Platform Economy needs International Action

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Context-Specific Interpretations of Platforms

Organization

Bringing together various stakeholders,
e.g. Plattform Industrie 4.0,
Nationale Plattform Zukunft der Mobilität, …

Computer / Architecture

Hardware platform,
e.g. Sony PlayStation, Microsoft Xbox,
Rasperry Pi, …

Digital Infrastructure

Prerequisite for multi-sided markets,
e.g. IaaS/PaaS/SaaS of Amazon Web Services, …

Digital Platforms: Self-reinforcing Growth Engines

- **Multi-sided markets with network effects**
  - With more users, the platform becomes more attractive to potential new users (e.g. social networks)
  - The more users on side of the platform, the more attractive the platform becomes for users of the other side (e.g. smartphones)
- **Dynamic digital ecosystems** are critical to success
  - Provide complementary data, services, products and competencies
  - New growth opportunities for SMEs and Startups
- **Cloud-based: Fast scaling** on a global level with low investments

→ Platform enterprises are more powerful than traditional enterprises.

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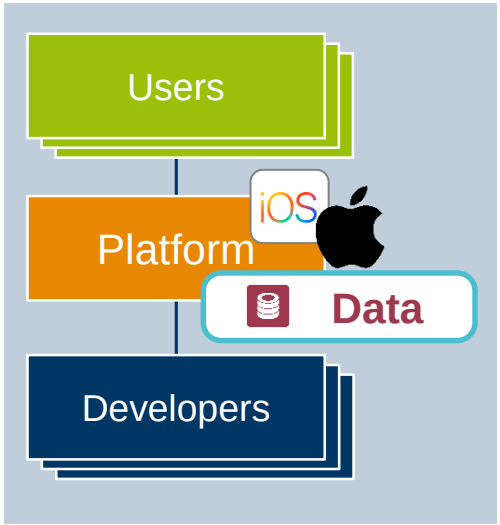
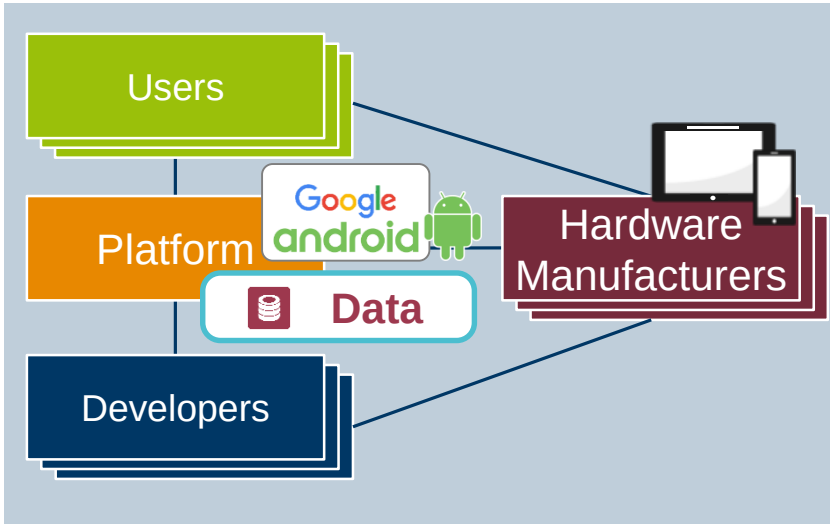
Multisided Digital Technology Platforms Enabling Interactions between several Interaction Groups

Two-sided Platforms:



e.g. Apple iOS

Three-sided Platforms:



e.g. Google Android

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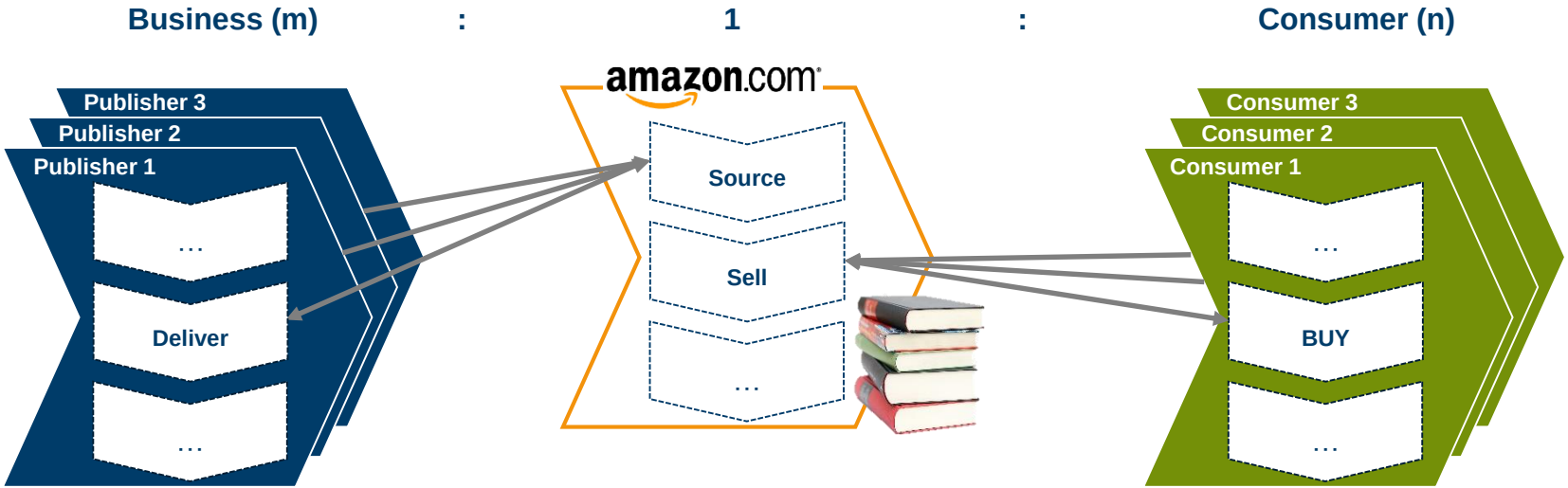
Digital Technology Platforms have Existed for many Years…



- Books are only delivered if sold
- Market and user info

- Cooperation with regional booksellers
- User profile: allows proactive actions

- Customer focused
- Completeness of service

Source: Österle et al. (2000), p. 65.

