The Value of RF based Information

Dieter Uckelmann
Email: uck@biba.uni-bremen.de

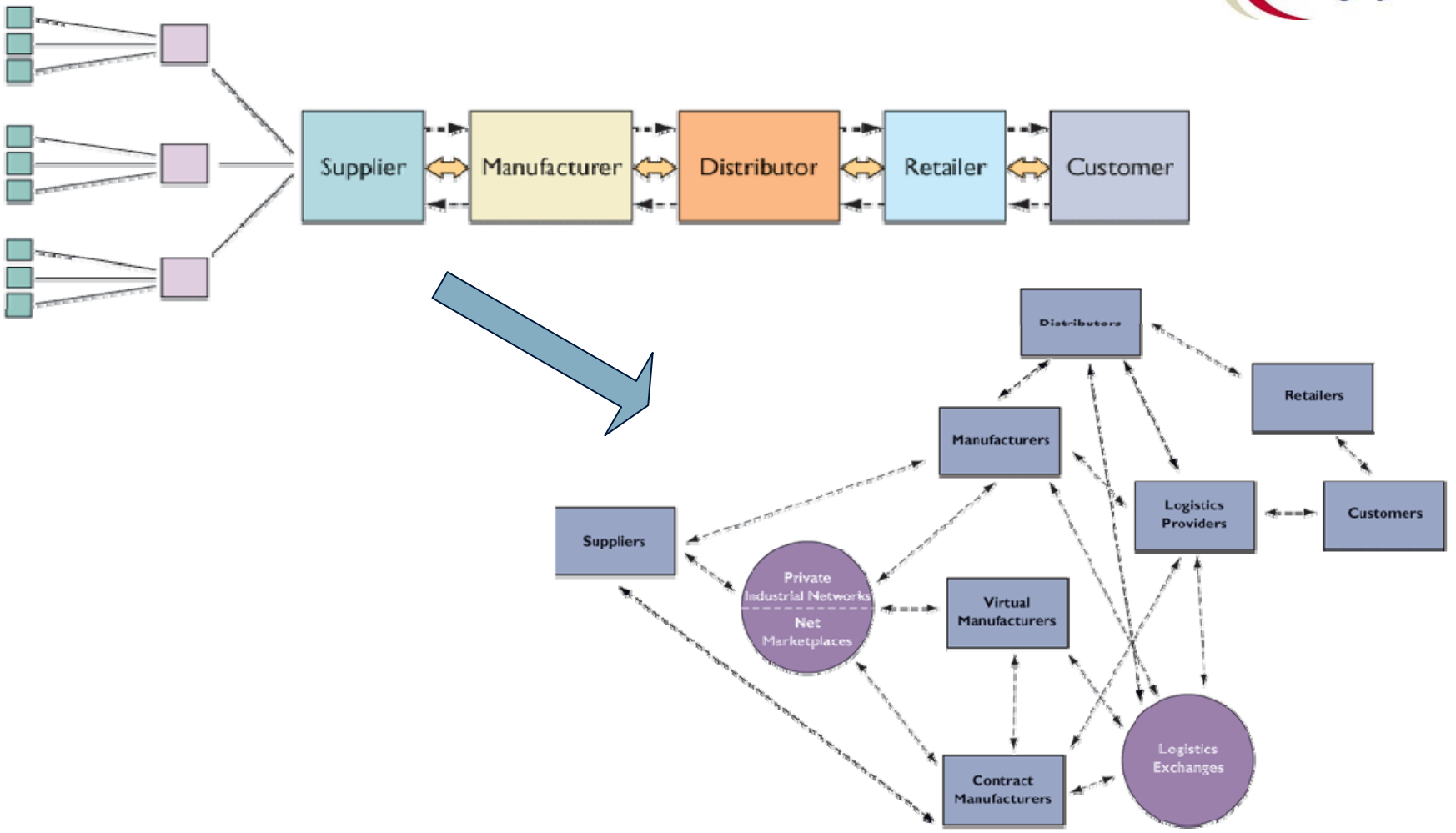
Universität Bremen
PSPS Planung und Steuerung produktionstechnischer Systeme

