

OWNER: DG TAXUD	ISSUE DATE: 22/03/2010	VERSION: 1.04
TAXATION AND CUSTOMS UNION DG ITSM		
SUBJECT:		
FQP - Annex 20: Availability Management		
FRAMEWORK CONTRACT # TAXUD/2007/CC/088		

ITSM	REF.: ITS-IFQP-SC04
FQP - Annex 20: Availability Management	VER.: 1.04
DOCUMENT HISTORY	ISSUE DATE: 22/03/2010

DOCUMENT HISTORY

Edi.	Rev.	Date	Description	Action (*)	Pages
0	01	06/07/2007	First Draft	I	All
0	02	05/10/2007	Further implementation	I/R	As req.
0	03	08/10/2007	Further implementation	I/R	As req.
0	04	15/10/2007	Draft delivered for information to DG TAXUD	I/R	As req.
0	05	31/10/2007	Draft delivered for information to DG TAXUD	I/R	As req.
0	06	30/11/2007	Further implementation + Implementation of comments received from DG TAXUD. Delivered for information to DG TAXUD	I/R	As req.
0	07	10/12/2007	Further updates	I/R	As req.
0	08	01/04/2008	Further updates	I/R	As req.
0	09	07/07/2008	Consolidation after intermediate deliveries of processes outside of the scope of the FQP document	I/R	As req.
0	10	15/07/2008	Delivered for review to DG TAXUD after internal QC	I/R	As req.
1	00	07/11/2008	Delivered for acceptance to DG TAXUD after implementation of review comments	I/R	As req.
1	01	28/11/2008	Re-delivered for acceptance to DG TAXUD after implementation of remaining comments	I/R	As req.
1	01-1	26/03/2009	Structure FQP modified	I/R	As req.
1	01-2	08/12/2009	Further updates (RfA76 – FQP Evolutive Maintenance)	I/R	As req.
1	01-3	10/12/2009	Delivered for information to DG TAXUD	I/R	As req.
1	01-4	15/01/2009	Final check	I/R	As req.
1	02	01/02/2010	Sent for review to DG TAXUD after internal QC	I	All

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1	03	05/02/2010	Re-delivered for review to DG TAXUD after internal QC	I/R	As req.
1	04	22/03/2010	Delivered for acceptance to DG TAXUD	I/R	As req.

(*) Action: I = Insert R = Replace

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1 - Introduction	ISSUE DATE: 22/03/2010

1. Introduction

This document is an annex to the Framework Quality Plan, deliverable DLV 0.1.1 requested in Specific Contract 04 [A2] under Framework Contract (IT Service Management for DG TAXUD) [A1], Work Package WP.0.1.

This document presents the Level 1, 2 and 3 of the ITSM process FQP - Annex 20: Availability Management.

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2. Reference and Applicable Documents

This chapter presents two lists of relevant programme related documents. They are divided into reference and applicable documents.

2.1 Reference Documents

Id	Reference	Title	Date	Version
R1	ITS-IFQP-SC04- Framework Quality Plan	Framework Quality Plan	22/03/2010	1.04
R2	ITS-IFQP-SC04-Annex 9	ITSM Glossary	22/03/2010	1.13
R3	ITSM-IP-269-AvM Operations Manual	Availability Management Operations Manual	01/02/2010	0.10

Table 1 – Reference documents

2.2 Applicable Documents

An applicable document is a document which content is binding for a contractor no matter what is mentioned in this FQP.

Id	Reference	Title	Date	Version
A1	TAXUD/2007/CC/088	Framework Contract	04/05/2007	N/A
A2	TAXUD/2008/DE/114	Specific Contract 04	30/06/2008	N/A
A3	ITS-SQI-SC06- Calculation Method	SQI SC06 Calculation Method	04/01/2010	0.19

Table 2 – Applicable documents

ITSM	REF.: ITS-IFQP-SC04
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3 - Terminology	ISSUE DATE: 22/03/2010

3. Terminology

3.1 Abbreviations and Acronyms

A list of the abbreviations and acronyms used in the context of the ITSM Programme, and more specifically for this document is provided in Annex 9 ITSM Glossary [R2].

3.2 Interface with DG TAXUD

Where there is a non-specific reference to DG TAXUD, Directorate Generale Taxation and Customs Union DG or other similar descriptions, it means that the interface can be with any one of the following business threads of DG TAXUD:

- DG TAXUD A4/CPT;
- DG TAXUD A4/ISD;
- DG TAXUD A4/APM;
- DG TAXUD A3/Tax;
- DG TAXUD A3/Exc;
- DG TAXUD A3/CUST;
- DG TAXUD A3/LISO.

Where it is intended that a reference is to a specific business thread/DG TAXUD department, one of the above naming conventions shall be stated.

