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**PRACE Fifth Implementation Phase Project**

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**Report on Management Processes and KPIs**

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- [1] <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0679&from=EN>
- [2] <https://www.surveymonkey.de/r/HPCecosystemSurvey>
- [3] Report on PRACE 2, TNA and DECI Year 2. D2.3 in PRACE-5IP project
- [4] Final Communication and Outreach Report. D3.3 in PRACE-5IP project
- [5] Deployment of Impact Assessment Methods. D2.4.1 in PRACE-3IP project
- [6] <http://www.prace-ri.eu/prace-kpi/>
- [7] Report on PRACE 2, TNA, DECI and KPIs Year 1. D2.1 in PRACE-5IP project

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### List of Acronyms and Abbreviations

aisbl	Association International Sans But Lucratif (legal form of the PRACE-RI)
BoD	PRACE Board of Directors
CPU	Central Processing Unit
DoA	Description of Action (formerly known as DoW)
EC	European Commission
ERC	European Research Council
FORAC	PRACE Financial Oversight and Risk Assessment Committee
GDPR	General Data Protection Regulation
GP	PRACE General Partners
GPU	Graphic Processing Unit
H2020	Horizon 2020
HM	PRACE Hosting Members
HPC	High Performance Computing; Computing at a high performance level at any given time; often used synonym with Supercomputing
HPCG	High Performance Conjugate Gradients benchmark
HPL	High Performance LINPACK benchmark
KPI	Key Performance Indicator
LINPACK	Software library for Linear Algebra
PRACE	Partnership for Advanced Computing in Europe; Project Acronym
PRACE 1	The initial period of the PRACE Research Infrastructure
PRACE 2	The second period of the PRACE Research Infrastructure following the initial period
PRACE-xIP	x PRACE Implementation Phase project
SHAPE	PRACE SME HPC Adoption Programme in Europe
SSC	PRACE Scientific Steering Committee
SWG	PRACE Strategy Working Group
Tier-0	Denotes the apex of a conceptual pyramid of HPC systems. In this context the Supercomputing Research Infrastructure would host the Tier-0 systems; national or topical HPC centres would constitute Tier-1
Tier-1	National or topical HPC centres
TNA	Trans-National Access
WP	Work Package – in case no project is indicated, it refers to the PRACE-5IP project

### List of Project Partner Acronyms

BADW-LRZ	Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften, Germany (3 <sup>rd</sup> Party to GCS)
BILKENT	Bilkent University, Turkey (3 <sup>rd</sup> Party to UYBHM)
BSC	Barcelona Supercomputing Center, Spain
CaSToRC	Computation-based Science and Technology Research Center, Cyprus
CCSAS	Computing Centre of the Slovak Academy of Sciences, Slovakia
CEA	Commissariat à l’Energie Atomique et aux Energies Alternatives, France (3 <sup>rd</sup> Party to GENCI)
CESGA	Fundacion Publica Gallega Centro Tecnológico de Supercomputación de Galicia, Spain, (3 <sup>rd</sup> Party to BSC)
CINECA	CINECA Consorzio Interuniversitario, Italy

CINES	Centre Informatique National de l'Enseignement Supérieur, France (3 <sup>rd</sup> Party to GENCI)
CNRS	Centre National de la Recherche Scientifique, France (3 <sup>rd</sup> Party to GENCI)
CSC	CSC Scientific Computing Ltd., Finland
CSIC	Spanish Council for Scientific Research (3 <sup>rd</sup> Party to BSC)
CYFRONET	Academic Computing Centre CYFRONET AGH, Poland (3 <sup>rd</sup> Party to PNSC)
EPCC	EPCC at The University of Edinburgh, UK
ETHZurich (CSCS)	Eidgenössische Technische Hochschule Zürich – CSCS, Switzerland
GCS	Gauss Centre for Supercomputing e.V.
GENCI	Grand Equipement National de Calcul Intensiv, France
GRNET	Greek Research and Technology Network, Greece
INRIA	Institut National de Recherche en Informatique et Automatique, France (3 <sup>rd</sup> Party to GENCI)
IST	Instituto Superior Técnico, Portugal (3 <sup>rd</sup> Party to UC-LCA)
IUCC	INTER UNIVERSITY COMPUTATION CENTRE, Israel
IT4I	IT4Innovations National supercomputing centre at VŠB-Technical University of Ostrava, Czech Republic
JKU	Institut fuer Graphische und Parallele Datenverarbeitung der Johannes Kepler Universitaet Linz, Austria
JUELICH	Forschungszentrum Juelich GmbH, Germany
KIFÜ	Governmental Information Technology Development Agency, Hungary
KTH	Royal Institute of Technology, Sweden (3 <sup>rd</sup> Party to SNIC)
LiU	Linköping University, Sweden (3 <sup>rd</sup> Party to SNIC)
NCSA	National Centre For Supercomputing Applications, Bulgaria
NTNU	The Norwegian University of Science and Technology, Norway (3 <sup>rd</sup> Party to SIGMA)
NUI-Galway	National University of Ireland Galway, Ireland
PRACE	Partnership for Advanced Computing in Europe aisbl, Belgium
PSNC	Poznan Supercomputing and Networking Center, Poland
RISCSW	RISC Software GmbH
RZG	Max Planck Gesellschaft zur Förderung der Wissenschaften e.V., Germany (3 <sup>rd</sup> 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 <sup>rd</sup> 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, Labotatório de Computação Avançada, Portugal
UCPH	Københavns Universitet, Denmark
UHEM	Istanbul Technical University, Ayazaga Campus, Turkey
UiO	University of Oslo, Norway (3 <sup>rd</sup> Party to SIGMA)
ULFME	Univerza v Ljubljani, Slovenia
UmU	Umea University, Sweden (3 <sup>rd</sup> Party to SNIC)
UnivEvora	Universidade de Évora, Portugal (3 <sup>rd</sup> Party to UC-LCA)
UPC	Universitat Politècnica de Catalunya, Spain (3 <sup>rd</sup> Party to BSC)
USTUTT-HLRS	Universitaet Stuttgart – HLRS, Germany (3 <sup>rd</sup> Party to GCS)
WCNS	Politechnika Wroclawska, Poland (3 <sup>rd</sup> Party to PNSC)



## Executive Summary

The objective of this deliverable is to report on the support provided by the PRACE-5IP Work Package 2 to the development of the PRACE Research Infrastructure (RI) during the timeframe of the PRACE-5IP project, following on the activities from PRACE-3IP and PRACE-4IP projects.

The work has followed the requests of the Board of Directors of PRACE, to review the governance structure of PRACE, to provide advice on PRACE processes, to analyse the impact of a potential Brexit, and to analyse a potential update of the compensation to PRACE Access Committee. The Board of Directors of PRACE also requested to further develop the impact assessment methodology through the development of internal indicators related to usage of PRACE resources and PRACE 2, , along with project KPIs. These project KPIs demonstrate that the project PRACE-5IP performed well with regard to its strategic objectives. In addition to these topics, this deliverable updates the analysis of Trans-National Access, including an answer to the request from PRACE-5IP reviewers to identify a unit of access for HPC.

As a result of all these efforts, a number of improvements have been implemented in PRACE aisbl. This includes an enhanced process for the allocation of resources to Centres of Excellence in HPC, a fair recognition of the work performed by the PRACE Access Committee, and better financial oversight of the infrastructure. The activities reported in this deliverable have also furnished valuable analysis to help understand the trends of usage of PRACE resources, and to be ready for a potential departure of the UK from the European Union.

## 1 Introduction

The objective of this deliverable is to report on the support provided to the development of the PRACE Research Infrastructure during the timeframe of the PRACE-5IP project by Work Package 2. This work builds on the efforts of the PRACE-3IP and PRACE-4IP projects to assist the association on their implementation.

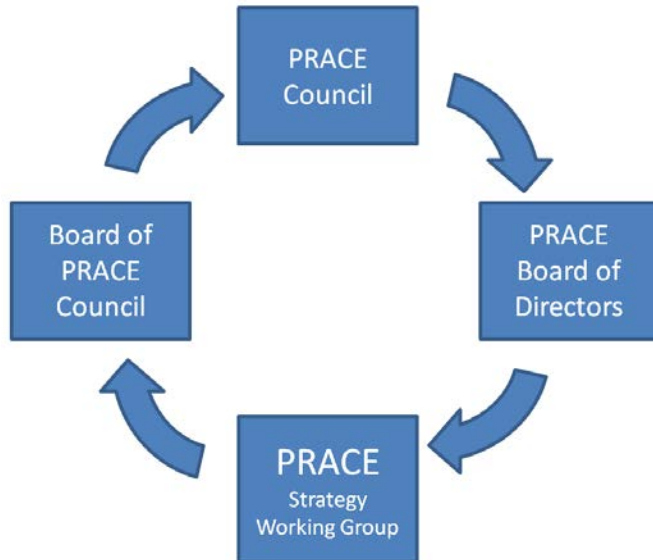
The work has focused on providing flexible support to PRACE aisbl bodies, i.e.: PRACE Council, PRACE Strategy Working Group and the Board of Directors (BoD) of PRACE, according to their needs throughout the duration of the project.

This deliverable describes the activities undertaken by Task 2.2, and it is structured as follows:

- Section 2 reports on the support provided to the PRACE association, regarding the governance structure of PRACE, PRACE processes, the impact of a potential Brexit and an analysis of an updated compensation to PRACE Access Committee, including implementation of GDPR [1];
- Section 3 reports on the development of internal indicators related to usage of PRACE resources and related to the PRACE 2 programme. This section includes a report on the PRACE-5IP Key Performance Indicators (KPIs);
- Section 4 updates the analysis of PRACE Trans-National Access (TNA).

