

14.Confernece Geoinformatics & Cartography, Zagreb, September 28th 2018.

Geoinformatics Development Perspectives – Challenges for Academic Society

Željko Bačić

Faculty of Geodesy University of Zagreb

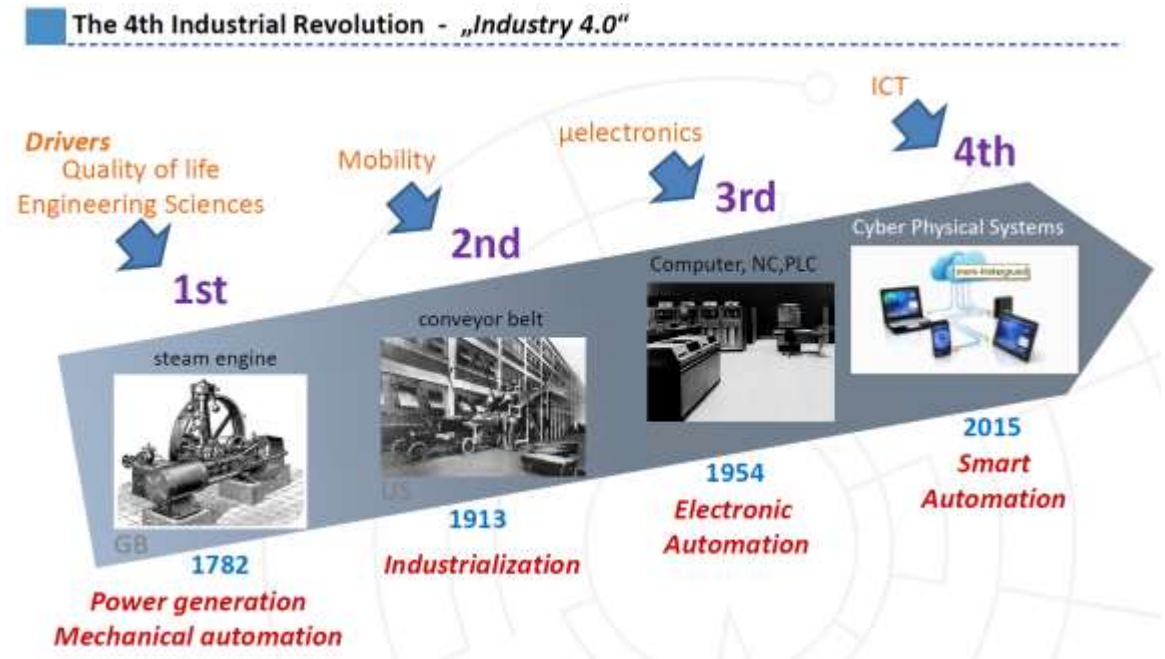


Co-funded by the
Erasmus+ Programme
of the European Union



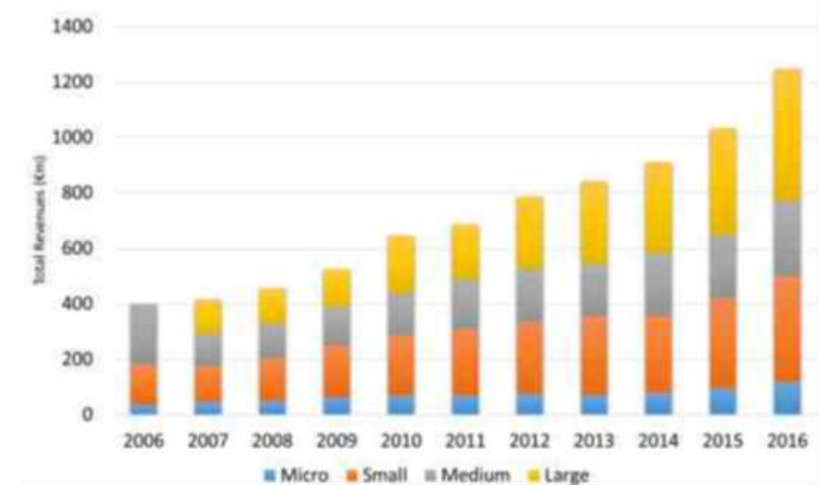
Present view to the future

- Today we are at the beginning of a Fourth Industrial Revolution entering the Digital Era
- We do not know duration of this process or its final results
- Nanotechnology, robotics, artificial intelligence, space technology ...
- Deep and far-reaching change
- Termendous impact on future development of human professions ...
- Estimation is that 65% of children entering primary school today will work in completely new job types that don't yet exist!



