

# Thematic session 2: Improving the efficiency in use of resources, environmental friendliness and reducing waste and cost

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Central European Cooperation in Smart specialisation on the application of ICT and Advanced Manufacturing Solutions in the Food Supply Chain workshop  
4-5 April 2018, Budapest, Hungary

# Participants of the Thematic session 2

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## Panelists

- *Gus Verhaeghe*

Innovation Manager at Flanders' FOOD,  
Innovation Platform, Agro-food Industry  
Established in 2005, 300+ members



- *László Vajta*

Former Dean, Budapest University of  
Technology and Economics (BME),  
National Industry 4.0 Technology Platform,  
Chairman of the Working Group on  
Employment, Education and Training



# Participants of the Thematic session 2

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## Panelists

- *Orsolya SZAPLONCZAY*

Cluster manager & Managing director,  
Innoskart Non-profit Ltd, Székesfehérvár,  
Hungary



- *Péter Galambos*

Director, Antal Bejczy Center for Intelligent  
Robotics,  
Deputy director, University Research and  
Innovation Centre, Óbuda University,  
Budapest, Hungary



# Participants of the Thematic session 2

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## Moderator

- *László Monostori*

Director, Institute for Computer Science and Control, Hungarian Academy of Sciences  
President, IPAR 4.0 National Technology Platform, Hungary



# Industry 4.0 in the food industry – Opportunities, challenges and new rooms for cooperation

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## László Monostori

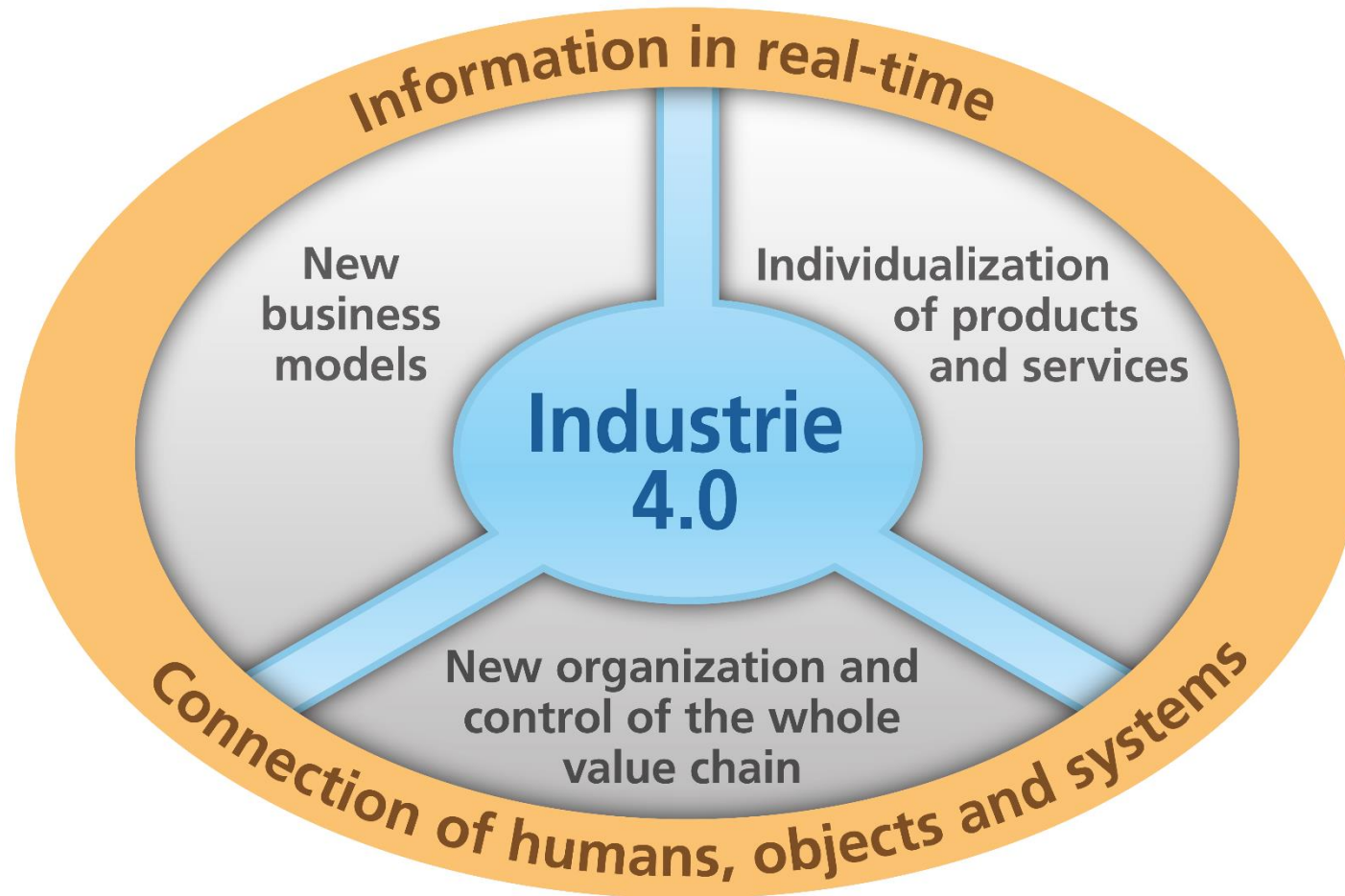
Inst. for Computer Science and Control, Hungarian Academy of Sciences (MTA SZTAKI)  
Dep. of Manufact. Science and Techn., Budapest Univ. of Techn. and Economics (BME)  
Centre of Excellence in Production Informatics and Control (EPIC)  
Ipar 4.0 National Technology Platform, Hungary

