Post-EMI/IGE
Software Provisioning

Collaborating with Technology Providers of varying levels of commitment

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# Introduction

With the EMI and IGE projects ending in Spring 2013, EGI.eu needs to plan and prepare for Software provisioning and collaboration with product teams and platform integrators that do not benefit from the pre-EGI coordination activities currently being undertaken by EMI and IGE.

The TCB members discussed this topic at the last F2F meeting [TCB-14], based on the document [EMIPlan]. This document drills into the technical details of Software Provisioning, and how the various activities will contribute to, and be published in the UMD.

# Technology Providers & Platforms

With the demise of the EMI and IGE projects, EGI.eu is expecting a stronger partitioning of the Technology Provider (TP) landscape into a larger numbers of providers, each with stronger focus of interest around a particular capability or service. What’s more, each of these providers will have their own sustainability plans and preferences for the level of commitment to collaboration and integration with EGI’s provisioning processes.

In early 2012 EGI started developing a roadmap [MS510] that will gradually evolve the EGI production infrastructure into a platform oriented architecture, to be able to build an e-Infrastructure that is capable to support a broad customer base with a very diverse set of requirements. MS510 defines a number of platforms, and the associated stakeholders and actors in a platform oriented architecture. Figure 1gives an overview of the EGI Platform architecture as defined in [MS510].

Figure 1: The EGI Platform model

The Resource Providers federated into EGI.eu’s member NGIs own the physical hardware, the resources consumed by the research projects that are part of the EGI community. Those resources are federated together using the EGI Core Infrastructure Platform (services needed to operate a federation of locally deployed distributed computing platforms). At the same time, the Core Platform serves as a framework for the EGI Cloud Platform, the EGI Collaboration Platform, and any number of Community Platforms that wish to use the Core Platform to manage their distributed infrastructure.

The Collaboration Platform is a set of generic and independent services, thus applicable to all supported research communities and are available to be consumed by the Core, Cloud and Community platforms. The Cloud Infrastructure Platform provides self-service provisioning and consumption of IaaS Cloud resources. Community Platforms are defined as providing infrastructure services tailored to the specific needs of the targeted EGI community.

EGI.eu will maintain ownership over the Core, Cloud and Collaborative Platforms in terms of specification, integration and distribution where required; the coordination of these activities will take place at the TCB incorporating recommendations coming from domain specific management and coordination boards such as the OMB, UCB and others. EGI.eu expects that Technology Providers will align their scope of activity with specific Community Platforms.

Therefore EGI needs to collaborate with Technology Providers on different levels. Identifying the different potential roles coming from the individual Technology Provides will help separating the requirements and responsibilities, as follows:

**Platform Integrator**

A Platform Integrator has the lead role within a group of Product Teams that together produce a well-defined Community Platform. This lead role particularly includes ensuring that the included services provided by Product Teams work well with each other. Platform Integrators are the main contact point of communication and collaboration for EGI.eu.

The association between Platform Integrators and Community Platforms is not restricted; there can be many Platform Integrators each producing one or more Community Platforms.

**Product Team**

Product Teams produces software and/or provide a well-defined service that EGI.eu is going to include into the platforms EGI.eu is responsible for specifying and integrating (e.g. Core Infrastructure Platform). Integration work might have to be ensured by EGI.eu, or secured through replacing services with alternatives that require no integration work.

# Technology Provider commitment levels

Recapturing the proposals made in [EMIPlan], EGI.eu expects its Technology Providers to fall into three categories, integrated, contributing and community providers as summarised in Table 1 below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TP type** | **MoU** | **SLA** | **TP QA** | **EGI.eu QA** | **URT** | **3rd line support** | **EGI.eu benefits** |
| **Integrated** | Y | Y | Y | Y | Y | Y | Y |
| **Contributing** | Y | Expected | Y | Equivalent | Y | Expected | Limited |
| **Community** | N | N | Optional | Optional | N | Optional | N |

Table 1: High-level categorisation of EGI Technology Providers

The mechanics of the collaboration between Technology Providers of either type are described in Memoranda of Understandings (MoU) and accompanying Service Level Agreements (SLA) where applicable. These documents describe and define the scope of the collaboration, particularly the roles and responsibilities in the Quality Assurance (QA) of delivered software. The UMD Release Team (URT)’s role will be defined in these documents as the management body coordinating releases of software in the UMD as described below.

It is important to note that these terms – integrated, contributing, community – do *not* describe EGI.eu’s expectation of what type of platform a Technology Provider may provide. These terms rather describe the level of process integration and collaboration between EGI.eu and the specific Technology Provider.