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4. ITSM Process model

4.1 Level 0: Process flows

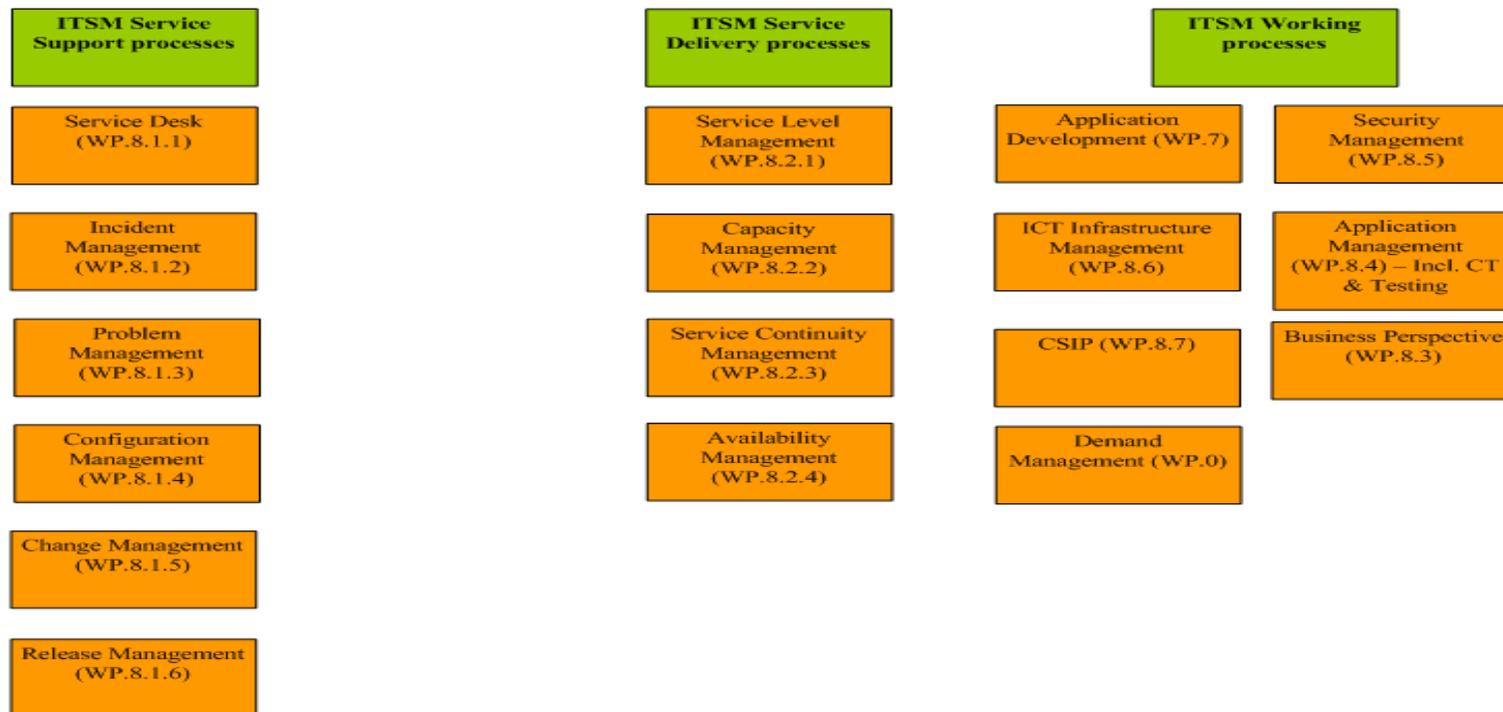


Figure 4-1: ITSM Process Model

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4.2 Level 1: Availability Management

Availability Management is the process responsible for defining, analysing, planning, measuring and improving all aspects of the availability of IT services. Availability Management is responsible for ensuring that all IT infrastructure, processes, tools, roles are appropriate for the agreed service level targets for availability.

Availability is the ability of an IT service to perform its agreed function when required and is determined by serviceability, reliability and maintainability. Availability is calculated as a percentage. This calculation is based on Agreed Service Time (AST) and Downtime and can be calculated (generally) as follows:

$$\text{Availability} = ((\text{AST} - \text{Downtime}) / \text{AST}) * 100$$

Downtime is related to a Configuration Item or IT Service which is not available during its Agreed Service Time.

Agreed Service Time is a synonym for 'Service Hours' and are the agreed hours when the service is to be available.

Serviceability is the ability of a Third-Party Supplier (not ITSM) to meet the terms of the Contract which will often include agreed levels of Availability, Reliability and/or Maintainability for a supporting service or component. Therefore the SLAs that ITSM has with HW/SW suppliers, must be aligned with the SLAs ITSM has with DG TAXUD.

Reliability is the average time that a Configuration Item or IT Service can perform its agreed Function without interruption. This is measured from when the CI or IT Service starts working, until it next fails. Reliability¹ is measured and reported as Mean Time Between Failures (MTBF).

Maintainability is a measure of the average time taken to repair a Configuration Item or IT Service after a Failure. Mean Time To Repair (MTTR) is measured from when the CI or IT Service fails until it is repaired. MTTR does not include the time required to Recover or Restore.

The following Specific Quality Indicators are applicable for "WP8.2.4 Availability Management": SQI05², SQI24³, SQI25⁴, SQI37⁵, SQI52⁶ and SQI53⁷;

¹ Reliability is usually indicated by MTBF or MTBSI, but is not defined in an SQI.

² Not activated

³ Activated

⁴ Not activated

⁵ Not activated

⁶ Not activated, but reported since SC06.

⁷ Not activated, but reported since SC06.

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- The Service Level requirements regarding ‘escalation’ are formalised through the SQI05 specifications;
- The Service Level requirement(s) regarding ‘availability’ are formalised through the SQI24 specifications;
- The Service Level requirement(s) regarding ‘maintainability’ are formalised through the SQI25 specifications (MTTR) and SQI37 specifications (switch over on the fail over site);
- The Service Level requirements regarding ‘monitoring of unscheduled unavailability’s’ are formalised through the SQI52 specifications;
- The Service Level requirements regarding ‘announcing scheduled unavailability’s’ are formalised through the SQI53 specifications.

A ‘scheduled unavailability’ correspond to the agreed time when an IT Service will not be available. This is generally used for maintenance, upgrades and testing. This event is covered by the Change Management (ITSM Application Management) procedure (part of the FSC). A scheduled unavailability must be registered, communicated and published to all affected stakeholders with an adequate lead time allowing them to take the necessary conservatory arrangements. This communication is handled by Service Desk, who is responsible for the creation of an incident, as well as a mass e-mail sending to concerned parties.

An ‘unscheduled unavailability’ is an event during which an IT Service is unplanned not being available. This event is also communicated through the Service Desk and the Incident Management process.

An incident is created for each scheduled and unscheduled unavailability. This process informs all concerned parties.

As shown in the picture below, Availability Management consists of three sub-processes:

- AvM.1 Analyse and Design for Availability;
- AvM.2 Monitor Availability;
- AvM.3 Produce and Maintain Availability Plans.

