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D3.5 First report on Tech-transfer services to digital innovation hubs

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Abstract	TETRA is an EU-funded project under the Horizon 2020 Research and Innovation programme which aims to offer well-tailored business support services to the third-party beneficiaries of the R&I Actions and the C&S Actions funded under the Next Generation Internet (NGI) - An Open Internet Initiative (H2020-ICT-24-2018-2019) topic. The objective of the task 3.3 is to identify and involve relevant Digital Innovation Hubs (DIHs) from the regions where the project teams are located to provide tech-transfer services to these digital innovation hubs in order for ensuring regional follow-up support that is not limited to the duration of this project and therefore increasing the sustainability of the project results. The following activities will be planned in this task: 1. Identification of a local/regional DIH for each team. The existing JRC DIH online Catalogue was used for identification of suitable DIHs for each team 2. If relevant DIH was not found - identification of incubator, hub, or other support organization was completed. 3. Reaching out to DIH and connect them with relevant project team
Keywords	Next Generation Internet, TETRA, DIH, Digital Innovation Hub, matchmaking

Document Revision History

Version	Date	Description of change	List of contributor(s)
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V0.2	25/02/2022	Final draft	SD

DISCLAIMER

The free-of-charge, first-line support provided by the TETRA project aims to help beneficiaries of the “R&I Actions” (co-)funded under the topic H2020-ICT-24-2018-2019 and their third parties to turn their research results into marketable products and services. This support -including support on intellectual property- should not be considered neither as of a legal or professional nature nor substitute to private advisory services.

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** R: Document, report (excluding the periodic and final reports)*

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc.

EXECUTIVE SUMMARY

Technology transfer refers to the process of moving results from scientific and technological research to the market. Tech-transfer services help facilitate this process. To ensure Tech-Transfer for TETRA beneficiaries (bootcamp participants), we are connecting them with Digital Innovation Hubs (DIHs) whose one of the main activities is to encourage and support the technology transfer. Initially, it was planned to start with tech-transfer services in the spring of 2020 as one of the services provided to the NGI innovators after they have participated in the TETRA bootcamp. Due to the Covid-19 pandemic, the first TETRA bootcamp was postponed and took place at the end of September, 2020. Thus, this report summarizes the methodology for the tech-transfer services which was developed at the beginning of this task as well as the process of tech-transfer services that took place after the first bootcamp.

The main tool for identification of Digital Innovation was the existing JRC DIH online Catalogue (http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-catalogue) (hereinafter - S3 platform) as it allows to filter DIHs based on their location, technical competences, services provided, TRL focus, market sectors, and evolutionary stages.

Three key criteria were chosen to select DIHs for matching with project teams: location, TRL and industry.

In connection to the first bootcamp, 64 DIHs were identified as suitable for matching with the 19 teams that participated in all 3 days of the bootcamp. The final list of the DIHs was reviewed based on the selection criteria and deeper analysis of the services they provide. One DIH per team was selected and initially 18 inquiries were sent to the DIHs.

While identifying and contacting relevant DIHs we encountered an unforeseen issue of unresponsiveness of most of the DIH representatives. We tried various means of contact, i.e., emails, phone calls, however we still couldn't get any answers. This led us to pivoting our approach and identifying relevant incubators, accelerators and other startup support organizations and hubs.

This report provides more details about the overall process of identifying and selecting suitable DIHs, along with the lists of DIHs and Incubators that we identified as relevant.

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ABBREVIATIONS

D	DELIVERABLE
DIH	DIGITAL INNOVATION HUB
EC	EUROPEAN COMMISSION
NUTS	NOMENCLATURE OF TERRITORIAL UNITS FOR STATISTICS
T	TASK
TRL	TECHNOLOGY READINESS LEVEL

1. CONCEPT OF TECH-TRANSFER SERVICES

1.1 OBJECTIVES OF T.T. TECH-TRANSFER TO DIGITAL INNOVATION HUBS

The objective of the TETRA project is to develop and implement a series of business-support activities targeted at 'R&I Actions' and their third parties funded under the topic H2020-ICT-24-2018-2019 to help turn their research results into marketable products and services and prepare them for success in the marketplace.

