D1.7 Report on EOSC-hub Service Management System

Lead Partner:	EGI Foundation
Version:	V1
Status:	Under EC review
Dissemination Level:	Public
Document Link:	https://documents.egi.eu/document/3499

Deliverable Abstract
A report on implementation of integrated EOSC Hub Service Management System (SMS) to effectively manage the delivery of services to customers.

EOSC-HUB RECEIVES FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT NO. 777536.

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DELIVERY SLIP

	Name	***Partner/Activity***	***Date***
From:	Małgorzata Krakowian Pavel Weber Sy Holsinger	EGI Foundation/WP1 KIT/WP1 EGI Foundation/WP1	
Moderated by:	Małgorzata Krakowian	EGI Foundation/WP1	
Reviewed by	Diego Scardaci	EGI Foundation/AMB	5/09/2019
	Tiina Kupila-Rantala	CSC/WP2	13/09/2019
Approved by:	AMB		

DOCUMENT LOG

Issue	***Date***	***Comment***	***Author***
V0.1	30/08/2019	First version	Małgorzata Krakowian
Final	25/09/2019	Final version	Małgorzata Krakowian

Contents

Executive summary

As part of the EOSC-hub contribution to the EOSC Federating Core[1], the project is developing and operating a Service Management system (SMS) for EOSC, a critical component in integrating services provided by different providers into the common marketplace and monitoring frameworks. The SMS ensures a robust and resilient service delivery in the EOSC federated infrastructure with different types of many-to-many relationships between users, providers and clients. Furthermore, it facilitates the alignment of service management activities of all the service providers, supporting different levels of integration with the centralised services.

This document focuses on the outcome of the EOSC-hub SMS internal audit activities, which were conducted according to the audit plan [2]in March 2019 and presents the plans for future work that have been developed considering the audit's findings. An overview of policies, processes and procedure of the SMS is depicted in the EOSC-hub deliverable D4.3 "Procedures and policies for the production infrastructure"[3].

All important aspects of (IT) service management and the service management system (SMS) were addressed during the audit, as far as applicable and subject to the audit scope and plan. The findings of this audit were based on 14 conducted audit interviews and the review of 108 pieces of other evidence (such as documents, records) by the auditors. In total, 76 findings were recorded, divided into 6 nonconformities (NC), 18 strong recommendations (SR), 48 hints (H) and 4 positive aspects (PA).

The audit goals were achieved. This was supported by the cooperative and open attitude the members of the EOSC-hub project demonstrated during the audit, which enabled the auditors to conduct the interviews in an efficient and improvement-focused manner.

It is the general assessment of the auditors that the EOSC-hub SMS is to a large extent in its planned state of development and maturity at this point of time. Service management capabilities in many parts are sufficient to support effective service delivery to customers (according to the scope of this audit) and manage interfaces to other parties involved adequately. The key ITSM activities and mechanisms are in place, including the tools to support them.

However, it cannot be stated that a comprehensive, consistent and fully effective SMS is in place yet. The current level of maturity / capability of the processes are inhomogeneous, and for some service management processes, gaps were identified preventing the respective processes to consistently deliver repeatable results and achieve all of the goals connected to the requirements

[1] The concept of the EOSC Federating Core is introduced in the EOSC Implementation Roadmap (SWD/2018/83) and further specified in the deliverable D2.6 "First Service roadmap, service portfolio and service catalogue".

[2] See Appendix I

[3] https://documents.egi.eu/document/3500

of FitSM-1[4]. It is apparent, that in certain areas, further investigations are still needed to understand the scope of what should be controlled by the SMS and, how EOSC Hub structures and the SMS have to interact. The experience gathered from the daily operation of the Hub and the on-going work on refining and implementing the EOSC Hub will help on better defining the scope of each process.

Moving from this status to a complete and effective SMS will require focused effort in the time ahead. General improvements that, in the opinion of the auditors, should be addressed with priority are:

- Develop a clear understanding of the general attributes and a classification of the services – those that are provided by EOSC-hub directly, as well as those brokered through the EOSC Portal[5] and Marketplace[6] with varying degrees of integration.
- Define the scope of all service management processes and procedures, using the classification of services. It should be as clear as possible, what is under control of each process and procedure, but also what is not under its control.
- Amend and revise procedure definitions to support the achievement of repeatable results. Definitions should be kept concise and provide concrete enough guidance for the procedure to be executed in a consistent manner by various people, not just the process manager or the person who wrote the definition.
- Use models and visualizations to serve as a basis of discussion and aid a common understanding of core elements of the SMS in development, e.g. the statuses various workflows and records can enter, use cases for the Configuration Management Database (CMDB), the general information models of records (including Configuration Item (CI) records), service portfolio entries etc.

[4] https://apmg-international.com/product/fitsm

[5] More information on: https://eosc-portal.eu/

[6] More information on: https://marketplace.eosc-portal.eu/

1 Introduction

This deliverable provides an independent assessment report of the implementation stage of EOSC-hub Service Management System (SMS). Section 2 is based on the report of the audit conducted on 11-15 March 2019 (M15). Defining and implementing the Service Management System is a complex work hard to be fully achieved in 15 months, especially for such a heterogeneous environment like EOSC. Management system is also supposed to be constantly improved and changed, based on the customer and provider needs. Therefore, the auditors introduced 4 types of findings to properly assess achievable level of conformity against FitSM standard [7]in 15 months and with allocated resources:

1. **Nonconformity or potential nonconformity.** Situation in which requirements are not met or a core activity is not effective, although at the current stage of the SMS implementation, the respective requirements should be fulfilled or the respective activity in place and effective. Current implementation and output(s) are behind expectations, corrective action vital for avoiding a negative effect on the effectiveness of the SMS.
2. **Strong recommendation.** Situation that requires a follow-up action, since requirements are or will not be met, and there is a risk of not meeting expectations in the future, if no corrective action is taken. Current implementation and output(s) match today's expectations, corrective action vital for avoiding a negative effect on the effectiveness of the SMS in the future.
3. **Hint, suggestion, opportunity for improvement.** Suggestion for improvement that should be considered to further increase the effectiveness or maturity of a process or activity. Implementation of actions for improvement optional, depending on the assessment of effort and benefits by the process manager and process owner.
4. **Positive aspect.**Situation that exceeds expectations. No actions required.

In the following subsections, each of the SMS processes has been assessed, based on the interviews performed during the audit and based on the observed evidence.

Section 3 provides the schedule of the work for each process until April 2020 divided in 3 periods. This plan will be used by process managers to prioritize the work and by process owners to track the progress. This work is supposed to prepare the EOSC-hub SMS for the 2nd internal audit in May/June 2020. The plan has been discussed and agreed between the process owners and the process managers.

[7] https://en.wikipedia.org/wiki/FitSM

2 Internal audit

2.1 Introduction

This section summarizes the objectives, scope, criteria, findings and conclusions drawn from an audit conducted on behalf of the EOSC-hub project from 11-15 Mach 2019. The audit activities were carried out under consideration of the guidelines for management systems auditing according to EN ISO 19011:2018[8].