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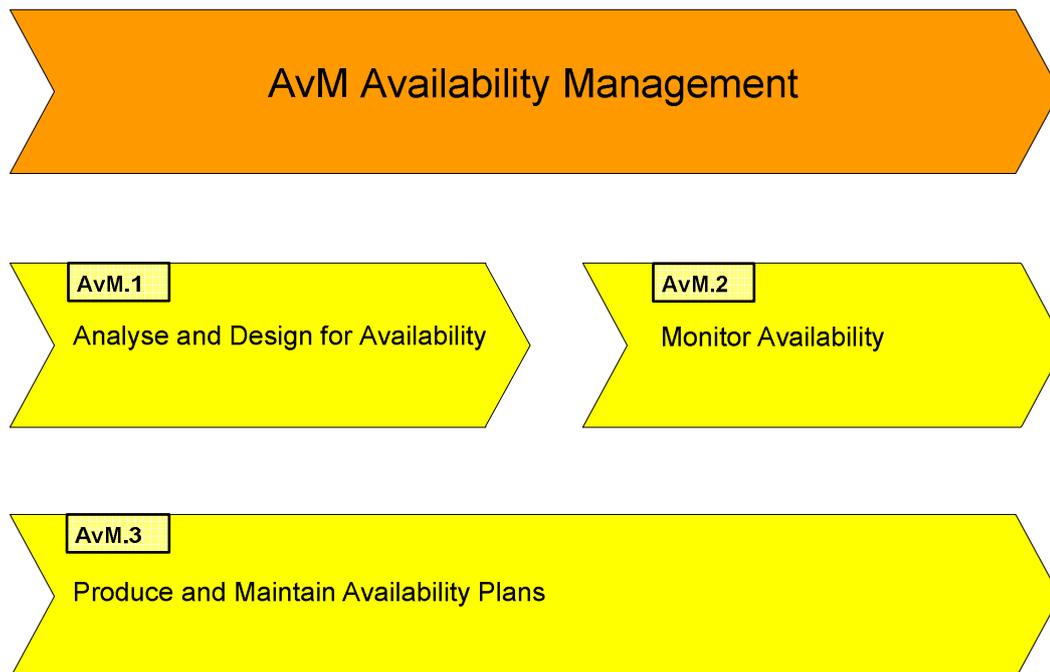


Figure 4-2: AvM Availability Management sub-processes

4.3 Level 2: Availability Management

AvM.1 Analyse and Design for Availability

This sub-process is an ‘ad hoc’ activity to review the IT infrastructure availability capabilities in comparison with the availability requirements and to determine countermeasures. When appropriate, the availability design criteria are refined. Based on the availability review and assessment, a decision is taken whether or not to revise the Availability Plans. The Availability Manager takes this decision after consultation with the availability analyst and other ITSM specialists. The Availability Manager then will discuss this with DG TAXUD A4/ISD or DG TAXUD A4/CPT, as the formal delivery of the availability plan needs to be ordered separately.

Reporting availability data and problems are done through the MPR/MSR, in the interval between deliveries of the Availability Plan. If the Portfolio of the applications covered by the plan needs to be updated, a new release of the plan is requested by DG TAXUD.

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AvM.1 Analyse and Design for Availability

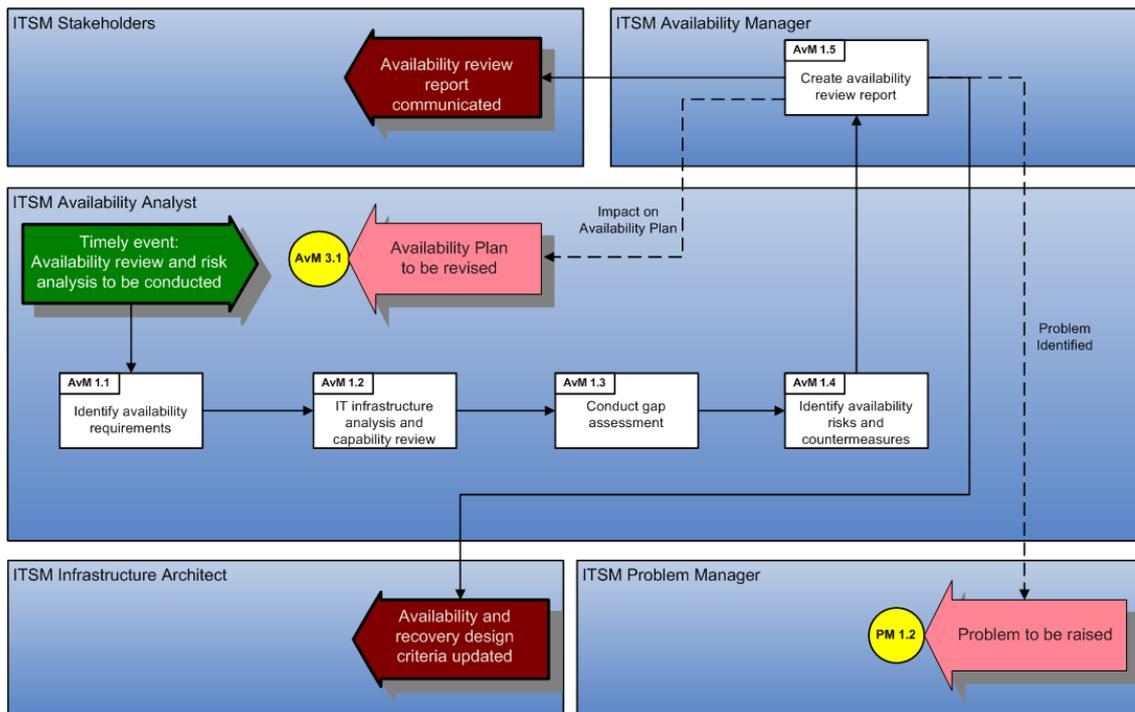


Figure 4-3: AvM.1 Analyse and Design for Availability

The above schema is the final goal for efficient and effective analysis and design for availability. This process is defined but not implemented yet; it will be put in place progressively.

