PLATTFORM INDUSTRIE 4.0

Platform Industrie **4.0**

Brief introduction of WG 3

"Security of networked systems"

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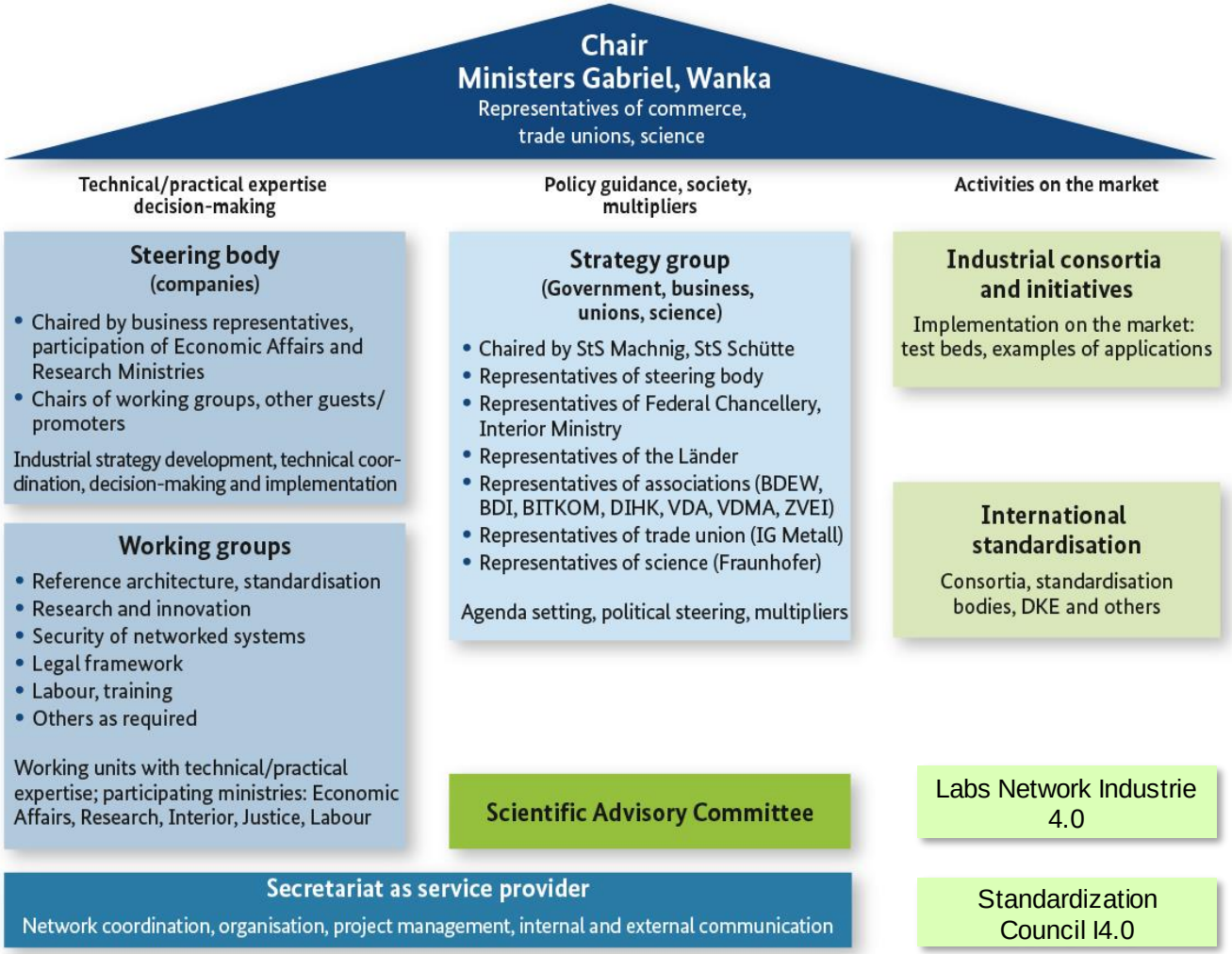
Platform Industrie 4.0
Structure



Platform Industrie 4.0

Five things we do.

1. Focus on the **needs of businesses** and of end users
2. Create a **central point of contact** (for international partnerships and alliances)
3. Ensure acceptance through high **transparency and participation**
4. Develop a common language, **objective and key messages**
5. Establish **clear structures** and reliable processes for the day-to-day work of the platform

The **Platform Industrie 4.0** is the moderator of and catalyst for the exchange amongst all societal actors in the pre-competitive phase

