

The Internet of Things 2.0

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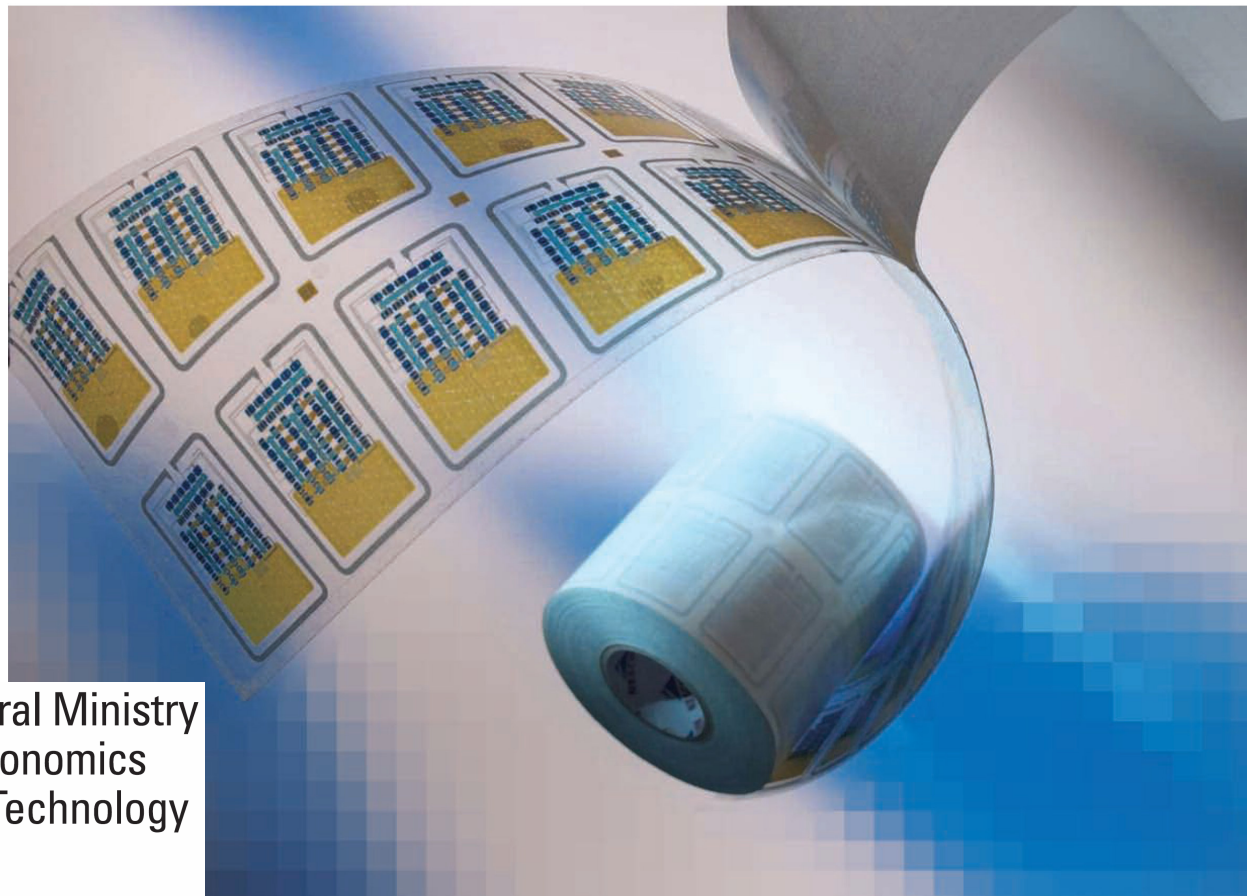
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Greeting German Ministry of Economics



Federal Ministry
of Economics
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Suggestions for RFID

- ➔ Disseminate Information
- ➔ Provide best practices to show what works
- ➔ Continue discussion with stakeholders
- ➔ Use light approach to regulation
 - Consistent with the level of RFID implementation
 - Set general standards, no detailed regulation
 - Monitoring of developments / review where necessary
 - Application-specific approach / one size does not fit all



Future



Prediction is very difficult
– especially about the
future!