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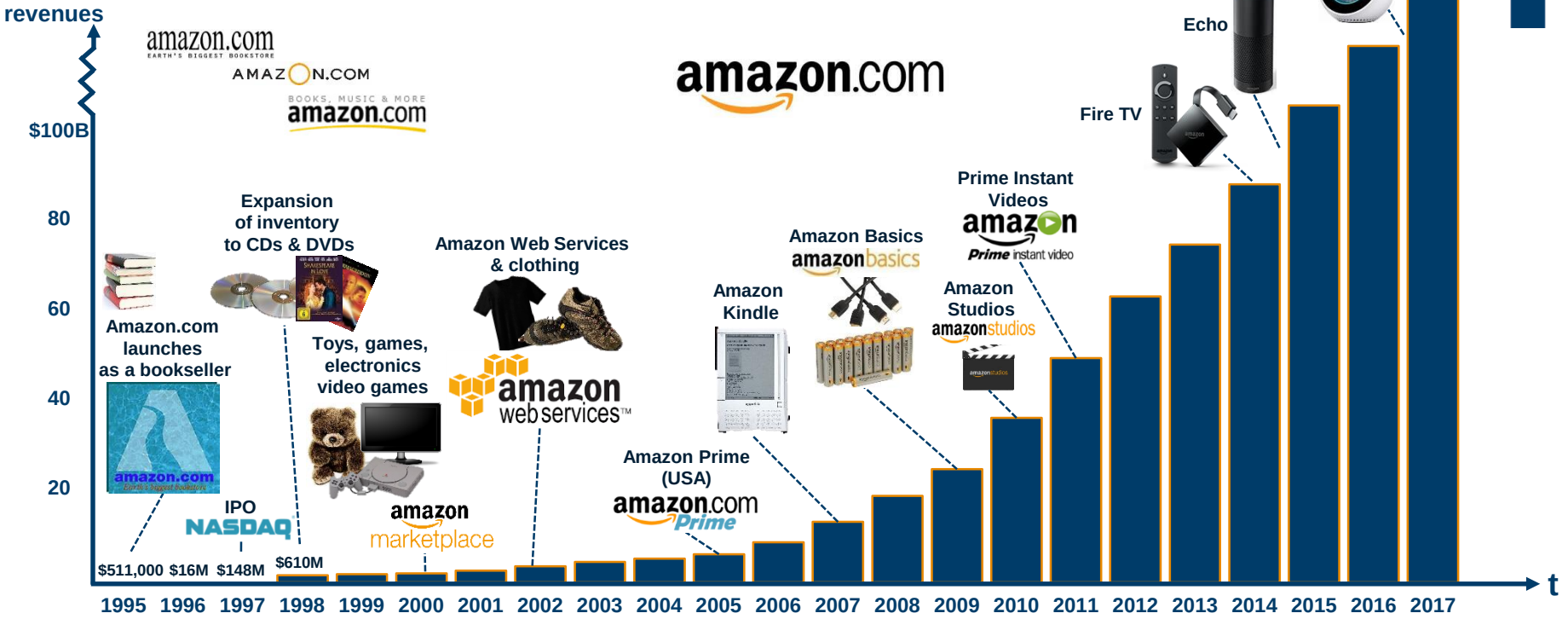
When a Platform Enters the Market, it mostly Wins…



Source: The company/The Wall Street Journal/finance.yahoo.com.

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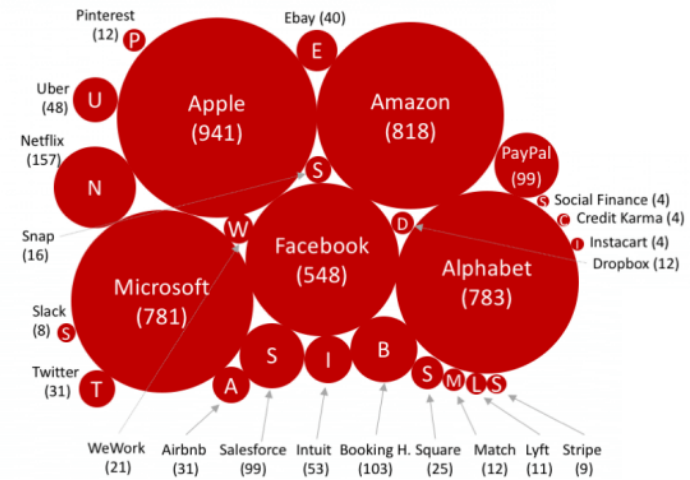
The most Valuable Companies in the World are Platform Companies – but there is a Regional Imbalance

USA

(share: 66% [2015: 67%])



Europe

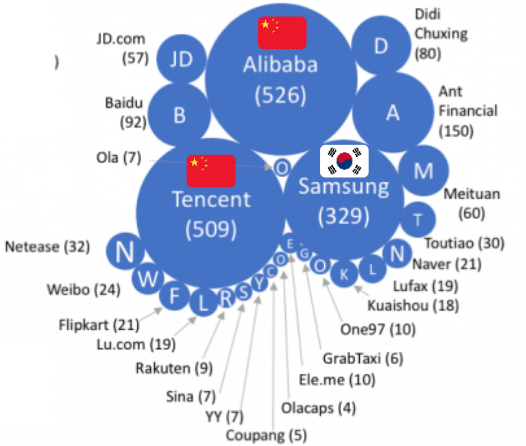
(share: 3% [2015: 3%])

Africa

(share: 2% [2015: 2%])

Asia

(share: 30% [2015: 28%])



→ **B2C is dominated primarily by USA & China.**

→ **Competition in the B2B sector has not yet been decided. This creates opportunities for Japan and Germany.**

Source: Netzoekonom.de/idea: Peter Evans.

