SELFSUSTAINED CROSS-BORDER CUSTOMIZED
CYBERPHYSICAL SYSTEM EXPERIMENTS
FOR CAPACITY BUILDING AMONG EUROPEAN STAKEHOLDERS

SMART4ALL Digital Innovation Hubs

Principles and Recommendations

PhD Radovan Stojanović, MECOnet Podgorica

Co-funded by the Horizon 2020 programme of the European Union

DT-ICT-01-2019
Smart Anything Everywhere Area 2

www.smart4all-project.eu
Grant Agreement: 872614

Overview

I. Instead of introduction
II. Industry X.X vs Ecosystem
III. Digital economy in SEE
IV. SMART4ALL DIHs
V. Conclusion

Instead introduction

- **About me?**
  - ***Sometimes when you turn a hobby into a job, it becomes work. Jeff Bennett*.**
  - **I am in my hobby from my 10th and in projects from 1998, more than 22 years.**
  - **I am a free and independent person because turned my passion and hobby in my work.**
  - **I am always speaking what I think, it is only way to escape data mining.**
  - **More about me:**

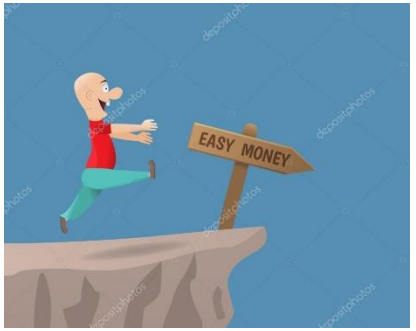
    http://www.apeg.ac.me/rstojanovic.htm

    https://en.wikipedia.org/wiki/Radovan_Stojanovi%C4%87

Instead introduction

- What will kill your idea or project?
  - Absence of fact: “Work on yourself, for yourself, by yourself”. You can not implement other project if skipped the project of “working on yourself”. Character, knowledge, social intelligence, perception and skills.
  - Running for easy money is dangerous.

https://twitter.com/official_agagz/status/1075276005676326912/photo/1



Instead introduction

- What will kill your idea or project?
  - Absence of team work or work in large team. Everyone likes to be a manager.

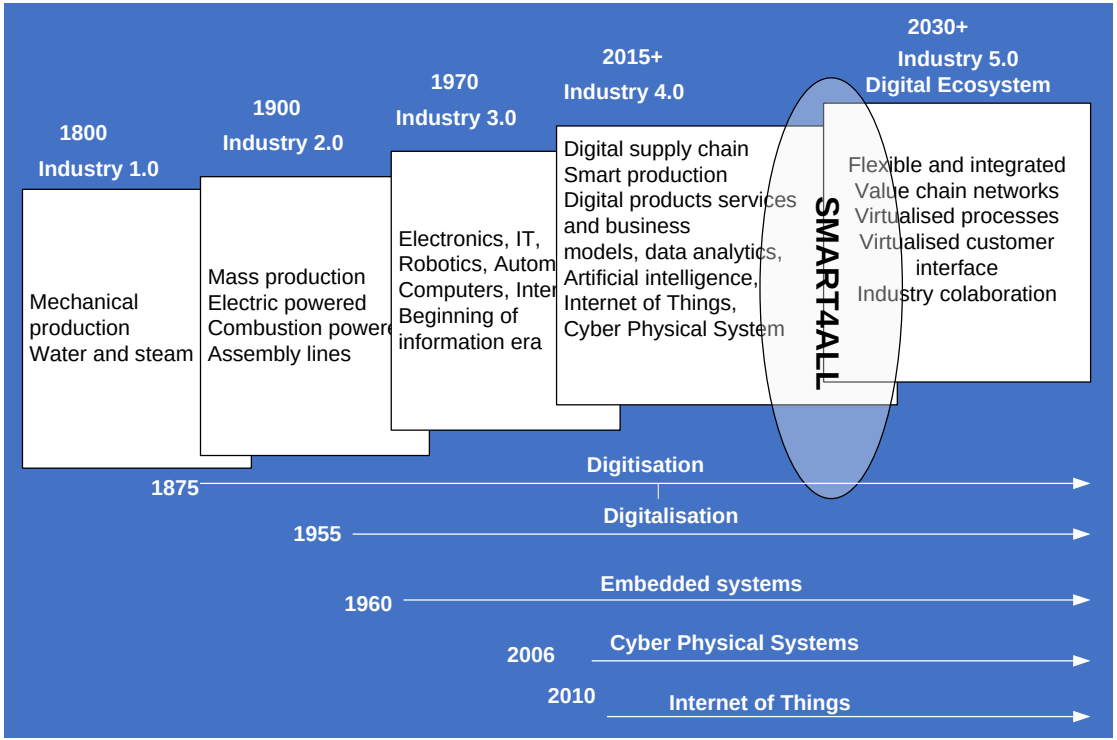
http://duckdown.blogspot.com/2009/07/wrath-of-non-technical-management.html