2.2 General information

Audit objectives	• Assess the current level of conformity and effectiveness of the services management system (SMS) and its processes • Point out inconsistencies • Highlight success factors • Provide practical suggestions for further development / improvement
Audit scope	The service management system (SMS) covering the (IT) service management processes and activities carried out under control of the EOSC-hub project to deliver services to customers

Audit criteria	**Audit criteria relate to the following topic areas:**
	General requirements for a service management system
	• Focus on:
	  ○ Top Management Commitment & Responsibility
	  ○ Documentation
	  ○ Scoping, Planning, Implementing, Monitoring/Reviewing and Continually Improving Service Management
	• Requirements based on FitSM-1, Clause 4 (GR1-7)
	
	Process-specific requirements
	• Focus on:
	  ○ Service Portfolio Management (SPM)
	  ○ Service Level Management (SLM)
	  ○ Service Reporting Management (SRM)
	  ○ Service Availability & Continuity Management (SACM)
	  ○ Capacity Management (CAPM)
	  ○ Information Security Management (ISRM)
	  ○ Customer Relationship Management (CRM)
	  ○ Supplier Relationship Management (SUPPM)
	  ○ Incident & Service Request Management (ISRM)
	  ○ Problem Management (PM)
	  ○ Configuration Management (CONFM)
	  ○ Change Management (CHM)

[8] More information on: https://www.iso.org/standard/70017.html

	○ Release & Deployment Management ○ Continual Service Improvement Management • Requirements based on FitSM-1, Clause 5 (PR1-14)
Audit client	EGI Foundation on behalf of the EOSC-hub project
Audit team	Dr. Thomas Schaaf, ITEMO Dr. Michael Brenner, ITEMO
Auditee	Relevant partners within the EOSC-hub project
Language	• Audit report (this document): English • Interviews: English
Dates and places	• Dates: Monday, March 11th to Friday, March 15th, 2019 • Place: EGI Foundation headquarter, Science Park 140, 1098 XG Amsterdam, The Netherlands

2.3 Audit findings

The audit findings were classified according to the following scheme:

Type of audit finding	Explanation
(NC) Nonconformity or potential nonconformity	Situation in which requirements are not met or a core activity is not effective, although at the current stage of the SMS implementation, the respective requirements should be fulfilled or the respective activity in place and effective → Current implementation and output(s) are behind expectations, corrective action vital for avoiding a negative effect on the effectiveness of the SMS.
(SR) Strong recommendation	Situation that requires follow-up action, since requirements are or will not be met, and there is a risk of not meeting expectations in the future, if no corrective action is taken → Current implementation and output(s) match today's expectations, corrective action vital for avoiding a negative effect on the effectiveness of the SMS in the future.
(H) Hint, suggestion, opportunity for improvement	Suggestion for improvement that should be considered to further increase the effectiveness or maturity of a process or activity → Implementation of actions for improvement optional, depending on the assessment of effort and benefits by the process manager and process owner.
(PA) Positive aspect	Situation that exceeds expectations → No action required

Please note that the number of findings (in total or per category) is NOT an indicator of the level of conformity, effectiveness or maturity of the respective process or topic. The absence of positive aspects does NOT indicate that there is nothing positive about the process or topic.

2.3.1 Service Management System (SMS)

(FitSM-1, GR1-GR5)

Audit evidence:

(EV) SMS Policies [9](Confluence)

[9] https://wiki.eosc-hub.eu/display/EOSC/SMS+Policies

(EV) Continual Improvement policy [10](Confluence)

(EV) EOSC-hub D4.1 Operational requirements for the services in the catalogue[11] (PDF)

(EV) SMS Processes' integration requirements (Confluence)

(EV) SMS communication plan[12] (Confluence)

(EV) SMS Events [13](Confluence)

(EV) EOSC SMS processes initial actions

(EV) EOSC-hub: M1.2 Majority of SMS Completed [14](Google Doc)

(EV) Coordination meetings [15](Confluence)

(EV) SMS Documentation checklist [16](Confluence)

(EV) SMS Scope[17] (Confluence)

(EV) SMS Tools [18](Confluence)

(EV) Service Management policy [19](Confluence)

Additional information:

- All roles for process owners and process managers have been assigned.
- Monthly SMS coordination meeting are carried out with all process owners for coordinating the implementation of the SMS.

Audit findings:

Classification	Finding
(SR)	The SMS scope covers the high-level integration services, but does not seem to be complete and up-to-date. Thus, it should be completed and updated to reflect for which services the processes and activities of the SMS apply. Instead of maintaining it manually, the relevant information could be recorded in the service portfolio and the scope definition be generated based on the service portfolio. For each service in the service portfolio, the specific integration level (and with that the information whether or not the service is in the scope of the SMS) should be documented.

[10] https://wiki.eosc-hub.eu/display/EOSC/Continual+Service+Improvement+policy

[11] Available on: https://documents.egi.eu/public/ShowDocument?docid=3342

[12] https://wiki.eosc-hub.eu/display/EOSC/SMS+Communication+plan

[13] https://wiki.eosc-hub.eu/display/EOSC/SMS+Events

[14] https://docs.google.com/document/d/1XkaGRgk_UF3e2D96CI4M78A23Yx0N70dxQ5eOTqoXDM/edit

[15] https://wiki.eosc-hub.eu/display/EOSC/SMS+Coordination+meetings

[16] https://wiki.eosc-hub.eu/display/EOSC/SMS+Documentation+checklist

[17] https://wiki.eosc-hub.eu/display/EOSC/EOSC+hub+SMS

[18] https://wiki.eosc-hub.eu/display/EOSC/SMS+Tools

[19] https://wiki.eosc-hub.eu/display/EOSC/Service+Management+policy

(SR)	A structured stakeholder analysis should be performed aiming at identifying the interested parties specifically from the perspective of the SMS (not the EOSC-hub project), aiming at understanding who the key players and other people are to keep informed / maintain awareness / actively involve. Based on the results of the stakeholder analysis, a more mature communication plan should be created and implemented.
(H)	It should be considered to extend the SMS documentation checklist to use it for tracking the status of the different parts of the SMS documentation.
(H)	It should be considered to add the SMS coordination meeting to the SMS communication plan.
(H)	It could be considered to extend the "SMS events" towards an "SMS schedule" that covers not only scheduled evaluation and improvement-related activities, but also implementation-related activities and milestones, such as the ones considered in the "SMS processes initial actions" document.
(H)	It should be considered to have more detailed minutes on the coordination meetings. In addition, it may make sense to use a "standard agenda" to walk through to ensure no topics of significance are overlooked when holding a coordination meeting.
(H)	Regular meetings should be scheduled for process managers to report to the process owners and to discuss current topics with the process owners and other process managers (in particular regarding interfaces between the processes).
(H)	In the document control section for procedures, the field "owner" does not relate to the process owner, but to the owner of the current page. To avoid confusion, it should be considered to rename this field from "owner" to "document owner"
(H)	It should be considered, to increase the use of visualisation throughout the documentation of the SMS (e.g. process charts, status diagrams). The free Confluence plugin PlantUML may be considered helpful. For more information, please refer to: https://marketplace.atlassian.com/apps/41025/plantuml-for-confluence?hosting=server&tab=overview
(PA)	The approach to define SMS integration requirements based on the intended level of service integration.
(PA)	As part of the process reviews for, relevant actions to be taken to implement / improve the processes have been identified and documented in a consistent and structured way, making use of Jira.

2.3.2 Service Portfolio Management (SPM)

(FitSM-1, PR1)

Audit evidence:

(EV) Service Portfolio Management[20] (SPM), process description (Confluence)

(EV) EOSC-Hub Service Description Template General (Google Doc)

(EV) Service Portfolio [21](Confluence)

(EV) Service Maturity Classification (Confluence)

(EV) Snap4City service description EOSCSPR-44 (Confluence)

(EV) Become a provider![22] (Website)

(EV) Become an EOSC provider[23] (Website)

(EV) Service Description Template (Google Doc)

(EV) Service Description Template filled out for D4Science.org infrastructure (Google Doc)

(EV) D4Science Visual Media Service VRE service description EOSCSPR-80[24] (Confluence)

(EV) Procedure SPM1 Add a service in the EOSC-Hub Service Portfolio[25] (Confluence)

(EV) EOSC Portal[26](Website)

(EV) EOSC Catalogue[27](Website)

(EV) SPM initial review report (Confluence)

(EV) EOSC-Hub Service Catalogue[28] (Confluence)

Additional information:

- The service portfolio covers externally and internally facing services.
- Currently, 77 services have been recorded in the JIRA-based service portfolio.
- Only services with a minimum service maturity level of TRL8 are accepted for integration in EOSC.

