D3.4: Second stage implementation plan for service management in federated e-Infrastructures

Deliverable

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Abstract

This report draws on the experience from the first phase of the project to refine the goals for the client partners, in particular for the second stage. It considers experiences from phase one before including sections on general and specific plans for clients. This then acts as the general plan until the end of the project.

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1. Introduction

The implementation and continual improvement of (lightweight) IT service management at the FedSM client partners (CSC, CYFRONET and EGI.eu) is one of the major goals of the FedSM project. This overall challenge has been structure in two phases: phase one covering the project months M1 to M18, and phase 2 covering the remaining project months M19 to M36.

In this deliverable, we will give an overview of the key lessons learned from phase 1 – both from the clients' and consultants' perspectives (section 3). This is followed by the presentation of the general plans for the second phase (section 4), which could also be adopted (and adapted) by other than the three clients in the project wanting to implement lightweight IT service management based on the FitSM approach in a two-phase approach. Finally, the client-specific plans for the second implementation phase are presented (section 5), which is basically a client-specific refinement of the general plans presented before.

2. Important terms and concepts

For the purposes of this deliverable, the terms set out in the FitSM-0 standard apply (see www.fedsm.eu/fitsm/0).

To simplify understanding, the following table shows the processes of the FitSM model and associated abbreviations.

Process code	Process	Abbreviation
GR1	Top Management Commitment And Responsibility	MgCom
GR2	Documentation	Doc
GR3	Defining The Scope Of Service Management	Scope
GR4	Planning Service Management (PLAN)	Plan
GR5	Implementing Service Management (DO)	Do
GR6	Monitoring and Reviewing Service Management (CHECK)	Check
GR7	Continually Improving Service Management (ACT)	Act
PR1	Service Portfolio Management	SPM
PR2	Service Level management	SLM
PR3	Service Reporting	SR
PR4	Service Availability and Continuity Management	SACM
PR5	Capacity Management	CapM
PR6	Information Security Management	ISM
PR7	Customer Relationship Management	CRM
PR8	Supplier Relationship Management	SRM
PR9	Incident and Service Request Management	ISRM
PR10	Problem Management	ProbM
PR11	Configuration Management	ConfM
PR12	Change Management	ChM
PR13	Release and Deployment Management	RDM
PR14	Continual Service Improvement Management	CSI

Table 1: FitSM processes and abbreviations

In addition, this deliverable discusses different 'phases' of the project, which do not map to the years of the project. These refer to the intended progress of the project, and were initially planned as follows over a 36 month project:

- Initial setup phase – PM1-6
  - Initial creation of approach and content
- Phase 1 implementation PM7-18
  - First implementation, 7 ITSM processes to initial quality
- Phase 2 implementation PM19-30
  - Second implementation, initial 7 and remaining 7 processes to final target quality
- Final integration phase PM31-36
  - Collection of implementation experience into best practice guidance

While this has been the general structure of the project work, there have been some changes, such as the much earlier development of best practice information to support implementation. However, the division into 'phase 1' implementation of 7 processes and 'phase 2' implementation of the remaining 7 processes remains.

In addition, general processes were continually implemented as a backing for all the specific processes rather than as isolated efforts.

3. Lessons from the first phase

The following section highlights Phase 1 activities by providing the overall experience from both the consultants and the clients.

3.1. Client view

It is essential not only for the project to assess progress of ITSM implementation in the client infrastructures and to understand their experience to improve both FitSM itself and related consultancy, but also for the clients to step back, reflect, and provide feedback. Therefore, each of the client infrastructures offers its experience to-date with implementing ITSM as well as communication and general awareness for the need of ITSM. As a full summary was presented within the first FedSM Periodic Report including suggestions for consultants, the information presented here focuses on providing an overview of Phase 1 activities, successes achieved, challenges faced and steps to be taken for the coming year.

The following sections were provided by the clients to explain their view.

3.1.1. CSC

Overview

Apart from development of FedSM conceptual models, the initial work related to the Finnish Grid Infrastructure (FGI) was in assessing FGI's baseline Service Management status. Apart from identifying a starting point, this and later work identified an important point related to FGI and implementation of ITSM. A realisation coming out of this is that CSC, as the organisation coordinating and operating FGI, would be a better focus of FedSM consultants' attention than FGI alone. This is because FGI service management is strongly dependant on that of CSC. CSC is a relatively small federation with tight integration and lots of reliance on centralised resources and policies at CSC.

Additionally, there is already at some level a Service Management implementation in many of CSC's internal processes. However it also brings challenges as it implies organisational change affecting a greater number of staff, and an increase in scope compared to the defined services of FGI.

Successes

Beside FGI's initial assessment, tools to support ITSM have been identified, foundations for a Service Management System have been put in place, FGI's service catalogue was written and draft versions of a Service Level Agreement for the Grid Computing service and the Service Management Policy have also been produced. All the above are included in a Service Management implementation plan with a defined roadmap and milestones (based on D5.3), created in collaboration with FedSM project consultants.

A combined FitSM training and implementation workshop took plan in Espoo, Jan 2014, and introduced FitSM and the FedSM project to more than 20 CSC staff members. This demonstrated that they are aware of the need for service management and are also willing to work toward higher levels of ITSM maturity using the FitSM standard. The availability of FitSM material, especially templates, was highly valued and considered to be of a great help.

Challenges

To maximize the chances of a successful ITSM implementation, a strong senior management commitment and involvement from CSC is critical. This fact is even more important when the changes are to be made to processes and tools that are already in place and considered to be working well for a long time. Such changes often face natural resistance, and ITSM implementation is a time consuming task that has to compete with several other day-to-day tasks, which are seen of higher priority. Demonstrating that changes are needed and that the effort of implementing a global service management system will pay off in the medium/long term is extremely difficult, thus it demands a top-down-approach and a clear and widely adopted policy.

3.1.2. PL-Grid

Overview

PLGrid is a federation of five Polish computer centres that aims at developing and providing IT infrastructure for academia. The maturity self-assessment performed at the beginning of Phase 1 evaluated the current ITSM status and identified areas requiring improvements. The assessment results revealed that the overall PLGrid maturity is already on a quite solid level and many aspects of ITSM are already implemented in some way. Good levels of compliance with FitSM come from the fact that PLGrid implements a concept of so called "computing grants" – agreements between users and resource providers. This fact, together with acting as a major provider of EGI, has had a positive influence on ITSM maturity at PLGrid. The self-assessment provided good motivation to gather people together and start talking about ITSM, finding a mapping between the PLGrid environment and accepted ITSM terminology, structure our processes, roles, responsibilities and put them into the right context. It also helped to identify missing parts and flaws.