Instead introduction

- What will kill your idea or project?
  - Bureaucracy and administration
  - Dissemination, management, and stories because of stories…

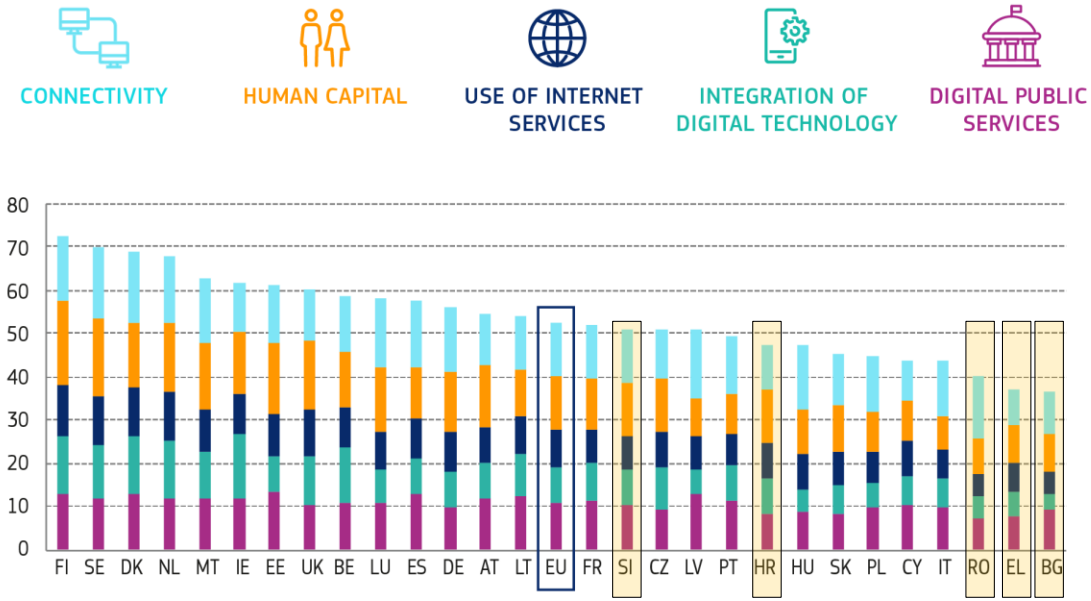
Industry X.X versus Ecosystems

- **We are between Industry 4.0 and Industry 5.0**



Digital economy in SEE

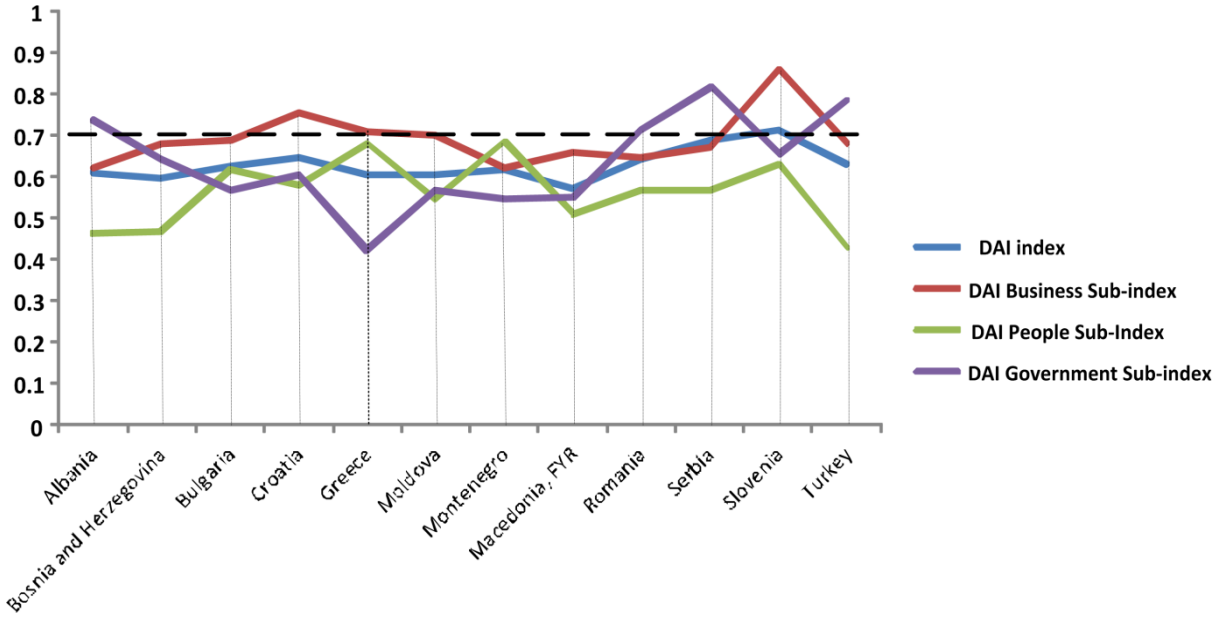
- DESI index for EU countries with EU average and position of 5 EU SEE countries