Central European Cooperation in Smart specialisation on the application of ICT and Advanced  
Manufacturing Solutions in the Food Supply Chain workshop  
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# Digitalisation of Industry – Industry 4.0

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Source: Bauernhansl, T. 2016

# Industry 4.0- related programmes world-wide

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- Industrie 4.0 (D)
- Advanced Manufacturing, Industrial Internet (US)
- Made in China 2025 (RC)
- Industry 4.0 → Society 5.0 (J), Robot Revolution Initiative (J)
- The Catapult Programme (UK)
- Alliance Industrie du Futur (F)
- Made in Sweden (S)
- Smart Industry (NL)
- Smart Connected Factory (Korea)
- Industrie 4.0 Österreich (A)
- Initiative Industry 4.0 Průmysl 4.0 (CZ)
- Smart Industry (SK)
- **Ipar 4.0 National Technological Platform (H)**



# Ipar 4.0 National Techn. Platform in Hungary

## Membership:

- SZTAKI and the Ministry for National Economy, and 37 founding members, May, 2016
- Now ~ 100 members
- Transformed into a legal entity, December, 2017

## Organisation:

- Presidium headed by SZTAKI
- 7 Working Groups
  - Strategic Planning
  - Employment, Education and Training
  - Production and Logistics
  - ICT Technologies (safety, reference architectures, standards)
  - Industry 4.0 Cyber-Physical Pilot Systems
  - Innovation and Business Model
  - Legal Framework

The screenshot displays the IPAR website interface. At the top, there is a navigation bar with 'English | magyar' and a menu icon. Below this is a search bar and a 'MEMBERSHIP REQUEST' section with a 'Read more' button. The main content area features a 'NEWS' section with a photo of a group of people and a 'Horizon 2020 Widening Programme Winners' article. Below the news is a 'WORKING GROUPS' section with text describing the platform's mission and the role of its working groups. At the bottom right, there is an 'EVENTS' section for '29 January' with a 'Visit to a Learning Factory in Germany' event. A date navigation bar at the bottom shows '2017. April' and days of the week.

