space4geo

Empowering space data users

PACT FOR SKILL

SPACE4GEO

Large Scale Partnership
on Space Data, Services and Applications

LARGE SCALE SKILLS PARTNERSHIP ON
SPACE DATA, SERVICES AND APPLICATIONS
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1. Preamble

The downstream space and geoinformation sector, which relies on Earth Observation (EO) and GNSS (Global Navigation Satellite System) data, is of strategic importance with great potential to support many European, national, and sub-national policy priorities. This sector encompasses numerous services across multiple market segments that use satellite-based positioning and/or EO data generated by satellites (but also by aircrafts, drones and in-situ components). EU space infrastructures such as Galileo and Copernicus provide global coverage and allow for the use of their data to determine location, velocity and timing, and to monitor earth, oceans and atmosphere. Within the context of the current digital paradigm, space-based data has the potential to both accelerate the digital transition and support the transition to a net-zero economy by providing valuable information and insights for various sectors. EO and GNSS are characterised by their cross-industry nature and capacity to provide economic benefits in terms of cost-effectiveness in many industrial ecosystems and become increasingly useful in decision-making processes. The data is used around the world for diverse applications, benefitting citizens and society and providing unrivalled information for several market segments, such as: agriculture, natural disaster management, marine weather forecast, (critical) infrastructure planning and monitoring, aviation and drones, biodiversity, ecosystems and natural capital, climate services, consumer solutions, tourism and health, emergency management and humanitarian aid, environmental monitoring, fisheries and aquaculture, forestry, insurance and finance, maritime and inland waterways, rail, urban development and cultural heritage, road and automotive, energy and raw materials, space, security and defence, etc.

Due to the large amount of data made available and accessible through data and information infrastructures at various levels, the uptake of existing data and services is not being fully utilized and their integration in added-value services for governments, businesses and citizens could be improved. The EO and GNSS sectors have separately developed in the last decades, but new developments and technologies are now enabling their tighter integration which paves the way to novel innovative applications and services.

In addition, the EO and GNSS sectors are following new processes and business models driven by disrupting technologies in data collection and exploitation such as big data, cloud computing, artificial intelligence, machine learning, data fusion or predictive analytics. With this evolution in quality, quantity, and cost of data, and thanks to the movement towards open data policies, emerging platforms and change in the market dynamics, EO and GNSS are now serving new value chains in other vertical sectors covering the needs for actionable intelligent solutions which require a highly skilled workforce on different levels. Technical, managerial,

academic and/or entrepreneurial skills need to be well balanced in future professionals' profiles. This trend of increasing demand of skills is reinforced by the on-going deployment of several data spaces identified by the EU strategy on data, which will be fed by the High Value Datasets specified by the very recently adopted Implementing Act of the Open Data Directive, as well as by the future adoption of the EU Regulation on Interoperability. Indeed, this rapidly evolving landscape of EU data policies, aimed to sustain in the long term a solid data economy, already paved the way for a series of new jobs, which will require upskilling and reskilling of workers and job seekers in the space downstream and geo-information sector.

An educated workforce will enable the downstream space sector to attract high value, innovative and knowledge-based businesses and adapt more readily to the challenging technological environment that the EO and GNSS sectors are experimenting with. Some degree of misalignment between the supply and demand for skills is inevitable, particularly in the short run, and in the context of dynamic transformations. This requires agility and adaptability in the education and training system, as well as reskilling of the workforce to retain knowledge.

2. Strategic ambition

In her **State of the European Union Address** on 14 September 2022, President von der Leyen identified a "*workforce with the right skills*" as a crucial factor underpinning the current and future competitiveness of our social market economy. Skills mean more and better jobs because a skilled workforce is a key driver of growth, enhancing the innovation power and competitiveness of all European companies, in particular small and medium-sized enterprises (SME).

The **2023 European Year of Skills,** announced by President von der Leyen in her State of the European Union Address, represents a unique opportunity to support European companies, and especially small and medium-sized enterprises, "*grappling with a shortage of staff*" by putting *"more focus in our investment on professional education and upskilling",* by ensuring *"better cooperation with companies",* by matching companies' needs "*with people's aspirations*" of both low and high skilled, and by speeding up and facilitating the *"recognition of qualifications also of third country nationals".*[1]

In this policy framework, the proposed Large Scale Partnership on space data, services and applications wants to leverage on the results of the [EO4GEO Blueprint project](#) on space geoinformation and its Sector Skills Strategy published on 6th December 2021, adopting a wider sectoral coverage to embrace not only Earth Observation and geoinformation but also positioning, navigation, secure connectivity as well as the use of data for security and defence, namely the entire so-called downstream segment of space economy.

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[1] Ref. COM(2022) 526 final – Proposal for a DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on a European Year of Skills 2023, Brussels, 12/10/2022

As we move towards green and digital transformation of society (impacting business, governments, and citizens alike), EO and GNSS data and services are rapidly becoming mainstream and contributing to achieving the objectives of the European twin transition. Moreover, the global competition is increasing with new entrants bringing new ambitions in the space sector and EO and GNSS are becoming increasingly commercial with greater private sector involvement. Internationalisation can strengthen the European space sector and its position as a leader in downstream services. The sector is enabling collaboration and cooperation between countries and regions, leading to increased innovation and competitiveness. International partnerships can also increase access to global markets for the European industry.

Recent trends are stimulating the demand for EO and GNSS data, allowing a steady growth for space-based products & services, increasing its reach into downstream industries and associated value chains. The vision is to foster skills development and market uptake by ensuring a workforce with the right skills, in the right place, at the right time, which based on its partnership will ensure strategic cooperation among stakeholders on skills development.