Digital Economy and Society Index (DESI)

Digital economy in SEE...

- DAI index for SEE Countries



Digital Adoption Index - DAI

Digital economy in SEE…

The Strengths

- The ICT broadcasting infrastructure is developed enough with predictions of further investments in this area.
- Almost most of the population is connected by some of communication means be it internet, mobile phone or other.
- The use of the internet is satisfactory in young generation and in stakeholders dealing with start ups and ecosystems.
- Some countries like Montenegro already have good legislative in this area, North Macedonia and Serbia have as well stimulating laws for entrepreneurs in this area.
- Majority of SMEs and already existing start-ups have good indexes in relation to Business technology integration dimension performances, especially in Electronics Information Sharing, Business connectivity, Social Media, Selling online cross border.

Digital economy in SEE…

The Weaknesses

- The lack of human capital, because of erosion of education over last 2 decades. Especially in areas related to Industry 4.0 and 5.0
- The influence of politics to ecosystem players.
- Utilization of transaction services for banking and shopping has risen modestly in WB and Turkey, but they still remain far behind the EU28 average.
- Cloud computing is in the beginning phases of development, especially in Albania, Macedonia, Montenegro, Kosovo and Albania.
- E-Government is not developed enough.
- Lacking in subventions in tax polices (VAT, tax exemptions, reduced tax rates for innovative products and services, subventions for employees in this sector, etc.)
- Customs don’t have the understanding for the trade of innovative goods or services.
- Cross-border communication for ecosystems doesn’t exist.

Digital economy in SEE…

The Weaknesses…

- Brain drain dominant, brain gain blocked.
- Cross-border communication for ecosystems doesn't exist.
- Although they have had good education during the Socialist Era, and have since then implemented the Bologna reforms, the practical oriented education is in fact very poor over all the Region, it produces non-competent IT profiles, especially in Bosnia, Montenegro, Kosovo and Albania.
- Big companies such as electricity or telecommunication-providers support start up community or ecosystems, but with dishonest intentions, since they foremost in order to present themselves as a social-responsible actors and thus advertise their brands.
- And so on and so on.

Digital economy in SEE…

The Weaknesses…

- E-Commerce within WBC countries is not commonly used. Some of the countries do not have access to PayPal and similar
- State grants for innovations and start ups does not exist only for the means of “propaganda” in an overall symbolic level.
- No Private funds in any form like finance angels or venture capitals.
- There is no research or development activities in the industry, while the academia rests on hyper-publishing with no real results.
- Low entrepreneurial culture and lack of education, especially in field of technological entrepreneurship.
- A weak sense for team work especially in the WB countries.
- No many start ups in Montenegro, Bosnia, Albania and Kosovo implementing EC agenda in this field.
- The hardware industry important for CPS or IoT does not exist.
- Open Data usage is on a symbolic level.
- E- Health services are undeveloped over all SEE countries, especially in regards of using e-health based on wearables.