The operational tool maturity assessment complemented the picture with a view on how specific processes are supported by tools. The tool assessment allowed us to identify some improvements to be done at the tool level indispensable to further improvements to process maturity. PLGrid is currently in a place where we know what are our strengths and weaknesses and we are working hard on improving the latter and retaining the former.

Successes

- Documentation: FedSM provided a solid and consistent framework to structure PLGrid operational documentation. Each operational document was categorized into one of the 14 processes of the FitSM standard and put together under one common space in our documentation tool. Using this opportunity, a number of documents were marked as obsolete and some missing documents were identified. A documentation policy has been proposed and accepted. New documents are created using the standard. Proper FitSM process definitions have also been created for the most important processes.

- Dedicated ITSM implementation team: After joining the FedSM consortium, Cyfronet established an implementation team responsible for driving ITSM changes in PLGrid. Thanks to FedSM we were able to identify what responsibilities are required in such a team to make it successful.

- Approval from senior management for proposed ITSM policies: It was understood that being successful in implementing ITSM requires commitment and support from the senior staff. This has been achieved by proposing ITSM policy based on FedSM materials. The policy was signed by the PLGrid Evolution Team in 2013, and thanks to this we started to convince our federation members of the importance and usefulness of ITSM in reaching PLGrid design goals. This process needs to continue as it was understood to be important to raise maturity equally through the whole federation.

Challenges

- Knowledge transfer: Implementing ITSM requires additional works from people who need to be convinced this work is useful and necessary. FitSM foundation training at Madrid in September 2013 revealed how important it is to raise the basic level of understanding among staff while implementing ITSM. This training was a turning point in discussions on ITSM in PL-Grid. People began to have a feeling they are talking about the same things, discussion began to converge which greatly improved people's enthusiasm and commitment. We see a need to train more people, especially from federation members to improve spreading ITSM ideas outside the PLGrid "headquarters". To overcome this challenge, together with FedSM consortium we made a plan to organize FitSM foundation training in Kraków (May 2014) to let more PLGrid staff to join.

- Training and actual work at the same time: Despite of the fact that only a few of the PLGrid staff were trained the actual work already begun. This means tasks may take more time as untrained staff need more explanations and sometimes make incorrect assumptions that need to be revised and tasks repeated with corrected assumptions.

- One PLGrid process mixes activities from different ITSM processes: Due to being designed in the pre-FitSM era, some PLGrid processes consists of activities belonging to a number of different processes in terms of FitSM standard. For example "computing grant accounting" consists of elements of Service Level Management and Customer Relationship Management.

Next steps

A number of gaps were identified in the PLGrid Service Management System during Phase 1 self-assessment, which realistically need a lot of work. Improvements mainly concentrate around SLAs. New SLA metrics were invented and they require defining a way of monitoring and implementation in the monitoring system. Also, service reports need to be revised and aligned to SLAs and services offered. Along with process maturity, tool maturity has been evaluated and improvements related to

tools have been planned. They include fixes related to SLAs in our Helpdesk tool, development of an AppDB (support for handling scientific applications as Configuration Items) and an improved User Portal. Although there will be new tasks to complete, we hope for the Phase 2 assessment and implementation will profit from the invaluable experiences gathered during Phase 1.

3.1.3. EGI.eu

Overview

As with many of the clients, much of the first year was supporting the project itself to set up the "framework" (the eventual FitSM standard) with a unique perspective of being a "customer". For EGI.eu, the opportunity to be a part of the inner workings allowed for the organisation to quickly identify the main issue that first needed to be tackled before moving to ITSM implementation: who are we and what are we providing to whom? Discussions with the project consultants made it clear that trying to tackle the entire complexity of EGI at once was not feasible, therefore we started to just look at EGI.eu as an organisation. The work on developing the EGI.eu Service Portfolio, which led to the creation of the EGI Solutions Portfolio immediately started to show the value of ITSM.

Once the Service Portfolio was designed, the next step was to conduct a self-assessment of EGI.eu's ITSM maturity based on the model developed by the project. The excel-based self-assessment tool is simple to use, and the review with FedSM consultants provided further clarification and understanding on an "application" level. Of the 15 services within the service portfolio (not all of which are IT services), EGI.eu conducted a self-assessment on 2 of the services: Federated Operations (the main technical work of EGI.eu) and the Repository of Validated Software (another IT services for comparing, however a smaller service in terms of dedicated resources).

As these services were analysed from an overall service perspective, there was a realization that many of the processes and procedures were tied to supporting activities and not the service itself. Some were quite mature while other processes and procedures were completely missing. The assessment allowed EGI.eu to identify areas working well coupled with areas for improvement, namely Service Level Management, Service Reporting, Customer Relationship Management and Incident & Service Request Management.

In almost every case, the missing processes and procedures are due to current practices being tied to an activity and not the overall service. For example, EGI has the capability of producing a variety of reports through a number of tools, however they do not specifically apply to the currently defined service and are not agreed with customers and tied to an SLA. In fact, SLAs are only currently defined for Technology Providers (third-party suppliers) and not for the customers.

Implementation has really only just begun as the developing the Service Portfolio took quite some time and with the initial project development phase. However, the key areas have been identified and are in progress.

Successes
- Service Portfolio: The biggest challenge ended up being the biggest success. EGI management was very satisfied with the end product, the development of the Solutions Portfolio and the butterfly effect throughout the NGIs. Lots of subsequent work not tied to FedSM directly, but dealing with issues such as sustainability and funding, has been based on this work.

- Knowledge Base: EGI.eu has created a dedicated wikispace for ITSM implementation, which holds all relevant ITSM information, such as general information, top-management policy endorsed by EGI management, as well as all individual processes and procedures. The EGI wiki is commonly used for hosting project and organisational information. Detailing the information and having the ability to directly provide links has proven to be effective (i.e. how to add a service to the service portfolio with direct links to templates and guides).

- Training: To date, six members of EGI.eu from different areas such as strategy, operations and technology have been successfully certified as well as a number of EGI community representatives with plans to increase through future trainings planned such as the EGI Community Forum 2014 in Helsinki and a dedicated training event at the EGI.eu premises.

- Knowledge Transfer: EGI.eu has supported a number of dissemination activities such as articles in iSGTW, e-IRG newsletter and EGI publications. Several meetings were held in other activities and projects such as with the EGI Federated Cloud and projects where EGI.eu is a partner such as BioVel and Helix Nebula.

Challenges

- Complexity: EGI is a very complex federation, and understanding the various moving parts makes implementing ITSM a challenge. The efforts given to producing the Service Portfolio were a testament to that.

- Progress: Much time was put into setting up the framework that "tangible" implementation is still at the very beginning and a bit behind original expectations, which will need to be sped up during 2014. The dedicated implementation meeting held at EGI.eu with the project consultants has greatly clarified and advanced activities.

