EGI-InSPIRE

APPDB ACTIVITIES SUMMARY AND WORKPLAN

(TNA3.4)

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Abstract

This document presents the objectives and responsibilities of the Database of applications, tools, and their developers (AppDB) subtask developed in the framework of EGI TNA3.4 Technical Services. It starts with a summary of the activities developed in the first six months of the EGI project, followed by a work plan to be accomplished in the following six months.

I. COPYRIGHT NOTICE

II. DELIVERY SLIP

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III. DOCUMENT LOG

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IV. APPLICATION AREA

This document is a formal deliverable for the European Commission, applicable to all members of the EGI-InSPIRE project, beneficiaries and Joint Research Unit members, as well as its collaborating projects.

V. DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the authors. The procedures documented in the EGI-InSPIRE "Document Management Procedure" will be followed:
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VI. TERMINOLOGY

A complete project glossary is provided at the following page: http://www.egi.eu/about/glossary/.

VII. PROJECT SUMMARY

To support science and innovation, a lasting operational model for e-Science is needed – both for coordinating the infrastructure and for delivering integrated services that cross national borders.

The EGI-InSPIRE project will support the transition from a project-based system to a sustainable pan-European e-Infrastructure, by supporting 'grids' of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI-InSPIRE will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area.

EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example within the ESFRI projects. Additional support will also be given to the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities.

The objectives of the project are:

1. The continued operation and expansion of today's production infrastructure by transitioning to a governance model and operational infrastructure that can be increasingly sustained outside of specific project funding.
2. The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
3. The support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities.
4. Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
5. Mechanisms to integrate existing infrastructure providers in Europe and around the world into the production infrastructure, so as to provide transparent access to all authorised users.
6. Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids) and heterogeneous resources (e.g. HTC and HPC) into a seamless production infrastructure as they mature and demonstrate value to the EGI community.

The EGI community is a federation of independent national and community resource providers, whose resources support specific research communities and international collaborators both within Europe and worldwide. EGI.eu, coordinator of EGI-InSPIRE, brings together partner institutions established within the community to provide a set of essential human and technical services that enable secure integrated access to distributed resources on behalf of the community.

The production infrastructure supports Virtual Research Communities (VRCs) – structured

international user communities – that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.

VIII. EXECUTIVE SUMMARY

This document introduces the EGI Applications Database (AppDB) sub-task developed in the framework of EGI TNA3.4 Technical Services in terms of its objectives and responsibilities. AppDB is the descendant of the EGEE Applications Registry [R 2] portal, which was initially developed by the IASA regional coordination team during the course of the EGEE-III project. It provides a catalogue of applications that have been ported, or are being ported, within the infrastructure [R 1]. As such it enables new communities to discover and reuse EGI applications, thus avoiding duplication of effort. By the reuse of ported applications one of the main barriers of grid adoption is eliminated.

During the first six months of the project, existing data from the EGEE era was ported to the new site and shaped to reflect the changes introduced by the EGI era. The data and object models were also modified and extended to meet the new needs. The first release of the portal [R 1] was deployed, and provided read-only access to the hosted applications and people data. A few months later, the second major release was deployed, featuring authenticated write-enabled access, through the use of the EGI SSO system, allowing users to modify data according to well defined privileges, thus enhancing the information quality and flow. Finally, user requirements were gathered and delivered to the developers in order to evaluate the present condition and prepare for future development, and an official communication channel (GGUS dedicated support unit) was established through which interested users can address general or specific questions or requests to the AppDB team.

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1 INTRODUCTION

The AppDB sub-task is developed in the context of the EGI TNA3.4 Technical Services activity. It stores tailor-made computing tools for scientists and NGI User Support Teams to use. The applications and tools filed in AppDB are finished products, ready to be used on the European Grid Infrastructure. By storing pre-made applications and tools, the AppDB aims to

- alleviate the need for scientists and NGI User Support Teams to spend time developing their own software
- avoid duplication of effort across the EGI community

2   ACTIVITY SUMMARY

The activities since the beginning of the project have been primarily focused on migrating valuable existing data from the EGEE era into a new system, able to meet the new requirements set forth with the introduction of the EGI era, and expanding the quality of the service. The new system was redesigned to provide a minimalistic, yet advanced in terms of functionality user interface. Another important aspect of development was integrating the EGI SSO [R 4] system with the portal, in order to provide authenticated write-enabled access. Finally, a new support unit was created in GGUS in order to properly address issues concerning the AppDB service. Details on these activities are given below.