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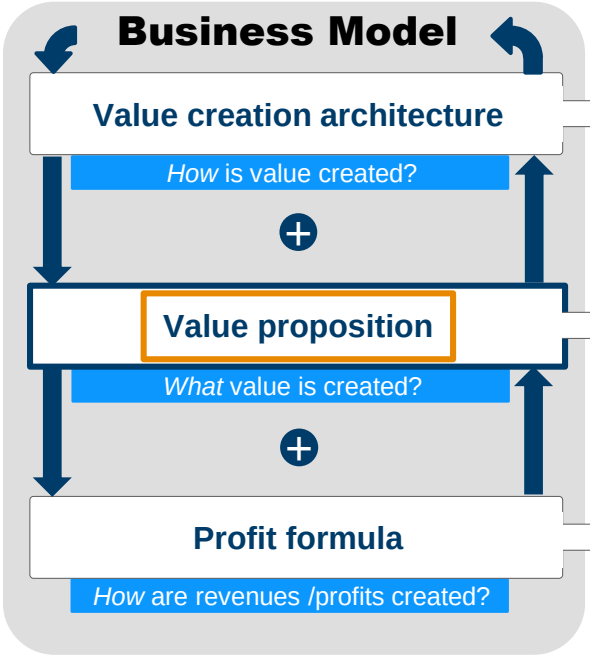
Business Models of the Digital Economy

…are based on Smart Services



- **Smart data** → independent value generator
- **Digital platforms** → scalable & repeatable business
- **Dynamic ecosystems** → attract developers of complements
- **Smart talents** → individualized qualification on the job

- **Individualized product-service-bundles on demand**
- **Superior user experience / real-time responsiveness**
- **“Everything-as-a-service”, low switching costs**

- **Flexible pricing model:**
  - usage-based (*time*)
  - output-based (*piece*)
  - value-based (*profit sharing*)

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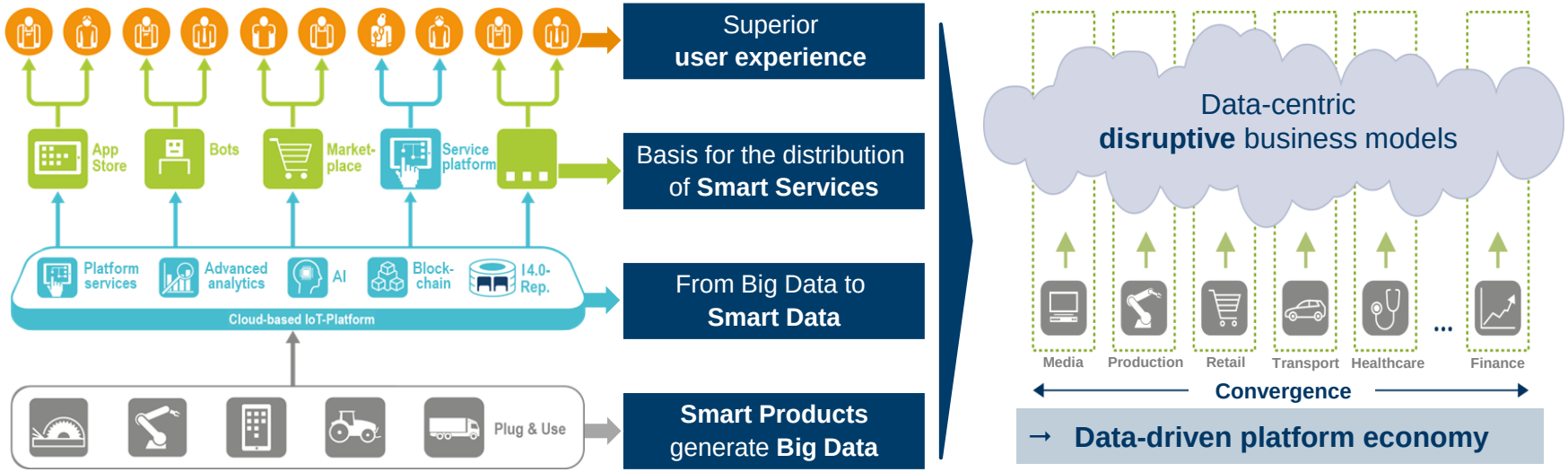
How are Smart Services Created?

In Dynamic Digital Ecosystems on Digital Technology Platforms



Source: acatech (2017), Wegweiser Smart Service Welt.

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New Opportunities with Artificial Intelligence (AI)

H. Kagermann (President, acatech),
J. Wanka (Fed. Minister of Education & Research),
S. Abe (Prime Minister, Japan),
A. Merkel (Chancellor, Germany),
R. Neugebauer (President, Fraunhofer)

AI-based context and **user modeling**

Self-learning Smart Services and AI-based **Chatbots**

AI

Cloud-based IoT-Platform

Intelligent multi-sensor fusion, AI-based **data curation**

Source: acatech (2017), Wegweiser Smart Service Welt.

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Digital Projects of the German Government

Ensure Competitiveness in the Digital Economy

I **Industrie 4.0**

- IT/OT-Convergence
- SmartX, Ad-hoc connectivity, decentral

Rethink production processes and workplaces

II **Smart Service Welt**

- Business model of the digital economy
- XaaS, data driven, platform based

Rethink business models and ecosystems

III  **Autonome Systeme**

- At home, at work, on the way
- XBots & ‘moral algorithms’