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AvM.3 Produce and Maintain Availability Plans

This sub-process is responsible for producing, maintaining (yearly revision) and initiating the actual implementation of the Availability Plans through Change Management. The Availability Plan aims to identify improvement areas for the overall availability of the IT infrastructure and to ensure that existing and future levels of availability can be provided on a timely and cost effective basis.

The formal process of ordering the evolutive maintenance of the Availability Plan is defined in the Specific Contract 04 [A2] elaboration procedures.

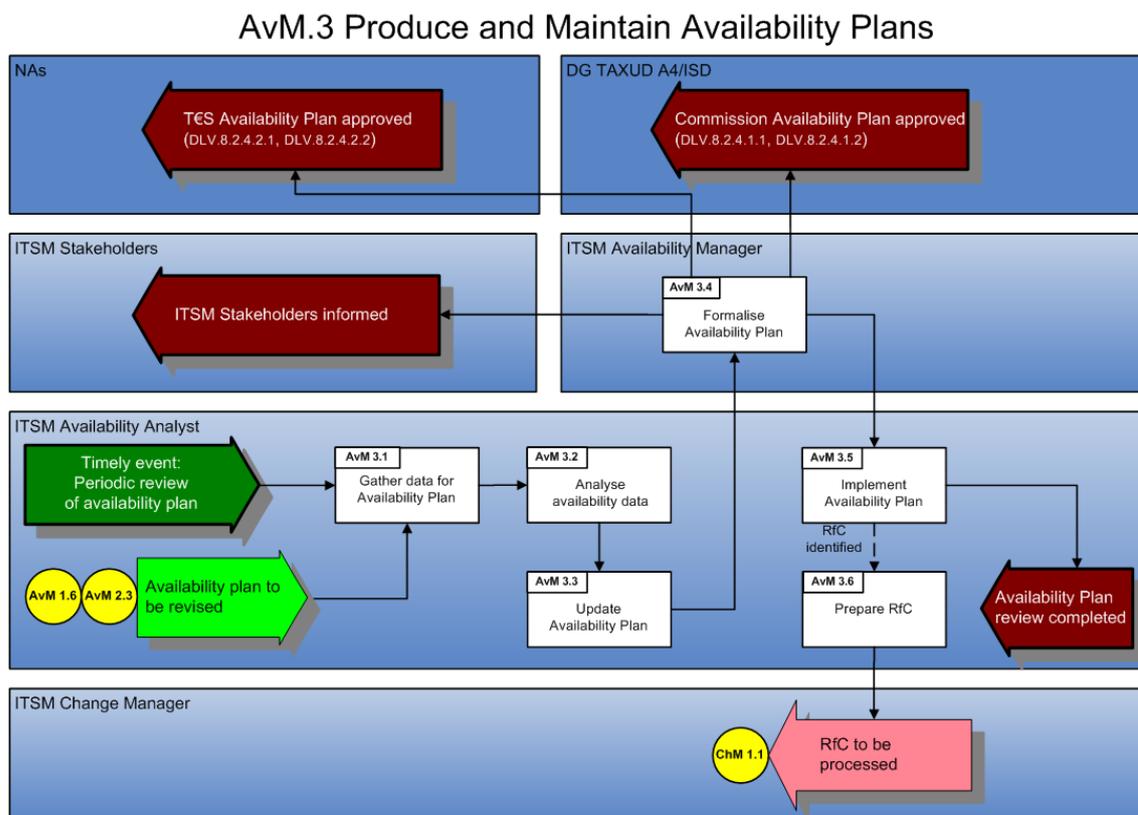


Figure 4-5: AvM.3 Produce and Maintain Availability Plans

The above schema is the final goal for the efficient and effective production and maintenance of the availability plans.

The Commission Availability Plan and the T€S Availability Plan have been created and formally accepted end 2008 (beginning 2009). They are subject to evolutive maintenance according to the applicable Specific Contract.

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RACI Table for AvM

Activity	DG TAXUD A4/ISD	DG TAXUD A4/CPT	NAs	ITSM Availability Manager	ITSM Availability Analyst	ITSM Monitoring Operator	ITSM Service Desk Operator	ITSM Stakeholders	ITSM Service Level Manager	ITSM Problem Manager	ITSM Change Manager	ITSM Infrastructure Architect
AvM.1.1 Identify availability requirements	C	C		A	R				C/I			
AvM.1.2 IT infrastructure analysis and capability review				A	R				C			C/I
AvM.1.3 Conduct gap assessment				A	R						I	C/I
AvM.1.4 Identify availability risks and countermeasures				A	R							C/I
AvM.1.5 Create availability review report	I	I	I	A/R	C				I			
AvM.2.1 Monitor availability		I		A		R	I					
AvM.2.2 Analyse availability data				A	R							
AvM.2.3 Identify availability issues				A	R					I		
AvM.2.4 Produce availability reports (for MPR/MSR)	I	I		A	R				I			
AvM.3.1 Gather data for Availability Plan				A	R							C
AvM.3.2 Analyse availability data				A	R							
AvM.3.3 Update Availability Plan				A	R							C
AvM.3.4 Formalise Availability Plan	C/I	C	C/I	A/R				I				
AvM.3.5 Implement Availability Plan				A	R						I	
AvM.3.6 Prepare RfC				A	R						I	

Table 4-1: AvM RACI Table

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Communication interfaces with DG TAXUD

