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Research Infrastructures

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PRACE-1IP

PRACE First Implementation Project

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Service Level Agreements

Final

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References and Applicable Documents

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List of Acronyms and Abbreviations

AAA	Authorization, Authentication, Accounting
AUP	Acceptable Use Policy
BSC	Barcelona Supercomputing Center (Spain)
CEA	Commissariat à l'Energie Atomique et aux Energies Alternatives (represented in PRACE by GENCI, France)
CINECA	Consorzio Interuniversitario, the largest Italian computing centre (Italy)
COBIT	Control Objectives for Information and related Technology
DEISA	Distributed European Infrastructure for Supercomputing Applications. EU project by leading national HPC centres
EC	European Community
EPSRC	The Engineering and Physical Sciences Research Council (United Kingdom)
FZJ	Forschungszentrum Jülich (Germany)
GENCI	Grand Equipement National de Calcul Intensif (France)
HLRS	High Performance Computing Center Stuttgart (Germany)
HM	Hosting Member
I/O	Input/Output
ISO/IEC	International Organization for Standardization/International Electrotechnical Commission

IT	Information Technology
ITIL	Information Technology Infrastructure Library
IPR	Intellectual Property Rights
JSC	Jülich Supercomputing Centre (FZJ, Germany)
LRZ	Leibniz Supercomputing Centre (Garching, Germany)
MOF	Microsoft Operations Framework
NCF	National Computing Facilities (Netherlands)
NCSA	National Centre for Supercomputing Applications (Bulgaria)
OLA	Operational Level Agreement
PRACE	Partnership for Advanced Computing in Europe; Project Acronym
PRACE-PP	PRACE Preparatory Phase
PRACE-1IP	PRACE 1st Implementation Phase
PRACE-2IP	PRACE 2nd Implementation Phase
PRACE AISBL	PRACE Association International Sans But Lucrative
PSNC	Poznan Supercomputing and Networking Centre (Poland)
RI	Research Infrastructure
SARA	Stichting Academisch Rekencentrum Amsterdam (Netherlands)
SLA	Service Level Agreement
SMF	Service Management Function
Tier-0	Denotes the apex of a conceptual pyramid of HPC systems. In this context the Supercomputing Research Infrastructure would host the Tier-0 systems; national or topical HPC centres would constitute Tier-1
UNINETT	UNINETT SIGMA AS (Norway)
WCNS	Wroclaw Centre for Networking and Supercomputing, Poland
WP	Work Package

Executive Summary

Service Level Agreements (SLAs) are of fundamental value for all organisations that provide services to users. SLAs record a common understanding about services, priorities, responsibilities, guarantees, and warranties of the services provided. This is very important not only for the organisations but also for the users to allow them to know the type of services (level of service) they can expect from the provider and which are the conditions for provision of these services, i.e. availability, serviceability, performance, operation, or any other characteristics of the service.

Within the PRACE AISBL context the main aim is establishing a service-oriented utility infrastructure for users that allows on demand provisioning and delivery of access services in a flexible way so that SLAs can serve as key enabler to support users management across different perspectives and domains between research and industry.

The SLAs definition methodology follows the well-established industry standard in the field of information technology management where there are several sets of best practices and standards which allow organisations to better understand, design and maintain the processes necessary for providing IT services. Some of the most important ones are the ISO/IEC 20000 [8] International Service Management Standard. This standard supports several IT service management approaches, including the Information Technology Infrastructure Library (ITIL) [9], the Microsoft Operations Framework (MOF) [10] and components of Control Objectives for Information and related Technology (COBIT) [11].

Further analysis of the results obtained in the PRACE projects and the best practices described in the above documents for the specific case of PRACE AISBL, taking into account its mission of providing high-end computing resources to European researchers from academic institutions and from industry, resulted in the definition of a Service Catalogue for PRACE AISBL and the need to produce two types of service level agreements:

- Operational Level Agreement (OLA) covering a service level agreement between each computer centre that contributes resources to PRACE AISBL and PRACE AISBL, called Contributors Agreement. This OLA should be common to all computer centres and cover the services defined in the PRACE Service Catalogue.

- User Agreement between each computer centre of the Hosting Members (HMs) contributing resources to PRACE AISBL and the users. This agreement should describe the standard average level of service the users may expect from the computer centres as well as the duties and responsibilities of the users for using the PRACE AISBL resources.

The next step is to take into account the following specific characteristics of the PRACE AISBL organisation for deciding on the terms of reference of these agreements:

- implications of the organisation model of PRACE AISBL;
- identification of the main stakeholders;
- experience of the members of PRACE AISBL in their own countries with special attention being given to similar SLAs applied in the countries of the HMs;
- implications of the geographic distribution of PRACE AISBL resources.

The main result of these efforts is a proposal illustrating the main elements to be considered or adapted for drafting the Contributors Agreement and the User Agreement. These proposals can serve as a reference framework to be used by PRACE AISBL to produce the actual versions of these agreements.

1 Introduction

Service Level Agreements (SLAs) are important in all types of organisations but are essential for organisations that provide services to customers, either directly or through contracts with third parties. SLAs in general define the level of the services and the responsibilities of the service providers. As the main goal of PRACE AISBL is to provide high-end computing resources to European scientific and industry researchers, it is important to analyse its needs in terms of SLAs and make a proposal for the type of SLAs that are suitable to the current organisation model and that are necessary to ensure an optimal service to all users. The main goal of this deliverable is to make a proposal of the types of SLAs deemed necessary for PRACE AISBL and suggest the main topics that should be covered by these SLAs. It is then the role of PRACE AISBL, its management and ultimately the Council to decide on the final form of the SLAs to be used by PRACE AISBL.

The structure of the deliverable is as follows. In section 2 a general definition of SLAs is given together with an analysis of the types of SLAs that are advisable for the present organisation model of PRACE AISBL.

Section 3 presents the methodology followed for drafting a proposal for the Contributors Agreement and the User Agreement together with an illustration of some sections that can be considered and adapted for drafting these agreements.

In section 4 the types of possible access to PRACE AISBL resources are presented.

Finally section 5 includes the conclusion of the deliverable.

2 Service Level Agreements

Service Level Agreements (SLAs) are very important to define the level of services provided by an organisation. This common understanding applies to the organisation itself and also to providers of services within or outside (third parties) the organisation. In this section the concept of SLAs is defined in general and an analysis within the framework of PRACE AISBL is proposed.

2.1 Definition

One of the most common definitions of a SLA is:

"A service level agreement is a negotiated agreement between two parties wherein one is the customer and the other is the service provider. This can be a legally binding formal or an informal "contract"."

SLAs record a common understanding about services, priorities, responsibilities, guarantees, and warranties. This is very important not only for the provider organisation itself but also for the users to allow them to know the type of services (level of service) they can expect from the provider and which are the conditions for provision of these services, i.e. availability, serviceability, performance, operation, or any other characteristics of the service. The level of service can also be specified in terms of average target and minimum which allows customers to know what to expect (at least the minimum), while providing a measurable (average) target value that shows the level of performance to be expected. In some SLAs, penalties and/or compensations may be agreed between the provider and the customer for non-compliance of the SLA.

In general, SLAs commonly address the main issues of the services provided, such as definition of the services, performance measurement, problem management, customer rights and duties, warranties, disaster recovery, and termination of the agreement.

The importance of SLAs is now so widely common that some organisations not only define SLAs for their customers but also define Operational Level Agreements (OLAs) for their so-called internal customers regulating the services between departments of the same organisation. This ensures not only the quality and level of the service to customers but also defines the interdependent relationships among internal support groups of an organization. One of the benefits is that the quality of service can be benchmarked against the service level agreed across multiple locations or between different business units. This internal benchmarking can help to improve the internal performance of the organisation and also serve as a test case for improving the services to customers.

Another characteristic of SLAs is that they are by nature delivery based, i.e. the subject of the agreement is the delivery of the service to the customer and its conditions. In general SLAs cover not only the type and characteristics of the service provided but also the relationships between the provider and the user.

In the field of information technology service management (ITSM) a set of best practices and standards, which allow the organization to better understand, design and maintain the processes necessary for providing IT services, are usually available. One of the most important ones is the ISO/IEC 20000 International Service Management Standard for IT service management [8]. The first part of this standard presents an integrated process approach to deliver services to meet the business and customer requirements. It consists of ten sections: Scope, Terms and Definitions, Planning and Implementing Service Management, Requirements for a Management System, Planning and Implementing New or Changed Services, Service Delivery Processes, Relationship Processes, Control Processes, Resolution Processes, Release Process. The second part of the standard describes the best practices for service management within the scope of the first part. Service Level Agreement management in ISO/IEC 20000 is part of the Service Delivery Processes. The standard supports several IT service management approaches, including ITIL (Information Technology Infrastructure Library) [9], MOF (Microsoft Operations Framework) [10] and components of COBIT framework (Control Objectives for Information and related Technology) [11].

The ITIL (version 3, 2011) consists of 5 core volumes – Service Strategy, Service Design, Service Transition, Service Operation, and Continual Service Improvement. Within these volumes 26 processes are defined, including service catalogue management and service level management.