Rethink social, legal, and ethical implications

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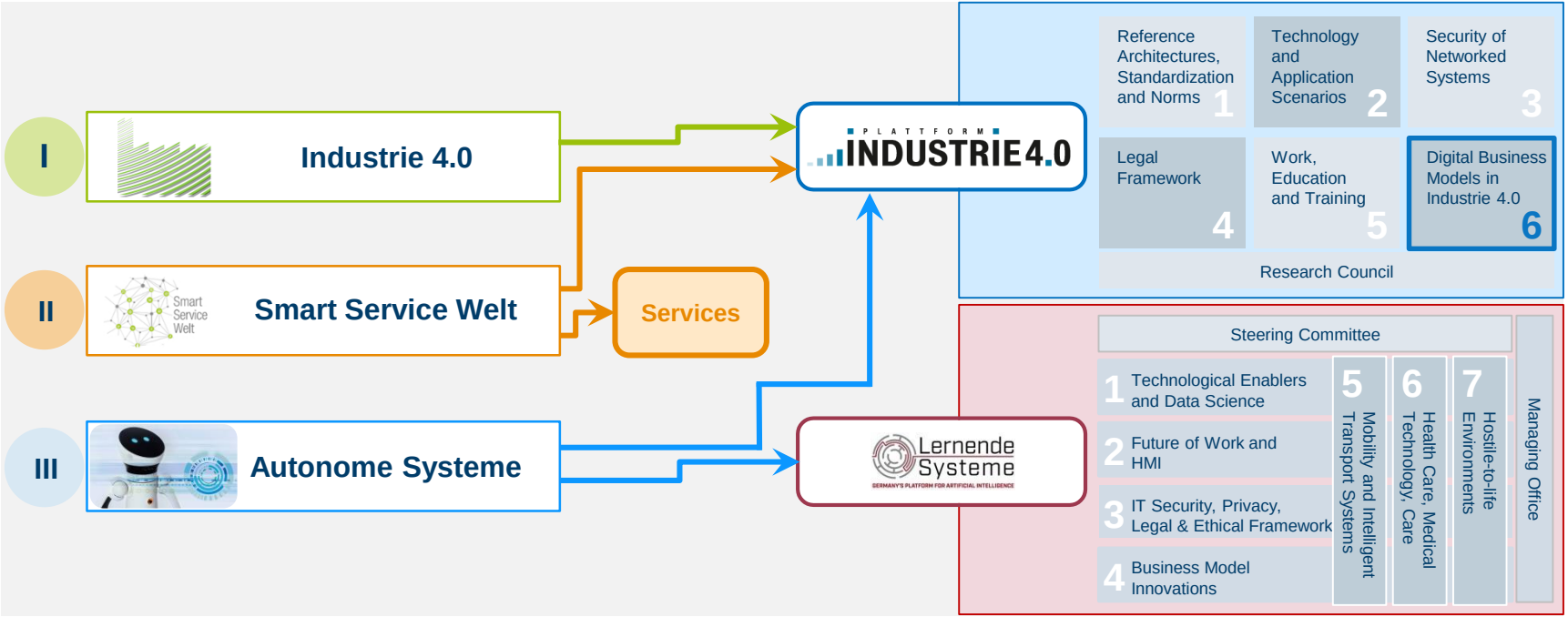
The digital Transformation requires a Broad Foundation

Plattform Industrie 4.0 and Plattform Lernende Systeme



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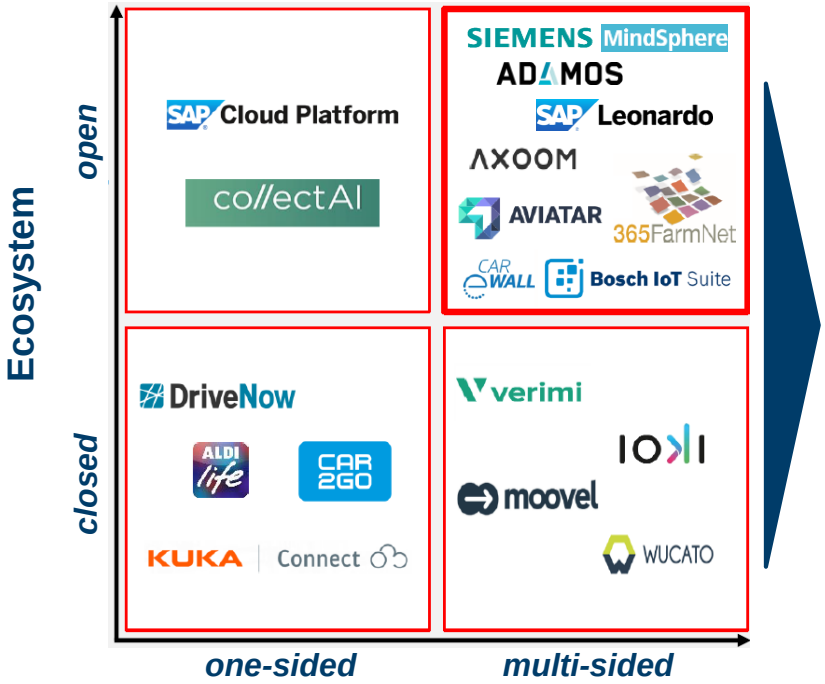
First Insights into the Platform Economy in Germany



***Multi-sided* and *open* platforms**

→ **Scalable growth**
through network effects

***One-sided* and *closed* platforms**

→ Limitation to **linear growth**
without network effects

Source: WG 6 of the Plattform Industrie 4.0.

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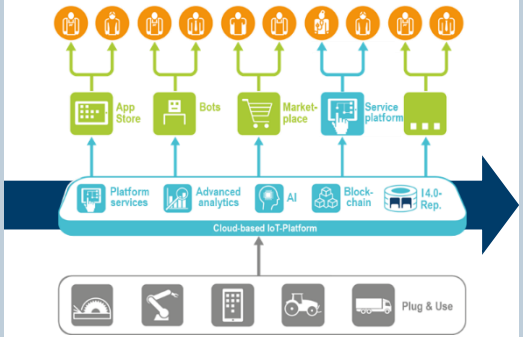
New Forms of Cooperation
Platform-based Business Ecosystems

Business Ecosystems

Definition

- Different players
- Providing higher value than one can achieve alone
- Mutual dependencies & complementary relationships
- Not completely controllable by one actor



„No one can do it alone“

Benefits of Ecosystems

- Better access to markets
- Scaling & bundling effects
- Lower transaction costs
- Shared innovation risks & costs
- Co-innovation between complementary partners

Source: Robert Bosch GmbH / Matischok (2018); acatech (2017), Wegweiser Smart Service Welt.