Interface description communication with DG Taxation and Customs Union	Entity	Direction	Format
AvM 1 Analyse and Design for Availability			
Availability review report	DG TAXUD A4/ISD, DG TAXUD A4/CPT	Outgoing	Electronic publication, e-mail
Availability review report approved	DG TAXUD A4/ISD	Incoming	Electronic publication, e-mail
AvM 2 Monitor Availability			
Availability requirements	DG TAXUD A4/ISD, DG TAXUD A4/CPT	Incoming	Electronic publication, e-mail
SQI24a Downtime Report	DG TAXUD A4/CPT	Outgoing	Electronic publication, e-mail
SQI24a Justification	DG TAXUD A4/CPT	Incoming	Electronic publication, e-mail
Availability Reports (AVA/SQI24a) (DLV.8.2.4.2)	DG TAXUD A4/CPT, DG TAXUD A4/ISD	Outgoing	CIRCA publication
Availability Reports (AVA/SQI24a) (DLV.8.2.4.2) approved	DG TAXUD A4/CPT	Incoming	E-mail
AvM 3 Produce and Maintain Availability Plan			
Availability Plan for Commission services (DLV.8.2.4.1.1, DLV.8.2.4.1.2)	DG TAXUD A4/ISD, DG TAXUD A4/CPT	Outgoing	CIRCA publication

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Interface description communication with DG Taxation and Customs Union	Entity	Direction	Format
Availability Plan for Commission services (DLV.8.2.4.1.1, DLV.8.2.4.1.2) approved	DG TAXUD A4/ISD, DG TAXUD A4/CPT	Incoming	E-mail and/or mail
Availability Plan for the trans-European IT services (DLV.8.2.4.2.1, DLV.8.2.4.2.2)	DG TAXUD A4/ISD	Outgoing	CIRCA publication
Availability Plan for the trans-European IT services (DLV.8.2.4.2.1, DLV.8.2.4.2.2) approved	DG TAXUD A4/ISD	Incoming	E-mail and/or mail

Table 4-2: AvM Communication interfaces with DG TAXUD

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4.4 Level 3: Availability Management

Procedure			
<table border="1"> <tr> <td>AvM.1.1</td> </tr> <tr> <td>Identify availability requirements</td> </tr> </table>	AvM.1.1	Identify availability requirements	<p><u>AvM.1: Analyse and Design for Availability</u></p> <p>AvM.1.1 Identify availability requirements</p> <p>Availability requirements, as defined in the SQIs (Technical Annex) and as activated in the applicable Specific Contract, are used at the moment.</p>
AvM.1.1			
Identify availability requirements			
<table border="1"> <tr> <td>AvM.1.2</td> </tr> <tr> <td>IT infrastructure analysis and capability review</td> </tr> </table>	AvM.1.2	IT infrastructure analysis and capability review	<p>AvM.1.2 IT infrastructure analysis and capability review</p> <p>At this moment the IT infrastructure availability is analysed ad hoc (in case of changes, re-occurring incidents, raised problems). Improvements on the availability of information (gather additional technical infrastructure information in terms of resilience, security, reliability, maintainability, serviceability and performance) are planned.</p> <p>As soon as the extra info is gathered and AvM.1.1 is optimised, the IT infrastructure analysis and capability review will be done on a regular basis.</p> <p>This analysis/review includes all hardware and software components involved in the delivery of IT services (thus including COTS and applications).</p>
AvM.1.2			
IT infrastructure analysis and capability review			
<table border="1"> <tr> <td>AvM.1.3</td> </tr> <tr> <td>Conduct gap assessment</td> </tr> </table>	AvM.1.3	Conduct gap assessment	<p>AvM.1.3 Conduct gap assessment</p> <p>This sub-process will be implemented after AvM.1.1 and AvM.1.2 are optimised.</p>
AvM.1.3			
Conduct gap assessment			
<table border="1"> <tr> <td>AvM.1.4</td> </tr> <tr> <td>Identify availability risks and countermeasures</td> </tr> </table>	AvM.1.4	Identify availability risks and countermeasures	<p>AvM.1.4 Identify availability risks and countermeasures</p> <p>This sub-process will be implemented after AvM.1.1, AvM.1.2 and AvM.1.3 are optimised.</p>
AvM.1.4			
Identify availability risks and countermeasures			
<table border="1"> <tr> <td>AvM.1.5</td> </tr> <tr> <td>Create availability review report</td> </tr> </table>	AvM.1.5	Create availability review report	<p>AvM.1.5 Create availability review report</p> <p>This sub-process will be implemented after AvM.1.1, AvM.1.2, AvM.1.3 and AvM 1.4 are optimised.</p>
AvM.1.5			
Create availability review report			

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<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; padding: 2px;">AvM.2.1</td> </tr> <tr> <td style="text-align: center; padding: 5px;">Monitor availability</td> </tr> </table>	AvM.2.1	Monitor availability	<p><u>AvM.2: Monitor Availability</u></p> <p>AvM.2.1 Monitor availability</p> <p>In this activity, the ITSM Monitoring Operator measures and monitors the availability, reliability and maintainability of systems and applications, according to contractual requirements. This includes monitoring the IT services and applications from an end-user or business perspective (end-to-end monitoring, where applicable) as well as the individual components of the IT infrastructure.</p> <p>The following inputs are used for availability monitoring:</p> <ul style="list-style-type: none"> • Availability requirements; • Application and infrastructure design documents; • Application Portfolio;⁸ • Incidents for scheduled unavailability's; • Incidents for unscheduled unavailability's. <p>The incidents for scheduled unavailability's (e.g. planned changes, planned maintenance activities,) are used to prevent the generation of (an) incident(s) during the planned downtime. The duration of the actual downtime is monitored against the projected outage specified in the scheduled unavailability notification (as agreed in the change record).</p> <p>To facilitate the ITSM Monitor System Operator, monitoring tools are set up and configured to automatically monitor the availability of most CIs. Some CIs must be monitored manually (to some extend)⁹.</p> <p>The central monitoring system monitors the availability of IT resources on different levels (e.g. network-level, system-level, middleware-level, application-level, end-to-end).</p> <p>Additional tools may be required to monitor specific (aspects of) technologies.</p> <p>In addition, most IT resources have built-in performance and capacity management tools, which are used to monitor and analyse performance (such as database management systems, operating systems ...). Database management tools have built-in monitoring and capacity/tuning tools are used 'ad hoc'.</p>
AvM.2.1			
Monitor availability			

⁸ In practice; the list of monitored CIs for availability is aligned with the list of CIs defined in the ITSM Service Management Tool (SMT), i.e. 'owITSM'.