Audit findings:

Classification	Finding
(NC)	Currently, there is no single central source of valid and up-to-date information on all services forming the service portfolio, including information on their categorization and their relevance for the scope of the SMS. Different views (e.g.

[20] https://wiki.eosc-hub.eu/display/EOSC/Service+Portfolio+Management+-+SPM

[21] https://wiki.eosc-hub.eu/display/EOSC/Service+portfolios

[22] https://eosc-portal.eu/for-providers

[23] https://eosc-portal.eu/join-provider

[24] https://jira.eosc-hub.eu/browse/EOSCSPR-80

[25] https://wiki.eosc-hub.eu/display/EOSC/SPM1+Add+a+service+in+the+EOSC+Service+Portfolio

[26] https://www.eosc-portal.eu

[27] https://catalogue.eosc-portal.eu

[28] https://wiki.eosc-hub.eu/display/EOSC/Service+catalogues

	the service portfolio generated from information recorded in Jira, the "initial" service catalogue) are not well-aligned to each other, and it seems to be unclear which information can or should be found at which place.
(NC)	No service owners have been assigned.
(SR)	Different categories of services and service portfolios should be clearly defined and understood. For each service, it should be clear, to which category or categories it belongs. For example: • EOSC-hub service portfolio (2 services): Marketplace for providers, Marketplace for researchers • Marketplace service portfolio (large number of services): All services "onboarded" to the marketplace; if necessary different sub-categories • Supporting services or service components: e.g. Helpdesk, Monitoring, CMDB etc.; if necessary different sub-categories such as "internal core services" (e.g. Helpdesk XGUS) and "supporting service components"
(SR)	The validation of new services added to the EOSC(-hub) marketplace service portfolio should be carried out in a repeatable way with defined authorities in particular for the final decision-making. An approved and comprehensive set of criteria should be available as documented information, e.g. in the form of checklists, and applied.
(H)	The wording around the service portfolio, including different categories of services, should be clarified and harmonized throughout the entire SMS.
(H)	It should be ensured that the terms "EOSC" and "EOSC-hub" are used in a consistent (and therefore defined) way.

2.3.3 Service Level Management (SLM), Service Reporting Management (SRM)

(FitSM-1, PR2 & PR3)

Audit evidence:

(EV) SLM Framework [29](Confluence)

(EV) Rules of Participation [30](Confluence)

(EV) SLA guideline / Default Service Level Agreement (Word)

(EV) SLM initial review report [31](Confluence)

[29] https://wiki.eosc-hub.eu/display/EOSC/SLM+Framework

[30] https://wiki.eosc-hub.eu/display/EOSC/Rules+of+Participation

[31] https://wiki.eosc-hub.eu/display/EOSC/SLM+initial+review+report

(EV) SRM initial review report [32](Confluence)

(EV) EOSC-hub service catalogue [33](Confluence)

Additional information:

- The SLM process manager assignment recently changed from Giovanni Morelli to Malgorzata Krakowian.
- For each service to be added to the marketplace, some Service Level Agreement (SLA) has to be in place. Customers currently must deal with multiple SLAs (in case they receive multiple services from different providers).
- Yet, under the control of the SLM process no SLAs have been put in place.
- OLAs are referred to as "participation agreements". However, currently no agreed OLAs are in place.
- The process SLM currently focuses on managing Operational level Agreements (OLAs) (rather than SLAs).
- The process SRM is intended to cover process reporting as well.

Audit findings:

Classification	Finding
(NC)	The process for managing service reporting (SRM) is currently not in operation.
(SR)	The role of the marketplace in the context of service level management should be clarified to understand which types of agreements including SLAs and/or OLAs are required. From a provider's perspective: On the one hand, any provider is a customer receiving the "marketplace for providers service" to enable the dissemination of services to researchers. On the other hand, any provider contributes to the marketplace service in the way it is delivered to researchers. (For example, the value of the marketplace from a researcher's point of view will decrease, if providers are not capable of fulfilling their duties as part of the ordering process.) Anyway, (groups of) researchers should be considered customers of the "marketplace for researchers' service".
(H)	It should be considered to split "marketplace" in two separate services: (1) marketplace for providers and (2) marketplace for researchers. This may help clarify the roles of different stakeholders and the requirements for OLAs and SLAs depending on the specific service context.
(H)	The SLM procedures should be extended to cover managing SLAs (including default SLAs) where necessary.

[32] https://wiki.eosc-hub.eu/display/EOSC/SRM+initial+review+report

[33] https://wiki.eosc-hub.eu/display/EOSC/Service+catalogues

2.3.4 Service Order and Customer Relationship Management (SOCRM)

(FitSM-1, PR7)

Audit evidence:

(EV) SOCRM initial review report [34](Confluence)

(EV) EOSCSMST-98 [35]Service Order Global Dashboard (Confluence/Jira)

(EV) Service Order Management workflow (PowerPoint)

(EV) EOSCSO-180 [36]Service Order (Confluence)

(EV) EOSCSO-181 [37]Cloud container compute BETA (Confluence)

(EV) SOCRM-01 procedure - Service Order Management [38](Confluence)

(EV) SOCRM-03 procedure - Recording and managing stakeholder information [39](Confluence)

Additional information:

- Recent activities have been focused on service order handling. CRM activities are not in place yet.

Audit findings:

Classification	Finding
(NC)	Major CRM activities are not in place, including maintaining a customer database, managing general customer communication and managing customer satisfaction.
(SR)	It should be avoided to have unassigned orders (tickets). Any order ticket in Jira should have an owner assigned at any point in time.
(H)	Unresolved orders should be reviewed from time to time. This activity should be reflected by one of the procedures in the context of order handling.
(PA)	An order dashboard is about to be developed.

2.3.5 Supplier and Federation Relationship Management (SFRM)

(FitSM-1, PR8)

Audit evidence:

[34] https://wiki.eosc-hub.eu/display/EOSC/SOCRM+initial+review+report

[35] https://jira.eosc-hub.eu/browse/EOSCSMST-98

[36] https://jira.eosc-hub.eu/browse/EOSCSO-180

[37] https://jira.eosc-hub.eu/browse/EOSCSO-181

[38] https://wiki.eosc-hub.eu/display/EOSC/SOCRM1+Service+Order+Management

[39] https://wiki.eosc-hub.eu/display/EOSC/SOCRM3+Recording+and+managing+stakeholder+information

(EV) Supplier and Federation Member Relationship Management (SFRM) - process description [40](Confluence)

(EV) SFRM DB [41](Confluence)

(EV) Dispute DB [42](Confluence)

(EV) SFRM initial review report [43](Confluence)

(EV) EOSCSMST-33 [44]- Should extend the Supplier DB to not only capture services, but also technology / products / software as well (Confluence/Jira)

(EV) Procedure SFRM2 - Maintain the supplier and federation member database[45]

(EV) EOSCSMST-35 [46]- Policy for SFRM DB

Additional information:

- There are three federation members: EGI Foundation, EUDAT, INDIGO-DataCloud.

