D8.6 – ACROSS societal and industrial impact maximization report

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Glossary

Acronym	Explanation
AI	Artificial Intelligence
BD	Big Data
CAE	Civil Aviation Equipment
DAG	Directed Acyclic Graph
DEC	Dissemination, Exploitation, Communication
EAB	External Advisory Board
EBCD	European Bureau for Conservation and Development
ENVI	Committee on the Environment, Public Health and Food Safety
EP	European Parliament
ER	Exploitable Result
FPGA	Field-Programmable Gate Array
GDPR	General Data Protection Regulation
GPU	Graphics Processing Unit
HPC	High Performance Computing
ITRE	Committee on Industry, Research and Energy
KPI	Key Performance Indicator
MEP	Member of the European Parliament
MoU	Memorandum Of Understanding
NGO	Non-Governmental Organisation
POS	Public Outreach Strategy
RANS	Reynolds-Averaged Navier-Stokes
SAB	Scientific Advisory Board
SBES	Stress-Blended Eddy Simulation
TRL	Technology Readiness Level

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Executive Summary

The **ACROSS** (HPC BIG D**A**TA ARTIFI**C**IAL INTELLIGENCE CROSS STACK PLATF**O**RM T**O**WARD**S** EXA**S**CALE) project will build **an Exascale-ready, HPC and data-driven execution platform**, supporting modern **complex workflows mixing HPC, BD and AI high-level tasks**, by leveraging on an **innovative software environment** running upon advanced **heterogeneous infrastructural components** (including GPUs, FPGAs and neuromorphic processors), as well as innovative smart resource allocation policies and job scheduling algorithms, up to the management of tasks inside jobs (pipelines, DAGs).

Position of the deliverable in the whole project context

The deliverable D8.6 is linked to WP8 "Enabling Integrated Validation and Value Creation Adoption" and particularly to Task 8.4 "Societal and industrial value creation adoption". This deliverable is a first report on activities initially planned in "D8.4 Dissemination, Exploitation and Communication (DEC) plan" that was submitted in M6. The final update of D8.6 is due in M36.

In **Error! Reference source not found.**, WP8 is dedicated to analyze the impact of the ACROSS project on an ongoing basis to ensure the success and relevance of the final system. Each WP is contributing to the WP8 in order to maximize the impact of the project.
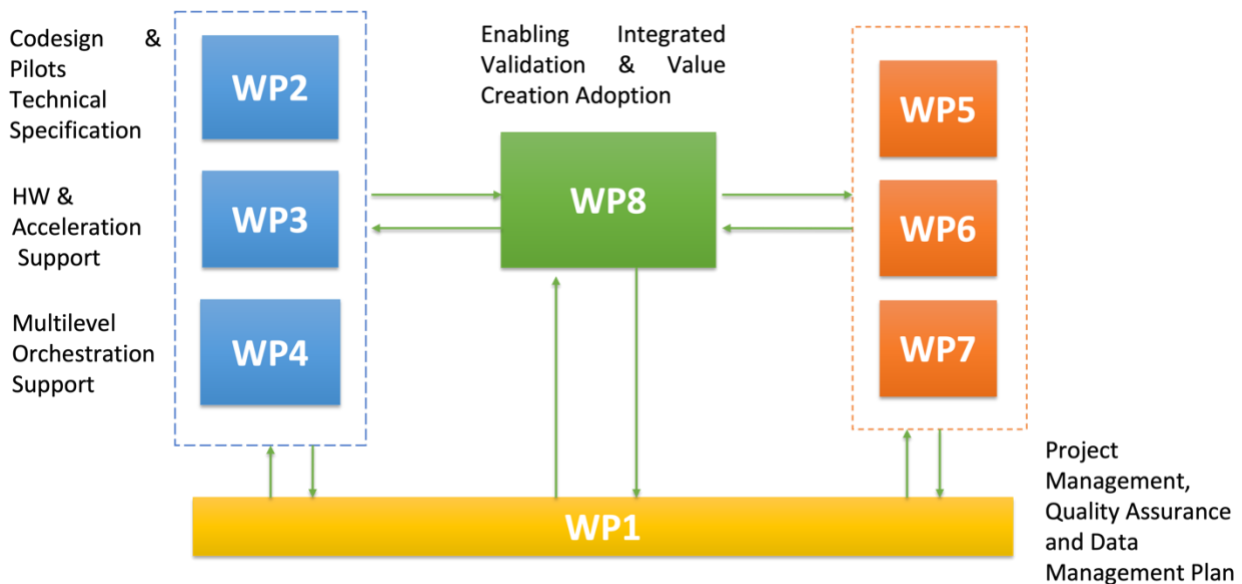
Figure 1 WP8 position inside ACROSS project

Description of the deliverable

This document is a direct outcome of the activities of T8.4 "Societal and industrial value creation adoption". It refers to activities which are expected to support the impact maximization of the project in relevant societal and industrial communities. The information provided within this report comprise of the following:

- reminder of vision, goals and KPIs related to societal and industrial value adoption,
- progress so far and results,
- next steps towards fulfilling the project goals.

All partners are expected to contribute to impact maximization activities in order to effectively support the uptake of the project.

1 Introduction

1.1 Scope

This deliverable presents the main outcomes of the activities conducted in T8.4 referring to societal and industrial value adoption. These activities, although they are associated with traditional dissemination, exploitation and communication activities, particularly employ aspects relevant to impact creation and maximization so as to dive deeper into growth hacking stages like activation in target communities.

The structure of this deliverable is organised in the following way:

- Section 1 introduces the reader to the scope of the deliverable, along with all relevant documents that should be considered.

- Section 2 presents information about the envisioned impact. It serves as a reminder for impact goals and KPIs, already documented in D8.4 along with the progress made so far in the project.

- Section 3 is responsible for elaborating on the specific activities conducted by consortium partners that are related to the ACROSS societal and industrial value adoption.

- Section 4 an overview of the next steps, towards fulfilling the project's goals.

- Section 5 concludes the report.

1.2 Related documents

ID	Title	Reference	Version	Date
D8.4	Dissemination, Exploitation and Communication (DEC) plan	Dissemination activities, establishment of tactical alliances and external (not project participants) stakeholders	v0.6	31/08/2021
D8.5	Report on dissemination, exploitation and communication activities	Scope of the task, relevant activities performed by the consortium, links with the ACROSS POS	v1.0	31/08/2022

Table 1 Related documents

2   Envisioned Impact & Progress Overview

The aim of the ACROSS societal and industrial impact maximization activities is to promote the project's vision to specific target communities which are expected to further increase its visibility and accelerate its uptake. As already reported in D8.4 DEC plan:

"ACROSS must become widely known, understood and appreciated both within and without the EU HPC communities. It must 'reach out' to a wide (local, regional, European and global) audience in an attempt to form tactical alliances. The project envisions forming tactical alliances with external stakeholders that play an active role in different aspects of HPC and particularly in domain-specific services, thus, extending the scope of the project and fostering its industrial and societal value adoption."

Compared to the T8.3 and the dissemination, exploitation & communication activities of the project, the envisioned impact of T8.4 is to move deeper into the ACROSS Public Outreach Strategy (POS) provided in D8.4 (from Reach to Act, Convert and Engage stage). This can be accomplished by considering growth hacking aspects. Growth hacking is defined as a process of rapid experimentation across marketing channels and product development to identify the most efficient ways to grow a business. It uses various approaches to "hack" the growth of a business and differs from traditional marketing as it involves science, data and processes and of consequently actors like marketers, engineers and product development managers. In traditional marketing, the promotional activities are conducted by mass media channels for product exposure and customer attraction. In growth hacking, on the other hand, different strategies are employed to develop a user based and learn which channels and methods work better towards accelerating the early growth of the business in a cost-effective way. A mapping of the ACROSS POS stages together with growth hacking follows.

Growth hacking activities	Description	Main question to consider	ACROSS POS stage
Awareness	This step involves all activities contributing to brand awareness and introducing the brand into the market. The volume of people reached at this step is critical to measure the effectiveness of the strategy.	How do people find us?	Reach
Acquisition	This step contributes to qualified lead generation. The aim here is to build customer/user touch points so that can be accessible by people that have been reached through awareness activities.	Where do people come from?	
Activation	Activation would require a lead to get engaged with the solutions offered. Solutions could be: joining a community, pilot testing of services, etc. The aim of this step is to convert users into community members.	How good is the first experience with the offered solutions?	Act
Revenue	Revenue involves business modeling & market analysis activities so as to determine if a business is sustainable.	Can we support a sustainable business model?	Convert
Retention	Retention requires leads to keep getting engaged on a regular basis with the offered solutions. Keeping leads coming back again and again, requires updating them with news, feature developments, events, etc. that offer value and solutions to their problems.	How many target users come back?	Engage

Referral	This step requires converting activated leads to brand ambassadors. It constitutes a free marketing approach, which validates that a brand is established and gets recommended.	Are people referring to the offered solutions through their networks?	

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Table 2 Growth hacking activities and main characteristics

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Taking all the above into consideration, the consortium has adopted a multi-channel, cross-country and multi-actor approach with specialized impact maximization activities and events. In order to measure the progress and success of the strategy, the achievable qualitative and quantitative targets were set in the DEC plan. The current progress is presented in the following table.

ID	Description	Contribution to POS stage	Target at DEC plan	Achievement (M18)
1	Participation to target sector specific industry-oriented events, business networks and fairs.	Reach, Engage	>15 events (Partners' regular reporting)	The consortium participated in 11 events in total up to M18 (7 HPC-oriented and 4 sector-oriented). Moreover, the participation in at least 2 sector-oriented events is foreseen within 2022. More information is provided in section 3.1 of the present deliverable.
2	A dedicated workshop at the European Parliament will be examined. This will facilitate lobbying and networking at EU level and the process of establishing contacts with key members of various EU institutions and the EC.	Reach, Convert	Envisioned to be held in 2022	The consortium is focusing on organising the event in Q4 2022 together with the European Bureau for Conservation and Development (EBCD). More information is provided in section 3.2 of the present deliverable.
3	Communication with policy makers for further supporting the aforementioned networking activities.	Reach, Convert	N/A	The following activities have been conducted: a) Contacts established with 2 MEPs and the Secretariat of the EP Intergroup on 'Climate Change, Biodiversity and Sustainable Development' provided by EBCD, b) Participation of the project in HIPEAC with increased participation of policy makers, c) Contributions provided in ETP4HPC in regards to policy making and standardisations. More information is provided in section 3.33.1 of the present deliverable.