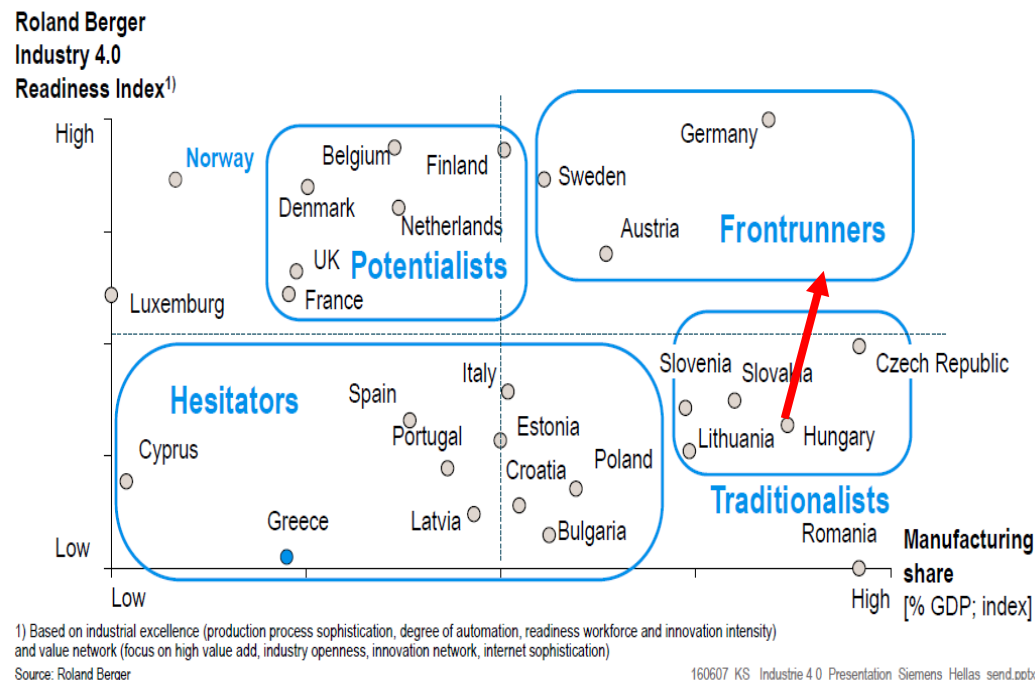
<https://www.i40platform.hu/>



# Ipar 4.0 NTP: Motivation and background

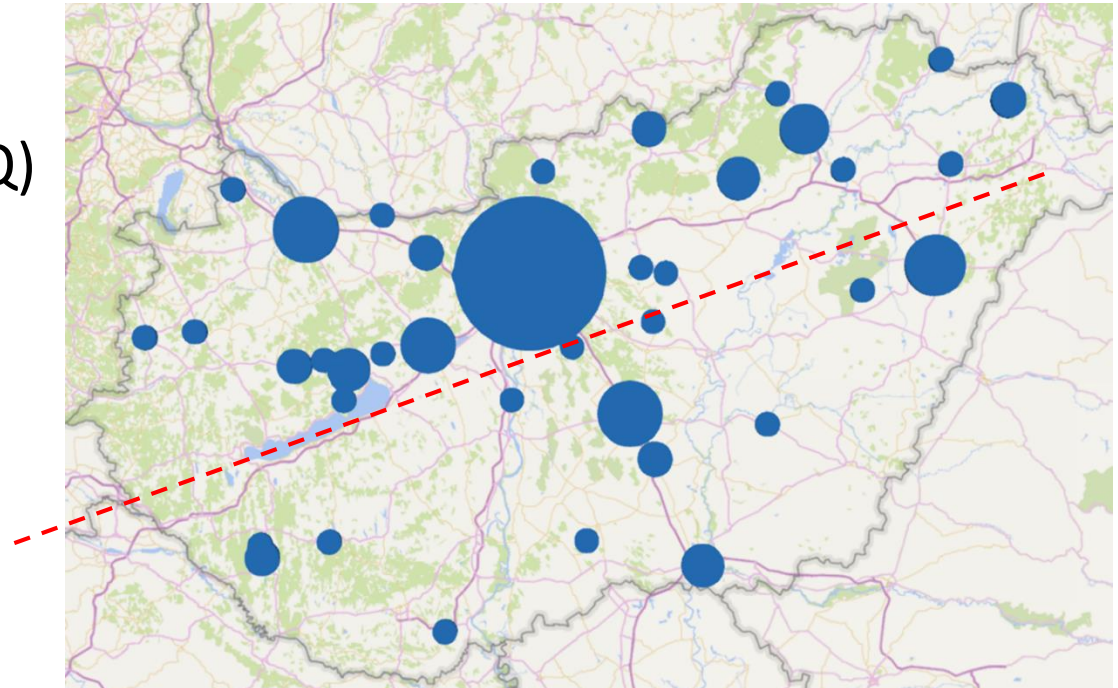
## ■ Irinyi Plan -- Recent strategy of the Ministry of National Economy

- Main directions of the re-industrialisation of the country
- Target: by 2020 the share of industrial production in the GDP should increase from the current 24% to 30%
- Increase the level of R&D expenditures to 1.8 % of the GDP by 2020
- Specifically mentioning the Industry 4.0 related R&D&I activity in the manufacturing
- Launching new complex programs
- Reinforcing the growth, export and innovation potential of the domestic companies
- Employment: „low skill” → „high skill”