Audit findings:

Classification	Finding
(SR)	Organisations (stakeholders / parties / entities) can take different roles (including customer, supplier, federation member, provider) at the same time, potentially with different contact points per role. It should be clarified and defined how to deal with this fact from a management point of view. For example, it might make sense to have one single master database that allows different classifications / tags for the same entry to generate different views depending on the context (e.g. process) from which the information need to be retrieved.
(H)	A consistent understanding of the concept of integration (on a low, medium or high level) should be promoted. Currently, for example, the introductory text for the SFRM DB refers to integration in the context of the federation members, while at other places; integration exclusively refers to services to be integrated. See also: procedure SFRM2.
(H)	Instead of creating a policy for the SFRM DB, it should be considered to just add the required details to the procedure SFRM2.
(H)	It should be clarified, in how far (core) services are handled by the service management processes that are under control of the individual federation

[40] https://wiki.eosc-hub.eu/display/EOSC/Supplier+and+Federation+Member+Relationship+Management+-+SFRM

[41] https://wiki.eosc-hub.eu/display/EOSC/SFRM+DB

[42] https://wiki.eosc-hub.eu/display/EOSC/Dispute+DB

[43] https://wiki.eosc-hub.eu/display/EOSC/SFRM+initial+review+report

[44] https://jira.eosc-hub.eu/browse/EOSCSMST-33

[45] https://wiki.eosc-hub.eu/display/EOSC/SFRM2+Maintain+the+supplier+and+federation+member+database

[46] https://jira.eosc-hub.eu/browse/EOSCSMST-35

	members of EOSC-hub, and under which circumstances these services have to be considered being in the scope of the SFRM process of the EOSC-hub SMS.

2.3.6 Information Security Management (ISM)

(FitSM-1, PR6)

Audit evidence:

(EV) Information Security Management - process description [47](Confluence)

(EV) WISE Risk Management template - Adapted to EOSC-hub - Risk_Management_B2ACCESS-2019-01-18-complete (Excel)

(EV) ISM EOSC-hub controls [48](Confluence)

(EV) ISMS Procedures [49](Confluence)

(EV) EOSC-hub Security Policy [50](Confluence)

(EV) EOSC-hub Service Security Policy [51](Confluence)

(EV) ISM initial review report [52](Confluence)

(EV) Incident #15299 - Security incident suspected at UKI-LT2-IC-HEP

Additional information:

- The approach to managing information security risks is considered “threat-centric” rather than “asset-centric”

Audit findings:

Classification	Finding
(SR)	The assignments of process-specific roles should be available as documented information.
(SR)	The approach to managing information security risks should be integrated in the SMS. Tracking of risks and risk treatment measures should be improved.

[47] https://wiki.eosc-hub.eu/display/EOSC/Information+Security+Management+-+ISM

[48] https://wiki.eosc-hub.eu/display/EOSC/ISM+EOSC-hub+controls

[49] https://wiki.eosc-hub.eu/display/EOSC/ISM+Procedures

[50] https://wiki.eosc-hub.eu/display/EOSC/EOSC-hub+Security+Policy

[51] https://wiki.eosc-hub.eu/display/EOSC/EOSC-hub+Service+Operations+Security+Policy

[52] https://wiki.eosc-hub.eu/display/EOSC/ISM+initial+review+report

2.3.7 Service Availability and Continuity Management (SACM)

(FitSM-1, PR4)

Audit evidence:

(EV) OLA: Marketplace Services (Confluence)

(EV) EGI Foundation Marketplace Services Operational level Agreement (PDF)

(EV) SACM: EOSC-hub Helpdesk - xGUS [53](Confluence)

(EV) SACM: Example [54](Confluence)

(EV) Service request ticket 138595 - Service Availability and Continuity plan for Marketplace (GGUS)

(EV) Procedure SACM1 [55]- Manage an event of a major loss of service (Confluence)

(EV) Procedure SACM2 [56]- Create and maintain service availability and continuity plans (Confluence)

(EV) Procedure SACM3 [57]- Verify suppliers integration (Confluence)

(EV) SACM initial review report [58](Confluence)

Additional information:

- Focus / scope of the process: EOSC marketplace and helpdesk (XGUS).
- The marketplace website availability is monitored by a central Nagios instance, based on e.g. HTTPS requests scheduled every 5 minutes.
- The EOSC marketplace operates under the same OLA as the EGI marketplace.

Audit findings:

Classification	Finding
(NC)	Although considered a potentially "critical" service, the SACM plan for the marketplace service including the risk assessment is pending for about three months with not significant progress during this time.
(SR)	The two perspectives "continuity" and "availability" should be considered in a more differentiated way. Following the results of the business impact analysis (BIA), the requirements for both service continuity and service availability should be identified and recorded. Based on the identified / relevant threats, it should be estimated how likely it is that a threat occurs and how that will impact the ability to deliver the service in line with the requirements identified before.

[53] https://wiki.eosc-hub.eu/display/EOSC/SACM%3A+EOSC-hub+Helpdesk+-+xGUS

[54] https://wiki.eosc-hub.eu/display/EOSC/SACM%3A+Example

[55] https://wiki.eosc-hub.eu/display/EOSC/SACM1+Manage+an+event+of+a+major+loss+of+service

[56] https://wiki.eosc-hub.eu/display/EOSC/SACM2+Create+and+maintain+Service+Availability+and+Continuity+plans

[57] https://wiki.eosc-hub.eu/display/EOSC/SACM3+Verify+Federation+Members%27+and+Suppliers%27+SACM+process

[58] https://wiki.eosc-hub.eu/display/EOSC/SACM+initial+review+report

(H)	The methodology for the business impact analysis should be reviewed. In particular, the classification criteria (low, medium, high) should be aligned to actual / practical needs.
(H)	The list of common risks as part of procedure SACM2 should be reviewed for completeness and, if necessary, updated / extended. Publicly available threats catalogue may be helpful for matching and comparison (see for example: https://www.bsi.bund.de/SharedDocs/Downloads/EN/BSI/Grundschutz/download/threats_catalogue.pdf). It should be considered to re-name the common risks into "common threats" as this better reflects the content.
(H)	When a service is mentioned (for example as part of the scope definition for a process), a reference / link to the service portfolio or service catalogue should be used to ensure consistency.
(H)	The status indicators (e.g. Draft, Discussion, Finalised) should be used in a consistent way throughout the documentation of the SMS (Confluence). In this context, it should be avoided to have more than one status being assigned to a specific case or documentation.
(H)	There is no monitoring in place for the helpdesk system which is in the scope of the SACM process.

2.3.8 Capacity Management (CAPM)

(FitSM-1, PR5)

Audit evidence:

(EV) Capacity Management[59] (Confluence)

(EV) Capacity Plan template [60](Confluence)

(EV) Procedure CAPM01 [61]- Create and maintain a capacity plan (Confluence)

(EV) Procedure CAPM03 [62]- Approve capacity plan (Confluence)

Additional information:

- Focus / scope of the process: EOSC marketplace and helpdesk (XGUS)

Audit findings:

[59] https://wiki.eosc-hub.eu/display/EOSC/Capacity+Management+-+CAPM

[60] https://wiki.eosc-hub.eu/display/EOSC/Capacity+Plan+template

[61] https://wiki.eosc-hub.eu/display/EOSC/CAPM1+Create+and+Maintain+a+Capacity+Plan

[62] https://wiki.eosc-hub.eu/display/EOSC/CAPM3+Verify+Federation+Members%27+and+Suppliers%27+CAPM+process

Classification	Finding
(NC)	No capacity planning has been carried out yet.
(SR)	A procedure should be in place that covers capacity monitoring, including e.g. receiving reports on performance and utilisation from underpinning providers / suppliers.
(H)	Based on the capacity plan template, an exemplary capacity plan could be created and provided to those involved in capacity planning.
(H)	To identify capacity requirements for the marketplace service, relevant capacity- and performance-related parameters such as the number of (expected) registered providers / services, the number of (expected) service orders etc. should be identified.