As EC defines, DIHs are organizations that provide full service and help companies become more competitive with regard to their business/production processes, products or services using digital technologies. DIHs provide access to technical expertise and equipment for their members so that companies could run tests before investing heavily into the development of their technology. They also provide innovation services, such as advice about funding options and financing, training and skills development that are needed for a successful digital transformation.[1]

Therefore, DIHs could be key partners for any project team aiming to transfer their technology to the market.

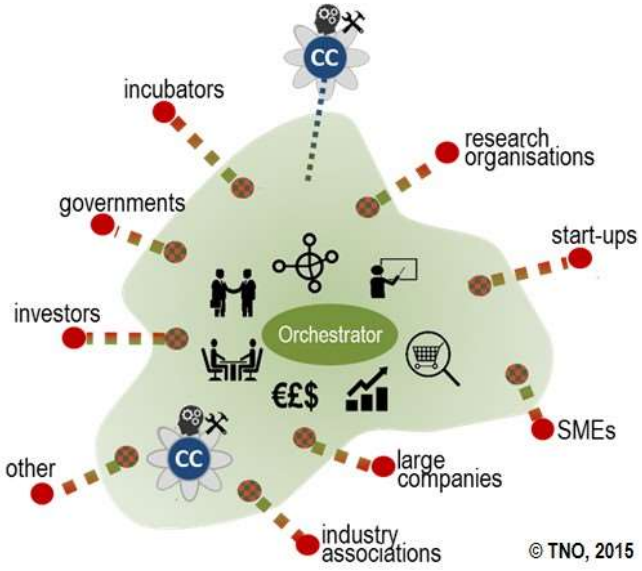

FIGURE 1 STRUCTURE OF DIHS

For the above-mentioned reasons, TETRA business support activities include tech-transfer services, i.e., facilitating the connection of project teams with Digital Innovation Hubs. For this project DIHs are relevant intermediaries that could provide sustainable support during and especially after the end of the TETRA project enabling the technology transfer.

[1] https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs-dihs-europe

DIHs are a relatively new type of organization - The EU proposed DIHs as a key priority in the Digitising European Industry Initiative which was adopted in April 2016.[2] Thus, DIHs and the services they provide are not very well known among startup communities. Currency, S3 Platform provides information about 370 DIHs that are fully operational but 221 are still in the preparation phase. We believe that facilitation of connections is also beneficial for DIHs as it will help to increase the awareness of their services.

The objective of this task is to identify and involve relevant DIHs from the regions where the project teams are located to enable the technology transfer and ensure regional follow-up support that is not limited to the duration of this project and therefore increases the sustainability of the project results.

1.2 DIH IDENTIFICATION PROCESS

In order to find appropriate DIHs to connect with the teams we established the selection process and specific criteria. The process is described in steps below:

1. Relevant DIHs are identified depending on the regions where the project teams are located. We aim to ensure sustainability of project activities by connecting DIHs with technology developers for further cooperation and tech-transfer. Even though currently, due to covid-19 pandemic, most of the networking and collaboration activities take place online, we believe that in the long-term it is better to connect project teams with local DIHs. This ensures that services are relevant and support is provided in the local language, DIHs can advise project teams about national funding opportunities and help them enter the local market (which startups very often chose as the first market to enter). Thus, we firstly look for:
    - DIHs in the same city as the team, if we do not find one, we expand the search to:
    - closest cities, then to:
    - NUTS2 regions and if that does not provide anticipated results, we:
    - look for DIHs in neighbouring countries.

2. The next step in the selection process is to ensure that DIHs support the relevant Technology Readiness Level (TRL). For example, for the participants of 1st TETRA Build Up bootcamp, support of low TRLs is relevant. Since the bootcamp was meant for low TRL teams, we needed to ensure that the low TRL are supported by selected DIHs. In our experience it is very often for the low TRL startups to be excluded from activities of DIHs.
3. As the third step in the selection process, services provided by selected DIHs and the industry it specializes in are reviewed and evaluated against the needs of individual participants. For example, if DIH in the corresponding region is focusing on a different industry than that of the participant, such DIH is evaluated as not matching the needs of the participant. Thus, we renew the search for a better fitting DIH. Thus, we renew the search for a better fitting DIH.

