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Table of Contents

Project and Deliverable Information Sheet	i
Document Control Sheet.....	i
Document Status Sheet	ii
Document Keywords	iii
Table of Contents	iv
List of Figures.....	v
List of Tables.....	v
References and Applicable Documents	v
List of Acronyms and Abbreviations.....	v
List of Project Partner Acronyms.....	viii
Executive Summary	10
1. Introduction	11
2. PRACE 2 Model	12
2.1. Vision of PRACE.....	12
2.2. Changes PRACE 2: New funding model	12
2.2.1. <i>Governance aspects</i>	14
2.2.1.1. <i>Bodies of the PRACE Research Infrastructure</i>	14
2.2.1.2. <i>Voting rights</i>	16
2.2.1.3. <i>Conflict of Interests.....</i>	16
2.2.2. <i>Funding aspects – cost-sharing principle.....</i>	17
2.2.3. <i>VAT aspects</i>	17
2.2.3.1. <i>Analysis of the European VAT Directives.....</i>	19
2.3. Analysis of other Research Infrastructures	25
2.3.1. <i>Governance.....</i>	25
2.3.2. <i>European Research Infrastructure Consortium (ERIC) legal framework</i>	27
2.3.3. <i>Funding.....</i>	28
3. Support to other Work Packages and PRACE RI	29
3.1. Copyrights for PRACE training material	29
3.1.1. <i>Background from previous PRACE-IPs.....</i>	29
3.1.2. <i>Analysis of copyrights for PRACE training material.....</i>	29
3.1.3. <i>IPR Framework.....</i>	32
3.2. Other legal support to other Work Packages.....	33
3.3. Memorandum of Understanding.....	33
3.4. Key Performance Indicators.....	33
4. Conclusions	34
5. Annex.....	35
5.1. Proposed conflict of interest policy for PRACE	35
5.2. Analysis of European Research Infrastructures.....	38
5.3. Memorandum of Understanding between the PRACE-4IP and the GÉANT (GN4) Projects on collaborative work in networking and IT security	47
5.4. Memorandum of Understanding between the PRACE-4IP and EUDAT 2020 projects for services cross-utilization pilots.....	51
5.5. Memorandum of Understanding between the PRACE-4IP and the EGI-Engage Projects.....	56

List of Figures

Figure 1: Distribution of operational costs according to GDP	13
Figure 2: The distribution of the contributions for the 5 years period of PRACE 1	17
Figure 3: The five conditions to be met by the Article 132(1)(f) of the VAT Directive (Source: taxud.c.1(2015)2162037 – EN)	21
Figure 4: Cross-border supplies of services to non-EU countries (Source: taxud c1 (2015)2162037 – EN)	24

List of Tables

Table 1: Overview copyrights PRACE training material.....	31
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List of Acronyms and Abbreviations

aisbl	Association Internationale Sans But Lucratif (legal form of the PRACE-RI)
ALMA	Atacama Large Millimeter/submillimeter Array
BoD	PRACE Board of Directors
CECAM	Coastal Ecosystem Conservation and Adaptive Management
Capex	Capital Expenditure
CJEU	Court of Justice of the European Union
DoA	Description of Action (formerly known as DoW)
EC	European Commission
EGI	The European Grid Initiative
ELI-DC	The European Laser Institute
ELIXIR	Integrated computing services for European researcher, Hinxton, UK
EMBL	The European Molecular Biology Lab, Heidelberg, Germany

ENES	The European Network for Earth System modelling
EPOS	The European Plate Observing System
ERF aisbl	Association of European-level Research Infrastructure Facilities, Brussels, Belgium
ERIC	European Research Infrastructure Consortium
ESA	European Space Agency, Paris, France
ESFRI	European Strategy Forum on Research Infrastructures
ESRF	European Synchrotron Radiation Facility, Grenoble, France
EUDAT	European Data
EVN	European For Very Long BaseLine Interferometry Network
FET	Future and Emerging Technologies
GDP	Gross Domestic Product
GÉANT	Collaboration between National Research and Education Networks to build a multi-gigabit pan-European network. The current EC-funded project as of 2015 is GN4.
GP	General Partners aka Non Hosting Members of Tier-0 system
Graphene	FET flagship Graphene
HM	PRACE Hosting Members
HPB	The Human Brain Project
HPC	High Performance Computing; Computing at a high performance level at any given time; often used synonym with Supercomputing
ILL	Institut Laue-Langevin, Grenoble, France
IPs	PRACE Implementation Projects
IPR	Intellectual Property Rights
ITER	International Thermonuclear Experimental Reactor
KPI	Key Performance Indicator
LHC	Large Hadron Collider
MB	Management Board (highest decision making body of the project)
MD	Managing Director
MOOC	Massively Open Online Course
MoU	Memorandum of Understanding
Opex	Operational Expenditure
PATC	PRACE Advanced Training Centres
PRACE	Partnership for Advanced Computing in Europe; Project Acronym
PRACE 1	PRACE agreement for the Initial Period of five years
PRACE 2	The upcoming next phase of the PRACE Research Infrastructure following the initial five year period.
RI	Research Infrastructure
SHAPE	SME HPC Adoption Programme in Europe
SME	Small and Medium Enterprise
SSC	PRACE Scientific Steering Committee
SWG	PRACE Strategy Working Group
TB	Technical Board (group of Work Package leaders)
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
Tier-1	National or topical HPC centres
UF	PRACE User Forum
VAT	Value Added Tax
VISIONAIR	The Vision Advanced Infrastructure for Research, Grenoble, France
WP	Work Package

List of Project Partner Acronyms

BADW-LRZ	Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften, Germany (3 rd Party to GCS)
BILKENT	Bilkent University, Turkey (3 rd Party to UYBHM)
BSC	Barcelona Supercomputing Center - Centro Nacional de Supercomputacion, Spain
CaSToRC	Computation-based Science and Technology Research Center, Cyprus
CCSAS	Computing Centre of the Slovak Academy of Sciences, Slovakia
CEA	Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France (3 rd Party to GENCI)
CESGA	Fundacion Publica Gallega Centro Tecnológico de Supercomputación de Galicia, Spain, (3 rd Party to BSC)
CINECA	CINECA Consorzio Interuniversitario, Italy
CINES	Centre Informatique National de l'Enseignement Supérieur, France (3 rd Party to GENCI)
CNRS	Centre National de la Recherche Scientifique, France (3 rd Party to GENCI)
CSC	CSC Scientific Computing Ltd., Finland
CSIC	Spanish Council for Scientific Research (3 rd Party to BSC)
CYFRONET	Academic Computing Centre CYFRONET AGH, Poland (3 rd Party to PNSC)
EPCC	EPCC at The University of Edinburgh, UK
EPSRC	Engineering and Physical Sciences Research Council, funding agency, UK
ETHZurich (CSCS)	Eidgenössische Technische Hochschule Zürich – CSCS, Switzerland
FIS	FACULTY OF INFORMATION STUDIES, Slovenia (3 rd Party to ULFME)
GCS	Gauss Centre for Supercomputing e.V., Germany
GENCI	Grand Equipement National de Calcul Intensif, France
GRNET	Greek Research and Technology Network, Greece
INRIA	Institut National de Recherche en Informatique et Automatique, France (3 rd Party to GENCI)
IST	Instituto Superior Técnico, Portugal (3 rd Party to UC-LCA)
IT4I	IT4Innovations National supercomputing centre at VŠB-Technical University of Ostrava, Czech Republic
IUCC	INTER UNIVERSITY COMPUTATION CENTRE, Israel
JKU	Institut fuer Graphische und Parallele Datenverarbeitung der Johannes Kepler Universitaet Linz, Austria
JUELICH	Forschungszentrum Juelich GmbH, Germany
KTH	Royal Institute of Technology, Sweden (3 rd Party to SNIC)
LiU	Linköping University, Sweden (3 rd Party to SNIC)
NCSA	NATIONAL CENTRE FOR SUPERCOMPUTING APPLICATIONS, Bulgaria
NIIF	National Information Infrastructure Development Institute, Hungary
NTNU	The Norwegian University of Science and Technology, Norway (3 rd Party to SIGMA2)
NUI-Galway	National University of Ireland Galway, Ireland
PRACE	Partnership for Advanced Computing in Europe aisbl, Belgium

PSNC	Poznan Supercomputing and Networking Centre, Poland
RISCSW	RISC Software GmbH, Austria
RZG	Max Planck Gesellschaft zur Förderung der Wissenschaften e.V., Germany (3 rd Party to GCS)
SIGMA2	UNINETT Sigma2 AS, Norway
SNIC	Swedish National Infrastructure for Computing (within the Swedish Science Council), Sweden
STFC	Science and Technology Facilities Council, UK (3 rd Party to EPSRC)
SURFsara	Dutch national high-performance computing and e-Science support center, part of the SURF cooperative, Netherlands
UC-LCA	Universidade de Coimbra, Laboratório de Computação Avançada, Portugal
UCPH	Københavns Universitet, Denmark
UHEM	Istanbul Technical University, Ayazaga Campus, Turkey
UiO	University of Oslo, Norway (3 rd Party to SIGMA2)
ULFME	UNIVERZA V LJUBLJANI, Slovenia
UmU	Umea University, Sweden (3 rd Party to SNIC)
UnivEvora	Universidade de Évora, Portugal (3 rd Party to UC-LCA)
UPC	Universitat Politècnica de Catalunya, Spain (3 rd Party to BSC)
UPM/CeSViMa	Madrid Supercomputing and Visualization Center, Spain (3 rd Party to BSC)
USTUTT-HLRS	Universitaet Stuttgart – HLRS, Germany (3 rd Party to GCS)
WCNS	Politechnika Wroclawska, Poland (3 rd Party to PNSC)

Executive Summary

The focus of this deliverable is to report on the status of the early stage of the implementation process of the second period of operations of the PRACE pan-European Research Infrastructure, so-called PRACE 2, that will succeed between 2016 and 2020 the PRACE agreement for the Initial Period (referred to as PRACE 1 in this deliverable). In addition to the main topic of this deliverable, this document reports briefly on the legal support provided by Work Package 2 of PRACE-4IP regarding the copyrights for the PRACE training material and for the PRACE Research Infrastructure related to the collaboration with other research infrastructures.

After recalling the vision of PRACE, this deliverable summarises the outcome of the initial period of PRACE pointing out the needed changes in the face of the transition from PRACE 1 to PRACE 2. This deliverable concentrates on the analysis of the different elements of the PRACE 2 model such as governance, funding and VAT aspects. A detailed analysis of the VAT aspects is undertaken in order to evaluate if the European VAT Directives exempt PRACE from VAT. In addition, a comparison with other research infrastructures concerning governance, funding and Key Performance Indicators (KPIs) is presented.

For some of the topics covered in this deliverable the analysis is based on the formulation of legal questions related to these topics, and on an evaluation of answers provided by the legal advisor firm Bird & Bird LLP assisting PRACE.

1. Introduction

This deliverable reports on the status of the early stage of the implementation process of the second period of operations of the PRACE pan-European Research Infrastructure, so-called PRACE 2, that will succeed between 2016 and 2020 the PRACE agreement for the Initial Period (referred to as PRACE 1 in this deliverable).

Since its establishment in 2010 PRACE 1 has been very successful in providing a world-class HPC infrastructure to European researchers in science and industry, enabling these users to access globally competitive HPC systems based on scientific and technical merit. Four Hosting Members (France, Germany, Italy and Spain) secured funding for the Initial Period from 2010 to 2015, while all PRACE project partners continued to develop the services and brand of PRACE in four FP7-funded Implementation Phase projects (PRACE-PP, PRACE-1IP, PRACE-2IP, PRACE-3IP) and one under Horizon 2020 (the current PRACE-4IP).

The need for PRACE 2 has been summarised by the PRACE SSC into the following recommendation to the PRACE Council: “PRACE 1 has been very successful in establishing a European HPC community, which has strengthened European science and competitiveness. The PRACE Scientific Steering Committee (SSC) strongly recommends that PRACE 2 continues to provide access to world-class HPC facilities in Europe at least at the level of PRACE 1”.

In agreement with this, the aim of PRACE 2 is to continue providing all European scientific communities with adequate, leadership-class computing systems, whose resources are pooled into an integrated distributed forefront infrastructure, accessible via a single peer review process. The specification of leadership-class systems is based on the requirements of different scientific disciplines. It is essential that PRACE 2 is built on the important achievements reached by PRACE 1 with the long-term objective of providing a sustainable infrastructure.

In PRACE-4IP, WP2 task 2.1 had the objective to support the PRACE aisbl Council and PRACE Board of Directors (BoD) to identify and analyse different elements of PRACE 2 such as financial and governance aspects.

In addition to the indicated support, the working group has provided direct legal support for PRACE aisbl in topics of different nature and to arising issues of organisational nature in the different work packages.

This deliverable describing the activity undertaken by task 2.1 is structured as follows:

- Section 2, after a brief introduction of the PRACE 2 model and recalling the vision of PRACE, summarises the outcome of the Initial Period of PRACE pointing out the needed changes of PRACE in the transition from PRACE 1 to PRACE 2. An analysis of the different elements of the PRACE 2 model such as governance, funding and VAT aspects follows. It deepens the analysis of the VAT aspects to evaluate if the European VAT Directives exempt PRACE from VAT. In addition, a comparison with other research infrastructures concerning governance and funding is presented;
- Section 3 reports on the direct legal support offered by the task 2.1 for the PRACE Research Infrastructure related to the collaboration with other research infrastructures and to arising issues of organisational nature in the different work packages. It also presents the work performed on Key Performance Indicators (KPIs);
- Finally, some conclusions are drawn in Section 4.

For some of the topics covered in this deliverable the analysis is based on the formulation of legal questions related to these topics, and on an evaluation of answers provided by the legal advisor firm Bird & Bird LLP assisting PRACE.

2. PRACE 2 Model

2.1. Vision of PRACE

The vision of PRACE is summarised as follows:

- To provide a world-class HPC infrastructure to European researchers in science and industry comprised at any time of leadership-class pan-European systems, linked with an underpinning network of national and regional systems.
- Access to PRACE leadership-class systems is awarded to all European researchers on the basis of a fair, equal and transparent peer review process based on scientific excellence and a fair cost sharing principle.
- Leadership-class systems need to be procured openly in a global market, following clear and transparent principles of user needs, technological leadership, and cost effectiveness.
- PRACE should be seen as the organisation providing leadership access to compute and data analysis services in science and research in Europe.

2.2. Changes PRACE 2: New funding model

The aim of PRACE 2 is to continue providing all European scientific communities with adequate, leadership-class computing systems, whose resources are pooled into an integrated distributed forefront infrastructure, accessible via a unique peer review process. The specification of leadership-class systems is based on the requirements of different scientific disciplines. It is essential that PRACE 2 is built on the important achievements reached by PRACE 1 with the long-term objective of providing a sustainable infrastructure.

It is the aim for PRACE 2 to have a model which enables the same quality of HPC services as in PRACE 1, avoiding a reduction in capacity, capability and diversity of HPC architectures available. In other words, it is the goal of PRACE to offer the capability and capacity required to support leading-edge research, using state-of-the-art technology systems.

At the beginning of 2016 PRACE offered a total of 24 Petaflops of peak performance on complementary architectures of 6 Tier-0 systems located in France, Germany, Italy and Spain. It is important to mention that some of these systems will be upgraded before the end of the year. This will place PRACE at a similar level to other RIs for open research in the US, Japan and China, allowing Europe to compete at the highest level within the worldwide HPC ecosystem.