However, EGI.eu will implement a policy that ties the criticality of a given platform to EGI.eu’s business success with the level of commitment of a Technology Provider to provide high quality software. This may translate into EGI.eu considering only integrated Technology Providers for services included in the Core Infrastructure Platform. It is up to the research community using a Community Platform to specify the quality and the corresponding QA process that it needs from the Technology Providers that comprise the respective platform.

Choosing a commitment level therefore has impact not only on how EGI.eu and the respective Technology Provider are collaborating, but also how the affected software will be received and perceived in the EGI community. Essentially, the relationship between Technology Provider and EGI.eu is governed by the higher the commitment of a Technology Provider, the higher EGI.eu’s commitment will be, too.

This includes not only the amount of benefits a Technology Provider may receive through other EGI.eu activities (e.g. Dissemination, priority access to slots in EGI community and technical fora), but also access to specific services EGI.eu provides in the area of Technology Provisioning.

# Software Provisioning and (re)presentation in UMD

he Software Provisioning process needs to improve and adapt to the foreseen changes in EGI.eu’s relationships with Technology Providers. This ultimately also affects the UMD, its contents, and how it is presented to its main customers, the Resource Providers federated into EGI.eu’s member NGIs. The classification of Technology Providers into three categories (integrated, contributing, and community) will be reflected in the process of provisioning software into the UMD, where the integrated and community TPs form the two ends on a scale of Software Provisioning activities. Figure 2 provides an overview of the processes described in the following subsections.

## Quality assurance and the provisioning process

 The software provisioning process for Integrated Technology Providers will be identical to the process that is currently used. Integrated Technology Providers will conduct their own independent Quality Assurance and make software available for EGI to provision. The EGI.eu Software Provisioning teams will pull the software; it will verify it against its Quality Criteria and test in a Staged Rollout phase before it is made available in an integrated UMD “main” repository. The quality of the software will be monitored against the number of bug reports, post mortems of production infrastructure failures, vulnerability reports, and other KPI and KQI that are available for metrication.

The provisioning process for Contributing Technology Providers is expected to be similar to the process for integrated technology providers except that the Technology Provider conducts the complete software quality assurance. Individual TPs may choose to use the existing EGI Software Provisioning process and tools, which EGI.eu is planning to offer as a service to those TPs that are interested in it. Otherwise, EGI.eu will audit the Quality Assurance documents, processes and artefacts on a regular basis to build its trust in the respective Technology Provider. Once this trust and agreement to operate as a contributing Technology Provider is in place, contributing Technology Providers will be given access to a tool that allows them to upload any number of software packages and corresponding release information, which will be used to update the technical repository and the release announcement system that is in place for integrated technology providers. EGI.eu will monitor the quality of the software in the production through regular reviews of KPIs and KQIs that are also used for reviews of integrated technology providers.

The provisioning process for Community Technology Providers is very simple, in that they will be allowed to upload any number of software packages to the repository at any point in time, without any expectation or constraints on quality assurance or even release timing formulated by EGI.eu.

/Furthermore, the releases of integrated and contributing Technology Providers will be coordinated through regular meetings of the UMD Release Team, in which each Contributing Technology Provider will be represented along with the Integrated Technology Providers. This UMD Release Team will ensure that releases of Integrated Technology Providers are well coordinated, and that releases of the Contributing Technology Providers are synchronised accordingly to ensure a consistent set of software across Integrated and Contributing Technology Providers.

Figure 2: Overview of the UMD software provisioning

## Changes to the UMD

The changes to the UMD are expected to be fairly significant in that it will no longer be a concise, integrated repository containing all software from all Technology Providers. Instead, the UMD may become a distribution of software that is deployed in EGI on various levels. Arguably, this would be the scope of an EGI distribution hosted in the EGI Software repository, and the authors wouldn’t object to this notion.

These changes support a number of provisioning scenarios. For example, new Technology Providers may be included as Community Technology Providers with a very lightweight intake procedure, determining the popularity of the provided software, before either side may consider a more formalised collaboration. Also, the functionality of the AppDB could be extended for any software entry to upload a release into the EGI Software Repository as a Community Technology Provider.

Either way (whether the system will remain publishing under the UMD “brand”, or in a renamed service), the following describes the technical layout of the repositories that will serve the Resource Providers with new and updated software.