Plume of fourth industrial revolution

- Digital technology
- Technology dealing with information
- Especially spatial information/spatial data
- New technologies, GNSS and EO from space provide necessary spatial data
- Key issue: effectiveness of usage of spatial data
- Resulted in number of concepts evolving through the time: GIS, SDI, ITS, Smart cities, Precise farming, BIM, ...
- Common for all – intensive use of spatial data



Revenue of EO companies in Europe
(Miguel Lago, M.; 2018)

Major challenge

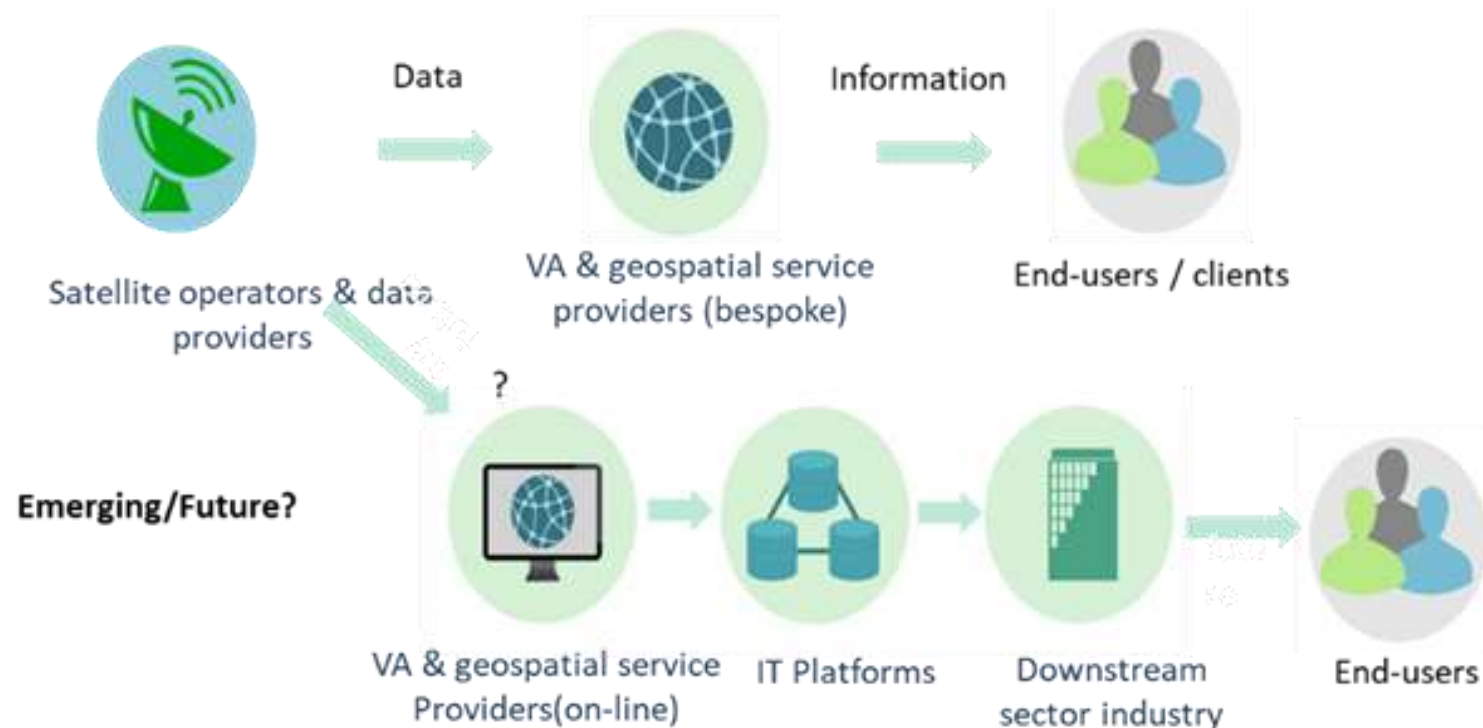
- Presently present gap between the offer and uptake of spatial data
- Disables maximization of socio-economic benefits of new technologies
- Two major challenges identified:
 - Most space data cannot be used directly by end users
 - Satellite data and services often need to be combined with other data to bring value



