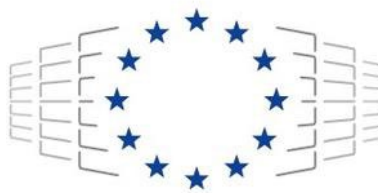


HORIZON-EUROHPC-JU-2021-COE-01



D7.6

Updated Collaboration Plan with definition of common objectives and activities including milestones



EuroHPC
Joint Undertaking

The EXCELLERAT P2 project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 101092621. The JU receives support from the European Union's Horizon Europe research and innovation programme and Germany, Italy, Slovenia, Spain, Sweden and France.

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List of abbreviations

ADAS	Advanced Driver Assistance System
AI	Artificial Intelligence
API	Application Programming Interface
AR	Augmented Reality
BSC	Barcelona Supercomputing Center
C2ISS	CASTIEL 2 Information Sharing System
CD	Continuous Deployment
CEO	Chief Executive Officer
CFD	Computational Fluid Dynamics
CI	Continuous Integration
CoE	Centre of Excellence
CSA	Coordination and Support Action
EC	European Commission
EOSC	European Open Science Cloud
EuroHPC JU	European High-Performance Computing Joint Undertaking
GPU	Graphics Processing Unit
HPC	High-Performance Computing
HPDA	High-Performance Data Analytics
HRB	Horizon Result Booster
IAC	Industry Academia Collaboration
IP	Intellectual Property
IPR	Intellectual Property Rights
ISV	Independent Software Vendor
LLM	Large Language Model
KERs	Key Exploitable Results
KPIs	Key Performance Indicators
MoU	Memorandum of Understanding
ML	Machine Learning
MS	Milestone
NCC	National Competence Centres
OEMs	Original Equipment Manufacturers
PoC	Proof-of-Concept
Q	Quarter
ROI	Return on Investment
R&D	Research and Development
SMEs	Small and Medium-sized Enterprises
STEM	Science, Technology, Engineering, and Mathematics
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TRL	Technology Readiness Level
WP	Work package

Executive Summary

This deliverable presents the key activities and outcomes of EXCELLERAT P2, highlighting its contributions to High-Performance Computing (HPC) for engineering applications within the European ecosystem. EXCELLERAT P2 advanced software development practices through its collaboration with CASTIEL 2, integrating modern Continuous Integration, Continuous Deployment (CI/CD) workflows into the Alya simulation code. It also launched a **joint Project Group with Plasma-PEPSC and HiDALGO2** to focus on Graphics Processing Unit (GPU) porting and code optimisation, supported under the Horizon Results Booster initiative.

The project enhanced its visibility through active participation at major events, including **ISC High Performance 2024** and the **EuroHPC JU User Day**, where it showcased technical innovations and engaged with the wider HPC community. Additionally, EXCELLERAT P2 co-hosted a successful workshop with **EuroCC Italy** on Machine Learning in engineering, reflecting its growing focus on data-driven approaches.

On the infrastructure side, the project became the first Centre of Excellence to integrate with the **Waldur HPC Service Hub**, improving the discoverability and accessibility of services. Integration efforts also extended to the **HPC in Europe Portal**, supporting unified access to Centre of Excellence (CoE) and NCC resources.

Another major milestone was the development and implementation of an updated **Interest Group Onboarding Process**, structured to foster long-term engagement, co-creation, and scalable community-building. This process now serves as the backbone of stakeholder expansion and alignment, supported by clearly defined segmentation strategies and communication tactics.

A significant advance in industry collaboration was achieved with the launch of the **Academic Showcase Zone** at the **Automotive Testing Expo 2024**, where ten academic partners presented use cases to a highly relevant industrial audience. The initiative successfully initiated 97 direct contacts, 74% of whom were from the industry, reflecting strong alignment with market demand and co-creation interest.

To complement this, EXCELLERAT P2 conducted three surveys, targeting *researchers*, *industry*, and *NCCs*, to better understand collaboration dynamics, pain points, and expectations. The findings were analysed using a comparative **SWOT framework** and translated into concrete proposals to reinforce joint development and technology transfer.

Through these initiatives, EXCELLERAT P2 continues to play a key role in driving innovation, fostering collaboration, and strengthening the European HPC landscape for engineering applications.

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1 Introduction

This document presents the updated version of the deliverable D7.5 “Collaboration plan with definition of common objectives and activities including milestones” [1], reflecting the progress made and the new developments since the initial document. It outlines refined common objectives, revised activities, and updated milestones, considering the evolving scope of collaboration among project partners. The adjustments are based on insights which were gained during the implementation phase and aim to further align joint efforts with the overarching goals of the EXCELLERAT P2 project.

Building on the initial collaboration framework defined at project launch, this document refines and expands the shared objectives, coordinated activities, and key milestones that will guide continued and enhanced cooperation among consortium partners through to project completion in 2026.

EXCELLERAT P2 brings together 15 institutions from six European countries, integrating a wide range of expertise in High-Performance Computing (HPC), High-Performance Data Analytics (HPDA), Artificial Intelligence (AI), and computational engineering. As the project matures, effective collaboration remains essential to delivering scientific innovation, robust engineering workflows, and scalable HPC services in support of Europe's transition to the exascale era.

The updated plan reflects:

- Evolving project priorities based on insights gained during the first reporting periods;
- Progress made in the collaboration activities initiated by CASTIEL 2 and with other organisations;
- Refinements of the Interest Groups plan and user engagement strategies;
- Participation in the Automotive Testing Expo where we fostered new connections and increasing awareness of the project's value to the automotive sector;
- An analysis of three surveys coming from academic, industry and National Competence Centres (NCCs) collaborations.

1.1 Structure of the document

This document is organised into several key chapters, each designed to provide a comprehensive view of the project's collaboration strategies and progress. After a short introduction in *Chapter 1*, the structure is as follow:

Chapter 2 details the updated collaboration activities initiated with CASTIEL 2 in the timeframe M13-M30.

Chapter 3 presents an updated Interest Groups Collaboration Plan, outlining the new onboarding process and revised objectives. It concludes with a forward-looking perspective on the future of the collaboration strategy.

Chapter 4 focuses on industry collaboration, providing strategic context, a conceptual design framework, and clearly defined objectives. It also highlights key lessons learned from the Automotive Testing Expo 2024.

Chapter 5 shares the findings from surveys on collaboration between industry and academia, concluding with a focus on strengthening partnerships with NCCs to foster industry co-creation.

Chapter 6 offers a summary and conclusion of the deliverable, while also providing an outlook on future objectives and anticipated challenges.

2 Revised Collaboration Plan

2.1 Updated Collaboration Activities with CASTIEL 2

Several significant collaborations have been advanced or newly initiated since the last reporting cycle. Above all, EXCELLERAT P2 has maintained its close cooperation with CASTIEL 2, particularly through the ongoing integration of its engineering workflows into the CI/CD platform developed under CASTIEL 2. This collaboration supports improved software development practices, continuous integration, and automation across Centres of Excellence, contributing to a more standardised and reproducible software ecosystem as reported in the [2]. A key new initiative has been the formation of a dedicated project group with the Plasma-PEPSC and HiDALGO2 CoEs, supported by the Horizon Results Booster (HRB) service. This group focuses on aligning dissemination and exploitation strategies, identifying common technical challenges, and promoting collective results to wider stakeholder audiences, thus reinforcing the European Commission's goals for cross-CoE synergies and joint impact.

A joint workshop was co-organised with EuroCC Italy titled “Machine Learning in Engineering”, which brought together experts from academia, industry, and HPC centres to explore practical applications of AI/Machine Learning (ML) methods in engineering workflows.

Recently, the project has made important progress in service integration and discoverability by connecting to the Waldur Service Hub, a platform for managing HPC and cloud resources, and by featuring its services and tools on the HPC in Europe portal. These integrations contribute to enhanced visibility and accessibility of EXCELLERAT's offerings, enabling broader user engagement and uptake across scientific and industrial domains.

The following part provides a more detailed account of the main collaborative activities, highlighting their specific contributions, implementation progress, and results within the context of the project.

1) CASTIEL 2 CI/CD Platform Integration

As part of the ongoing collaboration with CASTIEL 2 on CI/CD platform integration, the Barcelona Supercomputing Center (BSC) has made significant progress in applying modern software engineering practices to Alya, their high-performance, multi-physics simulation code. Designed for complex simulations involving fluid dynamics, solid mechanics, and heat transfer, Alya's growing codebase (now exceeding 24,000 commits and contributions from over 100 developers) necessitated the adoption of robust CI workflows. The team implemented platform-agnostic automated builds and a comprehensive suite of tests, including unit, smoke, and regression tests, all triggered on each code merge. Integration with the Squidient toolchain [3] enabled seamless deployment and validation on HPC systems, ensuring code correctness and performance consistency in production environments. These practices have significantly enhanced development efficiency and code quality, with plans underway to extend the pipeline to include static code analysis and GPU-based testing.

2) Project Group with Plasma-PEPSC and HiDALGO2 CoEs

EXCELLERAT P2 has established a Project Group in collaboration with the Plasma-PEPSC and HiDALGO2 Centres of Excellence, focusing on GPU porting and code optimisation. This initiative is supported under Modules A and B of the HRB Joint Dissemination service [4]. As a first step, pre-assessment questionnaires from all three projects were completed and submitted

through the HRB platform. The collaboration has also been integrated into the CASTIEL 2 technical collaboration activities, specifically in the area of GPU porting.

HRB Module A, which involved identifying and creating a joint portfolio of exploitable research and innovation results has been successfully completed. The final report, titled “Portfolio Dissemination and Exploitation (PDES)”, has been submitted to the HRB platform. Module B has been planned to be accomplished after the Mid-term Review, viz. in Quarter (Q) 4 2025.

3) Joint presence at EuroHPC JU ISC24 booth

EXCELLERAT P2 was prominently featured at ISC High Performance 2024 [5], held in Hamburg from 12–16 May, with more than 3,000 participants from 51 countries across the HPC, AI, and Quantum Computing communities. At the EuroHPC Joint Undertaking booth, EXCELLERAT P2 project was presented, highlighting its core codes and engineering-focused use cases that leverage advanced HPC capabilities. Additionally, we contributed to the 8th International Workshop on In Situ Visualisation (WOIV’24) [6] with a presentation on interactive in-situ visualisation. The work showcased the integration of a SENSEI-based module into the Vistle framework, enabling dynamic configuration of visualisation pipelines at runtime and efficient in-transit data transfers.

4) HPC Summit User Day 2024

EXCELLERAT P2 represented the project at the EuroHPC Joint Undertaking (EuroHPC JU) User Day 2024 [7], held in Amsterdam. On Wednesday, 23 October 2024, we participated in the plenary session titled “Applications and Skills”, alongside representatives from EuroCC Netherlands, CINECA, and the EPICURE Project. The session provided an important platform to discuss the current state and future direction of HPC applications across Europe. Key topics included the development of advanced applications, the importance of user skills and training, and opportunities for collaboration across the high-performance computing ecosystem.

The event gathered approximately 200 participants from a broad spectrum of the European HPC community, fostering valuable knowledge exchange and reinforcing the collaborative spirit essential for advancing research and innovation across Europe.

5) Joint Workshop with EuroCC Italy on Machine Learning in Engineering

On 18 October 2024, EXCELLERAT P2 and EuroCC Italy co-hosted a hands-on workshop in Bologna [8] focused on advancing Machine Learning (ML) and Data Analytics in engineering. The event gathered engineers, data scientists, and researchers from both initiatives to explore modern ML techniques and foster collaboration. The workshop gave prominence to advanced non-linear dimension reduction methods and clustering algorithms, applied to real-world engineering datasets and use cases. A second session focused on machine learning workflows, covering data cleaning, feature extraction, and model development using tools like Scikit-learn and PyTorch.

The workshop concluded with a networking lunch and discussions on future joint initiatives. Both EXCELLERAT P2 and EuroCC Italy emphasised the importance of continued cooperation to unlock the potential of ML in engineering domains, with plans for further workshops exploring reinforcement learning and distributed ML.

6) Waldur HPC Service Hub

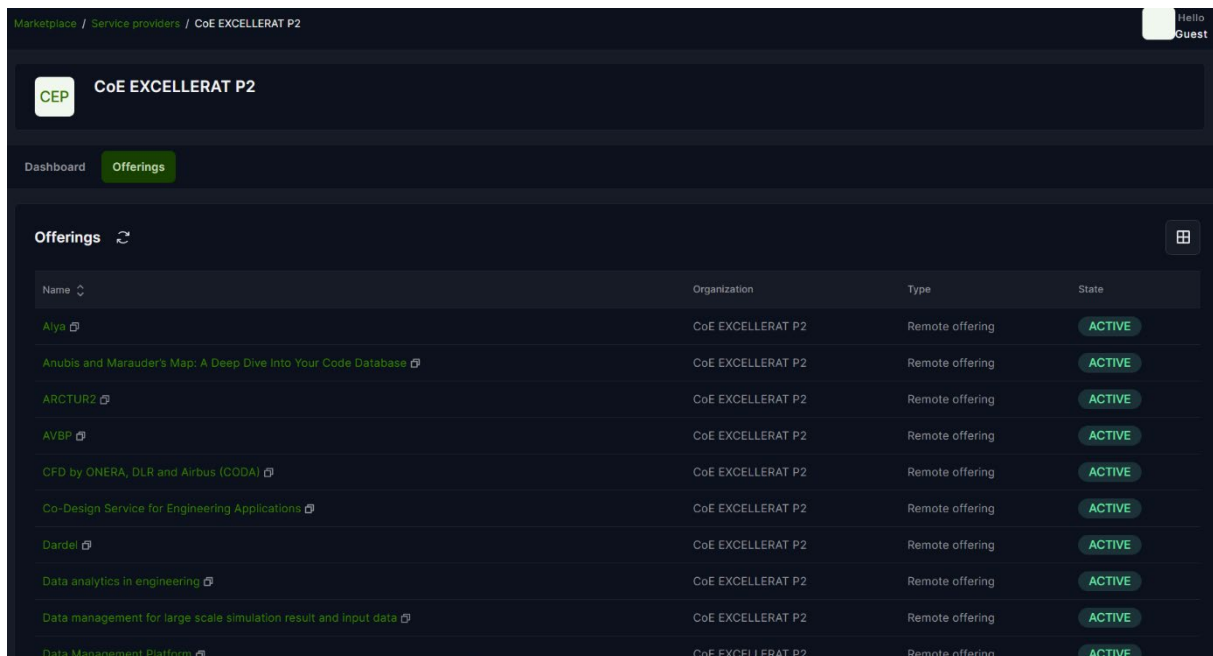
The Waldur HPC Service Hub [9] is an open-source self-service cloud management platform with a built-in service marketplace, developed by the University of Tartu (Estonia). It is being adopted to support service visibility and accessibility across the European HPC ecosystem. Key functionalities of Waldur include a structured service catalogue, categorised offerings, improved discoverability, and robust Application Programming Interface (API) and synchronisation capabilities. The platform is designed to increase the coverage of services provided by NCCs and CoEs and can act as a foundational data source for other representation layers, including the HPC in Europe Portal, individual NCC/CoE websites, and custom catalogues. Additionally, the use of Large Language Model (LLM)-based analysis offers potential for enhancing service descriptions and metadata.