Since 2010, PRACE has awarded 11,8 billion core hours to 435 projects (over a total number of 1178 proposals leading to an oversubscription ratio of 270%) based on open peer-reviewed calls for proposals with one single criterion: scientific excellence. This represents an average allocation of 26 million core hours per project, which is beyond what is usually available at the national level.

In 2012 the Open R&D model was launched as an initiative to attract more industrial project leaders and partners to PRACE. So far 57 industrial projects have been awarded including large companies as well as SMEs.

PRACE has awarded computing resources to major EU and international initiatives including FET Flagships (the Human Brain Project (HBP) and Graphene), large-scale instruments (ITER, LHC, ALMA, etc.) and European structured communities (ENES, EPOS, CECAM, etc.), as well as to ERC and Marie Curie grant holders.

During the agreement for the PRACE 1, the Hosting Members (HM) provided the computing cycles in their Tier-0 systems for free to European researchers, covering both Capital Expenditure (Capex, the cost for acquiring Tier-0 system) and Operational Expenditure (Opex, the cost of operation of the Tier-0 systems). In PRACE 2, a fair contribution to Opex from all partners is expected to build a sustainable research infrastructure. This assumes a shared participation of Hosting Members and the non-Hosting Members in the operational costs of the infrastructure. The success of PRACE 2 depends on the inclusion of the current partners and therefore PRACE aims at finding a cost model that is affordable for all partners. In that sense, a contribution from the European Commission is expected to strengthen the ambitions of PRACE 2 and to ensure inclusiveness.

The model evaluated at this stage of the design of PRACE 2 requires that Hosting Members finance the required hardware investments nationally (Capex) while all members contribute to the operational costs (Opex), in a distribution that could be based on national GDP and other modulating factors. The HMs would provide such contribution in cycles, while non-Hosting Members would provide such contribution in cash, which would be distributed to the HMs according to their provision of cycles.

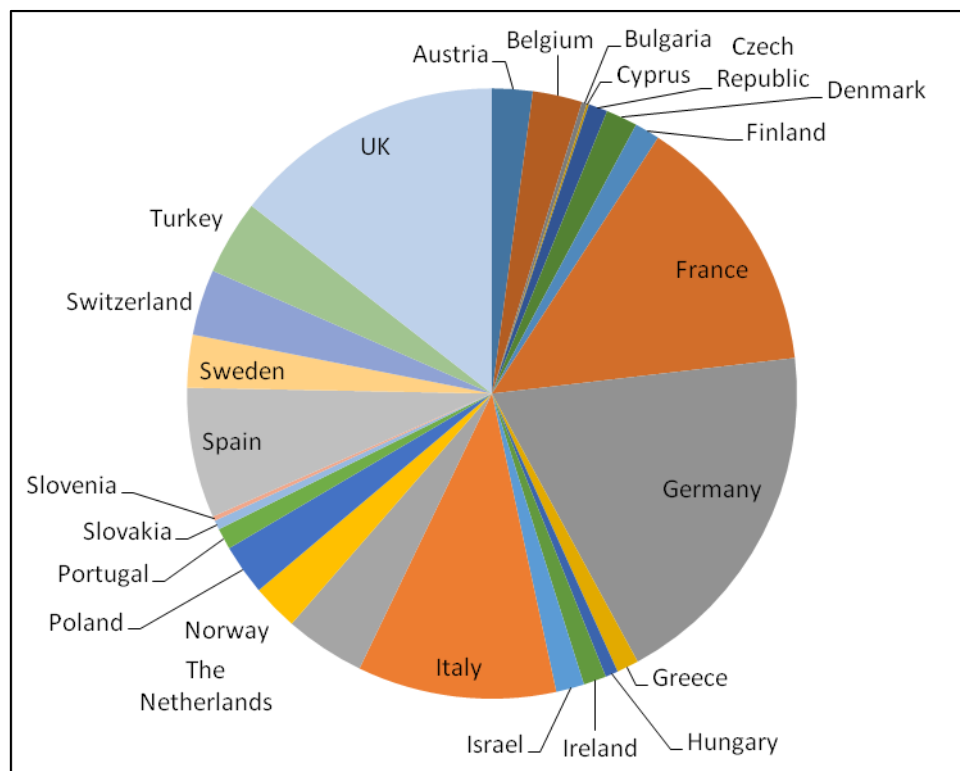


Figure 1: Distribution of operational costs according to GDP

In order to facilitate the transition from PRACE 1 to PRACE 2, the PRACE Council has established the Strategy Working Group (SWG). This group consists of representatives of the Hosting Members, representatives of the non-Hosting Members, the Chair and the Vice-Chair of the Council, the Chair of the BoD, the Chair of the SSC and the PRACE Project Coordinator. The mandate of the SWG is to define the exact details of the PRACE 2 model and present such a model for agreement by the members of the PRACE Council. It is important to add that a number of SWG and Council members are also involved in WP2. This has allowed WP2 to support the SWG in some aspects, as well as this has ensured the alignment between the needs of PRACE and the work of WP2.

The new financial regime foreseen for PRACE 2 has implications in several aspects of the PRACE organisation. It is also the scope of the SWG to analyse such implications and produce proposals to the Council. The present chapter of this deliverable reports on the support of WP2 to the SWG and PRACE Council in some of those aspects.

2.2.1. Governance aspects

Governance is the system by which organisations are directed and managed. It influences how the objectives of the organisation are set and achieved, spells out the rules and procedures for making organisational decisions, determines the means of optimising and monitoring performance, including how risk is monitored and assessed.

2.2.1.1. Bodies of the PRACE Research Infrastructure

Currently and according to its statutes, PRACE RI management is composed of the following bodies:

- The PRACE Council is responsible for considering and deciding on all matters of interest to the Association. The Council consists of one Delegate per country. Each Delegate has one vote that depending on the type of decision can be weighted with the amount of in-kind contribution of the represented country; each Delegate is allowed to bring one Advisor to Council meetings who has no voting right. The Council has a Board that consists of the Chair, the Vice-Chair and the Secretary. The Board of the Council is responsible for conducting, calling, setting the agenda of, preparing and handling the meetings of the Council.
- The Board of Directors (BoD) is the executive body of the PRACE Association. The BoD manages the Association, allocates the available computing resources and represents the Association in court. The BoD is composed of a minimum of two members due to the fact that in the Belgium law, a minimum of 2 directors is required. The BoD consists at present of 6 members, all assigned on a part-time basis. The four Hosting Members have each one representative in the BoD (1 day a week), one BoD member represents the General Partners and the 6th member is the Chair of the Scientific Steering Committee. The Chair of the BoD acts also as Managing Director of the Association.
- The Scientific Steering Committee (SSC) is responsible for giving guidance on all matters of a scientific and technical nature which may influence the scientific work carried out by the Association. The SSC consists of 21 members, with a Chairman. SSC members are proposed by the SSC appointed by the Council for two years, renewable twice.
- The Access Committee (AC) is in charge of giving opinions on the scientific use of the Tier-0 infrastructure, issuing recommendations and advising the BoD on policies regarding access to the resources. The AC is appointed by the Council and shall comprise an odd number of members with a minimum of five, from among which a Chairman and a Vice-Chairman are appointed. AC members serve a two-year term renewable once.
- The Industrial Advisory Committee (IAC) is composed of European industry representatives (both from multi-nationals and SMEs) representing 11 industrial sectors: Aeronautics / Aerospace, Automotive / Transport, Energy, Engineering / Manufacturing, Oil & Gas, Renewable Energy, Telecommunications/Electronics, ISV, HPC Vendors, Life Sciences, and Finances. They provide PRACE with advice on

HPC usage for the benefit of European competitiveness and economic growth. The IAC reserves an observer seat for the Chair of ETP4HPC. A Chair and Vice-Chair are chosen by the committee, who, like all members, are appointed for two years, which is renewable once only.

- The PRACE User Forum (UF) is an independent body from the Association. However, there are close links and interactions with the Association through the BoD. The role of the PRACE UF is to provide a communication channel between the user community and the resource providers, as well as to sustain an open exchange forum between users.

Chair of the Council and the Managing Director / Board of Directors (BoD)

PRACE strives to achieve a governance structure that ensures a clear separation of powers and responsibilities between the Chair of the Council and the Managing Director (MD), and the BoD. Many academic papers and best practices described in literature call for separation between the Chair of the Council and MD roles [1]. Separation is mainly used because it increases the Chair's and BoD's independence from management and thus leads to better monitoring and oversight. However, a clear mandate for the role of the Managing Director and the BoD should be defined in order to avoid conflict of interest with the Chair of the Council.

On the other hand, Stewardship theory [2] describes the principle of “unity of command” with clear lines of authority to which management (and the board) can respond more effectively. In a corporate environment where entrepreneurship is key to competitiveness, fast decision making is crucial and strong, directive, stable, and unconfused leadership is seen as critical to organisational success. In this case the Chair of the board will assume full accountability of his/her “unity of command” trusted to him/her by the shareholders.

This governance provides clear assignment of duties with:

- The decision preparing body (it could be the role of the SWG);
- The decision making body (the Council);
- The decision implementing body (the BoD).

PRACE has developed a consortium culture of consensus for decision making within the Council. The Chair of the Council does not have the authority to act on his own, and must acquire the legitimacy of his/her actions through consensus within the Council. The Chair, supported by the Council Secretary, is also responsible for ensuring that the Council members timely receive accurate and clear information and should manage for example strictly following the statutes, principles and rules agreed within the Council. On the other hand, the Council members have the obligation on their turn to seek or provide clarifications whenever needed.

Further considerations on the PRACE governance and management structure

The following statements represent some further considerations on the PRACE governance and management structure:

- The role of scientists in the governance of PRACE should be strengthened with the increased presence of the scientific community in one or more of the PRACE governing bodies;
- Agility and quick decision making is a key point for the success of an organisation like PRACE. At the moment the Council consists of 25 voting members as well as their advisors. The Council face-to-face meetings are used as the main opportunity for discussion and decision making, however the large number of members of the Council

does not allow for frequent meetings. At the moment PRACE organises four Council meetings per year. To increase the agility of decision making PRACE could introduce more frequent use of the online voting procedures. This process could be further assisted by the introduction of a relatively small body that is representative for the composition of the PRACE Council and the different members e.g. Hosting Members, non-Hosting Members. Such a body could assist the Council Secretary in preparing the decision proposals for the PRACE Council meetings as well as the online voting packages.

2.2.1.2. Voting rights

According to the PRACE aisbl statutes, the Association shall seek unanimity on all decisions and matters. When this is not possible, three majorities are also defined, according to the nature of the decision:

- Unanimous vote is required for admission of new members, setting the annual contributions, assumption of guarantees, subscription of collateral and the participation to other organisations, or for the amendment of the statutes.
- Qualified majority is required for matters related to contributions of members and, generalising, any matter with financial implications. The current threshold set for qualified majority is 80% of contributions to PRACE.
- Absolute majority for any other issues (50% threshold).

In addition, in some situations the HMs have an explicit veto right, for items concerning their level of contribution. Please refer to Article 14 of PRACE aisbl statutes for a comprehensive description of the application of these majorities.

Qualified majority and Absolute majority are defined in the statutes in relation with both the number of members and the contributions of such members. This means that any resolution passed by absolute majority needs a positive vote of >50% of the members, which includes >50% of the contributions to PRACE. In PRACE 1, the Hosting Members had the majority of contributions, but the new financial model in PRACE 2 could imply an important change on this fact.

In practical terms, absolute majority needed 2 HMs and qualified majority needed the 4 HMs to agree on the subject. This meant an effective veto right of all HMs in some resolutions. The situation is different in PRACE 2, where there are no more veto rights according to one of six agreed principles.

2.2.1.3. Conflict of Interests

In order for PRACE 2 to stay a respectable and trustworthy representative for the European HPC community, it must meet high ethical standards in order to merit the trust of its members, governments and the public.

Because of this, it was felt that a policy on conflict of interest was necessary to ensure that persons and bodies of PRACE 2 are committed to business in a manner that ensures members' judgment and decision making is not influenced by undue personal interests.

Such a policy has recently been created by members of WP2 and is due for approval by the PRACE Board of Directors.

The proposed policy can be found in Annex 5.1 and it describes what a conflict of interest is, the types of conflict of interest which can surface, when a conflict of interest should be

disclosed (and to whom) and also provides a guidelines on how a conflict of interest can be managed.

The conflict of interest policy is aimed for all persons and decision making bodies who represent PRACE, its interests and activities.

2.2.2. Funding aspects – cost-sharing principle

As already stated, the main difference between PRACE 1 and PRACE 2 is the distribution of the contributions for the infrastructure among the partners (and the EC). The following figure shows the distribution of the costs for the 5 years period of PRACE 1:

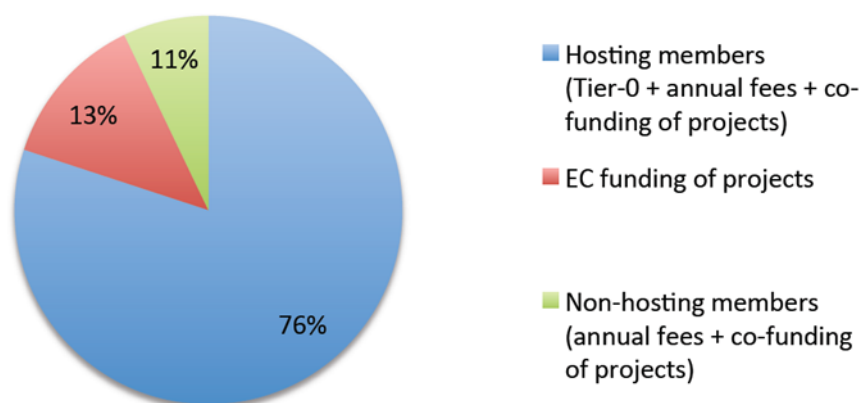


Figure 2: The distribution of the contributions for the 5 years period of PRACE 1

The working principle for PRACE 2 is that the HMs will carry out the procurement of new systems from national sources, and the operation costs of such systems will be shared by all PRACE members according to a fair process, taking into account their resources.

It is important to note that at the moment of submission of this deliverable the full model for PRACE 2 is still under negotiation, therefore the detailed distribution of contributions, including the valuable contribution of the EC through the current PRACE-IP projects and any other instrument in the future cannot be estimated yet. The co-financing of all PRACE partners to IP projects cannot be estimated either at this moment.

2.2.3. VAT aspects

At the time of PRACE Preparation Phase a considerable work of analysis was devoted to all the legal aspects concerning the establishment of a legal entity whose legal form had to accommodate its mission and scope.

The analysis pointed out the relevant issue of the taxability and VAT position of PRACE aisbl in consideration of the financial model and the benefits for its members.

The basic question was whether PRACE under the legal form of an AISBL (Association Internationale Sans But Lucratif) qualified as a VAT taxpayer. The services rendered by PRACE or on its behalf in the context of supercomputing infrastructure are rendered for free: the use of the infrastructure, conferences, etc. That is applicable not only to scientists or researchers of the PRACE member countries but also to those of other countries, including non-EU and overseas.

All transactions rendered for free (i.e. not for reward) fall outside the scope of VAT. Based on this conclusion, PRACE should be considered as a non-taxable person. However the question of non VAT taxability was at that time more complex and broader. The legal and fiscal advisors remarked clearly that:

“...it should be noted that PRACE’s services should not only be assessed in the context of use of the infrastructure. Any other advantage received by the members in their capacity of member, could be considered as a service. For instance, if the members will be informed – exclusively, because of their capacity as a member – of any research results obtained through the use of the infrastructure by the scientists and researchers, PRACE could be deemed rendering information services for reward, because there will then be a direct link between the membership fees and the information provided. This will not be the case if the research results would be communicated openly to everyone (including non-members) for free (e.g., through publication on the website).”

