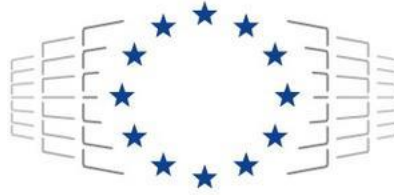**Coordination & Support
for National Competence Centres on a European Level Phase 2**

Project Number: 101102047

D4.1

Initial Report on the Actions performed to support the NCCs and the CoEs' Interactions with Industry

Work package:	4	NCCs, CoEs and Industry Interactions	
Author(s):	Hervé Mouren		TERATEC
	Marie-Françoise Gerard		TERATEC
	Lucile Garnier		TERATEC
	Miriam Koch		USTUTT
	Guntram Berti		SCAPOS
Approved by	Competence Centre Management		11.12.2023
Reviewer 1	Aline Melinette		BSC
Reviewer 2	Teona Macharadze		USTUTT
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2023-12-12	Marie-Françoise Gerard	Consolidated version to include the annexes in PDF	V0.4	

List of abbreviations

AAT	Automated Assessment Tool
AI	Artificial Intelligence
API	Application Programming Interfaces
BoF	Bird Of Feather
CASTIEL[1-2]	Phase [1 or 2] of CASTIEL
C2ISS	EuroCC-CASTIEL Information Sharing System
CC	Competence Centre
CoE	Centre of Excellence
COLA	Collaboration Agreement
CSA	Coordination and Support Action
EC	European Commission
EDIH	European Digital Innovation Hub
EUROCC[1-2]	Phase [1 or 2] of EUROCC
GA	Grant Agreement
HPC	High Performance Computing
HPC+	HPC/HPDA/AI
HPDA	High Performance Data Analytics
IWG	Industry Working Group
JU	Joint Undertaking
M	Months
NCC	National Competence Centre
PMT	Project Management Team
PO	Project Officer
SME	Small and Medium-Sized Enterprise
TPR	Technical Progress Report
T.X	Task X
Q	Quarter
WG	Working Group
WP	Work Package

Executive Summary

CASTIEL2 is the Coordination and Support Action (CSA) of the EUROCC2 project composed of 33 National Competence Centres (NCCs) and of the active 10 Centres of Excellences (CoEs) in Europe. The Work Package 4 (WP4) of CASTIEL2 is titled "NCCs, CoEs and Industry Interactions". The overall objective of this work package is to establish and support effective interactions between the NCCs, the CoEs and European industry to support adoption and use of HPC (and associated technologies like AI and HPDA) in the private (particularly SMEs) sectors considering the specific needs of the national & European HPC ecosystem.

This is being performed by CASTIEL2-WP4 by working on three main axes:

- On the topics related to the structuration of services and the promotion of those services, particularly (but not only limited to that) through the topic of the LinkHPC platform (previously called "Marketplace")
- On the support to the NCCs and CoEs to increase and extend engagements with established and potential industrial end-users (in particular SMEs), and to amplify the NCCs and the CoEs' collective impact through actions like the "Code of the month" series, through coordination to attend collaboratively sectorial events or organisation of thematic webinars.
- On ensuring the communications between the representatives of the NCCs and CoEs working on industry topics, to provide a clear exchange of knowledge, lessons learned and best practices regarding industry topics inside and outside the EUROCC2-CASTIEL2 networks

This deliverable D4.1 is the first report on the actions performed to support the NCCs and the CoEs' interactions with industry by CASTIEL2-WP4 during the first year of CASTIEL2. This document presents the strategies, the methodologies but also the main outcomes and results of the works done with regards to the industry interactions topics among the NCCs and the CoEs thanks to the coordination and support from CASTIEL2 during the first year of the project, and what this brought to the NCCs and CoEs as new skills, tools or instruments for their benefits, to support them in their interactions with industry as a whole.

This deliverable reports and presents key actions and outcomes that occurred during 2023. Therefore, the work performed in a dedicated task force about the LinkHPC platform (previously called "marketplace") is explained, along with, more generally, the actions done to support NCCs and CoEs when it comes to services available for industry: e.g. the "business" training of the NCCs or the collection of summarised information for the benefit of the NCCs and of the CoEs about how to structure their services for industry or how to interact with industry about their services. There are also descriptions of the setup of the "Code of the month" series, the organisation of the recurring "Industry virtual coffee breaks" and the organisations of several webinars with other initiatives to inform the NCCs and CoEs (e.g. the FF4EuroHPC webinar about the results of the experiments with SMEs, the ETP4HPC webinar about their market study, the GAIA-X webinar, etc.). Finally, explanations about the setup and monitoring of several task forces like the "SMEs assessment tool" task force led by NCC Slovenia and the "EuroCC Supercomputer Accelerator" task force led by NCC Austria are also included in this deliverable.

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1 Introduction

CASTIEL2 is the Coordination and Support Action (CSA) of the EUROCC2 project composed of 33 National Competence Centres (NCCs) and of the active 10 Centres of Excellences (CoEs) in Europe. In order to identify and close the gaps due to the diverse levels of maturity between the different nations, and to make them interact with the existing CoEs, CASTIEL2 is bringing together a core consortium to setup a framework of activities that support the evolution of all NCCs and CoEs and facilitate their sharing of knowledge and expertise.

The Work Package 4 (WP4) of CASTIEL2 "NCCs, CoEs and Industry Interactions" has for overall objective to establish and support effective interactions between the NCCs, the CoEs and European industry to support adoption and use of HPC (and associated technologies like AI and HPDA) in the private (particularly SMEs) sectors considering the specific needs of the national & European HPC ecosystem. This is being performed by CASTIEL2-WP4 by working on three main axes:

- On the topics related to the structuration of the services and the promotion of those services, particularly (but not only limited to that) through the topic of the LinkHPC platform (previously called "Marketplace")
- On the support to the NCCs and CoEs to increase and extend engagements with established and potential industrial end-users (in particular SMEs), and to amplify the NCCs and the CoEs' collective impact through actions like "Code of the month" series, coordination to attend collaboratively sectorial events, organisation of thematic webinars, etc.
- On ensuring the communications between the representatives of the NCCs and CoEs working on industry topics, to provide a clear exchange of knowledge, lessons learned and best practices regarding industry topics inside and outside the EuroCC2-CASTIEL2 networks

This deliverable D4.1 presents the strategies, the methodologies but also the main outcomes, the results of the works done and their added value for the NCCs and CoEs, when it comes to industry interactions topics among the NCCs and the CoEs thanks to the coordination and support from CASTIEL2 during the first year of the project.

Section 2 of this deliverable presents in more details the overall objective of CASTIEL2-WP4, its management and the way this WP interacts with the NCCs and the CoEs.

Section 3 explains the objectives, the strategy, the performed work, the outcomes from the year 2023, and the plans for the next steps of the Task 4.1 "Contribution to the C2ISS and the evolved EuroCC ACCESS Portal Design (including the marketplace)".

Section 4 explains the objectives, the strategy, the performed work, the outcomes from the year 2023, and the plans for the next steps of the Task 4.2 "NCCs, CoEs – industry interaction support".

Section 5 explains the objectives, the strategy, the performed work, the outcomes from the year 2023, and the plans for the next steps of the Task 4.3 "NCCs – CoEs Exchange and Knowledge - Sharing on Industry Interactions".

Section 6 presents the topics that are transversally monitored by WP4.

Section 7 summarises the key major achievements and provides concluding remarks.

Section 8 and 9 gather respectively the list of references and the annexes.

2 Work Package 4 of CASTIEL2: "NCCs, CoEs and Industry Interactions"

2.1 Objectives and Management of Work Package 4

Work Package 4 (WP4) of CASTIEL2 aims at establishing and supporting effective interactions between the NCCs, the CoEs and European industry to support adoption and use of HPC (and associated technologies like AI and HPDA) in the private (particularly SMEs) sectors considering the specific needs of the national & European HPC ecosystem. To achieve this main objective, WP4 initiates and organizes actions to understand the challenges and the requirements of the interactions of the NCCs and the CoEs with industry in order to find ways, together with the NCCs and CoEs, to address these.

CASTIEL2-WP4 is structured and working along three main tasks; its structure and the working mode are summarised in Figure 1.

Figure 1: Structure and working mode of CASTIEL2-WP4

Following the Grant Agreement (GA), Task 4.1 (T4.1) is in charge of the « Contribution to the C2ISS and the evolved EuroCC ACCESS Portal Design (including the marketplace)". For practical reasons, as the "marketplace" will not have a commerce aspect, and to highlight the *ecosystem interaction and connection* aspect, the "marketplace" was re-named "LinkHPC platform". Therefore, T4.1 is in charge of the discussions about the LinkHPC platform.

Additionally, as this concept of marketplace/LinkHPC platform is actually about services and offers and about how to practically support the NCCs and CoEs to develop them, T4.1 also undertook during the year 2023 several actions and initiatives in favour of the development and enrichment of offers and services, and the promotion of those among the NCCs and the CoEs.

Task 4.2 (T4.2) is in charge of "NCCs, CoEs – Industry Interaction Support". T4.2 supports the CoEs and the NCCs to increase and extend engagements with established and potential industrial end-users (in particular SMEs), and to amplify the NCCs and the CoEs' collective impact.

Task 4.3 (T4.3) is in charge of "NCCs – CoEs Exchange and Knowledge - Sharing on Industry Interactions". It manages an "industry relations" working group with NCCs and CoEs as members, which discusses and frames the challenges and requirements of establishing effective

and impactful interaction with industry, by for instance ensuring that both NCCs and CoEs have access to all relevant industrial interaction information and existing solutions.

Remark about the interactions with the CoEs: many activities of WP4 involve NCCs, CoEs and often other players of the (European and world wide) HPC Ecosystem. CASTIEL2 has very close and special relationships to the 10 JU-funded HPC CoEs who started in January 2023 along with CASTIEL2 and that are currently signing a collaboration agreement with CASTIEL2.

