

# Security is a key enabler for Industry 4.0!

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## Top of the Agenda

- ▶ Security makes a significant contribution to business success and makes tomorrow's sales possible!
- ▶ Security thus becomes the central enabler for Industry 4.0



„Achieving state-of-the-art information security and customer privacy protection in our products and throughout their entire life cycle (...) is an essential aspect of the Bosch quality promise.“

Volkmar Denner (CEO of Robert Bosch GmbH)

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## Our past ...



Efficiency = Control

Fast = Central

Bigger = Better

Hierarchy = Fast

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## Today & upcoming



Highly automatised

Distributed  
Connected







OEE and KPI driven

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## Industry 3.0 – Two worlds







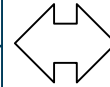
### Enterprise IT

Product life cycle: 3-5 year	
Standardized high performance computing power	
Primary protection goal: <b>Confidentiality</b>	
Patches are regularly installed	
Security audits, pen tests and monitoring on a regularly basis	 Firewall
Subordinate role for functional safety	



### Production IT

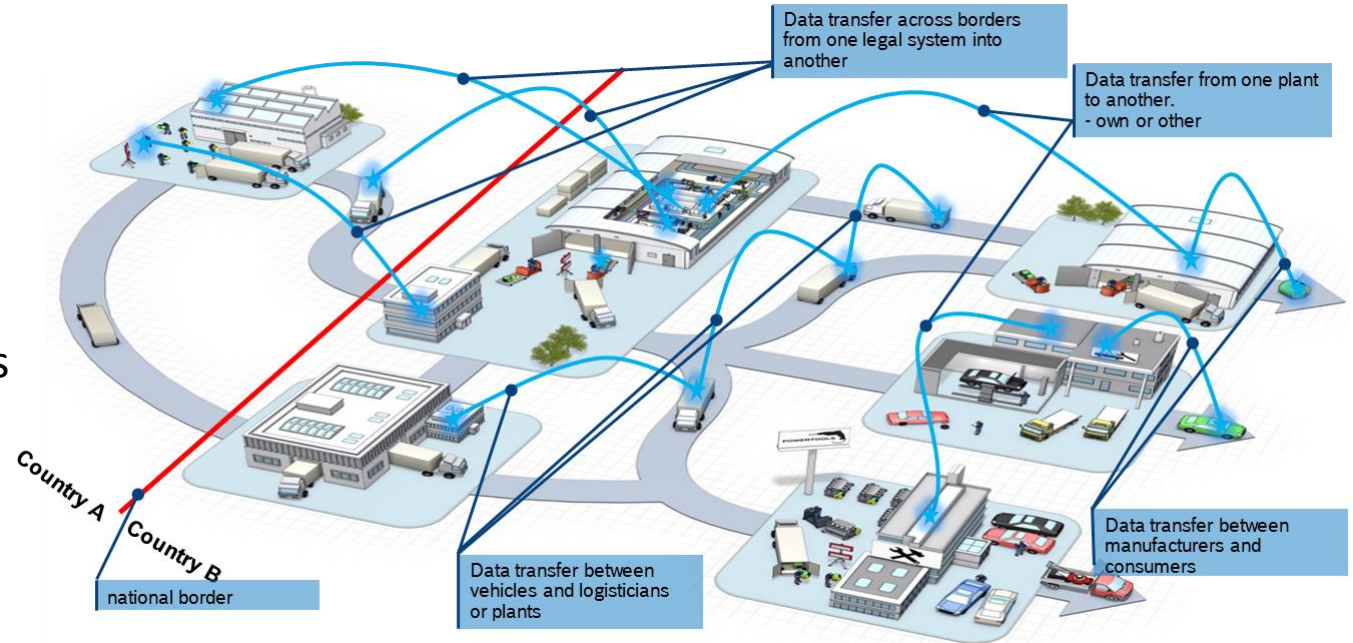
Product life cycle: 20 years and more	
Limited computing power, many vendors	
Primary protection goal: <b>Availability</b>	
Patching often not possible (regulations), only during planned maintenance tasks	
Security audits and monitoring not common	
European Machinery directive (safety)	