⁹ Commission IT Services which are not monitored automatically: CSI Bridge, HTTP Bridge, CCN Bridge, Taric2, TTA, SPEED-ECN, TA and SEEDv1.

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	<p>Example of components for which the availability is monitored by ITSM Monitor:</p> <ul style="list-style-type: none"> • Network devices; firewalls, switches, routers, ... • Servers; ping response time; • OS; processes/services/jobs availability; • Middleware; ping response time, processes availability; • Application; URL/processes availability; • Service; business specific events. <p>The monitoring tool ‘Host Monitor’ is specifically used (for now)¹⁰ to monitor the availability of the Commission IT Services:</p> <ul style="list-style-type: none"> • DIGIT hosted applications (e.g. EOS, Quota2, ...); • Publicly accessible (e.g. DDS) and ITSM hosted applications (e.g. CS/RD, CS/MIS ...). <p>Implementation and configuration of the monitoring tool(s) is improved on a continuous basis.</p> <p>The outcome of the monitoring activities (availability data) is stored in the AMDB¹¹. The Availability Management process maintains the AMDB that contains all monitoring data and information required to support the Availability Management activities.</p> <p>Events (or alarms) are generated in case the IT services and/or components are down or performance is severely degraded. After initial review of an event, an incident should be raised to the ITSM Service Desk Operator, in case further analysis and resolution is needed. Handling each unavailability and managing the communication with the business are part of the Incident Management process.</p> <p>All scheduled and unscheduled unavailability’s (including the notifications to the business / end-users) are registered by the Service Desk Operator in the Service Management Tool and communicated to all affected stakeholders with, when applicable, adequate recommendations of conservatory arrangements to be taken. The Service Desk also publishes the end of the unavailability to all affected stakeholders.</p>
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¹⁰ To be replaced with a new availability monitoring tool.

¹¹ In practice the AMDB is not one tangible object. It is primarily a collection of .csv files with processed raw monitoring data (parsed log files) and secondarily a list (workbook or database) which contains scheduled and unscheduled unavailabilities.

¹² Availability Reports since July 2008 up to the present.

¹³ Not in use.

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All scheduled and unscheduled unavailability's are published by the ITSM Monitor System Operator in the 'Availability Dashboard'. ITSM Monitor also publishes the end of the unavailability on the 'Availability Dashboard'. Scheduled unavailability's are maintained in the 'Availability Calendar' and unscheduled unavailability's are added to the 'Realtime Dashboard'.

The 'Availability Dashboard' contains the following features;

- Realtime Dashboard listing all current Commission IT Service unavailability's;
- Next Business Day update of the Availability Report;
- Historical Availability Overview¹² with the monthly Availability percentages;
- Scheduled Unavailability's Calendar listing all Commission IT Service and TES unavailability's;
- Downtime details (downtime in minutes, downtime start, downtime end, applicable Incidents);
- Single Alerting Point¹³; functionality is present to send SMS's to all the stakeholders when a Commission IT Service is unavailable. In other words the CI owner could be informed (via SMS) that the CI is currently unavailable;
- Justification section 'Downtimes still to be justified' to allow the DG TAXUD A4/CPT Service Level Manager to 'justify' (or not) all the Commission IT Service unavailability's previously listed in the 'Realtime Dashboard'.

Further details on the Availability Dashboard functionality, for the System Operator, are provided in Availability Management Operations Manual [R3].

To facilitate the justification procedure for SQI24a, the ITSM Monitor System Operator sends a 'Downtime Report' to the Service Level Manager at DG TAXUD A4/CPT. This Downtime Report is send (when feasible) the next business day after an unscheduled unavailability impacting a Commission IT Service CI.

It is a notification to DG TAXUD A4/CPT that ITSM Monitor has detected an unavailability impacting SQI24a and thus that the justification procedure must be initiated by DG TAXUD A4/CPT's SLM for the applicable unavailability.

It presents a short overview of the key elements of the (scheduled or unscheduled) unavailability (during the Service Window) of previous

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	<p>business day:</p> <ul style="list-style-type: none"> • Availability data (monitored data); downtime start and downtime end for each impacted CI(s); • Incident data; reference number, root cause (when available). <p>Further details on the Downtime Report are provided in Availability Management Operations Manual [R3].</p>		
<table border="1"> <tr> <td>AvM.2.2</td> </tr> <tr> <td>Analyse availability data</td> </tr> </table>	AvM.2.2	Analyse availability data	<p>AvM.2.2 Analyse availability data</p> <p>On a periodic basis (at least monthly), the ITSM Monitor System Operator and ITSM Availability Analyst analyse availability data to identify trends. These trends are consolidated for reporting (see AvM.2.4). The monitored (and calculated) availability figures are evaluated against the targets defined in the agreements (SQI24a). The following inputs are used for this analysis:</p> <ul style="list-style-type: none"> • Collected availability data (stored in the AMDB) from AvM.2.1; • Availability events from AvM.2.1; • Availability related incidents (history of outages) and problems (outstanding). <p>The information stored in the AMDB provides the basis for regular, ad hoc and exception availability reporting and the identification of trends within the data for the instigation of improvement activities.</p> <p>Activities are:</p> <ul style="list-style-type: none"> • Reviewing IT service and component availability and identifying unacceptable levels; • Conducting trend analysis of serviceability, reliability and maintainability; • Maintaining daily and monthly availability statistics per service (availability percentages, downtime in minutes); • Maintaining a list of availability Incidents.
AvM.2.2			
Analyse availability data			
<table border="1"> <tr> <td>AvM.2.3</td> </tr> <tr> <td>Identify availability issues</td> </tr> </table>	AvM.2.3	Identify availability issues	<p>AvM.2.3 Identify availability issues</p> <p>Based on availability monitoring and analysis, the ITSM Availability Analyst identifies areas requiring improvement. Shortcomings in IT availability are recognised and appropriate corrective actions are identified (e.g. to replace or upgrade CIs). These actions are further analysed and diagnosed by Problem Management.</p> <p>A broad range of availability data is reviewed and assessed to identify availability related issues:</p> <ul style="list-style-type: none"> • Availability data collected by monitoring (from AvM.2.1); • Analysed and consolidated availability data (identified trends, ...)
AvM.2.3			
Identify availability issues			