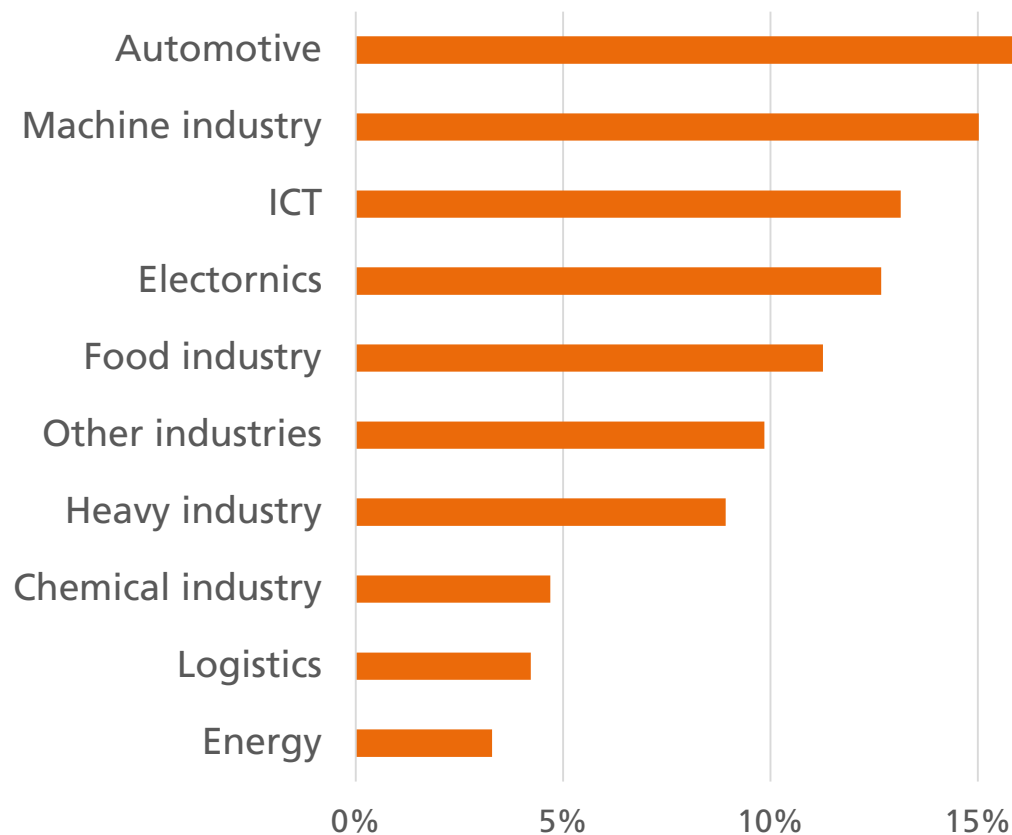
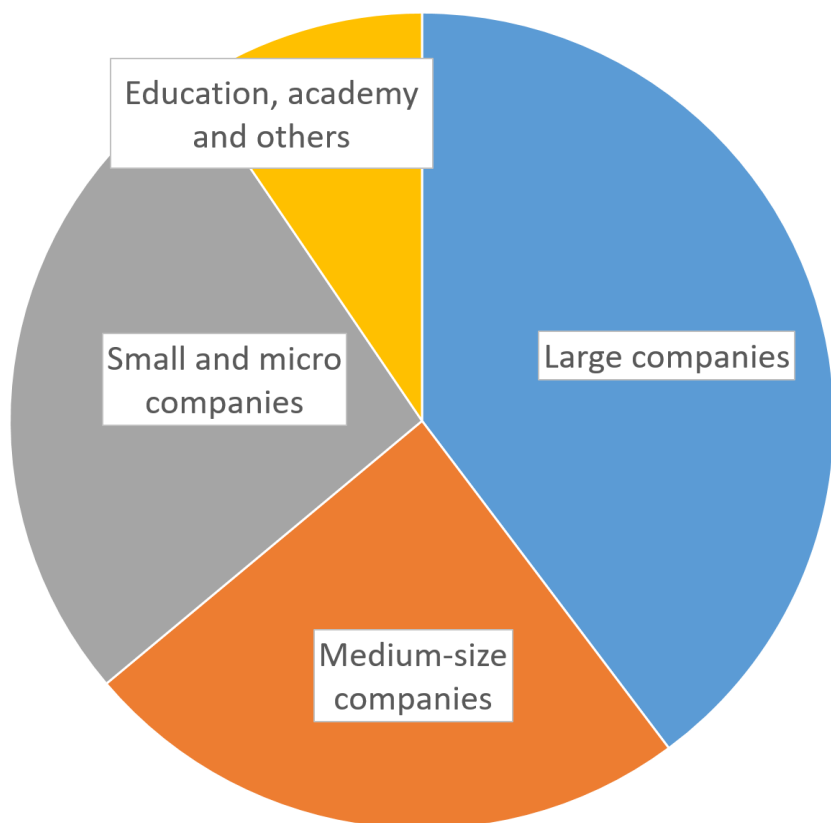