2.3.9 Incident and Service Request Management (ISRM)

(FitSM-1, PR9)

Audit evidence:

(EV) ISRM initial review report [63](Confluence)

(EV) Procedure ISRM1[64] - How to handle the incidents and service requests through the ticketing system (Figure)

(EV) EOSC-hub Helpdesk Guidelines (Google Doc)

(EV) EOSC-hub Helpdesk - helpdesk.eosc-hob.eu (XGUS)

(EV) EOSC-hub Ticket #7 (XGUS)

(EV) EOSC-hub Ticket #8 (XGUS)

Additional information:

- The ISRM process currently focuses on incident handling. So far, service requests for the services in the scope of this process have not been defined / agreed.
- For all services offered through the marketplace, first level support is provided EOSC-hub helpdesk, while second level support is provided by the providers.
- Interfaces to submit tickets: helpdesk.eosc-hub; in the future also through marketplace
- No classification of request vs incidents, scheduled to be supported in next release

Audit findings:

Classification	Finding

[63] https://wiki.eosc-hub.eu/display/EOSC/ISRM+initial+review+report

[64] https://wiki.eosc-hub.eu/display/EOSC/ISRM1+-+how+to+handle+the+Incidents+and+service+request+through+the+ticketing+system

(SR)	A procedure for assigning priorities to an incident or service request should be defined and / or information on prioritizing incidents or service requests added to the helpdesk guidelines.
(SR)	Definitions of the different status categories (e.g. verified, waiting for reply, on hold, etc.) should be added to the procedures or the helpdesk guidelines.
(H)	The selection options of "My support unit" in the XGUS system should be explained and the selection "private" reviewed (if it is really only available to admins).
(H)	It helps to keep terminology, especially regarding "incident" vs. "problem" straight.
(H)	Review: The status of existing tickets and possible ticket statuses in the ticket form do not match.
(H)	It should be considered to differentiate between "solved" and "closed" as status categories for incidents.
(H)	Instead of maintaining the EOSC-hub Helpdesk Guidelines as a Google Doc separate from the ISRM procedures, it should be considered to maintain all relevant information / details inside the process definition and related procedures in Confluence and generate the helpdesk guidelines based on this information. The Confluence macros "excerpt" and "excerpt include" may be helpful to automate this step. For more details, please refer to: • https://confluence.atlassian.com/doc/excerpt-macro-148062.html • https://confluence.atlassian.com/doc/excerpt-include-macro-148067.html
(PA)	The process is supported by a mature tool (XGUS) and all essential components for its operation are in place.

2.3.10 Problem Management (PM)

(FitSM-1, PR10)

Audit evidence:

(EV) PM initial review report [65](Confluence)

(EV) Process description - Problem Management [66](Confluence)

(EV) Procedure PM1 [67]- Periodic incident trend analysis (Confluence)

[65] https://wiki.eosc-hub.eu/display/EOSC/PM+initial+review+report

[66] https://wiki.eosc-hub.eu/display/EOSC/Problem+Management+-+PM

[67] https://wiki.eosc-hub.eu/display/EOSC/PM+1+Periodic+incident+trend+analysis

(EV) KEDB [68]-- Known Error Data Base (Confluence)

Additional information:

- The scope of the process is limited to marketplace services.

Audit findings:

Classification	Finding
(SR)	The process should be extended to cover activities required to effectively handle a problem which has been identified, including deciding (based on defined criteria) on whether or not the problem needs to be resolved (or will be recorded in the KEDB), tracking of the actions taken to resolve the problem and reviewing the effectiveness of the problem resolution after the actions have been implemented. These activities may be combined in one additional procedure that interfaces with the existing procedures PM1 and PM2.
(SR)	When a problem has been identified, e.g. based on analysing incident trends, a problem ticket should be created in XGUS to support problem analysis, escalation and decision making and to allow effective tracking in particular of the status of the problem. If a problem is considered a "known error", it should be classified accordingly, and relevant information be included in the KEDB either by having a JIRA report in Confluence that reflects the KEDB or by just manually copying the relevant information in the KEDB (table). (As alternatives to this, use one Confluence page with page properties per problem. Give only pages about problems with status "known error" a KEDB-label to be used in a KEDB page properties report.)
(H)	Problem records should include a reference to incident records with which the problems are related
(H)	The analysis / forwarding of incident data to providers like EUDAT is not strictly problem management in the defined scope. How and what is provided to the service providers should be defined in an agreement with them. Also input from these providers back to EOSC-hub (e.g. to include in the KEDB) should be considered in this agreement.
(H)	A reference to the KEDB and how the information in the KEDB may / should be used as part of the ISRM process should be added to the helpdesk guidelines.
(H)	A status diagram could be used to increase the clarity of the different statuses a problem can have, and their relationships.
(H)	A template should be created for recording the results of the bi-monthly incident analyses.

[68] https://wiki.eosc-hub.eu/display/EOSC/KEDB+--+Known+Error+Data+Base

2.3.11 Configuration Management (CONFM)

(FitSM-1, PR11)

Audit evidence:

(EV) CONFM initial review report [69](Confluence)

(EV) Process description - Configuration Management [70](Confluence)

(EV) SVMON[71] (Website)

(EV) GOCDB [72](Website)

(EV) CI EGI-Marketplace (GOCDB)

(EV) Conceptual CMDB Overview EOSC (Figure, Confluence)

(EV) B2SAFE (DPMT)

(EV) DPMT Data Model (DPMT)

Additional information:

- The EOSC-hub CMDB consists of the DPMT (EUDAT) and GOCDB (EGI).

Audit findings:

Classification	Finding
(SR)	The scope of the process, i.e. which services and related CIs are under control of configuration management, should be defined. In particular, the role of highly integrated services in the context of this process should be clarified.
(SR)	The (current and future) use cases for using the CMDB in managing the brokered services should be identified and documented. This should address the stakeholders that will use the CMDB and what information / answers they expect from it or in which situations the CMDB is required to provide support to effectively handle them.
(H)	The dependencies of the core services on their components should be documented in the CMDB.
(H)	The level of integration of configuration information for all other services (provided by EOSC service providers) should be planned in a staged approach, enabling a simpler short-term solution rather than aiming directly at a "full" solution.

[69] https://wiki.eosc-hub.eu/display/EOSC/CONFM+initial+review+report

[70] https://wiki.eosc-hub.eu/display/EOSC/Configuration+Management+-+CONFM

[71] svmon.eudat.eu

[72] goc.egi.eu

(H)	A semi-formal information / data model (e.g. using UML classes to describe CI classes and their possible relationships) should be developed and used as a basis for further discussion regarding the implementation and population of the CMDB.

2.3.12 Change Management (CHM), Release and Deployment Management (RDM)

(FitSM-1, PR12 & PR13)

Audit evidence:

(EV) Types of changes [73](Confluence)

(EV) Procedure CHM4 [74]- Calculate the Risk Level (Confluence)

(EV) EOSCCHM-27 [75]- Update of SVMON Production Instance (Jira)

(EV) SMS RM Guideline [76](Confluence)

(EV) EOSC-hub Change Management Workflow (Figure, Confluence)

(EV) List of Standard Changes [77](Confluence)

(EV) Procedure CHM8 [78]- Manage Normal Changes (Confluence)

(EV) A small "How to" for users (Change Requester) [79](Confluence)

(EV) Example of a Change Lifecycle (Figure, Confluence)

(EV) RDM Guidelines and best practices for software releases [80](Confluence)

(EV) Process description RDM - Release & Deployment Management [81](Confluence)

(EV) EOSCCHM-29 [82]- ARGO: EOSC Web UI (Jira)

(EV) EOSCWP10-54 [83](Jira)

Additional information:

- An online CAB meeting, chaired by Isabella Bierenbaum, was conducted one week prior to the audit.

