



Spatial Data Infrastructure and Earth Observation Education and Training for North Africa

ALEXANDRIA UNIVERSITY CONTRIBUTION FOR SEED4NA ERASMUS+ PROJECT;

Spatial Data Infrastructure and Earth Observation Education and Training For north Africa

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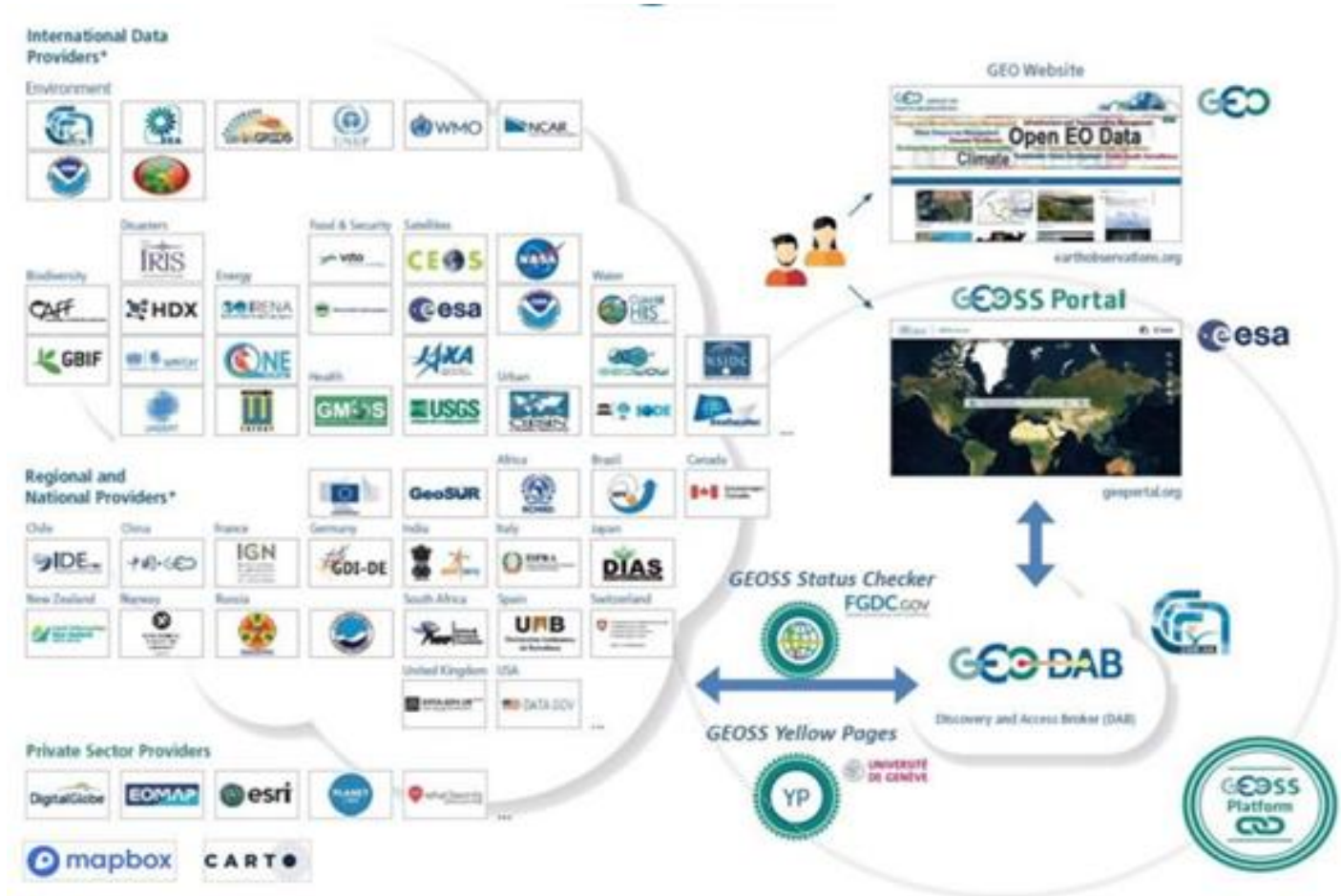
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WHAT IS SPATIAL DATA INFRASTRUCTURE (SDI)?

