D9.2 Joint Digital Industry Hub Introduction and Strategy

Lead Partner:	EGI Foundation
Version:	1
Status:	FINAL
Dissemination Level:	Public
Document Link:	https://documents.egi.eu/document/3345

Deliverable Abstract
This report introduces the overall project's Joint Digital Innovation Hub, now referred to as the EOSC Digital Industry Hub (EOSC DIH) including the structure, management, strategy for its evolution, technical facilities and initial commercialisation plans.

COPYRIGHT NOTICE

DELIVERY SLIP

	Name	Partner/Activity	Date
From:	Sy Holsinger Marcin Płóciennik	EGI Foundation PSNC/WP9	
Moderated by:	Malgorzata Krakowian	EGI Foundation	
Reviewed by	Shaun de Witt Gergely Sipos Dieter Van Uytvanck	UKAEA EGI CLARIN	
Approved by:	AMB		31/07/2018

DOCUMENT LOG

Issue	Date	Comment	Author
v.0.1	2018-03-20	Table of Contents	Sy Holsinger, EGI
v.0.2	2018-04-16	First draft of section outline for internal discussion	WP9 Task Leaders
v. 0.3	2018-05-21	Another round of internal discussion	WP9 Task Leaders
v. 0.4	2018-06-06	Full draft of content for internal review	WP9 Members
v. 0.5	2018-06-18	Version for external review	WP9 Members
v. 0.6	2018-07-05	Internal round of updates from external review	WP9 Members
v.1	2018-07-27	Final version for approval	Sy Holsinger, EGI

TERMINOLOGY

https://wiki.eosc-hub.eu/display/EOSC/EOSC-hub+Glossary

Terminology/Acronym	Definition
BDVA	Big Data Value Association
DI4R	Digital Infrastructures for Research
DIH	Digital Innovation Hub
EC	European Commission
EOSC	European Open Science Cloud
EU	European Union
HPC	High Performance Computing
IPR	Intellectual Property Rights
iSpace	BDVA Innovation spaces
MIDIH	Manufacturing Industry Digital Innovation Hubs
NREN	National Research and Education Network

RTO	Research and Technology Organisation
SAE	Smart Anything Everywhere
SHAPE	PRACE SME HPC Adoption Programme in Europe
SME	Small and medium-sized enterprises
TRL	Technology Readiness Level

Contents

Executive summary

The EOSC-hub Digital Industry Hub (DIH) is a mechanism for private companies to collaborate with public sector institutions in order to access technical services, research data, and human capital. There is a network of Digital Innovation Hubs in place across Europe, already supporting sectors such as manufacturing, internet of things, cybersecurity or cognitive computing. The EOSC-hub DIH will add to the network by bringing private companies into the European Open Science Cloud through concrete business cases.

The EOSC-hub DIH builds on individual public e-Infrastructures business engagement programmes and outreach activities in place for several years. The added value brought through a joint effort is in packaging a wider variety of services and expertise into a more coherent offer that would otherwise have to be accessed individually or compiled on their own. Services available to industry include, but are not limited to, access to e-Infrastructure resources; wealth of data produced by the research community; expertise and support; coaching and training; and visibility on a European and international scale, amongst others. There are already six active pilots involving a dozen individual companies exploiting these services, and through the EOSC-hub DIH, they will develop innovative solutions and bring them to market in different domains such as sport and biomedicine, cybersecurity, and environment.

Ultimately, the EOSC-hub DIH will add value in supporting entrepreneurship by providing access to e-infrastructure and Research Infrastructure services, resources, and data to accelerate market uptake and exploitation of results; brokerage and innovation, connecting commercial innovators with scientific community and business experts in the e-Infrastructures domain; and improve industry products and services through development activities like piloting, prototyping, performance verification, product testing.

Key activities are:

- Offer access to e-Infrastructure resources to support pilots, prototyping, scaling-up, design, performance verification, testing, demonstration, etc.
- Facilitate partnerships with SMEs/industry, innovation clusters, accelerators and investors that stimulate innovation.
- Increase visibility on a European/International level
- Provide business coaching and training to accelerate market uptake and exploitation results.
- Support access to funding/grants.
- Develop long-term business relationships.
- Support players from the industry become providers of services in EOSC.

Each of the six business pilots has defined activity plans that follow a common structure in a dedicated deliverable D9.1.

1 Introduction

The EOSC-hub Digital Industry Hub (DIH) is a mechanism for private companies to collaborate with public sector institutions in order to access technical services, research data, and human capital. There is a network of Digital Innovation Hubs in place across Europe, already supporting sectors such as manufacturing, internet of things, cybersecurity or cognitive computing. The EOSC-hub Digital Industry Hub will add to the network by bringing private companies into the European Open Science Cloud through concrete business cases.

This report is structured as follows:

- Section 1 - provides a brief summary of the EOSC-hub DIH and structure of the report.
- Section 2 - offers some context to the background and concept of Digital Innovation Hubs initiated by the European Commission and the existing networking of established DIHs.
- Section 3 - defines the overall strategy for the EOSC-hub Digital Industry Hub comprising value propositions, target groups and collaborations, services and technical facilities, communication channel, materials and events as well as commercialization activities to accelerate market uptake and results in exploitation of both the pilots and Competence Centres, thus contributing to further develop the European economic innovation capacity.
- Section 4 - outlines an activity plan for the first project year.
- Section 5 - concludes the report along with some challenges that will need to be addressed and mitigated as the project moves forward and concrete next steps to evolve the DIH.

Further details regarding the first initial set of business pilots and activity plans are available in D9.1[1].

---

[1] https://documents.egi.eu/document/3295

2 Background of Digital Innovation Hubs

2.1 Definition

There are many similar definitions of Digital Innovation Hub, however as a European initiative, the EOSC-hub DIH builds on the one defined by the European Commission:

> *"Digital Innovation Hubs are one-stop-shops that help companies to become more competitive with regard to their business/production processes, products or services using digital technologies. They are based upon technology infrastructure (competence centre) and provide access to the latest knowledge, expertise and technology to support their customers with piloting, testing and experimenting with digital innovations"*[2].

Important questions for any new DIH are:

- How does it help SMEs in digital transformation?
- How does it interact with regional, national and EU ecosystems?
- How does it coordinate EU, national and regional funding?

A DIH implies the participation of partners beyond individual SME engagement that is spread across multiple geographic regions with cooperation between organisations such Research and Technology Organisation (RTOs), universities, incubators/accelerators, regional development agencies and governments. The services provisioned by existing hubs can be strengthened by the establishment of a pan-European network of DIHs, an objective of the European Commission.

To foster innovation, all companies should have the opportunity to access products and services to digitize their organisations, and should be provided with both business and financial support; it is the EC's ambition that all companies should have a DIH within their region.

Digital Innovation Hubs are established on basis to help every company, whether large or small, high-tech or not, to gain access to digital opportunities. DIHs should work like one-stop shops, with research organisations at the core, where SMEs or startups get access to technology and opportunities to financing advice, market intelligence and networking.

The European Commission had earmarked 500M€ from Horizon 2020 budget to support the development of DIHs, of which 300M€ is for WP2018-2020.

In the European Commission's opinion, Member States and regions play a key role in establishing DIHs to support the digital transformation of industry in their regions.

In order to promote regional DIHs as part of a pan-European network of collaboration the European Commission launched the European catalogue of DIHs[3], a repository that includes more than 450 existing hubs across Europe and that will keep growing with new additions in the future.

---

[2] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs
[3] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool

Fig.1 - The Digital Innovation Hub Model[4]

Fig.2 – Element of Digital Innovation Hubs

"Every region, be it more or less industrialised, has a lot to gain; regions should build on their strengths, specificities and know-how to develop their economies, create new jobs, new spin-offs, develop entrepreneurship, and attract investors. They should shape ecosystems covering the entire value chain - from the scientific basis, up to deployment - in order to benefit the citizens, the service sector and the industry. Nevertheless, to take full advantage of such technologies, regions should team up and learn from their experiences, and exploit both expertise and value chain creation complementarities" Cécile Huet, Deputy Head of Unit Robotics & Artificial Intelligence, DG CONNECT, EC.

2.2 In the Framework of EC Strategy

'Digitising Europe Industry' is a key policy under the European Commission's Digital Single Market Strategy, which it states *"Industry is one of the pillars of the European economy – the manufacturing sector in the European Union accounts for 2 million enterprises, 33 million jobs and 60% of productivity growth. We stand on the brink of a new industrial revolution, driven by new-*

---

[4] https://ec.europa.eu/futurium/en/system/files/ged/dei_working_group1_report_june2017_0.pdf

generation information technologies such as the Internet of Things (IoT), cloud computing, big data and data analytics, robotics and 3D printing. They open new horizons for industry to become more adventurous, more efficient, to improve processes and to develop innovative products and services. Recent studies estimate that digitalisation of products and services can add more than €110 billion of annual revenue in Europe in the next five years"[5].

According to EC analysis, specifically around 'Pan-European network of Digital Innovation Hubs, *"Europe can gain decisive competitive advantages internationally as long as it is capable of generating a wave of bottom-up digital innovations involving all industrial sectors across Europe. With the rapid pace of change in digital technologies, most decision makers in industry have difficulties to decide when to invest, up to what level, and in which technologies. Around 60% of large industries and more than 90% of SME feel lagging behind in digital innovation. Similarly, there are strong digitisation discrepancies between industrial sectors"[6].*

When asked about public support to address the above, industrial stakeholders pointed out the urgent need for "facilities to experiment with, and test digital innovations" before investing in digitisation[7]. Regions and cities with a higher digital readiness had invested in digital competence centres (e.g. RTOs, university labs) offering such support to industry. As regions with strong clusters in digital industries are characterised with very high innovation levels, there is also scope to better use clusters with technology infrastructure and innovation intermediaries.

