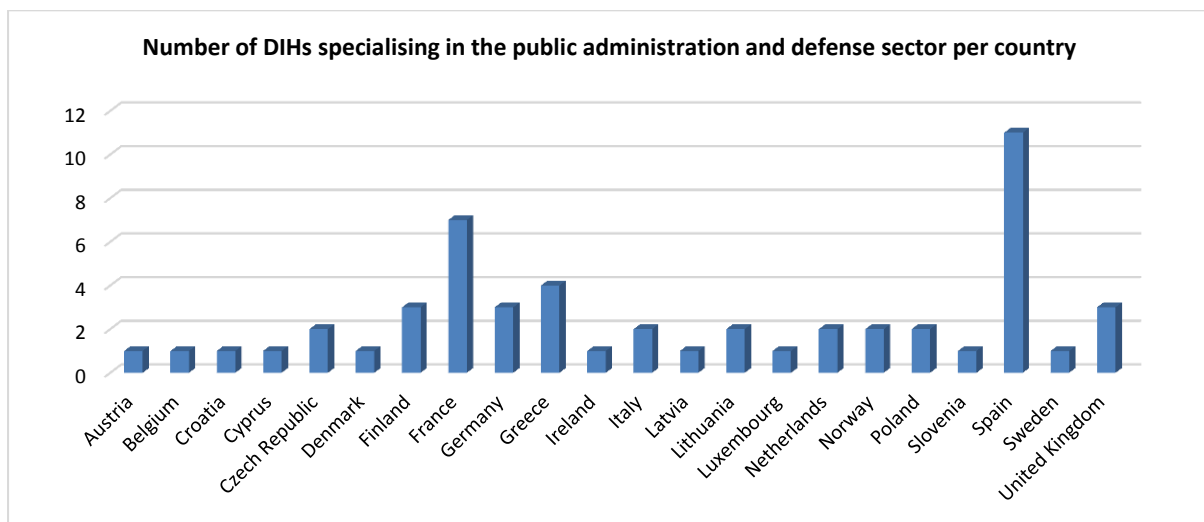




The country distribution of the above mentioned 53 DIHs that provide digitalisation services to the Public Administration and Defence areas are distributed per country as following:



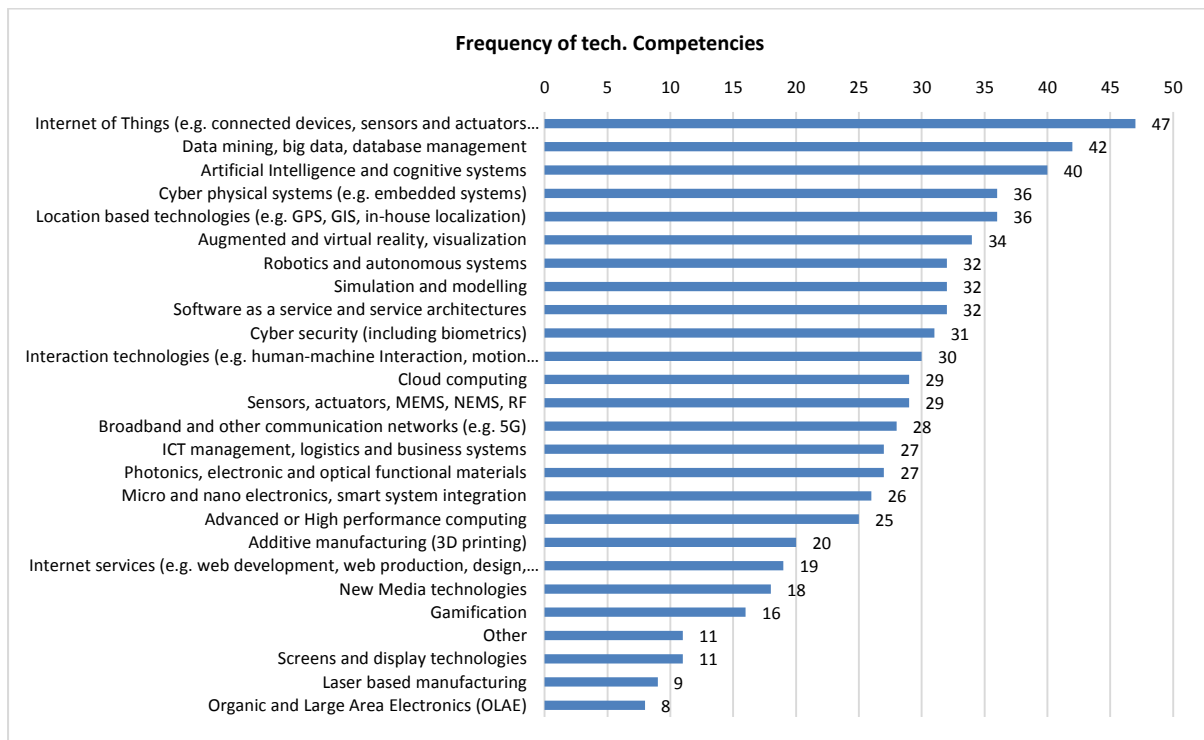
**Figure 2:** Number of DIHs specialising in the public administration and defense sectors per country