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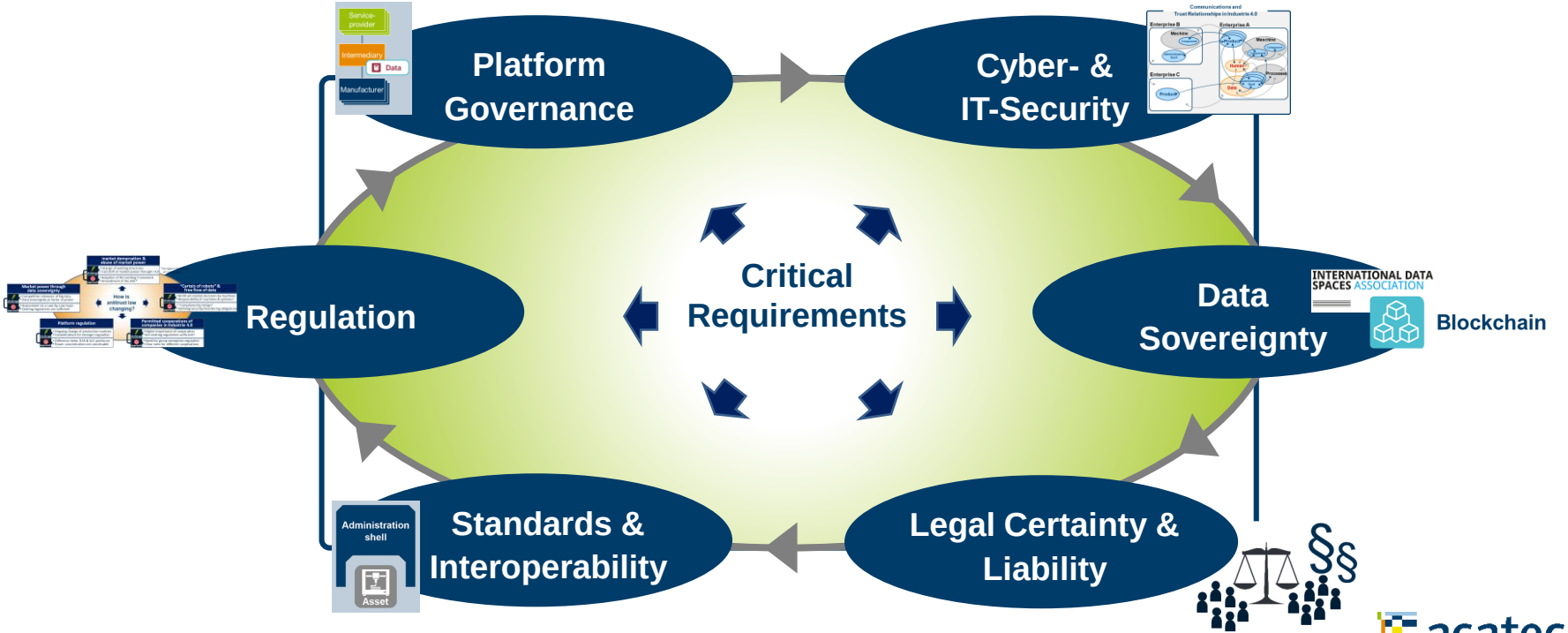
Critical Requirements for Digital Platforms that need International Cooperation



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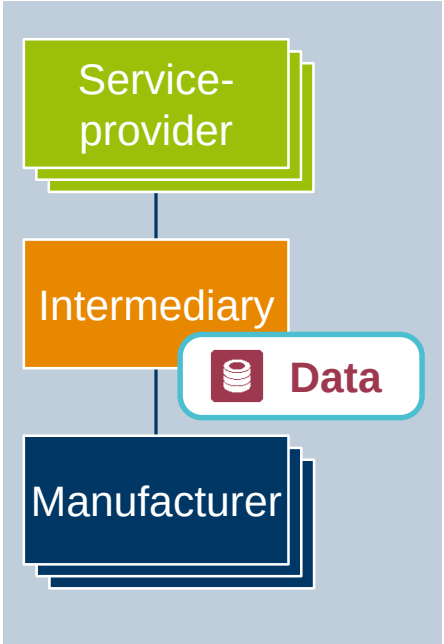
Platform Governance

New Regulatory Challenges

- **Tendency towards concentration:**
  - Network effects and economies of scale
- Avoid **lock-in effects**:
  - Interoperability und portability
  - Problem: Hampers differentiation of platforms
- **Platform neutrality**:
  - No preference for the platform operator’s offers
  - Problem: Who assesses neutrality and how?
- **Trustworthiness:**
  - Win-win-situation for all partners in the ecosystem vs. occupation of the customer interface



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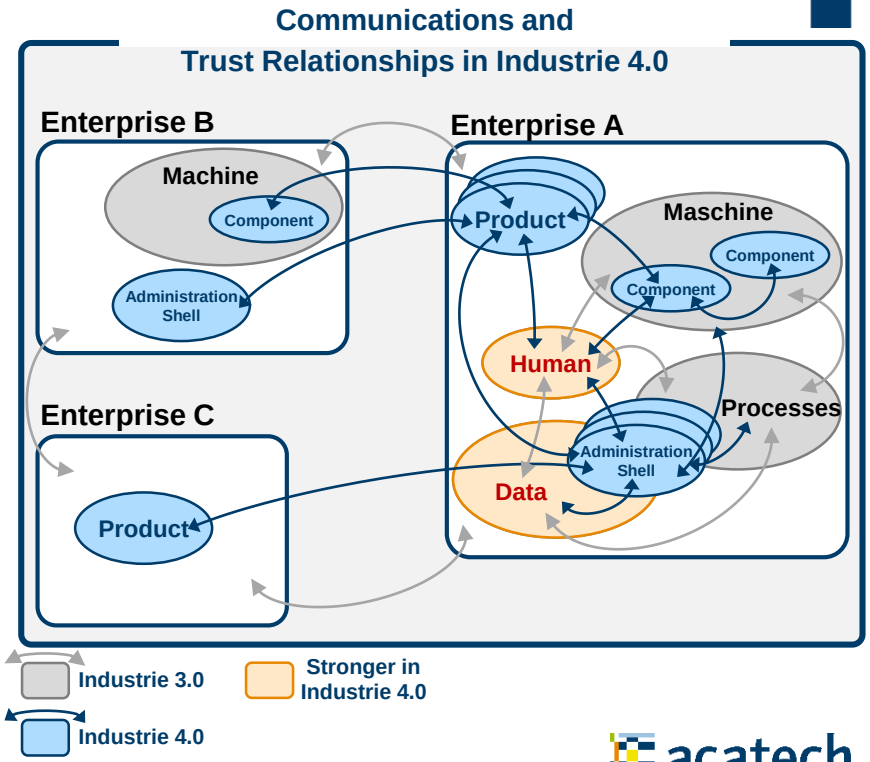
Cyber- & IT-Security

- **Increasing risks of attacks**
  - by **ad-hoc networking**
  - by **direct data exchange**
  - by **cloud-computing (isolation)**

- **Necessary prerequisites and success criteria of Industrie 4.0**
  - **Legally binding communication** between partners in a value network
  - Traditional machine suppliers have to develop **core competencies**
  - Establish **trust** in **situative ecosystems**



Source: Plattform Industrie 4.0.

