Imagineering Audit 4.0

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Motivation and Contribution

- Advances in Cyber-Physical Systems (CPS), Internet of Things (IoT), Internet of Service (IoS), and Smart factory promote a new industry revolution

- Industry 4.0 (Industrie 4.0) became publicly known at Hannover Fair in 2011 The German federal government announced Industry 4.0 as one of the key initiatives to implement the German high-tech strategy 2020

- This paper foresees the impact of the Industry 4.0 on the auditing profession, imagineers the use of new schemata for audit purposes, and identifies challenges in the transformation towards the new generation of auditing: "Audit 4.0"

Audit 4.0

- Audit 4.0 will piggyback on technology promoted by Industry 4.0 to collect financial and non-financial information, and analyze, model, and visualize data for the purpose of providing effective, efficient, and real-time assurance

- It is typically an overlay of Industry 4.0 business management processes and uses a similar infrastructure, but for assurance purposes

Evolution of Auditing: From 1.0 to 4.0

| Audit 1.0	Audit 2.0	Audit 3.0	Audit 4.0
- Manual audit - Tools: pencils, calculators	- IT audit - Tools: Excel, CAAT software	- Inclusion of non-financial data in audit analytics - Tools: analytical software	- Semi- and progressive automation of audit - Tools: sensors, CPS, IoT/S, RFID, GPS

Technology

- Sensors: collect real-time accounting information, such as quantity and quality of inventory, working hours of employees, energy consumption...

- Cyber-physical systems: embedded computers and networks monitor and control the physical processes, usually with feedback loops where physical processes affect computations and vice versa