Digital economy in SEE…

The Opportunities

- There is a political and social desire in all SEE countries to achieve progress in start-ups and ecosystems, especially in Bosnia and Herzegovina, Montenegro, Albania, Kosovo and North Macedonia.
- The young people are relatively willing to find their chance in start-up business.
- Still, those countries have low salaries (Bosnia and Herzegovina, Montenegro, Albania, Kosovo and North Macedonia, Bulgaria and Romani) that are thus a good terrain for foreign investments and outsourcing.
- Accessibility to international funds is better than in others countries (there are many available donor programmes and agencies and less competition to gain projects).
- Most of the countries are relatively small in geographical which is an opportunity for easy, even physical, communication.
- Diaspora is willing to invest in countries.
- Tourism is one of the chances and most of countries in this region are attractive for tourists.
- Friendly and neighbourhood countries in the region (like Slovenia, Croatia and Greece) want to help WBC countries on their way to join EU.
- An overall good geographical position, especially in the means of transport and so on

Digital economy in SEE…

The Threats

- Administrative obstacles for start-ups and e-communities.
- Financial risk and no legal protection in case of non-success.
- Mentality problems, especially fear of failure.
- Non-competent manpower, especially in high technologies (foremost in Montenegro, Bosnia , Kosovo and Albania)
- Low entrepreneurial culture, save for the cases of Slovenia, Croatia and partly Greece and Turkey.
- Negative trends in education, especially related to digital ecosystems.

SMART4ALL DIH

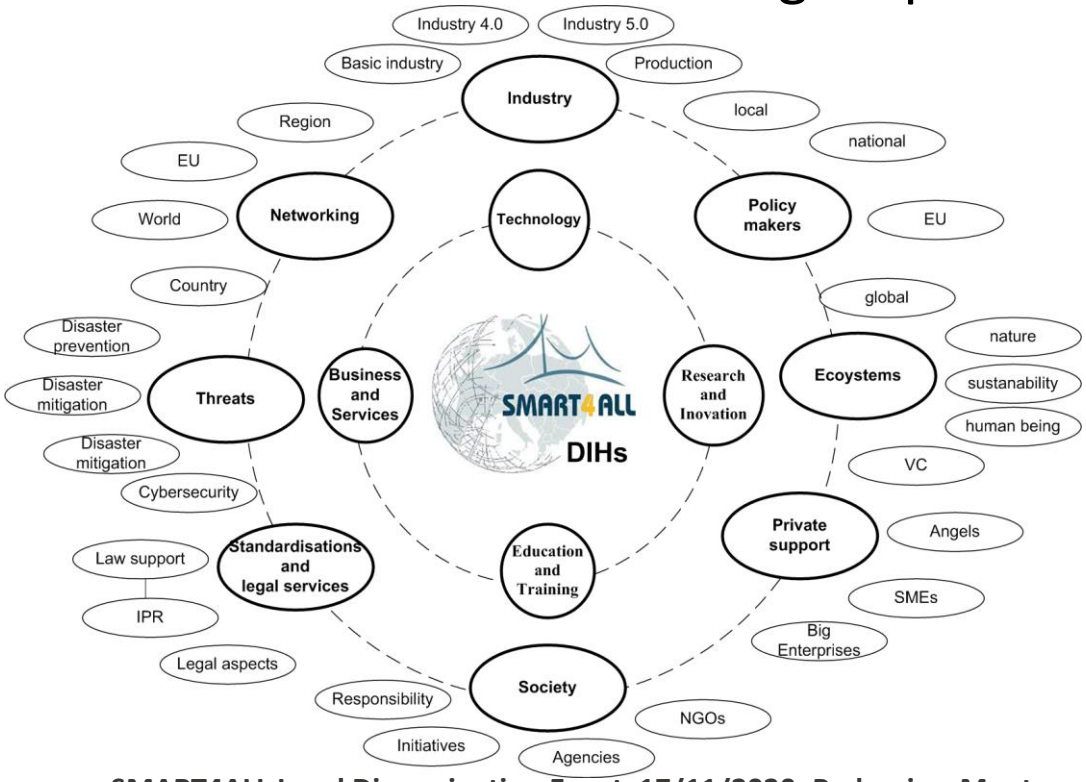
- **Main principle bottom-up principle**
  - Make yourself like a HUB
  - Make a HUB in your company
  - Make a HUB in your city.
  - Make a HUB in your country
  - Then go to international and national levels

SMART4ALL DIH

- SMART4ALL Digital Innovation Hub is a network of SEE institutions, which spreads SMART4ALL ideas and activities.

SMART4ALL DIHs

- SMART4ALL DIHs are fusion of advanced digital products and services.



Select one Technology/ field.
It is enough for you !!!