The identified DIHs possess a number of technical competences and offer a range of services to stakeholders in the public administration and defense areas. Following is some information on the frequency of technical competences and the range of services provided.

#### Frequency of technical competences of Fully Operational DIHs in Public Administration & defense

- Internet of Things (e.g. connected devices, sensors and actuators networks)
- Data mining, big data, database management
- Artificial Intelligence and cognitive systems
- Cyber physical systems (e.g. embedded systems)
- Location based technologies (e.g. GPS, GIS, in-house localization)
- Augmented and virtual reality, visualization
- Robotics and autonomous systems
- Simulation and modelling
- Software as a service and service architectures
- Cyber security (including biometrics)
- Interaction technologies (e.g. human-machine Interaction, motion recognition and language technologies)
- Cloud computing
- Sensors, actuators, MEMS, NEMS, RF
- Broadband and other communication networks (e.g. 5G)
- ICT management, logistics and business systems
- Photonics, electronic and optical functional materials
- Micro and nano electronics, smart system integration
- Advanced or High performance computing
- Additive manufacturing (3D printing)
- Internet services (e.g. web development, web production, design, networking, and e-commerce)

- New Media technologies
- Gamification
- Other
- Screens and display technologies
- Laser based manufacturing
- Organic and Large Area Electronics (OLAE)



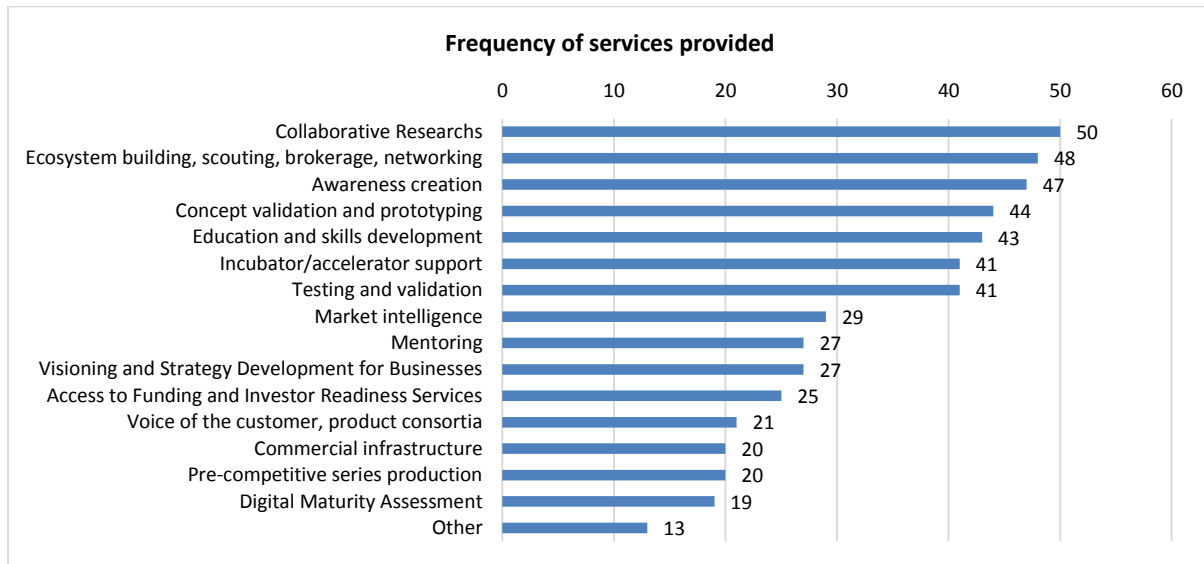
**Figure 3:** Frequency of technical competencies of DIHs specialising in the public administration & defense sectors