4	Organizing online events (webinars, training sessions and live demos) aiming to demonstrate the HPC-powered services and applications to specific target audiences (e.g., representatives from various industrial domains) and attract early adopters. This will help towards an open demonstration of the project results to a wide audience.	Act, Convert, Engage	~10 events (Partners' regular reporting)	The consortium organised 2 online events (1st tech-forum and 1 training). The 2nd tech-forum is also planned for 2022. More information is provided in section 3.43.1 of the present deliverable.
5	Visits to target sector stakeholders: A series of visits to targeted organizations across Europe will be examined, so as to engage them in talks for serving as either as major collaborators or early adopters.	Reach, Act, Engage	N/A	Field-Visits are expected to start after MS4 of the project, as the consortium will have more tangible results to showcase.
6	Mapping the networks of targeted stakeholder communities across the EU/globe and then selecting lead organizations on an international, national and regional basis that will facilitate knowledge sharing and further increase the visibility of the project outcomes, thus, empowering their swift adoption.	Reach, Act, Convert, Engage	1st version of ecosystem mapping ready (M9); Initiate reach with external stakeholders (M16); Updated version of ecosystem mapping ready (M18); Joint activities, events, discussions towards exploitation of project results (M36); Lessons-learnt (M36).	• 1st version of ecosystem mapping ready (M9) - 27 external stakeholders reported • Privacy Policy Ready • Initiate reach with external stakeholders (M16) - Done • Updated version of ecosystem mapping ready (M18) - 38 external stakeholders reported. More information is provided in section 3.6 of the present deliverable.
7	Establish an External Advisory Board (EAB) - an interactive network of interest aiming at discussing challenges and opportunities arising from the use of HPC products and	Convert, Engage	N/A	EAB established and includes 4 members. 2 meetings already conducted with the consortium partners (one technical meeting and one dedicated to WP8 activities).

services. The EAB will be formed at an early stage of the project through a multi-actor engagement approach aiming at reaching both specific and broad audiences covering scientific, policy, commercial as well as socio-economic aspects.			More information is provided in section 3.73.1 of the present deliverable.

Table 3 ACROSS T8.4 targets and progress overview

3 Societal and industrial value adoption activities

3.1 Industry-oriented events

3.1.1 HPC events

The creation of an increasing awareness of the ACROSS project at a societal and industrial level, passes through the participation to specific events, exhibiting industrial orientation/angle with a focus on the HPC domain. As such, ACROSS consortium selected and participated to the following major events. These events, allowed to start creating a collaborative environment among HPC stakeholders, as one of the main actions to highlight ACROSS value and its impact within the major actors involved in the HPC community. The specific events are reported in the following.

ISC 2021 (ISC High Performance 2021 (June 24th – July 2nd, 2021). This represented one of the major events in the HPC community, since it covered both scientific aspects (mostly related to conference papers presentation) and industrial ones thanks to the presence of a large exhibition space. LINKS, IT4I attended the event presenting the ACROSS project at the LEXIS project (https://lexis-project.eu/) booth and attending a discussion panel (within the co-located HPC I/O in the Data Center Workshop) where the ACROSS technology vision has been provided. The whole ISC event was focused on advancements and innovations developed by the HPC community both in the context of improving performance, energy efficiency, and capability of compute infrastructures, and to improve the performance and scalability of applications. As such, it was the occasion to interact with many of the domain players and start promoting the project activities, as well envisioned outcomes. The event allowed to expose the ACROSS vision concerning the evolution of HPC technologies, their integration and adoption in towards the creation of an added value.

Figure 2 ISC High Performance 2021 web site logo

Teratec Forum 2021 (June 21st – 23rd, 2021). This is a large venue in Europe where the HPC community (with a strong presence of industrial actors) provides latest advancements and innovations in the domain. The event is also connected to a large exhibition where major industrial players and projects can show their major advancements and research outcomes. FT7.3 attended the event, during which the ACROSS project was presented. Similarly to ISC-2021, this event (Figure 3) was the occasion to interact with many of the domain players and start promoting the project activities, as well envisioned outcomes.

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Figure 3 Teratec Forum 2021 web site logo

SC 2021 (The International Conference for High Performance Computing, Networking, Storage and Analysis (November 14t[h] -19th, 2021). This is one of the largest events in the HPC domain, covering both scientific and industrial aspects. As such, the conference held a large series of dedicated workshops and paper sessions, as well as a large exhibition space. As such, all major representative key players in the HPC domain were present. The event represents one of the major venues where innovative solutions and major advancements on HPC-focused applications are disclosed. LINKS attended the conference and had the chance to get access the exhibition (Figure 4). Given that, the event allowed to interact with all the major actors in the HPC community, resulting in the definition of a collaborative path with other EuroHPC project also attending the event. As such, various synergistic actions have been defined with HPC players, thanks to positive feedbacks in the creation of the ACROSS project awareness, thus helping to strengthen the ACROSS positioning within the community.

Figure 4 Supercomputing 2021 web site logo (left); LINKS people attending the exhibition (right)

EHPCSW 2022 (EuroHPC Summit Week 2022 (March 22th – 24th, 2022). This European event gathers together the main HPC stakeholders, ranging from technology suppliers to HPC infrastructures providers to industrial and academic users. The main target of the event was to enable this large and diverse groups of attendees to network together and facilitate their collaboration. The event allowed EU funded project to shortly present their current outcomes and results. LINKS attended the event (Figure 5), where the ACROSS project was presented to the audience. The impact of the presentation was maximized thanks to a shared poster and to a short presentation of the main goals and outcomes achieved so far to the whole audience. The event allowed ACROSS to enlarge its collaborative network with other EU funded projects, by meeting project representatives (e.g., Red-Sea project - https://redsea-project.eu/, EPI, etc.).
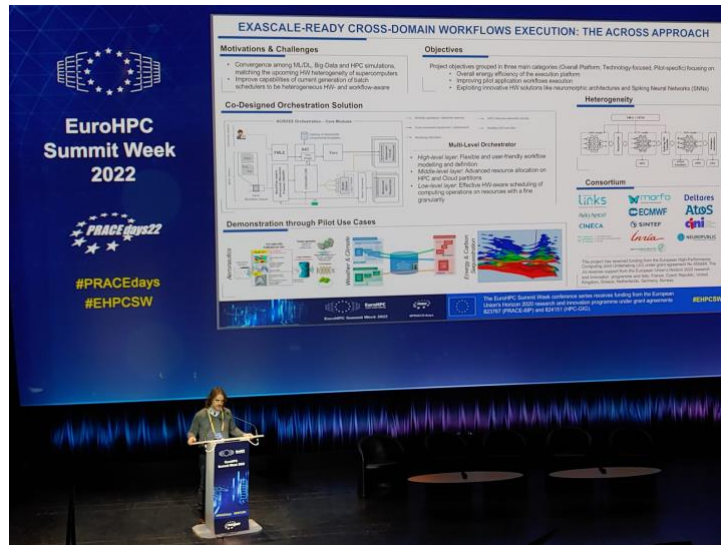
Figure 5 Presentation of the ACROSS project during the main session devoted to European projects

ISC 2022 (ISC High Performance 2022 (May 29th – June 2nd, 2022). As for the 2022 edition, this event represented one of the major venues in the HPC context, given the organization of sessions dedicated to present scientific papers and a large industrial-focused exhibition. As such, different stakeholders covering academic and industrial sectors attended the event. LINKS and IT4I attended the event (Figure 6); the project was presented both at the IT4Innovations booth and to that dedicated to the ACROSS project. The availability of a dedicated project booth increased the number of people (stakeholders) reached out, allowing the project to improve its collaborative network. Additionally MPI-M presented their poster about the BORGES platform for Climate model output data as developed in the context of ACROSS.

Figure 6 ACROSS project booth

Teratec Forum 2022 (June 14th – 15th, 2022). This event was attended by ATOS (Figure 7) that promoted the project during the associated exhibition. Similar to the 2021 edition, this event gives the chance to meet various stakeholders, highlight the innovations lying behind the ACROSS platform and strengthen the ACROSS positioning within the HPC community.

Figure 7 ATOS people presenting the ACROSS project

HiPEAC 2022 (High Performance Embedded Architecture and Compilation (June 20th – 22nd, 2022). This is one of the premier venues for networking, dissemination, training, and collaboration activities in Europe, gathering together academic researchers, industry, and policy makers operating in the context of computing systems. LINKS, NP, IT4I attended the event (Figure 8), where a full-day workshop was organized. The workshop capitalized all the previous networking activities covered by attending other events in 2021 and 2022, and resulting in the participation of EuroHP-JU and H2020 projects (ACROSS, eFlows4HPC, Red-Sea, Deep-Sea, Microcard, HEROES, REGALE and B-CRATOS). The main outcome of the workshop has been the further strengthening of the collaborative network among mentioned projects, the definition of synergistic actions for combining innovative technologies and approaches. This activity is connected with T8.2 of the project.

Figure 8 Dissemination of the ACROSS project during the HeLP-DC workshop (HiPEAC'22)

3.1.2   Sector-specific events

Apart from HPC-oriented industrial events, already explained in section 3.1.1, several sector-specific (focused on pilot domains of WP5, WP6 and WP7) online and physical events have been conducted or planned for the next period by consortium partners, during the first half of the project. The goal of these activities is to bring HPC innovations closer to sector-specific communities, thus, increasing the visibility of the project, raising awareness and initiating stakeholder engagement.

As the project results keep increasing their TRL, it's expected that participation in sector-specific events will increase as well, with more concrete and mature results ready to be demonstrated and promoted in relevant communities.

3.1.2.1 Aeronautics domain

ASME Turbo Expo 2022. The ACROSS project participated in ASME Turbo Expo 2022 (11-17 of June 2022) in Rotterdam, Netherlands, presenting the work conducted in the aeronautics domain.