The full assessment of PRACE position led to the request to the Belgian VAT authorities of a decision on the VAT taxability of the Association and the answer of the Belgian authorities was in favour of the VAT non-taxability. That includes the collection of the Association fee that aims at covering the expenses incurred in managing PRACE. At the moment, PRACE aisbl fiscal status grants the association to receive:

- Subsidies for which no services are required;
- Donations;
- Contributions to cover operational expenses that merely ensure the existence of the organisation and for which no link exists with services rendered by the organisation (e.g., lease costs or personnel costs that are not related to the rendering of services but to the mere existence of the organisation).

Furthermore, the very same reasoning has been applied to the contribution in-kind, including the resources committed by the Hosting Members. In the view of the fiscal advisors the voting power associated with the offered resources could not be valued sufficiently to be considered as reward for service but rather it has been seen as donation. The Belgian VAT office that was competent for PRACE confirmed the view that granting additional voting power should not be considered a service to the member that contributes.

So far the fiscal and VAT status of PRACE has been preserved although the activities carried out by the Association by means of its office staff and BoD has expanded and developed new areas (training, EU funded project participation, etc.).

Today PRACE is facing the challenge to evolve itself for strengthening its sustainability, expand the availability of resources for the scientific communities, and meet the EC strategic directions in HPC. The discussion on the so-called PRACE 2 has been going on for a while and among the topics of investigation and activities the fiscal status of the Association plays a key role. PRACE members are in general entities or organisations that in their countries have a specific role in the domain of support to science and research (either because they qualify as research centres or are national funding agencies). Most (if not all) have non-profit legal status, receive specific funding from their governments out of the scope of VAT, and have missions and activities that are out of VAT scope. However, it is becoming clear that it might not be possible for PRACE aisbl to benefit of the very same fiscal status in the next phase should the conditions described above change.

2.2.3.1. Analysis of the European VAT Directives

Historic reference

The application of VAT is decided by national tax authorities but there are some standard EU rules [3]. The main legislative text which regulates the European Union's common system of VAT is the Council Directive 2006/112/EC of 28 November 2006 [4] on the common system of value added tax. This text codifies all the amendments made to the very first directive, which was actually the original sixth Council Directive 77/388/EEC of 17 May 1977 on the harmonisation of the laws of the Member States relating to turnover taxes - Common system of value added tax: uniform basis of assessment. The directive is in force from the 1 January 2007 and since 2006, it has been amended several times.

The adoption of Council Directive 2006/112/EC fulfils the need for uniformity in the assessment of the VAT in the transactions of the European Union. As said in the Preamble p.61 "It is essential to ensure uniform application of the VAT system. Implementing measures are appropriate to realise that aim."

The Directive conforms to the principle of not distorting the fair competition and the principle of the free movement of goods and services in the internal market. The Directive also tends to give a solution to the problem of double taxation of cross-border transactions, (principle of avoiding double taxation in EU), which can occur as the result of divergences between Member States in the application of the rules governing the place where taxable transactions are carried out. (Dir. 2006/112/EC Preamble p. (19), (37), (62), articles 59a, 145 par.2).

The content of the Directive 2006/112/EC

Subject to VAT are:

1. The supply of goods/services for consideration (payment) within the territory of a single Member State by a taxable person acting as such;
2. The intra-EU acquisition of goods/services for consideration (payment) within the territory of a Member State by a taxable person acting as such (goods supplied and dispatched or transported by a business in one EU country to a business in another);
3. The importation of goods.

In other words, VAT is applied to all transactions carried out in the EU for consideration (payment) by a taxable person.

Taxable person is any person who, independently, carries out in any place any economic activity, whatever the purpose or results of that activity; any person who, on an occasional basis, supplies new means of transport, which is dispatched or transported to the customer by the vendor or the customer, or on behalf of the vendor or the customer, to a destination outside the territory of a Member State but within the territory of the Community, shall also be regarded as a taxable person. (Dir.2006/112/EC art.9/10).

A reference should also be made to Intra-Community acquisition of goods:

1. The Intra-Community acquisition of goods represents the acquisition of the right to dispose as owner of movable tangible property dispatched or transported to the person acquiring the goods, by or on behalf of the vendor or the person acquiring the goods, in a Member State other than that in which dispatch or transport of the goods began (article 20 par1).
2. As far as the exemptions of the Intra-Community acquisitions of goods are concerned, the article 141 provides that each Member State shall take specific measures to ensure

that VAT is not charged on the Intra-Community acquisition of goods within its territory where the following conditions are met:

- The acquisition of goods is made by a taxable person who is not established in the Member State concerned but is identified for VAT purposes in another Member State;
- The acquisition of goods is made for the purposes of the subsequent supply of those goods, in the Member State concerned;
- The goods thus acquired by the taxable person are directly dispatched or transported, from a Member State other than that in which he is identified for VAT purposes, to the person for whom he is to carry out the subsequent supply;
- The person to whom the subsequent supply is to be made is another taxable person, or a non-taxable legal person, who is identified for VAT purposes in the Member State concerned;
- The person above has been designated as liable for payment of the VAT due on the supply carried out by the taxable person who is not established in the Member State in which the tax is due.

A special reference should be made to the provisions of the Directive concerning the exemptions from VAT (articles 131-166).

In general, the Directive provides for exemptions from VAT. Most of them are exemptions without the right to deduct, e.g. financial and insurance services, medical care or social services. However, exemptions with the right to deduct also exist, e.g. intra-EU supplies of goods or exports of goods to a non-EU country. Certain exemptions are obligatory for Member States, while others are optional.

In order for the PRACE activity to be exempt from VAT, among the above-mentioned articles, it should have been provided that the supply of services by an HPC Unit (probably aiming exclusively to academic and research use) should be exempt from VAT.

EC Communication on Art 132(1)(f) of Directive 2006/112/EC

However, there is a point in the article 132, par1. subpart.(f) that establishes the following exemption from VAT:

“Member States shall exempt the following transactions:

the supply of services by independent groups of persons, who are carrying on an activity which is exempt from VAT or in relation to which they are not taxable persons, for the purpose of rendering their members the services directly necessary for the exercise of that activity, where those groups merely claim from their members exact reimbursement of their share of the joint expenses, provided that such exemption is not likely to cause distortion of competition;”

The scope of this exemption for so-called “cost-sharing groups” has been subject to discussion during several meetings of the EC VAT Committees. Taking into account the different views of the Member States as to its application the EC published on 6 May 2015 a Communication on the scope of the mentioned exemption.

According to such Communication there are basically five conditions to be fulfilled so this exemption can be applied:

1. There must be an entity (“independent group”) supplying services to persons who are members of it;

2. The members must be either taxable persons carrying on a downstream activity which is exempt from VAT or out of scope or non-taxable persons;
3. The services supplied by the group must be "directly necessary" for the exercise of the members' exempt or non-taxable downstream activities;
4. The services supplied by the independent group must be rewarded at cost ("exact reimbursement") and so the group must not make a profit out of the exempt services supplied to its members;
5. The exemption from VAT of the supplies must not be likely to cause distortion of competition.

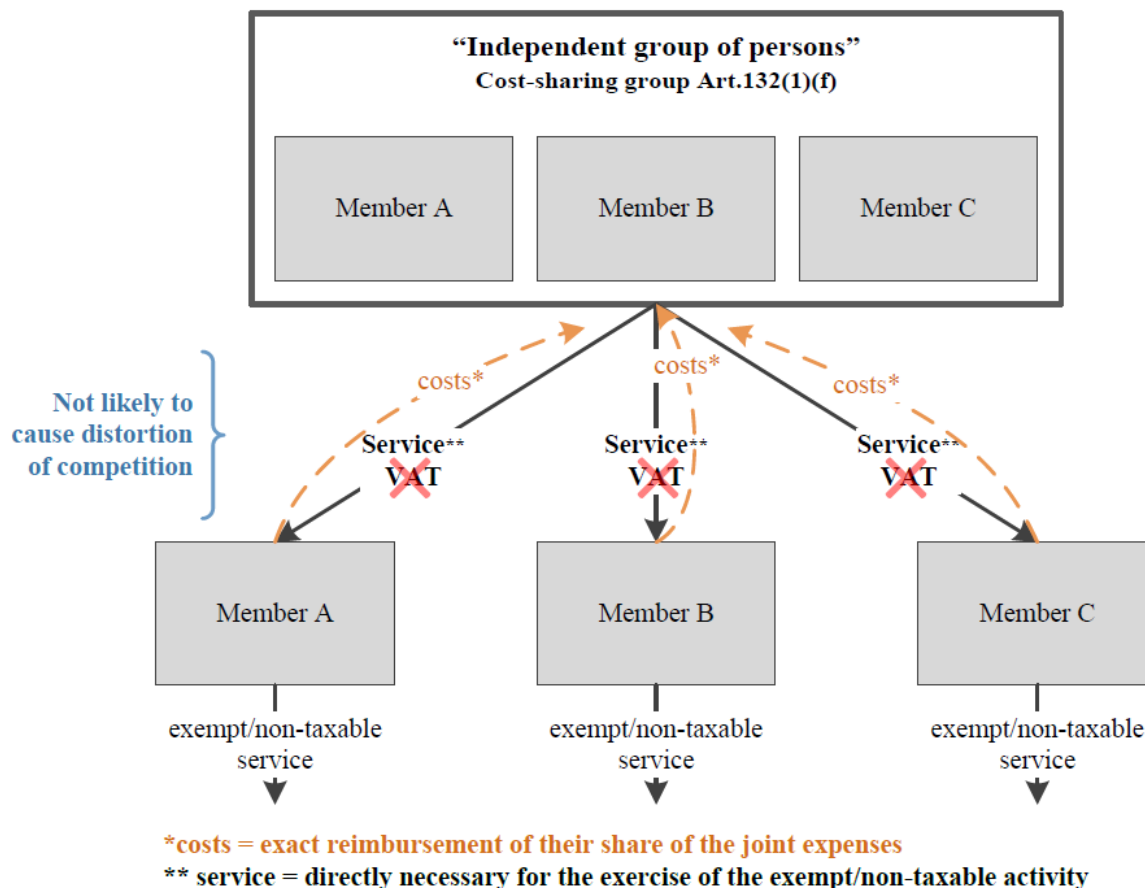


Figure 3: The five conditions to be met by the Article 132(1)(f) of the VAT Directive (Source: taxud.c.1(2015)2162037 – EN)

Condition 1: there must be an entity ("independent group") supplying services to persons who are members of it:

- Which is the status required from an "independent group"?

It follows that an independent group for the purposes of Article 132(1)(f) of the VAT Directive could be crystallised, for example, in a company, a foundation, an *association*, etc.

- Must the "independent group" be a separate entity?

The word "independent" in the provision suggests that it must at least be an *autonomous entity different from its members*.

- Is a particular status required for "persons" to be members of a cost-sharing group?

From a legal perspective, the wording of the provision simply states in respect of members of cost-sharing groups that they need to be "persons" which could include *natural or legal persons, in any legal form*.

The members of a cost-sharing group could for VAT purposes *be either non-taxable persons or taxable persons* carrying out an exempt activity or having out-of-scope activities.

- What does the use of the term "member" (of an independent group) imply?

Not only do the provider and the recipients of the exempt services need to be independent entities according to Article 132(1)(f) of the VAT Directive, but *the recipients must be "members" of the independent group supplying the services*.

- Can a member act individually in the capacity of being the cost-sharing group?

It seems difficult to consider that the services supplied by a member of a cost-sharing group to other members could be exempted under Article 132(1)(f) of the VAT Directive. One of the conditions for the exemption being available is that the services *must be supplied by the independent group – that is a separate entity – to its members. Such requirement would not be met, in the case of "member-to-member" supplies of services*.

- Can a subsidiary company act as cost-sharing group for its parent company?

Not applicable.

- Can the head office of a company act as cost-sharing group for its branch?

Not applicable.

- Can a VAT group of the kind referred to in Article 11 of the VAT Directive be a member of a cost-sharing group?

Not applicable.

- May a cost-sharing group provide different services to its members?

Not applicable.

- May a cost-sharing group provide services to third parties (non-members)?

There, however, seems to be no obstacle for the independent group also being *able to supply services to third parties other than the members of the group*, provided that those services (in so far as they are not covered by another exemption) are taxed.

- May a cost-sharing group provide (i) exempt services to those of its members meeting the conditions laid down in Article 132(1)(f) of the VAT Directive; and (ii) taxed services to other members not meeting those conditions?

There is *nothing* in the wording of Article 132(1)(f) of the VAT Directive *to suggest that each and every one of the supplies of services made to the members of a cost-sharing group need to comply with the requirements*, in order for exemption to be available.

Condition 2: *the members must be either taxable persons carrying on a downstream activity which is exempt from VAT or out of scope or non-taxable persons;*

- May members of a cost-sharing group who are taxable persons also carry out taxed activities?

Given the absence of any indication in the wording of Article 132(1)(f) of the VAT Directive that the exemption is only for the use of groups whose members "exclusively" carry on exempt or non-taxable activities, the Commission services are of the opinion that there is no basis for such a restriction. Moreover, there seems to be no foundation either for the

application of an eventual ceiling limiting up to a maximum the number of taxable activities that a member of the cost-sharing group can undertake. It seems reasonable requiring the *exempt activities of the member to be carried on in a consistent manner rather than merely sporadically*, and to represent a significant part of the member's business. An eventual decision in this matter is *left to the discretion of the Member States*.

Condition 3: *the services supplied by the group must be "directly necessary" for the exercise of the members' exempt or non-taxable downstream activities;*

- How should the expression "directly necessary" be interpreted?

The need to avoid competitive distortions, and the fact that exemptions constitute derogations to the general rule according to which VAT is levied on all supplies, counsel a strict interpretation of this condition. Consequently, the exemption should only be applicable to services which are directly connected with the exempt supplies or the non-taxable activities in which the members of the group are engaged. *The fact that the services may be used for other activities should not preclude the members of a cost-sharing group to benefit from the exemption*, since it does not follow from the fact that the services may be used for other activities that they are not directly necessary for an exempt activity.

- Must the services supplied by a cost-sharing group exempt from VAT under Article 132(1)(f) of the VAT Directive be services in the public interest or can they be of a commercial nature?

The exemption provided for under Article 132(1)(f) of the VAT Directive is contained in Title IX of the VAT Directive, under Chapter 2 "Exemptions for certain activities in the public interest". Hence the question is whether the services exempted under cost-sharing arrangements must be restricted to those which are considered to be of public interest.

The Commission services are of the opinion that the exemption provided for under Article 132(1)(f) of the VAT Directive *may also cover services of a commercial nature*, including those falling within the scope of Article 135 of the VAT Directive.

Condition 4: *the services supplied by the independent group must be rewarded at cost ("exact reimbursement") and so the group must not make a profit out of the exempt services supplied to its members;*

- How must the element "joint expenses" be interpreted? More specifically, does this term include non-deductible VAT paid by the cost-sharing group?

The cost-sharing group is to be regarded as a (separate) taxable person pursuant to Article 9 of the VAT Directive. As its activities are exempt from VAT, the non-deductible VAT incurred by the cost-sharing group will inevitably constitute a cost for the group and can therefore be included as a part of its expenses, to be refunded by the members.

Condition 5: *the exemption from VAT of the supplies must not be likely to cause distortion of competition.*

- How should the requirement that the exemption must "not be likely to cause distortion of competition" be interpreted?