# Industry 4.0 national questionnaire

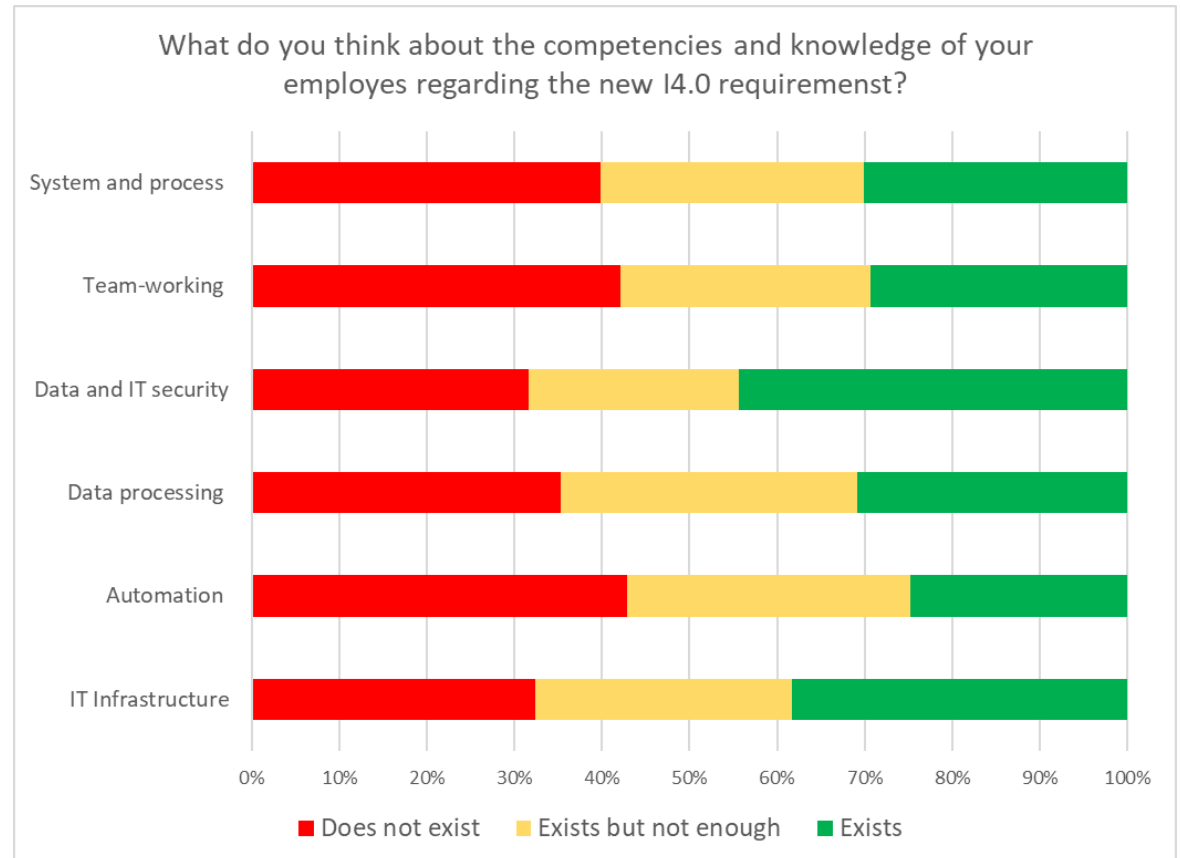
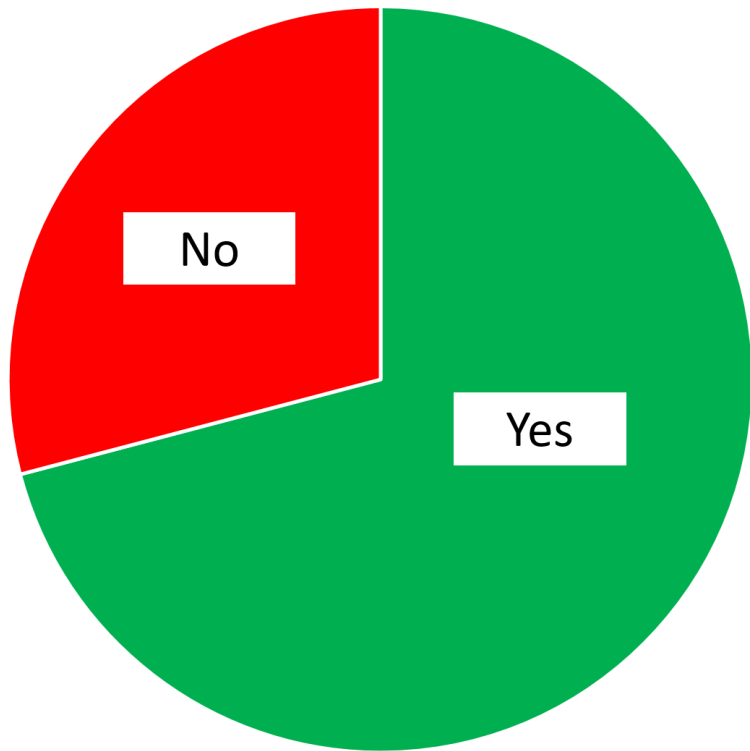
- Structure of the survey
  - Basic business data and statistics (15 Q)
  - I4.0 capability – micro (46 Q)
  - National economy – macro (37 Q)
  - Contact (1 Q)
- Responses
  - 133 fully completed



