Digital Transformation in the Czech Republic

Presented by Felipe Martinez
Centre for Digital Transformation

29 e 30 de junho – Florianópolis - Mercure Convention Hotel
Who I am

• Lean
• Digitalisation
• Organisations
• Eng. 2000
• PhD. 2013

• Colombia
• 13 years in CZ
• India, Argentina and Canada
• Entrepreneur, Manager, Consultant, Faculty...
Who we are

- **Interdisciplinary operational platform** of professional and academics.

- Faculty of Business Administration (FBA), University of Economics, Prague (UEP).

- We focus on the **socio-economic** aspects of **digital transformation**.
What we do

- We provide **professional and academic knowledge** to firms willing to **implement Industry 4.0** and their technologies.
VIII Congresso de Sistemas Lean
“Em busca da excelência do fluxo de valor”

Industry 4.0

29 e 30 de junho – Florianópolis - Mercure Convention Hotel
What is it?

- Industry 4.0
- i4.0
- Germany, 2012
- Europe catch phrase

- Internet of Things
- IoT
- Apply to Industry
- IIoT
Industry 4.0
Technologies...

1. Advanced Robotics
2. Big data
3. Digital modelling
4. The Internet of Things
5. Human-Machine Interaction
6. Augmented reality
7. Virtual Assistants
8. Energy sourcing
9. New sensors
10. Machine learning
11. Biosensors
12. Terahertz
13. Autonomous robots
14. Brain interface
15. Cognitive computing
16. Quantum technologies
17. New graphene characteristics
Top 10 skills

<table>
<thead>
<tr>
<th>Rank</th>
<th>Skill</th>
<th>2020</th>
<th>Rank</th>
<th>Skill</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Complex Problem Solving</td>
<td></td>
<td>1</td>
<td>Complex Problem Solving</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Critical Thinking</td>
<td></td>
<td>2</td>
<td>Coordinating with Others</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Creativity</td>
<td></td>
<td>3</td>
<td>People Management</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>People Management</td>
<td></td>
<td>4</td>
<td>Critical Thinking</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Coordinating with Others</td>
<td></td>
<td>5</td>
<td>Negotiation</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Emotional Intelligence</td>
<td></td>
<td>6</td>
<td>Quality Control</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Judgment and Decision Making</td>
<td></td>
<td>7</td>
<td>Service Orientation</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Service Orientation</td>
<td></td>
<td>8</td>
<td>Judgment and Decision Making</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Negotiation</td>
<td></td>
<td>9</td>
<td>Active Listening</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Cognitive Flexibility</td>
<td></td>
<td>10</td>
<td>Creativity</td>
<td></td>
</tr>
</tbody>
</table>

Source: Future of Jobs Report, World Economic Forum
Top 10 skills

in 2020
1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015
1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity
### When will the future arrive?

800 technology executives and experts from the information and communications technology sector were surveyed as part of our *Technology Tipping Points and Societal Impact* report.

<table>
<thead>
<tr>
<th>Technology tipping points expected to occur by 2025</th>
<th>Percentage of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% of people wearing clothes connected to the internet</td>
<td>91.2%</td>
</tr>
<tr>
<td>The first robotic pharmacist in the US</td>
<td>86.5%</td>
</tr>
<tr>
<td>The first 3D-printed car in production</td>
<td>84.1%</td>
</tr>
<tr>
<td>5% of consumer products printed in 3D</td>
<td>81.1%</td>
</tr>
<tr>
<td>90% of the population with regular access to the internet</td>
<td>78.8%</td>
</tr>
<tr>
<td>Driverless cars equalling 10% of all cars on US roads</td>
<td>78.2%</td>
</tr>
<tr>
<td>The first transplant of a 3D-printed liver</td>
<td>76.4%</td>
</tr>
<tr>
<td>Over 50% of internet traffic to homes for appliances and devices</td>
<td>69.9%</td>
</tr>
<tr>
<td>The first city with more than 50,000 people and no traffic lights</td>
<td>63.7%</td>
</tr>
<tr>
<td>The first AI machine on a corporate board of directors</td>
<td>45.2%</td>
</tr>
</tbody>
</table>

Revolution?
Industry 4.0.
The end Lean Management?
Does lean management contribute with i4.0?

Industry 4.0.
The end Lean Management?
Lean management:
• Value
• Waste
• Continuous Improvement

Just 26% occurrence
But
Low correlations
Industry 4.0 in the Czech Republic – State of the art.
Does CZ understand i4.0?

Industry 4.0 in the Czech Republic – State of the art.

- Scientific articles - less than 1%
- Academic articles 12%
- Business articles 56%
- Technology articles 31%
Implications, Applications, Trends, and Topics of Industry 4.0
Round table
Implications of i4.0 for
• Management
• Economy
• Society

Implications, Applications, Trends, and Topics of Industry 4.0

- Human capital.
  - Cross functional teams.
  - Holistic view.
  - People willing to do i4.0
  - Prepare to work with data... BIG data
- Management
  - Traditional vs. modern
  - Global vs local implementation

- Economy
  - It is a major change
  - Industry 70%
- Society
  - Education 4.0
Startups role in national industry 4.0 implementation
Do strategic documents to develop i4.0 include or consider startups as part of the strategy to the development of i4.0 in Czech Republic?

Startups role in national industry 4.0 implementation

The total documents keyword density is 4.2%
INDUSTRY 4.0 IN CLUSTERS
Do clusters in CZ implement i4.0?

INDUSTRY 4.0 IN CLUSTERS

1. Strategy
2. Cyber security
3. Processes
4. Data
5. Collaboration
ASSESSING PROCESS EXCELLENCE WITH DIGITALIZATION
Do Service firms in CZ implement i4.0?

ASSESSING PROCESS EXCELLENCE WITH DIGITALIZATION
Lean my food: From sandwich to catering with digitalisation

Do Catering firms in CZ implement i4.0?

Lean my food: From sandwich to catering with digitalisation

CI Index

\[ y = 0.0705x + 0.3964 \]
\[ R^2 = 0.8545 \]

51.25% 47.50% 53.75% 72.50% 83.75% 82.50% 83.75%

Digital Inclusion

\[ y = 0.0857x + 0.1714 \]
\[ R^2 = 0.9 \]

20.00% 40.00% 60.00% 60.00% 60.00% 80.00%

P1 P2 P3 P4 P5 P6 P7
Industry 4.0
Big acquisitions...
ABB completes acquisition of B&R

Group press release | Zurich, Switzerland, 06 July 2017
Big acquisitions...

China's Midea receives U.S. green light for Kuka takeover

#BUSINESS NEWS

DECEMBER 30, 2016 / 3:01 AM / 9 MONTHS AGO
Big moves...

General Electric rids itself of financial unit in $26.5bn deal as it hones focus
Big moves...

Bosch: Investing In Data-Driven Innovation

Tech #BigData

JUL 26, 2017 @ 08:18 AM
Current Research

Does process excellence facilitate digitalisation?
Current Research

- Education 4.0
  - Competences
  - Subjects
  - Feedback
- Implementation i4.0
  - Structure
  - Strategy
  - Investments
  - Business model
  - HR
  - Processes
  - Supply chain

- New technologies
  - Additive manufacturing
  - Collaborative Robots
  - Artificial Intelligence
  - Augmented reality
  - ...
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Questions?
Thank You
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