Figure 9 ASME Turbo Expo 2022 Banner

More specifically:

- University of Florence reported the first numerical results of TECFLAM combustor investigation. The paper describes the numerical setup used during this activity and a comparison between several numerical methods, in particular the simplified baseline U-THERM3D tool results are compared with an adiabatic wall SBES and a full coupled CHT RANS simulation. The paper has the final goal to show the capabilities of the simplified U-THERM3D tool in order to obtain a good prediction of the wall temperature distribution on the effusion cooled liner compared with the reference experimental results.
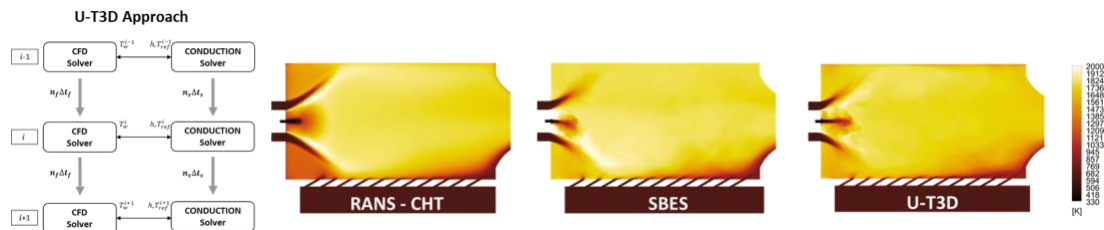
Figure 10 ACROSS results presented by University of Florence in ASME Turbo Expo 2022 [1]

- University of Genova reported latest advances on HPDA methodology applied to a open turbine case provided by KTH. The paper provides a first example of a data-driven procedure to identify the principal flow structures (shown in Figure 11) that determines the loss behaviour of the turbine blade. The procedure implemented in the paper was fully performed for the first time on CINECA cluster and constitute the basic procedure that is optimized within ACROSS.

Figure 11 ACROSS results presented by University of Genova in ASME Turbo Expo 2022 [2]

AVIO: Internal dissemination meeting on ACROSS pilots and HPC related topics. A first appointment was held in AvioAero on July, 15th 2022. The total amount of people participating to this event was fifteen referring to digital (3), combustion (6) and project management/executive (6) teams. It was identified as the right moment to communicate advances and gather suggestions on how to proceed (Figure 12). One of the most interesting and critical point to be discussed is relevant to the outcomes derived from U-Therm3D scalability tests performed on different hardware (Barbora and Karolina HPC cluster from IT4I, CINECA and Roger UNIFI server) where both INTEL and AMD technologies are displaced in different configurations in terms of RAM memory per node, clock speed, memory bandwidth, NUMA factor, etc. Main outcome was concerning the completion of the validation process of the newly defined U-Therm3D procedure to be done by simulating a more significant test case closer to real industrial products. Until then, the new process will not be considered applicable in industrial cases' analysis. Concerning the hardware analysis, recommendations were provided focusing on getting in touch with Ansys development team to clarify and solve the problem.

Figure 12 Screenshot from the internal dissemination meeting on ACROSS pilots by Avio

3.1.2.2 *Weather, Climate, Hydrological and Farming domain*

19th Workshop on high performance computing in meteorology. ECMWF held a biennial event on the use of high-performance computing in meteorology from 20 to 24 September 2021, bringing together experts from national weather centres, academia and industry. The theme of this year's online edition was 'Towards Exascale Computing in Numerical Weather Prediction'. A total of 313 participants from 43 countries took part in the event. They could follow more than 50 talks, including three keynotes from leading experts in high-performance computing (HPC):

- Preparing for Extreme Heterogeneity in High Performance Computing - Jeffrey Vetter (ORNL)
- Towards an Earth System Model at Storm Resolving Resolutions - Richard Loft (NCAR)
- The Riken Center for Computational Science - Satoshi Matsuoka (RIKEN)

with many other presentations such as From Earth system model simulations to Digital Twins - Nils Wedi (ECMWF) and Convergence of HPC, cloud technology and data analytics for exascale weather forecasting - Tiago Quintino (ECMWF) describing the innovation under development in the context of the ACROSS project (Figure 13).
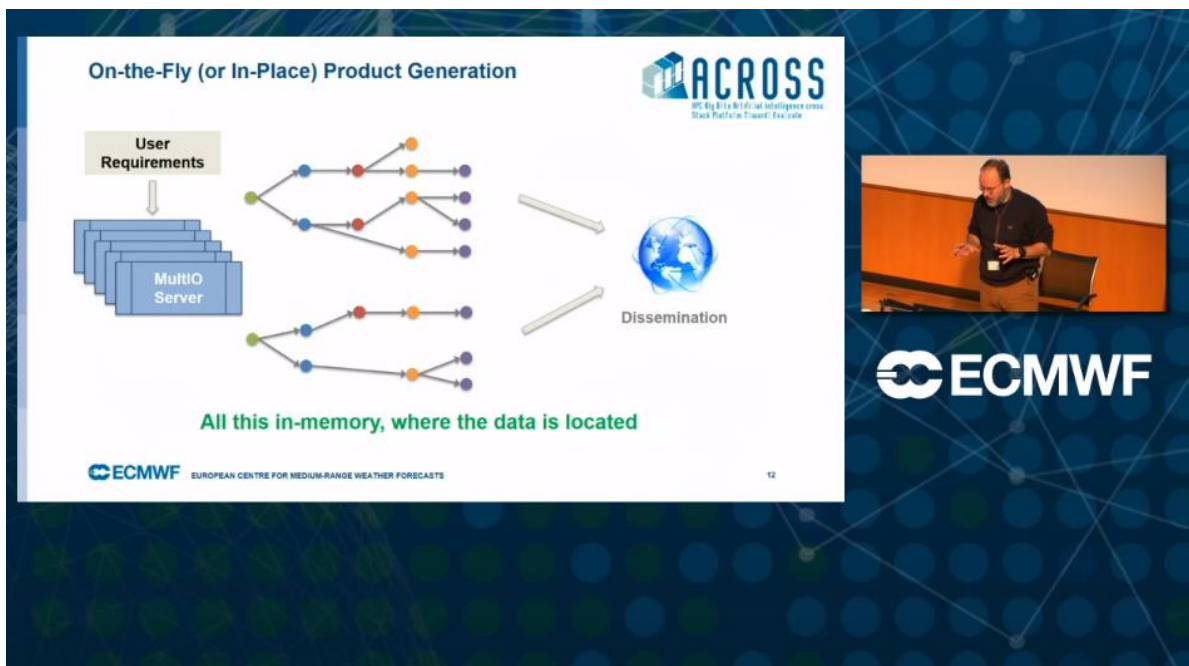
Figure 13 The ACROSS project presented by ECMWF in the 19th workshop on HPC in meteorology

Agrotica 2022. NEUROPUBLIC regularly participates in Agrotica [3] a bi-annual international event taking place in Thessaloniki, Greece. Agrotica opened its doors for the first time in 1985 and since then every event has attracted thousands of people who want to be informed about the new trends and global technology covering the entire spectrum of agricultural entrepreneurship. It is the largest trade fair in the sector of agricultural machinery, equipment, and supplies in the Balkans and the Southeastern Mediterranean, and one of the five most important primary sector exhibition events in Europe. Due to covid restrictions, the 2022 Agrotica was postponed from Q1 to Q4 of 2022. Therefore, the 29th Agrotica will make its presence felt in Thessaloniki from 20 to 23 October 2022, at the International Exhibition and Conference Centre of the city, and it is expected to be the reference point of the agricultural sector for yet another year and a key meeting place for exhibitors to network. At the same time, it will also act as a field of scientific discussion on sector issues through its well-established Agricultural Panhellenic Conference and with the hospitality of an impressive number of hosted buyers from abroad, this year's Agrotica will be expected to capture in the most

reliable way, the pulse of the rural economy and growth in the country. NEUROPUBLIC plans to promote the early results of the project in the 29th Agrotica.

Horizon Europe Quantifarm [4] Kick-off Meeting (Athens, Greece, 6/7/2022). NEUROPUBLIC disseminated the ACROSS project's scope and vision, particularly in the context of the Farming pilots, within the kick-off meeting of the Horizon Europe Quantifarm project and in side discussions of it (Figure 14). This allows the project to establish connections with projects more concentrated on domain-specific applications and build possible exploitation synergies with industrial stakeholders.

Figure 14 Screenshot of the presentation of the ACROSS farming pilot, in the Quantifarm's Kickoff meeting

3.1.2.3   *Energy & Carbon sequestration domain*

Participation in events & conferences is expected for disseminating the project results in the carbon sequestration domain. For 2022, the following event is targeted:

- The OPM Symposium, August 30-31 2022. This brings together developers, users and other stakeholders with an interest in the OPM software and its applications.

3.2   European Parliament Workshop

A high-profile event at the European Parliament is planned to be organized by the ACROSS consortium within the project's lifetime with the aim to raise awareness on the project and underline its significant value to sectors of societal and industrial relevance for Europe. The organization of such an event involved a number of preparatory activities which were undertaken by the ACROSS consortium.

1. Decision on optimal timing. The ACROSS consortium acknowledged that the optimal timing for holding such an event, would need to come after reaching MS3 "Alpha version: ACROSS platform & technologies" & MS4 "The first pilots use cases integrations". This would allow consortium partners to showcase tangible results and thus communication impact would be very important.
2. Preparation of email templates used for approaching policy makers, relevant groups and MEPs that would facilitate hosting of this event.
3. Engagement in exploratory discussions with policy makers, relevant groups and MEPs. NEUROPUBLIC as WP8 and T8.4 leader initiated a series of exploratory discussions with relevant stakeholders in order to communicate the vision of the project, its expected impact to the EU industrial and societal landscape, and the ambition of the project to co-orgranise an EP workshop. Exploratory discussions involved:
   o Contacts with Mrs Patrizia Toia, Italian MEP and Vice-Chair of ITRE (during Q4 of 2021)
   o Contacts with Mrs Maria Spyraki, Greek MEP and member of ITRE, ENVI (during Q2 of 2022)
   o Contacts with the European Bureau for Conservation and Development (during Q2 and Q3 of 2022).
4. Examination of the logistics around such an event, together with the Secretariat of the European Parliament Intergroup on 'Climate Change, Biodiversity and Sustainable Development' which is provided by the European Bureau for Conservation and Development (EBCD). The Intergroup

expressed its great interest in being involved in the ACROSS EP event during the exploratory discussions.

