

# DIGITALIZATION OF THE ECONOMY IN AN ENVIRONMENT OF BIG DATA

Project BG05M2OP001-1.002-0002

## CENTRE OF COMPETENCE

The project "Digitization of the Economy in an Environment of Big Data" aims to create a Centre of Competence and to build a science complex based on ICT excellence, to work with Big data for the purpose of digitizing the economy in Bulgaria and to conduct research with the established infrastructure.

**University of National and World Economy (UNWE)** is the project beneficiary, and the project partners are: University of Economics – Varna, Technical University of Gabrovo, Plovdiv University "Paisii Hilendarski", "Angel Kanchev" University of Ruse, Institute of Information and Communication Technologies (IICT) at the Bulgarian Academy of Sciences.

### PROJECT BG05M2OP001-1.002- 0002

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*Project Website:*

*<http://bigdataacc.bg/>*



EUROPEAN UNION  
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OPERATIONAL PROGRAMME  
SCIENCE AND EDUCATION  
FOR SMART GROWTH



## DIGITALIZATION OF THE ECONOMY

***Digitalization of businesses and processes leads to digitalization of the economy, in which business value is generated through digitally organized links between people, machines and companies/organizations, creating new integrated products and services.***

We are living in the era of "Digitalization of the Economy", which requires in an integrated and dynamic business environment every organization to undergo a digital transformation in order to survive and prosper in the extremely strong competition. If "business" is a term used for the activities of a company/organ, digitalization of business is a process in which ICT technologies increase the efficiency of a company/organization's activities through a computer collaborative processing of business processes, storing, sharing and analysing data, changing the models and behaviour of participants in organizing all industrial connectivity.

Digitalization of business processes leads to the digitalization of the economy, thus creating business value through digitally organized links between people, machines and companies/organizations, new related business models, products and services. The digitalization of the economy also includes embedding sensors in machines for more efficient management, creation of processes based on services and collaborative design for increased quality in the shortest terms. The digitalization of the economy is also a readjustment of the businesses to the interests of their clients (through mobile applications and devices), digital production management (through intelligent connected computers and sensors, digital content and services), using modern computerized platforms.

The digitalization of the economy does not work on the principle of improvement but on the principle of creating new models and solutions.

The digitalization of a company/organization includes: basic ICT infrastructure of the company/organization (hardware, software, telecoms, networks, etc.) with focus on the intelligent network infrastructure; dynamic ICT manageable business processes with built-in intelligence in all components; e-business with digital implementation and management of all business processes within the company/organization; B2B including also e-commerce with



integration of computer processes of the company/organization with partners` processes; B2C with integration of computer processes of the company/organization with mobile applications of customers; social networks for communication among employees.

# CENTER OF COMPETENCE "DIGITALIZATION OF THE ECONOMY IN AN ENVIRONMENT OF BIG DATA"

The Centre of Competence on "Digitalization of Economy in an Environment of Big Data" will be a complex ICT infrastructure (Fig. 1) with integrated research and organizational structures and with a special focus on the application of research results in various business areas of Bulgaria. The research complex will be based on the latest scientific and technological world achievements, international and industrial standards and best business practices.