## 2 Support to PRACE-RI

The PRACE Research Infrastructure (PRACE-RI) has been operating since 2010. Its management has been based on the creation of a legal structure to manage the access to PRACE HPC resources, while the strategic management has taken place at the Council level. In between these two bodies, the RADAR (Results, Approaches, Deploy and Assess and Refine) logic of the European Foundation for Quality Management Excellence model is completed in PRACE with the Strategy Working Group (SWG) of PRACE, in charge of the preparation of strategic proposals, and the Board of the Council, to evaluate the results and close the cycle.



**Figure 1: RADAR logic applied to PRACE governance**

According to this structure, the PRACE BoD and the PRACE SWG have been identified as the main interlocutors between PRACE-RI and the PRACE-5IP project. Throughout this project, it has proven useful that these two bodies have common members with this work package (WP2). This has ensured that the objectives of the PRACE-RI are aligned with the work developed in general in the PRACE-5IP project, and specifically in WP2 and Task 2.2. During the development of the project, there have been regular interactions between WP2 contributors and PRACE BoD, in order to review the actions in progress.

### 2.1 Support to PRACE aisbl governance

#### 2.1.1 Revised governance structure of the organisation

The composition and role of the Board of Directors of PRACE aisbl has been discussed for some time with the help of the Strategy Working Group. Different scenarios have been analysed, trying to find the best possible option.

The current format of executive directors seconded by PRACE members was implemented as an interim solution until a suitable Managing Director was recruited. During this interim period, the activities of PRACE have grown up to an extent that, when the Managing Director was incorporated, it was not possible anymore for a single person to manage the whole association. Therefore, the Board of Directors has maintained part of their executive tasks.

In order to handover the executive tasks of the Board of Directors – mainly management of the PRACE Peer Review process, it has been concluded that a new Technical/Operations Director was necessary. This posed a number of questions related to the mandate and line of command of this new position in relation to the Managing Director and the Board of Directors. According to the PRACE Statutes, the signature of two directors is required to engage the PRACE association. Nevertheless, the Managing Director also has the mandate to represent PRACE aisbl in day-to-day business and engage the association in commitments that do not exceed a value of 25.000 EUR. This implies that, in practice, the signature from a second Director is only needed for transactions above the mentioned threshold. A Technical/Operations Director could take this responsibility, though the command line (reporting) could pose a conflict of interest and/or lack of independence that would make this option unfeasible. An external legal analysis was requested in order to clarify these aspects:

- **Reporting:** it was clarified that, as a rule of thumb, the Managing Director would be normally reporting to the Board of Directors, except when a reporting line is organising the other way around, and provided that such information is necessary or useful for the Managing Director's mandate.
- **Independence:** regarding independence, understood in the sense of absence of any conflicts of interest, there are no specific constraints for international non-profit associations. The general good governance principle applies, which requires transparency in case of a possible conflict of interest.

As per decision making, two options were considered together with their pros and cons. A first one would be a two tier-governance structure with a Board of Directors combined with an executive committee (Managing Director and Technical Director). The main disadvantage would be that such executive committee would always work on an "ad hoc" basis.

A second option would be to create a governance structure with only the Board of Directors and a Managing Director, but with advisory/preparatory functions or committees. In this case *“the Technical Director could then assume such advisory/preparatory role and report to the PRACE Board of Directors and/or to the Managing Director. If desired, it is also possible to grant this Technical Director certain well-defined powers by means of a power-of-attorney, which can be either individual powers and/or joint powers together with the Managing Director”*. As a main drawback, this advisory function would be an additional role, which would need to be defined, as it could not be covered by the mandate as PRACE Director.

While the final solution is still under development, PRACE will soon open the position for this Technical/Operations Director.

### 2.1.2 Impact on the membership of the UK in PRACE after hypothetical Brexit

The impact of the potential exit of the UK from the EC was analysed in relation with their capacity to remain as PRACE Member.

From the different possible scenarios of the UK, the two main options were considered assuming that it could become an associated country to the EU or a third country. The first one would have no impact as the Statutes establish that: "there can only be one member per Member State of the European Union or of an associated country as described in article 217 of the European Union Treaty", interpreting that this is just a quantitative limitation.

As per the second scenario, while it would not conflict with the PRACE Statutes, it would have an impact on the eligibility criteria of the PRACE Council Internal Regulation Nr 3, which lays down that "the country of its origin is a member of the European Union or an associated country as described in article 217 of the European Union Treaty". Therefore, such Member would no longer comply with this requirement. However, the exclusion would only be triggered after a decision of the Council, if the UK wants to remain.

At this stage, PRACE recognises the important role and contribution of the UK to PRACE. The clarification of Internal Regulation Nr 3 is under development, in order to avoid confusions in this regard.

### 2.1.3 Changes affecting the Access Committee

With the start of the PRACE 2 programme, the PRACE Access Committee (AC) has strongly increased its influence in PRACE core activities. In order to acknowledge this, the relation of PRACE with this committee has been revised in two different aspects:

- **Confidentiality:** it was analysed whether the current Confidentiality Agreement used for the participants in the AC meeting would need to be adapted to the reporting/information requirement for the Members of the PRACE Board of Directors. After analysing the existing agreement, it was advised to update it and to include a clause on "Permitted disclosure", which would explicitly cover the reporting line to Directors (on a need-to-know basis). It also clarified the implicit adherence to a general confidentiality duty of the PRACE Directors not attending those meetings and to whom the information exchanged during those meetings is disclosed. The new requirements of the GDPR were also incorporated to the Agreement;
- **Remuneration:** following the advice of its Scientific Steering Committee (SSC), the PRACE Council accepted to increase the honorarium to be paid to the Members of the Access Committee, as a recognition of their increased contribution to the process. The impact of such decision was analysed with the assistance of an external legal firm. The main aspects to be considered were the following:
  - *Fiscal impact:* it was reminded that, as a non-profit association, there is a limitation when it comes to the distribution of any gains amongst its Members as an excessive remuneration could qualify as a hidden profit distribution. Therefore a market based updated remuneration would not be problematic as is it the case;

- *Employment point of view*: the external legal adviser considered that the mandate of the AC members would imply a “self-employed activity” with the relevant implications from the taxation point of view;

After these considerations, the rules for remuneration of ERC reviewers were adopted as an example of best practices in Europe, and implemented for the PRACE Access Committee members, retroactively covering their involvement since PRACE Project Access Call 16.

## 2.2 Support to PRACE strategy

### 2.2.1 HPC Landscape survey

Answering the recommendations of the PRACE-5IP interim review, PMO and WP2 have prepared a questionnaire (available in [2] and attached as Annex 1 to this deliverable) in order to define the position of European HPC players, and sort out and fix their roles in the HPC ecosystem. This questionnaire was distributed mid of April to the coordinators of all relevant HPC players (e.g. EOSC, EuroHPC, CoEs, FETHPC projects, Other Support actions for the HPC ecosystem like EXDCI, GIG, FocusCoE). It is expected that the results of the questionnaire will allow to elaborate a vision of architecture and integration of services with EOSC, EDI, data services, etc. for the communities.

A dedicated session during EuroHPC summit week (the HPC Ecosystem Summit, agenda available at <https://events.prace-ri.eu/event/850/timetable>) is being organised by the PRACE-IP project in order to present and discuss the results of the survey with all the relevant stakeholders.

## 2.3 Transfer of activities from PRACE-5IP to PRACE aisbl

### 2.3.1 PRACE mobility programme

One of the training activities of the PRACE-4IP and PRACE-5IP projects is the Summer of HPC programme (SoHPC). Over a number of years, this has grown to be a successful activity, highly valued by late stage undergraduates and early stage postgraduate students in HPC disciplines.

Deliverable 2.3 of this project [3] already reported on the developments to enhance this programme and transfer part of the activity from the PRACE-IP projects to PRACE aisbl tasks.

This section is a brief update to report that the PRACE aisbl budget for 2019 has been approved and will accommodate this new mobility programme for HPC students. The terms of reference and selection process for the programme are still under development, but in the meantime, the activities of SoHPC in PRACE-6IP have already been adapted to account for this programme.

### 2.3.2 PRACE aisbl web tender

The process to update the website of PRACE started already under previous PRACE-IP projects. This request was finally formalised under the final recommendations of PRACE-4IP by creating a specific task under PRACE-5IP.

#### *Hosting*

Since the beginning of the PRACE-IP projects, the website hosting was provided by CINES – one of the 3<sup>rd</sup> Parties of a PRACE Partner (GENCI). This service was provided as an effort in terms of PMs for the Project.

In order to upgrade the website hosting, WP3 in coordination with WP2 launched a contracting process with the entity providing the hosting of the website with the aim of formalising in a contract the updated hosting requirements. In this regard, the hosting requirements of the website were discussed with WP3 as reported in previous deliverables. After some contractual negotiation, this process was put on hold until having implemented the mentioned procurement of the new website in order to have a better idea on the requirements for the hosting.

#### *Content*

Over the years, the needs and content requirements have evolved substantially, in particular with regard to:

- Better integration and presentation of content;
- More user oriented access by target audience;
- Easier maintenance;
- Clearer integration between the PRACE-IP projects and the association activities;
- Implementation of the GDPR requirements;
- Improved security.

From the legal perspective, the main concern is that the new website is compliant with the requirements imposed by the GDPR from the different angles, in particular regarding the privacy notices, cookies, etc.

To this date, the procurement procedure for the redesign the content of the website is closed and the implementation is ongoing under the lead of WP3. One supplier was selected among the ones participating and the redesign service has been launched. The technical aspects of this tender are reported under D.3.3 of this project [4]. WP2 will support WP3, on demand with the contracting process until the implementation of the new website.