Topics

LogDynamics

- Dynamic Changes in Logistics
- Definitions
- Scenarios
- Challenges and Opportunities
- Future Work

Dynamic Changes: Shift from Traditional Supply Chains to Internet-Driven Supply Networks



(Picture taken from: Laudon & Laudon, Essentials of MIS)

Dynamic Changes: Shift to Digital n-to-n Information Logistics

LogDynamics

Type of Information	Analog	Digital 1-to-1, n-to-1	Digital n-to-n
Not physically linked to product	Fax, paper	EDI, XML	„Internet-of-Things“
Physically linked to product	Barcode	RF (-ID), traditional supply chains	RF (-ID), supply networks

Analogy Between EDI and RFID Usage?

LogDynamics

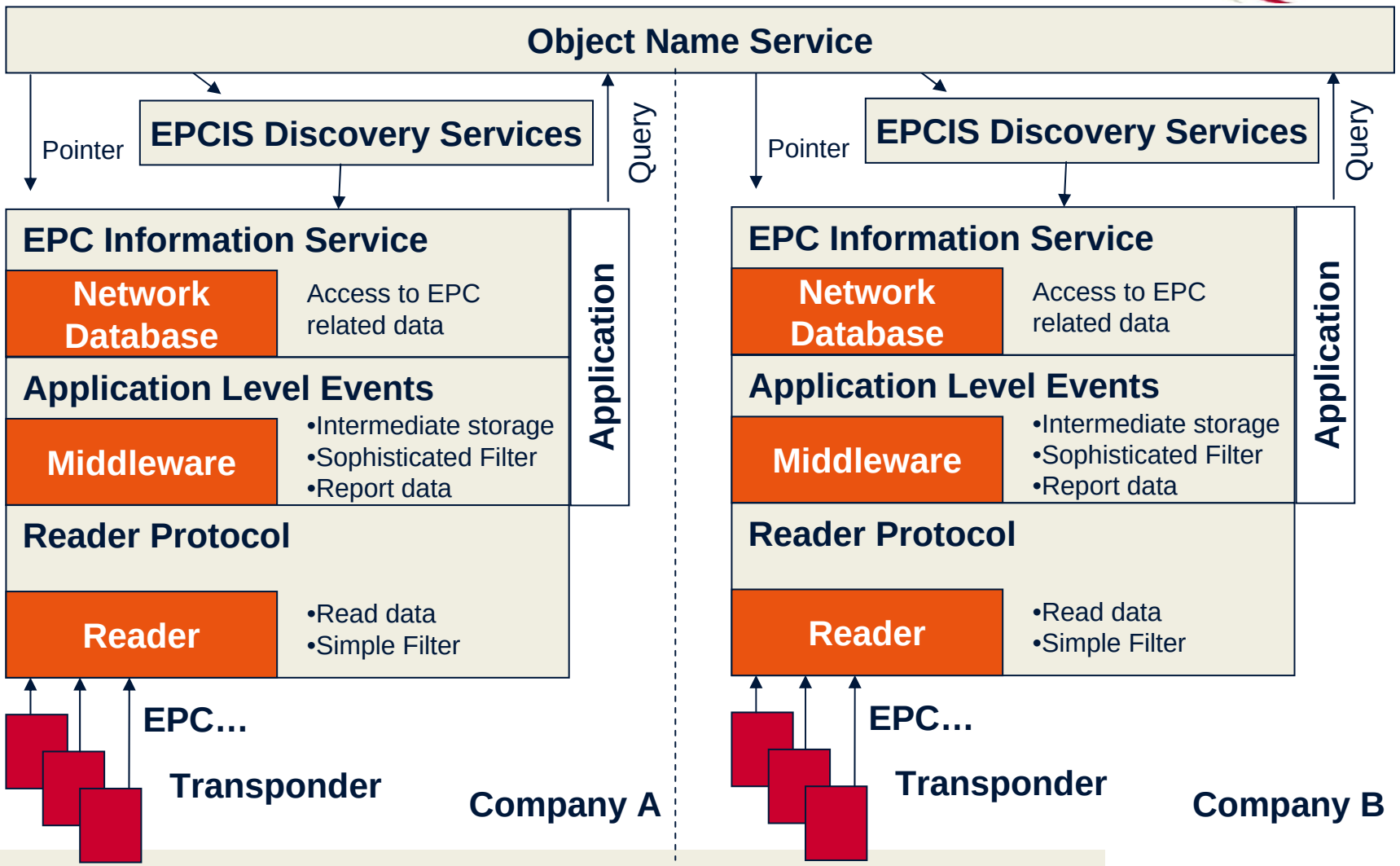
- Enterprise sizes using EDI-based standards
  - Micro 1-9 employees 2%
  - Small 10-49 employees 4%
  - Medium 50-249 employees 14%
  - Large 250+ employees 43%