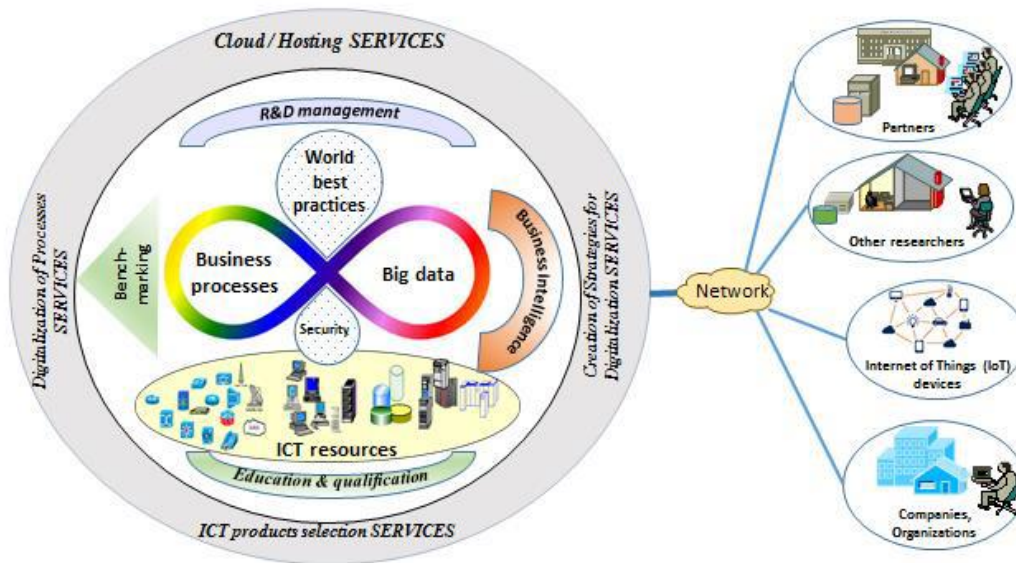


Fig.1: Functional architecture of the Centre of Competence

The Centre's infrastructure will consist of an integrated overflow between digitized Business Processes and Big Data Processing - a process built on the ICT resources of the Centre, which will offer 4 types of R&D services:

- Services creating strategies for digitalization:
- Services for digitalization of business processes
- Services for selection of ICT products related to integrated processing of big data in digital business processes
- Research and development services for use of the Centre resources by other scientific organizations for scientific research

Building functionalities for Big Data processing during digitizing business processes is based on the ability to embed and offer research and analysis of world best practices. Researchers who will use the Centre will be given worldwide good results in digitizing specific business areas. Business intelligence will be central to the Centre functioning. Different ways of implementing big data in the digitalization of business activities will be analysed and explored by the proposed methods and software solutions. For this purpose, potential offers for business solutions will be created, both in the process of conducting the research and in exploring potential future applications of the digitalization in the respective business area.



## EXPECTED RESULTS

Expected results from the projects include:

- Developing cloud and hosting infrastructure with access from home and abroad;
- Conducting system and applied scientific services for digitalization of economic business processes in a Big Data environment;
- Offering scientific research and system scientific and applied services;
- Offering access to the Cloud Infrastructure to external users for pooling their computing resources as temporary virtual resources to transmit their data for exploring and analysing (structured, semi-structured and unstructured data, data from Internet of Things devices, etc.);
- Using the Cloud Infrastructure to store Big Data by external users;
- Developing innovative methods for collecting and processing Big Data;
- Developing technologies for digitalization of business processes in main economic areas.

## MAIN USERS

Main users of the project results:

- **Business organizations** related to the production, logistics and transport, marketing, order management, supply chain management, property management, economics, construction, financial and accounting services, etc., that need optimization, restructuring or introducing new digital processes in digital form;
- **Companies** developing IoT systems that require storage and processing of their data;
- **Start-ups** related to smart homes, smart offices and smart urban environments are also potential practical applications;
- **Research organizations** that need to store and process their data, as well as use the latest technologies for analysis of large datasets;
- **Universities** that provide training and conduct research in the field of digitalization of business processes and working with Big Data.



## OPPORTUNITIES AND BENEFITS

Scientific infrastructure of the Centre will provide opportunities for research and offering of **3 types of corporate computing solutions for digitalization**:

- Solutions for development - improving existing computer systems processing mainly structured data by including additional new functions for digitalization of economic activity

### Development



- Solutions for differentiation - designing new ICT components and systems for digitalization, including processing of unstructured data (improving organization operation)

### Differentiation



- Solutions for innovation - designing a totally new ICT solutions for digitalization based entirely on Big Data (creating a new type of innovative organization for digitalization).

### Innovation



Main advantages for companies/organizations that will use the infrastructure of the Centre:

- Access to the necessary powerful hardware and software resources to handle Big Data without investing own funds for building the infrastructure by the company/organization itself;
- Use of modern scientific and technological world achievements, international and industrial standards;
- Opportunity for performing digitalisation of the business with the support of competent and experienced specialists and based on good business practices.

Digitalization of main economic areas with the application of integrated ICT tools, technologies and Big Data will create unique opportunities for developing national potential and increasing the competitiveness of the Bulgarian economy.

The Centre and the envisaged research activities will lead to the development of new advanced ICT technologies. The Centre will contribute to the development of technologies for digitalization of business processes at a high scientific level and new technologies for working with Big Data at a high international level.