. However, the vault is built against a thin wall and didn't seem to be fireproof. Particularly considering the high value of the goods it might be worth considering additional security measures.

Recommendation 5.16:
Further notice could be given to the fact that currently no sprinkler installation is in place as a preventive measure against fire.

Recommendation 5.17:
The manual scanning process to de-associate transponders from the item-ID could be considerably improved if the process would be re-designed. If the identification technology could be replaced with RFID technology, the process could be improved to automatically include the battery check and stock count. Another option could be to omit the de-association process until the tags are associated again (software based solution).

Recommendation 5.18:
Integrate despatch information from carriers with "UNEX™ Courier Report", so data with regards to validated deliveries to sending panellists can be automated, resulting in the avoidance of manual data entry.

Recommendation 5.19:
The decision to terminate the archiving activities of returned mail items (from 2014 onwards) is considered a good decision, as the auditors perceive this a limited value added activity in relation to the effort it requires. Furthermore the GMS Technical Design does not require archiving.

Recommendation 5.20:
To make the data gathering (first collection and updates) more efficient, it could be considered to implement an easy tool for DO's to enter or upload the required data themselves. By enabling the DO to enter data directly in to UMMS via simple application or tool, any human mistakes during entry by IPC or interpretation risks by IPC are limited.

With the application for DO's, a (real-time) validation during entry or request for additional or update of data can be easily achieved (e.g. quarterly).

Recommendation 5.21:
The following recommendations all apply to the Monthly Summary Report:
1) Generate a clear overview for all requests for change: by country, request/consideration and decision. Currently, this is only stored by IPC in mails (QLUG meetings) and separate files (item exclusion list), but no complete list per month or end of year is available.
2) At every report a standard note states that force majeure and any other specific adjustment is made. In addition, accepted requests are specified in accompanying mail. A clean overview of this data from these two sources, complementing the decisions with the impact they have had for the figures would enable the members to oversee the changes better.
3) Exempted items are not documented in a clear overview or report, requests for exemption is stored on a local IPC drive. The impact can be checked per month, however no impact check or accuracy change is assessed by IPC.

Recommendation 5.22:
Monthly Outbound Report: reporting on outbound DO performance would enable the outbound DO's to contact inbound DO's and discuss potential improvements for the permanent links and thus improving the overall system.

Recommendation 5.23:
It is recommended to standardize reports of panellists' errors recorded (numbers, cause and types of errors) including the pre-determined thresholds of errors. This method will provide an understanding of the most common errors and focus area can be determined for improvement projects.

Recommendation 5.24:
It is recommended to introduce and standardize reports relating to the RFID performance of the measurement system. KPI's related to the RFID performance of the infrastructure would provide the RFID technology team of IPC the possibility to proactively manage and improve the RFID system.

Recommendation 5.25:
It is recommended to implement standardised reports in the event of irregularities such as e.g. panellist integrity issues. Currently the information is available in the systems, however a central report for such events would provide more transparency.

Recommendation 5.26:
Currently no standardised KPI's or thresholds are set for monitoring the RFID performance across the architecture landscape. It would be recommended to implement KPI's in order to automate the performance measurement and prepare the basis for a condition based monitoring system.

Recommendation 5.27:
Currently no issues logged in CMS and WebSMO (on-line tool) don't seem to be linked. It would be recommended to be able to link these issues to expedite information gathering and issue analysis.

Recommendation 5.28:
Currently no standardised KPI's or thresholds are set for monitoring the RFID performance across the architecture landscape. It would be recommended to implement KPI's in order to automate the performance measurement and prepare the basis for a condition based monitoring system.

The section below summarises the recommendations made by the auditors regarding the MSP: UPU / Quotas.

Recommendation 6.1:
Although examples of practical contingency measures were provided, it could be recommended to draft a *Contingency Plan*, describing pro-actively which measures could be taken in the event of various 'what if' scenario's.

Recommendation 6.2:
In the assessment by the audit team a slight inconsistency was found between the calculated design (excel file from Quotas) and the uploaded design in the GMS STAR system of UPU. It would be recommended to ensure that the final version of the design is loaded and actualised in the operational GMS system.

Recommendation 6.3:
Many droppers are in place for specific countries (i.e. 15 for a specific country was demonstrated). It could be recommended to reconsider the amount of droppers in order to improve manageability.

Recommendation 6.4:
It could be recommended to expand the manuals with irregular flows (FAQ or instructions) and not only the 'happy flows'.

Recommendation 6.5:
It could be recommended to document when panellists are no longer part of the measurement study and provide background information about the decision.

Recommendation 6.6:
Document the irregularities or reported issues in order to improve the training programme manuals per country or at least in "QuoWIKI".

Recommendation 6.7:
Risk reduction measures regarding knowledge transfer are recommended. Although the production instructions are available at the production site, no knowledge documentation with regards to the production process in general is available. It is therefore recommended by the auditors to consider getting the BIP production facility ISO certified.

Recommendation 6.8:
Introduction of a designated inventory management system for transponders for a clear overview of transponder statuses, locations and the reduction of manual analyses to determine the current level of returns or to calculate the transponder loss rate. The system could include an application to easily generate KPI's.

Recommendation 6.9:
A written process describing the business contingency rules and actions is currently not available. In order to guarantee an efficient fall-back scenario in case of an emergency, written documentation including specific scenarios might be very helpful in an efficient and effective replacement of physical operations.

Recommendation 6.10:
The stock of the semi-active transponder reaches an approximate level of 1.000 pieces and represents business continuity of 2 weeks in case the delivery of transponders is terminated for a specific reason. It is recommended to evaluate if this period is sufficient in case such an event occurs.

Recommendation 6.11:
It could be recommended to enforce strict timelines with regards to the collection of data (NWD's, holidays, etc.) from the member countries, as this data should at all times be provided in the questionnaire. This saves Quotas to perform desk research and prevents potential delays.

Recommendation 6.12:
The actual allocation date is not received from Quotas, so the registration (file transfer) data from the GMS STAR is used. In the GMS STAR system, section "reporting", the allocation date is provided to the UPU users. It is recommended to either change the terminology of that data field into "event of data sent" or change the service definition of the interface and actually use the real 'allocation date' to be received from Quotas.

Recommendation 6.13:
It is recommended to introduce version control in the provided reports. It offers the ability to track operational performance improvements in conjunction with a version increase.

Recommendation 6.14:

Another recommendation is to add a footnote in the reports with a time indication to communicate by when the reported results can be considered valid/final.

Recommendation 6.15:
Currently it is possible that events take place, which influence reported results (e.g. a holiday is communicated after the event has taken place, so UPU was not aware of this). It could be recommended to introduce a deadline to deliver the holidays so adjustments can be applied accordingly.

Recommendation 6.16:
The option to provide RFID status data in the "monitoring" section of the GMS STAR system is questioned by the auditors whether this tool "still" adds value to the members. It is therefore recommended to evaluate maintaining this option.

Recommendation 6.17:
It could be recommended to automate the validation process by adding validation into UPUMAX, which is currently a manual process performed by Quotas and seems to be very labour-intensive.

Recommendation 6.18:
Patterns queries are not reported and collected in one document. Therefore, it could be recommended to use a dedicated document that collects all cases in order to provide a higher level overview. This could improve the efficiency and quality.

Recommendation 6.19:
The validation process could result in re-training of panellists. It could be recommended to document procedures containing the steps to take and a threshold to indicate when re-training is required.

Recommendation 6.20:
Besides automating the validation process (for efficiency reasons) it could be recommended to automate the detection of patterns, rather than doing this manually for test mail items and panellist behaviour.

