Are Data Ecosystems ready for Location Data – Case Location Innovation Hub in Finland

Antti Jakobsson [a],*

[a] *National Land Survey of Finland, - antti.jakobsson@maanmittauslaitos.fi*

* Corresponding author

Abstract:

European Union (2021) has set up a seven-year Digital Europe programme to support the digital transformation of industry and to foster better exploitation of key policy areas, namely: High Performance Computing (HPC); Artificial Intelligence (AI); Cybersecurity and Trust; Advanced Digital Skills; and Deployment and Best use of Digital Capabilities and Interoperability. In this programme, European Digital Innovation Hubs (EDIHs) have a central role in the implementation. These should stimulate the board adaptation of advanced digital technologies by industry, small and medium-sized enterprises (SMEs) and mid-caps, public sector, and academy. European Digital Innovation Hubs should serve as an access point for the latest digital capabilities in those key policy areas, provide access to test before invest infrastructure, promote open innovation and provide support to advanced digital skills by offering short-term training.

In 2022, European Commission completed the first restricted call for EDIHs and selected 152 consortia across Europe. Each country had a separate budget in the call and selected the candidates that could apply in the call. The strategies among countries also varied; some countries were focusing setting regional EDIHs, some like Finland had not set this type of strategy. In Finland 8 candidates were preselected of which 7 finally applied in the EU call. As a result, 4 were selected and have now started they operations in 2023. Remaining 3 candidates got a Seal of Excellence indicating high quality of applications from Finland. European Commission (2023) has set up a web site where contact details of EDIHs can been found and how these EDIHs locations are distributed. Each Finnish EDIH has different thematic focus. Finnish AI Region (FAIR) is focusing AI in areas of digital services, smart cities, and health. HealthHub Finland is focusing on health and Robocoast is focusing on Cybersecurity, AI, Internet of Things (IoT) and Robotics. Our EDIH, Location Innovation Hub (LIH) is targeting to all key policy areas where Location Intelligence has a role and focusing on four domains; Built environment, Bioeconomy, Transportation and Health & wellbeing.

We have identified 5 major challenges SMEs and public sector are facing when they try to exploit location data and technology. These are 1) Utilisation of location data and technologies: According to study of Mäkelä (2018) the realized value of location data in Finland varied between 13-46% of its full potential. Issues like security and resilience in positioning services, personal data protection, and timing information used in the critical infrastructure like power grids, banking and finance have emerged. 2) Market creation and penetration; For example, most SMEs in the EU lack a resilient Intellectual Property (IP) strategy. 3) Access to European market or world-wide; Most location data assets are produced for the national market and are not interoperable. Large corporations like Google, Apple and Amazon dominate consumer markets. Europe's strategy aims to change this with the introduction of High Value Data Sets / Data Spaces. 4) Society needs solutions on climate change and urbanisation; Access to high quality location data and accurate positioning has a key role in solving these issues. Lack of interoperability between location and other data is one of key issues. 5) Lack of knowledge and capability in the public sector; Innovative new solutions are needed but not often used as public sector is not ready for these.

Location Innovation Hub is planning to help SMEs and public sector to tackle these challenges. Our business model is presented in Figure 1. All our services are available free of charge, but we need to gatekeep some of the services in within our resource limits. This is done through the maturity assessment. Based on the maturity we can recommend use of our innovation eco-system services, or our innovation architecture services.
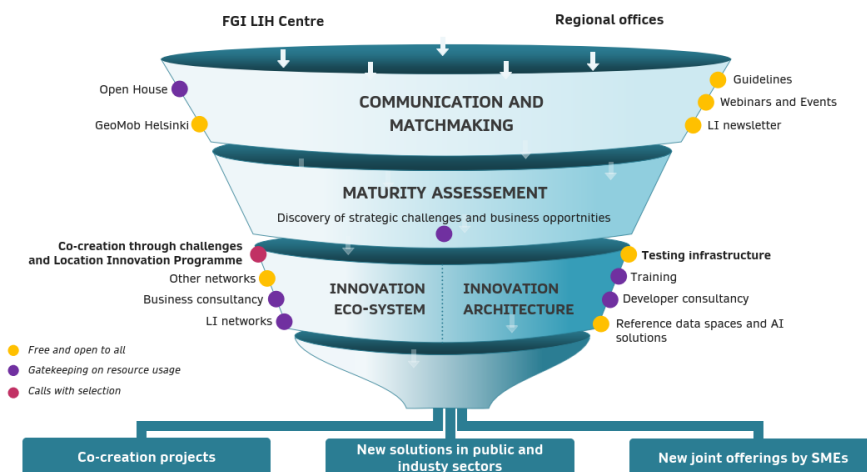
Figure 1. Location Innovation Hub Business Model

Innovation architecture services include technology consultancy and developer support and utilization of our experimentation facilities, enabling them to test the technologies before committing to investment. Our long-term vision is to participate in establishing reference data spaces. These enable businesses to take the next steps in meeting the challenges of climate change and urbanisation. These reference data spaces are also crucial in developing European data spaces. One of the test platforms we offer has been developed in the GeoE3 project (2023) and offers 3D building data, climate data and other data for energy efficiency solutions and smart city applications.

Our innovation ecosystem, based on our pre-existing networks, will play a key role in helping SMEs and mid-caps to connect to relevant partners and address new markets. Efforts are directed toward helping participants 1) Location enable their businesses, 2) work with global services/ national services, 3) to create API based businesses and 4) to network with other SMEs.

A low estimate scenario on benefits of LIH after three years would lead to a 3% increase of maturity in our target sectors resulting in a 300 million euro increase in those sectors. This would derive from progress in one or more data spaces, 60 new innovations and creation of new opportunities in Europe and outside. In the bioeconomy, improvements in laser scanned national datasets enable new innovations in forestry and agriculture and better management of carbon sinks. Together with precision positioning service these will have a significant impact on precision farming etc. In the built environment, Digital Twins, 3D data, IoT data, precise positioning and sensors will have great potential in businesses operating in construction & manufacturing. This enables enhanced decision making and citizen involvement. In Health and Wellbeing, a COVID19 map application demonstrated how important location data is in the management of pandemics. Further examples include use of dynamic mobile location data in modelling people movements and planning service locations and logistics. In transport ITS with autonomous vehicles (on land, sea, and air), fleet management, traffic monitoring, location-based service platforms (e.g. bike/car sharing) is fed by precise positioning and AI algorithms. Reliable autonomous driving requires a digital HD map for guaranteed localization. These are needed for making transport smoother, safer, and more sustainable.

References

European Union, 2021. Regulation (EU) 2021/694 of the European Parliament and of the Council of 29 April 2021 establishing the Digital Europe Programme and repealing Decision (EU) 2015/2240 (Text with EEA relevance). European Commission, 2023. Smart Specialisation Platform. https://s3platform.jrc.ec.europa.eu/digital-innovation-hubstool?p_p_id=eu_europa_ec_jrc_dih_web_DihWebPortlet&p_p_lifecycle=0&_eu_europa_ec_jrc_dih_web_DihWebPortlet_edihTabParam=Candidate+European+DIHs. (accessed 12th Jan 2023).

Mäkelä, J., 2018. The Economic Value of Spatially Enabled Services in Finland. Report. 17 pages. https://www.maanmittauslaitos.fi/sites/maanmittauslaitos.fi/files/attachments/2020/02/PTA-The%20economic%20value%20of%20spatially%20enabled%20services%20in%20Finland%2020181031.pdf (Accessed 12th Jan 2023).

GeoE3 project, 2023. www.geoe3.eu (Accessed 12th Jan 2023).