*Law of disruption –
that technology
develops exponentially
while social, economic
and legal systems
change incrementally!
(Downes, L; 2000)*

Future EO services value chain

Question looking for an answer is: how will be the future GI service value chain?



(Miguel Lago, M.; 2018)

Challenge

- Mentioned challenge clearly indicates need for new knowledges and skills for professionals challenging academia to provide education and training and offer new educational profiles on all levels of education scale!

Learning and skills

- Key contributor to society and economy.
- Fundamental transformation needed for future.
- Traditional geoinformatics* can't cover present and future needs!



* Traditional definition of geoinformatics integrates three traditional geosciences (geodesy and surveying, geography and cartography)

Learning and skills

- We need therefore broader, modern definition of geoinformatics** to address evolving needs!
- We need consequently broader modern curriculum for geoinformatics as response on those evolving needs!

** Looking broader, geoinformatics might be referred to the academic discipline or career of working with geo-data in general for better understanding and interpretation of human interaction with the earth's surface. This definition includes also new technologies like Earth observation, Global navigation satellite systems, in fact various kinds of platforms and sensors as well as expanded knowledge in geo-statistics, use of data, programming and visualization of results.

European response

- EC has recognized the problem of changing needs in education and has launched Erasmus+ program.
- Organised in 5 key actions (Ka1: Mobility, Ka2: Cooperation for innovation and exchange of good practices, Ka3: Support to policy reforms, Jean Monnet, Sport)
- Actions inside Ka2: decentralised and centralised activities. CA: Knowledge Alliances, Sector Skills Alliances, Capacity building in field of higher education and Capacity building in field of youth
- Its budget of €14.7 billion (2014.-2020.) will provide opportunities for over 4 million Europeans to study, train, gain experience, and volunteer abroad.

BESTSDI project

- BESTSDI is CBHE project (2016.-2019.).
- 16 academic partners and 3 associated partners from WB region.
- Project coordinator: University of Zagreb, Faculty of Geodesy
- The wider objectives of the BESTSDI project is to:
 - improve the quality of higher education in Geographical Science and Technology field, SDI and geodesy,
 - enhance its relevance for the labour market and society and
 - to improve the level of competences and skills in HEI's by developing new and innovative education programs within the field of SDI.
- Presently at the mid term.
- Regarding geoinformatics BESTSDI deals with a small part of the geoinformatics curriculum!

EO4GEO project



- EO4GEO is SSA project (2018.-2021.)
- 26 partners and 22 (initial) associated partners
- Project coordinators:
 - GISIG association Genova, Italy
 - Catholic University of Leuven, Belgium
 - University of Salzburg, Austria
 - University Jaume I Castelon, Spain