SMART4ALL DIHs VERTICALS

➢ **Digitalized Transport**

- ✓ Green transport
- ✓ Smart mobility
- ✓ Shared mobility
- ✓ Robotics
- ✓ New platforms for efficient supply-demand matchmaking
- ✓ Automotive electronics

- ✓ Autonomous vehicles
- ✓ Connected vehicles
- ✓ Streamlining transport using big data
- ✓ Aeronautics and space applications
- ✓ Transport and Logistics
- ✓ City Transport Mapping

SMART4ALL DIHs VERTICALS

➢ **Digitalized Environment**

- ✓ Smart buildings
- ✓ Smart home
- ✓ Critical infrastructure monitoring
- ✓ Smart hospitals
- ✓ Water pollution monitoring
- ✓ Smart grids
- ✓ Energy management
- ✓ Environment monitoring
- ✓ Rural areas -> Monitoring attractions such as lakes and rivers (both water and wet area)
- ✓ Urban areas -> indoor and outdoor pollution and noise monitoring.
- ✓ Bio-diversity
- ✓ Wild/migratory animals monitoring
- ✓ Smart industry
- ✓ Data processing & data visualization
- ✓ Processed data are visualized for monitoring by the interested parties .
- ✓ The data will be used to build models for future prediction.

SMART4ALL DIHs VERTICALS

➢ Digitalized Agriculture

- ✓ Smart laming
- ✓ AI inspired agriculture
- ✓ Information based site specific applications
- ✓ Demand driven, sustainable agriculture
- ✓ Mobile plant, soil and environment sensors
- ✓ Sensor networks - EU wide - cross-border
- ✓ Field robotics and automation systems
- ✓ UAV based agriculture and plant monitoring
- ✓ Selective plant protection
- ✓ Closed nutrient cycles

- ✓ Agricultural decision support systems
- ✓ Zero-energy food systems
- ✓ Circular economy
- ✓ Water, Energy and Food (WEF) efficiency
- ✓ Revalorization of agricultural waste

SMART4ALL DIHs VERTICALS

➢ **Digitized Anything**

- ✓ Human-machine Interaction
- ✓ Digital Education
- ✓ Industrial Automation
- ✓ Machine Learning
- ✓ Market Intelligence
- ✓ Medical and Health Applications
- ✓ Active & Healthy Ageing
- ✓ Support for disabled persons
- ✓ Cybersecurity
- ✓ Data Mining and Big Data
- ✓ Personal security
- ✓ Additive Manufacturing (3D printing)
- ✓ Augmented and Virtual Reality
- ✓ Audio/Video Processing

- ✓ Location-based Technologies
- ✓ Web and Mobile Applications
- ✓ Wireless Sensor Networks
- ✓ Disaster management (including pandemic response like COVID 19)
- ✓ Digital heritage
- ✓ Telemedicine
- ✓ Rehabilitation, wellness, fitness
- ✓ E-commerce

SMART4ALL DIHs

Core Activities	Technologies	Tools and methods	Application fields	Services
Education and Training **Research and Development** **Networking and Social** **Prototyping and** **Commercialisation** **Disaster management** **Legal aspects** **Sustainability**	Internet of Things (IoT). Cyber Physical Systems (CPS). Vertical and horizontal integration systems. Rapid prototyping. Data Analytics. Cybersecurity Cloud and edge computing. Artificial Intelligence, Virtual and Simulation Autonomous robots and vehicles	Effective and modern organisation and management Sustainable business Business compliant with the international and local legislatives law IPR protection Social responsibility and interaction	Smart logistics Smart utilities Smart mobility and transport Smart environment Smart cities and buildings Smart governance and institutions Block Chain Smart health Smart business Smart education Smart health Smart objects Smart appliances Smart disaster mitigation Smart tools Smart commerce Others	Training Mentoring Events organisations Projects development and assistance Incubation Funding Opportunities Innovation and Business support Internationalization Branding Labelling IPR services Other services related to the core activities, technologies, tools and application fields.

Conclusion

- DiH is step by step process.
- Try to identify your capacities in one area and to use them to get and implement a grant.
- Prepare carefully application with clear idea, clear implementation methodology and clear output.
- We can help you only with real advising and expertise.
- It is recommendable to have already some of the starting job done on idea.
- Use our grants for your idea.
- SMART4ALL DIH is a network of the people and institution that are doing the job.
- Contact us.

Thank you for your attention