- Documentation: Many processes are lacking documentation tied to the service. The details of what content to write in the related documents became the next difficultly. The project consultants are already producing templates and guides as part of FitSM-5. This concrete support in generating these documents will mean progress can be greatly advanced. The first example has been with the re-structuring the EGI.eu SLA.

- Momentum: FitSM is new and exciting, but the real work is only at the being. A big challenge will be in keeping the momentum.

- Parallel Activities: Trying to retrofit ITSM is a challenge in itself, however, EGI is a fast faced infrastructure with many simultaneous activities running in parallel. Implementing ITSM is a challenge to keep up with developments, ensure practices trying to be put in place are followed and understood. The question remains if ITSM implementation can keep up with infrastructure and community developments.

Next Steps

Over the next several months, EGI.eu will work the final refinements to its Service Management Plan, which will satisfy the remaining general FitSM requirements. Also, focus on restructuring Operational Level Agreements (OLAs) and SLAs (as mentioned, currently SLAs are defined only for Technology Providers and OLAs contain information that should be in an SLA) with Service Reporting being explicitly tied to agreed terms within the SLAs. One area that will be assessed as part of EGI's sustainability efforts will be how to ensure a minimum level of ITSM maturity of the resource providers alongside technical requirements outlined in OLAs.

Coupled with the process assessment are the tools that support ITSM. EGI has also assessed the tools that are currently available, potential missing functionality and define an improvement plan to increase tool maturity to support the overall ITSM processes.

EGI.eu is in the process of updating a new version of its Glossary that integrates all FitSM terms, and will continue to implement the processes and procedures according to FitSM across its services starting with Federated Operations.

3.2. Consultant view

In general, the first phase of the project has been very successful, though in some places in ways not foreseen in the planning of the project. This was driven by realisations that came about in the development of a lightweight ITSM approach and what they realistically meant for implementation in a community. Overall at the end of the first phase, we might say that we are well advanced in the development of material to support improved ITSM, in fact we have a recognisable brand for lightweight ITSM being implemented by clients inside and outside of the project. At the same time, the development of this framework, which was strongly required to achieve internal client improvement, took longer than expected, leading to a slight delay in some of the client implementation.

Moving into year 2, and the focus now more on implementation, project consultants, with the recommendation of the EC reviewers, have started to hold dedicated consultancy workshops that look specifically at implementation activities and issues and not project related topics like deliverables. With two already held, we see how this is having substantial impact on client clarity and understanding how to move forward. With this continue support, we can expect exponential progress in the short-term.

3.2.1. FitSM development

Clearly the biggest 'event' in the first phase of the project was the development of the FitSM standard, as while it is directly related to the work foreseen in the initial project plans, at the same time it was not directly foreseen.

FitSM is both a brand to improve dissemination, marketing and a logical 'toolset' for lightweight ITSM implementation. It built outward from the core requirements expressed in D3.2 to become a full modular standard, going beyond other competing approaches to provide practical implementation support as well as requirements.

The initial contents of FitSM included vocabulary, requirements, activities and role models. This was then expanded to include templates, samples and guides, based on the needs of clients and other interested parties. This involved shifting effort considered for later in the project in collating best practice information to an earlier point and releasing it incrementally to support implementation of the core requirements.

Most recently, we have decided to extend FitSM further to include the maturity/capability self-assessment tools developed within the project, to further develop the concrete help that FitSM provides to those trying to implement IT service management. This will form FitSM-6.

3.2.2. Improvement process

Within the project, FitSM has not fundamentally changed the goals or the steps to be taken to improve client ITSM, but it has affected the manner in which this change is achieved. It provides structure to the consultant-led improvement of client ITSM and gives us a framework within which to provide concrete help through generic templates and guides. This was required as the project engaged with internal clients as well as talked to potential external clients, to understand how ITSM could be improved in their organisation.

Unlike other projects where there may be a clear project plan that can be followed from start to finish, FedSM involves altering working practices in client organisations, thus impacting staff outside of those participating in the project. It also requires buy in from and approval by senior members of client organisations, and cannot simply operate in isolation from other activities. In line with experiences from traditional and commercial ITSM implementation, this kind of serious organisational change is a difficult and complex process that rarely runs entirely smoothly. In fact, if it appears to run too smoothly this is typically an indicator that it is not being taken seriously.

Through the first half of the project we have had to learn from our interactions with clients and understand what approach is most effective in supporting change. The most effective combination seems to be training as an introduction tool, followed by in depth workshops to discuss how requirements can be implemented. Implementation is then best driven by short lists of requirements backed by very clear related templates and guides.

Experience suggests that this method maintains momentum and confidence among clients, and when momentum is lost, progress slows considerably. Except for the champions within client organisations, others will lack not only information and knowledge on ITSM, but confidence to pursue their goals and use their judgement. The templates and guides give them a framework to work in which makes them far more effective than providing a blank piece of paper. While consultant intervention can work, it is a less sustainable solution as too often when the consultant leaves the staff member loses direction or confidence. The best possible solution is that through training and active consultant support, members of client organisations gain the skills to make good decisions about ITSM implementation themselves. Consultants remain on hand to provide input and advice, but clients feel a sense of ownership over the IT service management. The biggest factors in this seem to be training and templates. Templates provide a form of empowerment that allows members to go back from training session and make actual changes. They are also simple enough not to scare colleagues, and to show there is concrete support available.

3.2.3. Successes

Quality and conception of FitSM

Many if not most project successes have been driven by FitSM, its conceptual basis, contents and quality. There is a growing understanding in the research community that services must be better managed, but there is strong reluctance to adopt existing standards and approaches. The concise, clear and uncomplicated nature of FitSM, in particular FitSM-1 has been a major success. Those exposed to FitSM or told about it by colleagues look at the requirements, and most of them tend to make sense and seem achievable. This means that rather than hearing about a good approach then finding it complex and incomprehensible, they are more easily drawn in and more easily agree to try out FitSM.

Training and certification scheme

The training and certification scheme, produced together with TÜV SÜD, has been highly successful in furthering the aims of the project in several ways. Formal training alone is a positive as it structures how people learn about a topic, and training ending in an exam more so as the exam concentrates attendees on the material and avoids the typical conference problem of people tuning out or continuing with their own work. Finally, adding formal certification from an accredited organisation makes people see far more value in the training, and more authority in the material communicated.

In the eight months since the launch of the training, around 60 people have been trained, with 100% passing the exam. Two trainings are planned in the next two months, and a third is planned outside the context of the project (a commercially provided training by a project member for clients). The limiting factor is more time and effort within the project than interest in the material. Interest in higher-level training is also strong.

Working with TÜV on the training scheme has proved very beneficial as their structured, rigorous approach to training schemes helps to maintain a high quality and clear goal for each course.

