

IICT and EDIH SynGReDiT

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Many thanks for inviting me

- IICT-BAS is the academic ICT partner in the newly-formed hub ZAGORE established in the coal region of Stara Zagora. The largest lignite deposits in SE Europe are located there as well as interdependent mines and thermal power plants: **this industrial facility is causing the highest damage costs to health and the environment in the EU (ref. 2014)**
- **The region is known for the deep ecological problems, high investments into industry, active NGOs, ambitious plans**
- ZAGORE proposed EDIH SynGReDiT (Synergy for Green Regional Digital Transformation) **RETAINED FOR FUNDING** 😊
- SynGReDiT is strongly focused to green energy and digital transformation of industry

- SynGReDiT has the ambition to support the implementation of a pilot testing system for production of green hydrogen and to use it in public transport vehicles (for the first time)
- The aim is to develop a cyber-physical system for energy management of a hybrid fuel cell (in about 2 years)
- This includes collection of data in real time, AI and Machine learning to be used for modelling, simulation and predictive analytics



IICT-BAS and its role in SynGReDiT

- IICT-BAS is a CoE in Informatics and ICT, with expertise in four major areas: High Performance Computing (HPC), Artificial Intelligence (AI), Mechatronics, and Cybersecurity
- IICT-BAS provides HPC services, it hosts the core supercomputer Avitohol of the Bulgarian academic HPC network
- Processing text and speech in Bulgarian is another strong topic
- IICT is involved in the HPC/AI solutions in SynGReDiT (Imagine m-health solutions e.g. Vets and Agronomist walking around farms, talking to their mobile phones in Bulgarian, and then fining text notes in their mailboxes)

- Organising a Data Centre with the necessary facilities
- Train users to engage with their own data
- This is an emerging field (no standards)
- Select algorithms, develop & test prototypes
- Deploy appropriate AI solutions
- Meet reliability and efficiency targets

- Opening an IICT office in Stara Zagora

- No detailed discussions about data (in Bulgaria) and how to answer to the EU Data laws, European Data Strategy, incl. data clouds oriented to AI
- No hints in the EC docs about progress of emerging common European data spaces
- No concrete steps to support the creation of a **European energy data space** (Not yet)
- There will be an **EC Action Plan on digitalisation of the energy sector**, expected Q2 2022 – to be taken into account // to follow what's done in Europe

- Support of problem specific HPC applications
- Big Data analysis by tensor flow decomposition
- AI support for intelligent data processing, decision making and automation systems
- Research and reconstruction of internal 3D structure of parts and objects
- Investigation of particle size and size distribution in bulk materials and mixtures
- Development, construction and parameterization of 3D models of industrial objects / agriculture

- IoT solutions
- Drone analytics: survey of terrains and objects e.g. in plant growing and animal husbandry, analysis of video clips and thermograms
- Digitization of Medicine and Veterinary Medicine
- Training
 - Group courses
 - Training on demand
 - Train the trainers



Equipment brought by IICT to Zagore

- Computational infrastructure: Avitohol, several clusters, data centre
- Devices for 3D modelling and microstructure analysis: scanners, printers, tomographs, thermo-cameras, an acoustic camera, a high-speed camera
- Devices for studying of technological processes: a laser particle sizer, EDEM software, grinder
- Speech Lab



It is still in the very beginning,
Phase 1 starts in November with 3-years horizon

Thank you

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