Recommendation 6.21:
Although various contingency measures are in place in order to be able to manage irregularities or calamities, it could be recommended to describe a comprehensive (technical) contingency plan as well as plan and execute 'disaster recovery' procedures to validate whether the plan meets the expectations. Particularly as different parties provide services to the entire GMS solution a 'dry run' of a contingency exercise could prove to be valuable.

Recommendation 6.22:
It could be recommended to ensure that 100% far field tests are performed on the passive tags (at the supplier) prior to shipment to the production facility at Quotas. This could ensure better readability performance.

Recommendation 6.23:

It could be recommended to first of all perform thorough analysis why a relative high number of mail items are lost in the process. The losses between allocated- and valid items are considerable. Potentially this could be the result of readability performance. It that case, it might be beneficial to monitor the performance more closely to ascertain whether the 85% operational read performance is achieved.

Recommendation 6.24:
It could be recommended to implement (historical) data archiving procedures (Quotas). This could have a positive effect on the performance of the system.

Recommendation 6.25:
It could be recommended to improve the IT solutions used at Quotas in order to prevent some of the manual work, e.g. to simplify the current validation process, which is currently done manually. This could be a pre-requisite if the GMS measurement continues to grow.

Recommendation 6.26:
It is recommended to remove the current reader status from the postal operator dashboard. The status is updated based either on a 6-hour heart beat signal or on actual tag reads. The colour status 'red' or 'green' is not entirely clear. Furthermore the postal operators are not able to take any relevant action. The current status indicator could lead to confusion.

Recommendation 6.27:
It is recommended to check the delays implemented between receiving tag read data and displaying the status of readers on the GMS system.

Recommendation 6.28:
As irregularities are often first noticed by panellists, it is recommended to inform panellists on how to notice and deal with such events with manuals/instructions/FAQ on the panellist portal website.

Recommendation 6.29:
It is recommended to document integrity breaches in a much more structured manner than is currently the case at UPU and Quotas. All integrity breaches should be listed in a report (for management and auditing purposes). Furthermore per breach event a detailed document describing the event, measures taken and decisions, potential follow-up actions, etc. should be drafted.

9 APPENDIX 9: GLOSSARY OF TERMS

List of terms, acronyms/abbreviations and definitions (source: GMS Technical Design v1.1)

Full term	*Acronym/abbreviation*	*Explanation/description*
Air Mail Unit/Airport Mail Unit	AMU	A facility of the DO located at an airport, whose main purpose is to receive mail dispatches destined for the inbound OE and to hand over to the airline handlers mail dispatches prepared by the outbound OE
Boosting		The addition of more test letters or permanent links beyond the minimum number required for measurement purposes
Critical transponder time/critical tag time	CTT	The latest agreed time during the day at which a test letter can be handed over to the inbound DO in time to be processed and delivered in accordance with the service standard for domestic letters posted on the same day
Delivery date		Date recorded by the receiving panellist on which the item was delivered
Developing country	DC	Country which, according to the classification system developed by the United Nations Development Programme (UNDP) on the basis of various developmental indicators and factors, has generally not achieved a high level of industrialization
Designated postal operator	DO	A public postal administration within the meaning of the UPU Constitution and UPU Convention, or a private postal operator providing mandatory universal delivery service
Dropper/dropper panellist		Person or entity that posts test items in one country destined for another country. These test items are posted according to a pre-determined schedule
Grand format	G format	Large letters or flats up to ISO C4 in size (229 x 324 mm)
Gate		Piece of equipment that senses an electronic device (transponder) inside a test letter as it passes along the mail supply chain. A gate normally comprises an exciter, which queries the transponder, and a receiver, which receives a signal from the transponder. Other components include a power supply and a mechanism for transmitting the data to another device for analysis. Gates are installed at an agreed interface where responsibility for the mail in the logistical supply chain transfers from one party to another; a gate is placed in such a way as to ensure that all the items to be measured pass by or through that gate only
Gross domestic product	GDP	An indication of the size of a country's economy, equalling the market value of all goods and services produced by that country during a specified period (normally a year)

Full term	*Acronym/abbreviation*	*Explanation/description*
Global Monitoring System	GMS	The measurement system proposed in this document
Industrialized country	IC	Country which, according to a classification system developed by the United Nations Development Programme (UNDP) on the basis of various developmental indicators and factors, has achieved a high level of industrialization
IC–IC system		Quality of service measurement system operating between many industrialized countries. The IC–IC system began operation in January 2005
Inbound stretch		Segment of an end-to-end measurement during which the mail is the responsibility of the inbound DO, from the moment of handover by the international transport service up to final delivery to the customer
Items per kilogramme	IPK	The average number of mail items in a kilogramme of mail received. This figure is used for terminal dues calculations and payments
Latest arrival time	LAT	The latest acceptable time of arrival that will allow delivery of received airmail items the next working day
Least developed country	LDC	Country which, according to a classification system developed by the United Nations Development Programme (UNDP) on the basis of various developmental indicators and factors, has achieved a low level of industrialization and requires significant developmental assistance
Latest mail sortation		The latest time at which a DO has completed mail sortation and, in the case of a DO using post office boxes, all the mail for particular boxes is assumed to be available for collection
Office of exchange	OE	A postal sorting office, which specializes in receiving and sending cross-border mail
Panellist		A designated person or body external to the DO that either sends (dropper panellist) or receives (receiver panellist) test letter items
Petit format	P format	Letters up to ISO C5 in size (162 x 229 mm)
Portable data format	PDF	Format developed by Adobe Systems for compressing and exchanging documents. The format is an open standard that has widespread usage. One key feature makes it possible to send and receive documents without changing the document format
	PPI	Postage paid indicator
Priority mail		Mail designated as priority by the sending DO
Project Team 3 of the Terminal Dues Project Group	PT 3	

Full term	*Acronym/abbreviation*	*Explanation/description*
Quality of service	QoS	A large number of incoming cross-border mail items delivered on the working day following their handover to the receiving PPO in Europe or on the second working day following their handover to the receiving PPO in North America
Quality of Service Guide	QoS Guide	Document setting out, inter alia, rules and procedures relating to the determination of quality of service performance
Quality of Service Fund	QSF	Fund created by the Beijing Congress for financing projects aimed at improving quality of service
Quality of Service Project Group	QS PG	
Quality of service diagnostic systems		Transponder-based system, introduced by International Postal Corporation (organization owned by several postal operators), used to measure and diagnose the quality of service provided by receiving DOs
Reader		Piece of equipment that records the passage (through a gate) of transponders inserted in test letters. See also "Gate", "Radio frequency identification" and "Transponder"
Radio frequency identification	RFID	An automatic identification method that enables data on a storage device (transponder or tag) to be read without direct contact. The data on the transponder are transmitted to the reader by means of radio waves
Terminal dues	TD	See article 2.2 of the UPU Convention
Transponder (or tag)		Electronic device with a unique identity (data) inserted in a test letter and whose details are recorded by a reader that registers the letter's passage along the mail processing chain
UPU Convention		The UPU Convention and Regulations contain the common rules applicable to the international postal service and are binding on all UPU member countries
Universal service obligation	USO	Obligation of a DO, as decided by its regulator, to provide universal services to customers
Valid test mail item	VTMI	Test letter that has been validated and found to be correct by the entity conducting the test

10 APPENDIX 10: OVERVIEW AUDIT REVIEW TOPICS (ART'S)

Based on the GMS Technical Design v1.1, an overview of audit review topics (ART's) was prepared together with a digital questionnaire. Below the overview of the audit review topics (ART's) are described. These audit review topics (ART's) were sent to the MSP's and the contractors prior to the audit visits.