  ⇒EDI is a domain within large companies – will RFID be like that too?

- Typical industries
  - Automotive, Aerospace, Pharmaceutical, Retail

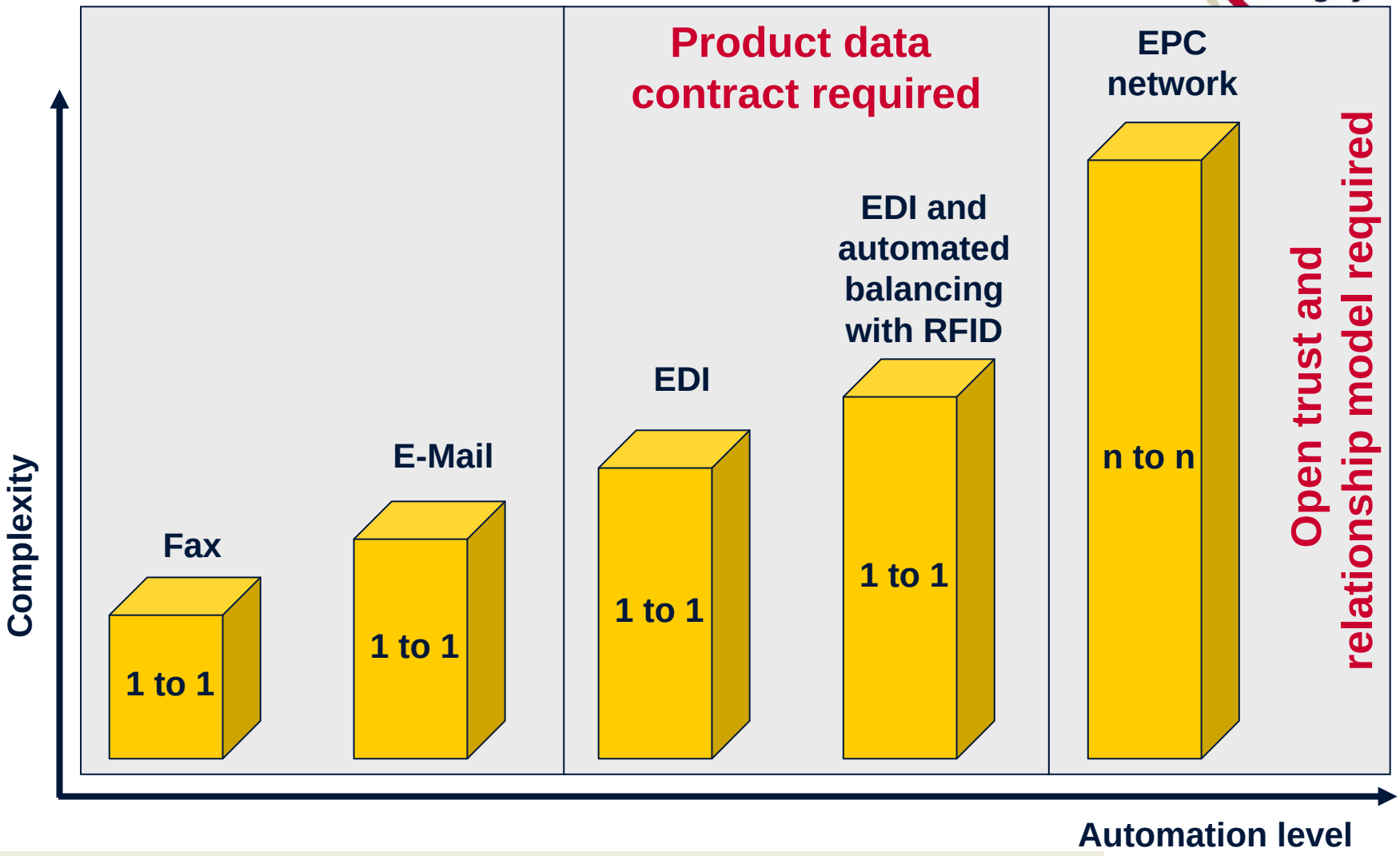
Based on: e-Business W@tch (e-Business Survey 2005)

