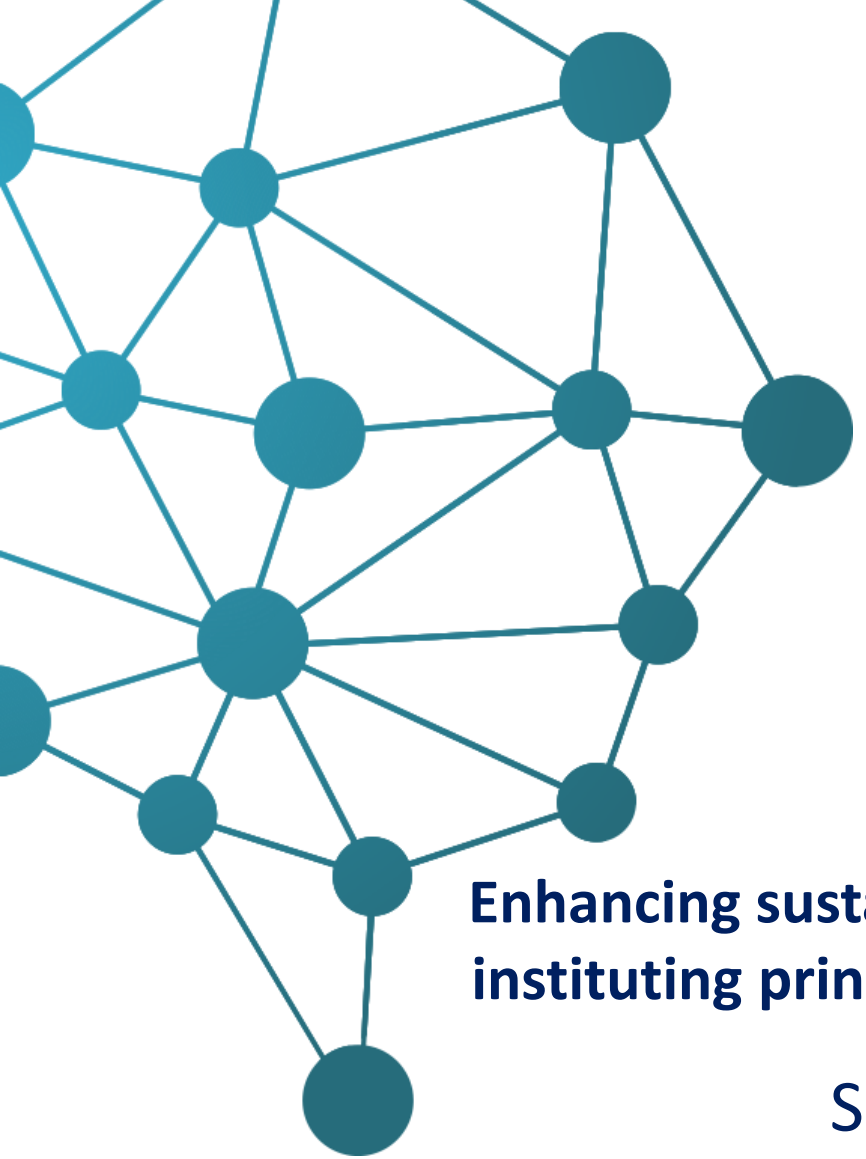

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Ernest Vlacic

Enhancing sustainable national tourism industry by instituting principles of fourth industrial revolution

SmartEIZ Conference

"Smart Specialization Strategies: Contemporary Challenges of its Design and Implementation"

Zagreb, 17 April 2018

Agenda

- global trends, industrial platforms evolution
- challenges in tourism industry, technology related
- assessment of the appropriateness and use, tourism vs. I4.0
- research methodology
- conclusions

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Research question and goals

keywords: ***tourism industry, fourth industrial revolution, digital economy, strategic positioning***

- **Multidisciplinary research approach (economy/business + technology)**

- **The research question:** how touristic sector can benefit from strategic foresighting in use of emerging technology development trends to establish itself as sustainable value added industry assisted by digital economy principles?