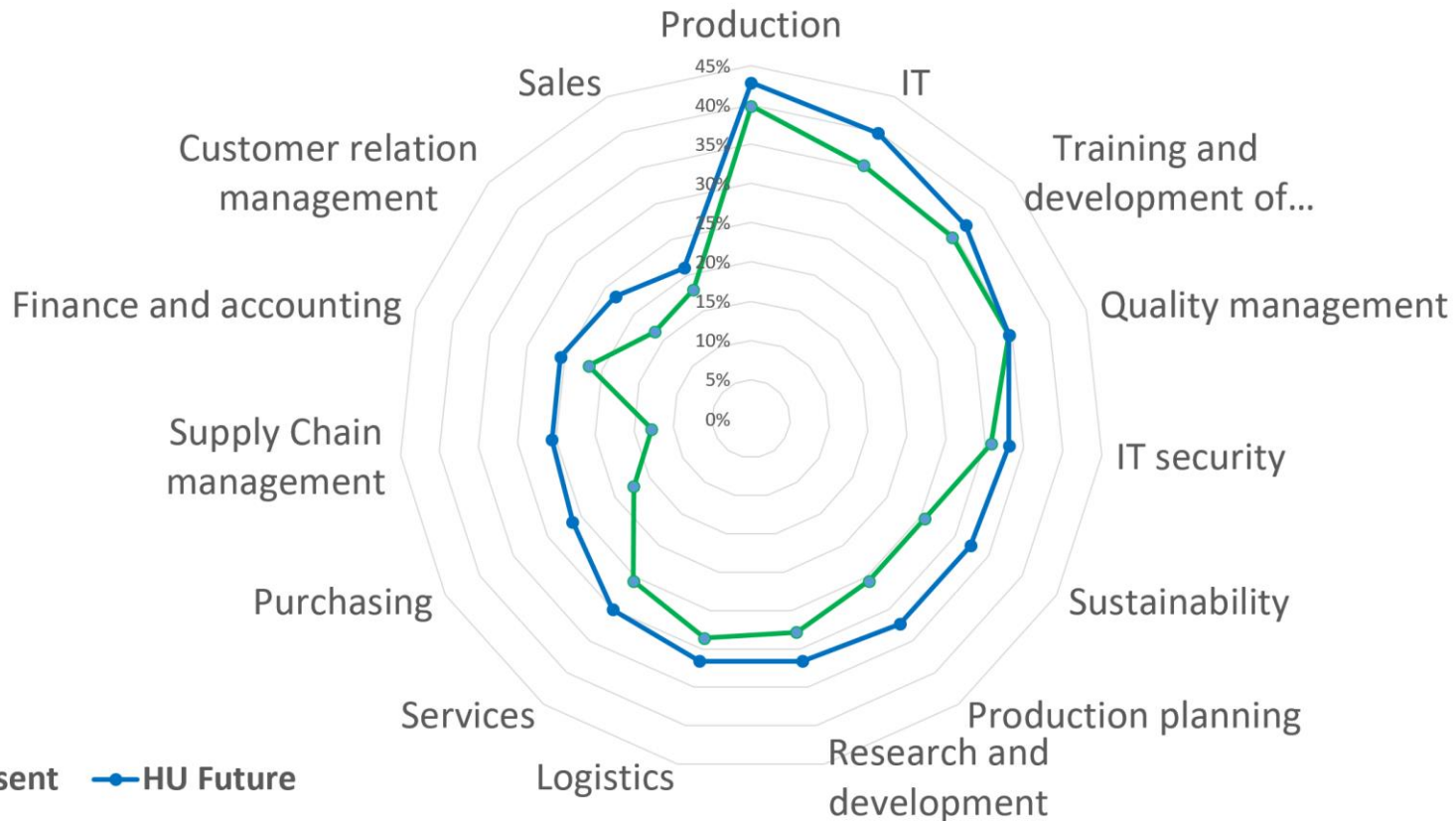
# Responders' general statistics