The impact is even higher when support to competence centres is combined with actions to facilitate access to finance and with outreach and brokerage actions. The result is a full "digital innovation hub" (DIH) fostering "many-to-many" connections between competence centres, industry users and suppliers, technology experts and investors and facilitating access to EU-wide markets. Networking these DIHs across Europe would create a one stop-shop to the latest digital technologies accessible for any business. In this context, the synergies between digital and other key enabling technologies could also be encouraged and is well-aligned with the objectives of the European Open Science Cloud.

Facilitated by a dynamic framework for coordination and experience sharing between public and private initiatives at the EU, national, and regional levels, the proposed actions are expected to mobilise close to 50B€ of public and private investment between 2016-2020 to reinforce coordination of efforts on skills and quality jobs in the digital age. In particular, the EC plans to focus DIH investment from Horizon 2020 on:

- Networking and collaboration of digital competence centres and cluster partnerships.
- Supporting cross-border collaboration of innovative experimentation activities.
- Sharing of best practices and developing, by end of 2016, a catalogue of competences.
- Mobilising regions with no Digital Innovation Hub to join and invest.
- Wider public procurement of innovation to improve efficiency and quality of public sector.

---

[5] https://ec.europa.eu/digital-single-market/en/policies/digitising-european-industry
[6] https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs
[7] EC Communication, "Digitising European Industry Reaping the full benefits of a Digital Single Market", COM(2016) 180 final

2.3 General Objectives and Activities

The overall goal of a Digital Innovation Hub (DIH) is to help SMEs become more competitive by providing companies with access to technological facilities, identifying technical solutions, and raising their level of awareness of how digital technologies can increase the competitiveness of their companies. It provides connections to investors, facilitates access to financing digital transitions, and helps connect users and suppliers of digital innovation along the entire value chain. DIH is to design to operate comprehensively, supporting and connecting companies in a region, or beyond, according to a common service model to digitalise activities. Through a DIH, companies have access to the latest knowledge and technology, not available anywhere else. DIHs give companies the opportunity to test and experiment with digital innovations related to its products, processes or business models. These services are of particular importance for enterprises that currently have a relatively low level of digitization and have no to limited resources to meet the challenges of digitization. DIHs should also provide access to knowledge, training and mentoring services, market research and financing through joint projects, matching companies, and supporting the identification of financial opportunities.

The goal of the EOSC-hub DIH being designed, is in line with the generally accepted goals of this type of initiative.

The following sections provide a brief overview of Regional, National, European and International DIHs, with specific examples and links included as part of Annex I.

2.3.1   Regional

According to I4MS[8]: *"Regional Digital Innovation Hubs are essential to the development and expansion of innovation ecosystems, making digital technologies accessible to any EU business. The regional hubs are consortia of organizations that maintain, expand and create the (regional) ecosystem on I4MS related activities. Innovation Hubs act as the 'spider in the web' of innovation ecosystem, supporting the (regional) community, sharing infrastructure and expertise, and linking research, industry and (regional) government.*

Innovation hubs include one or more competence centres and offer innovative services to activate and stimulate the digitization of SMEs, Mid-Caps, but also large companies. DIHs offer services such as business support, networking, matchmaking, brokerage and dissemination activities. Within the framework in I4MS, Digital Innovation Hubs are key to expanding the coverage of I4MS to regions that show limited activity in the field of I4MS and establish active network."

Regional DIHs play a key role towards enabling every company in Europe to have access to DIHs, by offering a convenient location for daily operations.

2.3.2   National

National Digital Innovation Hub helps promote the local thinking.

---

[8] http://dih.i4ms.eu/regional-hubs

Using Italy as an example, they adopted a multi-tiered approach under the framework of the so-called "Impresa 4.0" initiative[9]. At the national level, there are the National Technology Clusters. They are broad and inclusive networks made up of the major public and private entities operating throughout the country and focused on industrial research, training and technology transfer: enterprises, universities, public and private research institutions, start-up incubators and other players active in the field of innovation. Each aggregation focuses on a specific technology and application area of strategic interest to Italy. It represents excellence in terms of skills, knowledge, facilities, networks and potential.

Each National Technology Cluster is aimed at one of the following areas considered of strategic interest to the national industry: Aerospace, Agrifood, Green Chemistry, Smart Factory, Surface and Marine Mobility, Life Sciences, Technologies for Living Environments and Technologies for Smart Communities.

In particular, the National Cluster for Smart Factory[10] is structured as an association that includes large companies, SMEs, universities, research centres, company associations and other stakeholders that are active in the advanced manufacturing sector. At the moment, it includes 185 industries (of which 131 are SMEs) and 34 Research Organizations. Its vision is to propose, develop and implement a national strategy based on research and innovation aimed at the development and application of innovative technologies in order to strengthen the competitiveness of advanced manufacturing in the international industrial context.

This is just one example of several National DIHs (See Annex I).

2.3.3 European

At the EU level, the Digitising European Industry Strategy wants to ensure that every region in Europe has at least one DIH by 2020, so that digital innovations are accessible at a working distance to any company. In order to reach this target, the main focus of the European Commission is to link regional DIHs in a strong pan-European network of DIHs. For this, the European Commission is investing €100 million per year from 2016 to 2020.

Several EU initiatives are active in shaping the pan-European network of DIHs that are contributing to boost competitiveness of existing industries (notably for SMEs and mid-caps) and to create additional business opportunities.

As mentioned, to help DIHs to effectively collaborate and network, the European Commission launched the European catalogue of DIHs[11], a repository that includes more than 450 existing hubs across Europe and that will keep growing with new additions in the future.

A working group[12] within the Digitising European Industry initiative brings together relevant stakeholders and helps to keep making progress towards the implementation of the European

---

[9] http://www.sviluppoeconomico.gov.it/index.php/it/industria40
[10] http://www.fabbricaintelligente.it
[11] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool
[12] https://ec.europa.eu/futurium/en/content/report-wg1-digital-innovation-hubs-mainstreaming-digital-innovation-across-all-sectors-final

Commission's priorities on Digital Innovation Hubs. The EOSC-hub DIH is currently working with group to obtain recognition as a DIH and to be included in the catalogue.

2.3.4 International

International DIHs create a space for the cooperation of the largest international companies, international leaders, during projects of global significance. Its solution for global players to find more collective and effective ways of providing support to innovation spaces around the world. DIHs also give an opportunity for SMEs without international DIH support would not establish such cooperation. Thanks to International DIH technology innovation is spreading globally. International Hubs are a big platform for cooperation, exchanging knowledge, possibilities and global challenges.

EOSC-hub DIH has already started discussions with XSEDE representatives in the US to share experience with engaging commercial entities. Several areas have already been identified that could be re-used/leveraged to support wider industrial participation in the European Open Science Cloud e.g. knowledge exchange; paid memberships.

3 EOSC Digital Industry Hub

3.1 Strategy

The EOSC-hub DIH is written out as "Digital Industry Hub" as a marketing method to clarify that it is a mechanism for commercial enterprises. The EOSC-hub DIH is not starting from scratch, but builds on individual public e-Infrastructures business engagement programmes and outreach activities that have been in place for several years. A more complete overview of each programme can be found in Annex II.

The added value brought through a joint effort is in packaging a wider variety of services and expertise into a more coherent offer that would otherwise have to be accessed individually or compiled on their own. The following section provides and overview as background efforts and highlights the overall strategy of the EOSC-hub DIH.

3.1.1 Value Proposition

The EOSC-hub Digital Industry Hub is a multi-dimensional entity that allows research e-Infrastructures to support business organisations to stimulate the innovation potential of research infrastructures, as well as helping SMEs, start-ups and other innovative actors to tap into the academic world both in accessing knowledge as well as technical services. The final goal is to create a one stop shop that brings IT services, research data, and expertise into a single place to support innovation in industry.

From the perspective of business, there is a clear need for digital services (as mentioned in Section 2.2) that e-infrastructures (and the service providers within them) can satisfy, in terms of not only computing and storage needs but also a set of integrated services to allow, for example, the data ingestion, management, sharing, a set of different models and algorithms that gives an added value.

The value proposition of the EOSC-hub DIH can be summarized in five key areas:

3.1.1.1 *Brokerage and innovation*

One of the most important missions of a DIH is to stimulate interactive innovation between the different actors, especially between the service providers (supply side) and the innovative actors (demand side). It is important for the DIH's participants to be able to access the latest advances from the research and technology sector, so that they have the opportunity to explore ways of adopting them and applying them in their business cases.

In this regard, the EOSC-hub DIH aims to:

- Facilitate effective collaboration within local and international networks.
- Promote "open innovation" as the concept used to leverage resources available in the e-Infrastructure network and strategically manage business innovation processes.
- Generate innovation ecosystems around e-Infrastructures.

- Create a wider community adding researchers, web-entrepreneurs, startups, SMEs, investors and corporates from different sectors and geographies.
- Expose startups/SMEs to new markets, cultures and business opportunities.

In this context, the role of the EOSC-hub DIH is extremely important, as it operates as the key connection point between the different actors of the ecosystem. For this to happen, the EOSC-hub DIH needs to have a deep understanding of the needs of startups and SMEs and an always up-to-date knowledge of the existing technologies / solutions from the e-infrastructures.

3.1.1.2 *Provide the means for business incubation of innovative ideas*

Business incubation is a flexible combination of business development processes, infrastructure and people supporting businesses by helping them to grow through early stages of development. Activities in this space include, but not limited to:

- Identifying and refining innovative ideas and facilitating the start-up of operational groups.
- Providing the necessary expertise and infrastructure (data, hardware, software, platforms).
- Creating conditions for showcase of benefits of new services and products within the e-infrastructure.

A number of business pilots (x6) were identified through an open process at the time of the proposal definition and will serve as initial demonstrators of the DIH during the first half of the project and a laboratory to work out the long-term procedures and revised value proposition for future experiments. These pilots represent different domains and have different technical requirements, while introducing added value services and clear exploitation and long-term business plans. It is foreseen to add additional pilots over the course of the EOSC-hub project.

