

D5.3: EOSC Federated Service Management Framework

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Abstract: The purpose of the EOSC Service Management Framework (SMF) is to describe the implementation of IT Service Management (ITSM) principles, policies and structured processes of the European Open Science Cloud and to clarify the operational constituents, roles and responsibilities of the *Service Providers* to ensure a high quality of the service delivery to the *Customers* and their users. This document is a first attempt to lay down some concepts and approaches to organise and manage services within the future EOSC. It proposes a flexible approach allowing for various levels of service management maturity, which would apply to different services, sometime pertaining to the same federation.

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1. INTRODUCTION

The EOSC Implementation Roadmap (EC Staff Working Document) released on 14 March 2018¹ presents the European Open Science Cloud as *“a pan-European federation of data infrastructures built around a federating core and providing access to a wide range of publicly funded services supplied at national, regional and institutional levels, and to complementary commercial services”* (SWD, p.9). The document calls for the development of a “soft overlay” to connect the various research infrastructures and make them operate as one seamless European research data infrastructure.

The Implementation Roadmap envisages a process of federation of resources which would be implemented gradually (architecture, p.10). According to the document, data infrastructures (which include both e-Infrastructures, research infrastructures and research repositories) would enter the federation *“on a voluntary basis based on the commitment of resources and on the capacity to comply with its rules”*; *“they would define the extent of their own involvement in the federation, in terms of the data sets and services they would contribute to the EOSC”*; and *“their commitment and rule compliance would be limited to these data sets and services”*; data infrastructures *“would continue to follow their own rules outside of their specific commitments to the EOSC”* (SWD, architecture, p.10)

The objective of this deliverable is to lay out the foundation of a common service management framework for all the services that are being provided under EOSC umbrella. The task of bringing together all meaningful services into a common, federated framework is far from being trivial as services tend to be very heterogeneous and to be managed very differently, following different service management practices and standards, as highlighted previously in D5.2 EOSC Service Portfolio.

In this deliverable, we propose a flexible approach allowing for several levels of service management maturity, which would apply to different services, sometime pertaining to the same federation. Section 2 describes three models or “scenarios” for organizing service management. Section 3 discusses service management policies, while section 3 describes the relevant service management processes which will have to be put in place and /or federated.

1.1. IT Service Management, FitSM and existing standards/frameworks

IT Service Management (ITSM) is a discipline designed to help IT organisations improve service delivery by following a service- and process-oriented approach. ITSM helps to structure out the typical activities needed to plan, deliver, operate and control services and become more repeatable, with clearly defined responsibilities, ultimately increasing a level of professionalism and organisational maturity.

There are a variety of existing standards on the market that the EOSCpilot project evaluated such as ITIL, ISO/IEC 20000, ISO 27000, FitSM and COBIT. These standards share some key ideas and principles such as process-orientation, customer focus, IT / business alignment, continual improvement and involvement of people. However, many of them are too heavy/complex for public organisations. In addition, the majority assume single central control over service delivery, therefore not all concepts work in a federated environment.

For the purposes of this deliverable, we propose to use FitSM as the language of Federated Service Management and as an illustrative framework to reach consensus concerning the methods and approach needed to organise service management across the multiple service providers of EOSC. FitSM is a lightweight standard aimed at facilitating service management in IT service provision, including federated scenarios. FitSM includes both auditable requirements as well as freely available practical implementation guidance through templates, samples, and guides along with a formal training and certification scheme backed by third party certification authorities. Importantly, FitSM was produced by the FedSM project, an initiative co-funded by the European Commission Seventh Framework Programme, to improve service management in a select set of federated ICT infrastructures. Since then, FitSM has been operated and

¹ https://ec.europa.eu/research/openscience/pdf/swd_2018_83_f1_staff_working_paper_en.pdf

managed by the IT Education Management Organisation (ITEMO)² to whom the project transferred the FitSM license, and is now supported by a network of Accredited Training Organisations (ATOs) that have delivered more than 1000 FitSM certificates.

FitSM is now widely adopted, especially in the research communities (e.g. Life Science, Climate Change), public institutions (e.g. CSC, EBI-EMBL, LRZ, INFN, SURFsara), federations and e-Infrastructures (e.g. EGI, EUDAT, Helix Nebula, PLGrid) and EC-funded projects (e.g. EOSC-hub, eInfraCentral).