[2] https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs-dihs-europe

4. Once a DIH that fits the criteria is found, it is contacted in order to obtain contacts of the person/department that could be introduced to the participant and to make sure to get a confirmation. As it was mentioned in the Executive summary, this turned out to be one of the biggest obstacles in the process. From the first batch of selected DIHs (64) more than a half were unresponsive to the emails and even calls. After several times of unsuccessful tries to reach out we tried reaching out to other DIHs which were deemed suitable for the team as well. However, since there are few important criteria in the selection process, usually we had to start from the very first step – location.
5. When confirmation of the DIH representative is received, we do a formal introduction between the participant and the DIH.

The logic scheme of the selection process is presented in the figure below.

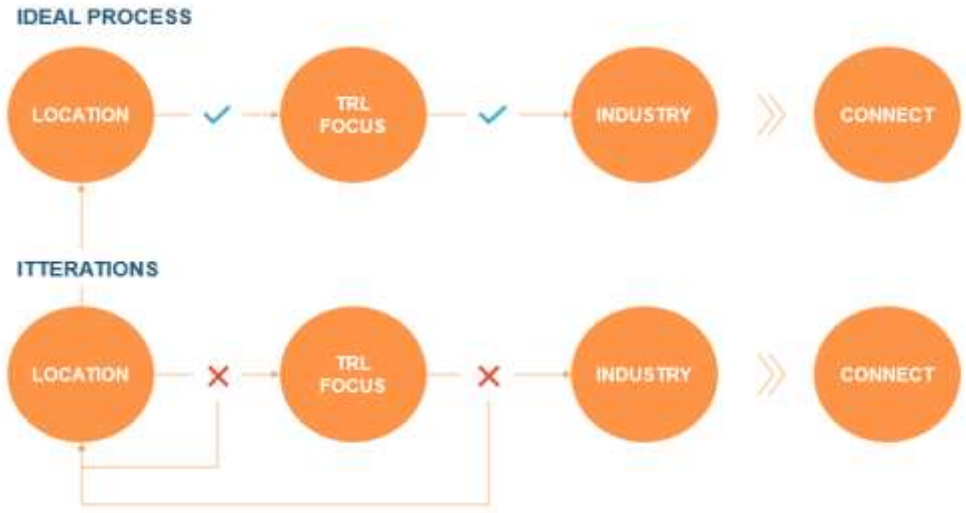

FIGURE 2 DIH SELECTION PROCESS

In an ideal situation, a DIH in a relevant region with matching TRL focus and industry is found, then the representative replies with a confirmation to connect and we introduce that DIH to the team. However, more often than not we failed to get a reply from selected DIHs which resulted in iterations and prolonged search. The figure below shows the process that was followed in order to establish connection with each DIH.

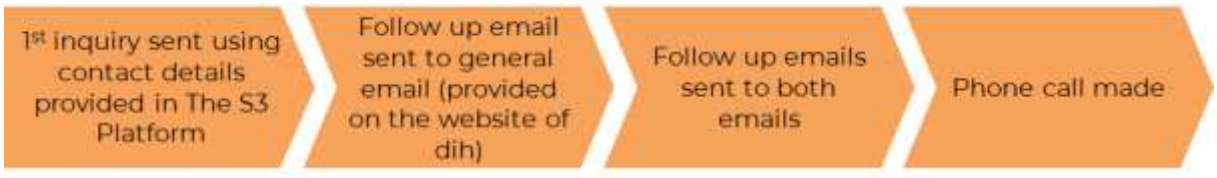

FIGURE 3 PROCESS OF REACHING OUT TO THE DIH

If the above process does not result in an established connection and there are no other relevant DIHs found, a different type of organization is being searched for. More information about that is provided in the following section.

1.3 UPDATED CONCEPT OF TECH-TRANSFER SERVICES

Besides DIH, there are other types of startup support organizations, such as:

- Incubators
- Co-working spaces
- Hubs
- Accelerators
- Governmental agencies
- Think tanks and research organizations

Even though the majority of these organizations tend to provide business support rather than technological expertise (as opposed to DIHs) they can also ensure regional follow-up support that is not limited to the duration of this project and therefore increase the sustainability of the project results.