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Data Sovereignty

Data is a key resource of Business Model Innovations

INTERNATIONAL DATA SPACES ASSOCIATION

- Sovereignty over own data
- But data must be shared in the digital economy
- A network of trusted data for all industries
- Support ‘architectural plurality’
- Addresses the most important concerns (IP-protection, loss of control, …)
- …

Blockchain

- Data transparency
- Multi-source, but single truth – redundancy of data creates **one single** truth
- ‘Trust by design’ – security, rooted in technology
- Decentral architecture – equality and integrity of the participants
- Smart contracts for M2M-collaboration
- …

→ **Trustworthy data transport**

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Legal Certainty & Liability (I/II)

Currently, legal regulations are directed to agreements between people

There is need for…

- legally secure **interoperability**, even for ad hoc networking and across country´s frontiers
- legally secure behavior of **autonomous systems** & Smart Devices
- Verification of **machine contracts** & service provision in case of liability
- Guaranteed **IT-security** & **informal self-determination**

Technological Enablers

⇨ Blockchain or trustworthy intermediary
⇨ Smart contracts
⇨ IDS to safeguard the informal self-determination

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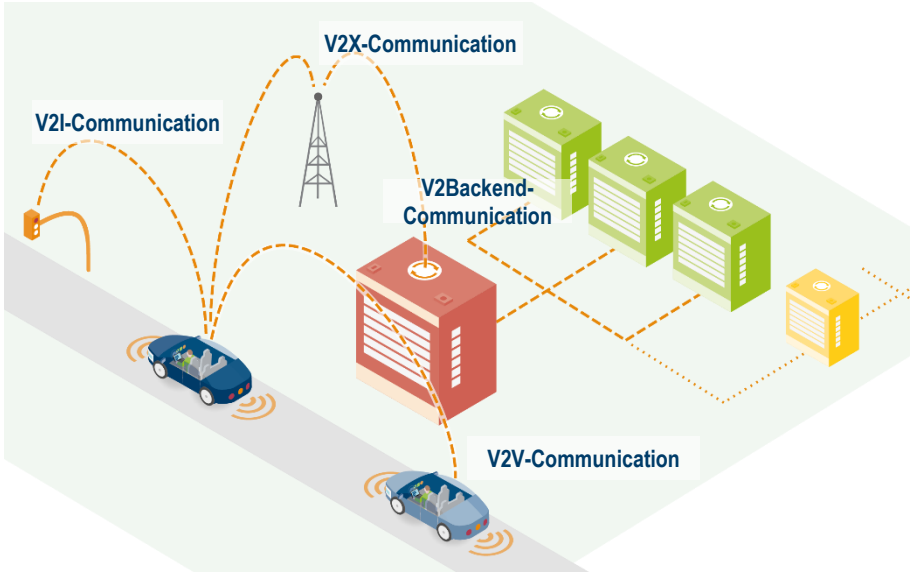
Legal Certainty & Liability (II/II)

Example: Responsibility in the context of autonomous driving



- Manufacturers and operators of support technologies have to be involved in questions of liability
- How much safer does a technical system have to be statistically?
- How much plasticity in self-learning systems?
- Rules for the transfer of control and ‘overruling’

→ **Traceability in case of damage**

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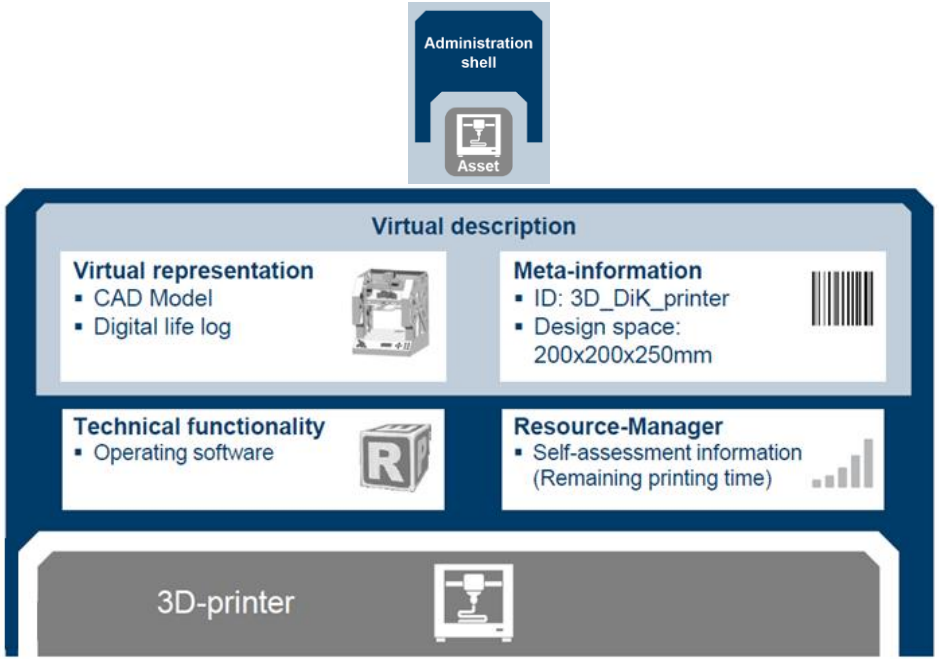
Standards & Interoperability (I/III)

Administration Shell & Reference Architecture Model RAMI 4.0



Asset Administration Shell

- Unique ID and nesting
- Structuring according to views
- Standardized mandatory properties
- Free, manufacturer-specific properties
- Considering aspects of information security
- Possible accessibility via apps (SOA)