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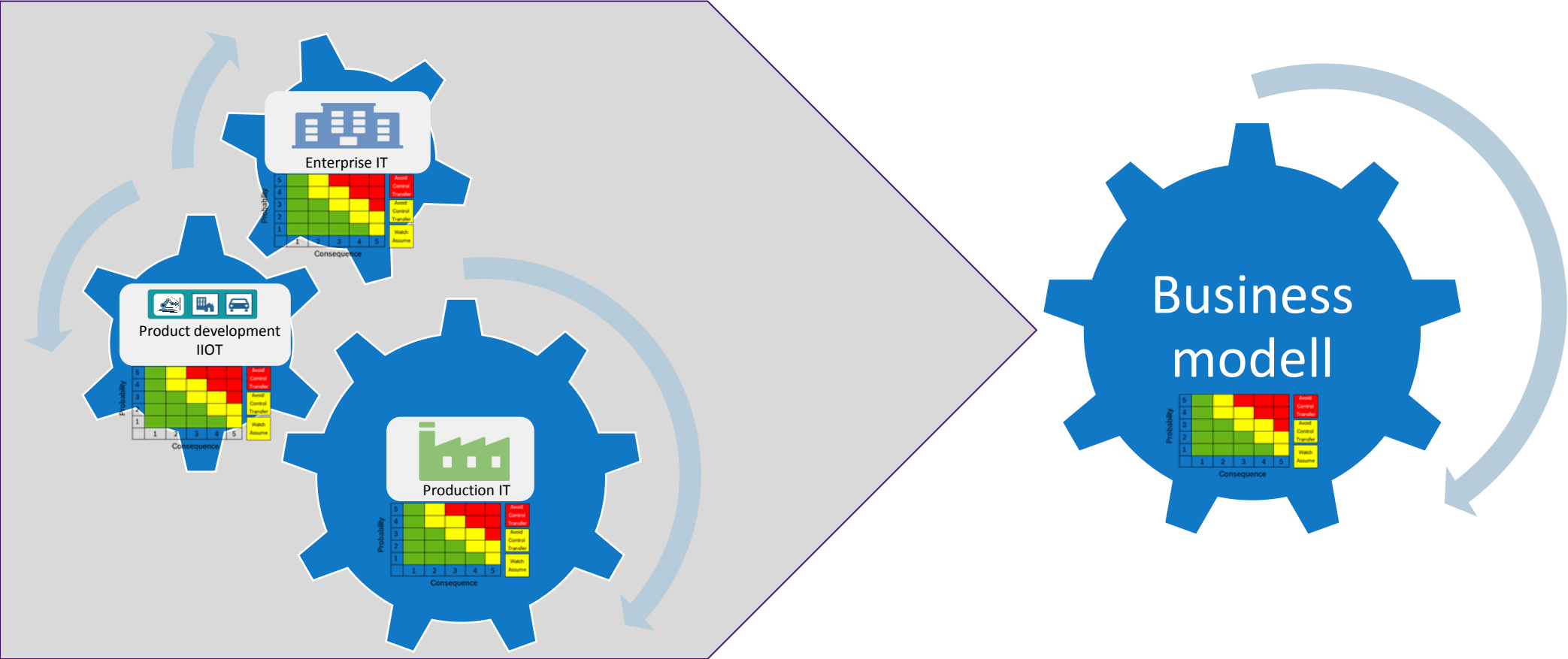
## Industry 4.0 – Value creation networks across companies

- ▶ Increasing flexibility and customer-specific production
  - ▶ Direct data exchange of all entities (people, machines, processes across company boundaries)
- ▶ Storage and processing of data generates added value.
- ▶ Main concerns
  - ▶ Correctness and completeness of data
  - ▶ Know how protection
  - ▶ Counterfeiting prevention
  - ▶ Authenticity of the business partners



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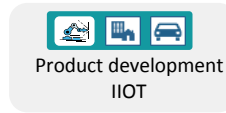
## What contributes to making this vision a reality?



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## Determining your starting point means creating transparency!

- ▶ Create transparency within the whole organisation, considering e.g.