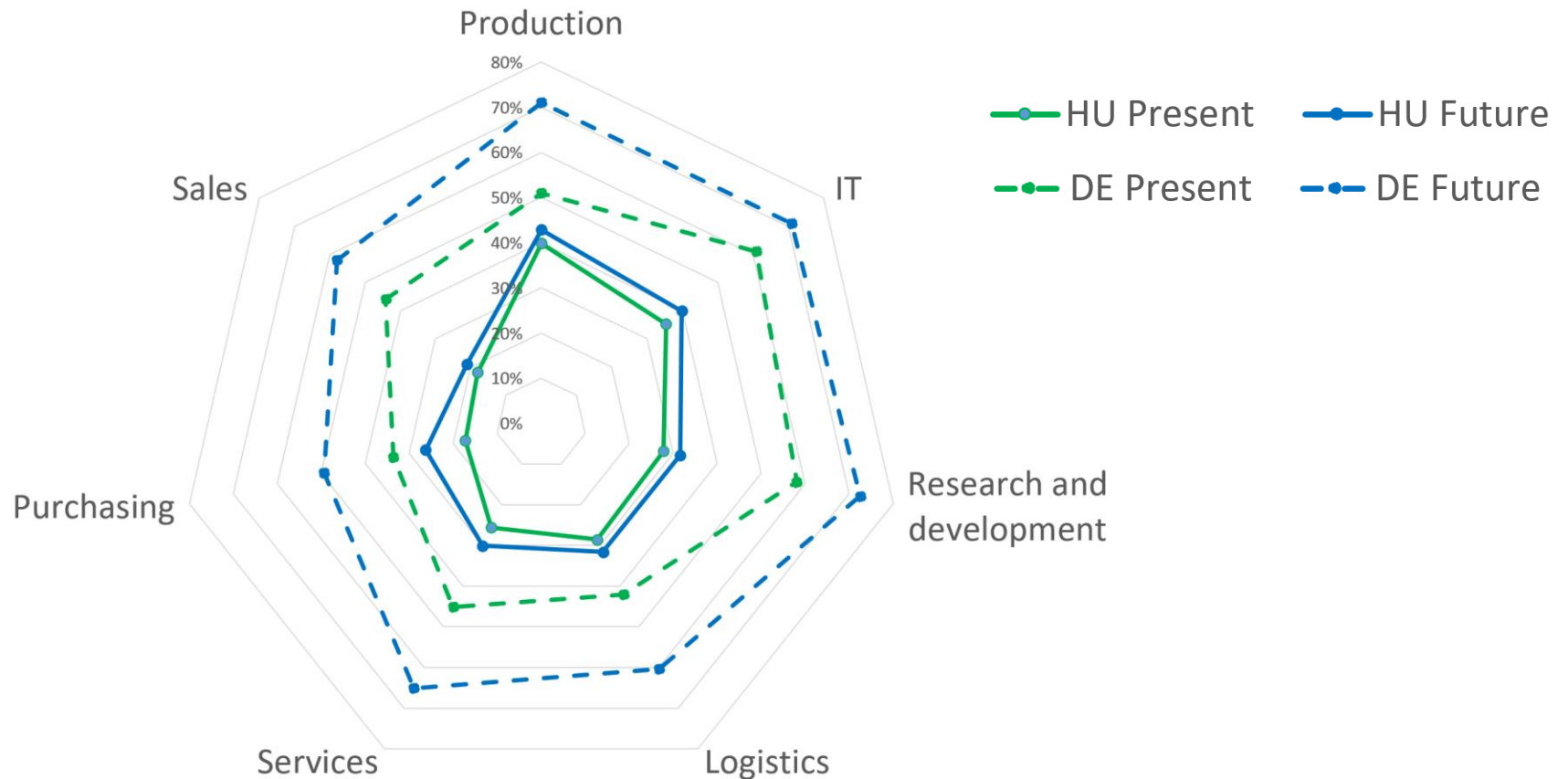
# Industry 4.0 importance from competitiveness point of view