Main topic	Sub topic	Description/question	Service package : 10 - EXECUTION						Topic			Applicable to			GMS TD Reference	
According to GMS Technical Design			UPU / AUDIT	UPU / AUDIT	UPU / AUDIT	UPU / AUDIT			BOSI indicatic			UPU GMS		UNEX		
Main topic	Sub topic	Description/question	Understand	Data collecti	Measure. st	Diag. monito	Reporting o	Contingency	Business Pro	Organisatio	System/Infra	Quotas	UPU	TNS	IPC	Chapter	Page no.
General																	
		Validate existence and availability of documentation within organisation such as operational procedures manuals, GMS Technical Design, working instructions, contact information, agreements and contacts, etc.															
		Validate existence of personnel access control and authorisation procedures with regards to confidential information															
		Validate the application of decisions on force majeure cases (if applicable) and demonstrate how these cases have been dealt with															
		Validate whether adjustments to data or QS results have been made following decisions of UPU bodies															
		Validate previous audit recommendations and to which extent these have been implemented															
		Validate if the applicaiton of the geographical requirements and ranges to ensure desired levels of distribution against those of the GMS TD															
		Validate the annual real mail flow study, checking the process and periodicity															
		Validate what process is followed in the event of a change towards the end of the reporting cycle, e.g. in the last quarter compared to the previous quarters.															
		Validate contingency planning procedure is in place in the event that the MSP fails to meet the design parameters.															
		Provide operational performance reports (2013) per country, enclosing target and actuals number of panelists and valid test mail items per week (example provided).															
Panel management	Recruitment of dropper panellist				x				x	x		x		x	x		
Panel management	Recruitment of dropper panellist	Validate whether at least 1 dropper per DO and/or outbound OE	x		x					x		x		x		7	37/38
Panel management	Recruitment of dropper panellist	Display availability of droppers according to schedule	x		x				x			x		x		7	37/38
Panel management	Recruitment of dropper panellist	Provide a list which demonstrates status of droppers (individual vs. professional)	x		x				x			x		x		7	37/38
Panel management	Recruitment of dropper panellist	Validate procedure and/or rules to avoid bundling of items			x				x			x		x		7	37/38
Panel management	Recruitment of dropper panellist	Validate procedure for test letter preparation of droppers							x			x		x		7	37/38
Panel management	Recruitment of receiver panellists				x				x	x		x		x	x		
Panel management	Recruitment of receiver panellists	Validate status of panellists for various DO's (private individuals or business individuals)	x		x					x		x		x		7	38/39
Panel management	Recruitment of receiver panellists	Validate that when a P.O. Box is used, the receiver is a business individual w/o internal delays	x		x					x		x		x		7	38/39
Panel management	Recruitment of receiver panellists	Validate the number of receivers (3 to 50) per level for various DO's			x					x		x		x		7	38/39
Panel management	Recruitment of receiver panellists	Validate procedure of backup panellist as "stand-ins" and demonstrate usage (provide example of vacation plan)			x			x	x			x		x		7	38/39
Panel management	Recruitment of receiver panellists	Validate availability of contact details of panellists (example of 20 at random)			x				x			x		x		7	38/39
Panel management	Recruitment of receiver panellists	Validate the recruitment process according to Technical Design			x				x			x		x		7	38/39
Panel management	Recruitment of receiver panellists	Provide at least 20 delivery addresses of receiver panellists and cross check against requirements	x		x							x		x		7	38/39
Panel management	Recruitment of receiver panellists	Demonstrate receivers are spread in city according to GMS Technical Design	x		x							x		x		7	38/39
Panel management	Recruitment of receiver panellists	Validate the existence of an exclusion list of receiver panellists			x					x		x		x		7	38/39
Panel management	Training of panellists		x		x							x		x	x		
Panel management	Training of panellists	Validate the availability of a documented programme	x		x					x		x		x		7	39
Panel management	Training of panellists	Provide a definition of the minimum proficiency levels	x		x				x			x		x		7	39
Panel management	Training of panellists	Confirm that panellists have an understanding of tasks and how is this measured			x				x			x		x		7	39
Panel management	Training of panellists	Are instructions and training given in the appropriate language and adapted to country?			x				x			x		x		7	39
Panel management	Training of panellists	Validate availability of training materials			x				x			x		x		7	39
Panel management	Training of panellists	Validate control measures to ensure comprehension and performance of panellists			x			x	x			x		x		7	39
Panel management	Training of dropper panellists				x							x		x	x		
Panel management	Training of dropper panellists	Validate that training programme includes exercises in preparing, dropping, recording test items and transmitting data	x		x				x			x		x		7	39
Panel management	Training of dropper panellists	Validate general instructions for the preparation of test items, dropping procedure, data transmission and irregularities, etc.			x				x			x		x		7	39
Panel management	Training of dropper panellists	Validate specifications of instructions to perform quality check of each test letter	x		x				x			x		x		7	39
Panel management	Training of dropper panellists	Validate information regarding, item number, transponders to be used, address and postage required			x				x			x		x		7	39