- **The main research goal** of this paper research is to offer an analytical techno-economic appropriateness assessing framework for the plausible and practical strategic implementation of I4.0 principles in the regional case of Croatian touristic sector, … complemented with recommendations for its translation and generalization on other global locations.

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Global challenges

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- EU deindustrialization, Tregenna (2011)
- Continuous productivity decline (reports)
- China and parts of Asia have become a ‘world factory’
- Protectionism on the rise – trade war fear, …. EU stuck in the middle (Rana and Ji, 2018)
- Radical shifts in the global energy context (Wang et al, 2018)

- …. others

- **… we taught our children that production is not our business, … that it happens somewhere else, distant !!**

EU, industrial platforms, Bramanti (2016)

Three current delineations of EU New Industrial Policies, Bramanti (2016):

- **'Phoenix Industry',** (UK, Midlands)
- **'Industry 4.0',** Germany, Baden-Württemberg
- **'Smart Specialisation',** Italy, Lombardia

Industry 4.0? But what is it?

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- The term "Industrie 4.0" was revived in 2011 at the Hannover Fair

- **Industry 4.0** >> industrial platform of automation, data exchange and SOA technology use in manufacturing technologies.

Amongst others It includes AI, Big Data, cyber-physical systems, the Internet of things, cloud computing[1][2][3][4]and cognitive computing.

Industry 4.0 is commonly referred to as the fourth industrial revolution.[5]

Ref: Vogel-Heuser, Hess (2016); Roblek, Meško and Krapež (2016), others

4th Industrial revolution (Lukac, 2016), what it is? Needed talents and skills

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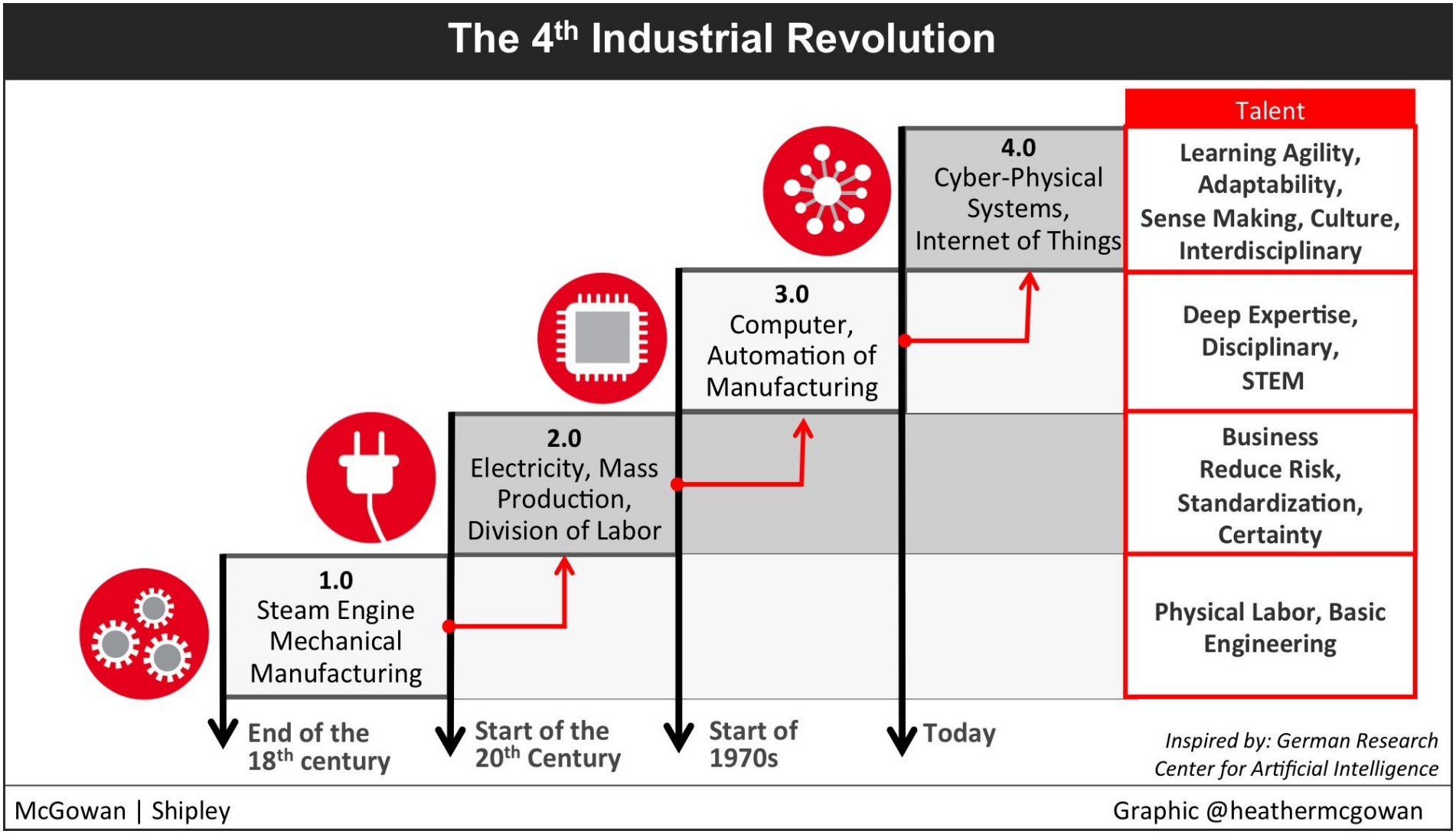