Niels Bohr

We are Living in a Paradoxical World

Globalization	↔	Localization
Flexible Littleness	↔	Powerful Magnitude
Concentration	↔	Diversification
Core Competence	↔	Vertical, lateral Integration
Hierarchy	↔	Heterarchy
Cooperation	↔	Competition
Outsourcing	↔	Insourcing
Decentralisation	↔	(Re-) Centralisation
Supply Chain Management has to be standardised	↔	Supply Chain Software is not standardisable

The Paradox of SCM Software

Supply Chain Management
has to be standardized

↔

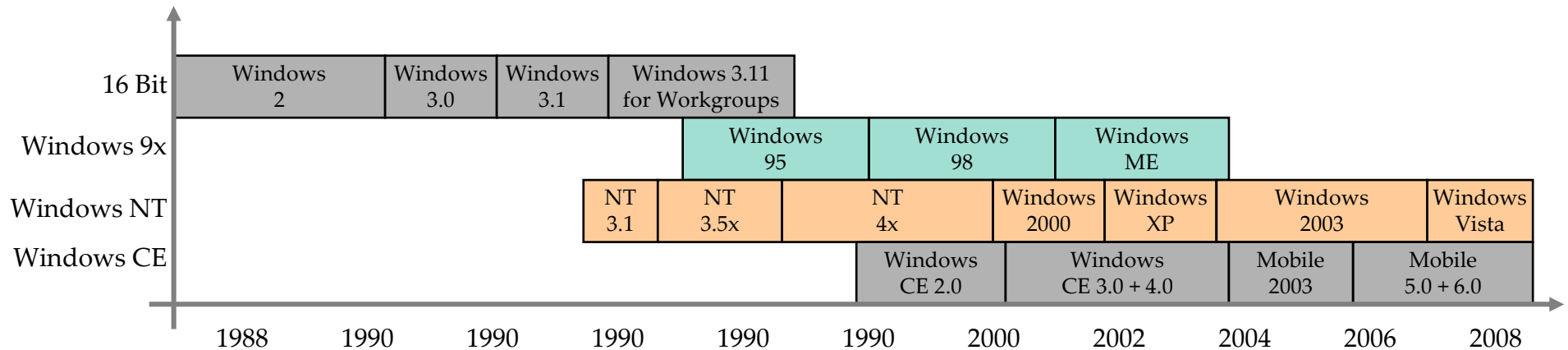
Supply Chain Software
is not standardizable

It is a verified scientific knowledge that supply chains are hardly predictable and therefore standardizable within one single industrial sector. It is nearly impossible to standardize the supply chains for two different sectors.

However, it is not only a wish but an imperative to standardize processes to better manage our industrial systems.

With every new software version the dream is dreamed to cut this Gordian knot.

For 20 Years Every Year a New Software Generation



Furthermore, there are some dozens different languages and concepts*:

- 3GL → 4GL → 5GL
- Procedural → Object Oriented Programming
- Graphical Notation (UML et al)
- Generations of Programming Languages (Cobol → Java)
- Application Server (Java EE, Netweaver...)