2.1   Data migration and transformation

The EGEE Applications Registry [R 1] site held c. 250 entries about applications available to the community under the gLite middleware. This data, stored in a DBMS, was transformed and extended during the migration process and stored in a new DBMS featuring relational support and a data model more sitable for the needs of the EGI project. Support for all EGI endorsed middleware was added (gLite, ARC, UNICORE, Globus) and the concept of *tools* was introduced. Entries marked as tools, represent helper software that may provide QoS, easy-of-use, or additional functionality to the scientific applications stored in AppDB, and which in general does not lead to publications about results of scientific work. The entries of the existing RESPECT program [R 3] were thus also ported into the database, making it an even more valuable service for both application developers and end-users.

Another concept introduced was the storing of personal profiles for each individual application developer and researcher, a feature that aims at simplifying the search for application developer experts who possess specialised knowledge.

Finally, it is worth mentioning that in order to map data from the RDBMS to the application layer, a PHP API has been implemented, serving as a more robust object model to use in code., according to the MVC architectural pattern that has been chosen (see §2.2). This API may eventually serve as a building base for external parties wishing to implement their own version of the service (see §3.2)

2.2   User interface redesign

The user interface of the new portal was designed with modern minimalistic principles in mind. It features a navigation pane on the left, from where the user selects the action/view of interest, and a data view on the right, where results/details about the selection are displayed. Explanatory tooltips are available for most of the action points of the display, along with intuitive icons, and where that is not enough, pop-up dialogues with help information are available.

Such architectural design patterns and techniques as MVC and AJAX have been employed in order to provide the user with a consistent and responsive end result. To this end, on another level, extensive use of Javascript has been made, and there has been much effort to keep all major browsers compatible with the portal. At this time, MS Internet Explorer is the only major browser whose support is to considered *experimental*, in the sense that it has not been yet extensively tested, although believed to be almost 100% operational.

2.3   Authenticated write-enabled access

Since the deployment of the first version of the portal in production, most of the development effort was concentrated in providing write-enabled access to registered users, by linking AppDB to the EGI SSO system. By providing authenticated access, users may, amongst others,

- Register new applications, instead of requesting the data be inserted for them by the AppDB support team, thus cluttering GGUS
- Modify existing application data whenever they deem appropriate
- Edit application associations with people (developers, scientific coordinators, etc.)

This feature is considered rather important, as it is expected to help provide more up-to-date, quality data, since developers will have one less barrier to divide them from it, and it should motivate them into feeling more connected to the data, in terms of ownership.

The second release of the Applications Database was deployed in production in mid-November, featuring write-enabled access, but it is restricted only to NGI representatives for the next couple of months to come, in order to test the functionality while minimizing data corruption in case of errors. After the completion of the testing period, said functionality will be available to all users holding an EGI SSO account.

2.4   AppDB Support Unit in GGUS

The AppDB Support Unit in GGUS serves as the main communication channel between interested users and the AppDB development/deployment team in order to communicate bugs, requests about features, and to help resolve issues concerning the quality of the service. At the time of this writing, the first requests for authenticated access grant are coming in, since the portal is in a testing phase by NGI representatives and authenticated access is still restricted. We expect to derive user stories concerning requests in the months to come, when the portal in be fully available to all SSO enabled users.

3   WORKPLAN

As declared by the UCST, a new release of each of the TNA3.4 services is expected every 6 months. New releases must be prepared according to development plans endorsed by the UCB, based on the requirements collected from user communities. The requirements collection for the AppDB has been completed and documented in [R 5]. A summary of the workplan for the next 6 months in presented in Table 1.