The „Internet-of-Things“



Will the “Internet-of-Things” be cheaper?

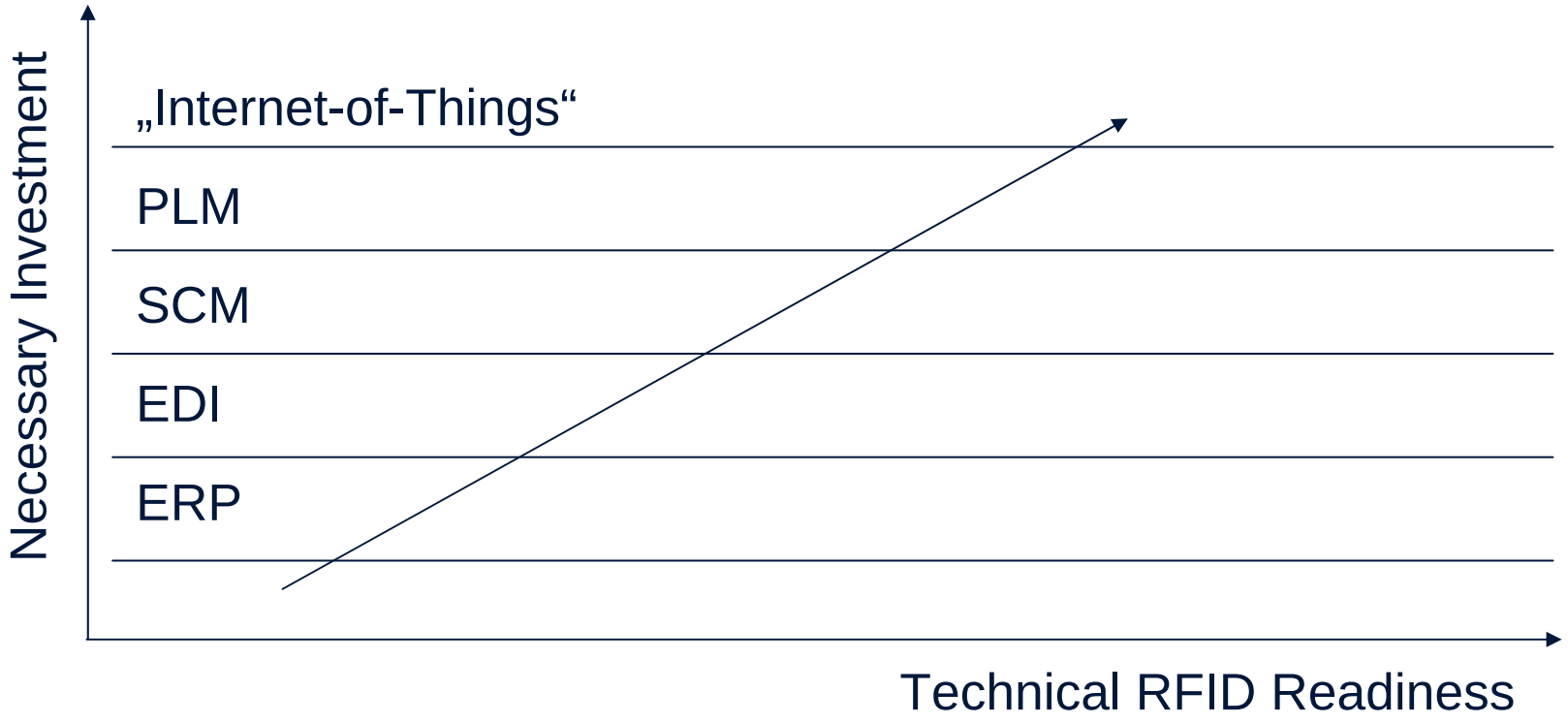
LogDynamics



Define: RF-based Information

- Implicit information
  - Identification
  - Static data
    - Production date
    - Size, weight
    - …
  - Dynamic data
    - Location
    - Temperature
    - …
- Linked information
  - Production data
  - Logistic information
  - Marketing information
  - Usage information
  - Service information
  - Recycling information

Prerequisite: Technical RFID Readiness



Prerequisite: Organizational RFID Readiness

LogDynamics

Today

- Internal factors
  - Technology investors and beneficiaries are one and the same
- Supply chain related factors
  - Supply chains are integrated
  - Long-lasting supplier-customer relationships
  - Closed loops
- Industry related factors
  - Security is mandatory (Pharma, Health, Defense)
  - Mandates are common
  - Industries defined by few, dominant players (Retail, Aerospace, Defense)

Tomorrow

- Internal factors
  - Technology investors and beneficiaries are separate
- Supply chain related factors
  - Open supply networks
  - Flexible supplier-customer relationships
  - Open loops
- Industry related factors
  - Open trust relationships and access control
  - Equal partners
  - Industries defined by multiple players

Define: Value of RF-based Information

LogDynamics

- Value depends on
  - Accuracy
  - Newness
  - Processability (syntax, semantic, infrastructure…)
  - Personal value
    - E.g. Recycling information is only of interest to the recycler