In this context, it is worth noting that the term “repositories” has two meanings. Firstly, the term “repository” refers in a technical context (i.e. a *package repository*) to a specific service that serves RPM or DEP packages with associated DB-like functionality – it is more than a directory with some binary files in it. As opposed to these, *software repositories* describe a service from which a client can fetch new or updated software independent of the actual architecture (32/64 bit, and OS). This document will discuss software repositories when using the term “repository”, unless otherwise specified.

The UMD will be composed of three software *domains*, reflecting the three different levels of QA and release coordination. Each of these domains may contain arbitrary numbers of repositories. The UMD “main” domain will contain exactly one repository – the integrated UMD repository, as it exists today.

The UMD “contributed” domain is likely to contain many repositories, providing each contributing Technology Provider with their individual repository. This scenario serves well when contributing Technology Providers are providing complete platforms. It does not, when Contributing Technology Providers provision individual products or worse, libraries that need to be integrated in e.g. Community Platforms. In this case a mix of integrated repositories for several contributing Technology Providers, and individual repositories for individual Technology Providers may be explored further.

The UMD “community” domain will simply contain as many repositories as there are Community Technology Providers associated with EGI, and each Technology Provider will update their repository using their own release process and timing.

# Service offerings

In order to implement the changes to UMD and the software provisioning processes and tools, a number of services will have to be made available to Technology Providers to be able to participate in this framework. The following subsections describe the various services available.

## Services for Community Technology Providers

Community Technology Providers need very few services in order to participate in this software provisioning framework. Their entire work is uncoordinated, and releases are allowed to be made at any point in time in their respective repository.

The set of services for Community contributors is currently proposed as:

**Basic package**:

1. Access to one software repository; including as many package repositories as there are supported platforms (typically two package repositories, base and update, per supported platform).
2. Access to a package uploading service; this service will support uploading binary packages for multiple platforms, and a free-form text field (HTML text editor) allowing to provide release announcement information published at <http://repository.egi.eu> in an appropriate channel.
3. Common AAI of all services using EGI SSO (subject to availability).

**Optional services**:

1. One EGI Helpdesk support unit including access to basic reporting and statistics, withouth integration into EGI’s 1st level and 2nd level support processes.
2. One discussion forum at the EGI discussion forum service (<https://forum.egi.eu/>) for developers and users to connect and share. This forum will be in a “Community Software” group.
3. Access to the EGI blog facility with one user account.
4. Other, non-technical services, such as dissemination events, access to EGI community and technical for a may be available, but are out of scope for this document.

## Services for Contributing Technology Providers

Contributing Technology Providers commit to and demonstrate considerable more collaboration and support to EGI.eu (and its federated members).

Technically, with regard to the UMD repositories, there are no differences to the requirements for Community Technology Providers provided that Contributing Technology Providers strategically align with the boundaries of Community Platforms (which EGI.eu desires).

The only exception to this is the alignment with major UMD versions: Contributing Technology Providers will receive access to as many individual software repositories as EGI is supporting major UMD versions. The current policy states that EGI will support major UMD versions for 2 years, with an overlap of one year between any 2 subsequent UMD major versions. This translates to two repositories for a Contributing Technology Provider, for any two UMD major versions being supported. If this policy will change in the future, the provisioning of repositories for Community Technology Providers will have to adapt as well.

EGI.eu expects from Contributing Technology Providers an end-to-end quality assurance programme that is equivalent to the programme undertaken together by Integrated Technology Providers and EGI.eu according to section 3. This QA programme is expected to be entirely covered by the respective technology provider’s efforts and resources. However, there are EGI.eu services that cover essential tools and activities in a QA programme that Contributing Technology Providers may make use of, if they wish to do so.

The set of services for Community is currently proposed as:

**Basic package**:

All of the basic package for Community Technology Providers, except that software repositories will be aligned with major UMD releases (including the upload service), plus:

1. Software release coordination in a UMD Release Team (URT) together with Integrated Technology Providers.
2. Observation status in the Technology Coordination Board (TCB).

**Optional services**:

1. Voting member status in the TCB (an SLA must be in place and in force).
2. Access to Early Access sites participating in Staged Rollout.
3. One or more GGUS support units (in case of more, one “head” SU will be included) including access to reporting and statistics, and integrated into EGI’s 1st level and 2nd level support processes.
4. Access to the EGI Software Provisioning process and tools.
	1. This includes Staged Rollout coordination, but not early access site effort.
5. One or more discussion fora (organised as sub-forums) at the EGI discussion board at <https://forum.egi.eu/>.
6. Access to the EGI blog facility with one or more user accounts.
7. Other, non-technical services, such as dissemination events, access to EGI community and technical for a may be available, but are out of scope for this document.