Technical Capabilities

Organisation and Processes

Maturity of the Organisation

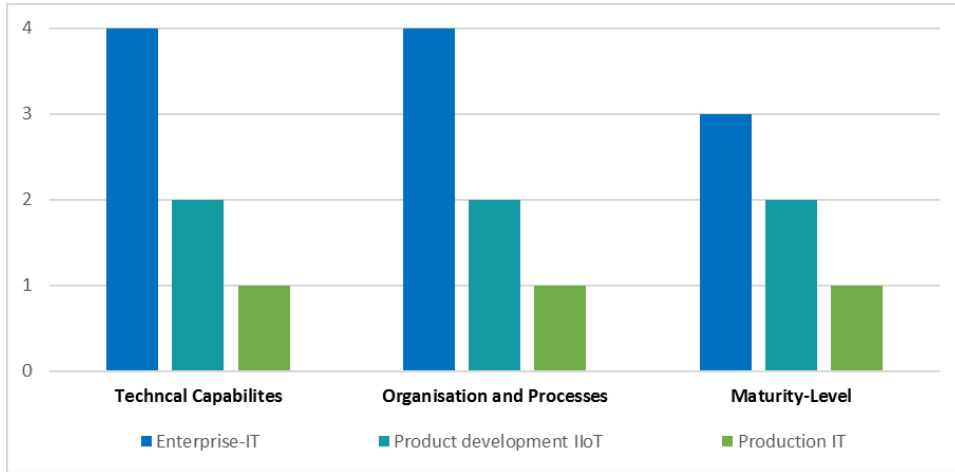


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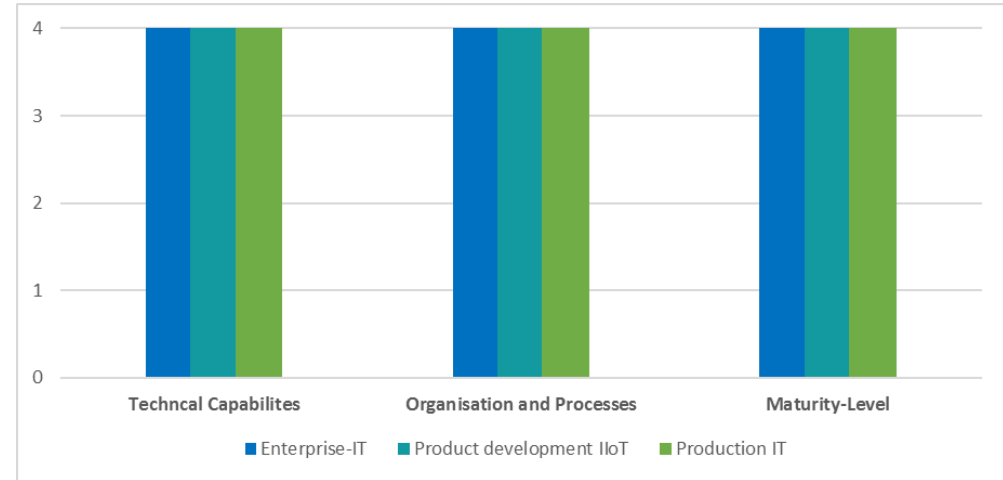
## Holistic approach



### ► Starting point



### ► Target state of all domains and silos



### ► Security is a collaborative **responsibility and mission**

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## Holistic approach



- ▶ Holistic approach taking into account the specifics of the domains (Enterprise IT, Product development, Production IT)
  - ▶ Define required **graded security for the technical capabilities** (for example based on the security level of IEC 62443)
  - ▶ **Set graded security**, such as ISO 2700x, for **processes and organization** based on required protection needs (e.g., basic protection, default protection, increased protection requirements)
  - ▶ The **second dimension** is always the **maturity of the organization** to be able to execute corresponding processes
- ▶ Ensuring the protection goal Availability is still a major challenge in products and in the Production IT
  - ▶ Increasing costs per product are not accepted by the market
  - ▶ Due to regulatory requirements / guidelines

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## Conclusion

- ▶ Security is the “enabler” of Industry 4.0 in the value creation networks!
- ▶ Security by design - fundamental component of development, deployment and operation
- ▶ Security concerns all of us – it becomes a cross-sectional task
  - ▶ **A secure product requires a secure production**
- ▶ Security is a “moving target” – we are never done
- ▶ Security should become a quality feature
  - ▶ It’s an essential aspect of the **Bosch quality promise**

# THANKS