Initial activities have included coordination meetings and the signing of a service contract. Notably, EXCELLERAT P2 has become the first CoE to integrate with Waldur via API, enabling dynamic service representation through the platform.

Figure 1 shows the preliminary integration phase. Planned next steps will include:

- Personalisation and re-design of the EXCELLERAT P2 page within Waldur
- Definition of an appropriate Privacy Policy and Terms & Conditions
- Implementation of analytics features (e.g., tracking visitors and link clicks per service)
- Introduction of service grouping and filtering capabilities
- Provision of admin access for content management by the EXCELLERAT P2 team

These efforts aim to enhance the visibility, usability, and strategic value of the EXCELLERAT P2 service offerings within the broader European HPC framework.



Marketplace / Service providers / CoE EXCELLERAT P2				Hello Guest
CEP CoE EXCELLERAT P2				
Dashboard Offerings				
Offerings				
Name	Organization	Type	State	
Alya	CoE EXCELLERAT P2	Remote offering	ACTIVE	
Anubis and Marauder's Map: A Deep Dive Into Your Code Database	CoE EXCELLERAT P2	Remote offering	ACTIVE	
ARCTUR2	CoE EXCELLERAT P2	Remote offering	ACTIVE	
AVBP	CoE EXCELLERAT P2	Remote offering	ACTIVE	
CFD by ONERA, DLR and Airbus (CODA)	CoE EXCELLERAT P2	Remote offering	ACTIVE	
Co-Design Service for Engineering Applications	CoE EXCELLERAT P2	Remote offering	ACTIVE	
Dardel	CoE EXCELLERAT P2	Remote offering	ACTIVE	
Data analytics in engineering	CoE EXCELLERAT P2	Remote offering	ACTIVE	
Data management for large scale simulation result and input data	CoE EXCELLERAT P2	Remote offering	ACTIVE	
Data Management Platform	CoE EXCELLERAT P2	Remote offering	ACTIVE	

Figure 1: EXCELLERAT P2 services in Waldur Hub

7) HPC in Europe Portal

The HPC in Europe Portal [10] (previously referred as C2/ISS, the CASTIEL 2 Information Sharing System) is designed to serve as a central access point for services, resources, and communication tools across the NCC and CoEs. Its primary goal is to support collaboration and

facilitate access to HPC-related content within the European ecosystem. The portal offers public access to most content, while also supporting two types of registered users: admin users, nominated by their organisations and granted access automatically, and regular members, who register via a form and undergo a two-step approval process. Registered users can also request to join other organisations within the portal, subject to admin approval.

Several technical developments are underway. An API for exporting content such as events, news, and blog posts will be introduced in the coming months. Due to current security policies, importing external content via API is not supported. Integration efforts are ongoing with Waldur (services platform) and HPC Spectra [16] (training resources), and potential linkage with the European Open Science Cloud [17] (EOSC) is being explored.

Recent activity includes a dedicated workshop and Q&A session, resulting in the registration of three admin users and two members. Figure 2 shows the EXCELLERAT P2 homepage. Next steps will involve enriching the CoE content on the portal, populating the project's dedicated page, requesting minor functional updates (e.g., enabling links to Bluesky and Spotify), and completing full integration with Waldur and HPC Spectra.



Figure 2 : EXCELLERAT P2 profile page on HPC in Europe Portal

3 Updated Interest Groups Collaboration plan

3.1 *Definition of the new Interest Groups Member Onboarding Processes*

Based on the previous plan in Deliverable D7.5, the EXCELLERAT Interest Group Member Onboarding Process aligns closely with several strategic elements outlined for engaging, co-creating, and expanding the EXCELLERAT community.

The EXCELLERAT Interest Group Member Onboarding Process is a very important first step in a multi-stage engagement strategy. It ensures that new members are smoothly integrated into the community and sets the stage for long-term relationships, feedback loops, co-creation, and ultimately, scaling and expansion. This onboarding process fits with each element of the strategy plan defined in the deliverable D7.5 as follows:

- **Aligns with Community Development:** The onboarding process directly contributes to growing the community by verifying and integrating new members who are aligned with EXCELLERAT P2's mission and goals.
- **Supports Early Engagement:** The personalised onboarding steps ensure that communication with new members is tailored, and their needs are understood from the beginning.
- **Enables Co-Creation:** By gathering initial feedback during onboarding, EXCELLERAT lays the groundwork for collaborative activities and co-creation.
- **Facilitates Pilot Testing:** The onboarding process ensures that members are ready to participate in pilot use cases and contribute real-world feedback.
- **Drives Knowledge Sharing and Advocacy:** The onboarding process supports member engagement and creates the foundation for advocacy through knowledge-sharing sessions and success stories.
- **Supports Continuous Relationship Management:** It establishes long-term communication channels and ensures members are kept up to date on the latest developments, addressing their needs continuously.
- **Supports Scaling and Expansion:** Efficient onboarding directly impacts the scaling and expansion of EXCELLERAT P2's services by integrating new members into the process and identifying growth opportunities.

By following this comprehensive onboarding process, EXCELLERAT P2 can not only onboard new members effectively but also foster ongoing collaboration, ensuring that the services and offerings evolve to meet the needs of the community while expanding their reach and impact.

3.2 *Objective of the new Interest Group Member Onboarding Processes*

The goal of this development is to create an efficient, transparent, and engaging system that streamlines the integration of new members into the EXCELLERAT P2 Interest Group. This involves accurate data collection, improved user experience, optimised internal review process, tailored member integration, and fostering a sustainable and engaged community.

Key Tasks:

- **Data Collection and Verification:** The onboarding process begins by collecting detailed and accurate information from new members, such as their contact information and organisation details. This information must be verified to ensure its correctness and reliability.

- **User Experience Enhancement:** A major task is to design a registration process that is user-friendly, minimizing errors and confusion while ensuring that the new members feel welcomed and confident from their first interaction.
- **Optimizing Internal Review Process:** Another task is to streamline the internal review steps, enabling the team to process the applications more efficiently and make quicker decisions regarding membership acceptance.

Impacts:

- **Improved Operational Efficiency:** By automating and structuring data collection and verification, EXCELLERAT P2 can process new members quickly, saving time and resources.
- **Smoother User Experience:** With an easy-to-navigate system, new members will have a positive first impression, which can lead to greater long-term engagement and trust.
- **Faster Onboarding Process:** The optimisation of internal review steps will significantly reduce the time taken for new members to be integrated into the community.

3.3 Onboarding Processes from new Interest Group members

Organisation & Contact Information

This section is focused on gathering essential information about organisations or institutions that wish to join EXCELLERAT P2. It includes fields for the organisation's name, address, and primary contact information, with a process in place to verify the accuracy of the data.

Key Tasks: see Annex Registration Template

- **Collect Organisational Information:** The first step is to capture basic but critical data, including the organisation's name, location, contact person, and communication details (email and phone).
- **Verify Information:** Ensuring that all the provided details are correct by sending confirmation emails and verifying the contact person's information.

Impacts:

- **Efficiency in Follow-Up:** By organizing the data in a standardised format, EXCELLERAT P2 can reach out to new members quickly and efficiently, making personalised follow-ups easier.
- **Data Integrity:** Collecting this essential information up front ensures that all future communications are based on accurate and reliable data, reducing errors in the long term.

Organisation Profile & Areas of Interest

This section allows organisations to provide further details about their profile and specify their areas of interest, such as data management, simulation, HPC, AI, etc. It also gives them the option to upload their logo for better visibility within the community.

Key Tasks: see Annex Interest in Areas Template

- **Enrich Organisational Profiles:** Organisations will be asked to provide a short description of their activities, including their headquarters and any relevant core areas of expertise.

- **Identify Areas of Interest:** Organisations must select from a list of predefined areas of interest to help EXCELLERAT P2 categorise and target their communications and collaboration initiatives more effectively.

Impacts:

- **Enhanced Segmentation:** By identifying specific areas of interest, EXCELLERAT P2 can better target its communications and projects to relevant members, ensuring that members receive information and opportunities that align with their goals.
- **Brand Recognition:** The option to upload logos and provide a description helps increase visibility for organisations, fostering a sense of identity and connection within the EXCELLERAT community.

Member Intent and Collaboration

In this section, organisations indicate their reasons for joining EXCELLERAT P2 and how they plan to contribute to the community. This includes specifying the types of collaborations they are interested in (e.g., joint research, networking, etc.) and the frequency of their engagement.

Key Tasks: See Annex Membership Intent and Collaboration Questionnaire

- **Understand Member Motivations:** EXCELLERAT P2 gathers insight into why each organisation wants to join, whether it is for networking, access to research, contributing to innovations, or other reasons.
- **Clarify Contribution and Collaboration Preferences:** The task is to ask the organisations how they intend to contribute to the community, whether by participating in working groups, sharing research, or offering strategic feedback.

Impacts:

- **Informed Selection Process:** The responses help EXCELLERAT P2 assess how well each member's goals align with the community's objectives, allowing for a more informed and accurate decision-making process.
- **Optimised Engagement:** By understanding the preferred methods and frequency of contribution, EXCELLERAT P2 can plan and organise activities that cater to member preferences, ensuring higher levels of participation and satisfaction.
- **Stronger Community Building:** This section fosters a stronger sense of community by matching members based on their goals and expertise, enhancing the collaborative environment within EXCELLERAT P2.

Terms, Confidentiality, and Verification

This section ensures that all applicants agree to EXCELLERAT's terms and conditions, particularly regarding confidentiality and data protection. A verification process is also conducted to ensure that the provided information is correct.

Key Tasks: see Annex Terms, Confidentiality, and Verification

- **Collect Acknowledgment of Terms and Conditions:** Applicants must explicitly agree to the confidentiality and data protection agreements before their application can proceed.
- **Preliminary Verification:** This step involves verifying the information provided by the applicants, ensuring that all necessary documentation is correct and complete.

Impacts:

- **Legal and Data Protection Compliance:** This ensures that EXCELLERAT P2 adheres to privacy regulations and protects members' sensitive information in compliance with the law.
- **Quality Assurance:** By verifying the information upfront, the likelihood of errors or incomplete applications is minimised, streamlining the approval and onboarding process.

Submission Instructions

After completing their application, applicants are instructed to review all the provided information to ensure accuracy before submitting it. Clear submission instructions help applicants understand what happens next.

Key Tasks:

- **Final Review and Confirmation:** Applicants are required to review all the information they have entered and confirm that everything is correct before submitting their application.
- **Submit the Form:** Once reviewed, applicants can submit their registration, triggering the verification and onboarding process.

Impacts:

- **Data Accuracy and Completeness:** The final review step helps ensure that no important details are missed, reducing errors and ensuring the application is complete.
- **Streamlined Process Flow:** Clear instructions facilitate a smooth transition to the verification and review stages, reducing administrative overhead and potential delays.
- **Enhanced User Experience:** Providing transparency and setting clear expectations about next steps helps build trust and reduces confusion among applicants.

3.4 Outlook and Further Activities Plan for Interest Groups Onboarding

To finalise and implement the onboarding process, the following strategic outlook and activity plan integrates stakeholder segmentation, growth priorities, and channel tactics to ensure robust recruitment and sustained engagement of new Interest Group members:

Segment-Specific Engagement Strategies

Segment	Stakeholders	Key Actions
Promoters (High Power, High Interest)	1. Industrial End Users 2. HPC Resource Providers 3. Code Developers 10. Engineering Communities	- Co-creation workshops and pilot projects - Strategy-alignment roundtables - ROI case studies and quarterly success-story briefs
Latents (High Power, Low Interest)	6. Technology Providers 9. Industry Trade Organisations	- Executive briefings and sector forums - Publish targeted white papers and KPIs - Ads/articles in trade journals
Defenders (Low Power, High Interest)	4. ISVs 5. NCCs 7. Academics & Scholars	- Monthly webinars and newsletters - Open-access testbeds and training

		grants - Community-driven hackathons
Apathetics (Low Power, Low Interest)	12. General Public	- Social-media campaigns and public demos- STEM outreach events and citizen-science projects

Table 1: Leverage the Power/Interest grid to tailor outreach and relationship management

Phase 2 Growth Priorities To effectively engage a diverse set of stakeholders, we categorise them into four segments based on their relative power and interest.

- **Promoters (High Power / High Interest):** Through co-creation workshops, pilot projects, and ROI case studies, we deepen strategic partnerships and demonstrate tangible value—resulting in faster adoption and higher advocacy.
- **Latents (High Power / Low Interest):** Executive briefings and targeted white papers raise awareness among decision-makers, leading to new institutional endorsements and resource commitments.
- **Defenders (Low Power / High Interest):** Monthly webinars, open testbeds, and hackathons keep these advocates engaged, amplifying reach within their networks and generating a steady pipeline of use-case champions.
- **Apathetics (Low Power / Low Interest):** Social campaigns, public demos, and STEM outreach build broader visibility, indirectly supporting recruitment and improving public perception of HPC.

By tailoring tactics to each segment’s needs and motivations, we maximise engagement efficiency and ensure resources are applied where they yield the greatest strategic return.

Focus next on the green-circled segments to expand the group’s reach and impact:

- **Technology Providers (6):**
 - Tailored demos showing seamless platform integration
 - Co-development “innovation sprints” to solve real use cases
- **Industry Sector Trade Organisations (9):**
 - Convene policy-focused roundtables and position papers
 - Invite representatives to speak at EXCELLERAT webinars
- **General Public (12):**
 - Develop interactive visualisations for media outlets
 - Host “Open HPC Days” and hands-on exhibits at science festivals

Leverage Phase 1 Ambassadors

Promoters and Defenders already onboard can amplify recruitment:

- **Ambassador Program:** Invite satisfied Industrial End Users and Academics to share testimonials at webinars and in social posts.
- **Reference Cases:** Publish 2–3 detailed case studies per quarter on the EXCELLERAT portal.

- **Ecosystem Multipliers:** Encourage NCCs and Code Developers to co-market through their networks and events.