## Services for Integrated Technology Providers

Integrated Technology Providers are not much different from Contributing Technology Providers. The main difference is that EGI will continue the TP’s software quality assurance process with its own software provisioning activities before the software will be accepted for inclusion in a new UMD release. Support through EGI’s Helpdesk system will be required for Integrated Technology Providers

**Basic package:**

All of the basic package for Contributing Technology Providers, except that EGI.eu will take the software through its Software Provisioning process and integrate it into a main UMD software repository, plus:

1. Voting member of the Technology Coordination Board.
2. Software will be validated against EGI Quality Criteria and exposed to pre-production in Staged Rollout through the EGI Software Provisioning process.
3. One or more GGUS support units (in case of more, one “head” SU will be included) including access to basic reporting and statistics, and integrated into EGI’s 1st level and 2nd level support processes.

**Optional services:**

1. One or more discussion fora (organised as sub-forums) at the EGI discussion board at <http://forum.egi.eu/>.
2. Access to the EGI blog facility with one or more user accounts.
3. Other, non-technical services, such as dissemination events, access to EGI community and technical events may be available, but are out of scope for this document.

# References

|  |  |
| --- | --- |
| [TCB-15] | 15th TCB meeting (F2F), 14 December 2012, <http://go.egi.eu/TCB-15>  |
| [TCB-14] | 14th TCB meeting (F2F), 6 November 2012, Amsterdam, NL, <http://go.egi.eu/TCB-14>  |
| [EMIPlan] | Plan around EMI - <https://indico.egi.eu/indico/getFile.py/access?sessionId=5&resId=0&materialId=1&confId=1170> |
| [MS510] | MS510: EGI Platform Roadmap, <https://documents.egi.eu/document/970>  |

1. Provisional platform compositions

This appendix defines a provisional list of components included in the platforms that EGI is retaining ownership of. Technology Providers may extend this overview with any number of Community Platforms on top of this in subsequent editions.

* 1. EGI Core Infrastructure Platform

The EGI Core Infrastructure Platform (Core Platform for short) comprises of operational services that support the operational management of a federated infrastructure, and a number of technical software services that aid in integrating any other platform with the operational management infrastructure. The following list includes existing services and, where applicable potential additions (indicated by a question mark in brackets: (?))

**Operational Services:**

1. Operations Portal
2. GGUS (EGI Helpdesk)
3. Metrics Portal
4. Gstat

**Technical Services:**

1. SAM (Monitoring)
2. GOCDB (Information)
3. APEL (Accounting)
4. AAI
	1. EGI trust anchors (EUGridPMA)
	2. VOMS (Attribute Authority for DTEAM, OPS)
	3. Gridmap files, etc.
	4. ARGUS?

## Cloud Infrastructure Platform

The Cloud Infrastructure Platform (Cloud Platform for short) comprises of locally managed IaaS Cloud services, and a number of collaborative tools that may in the future become part of the Collaborative Platform. The main IaaS Cloud services are Computing and Storage services; Resource Providers deploy and maintain appropriate Cloud service components as long as these are integrated with the Core Infrastructure and expose the Compute and Storage services through standardised interfaces.

**IaaS Cloud service stacks:**

1. OpenStack (Open Source)
2. OpenNebula (OpenSource)
3. StratusLab (Open Source extension of OpenNebula)
4. ~okeanos (GRNET)
5. WNoDeS (IGI)

**Integrations and others:**

1. rOCCI server – provides integration with the Core Infrastructure AAI (GWDG et al)
2. rOCCI client – OCCI command line client and API (GWDG et al)
3. APEL integration for OpenStack
4. APEL integration for OpenNebula
5. Nagios plugin for OCCI Cloud Compute services
6. Nagios plugin for CDMI Cloud Storage services
7. VOMS integration for EGI VM Appliance repository

**Collaborative tools and higher level services:**

1. VM Marketplace (StratusLab component)
2. Vmcaster, in consideration (DESY, soon private engagement by Owen Synge)
3. Brokers, several under consideration
4. Portal software, WS-PGRADE and INFN portal under investigation.

## Collaboration Platform

1. Federated Identity Management infrastructure
2. Data movement services (e.g. Globus Online)
3. VM Image Sharing (likely to take over VM Marketplace and VMCaster)
4. Research group membership (e.g. VOMS) for VOs
5. EGI Service Desk (currently GGUS)
6. Meeting planning (Currently Indico)
7. Training platform (Training Marketplace
8. Application Database