INDTECH2018
Innovative industries for smart growth

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Vienna, Austria

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Plenary – Keynote 2

KETs as an enabler for an innovative industry

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Chief Executive Officer
Chief Technology Officer

Infineon Technologies Austria AG

30 October, 2018

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 767162.
Why are KETs important: central „building blocks“ and enablers for innovation

Globalization, digitalization, „knowledgization“:
Europe can be the best place to live

Making it happen: Conclusions

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 787202.
Infineon at a glance

**Focus areas**

- Energy efficiency
- Mobility
- Security
- IoT & Big Data

**Employees**

Around 37,500 employees worldwide (as of Sept. 2017)

- **Europe** 15,650 employees
- **Americas** 3,850 employees
- **Asia/Pacific** 18,000 employees

36 R&D- and 17 manufacturing locations

**Financials**

<table>
<thead>
<tr>
<th>Year</th>
<th>[EUR m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 13</td>
<td>3,843</td>
</tr>
<tr>
<td>FY 14</td>
<td>4,320</td>
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<td>6,473</td>
</tr>
<tr>
<td>FY 17</td>
<td>7,063</td>
</tr>
</tbody>
</table>

- Revenue

**Market Position**

- **Automotive**
  - # 2
  - Strategy Analytics, April 2017

- **Power**
  - # 1
  - IHS Markit, Technology Group, August 2017

- **Smart card ICs**
  - # 1
  - IHS Markit, Technology Group, July 2017

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Infineon at a glance

**Infineon Austria**

**Facts FY 2017** (30.09.2017)

- **Revenue (Mio)**: € 2.539,6
- **Investments (Mio)**: € 150,2
- **Employees total**: 3.785
- **R&D in % of revenue**: 17%

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  - # 1
- **Power**
  - # 1
- **Smart card ICs**
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**Strategy Analytics**

- April 2017

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**IHS Markit, Technology Group**

- August 2017
- Juli 2017

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Infineon: We invest in and for Europe

Villach, Austria

› New 300-millimeter chip factory:
  › Investment 2019-2025: €1.6 billion
  › 400 new jobs
› Expansion of 860 jobs in R&D at Infineon Austria

Dresden, Germany

› Expansion of chip manufacturing:
  › Investment of a high three-digit million amount over next 3 years
  › 300 new jobs
› New R&D Center: 250 new jobs

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Despite higher costs for energy, wages and infrastructure

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Globalization, digitalization, „knowledgization“: Europe can be the best place to live

Making it happen: Conclusions
KETs are the essential technology building blocks creating value

**Figure 1:** Advanced products are a combination of KETs: the case of the electric vehicle

**Figure 2:** Advanced products are a combination of KETs: the case of the mobile phone

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### Europe’s global Market Share in %

<table>
<thead>
<tr>
<th></th>
<th>Europe</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROBOTICS</td>
<td>33</td>
<td>67</td>
</tr>
<tr>
<td>EMBEDDED SYSTEMS</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>AUTOMOTIVE SEMICONDUCTORS</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>SEMICONDUCTOR EQUIPMENT</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>PHOTONICS COMPONENTS</td>
<td>20</td>
<td>80</td>
</tr>
</tbody>
</table>


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A more strategic view on technology and innovation is needed...

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Making it happen: Conclusions
Global Megatrends shape our society

Demographic & social change

2050: > 9bn people on earth

Climate change & resource scarcity

Today: fossil fuels account for ~ 80% of energy supply

Urbanization

2030: > 6bn people in cities*

Digital transformation

2020: > 30bn internet connectable devices

Digitalization – more with less!

- **Energy efficiency:** More power with less resources
- **Quality of life:** More quality of life and security at lower cost
- **Prosperity:** More access to better and cheaper products through higher productivity
- **Mobility:** More sustainable movement in narrow spaces
- **Working world:** More human-like work through cooperation with machines

Digitalization affects all areas of our life and benefits society.

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Digitalization and Innovation: we can grow....

Disruptive Innovation

New: New markets, businesses

Evolutionary Innovation

Upgrade: More/better of same

Efficiency Innovation

Productivity
Lower prices, higher accessibility

new jobs

stabilize jobs

changing jobs

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Semis: Enablers for the digital transformation, in Europe and worldwide

Semiconductors enable 30-45% of European GDP in 2020

Significant Trends

Worldwide GDP 2017
WW: ~$80,000 Billion

Electronics 2017
WW: ~$2,000 Billion

Semiconductors
WW: $1412 Billion

Levers

x ~20-100*

x ~5

*Large parts of World GDP enabled by semiconductors; potential of enabled global GDP estimated ~10% up to ~50%


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Example ECSEL: Demonstrating joint success
Example KET Semi: Europe needs to take a driver seat

Top 20 Semiconductor Suppliers in 2017

[US-Dollar Billion]

- Samsung
- Intel
- SK Hynix
- Micron
- Broadcom Ltd
- Qualcomm
- Texas Instruments
- Toshiba
- NXP
- NVIDIA
- STMicro
- Western Digitial
- Infineon
- MediaTrek
- Renesas
- Sony Semiconductor
- Apple
- Analog Devices
- ON Semiconductor
- AMD

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Source: Based on or includes content supplied by IHS Markit, Technology Group, Annual 2001 to 2017 Semiconductor Market Share / Competitive Landscaping Tool, Q1 2018, June 2018. Information is not an endorsement of Infineon Technologies AG. Any reliance on these results is at the third party's own risk. Visit technology.ihs.com for more details.

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Europe must keep an eye on its innovation performance...

Bars show countries’ performance in 2017 relative to that of the EU in 2010.

Source: https://ec.europa.eu/docsroom/documents/30281

Change in performance is measured as the difference between the performance in 2017 relative to the EU in 2010 and the performance in 2010 relative to the EU in 2010.

Source: https://ec.europa.eu/docsroom/documents/30281

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Beyond Europe: Strategic & focused growth: „Made in China 2025“

Combination of:

› Technology from outside
› Own capabilities
› Market demand
› Public money

...may give the strategy „Made in China 2025“ significant effects ...
Artificial Intelligence: US and China are „on the fast track“
Globalization and data flows have entered a new era...

Technology is not neutral but linked with democratic values...

**USA’s Way**

Source: The Economist

**China’s Way**

Source: Merics China Monitor

**EUROPE’s WAY?**

e.g. Europe 2020: Smart, Sustainable and Inclusive Growth and Jobs

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Making it happen: Conclusions
Conclusions

KETs are the new geopolitical „currency“: they are system relevant for strategic value chains, competitive strength, economic & societal autonomy and security.

Digital transformation is more than technology: economic, political and cultural competition. However, competition in technology will decide.

A globally competitive European strategy is THE key for this competition. China and U.S. act strategically! We need to create a strong European way.

In practice: MFF with focus on future-oriented objectives (Innovation, Digitalization & digital infrastructure, Education), HEU: significant budget, KETs (eg AI) aligned resources, innovation-oriented procurement.