- The term spatial data infrastructure was coined in 1993 by the U.S. National Research Council to denote a framework of technologies, policies, and institutional arrangements that together facilitate the creation, exchange, and use of geospatial data and related information resources across an information-sharing community.
- Framework can be implemented narrowly to enable the sharing of geospatial information within an organization or more broadly for use at a national, regional, or global level, academia, and the private sector.
- The goals of SDI ; reduce duplication of efforts among governments,
- lowering costs related to geographic information while making geographic data more accessible, increase the benefits of using available spatial data.
- SDI widely uses Geographic Information System (GIS), GPS, Remote Sensing and other geospatial technologies.

WHAT IS GLOBAL EARTH OBSERVATION SYSTEM (GEOSS) PLATFORM

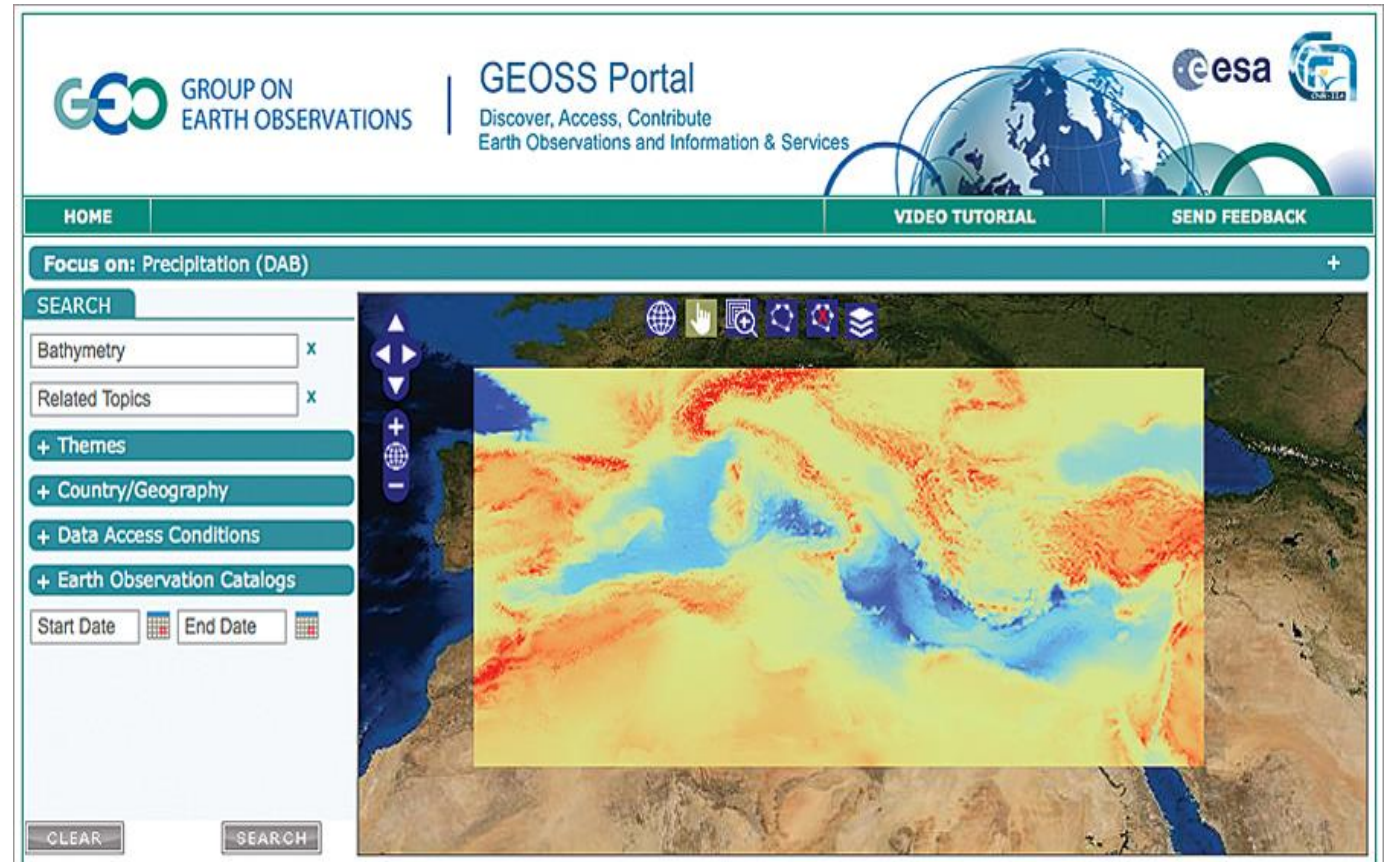
- The GEOSS is a social and software ecosystem connecting a large array of observing systems, data systems and processing services to strengthen monitoring of the state of the Earth.
- Vital for the work of decision/policy makers, planners and emergency managers. Both the public and private sector but as well citizens are served.
- 100 national governments + 100 Participating Organizations



Website: <http://www.earthobservations.org/>

EARTH OBSERVATION PLATFORM BENEFITS PLANET:

Sensors, satellites, radar, and other earth observation technologies are used to monitor typhoons, oil spills, deforestation, and more. This data makes it possible to track, learn, and take action when events threaten the environment and human safety.