In this respect, the CJEU seems to require the risk of distortion of competition being "real", as opposed to what is a purely hypothetical possibility.

- How should the distortion of competition be assessed, in case of cross-border supplies of services?

The VAT Directive does not provide any guidance on the cross-border assessment of the "distortion of competition" risk, and this is an issue never tackled by the CJEU in the context of cost-sharing groups.

With regard to the application of the exemption in cross-border scenarios the EC confirms that there is no basis in the wording of the exemption to be limited to domestic transactions:

“Members of the cost-sharing group could for VAT purposes be either taxable persons carrying out an activity which is exempt or out of scope or non-taxable persons. Therefore, both B2B and B2C place-of-supply rules could be applicable in relation to cost-sharing arrangements, depending on the nature of the service and the quality and the location of the member receiving the service. The existence of a cross-border taxable supply of services falling within the scope of the EU VAT, and possible application of the exemption for cost-sharing arrangements, would need to be assessed on a case-by-case basis.”

The EC clarifies that *“taking into account the place-of-supply rules, the legislation to be applied is that of the country where the transaction takes place, which may not necessarily be the country where the recipient is established.”*

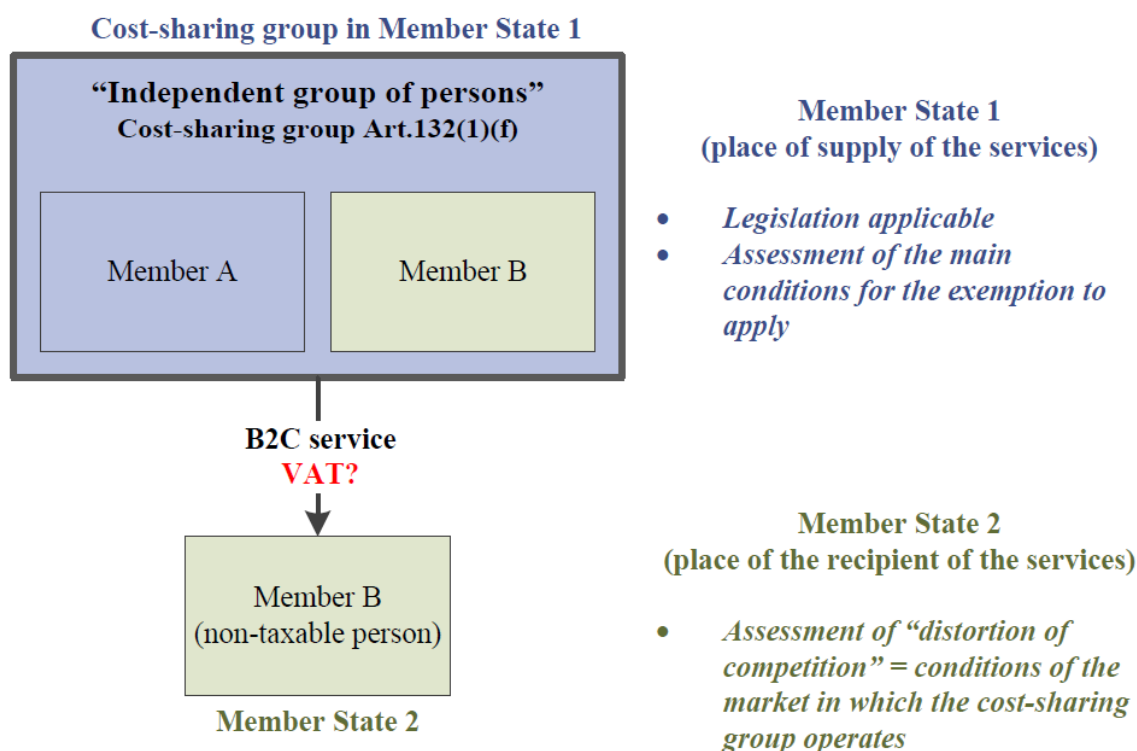


Figure 4: Cross-border supplies of services to non-EU countries (Source: taxud c1 (2015)2162037 – EN)

Taking into account the analysis above it is necessary to determine in the first place if the specific conditions of the national laws implementing the VAT Directive in the Countries of the Members differ or not from the ones established by the VAT Directive.

And secondly, in order to benefit from the exemption it is necessary to check whether the conditions above mentioned, as implemented in the national legislation on VAT, are met or not.

In this regard, it should be noted that PRACE aisbl is benefiting currently from another exemption provided for in Article 132.1.1 of the VAT Directive and implemented in the Belgian VAT regime:

“1.Member States shall exempt the following transactions:...the supply of services, and the supply of goods closely linked thereto, to their members in their common interest in return for a subscription fixed in accordance with their rules by non-profit-making organisations with aims of a political, trade-union, religious, patriotic, philosophical, philanthropic or civic nature, provided that this exemption is not likely to cause distortion of competition;”

This provision has been implemented in Belgium by Article 44.2.11 of the Belgium VAT Code. The Belgian tax authority issued in 2012 a Communication [5] clarifying the scope the above mentioned provision.

At the date of producing this Deliverable, the above described option is not considered as a suitable option for the cost sharing model foreseen by PRACE Members.

2.3. Analysis of other Research Infrastructures

This chapter contains a comparison of other Research Infrastructures (RIs) and organisational structures implemented in the framework of European infrastructures. Other e-Infrastructures, such as GÉANT, EGI or EUDAT are the closest and most familiar organisational structures to the PRACE governance. Apart from these organisations there are also other very advanced RIs which are posted on the ESFRI roadmap. The level of governance is very diverse - from a project related consortium (usually H2020 project), through a legal entity, e.g. aisbl to an ERIC organisation (European Research Infrastructure Consortium). The aim of all the mentioned organisational structures is the management of international infrastructure consisting of elements that are supervised by member countries.

2.3.1. Governance

The governance model should be regarded as instrumental in any RI to better accomplish its mission and achieve its objectives. The various RIs in Europe present a variety of governance models depending, among other factors, on the activity being pursued and the legal status of the organisation.

As a RI, PRACE shares many features in common with the other RIs operating in the European space. Therefore, it is natural to look at the governance models of these RIs when one tries to figure out the optimal model to be used in PRACE 2.

In this section we schematically describe the bulk of the organisational and governance aspects of a few other research organisations, not only related to computational activities. Among the various RIs we would say that the European Grid Initiative (EGI) pursues a mission, which more closely resembles that of PRACE, so that we will give more details for EGI.

In the format of a table (Annex 5.2), to facilitate the comparison between the governances of the different organisations, we provide the information we could collect. It is not supposed to be a comprehensive description but rather a list highlighting the following topics:

- RI name and membership to ESFRI roadmap;
- Legal status;
- Membership, Budget and Staff;
- Statutory Bodies;

- Roles of Managing Bodies and Directors;
- Funding rules;
- Voting rights.

We also added PRACE aisbl to the list of legal organisations coordinating RIs.

From the table provided as Annex 5.2 we can read the following major trends:

Upon the analysis of 16 European and International RIs, some clear trends can be noticed. Given their international area of work, all these RIs have an international legal status, embedded in national laws:

- Non-profit foundation under Dutch law (EGI);
- International association ‘aisbl’ (association internationale sans but lucratif) under Belgian law (ELI-DC, ERF aisbl, PRACE aisbl);
- Intergovernmental institution/organisation (ECMWF, EMBL, ELIXIR);
- Memorandum of Understanding ‘MoU’ (ENES);
- European Agency (ESA);
- Joint research facility under French law of “société civile” (ESRF);
- EU funded project (EUDAT and VISIONAIR);
- European consortium (EVN);
- International partnership and very big research instrument ‘TGIR’ under French law of “société civile” (ILL);
- Association under Dutch law (GÉANT);
- ERIC – Community legal framework for a European Research Infrastructure Consortium (ERIC) which entered into force on 28 August 2009 (JIV ERIC).

The RIs are usually composed of an average of 25 to 30 partners (26 members for PRACE). Most of these partners are established in a European Union member State and only few are H2020 Associated States and/or EU Associated States: for instance Israel and Norway (both members of PRACE with IUCC, Israel and UNINETT Sigma2, Norway Research Centers).

From this analysis, two different sizes of RIs can be highlighted: the ones with few staff members, which are similar to PRACE aisbl (less than 20 employees: ELIXIR, EGI) and the big RIs (more than 20 and up to 1750 staff members: ILL, GÉANT, ESRF, EMBL).

Apart from their difference in size, all RIs are run by an executive body (for instance the Board of Directors for PRACE and GÉANT, the Executive Board for EGI and ERF-aisbl) and a deliberative body representing all members (called the Council for PRACE aisbl) which meets at least once a year and is composed by representatives of RI members. The Managing Director, which can be also called Director General, Chair or CEO according to the RI statutes, usually coordinates the day-to-day operational, financial and administrative management. She/he is appointed by the Board (EGI, Elixir), by the Council (EMBL, PRACE aisbl, ESRF) or by the General Assembly (ERF aisbl, GÉANT).

Furthermore, most of the RI’s Bodies can rely on scientific and technical expertise from different committees: Scientific Advisory Board/Committee (ELIXIR, ESRF, PRACE aisbl), Strategy and Innovation Board and Technology Coordination Board (EGI), Coordination Council (ELI-DC), Science and Society department (EMBL), Technical Operation Group (EVN) and Industrial Advisory Committee (PRACE aisbl). EGI has also other supporting

boards, namely the Users Collaboration Board, Services & Solutions Board and Operation Management Board.

Last but not least, five out of the 16 analysed RIs have been integrated to the ESFRI Roadmap (European Strategy forum on Research Infrastructures):

- 2006 roadmap (creation): ELI-DC, ESRF, ILL;
- 2008 roadmap (update): ELIXIR and PRACE;
- 2016 roadmap (update): the latest ESFRI roadmap update provided in March 2016.

During the first roadmap preparation, ESFRI had several and effective interactions with intergovernmental organisations (such as CERN and ESA).

At both extremes of the spectrum, this analysis includes also formalised infrastructures with sustainable organisation (i.e. the official European Space Agency ESA) and potential infrastructure-to-be, such as EUDAT and VISIONAIR (so far at EU funded project level) and ENES (which is only at MoU level as of today).

2.3.2. European Research Infrastructure Consortium (ERIC) legal framework

The Council Regulation (EC) No 723/2009 on the Community legal framework for a European Research Infrastructure Consortium (the ERIC Regulation) [6] was adopted in order to facilitate the establishment and the operation of large European RIs among several Member States and associated countries by providing a new legal instrument, the European Research Infrastructure Consortium (ERIC).

According to the ERIC Regulation, an ERIC is a legal entity with legal personality and full legal capacity recognised in all Member States. It requires membership of at least three states: one Member State and two other countries that are either Member States or associated countries. Its members may be Member States, associated countries, third countries other than associated countries and intergovernmental organisations.

The ERIC internal structure is flexible, allowing the members to define, in the Statutes, their rights and obligations, the bodies and their competences and other internal arrangements.

An ERIC is considered as an international body or organisation in the sense of the directives on value-added tax and excise duties but to be exempted from VAT and excise duties it needs to be recognised as such by their host Member State. Being also considered an international organisation within the meaning of the directive on public procurement, an ERIC can be exempted from procurement procedures and may instead adopt its own procurement rules. An ERIC is set up by a decision of the Commission acting on the basis of implementing powers conferred by the Council. The Commission acts upon an application submitted by those Member States, countries and intergovernmental organisations who wish to become founding members of the ERIC.

The RI managed by an ERIC must meet the requirements set out in the ERIC Regulation:

- *“it is necessary for carrying out research programmes and projects;*
- *it represents an added value in the development of the European Research Area and significant improvement in the relevant scientific and technological fields;*
- *effective access is granted to the European research community in accordance with the rules established in the statutes;*
- *it contributes to the mobility of knowledge and/or researchers within the ERA;*
- *it contributes to the dissemination and optimisation of the results of the activities”.*

2.3.3. Funding

From the table “Analysis of European Research Infrastructures” (Annex 5.2) major trends can be noticed regarding the funding rules applied to the investigated and analysed European Research Infrastructures.

On one hand, all contributions to the RIs are made annually and every RI receives funding from its members. Regardless the RI size, all the analysed RIs (whenever the information was available online) receive funding from different sources (EGI, ELIXIR, EMBL, ERF aisbl, ESA, ESRF, GÉANT, ILL, PRACE aisbl and VISIONAIR): these sources can be either fees / contributions (depending on the Statutes’ wording) from the partners, from in-kind contributions, from their own income and/or EU funding (Horizon 2020 and FP7).

On the other hand, among these three funding schemes, some trends can be highlighted:

- Fees / contributions:
 - Amount can be calculated on the member States Gross Domestic Product ‘GDP’ (EGI and ESA) or on Net National Income at factor costs ‘NNI’ (ELIXIR) if RI members are Countries,
 - Amount can be calculated on the partner size within the RI (if the partner is an international infrastructure) (EGI),
 - Amount of contribution is determined by the General Assembly / Board / Council (ELIXIR, ERF-aisbl, GÉANT, PRACE aisbl),
 - Different levels of fees / contributions are calculated according to the partner status in the RI, for instance consortium members vs. scientific associated members (EGI, EMBL, ESRF, ILL),
 - Each RI member State must pay a single fee: a member State owning several infrastructures involved in the activity of the RI must pay as many single fees as the number of infrastructures it owns and are represented in the RI (EMBL),
 - Optional funding can be provided by some member States, which are interested in optional programs offered by the RI. Amount of contribution is up to member State good will (ESA),
- In-kind contributions: can be accepted as funding by Members and/or external entities (ERF aisbl, PRACE aisbl),
- EU funding:
 - Some RIs, during their preparatory phase, have been supported by a grant from FP7 or H2020 (ELIXIR, ERF aisbl, PRACE aisbl),
 - Projects receive funding from EU under FP7 and/or H2020 (EUDAT, EGI, GÉANT, PRACE aisbl),
- Own-income: Few RIs can generate own income (ILL, ESRF).

As a matter of fact, RIs with similar legal status to PRACE aisbl (international non-profit infrastructure) tend to receive the same kind of funding: EU funding (for the preparatory phase as well as for EU funded projects) and different types of fees according to Members’ status and their GDP.

3. Support to other Work Packages and PRACE RI

In addition to the indicated support mentioned in the previous sections of this deliverable, the working group has provided direct legal support for PRACE aisbl in topics of different nature and to arising issues of legal nature in the different work packages.

This section reports on the identified copyrights issues for the PRACE training material and the proposed IPR regulations related to this. Moreover, it summarises the legal support provided to the PRACE research infrastructure related to the collaboration with other research infrastructures, in the form of the current Memoranda of Understanding signed at the project level.

3.1. Copyrights for PRACE training material

During the years that PRACE projects and infrastructure have been operating a set of potentially IPR-protectable elements have been generated. These elements have been identified and analysed during the PRACE-3IP project, in the deliverable D2.2 [8]. In the current deliverable, the next sub-sections will have a closer look at the copyrights for the PRACE training material elaborated by WP4.

3.1.1. Background from previous PRACE-IPs

The previous PRACE preparatory and implementation projects have produced and accumulated a set of assets and foreground with their IPRs being regulated under all the Consortium Agreements (CA) signed until now, including PRACE-4IP.

PRACE has not yet developed an IPR general policy and the particular elements are tackled on a per case basis. For the work being done in PRACE under the Consortium Agreement, however there are some general measures that indicate a policy to follow.

According to the definition given by the PRACE-4IP Consortium Agreement the “Results” means any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including Intellectual Property Rights.