Communication & Outreach Channels

Deploy a multi-channel campaign to reach each segment effectively:

- **Webinars & Training:** Regular technical deep-dives for Independent Software Vendors (ISVs), Academics, and Code Developers.
- **Industry Days & Hackathons:** Hands-on events with Industrial End Users and Technology Providers.
- **Co-Marketing Partnerships:** Joint newsletters and event booths with NCCs and other CoEs.
- **Conference Presence:** Dedicated sessions at ISC, SC, and EU Open Science events.
- **Interactive EXCELLERAT P2 Service Portal:**
 - Live “Member Spotlight” Showcases
 - On-demand success stories, onboarding guides, and application portal link

4 The Industry-Academia Collaboration Concept through Trade Fair Participation

This section describes the participation in the Automotive Testing Expo and similar industrial events. It highlights the objectives (e.g., showcasing research results, fostering collaboration), the methodological approach (dedicated booth space, matchmaking, technological presentations), observed benefits (contacts initiated, topics discussed), and identified areas for improvement.

These fairs serve as technological showcases and neutral spaces for initiating concrete collaborations between academic research and industrial application.

Following last year's European Commission review and its associated recommendations, we decided to focus on our industry collaboration plan. For this reason, we conducted targeted questionnaires aimed at our two main audiences: researchers and industry representatives, as well as the NCCs, which can support us in fostering industrial collaboration.

In the following chapters, the results of these questionnaires have been demonstrated, which were addressed to industry stakeholders, researchers, and NCCs. These findings have been analysed in order to develop a more tailored activity, collaboration, and improvement plan that better meets the needs of each of these stakeholders.

4.1 Introduction and Strategic Context

To address Recommendation R5 from the European Commission Review Report, EXCELLERAT P2 Work Package 7 (WP7), and specifically Task 7.3, initiated a strategic effort to reinforce collaboration between academia and industry. This action aligns directly with the strategic priorities outlined in Deliverable D7.5, particularly Sections 2 (Stakeholder Engagement), 3.3 (Dissemination Strategy), and 3.4 (Community Building).

The Academic Showcase Zone through the Industry Academia Collaboration (IAC) concept was developed as a response to the identified need to increase the visibility and uptake of research outcomes in industrial environments. It also supports the EC's emphasis on improving the practical exploitation of research results and ensuring alignment with the needs of key industrial sectors such as automotive, aerospace, energy, and manufacturing. The initiative is part of a broader set of actions aimed at supporting EXCELLERAT's long-term sustainability, innovation transfer, and stakeholder engagement goals.

4.2 Conceptual Design and Objectives

The **Academic Showcase Zone** is a newly designed exhibition concept developed under WP7/Task 7.3. It serves as a structured, branded, and highly visible space within major industrial trade fairs. Its primary goal is to create a platform where academic and research institutions can present technologies, prototypes, and services developed under EXCELLERAT P2 to targeted industrial audiences.

This format facilitates direct dialogue between researchers and industry practitioners, enabling:

- **Early exposure of Key Exploitable Results (KERs)**

Presenting KERs at an early stage to industrial audiences provides an opportunity to validate and align research outputs with real-world industrial needs before final development and market deployment.

Impact on Industry Collaboration:

- **Accelerated feedback loop:** Industrial stakeholders can provide technical, regulatory, or business-related feedback early in the process, improving the relevance and applicability of the KERs.
- **Opportunity for joint development:** Industry actors may express interest in co-developing or piloting the KERs, leading to collaborative research projects or technology trials.
- **Stronger ownership and uptake:** By involving industrial partners early, the likelihood of downstream adoption or licensing increases significantly.

- **Demonstration of TRL 4–7 solutions**

By showcasing solutions in the mid-TRL range (Technology Readiness Levels 4–7), the Academic Showcase Zone bridges the gap between research and practical application, showing maturity and industry relevance.

Impact on Industry Collaboration:

- **Trust building through credibility:** Demonstrating operational prototypes or integrated test systems reassures industrial stakeholders of the feasibility and reliability of technology.
- **Entry point for Research and Development (R&D) collaborations:** Industries often seek partners for TRL 5–7 innovations that are close to deployment. This opens doors to collaborative R&D, validation, and pre-commercial deployment.
- **Informed investment and resource commitment:** Clear demonstrations help industry decision-makers justify internal investment in further joint development or adoption of the solution.

- **Co-creation of industrial use cases**

Co-creation involves working directly with industrial partners to adapt academic innovations to specific business or engineering challenges.

Impact on Industry Collaboration:

- **Tailored solutions with higher industrial relevance:** Co-developed use cases ensure alignment with sector-specific standards, workflows, and KPIs.
- **Enhanced commitment and long-term partnerships:** Co-creation fosters shared ownership, which can evolve into formal partnerships, joint ventures, or consortia for EU-funded projects.
- **Increased potential for upscaling and replication:** Successful pilots can be scaled across industrial sites or value chains, leading to broader uptake of EXCELLERAT P2's technologies.

- **Networking for future collaborations**

The Showcase Zone creates a structured environment for informal discussions and formal meetings between academia and industry.

Impact on Industry Collaboration:

- **Pipeline of collaboration opportunities:** The zone serves as a soft-entry point for potential partners who may not yet be ready for formal engagements but are open to dialogue and exploration.
- **Cross-sectoral learning and synergies:** Networking brings diverse stakeholders into contact, enabling unexpected collaborations (e.g., between aerospace and automotive).
- **Increased visibility for EXCELLERAT P2's innovation services:** Positioning EXCELLERAT P2 as a go-to partner for HPC-based solutions increases inbound interest and strategic alliances.

4.2.1 Pilot Implementation: Automotive Testing Expo 2024

Strategic Rationale for Event Selection

The **Automotive Testing Expo** was selected as the initial venue for piloting the Academic Showcase Zone due to its strong alignment with two EXCELLERAT P2 focus areas:

- **Advanced vehicle testing:** presenting a clear opportunity to position EXCELLERAT P2 as a provider of simulation-based engineering services.
- **Autonomous vehicle technologies:** allowing the demonstration of EXCELLERAT P2's capabilities in data analytics, ML and AI.

The selection process included a preparatory visit to the 2023 edition of the event, during which WP7 assessed the audience, thematic relevance, and organisational quality. Subsequently, a co-creation process was initiated with the event organisers, resulting in a jointly developed format tailored to EXCELLERAT P2's needs. The concept received formal approval from the CEO of the organizing body, who also fully sponsored the booth for the 2024 edition.

Booth Configuration and Academic Participation

The 100 m² EXCELLERAT-branded booth hosted:

- **Ten academic and research institutions**, each with an individual tabletop and screen.
- A central networking area to facilitate informal discussion and meetings.
- A prominent **LED wall** featuring branded visuals and animated use case demonstrations.

This layout maximised visibility, supported active engagement, and reinforced the professional image of EXCELLERAT P2 as a European provider of HPC-enabled engineering services.

In addition, printed flyers, business cards, and posters illustrated key technological offerings and use cases relevant to the automotive sector.

Communication, Outreach and Dissemination Results

To ensure wide visibility, Task 7.3 implemented a targeted communication campaign across social media and partner channels.

Channel	Number of Posts	Engagement Outcomes
LinkedIn	8	2,657 impressions, 19 reposts, 6 external mentions
X (Twitter)	8	4 retweets, 3 external mentions
Automotive Testing Newsletter	–	Featured in 5 editions

Table 2: Communication Channels and Metrics

The campaign successfully increased brand recognition for EXCELLERAT P2 in new industrial segments, enhanced digital engagement, and drew booth visitors. These activities supported the dual goal of dissemination and stakeholder onboarding.

The outreach campaign proved effective in broadening EXCELLERAT P2’s visibility and initiating multi-sector engagement. The balance of technical and non-technical messaging enabled both technical engineers and decision-makers to engage with the content.

Results and Stakeholder Engagement Outcomes

The Academic Showcase Zone generated measurable results in terms of industrial engagement, qualitative discussions, and potential future collaboration.

Key Results

- **97 direct contacts** were made during the three-day event.
- **74% of contacts** originated from the industrial sector (OEMs, Tier 1/Tier 2 suppliers, testing service providers).
- **9 academic/code developer stakeholders** and **5 ISV representatives** engaged with exhibitors.
- **74% of all contacts** expressed a desire for follow-up collaboration or continued engagement.
- Only 2 contacts identified themselves as direct service customers, suggesting that the primary interest lies in co-creation and joint research, rather than procurement.

Themes of Discussion

Attendees showed strong interest in the following application areas:

- HPC-powered **crash simulation and virtual prototyping**,
- **Predictive maintenance** through data analytics,
- **ML/AI for automated testing and anomaly detection**,
- **Advanced visualisation tools** (real-time displays, 3D modeling, AR).

These thematic areas correspond closely to EXCELLERAT P2’s strategic service portfolio, validating the relevance of the community’s technological offering.

The initiative succeeded in building relationships with strategic industrial actors. Based on the contact analysis, it is recommended to cluster stakeholders by engagement roles such as co-creation partner, technology integrator, or feedback source – and follow up through structured onboarding campaigns.

4.2.2 Internal Evaluation and Lessons Learned

Following the event, WP7 and Task 7.3 conducted an internal evaluation to identify areas for improvement. This evaluation covered booth layout, communication effectiveness, logistics, and data use.

Challenge	Impact	Recommended Action
Booth placement near hardware vendors	Visitor confusion regarding digital focus	Negotiate better thematic booth placement for future events
Mixed technical/business audience	Misaligned communication in some cases	Prepare audience-specific flyers, messaging, and value propositions
Lack of material storage	Logistic inefficiencies	Include dedicated storage or access to shared facilities
Static posters ineffective	Limited visitor engagement	Replace with digital/interactive displays (e.g. touchscreens)
Limited attendee profiling	Reduced targeting efficiency	Request access to event app data for enhanced profiling and outreach

Table 3: Findings and Recommendations

The internal evaluation produced actionable recommendations for the improvement of future Academic Showcase Zones. These insights will be integrated into upcoming exhibitions, including Automotive Interiors 2025 [11], NAFEM Worldwide 2026 [12], and ILA Berlin 2026 [13].

4.3 Conclusions and Future Outlook

The Academic Showcase Zone proved to be an effective mechanism for fulfilling the European Commissions (EC) Recommendation R5 and advancing EXCELLERAT P2's dissemination and exploitation strategy. It enabled direct academic-industry engagement, showcased high-impact KERs, and created strong momentum for co-development activities with European industrial stakeholders.

Planned next steps include:

- Extension of the concept to further events in **automotive, aerospace, and manufacturing** like for example **Automotive Interiors 2025, NAFEM Worldwide 2026, ILA Berlin 2026, Aero Friedrichshafen 2026** [14].
- Development of sector-specific **Use Case Flyers** and **demo videos**.
- Launch of a targeted **co-creation campaign** featuring thematic digital meetups and structured onboarding kits.

This initiative contributes directly to the EXCELLERAT P2 Centre of Excellence's **sustainability plan, stakeholder engagement strategy**, and the **broader goals of European research-to-industry transfer**.

5 The Industry-Academia Collaboration Value Proposition through questionnaires

The parallel surveys conducted among industry representatives and academic researchers as part of EXCELLERAT Phase 2 aimed to capture both perspectives on collaboration and to identify concrete enablers and barriers in working together. The purpose of this SWOT analysis is to compare insights and synthesise cross-cutting strengths, weaknesses, opportunities, and threats to inform future planning.

SWOT Element	Industry	Researchers	Insights from Comparison
Strengths	High interest in joint R&D and integration of AI, HPC, ADAS technologies	Advanced expertise in these same domains, motivation to collaborate	Complementary strengths; strong potential for co-innovation
Weaknesses	Resource limitations, limited follow-up and IP/legal concerns	Lack of real data, weak commercialisation, dissemination not adapted to industry	Both sides face structural and process-related hurdles
Opportunities	EU projects, EXCELLERAT P2 services, shared challenges (e.g., safety, AI)	Tech transfer, events, training, demonstrators, IP valorisation	Clear alignment: shared interest in HPC/AI/ADAS, training, and testing frameworks
Threats	Timing mismatch, competing solutions, unclear IP	Lack of feedback/testing, fragmentation, sustainability gaps	Strategic alignment and infrastructure (e.g., EXCELLERAT P2) can mitigate mutual risks

Table 4: Comparative SWOT Summary: Industry vs. Researcher Surveys Results

This comparative analysis confirms that although the intent to collaborate is well established on both sides, structural and operational issues persist. EXCELLERAT P2 is in a strong position to act as a bridging actor, offering tools, platforms, and coordination to mitigate these barriers.

The outcomes from this SWOT analysis will contribute to long-term impact through CASTIEL2 and WP6/WP7 collaboration planning.

To address the identified weaknesses and threats observed in both the industry and researcher surveys, EXCELLERAT P2 has developed a series of concrete, actionable solutions grouped

by thematic challenge areas. These proposals aim to mitigate the barriers to collaboration and provide practical mechanisms to support more effective engagement across the innovation ecosystem.

Challenge No.	Challenge Description	Concrete Ideas
1	Communication Gaps & Limited Follow-Up	Appoint collaboration facilitators Standardised templates Regular follow-ups
2	Lack of Real-World Data and Relevance	Data sandbox Synthetic data tools Data-sharing framework
3	Mismatched Expectations and Timelines	TRL roadmaps PoC cycles Milestone synchronisation
4	IP and Data Sharing Concerns	IP templates Legal coaching Tech transfer helpdesk
5	Low Visibility and Dissemination Impact	Video pitches Expo participation Tech snapshots
6	Skills and Knowledge Gaps	Joint training Mentoring Innovation sprints
7	Short-Term Nature of Collaborations	Fellowships Long-term challenge platforms Validation-as-a-service

Table 5: Solutions Proposal for Weaknesses and Threats - Concrete Ideas per Challenge (Industry-Academia Collaboration)

This comparative analysis confirms that although the intent to collaborate is well established on both sides, structural and operational issues persist. EXCELLERAT P2 is in a strong position to act as a bridging actor, offering tools, platforms, and coordination to mitigate these barriers.

The solutions outlined above are intended to feed directly into planning and execution strategies. By aligning actions with the actual experiences and expectations of both researchers and industry stakeholders, EXCELLERAT P2 can elaborate a roadmap to improve critical collaboration gaps and enhance the maturity and market readiness of large-scale Simulation Workflows for engineering applications.