These 10 CoEs are part of the CASTIEL2 industry working group managed by WP4 and part of the inner "NCC & CoE network". In addition to those 10, the older 6 already running, EC-funded CoEs (which will end between end 2023 and mid 2024: TREX, NOMAD-2, PerMedCoE, CoEC, RAISE, CompBioMed) were nonetheless considered also as relevant and interesting stakeholders of the HPC ecosystem, in view of their objectives that are close to those of the newly launched CoEs and in view of their many ongoing collaborations with NCCs stemming from the previous phase of CASTIEL1. Thus, WP4 has strived to involve these 6 CoE wherever this was possible even without some more formalised relationship, which is currently being established with the 10 new CoEs.

In particular, this concerned the activities of the NCC-CoE workshop in April 2023 (organised by CASTIEL2-WP2 and during which CASTIEL2-WP4 organized the specific session about the industry topics, see Table 7) and the "Code of the Month" series of webinars (see section 4).

At end of 2023, the PMT of EuroCC2 produced a questionnaire to collect information about collaboration and impact from the NCCs within the EuroCC2 project. This questionnaire included questions about industry topics (challenges, strategies and perspectives) and the LinkHPC platform. The results being processed and presented during December 2023 by EuroCC2-PMT in a specific deliverable D1.6 for EuroCC2, CASTIEL2-WP4 will use, during the next year, the outcomes presented in this deliverable D1.6 that concern industry in order to plan specific relevant actions to provide to the NCCs the skills or tools or methods to address their specific challenges.

3 Task 4.1 "Contribution to the C2ISS and the Evolved EuroCC ACCESS Portal Design (Including the Marketplace)"

3.1 Objectives and Strategy Implementation for Task 4.1

Task 4.1 is in charge of collecting the specific requirements, both from the NCCs and the CoEs, relevant and adapted to their actual and potential industrial end-users on the expectations and requirements for the evolved EuroCC Access portal (including the marketplace/LinkHPC Platform). The initial plan was to gather information from the NCCs and CoEs during the first year in order to be able to have a prototype by end of year 1 and to have the marketplace/LinkHPC Platform prototype s' first runs during year 2.

The topic "LinkHPC platform" was progressing at a relative slow rate for the first six months of EUROCC2-CASTIEL2 due to the following reasons: firstly, due to the complexity of this topic "LinkHPC platform" (e.g. how to design a common template for so different NCCs? And there are questions and issues with regards to the national constraints and various politics on this topic), and secondly to the absence of the official review report from the JU after the end of EUROCC1-CASTIEL1. Indeed, questions were asked to the reviewers and the JU by the industry working group about this topic and the related orientations to consider about it, and not knowing the answers obliged CASTIEL2 to proceed with carefully chosen actions in the meantime. However, the progress of the timeline got back on track in June 2023. The outcomes of the work done on this topic are presented in section 3.2

Therefore, in the meantime, in order to still provide relevant support and coordination to the NCCs and CoEs on the broad topic "services and offers and about how to support the NCCs and CoEs to develop them", T4.1 undertook in parallel many actions and initiatives in favour of the development and enrichment of offers and services and the promotion of those among the NCCs and CoEs. The outcomes of the work done on these other key topics regarding services and development of the interactions with industry are presented in section 3.3.

3.2 "LinkHPC platform": Actions Undertaken During Year 1 and Results

With/For the NCCs

(1) Initial questionnaire to collect interests for various features for the future central hub

In June 2023, CASTIEL2-WP5 created and launched a questionnaire to collect the feedbacks from the NCCs and the CoEs about the important or necessary features for the future design of the C2ISS (EuroCC-CASTIEL Information Sharing System). CASTIEL-2-WP4 collaborated to the creation of this questionnaire by providing the questions about a potential future central hub of the marketplace/LinkHPC Platform. Indeed, the current idea would be to have a future central hub "EU LinkHPC platform" that would aggregate selected information from the national "LinkHPC platforms" to display them centrally at the EU level. And this central hub "EU LinkHPC platform" would be articulated with the C2ISS as presented in Figure 2.

Figure 2: Global concept of the "LinkHPC platform" (formerly called "marketplace") & articulation with C2ISS

By July 06th 2023, 5 CoEs and 19 NCCs provided feedbacks. To ensure a better representativity for the 10 CoEs, CASTIEL2-WP2 and WP4 decided to re-open the parts about the competences and the future central hub of the marketplace/LinkHPC Platform during October 2023 and they reminded the CoEs to answer the questionnaire. The detailed complete answers are summarised and presented in Annex 1.

The collected complete answers show that except for the codes, almost all the NCCs are generally interested in displaying and seeing every available information when it comes to services, the ecosystem, the events and the other areas to all kind of users (industry, public administration, research centres, etc). The CoEs have a little more specific interests, for instance particularly on the codes and their related services, on training, consultancy and the external ecosystem. To concretely assess the priorities and to better design the exact structure to present all these elements of information on the future hub of the Marketplace/LinkHPC platform, it was decided to use an existing solution (namely the French "CC-FR marketplace") to be able for the interested NCCs to test and provide in-depth needed improvements for a future common template through a dedicated task force "Test of LinkHPC platform/marketplace to design a services structure".

(2) Task force about the "LinkHPC platform", organised with NCC France: "Test of LinkHPC platform to design a services structure"

Outcomes and follow-up at the end of phase 1: At the end of the phase 1 of EuroCC /CASTIEL, the results of the benchmark done during phase 1 about the potential solutions for

a "marketplace" were presented during the review in March 2023. The related questions asking for the JU orientations and recommendations (about a set-up of a potential European unique marketplace) were presented to the JU and the reviewers. There were limited received elements of answers during the review itself (a priori, the solution presented by NCC France was positively received during the review, and the reviewers highlighted the importance of having some homogeneity in the EuroCC network while working on this topic). The actual written report was received by CASTIEL2 only on November 29th 2023, allowing for very little time to take into account the provided feedbacks by end of year 1 of this phase 2 (December 31st 2023).

Update of the working name/terminology: As the planned structure will not have a commerce aspect, and to better highlight the *linking the ecosystem* aspect, it was decided from April 2023 to stop using the word "Marketplace" and to replace it by "LinkHPC platform"

CASTIEL2-WP4 proposal to collaboratively design a common structure for the national LinkHPC platform: in agreement with the PMT, as by June 2023, there was no written clear feedbacks after the review of phase 1 about the plans and actual expectations of the JU regarding the topic "marketplace", it was decided to at least proceed with launching a task force to work on a common template/structure for a "marketplace". This way, there were actual progresses on a specific part of this topic, as it was decided to focus on developing first a template (i.e. an architecture skeleton) appropriate and validated by the interested NCCs, that could be deployed by all interested NCC in their country in 2024.

This template or structure would be the unique common reference for all NCCs, the plan being to have it ready by end of 2023; in order to allow the NCCs to work, in a second step, on actual national implementations during 2024 while CASTIEL2 would work on developing a central hub to gather at a unique European level the selected national data. The "national implementation" part would have to be discussed first with the PMT and the JU to see what would be the flexibility for the NCCs in terms of providers, solutions and compatibility with the central hub. For the task force to not start from scratch and to have a common object to work with, CASTIEL2-WP4 discussed with NCC France to allow some access to the structure of their CC-FR platform (through a specially developed English test version of it) and to co-organise with them the management of the task force working on the design of a future common unique structure for all NCCs.

This proposal, established by CASTIEL2-WP4 after discussions with PMT team was shared with the industry working group and agreed upon on June 29th 2023. During Summer 2023, the procurement was launched to NCC France for them to prepare, using their" CC-FR Marketplace", the English updated version or prototype of a test version for the national LinkHPC platform.

The task force, gathering 15 NCCs (list in Annex 2) was launched on September 7th 2023, with the presentation of the plan and timeline (summarised in Figure 3) for this task force. The plan being to be able to share with all NCCs by beginning of 2024 a consistent unique structure, to be used by all potential future NCCs national platforms. The unicity of the template or structure is a key element in being able to build a common central hub in the future, articulated with the C2ISS to automatically display at a unique place the information about services and industry ecosystems available in the 33 NCCs.
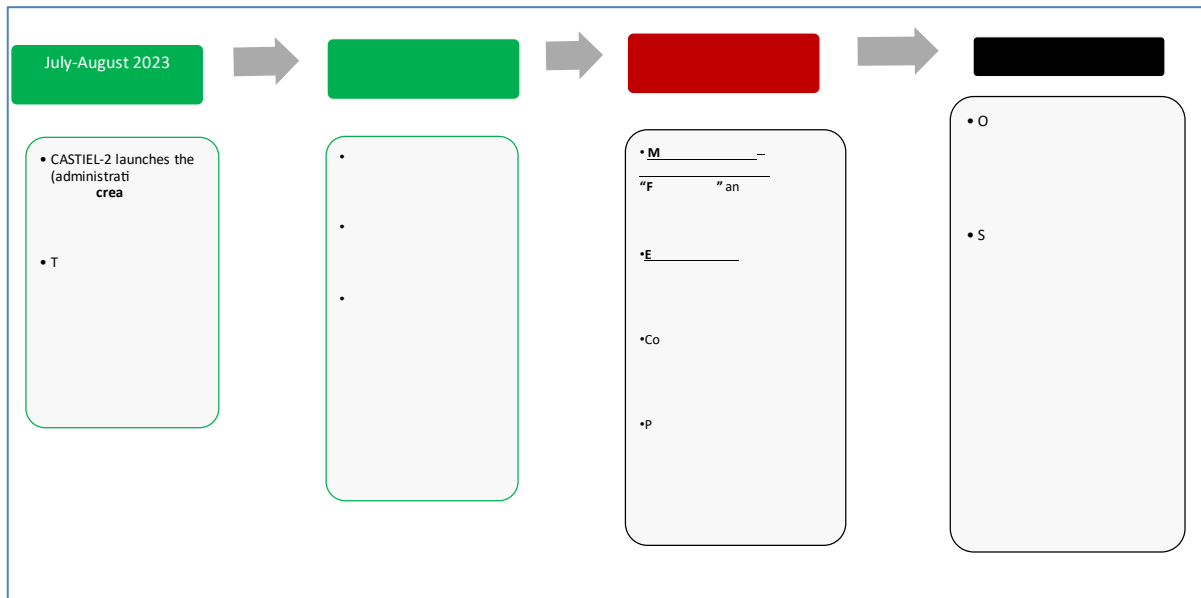
Figure 3: Initial timeline of the task force "Test of LinkHPC platform to design a services structure"

As indicated on the timeline, on October 16th 2023, the EN version being online, a tutorial was done in live online to the task force members, in order for NCC France to show them how to test the platform and how to provide their feedbacks about it through a common form (extract in Annex 2). A follow-up meeting was held on November 6th 2023 to collect the very first feedbacks or questions of the task force members regarding their tests of the EN platform. A "consolidation-summary" first meeting took on November 29th for CASTIEL2-WP4 and NCC France to present the consolidated common feedback from the task force, and discuss any debatable topic with all the task force member. Given the number of items to be discussed and agreed together for updates in the test version, a second meeting is planned for December 11th 2023. The outcome of these actions and of the consolidation meeting will be the core of the report planned for early 2024 to provide the proposed common architecture of such a platform. Following the updates to be implemented on the test version (thanks to the work of the task force), users tests could be planned beginning of 2024 with SMEs contacts of the NCCs to check the user-"friendliness" of the interface and the relevance of this future common structure.