Working group 3
Identified key topics

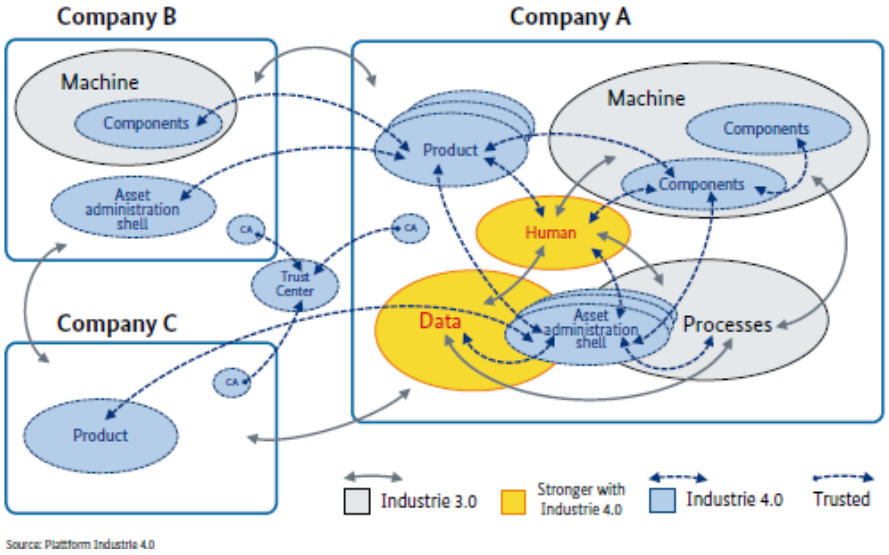
- **Secure communication for Industrie 4.0**
  Essential requirement for dynamic value creation networks across companies
- **Trustworthiness**
  e.g. development and a standardisation of a metric (such as a scale of security levels); a model for automatically determining the security level of a value creation network
- **Identities and their protection / verification**
- **Data integrity**
- **Conclusion of contracts**
  Knowledge of the skills and possibilities (of trustworthiness) of the individual participants
  - What are the **requirements for a legally binding "contract conclusion"**, e.g. between machine MA owned by company A, ordering goods from machine MB owned by company B?
  - How can machine MA be sure that it is communicating with machine MB of company B?

Publications by WG 3

Title	Publication	Document type
IT security in Industry 4.0	CeBit 2016	Guidelines
Secure identities	HMI 2016	Results paper
Secure communications between companies	HMI 2016	Results paper
Security in RAMI	HMI 2016	Guidelines
IT security in Industry 4.0 – Fields of action for operators	IT Summit 2016	Guidelines
Industry 4.0 – Security in training and further education	IT Summit 2016	Results paper

Results paper
“Secure identities”

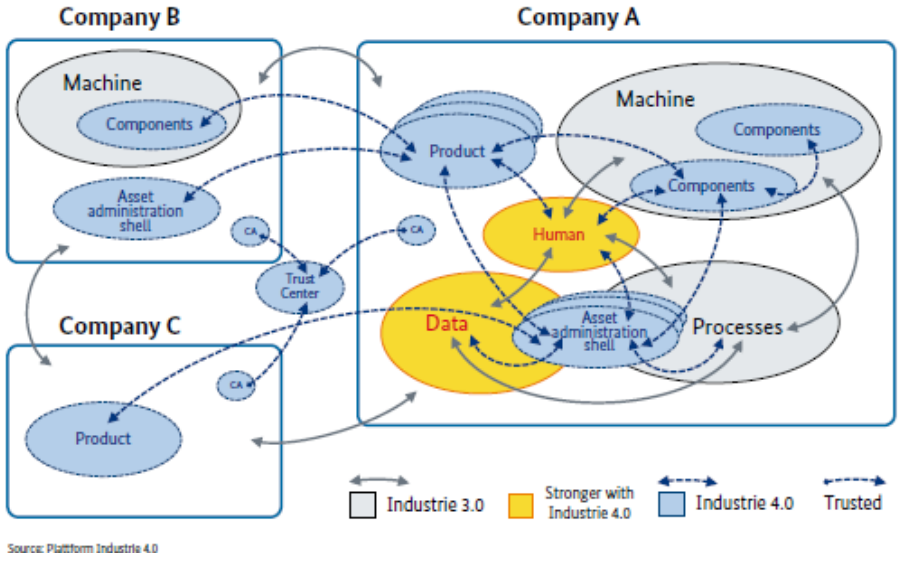
- Secure identities are
  - the foundation of the security chain.
  - They constitute a requirement … for many other preventive measures and are
  - relevant for legal and business processes.
- Results of the work
  - Requirements in secure identities
  - Introduction of identity types
    - Simple identity, unique identity and secure identity
  - Life cycle and identity management
  - Recommended actions for business and politics



Source: Plattform Industrie 4.0

Results paper
“Secure communications between companies”

- The decentralised “just-in-time” delivery of information for order-driven production in batch size 1 beyond company boundaries requires
  - increasing flexibilisation and considerably higher density of interactions
  - agile communications
- Requirement:
  - Secure identities, classification of data
  - Confidence in secure processing
  - Secure value creation networks