5. A draft collaboration agreement is circulated between EBCD and the ACROSS consortium, so that both parties can mutually agree on the details of co-hosting an ACROSS EP event. Within this draft collaboration agreement, the consortium acknowledges that this event would allow project partners to:
   - Contribute to the work of the European Parliament Intergroup, fully respecting the principles of transparency and corporate social responsibility;
   - Listen, interact and exchange with MEPs, European Commission and EU Member State representatives, as well as other stakeholders - scientists, experts, private sector, NGOs etc;
   - Bring concerns, knowledge and experience to MEPs and feed these into discussions and the debates in the EP;
   - Raise awareness and inform MEPs through briefings, special events, newsletters etc on its activities;
   - Benefit from EBCD's network and its expertise in the EP and European institutions.

The following details summarize the - under consideration - logistics around the organization of the event:
Date, time and place:
   - Q4 2022, hybrid event at the European Parliament together with EBCD.
Event format:
   - High-level conference,
   - Approximate duration of the event: 2 hours.
Policy Angle: Climate change adaptation

3.3 Networking with policy makers

3.3.1 HIPEAC

HiPEAC is a leading European network bringing together world-class computing systems researchers, industry representatives, policy makers and student communities. The HiPEAC initiative promotes technological advancements through the organization of various events (HiPEAC Conference, Computer System Weeks — CSW) and the publication of periodic magazines, as well as every 2 years the creation of a document devoted to collect research topics, highlight the foreseen technological evolution in the short and medium terms, offer recommendations and measures to ensure that Europe makes the most of what computing offers (HiPEAC Vision). ACROSS is being involved in the HiPEAC activities through the organization of a workshop (HeLP-DC) co-located with the main conference, and with a contribution to the HiPEAC magazine. Achievements of the ACROSS participation in HiPEAC can be summarized as follows:
   - Communication with Barcelona Supercomputing Center (BSC),
   - Contribution to the HiPEAC magazine,
   - Organization of the HeLP-DC workshop where several EuroHPC-JU and H2020 projects participated (as part of T8.2),
   - Organization of the the project's 2nd tech-forum (in planning).

3.3.2 ETP4HPC

The ETP4HPC is one of the major initiatives in the HPC context providing the roadmap about the evolution of HPC sector, along with collecting the inputs regarding the main research topics the HPC community sees as more urgent on which investigate on. To this end, the initiative defines a periodic Strategic Research Agenda (SRA), where all these aspects converged. Some of the ACROSS partners are members of the ETP4HPC; thus the involvement of the project came natural. To this end, ACROSS partners contributed to the definition of the next SRA-5. The ACROSS project is also represented within another document issued by ETP4HPC: the *2021 European HPC Handbook*, which gather all the major EU funded projects acting in the HPC domain. The ACROSS strategy foresees the presence in the initiative, as well as to progressively increasing the influence on the strategic vision, by promoting the main outcomes of the projects and research actions.

3.3.3 Communication with MEP Mrs Patrizia Toia

Mrs Patrizia Toia, is an Italian politician and a Vice-Chair of the Committee on Industry, Research and Energy (ITRE) of the European Parliament. Mrs Patricia Toia was approached during Q4 of 2021, in order to explore synergies with ITRE and also examining the possibility to co-host an event at the EP. ITRE's areas of responsibility relate to industry, especially technology-intensive manufacturing, information technology, and telecommunications. It also coordinates European space policy and therefore has ties with the European

Space Agency. It has oversight duties in relation to the Joint Research Centre and the Institute for Reference Materials and Measurements, as well as similar projects. During discussions with senior advisors of Mrs Toia, the ACROSS project, vision and objectives were communicated.

3.3.4   Communication with MEP Mrs Maria Spyraki

Mrs Maria Spyraki, is a Greek politician and a MEP. She is a member of the Committee on Industry, Research and Energy (ITRE) and of the Committee on the Environment, Public Health and Food Safety (ENVI) of the European Parliament. Mrs Maria Spyraki was approached during Q2 of 2022, in order to explore synergies and also examine the possibility to co-host an event at the EP. During discussions with senior advisors of Mrs Spyraki , the ACROSS project, vision and objectives were communicated.

3.3.5   Communication with Intragroup on Sustainable Development of the European Parliament

The European Parliament (EP) Intergroup on "Climate Change, Biodiversity and Sustainable Development" – originally called EP Intergroup on Sustainable Development – was established in 1994 at the initiative of the European Bureau for Conservation and Development (EBCD) and with the support of the International Union for Conservation of Nature (IUCN). The secretariat of the EP Intergroup is provided by EBCD.

This Intergroup constitutes a cross-party, cross-committee and cross-sectorplatform of discussion for Members of the European Parliament (MEPs) to learn, discuss and create policies geared towards finding solutions to climate change and biodiversity loss.

According to a 2018 Eurobarometer survey, 75% of EU citizens expressed support for increased EU action towards the environment. In order to contribute to this objective, the Intergroup provides a forum for discussion, aiming at sharing cross-sectoral experiences, bringing expertise and knowledge from different disciplinary areas on ongoing legislative initiatives, to support policy-makers in the achievement of a sustainable, competitive society, building on a resource efficient circular economy, climate neutrality and protection of nature.

The Intergroup adopts a multi-stakeholder approach and brings together MEPs with representatives of the European Commission, Member States and EU Presidency and key stakeholders, such as NGOs, private sector and industry representatives, scientists, experts, and civil society.

The Intergroup was first approached during Q2 of 2022, in order to explore the possibility of co-hosting the ACROSS event at the European Parliament. During the meetings with members of the Intergroup, the ACROSS project, vision and objectives were communicated.

3.4   Online events

A set of online events have been organized by consortium members to promote ACROSS. Detailed information about these events are included in D8.5 "Report on Dissemination, Exploitation and Communication activities".

- 1st Tech-Forum — an online event has been organized by LINKS (3/5/2022) [5] to present the general aspect of the ACROSS project to an Italian audience (PoloICT Torino). The event was attended by more than 20 people.
- Training (LINKS/CINI) — LINKS and CINI (UNITO) provided technical material and organized a training session covering the main technical aspects related to the description of workflows using Common Workflow Language (CWL) and StreamFlow.
- 2nd Tech-Forum — an online event (webinar) where the structure of the project, goals, technological pillars and pilots will be presented to a wide audience is planned starting from M18 on. The ACROSS consortium is planning to leverage on the HiPEAC network to boost the promotion of the event at the European level.

3.5   Field visits to target-sector stakeholders

Considering also future Covid restrictions, field visits to target-sector stakeholders are expected to start after reaching MS4 so as to start disseminating tangible project results. External industrial stakeholders, already identified in the ecosystem mapping spreadsheet (more information is provided in the next section), would be considered as candidate target-sector stakeholders for the field visits.

3.6   Stakeholder engagement

With external stakeholder mapping and engagement activities, the consortium foresees to form and sustain a live ACROSS community which will be regularly reached within the project's lifetime. By forming an ACROSS live community, the consortium pursues a threefold ambition and specifically it aims to facilitate:

1. The promotion of the ACROSS results in relevant organizations that hold the potential of maximizing the project's visibility and its societal and industrial value adoption;
2. The involvement of external (not project participants) stakeholders which can benefit from project ERs and initiate collaborations;
3. To support the project's POS.

The timeline of establishing tactical alliances with external stakeholders is summarized below:

- 1st version of ecosystem mapping ready (M9);
  - o 27 external stakeholders were identified and presented in D8.4.
- Initiate reach with external stakeholders (M16);
  - o Partners have initiated preliminary contacts with external stakeholders.
- Updated version of ecosystem mapping ready (M18);
  - o 38 external stakeholders were identified by M18.
- Joint activities, events, discussions towards exploitation of project results (M36);
  - o The ACROSS partners will approach a selected subset of the identified external stakeholders, with increased probability to show interest in the project's ERs and convert them to early collaborators/adopters;
- Lessons-learnt (M36).

The following sections outline the progress made so far by the consortium.

3.6.1 Ecosystem mapping

The updated version of the ecosystem mapping consists of a total of 38 organisations from EU and beyond which can be found at the following table. The first outputs of the ecosystem mapping activity were presented in D8.4. It should be noted that this is considered a working document for the consortium and as such, if an external stakeholder is considered appropriate to be included in the list, then the following table would be updated. The column status, indicates the engagement level of the external stakeholder specifically within the scope of the ACROSS project.

ID	Partner	Stakeholder Name	Link	Stakeholder Type	Country	Status	Interested in
1	NP	Centre For Research & Technology Hellas	https://www.certh.gr/	Research Organisation / Academia	Greece	Not contacted yet	Technical Framework
2	SINTEF	Equinor	https://www.equinor.com	Large Company	Norway	Collaborating	Energy & Carbon Sequestration
3	SINTEF	Ceetron Solutions	https://www.ceetronsolutions.com	SME	Norway	Contacted	Energy & Carbon Sequestration
4	NP	National Observatory of Athens	https://www.noa.gr/	Research Organisation / Academia	Greece	Not contacted yet	Weather, Climate, Hydrological & Farming
5	NP	GAIA EPICHEIREIN	https://www.c-gaia.gr/	Large Company	Greece	Contacted	Weather, Climate, Hydrological & Farming

6	IT4I	LUMI users	https://www.lumi-supercomputer.eu	Community	European	Contacted	Technical Framework
7	IT4I	e-INFRA CZ	https://www.e-infra.cz/en	Community	Czech Republic	Contacted	Technical Framework
8	SINTEF	NORCE	https://www.norceresearch.no	Research Organisation / Academia	Norway	Collaborating	Energy & Carbon Sequestration
9	SINTEF	TNO	https://www.tno.nl/en/	Research Organisation / Academia	Netherlands	Not contacted yet	Energy & Carbon Sequestration
10	MPI-M	DKRZ	https://www.dkrz.de	Other (HPC Centre with large Community)	Germany	Collaborating	Weather, Climate, Hydrological & Farming
11	MPI-M	CSCS	https://www.cscs.ch	Other	Switzerland	Contacted	Weather, Climate, Hydrological & Farming
12	LINKS	ITHACA	https://www.ithacaweb.org	Research Organisation / Academia	Italy	Not contacted yet	Weather, Climate, Hydrological & Farming (Earth Observation)
13	LINKS	CSI	https://www.csipiemonte.it/it	Regional Network	Italy	Not contacted yet	Technical Framework
14	MORFO	Ansaldo Energia	https://www.ansaldoenergia.com/	Large Company	Italy	Contacted	Aeronautics (Turbomachinery and Energy production)
15	MORFO	MAN	https://www.man-es.com/	Large Company	Switzerland	Contacted	Aeronautics (Turbomachinery and Heat Exchanger Optimization)
16	AVIO AERO	GE Aviation Europe	https://www.ge.com	Large Company	Germany	Contacted	Aeronautics (Additive Manufacturing process optimization via simulation)
17	AVIO AERO	Ansys France	https://www.ansys.com	Large Company	France	Contacted	Aeronautics
18	INRIA	JLESC	https://jlesc.github.io/	Research Organisation / Academia	European	Contacted	Technical Framework (Joint Lab in Extreme Scale Computing (JLESC))