Main topic	Sub topic	Description/question	Service package : 10 - EXECUTION						Topic			Applicable to			GMS TD Reference	
According to GMS Technical Design			UPU / AUDIT		UPU / AUDIT		UPU / AUDIT	UPU / AUDIT				UPU GMS		UNEX		
Main topic	Sub topic	Description/question	Understandi	Data collecti	Measure. st	Diag. monito	Reporting ou	Contingency	Business Pro	Organisatior	BOSI indicato	System/Infr	Quotas	UPU	TNS	IPC	Chapter	Page no.
Panel management	Training of receiver panellists				x				x	x			x		x	x		
Panel management	Training of receiver panellists	Validate training programme regarding practical exercises (availability of instructions, conditions of letters)	x						x				x		x		7	40
Panel management	Training of receiver panellists	Validate general instructions regarding delivery of tests items, data transmission, procedure for transponder and item returns, etc.			x				x				x		x		7	40
Panel management	Training of receiver panellists	Validate contact list and procedure in case of irregularities (provide example of reported irregularities by panellists)			x				x				x		x		7	40
Panel management	Training of receiver panellists	Provide instructions on how receiver should indicate the condition of the item received (envelope damaged, address label damaged, etc.)	x		x				x				x		x		7	40
Panel management	Duties of dropper panellist				x				x				x		x	x		
Panel management	Duties of dropper panellist	Provide example of how the contractor ensures that the duties of droppers are performed adequately (e.g.: prepares letters, checks quality, drops letters, etc.)			x				x				x		x		7	41
Panel management	Duties of dropper panellist	Validate instruction of study contractor for the production of test letters by droppers	x		x			x	x				x		x		7	41
Panel management	Duties of dropper panellist	Provide example of download records of PDF files			x				x				x		x		7	41
Panel management	Duties of receiver panellists				x				x				x		x	x		
Panel management	Duties of receiver panellists	Validate daily check and communication of delivery by panellist			x				x				x		x		7	42
Panel management	Duties of receiver panellists	Validate rules for electronic capturing of date of delivery and risk procedures			x			x	x				x		x		7	42
Panel management	Duties of receiver panellists	Validate means of communication between panellists and contractor for checks, follow-ups, etc.			x				x				x		x		7	42
Panel management	Panel maintenance				x				x	x			x		x	x		
Panel management	Panel maintenance	Validate procedure for continued standardized assessments of panellists performance			x				x				x		x		7	42
Panel management	Panel maintenance	Validate standard procedures on re-training of failing panellists			x			x	x				x		x		7	42
Panel management	Panel maintenance	Review latest evaluation report of panellists in specific region			x								x		x		7	42
Panel management	Panel maintenance	Provide example of latest re-training programme in specific region	x		x								x		x		7	42
Panel management	Panel maintenance	Provide standardized rules and procedures when panellist is no longer part of measurement (exclusion procedure)	x		x			x	x				x		x		7	42
Panel management	Panel maintenance	Validate the existence of a reward and incentive programme	x		x			x	x				x		x		7	42
Panel management	Panel maintenance	Validate to which extent analysis of panellists has been used to improve training programme (provide examples if possible)			x								x		x		7	42
Test mail	Characteristics of test mail				x				x				x		x			
Test mail	Characteristics of test mail	Provide examples of GMS test mail usage (envelopes, stamps/franking, KG, RFID transponders, types of address, format items etc.)	x		x								x		x		8	43/44
Test mail	Characteristics of test mail	Demonstrate that addressing is performed according to GMS Technical Design (typewritten or machine-typed)	x		x								x		x		8	43/44
Test mail	Characteristics of test mail	Validate example of published information to panellist regarding mail collection times at P.O. Boxes			x				x				x		x		8	43/44
Test mail	Characteristics of test mail	Demonstrate correct usage of priority mail stickers, corresponding to country specific standards	x		x				x				x		x		8	43/44
Test mail	Production of test letters				x				x				x		x			
Test mail	Production of test letters	Validate procedures to avoid irregularities (test mail and components availability, usage of stamps or meter franking, communication records)			x				x				x		x		8	44/45
Test mail	Production of test letters	Validate existence of risk reduction procedures (e.g.: droppers ignoring instructions, risk of delays, unreliable receiver panellists, etc.)						x	x				x		x		8	44/45
Test mail	Provision of stamps												x		x			
Test mail	Provision of stamps	Validate procedure and approach of providing stamps or financial compensation (without disclosing the identity of panellists to DO's)			x				x				x		x		8	46
Test mail	Provision of stamps	If applicable, provide the existence of theft records and measures against it			x				x				x		x		8	46
Test mail	Management of transponders								x				x		x			
Test mail	Management of transponders	Validate procedure for ensuring transponder performance (e.g. battery power, unique ID, etc.)			x				x				x		x		8	46
Test mail	Management of transponders	Validate the existence of follow-up processes in case of customs delays and the existence of explanatory information			x			x	x				x		x		8	46
Test mail	Management of transponders	Validate procedures for transponder returns and choice of transport			x				x				x		x		8	46
Test mail	Management of transponders	Demonstrate example of inventory management system of entire pool of transponders	x		x						x		x		x		8	46
Test mail	Archiving test letters								x				x		x			
Test mail	Archiving test letters	Validate procedure for archiving of test items by panellists			x				x				x		x		8	47
Collection of data	Information required		x	x					x	x								
Collection of data	Information required	not relevant, will be audited in other sections															9	48
Calculation	Inbound performance results		x											x		x		
Calculation	Inbound performance results	Demonstrate understanding of CTT tables, including NWDs and dates of arrival	x	x					x					x		x	10	49-51
Calculation	Inbound performance results	Demonstrate the correct application of the domestic service standard	x						x					x		x	10	50
Calculation	Inbound performance results	Provide a list of Non-Working-Days (Public holidays, non-operating, non-delivery and time of notification)	x	x					x					x		x	10	48-50
Calculation	Inbound performance results	Provide a list of CTT tables, including NWDs and dates of arrival	x	x					x					x		x	10	49-51
Calculation	Inbound performance results	Provide 3 example (3 different DO's) calculations of actual delivery time (delivery table, incl NWD) (Australia (A), Italia (B), Trinidad & Tobago (E.)		x	x				x					x		x	10	52-62
Calculation	Inbound performance results	Provide 3 example calculations of on-time delivery standard (success = 1 vs. non success = 0 table) (3 different DO's as above)	x	x	x				x					x		x	10	63
Calculation	Inbound performance results	Provide 3 example calculations of on-time inbound deliveries (POT on all levels, etc.) (3 different DO's as above)	x	x	x				x					x		x	10	63

Main topic	Sub topic	Description/question	Service package : 10 - EXECUTION						Topic			Applicable to			GMS TD Reference	
According to GMS Technical Design			UPU / AUDIT	UPU / AUDIT		UPU / AUDIT	UPU / AUDIT		BOSI indicato			UPU GMS		UNEX		
Main topic	Sub topic	Description/question	Understandi	Data collecti	Measure. st	Diag. monito	Reporting ou	Contingency	Business Pro	Organisatior	System/Infr	Quotas	UPU	TNS	IPC	Chapter	Page no.