Therefore, FitSM may serve as the basis for the EOSCpilot approach to defining the EOSC organisational model with regards to service management.

1.2. Rules of Participation

The notion of Rules of Participation (RoP) has been proposed to specify the conditions under which any service providers may participate in EOSC.

According to the SWD EOSC Implementation Roadmap, *“these rules would set out in a transparent and inclusive manner the rights, obligations and accountability of the different stakeholders taking part in the initiative (e.g. data producers, service providers, data and service users), and should address: 1) the use of the tools, specifications, catalogues and standards (EOSC shared resources) and applicable methodologies (framework for FAIR research data); 2) the principles for regulating transactions in the EOSC (e.g. financial mechanisms and procedures, agreements/bylaws established by the EOSC governance framework); and 3) the applicable legal frameworks (e.g. GDPR, copyright, Data Security and Cybercrime, dispute resolution and redress mechanisms, e-commerce directive).”* (SWD, rules of participation, pp.14-15)

However, it is foreseen that *“these rules will apply differently to EOSC participants, depending on their maturity and role (service providers vs. users, scientists or innovators), location (EU vs. global research partners), and would need to respect the specificities of different scientific disciplines”* (SWD, rules of participation, p.16).

As suggested in the Roadmap, *“compliance with the rules could differ based on: 1) the current situation and readiness of data infrastructures and services at the level of Member States (research infrastructures, e-Infrastructures) and disciplines (level of standardisation and integration) and the differences in their established rules and processes; 2) the actual existence and variety of service providers and the actual needs of users of the EOSC (e.g. public vs private; horizontal vs specialised); or evidence of changing needs and practices in relation with the implementation of the rules, in particular as concerns compliance with existing legal frameworks (e.g. GDPR) and emerging ones (e.g. free flow of data). In short, the rules of participation of the EOSC would need to take into account the established practices and current needs of all researchers and service providers.”* (SWD, rules of participation, p.16)

Taking into account these recommendations, it is possible to envisage a service management framework which provides guidelines and policies for the federated management of all services provided by and within EOSC, with different levels of compliance and federation.

This deliverable lays out the foundations of an EOSC service management framework encompassing different levels of compliance and federation.

1.3. Actors and Roles

As stated in the EOSCpilot DoA, the purpose of the EOSC Federated Management Framework is to “clarify the operational constituents, roles and responsibilities of the EOSC Service Providers and to ensure a high quality of the service delivery to the Customers and their users”.

² <https://www.itemo.org>

There are an extensive number of actors that can be involved in the EOSC, as outlined in previous EOSCpilot deliverables (e.g. D2.1 Draft Governance Framework, D5.1 Initial EOSC Service Architecture). In this report, our scope is limited to the coordination of the provisioning, configuration, management and support of *services* under EOSC in terms of the *roles* they fulfil within the context of service management. It should be understood that an individual or organisation may take over multiple *roles* across the EOSC. This section summarizes and proposes a number of key *roles* with regards to organisational models in the context of service management such as customers, users, service providers, federator, federation members and top management.

The two main roles in service delivery are *customers* and *service providers*. *Customers* are defined as any organisation or part of an organisation that commissions a *service provider* in order to receive one or more services. A *customer* usually represents a number of *users* e.g. acting on behalf of a defined *user community*. A *User* is any individual that primarily benefits from and uses a service. Users can be researchers, research groups, collaborative research organisations or industry making use of EOSC services provided by the *service providers*. In the case where *users* act on their own behalf they simply act as both the *customer* and the *user*.

In the context of EOSC - envisaged as a federated environment, a federation of federations, or a system of systems - two additional roles need to be introduced: the *federator* and the *federated members*. The federator is anybody that acts to coordinate a set of *federation members*. Federation members are either an individual, organisation or body that works together with other federation members, as part of a federation, to provide one or more services. Examples of existing European federations are EGI, EUDAT, GEANT, ELIXIR, Helix Nebula or national groupings such as NGIs or NRENs. It is worth noting that federation members do not have to be bound together by strict contractual agreements.