3.1.1.3 *Access to public and private funding and facilitate market uptake*

A dedicated project task (T9.3) aims to support both pilots and Competence Centres (CCs) to build-up successful market take-up and commercial boost strategy, through tailor-made coaching, market insights and network with investors/corporate. A business oriented coaching team will be established with the mission to accelerate pilots and CCs market uptake and exploitation of main achievements/ results.

The primary goals are:

- Identify market/business opportunities, and create, test and implement business models
- Define exploitation plans (strategy and commercial strategy and plans) through dedicated business-oriented coaching is also offered with the mission to "accelerate" market uptake and results.
- Analyse/evaluate IPR in collaboration and support definition of pre-commercial agreements.
- Design a communication plan to exploit Pilots/CCs achievements.
- Facilitating the identification of the most appropriate funding options.
  - There are a number of national, regional and local funding programmes, both in the public and private sectors, available to provide the investment required to

productise DIHs leveraging on e-infrastructures. In addition, project partner F6S[13] has been supporting and connecting innovators to funders and stakeholders for years and will support the EOSC-hub DIH to evolve concepts developed to be brought to market.

3.1.1.4 Support entrepreneurship

Entrepreneurship is the process of designing, launching and running a new business, which is often initially a small business.

- Creating opportunities for industry to obtain resources (i.e. products, services, data, platforms and testing facilities) to establish new business
- Gaining new competencies and skills within research and academic spaces for supporting spin-outs.
- Fostering the re-use of open e-infrastructures ecosystems for innovation.
- Improving exploitation of thematic/community-driven services among e-infrastructures.

3.1.1.5 Training

In the era of data-powered services and applications, the delivery of training on digital skills (related to e-infrastructures services) and IT service management to start-ups and SMEs is an essential service provided by the EOSC-hub DIH. The EOSC-hub DIH (through project WP9) will coordinate with another dedicated project activity (WP11 – training) to ensure that relevant training material, webinars and/or courses are created, promoted and delivered. Examples include areas such as service specific tutorials, business coaching webinars and formal certification in service management according to FitSM (Business pilot company Koma Nord has already attended FitSM Foundation course held in Malaga, April 2018).

3.1.2 KPIs and Milestones

Several Key Performance Indicators (KPIs) were provided during the project preparation phase. There were three KPIs specifically associated to the EOSC-hub DIH. In addition, a project milestone was identified to compliment the KPIs to ensure the business pilot success stories would be captured, published and promoted. These are summarized as:

Table 1 – EOSC-hub DIH KPIs

Description	Base Target	Stretch Target
# commercial services/technologies increased in TRL via the DIH	7	10
# published business pilot success stories	5	8
# signed (pre-)commercial agreements for EOSC-hub services	3	6

3.1.3 Vouchers

One of the project objectives of the EOSC-hub DIH is to attract additional pilots, however, there is no funding yet allocated to EOSC-hub providers to support additional business pilots with capacity

---

[13] www.f6s.com

beyond initial 6 pre-selected pilots. Moreover, there is no Annex K within the project (EC project financial instrument for involving financial support to third parties) in order to potential run open calls[14]. Finally, commercial entities tend to be sceptical when something is generically offered and unstructured for free with no specified monetary value.

The concept of vouchers is to offer a redeemable transaction that is worth a certain monetary value that may be used only for specific reasons or on specific goods, but not in the form of cash. The value of this instrument is:

- Is valid under EC rules for distributing internal project funds to consortium members.
- Provides a specific monetary "value" of defined service packages so industry has a clear understanding of what is being provided and the value of said service as well as its limitations.
- Ensures "real money" goes to the EOSC-hub providers to incentivize them to support industry.
- Supports the strategy for engagement to increase use cases beyond initial pilots.

The requested budget is €100,000, which would represent only 7% of the €1,450,000 reserved fund for the service providers call within the project, which offers a high return on investment with potentially an extra 12 use cases and around 10 additional concrete engagement/feedback through trials.

Table 2 – Voucher Packages

Amount (€)	Available (#)	Usage
€15,000	2	Formal agreements with defined use case (e.g. MoU)
€10,000	3	Organize a hackathon; other use cases
€5,000	7	Prize based (e.g. survey; industry events); incl. support
€500	10	Fully automated trial/testing (e.g. pre-packaged offer)

This is a common approach used not only in the commercial sector (e.g. Google, Amazon, Microsoft, Telekom Cloud), but also in public funded initiatives such as Helix Nebula and PRACE SHAPE programme.

At the writing of this deliverable, information was presented to the PMB, but no final decision has yet been taken on whether or not the reserved fund can be used for supporting consortium members to support new industrial applications. The risk is that if not approved, future service requests will need to be offered on a best effort basis only, limited to service providers willingness to offer services for free or would need to be supported by other means.

---

[14] https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-k-fs3p_en.pdf

3.2 Collaboration

3.2.1 Target Groups

The EOSC-hub DIH will foster the creation of partnerships to promote innovation between e-Infrastructures and the private sector by piloting concrete use cases. Key activities comprise networking and creating partnerships with innovation clusters and policy initiatives such as the i-Space (Innovation spaces) subgroup of the Big Data Value Association PPP (BDVA[15]).

The EOSC-hub DIH aims also at connecting with European Digital Innovation Hubs such as I4MS. This cooperation can provide an important input on business models and sustainability strategies.

In the table below, an overview of target users and the different types of collaborations planned is presented. Engagement measures for each include direct contact, participation in working groups and attendance of networking events. Planned event organisation and participation is provided in Section 3.5.

Table 3 – Target Groups

Target	Collaboration type	Examples
Regional and National Digital Innovation Hubs	Coordinate national providers and connection to EOSC	"Innovation Box" DIH of CNA Ancona (Italy)
Pan-European Digital Innovation Hubs	Exchange best practices and tools such as platforms for the DIH	I4MS; DIATOMIC (SAE); ECHORD++; ACTPHAST; SESAME NET
Policy makers and initiatives	Dissemination and sharing best practices and competencies for knowledge transfer between the public and private sector	EC DIH WG; BDVA (i-Space); e-IRG
European Projects	Dissemination and sharing best practices	CloudiFacturing; HPC-Europa3; Elixir; ICTFOOTPRINT
Business Institutions	Identifying sustainability models	POLIMI; Gränna Business Association
Innovation clusters, accelerators and investors	Identifying market/business opportunities	UberCloud; F6S; Digital Catapult; Innovalia; TNO
Industry Associations	Definition of new pilot activities, products, services and requirements from Industry	European Factories of the Future Research Association (EFFRA); FAO
SMEs	Definition of new pilot activities, products, services (predictive maintenance, digital twins, concurrent engineering, design-to-value, customer analysis, demand forecasting, supply, planning, sensor data-driven operations analytics, …)	CFD-Support; Numeca; Mind the Byte; Agro-Know; Terradue; Sinergise; CloudFerro; Acellera; Evotec

---

[15] http://www.bdva.eu/

3.2.2   Community Building and Social Engagement

The EOSC-hub DIH will foster a dynamic exchange between stakeholders to build a social community that facilitates matchmaking leading to the development of valuable and profitable relations between stakeholders (including researchers, universities, startups, SMEs, corporates, investors, accelerators and incubators), with the optimal goal of developing business and knowledge within the community. The community will be based on shared interests in connecting and scaling as well as on the shared experiences.

The community will be built in 3 levels:

- Community of people that participate in EOSC-hub DIH activities as well as representatives of external organizations that engages with EOSC-hub.
- Entities/stakeholders from other DIHs with valuable interactions with EOSC-Hub.
- Consortium-level and European level community of people and organizations interested in connecting and scaling.

The Community will be facilitated in 3 ways:

1. Through an online platform for exchange of information and business connections.
2. Through the different meetings and events, encouraging stakeholders to sign-up for the online platform and join the community in order to gain access to the benefits that it provides.
3. Promoting meetups, matchmaking and knowledge sharing sessions within larger events, attracting new community members.

3.2.3   Collaboration Agreements

Collaboration agreements (e.g. MoU) will be explored for formalising relationships between the EOSC-hub DIH and either projects, initiatives and/or individual organisations to define the activities and objectives of such a collaborative relationship to facilitate and strengthen the collaboration between them. An MoU would identify areas of collaboration, clarify roles and commitments from parties involved and agree on a joint programme of work.

The following organisations are a few where contacts have already been established, but our intended collaboration will obviously not be limited to these.

DIATOMIC (SAE project)

A Europe-wide, EC-backed network of Digital Innovation Hubs, with €3 million to fund startups/SMEs and midcaps working on Advanced Micro Electronics and Smart Systems Integration in the health, agrifood, and manufacturing industries. The project has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement No. 761809.

European Data Incubator (EDI)

A Big Data incubator offering a dedicated acceleration programme and up to €100k equity free for EU based startups and teams. EDI defies Big Data innovators to sort out data-based challenges for

a range of EU organizations in a myriad of sectors, or to propose their own concepts/ideas making use of the EDI data catalogue (>15 industry partners providing closed data sets. EDI is open to have additional data providers).

HPC-Europa3

A transnational access programme for fostering collaborative research, building cross-national collaborations, and allowing computational scientists to contribute to the skills development of junior researchers and/or researchers from countries with limited access to HPC facilities. An additional focus is to foster the HPC culture for SMEs. The network of host centres extends to labs with strong technical-engineering characterizations and expertise. This will lead, in the long term, to technology transfer actions with industries and SMEs. Specific marketing and publicity actions are foreseen to improve the awareness among SMEs of the opportunity given by HPC technologies and services, and to bring SMEs into a closer relationship with the use of HPC. A collaboration with HPC-Europa3 will allow researchers of SMEs working with the EOSC-hub to make use of additional opportunities for advanced training and support for their innovation projects.

