Abstract:

This document introduces several GGF specifications which are closely related and overlapping with SDD TC's scope. GGF specifications include Application Contents Services (ACS) specification, family of Configuration Description, Deployment and

5 Lifecycle Management (CDDLM) specifications, and Job Submission Description Language (JSDL), along with Open Grid Services Architecture (OGSA™)[1] Execution Management Services (EMS). This document is a submission to SDD TC for the SDD specification.

10 **Introduction**

As described in the SDD TC charter document [SDD charter], Global Grid Forum (GGF)[2] is one of the SDD TC's key domain specific standard development organizations. GGF's flagship architecture, the Open Grid Services Architecture (OGSA™)[3] is developing a number of grid capabilities. The two main capabilities are the Execution

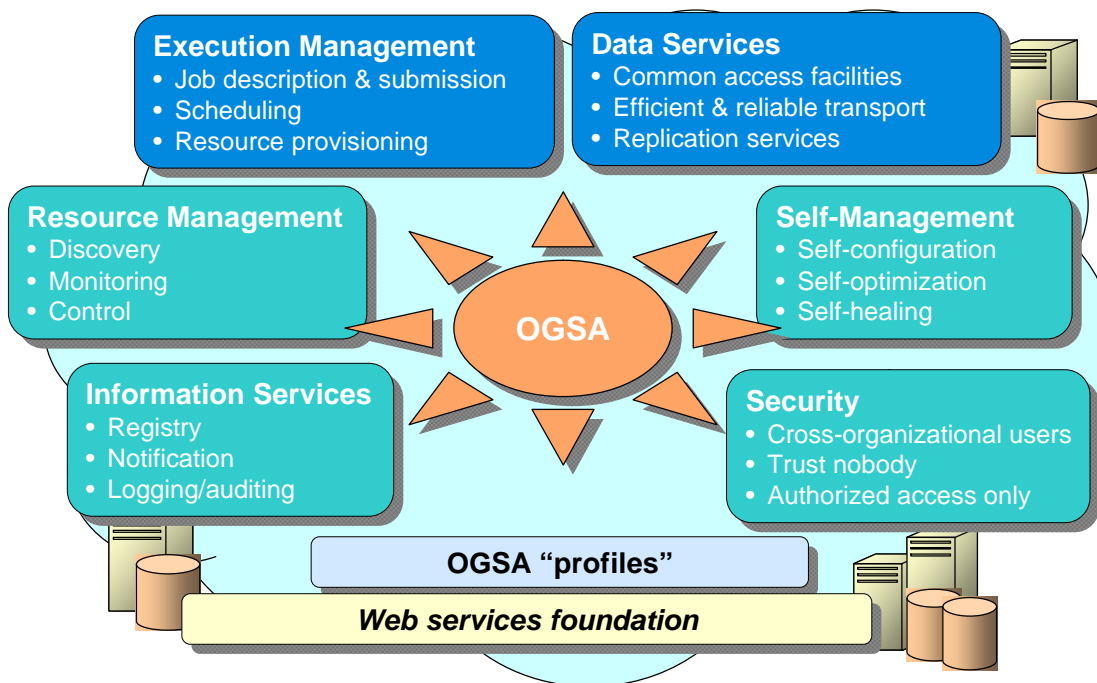15 Management Services (EMS) and Data Services (see Figure 1).

Figure 1: OGSA capabilities

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[1] OGSA is a trademark of Global Grid Forum.

[2] http://www.gridforum.org

[3] https://forge.gridforum.org/projects/ogsa-wg/

EMS is of particular interest to SDD TC. As shown in Figure 2, EMS consists of a number of services: Application Contents Services (ACS), Deployment, Configuration and Lifecycle Management are identified as major components of EMS [OGSA Arch]. Other key EMS features are standard ways (schemas) to define job submissions and the
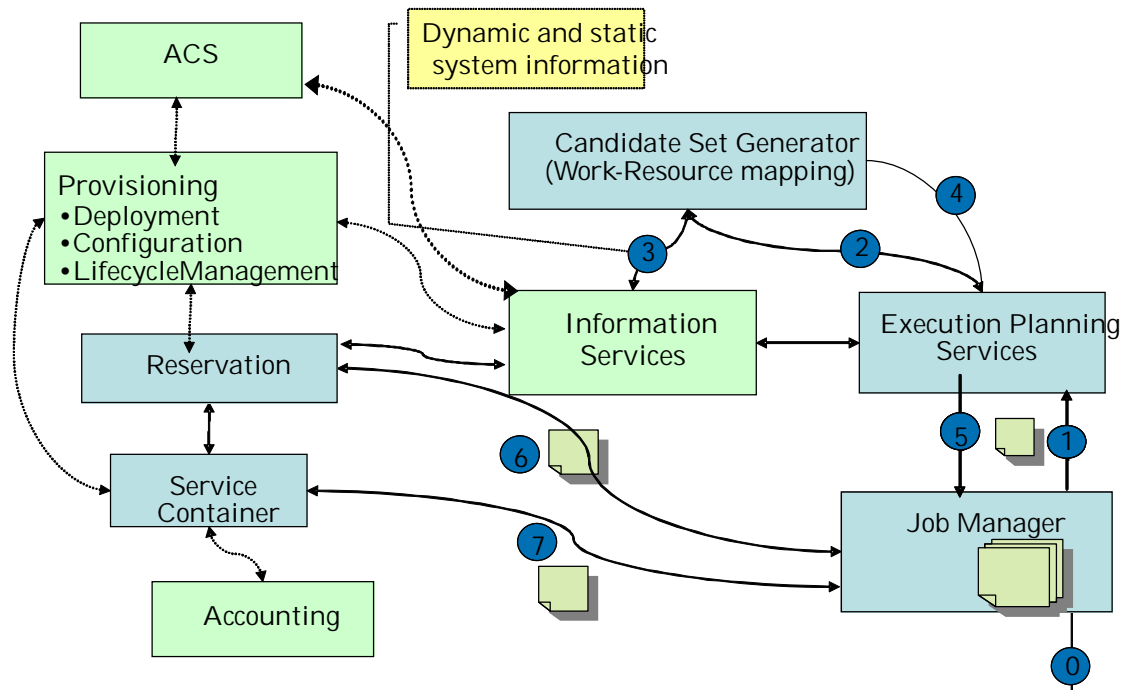
5   configuration of containers.