## 2.4 PRACE aisbl procedures

### 2.4.1 Allocation of resources to Centres of Excellence in HPC

Since PRACE Project Access 12<sup>th</sup> Call, there has been a fraction of PRACE Tier-0 resources reserved for direct use by the EC Centres of Excellence in HPC. This was understood as a marginal allocation that would allow all these recognised institutions to test PRACE Tier-0 architectures and maybe undertake adaptations for subsequent large Tier-0 projects.

These resources had a good initial acceptance, but we have observed how the interest of CoEs have been decreasing since then. In each call, resources are evenly reserved so that each CoE would have their fraction secured; unused resources from one call were evenly reshuffled in the next call, but still this did not allow complete usage. In order to understand this, a questionnaire was prepared and sent to CoEs in October 2018. This questionnaire is included as Annex 2. The results gathered are summarised here:

- All CoEs are well informed about the resources and about the process to access them;
- Most CoEs consider the reserve adequate for their purposes, in size and duration of allocations;
- CoEs understand that this reserve is not intended for their normal research, but for benchmarking, porting and optimisation of their applications;
- A couple of centres mention that they could gladly benefit from what others are not using, in order to run larger benchmarks or even for one CoE to use for production;
- A few centres complain about the heavy process to use the resources at the site level. It is suggested to have continuity on allocations through calls.

Two actions were identified to address the feedback received:

- **Revised application procedure:** the current application form has been simplified, and it is only required for new requests or significant changes to previous running projects. Whenever the centre will use the new resources for a normal continuation of their previous requests, an application will not be required;
- **Revised allocation of resources:** CoEs will be asked for their maximum capacity to use the whole reserve of resources. After this is received from all centres, the resources will be evenly distributed up to the maximum of their requests.

These actions were tested as a pilot second round of the reserve of Call 17, leading to a full distribution of the resources reserved. After this success, these changes will be implemented in the standard process already in Call 18.

### 2.4.2 Procurement rules

PRACE aisbl set up a document containing the procurement guidelines to be observed when purchasing goods and services. The thresholds levels taken as a reference were the standard ones in Belgium for public procurement in national non-profit associations.



At some point, it was considered that those rules needed to be updated in order to better accommodate the procurement of very specific services that due to their technical characteristic are only suitable for a specific provider, taking into account the scientific nature of the service.

In the case of subcontracting, the EC rules require the procurer to comply with “the best value for money” principle but such principle does not require in all cases competitive selection procedures. That is why in these cases the procurer needs to demonstrate how best value for money is ensured.

In all these cases, it is of utmost importance to follow a transparent and reasoned procurement in order to avoid any potential complaint in this regard.

The updated rules were circulated internally at the PRACE Office, and with the WP3 leader to be distributed to the people involved in purchasing services and goods with special attention to purchases for EC Projects and to any contract with an important value.

### 2.4.3 The PRACE Financial Oversight and Risk Assessment Committee (FORAC)

The Council of the PRACE aisbl created during its 28<sup>th</sup> meeting held on 20 December 2017 the FORAC, the Financial Oversight and Risk Assessment Committee, as an internal body. The Strategy Working Group supported the setup of this Committee. In addition, the Council appointed three initial members for this Committee coming from the Members of PRACE, one of them acting as a Chair. The initial proposed setup of this Committee included:

- *The name of the Committee*
- *The number of annual meetings of this committee (once or twice seems appropriate);*
- *Its scope: an advisory group and not a certification group.*

The Council mandated the mentioned members of this Committee with the review of the draft proposed scope above-mentioned and approval of its working rules. Later on the following tasks were established:

*“The main responsibilities of the Committee include:*

- 1) *Generally to review the statutory annual accounts, the preparation of the annual budget and other published financial statements and information reports to ensure current best practice is reflected;*
- 2) *To monitor the assignment given to the external auditors to ensure that there are no restrictions on the scope of statutory audit; to receive reports of the external auditors, review the activities, findings, conclusions and recommendations of the external auditors; and to consider and monitor action on all reports submitted by the external auditor;*
- 3) *To examine the processes by which PRACE management ensures and monitors the adequacy of the nature, extent and effectiveness of internal control systems – financial and other;*
- 4) *To assess the scope and effectiveness of the systems established to identify, assess, manage and monitor financial and non-financial risks. To pay particular attention to*

*risks and contingency plans on all business critical projects and report to the PRACE Council where plans or progress are such as to prejudice PRACE operations;*

- 5) *Where considered necessary, to receive and review individual audit reports, and on occasion to commission audit assignments to be conducted on the Committee's behalf.*

*The Chair of the Committee shall have discretion as to how these duties – or any other appropriate to the achievement of the objective of the Committee, as set forth in §1 above – shall be achieved.”*

An initial meeting was held at the PRACE Office on 11 September 2018 during which the financial management of the association was presented to the FORAC Members, including planned improvements. During this meeting, there was an exchange of best practices among the different Members. This Committee was consulted later on about the presentation of the budget for 2019 and also about the internal audit that will be launched on the accounting practices.

#### 2.4.4 Insurance for events

PRACE aisbl organises under the lead of WP3 multiple events all over the year. These events are organised in different countries and they are open to the general public, involving hundreds of participants in each event. Due to the magnitude of these events, it is important to have a proper insurance coverage over risks that may materialise during the celebration of each event.

In this regard, WP2 provided support to WP3 analysing and clarifying the type of insurance that can be set up for this type of events. A consultation process took place with some key personnel involved in the organisation of these events. As a consequence, it was considered helpful to develop a document (see Annex 3) providing guidance of how to insure these events addressing the following points:

- Information gathering;
- Clarification on the risks to be covered;
- Period of insurance;
- Territorial extension;
- Exclusions, limits and franchise;
- Prime;
- Contracting and follow-up.

This checklist was developed to provide guidance for future events and can be reviewed regularly in order to adapt it to each event if necessary.

## 2.5 Implementation of GDPR

As a follow-up of the implementation of the GDPR requirements [1], PRACE aisbl has concluded most of the GDPR Agreements with PRACE Partners, in order to handle the processing of personal data. This contractual process has been useful for all the involved Partners in order to guide their internal compliance process. It has also served to prepare the new Agreements for the upcoming PRACE-6IP project. This has also served to develop internal

agreements on the matter at the PRACE Aisbl level as reported in previous deliverables of PRACE-5IP [3].

Regarding the internal compliance, the following actions have been undertaken:

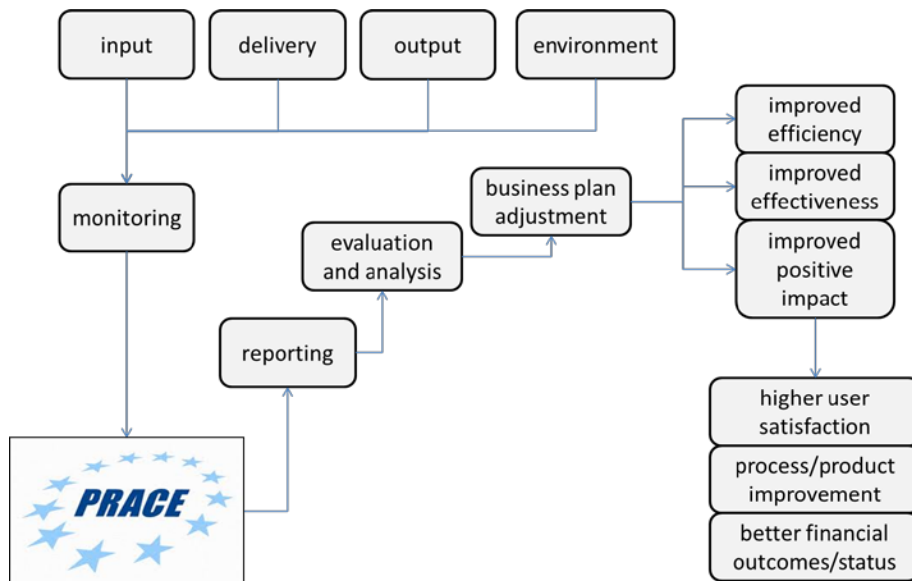
- a) **Internal meetings with the different departments of PRACE aisbl.** Several meetings took place with different departments in order to identify the sources of personal data and the handling of such data. A major aspect identified was the need of clarifying the GDPR terminology in order to understand better the concepts as “Personal Data”, “Data Controller” or “Data Processing”, among others;
- b) **Setup of a personal data inventory.** An initial inventory was set up in order to register and follow up the different types of personal data which are handled and also their origin, as well as the 3<sup>rd</sup> Parties involved as Data Processors and Sub-processors. This inventory needs to be updated regularly. The possibility of implementing a specific software was analysed but has not been implemented up to date;
- c) **Awareness raising about the handling of personal data.** During these meetings, the measures to be taken when handling personal data were discussed. This included:
  - Identification of Personal Data, what is this and different types;
  - Need of formalising agreements with external Parties involved in the processing, such as the providers or PRACE Partners;
  - Implementation of notices and agreements with the Data Subjects such as an update to the reimbursement form, registration for events, emails sent to Reviewers, etc;
  - Compliance with principles like data minimisation, informed consent. There is still quite a lot of work to be done about this and it is an ongoing process. This is due partially to the fact that there is an interest to avoid additional burden for the usual practices;
  - Analysis of the security measures in place and possible improvements.
- d) **Risk assessment.** After an initial evaluation it was considered that the two main activities in terms of risk assessment are the following:
  - *Peer Review process.* Regarding this activity there are many individuals participating in each Call. In addition, bank data are handled as there are payments done to external experts. The aspects to take into account to avoid risks are the following:
    - Several types of personal data (residential address, bank data, etc.);
    - Clear information on the processing of their data;
    - Many actors involved in the processing;
    - Storage of the personal information.