I4.0, main areas – pillars, Thames and Schaefer (2016)

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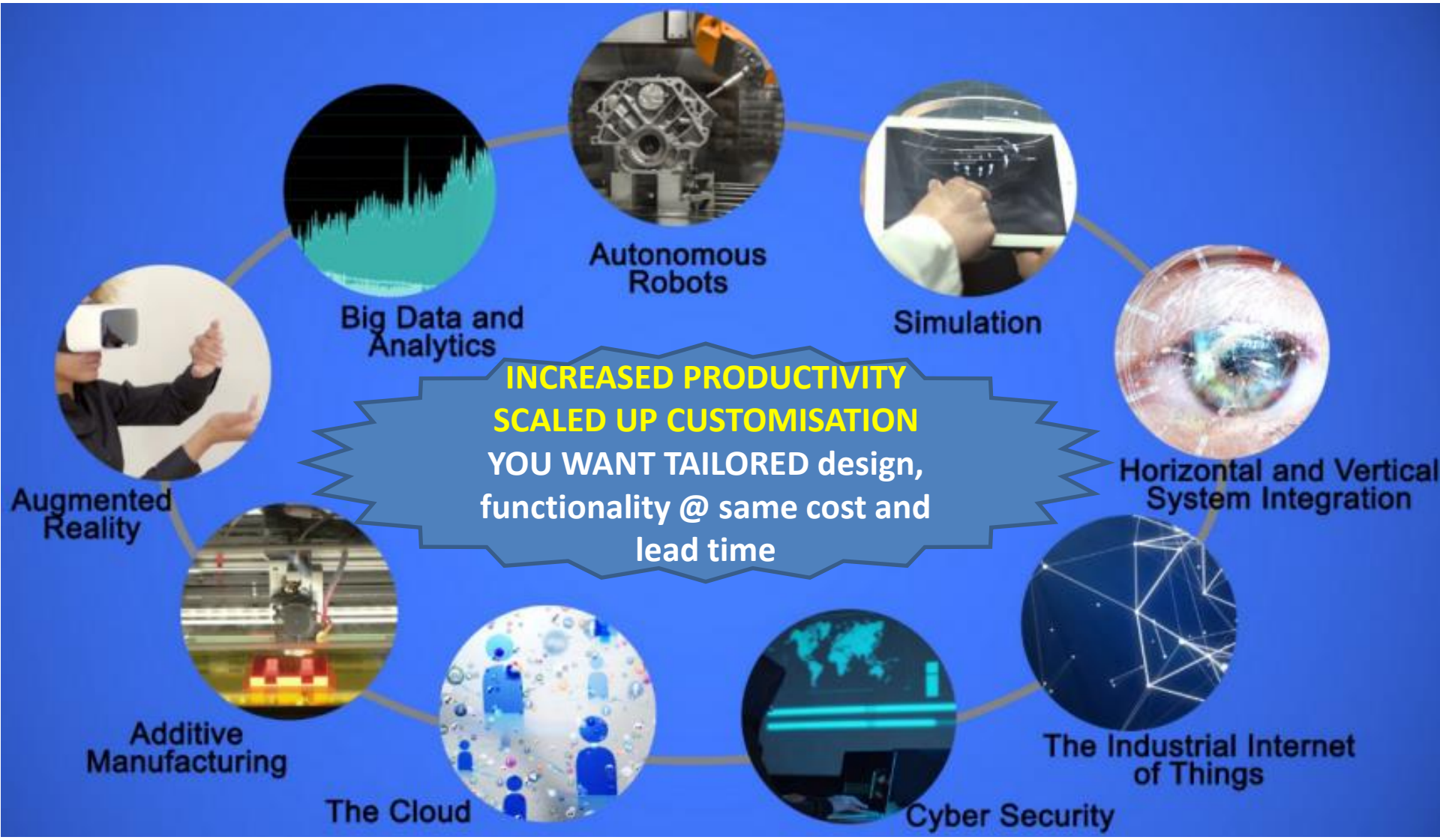