Sprint	Tasks	Duration (weeks)	Week
S1	Add NGI entities	3	4
S2	Add VO entities	3	7
S3	Integration - VO data sync from Central Operations Portal - NGI data sync from GOCDB	3	10
S4	Add requested details in app,tool,people entries Interconnect apps,tool,people with new entities (NGIs, VOs)	3	13
S5	Testing of new additions	1	14
S6	CSS/Styling integration	1	15
S7	Re-evaluation of user stories	1	16
S8	Localization - Enhance XML post interface - Document the PHP API - document the database	3	19
S9	Other person profile management by NGI reps	1	20
S10	Official MSIE 8+ support	2	22
S11	Future planning	2	24

Table 1: AppDB 6 month workplan

3.1   Non-functional requirements

The need for separate entities for NGIs and VO has been made clear from up-to-date requirements. At the moment, NGIs are represented by country references and VOs are simple name references in application data. The detailed bookkeeping of NGIs and VOs as entities on their own right will provide better overview of the existing data, and make possible the linkage of AppDB entries with data from other services such as GOCDB [R 6] and the Central Operations Portal [R 7]. Eventually, this will provide better filtering of the existing application, tool, and people data and make statistics data

more easy to manage and more reliable.

The introduction of NGIs and VOs as separate entities requires architectural changes and careful planning in order to smoothly integrate them with the existing data, avoiding regressions, and also avoiding important design changes mid-ways, which would lead to significant loss of effort time (S1,S2). It is imperative that NGI and VO data is not dublicated into AppDB since it already exists in [R 6] and [R 7], as that could lead to stale information and effort duplication. Therefore, integration with GOCDB and the Central Operations Portal should be implemented after the prototyping of the new entities(S3). Upon success of integration, existing data models can be extended according to requirements (S4), and the set of new features should be tested as a whole, to assure desired behaviour (S5). Finally, some minor changes in order to get styling themes from a centralized point, should be implemented, in order to avoid the need to perform changes in case of EGI logo revamping, etc..

The set S1-S6 is expected to finish around mid-terms, so a (re)evaluation of existing and new user stories (S7) would be favourable, in order to assert progress in well on-track.

3.2   Functional requirements

The next mid-term is expected to be focused on functional requirements of the AppDB service. The main recurring requirement is the ability to deploy *localized* version of the portal, e.g. from NGIs in their own native language, or VOs for the applications they directly support. It goes without saying that such efforts should get their data from the AppDB in an integrated fashion, meaning that they should not try to duplicate it.

At the time being, a rather simple POST interface, supporting data filtering exists, which provides requested data sets in XML format. This should be a good starting point for such efforts, but it is certain that the said interface will require polishing and modifications. As an alternative, external parties could make use of the existing PHP API, should they wish to set up their own DBMS instance, as a partial replica of the master AppDB RDBMS. In such a case both the API and the RDBMS should be documented (S8).

Other functional requirements to be implemented are the management of other people's profiles by NGI representatives (S9), in case they befall under their jurisdiction, and the consolidation of MSIE 8 support (S10). At the end of the development effort, their should be about a couple of weeks left to recapitulate and prepare planning for the next term (S11).

3.3   Next term requirements

Some of the requirements in [R 5] are too complex, or even infeasible to implement in the coming six month period. Such an example would be the items concerning the provision of application data related to sources from monitoring tools and services. These items will be reviewed in the next term, when a new workplan will be set out.

4 CONCLUSION

The AppDB subtask has used the first 6 month of the project to

- migrate existing data from the EGEE era
- transform said data and model to fit the EGI era
- initially provide a new read-only portal to the community
- subsequently provide a write-enabled version of the portal

The plans for the next 6 months include

- Additions to the data and object model, to best serve future and existing needs of the community
- Additions to the portal's functionality, mainly in order to integrate with other existing or future services such as the GOCDB, the Central Operations Portal, and localized/custom versions of the portal itself.

Details on the specifics of the above items can be seen in Table 1. The entries in the table have been set in order of priority and categorized in two logical groups, functional and non-functional. It should be mentioned that time estimations are quite optimistic, in an attempt to cope with the multitude of requirements already gathered, and thus, although feasible in theory at this point, might not be entirely reached.

On the other hand, some of the requirements that have been gathered were not possible to be included in the current workplan, due to time restrictions, therefore they will be review by the end of the coming term, in order to be included in the next one, should that be possible.

5   REFERENCES

R 1	http://appdb.egi.eu
R 2	https://na4rs.marie.hellasgrid.gr/
R 3	http://technical.eu-egee.org/index.php?id=290
R 4	https://www.egi.eu/sso/
R 5	https://documents.egi.eu/document/
R 6	http://www.ngs.ac.uk/egee/gocdb
R 7	https://operations-portal.in2p3.fr/