The provisions of the PRACE-4IP Consortium Agreement dealing with Results and Access Rights are contained in Sections 8 and 9 (Articles 8.1-9.8). Those provisions are complemented by the ones included in the Grant Agreement Number 653838, Article 26 – 28.

Regarding the ownership of the developed materials, the basic rule is that the Results are the property of the beneficiary carrying out the work generating those results (Grant Agreement Article 26.1). In case several beneficiaries have jointly carried out work generating results and where their respective share of the work cannot be ascertained, they shall have joint ownership of such results (Grant Agreement Article 26.2).

3.1.2. Analysis of copyrights for PRACE training material

In PRACE-3IP, WP2 drafted the following statement in order to clarify the ownership and usage of the PRACE training material made available on the PRACE Training Portal:

“The copyright of the structure and formatting of the PRACE Training Portal website belongs to the Partnership for Advanced Computing AISBL.

All training material (including but not limited to course descriptions, presentation files, videos, exercises) are made available for the sole purpose of distance learning by visitors to

the Training Portal. If material is labelled with a specific copyright, you should abide to it. Otherwise the copyright of the material belongs to the content creator and the material may not be re-distributed or re-purposed without explicit permission of the content creator.”

The statement is currently being implemented in the training website.

In PRACE-4IP, in the light of improving the online training service even further, a Massively Open Online Course (MOOC) aimed at unlimited participation and open access via the web, will be piloted as a new training method. The MOOCs will provide course materials such as filmed lectures, readings (full documents or presentations), and exercise sets. PRACE-4IP has also introduced the CodeVault, an open repository containing various high performance computing code samples for the HPC community. The CodeVault is an open platform that supports self-education of learning HPC programming skills where HPC users can share example code snippets, proof-of-concept codes and more. These new training methods add to the content of the training portal and the online training material offered by PRACE. An analysis of the requirements in terms of copyright is being performed aiming at providing the basis for handling any copyright issues that might arise from the publication of such material on the web, or in general sharing of such material to 3rd parties. The following table lists the types of training material PRACE distributes their producers, summarises associated copyright issues and provides some recommendation for handling them. Note that a producer of the material and the default holder of the IPR is the person that created the material. However, depending on the contractual relationship with the organisation that employs him the IPR might be subject to transfer to that organisation. In the following we refer only to organisations taking into account the former statement. PRACE partner means the PRACE-IP project beneficiary organisation.

Type of Material	Producer (in most cases)	Where the material is published/shared	Suggested Type of License, Other copyright issues
Seasonal School Material (PPT, Video, Code, PDFs) and PATC Material (PPT, Video, Code, PDFs)	<ul style="list-style-type: none"> PRACE Partner not funded by PRACE Universities associated with PRACE partners Commercial Companies 	<ul style="list-style-type: none"> Training events PRACE training portal 	<ul style="list-style-type: none"> Producer of the IPR remains the owner Publishing Consent should be signed by author PRACE should be able to publish this material on the training portal Suggested Licencing Creative commons Attribution, non-commercial, no derivative works 3.0 licence or other open source licence, i.e. Apache, BSD, GPL.
MOOC Material	<ul style="list-style-type: none"> PRACE partner funded by PRACE Universities associated with PRACE partners 	<ul style="list-style-type: none"> MOOC platform 	<ul style="list-style-type: none"> Producer of the IPR remains the owner but some right should be transferred to PRACE, i.e. use and publish in MOOC platforms and other web sites for educational and dissemination purposes (non-commercial promotional material etc) Publishing Consent should be signed by author
Code Vault material	<ul style="list-style-type: none"> PRACE Partners funded by PRACE Universities associated with PRACE partners 3rd parties. 	<ul style="list-style-type: none"> CodeVault GitLab repository 	<ul style="list-style-type: none"> Producer of the IPR remains the owner Publishing Consent could be signed by author or be clearly present in the terms of publishing in the code vault Suggested Licencing Creative commons Attribution, non-commercial, no derivative works 3.0 licence or other open source licence, i.e. Apache, BSD, GPL.

Table 1: Overview copyrights PRACE training material

Based on the table above, the PRACE training material can be distinguished in two types:

- (a) Training material that is created by PRACE partners or 3rd parties but provided for publishing via the PRACE web services, i.e. Seasonal School and PATC material, Code Vault material, published via gitlab;

- (b) Training material that is created by PRACE partners and it is in the interest of PRACE aisbl to have some of the rights. This related specifically to the MOOC material.

The analysis within WP4 had as an outcome the following principles that should be achieved regarding the IPR training material policy in PRACE:

- For the material in category (a) PRACE should be able to publish the material with the consent of the producer that he (the producer) remains the owner of the material and gives the permission to PRACE to publish such material. In cases such material is created with PRACE-IP project funding the material should be branded with the PRACE logo.
- For material in category (b) PRACE should have some rights i.e. to re-use, as it is or altered, with attribution for non-commercial purposes, and also material should be branded with the PRACE label. As discussed before this is mainly needed in the case of the MOOC material.
- All created material should be as open as possible (i.e. follow some creative common licenses principles), however all involved parties (i.e. producers, publishers, entities) who reuse the material should be protected.

3.1.3. IPR Framework

Currently WP2 is analysing the different possibilities for a generalized policy for Intellectual Property Right (IPR) management of the results created during the PRACE Project.

The principles of the Commission Recommendation [9] on the management of Intellectual Property in knowledge transfer activities and Code of Practice for universities and other public research organisations are a good point of reference. In line with this recommendation PRACE can tackle this issue by developing an IP Policy in order to provide clear rules regarding in particular the disclosure of new ideas with potential commercial interest, the ownership of research results, record keeping, the management of conflicts of interest and engagement with third parties.

In the Grant Agreement of the Project there is an obligation for the Partners to protect, exploit and disseminate their results of the Project. In addition, if those results include peer-reviewed scientific publications open access must be granted to those.

On top of these obligations, in principle, any dissemination of results must include the EU emblem and a specific statement acknowledging the support from the EU, and also a disclaimer excluding the European Commission responsibility.

Each Partner may transfer the ownership of its results but must however ensure that the above stated obligations apply to the new owner and subsequent ones, if any. Each Partner may also grant licences to its results under specific conditions. Exclusive licences for results may be granted only if all the other beneficiaries concerned have waived their access rights.

The above conditions set the framework according to which the Project Partners can implement specific IP Agreements concerning their results.

When the creators are individuals external to any of the PRACE Partners the Agreements in place between the EC and the PRACE Partners need to be respected. For the time being, specific IPR Agreements are being signed with those individuals as authors of Project results.

In view of the above described framework and on the specific needs identified for each training material a general model on IPR will be developed so it can be used by the PRACE Project Partners adapting its clauses to the specific case.

3.2. Other legal support to other Work Packages

Further legal assistance was provided to other Work Packages:

- PRACE Website Hosting (WP3)

Some legal assistance was provided in order to develop a contract for the hosting of the PRACE Website. The draft document was passed on to WP3 in order to check the technical requirements and its approval is in progress currently.

- Copyright PRACE Digest (WP3)

An update for the disclaimer in the context of this publication was provided for Communication purpose. In this regard some guidelines were provided regarding the scope of the ownership of such publication and the extent of the authorised use.

3.3. Memorandum of Understanding

PRACE collaborates with other e-Infrastructures, European projects, initiatives and the Centres of Excellence. Recently, Collaboration Agreements in form of Memorandum of Understandings were signed with GÉANT (GN4) in order to increase cooperation in network and security, with EUDAT2020 on data preservation and management, and another with EGI on training, security and interoperability. Members of WP2 gave support in finalising them. These MoUs are attached to this deliverable.

3.4. Key Performance Indicators

Key Performance Indicators (KPIs), were developed during the PRACE-2IP and -3IP projects and approved by the PRACE Council in 2014. The goals of the KPIs are to better track and clearly present key PRACE performance targets, which will aid for a deeper analysis and evaluation of PRACE's successes and possible weaknesses. This will allow for PRACE to carry on with its successful achievements, but also identify possible areas which require more focus to achieve further improvements. This is an internal management tool to help PRACE keeping track of its performance on a specific set of indicators representing key aspects of its strategy. This is also an external communication tool that will also be useful for the European Commission to assess whether the project is on the right path according to its commitments. Furthermore, this is a tool for the European Commission for maximizing and assessing the impact of its portfolio of supported e-Infrastructures, and to identify potential synergies. KPIs could be used for operational, technical and socio-economic impact assessment.

A total of nine KPIs have been approved and are published and regularly updated on the PRACE website [7].

These can be grouped into the following four categories:

- Three different KPIs on PRACE's impact on evolving research;
- One KPI on PRACE's impact on scientific production;
- Two different KPIs on PRACE's impact on growing know-how in Europe;
- Three different KPIs on PRACE's impact on attracting the industrial sector.

The three KPIs on PRACE's impact on evolving research show an increasing trend in the number of applications received for PRACE access, but also the maturing quality of these applications over time as a greater number of applications above the technical threshold were received. This trend highlights the increasing importance and impact of the PRACE Tier-0

service for research. The KPIs also identify PRACE's impact in the enhancement of European and international collaboration, as they identify a large percentage (between 50-75%) of PRACE resources being awarded to projects whose Principal Investigator is based in a different country to that in which the awarded computational resource is hosted.

The KPIs on PRACE's impact on scientific production identify the number of publications, scientific talks and thesis supported by the access to PRACE resources throughout the calls and where data is available. Up until the 5th PRACE Call for Proposals for project access, PRACE has supported a total of 158 PhD theses, 507 publications, 719 scientific talks and the filing of two patents. These numbers identify the importance of PRACE and access to PRACE resources to scientific research.

The two KPIs on PRACE's impact on growing know-how in Europe identify the number of training person days registered at PRACE training events throughout the years and it shows the increasing number of these offered – especially since the establishment of the six PRACE Advanced Training Centers (PATCs).

The remaining three KPIs on PRACE's impact on attracting the industrial sector identify the increasing relationship PRACE has with industry. They show the growing number of industrial contacts who visited the PRACE booth at supercomputing conferences, such as Supercomputing Conference (SC) in the US and International Supercomputing Conference (ISC) in Germany throughout the years. They also highlight the increasing number and proportion of industrial participants who attended PATC events, as well as, the increasing number of industrial companies who were leading or were part of the teams that applied for and were awarded PRACE allocations.

The above KPIs are good indicators on the increasing impact PRACE has upon computational science from both an academic and an industrial viewpoint.

Further KPIs will possibly be created so as to highlight different aspects of this impact during PRACE-4IP (indicators of SHAPE, SME HPC Adoption Programme in Europe for instance).

4. Conclusions

Today PRACE is facing the challenge to evolve itself for strengthening its sustainability, expand the availability of resources for the scientific communities, and meet the EC strategic directions in HPC. The discussion on the so-called PRACE 2 has been going on for a while and among the topics of investigation and activities the fiscal status of the Association plays a key role. Still, at the time of writing of this deliverable, the Council did not take a final decision regarding the business model for PRACE 2. The WP2 working group delivered important information for the discussion and will further support PRACE aisbl by all means. It is expected that besides the development of the final business model for PRACE 2 also interim solutions will be investigated in order to continue the valuable service for science to get access to the best HPC resources in Europe.

5. Annex

5.1. Proposed conflict of interest policy for PRACE

Purpose

The objective of this policy is to permit PRACE to manage conflict of interest situations successfully and resolve them fairly.

PRACE has always had high ethical standards within its core value, in order to merit the trust of its members, governments and the public and thus is committed to conducting business in a manner that ensures members' judgment and decision making is not influenced by undue personal interests. This was deeply embedded into his governance, and was reflected into his day to day practice, as into his fair and transparent peer review system that was put in place for the attribution of access to its resources and which meet the international standard for such process. Nevertheless, in order to continue the improvement of its governance, a conflict of interest policy for PRACE has been formalised, based on the best practices from other similar organisations, in order to provide guidance for efficiently dealing with this kind of situations.

The integrity of PRACE depends on ethical behaviour throughout the organisation, and in particular, on fair, well-informed decision-making. A conflict of interest may arise when a member's personal interests influence, could have the potential to influence or could be perceived to influence their decision making at PRACE.

PRACE understands that avoiding a situation of conflict of interest may not always be possible. The required action for a member who does not or cannot avoid a situation of potential conflict of interest is to disclose it. Having a situation of conflict of interest is not necessarily wrong, and transparency, in the form of disclosure, is critical and is necessary to protect the integrity and reputation of PRACE and the member by allowing PRACE to react promptly and appropriately when the impartiality and objectivity of PRACE members in the performance of their functions or in the fulfilment of their contractual obligations for and towards PRACE might be influenced, compromised or perceived as so.

For all the above, this Policy aims to explain the relevant principles and rules for preventing or managing conflicts of interest and how such principles and rules are to be implemented and applied for the whole association of PRACE.

This policy shall apply to all representatives of PRACE aisbl Bodies and participants in meetings acting on behalf of PRACE. This includes decision bodies/positions such as the Board of Directors, PRACE Committees and Working Groups.

Definition of Conflict of Interest

Conflicts of interest may arise where a individual places his or her personal interests before the interests of PRACE and where such personal interests unduly influence members' judgments, decisions, or actions. These situations may include both closely related persons and friends as well as organisations which someone may have interests in. Making judgments, taking decisions, or pursuing actions when facing a conflict of interest may make it difficult to perform work for PRACE objectively and effectively and may have legal and regulatory consequences.

A conflict of interest is thus a situation in which a person has a private or personal interest sufficient to appear to influence the objective exercise of his or her official duties at PRACE.

“Private or personal interest” refers to an individual’s self-interest (e.g. to achieve financial profit or avoid loss, or to gain another special advantage or avoid a disadvantage); the interests of the individual’s immediate family or business partners; or the interests of another organization in which the individual holds a position (voluntary or paid).

“Objective exercise of duties” refers to an individual’s ability to carry out her or his responsibilities in the best interest of PRACE.

Types of conflict

An individual working in PRACE may be in a conflict of interest situation that is:

1. Actual or real, where his official duties are or will be influenced by their private interests.
2. Perceived or apparent, where their official duties appear to be influenced by their private interests.
3. Foreseeable or potential, where their official duties may be influenced in the future by their private interests.

Timing of conflict of interest disclosure

Disclosure must take place as soon as the individual identifies that there may be a conflict of interest and before the member engages in the conduct in question. Late disclosure could disrupt PRACE operations, hamper an appropriate response from the PRACE and/or ultimately compromise the credibility of PRACE as well as that of the PRACE member.

Responsibility for Managing Conflicts of Interest

Members are expected to recognize when they have, potentially have, or could be perceived as having, a conflict of interest. Members should consult their Management Board members or chair of their respective committee if in doubt about what circumstances might create a conflict of interest.

a) Avoiding a Conflict of Interest

In the first place, PRACE, members should avoid conflicts of interest against PRACE wherever possible. “Avoiding” a conflict of interest means members take decisions or actions to ensure a conflict of interest does not occur, or does not have the potential to occur, in the first place.

b) Managing a Conflict of Interest

Where prevention is not possible, conflict of interest situations must be managed. Here are the steps to be taken by those involved in such situations by working together and supporting one another’s ethical responsibilities.