Organisation models are being explored through the EOSCpilot governance activity and are further discussed in Section 3 regarding service management policies and issues around *top management* responsibilities. Here, top management is meant to represent senior management within an organisation or federation who have authority to set policies and exercise overall control of the organisation or federation.

According to the EOSC Service Architecture deliverable D5.1, top management comprises different actor roles, which according to D5.1 perform the following functions.

- The EOSC System Top Manager: “The role played by the actors that are responsible for the continuous planning, implementation, and revision of the overall EOSC system. This is expected to be a “collective role” assigned to a committee acting as the “executive committee” of the EOSC System. The committee is responsible for putting in place the decisions of the EOSC System Owner by liaising with the EOSC Service Provider(s)”.
- The EOSC System Owner: “the role played by the actors responsible for the development and maintenance of the EOSC system as a whole. This is expected to be a “collective role” assigned to a committee acting as the “steering committee” of the EOSC system. The committee is the primary responsible for making the EOSC System compliant with the decisions of the EOSC Governance by liaising with the EOSC System Top Manager(s)”.
- The EOSC System Providers: “Actors playing this role are responsible for a specific *EOSC Service*. They are responsible for everything pertaining the development, operation and quality of the specific service including the establishment of the needed *underpinning agreements*.”

The EOSC Service Management Framework does not attempt to answer or suggest ‘how’ governance should be implemented, but can serve to feed in critical input to such discussions – different federation models will imply different levels of responsibilities with regards to service management, as outlined in the three high-level scenarios presented in section 2.

The following diagram outlines how the different *roles* fit together and what agreements are required between them from a service management perspective. The federation model sits on top to further

articulate how multiple actors (users and providers) would work together such as in the context of the EOSC. There are other governance and management standards frameworks that can provide additional support to these activities, such as SIAM or COBIT, but are considered out of scope of this deliverable.