Global industrial platforms

ref: https://www.i-scoop.eu/industry-4-0/

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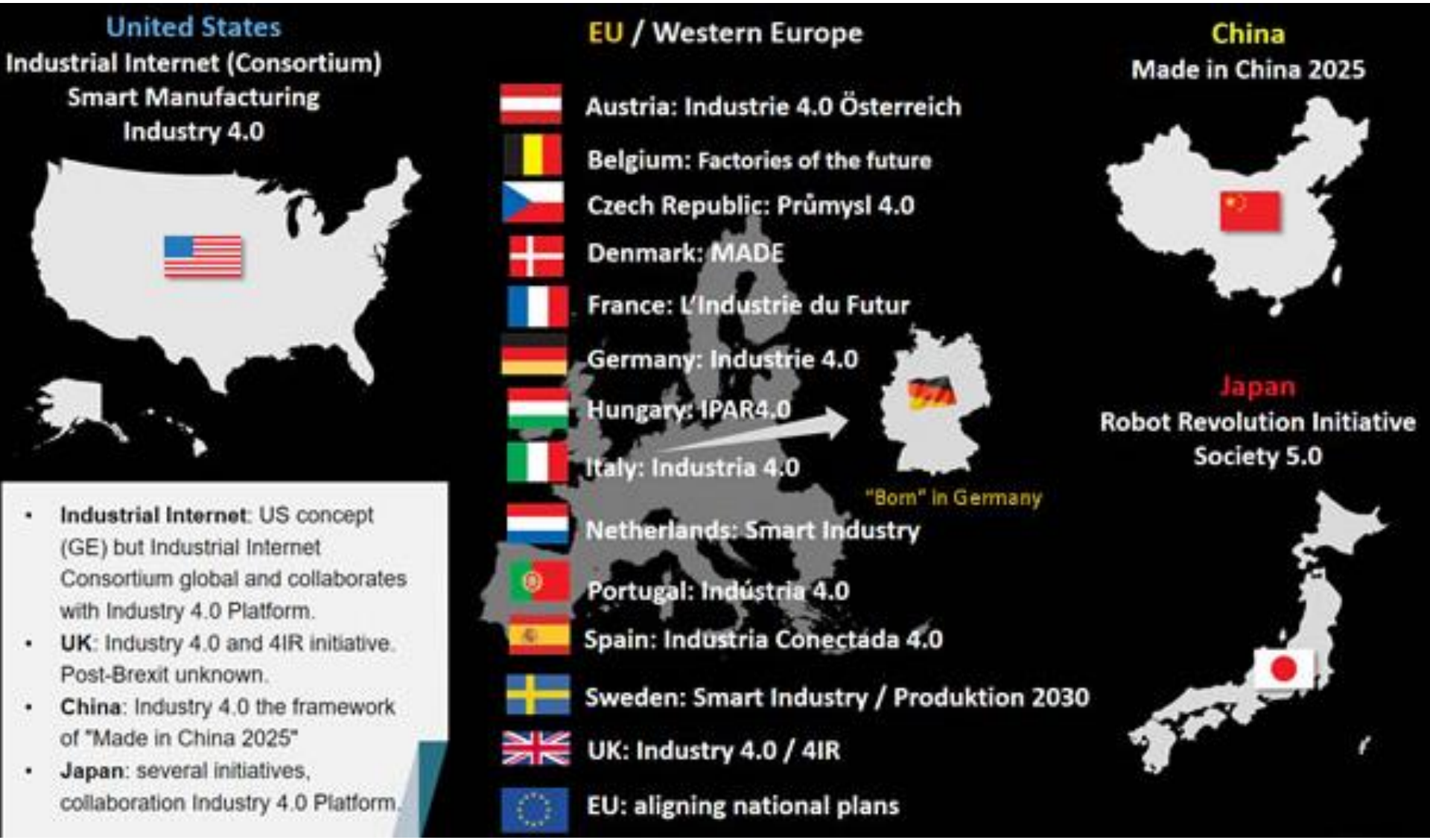

Touristic sector, offering segments, basic taxonomy

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- Hospitality / accommodation and catering
- Tour operators
- Transportation – for touristic purposes
- Travel agents
- Attractions
- Tourist information and guiding services

Ref: McKercher (2015) and others

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Touristic sector, emerging offering segments taxonomy