1. Declare it to your Management Board or chair of the respective PRACE Body/Committee. Ensure transparency by self-declaration, and by making sure that a record of the declaration is made and kept between the person reporting the conflict of interest and the person or chair of the body to which it was declared. To be effective, the declaration of interests will be updated at least annually, and also when any changes occur.
2. Discuss it. In a doubtful situation, take a moment for a quick word with the chair of your meeting, or undertake a full dialogue with the group, if the situation warrants it.
3. Deal with it. Measures to mitigate or eliminate a conflict of interest will depend on what is appropriate to the severity of the situation. Options include:
 - a. Restrict the involvement of the individual. For example, withdraw from decision-making or partake in discussion only. This would not be appropriate

- if the conflict of interest arises frequently, or if the individual cannot be separated from parts of the activity.
- b. Recruit a third party to assist such as another colleague or an external party.
 - c. Remove the individual from affected duties. When restrict and recruit are not suitable options, the individual with the conflict may be removed from duties related to the conflict. The individual could transfer to other duties.
 - d. Resign from the official duties. In serious cases where other solutions are not possible, the individual may have to resign from the position creating the conflict.

In the event that the person disclosing a conflict of interest is part of a body, body members should collectively decide on the appropriate measure to follow; In the event that the disclosure is confidential and made to the body chair only, the chair shall assume the decision making on their own.

The less disruptive option will be given preference. A written confidential record must be maintained of any such strategy agreed upon as well as of the measures taken.

c) Protection of the information disclosed

PRACE shall take the necessary measures to maintain confidential records of disclosures made as well as to safeguard the confidentiality of any private information disclosed in respect of the conflict of interest policy and according to the PRACE Data Protection Policy.

Recipients of disclosures shall respect confidentiality, and communicate information contained in such disclosures on a strict “need to know” basis.

5.2. Analysis of European Research Infrastructures

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
EGI (European Grid Infrastr.) Amsterdam NL	Dutch Not- for-profit foundation	26 Council Members (including CNRS, CSC, GRNET, SURF, SNIC) (23 countries). Two types of members: Participants and Associated Participants. 16 staff members led by the Director	The Council and the Executive Board (7 members)	Chair of the Executive Board: Matthew Dovey. The Executive Board is charged with the management of the foundation, for which it is accountable to the Council. The Director: Yannick Legré. The Director is in charge of the daily management of the foundation. The director is appointed, suspended and dismissed by the Executive Board, after approval of the Council and The director carries out his or her tasks within the competences mandated to him or her by the Executive Board. The Council: it monitors the affairs of EGI and appoints the members of the Executive Board. The Council is composed by one representative of each Participant. The Council approves the annual account of the past year and the budget for the following calendar year.	Associated Participants contribution is a fraction of the Participants contribution. Contributions depend on the Participant GDP when it represents a country or the consortium size when it represents an International Research Infrastructure.	The voting rights of each Participant are related to their share of financial contributions. Associated Participants do not have voting rights.
ELI-DC* (European Laser Institut) Brussels BE	International Association (AISBL - international non-profit association under Belgian law)	7 members (from CZ Rep, HU, RO, IT, DE, UK, GR)	The General Assembly (International members and 3 host members), the CEO, the Management Board and the Coordination Council	Chair of the General Assembly: Prof. Carlo Rizzuto Director General and the legal seat of the Association: Dr Catalin Miron	-	-

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
<p>ILL* (Institut Laue-Langevin) Grenoble, FR</p>	<p>International partnership - TGIR (Très grand instrument de recherche - Very Big Research Instrument)</p>	<p>International partnership managed by 3 partners funding 3/4 of the budget: FR, DE & UK Associated scientific partners (11 countries) 473 staff members Annual budget: 91M€</p>	<p>-</p>	<p>Director: Prof. William Stirling. Director runs 4 departments (Science division / projects & techniques division / reactor division / administration division).</p>	<p>-</p>	<p>-</p>
<p>ELIXIR* (Integrated computing services for European researcher) Hinxton UK</p>	<p>Intergovernmental organization (legal framework of ELIXIR is based on the ELIXIR Consortium Agreement (ECA - concluded among Member States and EMBL (see EMBL) in 01/2014).</p>	<p>Elixir Consortium Agreement Members (also full members of ELIXIR Board): UK, SW, CH, CZ, EE, NO, NL, DK, IL, PT, FI, FR, ES, BE, IT and the EMBL. Elixir observers: SI, GR, IE 13 staff members. The ELIXIR Director and the ELIXIR Staff are employed by EMBL</p>	<p>Board, Member States, SAB (Scientific Advisory Board), Elixir Director, Head of nodes committees and other advisory committees</p>	<p>Chair: Prof Torsten Schwede. He is the executive body within ELIXIR's governance structure and is appointed by the ELIXIR Board to manage and administer ELIXIR activities in accordance with the decisions of the ELIXIR Board. ELIXIR Staff assist the ELIXIR Director in his/her tasks. The Elixir Consortium Agreement (ECA): covers ELIXIR's mission, membership, obligations of the Members and the ELIXIR Hub, the governance structure between the ELIXIR Hub and the ELIXIR Nodes and the internal governance structure of the ELIXIR Hub itself. Based on the ECA, EMBL carries out activities on behalf of ELIXIR that require EMBL's legal personality. This allows ELIXIR to take advantage of EMBL's privileges and immunities. Each of the 15 member countries and EMBL has appointed delegates to the ELIXIR Board. Elixir Hub director: Nicklas Blomberg. The Director is responsible for day-to-day operational, financial and administrative management of ELIXIR in accordance with the decisions by the ELIXIR Board.</p>	<p>-ELIXIR Hub's sustainable source of funding: annual financial Contributions from the Member States (amount defined with a scale that is fixed every three years by the ELIXIR Board based on the average Net National Income at factor cost (NNI) of each State in accordance with OECD statistics). -ELIXIR Nodes funding: it is separated from the membership fee to ELIXIR. Each ELIXIR Node is required to secure appropriate and sustainable funding for its activities, either from national or international funding bodies. -EC funding: Preparatory phase funded by FP7. ELIXIR is also eligible to H2020.</p>	<p>Each ELIXIR Member has one vote. As an ELIXIR Member, EMBL participates in the decision-making processes of the ELIXIR Board and has one vote like all other Members of the ELIXIR Consortium</p>

D2.1

First Report on PRACE 2.0 Development

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
EMBL (European Molecular Biology Lab) Herdelberg DE	Intergovernmental institution - International treaty organization	21 member states, 2 associate member states and 4 prospect member states. 1724 employees people including 168 visitors Annual Budget: 171M€	The Council and the Director- General	Director General (DG): Prof. Iain Mattaj is the CEO and the legal representative of the Laboratory. DG runs various departments (resource development, science, administration, internal audit, research, training and international relations & communications). Appointed by the Council by a two-thirds majority of all the Member States for a defined period of time and may by the same majority of the Council be dismissed. DG shall be the CEO and the legal representative of the Laboratory. The Council: composed of all Member States of the Laboratory. Each member state is represented by two delegates (at most) who may be accompanied by advisers.	Funding from its Member States and its Associate Member States	
ENES (European Network for earth system modeling)	MoU between ENES and its 47 partners	47 partners from academic, public and industrial world, all signees of the ENES MoU (from BE, BG, DK, FR, DE, GR, IE, IT, NL, NO, PL, RO, ES, SW, UK + European and international organizations (Jülich, DKRZ, NEC, SGI, ICHEC, IBM etc.)	-	-	-	
VISIONAIR (Vision Advanced Infrastructure for Research) Grenoble, FR	Project funded by EC (FP7)	Over 20 members across Europe	-	-	Funded by FP7 & H2020	-

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
EUDAT (European Data)	H2020 EC funded project (16,3M€, Collab data infrastruct.)	Network of 35 European organizations (CSC, BSC, CINECA, EPCC, JULICH, PSNC, GRNET, SNIC, KTH etc.)	-	Project coordinator: Kimmo Kosci Scientific Coordinator: Peter Wittenburg Project Manager: Damien Lecarpentier	EUDAT receives funding from the European Union's Horizon 2020 program, DG Connect e- Infrastructures Unit under contract number 654065.	-
ERF-AISBL (association of European-level Research Infrastructure Facilities) Brussels, BE	International non-profit association governed by the Belgian law	16 Members (remain independent but accept to cooperate via the Association and to initiate common activities, initiatives and projects, in the frame of developing an overall European science policy): PRACE, Synchrotron Soleil, Alba Synchrotron etc.	The General Assembly, the Chair and the Executive Board	Chairman: Carlo Rizzuto. The Chair represents the Association in all legal actions. The Association is represented towards any third party by its Chair and one other Executive Board member, acting together. They however, have the right to delegate special powers to third persons. The Executive Board (EB): constituted by at least three persons elected by the Assembly, including the Chair, the Vice-Chair (if designated), and the Treasurer (if elected), and is attended and supported by the Executive Secretary. EB will include as full members the Chairs of the Chapters (if set-up), who are elected as indicated in the Regulations. General Assembly: composed by the Members of the Association represented by the Directors (or equivalent function) of the Infrastructures owned by them and accepted by the General Assembly upon admission. The GA elects the Chair.	Contributions and/or membership fees owed by each Member for the operation of the Association: defined and approved on an annual basis by the General Assembly. Single fee paid by each European-level RI or each European network of infra (one infrastructure or one network = one fee). Specific contributions may be acquired by agreed external contracts (i.e from EU funded programs and/or from other funding entities) and in-kind contributions by Members and/or external entities.	Number of votes of each Member equals the number of Infrastructures owned and accepted in the Association (2 Members co-owning the same Infrastructure have a single vote). Some decisions taken by the GA require a 2/3 majority of the votes of the Members present or represented (election of the Chair/ the Treasurer / the Vice-Chair, acceptance or exclusion of Members/Infrastructures, budget etc.). Other issues: simple majority of Members present or represented.

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
<p align="center">ESA (European Space Agency) Paris, FR</p>	<p align="center">European Agency</p>	<p>22 Member States: 20 states from EU (AT, BE, CZ, DE, DK, ES, FI, FR, IT, GR, IE, LU, NL, PL, PT, RO SE, UK, EE and HU), and NO and CH.</p> <p>Budget 2015:4433M€ 2233 staff members</p>	<p align="center">Council (governing body of ESA) and the Director General</p>	<p>The Director General (DG): Johann Dietrich Woerner. DG runs 6 scientific departments and 4 support directions (HR, quality, finance, legal)</p> <p>Other Directors: Scientific Directors (Alvaro Giménez Cañete, Gaele Winters, Thomas Reiter, Volker Liebig, Magali Vaissière, Didier Faivre) and Support directors (Franc Organo, Eric Moel De Westgaver, Hasn Georg Mockel and Giuseppe Morsillo)</p> <p>The Council: it provides the basic policy guidelines for ESA's activities. Each member State is represented on the Council. Council meets every two-year at ministerial level ("Ministerial Council") to take key decisions on new and continuing programs and financial commitments. The ESA Council at ministerial level also meets together with EU Council to form the "Space Council"</p>	<p>All Member States contribute to the ESA mandatory programs (activities under the General Budget and the Science Program) on a scale based on their Gross Domestic Product (GDP). The other programs, known as 'optional', are only of interest to some Member States, who are free to decide on their level of involvement.</p>	<p>Each member State is represented on the Council and has one vote.</p>
<p align="center">ESRF* (European Synchrotron Radiation Facility) Grenoble, FR</p>	<p>JRA (Joint Research Facility) French société civile (under French law)</p>	<p>11 countries / consortium of countries (total of 15 institutions). 8 scientific associated-countries (8 institutions)</p> <p>600 employees (incl. 500 researchers) Annual Budget: 80 M€</p>	<p align="center">Council and 3 committees (Administrative & Finance, Science Advisory and Machine advisory) and the Director General</p>	<p>Director General (DG): Mr Francesco Sette who runs 5 departments (administration, accelerator and source, experiments, technical infrastructures and instrumentation services and development). DG draws upon the expertise of the members of the Science Advisory Committee for any science topic. DG is the chief executive of the Company and its legal representative. The Council shall appoint the DG for a period not exceeding five years. Their contracts of employment shall be approved by the Council and shall be signed by the Chairman of the Council on behalf of the Company.</p> <p>The Council: it is composed of representatives appointed by the Member Countries</p>	<p>Each member from consortium contributes to the annual budget CNRS 13,75%, CEA 13,75%, DESY 24% etc. in total 94%), scientific associates contributes too (Portugal 1%, South Africa 0,3% etc. in total 6%).</p>	<p>Each Contracting Party shall have a single indivisible vote exercisable by the delegate designated for this purpose by the relevant Members. A "simple majority" means half of the capital, the number of unfavorable votes not exceeding half of the Contracting Parties. The Council shall take decisions on other matters by a simple majority.</p>

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
EVN (European For Very Long BaseLine Interferometry Network)	European Consortium	14 major institutes	Consortium Board of Directors (BoD), Chair of BoD	Chair of Board: Rene Vermeulen Consortium board of Directors (CBD): the general policy of the EVN is set by the EVN CBD. Members of CBD are the directors of the individual EVN members' institutes. CBD meets in spring and autumn yearly. TOG (Technical and Operations Group): Issues related to technical aspects of EVN operations are considered by TOG	-	-
GÉANT (association of TERENA, TNC, GÉANT project and DANTE) Amsterdam (NL) & Cambridge (UK)	-GÉANT Limited (England and Wales) -GÉANT Association under Dutch law (Netherlands)	36 National Members (including RENATER, GRNET, PCSS), 1 representative member (NORDUnet,) and 19 Associates (Alcatel Lucent, CISCO, Google UK, Huawei Techno., CERN, ESA etc.) 80 staff members	General Assembly (GA) Board of directors CEO	CEO: Mr Steve Cotter. CEO leads 3 general managers (1 in Amsterdam and 2 in Cambridge). Chair of BoD: Pierre Bruyère. The BoD manages and administers the organization. Day-to-day operations are carried out by the association's staff, based in Amsterdam and Cambridge, under the direction of the CEO (CEO is not member of the BoD according to the website list of members). The General Assembly elects members to the Board of Directors (BoD), which manages and administers the organization	GÉANT's funding comes primarily from the following sources: EC funding from projects; NREN network service subscriptions to co-fund the GÉANT Project (GN4-1); Membership subscriptions (NREN and Associate) determined by the GA; Earnings from the provision of administrative, consultancy and training services and Sponsorship for specific activities such as REFEDS and TNC.	Each member of the association shall have voting rights, to be exercised by its representative (or deputy representative) at the general meeting. Decision should be taken by consensus of the Board where possible. Otherwise decisions shall be made by majority vote with each member of the board (including the chair) holding a single vote. In the event of a tied vote the chair shall make the decision.