With/For the CoEs
 (3) Initial questionnaire to collect interests for various features for the future central hub of the LinkHPC platform

The same questionnaire was sent to the CoEs as the one for the NCCs. The outcomes of this questionnaire are presented in the previous paragraph.

With/For the NCCs (1) Initial questionnaire and detailed in Annex 1.

 (4) Meetings to discuss links of the services portals of the CoEs with the LinkHPC platform & the C2SSI, co-organised with WP2 and WP5

Some of the older CoEs have already some services portal on their own, and some recent ones are planning to have one. To more precisely define what are their services portals, how to link them with the future central hub of the LinkHPC platform or the C2SSI, CASTIEL2-WP4 co-organised with WP2 and WP5 meetings with the CoEs. The collected information during this

meeting and during the follow-up interactions with the industry champions of the CoEs is summarised in the Annex 3.

In a nutshell, the outcomes of these discussions and interactions were that for all CoEs except EXCELLERAT P2, the "services portals" are actually usually webpages listing their available services (in the form of a list or a basic catalogue) and a mere contact form. Therefore, except for EXCELLERAT P2 (and their services portal: https://services.excellerat.eu/ currently being re-designed), it should not be complicated to ensure links and visibility of these webpages and their related information through either the future central hub of the LinkHPC platform or the C2SSI.

The case of EXCELLERAT P2 is different as this CoE has created a real portal, https://services.excellerat.eu/, to display their services during their phase 1 and during their phase 2 (started in January 2023), they plan to update and improve it. Therefore, a dedicated meeting was organised between EXCELLERAT P2, CASTIEL2-WP4 and WP5 on October 5th 2023 to discuss how to liaise between these projects and to ensure links between the future solutions and platforms. Interactions will be ongoing with EXCELLERAT P2 during the next months to ensure that articulation between their services portal and the future C2SSI and the future central hub of the LinkHPC Platform or the C2SSI will be possible.

Interaction with WP5 about the articulation with the C2SSI, and to coordinate surveys & actions on this topic

To ensure the articulation of the future central hub of the LinkHPC platform with the C2SSI, continuous discussions were ongoing during 2023 with the WP5 of CASTIEL2. This regular interaction took place to ensure that WP5 could design a structure compatible and communicating with a future central hub of the LinkHPC platform, particularly through future APIs.

3.3 Other Key Topics to Support the NCCs & CoEs Services Development: Actions Undertaken During Year 1 and Results

Interests, challenges and needs to interact with industry

 (1) of the NCCs

Following the meeting in Stuttgart in January 2023 (details about this meeting in Table 7), several elements were highlighted as key topics for the NCCs for this phase 2 of the projects. They are listed, along with the actions that CASTIEL2-WP4 undertook towards them in the following Table 1, in order to ensure that the activity of WP4 during the project has a positive beneficial impact for the NCCs, by providing relevant support, skills, tools, instruments or processes for them to interact more and more easily with industry.

Expressed priority topics:	CASTIEL2-WP4 follow-up actions / answers
-marketing/sales & business development • 1. how to "sell" the NCCs support & services ("Prospects to clients, language & arguments to sell & adapt services") /	CASTIEL2-WP4 interacted with NCC Austria and NCC Sweden during year 1 of EUROCC2 to organize several actions towards the topic "Marketing-sales". - A webinar was organised with NCC Austria on March 30th 2023 about

to see also with communication champions - Need to make communication champions discuss with industry champions ("how to approach")	""How to sell High Tech Products and Services" and what we can learn from Tech-Start-ups" - CASTIEL2-WP4 interacted with NCC Austria to set up an Autumn academy (starting in November 2023, throughout beginning of 2024), and with NCC Sweden to think about a "sales seminar" (currently scheduled for February 2024) in order to train the NCCs about how to "sell" the NCCs support & services.
-marketing/sales & business dvpmt • 2. sustainability/build business - newsletter (structured system) to share info about funding schemes	- CASTIEL2-WP4 regularly updates the industry champions about the funding available through the EC or the JU, and shares information from ETP4HPC regarding their webinars organised to inform the ecosystem about funding schemes.
- legal trouble (software license) /contract templates/ memorandum of action or proof of good will	- Regarding the need for legal advice, it was forwarded to the legal task of EUROCC2
- experts/ consultancy platform /external experts /collaboration between NCCs	- Regarding the importance of collaboration and a need for an "experts" or consultancy platform, this is addressed through the Cluster tool and the "EuroCC Supercomputer Accelerator" task force.
- questions asked by the industry champions: • 1. Central pay per use scheme from JU is needed -Companies need to know what they sign up for	CASTIEL2-WP4 investigated about the pay per use scheme in all the JU supercomputers and produced a report[1] about the industry access to the JU infrastructures in order to provide practical information to the NCCs about the topic "Access for Industry to EuroHPC JU Systems"
- questions asked by the industry champions: • 2. JU should provide a scheme for access to HPC for PoC and training events. At the moment it's either benchmark/ development access or one to one with the systems which is not ideal.	- (question which would have to be rather asked to the JU,)
- questions asked by the industry champions: • 3. Interrogation about where do the JU systems fit within the cloud ecosystem (AWS, Azure etc...)	- (question which would have to be rather asked to the JU,)

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[1] GUIDE ‖ Access for Industry to EuroHPC JU Systems: https://www.eurocc-access.eu/services/document-library/

-Some integration of JU systems is needed.	
- questions asked by the industry champions: • 4. "external experts" = external to each NCC or external to the whole network? => restrictions of budget concerns which one?	This question of what is the exact definition of "external experts" in order to invite external experts as speakers to events was forwarded to the PMT for discussing and clarifying that with the JU/PO

Table 1: Priority topics, challenges and questions for the NCCs at end of phase 1 of EuroCC1-CASTIEL1, and the beginning of the phase 2

 (2) of the CoEs

Following the online kick-off meeting organised for the CoEs by CASTIEL2-WP2 on April 18 & 19th 2023 (details about the WP4 contribution to this meeting in Table 7), several elements were highlighted as key topics for the CoEs.

They were listed, along with the main information about the CoEs, their interactions with industry and their structure in a detailed report that was produced about these topics and shared only internally with all the NCCs and the CoEs (see Annex 4, only shared with the JU and the reviewers). Additionally, the following public tables, summarising their goals and structure (Table 2), and summarising the information regarding provision of services by the CoEs (Table 3) were also provided to the NCCs and CoEs for dissemination to their potential prospects about the opportunities offered by the CoEs. This was useful for the NCCs, as it enabled them to potentially display that information on their own websites and to use it to present to their own stakeholders how the EU ecosystem works and what they could potentially use, with which CoE (in terms of expertise, services or codes).

CoE	Complete name/topic	Goal	Structure

EXCELLERAT P2	*CoE for supporting supercomputing engineering applications from large scaling to the exascale*	*To enable the use of simulations workflow at a large scale to exascale computing challenges*	7 WPs:
			  -1 PM
			  -3 technical WPs
			  -3 outcome WPs: WP5 centre implementation, WP6 Market context & business development, WP7 Awareness, impact creation & outreach

ChEESE2	*Centre of Excellence (CoE) in the domain of Solid Earth*	*Identification of exascale computational challenges in geophysics (natural hazards) in term of capability computing, capacity computing, urgent computing*	3 pillars: 1) scientific community 2) EuroHPC infrastructures & NCCs 3) public & private industry parties benefiting from the products & downstream services on geohazards 11 open-source flagships codes 15 simulation cases For the 3rd pillar (public & private parties): co-design with mini-apps with EPI, EUPEX and EuPilot initiative.