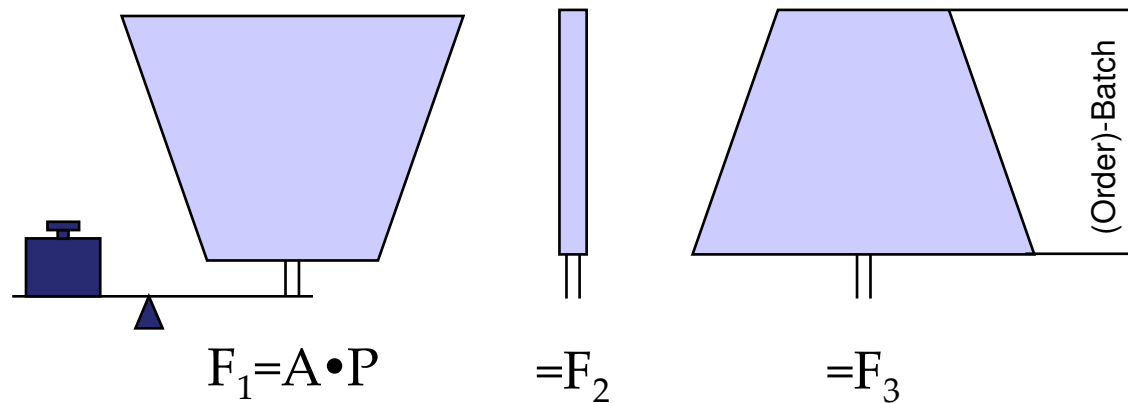
The uncertainty principle of Supply Chain Management

- ➔ The goal of standardization is to harmonize and unify processes and process chains.
- ➔ By this standardization the comparable use of practical knowledge becomes possible. This allows for the improvement of actual and future processes.
 - At least, every SCM system depends on these basic assumptions.
- ➔ The standardizing of processes and supply chains is nothing else than the attempt to predict future events - to react in a pre-calculated manner.
- ➔ **Determinism and standardization**
Standardization requires a predictable future.

The uncertainty principle of Supply Chain Management

- ➔ The more exactly an event is pre-calculated in advance the more improbably it will take place in a given time.
- ➔ The probability that an dedicated event occurs at specific point of time is exactly zero.
- ➔ Production and logistics are non deterministic!

The hydrostatic paradox gives a good picture of what happens in SCM of today: Also the best batch calculation cannot predict the future. **And at the end it is often a single bottleneck which gives**

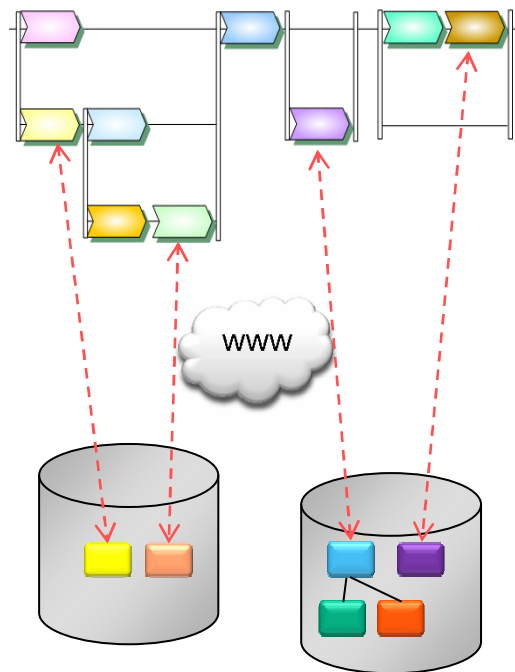


The uncertainty principle of Supply Chain Management

- ➔ Also in SCM the probability is zero that a sequence of events or processes occurs in a predictable order and at a predictable time.
- ➔ As precise as the probability should be calculated as large become the resulting data and table spaces.
- ➔ The one and only conclusion is: Do not try to predict the unpredictable but create an intelligent ambience, so that services instead of processes are executable within a given time frame.