In this regard, an internal legal analysis was performed in order to check the implication of sharing data related to the PRACE Calls for Proposals with Council Delegates, concluding that the requirements of the GDPR are not less stringent by the fact that those entities to which the Delegates belong are Members of the Association.
  - *Communication activities.* PRACE aisbl is involved in the organisation of many events all over the year which are open to external public and for a big number of participants. In this case the most important aspects to be tackled are the following:
    - Provision of information during the registration process;
    - Follow-up of communications;
    - Storage of the personal information.

### 3 PRACE-RI Key Performance Indicators

A **performance indicator** or **Key Performance Indicator (KPI)** is a type of performance measurement. KPIs evaluate the success of an organisation or of a particular activity in which it engages. The work on Key Performance Indicators in the context of PRACE-RI started as early as the first Implementation Phase (PRACE-1IP) project and continued to evolve in the succeeding series of PRACE-IP projects until today.

Deliverable D2.4.1 in PRACE-1IP [5] described in detail all aspects regarding monitoring and reporting in PRACE-RI. The document also elaborated on the management cycle of PRACE aisbl resulting from the whole monitoring process. The report emphasised that the process should lead to adjustments of implementation of PRACE where necessary.



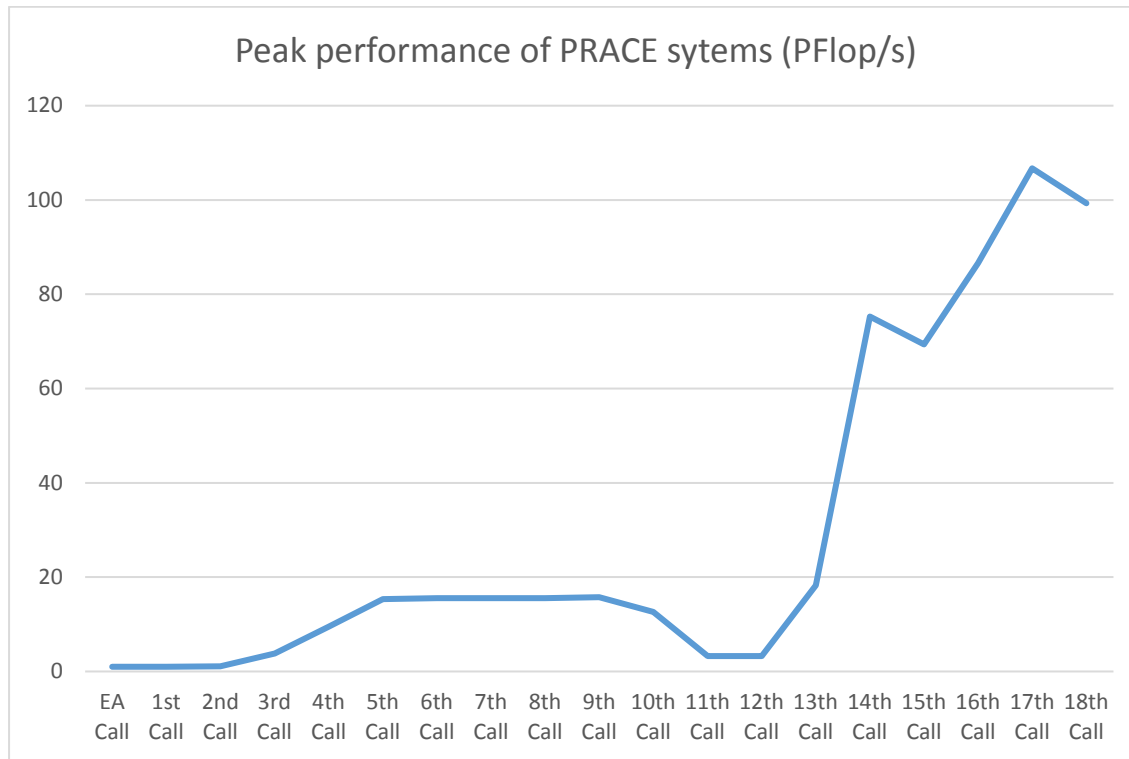
**Figure 2: Management cycle of PRACE aisbl**

After a period of refinement and elaboration from the PRACE aisbl, a total of 15 variables were finally selected as official PRACE-RI KPIs and became publicly available on the official PRACE website [6]. These KPIs rely on actual data collected on a yearly basis.

The work on PRACE-RI KPIs has continued in PRACE-5IP, with Task 2.2 focusing on the development and analysis of internal indicators that should help to understand the usage and trends of HPC users in PRACE, and the impact of the PRACE 2 programme in European research. This section reports also about the PRACE-5IP KPIs.

#### 3.1 PRACE aisbl internal indicators

The Board of Directors of PRACE maintains a set of internal indicators to guide them in the day-to-day operations of the association. These indicators are also used to report to the PRACE Council and eventually for dissemination purposes. These indicators are presented herein:

*Aggregated capacity of PRACE systems per call*

**Figure 3: Peak performance of PRACE systems (PFlop/s)**

The figure shows how PRACE has been increasing the computational capacity all over the years, from 1 PFlop/s in 2010 to 100 PFlop/s in 2018. The reduction of capacity in Calls 11 and 12 corresponds to the transition from PRACE 1 to PRACE 2.

*Details about PRACE architectures*

Since PRACE Preparatory Phase project, there have been sustained efforts in developing prototypes and testing future technologies that could be used for next-generation Tier-0 systems. While prototypes developed within PRACE-IP projects have never been used for production, PRACE has made available to its users a wide variety of general-purpose computing technologies. GPU accelerators were included in PRACE as of 6<sup>th</sup> Call with Curie Hybrid system, and Xeon Phi processors were included in the 9<sup>th</sup> Call with MareNostrum3 hybrid partition. The following figures compare the evolution of PRACE resources, split into general-purpose resources, Xeon Phi resources and GPU-accelerated resources.

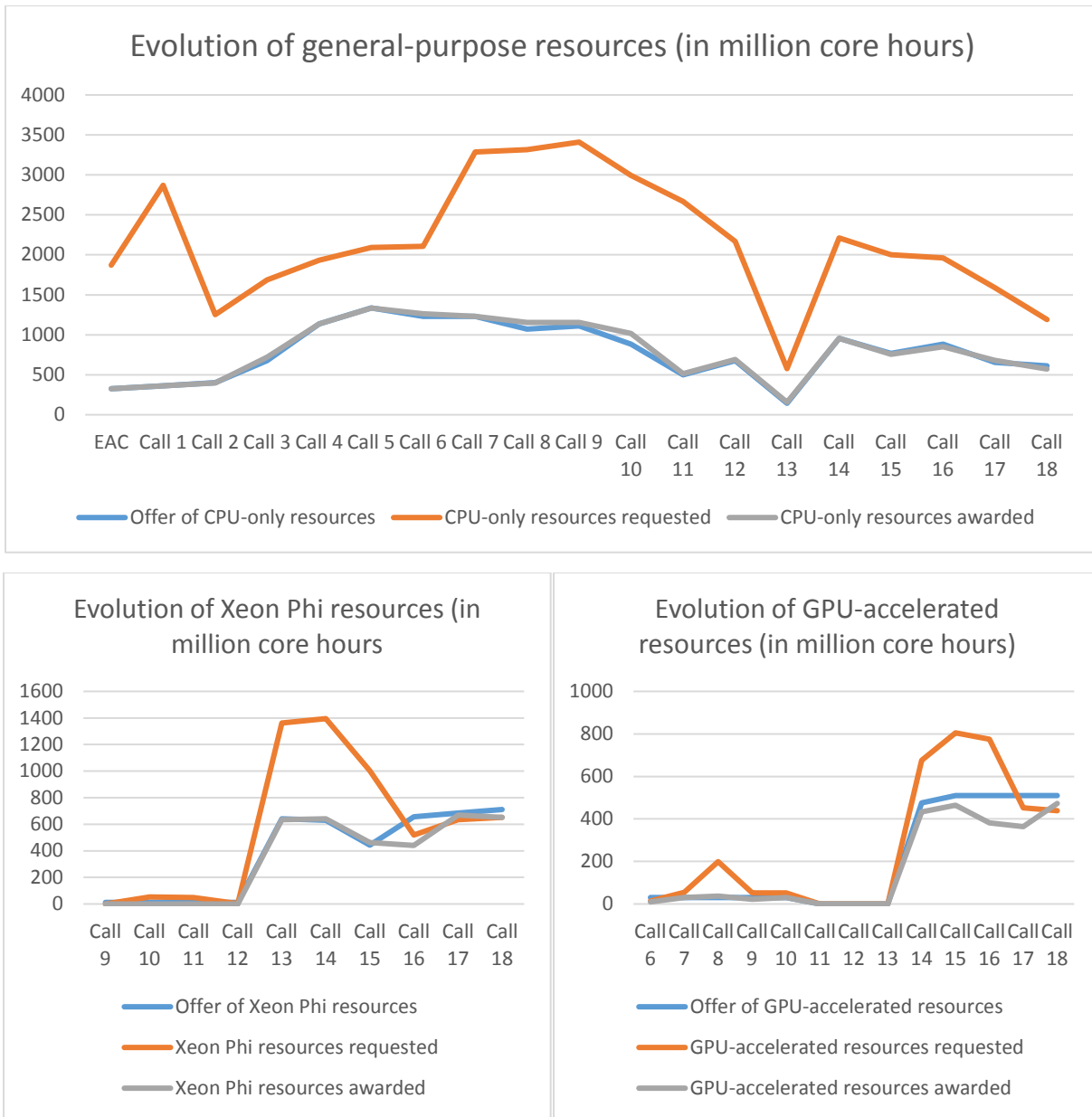


Figure 4: Evolution of PRACE resources according to architecture types

General-purpose resources have always represented the major fraction of PRACE portfolio, with a sustained over-demand above 200% of the available resources.