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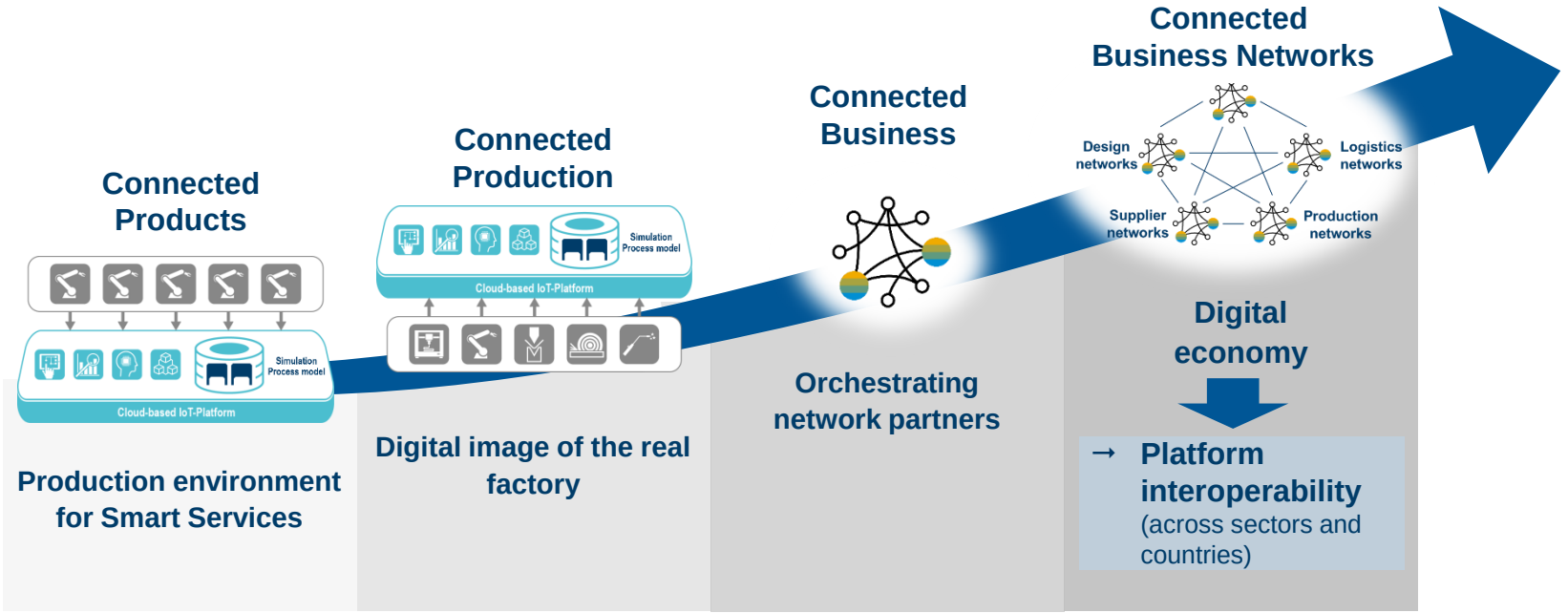
Standards & Interoperability (II/III)

From Connected Products to a Digital Economy



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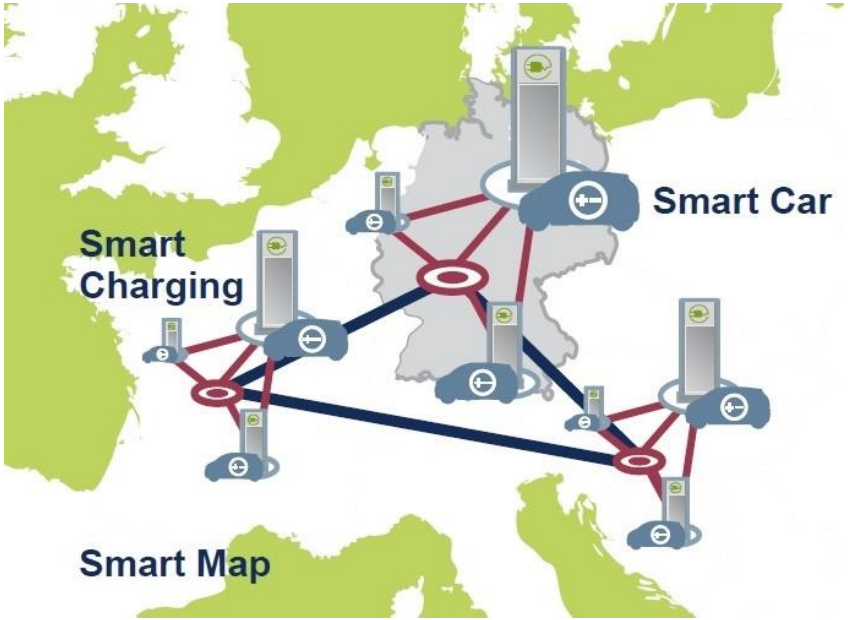
Standards & Interoperability (III/III)

Example of Platform Interoperability: e-Roaming for Electromobility



- **Aim:**
  - Non-discriminatory **ad hoc-charging** for all e-vehicles in europe
  - Competition of serveral service platforms
- **Measure:**
  - Europe-wide standardization (CCS)
  - Minimum requirements on charging process
- **Result:**
  - Open competition of different platforms
  - Better prices, better servicees
  - **But:** Political protectionism