Reporting	GMS monthly summary report				x				x				x		x		
Reporting	GMS monthly summary report	Provide examples of GMS monthly reports of last year	x				x						x		x	11	64
Reporting	GMS monthly summary report	Provide report and example of adjusted monthly results (e.g.: as a result of irregularities)					x						x		x	11	64
Reporting	GMS monthly summary report	Demonstrate validation procedure surrounding validation of (preliminary) GMS monthly summary report			x		x		x				x		x	11	64
Reporting	GMS monthly summary report	Demonstrate sources and calculations underlying the GMS monthly report			x		x		x				x		x	11	64
Reporting	GMS monthly summary report	Validate accuracy and quality of performance calculations					x						x		x	11	64
Reporting	GMS monthly summary report	Validate whether reporting of results are performed in adherence of the agreed timetable (according to GMS Technical Design)			x								x		x	11	64
Reporting	GMS monthly inbound DO report		x		x				x				x		x		
Reporting	GMS monthly inbound DO report	Provide examples of GMS monthly inbound DO reports of last year	x				x						x		x	11	64
Reporting	GMS monthly inbound DO report	Provide report and example of adjusted monthly results (e.g.: as a result of irregularities)					x						x		x	11	64
Reporting	GMS monthly inbound DO report	Demonstrate validation procedure surrounding validation of (preliminary) GMS monthly inbound DO report			x		x		x				x		x	11	64
Reporting	GMS monthly inbound DO report	Demonstrate sources and calculations underlying the GMS monthly inbound DO report			x		x		x				x		x	11	64
Reporting	GMS monthly inbound DO report	Validate accuracy and quality of performance calculations					x						x		x	11	64
Reporting	GMS monthly inbound DO report	Validate whether reporting of results are performed in adherence of the agreed timetable (according to GMS Technical Design)			x								x		x	11	64
Reporting	GMS monthly and YTD inbound city report		x		x				x				x		x		
Reporting	GMS monthly and YTD inbound city report	Provide examples of GMS monthly and YTD inbound city reports of last year	x				x						x		x	11	65
Reporting	GMS monthly and YTD inbound city report	Provide report and example of adjusted monthly results (e.g.: as a result of irregularities)					x						x		x	11	65
Reporting	GMS monthly and YTD inbound city report	Demonstrate validation procedure surrounding validation of (preliminary) GMS monthly and YTD inbound city report			x		x		x				x		x	11	65
Reporting	GMS monthly and YTD inbound city report	Demonstrate sources and calculations underlying the GMS monthly and YTD inbound city report			x		x		x				x		x	11	65
Reporting	GMS monthly and YTD inbound city report	Validate accuracy and quality of performance calculations					x						x		x	11	65
Reporting	GMS monthly and YTD inbound city report	Validate whether reporting of results are performed in adherence of the agreed timetable (according to GMS TD)			x								x		x	11	65
Reporting	GMS monthly outbound DO report		x		x				x				x		x		
Reporting	GMS monthly outbound DO report	Provide examples of GMS monthly outbound DO reports of last year	x				x						x		x	11	66
Reporting	GMS monthly outbound DO report	Provide report and example of adjusted monthly results (e.g.: as a result of irregularities)					x						x		x	11	66
Reporting	GMS monthly outbound DO report	Demonstrate validation procedure surrounding validation of (preliminary) GMS monthly outbound DO report			x		x		x				x		x	11	66
Reporting	GMS monthly outbound DO report	Demonstrate sources and calculations underlying the GMS monthly outbound DO report			x		x		x				x		x	11	66
Reporting	GMS monthly outbound DO report	Validate accuracy and quality of performance calculations					x						x		x	11	66
Reporting	GMS monthly outbound DO report	Validate whether reporting of results are performed in adherence of the agreed timetable (according to GMS TD)			x								x		x	11	66
Reporting	GMS monthly inbound item report		x		x				x				x		x		
Reporting	GMS monthly inbound item report	Provide examples of GMS monthly inbound item reports for 3 DO's (cross check granularity of data according to GMS TD)											x		x	11	67
Reporting	GMS monthly inbound item report	Validate whether challenged test items exempted from the measurement are documented and are auditable and whether they affect the accuracy of results as per the design requirements	x		x												
Quality/validation	Quality control			x					x			x	?	x	?		
Quality/validation	Quality control	Demonstrate understanding and definitions of KPI's documented (examples to be specified by auditor)	x		x		x		x			x	x	x	x	12	
Quality/validation	Quality control	Provide example of reports of the monitored KPIs for quality control and clarify calculation accuracy	x	x			x		x			x	x	x	x	12	69
Quality/validation	Quality control	Demonstrate the data sources used for quality control purposes (e.g.: patterns query file, panellist information file, transponder file)		x			x		x			x	x	x	x	12	69
Quality/validation	Quality control	Provide example of reports of the monitored KPIs and clarify calculation accuracy (e.g.: allocation shortfalls/overages, valid volume vs target volume)	x						x			x	x	x	x	12	
Quality/validation	Quality control	Demonstrate the process of the quality control of system integrity (information availability, integrity panellist)		x			x		x			x	x	x	x	12	70
Quality/validation	Quality control	Provide example of system management quality control report as provided by quality control to the GMS governing bodies	x									x	x	x	x	12	
Quality/validation	Validation		x		x				x			x	x	x	x		
Quality/validation	Validation	Provide procedure for the assessment process (validation) based on the 4 elements	x		x				x			x		x		12	70
Quality/validation	Validation	Provide example report of panellist errors recorded (numbers, cause and types of errors) including the pre-determined thresholds of errors	x									x		x	x	12	
Quality/validation	Validation	Demonstrate the use of the problem detection facility built into the GMS data validation and analysis system			x		x				x	x	x	x	x	12	
Quality/validation	Validation	Validate the follow-up procedures implemented as part of the preventive measures taken to eliminate and/or minimize recurrence of errors			x			x	x			x	x	x	x	12	
Quality/validation	Real-time validation											x		x			
Quality/validation	Real-time validation	Demonstrate the validation at data entry of incompatible combinations of information and alerts generated		x					x			x		x		12	70/71
Quality/validation	Real-time validation	Provide example of alerts generated to panellists and alerts generated towards contractors			x			x	x			x		x		12	
Quality/validation	Real-time validation	Demonstrate website to enter data by panellist and correct usage and example of rules of data entry system			x				x			x		x		12	
Quality/validation	Off-line validation / pattern queries / user queries											x		x			
Quality/validation	Off-line validation / pattern queries / user queries	Provide example of report in which "off-line" validated irregularities have been identified and queried			x							x		x		12	
Quality/validation	Off-line validation / pattern queries / user queries	Demonstrate the method of monitoring panellist performance by contractor (behaviour or patterns vs. standards)			x				x			x		x		12	
Quality/validation	Off-line validation / pattern queries / user queries	Provide procedure and example of validation requests by DO's and the subsequent queries and documented results by contractor			x							x		x		12	