Website: <https://www.esri.com/about/newsroom/arcnews/earth-observation-platform-benefits-planet/>

WHAT IS ERASMUS + PROJECTS?



- Erasmus+ is the EU's **programme** to support education, training, youth
- It has opportunities for a wide range of organizations, including universities, education and training providers, think-tanks, research organizations, and private businesses.
- Erasmus+ is open to many individuals and organizations, although eligibility varies from one action to another and from one country to another.

Key Action 1: Learning mobility of individuals.

Aims to encourage the mobility of students, staff, youth workers, and young people

Key Action 2: Innovation and good practices.

Designed to develop the education, training, and youth sectors through five main activities;
Capacity Building in the field of Higher Education.

Key Action 3: Support for policy reform.

Aims to increase the participation of young people in democratic life, especially in discussions with policy makers,

EDUCATION, TRAINING AND YOUTH:

Supporting quality education, training and social cohesion

- The EU supports Member States in their efforts to provide the best education and training for their citizens. It also promotes multilingualism in Europe, helping with the teaching and learning of languages, encouraging mobility of students, trainees, teachers and young people, and facilitating exchanges of information and experience.

The EU sets out the framework for EU countries to exchange best practices and learn from each other, with an aim of;

- Make lifelong learning and mobility a reality
- Improve the quality and efficiency of education and training
- Promote equity, social cohesion and active citizenship
- Enhance creativity, innovation and entrepreneurship

PROJECT PARTNERS

**PARTNER
COUNTRY**



Alexandria University



Fayoum University



University Ibnou Zohr a Agadir



Institut Agronomique et Veterinaire Hassan II



Regional Center for Remote Sensing of North Africa States



University of Carthage



University of Jendouba



University of Oran 1
Ahmed Ben Bella



Université des Sciences et de
la Technologie Houari
Boumediene

**PROGRAMME
COUNTRY**



University of Twente



University of Zagreb



Hochshule Bochum



Novogit AB



KU Leuven



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ALEXANDRIA UNIVERSITY

- Established in **1938**, one of the oldest and largest universities in Egypt.
- outreach centers with branches in Chad, South Sudan, Iraq and Ethiopia

25000

Undergraduate / year

&

4000

Postgraduate / year

Faculties	Enrolled Students	Staff	Hospitals	Libraries	Employees
23	146346	6181	11	25	1500





ALEXANDRIA UNIVERSITY VISION

Alexandria University aspires to restore the historic status of Alexandria University and to achieve a comprehensive qualitative leap in various fields of knowledge within a framework of noble human values, enabling it to take a leading position in its national , Arab, African, Mediterranean and global environments.

MISSION :

The University of Alexandria is a national, educational, research, and development institution integrated into the production and dissemination of knowledge. Also, emphasis the building of a modern human being and cultural rehabilitation of the society. And be able to assume leadership positions in all sectors

Website: <https://www.alexu.edu.eg/>

AIM OF THE PROJECT

The general objective of SEED4NA is to improve the quality of higher education in the fields of SDI and EO, and to enhance its relevance for the labour market and society by improving the level of competences and skills through the development of new and innovative SDI/EO curricula

SPECIFIC OBJECTIVES

- 1.To investigate, determine and analyze the needs and requirements for SDI/EO education in North Africa
- 2.To develop, test and adapt new curricula, courses, learning material and tools within the field of SDI and EO.
- 3.To improve the education and teaching skills and competences of the teachers involved in SDI/EO education at partner HEIs
- 4.To provide a foundation for future joint projects, targeting national needs but also aligned with European developments.
- 5.To increase the impact of the partner HEIs on SDI/EO developments in society



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NEEDS ANALYSIS

Very limited use of EO, GI and GIS in North Africa in areas such as environment, climate, water management, urban mapping, forestry and the study of natural resources. Key priority is the development of GI, earth observation and space-based information systems **in line with current and future technologies**”

The setup and usage of **SDI and EO platforms and services is not yet common practice**. In many regions, the knowledge, skills and competencies to develop, maintain and exploit these infrastructures and related technologies is relatively weak.”