A service catalogue, as defined in ITIL Service Design, is a list of services that an organization provides to its employees or customers. Preparation of the service catalogue is the first step to be taken before defining the SLA. Services are usually grouped and structured according to the target customer or technical level, e.g. services visible by customers, applications supporting those services, computer and network infrastructure. Typically each service is characterized by:

- Service description;
- Timeframes or SLA for fulfilling the service;
- Service owners;
- Customers;
- Costs/pricing;
- Operating procedures.

ITIL defines three types of agreements within the service level management process. The basic one is the SLA, but to support the fulfilment of the SLA an organization may also define internal operational agreements or sign contracts with external bodies.

In terms of ITIL service-level management process the following types of service agreements are described:

- SLA, for relations "IT to customer" (user), where the customer is external to the organisation and the supplier is internal;
- OLA, for relations "IT to IT", where the user is internal, and the supplier is internal;
- UC (Underpinning Contract) for externals suppliers, necessary for the organization to fulfil the SLA.

MOF (4.0) is another approach to manage the IT service lifecycle and is designed as a series of guides. The service lifecycle is composed of three phases: planning, delivery and operational phase along with a foundational layer for overall management. Each phase groups together a number of activities and processes organized into Service Management Functions (SMF). The MOF approach involves the definition and optimization of SLA and OLAs that are necessary to fulfil the statements of a SLA.

COBIT (4.1) is a framework for IT management and governance that is positioned at a high level due to its business orientation. The framework provides a set of good practices and subdivides IT into four domains: planning and organization, acquisition and implementation, delivery and support, and monitoring and evaluation. There are 34 generic processes defined together with their inputs and outputs, key activities, objectives, performance measures and elementary maturity models. One of the IT processes within the delivery and support domain, defines and manages service levels. COBIT is harmonized with other more detailed IT good practices and standards, including ITIL.

All those methodologies, concepts and processes are reference elements that may be used as the foundations of the SLA framework and the related agreements.

2.2 Types of SLAs for PRACE AISBL

Taking into account the definitions presented in the previous section and the governance model decided for PRACE AISBL [7] it is advisable that the agreements for PRACE Tier-0 should consist at least of OLAs to regulate the relationships between PRACE AISBL and Hosting Members (or individual computer centres) as resource infrastructure providers, and SLAs between Hosting Members (or individual computer centres) and Users of the infrastructure. OLAs between PRACE AISBL and specific service providers within PRACE should also be established according to the service catalogue defined by PRACE AISBL and using the IT service management approaches, standards and best practices, for instance ITIL, as possible elements of the reference framework or guidelines to follow.

In this section an analysis of the types of SLAs and eventually OLAs advisable for PRACE AISBL is presented. From this analysis it should also be inferred which main topics should be covered by each type of SLA. In the present organisational model of PRACE AISBL, Cycles Model, the agreements need to regulate the relationships between PRACE AISBL and its members with particular emphasis on the HMs who contribute compute cycles to PRACE AISBL and between the HMs (computing centres) and the users. The main factors influencing the agreement(s) between PRACE AISBL and the HMs are the organisational model, the model used for provision of services also called operational model and the service catalogue defined by PRACE AISBL. The SLA between the computer centres providing compute resources to PRACE AISBL and the users of the compute resources needs to cover issues as

Intellectual Property Rights (IPR), conditions of service provision, access security, rights and duties of users, and acknowledgment of the resources awarded by PRACE AISBL.

2.2.1 *SLA between PRACE AISBL and the HMs*

Implications of the organisational model of PRACE AISBL

The mission of PRACE AISBL [1] is to contribute to the advancement of European competitiveness in research and industry through provisioning of world leading persistent computing and data management resources and services. In order to fulfil this mission PRACE AISBL provides high-end computing resources to European researchers from academic institutions and from industry.

At present PRACE AISBL operates according to the Cycles Model, in which the Hosting Members (HMs) provide compute cycles for allocation by PRACE AISBL as in-kind contribution. PRACE AISBL then manages the compute cycles and allocates them to researchers (also called users) from academic institutions and from industry based on a peer review process specifically developed for PRACE. This means that at present PRACE AISBL does not own any compute equipment. The HMs own, host and manage the computer systems and contribute compute cycles for allocation by PRACE AISBL. The contributions of the HMs in terms of compute cycles are regulated by the Agreement for the Initial Period that runs from 2010 to 2015. The purpose of this Agreement is to define the conditions under which the commitments of the Members of PRACE AISBL are implemented during the Initial Period. Regarding the HMs this Agreement mainly regulates the amount of in-kind contribution of the HMs in terms of compute cycles for the Initial Period but does not completely regulate the details of the contribution of the compute cycles in terms of service provision and service level. These details need to be included in a OLA (called Contributors Agreement) based on the service catalogue and defining a light common level of services for all computer centres that contribute resources to PRACE AISBL. The reason for choosing this approach is mainly due to the necessity of regularly upgrading existing computer systems or making new acquisitions to replace the existing ones with the respective necessary adaptations to the Contributors Agreement (if necessary). The definition of a common service catalogue by PRACE AISBL is important for the definition of a Contributor Agreement common to all computer centres that provide resources to PRACE AISBL. This agreement should include the description of the standard level of services to be provided by all computer centres. The Service Levels proposed for PRACE AISBL are included in Annex 6.

Implications of the operational model of PRACE AISBL

Another major matter that needs to be regulated is how the compute cycles are provided to the users selected by PRACE AISBL according to the single European peer review process developed during the PRACE-PP project. One of the characteristics of the organisational model of PRACE AISBL is the geographic distribution of the compute resources made available to users. This has of course consequences for the operational model perceived by the users. The computer systems providing compute resources made available by PRACE AISBL are located in the Hosting Member countries and as such are distributed through various locations in Europe. At the same time these computer resources have different architectures and as such different characteristics regarding, e.g., amount of compute cores, memory per core, bandwidth, I/O, etc. This has of course, from the point of view of the users, several advantages in that users can apply to the computer resources that are deemed to be more adequate to their research work and have the possibility of optimising not only their projects but also the resources used. The main disadvantage may come from confronting users with different procedures for each computer system. This can be minimised by developing an operational model as seamless as possible to users. This work has now being undertaken by

task WP6 of the PRACE-1IP project and builds up on the experience of some of the PRACE members acquired during the DEISA [2] projects to operate the PRACE distributed research infrastructure and present it to the users as a single research infrastructure. This operational model has the following advantages:

- Presents PRACE AISBL as a single infrastructure to users (seamless) using a common production environment (CPE);
- Defines a set of standard procedures and best practices common to all sites contributing compute cycles to PRACE AISBL;
- Common Helpdesk service for all users independent of the location of the computer system(s) in use;
- Allows to compare and benchmark the performance of the various sites to decide on measures for improving the service to users;
- Possibility of creation of common user documentation (except for system bounded documentation);
- Common training programs for users;
- Common accounting strategies to monitor usage of the computer systems in terms of core-hours, memory, job duration, etc.

WP6 of the PRACE-1IP project is responsible for the development of this operational model and has defined a PRACE Service Catalogue [3] that includes a list of common services agreed upon by all computer sites that contribute resources to PRACE AISBL. This is by no means an easy task and needs strong coordination and cooperation between the different teams running and managing the computer systems hosted by the HMs. Amongst the foreseen services the following are under development:

- Centralised Helpdesk (point of contact of users for queries and problem solution);
- Uniform access to systems which allows users to run their codes in on PRACE Tier-0 systems, monitor their evolution and retrieve the results across Tier-0 systems;
- Incident management (standard procedures for managing incidents);
- Security policies and procedures (including AAA, i.e. Authentication, Authorization and Accounting);
- Change management (procedure for the management of changes at hard- and software level);
- User documentation (documentation with technical details of the computer systems available, system access, standard libraries and software stacks, etc.);
- Training facilities for users;
- Visualization services;
- Access with one single user identity (using the same credentials) to various services;
- Common accounting facilities;
- Common monitoring facilities (a single interface for monitoring the status of the services);
- Quality assurance and control (procedures for provision and monitoring of services).

The basic service delivery and provision of compute resources to users, mainly regarding the services described above, need to be regulated between PRACE AISBL and the HMs. These services and the respective levels need to be included in specific SLAs/OLAs. PRACE-1IP, WP6 is in the process of defining SLAs for these services. These SLAs will be based on the experiences of the different computer sites.

As PRACE AISBL is a dynamic infrastructure, i.e. computer systems will be upgraded during their lifetime, new computer systems may join the PRACE AISBL RI, new software developments and new libraries will be integrated in new or existing computer systems, it is

advisable that the level of specification of the SLAs would not be very high and SLA rules should be flexible to avoid constant updates and changes. This is complemented by one of the tasks of WP6 specifying and detailing these service levels in the PRACE Service Catalogue and making sure that this document is a "living" document where the status of the services described is kept up to date at all times. This is at present part of the commitment of WP6. Nevertheless this role should be followed up by PRACE AISBL at the end of the PRACE project to keep service continuity and to ensure a good coordination between all procedures necessary to make available a high-standard service to users.