19	INRIA, ATOS	TERATEC	www.teratec.eu	Community	European	Not contacted yet	Technical Framework
20	ATOS	EuroHPC	https://eurohpc-ju.europa.eu/index.html	EU Institution	European	Not contacted yet	Other (EuroHPC via PO Daniel Opalka would be interested by being a project stakeholder)
21	CINECA	CIMA research foundation	https://www.cimafoundation.org/	Research Organisation / Academia	Italy	Not contacted yet	Weather, Climate, Hydrological & Farming
22	CINI	Baker Hughes	https://www.bakerhughes.com/	Large Company	Italy	Not contacted yet	Other (Collaborating with UNIFI in Turbomachinery and Combustors system for the study and design of innovative solutions
23	CINI	University Of Melbourne	https://energy.unimelb.edu.au/	Research Organisation / Academia	Other	Collaborating	Other (Collaborating in the MSCA action TSCALE)
24	CINI	KTH	https://www.kth.se/mech	Research Organisation / Academia	Sweden	Collaborating	Other (Collaborating in data analytics of Hi-Fi simulation of Turbine blades)
25	DELTA	Rijkswaterstaat	https://www.rijkswaterstaat.nl/	Public Body / Administration	Netherlands	Collaborating	Weather, Climate, Hydrological & Farming
26	DELTA	KNMI	https://www.knmi.nl/home	Public Body / Administration	Netherlands	Not contacted yet	Weather, Climate, Hydrological & Farming (See whether it become possible to operationalize weather forecast stream)

27	DELTA	WUR-HWM	https://www.wur.nl/en/Research-Results/Chair-groups/Environmental-Sciences/Hydrology-and-Quantitative-Water-Management-Group.htm	Research Organisation / Academia	Netherlands	Not contacted yet	Weather, Climate, Hydrological & Farming (Interesting for collaboration for additional research by MSc/PhD students to result in scientific manuscripts)
28	LINKS	Thales Group	https://www.thalesgroup.com/en	Large Company	France	Contacted	Technical Framework
29	LINKS	HEROES	https://heroes-project.eu/	EU funded project	European	Collaborating	Technical Framework
30	NP	FORTH	https://forth.gr/en/home/	Research Institution	Greece	Not contacted yet	Technical Framework
31	LINKS	HIPEAC	https://www.hipeac.net/	European Network	European	Collaborating	Technical Framework
32	NP	ITRE	https://www.europarl.europa.eu/committees/en/itre/home/highlights	EU Body & Initiative	European	Contacted	Other (for the applied nature of the project and its industrial & societal impact)
33	NP	EBCD	https://ebcd.org/	EU Body & Initiative	European	Contacted	Other (for the applied nature of the project and its industrial & societal impact)
34	NP	Quantifarm	http://quantifarm.eu/	EU funded project	European	Contacted	Weather, Climate, Hydrological & Farming
35	LINKS	ETP4HPC	https://www.etp4hpc.eu/	European Network	European	Collaborating	Technical Framework
36	NP	BDVA	https://www.bdva.eu/	EU Body & Initiative	European	Not contacted yet	Technical Framework
37	LINKS	B-CRATOS	https://www.b-cratos.eu/	EU funded project	European	Collaborating	Technical Framework
38	LINKS	EUPEX	https://eupex.eu/	EU funded project	European	Collaborating	Technical Framework

Table 4 Targeted external stakeholders

The infographics presented below summarize the composition of the external stakeholders which were identified by consortium partners (Figure 15).
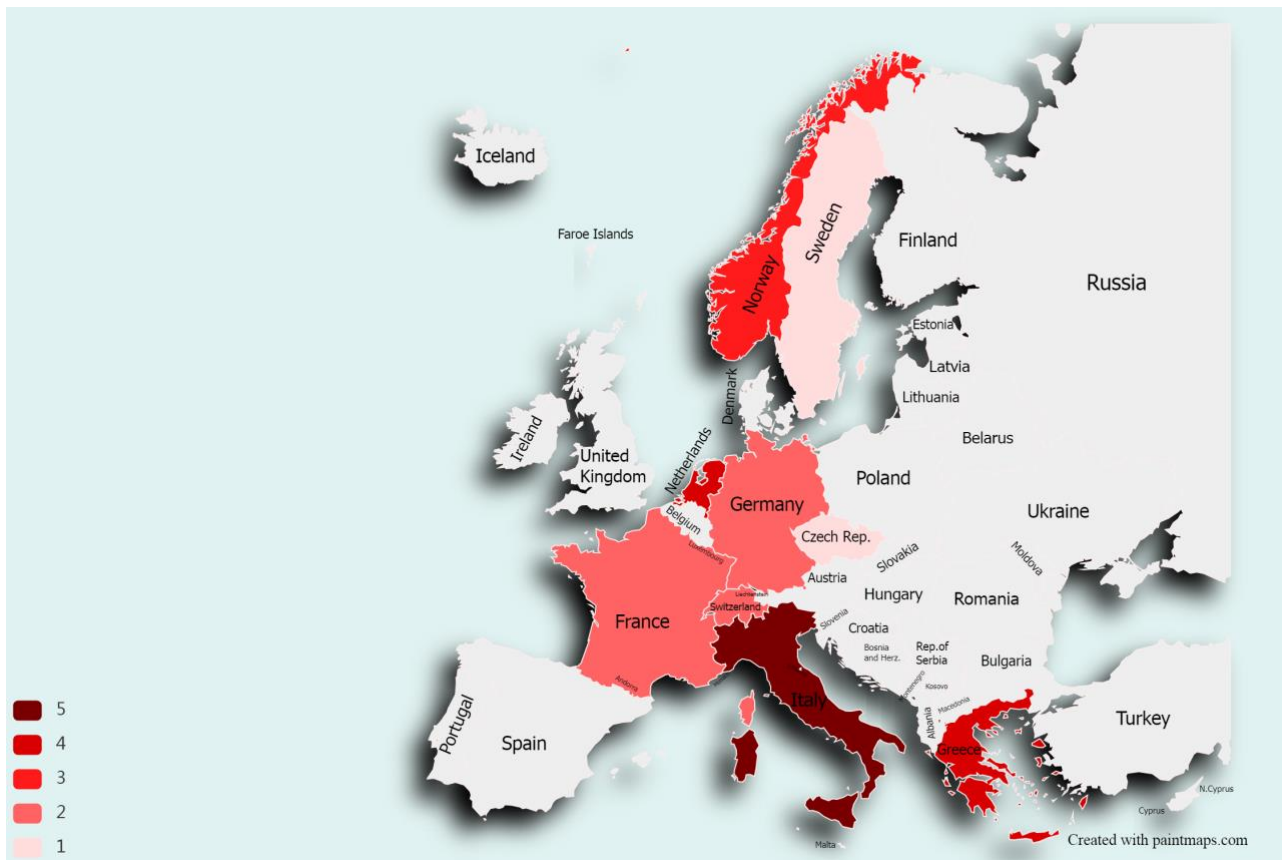

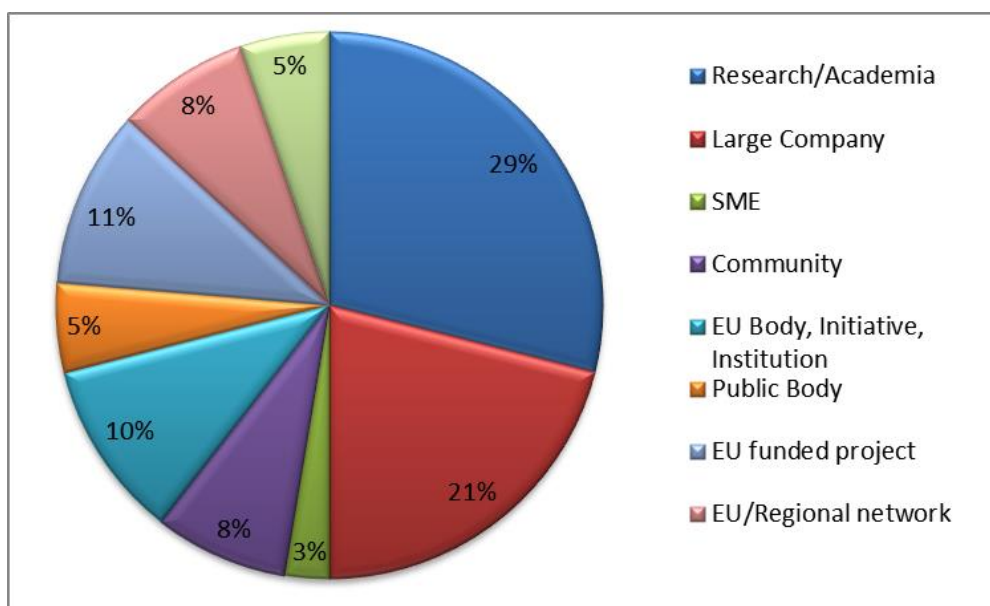**Figure 15 External stakeholder composition grouped by country**

