Geoinformatics Development Perspectives – Challenges for Academic Society

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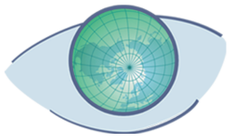
Abstract

The Fourth Industrial Revolution has had a deep impact on the economy, changing its profile drastically, and resulting in the disappearance of many traditional industrial branches and the emergence of completely new industries connected with products based on digital technology and services based on them. Developments in genetics, artificial intelligence, robotics, nanotechnology, 3D printing and biotechnology, to name just a few, build on and amplify each another. They lay the foundation for a more comprehensive thoroughgoing revolution than we have seen so far. Smart systems, in homes, factories, farms, grids or cities, will tackle problems ranging from supply chain management to climate change (World Economic Forum, 2016). These deep, far-reaching changes have also a tremendous impact on the future development of the workplace. According to one popular estimate, 65% of children embarking on primary school today will ultimately end up working in completely new jobs that do not yet exist.

Geoinformatics, defined traditionally, integrates three traditional geosciences (geodesy and surveying, geography and cartography) based on the results of informatics within rapid evolving computer sciences (Markus, 2016). Universities are under constant pressure to change, transforming traditional learning and preparing learners for the future. Taking a broader view, geoinformatics may refer to the academic discipline working with geo-data in general, in order to understand and interpret better human interaction with the Earth's surface. This includes new technologies such as earth observation, Global navigation satellite systems, and other platforms and sensors, as well as extended knowledge of geo-statistics, the use of data, programming and visualization of results. At the same time, these technologies have developed into new, fast growing branches of business with growth rates of over 10% annually.

Geoinformatics can be defined in a relatively broader term as a number of different technologies, approaches, processes, and methods to interpret issues and controversies relating to the Earth's surface for collaborative decision-making. Surveying, geography and cartography are influenced by geoinformatics, along with civil engineering, urban planning, architecture, environmental engineering, transportation engineering, and others. The most blatant example of how geoinformatics affects classical professional disciplines are Smart cities. It is hard to imagine any of above professions will be able to meet expectations in and around cities without taking into consideration the concepts behind Smart cities and consequently, implementing geoinformatics elements on which the concept is based. Geoinformatics is not the privileged domain of a particular profession but represents progress in many professions. In an overview on Masterstudies.com, 13 study programs in geoinformatics were listed in Europe, covering expanded geodesy, civil engineering, management, spatial planning, ecology, and environment and transportation.



Recognizing the gap between the fast-developing, growing geoinformatics business and the insufficient number of new high-school and academic specialists, the European Commission and its agencies have developed a comprehensive programme (Erasmus+) to ensure European citizens will be competitive on the future global market. There is clearly a need for new, high-level knowledge and skills among professionals in specific sectors, demanding from education and training institutions to identify them and provide new qualifications on all levels of education scale. A number of projects have already been carried out, or are under way, to modernize curricula and introduce new methods, with the aim of producing new kinds of specialists to satisfy the needs of the business sector.

Based on the findings and results of Erasmus+ Capacity building in the field of higher education project BESTSDI and the Sector skills alliances project EO4GEO, this paper presents a perspective on the development of the geoinformatics sector and new approaches in geoinformatics education.

Keywords: geoinformatics perspective, education, BESTSDI, EO4GEO