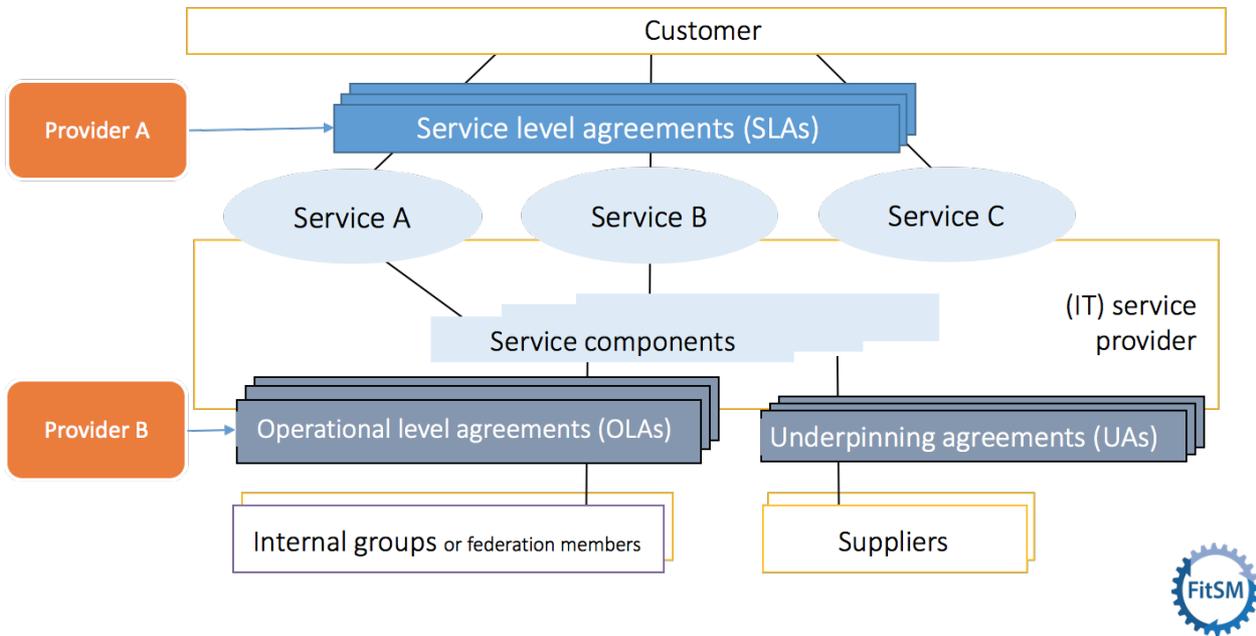


Figure 1 – Service management roles and agreements

2. SERVICE MANAGEMENT FEDERATION MODELS

There is some debate among the EOsc stakeholders as to how far to go in terms of service management integration. The temptation to create a fully federated ITSM framework (which incorporates a 'one-stop shop' for receiving, triaging, routing and storing all user requests and incidents, and provides fully federated problem, change, configuration management records) may be appealing to some, considering the highly collaborative environment in which the research infrastructures and e-Infrastructures operate. How far the common ITSM framework should extend along the supply chain is for debate: it could be implied that *all aspects of all services* within these EOsc federated centers would be managed according to FitSM, and/or from a central organisation or tool. If EOsc were a legal entity in its own right, it might comprise an organisation that operates and co-ordinates 'first line' service management using its own staff and a specific tool set to triage requests/incidents and allocate them to the responsible service provider, throughout the process acting as a single point of contact to users.

However, it is worth noting that whilst this ambition may be legitimate, traditional supply chain models do not mandate utilisation of a common service management platform, under which all incidents, requests and issues are managed 'under one roof' in order to successfully coordinate the management of interoperable services, and therefore a more flexible framework could be delivered. Moreover, the initial set-up for EOsc must start from the heterogeneity of service providers that include a large number of service providers using their own toolsets, methodologies and processes. The practicalities of introducing an overarching Service Management organisation, or even integrated tool sets would likely cause significant implementation challenges in the short- to medium-term.

The EOsc Implementation Roadmap seems to acknowledge and address this problem by foreseeing, at least initially, different entry points for accessing EOsc services and by calling for the establishment and coexistence of multiple EOsc geographic and/or thematic federated centers built upon data infrastructures that already have the capacity, commitment and added value to facilitate/coordinate EOsc operations at a geographical or thematic level.

In line with the Roadmap, the proposed service management framework foresees various levels of service management maturity within organisations, and various degrees of integration to the federating core. **Our goal is not to impose any new service management model within existing organisations, but to suggest a generic and flexible framework for interacting with the federation.**

The following scenarios should be considered as co-existing options to be selected as applicable, based on the given service that is brought under EOsc.

2.1. Scenario 1: Service Promotion

Description: Services are discoverable via the EOsc Portal/Service Catalogue, and are either offered singularly or as part of a larger, collaborative 'bundle' of services that are provisioned by one or more service providers. This goes one step further than unfederated service provision by introducing a higher degree of policy-based human coordination between the service providers (or at least the existing federations of e-Infras and RIs) organised e.g. as EOsc federated centers.. For example, there could be agreements from service providers, or federations of service providers, to follow a minimal set of common processes and practices; those services would be deemed EOsc-compliant, albeit compliant with the Rules of Participation.

Characteristics of services compatible with this approach:

- The focus is on coordination, harmonisation, and communication rather than integration.
- Services are discoverable as they are promoted through the EOsc Portal/Service Catalogue and can be accessed through multiple entry points.
- Services are not reliant upon other EOsc components operated by other service providers (outside the native federation).

Minimum requirements for participation:

- Compliance with EOsc Rules of Participation for service providers.
- Service description (e.g. structured template with minimum mandatory fields) is maintained as an organisation's service contribution to the EOsc catalogue, which is actively managed and kept up to date (this is the responsibility of the service provider).

Characteristics of interaction between service providers' systems and EOsc systems:

- Manual completion (or through rest API) of a service entry form provided by the EOsc catalogue; providers must commit and ensure any published services are maintained and up-to-date.
- Consumers of the services are redirected from the EOsc catalogue to the service providers' systems, where the transaction is managed in its entirety.

EXAMPLE CASE

ELIXIR is a fully organised federation delivering services to the life sciences community. They are interested in making some of their services discoverable through the EOsc and potentially partnering with other federations on a case-by-case basis. They do not want to be forced to comply with policies that are potentially not in line with existing policies, however, they are happy to follow any principles of engagement through a lightweight service catalogue management process.