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
JIV ERIC	The Community legal framework for a European Research Infrastructure Consortium (ERIC)	<p>Four countries are members of the new ERIC:</p> <p>The Netherlands (NWO), the UK (STFC), Sweden (Swedish research Council) and France (CNRS).</p> <p>Five additional Countries: Italy, Spain, South Africa, Germany and China, will contribute to JIVE as well.</p>	ERIC Council	<p>The JIVE director: Prof. dr. Huib van Langevelde, reports to the JIV-ERIC Council, which meets twice a year.</p> <p>Council Chair: Dr. Patrick Charlot, Laboratory of Astrophysics of Bordeaux, Floirac, France</p> <p>Vice Chair: Prof. Simon Garrington, Jodrell Bank Centre for Astrophysics, Manchester, UK</p>	--	--

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
ECMWF	ECMWF is an intergovernmental organisation established by a Convention that came into force on 1 November 1975 and was amended on 6 June 2010	ECMWF has 22 Member States and 12 Co-operating States. ECMWF's annual budget is funded primarily by annual contributions from the Member and Co-operating States, according to a scale based on their gross national income. Member States: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom. Member States are represented in the ECMWF Council, the organisation's governing body. Co-operating States: Bulgaria, Czech Republic, Estonia, the former Yugoslav Republic of Macedonia, Hungary, Israel, Latvia, Lithuania, Montenegro, Morocco, Romania and Slovakia.	The ECMWF Council is made up of representatives from ECMWF's Member States and meets twice a year	The Scientific Advisory Committee (SAC). The SAC provides the Council with opinions and recommendations on the draft programme of activities of the Centre drawn up by the Director-General and on any other matters submitted by the Council. The Finance Committee (FC). The FC provides the Council with opinions and recommendations on all financial matters submitted to the Council and exercises the financial powers delegated by the Council. The Policy Advisory Committee (PAC). The PAC provides the Council with opinions and recommendations on any matters concerning ECMWF policy submitted by the Council. The Technical Advisory Committee (TAC). The TAC provides the Council with advice on the technical and operational aspects of the Centre, including the communications network, computer system, operational activities directly affecting Member States, and technical aspects of the four-year programme of activities. The Advisory Committee of Co-operating States (ACCS). The ACCS draws up, for submission to the Council, opinions and recommendations on the programme of activities and the budget of the Centre, on items relevant to Co-operating States, and on any matter submitted to it by the Council. The Advisory Committee for Data Policy (ACDP). The ACDP draws up, for submission to Council, opinions and recommendations on matters concerning ECMWF Data Policy and its implementation. It reviews the opinions and recommendations coming from the Catalogue Contact Point Workshop and other similar bodies	In 2014, ECMWF's annual budget of almost £55 million was funded largely by annual contributions from the Member and Co-operating States, according to a scale based on their gross national income. Significant funding is also provided from the sale of forecast and data products and from a variety of externally funded projects. The sponsorship department in the UK Government for ECMWF is the Department for Business, Innovation and Skills.	Voting at Council 1. The presence of the representatives of the majority of Member States entitled to vote shall be necessary to constitute a quorum at meetings of the Council. 2. Each Member State shall have one vote in the Council. A Member State shall lose its right to vote in the Council if the amount of its unpaid contributions exceeds the amount of the contributions due from it, under Article 13, for the current financial year and for the preceding financial year. The Council, acting in accordance with Article 6(3)(1), may nevertheless authorise the Member State to vote. 3. Between meetings of the Council, the Council may dispose of any matter which is urgent by means of a postal vote. In such cases, the majority of the Member States entitled to vote shall constitute the quorum. 4. In determining unanimity and the various majorities provided for in this Convention, only votes cast for or against a decision and, in cases where the Council acts in accordance with the procedure laid down in Article 6(2), the financial contributions of the Member States taking part in the vote, shall be taken into account.

RI (*: Member of ESFRI Roadmap)	Legal Status	Membership, Budget and Staff	Statutory Bodies	Roles of Bodies & Directors	Funding rules	Voting rights
<p>PRACE* aisbl (Partnership for Advanced Computing in Europe)</p> <p>Brussels, BE</p>	<p>Research Infrastructure (international non-profit association established in Belgium)</p>	<p>25 member countries: AT, BE, BG, CY, CZ, DK, FI, FR, DE, GR, HU, IE, IL, IT, NL, NO, PL, PT, SK, ES, SE, SI CH, TR, UK</p> <p>Members can be either Hosting Members (4HM by 2015: DE, ES, FR, IT) or Members (General Partners)</p> <p>6 employees</p>	<p>-Council -Board of the Council -Scientific Steering Committee (SSC) -Access Committee (AC) -Industrial Advisory Committee (IAC)</p>	<p>Board of Directors (BoD) is the executive body of the Association and is generally responsible for managing and representing the Association. The BoD is composed of a minimum of two members elected by the Council. Each Director will serve for an initial term of three years, renewable for subsequent periods of two years. BoD members: Alison Kennedy (chair), Sergio Bernardi, Florian Berberich, Sylvie Joussaume, Oriol Pineda, and Stephane Requena.</p> <p>PRACE Director is responsible for the development of the strategy and vision for PRACE and the implementation of those as decided by the Council. The Director is responsible for the delivery of PRACE services across Europe and management of the PRACE organization.</p> <p>Chair of the BoD: Alison Kennedy. Chair leads a team of 6 employees (legal, communication, admin., peer review, assistant)</p> <p>The Council: it is the deliberative body of the Association and decides on all matters of the Association. It is composed of one representative from each Member. As a general rule, decisions of a purely scientific nature are subject to majority vote, while decisions related to provisioning and usage of funding and resources require a qualified majority based on partner contributions. All other decisions require a double majority of members and contributions, apart from a small number of issues that imply changes of the contract of the Association, which require unanimity.</p>	<p>Financial resources of the Association are the fees paid by the Members and other contributions from such Members set out in these statutes or any other fees that may be established by the Council; the revenue from the activities and the services provided by the Association; the donations accepted by the Association; the subsidies and/or financial support that may be granted to the Association by the States of which its Members are a part, or by any European, such as EU, or international organizations. Members' contributions may be grouped into monetary contributions; and contributions in goods or services ("in kind contribution") which include the Contributions in kind of the Hosting Members.</p>	<p>The Members have a right to participate in the activities of the Association, notably in its Councils' meetings, with the right to vote.</p> <p>Each Member shall participate in the meetings of the Council and shall vote through only one delegate, duly authorized for such purpose through a letter addressed to the Chairman of the Board of the Council. The Chairman does not have a vote. Each Member shall be allowed one vote.</p>

5.3. Memorandum of Understanding between the PRACE-4IP and the GÉANT (GN4) Projects on collaborative work in networking and IT security

1. Background

PRACE - the Partnership for Advanced Computing in Europe - research infrastructure enables high impact European scientific discovery and engineering research and development across all disciplines to enhance European competitiveness for the benefit of society. PRACE seeks to realize this mission through world class computing and data management resources and services open to all European public research through a peer review process. The broad participation of European governments through representative organizations allows PRACE to provide a diversity of resources throughout Europe including expertise for the effective use of these resources. PRACE operates a dedicated 10 Gb/s network among Tier-0 and Tier-1 partners, currently. To aid users and potential users as well as preparing the next generation scientists and engineers PRACE has an extensive pan-European education and training effort. Twenty-five PRACE members collaborate in the Implementation Phase projects (currently PRACE-3IP and PRACE-4IP) coordinated by Forschungszentrum Jülich GmbH, Germany and co-funded by the European Commission's 7th framework programme and Horizon 2020 research and innovation programme under Grant Agreement No. 312763 (PRACE-3IP) and No. 653838 (PRACE-4IP).

The GÉANT association is a membership organization acting with and for its members to further research and education networking in Europe and globally. GÉANT was formed in 2014 when TERENA and DANTE joined forces and adopted the GÉANT name from the GÉANT Project, which continues to be a major area of the organisation's work. 'GÉANT' no longer means a single project or organisation, but stands for the entire community collaboration. It combines the talents of its diverse membership to support and accelerate science, drive innovation and enrich education. GÉANT is owned by its core membership. This includes 36 National Members, which are European national research and education network (NREN) organisations, and one Representative Member - NORDUnet – which participates on behalf of five Nordic NRENs. Associates are also welcome and include commercial organisations and multi-national research infrastructures and projects. As part of the GÉANT 2020 Framework Partnership Agreement (FPA), the project receives funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 691567 (GN4-1).

2. Purpose of This MoU

The current PRACE network infrastructure is spanning across several NRENs and the GÉANT infrastructure since more than 10 years already. In order to improve the performance and transfer capacity as well as to secure the communication streams across a global European network, a continuous adjustment to PRACE requirements but also to GÉANT and NREN services is essential.

The large-scale, high-speed networks GÉANT plans, procures and builds bring researchers, educators and academics together to accelerate science, drive innovation and enrich education.

GÉANT leads the way in networking and associated services, working with NRENs and organisations worldwide to develop a portfolio of services that allow members and partners to support their users. Those services include connectivity & network services, trust, identity &

security, storage & clouds, real-time communication, media, and e-learning. The already rich service portfolio, which is delivered to the researchers via the local NRENs, their organisations are connected to, must be adjusted to user's needs continuously. New services will be developed only if market requirements ask for them. Therefore, a close collaboration with the leading European research projects is essential. GÉANT has expressed this interest already by forming the International User Advisory Committee (IUAC).

PRACE is one of the main European research projects, being highly dependent on massive high speed communication exchanges between supercomputers and data storage providers, as well as end users, via national and European research networks. Furthermore, PRACE is explicitly interested in using secure communication paths and authentication & authorization services on a European and global basis.

3. Benefits of a close collaboration

Both Parties of this MoU will benefit from closer collaboration, since knowing the other's requirements, preferences, restraints, and restrictions is the best fundament for solutions. This will create a win-win situation for both Parties. An informal collaboration between both projects already exists and this MoU, signed between both Parties, formalizes the collaboration. As GEANT is interested in testing its upcoming services with regards to meeting user requirements, the same applies to PRACE where evaluating new services in an early state might be very valuable.

4. Contact points

The following table lists areas of collaboration and contacts points for administrative issues:

Area	PRACE	GÉANT
Network (technical)	Ralph Niederberger, (r.niederberger@fz-juelich.de)	Roberto Sabatino, Roberto.Sabatino@geant.org, Enzo Capone, Vincenzo.Capone@geant.org
IT Security	Jules Wolfrat, jules.wolfrat@surfsara.nl Ralph Niederberger, r.niederberger@fz-juelich.de	Fotis Gagadis, Fotis.Gagadis@geant.org
Administrative and contractual issues	Florian Berberich, f.berberich@fz-juelich.de	David Wrathmall, david.wrathmall@geant.org
Networking (human)	Florian Berberich, f.berberich@fz-juelich.de	John Chevers, John.Chevers@geant.org

5. Proprietary Rights

This MoU shall not affect the proprietary rights of the Parties. Any joint development made by the Parties, will be subject to the provisions of a separate written agreement to be executed by the Parties prior to the commencement of any such joint development work. The execution of this MoU shall in no way serve to create, on the part of either Party, a license to use any proprietary rights of the other Party otherwise than explicitly stipulated herein.

6. Liability

With respect to information, data and services supplied by a Party to another Party under this MoU, the supplying Party shall be under no obligation or liability and no warranty or representation of any kind is made, given or to be implied as to the sufficiency, accuracy or

fitness for a particular purpose of such information, data and services, or the absence of any infringement of any proprietary rights of third parties through the possession or use of such information, data and services. The recipient Party shall be entirely responsible for its use of such information, data and services, and shall hold the other Parties free and harmless and indemnify them for any loss or damage with regard thereto.

No Party shall be responsible to the other Party for punitive damages, indirect or consequential loss or similar damage such as, but not limited to, loss of profit, loss of revenue or loss of contracts.

The limitation of liability stated above shall not apply in (i) the case of damage caused by a proven willful act or gross negligence, and (ii) in respect of any activity involving the willful or grossly negligent misuse of anything protected by the intellectual property rights of another Party and (iii) infringement of the confidentiality obligations of this MoU.

Each Party shall be solely liable for any loss, damage or injury to third parties in relation to its execution of this MoU.

7. Public relations

Any publication by a Party resulting from the activities carried out under this MoU shall be subject to prior agreement of the other Party, not to be unreasonably withheld.

PRACE Implementation Project and the GÉANT GN4 project may independently release information to the public, provided it is related only to its own part of the activities under this MoU. In cases where the activities of the other Party are concerned prior consultation shall be sought. In all relevant public relations activities, the contribution of each Party related to activities covered by this MoU shall be duly acknowledged.

8. Confidentiality of Information

The Parties may disclose to each other information that the disclosing Party deems confidential and which is (i) in writing and marked "confidential", or (ii) disclosed orally, and identified as confidential when disclosed, and reduced in writing and marked "confidential" within fifteen (15) days of the oral disclosure (hereafter referred to as "Confidential Information"). Confidential Information shall be held in confidence and shall not be disclosed by the receiving Party to any third party without the prior written consent of the disclosing Party.

Notwithstanding the foregoing a Party is entitled to disclose Confidential Information which it is required by law to disclose or which, in a lawful manner, it has obtained from a third party without any obligation of confidentiality, or which it has developed independently from any confidential information received under this MoU, or which has become public knowledge other than as a result of a breach on its part of these confidentiality provisions.

9. Applicable law and settlement of disputes

This MoU shall be construed in accordance with and governed by the laws of Belgium.

All disputes arising out of or in connection with this MoU which cannot be solved amicably, shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules.

The place of arbitration shall be Brussels in English language if not otherwise agreed by the conflicting Parties. The award of the arbitration will be final and binding upon the Parties.

Nothing in this Agreement shall limit the Parties' right to seek injunctive relief or to enforce an arbitration award in any applicable competent court of law.

10. Duration

This Memorandum of Understanding will take effect when approved by the Board of Directors of GÉANT and the Management Board of PRACE-4IP, and will remain in effect until the end of the EU Framework Programme for Research and Innovation Horizon 2020 or until terminated, after notice, by one of the parties.

Each Party may terminate this MoU at any time by giving the other Party written notification (including motivation).

Date:

Prof. Dr. Dr. Thomas Lippert
PRACE-4IP Project Coordinator
Forschungszentrum Jülich GmbH
Wilhelm-Johnen-Str.,
52428 Juelich,
Germany

Date:

Steve Cotter
CEO, GÉANT
Singel 468 D
1017 AW Amsterdam
The Netherlands

5.4. Memorandum of Understanding between the PRACE-4IP and EUDAT 2020 projects for services cross-utilization pilots

1. Background

PRACE – the Partnership for Advanced Computing in Europe – research infrastructure enables high impact European scientific discovery and engineering research and development across all disciplines to enhance European competitiveness for the benefit of society. PRACE seeks to realize this mission through world class computing and data management resources and services open to all European public research through a peer review process. The broad participation of European governments through representative organizations allows PRACE to provide a diversity of resources throughout Europe including expertise for the effective use of these resources. PRACE operates a dedicated 10 Gb/s network among Tier-0 and Tier-1 partners. To aid users and potential users as well as preparing the next generation scientists and engineers PRACE has an extensive pan-European education and training effort. Twenty-five PRACE members collaborate in the Fourth Implementation Phase (PRACE-4IP) project that focusses on training, outreach and services for scientific and industrial users. The Fourth Implementation Phase Project (PRACE-4IP) is coordinated by Forschungszentrum Jülich GmbH, Germany and co-funded by the European Commission's H2020 Framework Programme.

EUDAT 2020 is a pan-European data initiative bringing together a consortium of 25 partners, including research communities, national data and high performance computing (HPC) centers, technology providers, and funding agencies from 13 countries. EUDAT 2020 aims to build a sustainable cross-disciplinary and cross-national data infrastructure providing a set of shared services to access and preserve research data. The design and deployment of these services is being coordinated by multi-disciplinary task forces comprising representatives from research communities and data centers. The EUDAT 2020 project is coordinated by CSC – IT Center for Science, Finland, and co-funded by the European Commission's Framework Programme H2020.

Organisations common to both projects, PRACE-4IP and EUDAT 2020, parties of this Memorandum of Understanding (MoU), are BSC, CSC, JUELICH, CINECA, GENCI/CINES, EPCC, RZG, UNINETT Sigma, SURFsara and SNIC.

2. Purpose

Research is producing an increasing volume of data and requires solutions to manage them. PRACE-4IP and EUDAT 2020 are offering complementary services and tools for those data, covering the full life cycle from production to preservation.

In order to allow researchers to create workflows for their use cases embedding PRACE-4IP and EUDAT 2020 services and to stream data in a seamless and a smart way from Tier0 to Tier1 and then Tier2 systems, it is necessary to ensure interoperability between both e-Infrastructures. This is done through the implementation of community pilots.