2.2.2 Agreements between the computer centres of the HMs and the users

PRACE AISBL is in charge of managing the distribution of the resources contributed by the HMs to users from academia and research. This management includes the opening of calls for the various types of projects and evaluation of the proposals according to the peer review process specifically developed for PRACE. The applicants of successful proposals, i.e. proposals that are deemed to have excellent scientific quality and have proved to be technically suitable to the computer systems made available through PRACE AISBL, will need to sign an agreement regulating their rights and duties incurring from usage of the compute resources. This User Agreement need to include a part common to all computer centres and approved by PRACE AISBL based on the user agreements of the HMs and covering a set of basic points, e.g. IPR, duties and rights of users, and a part specific to each computer centre that needs to include any restrictions imposed by vendors or any other type of restrictions resulting from national decisions. This specific part will be of the responsibility of each computer centre that contributes resources to PRACE AISBL. The duties of the users of PRACE AISBL resources need to be described and defined in the Acceptable Use Policy (AUP) according to the policy applicable at the computer centres.

3 PRACE AISBL SLAs

From the previous analysis it is advisable that PRACE AISBL will define two types of agreements:

- OLA covering a light service level agreement between all computer centres that contribute resources to PRACE AISBL, called Contributors Agreement. This OLA should be common to all computer centres and cover the services defined in the PRACE AISBL Service Catalogue.
- User Agreement between each computer centre of the HMs contributing resources to PRACE AISBL and the users. This agreement should describe the standard average level of service the users may expect from the computer centres as well as the duties and responsibilities of the users for using the PRACE AISBL resources.

In figure 1 a graphic representation of the type of agreements deemed necessary for PRACE AISBL and the stakeholders involved is displayed.
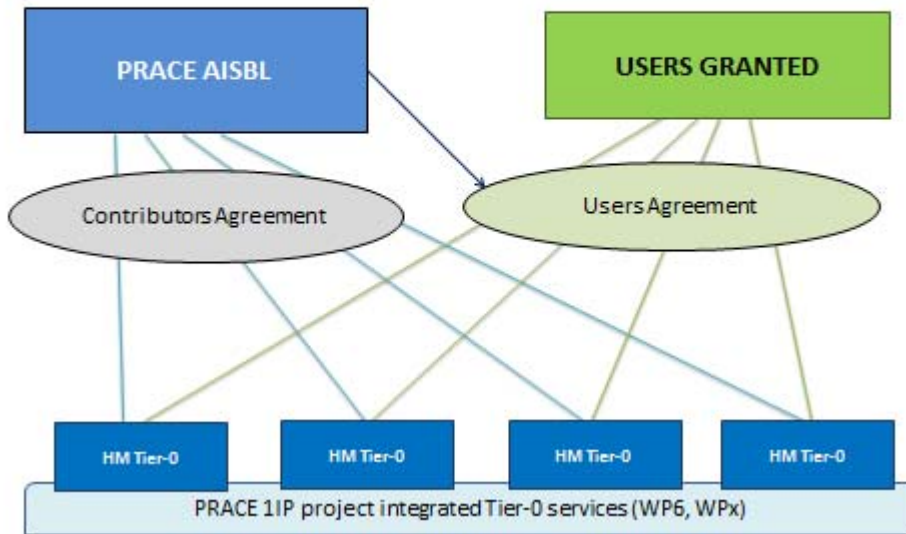
Figure 1: Graphic representation of the PRACE AISBL agreements and the respective stakeholders

3.1 Methodology

The methodology followed for drafting a proposal for the Contributors Agreement and the User Agreement takes into account the analysis of the following points:

- implications of the organisational model of PRACE AISBL;
- identification of the main stakeholders;
- experience of the members of PRACE AISBL in their own countries with special attention being given to similar SLAs applied in the countries of the HMs;
- implications of the geographic distribution of PRACE AISBL resources.

Organisation model of PRACE AISBL

The guidelines proposed for the Contributors Agreement take into account the present operational model of PRACE AISBL, i.e. the Cycles Model. If PRACE AISBL decides to evolve in the direction of the Operator Model or another type of model, these guidelines need to be reviewed and adapted according to the characteristics of the new organisational model.

The User Agreement is much less dependent on the organisational model of PRACE AISBL and could be kept almost unchanged if the model for the technical operation of the distributed RI, also called operational model, will remain as seamless as possible. The PRACE Service Catalogue will possibly need to accommodate new procedures and services necessary for the future generations of computer systems, but this is something that does not really depend on the organisational model.

Identification of stakeholders

Another important point is the identification of the different types of stakeholders involved in the agreements.

In the case of the Contributors Agreement the agreement is between the HMs and possibly other members contributing resources to PRACE AISBL and PRACE AISBL. This meant that although all Members of PRACE AISBL were consulted regarding the proposal presented in this deliverable, main consensus needed to be reached amongst the HMs and as such their input to the proposal for the Contributors Agreement guidelines was essential. It was also taken into account that the Contributors Agreement should be considered a minimum agreement that could apply to all computer centres contributing resources to PRACE AISBL and should be in line with the Service Catalogue defined by PRACE AISBL.

For the User Agreement it was decided to start up with an agreement in general more suited to users from scientific institutions that could nevertheless be used as a basis agreement for regulating the relationship between PRACE AISBL and users from industry. The User Agreement for industrial users will need to be coordinated with the business model [4] that is at present being developed by WP5 of the PRACE-1IP project. Once the business model for access of industrial users to the resources made available through PRACE AISBL is confirmed by the Council, the necessary adaptations to the User Agreement proposed for scientific users will be made.

Multi-national character of the stakeholders

Drafting of the Contributors Agreement proved to be very complex because of the multi-national character of the computer centres, operation and jurisdiction. The collaboration of representatives of the HMs in the PRACE projects and the support of their legal departments was very important for the achievement of the proposal presented in this deliverable. The Contributors Agreement can be seen as a contract between PRACE AISBL and the HMs representing various European countries and as such needs to take into account the diversity of the legal framework and issues of the various countries involved. Most of these difficulties were surpassed by engaging in open communication and coordination activities with the representatives of the different Hosting Member countries in the PRACE projects and when necessary through consultation with their legal departments for feedback in general and also on some specific parts of the agreement.

From the point of view of the User Agreement, the multi-national character of the stakeholders was taken into account by deciding to keep the User Agreement guidelines as simple as possible regarding legal regulations and devoid of legal jargon to facilitate its understanding by users of the various countries who in some cases are not well acquainted with legal matters and may have some difficulties understanding the clear meaning of the agreement in a language that is not their mother tongue.

Geographic distribution of PRACE AISBL compute resources

For the Contributors Agreement the geographic distribution of PRACE AISBL compute resources required a close coordination with WP6. Finally, it was decided to keep the operational description of the service levels at a basic level and include the details of the service levels and the necessary procedures in the PRACE Service Catalogue.

From the point of view of the User Agreement the geographic distribution of resources is being considered by WP6 working on the development of a seamless environment where users will as much as possible experience a single RI, instead of a collection of computer systems hosted in several countries. This effort is underway and needs to be developed and upgraded in the future either by other PRACE projects or by PRACE AISBL.

3.2 Contributors Agreement

This section shows elements to be considered or adapted for drafting a Contributors Agreement for PRACE, explaining the structure that the contract should have as well as examples to illustrate some of its sections:

A preamble that will introduce the context of the agreement:

- Parties of the agreement – it will identify the parties of the agreement:
  - o **PARTNERSHIP FOR ADVANCED COMPUTING IN EUROPE AISBL** an International Non-Profit Association (AISBL) in Belgium under registration number 826.890059, whose registered office is Rue du Trône 98, 1050 Brussels, Belgium ("**PRACE”**); and
  - o [NAME OF HOSTING CONTRIBUTOR AND ADDRESS DETAILS] (the "**Contributor”**)
- Background of the agreement – it will describe the main characteristics of PRACE AISBL relevant to the agreement. These shall include the following list:
  - PRACE is a non-profit entity created to enable the scientific research community the access to pan-European high performance computing services.
  - PRACE has been initially incorporated as an International Non-Profit Association (AISBL) in Belgium. The Members of PRACE have signed an Agreement for the Initial Period which sets out the terms governing the relationship between the Members for the first five years following the incorporation of PRACE.
  - The Contributors Agreement sets out the terms and conditions on which the Hosting Members shall contribute to PRACE.
  - The terms and conditions set out in the Contributors Agreement shall be interpreted in the context of the provisions of the Statutes of the Association and the provisions of the Agreement for the Initial Period.
- Definitions and interpretations – it will list the definitions used further on in the agreement and the meaning of the terms used. The list shall include:

  Acceptable Use Policy is the policy which sets out the terms on which the End User may access the Tier-0 Resources (to be set out in an Annex to the User Agreement);

  Agreement for the Initial Period means the agreement between the Members of PRACE relating to the general strategic plan for PRACE during its first five years of operation, dated [   ] 2010;

  Chairman shall mean the Chairman of the Board of Directors of PRACE;