Figure 2: Major services within EMS

Several Working Groups within GGF have already developed specifications covering the above mentioned services and document schemas relevant to SDD TC. These specifications are already published as Grid Forum Document (GFD, equivalent to

10   OASIS Standard); or their public comment review is finished or underway (equivalent to OASIS TC Committee draft, CD) [OGSA Profile].
In order to leverage already existing and implemented specifications and avoid unnecessary interoperability problems, SDD TC should utilize these GGF specifications as part of their SDD specifications. More precisely, it is proposed that the SDD

15   specification is defined in a modular manner so that an SDD document can include one or more XML document segments defined by other external (non-SDD) schemas, including the GGF specifications described in this document.
The following chapters explain each GGF specification and identify related SDD

requirements. [SDD req] Note: Full list of requirement coverage will be provided at the May F2F meeting.

Application Contents Service

5   In order to install and operate complex systems such as n-tier systems more efficiently and automatically, it is necessary to specify and manage, as a unit, a diverse set of application related information. The Application Contents Service (ACS) provides central management of such application information [ACS]. The Application Contents Service specification will focus on two main topics: a) Application Repository Interface

10   (ARI), specifying repository service and its interface to Application Contents; and b) Application Archive Format (AAF), specifying archive format to register a set of Application Contents to the ACS as a unit. The Application Contents include application binaries and related information; e.g. program binaries, configuration data, procedure descriptions for lifecycle management, requirements descriptions for the hardware and

15   underlying middleware, policy rules, and anything needed to create a task on grid systems.

Among the ACS specifications, above Application Archive Format specifies information as an XML schema, describing package identity and the list of contents included in an archive. We believe that this part of the ACS specification is relevant to information to

20   be included in SDD descriptor. Coverage over the SDD Requirement will be presented at the May Face-to-Face meeting of SDD TC.

The GGF ACS-WG[4] has developed this specification. The specification has completed a 60 day public review period and updated version will be submitted shortly. It is expected to be published as GFD-R.P in May or June 2006.

25   Parts of ACS specification are adopted and implemented by multiple organizations including the following;

- Business Grid project[5]
- NAREGI project[6]

30   **Configuration Description, Deployment, and Lifecycle Management**

The CDDLM Configuration Description Language (CDL) is an XML-based language for declarative description of system configuration that consists of components (deployment

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[4] https://forge.gridforum.org/projects/acs-wg/

[5] http://www.ipa.go.jp/about/english/project/grid.html

[6] http://www.naregi.org/index_e.html

objects) defined in the CDDLM Component Model. [XML-CDL] The language provides
ways to describe properties (names, values, and types) of components including value
references so that data can be assigned dynamically with preserving specified data
dependencies. A system is described as a hierarchical structure of components. The
5   language also provides prototype-based template functionality (i.e., prototype
references) so that the user can describe a system by referring to component
descriptions given by component providers.

The CDDLM Component Model outlines the requirements for creating a deployment
object responsible for the lifecycle of a deployed resource.[CDDLM-CMP] Each
10   deployment object is defined using the CDL language and mapped to its implementation.
The deployment object provides a WSResourceFramework (WSRF) compliant
"Component Endpoint" for lifecycle operations on the managed resource. The model also
defines the rules for managing the interaction of objects with the CDDLM Deployment
API in order to provide an aggregate, controllable lifecycle and the operations which
15   enable this process.

These two specifications are developed by the GGF CDDLM-WG[7]. The CDDLM
Component Model is already published as GFD.65. The XML-CDL is approved by
CDDLM-WG and is now in a 60-day public review period, finishing on May 26.

The family of CDDLM specifications is already implemented by multiple organizations
20   including the following;

- HP
- Softricity
- NEC corporation
- OurGrid project (Universidade Federal de Campina Grande)[8]

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Job Submission Description Language

The Job Submission Description Language (JSDL) [JSDL] is a language for describing
the requirements of computational jobs for submission to resources, particularly in Grid
environments, though not restricted to the latter. The JSDL language contains a
30   vocabulary and normative XML Schema that facilitate the expression of those
requirements as a set of XML elements.

One part of the JSDL specification defines a set of resource elements that can be used to
describe the resource requirements of a job. Resource requirements include, for example,

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[7] https://forge.gridforum.org/projects/cddlm-wg/

[8] http://www.ourgrid.org/

CPU, memory, disk space, operating system. Some definitions are based directly on CIM, for example, the values of the OperatingSystem element. The JSDL definitions are, in general, aligned to CIM and there is ongoing work to provide a more formal mapping as well as to make the necessary additions to CIM.

5   The GGF JSDL-WG[9] has developed this specification. It is published as GFD.56. JSDL is already implemented by multiple organizations including the following:

- Business Grid project[10]
- NAREGI project[11]
- GridSAM (LeSC)[12] (part of the OMII distribution)

10 - UniGrids (FLE)[13]
- HPC-Europa[14]

A more detailed list is available online.[15]

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