Xeon Phi and GPU-accelerated resources had an initial fair acceptance, despite the low capacity of the systems and the small fraction of resources. This can be observed in Calls 9 to 12 for Xeon Phi, and Calls 6 to 11 for GPU-accelerated. After this initial success, large systems including Xeon Phi and GPU accelerated resources were incorporated into PRACE portfolio, in Calls 13 and 14 respectively. These systems had a starting excellent acceptance, but the interest has slowly decreased call after call. A possible explanation for this decreasing tendency is that such systems have proved to be used effectively by only a limited fraction of HPC users.

*Global evolution of resources (offered, requested and awarded) per call*

This indicator is complementary to the PRACE-RI KPI monitoring the number of proposals received and projects awarded. The figure shows the sustained interest in PRACE, proportional to the offer of resources per call.

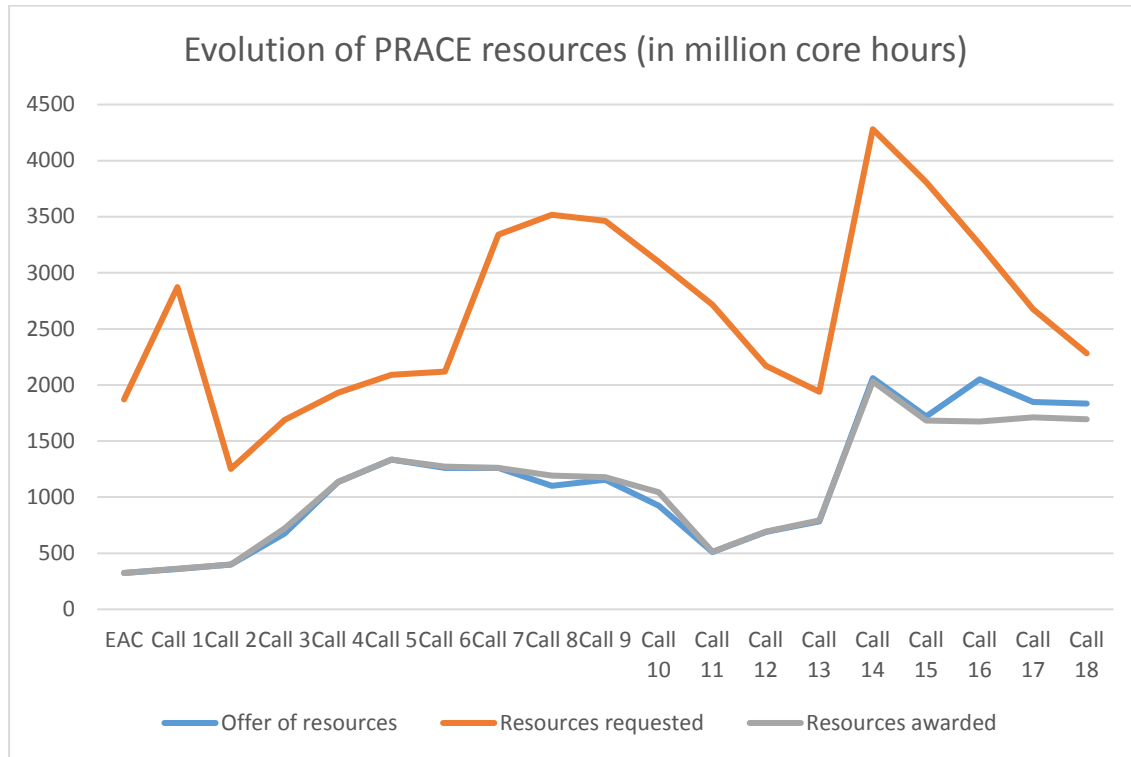


Figure 5: Evolution of PRACE resources

*Allocation ratio*

This indicator is used to monitor the percentage of resources allocated, as compared to the offer per call. PRACE has a mechanism to transfer projects from one system to another, in order to follow the scientific excellence ranking of the proposals received.

In some cases, this indicator is above 100%, showing both the success of PRACE allocation mechanisms and the capacity of PRACE to accommodate additional projects by slightly increasing the resources above the initial offer of resources from the ToR.

Since Call 16 we observe how the indicator is below 100%. The main reason for this under-allocation comes from the GPU-accelerated resources, and the lack of projects that can use such resources in an effective manner.

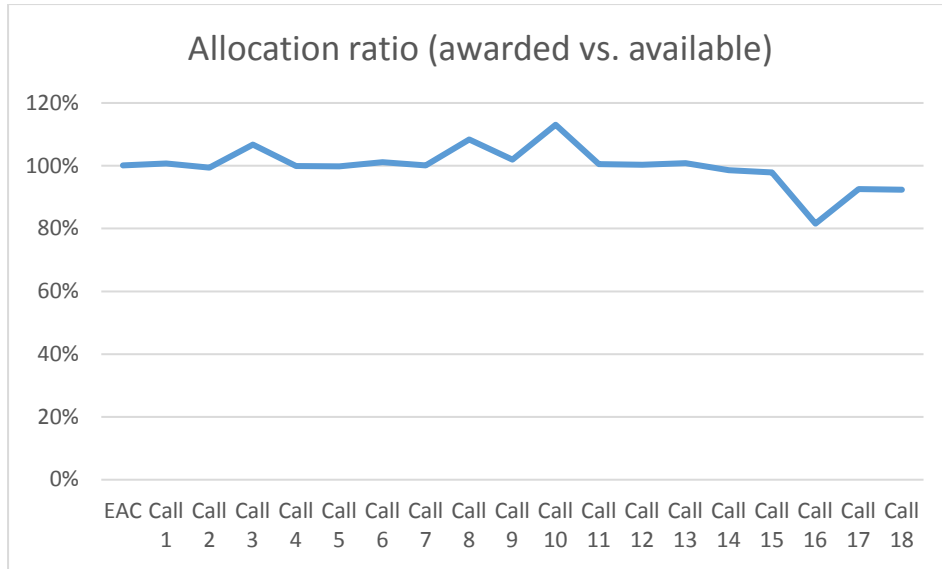


Figure 6: Allocation ratio (awarded vs. available)

**Multi-system proposals**

One of the objectives of PRACE is to foster wide collaborations within European researchers. To this end, PRACE started encouraging collaborative projects and projects running in more than one PRACE system. In this way, research groups from different countries can combine their expertise in using different PRACE systems in collaborative projects. This option had a good and increasing acceptance by users, but we are experiencing a strong decrease of proposals requesting resources in more than one system. We need to analyse further on this effect, probably checking other variables that may affect this trend.

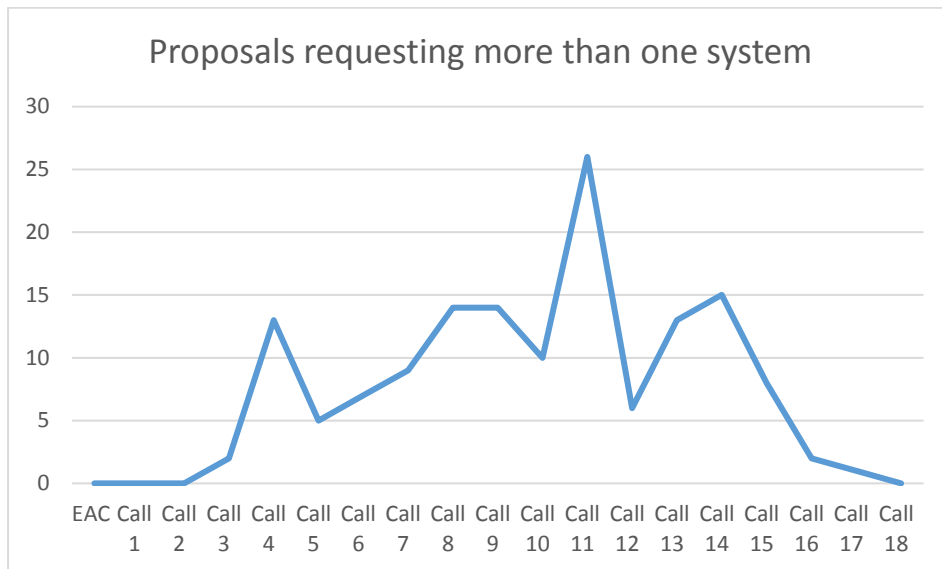


Figure 7: Proposals requesting more than one system



### 3.2 PRACE 2 indicators

The PRACE 2 programme introduced a set of constraints in the access to PRACE 2 systems, namely a quota of allocation of resources based on the nationality of the principal investigator of the Tier-0 projects. Whenever the constraints are exceeded, i.e.: when allocating a proposal would deviate from the quotas set by the PRACE 2 programme, the corresponding HM is asked if it can accept the deviation. When this is not possible, movement of the corresponding proposal to another suitable system is attempted. When this is not possible, the AC Chair is requested to confirm if the proposal is still viable with the highest available resources. When that is not possible, the proposal is rejected due to PRACE 2 constraints.

Even if these constraints have not been strongly enforced, the Board of Directors has defined a set of allocation indicators to understand the impact of these constraints in Project Access allocations. These are internal indicators used to report to PRACE Council about the usage and distribution of PRACE 2 resources.