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	<p>(from AvM.2.2);</p> <ul style="list-style-type: none"> • Results from Service Outage Analysis reviews (by Problem Management); • Incident history related to availability (including information such as MTTR); • Outstanding problems related to availability; • Availability and reliability of CIs (components); • Configuration management data (such as relationships and dependencies between CIs and IT services). <p>The outcome of these activities can be:</p> <ul style="list-style-type: none"> • Identified problems/known errors (which need to be investigated by Problem Management); • The Availability Plan to be revised; or • Reporting that no availability issues occurred. <p>In case issues are identified, which need additional investigation, a problem is raised. The actual investigation of the underlying reasons for unacceptable availability is described in the Problem Management process.</p> <p>Depending on the issues identified, it may be necessary to revise the Availability Plan sooner than the periodic review cycle. In this case, the revision of the Availability Plan is triggered.</p>		
<table border="1"> <tr> <td>AvM.2.4</td> </tr> <tr> <td>Produce availability reports (for MPR/MSR)</td> </tr> </table>	AvM.2.4	Produce availability reports (for MPR/MSR)	<p>AvM.2.4 Produce availability reports (for MPR/MSR)</p> <p>On a monthly basis, the ITSM Availability Analyst consolidates availability metrics in the availability report.</p> <p>The following data are used for the creation of the report:</p> <ul style="list-style-type: none"> • Analysed and consolidated availability data (identified trends...) (from AvM.2.2); • Analysed data from monitoring tools (from AvM.2.2); • Incident history and statistics (related to availability and unplanned unavailability); • Change history related to scheduled unavailability (e.g. maintenance activities). <p>The outcome of this activity is the Availability and SQI24a Report (DLV.8.2.4.2), respectively delivered for MSR and MPR.</p> <p>The Availability Report presents the availability figures for Commission IT Services with all downtimes included. This report presents the real availability as ‘experienced’ by the end-user.</p> $AVA = ((AST - DT)/AST)*100$ <p>The SQI24a Report presents the availability figures for Commission</p>
AvM.2.4			
Produce availability reports (for MPR/MSR)			

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	<p>IT Services without taking ‘justified downtimes’ (e.g. outside applicable Service Window, scheduled unavailability with agreement from DG TAXUD/CPT) into account. This report presents the availability according to contractual requirements, where justified downtimes must be subtracted from the total downtime figure.</p> <p>$SQI24a = ((AST - (DT - \text{justified DT})) / AST) * 100$</p> <p>The Availability percentage is therefore always lower than or equal to the SQI24a percentage.</p> <p>Each Commission IT Service is represented by a number of “Managed CIs”. A web application for example is usually represented by a collection of representative individual links of that application (e.g. the home page and a query).</p> <p>This list of “Managed CI” is maintained in the “Thread CI” configuration files, which is aligned with the Application Portfolio (SMT CI list) on service-level. Each service is then split up in a number of Managed CIs for that service. The applicable “Thread CI” configuration file is delivered with the MPR/MSR.</p> <p>The detailed specifications for the calculation of the (AVA and) SQI24a percentage are provided in (but not limited to) ITS-SQI-SC06-Calculation Method [A3].</p> <p>The monthly availability and SQI24a percentages¹⁴ are integrated in the MPR/MSR by Service Level Management. The complete delivered package(s) contain;</p> <ul style="list-style-type: none"> • ADB¹⁵ which lists the availability data from the automatic and manual monitoring; • AVDB which lists all the Commission IT Service unavailability Incidents (with details); • Monthly average AVA/SQI24a percentage; • Monthly average AVA/SQI24a availability percentages per Business Thread; • Daily AVA/SQI24a availability percentages on Managed CI level; • Downtimes list for all the detected unavailability’s (start/end) on Managed CI level; • Downtime duration for all the detected unavailability’s (minutes) on Managed CI level. <p>Further details on the production of MPR/MSR regarding AVA/SQI24a are provided in Availability Management Operations</p>
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¹⁴ Annexes 14