Two distinct questionnaires were developed:

- For industry stakeholders: to gather insights on their collaboration needs, expectations towards academic partners, encountered challenges, use of digital collaboration tools, and interest in future cooperation.
- For academic researchers: to understand their target industrial sectors, previous collaboration experiences, main obstacles, and suggestions for improvement.

A comparative analysis of both sets of responses highlights convergence points, areas of friction, and opportunities for more effective collaboration models. In the following sections, the details of the survey results will be described in detail.

5.1 Academic Perspective on Industry Collaboration

5.1.1 Introduction and Objectives

This report summarises the results of a survey (see details from the survey results in the Annex “conducted during the second period among academic and research stakeholders involved in industry collaboration across Europe. The survey was initiated by the EXCELLERAT P2 Centre of Excellence in response to the strategic objectives in alignment with the **European Commission project review recommendations** (Ref. Ares (2024)4160145 - 10/06/2024) [15].

This survey directly supports several goals outlined in D7.5, especially:

- **Section 3.1** on joint communication and promotion
- **Section 3.3** on identifying shared interests and challenges
- **Section 3.4** on developing pathways from collaboration to exploitation
- Collaboration Plan with definition of common objectives and activities including milestones

It also responds to the EC recommendation for Centres of Excellence to better document and enhance their engagement mechanisms with industry, and to address obstacles that hinder technology transfer.

By complementing the industry-side survey, this initiative ensures a **bidirectional perspective**, which is key for designing effective co-development frameworks under CASTIEL 2 and EXCELLERAT P2’s WP6 and WP7.3 activities.

The European Commission highlighted the need for stronger and more structured collaboration between CoEs and industry, with a specific focus on:

- Translating academic research into industrial innovation.
- Bridging cultural and communication gaps.
- Supporting joint demonstrators and co-design activities.
- Enabling smoother technology transfer from TRL 4–6 to TRL 7–9.

This researcher survey complements the industry-side consultation and aims to gather qualitative feedback on challenges, outcomes, and future expectations from academic participants.

5.1.2 Respondent Profile

The survey received 27 responses from researchers affiliated with:

- Universities
- Applied research institutions
- Public research centres

Most respondents were active in domains such as:

- Automotive and aerospace
- Energy systems and aeronautics

Top topics of collaboration included:

- Simulation
- High Performance Data Analytics
- Machine Learning and Artificial Intelligence

5.1.3 Collaboration Experience

- **Types of Industry Partners:** Large companies/Original Equipment Manufacturers (OEMs) and Small and Medium-sized Enterprises (SMEs)

Nature of Collaboration:

- Joint R&D projects
- Contract research
- Consulting or expert support
- Student theses/internships

Collaboration was often driven by mutual interest in innovation, joint funding opportunities, and access to real-world use cases.

5.1.4 Challenges and Outcomes

Key Challenges Faced:

Challenge	Frequency
Confidentiality/IP issues	High
Misaligned expectations or timelines	High
Limited feedback from industry	Medium
Lack of continuity/follow-up	Medium
Focus on short-term results	Noted

These reflect the need for:

- Better alignment of project goals
- Flexible contractual frameworks
- Improved recognition of academic contributions

Concrete Outcomes:

Outcome	Reported By
Scientific publications	Many
Technology transfer or patents	Several
Industry-funded follow-up projects	Some
Success story dissemination	Noted
Long-term partnerships	Emerging

Overall, experiences were mostly rated as **positive** or **very positive**.

5.1.5 Future Collaboration Intentions and Needs

Most researchers are open to collaborating again, though some would require improvements:

- Clearer project expectations and administrative support
- Flexible IP arrangements and simplified legal terms
- Targeted funding calls for academia-industry cooperation
- Stronger feedback mechanisms and evaluation of joint outcomes

Suggestions to improve future cooperation:

- More dedicated funding programs and matchmaking platforms
- Shared roadmaps to align research and industry objectives
- Platforms for showcasing joint results and peer-learning

5.1.6 Conclusion and Next Steps

The researchers' survey confirms that while collaboration with industry is already active and appreciated, significant gaps remain in legal processes, feedback loops, and long-term value recognition.

Area	What Researchers Want
Collaboration	Real data access, industrial pilots, joint proposal writing
Support	IP guidance, legal training, matchmaking with companies
Feedback	Industrial input on research relevance and potential
Support	Business development and technology transfer skills
Dissemination	Help in showcasing results at fairs, expos, webinars

Table 6: Researchers' survey summary

Next steps could include:

- Strengthening guidance and templates for contract/IP support
- Launching co-design workshops for shared road mapping

- Including researcher feedback in the definition of EXCELLERAT's industrial service models

These actions will help better align academic and industrial innovation agendas and fulfil EXCELLERAT P2's mission of accelerating HPC-based engineering in European industry.

5.2 Industry Perspective on Academic Collaboration

5.2.1 Introduction and Objectives

This report presents the findings of a survey conducted in the second period among industrial stakeholders across Europe. The survey was launched by the EXCELLERAT P2 Centre of Excellence and aimed to:

- Assess industry experience with academia-led collaboration.
- Identify key barriers and enablers in industrial uptake of early-stage technologies (TRL 4–6).
- Collect input to refine EXCELLERAT P2's service offerings and engagement strategy.

The initiative addresses strategic goals outlined in implements recommendations from the European Commission review (Ref. Ares (2024)4160145 - 10/06/2024), which called for:

- More direct engagement with industry.
- Structured documentation of collaboration outcomes.
- Support for knowledge transfer and co-development mechanisms.

This survey supports multiple sections of Deliverable D7.5:

- **Section 3.2:** Identifying key stakeholders and industrial segments
- **Section 3.3:** Understanding joint interests and cooperation formats
- **Section 3.4:** Building pathways for structured pilot activities and co-development

It also directly implements EC review recommendations, especially those highlighting the need for EXCELLERAT to proactively engage with industry independently of CASTIEL, due to CASTIEL's limited resources for national or sector-specific outreach.

The results will guide updates to WP6 and WP7.3 planning for the next 12 months.

The survey complements a parallel consultation with researchers to establish a full picture of collaboration dynamics within the EXCELLERAT ecosystem.

5.2.2 Respondent Profile

The survey was anonymous and included a multi-choice and qualitative questions. 24 responses were collected from companies active in:

- Automotive and manufacturing
- Aeronautics and energy

Company types included:

- SMEs (50%)
- Large companies/OEMs (38%)
- Industry associations or technology platforms (12%)

Respondents had varying levels of past collaboration with academia and represented technical management, innovation, and R&D roles.

5.2.3 Collaboration Experience

Most respondents (79%) had already collaborated with research organisations, through formats such as:

- Joint R&D projects (67%)
- Contract research (29%)
- Consulting/expert exchange (33%)

Key collaboration goals included:

- Access to emerging technologies (AI, simulation, HPC)
- Innovation acceleration and digital transformation
- Development of demonstrators or product features

The top technical topics of interest were:

- Simulation workflows
- AI/machine learning
- HPC and hybrid cloud environments

5.2.4 Challenges and Outcomes

Main Barriers

Challenge	Frequency
Misaligned timelines and expectations	High
Communication or cultural gaps	High
IP/legal complexities	Medium
Lack of visibility of academic capabilities	Medium
Unclear business outcomes	Medium

Reported Outcomes

Outcome	Reported By
New product or service ideas	Multiple
Process or workflow improvements	Frequent
Technical publications or joint papers	Some
Upskilling or internal knowledge growth	Noted
Increased access to funding or calls	Noted

Despite barriers, most respondents rated the collaboration experience as positive when supported by clear goals and structured coordination.

5.2.5 Lessons Learned and Expectations

Respondents provided several insights to improve future collaboration:

- Clearly defined objectives and scope are essential.
- Faster, less bureaucratic processes are needed.
- Industry partners value prototypes and demonstrators more than academic deliverables.
- There is a need for flexible and ready-to-use IP frameworks.

5.2.6 Expectations for Future Engagement

- Access to ready-to-test tools or use cases
- More matchmaking platforms to identify researchers
- Shared timelines and co-ownership models
- Support for grant writing and pilot activities

5.2.7 Conclusions and Next Steps

This survey confirms the relevance and potential of EXCELLERAT P2 in enabling industry-academia collaboration, especially for data-driven engineering challenges.

Area	What Industry Wants
Technology	HPC, AI-driven simulation, interoperable software, real-time analytics
Support	IP clarity, legal templates, technical documentation
Training	Focused sessions on code optimisation, containerisation, AI integration
Collaboration Model	Co-development of tools, pilot use cases, short-term sprints
Outreach	Increased visibility of research tools at expos and industry events

Table 7: Industry's survey summary

Next steps could include:

- Designing co-creation workshops focused on simulation and HPC workflows.
- Developing ready-to-use templates for legal, IP, and business coordination.
- Supporting matchmaking events and demonstrator-driven interactions.

EXCELLERAT P2 will continue to coordinate directly with NCCs and industrial clusters to bridge technical excellence with practical, scalable industrial application.

6 Industry Academia Collaboration through NCCs

This section presents how NCCs are being activated as strategic intermediaries for developing long-term, sustainable industry collaborations in various European countries.

Actions include: collecting the NCCs' specific objectives, identifying key industrial topics per country, and nominating thematic champions responsible for driving cooperation activities.

These efforts support a decentralised but coordinated strategy for reinforcing industry engagement through local networks and expertise.

6.1 Introduction and Objectives

In response to the recommendations received in the project review report (Ref. Ares (2024)4160145 – 10/06/2024), and specifically recommendation [R5] concerning the exploration of synergies between EXCELLERAT P2 and the National Competence Centres (NCCs), a survey (see details in Annex “Survey to boost collaboration between EXCELLERAT P2 and NCC Industry Champions”) was designed as a targeted action to address the need for stronger collaboration and knowledge exchange to boost the collaboration between EXCELLERAT P2, NCCs and the industry. The review acknowledged that NCCs are uniquely positioned to act as translators between the research world of the Centres of Excellence like EXCELLERAT P2 and industry stakeholders, making them critical actors for market uptake and community expansion.

Additionally, the review explicitly recognised that CASTIEL 2, while playing a valuable coordination role, lacks sufficient resources to fully support the detailed, country-specific industry engagement work required. As such, it was recommended that EXCELLERAT P2 take a **proactive and direct role** in engaging with NCCs to complement CASTIEL 2's coordination efforts. This survey marks an initial step in that direction.

As described in Deliverable D7.5 “Collaboration Plan with definition of common objectives and activities including milestones”, one of EXCELLERAT P2's strategic goals is to reinforce its coordination with NCCs to facilitate the transfer and pilot deployment of early-stage technologies (TRL 4–6) in industrial contexts. This aligns with WP6 (Business Development) and WP7.3 (Ecosystem Collaboration), which aim to understand the market potential, develop collaboration frameworks, and promote adoption of key exploitable results through trusted intermediaries.

More specifically, this survey addresses the following components from D7.5:

- **Section 3.1 (Joint Communication Activities):** The survey was promoted as part of a communication effort to raise awareness about EXCELLERAT P2 services and gather feedback from NCCs.
- **Section 3.2 (Engagement of NCC Industry Champions):** The survey directly targeted Industry Champions to evaluate their current involvement and willingness to contribute.
- **Section 3.3 (Identification of Shared Interests and Challenges):** The collected data maps overlapping technological interests and identifies sector-specific challenges in engaging with TRL 4–6 tools.
- **Section 3.5 (Establishment of Collaboration Milestones):** The results of this survey will be used to refine future collaboration milestones and propose a more structured collaboration framework in the upcoming D7.6.

Therefore, the objective of this survey was to:

- Understand the current level of NCC engagement with EXCELLERAT P2.
- Identify industrial sectors most open to testing early-stage tools.
- Gather feedback on relevant EXCELLERAT P2 topics.
- Pinpoint challenges and needs in facilitating industry collaboration.

The findings directly support CASTIEL 2 efforts, WP6 planning, and the refinement of joint milestones with NCCs. Furthermore, they provide concrete evidence for implementing the business development and collaboration mechanisms suggested in the EC review recommendations, and for strengthening EXCELLERAT P2's independent outreach capacities in response to CASTIEL 2's resource constraints.

6.2 Respondent Profile

The survey consists of 11 questions with multichoice responses which could be done in less than 5 minutes to encourage the Industry Champions from NCCs to respond and based on the Value Proposition Canvas Methodology asking for jobs, pains and gains. It collected responses from 12 NCCs representing a diverse cross-section of the European HPC ecosystem. These NCCs are based in Germany, Croatia, Belgium, Sweden, Slovenia, Poland, North Macedonia, Italy, Latvia, Estonia, and Czechia. The respondents were designated Industry Champions or their nominated substitutes, with varying degrees of experience and involvement in EXCELLERAT-related activities.

6.3 Summary of Key Findings

This section highlights the core insights drawn from the survey and relates them to EXCELLERAT P2's overall mission of supporting engineering applications through HPC-enabled solutions.

Relevant Industry Sectors

Respondents identified key industrial sectors perceived as most open to adopting early-stage HPC technologies supported by EXCELLERAT P2:

- Aerospace
- Automotive
- Manufacturing
- Energy

Some NCCs stressed that sectoral openness often depends on the maturity level of each company and their familiarity with HPC, rather than on the sector alone. The findings confirm that EXCELLERAT P2's offering is relevant to a wide array of strategic sectors, with a particular emphasis on data-driven, simulation-heavy applications.

Relevant EXCELLERAT P2 Topics

The most relevant technological themes for industrial outreach efforts include:

- HPC-driven simulation workflows
- AI and digital twins for predictive maintenance
- High-Performance Data Analytics and Machine Learning

- Training and best practices for HPC adoption

There is high alignment between EXCELLERAT P2's technological scope and the digital innovation needs of industry across Europe.

Level of Engagement

Survey results indicate that:

- Over 50% of NCCs are **passively engaged**, constrained by resource limitations.
- Several are **moderately engaged**, participating in selected events or discussions.
- Some are **interested in scaling up their involvement**, provided they receive clearer guidance and targeted support.

Strengthening engagement mechanisms and clarifying mutual expectations could help activate currently passive stakeholders.

Dedicated Industry Contact

- Most NCCs are **open to appointing a dedicated industry liaison** for EXCELLERAT.
- Some prefer **clearer definitions of roles and expected benefits** before proceeding.

There is a willingness to strengthen coordination with EXCELLERAT P2, but structured frameworks and onboarding materials are needed.