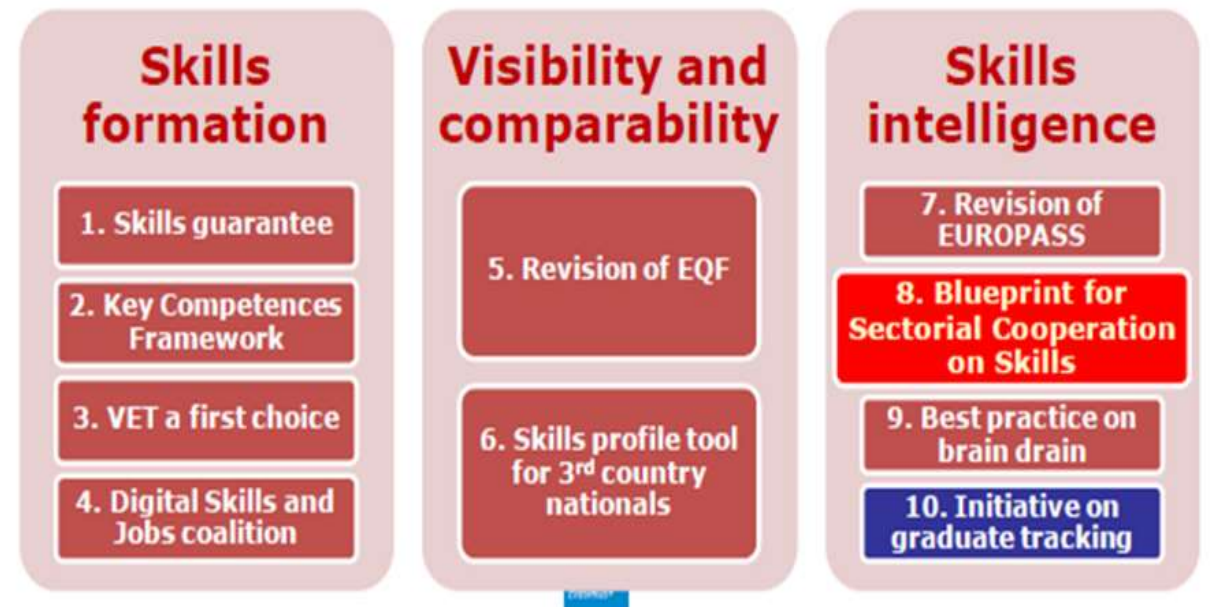
EO4GEO project



- The objectives of the EO4GEO project are:
 - Identification of existing and emerging skills needs for professions in specific sectors, strengthening the exchange of knowledge and practice between education and training institutions and the labour market;
 - Modernizing Vocational Education Training by adapting provision to skills needs,
 - Integrating work based learning in VET provision, and exploiting its potential to drive economic development and innovation, increasing the competitiveness of the sectors concerned;
 - Building mutual trust, facilitating cross-border certification and therefore easing professional mobility in a sector, and increasing recognition of qualifications at European level within a sector;

EO4GEO project

- The objectives of the EO4GEO project are:
 - Supporting a strategic approach ("Blueprint") to sectorial cooperation on skills
 - EO4 GEO shall cover a coherent and comprehensive set of activities and outputs as relevant for the sector concerned.
 - A particular focus must be given to digital skills as they are increasingly important in all job profiles across the entire labour market.



Structure of the new skills agenda

EO4GEO outcomes

- To identify needed knowledge and skills initial tasks and outcomes of the EO4GEO project are defined:
 - Identifying supply of GI / EO education & training at academic and vocational levels - resulting in findings of the analysis of previous relevant studies, results from new survey with metadata descriptions of courses/modules;
 - Identifying demand for GI / EO skills & occupational profiles - resulting, based on previous related studies and on new survey and interviews in definition of priority occupational profiles for space/geospatial sector;
 - Analysing trends, challenges/opportunities in GI / EO sector: technology watch - identifying major trends relevant to impact on space/geospatial sector, focusing on the technological (general ICT) and non-technological aspects (soft skills developments);
 - Assessing skills shortages, gaps between supply / demand - discussing findings, vision, choices / options resulting in assessment of shortages and gaps.
 - Defining GI/EO sector skills strategy - proposing approach / methods to bridge the gaps and resolve mismatches, describing concrete actions and feed European Skills Panorama.

Summary

- Developing new geoinformatics competences and skills represents great challenge!
- Great gap between need for new competences and skills (now) and ability to introduce education for them in academia (5-10 years).
- Resulting in present gap between supply and demand.
- Number of projects are running on this topic, among them BESTSDI and EO4GEO.
- Projects should contribute to reduction of gap in field of SDI and geoinformatics.
- Beside challenge, projects are also opportunity for involved academic institutions to modernize themselves and profile as institutions fostering development and excellence.