# Past and planned investments in Industry 4.0



# Past and Planned investments in Industry 4.0



# Ipar 4.0 strategy – structure & priorities

Pillar ⇒		Digitalization and business development	Production and logistics	I4.0 labour market development	Research, development and innovation	I4.0 ecosystem
Dimension ↓						
Technology		Dedicated digitalization investment programs	<b>Improved efficiency and increased capacities</b>	Infrastructure for I4.0 training and education	<b>Production related RDI services</b>	Technology and infrastructure development
Society		Survey and attitude shaping	Concentrated strategy projects, supplier programs	<b>From vocational I4.0 training up to graduate and postgraduate education</b>	<b>Reinforcing science, RDI programs</b>	<b>Legislation, standardisation, control</b>
Business		<b>Revival of SMS business models</b>	Cluster formation	In-company training	New business models, RDI incubation	Digital I4.0 networks



# European CoE in Production Informatics and Control

## EPIC: Signing ceremony in Brussels, February 16, 2017



# EPIC CoE's historical background



**2017-2024**

EPIC CoE, including **SZTAKI CoE** and the **EPIC InnoLabs Ltd.** to be established soon



**2015**

Start of **EPIC** initiative in the **H2020 Teaming Widening** call



**Virtual Institute on Production and Business Management (IPBM)** established in SZTAKI with FhG IPA

**2002**

**2010**

Fraunhofer Project Centre for Production, Management and Informatics, **Fraunhofer PMI**



**2001**

SZTAKI became **EU CoE in IT, Computer Science and Control**

# Participation at fairs and exhibitions





# Industry 4.0 Laboratorium at SZTAKI's subsidy in Győr



September 29, 2017.

<https://indigonap.hu/>

# INDIGO Industrial Digitalisation Day

## PROGRAM

### INDIGO Ipari Digitalizációs Szakmai Nap

2017. október 10., ÖbölHáz Rendezvényközpont, 1117 Budapest, Kopaszi gát 2.

9:00 - 9:30	Érkezés, regisztráció
9:30 - 11:00	<b>Keynote előadások és panelbeszélgetés - Ipari digitalizáció</b> <ul style="list-style-type: none"><li>• Köszöntő (Monostori László, MTA SZTAKI)</li><li>• Ipari digitalizáció, trendek (Váncza József/Kádár Botond, MTA SZTAKI)</li><li>• A hazai ipar és a digitalizáció - NTP felmérés eredménye (Nick Gábor, Ipar 4.0 Nemzeti Technológiai Platform)</li><li>• Módszerek és megoldások Ausztriában (Wilfried Sihn, Fraunhofer Austria, angol nyelvű)</li><li>• Panel beszélgetés - Lépések a sikeres ipari digitalizáció felé (meghívott vendégek)</li></ul>
11:00 - 11:30	Kávészünet
11:30 - 12:30	<b>Szakmai előadások - Digitalizációs eszközök és megoldások</b> <ul style="list-style-type: none"><li>• Termelésstervezés, -ütemezés és -végrehajtás integrált rendszerekkel (Kardos Csaba, MTA SZTAKI)</li><li>• A gépi tanulás lehetőségeiről (Csáji Balázs Csanád, MTA SZTAKI)</li><li>• Digitális gyártás - termelési és logisztikai rendszerek kapacitáselemzése (Pfeiffer András, MTA SZTAKI)</li><li>• Ember és robot együttműködése a termelésben (Erdős Gábor, MTA SZTAKI)</li></ul>
12:30 - 13:30	Büfépéd
13:30 - 14:40	<b>Szakmai előadások - Ipari és logisztikai automatizálás, infokommunikációs technológiák</b> <ul style="list-style-type: none"><li>• Autonóm vezetől nélküli targoncák - ez már a jelen (Bohács Gábor, BME)</li><li>• Cyber-security - biztonságos? (Rigó Ernő, MTA SZTAKI)</li><li>• Felhő-alapú technológiák (Lovas Róbert, MTA SZTAKI)</li><li>• Virtuális valóság a termelésben (Rácskay Zoltán, MTA SZTAKI)</li></ul>
14:40 - 15:00	Kávészünet
15:00 - 17:00	Szakmai konzultáció lehetősége az előadások témájában
	<b>I4.0 Nemzeti Technológiai Platform - Rendkívüli Taggyűlés</b> (zártkörű ülés csak a Tagok képviselőinek)



<https://indigonap.hu/>

# Social responsibility

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# Industry 4.0: Specialities of the food industry

- Changing needs
- Healthy food
- Product safety
- Smart sensors, e.g. for measuring changes in microbial activity, temperature, pH, oxygen, CO<sub>2</sub> levels, etc.
- Food spoilage
- Recall and traceability





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# Thank you for your attention!

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<https://www.i40platform.hu/>

<https://www.centre-epic.eu/>