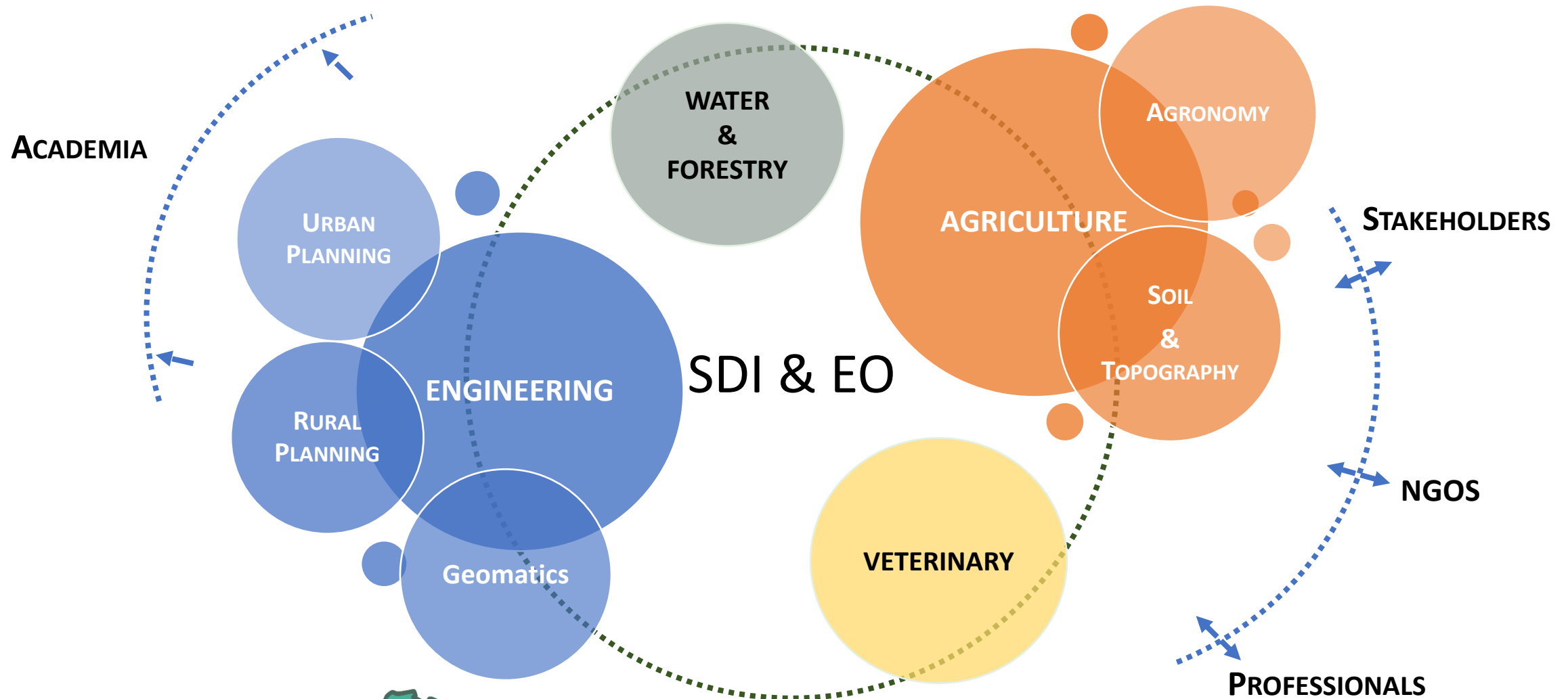
In **Egypt**, there is no full undergraduate program on Earth Observation and Spatial Data analysis in the domains of agriculture, IT and Engineering. Education in GI, SDI and EO mainly takes place in the area of geography. Teaching and learning on GI mainly takes place in the context of vocational training. Also, at the level of graduate programs, GI (geomatics) programs exist, but clearly suffer from a lack of well-trained teachers.



NEEDS ANALYSIS

- Summarizing our needs analysis, we can state that the curricula at HEI's in Northern Africa already contain some elements on geographic information science and EO data and technologies. But a **systematic modernization of those curricula and their further development to cope with the newer approaches and techniques, as well as the latest concepts in the collection, managing and dissemination of spatial and EO data for cross-thematic and cross-border applications.**
- The academic and the VET education and training systems should follow these developments and it requires curricula that tackle both technological aspects to build and maintain such infrastructures, but also to use and exploit them in order to help solving the problems & challenges in the mentioned field.