Name	Title	Call 14	Call 15	Call 16	Call 17	Call 18
RAS.1	Proposals moved from a PRACE 2 system to a PRACE 1 system due to a potential deviation in the distribution of resources	3	0	0	1	0
RAS.2	Proposals moved from a PRACE 1 system to a PRACE 2 system	6	2	4	0	0
RAS.3	Total proposals moved	20	3	8	9	13
RAS.4	Proposals where the HM accepted a deviation on the distribution of Resources	6	4	3	7	5
RAS.5	Proposals not allocated due to PRACE 2 constraints	0	0	0	0	0

**Table 1: PRACE 2 internal indicators**

- Indicator RAS.1 shows how the PRACE 2 quotas are not strongly enforced. Only in a limited number of cases the quotas have been applied, when skipping them would have led to a major deviation on PRACE 2 constraints.
- Indicator RAS.5 shows that the PRACE 2 constraints have had no effective impact in the allocation of resources, and that the main principle of “allocation of resources based on scientific excellence” of PRACE is still valid and followed with PRACE 2.
- It is important to compare indicator RAS.1 with the opposite movement (RAS.2) and the total number of proposals moved (RAS.3) to understand how the movement of proposals due to quotas represents a small fraction of the total proposals moved, which is a normal operation in PRACE allocation of resources. By comparing indicator RAS.1 with indicator RAS.4, one can see the existing flexibility in the application of PRACE 2 constraints.

The Board of Directors also monitors the distribution of resources according to the PRACE 2 constrains. This distribution is computed in node hours, the PRACE 2 contribution metric. The tables below summarise this distribution, in global and per hosting member:

Resources allocated to HMs	CH	DE	ES	FR	PRACE 2
Call 14	59%	79%		75%	72%
Call 15	100%	60%		90%	87%
Call 16	77%	55%		77%	65%
Call 17	59%	56%	43%	80%	58%
Call 18	58%	39%	64%	59%	56%
<b>Total</b>	<b>71%</b>	<b>60%</b>	<b>54%</b>	<b>79%</b>	<b>68%</b>

**Table 2: Percentage of PRACE 2 resources allocated to PRACE Hosting Members**

Resources allocated to GPs	CH	DE	ES	FR	PRACE 2
Call 14	41%	21%		25%	28%
Call 15	0%	40%		10%	13%
Call 16	23%	45%		23%	35%
Call 17	41%	44%	57%	20%	42%
Call 18	42%	61%	36%	41%	44%
<b>Total</b>	<b>29%</b>	<b>40%</b>	<b>46%</b>	<b>21%</b>	<b>32%</b>

**Table 3: Percentage of PRACE 2 resources allocated to General Partners contributing to the PRACE 2 programme**

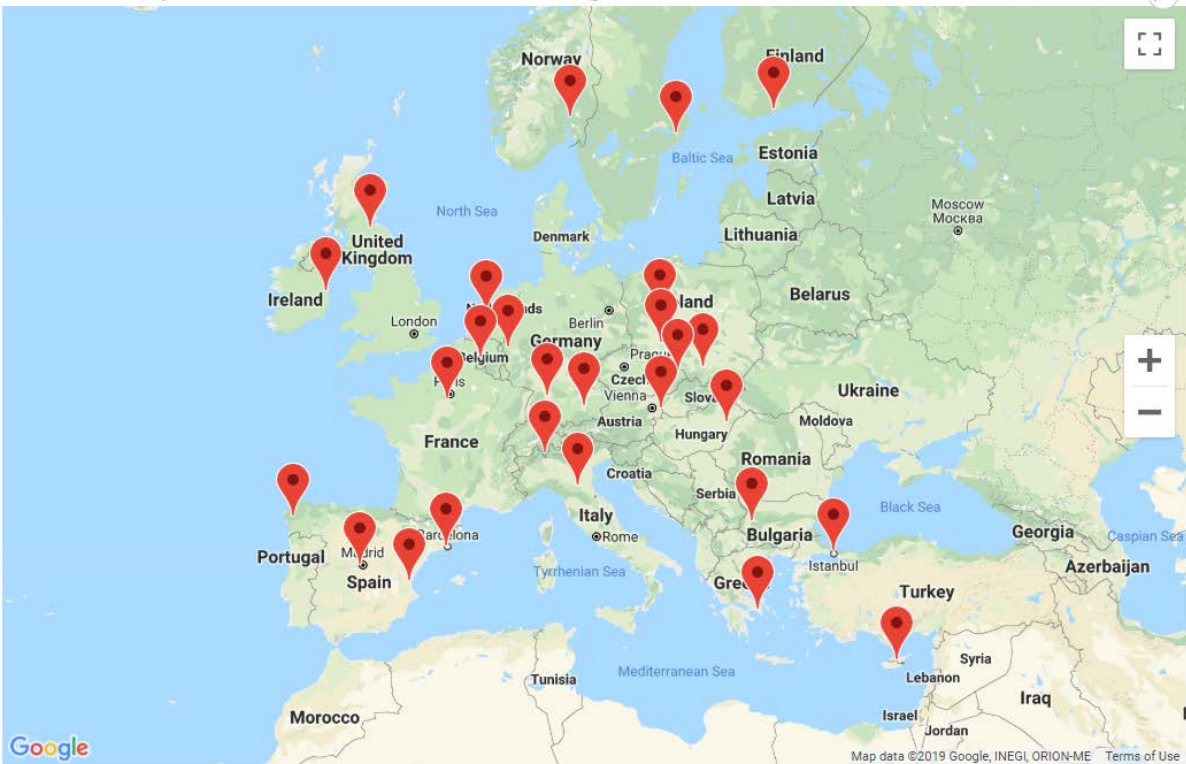
The tables show again the flexibility in the implementation of PRACE 2 constrains, as regards to the allocation of resources. Nevertheless, after five PRACE 2 calls the distribution of resources between PRACE Hosting Members and PRACE General Partners is close to the target (75% - 25%). This target will likely be reached naturally in the next calls.

### 3.3 Map of European HPC systems

After a request from the EC, a *demonstration* webpage identifying European HPC systems on a map was developed in September 2018 and populated with systems provided to PRACE-5IP PMO from project Partners.

This map can be found at [www.hpc-in-europe.eu](http://www.hpc-in-europe.eu) and a screenshot of it can be seen below:

Click to select your search filter. Deselect values using Ctrl + Click.



**Figure 8: Screenshot of the map of European HPC systems**

The map was developed using Drupal and uses a google maps overlay to geographically identify the location of HPC systems. Further to their location, the systems on the map can be filtered as to whether they are Tier-0 or Tier-1 systems, and by the Centers of Excellence which a system may be associated.

As stated, this map is a demonstration development. It will be redeveloped using an external provider in PRACE-6IP.

### 3.4 PRACE-5IP Key Performance Indicators

The PRACE-5IP project KPIs are the following:

- WP2 provides legal and organisational support to PRACE bodies and the rest of the WPs. Thus, the number of support tasks carried out has been chosen as an indirect indicator of performance, in the sense of an assessment of usefulness for a very transversal activity;

- WP3 is in charge of communications, dissemination and outreach events. Number of events where PRACE has been represented is a direct performance indicator of this WP, whereas “visits to PRACE web site” and “industrial attendees to PRACE booth at SC and ISC” are PRACE-5IP KPIs indirect measure of the performance of this WP, linked to the activity of this WP but also to the overall branding and awareness of the PRACE RI;
- WP4 manages and delivers the training activities of PRACE, a key service of the PRACE Infrastructure. As the training activity is fully performed by the PRACE-IP projects, “person days registered for PRACE training” is the more relevant indicator for this WP;
- WP5 organise an annual workshop “European HPC Infrastructure workshop”, for which the number of attendees to this workshop is used as performance indicator of this WP;
- WP6 is related to the operation of the systems, which is another major service of PRACE. The Tier-0 availability is a clear KPI of this WP, with a target of 85%, according to the current best practice of PRACE Tier-0 managers;
- WP7 coordinates the advanced support to PRACE RI users through Preparatory Access, including the PRACE SME HPC Adoption Programme in Europe (SHAPE). The performance of this WP can be measured in terms of the number of projects supported, best practice guides and white papers produced.

These project KPIs have been designed for internal use, in order to help PRACE Work Package and Task leaders monitor their activity and performance toward strategic goals of the project. These KPIs are discussed on a regular basis during PRACE-IP Technical Board meetings. The end of project result of these KPIs are presented in the following table, with colour code: **red** not achieved, **yellow** almost fully achieved, **green** achieved and **blue** exceeded, demonstrating the success of the PRACE-5IP project with regard to its Key Performance Indicators.

WP	KPI title for PRACE-5IP	Target	Fulfilment
WP2	Support tasks completed	5 support tasks completed per year	exceeded
WP3	Events with PRACE representation	10 events per year	exceeded
WP3	Visits to PRACE web site	Average 75.000 visits per year	exceeded
WP3	Industrial attendants to PRACE Booth	250 industrial attendants	achieved
WP4	Person days registered for PRACE training	6 000 person-days registered /year	exceeded
WP4	Participants in SoHPC & IHPCSS	50 participants per year	achieved
WP5	Attendants to HPC Infrastructure workshops	75 attendants per year	exceeded
WP6	Service availability	85%	achieved
WP7	Projects supported	12	exceeded
WP7	Best practice guides	2	exceeded
WP7	White papers	20	exceeded

Table 4: PRACE-5IP project KPIs targets and fulfilment

## 4 Trans-National Access in PRACE

The EC has different funding mechanisms for the access to research infrastructures in general, and HPC resources in particular. One of them is the Trans-National Access (TNA) mechanism, for infrastructures offering access to their services to researchers across Europe. Under certain conditions, the operational cost of these services can be eligible in H2020 Research and Innovation Action (RIA) projects.