  Confidential Information means all information in any medium or format (written, oral, visual or electronic, and whether or not marked as "confidential"), together with any copies (in any format), which relates to a party (the "Disclosing Party") or to its employees, officers, customers or suppliers, and which is directly or indirectly disclosed by the **Disclosing Party** to another party in the course of their dealings relating to this Contributors Agreement, before or after the date of this Contributors Agreement. However, the following information is not "Confidential Information" for the purposes of this Contributors Agreement:

a) information which is in the public domain other than as a result of breach of this Contributors Agreement or any separate confidentiality undertaking between the parties;

b) information which the recipient party received, free of any obligation of confidence, from a third party which itself was not under any obligation of confidence in relation to that information; and

c) information which was developed or created independently by or on behalf of the recipient party;

Contribution means the in-kind contribution of the Contributor to PRACE;

Controller shall mean the natural or legal person, public authority, agency or any other body which alone or jointly with others determines the purposes and means of the processing of personal data; where the purposes and means of processing are determined by national or Community laws or regulations, the controller or the specific criteria for his nomination may be designated by national or Community law;

Council shall mean the Council of PRACE;

Data Subject means an individual who is the subject of personal data;

Effective Date means the date of signature by both parties of this Contributors Agreement;

Excessive Downtime means an unavailability which exceeds the expected unavailability due to unexpected hardware or software failures or unplanned operations of the Tier-0 Resources (excluding planned maintenance or upgrades to the system);

Initial Period means the first five year period of PRACE, as described in the Agreement for the Initial Period;

Intellectual Property Rights means:

a) patents, inventions, designs, domain names, trade marks and related goodwill and trade names (whether registered or unregistered) and all rights to apply for registration of the same;

b) copyright and related rights, database rights, know-how and confidential information;

c) all other intellectual property rights and similar or equivalent rights anywhere in the world which currently exist or are recognised in the future; and

d) all applications, extensions and renewals in relation to any such rights;

Peer-Review Process means the evaluation process carried out by the Access Committee of PRACE used to determine whether a potential user fulfils the evaluation criteria in order to become a PRACE User;

Personal Data shall mean any information relating to an identified or identifiable natural person ('data subject'); where an identifiable person is one who can be

identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity;

Processing of personal data ('processing') shall mean any operation or set of operations which is performed upon personal data, whether or not by automatic means, such as collection, recording, organization, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, blocking, erasure or destruction;

PRACE User means an individual member of a PRACE User Group;

PRACE User Group means a group which has been allocated a period of usage of the Tier-0 Resources by PRACE pursuant to the Peer-Review Process. (Typically, a PRACE User Group will be a group of PRACE Users, represented by a Principal Investigator);

Principal Investigator means the lead named applicant of a PRACE User Group in an application for the use of Tier-0 Resources;

Processor shall mean a natural or legal person, public authority, agency or any other body which processes personal data on behalf of the controller;

Statutes means the Statutes of PRACE;

Tier-0 Resources means the resources made available to PRACE on the Tier-0 System as identified in Annex III to the Agreement for the Initial Period;

Tier-0 System means the high end computing facilities installed in the Member State of the Contributor and described in an Annex to this Contributors Agreement; and

User Agreement means the agreement signed between a User and the computer centres which sets out the terms on which a PRACE User Group will be allocated the Tier-0 Resources.

The term of the agreement:
- Term of the agreement – it will define the terms of duration of the agreement accordingly to what has been agreed in the Statutes of the association;

The conditions of delivery of the computing service:
- Availability and usage of the Tier-0 resources – it will describe a set of common, basic conditions of availability and usage of the Tier-0 resources contributed to PRACE AISBL and any particular restrictions that might apply to the contributor due to national laws; This section should specify the provision of the Contributor's Tier-0 resources to the users as well as the provision of First Level Support services (that will also be specified later on in the contract as an Annex). Regarding the Peer-Review process that PRACE will run, it shall be also specified in this section the specificities of the communication of the PRACE allocation assessment results to the contributor:
    - PRACE AISBL shall notify the Contributor in writing of the results of the allocation assessment in table form:

- the identity of the PRACE User Group, including name, address and country, together with the name, e-mail address, address and nationality of the Principal Investigator and all of the PRACE Users within that PRACE User Group who will be entitled to access to the Tier-0 Resources;

- project descriptions;

- resource and assigned allocation;

- the signature process will be defined according to computing centres specific rules and site terms and conditions;

- confirmation that the User has signed a User Agreement. (For the avoidance of doubt, it shall be the Contributor's responsibility to ensure that each User in the relevant PRACE User Group who will be given access to the Tier-0 Resources has been notified of and confirmed acceptance of the Acceptable Use Policy).

The conditions, terms and references for the contribution of the Contributor:

- Contribution – it will define the terms of the contributions of the HMs as stated by the Statutes of the association and the Agreement for the Initial Period; it will provide a specification for the assessment of the contribution and the associated reporting process. This shall include a specification on special treatment upon deviation in the contributions, such as the following cases:
  - o The Chairman shall review any additional Contribution of the Contributor during the period of the annual assessment in excess of the Contribution offered to PRACE and agreed by the Board of Directors of PRACE for such period. In the event that there is any additional Contribution it shall be taken into account in the calculation of the Contributor's aggregate Contribution for the Initial Period;

  - o The parties to this Contributors Agreement acknowledge that the Contributors Contribution to PRACE pursuant to this Contributors Agreement is in kind and does not involve the exchange of any goods between the Contributor and PRACE. The total amount of the Contribution is a measurement methodology for this Contribution.

IPR, confidentiality, security:

- Intellectual Property Rights – it will specify the conditions of ownership IPR; These shall include:
  - o All Intellectual Property Rights which are owned by any party as at the Effective Date shall remain vested in that party and nothing in this Contributors Agreement shall transfer ownership of such Intellectual Property Rights to any other party or any third party.

  - o The Contributor shall ensure that it has the necessary operating software licences in place to enable the PRACE Users to access the Tier-0 System. For the avoidance of doubt, PRACE acknowledges and shall notify each Principal Investigator that it is the responsibility of the PRACE Users to obtain all

necessary application software licences in connection with their usage of the Tier-0 Resources.

- o The Contributor acknowledges that any Intellectual Property Rights arising out of the PRACE User's use of the Tier-0 Resources in accordance with this Contributors Agreement shall be the property of the PRACE User or their employer (as the case may be), except in the event that any PRACE User identifies any modifications, adaptations, developments to any of the Tier-0 Resources. In this case, the Principal Investigator shall ensure that the relevant PRACE User shall use all reasonable endeavours to assign all of the Intellectual Property Rights in such modifications, adaptations, developments in favour of the Contributor or such third party as directed by the Contributor.

- o PRACE shall ensure that each PRACE User Group will provide a popular summary of the results for publication on its website. PRACE and the Contributor shall have the right to use this popular summary for its own purposes.

- Confidentiality and publicity – it will describe the confidentiality and publicity conditions for all parties, including the following statements:
    - o PRACE and the Contributor acknowledge that during the term of this Contributors Agreement certain information may be disclosed by one party to the other which is and shall be treated as confidential by the recipient. In such circumstances the party disclosing the confidential information shall make clear to the other party that the relevant information is confidential and the Confidential Information shall be held strictly in confidence and shall not be divulged directly or indirectly or otherwise made available in whole or in part to any third party without the prior written consent of the disclosing party except to the extent strictly necessary by the recipient to its employees and officers and to its outside professional advisors.

    - o All Confidential Information shall remain the property of the disclosing party and the disclosure of Confidential Information does not amount to a licence in favour of the receiving party.

- Data protection – it will regulate data protection and issues related to EU and national laws and regulations. The following statements shall be included:
    - o Each Party's attention is drawn to Directive 95/46/EC of the European Parliament and the contributor's national legislation and/or regulations implementing them (all referred to together as the "**Data Protection Requirements**").

    - o The parties agree that PRACE shall be the Controller for all personal data that is provided to the Contributor by PRACE and such data shall only be processed on behalf of PRACE by the Contributor as a Processor.

    - o The parties agree that each PRACE User shall be the Controller in respect of all personal data that may be contained in any data that is processed by the PRACE User in its use of the Tier-0 Resources. The Contributor shall process any such data as a Processor

    - o In the Contributor's activities as a data processor it shall:

> ▪ only carry out processing on the policy of PRACE or the PRACE User (as applicable);
>
> ▪ implement appropriate technical and organisational measures to protect personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorised disclosure or access; and
>
> ▪ ensure the reliability of staff who have access to personal data.

The regulations for the contractual legal elements:

- Termination – it will regulate the termination of the agreement. It shall specify the cases where one party can terminate the contract, including the following scenarios:
  - the Contributor ceases to operate Tier-0 Resources,
  - the Contributor's membership of PRACE is terminated pursuant to Article 10 of the Statutes

- Force majeure – it will define force majeure conditions and will regulate the procedures to apply if force majeure occurs. The force majeure shall be generally interpreted as an event the occurrence of which is beyond the reasonable control of either party to the Contributors Agreement including (without limitation) the following: earthquake or other natural disaster, act of terrorism, war, civil unrest, riot, fires, floods, explosions or malicious damage. The regulations regarding Force majeure events in the Contributor Agreement should include, for example:
  - If a Force Majeure Event occurs which prevents, hinders or delays the Contributor from providing the Tier-0 Resources to a PRACE User at any time the Contributor shall be released from its obligations to provide the Technical Contribution to the extent that its ability to provide the Technical Contribution has been directly affected by the Force Majeure Event, provided that:
  - The Contributor notifies PRACE in writing as soon as reasonably practical of the occurrence of the Force Majeure Event and the nature and likely duration of its impact upon the PRACE User; and
  - The Contributor shall resume normal performance of all affected obligations as soon as reasonably possible after the Force Majeure Event ceases to have an impact, and shall notify PRACE and the relevant PRACE Users in writing promptly of such resumption.