DEVELOPING MULTIDISCIPLINARY SCIENCES



NEEDS ANALYSIS

Undergraduate students

New Curricula developed that will be implemented for the next five years

Courses

- Introduction to GIS 2 credits
- Surveying for Architects 2 credits
- Urban Development 2 credits

Postgraduate students

New proposed Curricula under approval that will be implemented for the next five years

Courses

- Introduction to Remote sensing 3 credits
- Application of GIS / Remote sensing in Environmental Indicators 3credits
- Policies of Land Use 3credits
- Transportation and Land use
- Special Studies in urban design 3credits
- Selected Topics in Urban Practice & Management 3credits
- Web GIS and Geoportals for SDI 3credits

Website:

BUILDING FURTHER ON EU APPROACHES

The wider objectives of the BESTSDI project is to improve the quality of higher education in Geographical Science and Technology field, SDI and geodesy



Website: <http://bestsdi.eu/>



**Innovative solutions for Earth
Observation/Geoinformation training**

EO4GEO aims to help bridging the skills gap between supply and demand of education and training in the EO/GI sector

Website: <http://www.eo4geo.eu/>

AU ROLE IN THE PROJECT

Project WORKPLAN	Preparing the environment for curriculum design					
	Development of SDI and EO curriculum and capacity building					
	Implementation of SDI and EO courses					
	Dissemination and exploitation of project results					
	MANAGEMENT					
	Quality assurance and evaluation					
	6 MONTHS	12 MONTHS	18 MONTHS	24 MONTHS	30 MONTHS	36 MONTHS
	FIRST YEAR 2020		SECOND YEAR 2021		THIRD YEAR 2022	

CURRICULUM DEVELOPMENT

SDI/EO courses, as perceived by The stakeholders, job market towards undergraduate and postgraduate

VOCATIONAL TRAINING DEVELOPMENT

courses conducted & number of professionals attending the VET Courses and workshops

TRAINING FOR STAFF MEMBERS

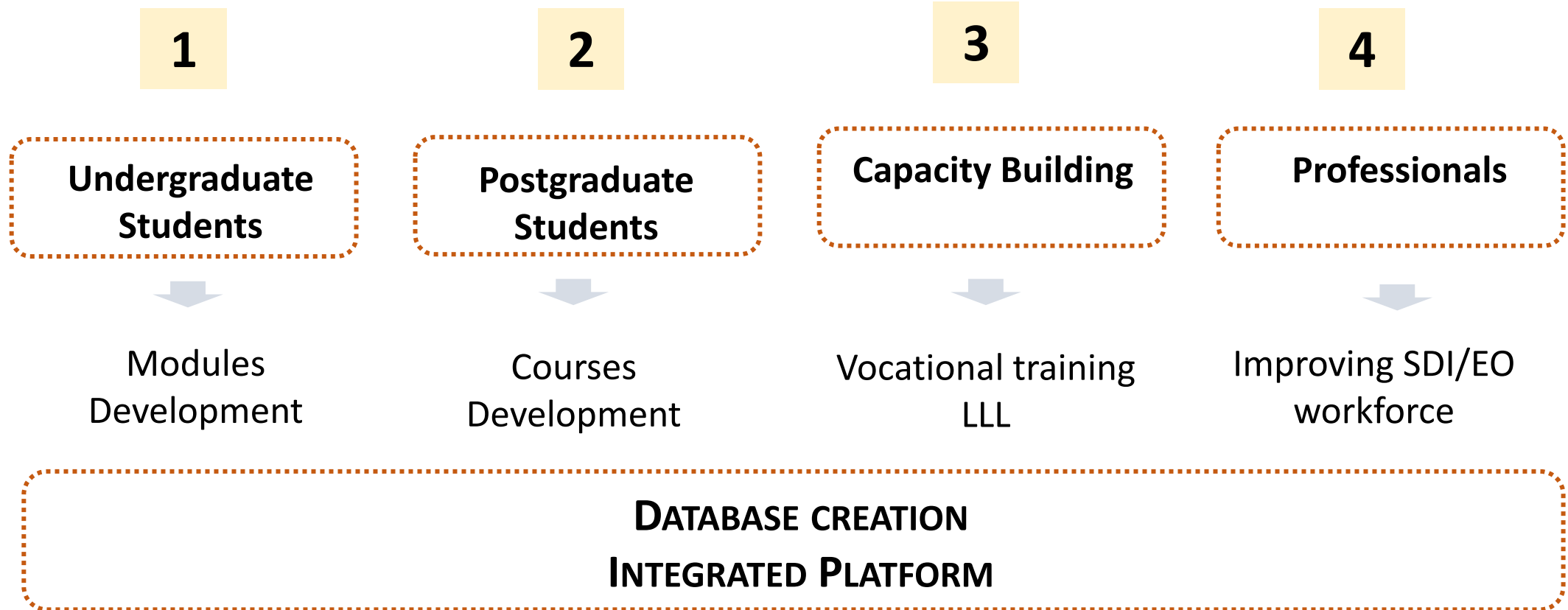
improve the education and teaching skills and competences of the staff involved in SDI/EO education at HEIs