			Some TRL 8 or 9, that went into operations.
CEEC	*Centre of Excellence in Exascale CFD*	*Address the extreme-scale computing challenge to enable the use of CFD simulations at exascale.*	7 WPs: 3 technical WPs (2, 3, 4) supporting the execution of lighthouse cases WP1, future technologies WP5, dissemination WP6 and PM WP7.
HiDALGO2	*Centre of Excellence in Urban-migration simulation topics*	*bring together advanced solutions (HPC HPDA AI) to provide stakeholders & decision makers tools that would mitigate tragic consequences of climate & civilisation phenomenon by delivering necessary knowledge*	The objectives are distributed in Conceptual services: 4 areas: technological, multidisciplinary, socio-scientific, team working objectives. 4 current use cases: urban air project (TRL6), urban buildings (), renewable energy sources, wildfires. Project components (see the slides). Main topics of interest for phase 2: Exascale support for Global Challenges, DATA Exploration and visualisation
MaX3	*MAX designs new materials at the exascale*	*Turn MaX lighthouse codes into exascale-enabled applications Enabling materials for grand challenges*	7 WPs: -1 MGT -4 technical WPs -WP5 training & community engagement, WP6 communication, exploitation & dissemination
SPACE	*Scalable Parallel Astrophysical Code for Exascale* *Centre of Excellence (CoE) for HPC astrophysical applications*	*outstanding quality & volume of data => exceptional challenges to their theoretical interpretation. 8 codes in 3 main themes 5 objectives: to evolve the 8 codes, evolve data analysis & visualisation ecosystem, development of ML techniques, address the energy efficiency issue, federate the A&C community*	3 private companies in the consortium WP1: Management WP2/3: science (interaction in WP2 with HW providers) WP4: tools (transversal for the others) WP5: dissemination, outreach, training for the A& C community

MultiXScale	*Performance, portability, productivity*	*Application co-design for exascale, accelerate development of scientific workflows, interest in co-design* *Objective: increase performance, productivity and portability for scientists & pilot multiscale use-cases of societal and industrial significance.*	2 private companies in the consortium Scientific WPs (2, 3, 4): WP4 includes 3 showcases – one of them is helicopter design with industry partner Leonardo; Technical WPs (1,5); Collaboration with EESSI as a deployment mechanism for software. Large interest from cloud providers. WP7: – Two tasks with specific focus on industry, "Task 7.1 – Scientific applications provisioned on demand" and "Task 7.4 – Industry-oriented training activities"
Plasma-PEPSC	*Plasma exascale performance simulations CoE*	*Fusion energy research and modern industries depends on plasma science and technology, plasma simulations for societal challenges, HPC, supercomputers and virtual prototyping have an important role in predicting observations and in design => pushing flagship plasma simulation codes to tackle exascale enabled grand challenges.*	3 technical WPs (2.3.4.5) with use cases; WP6: dissemination, community building, training and exploitation. WP1 drives the project (on tech viewpoint) WP7 on admin management Methods: performance optimisation and co-design
BioExcel-3	*Centre of excellence for Computational Biomolecular Research*	*Supports computational molecular life sciences (neurosciences, drug discovery etc.) and developing exascale for life science. Provide researchers with high-quality user-friendly software, to increase their expertise and skills. Codes world leading open-source software like GROMACS, HADDOCK...*	2 technical work-packages (core software and workflows), WP on user-driven development, WP on training and dissemination, WP on management. Industry interactions are part of the user-driven development as well as outreach and dissemination. One SME is a member of the consortium.

| ESiWACE-3 | Excellence in simulation of Weather and Climate in Europe | Focus on supporting the modelling community to reach a higher TRL for exascale supercomputing and foster knowledge transfer in EU.

Objective: evolution: enable leading EU weather and climate models to leverage performance of pre-exascale systems, revolution: make use of exascale. | 3 pillars: scalability of codes and of software development, usability of workflows in HPC environment and exploitability of data. Pillar 2 includes community building with regards to earth system modelling
Pillar 1: WP1, 2, 3, about tech development. Pillar 2: WP4, 5, 6 about services and networking with community. WP5 => training & capacity building Partners, includes industry company Atos!
Core services
=> infrastructures
=> R&I
=> Community engagement |

Table 2: Goals and structure

CoE	COE-TYPE	Provision of services	Existing services Portal
EXCELLERAT P2	Type 2	**Yes**	https://services.excellerat.eu/
CEEC	Type 1	**No**	-
HiDALGO2	Type 2	**Yes**, provision of solution access to SMEs. 4 families of applications and 2 are directly targeting industry, there are also potential for industry with regard to their applications, or the general used techniques	-
ChEESE2	Type 2	**Yes**, mainly focused on the public sector.	-
MaX3	Type 1	Max3 did offer a set of services for expert users from industry in the past, it is not their current highest priority	http://www.max-centre.eu/services
SPACE	Type 1	**No**	-
MultiXScale	Type 2	In some way: Training yes, otherwise not directly. Cloud providers are providing apps SW- as- services to their users (customers)	-
Plasma-PEPSC	Type 1	**No**	**-**
BioExcel-3	Type 2	**Yes**, but any details to be discussed case-by-case	https://bioexcel.eu/services/
ESiWACE-3	Type 2	Maybe very indirectly by Meteo Centres / DestinE)	https://www.esiwace.eu/services

Table 3: Provision of services & Services portal

"Business" Marketing trainings

(1) "How to sell products[..]" with NCC Austria on March 30th, 2023

To address the need of understanding of "how to sell services to start-ups and SMEs "among the NCCs, CASTIEL2-WP4 organised a workshop "How to sell High Tech Products and Services" and what we can learn from Tech-Startups" with NCC Austria on March 30th , 2023.

Following this workshop, an Autumn academy on the business development and marketing topic started to be in discussion with NCC Austria, CASTIEL-WP3 and the PMT to be organised during fall-winter 2023.

(2) <u>Autumn academy set-up with NCC Austria: "Innovation and customer-users centric approached and mindset"</u>

Following the workshop on "How to sell High Tech Products and Services ", and the interest of the participants to get hands-on information and training on this topic, a concept for an Autumn academy on the business development and marketing topic was developed by CASTIEL2-WP4 and NCC Austria, with support from the PMT during spring-summer 2023 to take place during fall-winter 2023. 19 representatives (from 15 NCCs and 2 CoEs) registered to participate to this Autumn academy that was launched by an online Survey produced by TheVentury in interaction with CASTIEL2-WP4 in September 2023, then an on-site workshop in Vienna on November 16th -17th 2023 (13 present participants on-site), followed by 2 online workshops during Winter 2023-2024. The details of the concept of this Autumn Academy co-developed with the marketing experts TheVentury and NCC Austria are presented in Annex 5. Pictures from the first on-site event are available in Figure 4.

Figure 4: Group of participants from NCCs and CoEs that attended this on-site workshop. Wall of multiple contributions (coloured post-it to address key questions)

The feedbacks about this workshop were very positive as one can see from the Figure 5. The detailed answers to the complete feedbacks survey are presented in Annex 5. The ideas for further future workshops or actions on this generic topic "Marketing & sales" will be taken into

account to continue providing the NCCs and the CoEs with the most relevant skills, to address their specific challenges to interact with industry.
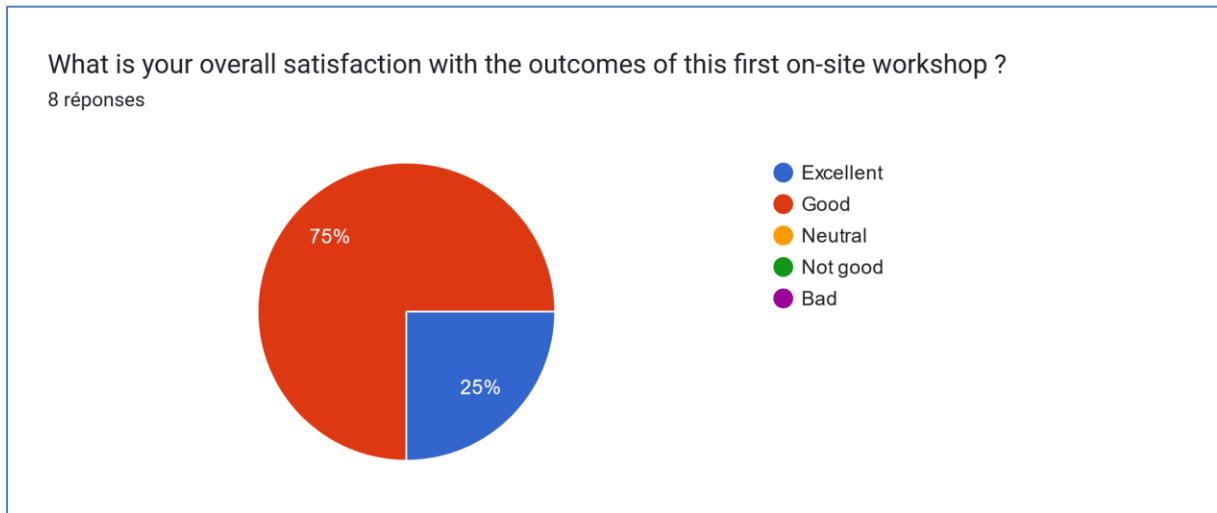

Figure 5: Feedback survey - satisfaction with this first on-site workshop

Additionally, some participants indicated several days after the on-site workshop, that they practically tested the learned mindset and approaches after being back in their respective NCCs with positive outcomes: see for instance the Belgium meeting about some methods discussed during the Vienna workshop and proposed for use in NCC Belgium in Figure 6.
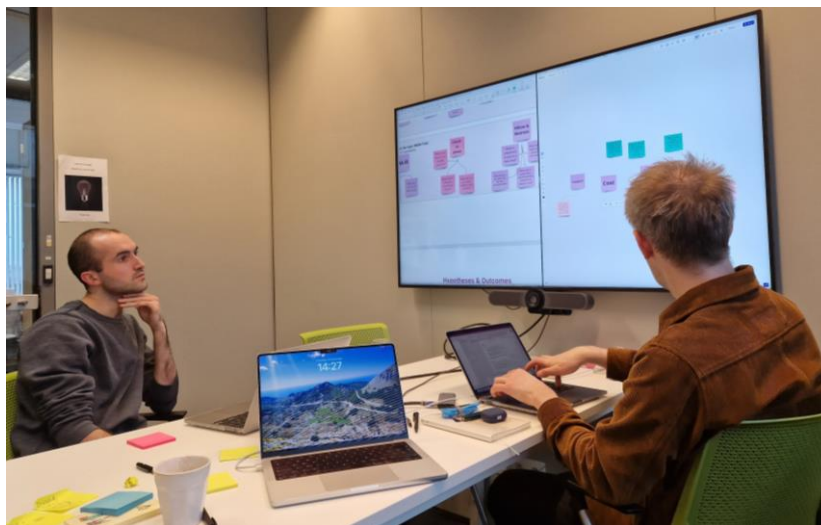

Figure 6: Practical implementation in NCC Belgium of a method regarding marketing & customer-user, discussed in the Autumn academy in November 2023

(3) Marketing "sales" seminar with NCC Sweden

CASTIEL-WP4 and NCC Sweden started interacting after the Industry working group meeting in Stuttgart in February 2023 about a Marketing "sales" seminar to train the industry champions on how to shape best and how to sell their services provided by the NCCs to the industry stakeholders, with a focus on the "language for customers". This action is currently planned for first semester of 2024.