Client feedback on training has been excellent, both in terms of direct results of the courses and also through better progress with client staff after they have been trained. We will continue to provide training, focussing on getting enough foundation certifications to support the higher-level courses.

Training and workshop package approach

We have developed a 'package' of a 1-day training course and a 1-day workshop in ITSM implementation as a good kick off for using FitSM. This approach lets the project give an organisation a reasonable amount of information on ITSM while keeping travel for FedSM staff and participants to a minimum. Either single day on their own may not generate enough interest and momentum to catalyse change, but together they provide a valuable body of knowledge. The first day generally leaves then with a good grounding in the conceptual basis of ITSM and the FitSM process model, but with less idea of how it can be implemented or the order in which this should take place. There is a general desire to jump directly to detailed questions of procedure and agreements, which generally are those related to the work of each individual concerned. The workshop day not only looks at implementation in general, but also at a recommended order for working on it, beginning with general and strategic questions (related to Service Portfolio Management and Service Level Management) and how these must be answered before jumping into detailed procedures.

An interesting result of this process is that maturity of service providers is not always related to how easy it is to answer these questions. Even for organisations or consortia with many customers and long histories, it can be complex to provide clear answers to simple questions related to customer groups, value provided and services offered.

3.2.4. Challenges

Lack of consultancy materials

In the initial phases of the project there was a lack of concrete support for clients, beyond discussions and consultation (which are time consuming and not so reusable). These materials were planned, but the original intention was to produce them in the late stages of the project based on experience with clients. Instead, a clear need for them came up early on, and consequently effort

was needed to produce them. This process also limited client implementation at some stages, and caused effort-spikes. However, having created this material (being released as FitSM-4 and FitSM-5) it has proved one of our greatest successes. However, this did have a cost in time spent on other tasks and on client implementation progress, despite actually making further client implementation much more realistic and achievable.

Co-development of consultancy material with actual consultancy

Related to the above, the development of consultancy material, intended for the last year of the project, was actually being written on the fly as consultancy with clients was being carried out. This was driven by need, but meant there was less of a clear development phase for material, it was being used in draft and partial versions prior to public release, and as a result some elements had to be incrementally improved several times before they reached a stable state. However, after being tested in real situations several times from their inception, many of these materials reached a high level of quality by the time they were publically released.

Clients meet requirements rather than improve management

While FitSM is carefully designed to be meaningful and ask clients to do things of real use to them, there is still a risk that groups find ways to meet requirements as an exercise in 'box checking' rather than as a sign of real improvement. For instance, while it is important to set a scope for ITSM introduction, as introduction everywhere at once tends to be too hard, it is tempting for those being pushed into ITSM to set a scope that is too small to bring meaningful improvement, which then makes the whole ITSM introduction look less worthwhile as it shift the cost/benefit balance to be inacceptable. Equally, requirements can be met in name only – one could sign SLAs for all services but make the SLAs so weak that they are not meaningful.

Within FedSM, all clients have a genuine interest in improving their services through ITSM rather than ITSM for its own sake, but this remains an issue as the project pushes past initial champions to other members of client communities that may not have direct contact with consultants and be assigned ITSM-related tasks out of context. This becomes more of a danger as FedSM moved from looking at more strategic or centralised processes such as Service Portfolio Management or Service Level Management to more operational processes like Incident and Service Request Management.

The key to avoiding this problem is likely to be found through training and matched consultancy. As long as members of client organisations that interact with FedSM get a real sense of why ITSM is important and what is required to implement it usefully, then they essentially take on the role of peer-consultants. This asks a lot of them, but as they have the backup of high quality templates and guides, as well ability to send colleagues to FitSM trainings, it is realistic to use this method to trickle down not only understanding of ITSM, but understanding of the reasons it is needed and why implementation should be meaningful not simply lip service to gain some stamp of approval.

Finally, in the latter half of the project we plan some level of audit for clients that will give the consultants a formal way to recognise any such problems and correct them.

Avoiding overcomplicating FitSM

FitSM is designed to be modular, as it allows each part to be small and concise, but this brings with it dangers. A core goal of the project is to make ITSM more approachable, but at some stage the level of jargon or coded naming might get complex enough to inhibit uptake. Already FitSM has 7 parts (0-6), and are often listed by number not name, such that 'FitSM-1' is used in place of ''core

requirements. As FitSM is extended, both within and external to the project, it gets more complex and therefore harder to understand. As we move forward and add to FitSM, we must avoid it taking on the characteristics of other ITSM solutions that lead to FitSM's development, including over complication, lack of clarity and coherency, overreliance on specialist terminology and lack of clear, immediate value. We have already started to limit this risk by using clear labels on the FedSM website menus.

Tracking improvement

As the improvement process gets underway with clients, it has become apparent that tracking it is rather complicated. Targets are not static and require interpretation by clients. They are also numerous and multifaceted. As a result a static document has not proved effective in tracking them (D5.3 suffers from this issue). To remedy this, we are moving to online task tracking for improvements.

4. General plans for the second phase

The following sections offer general plans for phase 2 to reach maturity targets for phase 2 processes, which are refined based on experience. The broad goals for phase 2 are presented such as moving into more operational than planning processes.

4.1. Phase 2 general approach

For the second phase of the project, we feel that in general we pursue the same core principles that we intended for the project as a whole, but with significant tweaks to how these are implemented in real life. These are based on changes to the overall community situation and also on experience from the first phase of the project. Many of these issues have already come up and are listed in the above sections on challenges, so approaches to mitigate them or avoid them are already in place. However, this plan is a good opportunity to put these.

4.2. Key changes

The key changes from phase 1 to 2 are as follows:

- Amend phase 1 goals to reflect refined assessment schema developed to form part of FitSM-6: FitSM-6 revised the generic state descriptions for maturity level 3 to make it more achievable and useful, and also improved many state descriptions based on experience to make them more useful and consistent. These changes need to be propagated through to the to-do lists for clients.
- Create a Client Action List online to track implementation: In the first phase of the project, tracking to do items through deliverables or static documents provide unwieldy. Instead, for the remainder of the project, a Client Action List will be created and maintained online to allow these to be more living documents, and to improve the ability of all parties to monitor progress.
- Prioritise effort for templates and guides (FitSM 4 and 5) as well as tools (FitSM-6) to give concrete support: The success of FitSM-4 and 5 with internal and external clients means we need to keep up effort in this area to support client implementation. Items will be developed based on the next anticipated needs of the internal clients, but production will be increased and used as a marketing opportunity as well as key input for clients.

- Continue and expand training for client organisations and push toward higher-level training: Training has been critical to success with all clients and must be expanded to cover as many as staff as possible from client organisations. This is especially complex for EGI as their community is so large, and as their event schedule becomes less certain after Summer 2014 (due to their funding cycles). FedSM must work with EGI to decide who most needs FitSM training to make progress toward their overall goals.