[73] https://wiki.eosc-hub.eu/display/EOSC/Types+of+Changes

[74] https://wiki.eosc-hub.eu/display/EOSC/CHM4+Calculate+the+Risk+Level+of+a+Change

[75] https://jira.eosc-hub.eu/browse/EOSCCHM-27

[76] https://wiki.eosc-hub.eu/display/EOSC/SMS+RM+Guideline

[77] https://wiki.eosc-hub.eu/display/EOSC/List+of+Standard+Changes

[78] https://wiki.eosc-hub.eu/display/EOSC/CHM8+Manage+Normal+Changes

[79] https://wiki.eosc-hub.eu/pages/viewpage.action?pageId=34641746

[80] https://wiki.eosc-hub.eu/display/EOSC/RDM+Guidelines+and+best+practices+for+software+releases

[81] https://wiki.eosc-hub.eu/display/EOSC/Release+and+Deployment+Management+-+RDM

[82] https://jira.eosc-hub.eu/browse/EOSCCHM-29

[83] https://jira.eosc-hub.eu/browse/EOSCWP10-54

Audit findings:

Classification	Finding
(SR)	Make classifications of impact and likelihood more concrete and easier to apply in a consistent manner. For each change, the most likely risk(s) should be described.
(H)	The risk likelihood descriptors (SMS RM Guideline) should be reviewed for their practical applicability. It should be considered to add criteria that make it easier to identify the most appropriate rating / category of likelihood for a given risk. For example: unlikely = expected to occur at most in 1 of 1.000 occurrences, possible = expected to occur in less than 10 of 1.000 occurrences, likely = expected to occur in less than 100 of 1.000 occurrences, almost certain = expected to occur in more than 100 of 1.000 occurrences.
(H)	Planned and actual deployment dates should be documented. It might be difficult to derive deployment dates solely on basis of status changes done by the change implementer.
(H)	It should be considered to add references to related services to the entries in the list of standard changes. In addition, document control information should be added to the page that lists the standard changes.
(H)	Take more care in using terminology. Differentiate Changes and Releases more clearly.
(H)	At a minimum, document the regular maintenance windows of the providers of the core services for RDM. Consider a harmonization.
(H)	Consider an additional type of change ticket “external change”. This could be used to have basic documentation (esp. planned service downtime) on changes to the underlying infrastructure, over which EOSC-hub cannot have or chooses not to have direct control.
(H)	Consider merging the Jira ticket types for WP requirements (e.g. EOSCWP10-54) and change tickets - at least for concrete technical requirements. This could facilitate managing changes end-to-end in their lifecycle, from requirement specification to implementation to review.

2.3.13 Continual Service Improvement (CSI), Evaluation & Improvement

(FitSM-1, PR14, GR6 & GR7)

Audit evidence:

(EV) CSI initial review report[84] (Confluence)

[84] https://wiki.eosc-hub.eu/display/EOSC/CSI+initial+review+report

(EV) Suggestions for improvement [85](Confluence)

(EV) CSI Jira Actions [86](Confluence)

(EV) IMSIS: Project Management Workflow Improvements (Jira)

(EV) Procedure CSI 1 [87]- Record, plan, coordinate and review all audits (Confluence)

(EV) Procedure CSI2[88] - Identify, record, prioritise, evaluate and approve an opportunity and suggestion for improvement (Confluence)

(EV) Procedure CSI3 [89]- Manage and review the status and progress of improvements (Confluence)

(EV) Procedure CSI4 [90]- Organise and conduct management reviews (Confluence)

Additional information:

(None)

Audit findings:

Classification	Finding
(H)	The final steps in CSI2 (steps 5 and 6) should be more clearly defined (What role is responsible for what aspect of validation?)
(H)	It should be considered to have a "review for success / effectiveness" in addition to the formal "validation" of an improvement, where necessary. While the formal validation could be done by the CSI manager, the review for success / effectiveness would have to be done by a person more involved in the specific topic, in many cases the initiator of the improvement, in other cases a third party.
(H)	CSI2, and the Jira workflow supporting it, should consider effectiveness controls for implemented improvements. Note: These checks need not and should not be applied to all implemented improvements. CSI1 should also be revised to consider this, as effectiveness controls can be conducted efficiently by adding them to audit goals.
(H)	The role of the status and progress report of all improvements (according to procedure CSI3) should be clarified, including whether or not it is required, what it contains, etc. It is likely that a specific report does not need to be generated as the relevant information can be retrieved in real time at any time from Jira. In this context, the scope and subject of procedure CSI3 should be reconsidered and changed / updated if necessary.

[85] https://wiki.eosc-hub.eu/display/EOSC/Suggestions+for+Improvement

[86] https://wiki.eosc-hub.eu/display/EOSC/CSI+Jira+Actions

[87] https://wiki.eosc-hub.eu/display/EOSC/CSI1+Record%2C+plan%2C+coordinate+and+review+all+audits

[88] https://wiki.eosc-hub.eu/display/EOSC/CSI2+Identify%2C+record%2C+prioritise%2C+evaluate+and+approve+an+opportunity+and+suggestion+for+improvement

[89] https://wiki.eosc-hub.eu/display/EOSC/CSI3+Manage+and+review+the+status+and+progress+of+improvements

[90] https://wiki.eosc-hub.eu/display/EOSC/CSI4+Organise+and+conduct+management+reviews

(H)	Procedure CSI2 should be reviewed and revised to consider audit findings as a source of improvements along with process reviews and individual improvement suggestions.
(H)	For improvements resulting from a process review, currently, a simplified workflow / procedure applies (e.g. not requiring review, validation etc.). This approach makes sense as long as the improvement can be implemented with low effort by the process manager him-/herself. However, if the improvement resulting from the process review requires some level of discussion, planning and/or effort, it should be managed according to procedure CSI2 and not just “inside” the process.

3 Future plans

This section provides an activity plan for upcoming months till April 2020 for each process. The audit findings have been marked as (AF). The list will help the process managers to prioritize the implementation work and the process owner to track the progress. All tasks have been recorded in EOSC-hub Jira instance and are being tracked and scheduled.

Process	Due	Milestones
SPM	end of Sept 2019	1. KPIs for SPM are defined 2. SPM Define process reports 3. No single central source of valid and up-to-date information on all services 4. (AF) No service owners have been assigned. 5. (AF) Different categories of services and service portfolios should be clearly defined and understood. (Audit finding) 6. (AF) The validation of new services added to the EOSC(-hub) marketplace service portfolio should be carried out in a repeatable way 7. (AF) The wording around the service portfolio, including different categories of services, should be clarified 8. (AF) Ensured that the terms “EOSC” and “EOSC-hub” are used in a consistent (and therefore defined) way. 9. (AF) It should be considered to split “marketplace” in two separate services 10. Define technical requirements for services in different levels. E.g. highly integrated service supports EOSC-hub monitoring, accounting etc. 11. Check SDT v1.1 order management option is identified and aligned in the marketplace 12. SPM Check and approve The Hub SP participation agreement requirements
	end of Dec 2019	1. Plan for SDT migration to Agora 2. Rewrite SPM1 and SPM2 and establish what board has oversight of this process. 3. Prepare a document with a MP service model to be an input to the common SDT 4. SPM documentation re-organisation 5. Create a list of SMS related polices 6. Rota team clarification/cleaning in Roles 7. On boarding - request template
	end of March 2020	1. SOCRM Implementation of all validated audit findings is completed
SLM	end of Sept 2019	1. (AF) The SLM procedures should be extended to cover managing SLAs 2. (AF) The role of the marketplace in the context of service level management should be clarified 3. Draft OLA template 4. Participant agreement 5. SLM1 - Draft procedure 6. KPIs for SLM are defined 7. SLM Define process reports
	end of Dec 2019	1. SLM Check and approve The Hub SP participation agreement requirements 2. Draft email for escalation of complaints 3. SLM Policies