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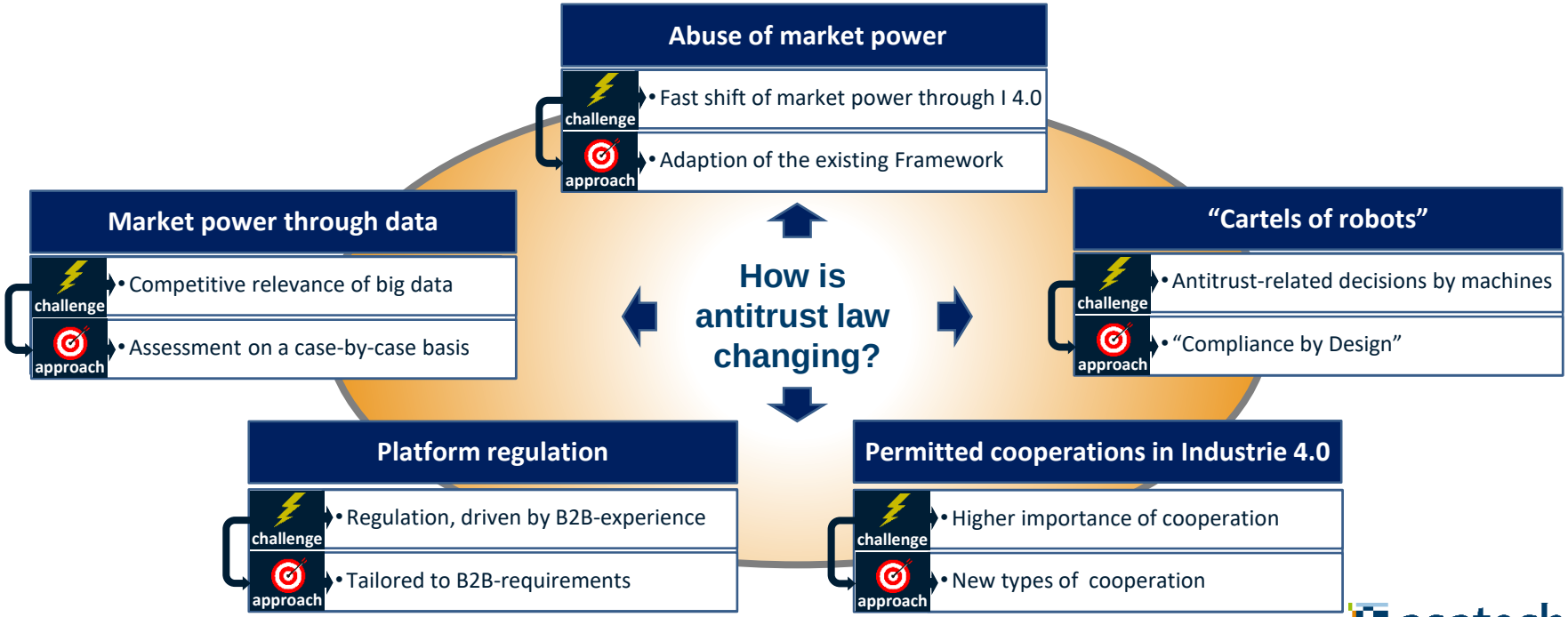
Regulation

Example: Trust Law in the Context of Industrie 4.0



Source: Plattform Industrie 4.0.

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International Cooperation Today

Germany's International Initiatives for Cooperation

USA

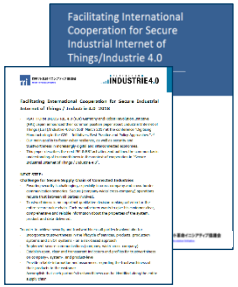
- Industrial Internet Consortium
- Interoperability: RAMI 4.0 & IIRA

Japan

Plattform Industrie 4.0 & Robot Revolution & Industrial IoT Initiative

Robot Revolution & Industrial IoT Initiative
ロボット革命イニシアティブ協議会

- Cyber Security
- SME-Promotion
- internat. Standardization
- internat. Regulation



China

- Made in China 2025
- Internet Plus

Czech Republic

- Narodni Iniciativa Prumysl 4.0

Alliance Industrie du Futur + Piano Nazionale Industria 4.0

Joint Road Map

Australia

- Memorandum of Understanding

Source (Images): Plattform Industrie 4.0; luzitanija – stock.adobe.com; BMWi/Janssen

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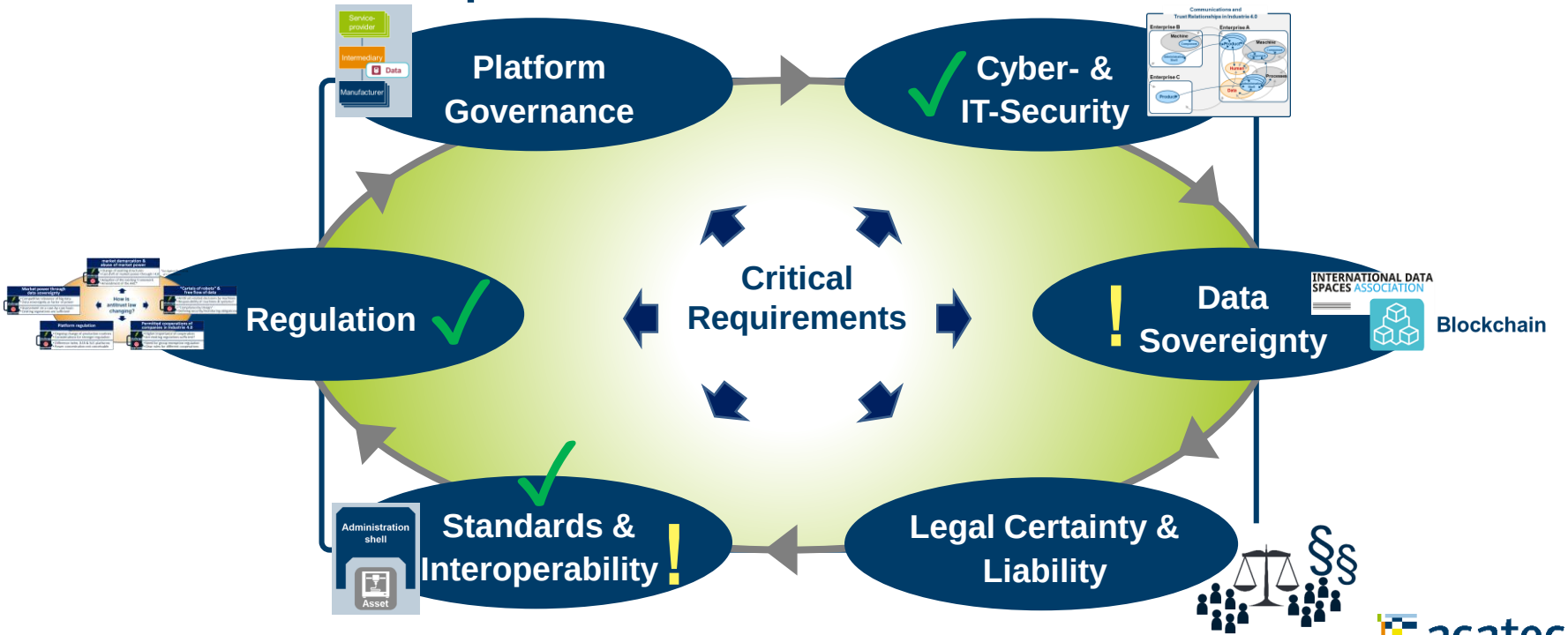

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Thank you very much for your attention.

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