- Conflict resolution – it will regulate the resolution of conflicts. The agreement will include standard procedures for conflict resolution, such as that parties shall give the other party written notice of any conflict arising between the parties in connection with the Contributor Agreement, and the parties shall first attempt to resolve the conflict by amicable means.
- Notices – it will regulate the communication between the parties; The regulations shall include the language of communications, the accepted delivery channel (hand, fax or recorded delivery post, for example), and the structure of formal communications.
- Relationship of the parties – it will specify the relationship between PRACE and the Contributor, stating, indicating that the agreement is not deemed to constitute a partnership or joint venture, or create a relationship of principal and agents for any purpose between the parties;
- Amendments, waivers and rights cumulative – it will regulate the possibilities of variation of the Agreement. This shall include that no variations of the agreement shall

be effective unless made in writing and signed on behalf of each of the parties or by their duly authorised representatives. The agreement shall also specify that the failure to exercise, or delay in exercising, a right, power or remedy provided by the agreement or by law shall not constitute a waiver of that right, power or remedy. If a party waives a breach of any provision of the Agreement this shall not operate as a waiver of a subsequent breach of that provision, or as a waiver of a breach of any other provision. Finally, the Agreement shall include that the rights, powers and remedies provided in the contract are (except as expressly provided) cumulative and not exclusive of any rights, powers and remedies provided by law, or otherwise.

- Severability – it will regulate the validity of the clauses of the agreement. This regulation shall include a provision indicating that if any clause of the agreement is found invalid by any court, and the clause is not of fundamental nature to the Agreement as a whole, the legality of the remainder of the Contributor Agreement shall not be affected. It shall also include that in the mentioned circumstances, the parties shall use all reasonable endeavours to agree within a reasonable time upon reasonable variations to the Agreement which may be necessary in order to achieve, to the greatest extent possible, the same effect as would have been achieved by the clause in question.

- Governing law and jurisdiction – it will define the law and jurisdiction that applies in case of conflict. This shall be the Belgian Law. This section will also define the process to follow in case an amicable settlement of any conflict is not reached within 2 months of notice. In this conditions, either party shall submit the conflict, by unanimous decision of the parties, to arbitration in accordance with the CEPANI Rules of Arbitration. The place of arbitration shall be Brussels and the language to be used in the arbitration proceedings shall be English.

The agreement will be complemented with additional documents for what concerns:

- Technical contribution – describes the technical characteristics of the computer system of the HM and of some basic characteristics of the Helpdesk run by the HM;
- Basic quality of service – describes the quality of service agreed upon between PRACE AISBL and the HMs.

In order to ensure an homogeneous and high quality Tier-0 service to users across Europe, the Contributor Agreement shall incorporate an Annex Specifying a service level. A proposal for such annex can be seen next.

3.3 User Agreement

This section shows a model for a User Agreement between PRACE Hosting Members and PRACE users, explaining the structure that the contract should have as well as examples to illustrate some of its sections:

Preamble introducing the context of the agreement:

- Background of the agreement – it will describe the main characteristics of PRACE AISBL relevant to the agreement. These shall include the following list:

– PRACE is a non-profit entity created to enable the scientific research community the access to pan-European high performance computing services;

− PRACE has been initially incorporated as an International Non-Profit Association (AISBL) in Belgium. Contributors are Hosting Members of PRACE who have agreed to provide Tier-0 Resources to PRACE which will be made available to PRACE Users;

− The Principal Investigator has applied for the use of the Tier-0 Resources. Use of the Tier-0 Resources has been granted to the Principal Investigator by PRACE on the basis that the PRACE User Group has fulfilled the eligibility criteria and the technical and scientific requirements set out in the Peer-Review Process;

− This User Agreement sets out the terms and conditions under which the Principal Investigator will be allocated the Tier-0 Resources for use by the PRACE User Group;

− The Principal Investigator will use all reasonable endeavours to ensure that the PRACE User Group will comply with all of the PRACE User obligations set out in this User Agreement and the Acceptable Use Policy;

• The terms and conditions set out in the User Agreement shall be interpreted in the context of the provisions of the Statutes of the Association. Definitions and interpretations – the definitions used further on in the agreement and the meaning of the terms used will be listed. This list should include:

− **Acceptable Use Policy (AUP)** is the policy which sets out the terms on which the PRACE User may access the Tier-0 Resources, as set out in the additional document to the User Agreement;

− **Chairman** shall mean the Chairman of the Board of Directors of PRACE;

− **Confidential Information** means all information in any medium or format (written, oral, visual or electronic, and whether or not marked as "confidential"), together with any copies (in any format), which relates to a party (the "Disclosing Party") or to its employees, officers, customers or suppliers, and which is directly or indirectly disclosed by the Disclosing Party to another party in the course of their dealings relating to this Contributors Agreement, before or after the date of this Contributors Agreement. However, the following information is not "Confidential Information" for the purposes of this Contributors Agreement:

    a) information which is in the public domain other than as a result of breach of this Contributors Agreement or any separate confidentiality undertaking between the parties;

    b) information which the recipient party received, free of any obligation of confidence, from a third party which itself was not under any obligation of confidence in relation to that information; and

    c) information which was developed or created independently by or on behalf of the recipient party;

− **Contribution** means the in-kind contribution of the Contributor to PRACE

− **Contributor** means a Hosting Member of PRACE who provides Tier-0 Resources in accordance with the terms of the relevant Contributors Agreement;

− **Controller** shall mean the natural or legal person, public authority, agency or any other body which alone or jointly with others determines the purposes and means of the processing of personal data; where the purposes and means of processing are determined by national or Community laws or regulations, the controller or the specific criteria for his nomination may be designated by national or Community law;

- **Council** shall mean the Council of PRACE;

- **Data Subject** means an individual who is the subject of personal data;

- **Effective Date** means the date of signature by both parties of this User Agreement;

- **Excessive Downtime** means an unavailability which exceeds the expected unavailability due to unexpected hardware or software failures or unplanned operations of the Tier-0 Resources (excluding planned maintenance or upgrades to the system);

- **Grant Proposal** means the application for Tier-0 Resources submitted by the Principal Investigator to PRACE;

- **Intellectual Property Rights** means:

  (a) patents, inventions, designs, domain names, trademarks and related goodwill and trade names (whether registered or unregistered) and all rights to apply for registration of the same;

  (b) copyright and related rights, database rights, know-how and confidential information;

  (c) all other intellectual property rights and similar or equivalent rights anywhere in the world which currently exist or are recognised in the future; and

  (d) all applications, extensions and renewals in relation to any such rights;

- **Force Majeure** means an event the occurrence of which is beyond reasonable control including (without limitation) the following: Act of God (including earthquake or other natural disaster), act of terrorism, war, civil unrest, riot, fires, floods, explosions or malicious damage or the failure of plant or computer equipment;

- **Malicious Software** means computer virus, trojan, worm, logic bomb or other harmful material;

- **Period of Availability** means the time period which Tier-0 Resources are allocated to the PRACE User for access to and use, as identified in Annex A;

- **Peer-Review Process** means the evaluation process carried out by the Access Committee of PRACE and external evaluators used to determine whether a potential user fulfils the evaluation criteria in order to become a PRACE User;

- **Personal Data** shall mean any information relating to an identified or identifiable natural person ('data subject'); where an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity;

- **Processing of personal data** ('processing') shall mean any operation or set of operations which is performed upon personal data, whether or not by automatic means, such as collection, recording, organization, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, blocking, erasure or destruction;

- **PRACE User** means an individual within a PRACE User Group who has been approved by PRACE to use the Tier-0 Resources, and who is identified in Annex A of this User Agreement;

− **PRACE User Group** means a group which has been allocated a period of usage of the Tier-0 Resources by PRACE pursuant to the Peer-Review Process. (Typically, a PRACE User Group will be a group of PRACE Users, represented by a Principal Investigator);

− **Principal Investigator** means the lead named applicant of a PRACE User Group in an application for the use of Tier-0 Resources;

− **Processor** shall mean a natural or legal person, public authority, agency or any other body which processes personal data on behalf of the controller;

− **Project** means the research project carried out by the PRACE User Group using the Tier-0 Resources;

− **Statutes** means the Statutes of PRACE;

− **Tier-0 Resources** means the resources made available to PRACE on the Tier-0 System;

− **Tier-0 System** means the high end computing facilities installed in the Member State of the Contributor; and

− **User Agreement** means the agreement signed between the Contributor and a Principal Investigator which sets out the terms on which a PRACE User Group will be allocated the Tier-0 Resources.