The uncertainty principle of Supply Chain Management

„classical“ Supply Chains

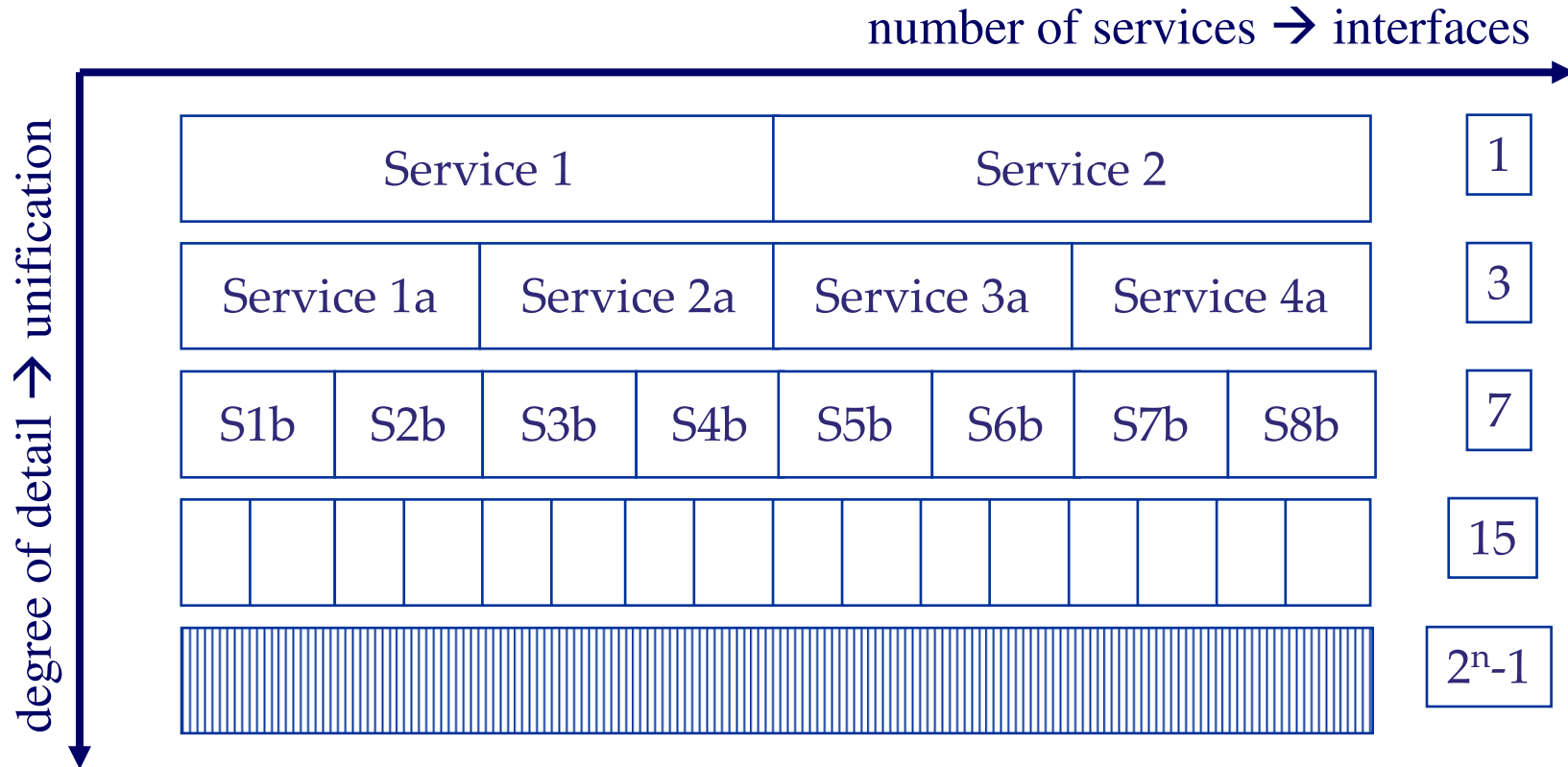


„advanced“ Service Pools

- ➔ This leads to a service-oriented supply chain management:
 - process → service
 - determinism → Service on Demand
 - SCM → service-oriented (software) ambiances
 - process standards → convergent services