(4) <u>EuroCC Supercomputer Accelerator with NCC Austria</u>

This task force, initiated by NCC Austria and supported by CASTIEL2-WP4, gathering 21 NCCs (list in Annex 6) was launched on September 7th 2023, with the presentation of the plan and timeline by NCC Austria. The plan was to distribute among all interested NCCs the requests from start-ups and SMEs received through EuroCC ACCESS or through the platform F6S (see the concept in Figure 7).
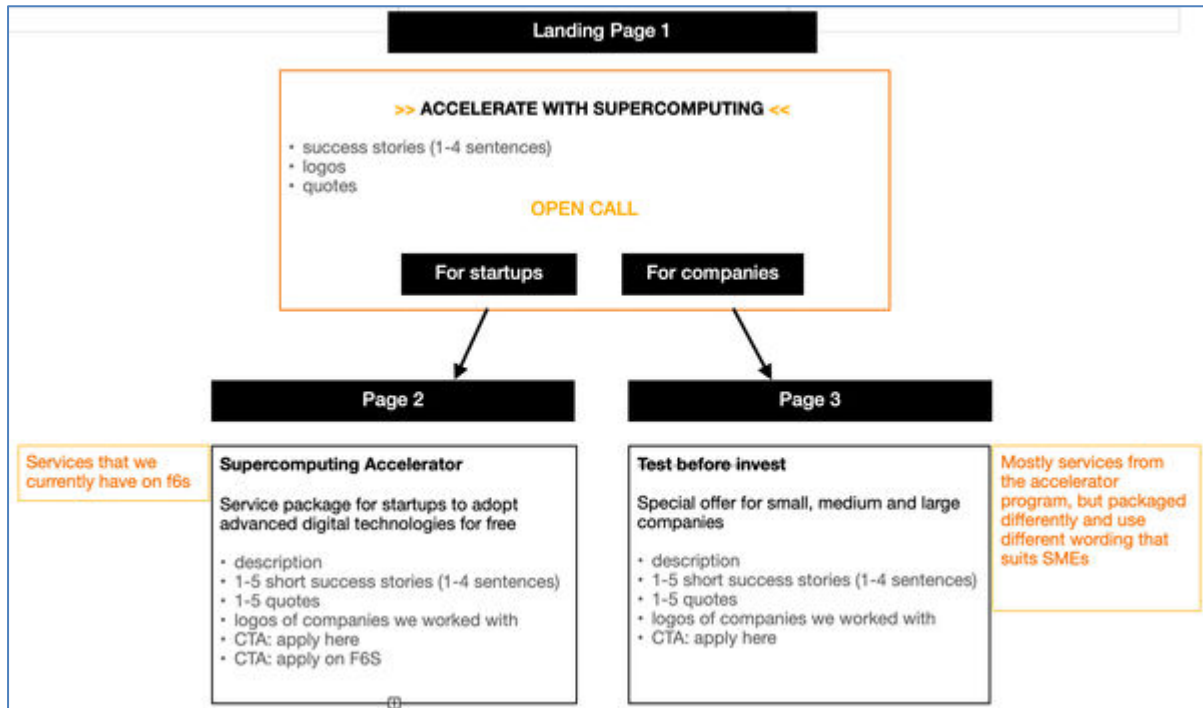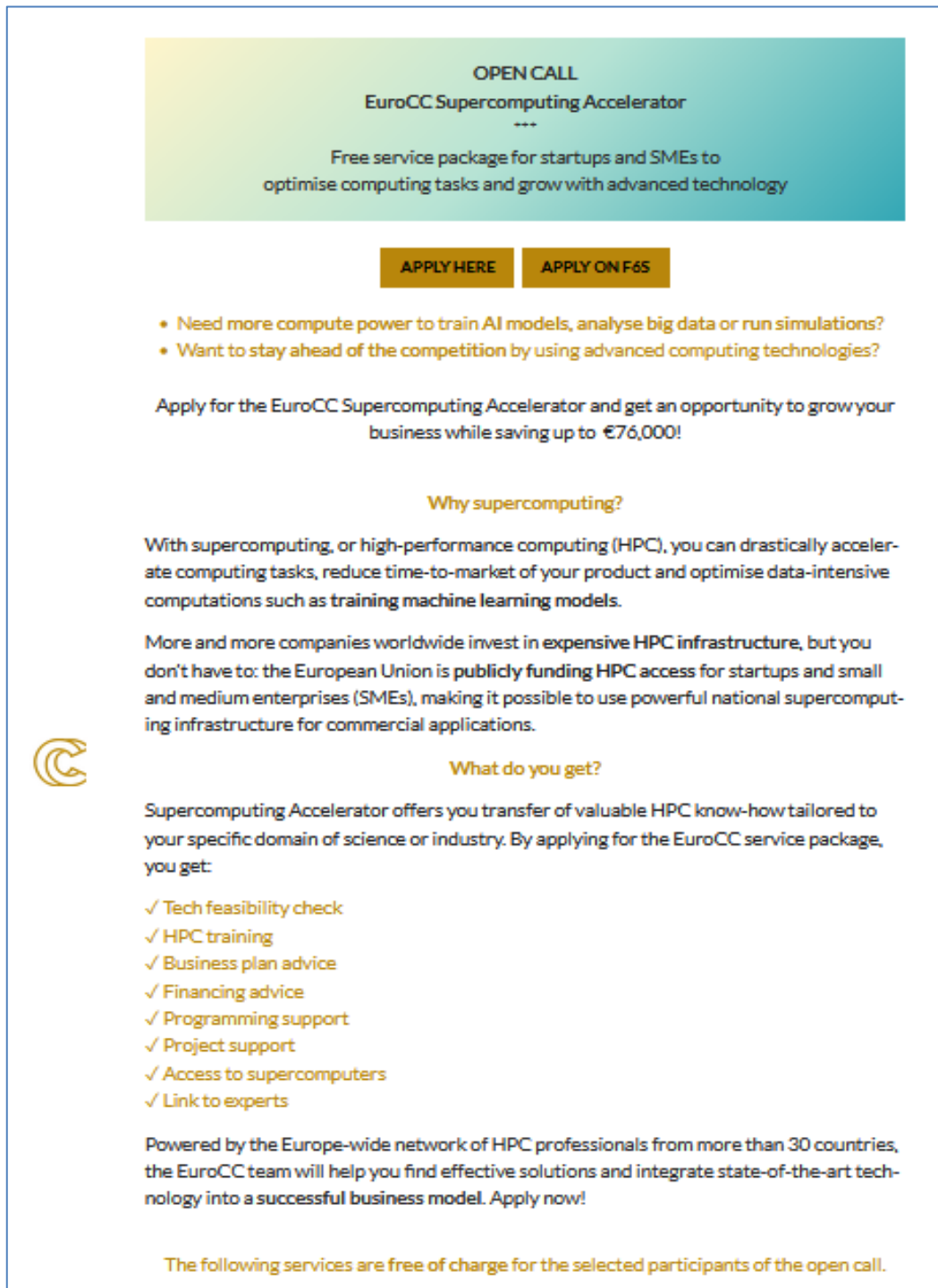

Figure 7: Concept of the "EuroCC Supercomputer Accelerator"

The added value of this task force is to launch common collaborative marketing actions to widely disseminate about the NCCs services and to join forces to address more requests from the start-ups willing to use HPC/HPDA/AI (HPC+) through the NCCs (in a way, this process being an improved version of the cluster tool developed during phase 1 of CASTIEL-EuroCC), see the screenshot of the landing page created by this task force to welcome the requests from start-ups and SMEs in Figure 8, with the application form available online[2].

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[2] Landing page of the EuroCC Supercomputer Accelerator: https://www.eurocc-access.eu/supercomputing-accelerator/

Figure 8: Screenshot of the landing page to welcome requests from start-ups and SMEs to the EuroCC2 network

This task force is a useful complementary action to the LinkHPC task force. The EuroCC Supercomputer Accelerator is indeed a program to welcome, train and support the early users of HPC+ (namely start-ups and SMEs), that could for instance develop their services thanks to HPC+. Then when these users/potential providers are ready, thanks to the Accelerator, they can go to the LinkHPC platform to use it as a stage to promote their services, their offers or to look for further specific HPC+ expertise or existing services. At end of November 2023, 9 types of services were available and more than 30 applications from start-ups or SMEs were received

through this F6S platform. These applications are currently being distributed among the NCCs part of this task force to address them and potentially provide services to new industry stakeholders.

3.4 Plans for the Next Steps

The current plan – that still might evolve given the outcomes of the ongoing task forces related to the industry topics and given the feedbacks of the first-year review to take place in February 2023 – is that CASTIEL2-WP4 would work, during 2024, on developing a central hub for the LinkHPC platform to be designed and articulated with the C2ISS and with the future national LinkHPC platforms. This will be done by:

- using on one side, the agreed common improved template/architecture skeleton of a LinkHPC platform for the national marketplaces (outcome expected by beginning of 2024)
- and on the other side the information collected from the CoEs and the NCCs about the central hub through the questionnaire used in 2023.

This being done in continuous interaction with WP5 in charge of the C2ISS.

"Business" Training of the NCCs and CoEs and support to them regarding the topic "marketing/sales" will be continued through the organisation of a marketing "sales" seminar with NCC Sweden and with potential other actions, using the needs reported by the NCCs and the CoEs through the various actions done in year 1.