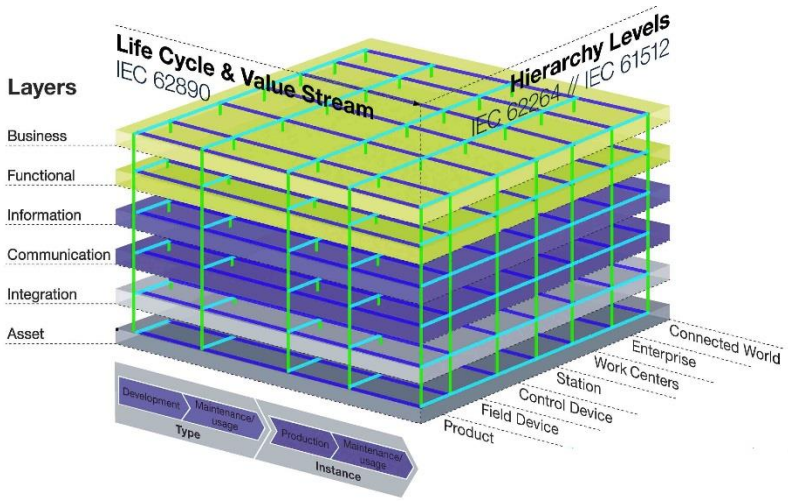


Source: Plattform Industrie 4.0

Guidelines
“Security in RAMI 4.0”

Secure value creation networks and, consequently, “security by design” become indispensable elements of Industry 4.0 development and concept work.

Layers: Security is relevant to all layers. Risks must be considered from a holistic perspective.



Hierarchy Levels:
All objects/assets are subject to security investigations (risk analysis) and must possess or provide security properties that are relevant to their task and to prevention.

Value Stream:
The owner of any object must consider security aspects for the entire life cycle of the object.

Guidelines

“IT security in Industry 4.0 – Fields of action for operators”

Besides purely technical preventive measures, the necessary organisational conditions are described in detail. This helps operators of machines and systems with their **self-assessment**, on the basis of which they can implement the further **fields of action**.

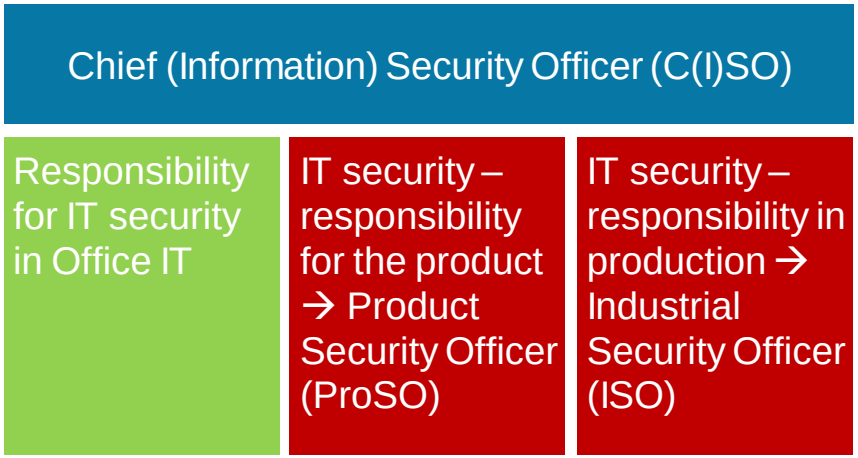
- **Establishment of an information security management system (ISMS)**
- **Establishment of a risk management system**
- **Emergency management and restoration**
- **Segmentation of devices, systems and networks**
- **Installation of a secure identity management system**
- **Ensuring the security of software in the production stage**
- **Taking IT security into account when purchasing machines and systems**

Inventory	•Where do assets exist?
Scoping	•Which have already been captured? •Which still need to be captured?
Responsibility	•Who is responsible for the assets?
Asset management	•Who manages hardware, software, firmware?
Integration and administration	•Which interfaces exist? •What must be configured?

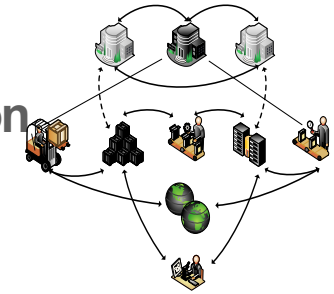
Results paper

„Industry 4.0 – Security in training and further education: New aspects for business organisation and competences“

- The “human factor” is a fundamental aspect of the holistic implementation of IT security, and specialist knowledge of correct conduct and approaches to IT security must be taught.
- Overview and orientation: new qualification requirements in an Industry 4.0 context
- A significant result is the definition of the role of production security officer and the expertise required for it.



Summary
Core messages of WG 3



- **Security is the "enabler" of Industry 4.0 in the value creation networks!**
  Industry 4.0 is only possible with adequate security
- **Security by design**
  Security must be a fundamental component of development, deployment and operation
- **Security concerns all of us!**
  It is a joint task that requires cooperation between departments and across company boundaries throughout the entire value creation network. Security becomes a cross-sectional task
- **Security is a "moving target"**
  We are never done. The core questions – "What should I expect?" and "Which measures must be taken?" – must be re-evaluated again and again