2. TECH-TRANSFER SERVICES PROVIDED TO THE PROJECT TEAMS OF THE FIRST BOOTCAMP

2.1 CONNECTING PROJECT TEAMS WITH DIGITAL INNOVATION HUBS

S3 Platform is used to identify DIHs to be connected with projects teams. The platform has Digital Innovation Hubs Catalogue. It was set up to give a comprehensive picture of DIHs in the EU. Today, catalogue provides details about more than 400 DIHs, over 200 of which are fully operational. For the first batch of project teams 73 DIHs were identified.
Location and services provided by each DIH were evaluated and one DIH per bootcamp participant was selected. Introduction of DIHs to participants took place in M19. List of DIHs is provided in the table below. Unfortunately, 9 teams weren't connected to any DIHs due to unresponsiveness of representatives and lack of relevant DIHs. Instead, those teams were connected with relevant incubators (further information provided in the section below).

TABLE 1 DIHS THAT WERE IDENTIFIED AND SELECTED FOR CONNECTION

Team name	DIHs matching the location criteria	DIHs matching TRL and industry	Result (answer from DIH)
B-Smart	• Digital Innovation Hub Lombardia • Politecnico di Milano • AFIL - Lombardy Intelligent Factory Association • MADE - Competence Center • ComoNExT Innovation Hub	MADE - Competence Center	Appeared to be not a good match industry wise
		ComoNExT Innovation Hub	Refused to be connected
	Result: no matching DIH found		
Binare	• IoT Compass Hub (DIH) • DigiCenterNS • Intelligent Industry ecosystem • Finnish Center for Artificial Intelligence (FCAI)	Intelligent Industry ecosystem	Unresponsive
		IoT Compass Hub (DIH)	Unresponsive

	• ROBOCOAST		
	Result: no matching DIH found		
Blockchain for Climate-Neutral Agriculture	• Tyndall National Institute, Tyndall • The Irish Software Research Centre, Lero • Confirm | Research Centre for Smart Manufacturing • Intelligent Systems for Production and Resource Optimisation in Industry • Harbour Innovation Campus	Harbour Innovation Campus	Appeared to be out of business
	Result: due to a very low TRL of the team we decided to recommend them to look into H2020 Blockchain projects (Block.IS, BlockStart, B-hub) and connected them with organizations involved in those projects.		
Casper	• Science Technology Park Belgrade, STP Belgrade • HUBTECS • ICT HUB	Science Technology Park Belgrade	Agreed to be connected
	Result: successfully connected to Science Technology Park Belgrade The Science Technology Park Belgrade is intended for startups and growing high-tech development companies (SMEs and development centers of international companies), helping them develop and commercialize innovative products and services.		
Decentralized Science	• Intelligent Urban Lab, Alcobendas • Centro Nacional de Tecnología de Riegos (CENTER) • MaDIH: Manufacturing Digital Innovation Hub • AIR4S - Artificial Intelligence & Robotics	Intelligent Urban Lab, Alcobendas	Agreed to be connected

	for Sustainable Development Goals • SEK Lab EdTech Accelerator • RoboCity2030 • 5TONIC Open 5G Lab 5TONIC		
	Result: successfully connected to <u>Intelligent Urban Lab, Alcobendas</u> The Intelligent Urban Lab enforces the development of bonds between users, technology suppliers and digital enablers throughout the entire value chain. It provides connections between training providers, investors and market access eases.		
DPella	• Stena Industry Innovation Hub at Chalmers - SII-Hub • Bron Innovation	Stena Industry Innovation Hub at Chalmers - SII-Hub	Unresponsive
		Bron Innovation	Unresponsive
	Result: no matching DIH found		
Eyemmersive	• Sunderland Software City • CP Lab Newcastle	Sunderland Software City	Unresponsive
	Result: no matching DIH found		
Georepublic	• Center Digitisation.Bavaria, ZD.B • Munich Innovation Hub for Applied AI • Miro Innovation Lab • Digital Hub Mobility	Digital Hub Mobility	Unresponsive
	Result: no matching DIH found		
Hybridcore	• Sirris Hub / Offshore Wind Infrastructure Application Lab • 3IF - Industrial Internet In Flanders • Made Different | Digital Wallonia	3IF - Industrial Internet In Flanders	Unresponsive
		Made Different | Digital Wallonia	Unresponsive