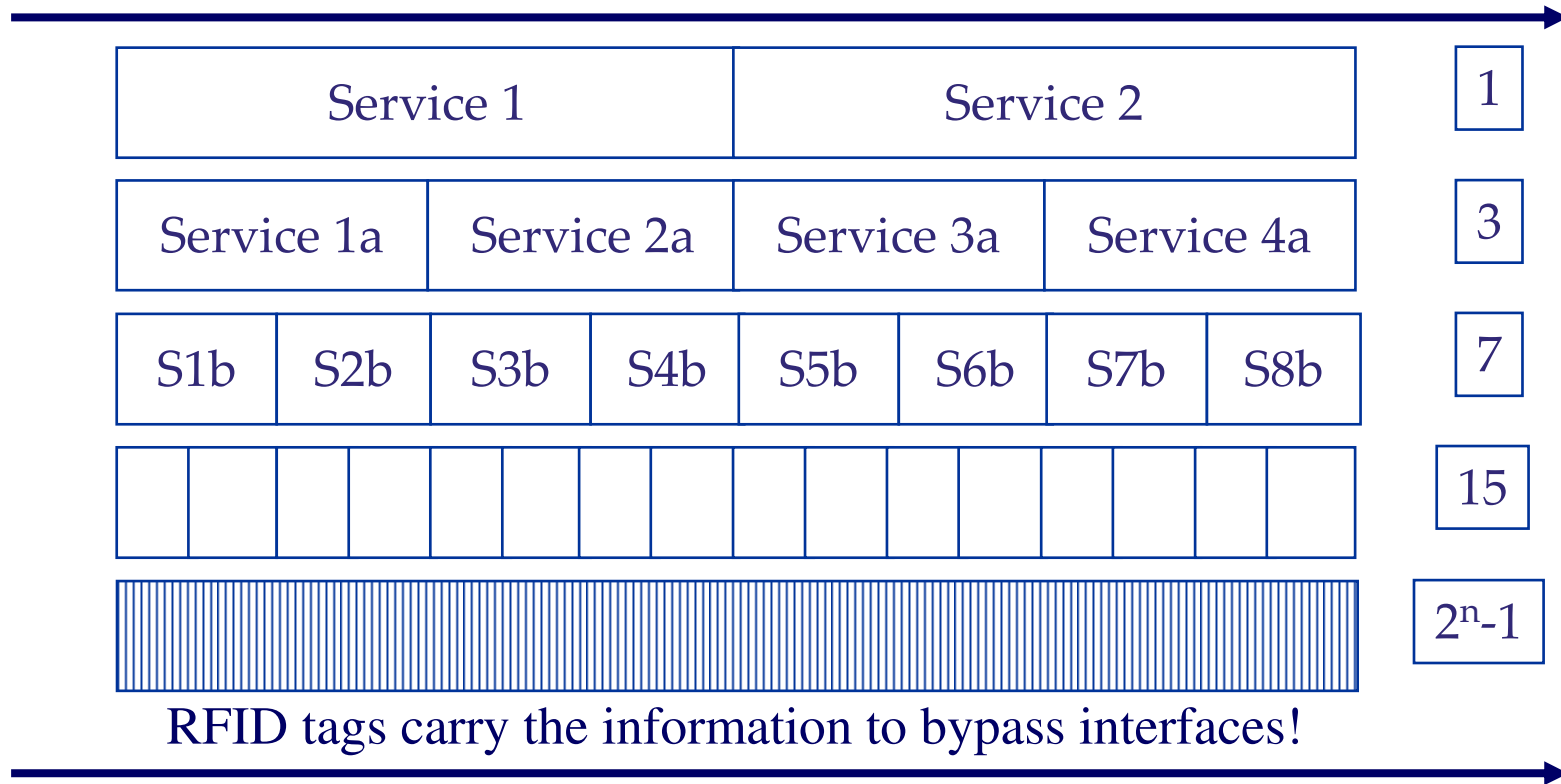
- ➔ A service-oriented (software) system leads to “service chains” coming up in realtime.