Challenges for Industry Adoption (TRL 4–6)

The following table summarises the most cited barriers to the industrial uptake of early-stage HPC technologies:

Challenge	Occurrence
Lack of time/resources to support (TRL 4–6) collaborations	Very High
Industry preference for mature (TRL 7–9) technologies	High
Limited access to testing/pilot environments and funding	High
Low awareness of EXCELLERAT or HPC benefits	Medium
Lack of clear IPR and business models	Medium

The data underlines the necessity of reducing the complexity and cost of piloting new technologies while boosting communication and funding support. These concerns echo the barriers listed in the collaboration plan from D7.5, particularly around knowledge transfer and the need for simplified frameworks.

6.4 Recommended Support from EXCELLERAT P2

To address these barriers, NCCs proposed the following support mechanisms:

- Develop and disseminate **business-oriented materials** (e.g., white papers, ROI-focused use cases)
- **Co-organise pilot workshops** that involve industry stakeholders and decision-makers
- Provide **targeted training** for NCCs on communicating HPC benefits effectively
- Define **structured engagement models** for testing and validating TRL 4–6 tools
- Develop a **funding roadmap** to support industry participation in technology adoption

Practical, business-aware, and co-developed tools are preferred to drive adoption and visibility. These recommendations align with the collaboration plan's commitment to joint dissemination and knowledge exchange activities.

6.4.1 Preferred Communication Channels

Respondents indicated that the most effective communication formats are:

- Dedicated mailing lists with structured, regular updates
- Industry-specific newsletters with success stories and funding tips
- Webinars and expert panels for thematic knowledge exchange
- Bilateral or group meetings between EXCELLERAT P2 and NCCs

Ongoing engagement should combine structured digital updates with interactive, topic-driven formats. These preferences support the goals in D7.5 to enhance regularity, relevance, and clarity in internal communication.

6.4.2 Recommendations for Improvement

To foster stronger, more consistent collaboration between EXCELLERAT P2 and NCCs, we recommend:

Short-term actions:

- Create clear descriptions of the NCC industry liaison role
- Prepare reusable slide decks and communication templates for industry outreach
- Offer direct logistical support for national/regional events

Medium-term actions:

- Establish a **CoE–NCC coordination group** under CASTIEL 2 with enough resources and competences for industry alignment
- Organise thematic workshops on sector-specific TRL 4–6 applications
- Create an expert advisory board to support NCCs with market and IP issues

Coordinated tools, guidance, and shared goals will help transition from individual actions to collective impact. These proposed steps support and operationalise the milestones and collaboration strategy described in D7.5.

6.5 Follow-Up and Support for CASTIEL 2

A strong majority (10 out of 12 NCCs) expressed interest in participating in follow-up meetings. These meetings offer a valuable opportunity to:

- Refine joint strategies for industry engagement
- Exchange best practices across NCCs and CoEs
- Define a roadmap with indicators that can be integrated into CASTIEL 2 activities

7 Conclusion and Recommendations

The current deliverable outlines EXCELLERAT P2's key achievements in fostering collaboration, advancing HPC technologies, and improving service visibility across the European HPC ecosystem.

Notable technical progress includes the integration of CI/CD workflows into the Alya codebase in collaboration with CASTIEL 2, and the joint Project Group with Plasma-PEPSC and HiDALGO2 focused on GPU porting and code optimisation. Engagements at ISC High Performance 2024 and the EuroHPC JU User Day further strengthened the project's visibility and influence within the HPC community.

Workshops such as the joint event with EuroCC Italy demonstrated the project's commitment to applying Machine Learning in engineering, while integration with platforms like the Waldur HPC Service Hub and HPC in Europe Portal enhanced service accessibility and collaboration across CoEs and NCCs.

In parallel, the Interest Group Onboarding Process was fully restructured to enhance engagement, segmentation, and co-creation, laying the foundation for a sustainable and scalable stakeholder ecosystem.

One of the most impactful actions was the Academic Showcase Zone piloted at the Automotive Testing Expo 2024. This initiative validated the relevance of EXCELLERAT P2's offerings to industry stakeholders and generated concrete follow-up opportunities for joint development.

Complementary surveys from academic, industry, and NCC stakeholders delivered valuable insight into collaboration challenges and solutions. These were translated into action points, ranging from legal support to training and communication strategies, strengthening EXCELLERAT P2's role as a connector between research and industry.

Looking ahead, EXCELLERAT P2 will continue to expand its technical capabilities and collaborative efforts, with a focus on performance, usability, and innovation in engineering-driven HPC applications. The initiatives described in this deliverable are instrumental to supporting the project's sustainability, contributing to European competitiveness, and accelerating the uptake of HPC-enabled engineering workflows.

8 References

- [1] „EuroCC Access,“ [Online]. Available: <https://www.eurocc-access.eu/event/code-of-the-month-vol-1-avbp-excellerat-coe/>.
- [2] „OpenFOAM Workshop,“ [Online]. Available: <https://openfoamworkshop.org/>.
- [3] <https://alya.gitlab.bsc.es/alya/ci-cd/squidient>
- [4] <https://www.horizonresultsbooster.eu/>
- [5] <https://www.excellerat.eu/excellerat-p2-shines-at-isc-high-performance-2024/>
- [6] <https://woiv.gitlab.io/woiv24/>
- [7] https://eurohpc-ju.europa.eu/media-events/events/eurohpc-user-day-2024-2024-10-22_en
- [8] <https://www.excellerat.eu/advancing-engineering-insights-through-machine-learning-excellerat-p2-and-eurocc-italy-workshop-in-bologna/>
- [9] <https://waldur.com/>
- [10] <https://hpc-portal.eu/>
- [11] <https://www.automotive-interiors-expo.com/en/>
- [12] <https://www.nafems.org/>
- [13] <https://www.ila-berlin.de/en>
- [14] <https://www.aero-expo.com/>
- [15] EUR-Lex : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=PI_COM%3AAres%282024%29331606&qid=1749196816337
- [16] <https://www.hpc-spectra.eu/>
- [17] <https://open-science-cloud.ec.europa.eu/>

Annexes

Onboarding Processes for New Interest Group Members

Registration Template

- **Organisation/Institution Name:**

Field Type: Text

Instructions: Enter the full legal name of your organisation or institution.

- **Stakeholders:**

Field Type: Text

Instructions: Enter the stakeholder type

- Industry (SMEs, Mid-Cap, Big-Cap, Start Up)
- Academia (University Research Centre)
- Code & Software Developer
- Expert (Engineering Consultancy)
- Industry Association
- HPC Providers (On-premises; HPC Cloud)
- HPC Technologies Providers (HPC Hardware and Software Providers)

- **Organisation Headquarters Address:**

Field Type: Text

Instructions: Provide the complete address, including street, city, postal code, and country.

- **Organisation Head-office Address in Europe:**

Field Type: Text

Instructions: Provide the complete address, including street, city, postal code, and country.

- **Primary Contact Person:**

Field Type: Text

Instructions: Provide the full name of the primary contact responsible for this registration.

- **Contact Email Address:**

Field Type: Email

Instructions: Enter a valid email address for correspondence and verification.

- **Contact Phone Number (Optional):**

Field Type: Text

Instructions: Provide a phone number in case additional contact is required.

Interest in Areas Template

- **Organisation Logo:**

Field Type: File Upload (Image – JPEG, PNG, etc.)

Instructions: Upload a high-quality image of your organisation's logo (if available).

- **Areas of Interest:**

Field Type: Checkbox/Multi-select

Instructions: Select all topics relevant to your interests from the list below.

- Data Management
- Data Analytics
- Machine Learning
- Artificial Intelligence
- Simulation
- High Performance Computing (HPC)
- Cloud Technologies

- Visualisation
- Others (please specify): [Text Field]
- **Industrial Sectors:**
 - Automotive
 - Aeronautics
 - Aerospace
 - Energy
 - Manufacturing.
 - Others (please specify): [Text Field]
- **Brief Organisation Description:**

Field Type: presentation download

Instructions: Provide a short description of your organisation (Head office in Europe, number of employees, its core activities, and how it engages with topics related to EXCELLERAT's focus areas)

Membership Intent and Collaboration Questionnaire

- **Motivation for Joining the Interest Group:**

Field Type: Multiple-Choice (Select all that apply)

Question: **What are your primary motivations for joining the EXCELLERAT Interest Group?**

 - Expanding my professional network
 - Collaborating on innovative research projects
 - Gaining access to industry insights and best practice
 - Contributing to the development of cutting-edge technologies
 - Enhancing visibility for my organisation
 - Other (please specify): _____
- **Expected Contribution & Collaboration:**

Field Type: Multiple-Choice (Select all that apply)

Question: **How do you plan to contribute to the EXCELLERAT community?**

 - Participating in working groups and committees
 - Sharing case studies or success stories
 - Presenting research findings or project updates
 - Supporting pilot projects or collaborative initiatives
 - Providing strategic feedback and insights
 - Other (please specify): _____
- **Preferred Collaboration Type:**

Field Type: Multiple-Choice (Select one)

Question: **What type of collaboration are you most interested in?**

 - Joint research projects and innovation initiatives
 - Networking events and professional gatherings
 - Workshops and training sessions
 - Virtual roundtable discussions
 - Mentorship and advisory roles
 - A combination of the above
- **Engagement Frequency:**

Field Type: Multiple-Choice (Select one)

Question: **How frequently would you be willing to engage with the EXCELLERAT community?**

- Weekly
- Bi-weekly
- Monthly
- Quarterly
- As needed / Occasionally

Template Terms, Confidentiality, and Verification

- **Confidentiality & Data Protection Agreement:**

Field Type: Checkbox (I Agree)

Instructions: Confirm that you have read, understood, and agree to the confidentiality and data protection terms provided by EXCELLERAT.

[] I agree to the terms and conditions.

- **Verification Process:**

Field Type: Informational Text

Instructions: Upon submitting this form, you will receive an email confirmation. An administrative review will follow to verify the provided information. Additional documentation or clarification may be requested if necessary.

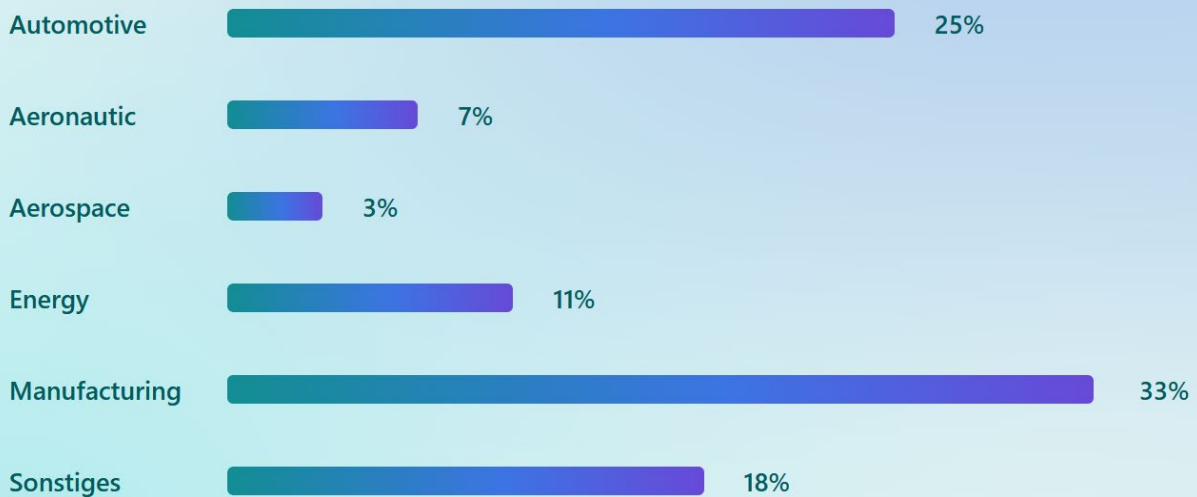
Survey Questionnaires

Industry Academia Collaboration Survey Results from the Industry Perspective

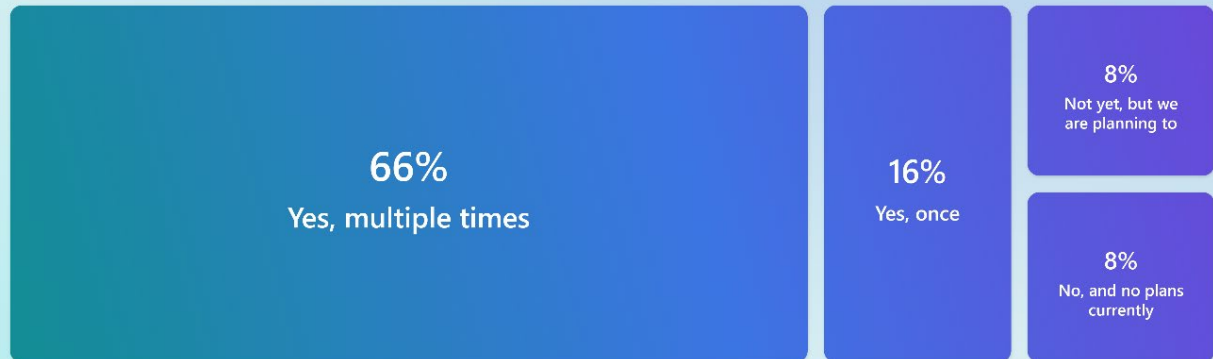
What types of industry company are you ?