		4. Find name for default SLA like EOSC SLA Guidelines. 5. SLM2 - Draft procedure 6. SLM3 - Draft procedure
	end of March 2020	1. SPM Implementation of all validated audit findings is completed
SRM	end of Sept 2019	1. SRM KPIs for SRM are defined 2. SRM Define process main policies and procedures 3. SRM Define process reports 4. define SRM procedures
	end of Dec 2019	1. (AF) Service reporting (SRM) is currently not in operation. 2. SRM Start production of process reports
	end of March 2020	1. SRM Implementation of all validated audit findings is completed
SOCRM	end of Sept 2019	1. KPIs for SOCRM are defined 2. Reporting number of user requests received 3. (AF) Unresolved orders should be reviewed from time to time 4. (AF) It should be avoided to have unassigned orders (tickets). 5. (AF) Major CRM activities are not in places 6. SOCRM Check and approve The Hub SP participation agreement requirements
	end of Dec 2019	1. Customer database 2. SOCRM Define process reports 3. Ask tools owners to list information that THE OWNER OF THE SERVICE should deliver (about the service) in order for those tools. 4. Provide input for WP11 about consultancy option in MP and training possibility. 5. Define use case for sharing-moving projects between project owners. 6. Change acronym of PO and PM to be SOCRM 7. Revise the process goal to include Order Mgmt. 8. Write descriptions for each input/output and link to where the info is 9. Add process summary diagram to main process page 10. Update tasks with past deadlines Service Order Global Dashboard 11. Add the roles to the roles table and descriptions and links to where further information is. 12. SOCRM Start production of process reports
	end of March 2020	1. SUPPM Implementation of all validated audit findings is completed
SUPPM	end of Sept 2019	1. KPIs for SUPPM are defined 2. (AF) Organisations (stakeholders / parties / entities) can take different roles 3. (AF) A consistent understanding of the concept of integration (on a low, medium or high level) should be promoted. 4. (AF) it should be considered to just add the required details to the procedure SFRM2 5. (AF) It should be clarified, in how far (core) services are handled by the service management processes 6. SFRM Check and approve The Hub SP participation agreement requirements

		7. SUPPM Define process reports
	end of Dec 2019	1. Policy for SFRM DB In progress 2. SUPPM Start production of process reports
	end of March 2020	1. CONFM Implementation of all validated audit findings is completed
SACM	end of Sept 2019	1. SACM KPIs for SACM are defined 2. All audit findings are addressed (assessed and implementation plan defined) 3. SACM Define process reports 4. (AF) The status indicators (e.g. Draft, Discussion, Finalised) should be used in a consistent way 5. (AF) The list of common risks as part of procedure SACM2 should be reviewed for completeness 6. (AF) The SACM plan for the marketplace service including the risk assessment is pending 7. SACM - All procedures/policies shall be checked to reflect The Hub service portfolio scope
	end of Dec 2019	1. SACM - Start production of process reports 2. (AF) A reference / link to the service portfolio or service catalogue should be used to ensure consistency 3. (AF) There is no monitoring in place for the helpdesk system 4. (AF) The methodology for the business impact analysis should be reviewed 5. (AF) The two perspectives “continuity” and “availability” should be considered in a more differentiated way. 6. SACM - SACM1 Manage an event of a major loss of service shall be approved by process owner 7. SACM - SACM2 Create and maintain Service Availability and Continuity plans shall be approved by process owner 8. SACM - SACM3WiP Verify suppliers integration shall be approved by process owner
	end of March 2020	1. SACM - Implementation of all audit findings is completed
CAPM	end of Sept 2019	1. KPIs for CAPM are defined 2. CAPM All audit findings are addressed (assessed and implementation plan defined) 3. CAPM Define process reports 4. (AF) No capacity planning has been carried out yet. 5. (AF) Identify capacity requirements for the marketplace service 6. (AF) An exemplary capacity plan could be created 7. CAPM All procedures/policies shall be checked to reflect The Hub service portfolio scope
	end of Dec 2019	1. CAPM Start production of process reports 2. (AF) A procedure should be in place that covers capacity monitoring 3. CAPM CAPM01 Create and Maintain a Capacity Plan shall be approved by process owner 4. CAPM CAPM02 Approve Capacity Plan

	end of March 2020	1. CAPM Implementation of all audit findings is completed
CONFM	end of Sept 2019	1. KPIs for CONFM are defined 2. CONFM Define process reports 3. CONFM All audit findings are addressed (assessed and implementation plan defined) 4. (AF) The (current and future) use cases for using the CMDB in managing the brokered services should be identified and documented 5. (AF) A semi-formal information / data model should be developed
	end of Dec 2019	1. CONFM Start production of process reports 2. (AF) The scope of the process, i.e. which services and related CIs are under control of configuration management, should be defined 3. (AF) The level of integration of configuration information for all other services should be planned 4. (AF) The dependencies of the core services on their components should be documented in the CMDB.
	end of March 2020	1. SLM Implementation of all validated audit findings is completed
ISM	end of Sept 2019	1. ISM All audit findings are addressed (assessed and implementation plan defined) 2. (AF) The assignments of process-specific roles should be available as documented information.
	end of Dec 2019	1. KPIs for ISM are defined 2. ISM Start production of process reports 3. ISM Define process reports 4. (AF) The approach to managing information security risks should be integrated in the SMS
	end of March 2020	1. ISM Implementation of all audit findings is completed
PM	end of Sept 2019	-
	end of Dec 2019	1. PM: All procedures/policies shall be checked to reflect The Hub service portfolio scope 2. PM: All audit findings are addressed (assessed and implementation plan defined) 3. PM: KPIs for PM are defined 4. PM: Define process reports 5. (AF) The process should be extended to cover activities required to effectively handle a problem 6. (AF) A template should be created for recording the results of the bi-monthly incident analyses. 7. PM: Start production of process reports 8. (AF) A status diagram could be used to increase the clarity of the different statuses 9. (AF) A problem ticket should be created in XGUS to support problem analysis

		10. (AF) A reference to the KEDB and how the information in the KEDB may / should be used 11. (AF) The analysis / forwarding of incident data to providers like EUDAT is not strictly problem management in the defined scope 12. (AF) Problem records should include a reference to incident records
	end of March 2020	1. PM: Implementation of all audit findings is completed
ISRM	end of Sept 2019	1. KPIs for ISRM are defined 2. ISRM All audit findings are addressed (assessed and implementation plan defined) 3. ISRM Define process reports 4. (AF) A procedure for assigning priorities to an incident or service request should be defined 5. (AF) Definitions of the different status categories 6. (AF) Maintain all relevant information / details inside the process definition and related procedures in Confluence 7. (AF) Differentiate between “solved” and “closed” as status categories for incidents 8. (AF) The status of existing tickets and possible ticket statuses in the ticket form do not match 9. (AF) Keep terminology, especially regarding “incident” vs. “problem” straight. 10. (AF) The selection options of “My support unit” in the XGUS system should be explained
	end of Dec 2019	1. ISRM Start production of process reports
	end of March 2020	1. ISRM Implementation of all validated audit findings is completed
CHM	end of Sept 2019	1. KPIs for CHM are defined 2. CHM All audit findings are addressed (assessed and implementation plan defined) 3. CHM Define process reports 4. (AF) Make classifications of impact and likelihood more concrete and easier to apply in a consistent manner 5. (AF) Differentiate Changes and Releases more clearly. (AF) Add references to related services to the entries in the list of standard changes
	end of Dec 2019	1. (AF) The risk likelihood descriptors (SMS RM Guideline) should be reviewed for their practical applicability 2. (AF) Consider an additional type of change ticket “external change” 3. Implementation of interfaces between EOSC-hub CHM and EGI and EUDAT CHM processes.
	end of March 2020	1. CHM Implementation of all validated audit findings is completed
RDM	end of Sept 2019	1. KPIs for RDM are defined 2. All audit findings are addressed (assessed and implementation plan defined) 3. Define process reports