- Internet of things: objects linked through a network

- Internet of service: service vendors can offer their services via the internet

- Smart factories : use CPS, and IoT/S to assist people and machines in the execution of their tasks
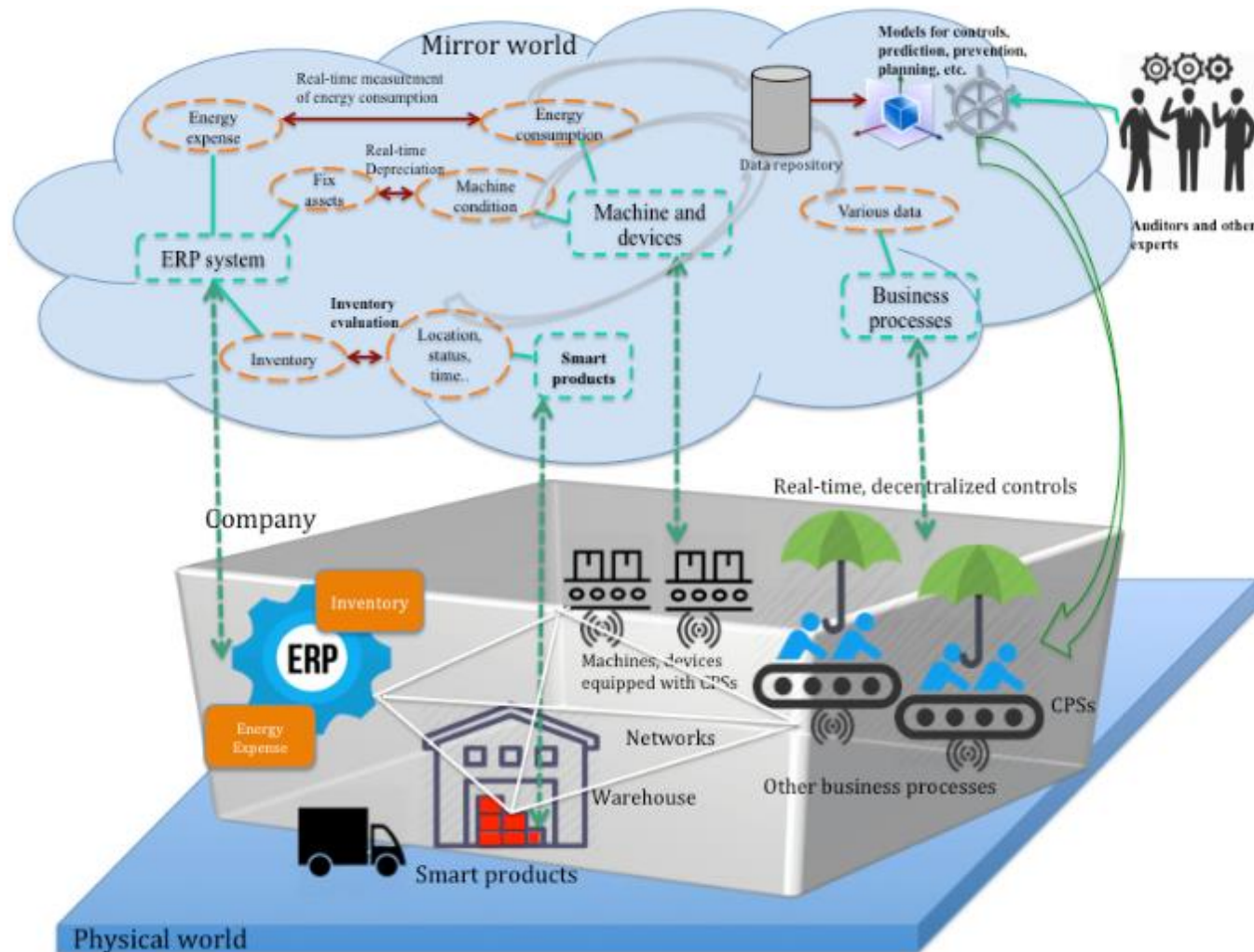