2.2. Scenario 2: Semi-Integrated Service Management

This is similar to Scenario 1 above, where services can be offered singularly or as collaborative bundles, but in this scenario there are service management processes that are coordinated centrally, while some key processes (e.g. change management) remain controlled by the individual provider or its native federation.

Characteristics of services compatible with this approach:

- Services that are partly relying upon EOsc components operated by other service providers, such as EOsc federating core services.
- Bundled services are interoperable in the sense that they are capable of communicating technically with each other based on a common 'language', but are not directly dependent upon data sent or received by other component systems in order to deliver the service.
- Regarding the service management process, the focus is limited to strategic process interfaces (could be manual or technical) to ensure regular operation of the service(s) (e.g. OLAs, incident handling and problem management of component dependencies).
- Services are promoted through the EOsc portal and can be accessed through multiple entry points.

Minimum requirements for participation:

- Compliance with EOsc Rules of Participation for service providers
- Service description (e.g. structured template with minimum mandatory fields; rest API) is maintained as an organisation's service contribution to the EOsc catalogue, and the service provider is actively encouraged to utilise the rest API.
- Ensuring that, at the minimum, OLAs are in place between any service provider with CRM responsibilities and the provider supporting an EOsc service component.

Characteristics of interaction between service providers' systems and EOsc systems:

- A rest API would be made available to adopt for EOsc catalogue updates and would be actively

encouraged.

- Consumers of the services can request services, view service status and report service incidents via the EOSC Portal, although the incidents and requests are managed by the service provider.

EXAMPLE CASE

Using BlueBRIDGE as an example, the Virtual Research Environments (VREs) provided by them is on-demand and personalized by the end customer. This service can be promoted in EOSC catalogue. However, in the case of a VRE provider consuming EOSC supported services such as AAI, compute and preservation services to provide an added value service (scientific gateway) on top of these, some agreements and processes will need to be established to ensure full service lifecycle (e.g. OLAs). Therefore, EOSC provides access to compute, data resources and data preservation services on the backend, where BlueBRIDGE serves as the consumer facing provider (e.g. CRM). Thus serving as a hybrid scenario where only part of the service management process apply, and the focus is on the coordination between the different providers and partial integration of some service management processes (e.g. handling incidents, ensuring capacity/operational targets).

2.3. Scenario 3: Fully Integrated Service Management

This scenario has fully managed/controlled services, where all service management processes are in scope and common to any provider offering a service and are documented and managed as part of the EOSC SMS.

Characteristics of services compatible with this approach:

- Services are offered as part of EOSC supported services.
- Services may be dependent upon data sent or received by other systems in order to offer, provision or run the service (and the components of the service are developed with each other - and integration - in mind, regardless of who the service provider is).
- Services are fully integrated to the EOSC federating core services.
- Services are promoted through the EOSC portal, though can remain accessible through multiple entry points.

Minimum requirements for participation:

- Compliance with EOSC Rules of Participation for service providers.
- Compliance with all EOSC service management processes.

Characteristics of interaction between service providers' systems and EOSC systems:

- A rest API for EOSC catalogue updates would be made available to service providers and would be mandatory for use.
- All Service Management processes are managed via the EOSC SMS (e.g. services definition follow a structured approach, consumers of the services can request services directly via the EOSC Portal, incidents and changes are centrally managed).

EXAMPLE CASE

Using "Accounting" as an example, this service is considered a supporting service needed to operate the EOSC, which is therefore "internal" to the EOSC supporting the delivery of its functions and cannot be "ordered" by users. As the EOSC infrastructure is composed of repositories and portals, this service would collect usage statistics of the EOSC services and present them to the stakeholders. All service management

process would be considered “in scope” for this service and fully integrated into the EOsc SMS.