Conditions of delivery of the computing service:

- Description of the terms by which PRACE and the Contributor makes available Tier-0 resources and conditions of usage. This description should include the following items:

− PRACE will allocate the Tier-0 Resources to the Principal Investigator for use by the PRACE User Group during the Period of Availability (to be specified in the agreement as an Annex). The PRACE Users (to be also identified in the agreement) are entitled to access to and use of the Tier-0 Resources;

− Immediately prior to the commencement of the Period of Availability and subject to confirmation in writing by each PRACE User of compliance with the Acceptable Use Policy and any further confirmations that may be required from each PRACE User by the Contributor, the Contributor will exchange with each PRACE User personal access credentials to enable the PRACE Users to access the Tier-0 System;

− The Principal Investigator will comply, and will use reasonable endeavours to ensure that all PRACE Users are aware of and will comply, with the Acceptable Use Policy;

− The Principal Investigator will provide to PRACE at the end of the Period of Availability, or every twelve (12) months throughout the duration of the Project, a report setting out the scientific results of the Project, as well as a qualitative feedback on the use of the Tier-0 Resources;

− The Principal Investigator will provide a popular summary of the results for publication on the PRACE and the Contributor website. PRACE and the Contributor have the right to use this popular summary for its own purpose;

− If the requirements of the PRACE User Group change so that it no longer requires the use of the Tier-0 Resources or the PRACE User Group only requires the resources for a significantly shorter time period than has been allocated, the Principal Investigator will notify PRACE and the Contributor in writing without undue delay. PRACE may

in such circumstances, at its sole discretion, reallocate the Tier-0 Resources to other PRACE Users;

− Resources not consumed by the Prace User Group at the end of the Period of Availability will be forfeit.

Intellectual Property Rights (IPR), confidentiality, security:

- Intellectual Property Rights – it will specify the conditions of ownership IPR. These shall include:

− The Principal Investigator will ensure that all necessary application software licences are obtained in connection with its usage of the Tier-0 Resources. It is the responsibility of the relevant Contributor to obtain the necessary operating software licences to enable the PRACE User to use the Tier-0 System;

− All Intellectual Property Rights arising out of the PRACE User's use of the Tier-0 Resources will be owned by the PRACE User or his or her employer (as the case may be), except that in the event that any PRACE User identifies any modifications, adaptations, developments to any of the Tier-0 Resources PRACE or the Contributor shall be entitled to require the PRACE User to transfer the Intellectual Property Rights in such modifications, adaptations, developments to the Contributor;

− Each PRACE User shall acknowledge the contribution of the use of the PRACE High Performance Computing Infrastructure as a contributing factor to the PRACE User Group's results in all papers and other publications that record the PRACE User Group's research made utilising the Tier-0 Resources. Each PRACE User shall use the following (or an equivalent) wording in such acknowledgement in all such papers and other publications:

«This work was granted access to the HPC resources of PRACE-[Name of the Contributor/Name of the Tier- 0 site] under the allocation 20XX- [file number] made by PRACE (Partnership for Advanced Computing in Europe)»

Where technical support has been received the following additional text should also be used:

«The assistance of [name of person/people] from [organisation name], [country] in achieving the technical requirements is gratefully acknowledged»

- Confidentiality and publicity – it will describe the confidentiality and publicity conditions for all parties, including the following statements:
− PRACE, the Contributor and the Principal Investigator acknowledge that confidential information may be disclosed by one party to the other which is confidential and shall be treated as confidential by the recipient. In such circumstances the party disclosing the confidential information shall notify the other party in writing that the relevant information is confidential and the confidential information shall be held strictly in confidence and shall not be divulged directly or indirectly or otherwise made available in whole or in part to any third party without the prior written consent of the disclosing party except to the extent strictly necessary by the recipient to its employees and officers and to its outside professional advisors;
− All confidential information shall remain the property of the disclosing party and the disclosure of confidential information does not amount to a licence in favour of the receiving party.
- Data protection – it will regulate data protection and issues related to EU and national laws and regulations. The following statements shall be included:

- The Principal Investigator shall be the data controller in respect of all personal data that may be contained in any personal data that the PRACE Users use in their computer processing using the Tier-0 Resources and in respect of such data the Principal Investigator shall have the responsibilities of the data controller pursuant to Directive 95/46/EC of the European Parliament and any relevant implementing national legislation and/or regulations.
- Regulations for the contractual legal elements:
- Termination – it will regulate the termination of the agreement. It shall specify the cases where one party can terminate the contract, including the following scenarios:

- PRACE or the Contributor may terminate this User Agreement immediately by giving written notice to the Principal Investigator if the Principal Investigator or any PRACE User acts in any way which is materially contrary to the terms of this User Agreement (including the Acceptable Use Policy).

- Force majeure – it will regulate the procedures to apply if force majeure occurs. The regulations regarding Force majeure events in the User Agreement should include, for example:

- The Principal Investigator acknowledges that its usage of the Tier-0 Resources may be impacted by a Force Majeure Event which prevents, hinders or delays the Contributor from providing the Tier-0 Resources to the PRACE User Group. In such circumstances PRACE will endeavour to allocate replacement cycles to the PRACE User Group following the cessation of the Force Majeure Event.

- Dispute resolution – it will regulate the resolution of disputes. The agreement will include standard procedures for dispute resolution, such as that parties shall give the other party written notice of any dispute arising between the parties in connection with the User Agreement, and the parties shall first attempt to resolve the dispute by amicable means. These shall include:
- The parties undertake to use all reasonable efforts to resolve in good faith any disputes arising between them in connection with this User Agreement;
- A party will, as soon as reasonably practicable, give the other party written notice of any dispute in connection with this User Agreement.
- Governing law and jurisdiction – it will define the law and jurisdiction that applies in case of conflict. These shall include:
- This User Agreement, and conflict or claim arising out of or in connection with it (including any conflict or claim relating to non-contractual obligations), shall be governed by, and construed in accordance with, Belgian Law;
- If an amicable settlement of any conflict or claim is not reached within 3 months of notice being provided, either party may submit the conflict, by unanimous decision of the parties, to arbitration in accordance with the CEPANI Rules of Arbitration. The arbitration tribunal shall consist of three arbitrators designated in accordance with the CEPANI Rules of Arbitration. The place of arbitration shall be Brussels. The language to be used in the arbitration proceedings shall be English. In case no unanimous decision can be taken, the conflict may be submitted to the courts of law of the registered office of PRACE;
- The Governing Law and Jurisdiction of this Contributors Agreement may be changed from time to time in the event of a change in location of the registered office of PRACE.

The document should include as an integral part additional documents for what concerns:

- Detail on Tier-0 resources – description of the technical characteristics of the computer system of the Contributor, period of availability and information about PRACE user groups;
- Acceptable Use Policy ("AUP") – it will apply to all PRACE Users of the PRACE Tier-0 systems. This AUP is in addition to any policies or conditions which may be imposed by the Contributor of the Tier-0 Resources (accessible at the home page of PRACE AISBL: www.prace-ri.eu). PRACE may make any reasonable changes to this AUP at any time and will inform the user in due time. If the PRACE User does not accept these changes, it may cease to use the Tier-0 Resources at any time. For the purposes of this AUP, the all terms will have the meanings set out in the definitions and interpretations to the User Agreement. Furthermore, AUP will define the following conditions:
  - General Use – describes the basic conditions of usage:
    - ✓ The PRACE User will have regard to the principles which require that PRACE acts exclusively for peaceful purposes and conduct its activities in an ethical manner;
    - ✓ The PRACE User agrees to the storage, processing and transmission of the personal data asked for by PRACE in the Peer-Review Process;
    - ✓ The PRACE User will inform PRACE and the Contributor if there are any changes to its contact information;
    - ✓ The PRACE User will only use the Tier-0 Resources for the creation, storage, use and transmission of data in conjunction with the purposes set out in the Grant Proposal, the overriding objectives of PRACE and this AUP;
    - ✓ The PRACE User's right to use the Tier-0 Resources is strictly personal and may not be transferred to any other third party. The rights to use the Tier-0 Resources will terminate when the period of allocation comes to an end;
    - ✓ The PRACE User recognises that the use of the Tier-0 Resources by nationals of certain countries may be restricted by policies laid down by PRACE or the Contributor in connection with the Wassenaar Arrangement;
    - ✓ The PRACE User will respect all proprietary rights belonging to PRACE and / or the contributor, including any copyright and licences;
    - ✓ The PRACE User will keep confidential all information which is obtained through the use of the Tier-0 Resources which it may reasonably be expected to know is confidential or sensitive;
    - ✓ PRACE and/or the Contributor reserve the right to manage the usage of the Tier-0 System in order to ensure full optimisation of the Tier-0 Resources, even if this may cause some limitation of usage for the PRACE User or changes to the Tier-0 Resources. The allocated cycles will be provided by the Contributor equally distributed over the granted allocation time. Discontinuous use may lead to a loss of the unused cycles.
    - ✓ The PRACE User agrees not to remove from the Tier-0 System any information without the explicit or implied permission of its owner.
    - ✓ The PRACE User will not transport any data, which it may reasonably be expected to know is confidential or sensitive, e.g. access credentials on IT equipment without adequate protection (such as encryption) in place. Any equipment used will be subject to the Contributor's security policies.