3. Opportunities

PRACE-4IP and EUDAT 2020 collaborate to identify relevant pilots part of their users 'project, some of them coming out of joint calls.

The scenarios for the pilots should cover one or two of the following data flows:

- a) PRACE or EUDAT users want to access EUDAT services in order to transfer data stored in EUDAT storage services to HPC systems for further analysis or as input data for simulations

- b) PRACE HPC users want to transfer data that they generated on HPC systems to EUDAT storage services
- c) EUDAT users or centres want to transfer data between EUDAT storage systems using the PRACE dedicated network

Scenario a) will allow HPC users to access and exploit data from various sources and repositories without storing all the data on the local HPC system. This includes access to data from research communities that they have access to. Examples are simulations on an HPC system that use only a small subset of huge data repositories as input. The requested input data could be accumulated by EUDAT services and then transferred to the HPC system.

Scenario b) could be used to store results of simulations on EUDAT storages and to grant a research community access to this data. Another usage example would be a user whose computing grant period finishes and thus needs to transfer his data to another system for further exploitation.

Scenario c) will allow EUDAT partners who are running EUDAT storage servers to replicate data between their sites either for the safe replication service or for granting users at another site faster, local access to the data.

4. Technical prerequisites

Before a EUDAT service running on EUDAT storage server can transfer data through the PRACE dedicated network the EUDAT storage server needs to be connected to this network. This usually requires additional hardware equipment on the EUDAT storage server and wiring of this server to the PRACE network switch at the partner's site. This will be done on EUDAT or the respective partner's expenses.

Connecting EUDAT storage servers to the PRACE dedicated network has to be agreed and planned between the EUDAT storage server administrator and the PRACE site network administrator. Usage and operation of the EUDAT storage servers and services will comply with the PRACE and EUDAT security policies. To implement those pilots, solutions will be jointly designed to cover all areas of interoperability. They are listed below; some additions might be made as design will progress:

- Governance for the pilots
- Security
- User support
- Training
- Data management planning
- Use cases and workflows
- Technical components for the interface (user id, data transfer, ...)
- Infrastructures (network, storage, servers, ...)

5. Usage permission

The usage of PRACE-4IP and EUDAT 2020 services and infrastructures is granted to the pilot projects with the following limits:

- For the PRACE-4IP services, the amount of resources granted to the project as part of the call it applied to.

- For the EUDAT 2020 services, the storage volume and the duration granted during the pilot selection process.
- The usage of the PRACE dedicated network is granted without restrictions for the usage scenarios a) and b), i.e. for the transfer from PRACE HPC systems to EUDAT storage servers and vice versa.
- For usage scenario c) the data transfer between two EUDAT storage servers should not hamper any PRACE usage of the dedicated network. The operational teams of both projects will define how this EUDAT traffic will be controlled.

6. Costs

The usage of the PRACE dedicated network for usage scenarios a), b) and c) as described in section “3. Opportunities ” and EUDAT services will be free of charge, if the conditions described in section 5 “Usage permission” are met.

7. Contact points

The contact points for technical topics are:

- For PRACE-4IP: Ralph Niederberger (r.niederberger@fz-juelich.de) and Stéphane Coutin (coutin@cines.fr)
- For EUDAT 2020: Giuseppe Fiameni (g.fiameni@cinca.it)

For administrative issues the contact points are:

- For PRACE-4IP: Florian Berberich (f.berberich@fz-juelich.de)
- For EUDAT 2020: Damien Lecarpentier (Damien.lecarpentier@csc.fi)

8. Proprietary Rights

This MoU shall not affect the proprietary rights of the Parties. Any joint development made by the Parties, will be subject to the provisions of a separate written agreement to be executed by the Parties prior to the commencement of any such joint development work. The execution of this MoU shall in no way serve to create, on the part of either Party, a license to use, any proprietary rights of the other Party otherwise than explicitly stipulated herein.

9. Liability

With respect to information, data and services supplied by a Party to another Party under this MoU, the supplying Party shall be under no obligation or liability and no warranty or representation of any kind is made, given or to be implied as to the sufficiency, accuracy or fitness for a particular purpose of such information, data and services, or the absence of any infringement of any proprietary rights of third parties through the possession or use of such information, data and services. The recipient Party shall be entirely responsible for its use of such information, data and services, and shall hold the other Parties free and harmless and indemnify them for any loss or damage with regard thereto.

No Party shall be responsible to the other Party for punitive damages, indirect or consequential loss or similar damage such as, but not limited to, loss of profit, loss of revenue or loss of contracts.

The limitation of liability stated above shall not apply in (i) the case of damage caused by a proven willful act or gross negligence, and (ii) in respect of any activity involving the willful or grossly negligent misuse of anything protected by the intellectual property rights of another Party and (iii) infringement if the confidentiality obligations of this MoU.

Each Party shall be solely liable for any loss, damage or injury to third parties in relation to its execution of this MoU.

10. Public relations

Any publication by a Party resulting from the activities carried out under this MoU shall be subject to prior agreement of the other Party not be unreasonably withheld.

PRACE-4IP and EUDAT 2020 may each release information to the public, provided it is related only to its own part of the activities under this MoU. In cases where the activities of the other Party are concerned prior consultation shall be sought. In all relevant public relations activities, the contribution of each Party related to activities covered by this MoU shall be duly acknowledged.

11. Confidentiality of Information

The Parties may disclose to each other information that the disclosing Party deems confidential and which is (i) in writing and marked “confidential”, or (ii) disclosed orally, and identified as confidential when disclosed, and reduced in writing and marked “confidential” within fifteen (15) days of the oral disclosure (hereafter referred to as “Confidential Information”). Confidential Information shall be held in confidence and shall not be disclosed by the receiving Party to any third party without the prior written consent of the disclosing Party.

Notwithstanding the foregoing a Party is entitled to disclose Confidential Information which it is required by law to disclose or which, in a lawful manner, it has obtained from a third party without any obligation of confidentiality, or which it has developed independently from any Confidential Information received under this MoU, or which has become public knowledge other than as a result of a breach on its part of these confidentiality provisions.

12. Applicable law and settlement of disputes

This MoU shall be construed in accordance with and governed by the laws of Belgium.

All disputes arising out of or in connection with this MoU which cannot be solved amicably, shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules.

The place of arbitration shall be Brussels in English language if not otherwise agreed by the conflicting Parties. The award of the arbitration will be final and binding upon the Parties.

Nothing in this Agreement shall limit the Parties' right to seek injunctive relief or to enforce an arbitration award in any applicable competent court of law except in relation to CERN where this provision shall not apply.

13. Duration

This Memorandum of Understanding will take effect when approved by the steering committee of EUDAT 2020 and the management board of PRACE-4IP, and will remain in effect until terminated, after notice, by one of the parties.

Each Party may terminate this MoU at any time by giving the other Party written notification (including motivation).

_____ Date: _____
Prof. Dr. Dr. Thomas Lippert
PRACE-4IP Project Coordinator
Forschungszentrum Jülich GmbH
Wilhelm-Johnen-Str., 52428 Juelich, Germany

_____ Date: _____
Kimmo Koski
EUDAT Project Coordinator
CSC –IT center for Science
Keilaranta 14, 00210 Espoo, Finland
No. 653838 (PRACE-4IP).

5.5. Memorandum of Understanding between the PRACE-4IP and the EGI-Engage Projects

1. Background

PRACE – the Partnership for Advanced Computing in Europe – research infrastructure enables high impact European scientific discovery and engineering research and development across all disciplines to enhance European competitiveness for the benefit of society. PRACE seeks to realize this mission through world class computing and data management resources and services open to all European public research through a peer review process. The broad participation of European governments through representative organizations allows PRACE to provide a diversity of resources throughout Europe including expertise for the effective use of these resources. PRACE operates a dedicated 10 Gb/s network among Tier-0 and Tier-1 partners, currently. To aid users and potential users as well as preparing the next generation scientists and engineers PRACE has an extensive pan-European education and training effort. Twenty-five PRACE members collaborate in the Implementation Phase projects (currently PRACE-3IP and PRACE-4IP) coordinated by Forschungszentrum Jülich GmbH, Germany and co-funded by the European Commission's Horizon 2020 Framework Programme.

EGI is an international collaboration that federates the digital capabilities, resources and expertise of national and international research communities in Europe and worldwide. The main goal is to empower researchers from all disciplines to collaborate and to carry out data- and compute-intensive science and innovation. EGI is coordinated by Stichting EGI (abbreviated EGI.eu), a not-for-profit foundation established under the Dutch law.

EGI.eu has participants and associated participants drawn from representatives of national e-infrastructure consortiums (NGIs), EIROs, ERICs, and other legal entities. These entities provide the physical resources and shared services that enable EGI to deliver, improve and innovate services for communities.

EGI offering includes a federated IaaS cloud to run, via a uniform interface, compute- or data-intensive tasks and host online services in virtual machines or docker containers; high-throughput data analysis to run compute-intensive tasks for producing and analysing large datasets and store/retrieve research data efficiently across multiple service providers; federated operations to manage service access and operations from heterogeneous distributed infrastructures and integrate resources from multiple independent providers with technologies, processes and expertise offered by EGI; consultancy for user-driven innovation to assess research computing needs and provide tailored solutions for advanced computing.

The EGI-Engage project (Engaging the Research Community towards an Open Science Commons) started in March 2015, co-funded by the European Commission for 30 months, as a collaborative effort involving more than 60 institutions in over 30 countries. EGI-Engage aims to accelerate the implementation of the Open Science Commons by expanding

the capabilities of a European backbone of federated services for compute, storage, data, communication, knowledge and expertise, complementing community-specific capabilities.

2. Purpose of this MoU

Over recent years it has become more and more evident how large research infrastructures, communities and users, need to utilise various services together to conduct world leading scientific research.

The present MoU aims at:

- Identifying and coordinating common actions toward increased interoperability, integration and cross-infrastructure adoption of digital capabilities for data-driven science, varying by nature and organisation, which are required to accelerate research and innovation;
- Analysing the options and advantages of an integrated e-Infrastructure services catalogue for research communities;
- Defining common actions to increase the security of collaborating e-Infrastructures in Europe and beyond, thanks to the participation to joint boards and events;
- Providing a joint training programme, notably on security aspects;
- Working towards common approaches for increased efficiency of operations of systems and federations of services;
- Collaborating to enhance services for an increasingly solid European e-infrastructure supporting the European Research Area.
- Developing a communication plan to raise users' and stakeholders' awareness on the topics covered by this MoU.

3. Benefits of a close collaboration

EGI and PRACE have been collaborating on security policies, trust models and user-driven innovation. With this MoU the areas of joint effort expand with the support of PRACE-4IP and EGI-Engage.

The MoU will allow joining efforts and developing of coordinated actions which involve user communities and service providers of EGI and PRACE.

Knowing the respective requirements, priorities, and limitations will create the conditions for a long-term collaboration.

4. Contact points

The following table lists areas of collaboration and contacts points for administrative issues:

Area	PRACE	EGI
Training	Jussi Enkovaara, jussi.enkovaara@csc.fi	Gergely Sipos: Gergely.SIpos@egi.eu General list: training@egi.eu
IT Security	Jules Wolfrat, jules.wolfrat@surfsara.nl Ralph Niederberger, r.niederberger@fz-juelich.de	Dave Kelsey (STFC), david.kelsey@stfc.ac.uk Peter Solagna (EGI.eu), Peter.Solagna@egi.eu General list: scg-discuss@mailman.egi.eu
Operation	Giovanni Erbacci, g.erbacci@cinca.it	Peter.Solagna@egi.eu (EGI.eu)

		General list: operations@mailman.egi.eu
Administrative and contractual issues	Florian Berberich, f.berberich@fz-juelich.de	Yannick Legré, Tiziana Ferrari, Céline Bitoune General list: egi-engage-po@egi.eu

5. Proprietary Rights

This MoU shall not affect the proprietary rights of the Parties. Any joint development made by the Parties, will be subject to the provisions of a separate written agreement to be executed by the Parties prior to the commencement of any such joint development work. The execution of this MoU shall in no way serve to create, on the part of either Party, a license to use any proprietary rights of the other Party otherwise than explicitly stipulated herein.

6. Liability

With respect to information, data and services supplied by a Party to another Party under this MoU, the supplying Party shall be under no obligation or liability and no warranty or representation of any kind is made, given or to be implied as to the sufficiency, accuracy or fitness for a particular purpose of such information, data and services, or the absence of any infringement of any proprietary rights of third parties through the possession or use of such information, data and services. The recipient Party shall be entirely responsible for its use of such information, data and services, and shall hold the other Parties free and harmless and indemnify them for any loss or damage with regard thereto.

No Party shall be responsible to the other Party for punitive damages, indirect or consequential loss or similar damage such as, but not limited to, loss of profit, loss of revenue or loss of contracts.

The limitation of liability stated above shall not apply in (i) the case of damage caused by a proven willful act or gross negligence, and (ii) in respect of any activity involving the willful or grossly negligent misuse of anything protected by the intellectual property rights of another Party and (iii) infringement of the confidentiality obligations of this MoU.

Each Party shall be solely liable for any loss, damage or injury to third parties in relation to its execution of this MoU.

7. Public relations

Any publication by a Party resulting from the activities carried out under this MoU shall be subject to prior agreement of the other Party not to be unreasonably withheld.

PRACE Implementation Project and EGI-Engage may independently release information to the public, provided it is related only to its own part of the activities under this MoU. In cases where the activities of the other Party are concerned prior consultation with reasonable delay shall be sought. In all relevant public relations activities, the contribution of each Party related to activities covered by this MoU shall be duly acknowledged.

8. Confidentiality of Information

The Parties may disclose to each other information that the disclosing Party deems confidential and which is (i) in writing and marked "confidential", or (ii) disclosed orally, and identified as confidential when disclosed, and reduced in writing and marked "confidential" within fifteen (15) days of the oral disclosure (hereafter referred to as "Confidential Information"). Confidential Information shall be held in confidence and shall not be disclosed by the receiving Party to any third party without the prior written consent of the disclosing Party.

Notwithstanding the foregoing a Party is entitled to disclose Confidential Information which it is required by law to disclose or which, in a lawful manner, it has obtained from a third party without any obligation of confidentiality, or which it has developed independently from any confidential information received under this MoU, or which has become public knowledge other than as a result of a breach on its part of these confidentiality provisions.

9. Applicable law and settlement of disputes

This MoU shall be construed in accordance with and governed by the laws of Belgium.

Should a dispute arise between the Parties concerning the validity, the interpretation and/or the implementation of this MoU, they will try to solve it through mediation, according to the rules of Mediation, Brussels in English language. The Parties undertake not to put an end to the mediation before the introductory statement made by each Party in joint session.

Should the mediation fail to bring about a full agreement between the Parties putting an end to the dispute, said dispute will be finally settled by arbitration, according to the rules of the Belgian Centre for Arbitration and Mediation (in short: CEPANI).

Nothing in this Agreement shall limit the Parties' right to seek injunctive relief or to enforce an arbitration award in any applicable competent court of law.

10. Duration

This Memorandum of Understanding will take effect when approved by the Project Management Board of EGI-Engage and the Management Board of PRACE-4IP, and will remain in effect until the end of the PRACE Implementation Phase project, the end of the EGI-Engage project or until terminated, after notice, by one of the parties, whatever reason occurs first.

Each Party may terminate this MoU at any time by giving the other Party written notification (including motivation) at least two months before the anticipated end date.

Date: _____

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Date: _____

Dr. Tiziana Ferrari
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Science Park 140
1098 XG Amsterdam
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