		4. (AF) document the regular maintenance windows of the providers of the core services for RDM 5. All procedures/policies shall be checked to reflect The Hub service portfolio scope
	end of Dec 2019	1. Start production of process reports 2. (AF) Planned and actual deployment dates should be documented 3. RDM1 Internal Catalogue release and deployment process shall be approved by process owner
	end of March 2020	1. Implementation of all audit findings is completed
CSI	end of Sept 2019	1. Define process reports and start production of the reports. 2. CSI KPIs are defined 3. Schedule a 2nd management review for the 2nd half of the year 4. Make sure that all audit findings have been scheduled or addressed by process managers. 5. (AF) For improvements resulting from a process review, currently, a simplified workflow / procedure applies 6. (AF) The role of the status and progress report of all improvements (according to procedure CSI3) should be clarified 7. (AF) CSI2, and the Jira workflow supporting it, should consider effectiveness controls for implemented improvements. (AF) Have a "review for success / effectiveness" in addition to the formal "validation" of an improvement
	end of Dec 2019	1. Make sure that every process should have defined KPIs. 2. Make sure that Majority of audit findings have been addressed by process managers. 3. (AF) Procedure CSI2 should be reviewed and revised to consider audit findings 4. (AF) The final steps in CSI2 (steps 5 and 6) should be more clearly defined
	end of March 2020	1. Organize management review 2. Make sure that All Audit findings have been addressed by process managers.

Appendix I. Audit activities

The following is a record of the conducted (remote and on-site) audit activities.

Date	Time	Topic(s)	Auditee(s)	Observer(s)
11 Mar 2019	13:00-13:30	Opening meeting • Introduction of the participants • Confirmation of audit objectives, scope, criteria • Brief presentation and confirmation of the audit plan • Brief overview/confirmation of audit methods • Questions and answers		Yannick Legre Johannes Reetz Diego Scardaci Sy Holsinger Malgorzata Krakowian Pavel Weber Hilary Goodson Sergio Andreozzi Giovanni Morelli Matthew Viljoen David Kelsey Alessandro Paolini David Vicente Joao Pina
11 Mar 2019	13:30-15:00	Service Portfolio Management	Hilary Goodson Sergio Andreozzi	Sy Holsinger Malgorzata Krakowian Matthew Viljoen

11 Mar 2019	15:30-17:30	Management Responsibilities, Scope, Organizational Context, Planning • Planning the management system (incl. service management plan) • Governance and governing bodies • (Strategic) goals, requirements, expectations • Management commitment / leadership • Management Review	Yannick Legre Malgorzata Krakowian Johannes Reetz Diego Scardaci	Sy Holsinger Malgorzata Krakowian Pavel Weber Matthew Viljoen Giovanni Morelli
12 Mar 2019	9:00-10:30	Service Level Management Service Reporting Management	Malgorzata Krakowian	Sy Holsinger Pavel Weber Matthew Viljoen
12 Mar 2019	10:45-12:15	Service Ordering and Customer Relationship Management	Giovanni Morelli	Sy Holsinger Pavel Weber Matthew Viljoen
12 Mar 2019	13:30-15:00	Supplier and Federation Member Relationship Management	Matthew Viljoen	Sy Holsinger Pavel Weber David Kelsey Malgorzata Krakowian Alessandro Paolini
12 Mar 2019	15:30-17:00	Information Security Management	David Kelsey	Malgorzata Krakowian Sy Holsinger Pavel Weber

				Matthew Viljoen
12 Mar 2019	17:00-17:15	Daily Closing Meeting • Summary of audit activities and key findings • Deviations from the audit plan (e.g. topics uncovered, reasons) • Open issues (e.g. missing audit evidence)		Giovanni Morelli Matthew Viljoen David Kelsey Sy Holsinger Pavel Weber Malgorzata Krakowian
13 Mar 2019	9:00-10:30	Availability and Continuity Management	Alessandro Paolini	Malgorzata Krakowian Pavel Weber Sy Holsinger Matthew Viljoen Giovanni Morelli
13 Mar 2019	10:45-12:15	Capacity Management	Alessandro Paolini	Malgorzata Krakowian Pavel Weber Sy Holsinger Matthew Viljoen Giovanni Morelli
13 Mar 2019	12:15-12:30	Daily Closing Meeting		Alessandro Paolini

		• Summary of audit activities and key findings • Deviations from the audit plan (e.g. topics uncovered, reasons) • Open issues (e.g. missing audit evidence)		Malgorzata Krakowian Sy Holsinger Pavel Weber Matthew Viljoen
13 Mar 2019	14:00-16:00	Audit team synchronization • Discussion of audit findings from first three audit days • Preparations for audit days 4 and 5		
14 Mar 2019	9:00-10:30	Incident and Service Request Management	David Vicente	Pavel Weber Sy Holsinger Malgorzata Krakowian Matthew Viljoen Joao Pina Isabella Bierenbaum
14 Mar 2019	10:45-12:15	Problem Management	David Vicente	Malgorzata Krakowian Pavel Weber Sy Holsinger Matthew Viljoen Joao Pina Isabella Bierenbaum

14 Mar 2019	13:30-15:00	Configuration Management	Joao Pina	Pavel Weber Matthew Viljoen Isabella Bierenbaum
14 Mar 2019	15:30-18:15	Change Management Release and Deployment Management	Joao Pina	Pavel Weber Malgorzata Krakowian Matthew Viljoen Isabella Bierenbaum
14 Mar 2019	18:15-18:30	Daily Closing Meeting • Summary of audit activities and key findings • Deviations from the audit plan (e.g. topics uncovered, reasons) • Open issues (e.g. missing audit evidence)		David Vicente Joao Pina Malgorzata Krakowian Sy Holsinger Pavel Weber Matthew Viljoen Isabella Bierenbaum
15 Mar 2019	9:00-10:00	Evaluation and Improvement	Sy Holsinger Malgorzata Krakowian Pavel Weber Yannick Legre	Matthew Viljoen

15 Mar 2019	10:00-11:00-	Service Portfolio Management	Hilary Jane Edwarda Goodson	Sy Holsinger Malgorzata Krakowian Pavel Weber Matthew Viljoen Yannick Legre
15 Mar 2019	11:00-12:00	Auditor Time • Preparation of draft audit report • Preparation of closing meeting presentation		
15 Mar 2019	13:00-14:30	Closing meeting • Summary of audit activities and key findings • Deviations from the audit plan (e.g. topics uncovered, reasons) • Open issues (e.g. missing audit evidence) • Follow-up actions		Yannick Legre Diego Scardaci Sy Holsinger Malgorzata Krakowian Pavel Weber Hilary Goodson Sergio Andreozzi Giovanni Morelli Matthew Viljoen David Kelsey Alessandro Paolini David Vicente Joao Pina