The uncertainty principle of Supply Chain Management



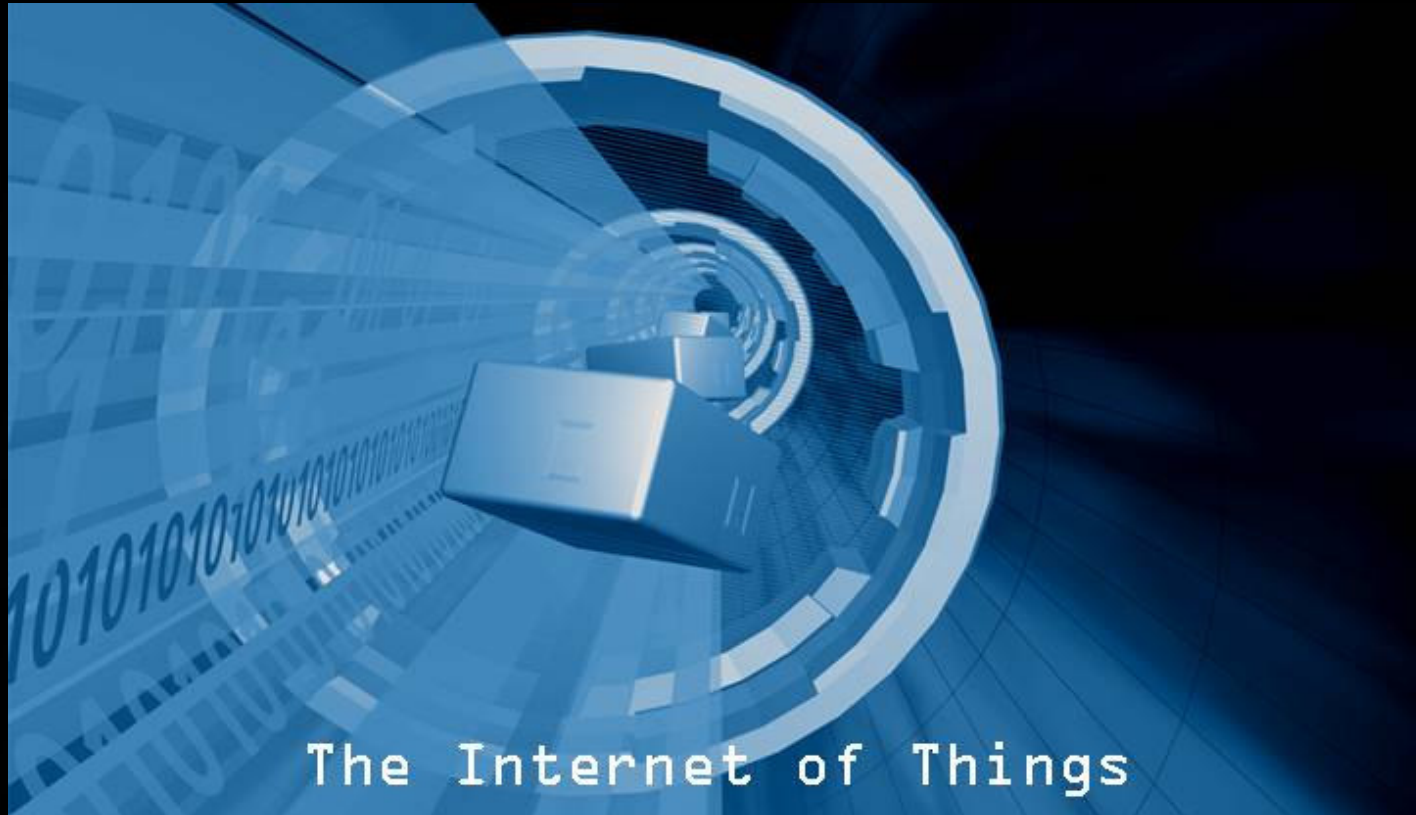
The uncertainty principle of Supply Chain Management

RFID tags carry the information to bypass interfaces!