- ✓ Use of the Tier-0 Resources is at the risk of the PRACE User. PRACE and the Contributor do not make any guarantee as to their availability or their suitability for purpose.

- ✓ PRACE and the Contributor will not be liable for any damages suffered by the End User. PRACE and the Contributor do not exclude or limit liability for death or personal injury resulting from negligence of PRACE.

- ✓ PRACE and the Contributor exclude all liability for representations, statements, conditions or warranties to that or any other effect except to the extent that such liability may not be lawfully excluded;

- ✓ The End User will exercise all reasonable care when accessing the Tier-0 Resources.

- ▪ Unacceptable Use - the PRACE User will not use the Tier-0 Resources for any unacceptable purposes. Unacceptable purposes include but are not limited to:

  - ✓ any activity which is illegal under local, national or international law;

  - ✓ any attempt to breach or circumvent any administrative or security controls;

  - ✓ any creation, storage, use or transmission of data which is in breach of any copyright or licence;

  - ✓ any activity which purposely causes material or moral damage to PRACE or the Contributor, or which causes loss of operational efficiency, or loss or corruption of the Tier-0 System;

  - ✓ any activity which interferes with the use of the Tier-0 Resources by other users;

  - ✓ any activity which compromises the privacy of other users.

- ▪ Security:

  - ✓ The Contributor will provide and exchange with the PRACE User the relevant access credentials information;

  - ✓ It is the responsibility of the PRACE User to protect the details of its user account and access credentials;

  - ✓ The PRACE User will not divulge its access credentials to any third parties, unless expressly authorised to do so by PRACE or the Contributor. The PRACE User will not use any other user's username to access the Tier-0 Resources;

  - ✓ The PRACE User will take all reasonable steps necessary to protect the security of personal computers, laptops and workstations against unauthorised access. Recommended security measures include the use of password-protected screensavers and locking and/or shutting down terminals when left unattended or not in use;

  - ✓ The PRACE User will not use any computer applications which jeopardise the functioning of the Tier-0 System. In the event that any such applications are identified PRACE or the Contributor will notify the PRACE User concerned who will be required to take all steps necessary to detect the cause and prevent re-occurrence. PRACE and the Contributor have the right to suspend the PRACE User's access to the Tier-0 System if necessary and to prohibit any computer application which, in its reasonable opinion, poses a security threat;

- ✓ PRACE and the Contributor will endeavour to protect the confidentiality of information stored on the Tier-0 System;

- ✓ The PRACE User agrees to comply on use with any special conditions which may apply to specific software installed on the Tier-0 System;

- ✓ The PRACE User will report immediately to the Contributor if it becomes aware of any unauthorised use of its user account, or if it knows or suspects that there has been a breach of security or misuse of the Tier-0 Resources. Failure to do so will enable PRACE or the Contributor to terminate the PRACE User's agreement or the PRACE User's use of the Tier-0 Resources;

- ✓ The PRACE User must take suitable precautions to protect their data once the Project comes to an end. The PRACE User has the right to access their personal workspace for thirty days after the Project ends. After this thirty day period, the Contributor will save the PRACE User's data and will hold them for a period of one (1) year up to a reasonable size. After this period the Contributor may erase the data without prior notice.

- ▪ Liabilities and Sanctions:

  - ✓ The PRACE User will be liable for any damages resulting from the infringement of this AUP or any other policies or conditions imposed by PRACE or the Contributor and which have been communicated to the PRACE User.

Any infringement or potential infringement of the AUP identified by the Contributors will be notified to the PRACE User in writing. If the infringement persists and/or further infringements are detected and/or where it is justified by the seriousness of the infringement, PRACE or the Contributor may withdraw access rights to the Tier-0 System and/or initiate disciplinary proceedings and/or legal proceedings against the PRACE User.

4 Types of access to the PRACE AISBL resources

In the previous sections the terms "access to PRACE AISBL resources" and "user" have been widely used. In this section we analyse the conditions for access to PRACE AISBL and the types of access. At present the conditions of access cover the following two main concepts: open access and eligibility.

4.1 Open Access

The concept of open access in research started with the discussion of the publication of scientific results in journals and progressed with the creation of open access journals (mainly in electronic form) made available free of charge to all researchers through the internet. This type of open access publication still has some common points with traditional publishing in that relies on peer review processes to ensure the scientific quality of the publications and the reliability of the results published. This concept has since then seen several evolution steps, e.g. various forms of pay per user models in scientific publishing, and has also been extended to other research activities and in some cases even to some commercial activities, e.g. communication companies providing internet and other communication types of services.

PRACE since the starting up of the preliminary negotiations for beginning work towards the creation of a pan-European research infrastructure focused on the Open Access model. The Open Access model is not really new in terms of research infrastructures as one of the

promoters of this model was the CERN, European Organization for Nuclear Research [5], founded in 1954. One of the main reasons why European RIs use the Open Access model is connected to their funding by public money of the member countries or from the EC which in turn receives funding from all its member countries. All in all the main funding of European RIs comes from public money either directly from its European member countries and/or through the EC.

Open Access in the case of PRACE AISBL means in general terms that access to its computer resources is open to all researchers on a free of charge basis. This model implies also that the scientific results and developments obtained with the PRACE AISBL computer resources have to be made public through publications in the scientific literature or any other type of publication.

At present the eligibility conditions for applying to PRACE AISBL resources are as follows: "*Proposals from academia are eligible, as long as the project leader is a senior researcher employed in a research organisation homed in a European Union country or a PRACE Association member country. The employment contract of the project leader with the research organisation must be valid to at least 3 months after the end of the allocation period. Industry will be eligible for access through collaborations with academia, i.e. industry must have the role of collaborators in academic projects.*"

This means that scientific researchers employed by a research organisation not homed in a European country or in a PRACE Association member country, as well as researchers from industry cannot apply to PRACE AISBL resources as Principal Investigators but only as collaborators in a project of an eligible Principal Investigator. These limitations are under discussion and may change if e.g. PRACE AISBL will engage in collaborations with similar organisations outside Europe for exchange of resources. One of the possibilities, at present, of exchange of resources is with USA programs for allocation of computer resources. One of these programs is XSEDE (Extreme Science and Engineering Discovery Environment) [6], the follow up of TeraGrid. XSEDE is interested in establishing a pilot exchange of resources with PRACE.

Access to PRACE AISBL resources by users of research institutions from academia is based on scientific excellence and is regulated by the peer review process developed specifically for PRACE. Another role of the peer review process is to maximise the potential of the PRACE resources for the development of science in Europe and its economic and social impact. The PRACE AISBL Scientific Steering Committee and the Access Committee are responsible for the methodology followed by the PRACE peer review process and its application.

Regarding industry PRACE AISBL may decide to engage in another form of Open Access model. As one of the main goals of PRACE AISBL is to promote competitiveness and socio-economic development in Europe, access to industry will be part of this goal. This access may take two forms:
- Full open access to industrial users without any charge for pre-commercial research that is to be made available to all other researchers.
- Industrial access on a paid per use basis for commercial purposes. This model can still be considered somehow a variant of open access in that all industries have the same opportunity to access the PRACE AISBL resources without any specific preference been given to any particular type of industry.

Both models referred above are under development and will be discussed in the deliverables of WP5 of the PRACE-1IP project.

4.2 Types of access

At present there are two types of access to PRACE AISBL resources:
- Project access;
- Preparatory access.

Another type of access, programme access, is under development. Regarding industry, WP5 of the PRACE-1IP project is drafting a business model for industry and after that it will be rather easy to establish the necessary type(s) of access for industry.

In this deliverable we will only focus on project, preparatory and programme access.

Preparatory access

In general preparatory access corresponds to a limited allocation of computer time for code, scalability and/or software testing. Users can apply to preparatory access in preparation for application to project calls. This will allow users to check the scalability of their codes in the PRACE AISBL systems they intend to use and prove that their codes fulfil the minimum scalability required for application to project calls. Another possibility of preparatory access is to port new codes and develop new or existing codes in order to increase scalability. This development can be done with or without support of software experts of the PRACE projects. The call for preparatory access is open all year round with cut-off dates for evaluation, in principle every two or three months. This type of access has a quick turn around on its assessment and proposals only undergo technical assessment, i.e. proposals are awarded immediately after positive technical assessment without undergoing scientific assessment. This type of access is only for testing and as such no production runs are allowed. At the end of the allocation time applicants have to submit a report to PRACE AISBL.

There are 3 types of preparatory access:

A. Code scalability testing to obtain scalability data which can be used as supporting information when responding to PRACE AISBL project calls. This route provides an opportunity to ensure the scalability of the codes within the set of parameters to be used for PRACE AISBL project calls, and document this scalability. Assessment of applications is undertaken using a light-weight application procedure. Maximum allocations in terms of core-hours are defined for each PRACE AISBL system. The maximum allocation time is 2 months which includes submission of the final report.