- Others: RFID, GPS, and data analytics
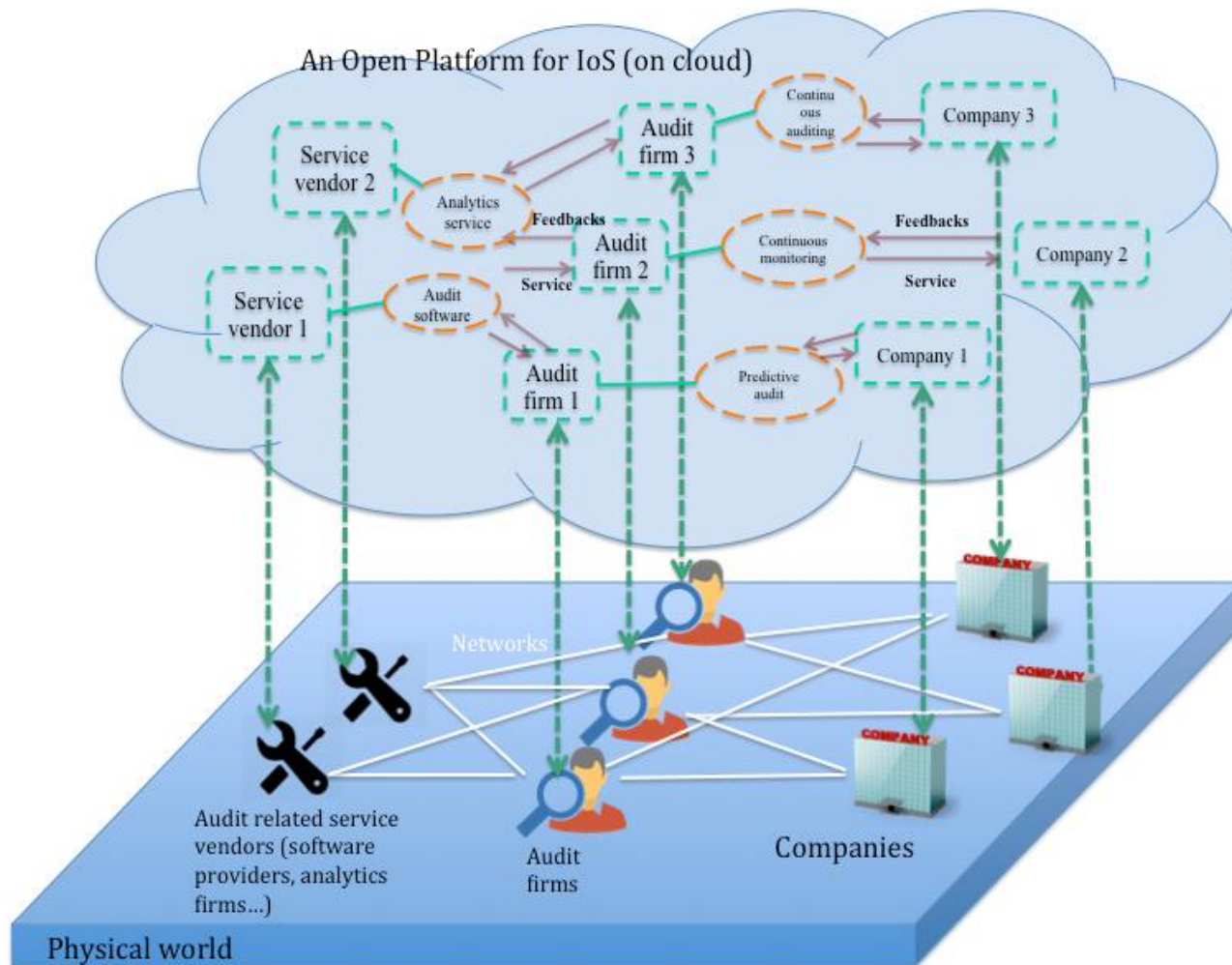
Imagineering Audit 4.0 - Overall
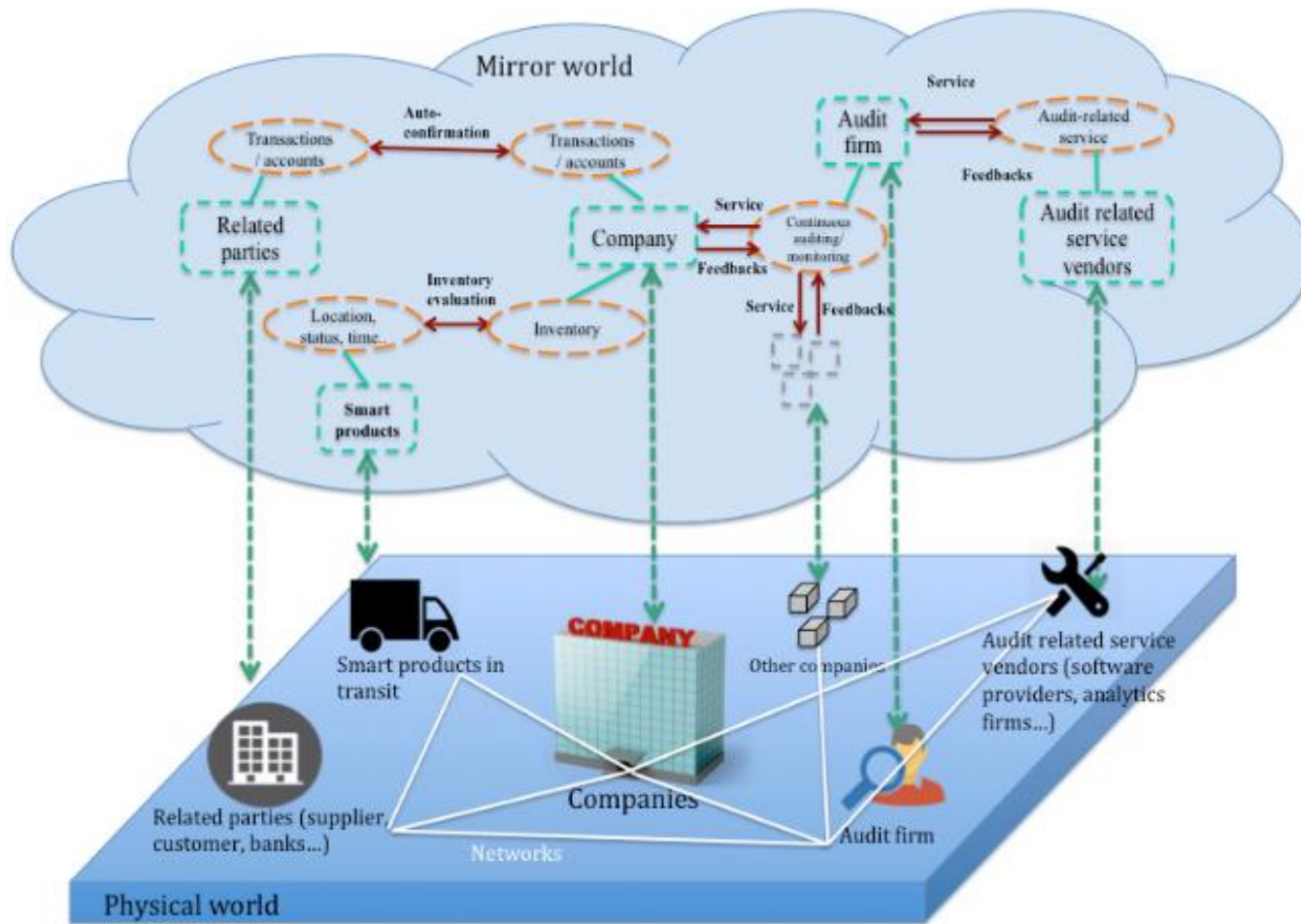
Imagineering Audit 4.0 – Inter-businesses
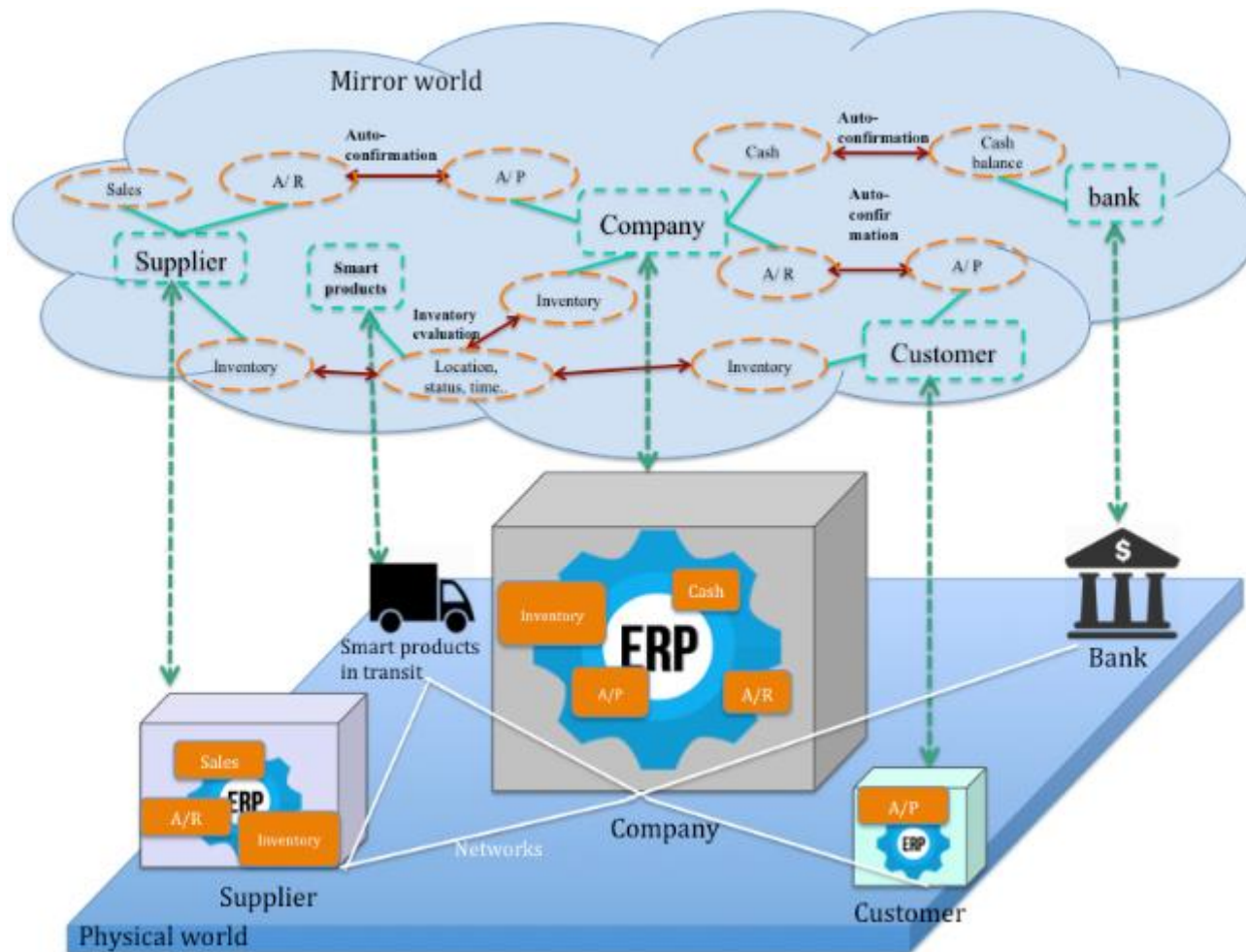
Imagineering Audit 4.0 – Intra-business

Imagineering Audit 4.0 –Audit as a Service

Challenges

- Digital crime: technique given, technique taken

- Security and privacy issues of companies' data

- Standardization of information and data

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Thank you!