=

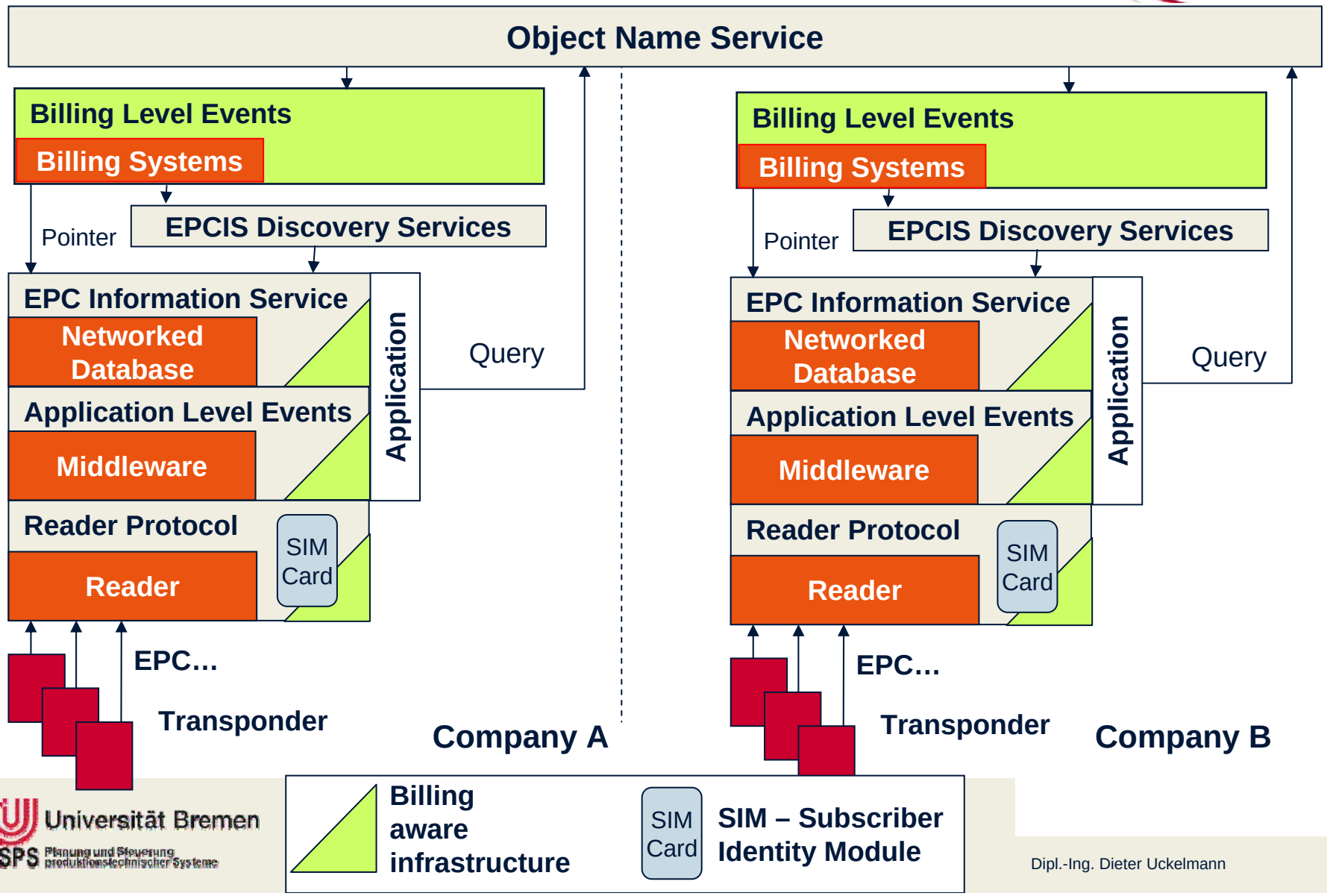
How to get hold of it

LogDynamics

- Search for a gold vein on your estate and start digging
  - = internal pilot projects
- Tell others to give it to you
  - = mandating
- Buy it
  - = ???

=> New concepts needed

Solution Model: The „Billing Integrated Internet-of-Things“



Scenario 1 – Cross Supply Chain Value (Retail)