- Medical - wellness
- Sport and adrenaline (golf, polo, adventures, …)
- Rural and Eco
- Heritage
- Luxury
- Business related, events

Ref: McKercher (2015) and others

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I4.0/4thIR and tourism major challenges

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Overtourism or tourismphobia

UNWTO, Sept. 2018

- congestion management
- reduction of seasonality

I4.0/4thIR and tourism example

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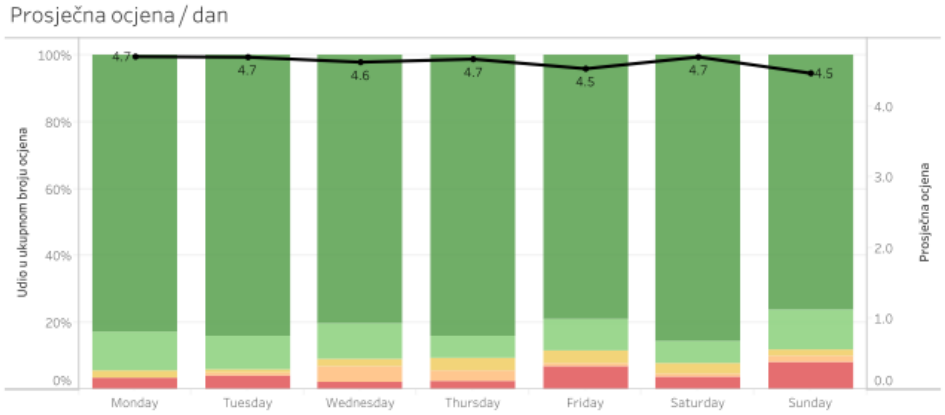