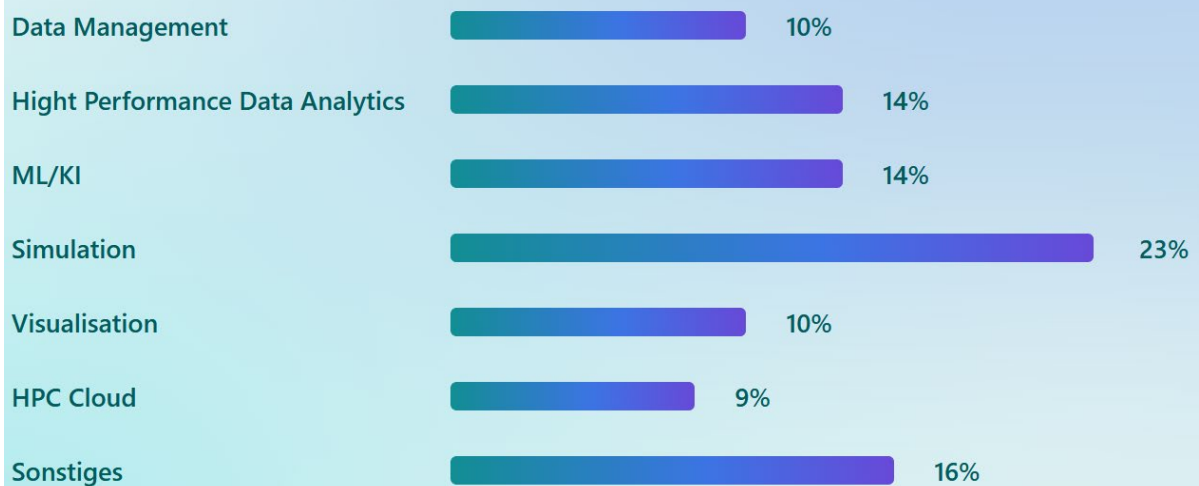
What are your main industrial sector ? (Multiple answers possible)



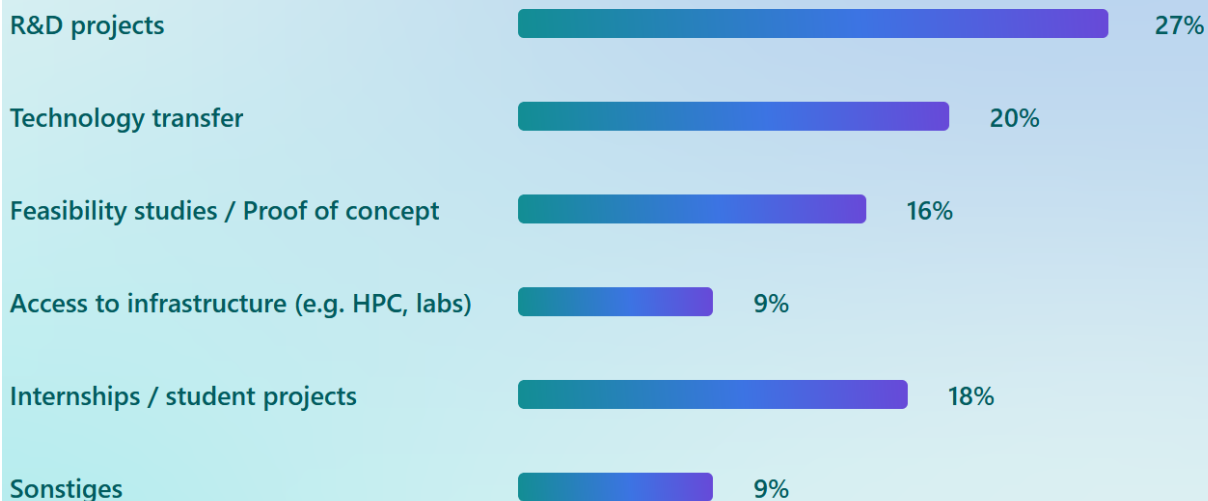
Has your company already collaborated with a university or a research center?



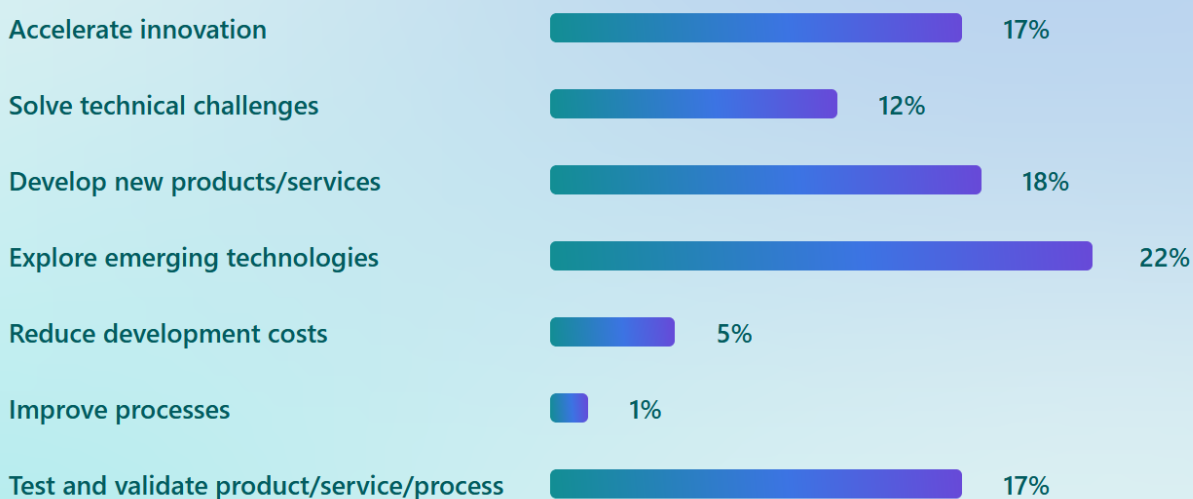
For which topics have you collaborated with researchers? (Multiple answers possible)



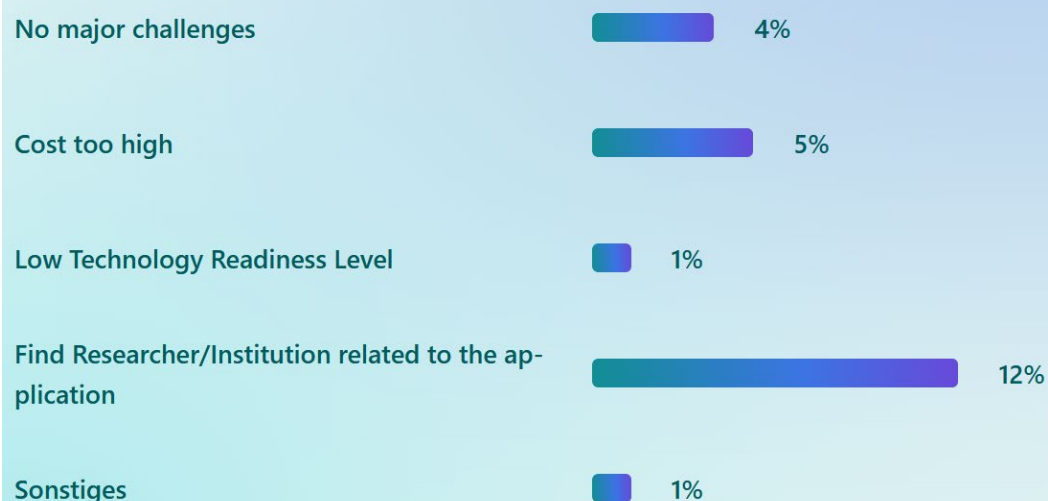
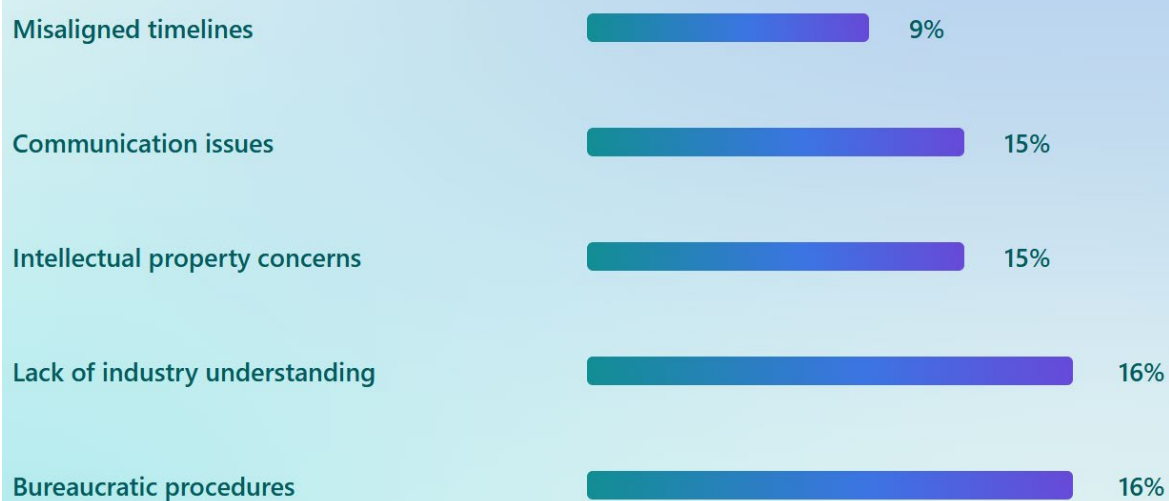
In which areas have you collaborated with academic partners? (Multiple answers possible)



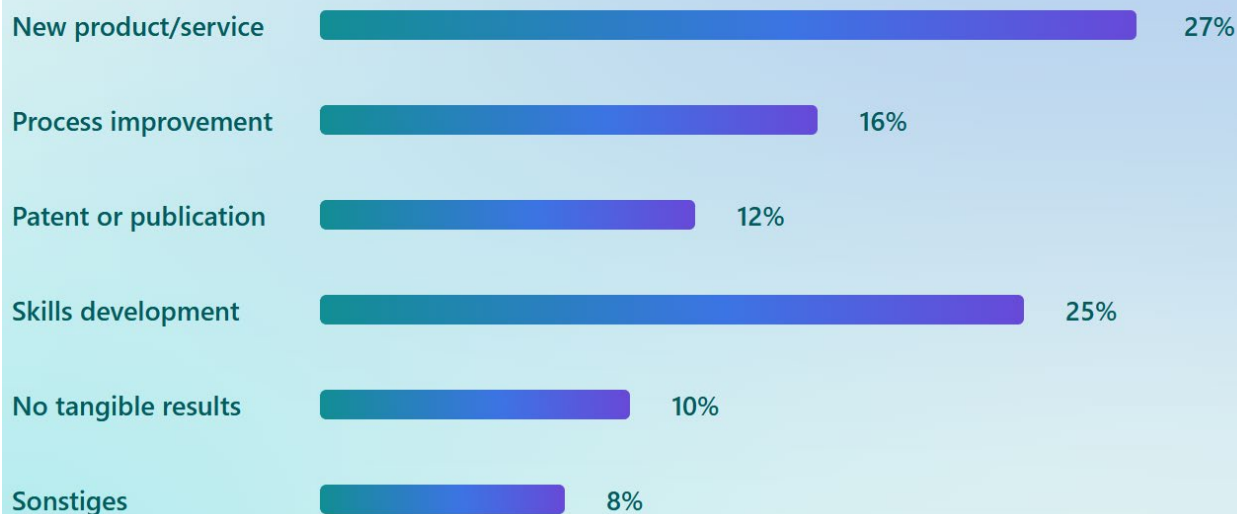
What were the main goals of the collaboration? (Multiple answers possible)



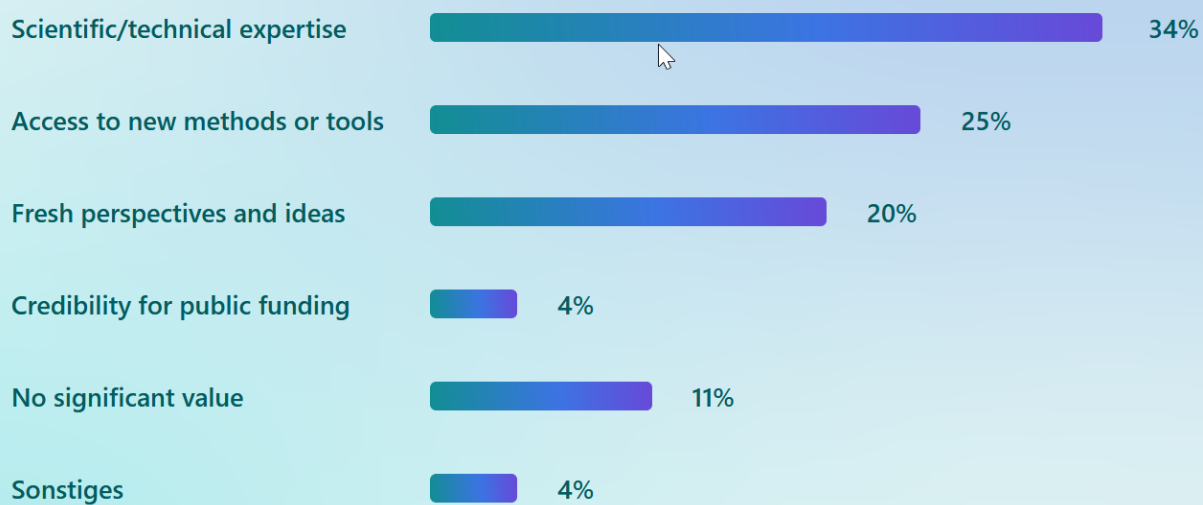
What challenges did you face when working with academic partners? (Multiple answers possible)



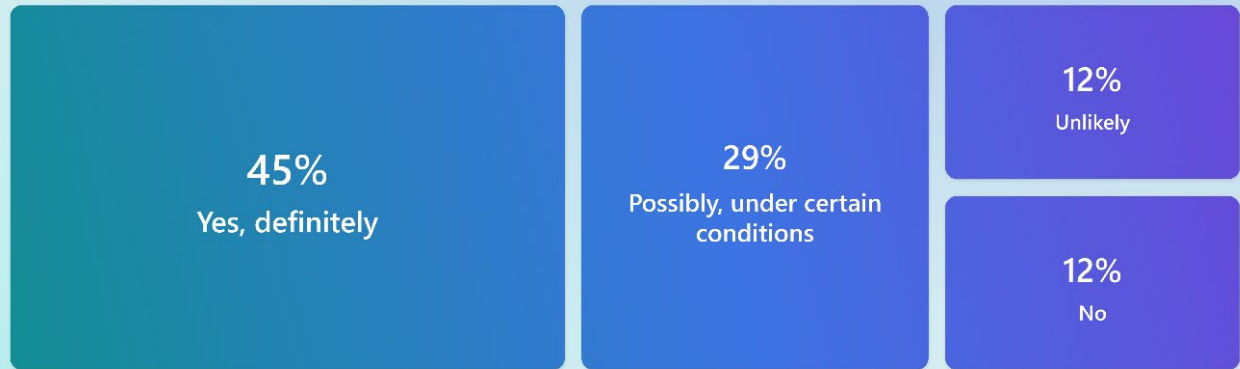
What concrete outcomes did the collaboration produce? (Multiple answers possible)



What value did the researchers bring to your company? (Multiple answers possible)



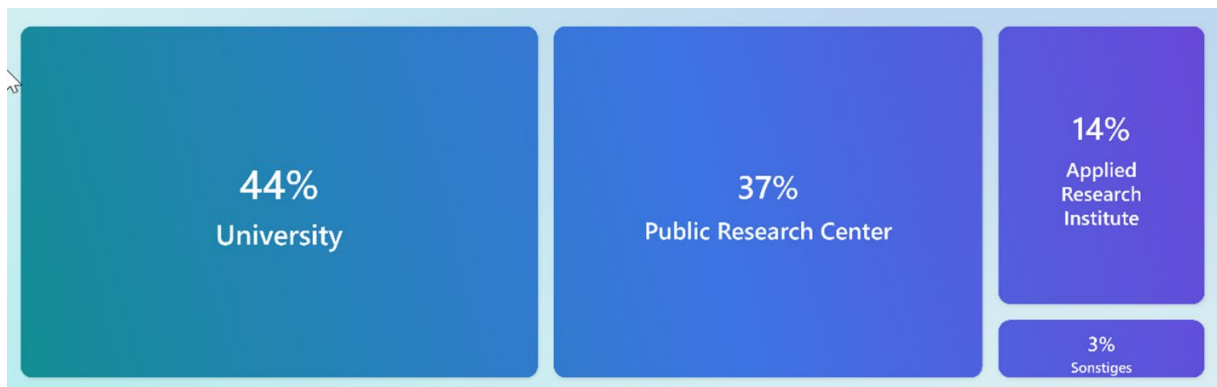
Would you collaborate again with a university or research center?