- Push implementation from strategic processes (SLM, SPM) into more operational processes such as ISRM and ChM: This migration was already imagined in the two phases planned for FedSM, but it is apparent that while strategic processes are key, we must get beyond them to have a greater impact on how clients actually serve their customers. There is a need to finish agreeing on approaches, in particular to SLM and SPM, so that other processes can be addressed. While a challenge that must be met, this is a consequence of how ITSM needs to be applied in the research sector, it has proven impossible to skip directly to operational processes as there are too many dependencies on a clear list of well defined services delivered according to agreed SLAs.

- Vary phase 2 goals by client to a greater extent than in phase 1: In phase 1, goals were quite generic and set for all clients, based on initial ideas of how clients could improve their ITSM. In phase 2, they need to be set with more emphasis on both general experience and specific experience with each client. We will set overall goals but will vary them in some ways according to each client.

- Move from self-assessment to audit: Initial assessment of ITSM maturity baselines was based on guided self-assessment, as at the time full self-assessment would not have provided useful results due to a lack of solid grounding in ITSM among clients. This has changed, but at the same time we now need to have a more detailed idea of where clients are succeeding or facing challenges in their implementation. Hence, in the second phase of the project we will move much more toward an audit approach to assessing ITSM maturity.

4.3. Phase 2 general goals

We define goals in terms of maturity and capability of processes, as defined in the work of work package 5 and deliverables D5.1 and D5.2. In the first phase of the project, we set an overall maturity goal of 'in place' to cover seven initial processes, with the target capability varying deepening on the process.
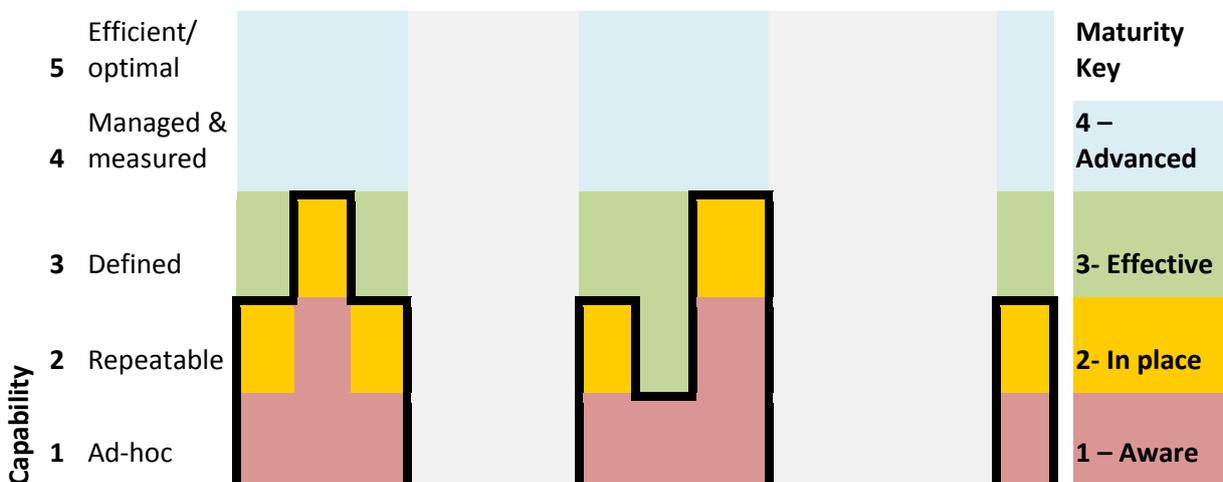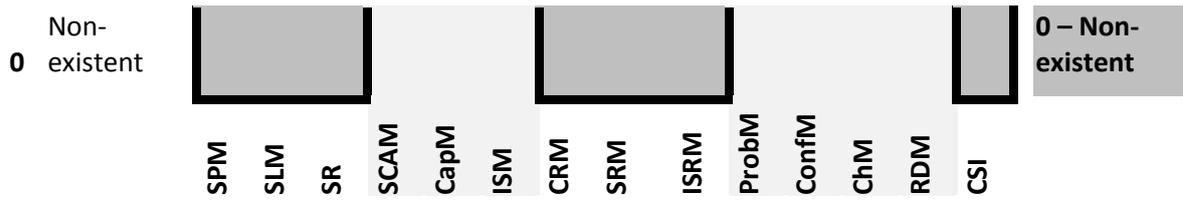
As can be seen from this table, targeting Maturity 2: in place implies targeting Capability 2: Repeatable in several cases. However, a lesson from the first phase of the project is that targeting Capability 2: repeatable is rarely a good idea. In brief, Capability 1: ad hoc implies there is some way things get done that is inconsistent but achieves some results. Capability 2: repeatable is similar, but with more consistent results. There is still no real documentation or formalism. As a result, it is hard to target. Capability 1: ad hoc can be targeted with education about the general topic area, and Capability 3: Defined can be targeted by supporting definition and documentation.

As a result, it makes little sense to give people more idea of a topic to let it be Capability 2: repeatable without also asking them to document it so it becomes Capability 3: Defined. Otherwise we essentially ask clients to do almost all the work to get to Capability 3 but not benefit from all of it. Instead, we will target only Capability 1: ad hoc or Capability 3: Defined, and if when targeting level three we only achieve 2, this will be acceptable. This way we set higher goals and let clients benefit from all their work, but do not penalise them if they do not fully meet the revised, higher goals.