### Most common services offered by Fully Operational DIHs on Public Administration & Defense

There is a broad range of services provided by DIHs depending on their capacities and also on the level of maturity of SMEs in their process of digital transformation. The types of services most commonly mentioned by DIHs that provide support to the public administration & defense sectors are the following:

- Collaborative Research
- Ecosystem building, scouting, brokerage, networking
- Awareness creation
- Concept validation and prototyping
- Education and skills development
- Incubator/accelerator support
- Testing and validation
- Market intelligence
- Mentoring
- Visioning and Strategy Development for Businesses
- Access to Funding and Investor Readiness Services
- Voice of the customer, product consortia

- Commercial infrastructure
- Pre-competitive series production
- Digital Maturity Assessment
- Other



**Figure 4:** Frequency of services provided by DIHs specialising in the public administration & defense sectors

➤ **Examples of digitalisation services in public administration & defense:**

DIHs are already contributing in the digital transformation of stakeholders in the public administration & defense sectors in Europe and in the future their role will be increasingly important. Following are some examples of different digitisation services provided by DIHs in different countries to beneficiaries related to the public administration & defense sectors:

**i) Luxembourg Institute of Science and Technology (LIST), Luxembourg**  
<http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1061/view>

**Service example**

Measuring the performance of education systems rely on the reliable measurement of actable competencies. In a context where traditional paper-based instruments become more and more adapted to the skills that needs to be evaluated, Computer-Based Assessment represents nowadays one of the cornerstones of the future Human Capital development. In close collaboration with the University of Luxembourg (psychology and educational measurement), we have developed an advanced Computer-Based Assessment Open-Source platform called TAO. This platform aims at providing value added artifacts to various types of stakeholders, they range from the policy-making perspective, OECD (Pisa, Piac) to other international institutions. Technological partnerships have bee, also established with world-leaders in the assessment fields such as Educational Testing Services (ETS), in the US, and Australian Council of Educational Research (ACER), Australia. Today, TAO has been transferred to the spin-off OAT created in 2013 with 28 collaborators today.

**ii) TeraLab: Big Data Platform for Research, Education and Innovation, France**  
<http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/1058/view>

### **Service example**

Access to Research (e gouvernement)

Analysis of the use of the Gallica digital library (French Component of Europeana)

Client profile: BnF, French National Library

Client Needs: Since 2013 BnF ( French national library) and Telecom ParisTech Department of Economics and Social Sciences are jointly working ( 2014 observation of Gallica users, , 2015: Study of the use of funds digitized by amateurs of the Great War.) on qualitative analysis. In 2017, they needed to complete these first research item with a digital, quantitative analysis : Log Mining = Logs of Gallica Website from BnF on the behavior of users of the BnF: 40 m visitors per days, 20 M lines of logs per day. For that they needed an infrastructure, security, tools to allow data scientist to access to these logs.

Provided solution to meet the needs:

The contribution of Teralab:

- Technical: Implementation of an Elasticsearch database, Easy recovery for treatments.
- Workspace security: the TeraLab team worked with the security officer of BnF in order to get access to the logs.
- Acceleration of research action by providing all tools, security and pre-installed workspace to focus on Log Mining.
- Benefits for the BnF: Data security, Data stored in France. Benefits for Telecom ParisTech: Flexibility, adaptability (changing needs)

Analyses produced:

- Simple statistics (popular documents, average times, entry point ...).
- Analysis and optimization of the impact of mediation (blog, Facebook) on the Gallica audience.
- Characterization of uses: how Gallica users navigate the site.

More details: <https://www.teralab-datascience.fr/fr/accueil/le-projet/utilisateurs/clients/la-bibliotheque-nationale-de-france>

### **iii) Algebra LAB, Croatia**

(<http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/2566/view>)

#### **Service example**

Labour Market Dynamics Monitoring using Big Data

Client profile: labour market stakeholders and policy makers

Client needs: to understand labour market dynamics

Provided solution: developed system provides a profound insight into the supply and demand of skills in the labour market and the gap between the same with the main aim of supporting decision-making in employment policies and the education system; as part of the system, projections of skills that will be required in the future in certain geographic areas are successfully presented; use of regional data enabled the insight into all the specifics of the EU labour market, which was one of the main goals preparing the solution, data from tens of millions of job adverts from the European Center for the Development of Vocational Education (CEDEFOP) was used; in addition to these advertisements, job advertisements were also published on the European Job Mobility Portal (EURES), data from 4.7 million resume job seekers.

More details: <https://www.linkedin.com/pulse/croatian-team-won-first-eu-big-data-hackathon-leo-mr%C5%A1i%C4%87-phd/>