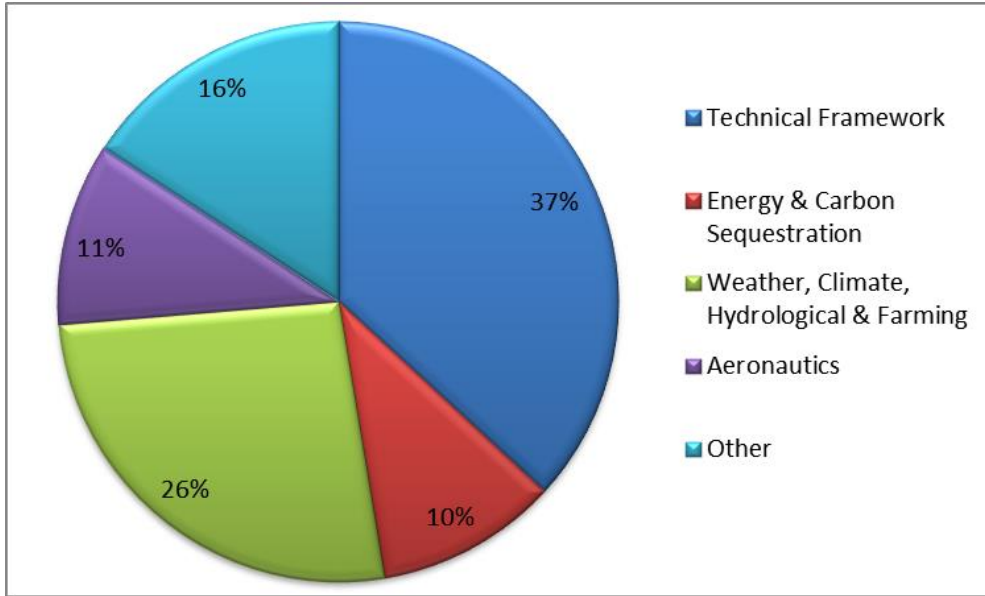**Figure 16 External stakeholder composition grouped by organisation type**

Figure 17 External stakeholder composition grouped interest on the project

3.6.2 Privacy Policy

The ACROSS privacy policy, was developed on M9 of the project, as an important document to be used within the stakeholder engagement activities, as already expressed in the D8.4 DEC plan. The ACROSS privacy policy ensures the security and privacy of all collected Personal Data. As a controller, the Consortium takes its responsibility regarding the security and privacy of Personal Data very seriously and is going to be transparent about the type of data it collects and how it is being handled. Pursuant to article 5 of the General Data Protection Regulation (EU) 2016/679 ("GDPR"), the Processing of the Personal Data carried out by the Consortium for the implementation and execution of the Project is based on the principles of lawfulness, fairness, transparency, purpose limitation, data minimization, accuracy, storage limitation, integrity and accountability. All entities that wish to get engaged with the ACROSS consortium will need to agree on the ACROSS privacy policy (Figure 18).
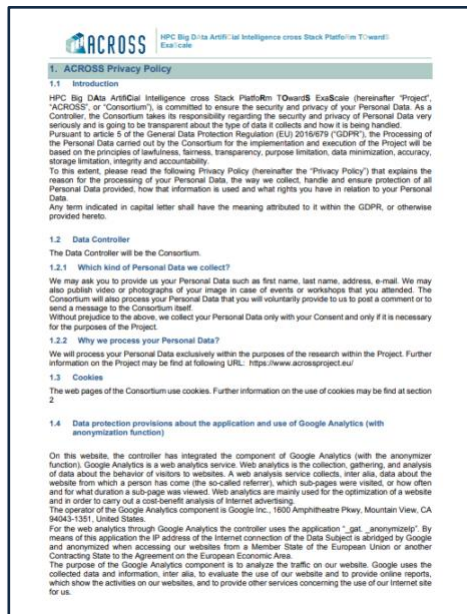

Figure 18 ACROSS privacy policy

3.6.3 Reach initiation & early value adoption activities

Even from the first months of the project, the consortium partners initiated preliminary contacts with external stakeholders so as to present the activities carried out within the project and support the early stakeholder

acquisition and activation. Up to M18, from the stakeholders identified in the ecosystem mapping spreadsheet 16 are contacted, while 11 have initiated some form of early collaboration/adoption. Early adopters of the ACROSS value proposition, are the organisations which express their interest in the project, and through the exploration of the ACROSS solutions and close collaboration with ACROSS partners, can provide valuable feedback and support in respect to next releases, business model, dissemination, impact maximization, etc.

A new emailing campaign to a selection of organizations that are introduced in the ACROSS ecosystem mapping spreadsheet is also expected to start in September 2022 that coincides with the MS4 "The first pilots use cases integrations". The consortium felt that it is necessary to initiate another round of stakeholder engagement activities at this stage of the project, which coincide's with the preliminary pilot integrations.

Out of the early contacts with external stakeholders, preliminary value adoption results should be reported at the following cases.

- **HEROES:** in the context of the 5th edition of the workshop on Heterogeneous and Low-Power Data Center technologies (HeLP-DC) —co-located with the HiPEAC'22 conference— the invited EuroHPC-JU project named *HEROES* expressed positive feedbacks and great interest in the orchestration solution ACROSS is developing. More specifically, the major point of interest was identified in the WARP module, i.e., the ACROSS technical solution for provisioning HPC resources through reservations. Indeed, HEROES found this solution complementary to their technical outcomes and in particular with their predictive system (i.e., a ML/DL based system able to perform predictions, for example regarding the type of jobs will be submitted to the (queuing) system in the near future. HEROES agreed to start a collaboration path with ACROSS to better explore such possible technological integration.

- **HIPEAC/ETP4HPC:** ETP4HPC and HiPEAC are respectively one of the major European initiatives in the context of High-Performance Computing and one of the largest research networks in Europe, bringing together a large community of researchers, decision makers and infrastructural resources/technology providers. As such, ACROSS established a collaborative path with both. Specifically, ETP4HPC promotes the advancement and technological innovation in the HPC context, through the publication of its Strategic Research Agenda (SRA), which presents current and future research directions. In this regards, ACROSS contributed to the last SRA —LINKS has been part of many working groups— (at the moment of writing this deliverable, it is under preparation) by highlighting the importance of some of the ACROSS research activities to the community and for setting up future research projects. With HiPEAC, ACROSS found a collaborative path as it promotes outcomes, technologies and developments through main events organized by the network. For the future, ACROSS intends to further enlarge the collaboration basis, by contributing actively to the HiPEAC vision (i.e., the main document collecting a series of recommendations and measures *"to ensure that Europe makes the most of what computing has to offer while managing and controlling the challenges and risks"*.

- **EUPEX:** During the ISC High Performance 2022 conference and exhibition, ACROSS coordinator met the EUPEX project coordinator. The event was the occasion to share with the EUPEX project, some of the innovations and technical solutions, in the context of WP4, ACROSS is working on. EUPEX found very interested in evaluating the ACROSS set of technology, as well as the execution platform currently under development through some of the pilot applications available in EUPEX. In the second half of the ACROSS project, focused meeting and workshops will be set up to quickly enable EUPEX team to access the ACROSS platform.

- **B-CRATOS:** in the context of the 5th edition of the workshop on Heterogeneous and Low-Power Data Center technologies (HeLP-DC) —co-located with the HiPEAC'22 conference— the invited H2020-FET Open project named *B-Cratos* provided a talk concerning the use of HPC resources to train ML/DL models used to control a prosthetic robotic hand. Given the complexity of the ML/DL models (large effort is spent in the B-Cratos project to devise the proper ML/DL models, which requires a large number of trials), facilitating the access to HPC resources is of primary interest. In particular, the ACROSS solution for provisioning HPC resources through specific reservations is of worth. B-Cratos is thus interested in evaluating the adoption of such kind of technical solutions. A more concrete collaborative path will be established in the second half of the ACROSS project.

- **Collaboration with Rijkswaterstaat:** DELTA has set a collaborative path with Rijkswaterstaat, having provided a map of weak points in the Dutch road network[1]. The activities carried out in the ACROSS project are of value for Rijkswaterstaat to improve their services; given this, in the second half of the project, a more concrete collaboration path will be established by finding specific outcomes of the ACROSS project to focus on.

- **Collaboration with DKRZ:** MPI-M is closely collaborating with DKRZ on many technical issues. With DKRZ operating the HPC used by scientists at MPI-M their interest in supporting ACROSS products is quite high. In particular, the ACROSS team at MPI-M is in direct contact with the data management group at DKRZ on establishing the FDB-based BORGES data platform developed in ACROSS on the DKRZ HPC "Levante". Also the related workflows will be tested as part of this collaboration.

- **Collaboration with University of Melbourne (UOM):** The collaboration with UOM is active within a H2020 MSCA action TSCALE (mulTi-SCALE modelling for turbomachinery flows using high-fidelity computational data, Grant Agreement n. 101026928) coordinated by UNIGE (University of Genova-CINI) that started on April 2022 (end date March 2024). The objective of this project is to provide a new paradigm for industrial flow modelling by adapting a theoretical framework of data-driven flow decomposition to turbomachinery flows. The analysis will be facilitated by combining multiple high-fidelity simulations at engine representative conditions with a deep data-driven analysis. In this context, high-fidelity simulations are being performed by UOM by means of the in-house DNS code HiPSTAR and will be analyzed by means of the HPDA (High-performance data analitycs routine) that UNIGE is developing and improving within ACROSS. Results of this project are expected to provide much needed insight into multi-scale interactions in complex industrial flows such as those of aero-engines.

- **Collaboration with KTH (Royal Institute of Technology, Stocholm, Sweden):** Within the TRANSEP-ERC-2015-AdG project (grant agreement 694452) the KTH performed several DNS simulations of a reference case turbine blade with and without unsteady inlet conditions simulating the experimental test case available at UNIGE. This high-fidelity simulation database has been provided to UNIGE as a first exemplary case for the development and improvement of the ACROSS HPDA routines (leading to a publication for the ASME Turbo Expo 2022). The collaboration is active also by computational resources provided by CINECA within the Transnational Access Programme for a Pan-European Network (HPC-EUROPA3, February 2022 - June 2022). Within this project a large database of the high-fidelity simulations has been used as test benchmark for development of advanced routines for bigdata analytics. Some of these routines are under optimization within the ACROSS project. Results of this collaboration are expected to lead to a deeper understanding of the fluid dynamics of turbomachinery blade by leveraging on HPC resources.
- **Collaboration with Equinor (Large company, Norway) and NORCE (Research institute, Norway):** Both Equinor and NORCE are broadly engaged in supporting work on and developing OPM Flow. Within the specific ACROSS context, they are collaborating on specifying the parallel file format to be used for the parallel output, and testing on CO_2 storage test cases.

3.7 External Advisory Board operational framework

The ACROSS consortium identified the need to have the support of an External Advisory Board (EAB). This would add value to the project's activities in a twofold way:
- to receive feedback from industry experts and thus, allow the ACROSS solutions to be fine-tuned and better validated through the project's lifetime. Thereby, the project is expected to benefit from external expert insights during the decision making process for strategic, business and technical aspects.
- to exploit the connection with industry experts, which would become members of the EAB, and facilitate the project's dissemination and impact maximization.

The timeline of activities related to EAB is presented at the following table.