Main topic	Sub topic	Description/question	Service package : 10 - EXECUTION						Topic			Applicable to			GMS TD Reference	
According to GMS Technical Design			UPU / AUDIT	UPU / AUDIT	UPU / AUDIT	UPU / AUDIT	UPU / AUDIT	UPU / AUDIT				UPU GMS		UNEX		
Main topic	Sub topic	Description/question	Understandi	Data collecti	Measure. st	Diag. monitc	Reporting ou	Contingency	Business Prc	Organisatior	BOSS indicati	Quotas	UPU	TNS	IPC	Chapter	Page no.
Diagnostic monitoring	RFID technology (std. single unit)					x							x		x		
Diagnostic monitoring	RFID technology (std. single unit)	Provide example of an installation overview of 2 countries (1 standard and 1 single unit implementation)				x					x		x		x	13	
Diagnostic monitoring	Basic principles and procedures	Switzerland (B), Croatia (C), Aruba (E)				x							x		x		
Diagnostic monitoring	Basic principles and procedures	Assess selected handover point terminal dues gates for various DO's (examples to be specified by auditors for level A,B,C and D or E)	x			x							x		x	13	
Diagnostic monitoring	Basic principles and procedures	Validate whether the agreed read rate of > 95% is realised at the handover points terminal dues gates (same countries as above)				x					x		x		x	13	
Diagnostic monitoring	Basic principles and procedures	Provide example of installation procedure used for installation of "customs gate" to enable border control corrections				x					x		x		x	13	
Diagnostic monitoring	Basic principles and procedures	Provide example of detailed report describing the situation at a specific site in question (see examples as used above)				x			x				x		x	13	
Diagnostic monitoring	Practical considerations	Switzerland (B), Croatia (C), Aruba (E)				x							x		x		
Diagnostic monitoring	Practical considerations	Provide example of exception report describing variations to installations guidelines, due to practical considerations					x		x				x		x	13	
Diagnostic monitoring	Practical considerations	Validate whether RFID equipment has been installed within 3 countries for OE's with at least 0.5% of total annual and national inbound volume (examples to be specified by auditor)	x			x					x		x		x	13	
Diagnostic monitoring	On-site decision making process/ Site survey	Switzerland (B), Croatia (C), Aruba (E)				x							x		x		
Diagnostic monitoring	On-site decision making process/ Site survey	Provide a site survey report for an onsite survey carried out at level A, B or C country				x			x				x		x	13	77
Diagnostic monitoring	On-site decision making process/ Site survey	Provide a site survey report for a remote site survey carried out at level D or E country				x			x				x		x	13	
Diagnostic monitoring	On-site decision making process/ Site survey	Provide an example of an RFID installation procedure for installation at level A, B or C country	x			x					x		x		x	13	
Diagnostic monitoring	On-site decision making process/ Site survey	Demonstrate/provide audit report for continuous checks of integrity of overall system for a level A, B or C country				x			x				x		x	13	
Diagnostic monitoring	Acceptance process	Switzerland (B), Croatia (C), Aruba (E)				x							x		x		
Diagnostic monitoring	Acceptance process	Validate the existence of certification reports by UPU body, for diagnostic gates designated for terminal dues				x							x		x	13	81
Diagnostic monitoring	Border Control correction					x							x		x		
Diagnostic monitoring	Border Control correction	Validate the existence of border control corrections where no "custom gates" are utilised and other options are used				x			x				x		x	13	82
Diagnostic monitoring	Maintenance					x							x		x		
Diagnostic monitoring	Maintenance	Provide a copy of the service level agreement, which describes the key indicators (preventive maintenance plan, corrective maintenance and CR procedures, online diagnostic monitoring system, response windows, DR and back up procedures, fall-back scenarios, spare part availability, time-to-fix guidelines, helpdesk availability and procedures, guaranteed system availability, etc.)											x		x	14	
Diagnostic monitoring	Maintenance	Provide historical reports, indicating maintenance performance (MTTF, MTBF, etc.)				x							x		x	14	
Diagnostic monitoring	Maintenance	Demonstrate the real-time continuous diagnostic monitoring system (incl. dashboard and alerts generated)				x		x					x		x	14	
Diagnostic monitoring	Maintenance	Demonstrate/provide documented work instructions and procedures for first, second and/or third line support or maintenance personnel				x			x				x		x	14	
Diagnostic monitoring	Maintenance	Demonstrate/provide the contingency planning and procedures in case of: hardware/system/disaster recovery				x		x	x		x		x		x	14	
Diagnostic monitoring	Reliability					x							x		x		
Diagnostic monitoring	Reliability	Provide test reports of the GMS diagnostic monitoring system indicating the overall system reliability system performance				x					x		x		x	14	
Diagnostic monitoring	Reliability	Provide independent assessment reports ensuring that the GMS solution meets the minimum requirements	x			x					x		x		x	14	
Diagnostic monitoring	Security/integrity					x							x		x		
Diagnostic monitoring	Security/integrity	Demonstrate security measures to ensure loss of data is minimized resulting from power outages				x		x	x		x		x		x	14	84
Diagnostic monitoring	Security/integrity	Validate security measures to ensure that data files cannot be accessed, altered, erased or corrupted during capture, at (local) server or during transfer				x		x	x		x		x		x	14	84
Diagnostic monitoring	Security/integrity	Validate security measures taken to ensure protection against external data access (hacking), computer viruses, electromagnetic interferences/jamming)						x			x		x		x	14	84
Diagnostic monitoring	Security/integrity	Demonstrate the strict separation between GMS and domestic monitoring systems (architecture)				x					x		x		x	14	84
Diagnostic monitoring	Technical requirements					x							x		x		
Diagnostic monitoring	Technical requirements	Provide test report to validate minimum read rate performance of 95% read rate in a controlled situation and 85% read rate in the live environment				x					x		x		x	14	85
Diagnostic monitoring	Technical requirements	Demonstrate compliancy with airline security regulations (FAA/CAA) and national regulations covering RF used				x			x				x		x	14	85
Diagnostic monitoring	Alternative method					x							x		x		
Diagnostic monitoring	Alternative method	Provide an example of a country using an alternative monitoring system (e.g. date-stamping)	x			x							x		x	15	86
Confidentiality/Integrity	Confidentiality/ Integrity												x		x		
Confidentiality/Integrity	Confidentiality/ Integrity	Provide report describing confidentiality/integrity breaches and subsequent measures taken to prevent the same in the future	x					x	x				x		x	16	87
Updates and annual review	Updates and annual review												x		x		
Updates and annual review	Updates and annual review	Provide procedures and example of updates, like boosting, update of CTT and/or P.O. box uptimes, country level indication, links and pools											x		x	19	93
Statistical design and calculations												x	x	x	x		
Statistical design and calculations	Statistical design	Validate the statistal design features for the following countries: Australia (A), Brazil (B), Slovenia (C)														4	
Statistical design and calculations	Statistical design	Validate inbound city profile and number of valid test items (VTMI's) per link and pools (examples to be provided as above)														4	
												x	x	x	x		
Statistical design and calculations	Calculation of Performance	Validate the statistical design features for the following countries: Australia (A), Brazil (B), Slovenia ©														5	
												x	x	x	x		
Statistical design and calculations	Calculation of total result	Provide document/report describing the selection of DO's per year (and if applicable the required DO rotation)														5	
Statistical design and calculations	Calculation of total result	Validate the temporal coverage/allocation for the countries above														5	
Statistical design and calculations	Calculation of total result	Validate the allocation of flows to cities for the countries above														5	
Boosting options	Options											x	x	x	x		
Boosting options	Options	Provide an example and the subsequent change in the statistical design of 2 applied boosting options: DO level upgrade and adding a city link			x											6	
Costs												x	x	x	x		
Costs	RFID equipment costs	Validate and determine costs of individual (RFID) technical components (gates, transponder, etc.)			x											18	
Costs	Measurement system costs	Validate and determine operational measurement system costs														18	