Table 1 - Summary of the three scenarios and main characteristics

	Service Promotion	Semi-Integrated Service Management	Fully Integrated Service Management
Discoverable in EOsc Service Catalogue	Yes	Yes	Yes
Compliant with Rules of Engagement for Service Providers	Yes (minimum)	Yes	Yes
Maintenance of Service Descriptions	Manually kept up to date (the responsibility of the service provider).	Active encouragement to use rest API	A rest API for EOsc catalogue updates is mandatory for use
Service Management processes are integrated or interoperable	No	Strategic interactions only	Yes
Request Fulfilment	Consumers of the services are redirected from the EOsc catalogue to the service providers’ systems, where the transaction is managed in its entirety.	Consumers of the services can request services via the EOsc Portal, although the requests are managed by the Service Provider.	Consumers of the services can request services via the EOsc Portal, although the requests are managed by the Service Provider.
Service Components are technically reliant upon one another across Service Providers	Never	Interoperable in some cases, or where EOsc federating core services are required	Interoperable or integrated

3. SERVICE MANAGEMENT POLICIES

One of the primary functions of a service management system is to formally capture a collection of service management policies and processes that set out the fundamental principles (both strategic and operational) required to create and deliver efficient, high-quality service provision in line with customer expectations. Best practice service management is often measured by compliance to the ISO/IEC 20000 standard, however, as mentioned before, the standard is viewed by many as too heavy for practical implementation within the EOsc and not all concepts work in a federated environment, with FitSM being the preferred lightweight standard to reference. FitSM defines a *Policy* as a documented set of intentions, expectations, goals, rules and requirements, often formally expressed by top management representatives in an organisation or federation. As mentioned in Section 1, *Top Management* (as defined by fitSM) is referred to as senior management within an organisation or federation who has authority to set policies and exercise overall control of the organisation. Although who will actually fulfil this *Role* has not yet been identified, it is important to note where policies will need to actually be defined, implemented and enforced.

The EOsc Implementation Roadmap (SWD) discusses a potential legal entity being introduced, which, in the context of service management, would play the role of the *Federator* that would define policies, as well as some more specific context across the landscape. However, it is important to reinforce that federations need not be bound together by strict contractual agreements, and though legal entities do help formalize organisational structures, they are not inherently required as long as the *Federation members* recognize the *Federator* as the coordination body and follow any set policies.

The definition of EOsc service management policies is multi-faceted and subject to many drivers. Whilst this discussion about service management policies is being informed by other work packages of the EOscpilot project, the policies involved here are not the same as, for example, the policies being captured by 'WP3: Policy' which deal with broader issues such as addressing specific cultural challenges that could otherwise impair 'strong and disparate stakeholders' in working together. WP3 is tasked with undertaking an in-depth review of the policy landscape with a view to determining an appropriate policy framework for the EOsc. The service management policies are to be considered a subset of this, and represent a further layer of granularity. For example, a strategic policy deriving from WP3 (or from WP2 which deals with governance) might state that 'participating organisations must meet the requirements for the Federated Service Management Framework', which would then create the need to define a set of tactical policies that set out what that means in practical terms for those participating in the federation. Those tactical policies will address the design, transition, delivery and improvement of services in a federated environment and would ideally take an integrated position on how each service provider plans, implements, operates, monitors, reviews, maintains and improves their services. These types of policies fall into two categories: general policies that look at the overall approach to service management and process specific policies such as security incident response policies.

Section 4 explores the relevant service management processes (using FitSM terminology in order to promote shared understanding of the concepts), however, the policies concerning how those processes would operate across organisational boundaries, must be informed by the context.

Each of the 14 process areas set out in Section 4 will require a 'headline' tactical policy that sets out a) the rules of engagement/participation (policy statements) that the service provider must comply with, b) the role of the service provider and the obligations it has in delivering its services in a manner that will enable a federated process to operate, c) the scope of the policy, and d) references to relating processes and other related policies, and that policy would inform the manner in which the process is federated. For example:

Incident and Service Request Management policy may include:

1. The service provider must maintain an internal Incident and Service Request Management policy and process.
2. The service provider must provide a formal method for users to request the service.

3. The service provider must provide a help desk contact point and formal method for users to report incidents concerning the service.
4. The service provider must publish a service level agreement comprising incident response times and service hours.
5. The service provider must integrate its incident management processes with a Problem Management process in order to ensure that recurring incidents are managed effectively.