LogDynamics

Case for time saving within the Distribution Value Chain

Example: 6 items (e.g. DVD-Player) per carton, 12 cartons on 1 pallet

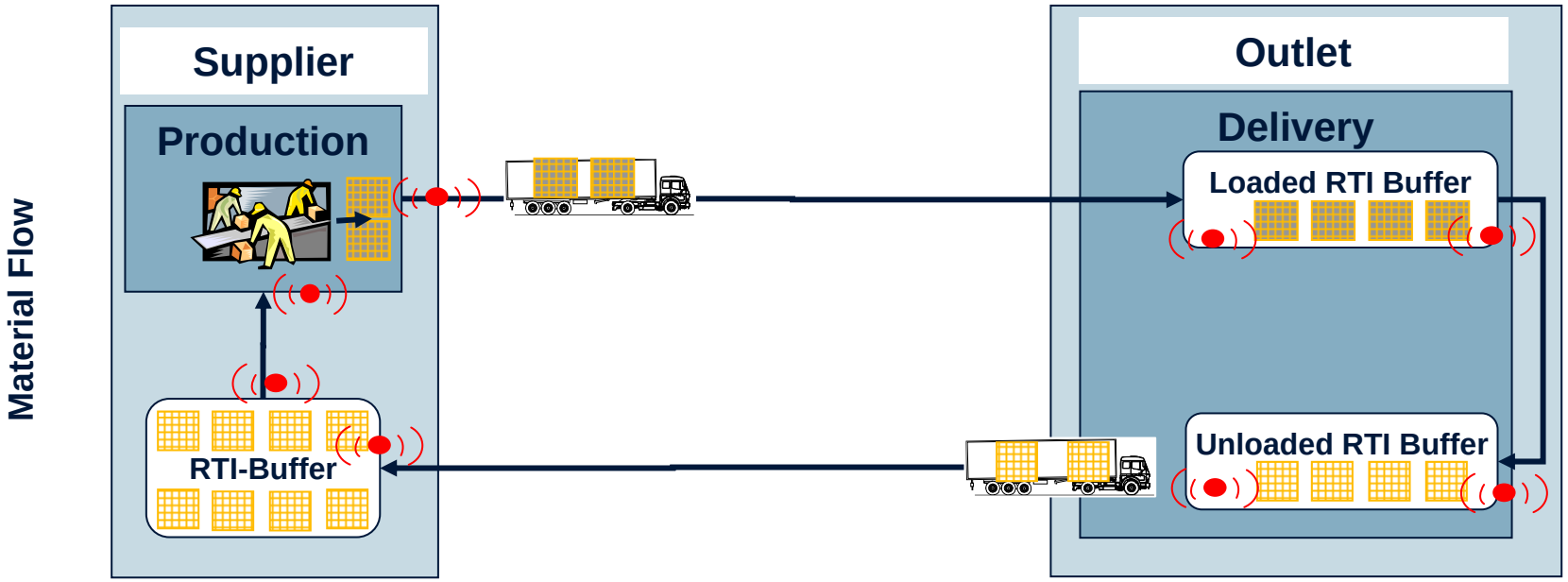
	Identify Delivery	Check items with ship list	Identify Delivery	Check items with ship list	Check shelf inventory	Check out Customer	Total
Barcode	2 sec	203 sec	2 sec	203 sec	144 sec	10 sec	564 sec
RFID	2 sec	15 sec	2 sec	15 sec	15 sec	1 sec	50 sec

While individual time saving did not exceed 188 seconds, the overall time saved within the value chain added up to 514 seconds.