	Result: no matching DIH found		
Healthymithy	• Hub-laboratory Internet of Things: DIH I4MS Ukraine	Hub-laboratory Internet of Things: DIH I4MS Ukraine	Agreed to be connected
	Result: successfully connected to Hub-laboratory Internet of Things: DIH I4MS Ukraine Hub DIH I4MS Ukraine is the only Ukrainian digital hub included in catalogue of European hubs. DIH I4MS Ukraine, which was launched as part of the European initiative I4MS with the support of the cascade funding mechanism Horizon 2020.		
Internet of Stem Cells Dust: Cyber Control of Polymer-based Devices for Treating Lung Damage from SARS-CoV-2	• Tyndall National Institute, Tyndall • Confirm | Research Centre for Smart Manufacturing • Insight Centre for Data Analytics	Insight Centre for Data Analytics	Agreed to be connected
	Result: successfully connected to Insight Centre for Data Analytics Insight is an SFI research centre. They support 450 researchers across areas such as the Fundamentals of Data Science, Sensing and Actuation, Scaling Algorithms, Model Building, Multi Modal Analysis, Data Engineering and Governance, Decision Making and Trustworthy AI.		
Lightmeter	• EPoSS e.V. - European Technology Platform on Smart Systems Integration • Cluster ICT, media and creative industries Berlin-Brandenburg • Independent Platform for Photonics in Data Centers, PhoxLab • Competence Centre Mittelstand 4.0 Berlin	Competence Centre Mittelstand 4.0 Berlin	Unresponsive
	Result: no matching DIH found		

<table>
<tr><td rowspan="3">Move Phorward</td><td rowspan="2">Emerging Transactional and Financial Technology Hub (ETFTH)
IT and Expert Hub Supporting Biomedical Research, Technology and Education (BioMedHub)
Institute of Electron Technology (ITE)
NASK National Research Institute
HPC4Poland</td><td>NASK National Research Institute</td><td>Unresponsive</td></tr>
<tr><td>HPC4Poland</td><td>Agreed to be connected</td></tr>
<tr><td colspan="3">Result: successfully connected to <u>HPC4Poland</u>

HPC4Poland objective is to co-create and provide HPC tools in response to the demand of Polish manufacturing enterprises.They provide access to comprehensive digital simulation services. Its services include computational methods, such as Finite Element Method, Computational Fluid Dynamics, Fluid-Structure Interaction.</td></tr>
<tr><td rowspan="3">Own Your Data</td><td rowspan="2">VRVis Zentrum für Virtual Reality und Visualisierung Forschungs-GmbH
CDP - Center for Digital Production
DIHOST - Digital Innovation Hub Lower Austria/Vienna/Burgenland
Know-Center GmbH</td><td>DIHOST - Digital Innovation Hub Lower Austria/Vienna/Burgenland</td><td>Unresponsive</td></tr>
<tr><td>Know-Center GmbH</td><td>Unresponsive</td></tr>
<tr><td colspan="3">Result: no matching DIH found</td></tr>
<tr><td>Pi-Lar Entreprise Architects</td><td>Digital Hub Bonn
Aachen DIH Center for Robotics in Healthcare</td><td>Digital Hub Cologne</td><td>Refused to be connected</td></tr>
</table>