	When	Activities performed
1	March 2021 - March 2022	• Recruitment process Initiation • Establishing goals and methodology

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[1] https://www.deltares.nl/en/projects/blue-spots-5/

2	March 2022	• Reach candidate EAB members • Receive signed letters of support
3	May 2022	• Advisory board meeting with technical WPs (WP2-WP7) - Feedback received assisting the project's technical implementation. • Advisory board meeting with WP8 - Feedback received assisting the project's dissemination, exploitation and business model elaboration.

Table 5 Timeline of activities related to EAB

The EAB recruitment process was conducted during the 1st year of the project and comprised of the following steps:

- Exploration of the availability of stakeholders, having sent commitment letters during the project's proposal elaboration procedure (i.e. Jean-Marc Philippe, Joao Cardoso, Hajime Yamamoto, Dominique Ragot), to participate in the project's EAB. Identify if open spots in the EAB are available.
- Since two EAB member positions were available, a discussion regarding the characteristics of candidates with respect to the ACROSS project mission and objectives was conducted,
- Initial contact by email to candidates, from the partners' networks, by the coordinator of the ACROSS project. Invitation to participate as scientific advisory board member,
- On acceptance, formal letter of support to the ACROSS consortium by EAB members.

The letter of support from the EAB members to the ACROSS consortium defines a set of rights & obligations. More specifically, letters of support included the following statements:

According to my availabilities and adequate resources, I will provide experiences and knowledge and will contribute to the project as follows:
- Give an independent view on the ACROSS project with respect to the high-level objectives,
- Recognize challenges and opportunities for innovation to maximize the impact of the ACROSS project and the future exploitation of the project results,
- Discuss with other members of the SAB and/or with Partners the intermediate) results of the ACROSS project,
- Provide comments and recommendations regarding objectives, development, and progress as well as exploitation and dissemination activities to be discussed and processed at General Assembly meetings.
- Support user uptake of project results, where possible,
- Participate in the SAB meetings that will be organized face-to-face or by means of telephone conferences or co-located to some major international events to minimize travel expenses.

By signing this letter, I confirm that:
1. I will use Confidential Information disclosed to me only for the purpose. "Confidential Information" shall mean all information in whatever form or mode of communication, which is disclosed by a Party of the ACROSS consortium to any other Party (the "Recipient") or another SAB member to me in participation in the SAB during implementation.
2. I will not disclose Confidential Information to any third parties other than the Partners of ACROSS or the SAB members.
3. The obligations as per Articles 1 and 2 shall not apply, however, to any information which:
   a. a.is already in the public domain or becomes publicly available by means other than my breach of confidentiality obligations;
   b. was rightfully in my possession without confidentiality obligation prior to receipt from the disclosing party;
   c. I have rightfully received from a third party who is in lawful possession thereof without confidentiality obligation;
   d. is approved for release by the disclosing party;
   e. I am required to disclose by any ruling of a governmental or regulatory authority or court or by mandatory law.
4. 4.I shall have the right to refuse to accept any information under the ACROSS project prior to disclosure.
5. This Letter of Support shall automatically terminate upon termination or expiration of the ACROSS project or the termination of my role as member of the SAB at the ACROSS project. We are free to

withdraw from discussions or negotiations without any liability at any time. The rights and obligations accruing prior to termination shall, however, survive the termination of this Letter of Support for a period of 5 years.
6. This Letter of Support shall be governed by Belgium Law without giving effect to principles of conflict of laws.

Finally, as of March 2022 the ACROSS EAB consists of four members, which are representing external research and industrial institutions, serving as a gateway between the project and potential markets, as well as other stakeholders like industrial partners, end users and regulatory bodies. The ACROSS EAB members are:

Title	First Name	Last Name	Job Title	Institution	WPs involved
Dr	Dominique	Ragot	Software Architect	Thales Group	WP8
Dr	Joao	Cardoso	Associate Professor	Department of Informatics Engineering (DEI), Faculty of Engineering, University of Porto	WP8
Dr	Leonard	Barolli	Professor	Department of Information and Communication Engineering Faculty of Information Engineering Fukuoka Institute of Technology (FIT)	WP2-WP7
Dr	Fatos	Xhafa	Full Professor	Dept. of Computer Science, Universitat Politècnica de Catalunya, Barcelona	WP2-WP7

Table 6 ACROSS EAB members

Short CVs of the EAB members are provided below:

Dominique Ragot Ing, graduated from ENST, Paris, France in 1988. Presently Senior Software Architect and Real-Time Expert, has been involved in the design and integration of many advanced software intensive processing systems at Thales including radars, sonar, infrared imaging, satellite and telecommunication systems. For more than 20 years I have been participating in many collaborative projects mainly at European level (Eureka,ITEA,EDA,FP7,H2020). My areas of expertise are at the architecture/application adequation in order to provide the most efficient solution for industrial systems with non-functional constraints such as reliability, safety and security. In this context I have been working in HPC with a special focus on heterogeneity and techniques to manage applications in order to optimize both processing and communications vs. power and QoS constraints.

Joao Cardoso got his PhD degree in Electrical and Computer Engineering from the IST/UTL (Technical University of Lisbon), Lisbon, Portugal in 2001. He is Full Professor at the Department of Informatics Engineering, Faculty of Engineering of the University of Porto, Porto, Portugal, and a research member of INESCTEC. Before, he was with the IST/UTL (2006-2008), a senior researcher at INESC-ID (2001-2009), and with the University of Algarve (1993-2006). In 2001/2002, he worked for PACTXPP Technologies, Inc., Munich, Germany. He has been involved in the organization and served as Program Committee member for many

international conferences. He was general Co-Chair of IEEE/IFIPEUC'2015 and IEEECSE'2015, General Chair of FPL'2013, General Co-Chair of ARC'2014 and ARC'2006, Program Co-Chair of HEART'2019, ARCS'2016, DASIP'2014, and RAW'2010. He is a senior member of IEEE, a member of IEEE Computer Society, and a senior member of ACM. His research interests include compilation techniques, domain-specific languages, reconfigurable computing, high-level synthesis and application-specific architectures, and high-performance computing.

Leonard Barolli received B.S. from Tirana University, Albania in 1989 and Ph.D. degree Yamagata University, Japan in 1997. From April 1997 until March 1999, he was working as a Post Doctor Fellow Researcher of Japan Society for the Promotion of Science(JSPS) at Department of Electrical and Information Engineering, Yamagata University, Japan. From April 1999 to March 2002, he was a Research Associate at Department of Public Policy and Social Studies, Yamagata University. From April2002 to March 2003, he was an Assistant Professor at Department of Computer Science, Faculty of Engineering, Saitama Institute of Technology (SIT). From April 2003 to March 2005, he was an Associate Professor and presently is a Full Professor at Department of Information and Communication Engineering, Faculty of Information Engineering, Fukuoka Institute of Technology (FIT), Japan. Prof. Barolli was an Editor of Information Processing Society of Japan (IPSJ) Journal and has served also in the Editorial Board for some Special Issues of IPSJ Journal. He is serving in the Editorial Board and Guest Editor of many International Journals. He is engaged as a Program Committee (PC) Member, PC Chair, General Chair for many International Conferences. Prof. Barolli is Steering Committee Co-Chair of AINA, CISIS, IMIS, NBiS, INCoS, BWCCA, 3PGCIC, EIDWT International Conferences. He also is organizer of many International Workshops. He serves as a reviewer for many International Conferences and Journals. Prof. Barolli has published more than 1,200 papers in International Journals and International Conference Proceedings. His research interests include high-speed and broadband networks, mobile communication systems, mobile ad-hoc networking, wireless sensor networks, P2P systems, VANETs, wireless sensor and actor networks, opportunistic networks, wireless mesh networks, Software Defined Networks, Could computing, Web applications, Quality of Service (QoS), congestion control, Connection Admission Control (CAC), intelligent algorithms, fuzzy theory, agent-based systems and Internet computing. Prof. Barolli is a Fellow of IPSJ, Senior Member of IEEE and a member of Japan Society for Fuzzy Theory and Systems (SOFT).

Fatos Xhafa, PhD in Computer Science, is Full Professor at the Technical University of Catalonia (UPC), Barcelona, Spain. He has held various tenured and visiting professorship positions. He was a Visiting Professor at the University of Surrey, UK (2019/2020), Visiting Professor at the Birkbeck College, University of London, UK (2009/2010) and a Research Associate at Drexel University, Philadelphia, USA (2004/2005). He was a Distinguished Guest Professor at Hubei University of Technology, China, for the duration of three years (2016-2019). Prof. Xhafa has widely published in peer reviewed international journals, conferences/workshops, book chapters, edited books and proceedings in the field (H-index 58). He has been awarded teaching and research merits by the Spanish Ministry of Science and Education, by IEEE conferences and best paper awards.

EAB members have been split in two groups. Dr. L. Barolli and Dr. D. Xhafa will provide consultation in respect to the technical and pilot project WPs (WP2-WP7), whereas Dr. D. Ragot and Dr. J. Cardoso would support the activities of WP8. These two groups will meet at least once a year with consortium partners. The first round of EAB meeting took place in May 2022 with two separate meetings.