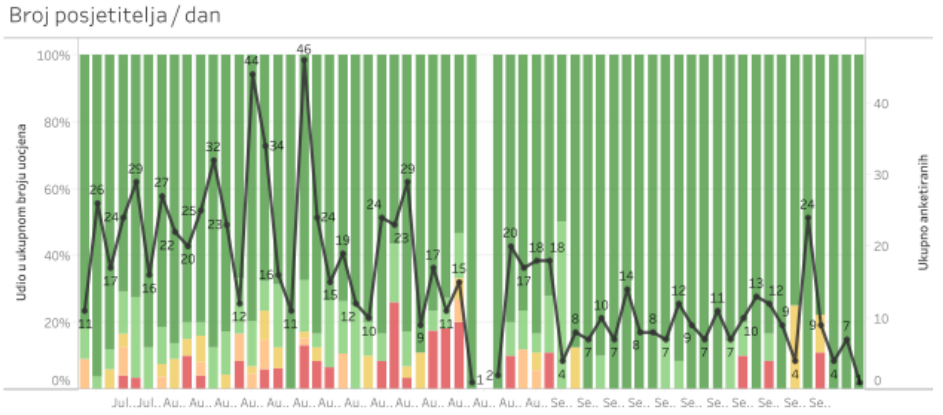

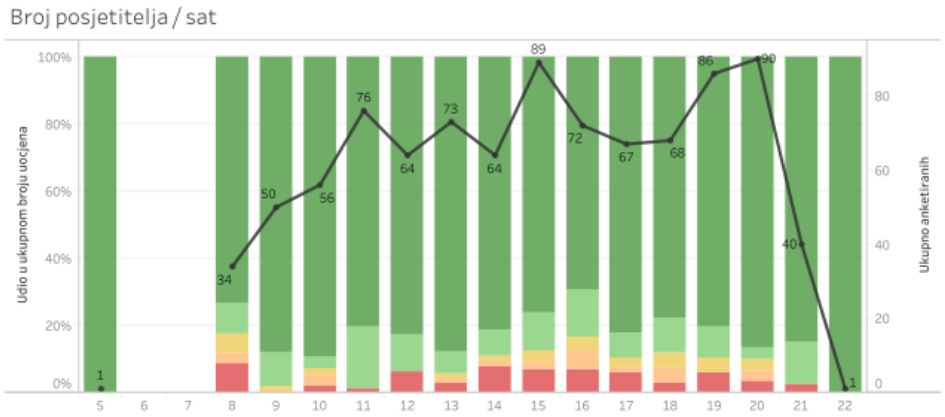

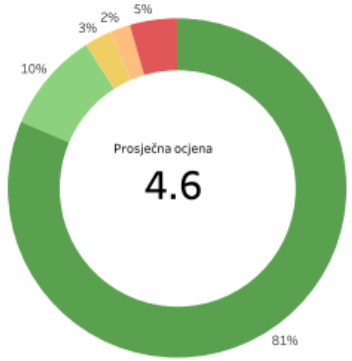

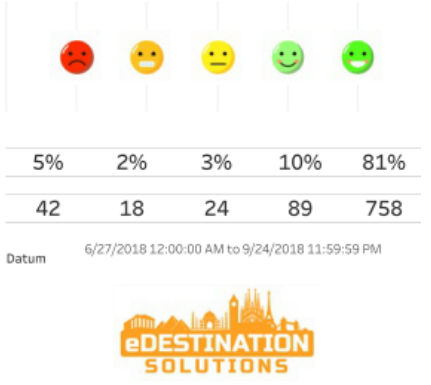

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I4.0/4thIR and tourism tech related challenges

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Ref: Ha Long, Viet Nam (2017)

I4.0/4thIR and tourism opportunities

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Shamim, Cang, Yu and Li (2017)

- smart working
- digitalization, transformation/evolution
- efficient supply chain
- mass customizations
- … also Ivanovic, Milojca, Robler, 2016 are discussing opportunities of I4.0 implementation in touristic sector

Research – the model

I4.0 segments/basic components	Accommodation/catering	Tourist operators	Adventures	…….
Artificial intelligence				
Internet of things				
Big Data				
….				