The work performed through the "EuroCC Supercomputer Accelerator" task force will be continued and developed, potentially including even more NCCs or with the development of new features or processes.

Lastly, in collaboration with Task 4.3, a series of meetings for the NCCs to present their SMEs use cases/success stories to show how the NCCs supported the SMEs, and the benefits for them, could be organised by industry sector in a format similar to the Code of the Month activity, but this would be structured by industry sector: 1 volume per month or bi-monthly on one sector, the NCCs-CoEs would invite their SMEs contacts to present a few selected use cases during a 1-2-hour slot.

4 Task 4.2 "NCCs, CoEs – Industry Interaction Support"

4.1 Objectives and Strategy Implementation for Task 4.2

Task 4.2 is in charge of offering coordination to maximise the impact and to support further development of the CoE offerings by identifying and implementing actions to increase the volume of NCCs' and CoEs' engagement with industry.

Coordination and support of the NCCs and CoEs on these topics are done through the organisation of actions related to sectorial industry events of interest, potential thematic webinars and Code of the Month series.

4.2 Actions Undertaken During Year 1 and Results

Sectorial industry events of interest
 (1) for the CoEs

Initially, the plan was to organise common participation to sectorial industry events with the CoEs, following the processes successfully used during the previous CSA FocusCoE. However, given that some CoEs were either just re-starting a new phase with new objectives towards industry or other stakeholders, or that other were starting from scratch with not specific elements to promote yet, or, as is the case for several CoEs (see the previous Table 2), no specific resources and objectives for targeting industry specifically are present, it appeared in spring 2023 that this approach would not lead to a very meaningful outcome at least in the short term. Therefore, it was decided to organise such common participation to sectorial industry events with the NCCs as prime contacts, and then to invite the CoEs to join the events that could be interesting for them.

 (2) for the NCCs

As described above, following a new plan, CASTIEL2-WP4 contacted the NCCs, and in interaction with them set up a list of sectorial events of interest through all Europe. Consolidating the votes of the NCCs and having in mind the very limited budget of CASTIEL2 to support this action (23 000€) and the high price of booths (sometimes up to around 10-15 k€ for basic options) or other participation at such events, the events that received more than 5 votes were kept in a total list of potentially 10 events (details available in Annex 7). This list is used to prepare a joined and coordinated participation of the NCCs (and if interested, relevant CoEs) to the selected events. Given the very high prices of participation in some countries (for instance, in France), there are ongoing discussions to find some agreements with the national NCCs to foster their collaboration with the other interested NCCs for some kind of joint participation as not all events will be possibly funded by CASTIEL2-WP4. Each CASTIEL2-WP4 partner involved in T4.2 received several events to manage the events on behalf of CASTIEL2 with the responsibility to coordinate with the interested NCCs to organise a common participation to the sectorial event. CASTIEL2-WP4 providing when possible (i.e. with reasonable prices, rather around 3k€) the common booth and a few tickets for representatives of the NCCs to join and present their NCCs offers. Otherwise when the prices are too high, CASTIEL2-WP4 interacts with the national NCC to find alternative ways to involve the other NCCs.

Thematic outreach activities
During meetings of the WP4 CoE industry working group, it became clear that specific outreach to industry was not high on most CoEs current agendas. Thus, it was decided to broaden the

mission of WP4 somewhat regarding the support for CoEs to help them access user groups beyond their direct research community, which is evidently best address by themselves. In the previous CSA FocusCoE, good experience was made with thematic webinars on overarching topics. During the WG meetings, a few topics were identified where a coordinated approach to activities could bring an added value and increase visibility beyond the research communities addressed by the individual CoEs, in order to highlight potential services, offerings, perspectives and tools with potential to build awareness and prepare uptake in an entire area. One of the first areas is the broad field of "environmental simulation" covering the work of HiDALGO, ChEESE and ESiWACE. Their results could be useful for instance for environmental, urban or regional planning, disaster prevention and mitigation (such as wild fires, urban heat, regional implications of climate change etc.). In a first brainstorming meeting on September 28th 2023 with these CoEs, their view on this general approach and overall topic was gathered and first ideas for activities compiled. It became clear that a useful approach would likely not be limited to a singular event but a series of activities building the necessary awareness and connections. A first concrete goal envisaged is a workshop with interested NCCs who could contribute contacts to relevant players, such as public administrations interested in these applications and consulting companies in these areas.

Coordinated action to participate at events
Another kind of action to support the efforts of the NCCs to promote their offers is to coordinate a join participation to international events like ISC2023. CASTIEL2-WP4 coordinated the participation of NCC Italy, NCC Croatia, NCC Türkiye at ISC2023 on May 24th 2023 for a BoF "HPC and industry cooperation in EU", for them to present and promote their success stories and services. This participation allowed the NCCs to showcase their successful use cases and to meet potential prospects during the whole ISC2023 event. However, this will not be renewed for the next years, as the audience met at ISC2023 was mostly already about known entities or academic profiles.

"Code of the Month" series (in collaboration with WP2): 5 volumes
To promote the codes of the CoEs (i) towards the industry champions of the NCCs, for the NCCs to better present them in their country or to their potential prospects and (ii) towards the whole European ecosystem, CASTIEL2-WP4 and WP2 set-up a "Code of the Month" series.

For each series, there is an INTERNAL webinar only for industry and competence champions of the NCCs to allow informal discussions and specific questions, and there is a PUBLIC recorded webinar open to everyone. On 06.12.2023, 5 volumes were done and the next two others (with CEEC and BioExcel) are being scheduled. The details are provided in the Table 4 below.

	Code and CoE	Date of the webinars	Number of participants	Link to the recording
Volume 1	AVBP by EXCELLERAT-2	Internal on June 14th 2023 Public on June 28th 2023	30 participants 57 participants	https://www.eurocc-access.eu/services/video-library/
Volume 2	UAIF by RAISE	Internal on July 19th 2023 Public on July 26th 2023	28 participants 27 participants	

Volume 3	NekRS by CoEC	Internal on September 20th 2023 Public on September 27th 2023	24 participants 30 participants	
Volume 4	PhysiCell-X by PerMedCoE	Internal on November 8th and Public on November 15th	21 participants 9 participants	
Volume 5	EESSI by MultiXScale	Internal on November 28th 2023 Public version will be covered by the long tutorial organised by CASTIEL2-WP3 on December 5th 2023	33 participants Public version common with WP3 long tutorial.	

Table 4: "Code of the Month" series (in collaboration with WP2): 5 volumes by end of November 2023

4.3 **Plans for the Next Steps**

During the next period, the Code of the Month activity will be continued to become a well-established event and building a library of interesting short videos on a variety of high-end software.

The first joint industrial events will be attended, the first one being the "Innovation 4 Health" exhibition on March 28 in Rotterdam, and several more in the pipeline for 2024. It will also be explored what collaborations regarding industrial outreach can be established with the project coming out of Call DIGITAL-EUROHPC-JU-2023-SME-01-01.

The approach of thematic outreach activities will be pursued with the common topic of environmental simulation and extended to more topics, also including new CoEs as they become active.

5 Task 4.3 "NCCs – CoEs Exchange and Knowledge – Sharing on Industry Interactions"

5.1 Objectives and Strategy Implementation for Task 4.3

Task 4.3 is in charge of ensuring that both NCCs and CoEs have access to all relevant industrial interaction information and existing solutions, by organizing exchange and discussions about the lessons learned, by optimizing outreach and promotion activities of the NCCs towards industry and by involving other EC or EuroHPC JU funded R&I projects where advantageous (in collaboration with WP1).

5.2 Actions Undertaken During Year 1 and Results

To address the variety of the NCCs maturity, but also the variety of the NCCs needs and challenges, or the fact that different NCCs have different staff resources available or different levels of expertise available in their structure, CASTIEL2-WP4 decided to support all the initiatives that were developing collaboratively relevant tools potentially pre-existing in some NCCs or processes to assess the maturity of the SMEs (as potential prospects, to become users or customers of the NCCs services). This way, the NCCs needing to put in place tools or processes in their NCCs in order to better welcome prospects or to monitor their interactions with SMEs and industry stakeholders can select the solution the most relevant to their specific situation: an NCC meeting a lot of prospects through conferences or industry events can use the HPC4SME tool as a first meeting tool and follow-up later on; an NCC having a developed industry department and several experts on numerous topics can use the process developed in NCC Türkiye to select with which SMEs to interact, finally an NCC not knowing where to meet SMEs and start-ups and how to communicate can leverage the "EuroCC Supercomputer accelerator" (presented in Section (4)3.3) to get more SMEs and start-ups requests and address these as new contacts.

In this task 4.3 of "sharing the existing knowledge and best practices", potentially developed in phase 1, we present the outcomes of the task force "HPC4SMEs" led by NCC Slovenia, the sharing done by NCC Türkiye about their white paper, then we report about the other actions done within this task in favour of best practices sharing and dissemination of useful content.

"SMEs assessment tool" task force led and managed by ARCTUR
This task force was launched in March 2023 with the lead by NCC Slovenia, in collaboration with CASTIEL2-WP2 and WP4, following some discussions and needs spotted during the kick-off meeting in Stuttgart. NCC Slovenia worked collectively with volunteer NCCs to improve their SMEs assessment tool, translate it in several languages and implement it in several NCCs. The tool improved and developed in 9 languages by NCC Slovenia and the task force members was finalised and online[3] in September-October 2023 and the official announcement to the whole EUROCC network, with promotion of how to present this tool and how to potentially implement it in other countries, took place on November 29th 2023 during an online meeting.