Thus, our baseline goal for the second phase of the project is to bring all processes to Maturity 2: In place, which would be as follows.
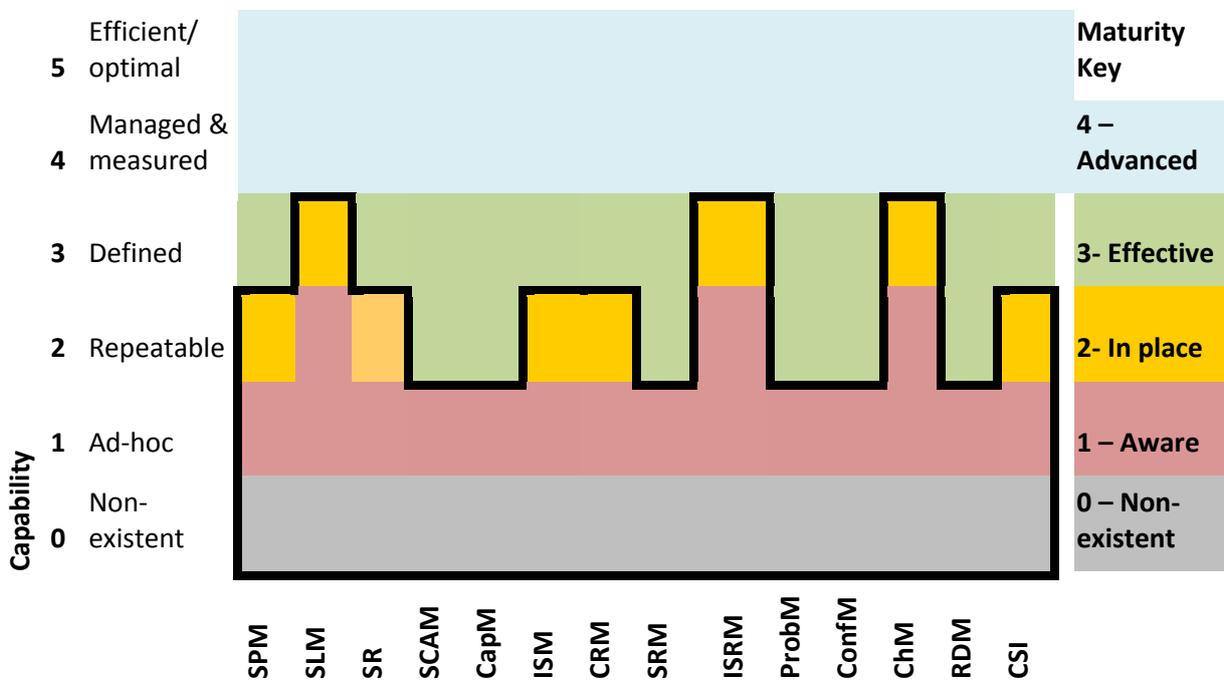
This result would mean there was a general ability within each client to manage services in a meaningful way, with a focus on key processes such as Service Level Management, Incident and Service Request Management and Change Management.

However, while making this the baseline goal, the project will in fact encourage and support clients to reach Maturity 3: effective, so in fact reach Capability 3: Defined for all processes. This may well not be achieved, especially as for EGI the number of individuals involved might reach into the many hundreds, and getting all to participate may be unrealistic. However, by setting an achievable baseline goal but pushing past this to a more aspirational one, we believe we can serve our clients well.

5. Client-specific plans for the second stage

In each of the following sections, we consider the situation each client is in, their overall priorities as well as their specific ITSM challenges and goals. These act as amendments or adjustments to the general phase two goals set out in the previous sections.

5.1. CSC

5.1.1. CSC/FGI priorities and foresight

The major change foreseen for FGI is the expansion of the service to the Finnish Grid and Cloud Infrastructure (FGCI), which will offer cloud services to existing FGI Grid users. This new project is foreseen as an upgraded version of FGI thus all IT Service Management produced under FedSM will be re-used and translated to FGCI with an expected minimal effort. This re-imagining of FGI as FGCI will, in our view, constitute a good opportunity to leverage ITSM adoption by all partners of the federation, as well as an opportunity to revitalise and increase interest in ITSM. It also presents a useful opportunity to discuss ITSM scope and policies with the FGCI board, and improve top management engagement in the ITSM introduction process.

5.1.2. ITSM improvement areas and processes

The main challenge for ITSM in FGI has been to make people accept the real importance of having a concrete Service Management System. From this, it is very important to ensure Service Management isn't a secondary task to do "if we have time". It seems to be clear that ITSM makes sense for everyone and its something that they already do somehow, at some level of maturity. However, there is a leap from this to acceptance that ITSM should be and is part of everyday work. These are typical problems in ITSM implementation, and are likely related to the successful but very technology-focussed history of the hosting organisation. This is also complicated by the relatively minor status of FGI within the very large CSC service portfolio, comprising in effect most IT related services from Finnish academia.

This barrier can only be overcome by persuasive training, using concrete examples and some demystification – it's not uncommon to find people with over complicated understanding of the subject – and a clear and strong commitment from all parties, from top level management to technical staff. This has already begun with the broadening of engagement somewhat from FGI to CSC as a whole to better connect with key staff, but it remains an issue to be tackled

5.1.3. Interpretation of Phase 2 goals

Key processes remain the initial core process on which others rely, specifically Service Portfolio management and Service Level Management. Effort in these areas has been worthwhile but needs to go further, and moreover, have a greater impact on daily work. Also this provides input to other process, as many key elements of other processes rely on promises in SLAs and OLAs. There will also

be development here driven by changes in the EGI infrastructure, also catalysed by FedSM, which enforce changes for FGI and later FGCI.

Service reporting will also be important for this phase, as it gives a channel for interaction with customers, and also must develop to be able to report on the promises made and monitored in SLM. Finally, incident management and problem management will be important for phase two. Here the work is not inventing procedures but adapting existing systems for incident handling into more structured processes.

Other processes are important but will be more challenging. Configuration management, as in all cases, is very complex and might be hard to bring up to the targeted capability, as it means not only working on changing CSC processes but those at the other FGI partners. As with other clients, work here must be well targeted and based on a realistic scope that gives sufficient control of configuration information to operate the federation without requiring so much that it is not feasible to implement.

Some issues may also arise with change, capacity and release and deployment management for similar reasons, also because these depend on the evolution of other processes. Capacity plans require firmer SLAs to give requirements; change management is closely tied to configuration management, while release and deployment management for FGI is tied to existing processes at CSC and also to requirements from EGI.

5.1.4. Tool changes.

Most of the core tools for ITSM are already in place for FGI and at CSC, such as wikis for documentation, mailing lists, ticket tracking and project management tools. Initial implementation is based on simple and existing tools, rather than new developments. This is well suited to the baseline level of maturity and challenge of getting people on board with ITSM, better to stick with tools people are already invested in than try and persuade them to adapt both ITSM and new tools.

Challenges around tools are more in the area od adoption than availability. For instance, incidents shouldn't be reported mainly through personal e-mail accounts, instead the helpdesk e-mail address or portal should be the entry point for most issues. This requires re-education and perhaps training in tool use to tie use of tools to the new procedures being developed.

5.2. Cyfronet

5.2.1. PLGrid priorities and foresight

PLGrid is a successful infrastructure that has operated for many years with happy customers and an impressive approach to service management. It is based on a tightly knit collaboration between Polish academic organisations and strong national support in terms of funding and engagement.

The current project supporting PLGrid is PLGrid Plus, providing funding and a joint plan for the national infrastructure (distinct from Polish participation in European e-Infrastructure through the EGI community). PLGrid Plus finishes at the end of 2014, but will be succeeded by PLGrid Core, but this concentrates in Cyfronet (the PLGrid coordinator) only and at present funding for the other national members is not guaranteed. This raises challenges for on-going ITSM development as less funding for federation members means it is crucial to get them on board with full ITSM now,

spreading concepts, knowledge and understanding through the federation as soon as possible so the members can be independently motivated to continue with it in the coming years.