Source: Accenture

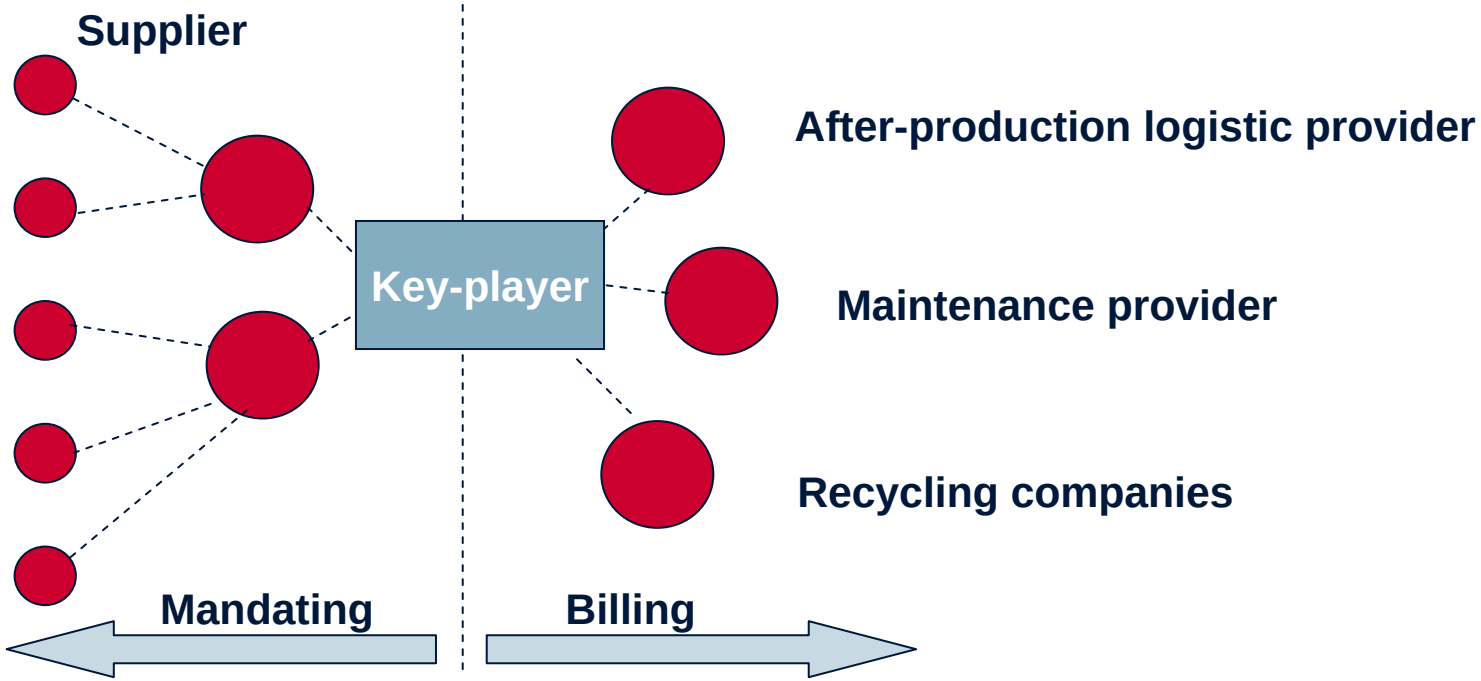
Scenario 2 – Rental System:

- Information = money
- E.g.: Beverage industry, RTI, …



Scenario 3 – Post Key-player Information Handling

- After-production logistics
- Maintenance provider
- Recycling companies



Challenges and Opportunities

LogDynamics

Challenges

- Information in B2B product sales is expected to be free of charge
- The value of product-related information will most often be in the range of cents or fractions of cents
- There is no established payment infrastructure to collect and invoice a huge amount of B2B information and messages
- Technology and standards are missing

Opportunities

- Better ROI potentials for
  - SME
  - „Non-dominated“ industries
  - Life-cycle scenarios
  - Post key-player scenarios
- Benefit in
  - Open supply networks

Influencing Push and Pull factors

LogDynamics

Technology Push

- RFID, Sensors
- Software Agents
- EDI
- „Internet-of-Things”
- e-Procurement, e-Invoicing, e-Payment
- Pico-/Micro-Payment solutions

Regulatory Push

- EU-Directive 178/2002
- EU-Directive 2002/96/EG
- Department Of Defense
- Food and Drug Administration

Success factors for a “Billing Integrated Internet-of-Things”

Push- and Pull-factors

Industry Pull

Dynamic Changes

- Supply networks

Benefit

- Cost sharing
- Revenue generation
- Added value
- Scalability

Fields of Impact

- Supply Chain Management
- Product Life Cycle Management
- Customer Relationship Management
- Smart Products
- Smart Services

Future Work

LogDynamics

- Development of a demonstrator
- Proof-of-Concept in different scenarios
- Dissemination of results
- Standardization
- Commercialization through integration of influencing companies

Thank you for your attention

Dieter Uckelmann
Phone: ++49 421 218 5550
uck@biba.uni-bremen.de

http://www.logdynamics.de/