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[3] HPC4SME tool: https://aat.hpc4sme.eu/questionnaire/overview

The concept reminded during this official launch announcement event by ARCTUR is summarised in in the slide of Figure 9 and in the process scheme in Figure 10.
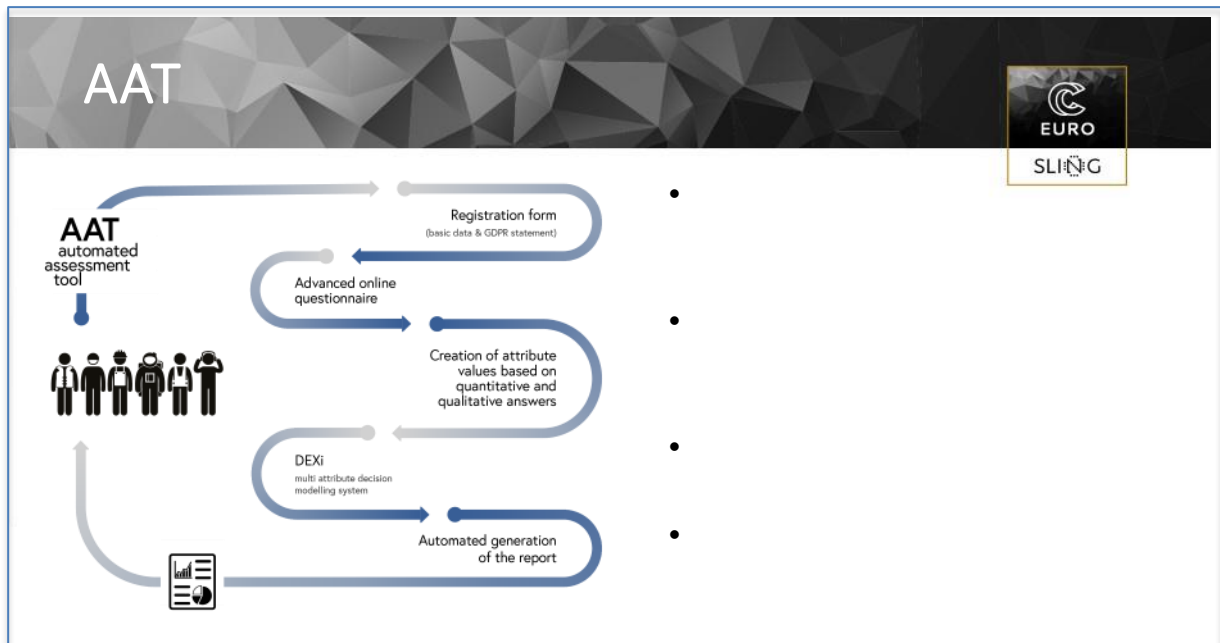

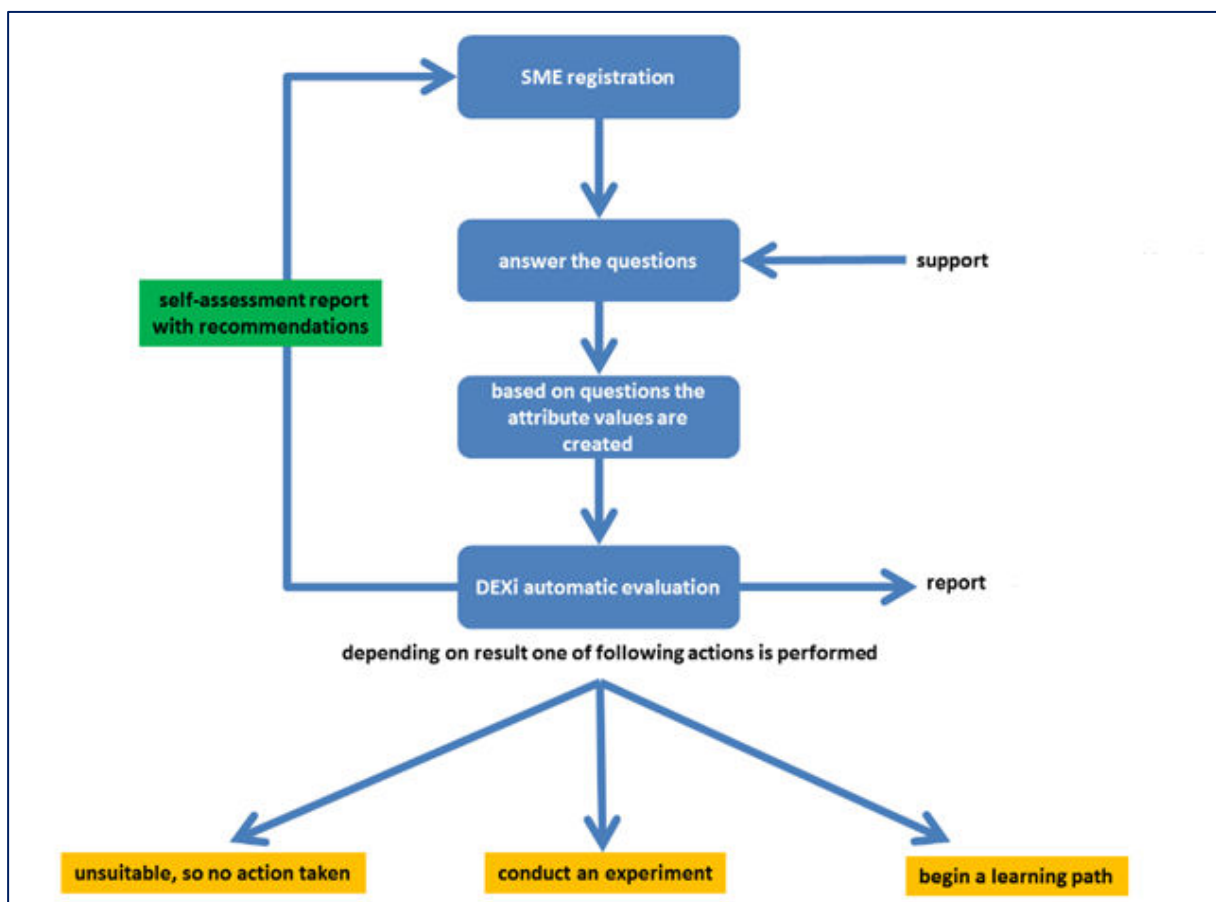**Figure 9: HPC4SMEs concept**

Figure 10: HPC4SMEs proposed process

Following the end of this task force, CASTIEL2-WP4 and WP2 worked on an online questionnaire to ask the task force members about their feedbacks in October 2023 (detailed report about them in Annex 8). Overall, the Task Force "SMEs assessment tool" is considered very successful by the Task Force members, by CASTIEL2 WP2 and WP4 and by NCC Slovenia who led the works. The way the Task Force operated was efficient and allowed to obtain a tangent result in a relatively short time. This action and the related outcome provided a new useful tool for the NCCs to interact with the SMEs, as explained in the presentation marketing document (see Annex 9) created by NCC Slovenia: "using the HPC4SME AAT gives an NCC the advantage in data-driven decision-making, strategic planning, and more. Secondly, the automatically generated reports and personalised recommendations generated by the HPC4SME Automated Assessment Tool (AAT) represent a potent information resource for your HPC4SME AAT's end users, enabling them to chart their course with data-driven insights".

The outcomes of this action were already useful for the NCCs by end of November 2023, as 17 NCCs either already contributed to have the tool usable by their potential SMEs prospects, or indicated their interest to use it. It was translated in 9 languages and planned for 1 more (French) in the next months and 33 assessments were already completed by SMEs in Europe.

Maturity assessment of the SMEs – white paper and collaboration proposal by NCC Türkiye
On August 29th 2023, CASTIEL2-WP4 invited NCC Türkiye to present their white paper "Development of a maturity assessment tool to improve SME HPC capabilities" to the industry working group of the NCCs. NCC Türkiye developed indeed a process to assess the maturity of the SMEs they interact with for the first time. This process is done through interviews, assessments by experts within their NCC. The details are presented and explained in their white paper available online[4] on EuroCC ACCESS website. During this meeting, NCC Türkiye presented their process and offered to the other NCCs to collaborate with them in case they would be interested to implement similar processes in their NCC.

Industry coffee breaks
The purpose of this action is to provide a space of free informal discussions, and to discuss important topics and collect direct feedbacks, questions or needs from the industry champions. Virtual industry coffee breaks were organised on July 6th, September 28th, and October 26th 2023, November 23st 2023, December 21st 2023. The virtual coffee breaks allowed industry champions to exchange ideas, to ask CASTIEL2-WP4 about needed elements, actions or clarifications.

Industry success stories booklet (in collaboration with WP5) & industry use-cases portfolio
In the continuity of the work done during phase 1, CASTIEL2-WP4 kept interacting with WP5 to produce an industry success stories booklet[5] in May 2023. This booklet was first distributed during ISC2023 in Hamburg. Then it was also published online for a wide promotion .

Additionally, starting in September 2023, CASTIEL2-WP4 interacted with NCC Belgium to produce a template for a slides deck (a "portfolio") of industry use cases. The "November 2023" version of this living-document/template is available in Annex 10. Ten NCCs provided 26 use cases from 11 industry sectors (out of a list of 28 industry sectors) by October 2023. On

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[4] White paper by NCC Türkiye: https://wwww.eurocc-access.eu/wp-content/uploads/2023/07/White-paper-v1.0.pdf
[5] EuroCC2 booklet n°1: https://www.eurocc-access.eu/wp-csontent/uploads/2023/07/EuroCC_booklet_2023_final.pdf

November 10th, a first complete portfolio either sorted by NCC names or by industry sectors was shared with all NCCs (see Annex 11). This portfolio will be regularly updated by CASTIEL2-WP4 when future use cases will be provided by the NCCs. The aim is indeed for the NCCs to be able to use it to interact with potential prospects from various industry sectors by showing them successful use cases from the relevant specific industry sector.

<u>Webinars with other initiatives</u>
When relevant, CASTIEL2-WP4 organised webinars for the industry champions to receive direct information from other initiatives, that could be relevant for their interactions with potential prospects or ongoing collaborations with industry. The webinars organised in 2023 were:

(1) <u>FF4EuroHPC success stories - alignment with CASTIEL2 (WP4) webinar on April 24th 2023</u>

This webinar was the opportunity for the industry champions to hear about the outcomes of the open calls of FF4EuroHPC, about statistics regarding them, and to hear useful tips to prepare successful applications for future similar open calls.