Section 4 of D2.1 of this project [7] evaluated the compliance of the current access mechanism to PRACE HPC resources with the TNA mechanism (Article 16 of the Model Grant Agreement), concluding full compliance with it. Section 4 of D2.3 of this project [3] reported on the PRACE Tier-0 allocations from PRACE Project Access Calls 14 to 17. This section updates such report to include the results of PRACE Project Access Call 18, recently awarded. We also include in this section a discussion about a potential unit of access to HPC.

### 4.1 TNA to PRACE Tier-0 systems

Since the beginning of the PRACE-5IP project, five Tier-0 Project Access calls have been awarded. These calls have been managed by PRACE aisbl, and have followed the PRACE Peer Review process that was analysed in D2.1 and concluded as compliant with the requirements of Article 16 of the H2020 Grant Agreement (TNA).

	14 <sup>th</sup> Call	15 <sup>th</sup> Call	16 <sup>th</sup> Call	17 <sup>th</sup> Call	18 <sup>th</sup> Call
Opening of the call	10 Oct 2016	5 Apr 2017	26 Sep 2017	7 Mar 2018	4 Sep 2018
Start of allocation	1 Apr 2017	2 Oct 2017	3 Apr 2018	2 Oct 2018	2 Apr 2019
End of allocation	31 Mar 2018	30 Sep 2018	31 Mar 2019	1 Oct 2019	1 April 2029
Proposals received	117	84	72	63	52
Proposals ranked above scientific quality threshold	81	44	45	44	36
Projects awarded	60	46	44	42	36
Resources offered	2061MCH	1728MCH	2051MCH	1849MCH	1834MCH
Resources requested	4280MCH	3809MCH	3254MCH	2676MCH	2283MCH
Resources awarded	2075MCH	1684MCH	1673MCH	1712MCH	1694MCH

**Table 5: Tier-0 Project Access calls during PRACE-5IP (MCH: million core hours)**

The following table shows the breakdown of systems contributing to each call and the resources offered by them:

	14 <sup>th</sup> Call	15 <sup>th</sup> Call	16 <sup>th</sup> Call	17 <sup>th</sup> Call	18 <sup>th</sup> Call
Marconi	665	478	636	648	646
Mare Nostrum 4	356	475	475	240	240
Curie / Joliot Curie	113	156	185	206	243
Hazel Hen	57	57	70	70	-
Juqueen / Jewels	350	-	70	70	70
Super MUC	44	44	105	105	125
Piz Daint	476	510	510	510	510

**Table 6: Resources offered by PRACE HMs to PRACE 2 Calls, in million core hours**

The proposals competing for these resources have undergone the steps of the Peer Review process, as follows:

- *Administrative check*, for compliance with the requirements of the call and formal completeness of the proposals received;
- *Technical assessment*, for the suitability of the HPC methodology proposed and codes to be used;
- *Scientific review*, to evaluate the scientific excellence of the proposals;
- *Prioritisation*, in order to rank all the proposals received;
- *Allocation of resources*, following the ranking of proposals.

The following table shows the resources allocated in each Tier-0 system:

	14 <sup>th</sup> Call	15 <sup>th</sup> Call	16 <sup>th</sup> Call	17 <sup>th</sup> Call	18 <sup>th</sup> Call
Marconi	678	502	476	633	614
Mare Nostrum 4	356	475	470	254	243
Curie / Joliot Curie	113	158	130	213	214
Hazel Hen	57	40	46	67	-
Juqueen / Jewels	350	-	68	71	62
Super MUC	44	45	101	110	88
Piz Daint	433	464	382	364	473

**Table 7: Resources allocated in each Tier-0 system, in million core hours**

It has not been possible to analytically calculate the actual operation cost of these systems. However, an average TCO cost of 0.02 Euro per core hour is commonly accepted as a fair estimation of the cost of general-purpose HPC systems; it is also estimated that 50% of the TCO of HPC systems corresponds to operational costs. The following table summarises the operational costs of PRACE Calls 14<sup>th</sup> to 18<sup>th</sup>, based on these assumptions:

	14 <sup>th</sup> Call	15 <sup>th</sup> Call	16 <sup>th</sup> Call	17 <sup>th</sup> Call	18 <sup>th</sup> Call
Resources awarded	2031M core hours	1684M core hours	1673M core hours	1712M core hours	1694M core hours
Projects awarded	60	46	44	42	36
TCO of resources	40.6M €	33.7M €	33.5M €	34.2M €	33.9M €
Operational costs	20.3M €	16.8M €	16.7M €	17.1M €	16.9M €
Average resources awarded to one project	34M core hours	37M core hours	38M core hours	41M core hours	47M core hours
Average operational cost of a project	338K €	366K €	380K €	408K €	471K €

**Table 8: The operational costs of PRACE calls 14th to 18th**

Along the duration of the PRACE-5IP project, there have been five Tier-0 calls offering a total of 9.6 billion core hours. From 388 proposals received, 228 projects from 19 different countries have been awarded 8.8 billion core hours, for an estimated operational cost of 88 million Euro. The average cost of a PRACE Tier-0 project is therefore estimated to be 386 000 Euro.

## 4.2 HPC computing unit (provided by WP6)

According to the “COUNCIL RESOLUTION OF 3 MARCH 2017 FOR THE SECOND PERIOD OF PRACE” document, which is the source of rights and duties for the PRACE 2 optional programme’s stakeholders, the smallest grain of HPC computing unit is the node hour. The aforementioned agreed definition can produce some misunderstanding or confusion when putting in practising this unit into the Tier-0 system purchasing tender and then into the resource usage accounting and billing. It can provide the feeling that such unit is “not fair” when comparing the different nodes.

In PRACE 2 the Tier-0 reference system is defined to have (excerpt from the Resolution):

- “A capability comparable to a system of 5,000 nodes with two Intel-Xeon processors of the latest generation (at procurement time for existing Tier-0 systems or at the latest at the firming of the PRACE 2 contract) and an anticipated total availability of approximately 37,5 million node-hours (85%) per year. For the purpose of inclusiveness, any Tier-0 system will comprise of at least 2,500 nodes, in order to be able to provide enough capability;
- The baseline capacity for Tier-0 systems for PRACE 2 is a minimal contribution of 40% of the total available node-hours per year on a Tier-0 reference system, i.e., approximately 15 million node-hours per year. Each hosting member is expected to provide the equivalent capacity of at least one Tier-0 system while always fulfilling the minimal capability requirement of 2,500 nodes.”

Here, there is a need to recall the current most popular and available cutting-edge HPC architecture on the market. Most, or all of them, except: pilot installation, quantum (pseudo-quantum) and small SMP-like systems, implement MPP architecture (tightly coupled clusters) and it seems this architecture shall be leading in the upcoming years (eg. EWHPC - European Workshops on HPC Infrastructures #8, #9). This architecture is also the primary selection for its deployment in the forthcoming Exascale systems. The fundamental question is the following: how to compare the shares of several HPC systems with convergent architecture, with the nodes (also: interconnect, hybrids) consisting of different hardware entities? What about the comparison on the time scale, during which the subsequent (more powerful) systems will be purchased? The observation of TOP500 lists generated among past several years give as the hint, that (in general) each subsequent system is more powerful than its predecessor.

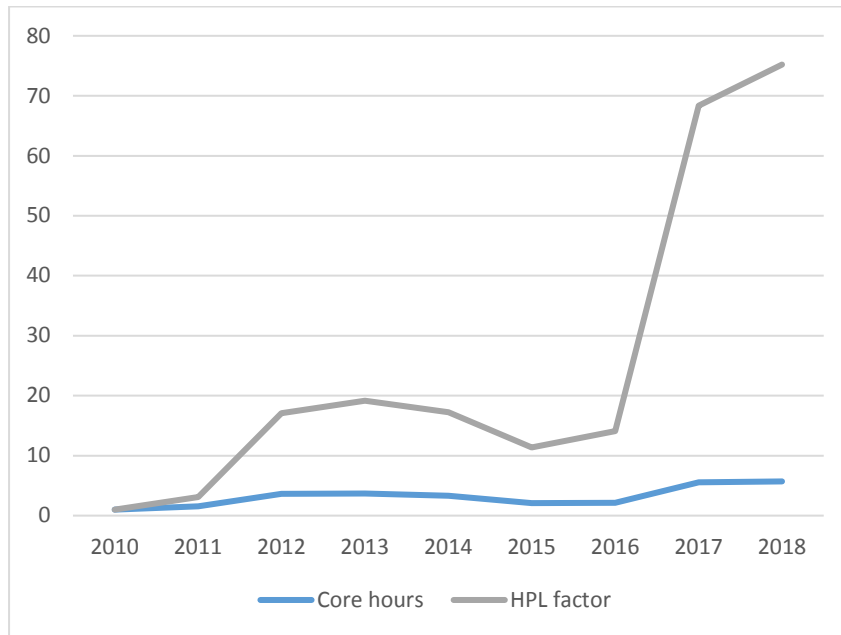
Nowadays, two performance benchmarks are mostly used: HPL and HPCG. HPL, the most popular, has been used for creating TOP500 list based on the idea of Jack Dongarra. HPCG is currently considered to be more representative for the system efficiency. There are many pros and cons of each of these benchmarks considered, but both of them are in use. The total Peak performance index might also be calculated but this number is burdened with discrepancy between theoretical and real measured speed of computations and it has not been considered there. The proposal: the baseline capacity for Tier-0 systems is 40% of the available node-hours per year on a Tier-0 reference system, or approximately 15 million node-hours per year, but 2500 nodes at least. Summing up, the newly purchased system will be (must be) faster – more capable - than its older Tier-0 equivalent. If we consider these resources in node-hour units, it means the measured share will increase. For the demonstrating purpose, the computational capacity of systems is being compared by the metric  $R_{max}$  per core (HPL factor, in Gflop/s per/ core). The tests of each existing Tier-0 system had been performed.