The EAB meeting with WP8 partners and Dr. D. Ragot and Dr. J. Cardoso took place on Friday 13/05 at 14:00-15:00 CET (Figure 19). The agenda of the meeting was the following:

- 14:00 - 14:05 Welcoming & Introductions (Savvas Rogotis, NEUROPUBLIC)
- 14:05 - 14:15 Project Overview (Olivier Tetzo, LINKS)
- 14:15 - 14:35 WP8 presentation (Objectives, Tasks, Progress so far, Open issues, Next Steps)
- 14:35 - 14:50 EAB Remarks & Open discussion (All)
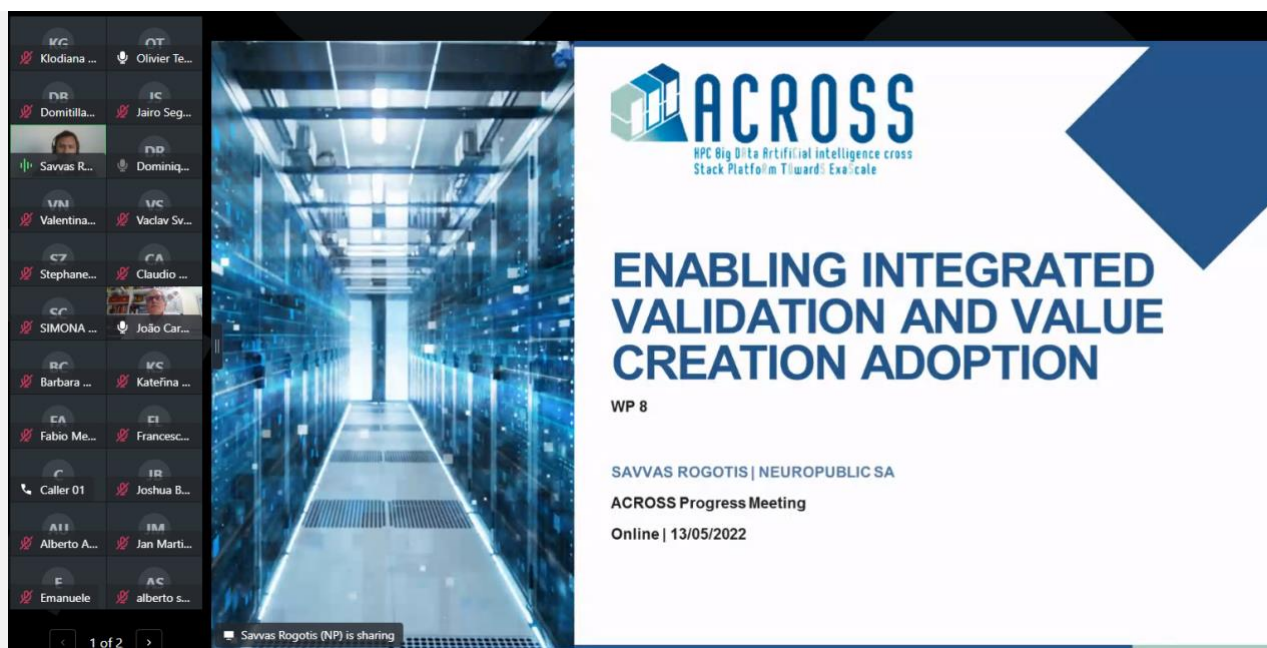- 14:50 - 15:00 Wrap-up & closure (Savvas Rogotis, NEUROPUBLIC)

Figure 19 Screenshot of the EAB meeting with WP8 consortium partners on 13th of May 2022.

Comments by Advisory Board Members:

Dominique Ragot highlighted the importance of ACROSS building synergies with large companies that might be interested as external stakeholders (early adopters) like Thales group. Moreover, he mentioned that the project exploitable results should be really cautious with TRLs and their validation process.

Joao Cardoso congratulated the ACROSS team on the work already conducted and in particular the work related the market analysis workshops (swot analysis is very important and pestle analysis is also appreciated as it adds value). He also noted that the TRLs which are presented showcase ambitious targets for the project. In terms of impact, building synergies with industrial communities and providing trainings is very important. Scientific publication should be standing out in the structure of the website. He suggested to pay more attention in exploitable plans for tools rather than services, as it is more difficult to build concrete business models for tools. Offering 2-3min videos from pilots is very practical and seems to be very effective as a communication mechanism. Finally, he suggested to push on the work on traditional media articles. The number 30 as a target over the 3 years of the project is very ambitious but it is important as it will maximize impact.

The EAB meeting with WP2-WP7 partners and Dr. L. Barolli and Dr. D. Xhafa took place on Thursday 19th of May 2022, 11:30-13:30 CEST (Figure 20). The agenda of the meeting was the following:

- 11:30 - 11:45 Welcoming, Introductions, and Project Overview [Olivier Terzo, LINKS]
- 11:45 - 12:00 WP2 Presentation [Vaclav Svaton, IT4I] - (WP Objectives, Progress so far, Ongoing activities, Envisaged results at the end of the project) - (10 minutes presentation + 5 minutes for discussion)
- 12:00 - 12:15 WP3 Presentation [Huy-Nam Nguyen, ATOS] - (WP Objectives, Progress so far, Ongoing activities, Envisaged results at the end of the project) - (10 minutes presentation + 5 minutes for discussion)
- 12:15 - 12:30 WP4 Presentation [Alberto Scionti, LINKS] - (WP Objectives, Progress so far, Ongoing activities, Envisaged results at the end of the project) - (10 minutes presentation + 5 minutes for discussion)
- 12:30 -12:45 WP5 Presentation [Ennio Spano, AVIO] - (WP Objectives, Progress so far, Ongoing activities, Envisaged results at the end of the project) - (10 minutes presentation + 5 minutes for discussion)
- 12:45 - 13:00 WP6 Presentation [Emanuele Danovaro, ECMWF] - (WP Objectives, Progress so far, Ongoing activities, Envisaged results at the end of the project) - (10 minutes presentation + 5 minutes for discussion)

- 13:15 - 13:30 WP7 Presentation [Atgeirr Rasmussen, SINTEF] - (WP Objectives, Progress so far, Ongoing activities, Envisaged results at the end of the project)- (10 minutes presentation + 5 minutes for discussion)

Figure 20 Screenshot of the EAB meeting covering technical aspects and pilot presentations on 19/5/2022

Comments by Advisory Board Members:

Leonard Barolli congratulated with the ACROSS team for the technical activities and achieved results during the first year of the project. Technical WPs concluded the first year of activities providing a clear idea of how the platform will be implemented. Similarly, Pilots are doing a very good work with a clear path of the objective to achieve also in the remaining part of the project. A major suggestion was on the need to improve the comparative analysis of the proposed solutions/implementations with the State-of-the-Art to better highlight the progress done by the project activities.

Fatos Xhafa reported that the technical activities and pilots work done in the first year of the project time frame provide a very positive set of results. Some suggestions were given in order to further improve the impact of the outcomes and results at the of the project. First, more attention should be given in clarifying how various aspects related to data set management are treated (e.g., data set privacy), because these are important in respect to the convergence of HPC, Big Data and AI. Similarly, given the nature of the project, where the convergence of these three domains is concerned, a suggestion was to better clarify how the convergence is measured and compared with the State-of-the-Art solutions. Other important aspects to better highlight are in the clear specification of which parts of the pilot workflows involve different types of executions (i.e., batch execution, streaming, interactive execution). An important suggestion was given concerning the investigation done on neuromorphic computing. Besides motivating the interesting of the project because of the more energy efficiency, that is a key factor for Exascale systems, pilot requirements fulfillment and execution advantages should be better highlighted. To this end, definition of KPIs and comparison with State-of-the-Art solutions is warmly suggested.

4 Next Steps (M18-M36)

During the second half of the project, the following action plan has been defined by the consortium. This action plan ensures that all goals set for T8.4 will be achieved until the end of the project.

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ID	Context of the planned activities	Action Plan (M18-M36)
1	Participation to target sector specific industry-oriented events, business networks and fairs.	The partners are planning to participate at the following events: • SC 2022 (BOF), • HiPEAC 2023 and CONCERTO workshop organisation, • ISC 2023, • Teratec 2023, • EuroHPC Summit Week 2023, • SC 2023, • ASME Turbo Expo 2023 (WP5-related activity) • Agrotica 2022 (WP6-related activity) • GAIA Congress 2023 (WP6-related activity) • Thessaloniki International Fair 2022 (WP6-related activity) • OPM Symposium 2022 and 2023 (WP7-related activity) • SPE Reservoir Simulation Conference 2023 (WP7-related activity) • TCCS 2023 (WP7-related activity)
2	A dedicated workshop at the European Parliament will be examined. This will facilitate lobbying and networking at EU level and the process of establishing contacts with key members of various EU institutions and the EC.	The consortium is focusing on organising the event in Q4 2022 together with EBCD.
3	Communication with policy makers for further supporting the aforementioned networking activities.	Further contacts with policy makers will be pursued. The EP event that is planned for Q4 2022 will be a good opportunity for networking at this level.
4	Organizing online events (webinars, training sessions and live demos) aiming to demonstrate the HPC-powered services and applications to specific target audiences (e.g., representatives from various industrial domains) and attract early adopters. This will help towards an open demonstration of the project results to a wide audience.	The partners are planning to organise the following events: • 2nd tech-forum (M18 and on) - At the end of the first integration with pilot's workflows, following the first calculus attempts by pilots, this conference will explore the main issues encountered and lessons learned. • 3rd tech-forum (M30) - The ACROSS platform is validated, this Tech Forum will be focused on benchmark of the overall hardware and software ecosystem. • Training activities by consortium partners IT4I, CINECA, CINI, AVIO. A more detailed plan related to the foreseen Training Sessions is included in D8.5 "Report on dissemination, exploitation and communication activities".

5	Visits to target sector stakeholders: a series of visits to targeted organizations across Europe will be examined, so as to engage them in talks for serving as either as major collaborators or early adopters.	Field-Visits are expected to start after MS4 of the project, as the consortium will have more tangible results to showcase.
6	Mapping the networks of targeted stakeholder communities across the EU/globe and then selecting lead organizations on an international, national and regional basis that will facilitate knowledge sharing and further increase the visibility of the project outcomes, thus, empowering their swift adoption.	As already mentioned, joint activities, events, discussions towards exploitation of project results are going to be pursued until the end of the project. As a first step, the ACROSS partners will approach via email campaigns, a selected subset of the identified external stakeholders, with increased probability to show interest in the project's ERs (M20); As more concrete results will become available, the elaboration of success stories will facilitate the value adoption activities by the end of the project .
7	Establish an External Advisory Board (EAB) - an interactive network of interest aiming at discussing challenges and opportunities arising from the use of HPC products and services. The EAB will be formed at an early stage of the project through a multi-actor engagement approach aiming at reaching both specific and broad audiences covering scientific, policy, commercial as well as socio-economic aspects.	At least two more meetings (1 WP2-WP7-related and 1 WP8-related) will be conducted by the end of the project.

Table 7 Action plan for T8.4 during the second half of the project

5 Conclusions

The D8.6 ACROSS societal and industrial impact maximization report provides a comprehensive summary of all undertaken impact maximization activities in industrial and societal communities during the first 18 months of the ACROSS project.

All consortium partners are contributing towards this direction. Thanks to the common efforts and continuous work of all partners within WP8, the project has achieved to present evident progress in most of the foreseen plans.

The work of the consortium is expected to intensify during the second half of the project, as more tangible results will be available so as to showcase them to relevant industrial communities, fostering the project's value adoption.

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