(2) <u>ETP4HPC: presentation of their market study results in July 2023</u>

As the NCCs were asked to participate to the ETP4HPC market study in Summer 2022, ETP4HPC presented some first results and outcomes of this study to the industry champions in July 2023.

(3) <u>Interaction with GAIA-X and EDIHs to organize a webinar with them for the NCCs and CoEs by end of 2023.</u>

GAIA-X presented its objectives and opportunities during a webinar on November 6th 2023. A workshop with the EDIHS is yet to be organised. Since this touches other areas and the concept needs to be well thought out with all stakeholders, this is postponed.

5.3 Plans for the Next Steps

The continuous work about the industry success stories will be continued in collaboration with WP5, the NCCs and as new collaborators the CoEs too. Indeed, a second booklet is planned for Summer 2024, and either this new volume will include industry success stories from the CoEs too, or there will be a dedicated booklet for the CoEs. Similarly, the continuous work about the industry use cases portfolio will be continued in collaboration with the NCCs, with the aim by the end of the EUROCC2 project to have collected use cases from all industry sectors and from all NCCs.

The industry coffee breaks will continue as they allow the industry champions from NCCs and CoEs to interact together; this is also an opportunity for them to ask questions to CASTIEL2-WP4 or to formulate needs or requests for some specific actions or support.

At the beginning of 2024, the NCCs will be asked about the organisations or entities they have been connected yet and Task 4.3 will analyse if the most relevant actors have been covered. Then, to reinforce the knowledge about the industry stakeholders in the HPC ecosystem in Europe, there will be topic-focused meetings with some relevant initiatives per topic (e.g. funding for SMEs, infrastructure access etc.). This way, the NCCs and the CoEs would have opportunity to interact with HPC actors outside of the European ecosystem, and that are relevant regarding the industry topics to provide guidance for NCCs in the international ecosystem.

6 Transversal Topics Monitored by Work Package 4

There are several topics that are transversal to all tasks of WP4. They are therefore organised and monitored centrally, and the results and outcomes are made available to all tasks leaders.

6.1 Key Figures Regarding Interactions with Industry

- **For the NCCs**

In continuity with phase 1 of EuroCC/CASTIEL that ended on December 2022, the project management team (PMT) collects quarterly Technical Progress Reports (TPRs) from the NCCs. Following the end of the phase 1 of EuroCC/CASTIEL, CASTIEL-2-WP4 updated in the template of these TPRs the two tables about "Industry figures".

The questions asked in these quarterly TPRs are indicated in the tables Table 5 and Table 6 below.

Industry Interaction – SMEs within the reported 3-month period

	Last up-to-date figures FOR THIS QUARTER
Number of PoCs done with SME	X PoCs done with SMEs
Projects initiated with SMEs6	X projects initiated
Projects finalised with SMEs7	X projects finalised
Sectors concerned8	X sectors concerned
Number of success stories with SMEs	X success stories ready for publication & shared with CASTIEL2

Table 5: Industry interaction with SMEs

Industry Interaction – Big Industry (Large companies) within the reported 3-month period

	Last up-to-date figures FOR THIS QUARTER
Number of PoCs done with Big Industry stakeholders	X PoCs done with Big Industry stakeholders
Projects initiated with Big Industry[9]	X projects initiated
Projects finalised with Big Industry[10]	X projects finalised
Sectors concerned[11]	X sectors concerned
Number of success stories with Big Industry	X success stories ready for publication & shared with CASTIEL2

Table 6: Industry interaction with Big Industry

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6 e.g. All other types of projects, that are not PoCs (e.g., support provided to submit a proposal to a funding agency OR collaboration agreement/MoU signed, etc.)

7 e.g. All other successful types of projects, that are not PoCs (e.g., funding grant received by SME thanks to NCC support OR technology transfer support, etc.)

8 looking at the list from the ILO

9 e.g. All other types of projects, that are not PoCs (e.g., collaboration or contract initiated between a Big Industry player and the NCC, etc.)

10 e.g. All other types of projects, that are not PoCs (e.g., successful finished collaboration with a Big Industry player or finished direct contracts, etc.)

11 looking at the list from the ILO

The results for the first two quarters (Q1: January-March 2023 and Q2: April-June 2023) were collected by the PMT and forwarded to CASTIEL-2-WP4. CASTIEL-2-WP4 processed these figures, the results are presented in Annex 12.

Looking at the very low reported numbers and at the high amount of "no answer", CASTIEL2-WP4 interacted with the industry champions of the NCCs on October 12th 2023 to understand where there might have been some miscommunication or confusion and to ensure that the objectives of the tables (i.e. for CASTIEL2 to monitor the evolution of the interactions of the NCCs with industry stakeholders) were understood. Afterwards, CASTIEL2-WP4 produced a FAQ document (Annex 13) to explain how to fill in these tables and how to properly count and declare PoCs and projects in the NCCs. This way, the next quarters should allow CASTIEL2 to have a better view of the actions undertaken by the NCCs to interact with industry (through PoCs and projects).

- **For the CoEs**: in C5, it was decided during September-October 2023, at the request of CASTIEL2-WP4, that PMT will collect the same industry figures from the CoEs when the Collaboration Agreement (COLA) will have been signed between them and CASTIEL2 (this being not yet in place by December 8th 2023).

6.2 **Meetings and Workshops for the Industry Working Group**

Several meetings of the industry working group were organised as transversal actions (between the three tasks of WP4), as they promoted outcomes of transversal actions or as they were meant to provide valuable inputs for phase 2 for all tasks of WP4 to work on their specific topics. These meetings are listed in the Table 7.

Title	Objective	Date & Location	Content-Outcomes of the meeting
Industry working group meeting: "Lessons learned from phase 1 & launch of phase 2"	To collect the feedbacks following the end of phase 1 and to start the phase 2 with relevant feedbacks and new requests from the industry champions	January 31st 2023 Stuttgart, Germany	Collection of key topics for the NCCs, for CASTIEL2-WP4 to implement actions to address them during EUROCC2-CASTIEL2
Industry working group meeting "kick-off meeting"	Session organised during the kick-off meeting, to launch the phase 2 and discuss the plans regarding the industry working group	February 07th 2023 Stuttgart, Germany	The objectives set up in the various Grant Agreements (EUROCC2-CASTIEL2) were discussed. The interactions with the CoEs, new members of EUROCC2 -CASTIEL2 were discussed
Industry working group at the CoEs kick-off meeting organised by CASTIEL2-WP2	Participation to the CoEs kick-off meeting organised by CASTIEL2-WP2	April 18 & 19th 2023, online	Organisation of an "Industry topics" session, with animation of group discussions and monitoring of a concept-board used to collect the goals, challenges and needs of the NCCs & CoEs with regards to the industry topics during this starting period of EuroCC2-CASTIEL2
Cluster tool tutorial (updates & how to use it)	Session co-organised with CASTIEL2-WP5	May 16th 2023, online	Meeting online to update the NCCs about how to enter their info, and how to use it, and about the available external contact page
Industry working group meeting to launch a task force on the topic "LinkHPC platform"	Meeting to present the current situation, the lack of feedbacks from the review of CASTIEL1 on this topic, and to propose to create a task force to at least create a common template for such a platform.	June 29th 2023, online	To present the proposal by CASTIEL2-WP4 to work together on the "LinkHPC topic" & set up a dedicated task force

Table 7: Meetings organised transversally by CASTIEL2-WP4

7 Major Achievements and Concluding Remarks

During the first year of the CASTIEL-2 project, WP4 performed various and numerous actions. Major achievements for CASTIEL2-WP4 for the benefit of the NCCs are the various outcomes and results performed by the task forces, coordinated by CASTIEL2-WP4:

- "LinkHPC platform: design of a common structure for the services" led by NCC France (see details in section 3.2)
- "EuroCC Supercomputer accelerator" led by NCC Austria (see details in section 3.3)
- "SMEs assessment tool" led by NCC Slovenia (see details in section 5)

Thanks to these task forces, during this first year 2023, there were several valuable developments of tools, processes and templates that can then be used by the whole EUROCC2 network.

CASTIEL2-WP4 also organised for the industry champions (and the communication or competence champions on some actions) dedicated customised trainings on the topic "marketing/sales" (see details in section 3.3), in order for the NCCs and CoEs to be able to properly present and promote their services towards industry stakeholders.

Other major outcomes, including summary documents and provided information, are:

(1) Information about the "pay-per-use" access for industry to the EuroHPC-JU supercomputers

Following the meeting of the industry working group in Stuttgart in January 2023 (details about this meeting in Table 7) and the request made there by the NCCs to receive clear information about how industry can get access through "pay-per-use" to the JU supercomputers, CASTIEL2-WP4 undertook an investigation on this topic and produced in July 2023 a summary Guide regarding Access for Industry to EuroHPC JU Systems, publicly available at https://www.eurocc-access.eu/wp-content/uploads/2023/07/202307_Access-to-supercomputers-of-the-JU_Industry_focus.pdf .

(2) Information about the CoEs, with regards to their interaction with industry

Following the online kick-off meeting organised for the CoEs by CASTIEL2-WP2 on April 18 & 19th 2023 CASTIEL2-WP4 produced a detailed report about the main information about the CoEs, their interactions with industry and their structure in a detailed report was produced about these topics and shared only internally with all the NCCs and the CoEs (see Annex 4, only shared with the JU and the reviewers). Public tables, summarising their goals and structure (Table 2), and summarising the information regarding provision of services by the CoEs (Table 3) were also provided to the NCCs and CoEs for dissemination to potential prospects about the opportunities offered by the CoEs.

(3) Sharing of "EU" information

Continuing what was done during EUROCC1/CASTIEL1, CASTIEL2-WP4 kept regularly forwarding by email to the industry champions the information received about the EU (JU/EC or even outside the Horizon Europe) about potential funding or opportunities for industry that could be of interest for the NCCs or the CoEs.