CloudiFacturing

An EU Innovation Action funded in the framework of the I4MS initiative to foster the cloudification of services and enable manufacturing digitalization. The project aims to leverage factory data with cloud-based engineering tools to pave a way toward manufacturing analytics, enrich manufacturing engineering process with on-line data, and simulate and optimize producibility and production processes with the vision to support it in real-time.

The project is offering cascade funding through open calls for experiments. Collaboration with CloudiFacturing will allow SMEs working with the EOSC-hub additional opportunities for funding their innovation projects and additional competences and services.

Mind the Byte

An SME in silico drug discovery providing accessible, scalable, and affordable solutions to accelerate the development of new drugs. The company works with over 50 biotechnology and pharmaceutical companies as well as research centres and universities around the world. With their SaaS platform, Mind the Byte offers a set of programs and applications.

Discussions were originally initiated via EGI's business engagement programme, but will be carried forward through the EOSC-hub DIH. An initial outline of an agreement has already been defined to enable provide distributed computing services to support their work. In this broad context, the goals of the collaboration will be to:

- Provide computing resources from EOSC-hub (via EGI) so academic users can focus on the analysis without knowing the underlying technology: big data workloads, algorithms to perform optimisation.
- Increase potential users in academic sector through the EOSC-hub network.
- Explore new business opportunities providing the access to the academia sector in Europe.
- Possibility of providing part of Mind the Byte' services on the EGI Federated Cloud.

Two groups of potential users have been preselected for the pilot activities from the EGI network, both in academia and industry: Organic Chemistry and Pharma research groups.

CINECA

CINECA, WP9 partner, is recognized as an I4MS Competence Centre on Cloud HPC, and as a Digital Innovation Hub both for HPC-enabled simulation[16], and High Performance Data Analytics[17]. Activities/Services for SMEs range from technical support and infrastructure provisioning to access to finance. Training and education services are well developed, ranging from dissemination and awareness events to Summer Schools devoted to specific Industry 4.0 methodologies. CINECA will leverage ongoing work through the EOSC-hub DIH.

EGI

The EOSC-hub DIH serves as a channel for where EGI can leverage and evolve its existing business engagement programme, which has been offering a number of support services to industry/SMEs for the last several years. EGI has established a number of concrete business cases, comprising 9 SMEs and 2 large enterprises across 9 countries in sectors including Astrophysics; Computer-Aided Design; Computational Fluid Dynamics; Earth Observation; Manufacturing/Engineering; Music[18]. In addition, EGI has built up a database of more than 150 contacts that will be exploited for potential collaborations via the EOSC-hub DIH.

EUDAT

The EUDAT project developed collaboration agreements with commercial entities through work within the EUDAT2020 project. EUDAT introduced two pilot studies to engage commercial end users in the use of the data infrastructure. The first pilot performed a feasibility study, involving two commercial partners, Acellera and Evotec, from the pharmaceutical sector who had ideas on how to use the EUDAT services and were willing to test the use of those services in their businesses. Acellera are a small (5 employees) but growing SME founded in Spain and the UK, focussed on technology for and applications of molecular dynamics. Their main clients are the pharmaceutical industry and academics. Evotec are a much larger (approximately 1000 employees) company who act as a service provider for the pharmaceutical industry. Both partners engaged in assessing EUDAT services and recommending improvements to APIs and documentation, to make them usable for business customers. Many of these improvements were subsequently made, although outside the scope of the pilot project.

The second pilot project focused on performing a local deployment of the B2SHARE service for use by an SME (Statmodatics) that provides data services consulting focussing on the field of biomedical data analysis. The deployment was evaluated as a platform for the SME to share data with customers, and applying metadata annotation. At the end of the pilot, Statmodatics were very happy with the stability and performance of the containerized B2SHARE instance. They also felt the work undertaken on the deployment process had resulted in a considerable improvement, although they still had concerns about the fragility of some of the dependencies.

---

[16] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1322/view; http://i4ms.eu/dihs
[17] http://www.bdva.eu/?q=node/790#overlay-context=node/787%3Fq%3Dnode/787
[18] https://www.egi.eu/business/business-use-cases/

All three of these SMEs have a relationship with EUDAT which can potentially be carried forward into EOSC-hub DIH, with a view to making the pilot evaluations more concrete. Furthermore, a relationship exists between MyMTRL, who are interested in developing plans to change people's thinking about commercialising data related products, and the CompBioMed Centre of Excellence, who have deployed an instance of B2SHARE for their own project data management.

3.3 Technical Facilities

3.3.1 E-Infrastructure Support

The catalogue of EOSC-hub services and provided infrastructure available for industry is defined in the EOSC-hub Marketplace[19], which will serve as the essential building blocks for the EOSC DIH offerings. Several initial requirements and key services have already been identified as part of the analysis of the first 6 business pilots. As part of the further EOSC-hub DIH strategy the following aspects will be defined:

- What services can be offered by the providers with guaranteed service levels?
- What providers are able and willing to support industry?

3.3.1.1 Services

The EOSC-hub service catalogue provides an initial set of existing mature services to the EOSC. The catalogue will be extended during the project to include data and thematic services of pan-European relevance and through collaboration with the EOSCpilot project.

The catalogue can be broken down into five service categories:

- **Technical:** services provided by national, regional and pan-European digital infrastructures and include high-throughput computing, cloud compute, storage and data management, among others. These are the main services initially being provided to the business pilots, but it is expected to be expanded.
- **Thematic:** services include data, advanced data brokering and analysis capabilities provided by and for specific sectors.
- **Collaborative**: platforms for sharing digital objects like applications, pipelines and virtual appliances.
- **Federation**: services enabling seamless operation, management and monitoring of distributed services across organisational borders.
- **Human**: providing support, consultancy and training.

3.3.1.2 Providers

The EOSC-hub DIH will initially run 6 pilots with SMEs to kick-start activities, which were selected via an open call during the project preparation phase. The objective was to use these pilots to seed the initial DIH, while also allowing refining the service offers and related processes and

---

[19] https://marketplace.eosc-hub.eu/

procedures for smoother onboarding of future pilots. In order to support effectiveness and efficiency, each pilot was matched with a project service provider to ensure at least an initial service offering: CINECA, PSNC, CESGA and EGI Federated Cloud.

Any new pilots or business contacts will be onboarded and managed via dedicated processes that follow the lightweight service management standard, FitSM[20]. For example, service levels with customers will be ensured and monitored by establishing meaningful service level agreements (SLAs) and where necessary, supportive operational level agreements (OLAs). In addition, as the current pilots develop and as part of analysing any new potential customer, the longer-term business model will need to be considered. This will be handled differently for these two groups:

- **Current business pilots:** there is a dedicated project task (9.3) that has the mandate to support commercialisation and business model support to each pilot. Here, opportunities for continued business relations and potential business models will be explored and defined. Also, this matches a project KPI in "signing (pre-)commercial agreements for EOSC-hub services".
- **New potential customers:** prior to supporting any new pilot, an initial analysis will be conducted to understand the need, identification of a service provider(s) and long-term potential opportunities. This is important as resources are limited and partners need to focus on high-value relationships. In ensure transparent and inclusive participation from the wider EOSC-hub service provider pool, a survey will be conducted to collate interest, availability, and delivery models to industry (e.g. free tier, credits, pay-for-use, consultancy, training, support). At the minimum, EGI has several providers as potential candidates that can be tapped into from internal work towards implementation pay-for-use mechanisms[21].

3.3.2 EOSC-hub DIH Platform

To manage an inclusive EOSC DIH, use of an open platform would facilitate cooperation and engagement, i.e. a web portal and knowledge database to interconnect SMEs, experts and researchers. The EOSC DIH platform would allow SMEs to easily join the DIH, allow experts to advertise their fields of expertise, and find both business partners and new projects to participate. In addition, information provided within any platform should have the option of different permission levels (public, members only) and account types.

It is currently not part of the workplan to develop our own solution, but rather investigate available solutions that could help facilitate more dynamic engagement through the EOSC-hub DIH (Section 3.3.3). Therefore, the following sections summarize the types of information and value that could be delivered through such platform.

3.3.2.1 Collaboration space

In order to build a thriving ecosystem, actors need a place where they can go to not just discover content, but be able to find and engage others directly. A collaboration/community space would

---

[20] www.fitsm.eu
[21] https://wiki.egi.eu/wiki/Pay-for-use

stimulate exchange of ideas, act as a collaborative knowledge platform for the EOSC DIH and support the industrial actors in matchmaking (i.e. experts, other stakeholders, solutions).

3.3.2.2   Products and services presentation

Provide space for the products and services presentation - connecting EOSC hub products & services catalogue with SMEs potential users and offers.

3.3.2.3   Provide information space

Provide a wider range of information including topics such as funding opportunities e.g. open calls, business angels and investors; webinars on how to pitch to investors and how to approach private investors; webinar on public funding; knowledge/documentation, training material, market surveys and analytical reports.

Provide best practices such as through successful use cases i.e. first pilots description of the benefits, how it is integrated, how they can access, what were the steps, demonstrate evidence of how the whole process worked, how the service improved, etc.

3.3.2.4   Innovation enrichment

One of the key values that companies shall consider, as an immediate advantage, is the access provided by the DIH to up to date technologies and innovation across the community. In this context, the community acts as the network of European DIHs, Competence Centres, Start-ups and Laboratories that is one of the big assets of the DIH. This easy access to information and knowledge is a key factor to the success not only of the SMEs but, more than ever, to big companies. This follows our understanding of the term "Innovation Enrichment". Companies accessing the latest technologies mean that they can address in a more focused way customer needs, identify the best training opportunities and trending technologies for their employee and efficiently invest their money in the most up to date platforms on the market.

The goal of the DIH is to combine skills, technologies, instruments and solutions to the most consistent extent, and it complies with the company's innovation needs and digitalization path.