¹⁵ Only available in the AVA package

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	Manual [R3].		
<table border="1" data-bbox="268 302 507 430"> <tr> <td data-bbox="268 302 375 336">AvM.3.1</td> </tr> <tr> <td data-bbox="268 336 507 430">Gather data for Availability Plan</td> </tr> </table>	AvM.3.1	Gather data for Availability Plan	<p data-bbox="526 302 1332 347"><u>AvM.3: Produce and Maintain Availability Plans</u></p> <p data-bbox="526 392 1220 436">AvM.3.1 Gather data for Availability Plan</p> <p data-bbox="526 459 1412 526">Yearly or as a result of AvM.1.5 or AvM.2.3 activities, the Availability Plan will be revised and formalised with DG TAXUD.</p> <p data-bbox="526 560 1420 638">The ITSM Availability Analyst collects all data required to produce the Availability Plan:</p> <ul data-bbox="526 660 1428 1288" style="list-style-type: none"> • Availability review reports (from AvM.1.5); • Incidents (outages and unacceptable recovery and restoration time; unplanned outages); • Availability reports (generated on a monthly basis) (from AvM 2.4); • Availability monitoring data and trends (e.g. indicating a gradual deterioration in availability) (from AvM.2.2); • Availability requirements (requests from the business to increase the level of availability provided) (from AvM.1.1); • Changes in scope of the availability plan (such as new or retired applications to be included or excluded in the plan); • Service Outage Analysis¹⁶ results from Problem Management; • Planned unavailability (for maintenance, releases, upgrades, ...); • Outstanding problems (identified root causes) and proposed changes (improvements). <p data-bbox="526 1299 1444 1512">Service Outage Analysis (SOA) results from Problem Management; this includes the causes of unavailability. This service outage analysis is a post review of the availability incidents that have occurred. These outage analyses provide important information of the root cause of service interruptions and opportunities to improve levels of availability.</p>
AvM.3.1			
Gather data for Availability Plan			
<table border="1" data-bbox="268 1534 507 1662"> <tr> <td data-bbox="268 1534 375 1568">AvM.3.2</td> </tr> <tr> <td data-bbox="268 1568 507 1662">Analyse availability data</td> </tr> </table>	AvM.3.2	Analyse availability data	<p data-bbox="526 1534 1093 1579">AvM.3.2 Analyse availability data</p> <p data-bbox="526 1601 1444 1792">The collected data for the Availability Plan from AvM.3.1 are analysed and diagnosed in detail, by the ITSM Availability Analyst. If needed, specialists from Infrastructure and Application Management are involved to determine and evaluate the improvement options.</p> <p data-bbox="526 1825 1436 1926">The CMDB, incident and problem records are examined, in order to determine which components are responsible for IT failure – referred to as the SPOF.</p>
AvM.3.2			
Analyse availability data			

¹⁶ Currently not implemented

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	<p>With this knowledge, recommendations and a prioritised action plan for the improvement of availability is created (e.g. by modifying the IT infrastructure to provide higher levels of reliability).</p>		
<table border="1" data-bbox="268 392 507 517"> <tr> <td data-bbox="268 392 363 432">AvM.3.3</td> </tr> <tr> <td data-bbox="268 432 507 517">Update Availability Plan</td> </tr> </table>	AvM.3.3	Update Availability Plan	<p>AvM.3.3 Update Availability Plan</p> <p>The ITSM Availability Analyst creates (or updates) the Availability Plan and documents the recommended improvements. This activity uses the outcome of the previous activities including:</p> <ul style="list-style-type: none"> • The analysed availability data (from AvM.3.2); • The availability improvement options and recommendations (from AvM.3.2); • The previous version of the Availability Plan (from AvM.3.3). <p>The Availability Plan provides the structure and aggregation of a wide range of initiatives needed to improve availability. As the Availability Management process matures, the plan will evolve to cover the following:</p> <ul style="list-style-type: none"> • Actual levels of availability versus contractual levels of availability; • Activities to address shortcomings in availability for existing IT services; • Details of changing availability requirements for existing IT services. The Availability Plan documents the options to meet these changed requirements; • Details of the availability requirements for new IT services. The Availability Plan documents the options to meet these new requirements; • A forward-looking schedule for the planned Service Outage Analysis assignments; • Regular reviews of Service Outage Analysis assignments to ensure that infrastructure availability is improved proactively. <p>During the production of the Availability Plan, different specialists are consulted, related to the following areas:</p> <ul style="list-style-type: none"> • Service Level Management, concerning changing business and user requirements for existing IT services; • ITSCM, concerning business impact and resilience improvements; • Business Perspective, to understand major customer concerns and/or future needs relating to IT availability; • Capacity Management, concerning the scenarios for upgrading (or downgrading) the software, hardware and network layers of the IT infrastructure; • Application Management, concerning the availability requirements for new services; • Technical support groups responsible for testing and maintenance functions, concerning the reliability and maintainability of
AvM.3.3			
Update Availability Plan			

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	<p>existing services;</p> <ul style="list-style-type: none"> • ICT Infrastructure Management, for reviewing the IT infrastructure designs. <p>Resulting from the assessment of business impact, risk and the agreed requirements for changed availability, the IT Service Continuity process is provided with the necessary information to include new requirements in the Service Continuity Plan.</p>		
<table border="1"> <tr> <td>AvM.3.4</td> </tr> <tr> <td>Formalise Availability Plan</td> </tr> </table>	AvM.3.4	Formalise Availability Plan	<p>AvM.3.4 Formalise Availability Plan</p> <p>The ITSM Availability Manager ensures that the Availability Plan is formally approved.</p> <p>The result of this activity is the formalised and approved Availability Plan, that is subject to a formal review cycle (SfR/SfA):</p> <ul style="list-style-type: none"> • Availability Plan for Commission IT services (DLV.8.2.4.1.1, or its evolutive maintenance DLV.8.2.4.1.2); • Availability Plan for the trans-European IT services (DLV.8.2.4.2.1, or its evolutive maintenance DLV.8.2.4.2.2). <p>The Availability Plan is also made available to ITSM internally, by e-mail communication and post on the ITSM Collaborative tool.</p>
AvM.3.4			
Formalise Availability Plan			
<table border="1"> <tr> <td>AvM.3.5</td> </tr> <tr> <td>Implement Availability Plan</td> </tr> </table>	AvM.3.5	Implement Availability Plan	<p>AvM.3.5 Implement Availability Plan</p> <p>The Availability Plan can result in one or more projects or changes to be initiated in order to improve the availability. After the plan has been approved by DG TAXUD (and –when applicable- the NAs), the ITSM Availability Analyst implements identified initiatives and required improvements mentioned in the plan, through a formal RfC.</p> <p>The actual implementation of the identified improvements is realised by Change Management and Release Management.</p>
AvM.3.5			
Implement Availability Plan			
<table border="1"> <tr> <td>AvM.3.6</td> </tr> <tr> <td>Prepare RfC</td> </tr> </table>	AvM.3.6	Prepare RfC	<p>AvM.3.6 Prepare RfC</p> <p>The ITSM Availability Analyst prepares the RfC (identified in AvM. 3.5), to be handled further by the ITSM Change Manager.</p>
AvM.3.6			
Prepare RfC			