Gender unbalanced workforce, an ageing society, as well the shortage of skills in the space downstream and geoinformation sector call for a culture of lifelong learning.
In line with the EU core values and the key principle of the Charter of the Pact for Skills, the partnership will pursue equal and inclusive access to training to activate more people for the space sector labour market, in particular women and young people.

The Partnership will not operate in isolation, rather in collaboration with other projects and initiatives in the sector, i.e. the Copernicus Academy and Relays, the UNIVERSEH Alliance, the projects ASTRAIOS, STARS*EU and GIS4School, or internationally with the EOTEC DevNet to name but a few and with which conversations are already on-going, also with some of their partners directly involved in the proposed LSP. The Partnership is also open to support and complement efforts pursued through the Union CASSINI initiative as well as the EU Space academy.

The proposed Partnership is promoted within the "Aerospace and Defence" industrial ecosystem and is fully complementary to the existing "Aerospace and Defence Large Scale Partnership" focusing mainly on aeronautics and defence and covering also the manufacturing and infrastructure part of the space economy, the so-called "upstream" segment. Collaboration with this Partnership is planned and contacts with some partners are already ongoing to ensure a coherent approach to skills development covering the whole spectrum of the space sector (upstream and downstream).

3. Skills / VET challenge

Currently, the academic and vocational education and training offered are lagging behind the continuously evolving needs of the industry, the individual businesses, public sector actors and society at large. The actual offer is focusing mainly on the upstream part of the space sector, while the downstream part, and especially the different application domains and the connection/synergies with the user communities, such as other business sectors (agriculture, infrastructure, insurance, etc.), are underrepresented. Moreover, requirements are evolving continuously, and due to technological trends and user expectations, the education and training offer requires for a continuous update of existing curricula, and the development of new curricula reflecting new skills requirements. Therefore, it is of utmost importance that the sector systematically monitors and assesses these evolving needs through a well-organized observatory that will significantly contribute to the "Pact for Skills" and contributes as a tool to monitor the competitive environment in the space downstream and geoinformation sector in the digital economy worldwide.

Moreover, although a rich offer of academic training exists in universities, especially with regard to the theoretical and scientific elements of space and the space downstream sector, the skills development part is usually less developed. Formalized vocational education and training offers in the sector are also less developed and not standardized, and in many cases no certification mechanism exists. The downstream sector needs particular attention, especially the many sectoral or thematic application domains that (can) make use of geospatial data and services. From this perspective, more practical, case-based learning curricula could and should be designed in a collaborative effort by academic, service companies, the public sector, and other business sector actors. Europe has a strong and diversified downstream service industry capable of providing many products and services derived from satellite observations, other platforms and various geoinformation data across a wide range of applications. Many countries lack the skills to develop products on their own.

Finally, the benefits and opportunities for other business sectors are not fully taken into account and exploited currently. Focus in the space downstream and geoinformation sector should be on reaching out to the public sector as customer and application domains to highlight the potential value of geospatial data and services for their domain, or to discover new opportunities in a collaborative way demonstrating how the benefits are driven along a value chain. Reskill and upskill activities in different business sectors are required to support the adoption of geoinformation and space data & services as part of the digital agenda implementation, encouraging them in the uptake of skills development to better perform business sectors' challenges and needs. Actions are needed to help develop and foster geospatial skills in the end-user sectors (agriculture, energy, transport, local government, etc.) as this is where the "pull" for space geoinformation data and services eventually comes from.

4. High level commitments

In line with the principles governing the Pact for Skills and its Charter, the proposed LSP wishes to ensure continuous exchange and cooperation among stakeholders from the academic, private and public sectors on skills development and requirements.

To this purpose, the partners are committing to establish and deliver a shared understanding of the volume of skills needs and capacity requirements needed (in the short, medium and long term) to achieve the high level vision of a successful space downstream and geoinformation sector.

The vision is being translated into strategic commitments which will lead to a certain impact that contributes to bridging the skills gaps and mismatches and an improved user uptake of space data, services and applications.

Specific commitments for the Partnership are:

- To monitor the occupational supply and demand to identify the skills and competences required and provide feedback on the evolving sector needs.

- To help and guide candidate learners in their skilling, upskilling and reskilling efforts, supporting them to access quality training.

- To facilitate and stimulate a more integrated and inclusive approach on skills development across different value chains (vertical sectors) and at different levels, including local and regional level.

- To encourage citizens' engagement, citizens' science practices and hands-on activities enhancing the inclusion/recognition of space downstream and geoinformation applications' value in everyday aspects of life, also attracting new talents to the present and emerging space geospatial professions.

5. Key Performance Indicators

Key Performance Indicators (KPIs) – quantitative and/or qualitative – to help monitoring the above high level commitments could include:

- Number of awareness raising workshops organized per year

- Number of stakeholders reached by the awareness raising campaign, classified by target groups and by application vertical sectors

- Number of active collaboration established with complementary projects and initiatives

- Number of learning paths designed to meet current and expected skills needs in the sector for relevant occupational profiles

- Number of courses organized to up-skill and reskill staff of private and public organizations on the use of space geoinformation data, technologies and derived services

- Number of persons being trained and their geographical coverage (with a particular attention to those countries less "mature" in the use of space geoinformation data and technologies)

- Number of mobilities (traineeships, apprenticeships, project work, ...) promoted within the partnership

- Participation of women in upskilling and reskilling activities (in percentage)

- Number of students/trainees participating in summers schools/educational activities on space downstream and geoinformation

- Number of users registering and completing online training courses promoted by LSP members

- Number of other sectors identified in which space downstream and geoinformation skills could add value or might even become essential, and with which an active collaboration is set-up

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