Note that the above is a very high-level example, and the final policies will differ in content depending on the outcome of the discussions concerning the EOsc architecture and organisational model. i.e. a policy-driven federated service management framework would be expressly different to a service management system operated by a particular operator, who plays an active role in coordinated front-line, user-facing activities, for example, via a centralized help desk that records incidents then engages the service provider to follow up.

Service Management policies in a federated context have wide-reaching impact because integrated policies need detailed integrated business processes, and as such they require careful consideration and rich collaboration. Setting the bar too high risks exclusion of valuable services that cannot meet those standards. Despite the position being clarified that service providers are free to continue running services outside the EOsc to their preferred processes, it may result in service providers opting not to include *any* service if they find that the cost and complexity of complying with the EOsc SMF is too high. For example, requesting mandatory ISO accreditation, or requiring commitment to a specified ITSM methodologies (which could be a logical and legitimate policy statement), could be a barrier to participation resulting in services not being volunteered to be entered into “the Hub” and therefore counterproductive to the all-encompassing ambitions of the EOsc.

Further to the detailed work being carried out in EOsc, the service management policies for EOscpilot (and specifically the pilots in T5.4) are dealt with initially via the ‘minimum requirements for participation’ headings of sections 2.1-2.3, and differ according to the characteristics of the service.

4. SERVICE MANAGEMENT PROCESSES

The table below summarises the different service management processes defined by FITSM and maps them to the three scenarios presented above.

Table 2 – Summary of service management processes and their mapping to the three scenarios

	Service Promotion	Semi-Integrated Service Management	Fully Integrated Service Management
PR1 Service Portfolio Management	Individual service provider responsibility	Defined process for how proposed integrated services and/or service components are evaluated / managed	Single service portfolio New or major changes are evaluated and managed
PR2 Service Level Management	Process defines the rules of participation for individual providers to be published in the EOSC catalogue	OLAs for relevant services and/or service components are ensured Process for publication of those services in the catalogue	SLAs and OLAs follow standardized template, are tracked and managed
PR3 Service Reporting	Not Applicable	Responsibility of the assigned SLA/OLA Owner	Reporting is coordinated for all defined SLAs and OLAs
PR4 Service Availability & Continuity Management	Optional (some criteria could be set in PoEs)	Availability is scope regarding core services Continuity probably more on the individual provider	Common plans
PR5 Service Capacity Management	Not Applicable	Coordinate to ensure capacity Central monitoring systems encouraged to be re-used	Capacity Plans are defined for all services Central monitoring systems operated
PR6 Information Security Management	Optional (some criteria could be set in PoEs)	Defined policies	Defined policies

PR7 Customer Relationship Management	Assurance that clear contact points are established	Responsibility of the assigned SLA Owner	Coordination representatives are responsible for managing all customers with SLAs
PR8 Supplier Relationship Management	Not Applicable	Responsibility of the assigned UA Owner	Coordination representatives are responsible for managing all suppliers with UAs
PR9 Incident and Service Request Management	Not Applicable	Integration of help desks or ticket processing workflow	Single helpdesk and ticket management processes
PR10 Problem Management	Not Applicable	Coordination / collaboration to identify root causes to incidents as appropriate	Coordination representatives are responsible for analysing underlying root causes
PR11 Configuration Management	Not Applicable	Coordination of configuration items with dependencies	Coordinated CMDB
PR12 Change Management	Not Applicable	Joint CAB for only the services concerned	Single CAB
PR13 Release and Deployment Management	Not Applicable	Coordination of releases containing configuration items with dependencies	Definition of release policies Coordination of all releases
PR14 Continuous Service Improvement	Management of suggestions for improvement reported by individual service providers	Ensures documentation of processes for services / service components in scope of the SMS	Covers all documentation and processes in scope of the SMS Manages the audit programme, and management reviews Coordinates all suggestions for improvements

5. CONCLUSIONS AND NEXT STEPS

The task of bringing together all meaningful EOSC services into a common, federated framework is challenging, given the heterogeneity of these services and of the way they are currently being managed. This document has proposed a flexible approach to organise and manage services within the future EOSC, which should be regarded as a first step towards the establishing a service management framework for the European Open Science Cloud. It should be revised and updated once there is a consensus on what the final organizational form of EOSC will be.