Artificial Intelligence



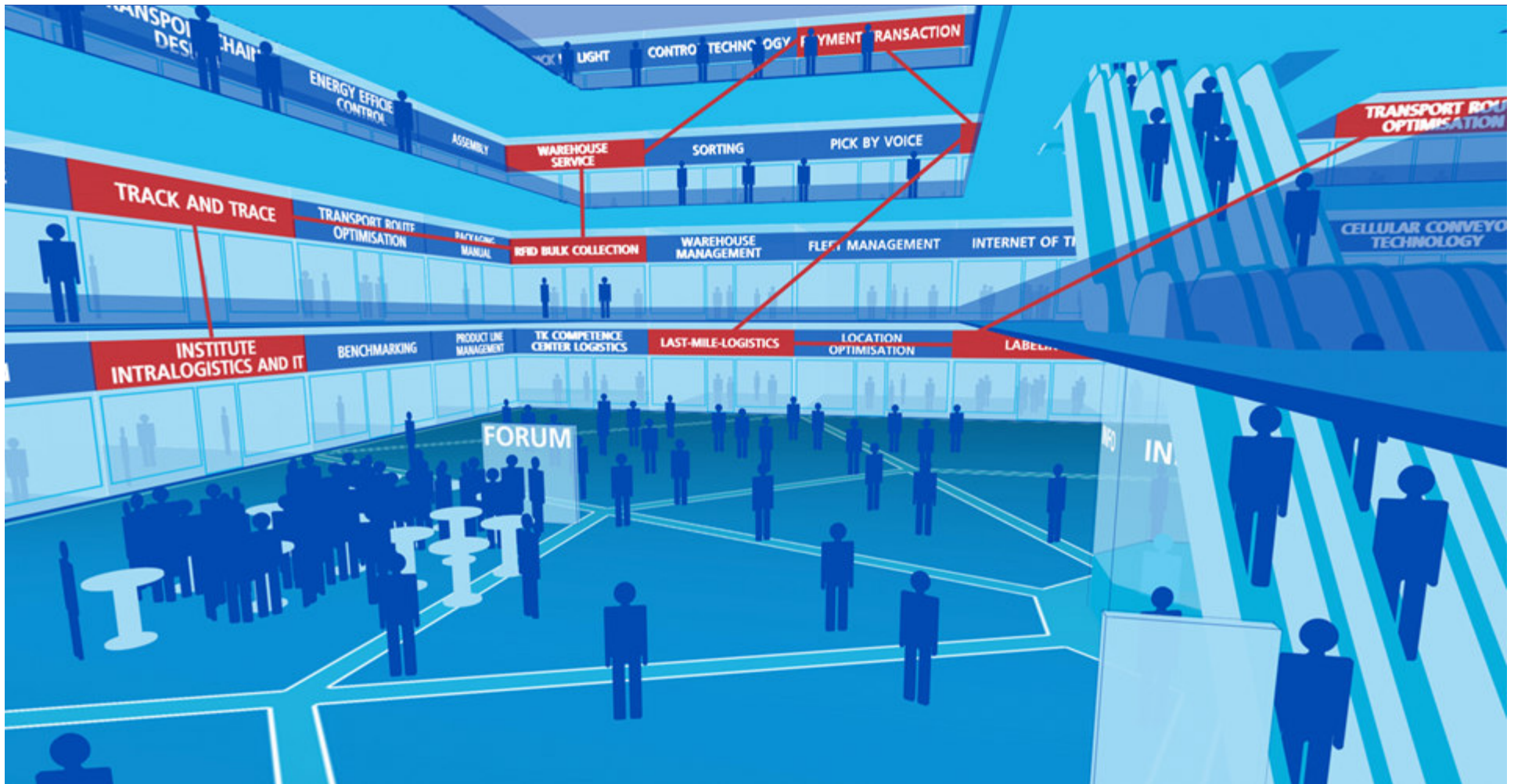
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R&D project, s. www.internet-of-things.com