	• Siegener Mittelstandsinstitut (SMI) • Institute of Advanced Studies – ForschungsKollegSiegen • Digital Hub Cologne • L3S Digital Innovation Hub	L3S Digital Innovation Hub	Unresponsive
	Result: no matching DIH found		
Porwol	• Irish Centre for High End Computing, ICHEC • Insight Centre for Data Analytics • Confirm | Research Centre for Smart Manufacturing	Confirm | Research Centre for Smart Manufacturing	Agreed to be contacted
	Result: successfully connected to Confirm | Research Centre for Smart Manufacturing CONFIRM DIH is focused on the application of digital innovation across the manufacturing value chain to foster growth and competitiveness in the Irish manufacturing industry and enable Irish based manufacturing SME and larger companies to compete within the rapidly changing global landscape.		
QuarkXR	• AgroHub.BG • SmartFabLab • Sofia Tech Park • Bulgarian Innovation and Technology Hub - DigiTecH 4.0	Sofia Tech Park	Agreed to be connected
	Result: successfully connected to Sofia Tech Park Sofia Tech Park is the first science and technology park in Bulgaria, created with the aim to be established as a platform for exchange of knowledge and ideas between the academic field, the business, the government and the society.		
Sensio	• Industrial Ring • IoT Catalan Alliance	La Salle Technova Barcelona	Agreed to be connected

	• Centre d'Innovació i Tecnologia de la UPC (CIT UPC) • La Salle Technova Barcelona • Associació Clúster Digital de Catalunya • Experience-based industries Hub (e!xperience) • Catalonia AI DIH		
	Result: successfully connected to La Salle Technova Barcelona La Salle Technova Innovation Park (Technova Barcelona) is the innovation park at La Salle–URL). Its mission is to provide a high-quality environment for the development of new technology-based companies and foster technological innovation in SMEs in the Catalan region.		

We connected 8 teams with DIHs, informed 1 team about relevant H2020 blockchain projects and started looking for relevant startup incubators for the remaining 9 teams.

2.2 CONNECTING PROJECT TEAMS WITH OTHER STARTUP SUPPORT ORGANIZATIONS

Since some teams were from the same country, we identified 7 incubators, which are provided in the table below. The selection process was based on the country, i.e., we looked for incubators, hubs and campuses that are in the same country as the startup. We also tried reaching out to those, which were offering more diverse services, which are reminiscent to DIHs. Since we could not find a unified database of all Europe's incubators similar to the S3 Platform for DIHs, we used Google and simple relevant keywords for the search. We also reached out to project teams and asked what kind of organization they would like to be connected with. Thus, one of the organizations was connected to World Bank for an exploration of their challenges in data security.

TABLE 2 ORGANIZATIONS SELECTED FOR THE TEAMS

Team name	Organization identified	Status
B-Smart	H-Farm	Communication is in process

Binare	Maria 01	Agreed to be connected
	Result: successfully connected to Maria 01 Maria 01 is an entrepreneurial community and a selection-based campus for tech teams. With their robust network of partners, experts, and community builders, they equip their members with the right tools, working spaces, and knowledge to build upon their businesses.	
DPella	Science Park Skövde	Agreed to be connected
	Result: successfully connected to Science Park Skövde Science Park Skövde is a meeting place for entrepreneurs, startups and companies focusing on development, innovation and digitalization. Its mission is to contribute to innovation in business.	
Eyemmersive	CodeBase	Agreed to be connected
	Result: successfully connected to CodeBase CodeBase is the largest technology incubator in the UK and one of the fastest growing in Europe.	
Georepublic	World Bank	Contact details exchanged
	Result: successfully connected to World Bank	
Hasan Suzen	Corda Campus	Communication is in process
Lightmeter	Rocket Internet	Communication is in process
Own Your Data	INiTS	Communication is in process
Pi-Lar Entreprise Architects	Rocket Internet	Communication is in process

3. CONCLUSIONS

Tech-transfer service activities covered in this report were performed from M1 to M22. The remaining time of project implementation will be more intense and we plan to provide tech-transfer services to more than 100 project teams that will participate in the upcoming TETRA Scale-up and Build-up bootcamps.
We will follow the methodology developed and first aim to connect project teams with DIHs as they are best fit to provide tech-transfer services and ensure sustainability after project completion. However, as mentioned in the sections above, if connections with DIHs are not possible, we will look for suitable alternatives such as startup hubs, incubators, etc.
Moreover, we intend to continue communication and strengthen our partnership with organizations that agreed to collaborate with us and will connect more project teams with them (if all requirements are met).