PRACE Tier-0 system	Site	$R_{peak}$ (Pflop/s)	$R_{max}$ (Pflop/s)	Cores	HPL factor (Gflop/s per core)
Hazel Hen	GCS/HLRS	7.404	5.640	185,088	30.47
Irene KNL	GENCI/CEA	2.340	1.311	56,304	23.29
Irene SKL	GENCI/CEA	6.636	4.066	79,488	51.15
JUWELS	GCS/FZJ	9.891	6.178	114,480	53.96
Marconi Broadwell	CINECA	2.003	1.724	54,432	31.67
Marconi KNL	CINECA	18.816	10.385	348,000	29.84
MareNostrum 4	BSC	10.296	6.471	153,216	42.23
Piz Daint	CSCS	27.154	21.230	387,872	54.73
SuperMUC-NG	GCS/LRZ	26.874	19.477	305,856	63.68

Table 9: Comparison of PRACE Tier-0 Systems, HPL (2018)



If these conversion factors are applied to recalculate the PRACE resource offering, the increase of capacity, compared to the resources provided in 2010, can be shown in the next figure:



**Figure 9: Increase in computational capacity of PRACE, relative to the capacity in 2010**

## 5 Conclusions

PRACE is nowadays an excellent European Research Infrastructure, created with the help of the Preparatory Phase project and supported by Implementation Phase projects. This excellence relies on the contributions of all PRACE Members to the infrastructure, in terms of resources but also of expertise and work force, and in the regular review and improvement of the processes of the Research Infrastructure as well, according to experience and lessons learned.

The work performed in Task 2.2 of WP2 of PRACE-5IP has contributed to this success, by supporting the analysis of PRACE governance and procedures, and facilitating the transfer of activities from PRACE-5IP to the association. The tight link of the members of WP2 with PRACE association bodies has enabled an exceptional alignment of objectives, enabling meaningful analysis of PRACE indicators and statistics. This has allowed establishing a solid basis to consolidate the PRACE 2 programme, as the major step towards reaching a sustainable and persistent European High-Performance Computing Infrastructure.

## Annex 1 – HPC Ecosystem Survey

The European Commission recognised the need for an EU-level policy in HPC to optimise national and European investments, addressing the entire HPC ecosystem and adopted its HPC Strategy on 15 February 2012 and published the communication 'High Performance Computing: Europe's place in a Global Race' [COM(2012) 45 final]. Since then the European Commission increased the investment in HPC significantly and supported the three HPC pillars: Technology, Infrastructure and Applications with various projects and initiatives.

Recently the EuroHPC Joint Undertaking was founded. EuroHPC will permit the EU and participating countries to coordinate their efforts and share resources with the objective of deploying in Europe a world-class supercomputing infrastructure and a competitive innovation ecosystem in supercomputing technologies, applications and skills.

The PRACE-5IP and -6IP projects will organise therefore a HPC Ecosystem Summit in order to facilitate creating a coherent HPC landscape including access to HPC resources, services for users and research. This Summit will help to clarify the future roles of each actor in the field.

The aim of this survey is to provide in advance detailed information about each of the actors in the field and to support the discussion during the Summit.

HPC player details:

1. Project name
2. Organisation
3. Please select: I am part of
  - Technology Pillar
    - ETP4HPC
    - FETHPC
    - EPI
    - Other
  - Infrastructure Pillar
    - PRACE
    - GEANT
  - Application Pillar
    - CoE
    - Other
  - Else
    - EOSC
    - BDVA
    - Other

4. Contact details  
Name:

First Name:

Position:

E-Mail:

Tel:

5. Will you attend the HPC Ecosystem in Poznan on 14 May 2019?

Yes

No

6. Where do you see/place your organisation in the following matrix:

	<b>Developer</b>	<b>Coordinator</b>	<b>Provider</b>	<b>User/Beneficiary</b>	<b>Enabler</b>	<b>Not applicable</b>
<b>HPC Policy</b>						
<b>HPC Technology (industry, hard&amp;soft)</b>						
<b>HPC Computing Services</b>						
<b>HPC Training</b>						
<b>HPC Application Enabling and User Support</b>						
<b>HPC Research</b>						

Definitions:

- Developer: institution in charge of preparing materials for the development activity
- Coordinator: institution in charge of collecting materials from developers and of coordinating their implementation
- Provider: institution in charge of providing the services to execute the activity
- User/Beneficiary: institution that benefits from the activity
- Enabler: institution that enables the activity by providing the necessary services that are not part of the core of the activity
- HPC Policy: institution related to the definition, development, enablement, implementation or funding of HPC policies, or their beneficiaries.
- HPC Technology: institution related to HPC software and hardware industry
- HPC Computing Services: institution involved in the access to HPC computing resources (cycles)
- HPC Training: institution involved in training in HPC
- HPC Application Enabling and User Support: institution involved in the support to HPC users, e.g.: application enabling,
- HPC Research: institution performing research in HPC or related domains

7. Please indicate your scientific domain(s) (e.g. engineering, physics, biology,...):

- 
- 

8. Please include a list of your services (e.g. training, code enabling,...):

- 
- 
- 
- 

9. Where do you see overlap with other initiatives / organisation:

- 
- 

10. Where do you see possible collaborations with other initiatives/ organisations in the near future?

- 
- 
-

## Annex 2 – Questionnaire: Centres of Excellence (CoE) and resources usage

*Name:*

*Centre:*

- Do you consider that you and your centre are well informed about the resources available to CoEs?
  - Yes
  - No
  - No opinion
  
- How well do you understand the application process to access resources?
  - No idea of the process
  - Some idea of the process
  - Understand the process reasonably well
  - Good idea of with the process
  - Understand the process completely
- Please indicate how you believe the application process could be improved:
  
- Do you know who to contact at PRACE to apply for CoE allocations?
  - Yes
  - No
  
- Do you consider the size of the available resources adequate to your type of work?
  - Yes
  - No
  - No idea
- If the answer was No: Would you consider it preferable to have,
  - smaller allocations: .....(core hours)
  - bigger allocations: .....(core hours)
  
- Do you consider the duration of the allocations adequate?
  - Yes
  - No
  - No idea
- If the answer was No: Should the duration of the allocations be,
  - shorter .....(months long)
  - longer .....(months long)

- Do you consider the available Tier-0 systems adequate to your HPC needs?
  - Yes
  - No
  - No idea
  
- Do you feel you receive adequate support for technical experts at PRACE centres?
  - Yes
  - No
- If you answered no, please explain why
  
- Briefly describe the nature of the work your centre undertakes with PRACE resources available to CoEs

## Annex 3 – Event Insurance Check list

PRACE organises several events during the year. The aim of this document is to provide guidance in order to contract an insurance covering the consequences of accidents that may occur during these events.

### 1. Information gathering

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In order to set up the insurance the following information needs to be collected from the organiser/s of the relevant event. A preliminary question to be clarified is which entity is considered the organiser in the sense of being responsible for the organisation of the event in order to avoid covering events organised by other entities.

#### 1.1 Event

- Name of the event
- Purpose of the event
- Venue/s
- Location
- Dates
- Attendance
- Costs
- Equipment

#### 1.2 Event Host/s

- Address
- Contact person/s
- Contract containing the clauses related to the insurance/s

### 2. Risks to be covered

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Once the insurance of the event host are known then the risks that need to be covered can be identified. The contract with the local host may impose some specific insurance/s. In addition, the cover for some risks may be necessary (e.g. civil liability) or optional (e.g. cancellation). The following are the most common covers:

- **Civil liability:** Covers the liability in respect of accidental damage to third party property and accidental bodily injury to a third party.
- **Cancellation:** Provides cover for irrecoverable costs (expenses, less any income) incurred because of the cancellation, abandonment & postponement of the event for reasons which are unavoidable, unforeseen and beyond the organiser's control. This may have these optional extensions:

- ✓ **Adverse Weather Cover:** for the cancellation of the event due to dangerous weather conditions, or in case the location of the event is inaccessible and unusable.
  - ✓ **Non-Appearance Cover:** for the cancellation of the event if a key speaker or performer are unable to attend.
  - ✓ **Terrorist attack:** in case the event needs to be cancelled due to a terrorist attack taking place the dates of the event or a few days before the event.
- **Travel:** This insurance protects persons traveling for short-term in Europe or worldwide, and it covers typically personal accidents, medical expenses, and luggage and travel inconveniences.
  - **Event Equipment Cover:** provides cover for the accidental loss, damage or theft of event equipment that is hired, leased or owned by the organiser for the purposes and duration of the event. A list of this equipment may be requested.
  - *Other .....*

### 3. Period of insurance

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It should correspond to the days during which the event is open to the public, including set up and/or taking down the event. If the travel insurance is included, the dates of travels need to be included.

In the case of multi-event insurance, the duration corresponds to a specific calendar period.

### 4. Territorial extension

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The cover of the insurance needs to be applicable to the country or countries where the event or events take place.

### 5. Exclusions, limits and franchise

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#### - Exclusions:

Some limitations may be established with regard to each type of risk covered. It is important to check that those limitations are acceptable.

#### - Limits:



This refers to the maximum value that the insurer may establish for each type of risk. For example, number of attendees, value of the rented equipment, etc.

- **Franchise:**

It is the minimum amount of loss that must be incurred before insurance cover applies.

## **6. Prime to be paid**

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The primer for each risk is established by the insurer as a % of the value of the each coverage.

## **7. Contracting and follow-up**

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Once the insurer is chosen and the policy insurance is signed the documentation containing the insurance terms, the policy reference number and contact details needs to be communicated to the organiser's key personnel.

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