Current priorities for PLGrid include refining service guarantees and introducing a cloud service. In terms of service guarantees, this is a dual goal of creating an offer that suits the need or researchers and at the same time facilitate scheduling and efficient resource utilization of the PLGrid compute and storage resources. New metrics related to service guarantees have been developed and agreed by the community, which allow different levels of guarantee to be expressed. For example computing time can be expressed by four different metrics: guaranteed, non-guaranteed, reserved and pre-emptive. Implementation of these new metrics is understood as a significant improvement for users and providers but needs to be completed.

Up to now, PLGrid has delivered a Grid based service, but in order to keep up with consumer demands and new technologies, they wish to expand into clouds. They already offer a per-production Infrastructure as a Service (IaaS) system, running on production resources. While it is monitored, support needs to be refined and finalised, and work on security and accounting it on going. IT Service Management still needs to be integrated into this service.

5.2.2. ITSM improvement areas and processes

The main challenge around ITSM at present is an uneven level of engagement in improving ITSM practices at federation members. Some members of the PLGrid federation are more interested and active than the others. This can be observed in outages, list of scientific software available at sites and resource utilization. Some sites are fully booked, while others have a lot of free compute time. Users prefer to wait in queues at "better" sites rather than migrate their jobs to free resources in other centres. This is interesting, as it shows users care a lot about service quality, but also means there is work to do. It is important to investigate where the root cause lies and identify ways how to improve it, both in terms of technical issues ('problems') and also where the problem is related to insufficient service management.

Another major issue us overloaded 1st line support. They currently have problems in providing a good quality service, and due to broader budget issues, increased staffing is not an option. PLGrid took a decision to provide collaboration tools for the users and foster user community-based support to mitigate this. The tool (zapytaj.plgrid.pl) has been deployed but take up has been very limited or at least not enough to reduce load on 1st line support. For the coming year it is important to work out hwo to reduce 1st lien loading, through a combination of the community-support system and increased structure for support delivery through ITSM processes.

Due to the impending end of PLGrid Plus, it is crucial to get federation member and supplier service management into a better state. While at Cyfronet lots of work has gone into Service Level Management, more work on SLM must be carried out with federation members, along with work in Supplier Relationship Management (SRM). These partners need to maintain the impact of PLGrid Plus for around 5 years with significantly lower effort. Previous effort in SLM was more on the customer-facing side, as internal collaboration within PLGrid was so strong that OLAs were less crucial. Now, things have changed and it is time to strengthen the internal federation agreements to allow fulfilment of promises to customers.

As well as work on SLAM and SRM, problems with first line support show that work on Incident and Service Request Management, and supporting Problem Management and Change Management is required. This will be challenging but important for on-going viability of PLGrid.

5.2.3. Interpretation of phase 2 goals

Comparing the phase two goals to PLGrid current state, all processes are implemented in some way, though the extent and level of documentation varies. However, some processes, such as Change Management, may require a great deal of effort, and the challenge will be to work out where the investment in time and resources id most necessary and brings about the best overall improvement to the services.

Configuration management will be complex but necessary as a lot of technical service instances (such as portals) will be brought online itn eh coming year and must be tracked. Configuration management also relates to operational tools, which are being developed and need to be coherent. Problem management will extend work on ISRM and simplify existing helpdesk and support work. Release and Deployment Management (RDM) is already well established and work here will eb on documenting rather than defining processes. Finally Continual Service Improvement is underpinning all other activity as PLGrid is already a successful services that needs improving, rather than a start from scratch. All these processes should be implemented successfully to varying extents in the second phase.

In comparison, more challenging processes will be Service Availability and Continuity Management (SACM) and Capacity Management (CapM). Efforts will be made, but these processes rely on the work of the federation members, where we have other priorities for development. The same is true of Information Security Management. In these processes it will be important to define a realistic scope of the improvement and consider what is crucial ona federation level rather than thinking about fully detailed implementation across every federation member.

5.2.4. Tool changes

Changes to be made will follow that already described in D6.3 (which is a single phase improvement plan, not a two-phase plan). These include:

- SLA-aware monitoring (include "reserved compute time", "storage" and new metrics when they will be introduced
- AppDB as a part of CMDB dedicated to scientific software installed at sites
- A new version of User Portal integrated with other operational tools
- To extend Helpdesk tool to contain reference to computing grant ID

In addition, currently the PLGrid Helpdesk system is also used also for handling project issues. It was recently decided that Helpdesk should be used by users and staff should use an internal JIRA ticketing system, and this migration is in progress.

5.3. EGI.eu

5.3.1. EGI priorities and foresight

2014 is an important year for EGI as a community. This year, the EGI Federated Cloud launches (May), preparations of Horizon 2020 proposals are underway, changes to EGI.eu legal structure are being investigated, proof of concepts with pay-for-use services are being developed and the EGI-

InSPIRE support project will come to a close (Dec). With each of these changes, brings an impact on ITSM as whole – some positively, others unknown. On one hand, new projects and technologies are allowing for EGI to insert ITSM in the design phase, while on the other, potential future changes leave other ITSM related activities in limbo or of lower priority.

Much, if not all, of the ITSM implementation to date has been in strategic areas, which led to a not so insignificant result of the service portfolio definition. However, with the end of EGI-InSPIRE, EGI.eu has started a re-bidding of the services that are outsourced to community partners, such as the Accounting Portal and the Helpdesk amongst others. This re-bidding process has brought the revised Operational Level Agreements based on FitSM to front stage. The main issue has been the need for EGI.eu to understand the levels of support in order to reflect those levels in the SLAs to its customers (e.g. cannot guarantee a 5-day response time to users if internal suppliers offer 7). This clarification is now under discussion as reduction in budget may reflect response times. This is one example where ITSM is shown to be taken seriously, however, this kind of real change highlights the need to evaluate what areas will be 'quick wins' and where others may take more time than originally planned.

5.3.2. ITSM improvement areas and processes

It was mentioned before that year 2 will actually be the start of implementation of the processes and procedures moving beyond strategic level development. Following on from the dedicated consultancy workshop, it was made clear exactly how to take advantage of the documentation and templates available and put them together in a pragmatic and real way. More specifically, taking the requirements from FitSM-1, looking at the activities in FitSM-2, understanding who is involved in FitSM-3, then using the applicable templates in FitSM-4, we were able to apply them in one coherent fashion using "add a service to the service portfolio" as a real-world example. The goal now is to take this clarity and apply them across SPM, SLM and CRM in the very short-term serving as the aforementioned 'quick wins'. This is realistic as with SPM there is the freedom to produce processes around the new portfolio, the current necessity with SLM for OLAs and SLAs, also tied to the new portfolio, and CRM as EGI develops is business strategy to reach not only big science, but the long tail of research as well.