3.3.2.5   Increase visibility

Provide visibility to the SMEs and their products/solutions portfolio of companies that had access to EOSC-hub services on a European and wider scale. The majority of small business initially invests solely in development of products and services with limited to no budget for marketing, especially on a larger scale. By engaging with European networks, SMEs will have unprecedented access to valuable information regarding financing programs and opportunities, the possibility to establish connections with several stakeholders including universities and other kind of Competence Centres.

3.3.2.6   Engagement System

One of the main challenges that today companies are facing is the shift from the so-called "System of Records" to "System of Engagement". In brief, the "System of Record" is the system where the data are central to the business and where the main task of IT is to store and keep it in the most

efficient way. The advent of new technologies and the access of the society (including customers) to new communication frameworks and societal paradigm require that companies start developing a new strategy where the data are not the final goal, but only a medium to understand new trends, define new products and services.

The DIH can play an important role for the customer companies since it represents one important aspect of engagement for Competence Centre, SMEs, start-ups and Governments (at various geographic levels).

3.3.2.7   The DIH as an "Ideas Lab"

Provide SMEs an "Ideas Lab" where the development of ideas as prototypes, proof of concepts, new business models or demos will demonstrate to the outside world the strength of common effort, collaboration and networking. The strong relationship of the DIH with Competence Centres, offers the ability to be continuously connected with innovative start-ups and with Research Centres as well as the relationship with other National and European DIHs will create the right "humus" for new ideas, new concepts and new business models. Enterprises can greatly benefit and contribute to this "Ideas Lab".

3.3.3   Analysis of Available Platforms

As mentioned, the development of a new platform is not the goal of project activities, instead we want to adopt an existing state-of-the-art platform and adopt best practices based on other successful DIHs. Since we do not want to build a full platform from scratch, we have decided to reuse an existing software system. The purpose of the analysis below is to identify potential suitable platforms available on the market, check the functionality of those platforms and verify that they meet the goals defined in the previous section.

Because DIHs are a relatively new concept (many DIHs have evolved recently from non-official groups of R&D organisations and companies, others have emerged due to EU initiatives), their platforms are currently under development and very little off-the-shelf solutions are available. Therefore, we have also analysed solutions used by other aligned initiatives that engage with industry (especially SMEs), for example platforms used by business incubators, accelerators and open innovation platforms.

3.3.3.1   Digital Innovation Hubs and their communication platforms

While analysing the large catalogue of DIHs[22], we have identified that DIHs do not use comprehensive platforms to engage new members but rather direct contact via e-mail, social media, contact form or phone. To name just a few examples:

---

[22] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool

Table 4 – Examples of DIH Contact Methods

DIH	Contact Method	Link
RoboCluster	Send email or call	https://www.robocluster.dk
ACTPHAST 4.0	Manual application	http://www.actphast.eu/who-can-apply
Axelera	Print, fill and send a form	https://www.axelera.org/en/become-a-member/
Barca Innovation Hub	Login with Facebook	http://barcainnovationhub.com/#PecTabRegister
Biorizon	Simple login form[23]	http://www.biorizon.eu/community/join
Digital Catapult	Online form	https://www.digitalcatapultcentre.org.uk/get-involved/
Future Work Lab	Send email	https://futureworklab.de/en/about-us.html

3.3.3.2   Platforms for business accelerators and incubators

In many ways, business accelerators and incubators are similar to DIHs. They also need to engage business partners and opportunities for creative interaction. Therefore, we also did a desk study on the platforms they are using. Founder Institute[24] is a great platform for startups, but only in terms of education, not in terms of networking. SESAME Net[25] has a tool that allows you to create an account and to use an online questionnaire to assess if your organization could potentially benefit from using HPC in the Cloud.

Again, we have found many examples of many initiatives without a real platform; initiatives that are based on simple email, contact forms, phone or face-to-face contact between members, e.g. EIT Digital[26] and ACTPHAST[27] or platforms that allow to search for potential business partners[28].

One of the better ones that we have paid close attention to, and is one of the reasons for having them as part of the EOSC-hub consortium and DIH participant, was the F6S platform[29], which has an impressive database of startups, accelerators and startup jobs. We can/will use some of its platform design patterns, but we cannot use the platform as a whole since the use-case is too different.

Conclusion: There are many platforms among business accelerators and incubators initiatives, but none of these platforms meet our purpose.

3.3.3.3   (Open) Innovation Platforms

Innovation platforms and open innovation platforms are initiatives that bring together business, innovators, startups and experts and have objectives that are very similar to those of DIHs.

---

[23] We created an account and got access to many documents, reports and presentation slides
[24] https://fi.co/
[25] https://network.sesamenet.eu/hpc4sme-assessment-tool/
[26] https://www.eitdigital.eu/accelerator/
[27] http://www.actphast.eu/eform/register-your-interest/confirm?entityform_id=394
[28] https://een.ec.europa.eu/tools/services/SearchCenter/Search/ProfileSimpleSearch?shid=32db25cb-726f-43b0-8b5f-7742d0935799
[29] https://www.f6s.com/

We analysed many innovation platforms[30]. Few of them were promising; many are in the development stage or created as a startup themselves and have yet to become a working product. For example, we were trying to use trial versions of platforms[31] [32] where even the contact form is not working. Others are Customer Relationship Management (CRM) systems like CRM company[33], which registrants get access to management software for its marketing and sales department (and additional WordPress plugin).

Conclusion: Open innovation platform seems to be more of a buzzword that may apply to many things from marketing agencies to startups that try to build a search engine of experts. They support innovation processes, and met partially our requirements.

3.3.3.4 Platforms further investigated

Manufacturing Industry Digital Innovation Hubs (MIDIH) is developing the DIHIWARE[34], which meets most of the EOSC-hub DIH requirements. We are currently discussing with them about the possibility of customising specific features and possible cost models to apply for using the platform.

We also started a discussion with the key stakeholders of ideXlab[35], an innovation platform that has a huge database of experts, innovation companies, projects, scientific papers, etc. The platform presents also a sophisticated search engine with some basic cooperation features. This platform has good potential to be used for the EOSC-hub DIH; however, some additional adjustments would be required. Another drawback of the ideXlab platform is that the cost (monthly fees) of joining is significant.

3.4 Promotional Channels and Material

3.4.1 Web Presence

The EOSC-hub DIH will be supported by WP3 "Communications, Dissemination and exploitation". Wider EOSC-hub project related support and activities is provided in D3.1[36]. However, a summary of industry related aspects includes:

---

[30] https://crowdsourcingweek.com/blog/10-indispensable-open-innovation-platforms-global-corporations/
[31] http://www.openisme.eu/project/trials
[32] https://www.qmarkets.net/thank-you/
[33] https://app.hubspot.com
[34] http://midih.eu/dih_network.php
[35] https://www.idexlab.com/en/
[36] https://documents.egi.eu/document/3301

Table 4 – Communication Activities and Outputs

Communication Activity	Outputs and Examples
Write use cases to illustrate added value of business pilots	• 5 published business pilot success stories, focused on key exploitable results and impact of/on EOSC-hub
Promote the outputs of the business pilots	• 1 flyer showcasing each business pilot • 1 business use case publication (combining individual success stories) • 1 video • Promotion on social media
Promote the Digital Industry Hub	• Area in the EOSC-hub website about the DIH • News/interviews/social media from the business pilots • 1 flyer to promote the Digital IndustryHub • 1 infographic to illustrate what is available for industry • Promotion on social media

3.4.2   Initial Business Pilots

The EOSC-hub DIH will initially run 6 pilots with SMEs to kick-start activities, seed the initial DIH, while also allowing to refine the service offers and related processes and procedures for smoother onboarding of future pilots.

These business pilots have been selected via an open call during the project preparation phase, out of 30 high-quality applications, and are summarized as:

Business Pilot 1: CyberHAB (Water body management sector) The main objective is to demonstrate the technical and economic advantages of applying the management of harmful algae blooms, exploiting Data Cloud Services (DCS) to support the key processes required (data processing, modelling, integration of images).

Business Pilot 2: Sports Smart Video Analysis (Sports sector) The objective of the pilot is to develop a mobile-friendly cloud platform, to be configured as a SaaS, for data-driven video analysis and automatic processing of videos of athletes' training sessions. The web-based, cloud-hosted software platform will provide coaches, athletes and, in general, sports professionals with a user-friendly and reliable tool to analyse and improve the athletic gesture performance through objective, customised and fully automated video analysis.

Business Pilot 3: Bot Mitigation Engine (Cybersecurity sector) The major objective of the pilot is to create a solution for online service providers in the business sector to prevent online services from botnet attacks such as web scraping, online fraud, digital ad fraud and spam. It will be offered as a SaaS and will behave as a filter between global networks and a client's online services independent of where they are running (on premises or in the cloud).

Business Pilot 4: ACTION Seaport (Local coastal authorities) ACTION Seaport is to be an advanced mobile-friendly platform aiming to be accurate, computationally efficient, scalable, reliable, and capable of serving simultaneously multiple Port Authorities - as well as coastguards and other

maritime authorities – worldwide in decision support to improve safety, environmental and operational performance.

Business Pilot 5: Space Weather Data Services for the future DRACO Observatory (Climate sector) The main objective is to develop an appropriate cloud super computational pilot framework for the future commercialisation of the DRACO observatory data. The outcome will be the framework for the analysis, storage and distribution for the state-of-the-art Space Weather data generated first by the existing next-gen cosmic ray prototypes and then by the future DRACO observatory.

Business Pilot 6: Furniture Enterprise Analytics - DataFurn (Furniture industry sector) The DataFurn pilot aims at designing and deploying a furniture analytics Platform-as-a-Service (PaaS) that collects, analyses and visualises online content (from social media and blogs to online portals), detects useful product-related content, extracts relevant furniture product-service topics/features, monitors brand influence and customer interactions and early predicts furniture trends for the upcoming seasons (e.g. regarding colours or textiles).