11 APPENDIX 11: IPC – TNS AUDIT DOCUMENTATION LIST

The following list of documents are provided by IPC and TNS for the audit of the UNEX measurement system 2013. The document have been reviewed by the auditors and non-confidential documents have been added to the report for illustrations and references.

Authors	J. P. Owusu MSc., T. de Vos MSc.	Version	v1.0
Title	Overview of documents provided by IPC and TNS and reviewed for the audit of the measurement system UNEX™ 2013	Date	08-07-14

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Item ID	Title of document	Description of document	Status
IPC-01	074.681.701_Marsa_OE.pdf	Site survey report for Malta for automatic mail quality measurement	Received
IPC-02	077 090 056 Installation Guide LS Portals.pdf	Installation guideliness for Lyngsoe RFID products	Received
IPC-03	077.081.492 SS_Brussels EMC.PDF	Site survey report for Brussels for automatic mail quality measurement	Received
IPC-04	077.081.581_SS_Roissy HUB.PDF	Site survey report for Roissy for automatic mail quality measurement	Received
IPC-05	Example integrity sealing.pdf	Integrity sealing - RFID reading point report	Received
IPC-06	Example of notification of grey zone.pdf	TD - RFID reading point report to pinpoint grey areas in handover of mail items	Received
IPC-07	Example TD reading points report.pdf	TD - RFID reading point report	Received
IPC-08	read_rate_2013.xlsm	2013 read rate report for all UNEX member countries	Received
IPC-09	Regulatory Compliance of Lyngsoe Postal Tags.pdf	Offical letter stating The size and lithium metal content of the cells and batteries meet the provisions set out in Special Provision (SP) 188 - IATA	Received
IPC-10	Site survey and SAT Manual.pdf	Description of the Site Survey and Site Acceptance Test procedures	Confidential
IPC-11	GMS receiver panelists ACTUALS.xls	Snapshots of the actual panellists active per month	Received
IPC-12	System landscape	Overview and relation of the IPC systems	Received
IPC-13	Operational performance report IPC-UPU v2.xlsx	Report on the performance of VTMI and panellists for IPC and UPU by M&A	Generated
IPC-14	UNEX GMS Module -Transition Report FY 2013-20140303.xlsx	Actual results of UNEX 2013 (Design vs Allocated vs valid vs Valid on Time)	Received
IPC-15	GMSMMYTD December 201348.pdf	GMS Specific ReportYTD December 2013 Customs Corrected as PDF file	Received
IPC-16	GMSMMYTD December 201348.xls	GMS Specific ReportYTD December 2013 Customs Corrected as Excel file	Received
IPC-17	kpi country receiver - part 1.JPG	Screenshot of the country receiver KPI part 1 (total allocated items)	Received
IPC-18	kpi country receiver - part 2.JPG	Screenshot of the country receiver KPI part 2 (total allocated items)	Received
IPC-19	kpi country sender - part 1.JPG	Screenshot of the country sender KPI part 1 (total allocated items)	Received
IPC-20	kpi country sender - part 2.JPG	Screenshot of the country sender KPI part 2 (total allocated items)	Received
IPC-21	kpi panellist receiver - part 1.JPG	Screenshot of the country receiver KPI part 1 (per panellist)	Received
IPC-22	kpi panellist receiver - part 2.JPG	Screenshot of the country receiver KPI part 2 (per panellist)	Received
IPC-23	List of reconciliation codes.doc	Codes used to process the reconciliation	Received
IPC-24	Mail_Facilities.pdf	Reconciliation visual - journey of a letter	Received
IPC-25	QLMSMMYTD December 201348.pdf	UPU Quality Link Measurement System reportYTD December 2013 Customs Corrected	Received
IPC-26	QLMSMMYTD December 201348.xls	UPU Quality Link Measurement System reportYTD December 2013 Customs Corrected	Received
IPC-27	TP loss details.JPG	Screenshot of the transponder loss rate KPI	Received
IPC-28	GMS design 2013 - DE - specific report.xlsx	GMS statistical design for Germany 2013 - boosted	Received
IPC-29	GMS design 2013 - DE.xlsx	GMS statistical design for Germany 2013	Received
IPC-30	GMS design 2013 - IL - specific report.xlsx	GMS statistical design for Israel 2013 - boosted	Received
IPC-31	GMS design 2013 - IL.xlsx	GMS statistical design for Israel 2013	Received
IPC-32	GMS design 2013 - JM - boosted v02 in Sept.xlsx	GMS statistical design for Jamaica 2013 - city boosted	Received
IPC-33	GMS design 2013 - NZ.xlsx	GMS statistical design for New-Zealand 2013	Received
IPC-34	GMS Allocation_DE_Y4_20090514.xlsx	GMS statistical design for Germany 2009-2012	Received
IPC-35	GMS Allocation_IL_Y4_20090430.xlsx	GMS statistical design for Israel 2009-2012	Received
IPC-36	GMS Allocation_NZ_Y4_20090511.xlsx	GMS statistical design for New-Zealand 2009-2012	Received
IPC-37	20140609 TNS Tracking Document.xlsx	Pattern query panel management	Confidential
IPC-38	DCPF_FI20140326 FI price increase(s) - approved by IPC.pdf	Anouncement of changes in postal values or tariffs for Finland	Received
IPC-39	DCPF_GR20130814 GR price increase - approved by IPC.pdf	Anouncement of changes in postal values for Greece	Received
IPC-40	DCPF_IL20130617 IL price increase - approved by IPC.pdf	Anouncement of changes in postal values for Israel	Received
IPC-41	GMS QLUG - UNEX GMS status report.pptx	UNEX GMS status report as presented to the GMS CLUG on 15 April 2013	Received
IPC-42	GMSQLUG doc 7 Rev 1.docx	POC - Memorandum by the International Bureau of UPU	Received
IPC-43	Letter 0426(DER.PAE) - 28062013.PDF	Decision by the IB to use Reims items for Jan to Mar 2013 for GMS MS	Received
IPC-44	Offline Ad Hoc Item Queries Tool Guidelines.docx	Instruction how to use the template and which procedures to follow	Received
IPC-45	Offline Adhoc Item Query Tool.xlsm	Template to request queries	Received
IPC-46	EXAMPLE OF CSV FILE AdHocQueries_12.11.2013.csv	Example	Received
IPC-47	Panel Integrity Cases.docx	2014 IPC Manual Procedure for panel integrity cases	Received
IPC-48	Postal_holidays - 2013-2014 hol UMMS - MA.csv	Overview of the postal holidays of all member countries for 2013-2014	Received
IPC-49	PT Numbers Behind Country Specific Scorecard (GMS) w41.xlsx	UNEX 2013 Country Specific Scorecard - data file	Received
IPC-50	PT_Country Specific Scorecard (GMS)_w41.pdf	UNEX 2013 Country Specific Scorecard	Received
IPC-51	RE VRC decisions .msg	Email containing decisions made on Force Majeur cases	Received
IPC-52	UNEX 2013 - follow-up report - GMS QLUG October 2013.pdf	Status report on UNEX GMS module for 2013	Received
IPC-53	UNEX 2013 Late postage tariffs or stamps - contingency actions and fees.pdf	Actions and fees related to late communication of postage tariffs changes or late provision of stamps	Received
IPC-54	UNEX 2013 status report for UNEX GMS module - GMS QLUG April 2013.pdf	Status report on UNEX GMS module for 2013	Received
IPC-55	UNEX GMS - item queries overview all 2013.xls	Overview of all queried items for 2013	Confidential
IPC-56	UNEX GMS - panellist queries overview all 2013.xlsx	Overview of all queried panellists for 2013	Confidential
IPC-57	Contract non-member country	Agreements and contracts with a non-member based on an email conversation	Viewed
IPC-58	UNEX GMS user group meeting.pptx	Presentation of the UNEX GMS user group meeting on 11 April 2013	Received

Authors	J. P. Owusu MSc., T. de Vos MSc.	Version	v1.0
Title	Overview of documents provided by IPC and TNS and reviewed for the audit of the measurement system UNEX™ 2013	Date	08-07-14

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Item ID	Title of document	Description of document	Status
IPC-59	UNEX Introduction to IPC new staff – May 2014 - version Audit GMS MA.pptx	Presentation of UNEX for new employees	Confidential
IPC-60	Screenshots from reporting	Contains screenshots of several DO specific reports	Received
IPC-61	Re-use matrix 2013 QLMS	Decision matrix for re-use of Reims items	Received
IPC-62	ISO document UNEX	ISO 9001:2008 certificate of registration for MSQ	Received
IPC-63	QLMS 2013 AT	Calculation sheet, weighted format-city-flow	Received
TNS-01	Activities.docx	Two screenshots of the activity plan overview	Received
TNS-02	Introduction - GMSAuditslides.pptx	Introduction presentation of TNS Westgate and West Bromwich	Received
TNS-03	ISO9001 Certificate_November 2013.pdf	ISO 9001:2008 certificate system for the registration of firms assessed QS	Received
TNS-04	ISO20252 Certificate_November 2013.pdf	ISO 20252:2012 certificate system for the registration of firms assessed QS	Received
TNS-05	ISO27001 Certificate_August 2013.pdf	ISO/IEC 27001:2051 certificate information security management system	Received
TNS-06	Panellist instructions RO V4.docx	UNEX panellist instructions: receivers only	Received
TNS-07	Recruitment.docx	Two screenshot of the recruitment status overview (country - and survey level)	Received
TNS-08	UNEX Courier QA Despatch Allocation Week 48.xlsx	UNEX weekly QA list for despatching test items for week 48 2013	Received
TNS-09	Unex Despatch Report Allocation Week 48 2013.xls	UNEX weekly despatch reports of produced test mail items (UPS) Week 48 2013	Received
TNS-10	UNEX GMS Panellist Guidelines v3.doc	UNEX global monitoring survey panellist guidelines (senders)	Received
TNS-11	UNEX Item PP QA Allocation Week 48.xlsx	Registration sheet for quality checks performed by TNS employees	Received

12 APPENDIX 12: UPU – QUOTAS AUDIT DOCUMENTATION LIST

The following list of documents are provided by UPU and Quotas for the audit of the GMS measurement system 2013. The document have been reviewed by the auditors and non-confidential documents have been added to the report for illustrations and references.

Authors	J. P. Owusu MSc., T. de Vos MSc.	Version	v1.0
Title	Overview of documents provided by UPU and Quotas and reviewed for the audit of the GMS measurement system 2013	Date	15-07-14