Following these 3 processes, work will move to the final 5 processes of Phase 1 over the next year (2014). More specifically, efforts will first focus on where processes and procedures are already well defined or are mature, but where information is potentially scattered, and to combine it into a more coherent ITSM approach. These processes, with a medium-term timeline, are: ISM as security activities are well-defined and mature; SUPPM which has a strong framework with technology providers; ISRM which has been in place for almost a decade; RDM that has defined procedures as an extension from reliance on third party providers to which EGI focuses on integration, testing and release; and CAPM and CONFM which is around one of the main services offered by EGI to its users.

Longer-term processes that may be potentially laborious will be not only where processes are not yet defined, but also where tools are tied to service components and not the service itself as per the defined portfolio. This is currently being identified within the EGI tool development roadmap for the final year of EGI-InSPIRE, which has limited remaining effort, and what could potentially be part of a follow-up Horizon 2020 proposal. These processes are more likely to be: SRM as much of the reporting, which uses highly complex tools (e.g. accounting, monitoring), are not necessarily tied to

the services; and SCAM, PM, and CHM as new processes that need to be defined, but where technology is currently changing and responsibilities are shifting.

The principle challenges moving forward will not be around the "buy-in" of ITSM, as the majority of EGI.eu staff and members of the EGI partnership see the value and necessity, but it will be on whether or not ITSM can keep up with the numerous activities running in parallel.

5.3.3. Interpretation of phase 2 goals

Phase 2 will start with the self-assessment that EGI.eu will complete. Once having the understanding of where we are, and the experience gained by defined very specific process and procedures, progress will be greatly achieved.

So the goals can be summarized as:

- Short-term: Complete individual processes and procedures for SPM, SLM, CRM
- Short-to-Medium term: Expand to remaining 5 processes of Phase 1
- Short-to-Medium-term: Complete Phase 2 self-assessment
- Medium-to-Long-term: Produce implementation plan around Phase 2 processes, similar to Phase 1 where the most important processes were tackled first.
- Long-term: Defined process and procedures for Phase 2.
- Overall ITSM goal: Reach at least the minimum level maturity defined by the project across all processes,
- Stretch target: Hitting Level 3 in 80% of the 14 processes.

It is evident through the experience with the OLAs, that not all processes will be smooth to implement, and with the many changes that EGI is experiencing with preparing its final sustainability and business plan as part of the last year of the EGI-InSPIRE project, it is too early to gauge how much progress will be obtained by the end of the FedSM project, however, it is foreseen that at least all of the processes will reach at least the minimum maturity level set by the project, with others on a longer timeframe to hit level 3. By identifying these areas, we feel that greater progress will be made.

5.3.4. Tool changes

Deliverable 6.2 and 6.3 outlined EGI.eu's assessment and implementation plan around the use and development tools around ITSM. During Phase 2, the first goal is to add all tool related information to the EGI ITSM wiki, which is currently missing. The second goal is to continue to feed ITSM requirements into tool development. This is currently on-going as roadmaps are being prepared for what can be handled during the final year of the EGI-InSPIRE project and what needs to be added in the follow-up project proposal in Horizon 2020. Most of the work is being fed in the e-GRANT tool that is being used and developed to deliver a federated resource allocation service that provides EGI with a centralized mechanism for allocated resources that allows researchers and/or research communities to avoid having to deal with multiple NGIs (resource providers). This tool will have the most applicable connection to ITSM processes.

- Short-term: Add tool related information to the EGI ITSM wiki
- Short-to-Medium term: Feed requirements into existing tools for final EGI-InSPIRE project year development roadmaps.
- Medium-term: Carry out FedSM tool development and improvement plan according to D6.3.

- Long-term: Comprehensive tool development within H2020 project.
- Overall ITSM goal: Reach at least the minimum level maturity defined by the project.
- Stretch target: Hitting Level 2 in 70% of the 14 processes.

Much of ITSM implementation will be around refining the already existing tools where necessary, but will also be dependent on what is possible within EGI-InSPIRE project resources between now and the end of the project. One thing that will be ensured is that any remaining developments moving beyond 2014 will be part of a follow-up project within Horizon 2020, thus ensuring a full implementation of ITSM across EGI.

6. Summary and outlook

The FedSM project is a complex and ambitions initiative, especially given the effort available to it, split between development of FitSM and consultancy for clients. Moreover, it asks a lot from clients in being prepared to change their internal processes and procedures in ways that imply a major need for commitment and resources.

Despite these challenges, the first phase of the project has been incredibly successful. FitSM has generated very strong interest both from within the consortium and external to it. This success is built on experience with project internal clients and excellent feedback to consultants, and collaboration between the two groups.

The first phase taught the consortium many lessons – notably the need for strong material (FitSM) in advance of implementation with clients, as the material and training make the change seem more realistic and useful. This caused delays to implementation, which were not foreseen, but ultimately probably leave clients in a stronger position than forcing implementation without sufficient backup material.

First stage implementation concentrated on strategic processes, in almost all cases beginning with SLM and SPM and then extending from this basis into more operational processes depending on needs and priorities. This highlighted that common plans were a nice idea but less realistic in practice, as the situations of each client varied widely. However, the same experiences validated that the core requirements of FitSM do fit all clients, despite the variability in how they can and should be implemented.

Foe the second stage it is important to push forward with more processes including the second phase processes, but this does not mean the phase 1 processes are 'done'. Work rightly began with the phase 1 processes and the expansion to the full set of processes will require further development of phase 1 processes to support the new phase 2 processes. To support this, the consultants must increase the tempo of training to expand understanding out ITSM within client organisations, and continue to generate the elements for FitSM-4 and 5 (the samples, templates and guides) to make implementation easier and also to let people deeper into the client organisations be involved with implementation without all needing large amounts of time with consultants.

On-going implementation will be better tracked through the online Client Action List, which will be developed shortly. This will improve the availability of consultants to monitor, track and support improvements, and ensure that clients reach a meaningful improvement within the lifetime of the project.

Version History

Version	Date	Author	Change record
0.1	19.02. 2014	Owen Appleton	Skeleton
0.3	23.03.2014	Sy Holsinger	Lessons learned by Clients
0.5	11.04.2014	Owen Appleton	Second stage plans, initial version
0.7	17.04.2014	Owen Appleton	Second stage complete less client-specific plans
0.8	22.04.2014	Owen Appleton	Include second stage plans per client based on input
0.9	25.04.2014	Owen Appleton	Improvements and harmonisation of second stage client plans.
1.0	30.04.2014	Owen Appleton	Final
1.1	24.09.2014	Thomas Schaaf	Final QA prior to FedSM periodic review