SDI & EO LAB

Preparation of lab with equipment , software , Geoportal, server to enable database creation & platform startup

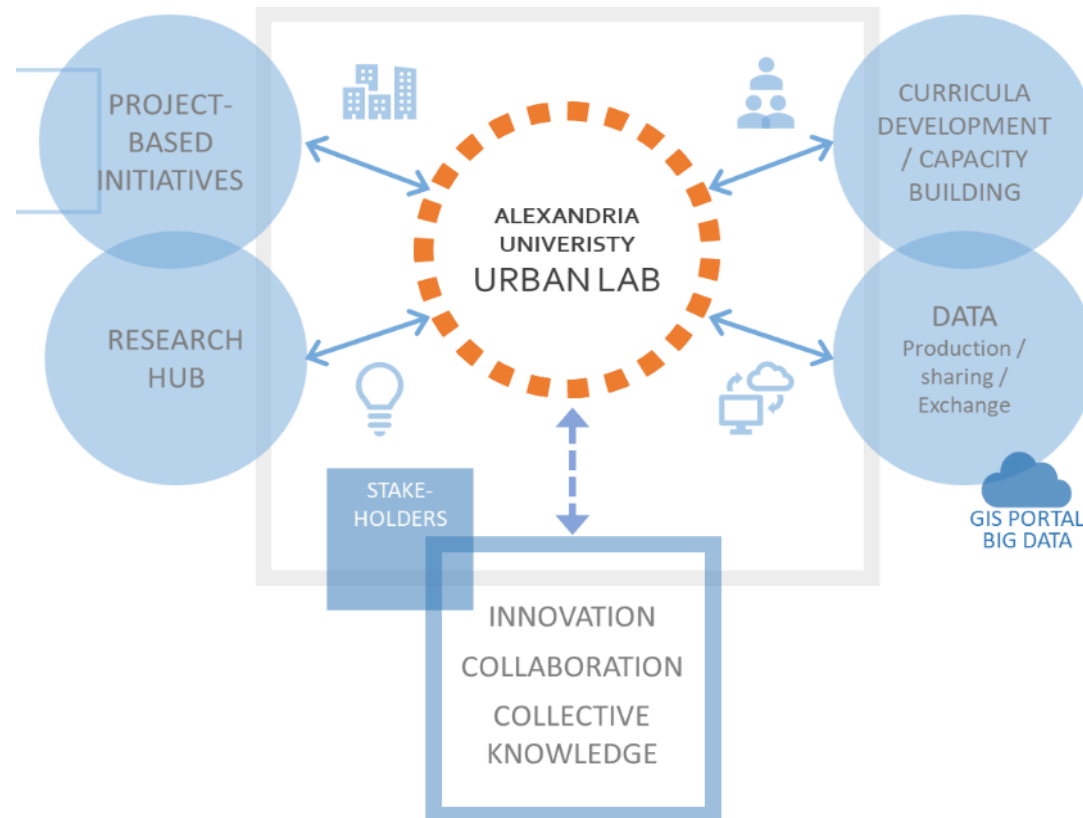


TARGET GROUP



PROJECT OUTPUTS

SEED4NA will **apply the case-based and collaborative learning method**. To this end, the HEI's will work together with relevant stakeholders that manage the different application domains.



CONTRIBUTION TO THE PROJECT

- In order to gain insight in and better understand the skills needs and requirements of professionals and stakeholders in North Africa, SEEDNA has launched a Stakeholder Survey on necessary competences related to SDI and EO.
- Participation is highly appreciated through survey link

<https://docs.google.com/forms/d/1FDgb5cPC0LJindCEE-dLWXv2sleikunGpkeM-AbfUY0/edit?usp=sharing>



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Thank you for your attention!



www.seed4na.eu



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