Vision 2.0 of the »Internet of Things «



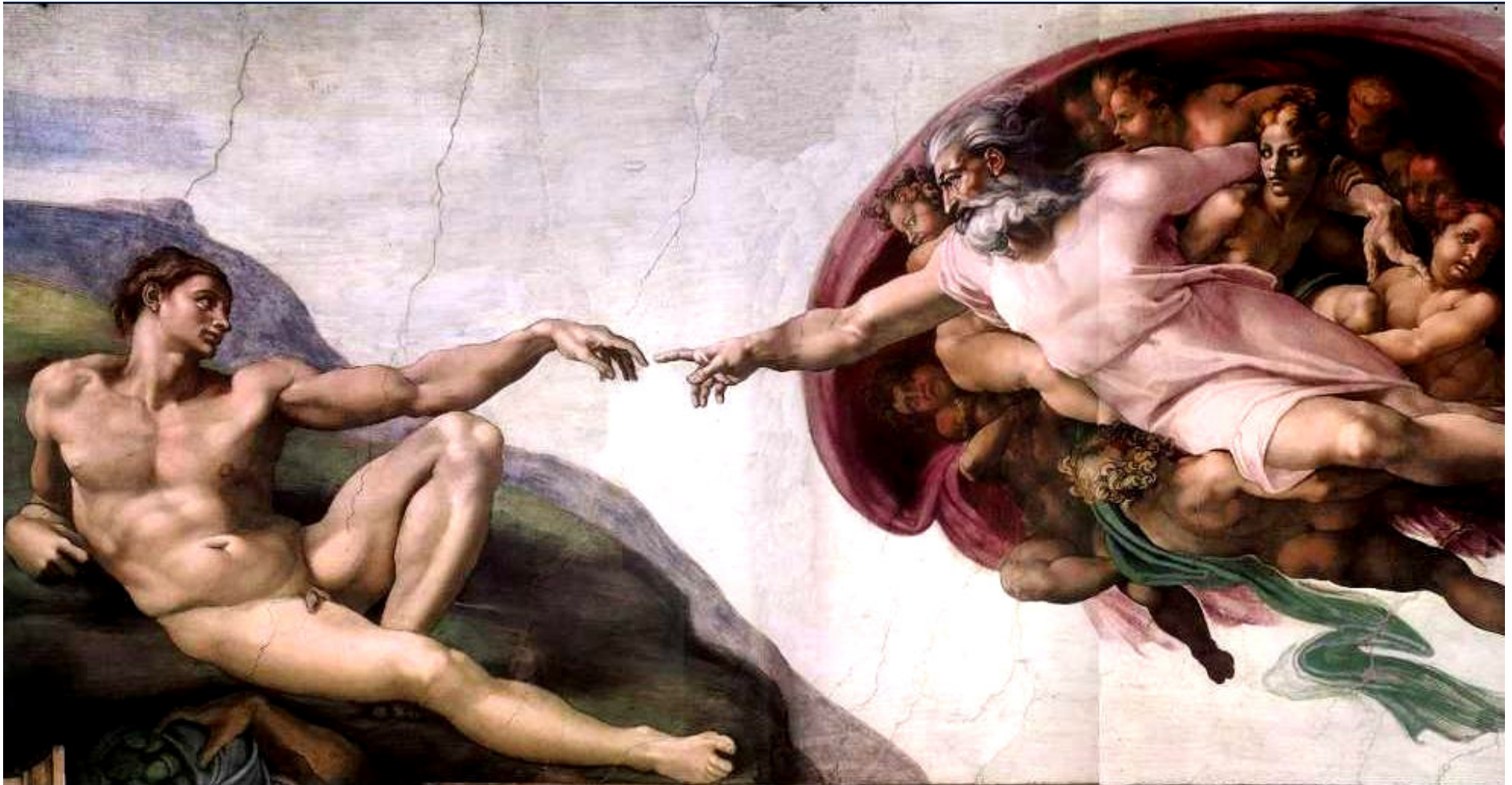
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Thank God! We live in a non-deterministic world!



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