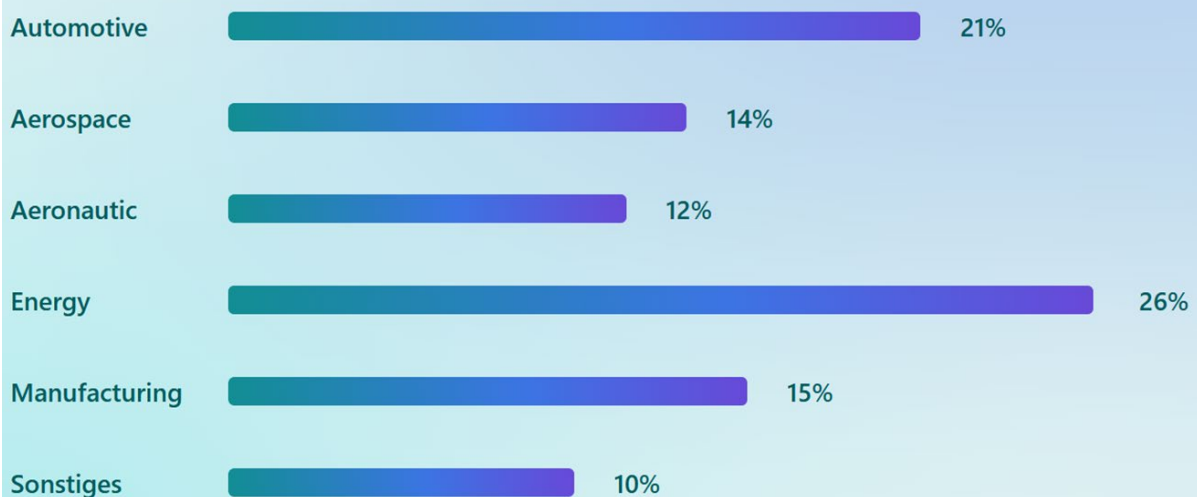
What would make future collaborations more successful? (Multiple answers possible)



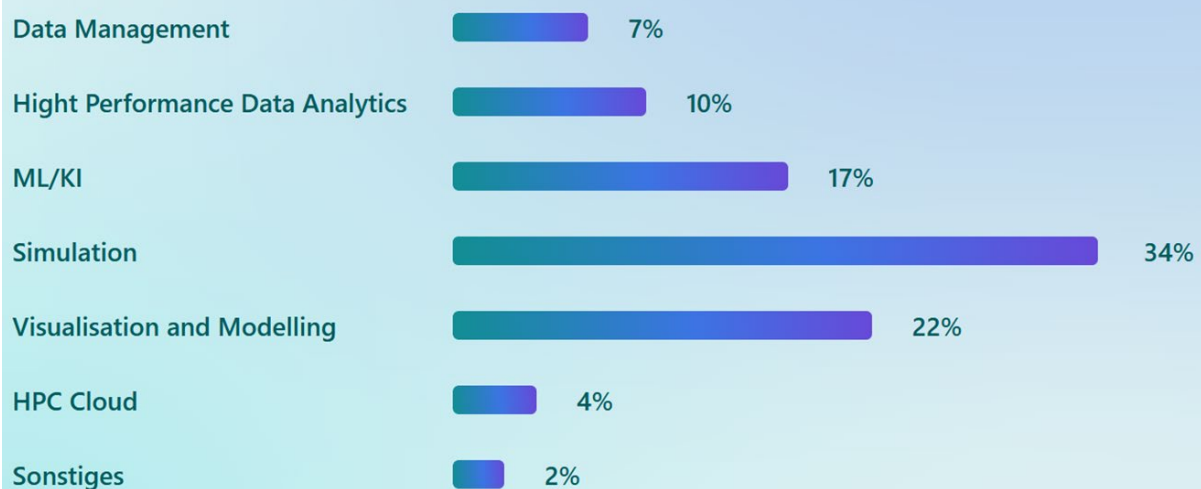
Industry Academia Collaboration Survey Results from the Researchers Perspective



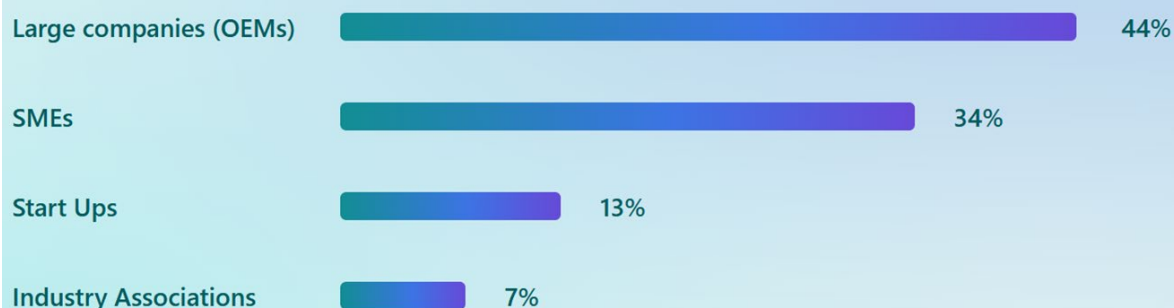
In which application domains have you collaborated with industry? (Multiple answers possible)



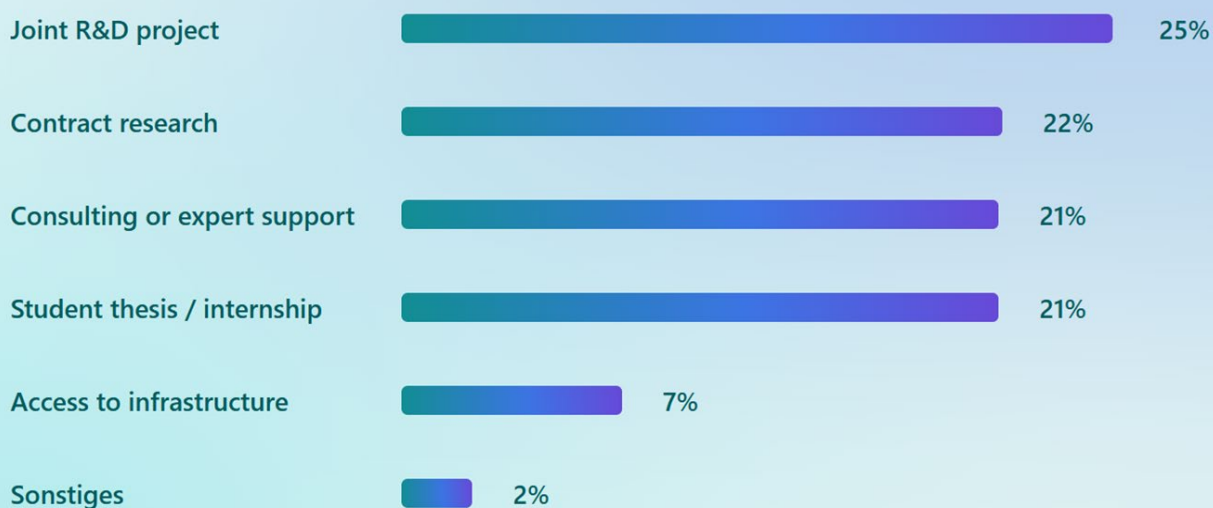
For which topics have you collaborated with Industry? (Multiple answers possible)



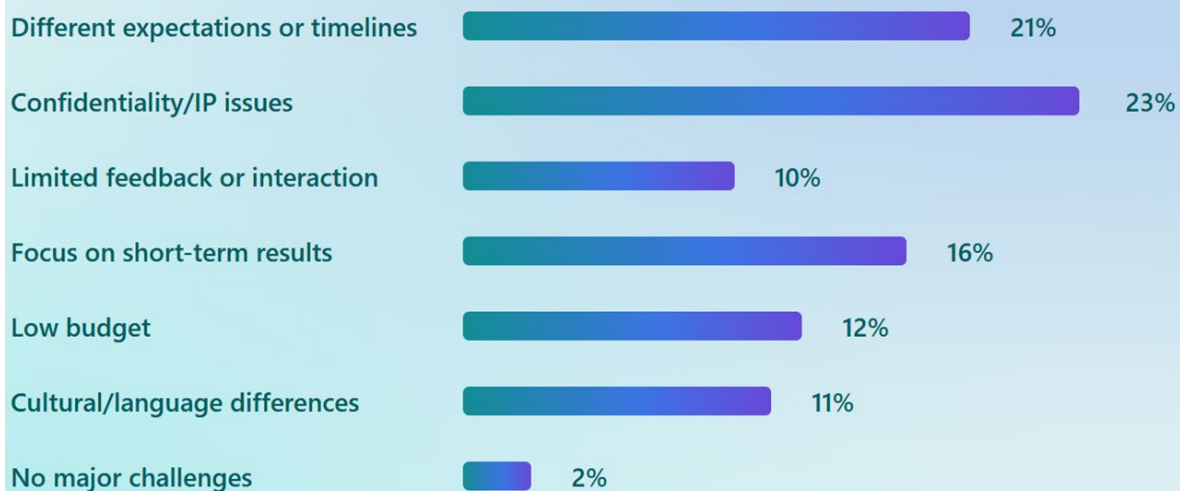
What types of industry partners have you worked with? (Multiple answers possible)



What was the nature of the collaboration? (Multiple answers possible)



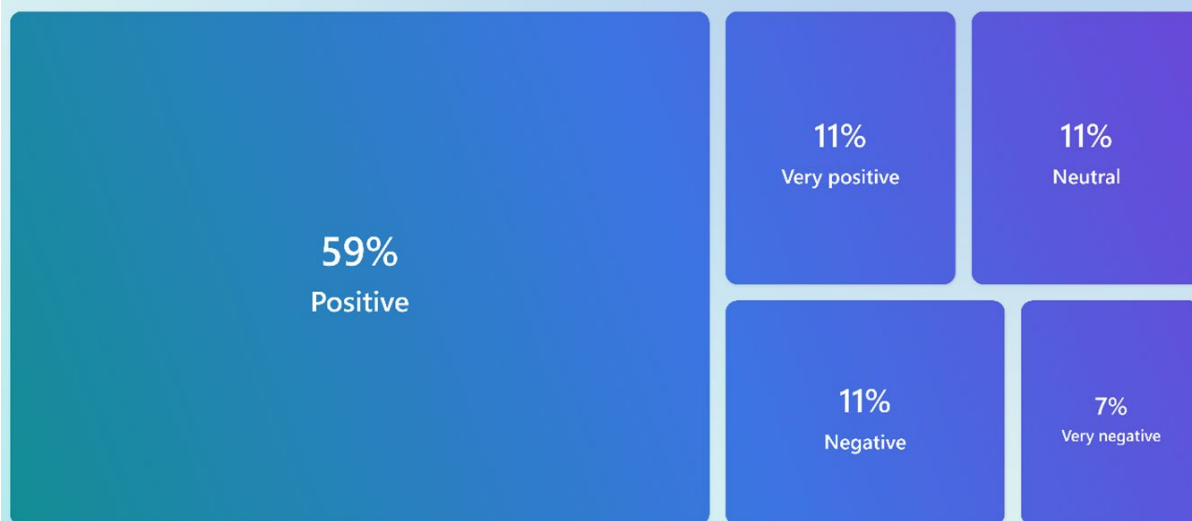
What were the key challenges you faced in working with industry? (Multiple answers possible)



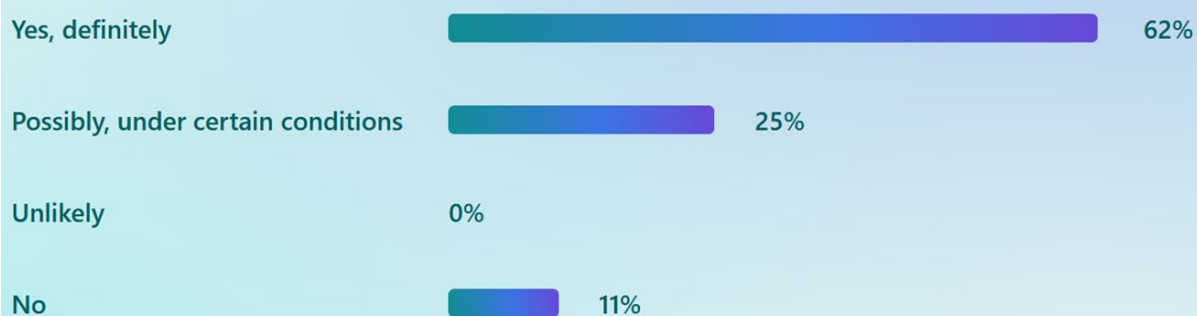
What concrete outcomes resulted from the collaboration? (Multiple answers possible)



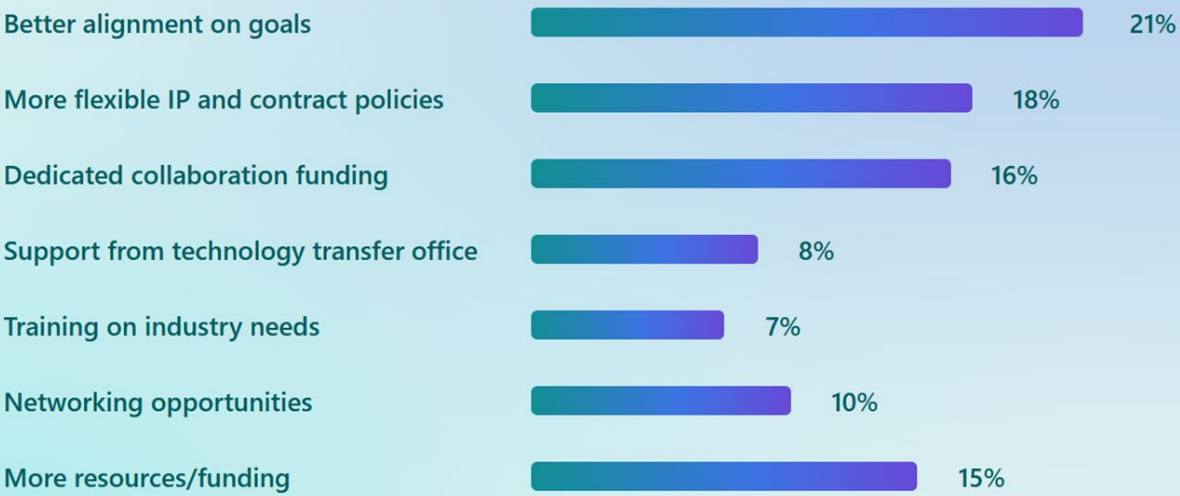
How would you rate your overall experience collaborating with industry? (Multiple answers possible)