B. Code development and optimisation by the applicant using their own personnel resources (i.e. without PRACE support). Applicants need to describe the planning for development in detail together with the expert resources that are available to execute the project. Maximum allocations in terms of core-hours are defined for all PRACE AISBL systems. The maximum allocation time is 6 months which includes submission of the final report.

C. Code development with support from software experts of PRACE. Maximum allocations in terms of core-hours are defined for all PRACE AISBL systems. The maximum allocation time is 6 months which includes submission of the final report.

Project access

Project access is the most common type of access to PRACE AISBL computer resources. This access is directed to projects that with a degree of maturity that justifies utilisation of Tier-0 compute resources, and that have scientific excellence, novelty and transformative qualities, good dissemination planning and a solid management structure. Assessment is based on technical evaluation of the suitability and feasibility of the project with the PRACE AISBL resources required and scientific evaluation by independent experts on the field of the proposal. The allocation time is 1 year and a final report is required.

It is expected that the applicants to project access are well established research groups with a good track record in the research field or collaborations including well recognised research groups from research organisations of various countries from and/or outside Europe.

Programme access

Programme access allows for application to a number of large blocks of computing resources for grand challenge projects of major scientific interest for Europe proposed by major research teams or consortia who can manage the use of the computing time allocated themselves between a number of individual projects or parts of a large project aiming at achieving a high scientific impact. This access route is important for national or multi-national groups tackling major research challenges and has the potential to enable and promote European research with significant impact. Proposals for programme access may need endorsement of Tier-1 national centres to support the computational experience of the applicants. Applicants may also need to show evidence that they have been granted previous national award(s) from their national Research Councils. Proposals for programme access may be subject to an additional level of peer review (i.e. extra reviewers) for a more thorough assessment of the entire proposal. The allocation time should be at least 2 years. There would be the possibility for these proposals to be subject to a mid-term review if it was felt to be necessary by the Prioritisation Panel and/or the Scientific Steering Committee and the Access Committee of PRACE AISBL. This could result in resources for the second year of the project not being granted or being reduced. A final report at the end of the project is required.

5 Conclusion

This deliverable reviews the concept of SLAs in general and presents an analysis of the SLAs deemed necessary for PRACE AISBL.

A proposal for the Contributors Agreement and the User Agreement is provided, taking into account the organisational and funding model currently used by PRACE AISBL. This proposal has been handed to PRACE AISBL for discussion and possible adoption. Although the proposed agreements may require some modifications due to different legislation applicable in the countries that contribute resources to PRACE AISBL, it offers a unified approach for the services.

6 Annex

ANNEX SERVICE LEVELS

TO BE USED FOR A PROPOSAL FOR THE COMMON LEVELS OF SERVICES OFFERED BY THE COMPUTER CENTRES OF THE HOSTING MEMBERS

For the purposes of this Annex, all capitalised terms shall have the meanings given to them in Clause 1 (*Definitions and Interpretations)* of this Contributors Agreement and the following additional terms shall have the following meanings:

Contributor Personnel means all employees of the Contributor or personnel working on behalf of the Contributor;

PRACE Personnel means all employees who are directly employed by PRACE;

Incident means an event that causes a Problem.

Problem means any error or fault on the Contributor's infrastructure which effects the PRACE User's access to or use of the Tier-0 Resources;

Support Hours means the normal working hours according to the usual working arrangements of the Tier-0 site of the Contributor

The Contributor shall make available the Tier-0 Resources in accordance with the Service Levels set out below.

1. **Availability and Allocation of the Tier-0 Resources**

1.1 The Contributor shall use all reasonable endeavours to make available the Tier-0 Resources on a twenty-four (24) hours a day, seven (7) days a week basis, with the exception of scheduled downtime, such as regular maintenance and upgrade of the system.

1.2 For each PRACE User Group that uses the Contributor's Tier-0 Resources, the Contributor shall provide each PRACE User with an account and exchange access credentials to enable all PRACE Users to access and use the Tier-0 System.

1.3 The allocated cycles will be provided by the Contributor equally distributed over the granted allocation time. Discontinuous use may lead to a loss of the unused cycles.

1.4 The PRACE User's codes are expected to be ready to use the Tier-0 System. It shall be the responsibility of each Principal Investigator to ensure that the relevant codes are ready to use on the Contributor's Tier-0 System. PRACE shall not have any liability in the event that the relevant codes are not ready to use on the Contributor's Tier-0 System.

2. **Helpdesk/First Level Support**

2.1 As a mandatory component of the Contributor's in-kind Contribution of Tier-0 Resources the Contributor shall provide a helpdesk or contribute to the common

helpdesk to provide First Level Support for the Tier-0 System as set out in this paragraph.

2.2   First Level Support means:

(a)   acting as the first point of contact for support for the PRACE Users by telephone, email, [other communication mechanisms – eg. Instant Messaging?] and ensuring regular follow-up of outstanding requests to each PRACE User;

(b)   providing web-based information on the usage of the Tier-0 resources to the PRACE Users, such as databases of information on frequently asked questions and the technical responses to previously asked support queries;

(c)   providing information and support to the PRACE Users on the access arrangements to the Tier-0 resources, including support on password allocation and re-sets;

(d)   providing advice and assistance to the PRACE Users on the use of the Tier-0 Resources; and

(e)   providing initial aspects of Problem diagnosis and Problem fixes to the PRACE Users. (Problems which cannot be fixed at First Level Support will be appropriately escalated to higher level of support.

2.3   The First Level Support helpdesk shall be available to the PRACE Users during Support Hours throughout each PRACE User's usage of the Tier-0 Resources. The Contributor shall ensure that the First Level Support helpdesk is provided by appropriately skilled and experienced Contributor Personnel who will use English as the working language.

2.4   The Contributor shall ensure that the First Level Support helpdesk may be contacted by the PRACE Users as described in Annex A.

2.5   The Contributor shall ensure that all calls to the First Level Support helpdesk are answered promptly and that all emails are promptly acknowledged.

2.6   All PRACE User queries must, wherever possible, be addressed within two support days.

2.7   Once the query is resolved, the PRACE User will be asked to provide a feedback on the resolution process. In case of the non resolution of any query within two support days the PRACE End User will be informed in due time.

3.   **Higher Level Support**

3.1   As additional in-kind contribution, the Contributor (along with the other Members of PRACE AISBL) shall be entitled at its discretion to make contributions to Higher Level Support for the Tier-0 System.

3.2   Higher Level Support means:

(a)   Support for application porting

(b)   Tuning of applications to exploit the Tier-0 Resources;

(c)   Support for data access;

(d)   Support for pre and post-processing, data management; and

(e)   Support on algorithms, libraries and recommendations of appropriate software packages.

3.3   Contributions to Higher Level Support will not be included in the valuation of the Contributor's in kind Contribution which is described in the Annex III of the Agreement for the Initial Period but will be separately valued as an in-kind Contribution to PRACE.

4.   **Downtime**

4.1   In accordance with Clause 3.2 of the Contributors Agreement, any unscheduled or unexpected downtime experienced by the complete Tier-0 System during any period that the Tier-0 Resources are allocated to PRACE in excess of six (6) hours during each PRACE user's usage of the Tier-0 Resources must be reported by the Contributor to the PRACE Users as soon as reasonably practicable.

4.2   Scheduled downtime, such as regular maintenance and system upgrade must be reported by the Contributor to the PRACE Users well in advance before the downtime is due to commence, with an estimated timeframe for the downtime. The notice must contain the following information with respect to the downtime:

(a)   the date and time on which the downtime commenced or is due to commence;

(b)   purpose and reasons for the downtime; and

(c)   an estimate of the duration of the downtime.

4.3   The PRACE End Users shall be informed about the downtime after the recovery of the system.

5.   **Data**

5.1   The Contributor must use all reasonable endeavours to protect the security and privacy of any PRACE User data which is stored, processed or transmitted on the Tier-0 System.

5.2   Once the allocation of the PRACE User has come to an end, the Contributor must allow the PRACE User access to its data on the Tier-0 System for thirty (30) days. After the thirty (30) day period, the Contributor will save the PRACE User's data and will hold them for a period of one (1) year up to a reasonable size. After this period the Contributor may erase the data without prior notice.

6.   **Reporting**

6.1   The Contributor shall, as a minimum, report to PRACE at quarterly intervals on:

(a) number of problems; and

(b) accumulated downtime.

6.2   Quality of Service

    (a)   The Contributor must, as a minimum, keep a record of:

        (i)   number of Problems reported and scheduled or planned downtime experienced;

        (ii)   any incidents or changes to the Tier-0 System such as power failures, security incidents and network performance; and

        (iii)   any other impact on normal operations of the Tier-0 Resources.

    (b)   Where possible, the real time utilisation of the Tier-0 Resources should be made available to the PRACE User on-line.

    (c)   PRACE will conduct a PRACE User satisfaction survey every year, covering a number of aspects such as hardware, software, application performance, support services, resource allocation and overall satisfaction.

6.4   System Usage

    (a)   The Contributor shall, as a minimum, keep a record of:

        (i)   total usage relative to total available capacity (CPU hours);

        (ii)   total usage relative to allocation per project; and

        (iii)   distribution per job size and job duration.