The 6 pilots represent different domains and have different technical requirements, while introducing added value services and clear exploitation and long-term business plans. They will make use of the EOSC services and will contribute to the EOSC-hub catalogue.

For each of the pilots, a detailed implementation work plan has been identified, covering the phases of requirements identification, architecture definition of the integration with EOSC-hub services, and implementation tasks with specific major milestones. Pilots will open the releases for validation by early adopters after project month 12, and will be finalised before project month 18, entering the business exploitation phase. The experiences with the first cases will allow for better interaction and value offering of the DIH for further pilots.

Each of the pilots will be provided with the technical and business support and training required for integration with the EOSC-hub services, building business opportunities, and defining pre-commercial agreements and handling of Intellectual Property Rights (IPR) aspects.

The project results from the pilots are captured, assessed and protected through the Innovation Management process; appropriate dissemination, exploitation, communication measures and related IPRs are agreed as well as developing interim and final dissemination and exploitation plans.

3.4.3 F6S Platform

F6S[37] will be used to optimise the EOSC-hub web presence and outreach. F6S is a member of the EOSC-hub consortium and is a key partner in WP9, being responsible for the commercialization support.

F6S is the largest social network for startups in the world with over 2,500,000 profiles for the startup/SME community and more than 950,000 individual startups. F6S currently supports the

---

[37] www.f6s.com

majority of the startup/SME ecosystem through deal flow/applications, jobs listings, free services, communication forms, technology transfer infrastructure, amongst other areas.

F6S is the leading platform for application management for commercial, corporate, government, university and other accelerator programs, helping more than 15,000 such initiatives worldwide. Every year, F6S processes more than 700,000 applications and facilitates about €2 billion to startups/SMEs per year.

F6S will be an important channel for building and sustaining the EOSC-hub DIH, and contribute to creating partnerships with SMEs/industry, accelerators and investors.

A specific page for the EOSC-hub project and the Digital Industry Hub will be set up on F6S, allowing to create a community and publish news about the recent activities, as well as project events. Such page will be strategically placed under the European Commission F6S page[38], which accounts for a well-established network of startups and stakeholders interested and involved in EU funded projects.

3.5 Events

3.5.1 Participation to ICT and RI events

DI4R events[39]: As part of the events co-organised by EOSC-hub, there are the Digital Infrastructures for Research (DI4R) events. These are events jointly organised by the major e-infrastructure players: EGI, GEANT, EUDAT, OpenAIRE, PRACE and EOSC-hub. The purpose of these events is to join forces to organise a joint user forum as in many cases the stakeholders overlap. The DI4R events are also a good way to minimize organisational costs. The plan is to co-organise 3 DI4R events over the duration of the project (DI4R 2018 - October 2018; DI4R 2019 - May 2019; DI4R 2020 - May 2020 - dates to be confirmed).

WP9 submitted 2 abstracts for the upcoming DI4R Conference in Lisbon 9-11 October 2018, both of which were accepted by the Programme Committee:

1. World Cafe session "Digital Innovation Hubs for Industry Engagement" under programme Area 7. Innovation in Open Science with SMEs and Industry, which is designed to seed engagement with other DIHs, not for specific SME engagement which will happen through other channels outside DI4R.
2. Demo: EOSC-hub Business Pilots comprising a single demo booth will showcase at least 2 business pilots.

ICT 2018 - Vienna 4-6 Dec 2018
This research and innovation event will focus on the European Union's priorities in the digital transformation of society and industry. It will present an opportunity for the people involved in this transformation to share their experience and vision of Europe in the digital age. This event typically attracts ~4000 participants each year[40].

---

[38] www.f6s.com/europeancommission
[39] https://www.digitalinfrastructures.eu/
[40] https://ec.europa.eu/digital-single-market/en/events/ict-2018-imagine-digital-connect-europe

WP9 submitted a networking session proposal entitled "Matchmaking Industry with the European Open Science Cloud". This session is designed to 1.) showcase how publicly funded e-Infrastructure services and research data can be exploited by private industry to develop innovative solutions and bring them to market 2.) facilitate matchmaking between industry and the European Open Science Cloud implementation project called EOSC-hub.
A video interview was also prepared as part of the application[41].

3.5.2 Participation to specific industry-related events

Similar to community-specific events, attendance at industry-related events will be a fundamental opportunity for EOSC-hub DIH and individual pilots to promote results and engage new potential users. Events can be broken down into two categories: 1.) European level events with participants from large initiatives that support public private partnerships (aka. multipliers) 2.) Sector-specific events for showcasing pilots or reaching out to potential new pilots. Examples for the first include, but not limited to, events such as:

- BDVA Summits
- I4MS annual events
- Next Generation Internet forum
- FIWARE Global Summit
- EC Industry Days
- EC Digital Innovation Hub Working Group meetings
- European DIGITAL SME Alliance events.

Examples of sector specific, to be mainly attended by business pilot representatives include:

- International Water Association (CyberHAB/Ecohydros)
- MathSport International (Moxoff)
- GreenPort Conference & Business2Sea (ACTIONseaport/Bentley)
- Big Data from Space Conference (DRACO/Hidronav).

Several others under discussion and are tracked via a dedicated page on the EOSC-hub Confluence wiki. Additional examples include but are not limited to:

Table 5 – DIH and Industry Related Events

Event Name	Sector	Date	Location	Opportunity	URL
EC DIHs 2nd WG Meeting	EC	21 Feb 2018	Brussels / Online	How to connect the EOSC-hub DIH	https://ec.europa.eu/futurium/en/implementing-digitising-european-industry-actions/digital-innovation-hubs-2nd-working-group-meeting
BDVA Activity Group Meeting	EU Initiative	14-15 Mar 2018	Brussels	Initiate collaboration with BDVA iSpace	http://www.bdva.eu/?q=node/974

---

[41] https://www.youtube.com/watch?v=WrzU0OWHJAk

ICTFOOTPRINT.eu Workshop Event "Green ICT – in practice"	Green IT	20 Mar 2018	Amsterdam, NL	Network with start-ups/SMEs Present EOSC-hub DIH	https://ictfootprint.eu/en/events/ictfootprinteu-hands-workshop-event-%E2%80%9Cgreen-ict-%E2%80%93-practice%E2%80%9D
Digitising European Industry Stakeholder Forum 2018	EC	27-28 Mar 2018	Paris, France	Promote EOSC-hub DIH	https://ec.europa.eu/digital-single-market/en/news/digitising-european-industry-stakeholder-forum-2018
Technology & Innovation Days Conference	INDUSTRY 4.0 IoT	5-6 Sept 2018	Łódź, Poland	Establish new business contacts	https://innovationdays.com.pl/en/
GECON 2018 **15th Conference on "Economics of Grids, Clouds, Software and Services"**	IT Economics	18-20 Sept 2018	Pisa, Italy	Promote EOSC-hub DIH; Related activities to pay-for-use (cost/pricing)	http://2018.gecon-conference.org/
IT FUTURE EXPO 2018	B2B	20 Sept 2018	Warszawa, Poland	Meeting devoted to trends and innovations in information technology. An event with the participation of market leaders.	http://itfuture.pl/
EUROPEAN BIG DATA VALUE FORUM	EC	12-14 Nov. 2018	Vienna, Austria	Promote EOSC-hub DIH	http://www.european-big-data-value-forum.eu
HANNOVER MESSE	Industry technology show	1-5 April 2019	Hannover, Germany	One of the largest industry technology trade shows (5000+)	www.hannovermesse.de/home
SECUREX-International Security Fair with Digital Technologies	IT	Apr 2020	Poznań, Poland	Networking with SMEs present	http://www.securex.pl/en/

Forum					
Digitising European Industry Stakeholder Forum 2018	EC	27-28 Mar 2018	Paris, France	Promote EOSC-hub DIH	https://ec.europa.eu/digital-single-market/en/news/digitising-european-industry-stakeholder-forum-2018

3.6 Commercialization Activities

This section provides an overview and preliminary planning of commercialisation activities with a start date of PM6 within the scope of Task 9.3 – Commercialisation Support. The overall goal of this task is to accelerate market uptake and results in exploitation of both the pilots and Competence Centres, thus contributing to further develop the European economic innovation capacity.

The dedicated commercialisation support services to be provided by the DIH have the following objectives to:

- Identify market and business opportunities, and create, test and implement business models;
- Define exploitation plans (exploitation and commercial strategy and plans);
- Analyse/evaluate IPR in collaboration and support the definition of pre-commercial agreements;
- Design a communication plan to exploit the pilots and highlight Competence Centres' achievements/ successful connections between competence centres and SMEs.

The commercialisation activities will be implemented by a business oriented coaching team with real world experience and expertise in SME innovation, business growth, market development and scaling-up. Such team will be established after consulting the pilots and Competence Centres, in order to match business cases and mentors in line with their needs and expectations.

Considering the identified needs and established commercialisation goals, the team will deliver tailor-made coaching services, which may include the following activities, when applicable:

- One-to-one mentoring focused on acceleration and commercialisation
- Market insights
- Workshops/webinars (on topics such as Business Model Canvas, Marketing & Communication, Business Internationalisation, Pitching, Technology Transfer models) - supported by WP3
- Connection with corporates and investors
- Events and networking opportunities
- Grants and funding opportunities

Summary of the Year 1 planning provided in Section 4.