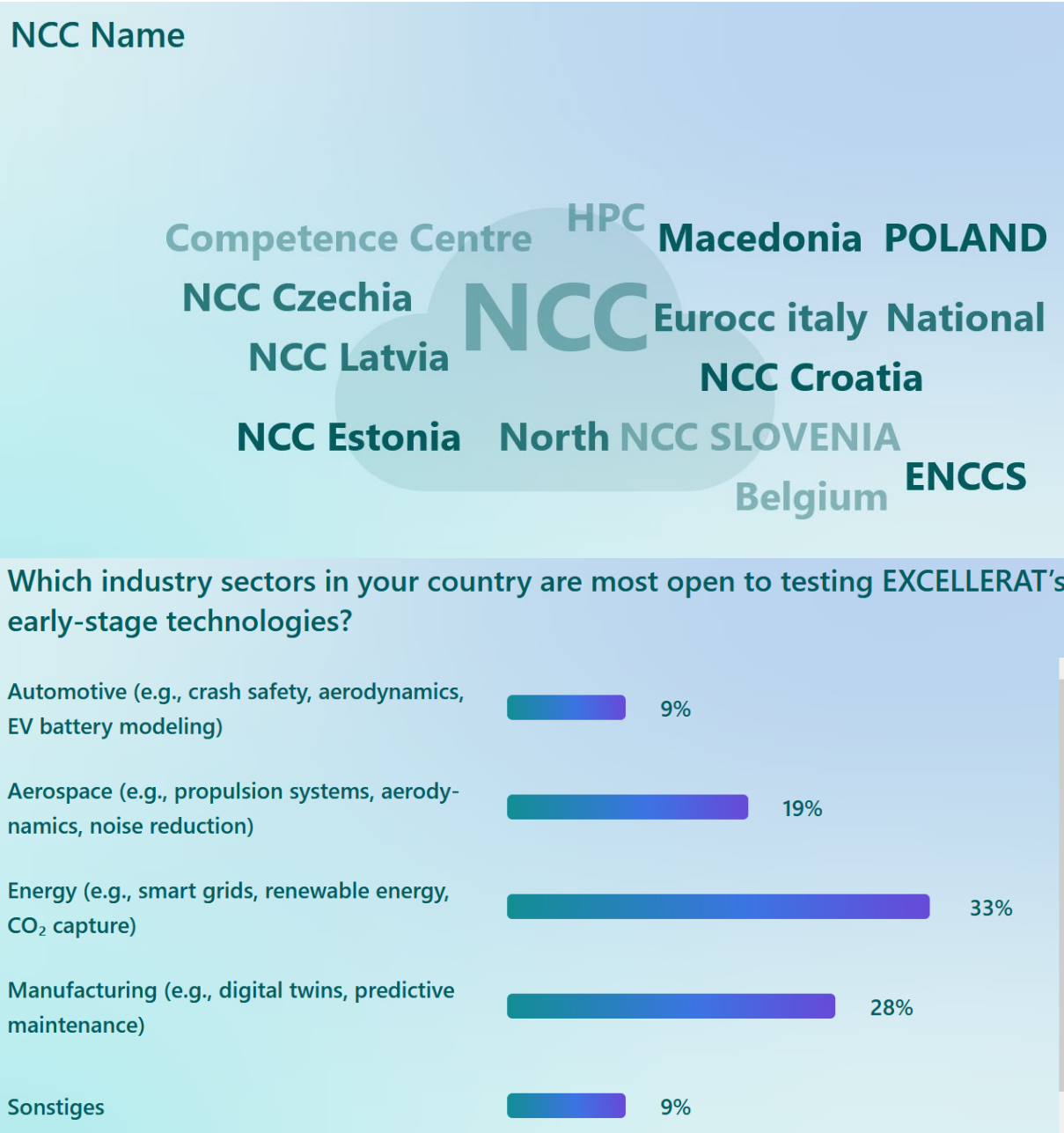
Would you collaborate again with an industrial partner?



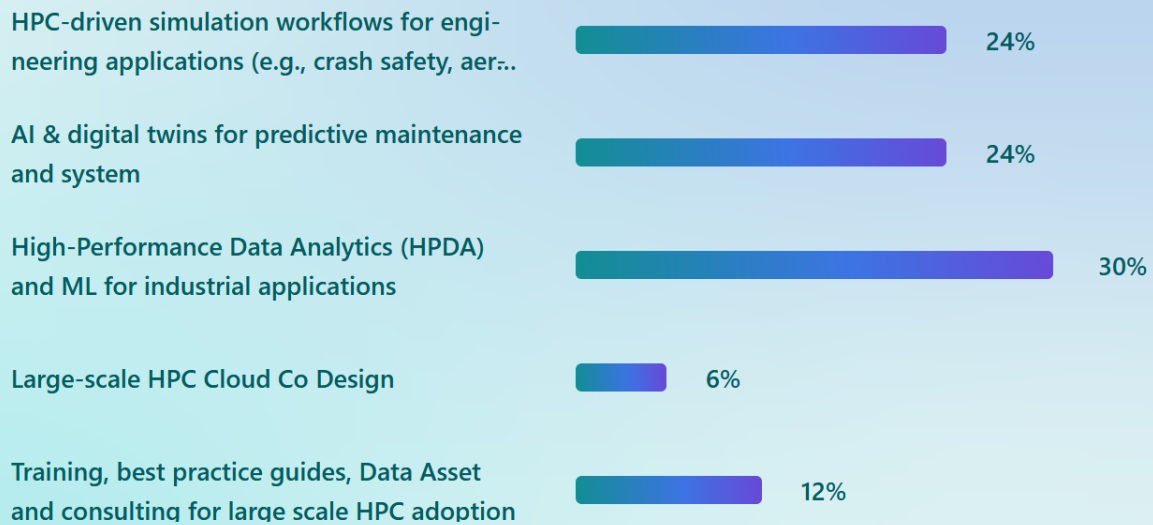
What would improve future collaborations with industry? (Multiple answers possible)



Survey to boost collaboration between EXCELLERAT and NCC Industry Champions



Which EXCELLERAT topics are most relevant to your industry outreach efforts? (Select up to three)



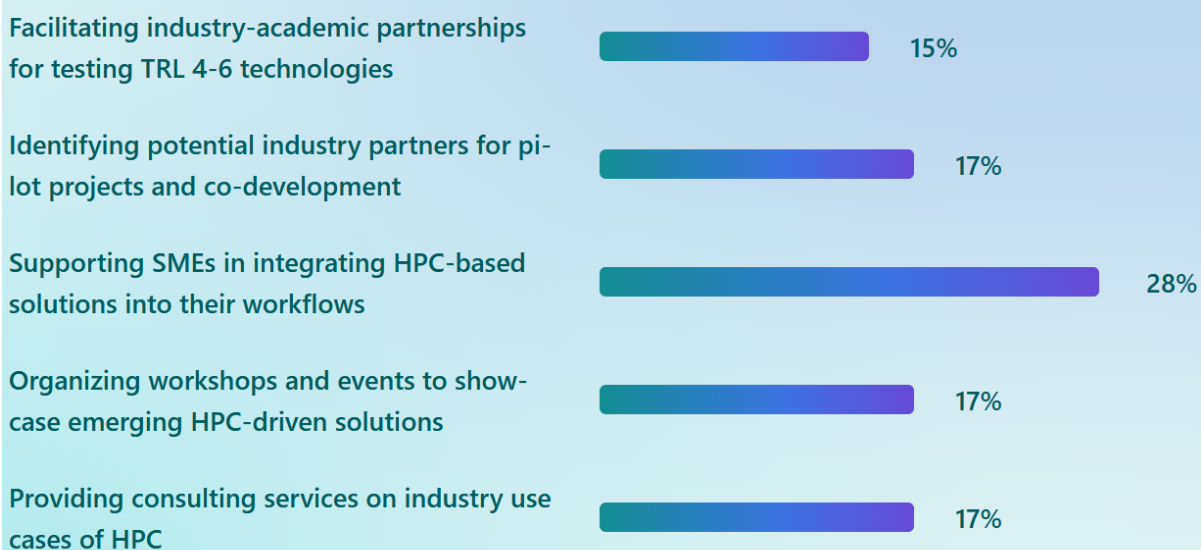
What is your current level of engagement with EXCELLERAT as an NCC Industry Champion? (Select one)



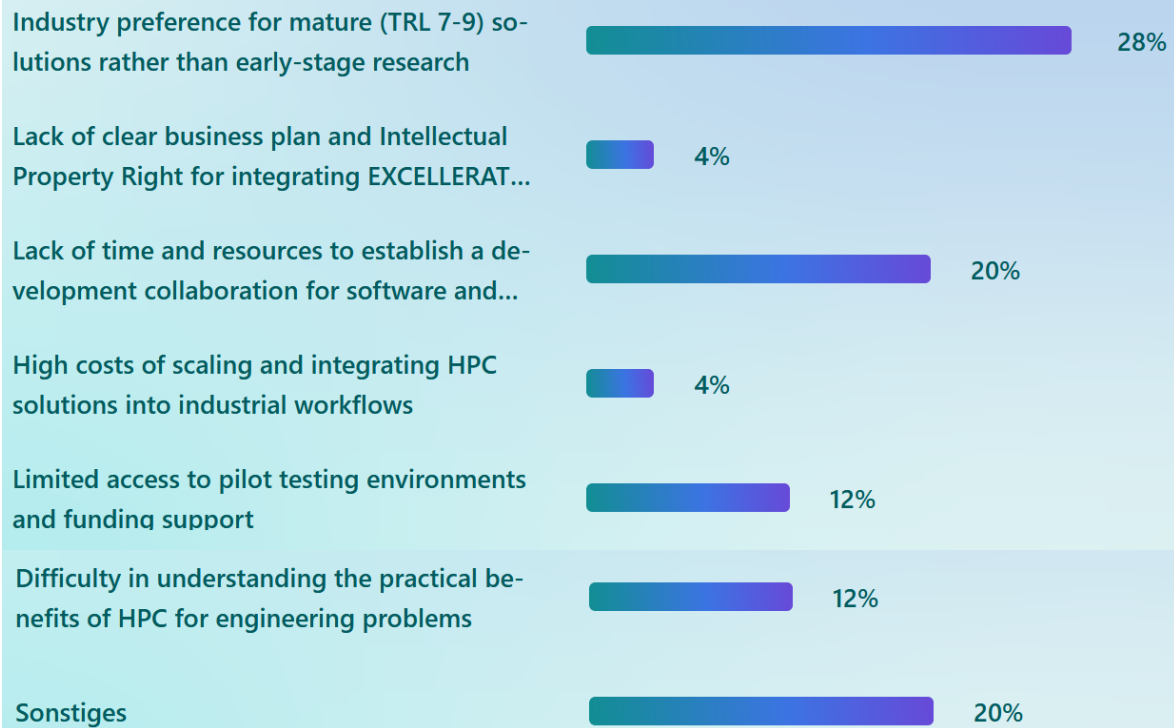
Would your NCC be interested in assigning dedicated industry contact to facilitate EXCELLERAT collaboration? (Select one)



How does your NCC interact with industry stakeholders regarding early-stage technology adoption (TRL 4-6)? (Select up to three)



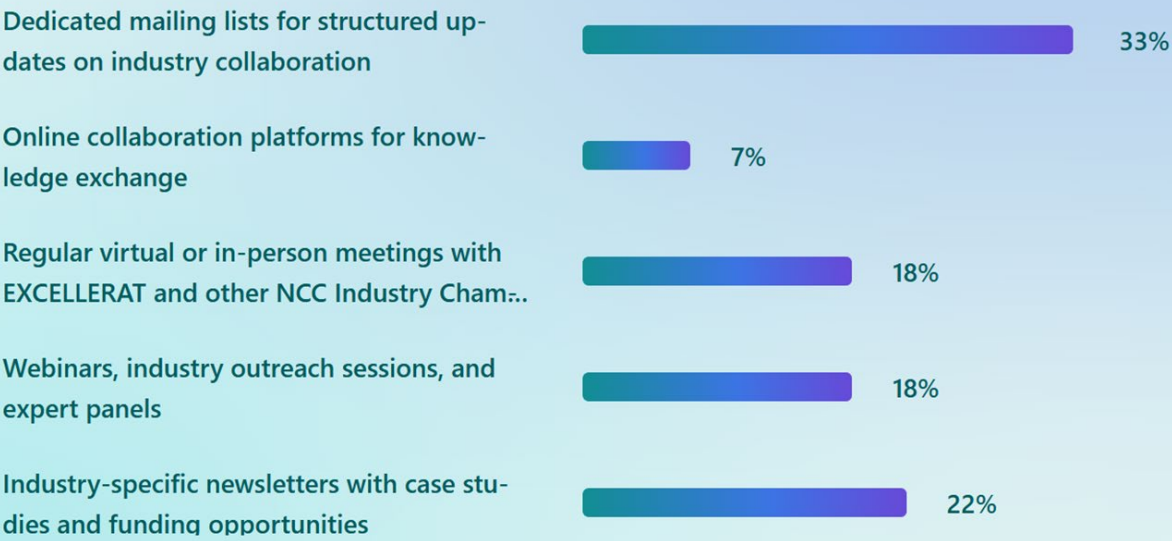
What are the biggest challenges for industry adoption of EXCELLERAT's software and tools at TRL 4-6? (Select up to three)



How can EXCELLERAT best support NCC Industry Champions in industry outreach? (Select up to two)



What communication channels are most effective for keeping you informed and engaged with EXCELLERAT? (Select all that apply)



Would you like to participate in a follow-up meeting to discuss industry engagement strategies?