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Item ID	Title of document	Description of document	Status
UPU-01	F1 Terminal dues reader list.xlsx	List of reader types and numbers applicable per country	Received
UPU-02	F8 ON SITE SURVEY BRAZIL GUARULHOS INT_BRSAOD_120804.pdf	On-site site survey report for Brazil	Received
UPU-03	F8 REMOTE GMS SITE SURVEY BARHAIN.pdf	Remote survey report for Barhain	Received
UPU-04	F15 Maintenance monitoring report Week 21 TD.pdf	Maintenance monitoring report for 20th to 26th of May 2013	Received
UPU-05	F18 DC Quality and Security.pdf	Data centre Quality and Security: Enterprise Security Management	Received
UPU-06	F18 GMS Disaster Recovery.pdf	summary of the Disaster Recovery plan and backup measures implemented in servers running GMS software	Received
UPU-07	F25 SWISS READ RATES.xlsx	Read rates reported per week in 2013 for Switzerland	Received
UPU-08	GMS Item elements header.xlsx	Elements reported in the GMS monthly inbound item report (specific to DO)	Received
UPU-09	GMS_Distribution_of_transmission_times_TD_2013_AU.pdf	Report: GMS Distribution of transmission times - Terminal Dues (Australia 2013)	Received
UPU-10	GMS_Distribution_of_transmission_times_TD_2013_CH.pdf	Report: GMS Distribution of transmission times - Terminal Dues (Switzerland 2013)	Received
UPU-11	GMS_KPI_Allocation_On_Target_Report_TD_2013_BR.pdf	Report: GMS Allocation On Target KPI Report - Terminal Dues (Brazil 2013)	Received
UPU-12	GMS_KPI_Transponders_Read_Rates_Report_CH.pdf	Report: GMS KPI Transponders Read Rates Report - Terminal Dues (Switzerland 2013)	Received
UPU-13	GMS_KPI_Valid_On_Target_Report_TD_2013_AU.pdf	Report: GMS Valid On Target KPI Report - Terminal Dues (Australia 2013)	Received
UPU-14	GMS_Monthly_Inbound_DO_Report_TD_2013_CH.pdf	Report: GMS Monthly Inbound DO Report - Terminal Dues (Switzerland 2013)	Received
UPU-15	GMS_Monthly_Inbound_OE_Linked_City_Report_TD_2013_CH.pdf	Report: GMS Monthly Inbound OE Linked City Report - Terminal Dues (Switzerland 2013)	Received
UPU-16	GMS_Monthly_Outbound_Report_TD_2013_CH.pdf	Report: GMS Monthly Outbound Report - Terminal Dues (Switzerland 2013)	Received
UPU-17	GMS_Summary_Report_TD_2013.pdf	Report: GMS Summary Report - Terminal Dues 2013	Received
UPU-18	GMS_YTD_Inbound_City_Report_TD_2013_CH.pdf	Report: GMS YTD Inbound City Report - Terminal Dues (Switzerland 2013)	Received
UPU-19	Screen shots.xlsx	Screenshots of GMS STAR (e.g. home page, KPI menu, audited items, NWW's)	Received
UPU-20	A. REVA DIAGRAM.png	System overview of IB UPU, AIDA centre and Postal site	Received
UPU-21	B. REDBITE DIAGRAM.png	System overview of IB UPU, NMS screen Redbite and Postal site	Received
UPU-22	F23 Billion 7402 firewall B.png	Screenshot of F23 Billion 7402 firewall B	Received
UPU-23	F23 Billion 7402 firewall.png	Screenshot of F23 Billion 7402 firewall	Received
UPU-24	F23 Netgear FSV318 firewall.png	Screenshot F23 Netgear FSV318 firewall	Received
UPU-25	Copy of GMS Design 2013.xlsx	GMS statistical designs for Australia, Brazil and Switzerland	Received
UPU-26	Gms external auditing 2014.pptm	Presentation of the general concept of UPU GMS	Received
UPU-27	GMS system_Auditing_2-4 June 2014.pptx	Presentation of GMS system (overview, stakeholders, calculations and reports, etc.)	Received
UPU-28	GMS_TECHNICAL_DESIGN_en_2nd Edition_October 2011_V1.1.doc	Word version of the GMS Technical Design v1.1	Received
UPU-29	Invitation Annex 4 questionnaire.pdf	Application form and cost-calculation questionnaire	Received
UPU-30	Invitation letter.pdf	Invitation to participate in the UPU Global Monitoring System (GMS) in 2014 and 2015	Received
UPU-31	GMS_project_organization_V5	Organisation chart of the internal UPU project organisation	Received
UPU-32	GMS site survey template	Hardcopy of the site survey documents	Received
UPU-33	GMS User manual	Hardcopy of the Global Monitoring System version (April 2014)	Received
UPU-34	GMS STAR user guide	Hardcopy of the GMS STAR user guide v1.2 (for DO's)	Received
UPU-35	GMS data collection	Hardcopy of the real mail data collection questionnaire	Received
UPU-36	REMOTE GMS SITE SURVEY HONG-KONG	Hardcopy of a remote survey in Hong-Kong (Aidacentre)	Received
UPU-37	GMS questionnaire annual data	3 x hardcopies of Switzerland, Brazil and Australia	Received
UPU-38	GMS backup systems	Hardcopy of the backup systems as provided by AIDA	Received
UPU-39	Report and diagnose tool	Hardcopy of the reporting (JIRA) and diagnose tools	Received
UPU-40	Certification tests - ANNEX	AIDA centre certification tests	Received
UPU-41	UPU Global Monitoring System	GMS implemention report	Received
UPU-42	AIDA C-IRU user guide	User guide containing the installation procedure	Received
UPU-43	Site certification Switzerland	Hardcopy of the test report for Switzerland	Received
UPU-44	Efficiency test report Madrid	Hardcopy of a special installation report in Madrid airport	Received
UPU-45	Site certification Hong Kong	Hardcopy od the summary of certification and test results for Hong Kong Post	Received
UPU-46	Statistical system for analsysis and repots	Hardcopy of the encrypted data transfer procedures	Received
UPU-47	Maintenance Plan Definition	Hardcopy of the Maintenance Plan Definition (ADIA SLA)	Received
UPU-48	Product folder GMS	Introduction into GMS	Received
Quotas-01	A3_Status Droppers.xlsx	List of the 3 statuses of dropper panellists (professional, semi-professional, private)	Received
Quotas-02	A16 - panel proficiency levels.pdf	Definition of the minimum proficiency levels	Received
Quotas-03	GMS Manual 2014 1.0.xlsx	GMS manual containing statistical design, work instructions, panellists procedures, etc.	Received
Quotas-04	GMS Manual 2014 2.0.xlsx	GMS manual extended	Received
Quotas-05	GMS Panel Training English passive transponders.pdf	Panellist training instructions for the use and procedures of passive transponders	Received
Quotas-06	GMS Panel Training English semiactive transponders.pdf	Panellist training instructions for the use and procedures of semi-active transponders	Received
Quotas-07	Overview of survey details private droppers a	Hardcopy of dropping instructions without franking for private droppers	Received
Quotas-08	Overview of survey details private droppers b	Hardcopy of dropping instructions with franking for private droppers	Received
Quotas-09	Overview of survey details private droppers c	Hardcopy of dropping instructions with franking for Semi- and professional droppers	Received

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Item ID	Title of document	Description of document	Status
Quotas-10	Manual Quoassign	Hardcopy of the instruction to associate a items ID to a transponder	Received
Quotas-11	Overview of Survey and Production Details	Hardcopy of the instructions for dropper panellists	Received
Quotas-12	GMS_Annual inbound mail volumes_2013-CH.xls	Overview of the proportional inbound mail volumes per country of origin (Switzerland 2013)	Received
Quotas-13	Panel Overview 2013.xlsx	Panellist overview 2013, including the back-ups and ratios per country/city	Received
Quotas-14	Quotas Profile.pdf	Introduction presentation of Quotas	Received
Quotas-15	Screenshot error messages website.jpg	Screenshot of an error message (real-time validation)	Received
Quotas-16	Screenshot Validation Screen.jpg	Screenshot validation screen used by Quotas for the off-line validation process	Received
Quotas-17	Status Report UPU GMS 2013.xlsx	Complete status report 2013 covering KPI's and quality control of system management ratios	Received
Quotas-18	SWITZERLAND_Annual Questionnaire_2013_CH v3_update.pdf	Questionnaire for Switzerland to gather information for the annual updates and review	Received
Quotas-19	TLR GMS 2013.xlsx	Transponder loss rate per country and link	Received
Quotas-20	2014_Organization chart	Organizational chart of Quotas GmbH	Received

Mieloo & Alexander

Mieloo & Alexander Business Integrators is a system integrator that specializes in technology enabled supply chain improvement, with a focus on supply chain management & logistics and visibility through the use of innovative automatic identification technologies such as RFID.

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