4 Activity Plans

This final report sections provides a summary of the overall project activity timelines related to the EOSC-hub DIH, deliverables and milestones, metrics and first year plan. Periodic updates to future plans and results achieved will be provided in the project intermediate reports.
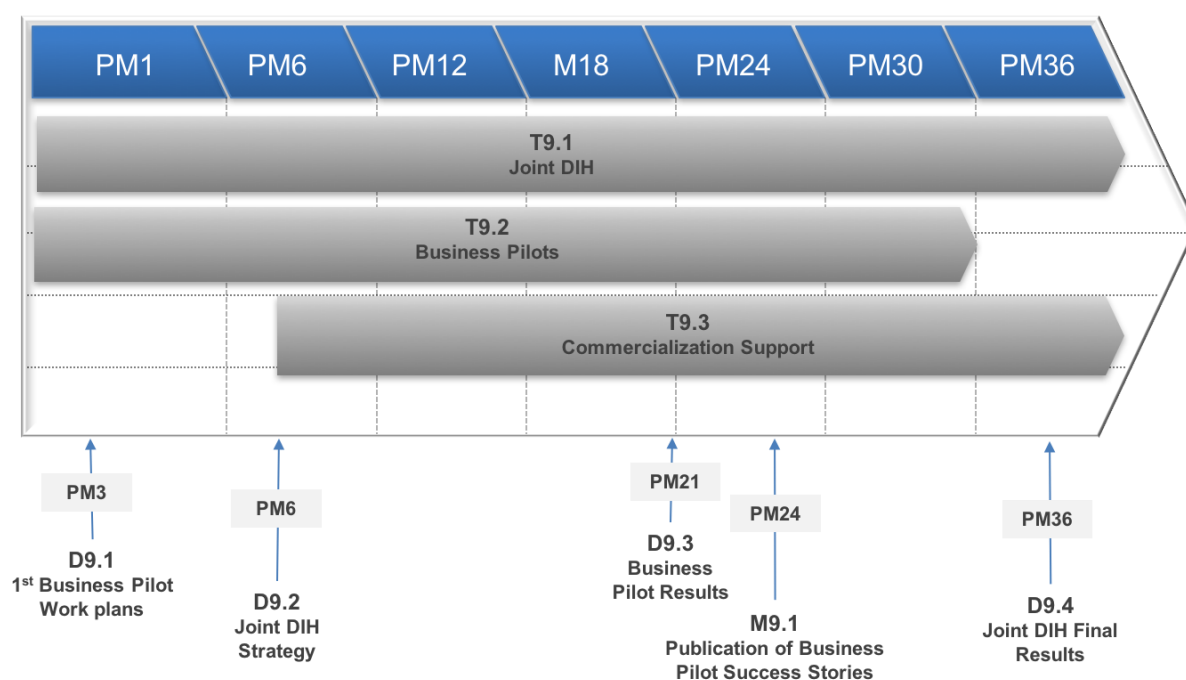
4.1 Overall Timelines

Fig.3 – WP9 Task and Deliverable Timelines

4.2 Deliverables and Milestones

Table 6 – WP9 Deliverables and Milestones

Title	Description	Lead Partner	Project Month
D9.1 Initial Business Pilots Overview & Work Plans	This report introduces the management of the business pilots and details the individual activity plans of each pilot comprising description, objectives, timelines, KPIs, exploitable results and business exploitation, risk analysis, integration with the EOSC-hub services and initial requirements, and dissemination plans and channels. Communication of these initial activities will be limited to the Joint DIH public web spaces. Upon conclusion of each pilot, a polished use case/success stories will be published for external consumption and promotion.	PSNC	PM3

D9.2 Joint Digital Innovation Hub Intro and Strategy	This report introduces the overall project's Joint Digital Innovation Hub, now referred to as the EOSC Digital Industry Hub (EOSC DIH) including the structure, management, strategy for its evolution, technical facilities and initial commercialisation plans.	EGI	PM6
D9.3 Business Pilots Results	This document provides a report of each business pilot including activities carried out, technical support provided by T9.2, an assessment of results achieved including commercial support provided and results by T9.3. The inner workings of the pilots will not be made public (See M9.1). This report will also include all commercialisation and coaching activities, results and impact on both the business pilots and CCs. It also serves as the intermediate report between the final Joint DIH deliverable.	PSNC	PM21
M9.1 Business Pilot Success Stories	The results of the pilots will be turned into success stories and will be published and disseminated accordingly.	EGI	PM24
D9.4 Joint Digital Innovation Hub Final Results and Sustainability Plan	This is the final comprehensive report of the Joint Digital Innovation Hub and its inherent activities. It provides details regarding all engagement activities, key results and future plans beyond the life of the project. This report will also provide the details regarding newly established experiments that were run in the second half of the project.	EGI	PM36

4.3 Metrics

Table 7 – WP9 Activity Metrics

Description	Target PY1	Target PY2	Target PY3
Industry event participation	2	4	6
Business related promotional material	1	2	3
Establish partnerships/collaborations (e.g. DIHs, industry associations)	1	3	6
Business pilot architecture defined	6	6	--
Business pilots released for early adopters	4	6	--
Published business success stories	--	5	6
New business pilots established	--	1	3
Business Stakeholders engaged / interactions	4	8	18
Workshops/webinars for pilots and competence centres	1	3	6
Business exploitations and commercialization strategy plans produced	--	2	4
Signed (pre-)commercial agreements for EOSC-hub services	--	2	6

4.4 Project Year 1 Plan

Table 7 – WP9 Project Year 1 Plan

Activity	Lead Partner	PM Start	PM End	Measurable Outcome	Status
Prepare and host kick-off meeting	EGI	01/18	01/18	Meeting held	Done
D9.1: Initial Business Pilots Overview and Work Plans	PSNC	01/18	03/18	Report sent to EC (ultimately approved)	Done
Set-up individual calls/meetings with pilots to refine work plans from initial open call application	PSNC	01/18	03/18	Calls held; contributions provided	Done
Prepare initial text/article for project website/comms	EGI	02/18	06/18	Published online on EOSC-hub website	Done
Collect and analyse requirements	PSNC	02/18	08/18	Requirements documented	Ongoing
Follow EC DIH activities/events	EGI	02/18	09/18	Meetings attended / contributed to	Ongoing
Analyse requirements for becoming an official EC DIH	EGI	03/18	04/18	List of requirements, action plan document	Ongoing
Support pilots with technical support	PSNC	03/18	09/18	Access to requested services provided	Ongoing
Organize WP9 meeting – EOSC-hub all-hands	EGI	04/18	04/18	Meeting held	Done
Contribute to D3.1 EOSC-Hub Comm. & Stakeholder Engagement Plan	EGI	04/18	04/18	Contribution provided	Done
D9.2 - Joint Digital Innovation Hub Intro and Strategy	EGI	04/18	06/18	Report sent to EC (ultimately approved)	Done
Identifying needs and opportunities for business cases	F6S	06/18	09/18	Business cases documented	Planned
Identifying and engaging relevant stakeholders (mentors, investors, corporates, etc.)	F6S	06/18	09/18	Documented engaged interactions	Planned
Create the framework/strategy of business case support	F6S	06/18	09/18	Strategy documented	Planned
Set up panel discussions and interviews, gather needs and requirements of private sector	EGI	09/18	12/18	Interviews conducted; Feedback documented	Planned

Develop business models to facilitate e-Infrastructure interaction with private sector	EGI	09/18	12/18	Business models documented	Planned
Plan networking, matchmaking, brokerage events	EGI	09/18	12/18	Events attended and documented via Confluence	Planned
Set up the technical and non-technical environment to support the DIH	EGI	09/18	12/18	DIH services published online with clear instructions on how to access them	Planned
Finalize early adopters and develop final reporting and success stories	PSNC	09/18	12/18	Published success stories (KPI)	Planned
First round of BC <> Mentor meetings, validate the strategy	F6S	10/18	12/18	Feedback documented	Planned
Start definition of exploitation plans along with mentors	F6S	10/18	12/18	Plans created	Planned
Analyse/evaluate IPR in collaboration and support definition of pre-commercial agreements	F6S	12/18	01/19	Input for D3.3	Planned
First round of BC <> Investor, Corporate meetings, validate the strategy	F6S	12/18	01/19	Feedback documented	Planned

5 Conclusions

The EOSC-hub Digital Industry Hub will serve as *the* mechanism for private companies to collaborate with public sector institutions in order to access technical services, research data, and human capital, and ideally the European Open Science Cloud as a whole. This report has set out a variety of activities as initial strategic guidance, but will evolve over time. Activities are diverse and ensure broad coverage in a number of areas, but are at the same time having specific objectives: showcase public funded infrastructure services and support the advanced digitization of private industry.

Summary of activities include:

- Offer access to e-Infrastructure resources to support pilots, prototyping, scaling-up, design, performance verification, testing, demonstration, etc.
- Facilitate partnerships with SMEs/industry, innovation clusters, accelerators and investors that stimulate innovation.
- Increase visibility on a European/International level.
- Provide business coaching and training to accelerate market uptake and exploitation results.
- Support access to funding/grants.
- Develop long-term business relationships.

EOSC-hub and the EOSC is only now just being established, therefore the initial focus will be on supporting the initial business pilots; however, this report outlined a number of opportunities through low hanging fruit via existing e-Infrastructure programmes for industry engagement that can run in parallel. Outreach through promotional material and event participation, as well as collaborating with existing Digital Innovation Hubs will ramp along with the project.