I4.0 segments/emerging components	Sport and adventure	Rural and Eco	Medical - wellness	…….
Artificial intelligence				
Internet of things				
Big Data				
….				

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Research - methodology

- **Analytic tools:** AHP (Analytic hierarchy process), SEM – optional
  - Criteria >> elements of Industry 4.0
  - Alternatives >> touristic components (basic, emerging)
  - multicriterial assessment factor **Influence** >> **appropriateness**
  - **Example:** 'what is the appropriateness level of **Artificial Intelligence** vs. **Internet of Things** use in **Accommodation/Hospitality/Catering** component
- **Data collection:** semistructured interviews accompanied with questionnaire with decision and opinion makers, from both touristic and technology sector

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Research – expected results

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- Production of technology offering/segment need matching matrix (McKinsey, 2010; Manyika, et al, 2012)

- Practitioners recommendations, with generalization included aiming to
  - involved industries
  - policy makers, the institutional framework

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Result example: The Diversity in Global Manufacturing, (McKinsey 2010)

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● % of global manufacturing value added

□ Most significant factors for group

Intensity or density of given factor[1]

■ Very high ■ High to moderate ■ Moderate to low ■ Very low

	Group	Industry	R&D intensity	Labor intensity	Capital intensity	Energy intensity	Trade intensity	Value density
34%	Global innovation for local markets	Chemicals	■	□	■	□	□	□
		Motor vehicles, trailers, parts	□	□	□	□	□	□
		Other transport equipment	■	□	□	□	□	□
		Electrical machinery	□	□	□	□	□	□
		Machinery, equipment, appliances	□	□	□	□	□	□
28%	Regional processing	Rubber and plastics products	□	□	□	□	□	□
		Fabricated metal products	□	■	□	□	□	□
		Food, beverage, and tobacco	□	■	■	□	□	□
		Printing and publishing	□	□	□	□	□	□
22%	Energy- and/or resource-intensive commodities	Wood products	□	■	□	■	□	□
		Refined petroleum, coke, nuclear	□	□	■	■	□	□
		Paper and pulp	□	□	□	■	□	□
		Mineral-based products	□	□	□	■	□	□
		Basic metals	□	□	■	■	□	□
9%	Global technologies/ innovators	Computers and office machinery	■	□	■	□	■	■
		Semiconductors and electronics	■	□	□	□	■	■
		Medical, precision, and optical	■	□	□	□	■	■
7%	Labor-intensive tradables	Textiles, apparel, leather	□	■	□	□	■	□
		Furniture, jewelry, toys, other	□	■	□	□	■	□

For methodology, see *Manufacturing the Future: The next era of global growth and innovation* available on mckinsey.com.
Source: 2010 Annual Survey of Manufactures (ASM); 2007 Commodity Flow Survey, US Census; IHS Global Insight; Organisation for Economic Co-operation and Development (OECD); McKinsey Global Institute analysis

Recommendations and further work

- Deliver **tourism segments – I4.0 technology appropriateness** matching matrix, in order to enhance sector's competitiveness and efficiency
- Provide **practitioners recommendations** to both industries
- Generate **strategic technology foresight recommendations** to policy makers, in order to rearrange current national technology incentivizing strategies, or generate new ones

- Identify gaps in workforce needed for digital economy **evolution** (transformation)

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Thank you…

questions/discussion?

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