Appendix I. Examples of Existing DIHs

Regional

- Digital Innovation Hub "Smart Production Systems" Saxony– InnoSax SP[42]
- Poland: Regional Digital Innovation Hub related to Internet of Things (IoT North Poland)[43]
- Canary Island´s Digital Manufacturing Innovation hub in Cloud Computing[44]
- University College Bruxelles-Brabant - HE2B[45]
- "Innovation Box" DIH of CNA Ancona (Italy)[46]

National

- Italy: Impresa 4.0 initiative[47].
- Serbia: Science Technology Park Belgrade, STP Belgrade[48]
- Spain: Spanish Digital Innovation Hub for HPC (esHPC)[49]
- Sweden: Stena Industry Innovation Hub at Chalmers - SII-Hub[50]

European

Several EU initiatives are active to shape the pan-European network of DIHs which are contributing to boost competitiveness of existing industries –notably for SMEs and mid-caps– and to create additional business opportunities:

- Innovation for Manufacturing SMEs (I4MS)[51]
- Smart Anything Everywhere (SAE)[52]
- Big Data Value Association (BDVA)[53]
- European Coordination Hub for Open Robotics Development (ECHORD++)[54]
- Access Centre for Photonics Innovation Solutions and Technology Support (ACTPHAST)[55]
- Supercomputing Exercise for SMEs (SESAME NET)[56]

---

[42] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1505/view
[43] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1543/view
[44] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1470/view
[45] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1146/view
[46] http://innovationbox.an.cna.it/
[47] http://www.sviluppoeconomico.gov.it/index.php/it/industria40
[48] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1525/view
[49] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1168/view
[50] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1198/view
[51] http://i4ms.eu/
[52] https://smartanythingeverywhere.eu/
[53] http://www.bdva.eu/
[54] http://echord.eu/
[55] http://www.actphast.eu/

- EIT Digital[57] (from the European Institute of Innovation and Technology[58]), a Knowledge and Innovation Community (KIC) will also contribute to the network of DIHs through its project MIDIH[59].
- EDIncubator (EDIncubator)[60]
- DataPitch (DataPitch)[61]

Examples of other European DIH:

- TeraLab: Big Data Platform for Research, Education and Innovation[62]
- Accelerating Photonics innovation for SMEs (ACTPHAST 4.0)[63]
- Biorizon[64]
- European Technology Platform on Smart Systems Integration, EPoSS[65]

International

Examples of DIHs cooperating with companies from outside Europe:

- Hahn-Schickard Gesellschaft für Angewandte Forschung e.V. (Hahn-Schickard)[66]
- Insight Centre for Data Analytics[67]
- Institute of Reliable Embedded Systems and Communication Electronics[68]
- Nanotechnology Lab LTFN - Center for Organic & Printed Electronics (COPE-H)[69]

[56] https://sesamenet.eu/
[57] https://www.eitdigital.eu/
[58] http://eit.europa.eu/
[59] http://www.horizon2020projects.com/policy-research/eit-digital-begins-midih-initiative/
[60] http://edincubator.eu/
[61] https://datapitch.eu/
[62] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1058/view
[63] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1417/view
[64] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1465/view
[65] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1328/view
[66] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1373/view
[67] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1373/view
[68] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1448/view
[69] http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1783/view

Appendix II. Current e-Infrastructure Programmes for Business Engagement

EGI

EGI formally launched its Business Engagement Programme in 2016[70], but really dates back to 2006 through commercial outreach via the EGEE series of projects. EGI continues to be committed to sharing the benefits of e-Infrastructure technology and services with industry, especially SMEs.

The main 4 areas of value seen are:

- Access the EGI e-infrastructure and platforms: Obtain computing capacity to test workflows, models, and applications that will be part of a future advanced ICT product or service. All with dedicated support and consultancy.
- Reuse open research data sets, tools and applications for product or service development: Make the most of the increasing amount of research data sets connected to EGI resources to assist in building your own added-value services.
- Co-design new products and services: Team up with experts on distributed computing systems and all scientific domains to deploy technological solutions using distributed infrastructure or co-develop new products and services.
- Market your services: Benefit from EGI's events, publications and international network. Get recognition within the EGI ecosystem.

Industry and SMEs have access to all services available in the EGI Service Catalogue e.g. compute, storage, data management, applications and training services.

EUDAT

EUDAT is founded on the vision of being able to share and preserve data across borders and disciplines. Achieving this vision means enabling data stewardship within and between European research communities through a Collaborative Data Infrastructure (CDI), a common model and service infrastructure for managing data spanning all European research data centres and community data repositories.

European researchers and practitioners from any research discipline can preserve, find, access, and process data in a trusted environment. As part of the EUDAT Collaborative Data Infrastructure a network of collaborating, cooperating centres has been established, combining the richness of numerous generic and community-specific data repositories with the permanence and persistence of some of Europe's largest scientific data centres. EUDAT encourages the open publication and sharing of research data under permissive licence conditions in line with the FAIR data principles of findability, accessibility, interoperability and reusability.

---

[70] https://www.egi.eu/business/

One of EUDAT's main ambitions is to bridge the gap between research infrastructures and e-Infrastructures through an active engagement strategy, using the communities that are in the consortium as EUDAT beacons and integrating others through innovative partnerships. EOSC-Hub furthers the possibilities of what EUDAT alone can do in this respect. EUDAT partner organisations will be fundamental to the realisation of this EOSC and many of them are involved in the pilot project, tasked with the responsibility to design the EOSC.

EUDAT services[71] give users the possibility to:

- Use a simple, efficient, trustworthy, affordable collaborative and interoperable data infrastructure.
- Be connected with Europe's most powerful supercomputers
- Be supported by a pool of experts to tackle your data challenge

GEANT

According to the Geant website: "The GÉANT Community is striving to expand its current collaboration and liaisons with Industry and SMEs. To achieve this GEANT will:

- Investigate and enhance our understanding of the links between NRENs, universities and research institutions with Industry and SMEs.
- Develop partnerships with Industry and SMEs with the aim of transferring knowledge, developing human capital and identifying opportunities for collaborations, with a particular emphasis on developments that could improve GÉANT's own services. Open Call projects, joint research or testing projects and privileged vendor relations (e.g. pre-release testing and pre-commercial procurement) are all examples of partnership instruments that can be used to ensure that innovative solutions are brought forward.
- Identify opportunities and initiate outreach and support activity to Industry and SMEs and encourage their membership of the GÉANT Association in a competitive and open dialogue. In addition to creating value for GÉANT, Industry and SMEs, our collaborations will also help to create new high-value jobs in Europe.''

PRACE

At European and international level PRACE strives to establish an HPC ecosystem. Part of this work is to establish networks and co-operations with other scientific, research, industrial and HPC-related projects, programmes and organisations. Europe's Partnership for Advanced Computing in Europe (PRACE) is a government-sponsored program spanning 25 European member countries. It provides academic institutions and corporations access to some of the world's most powerful supercomputers and a dedicated team of HPC experts. Organizations apply for PRACE's help, and once accepted, PRACE teammate's partner with scientists to provide support for test plans, workload evaluation, code optimization, simulations and evaluation of results. PRACE which

---

[71] https://eudat.eu/catalogue

supports fledgling organizations working on major engineering challenges, SMBs apply for free HPC support.

In particular, PRACE maintains the SHAPE (SME HPC Adoption Programme in Europe) initiative[72], a pan-European programme supporting HPC adoption by SMEs. The Programme aims to raise awareness and equip European SMEs with the expertise necessary to take advantage of the innovation possibilities opened up by High Performance Computing (HPC), thus increasing their competitiveness. HPC is a powerful technology that can enable the development of new products or services, reduce time-to-market and cost of R&D or increase quality. The opportunities opened up by HPC are vast and an increasing number of SMEs turn to HPC in order to create new business opportunities. The Programme helps European SMEs overcome barriers to using HPC, such as cost of operation, lack of knowledge and lack of resources. It facilitates the process of defining a workable solution based on HPC and defining an appropriate business model.

The SHAPE initiative publishes yearly two calls for proposals. The seven calls already held awarded about 50 SMEs. A typical project has duration of 12 months.

HELIXNEBULA

HelixNebula aims to be Europe's Leading Public-Private Partnership for Cloud. According to the Helix Nebula website[73]: "The Helix Nebula Initiative is a partnership between industry, space and science to establish a dynamic ecosystem, benefiting from open cloud services for the seamless integration of science into a business environment. Today, the partnership counts over 40 public and private partners.

The Helix Nebula – the Science Cloud is a €5.3 million Pre-Commercial Procurement (PCP) tender for the establishment of a European hybrid cloud platform to support the deployment of high-performance computing and big-data capabilities for scientific research.

It covers the procurement of R&D services for the design, prototype development and pilot use of innovative cloud services. The tender is operated as a competitive development with contracts in each phase (design, prototype, pilot) being awarded to multiple contractors using Most Economically Advantageous Tender (MEAT) criterion. The innovative cloud services provided through the platform will be designed and implemented to address a set of challenges that require a combination of services at the Infrastructure as a Service (IaaS) level, including:

- Compute and Storage – support a range of virtual machines and container configurations working with datasets in the petabyte range;
- Network Connectivity and Federated Identity Management – provide high-end network capacity for the whole platform with common identity and access management;
- Service Payment Models - explore a range of purchasing options to determine the most appropriate ones for the scientific application workloads that will be deployed.

---

[72] http://www.prace-ri.eu/hpc-access/shape-programme/
[73] http://www.helix-nebula.eu

The procured cloud services will be integrated with the procurers' in-house resources and publicly funded e-Infrastructures to provide a hybrid platform for end-users from a wide range of scientific fields.'' The resulting common platform will be evaluated by end-users and exploited as the incubator for new businesses and scientific activities engaging a growing number of buyers, suppliers & users.

ELIXIR

ELIXIR supports open innovation, and promotes the use of widely adopted standards within the bioinformatics domain. This reduces barriers between information sharing and helps facilitate cross-company research partnerships. Industry is already a large user of public bioinformatics resources. In 2016, the number of requests on the EMBL-EBI websites from commercial IP addresses was 32 million. From drug discovery to sustainable manufacturing, industry increasingly relies on safe, secure access to bioinformatics datasets, tools, training and standards in order to develop new products and services.

Key reports and brochures:

- ELIXIR support to Industry[74]
- Public data resources as a business model for SMEs: The Role of Public Bioinformatics Infrastructure in Supporting Innovation in the Life Sciences[75]

---

[74] https://drive.google.com/file/d/0B8in1NtGRloYYVRDT1J2QUhhN00/view
[75] https://drive.google.com/file/d/1Xhi7X-XeJqi0JDfYM_50VhlXgXPgAX0q/view