Microsoft RFID Platform Data Management

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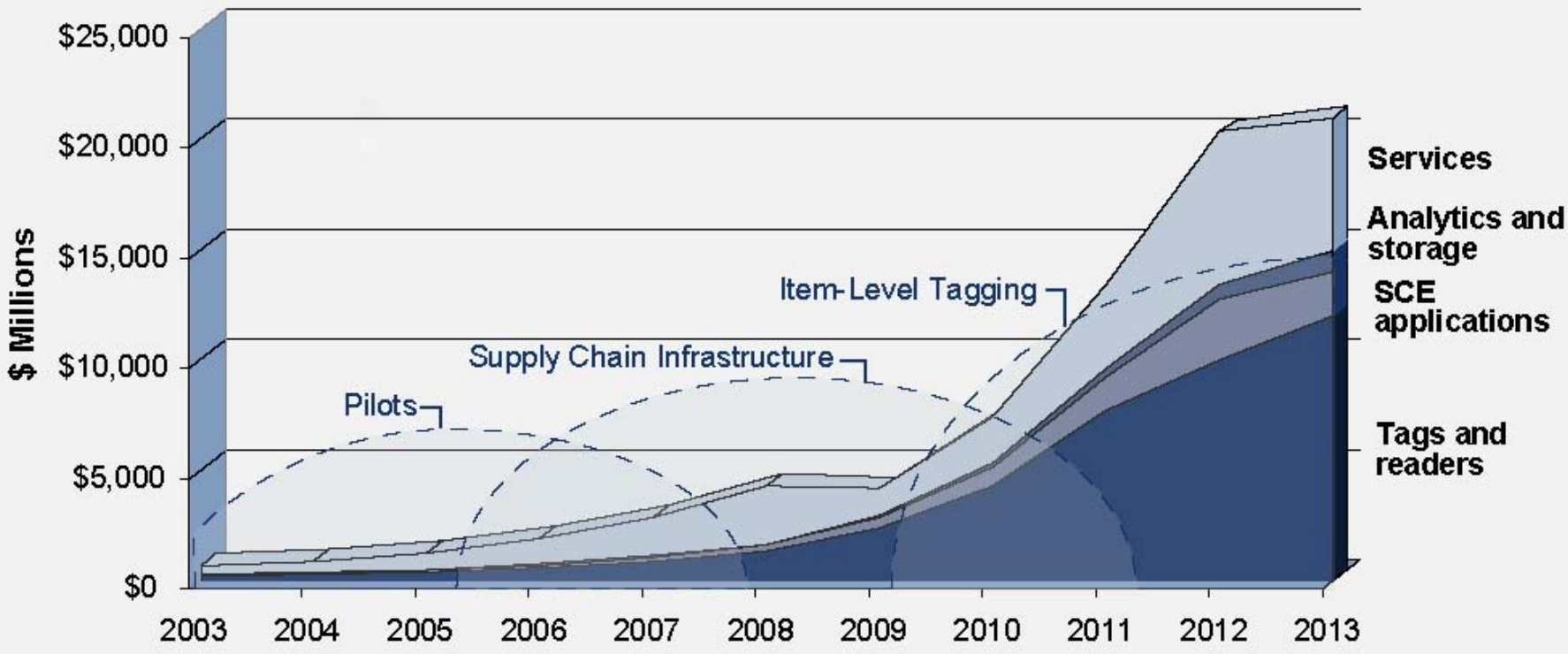
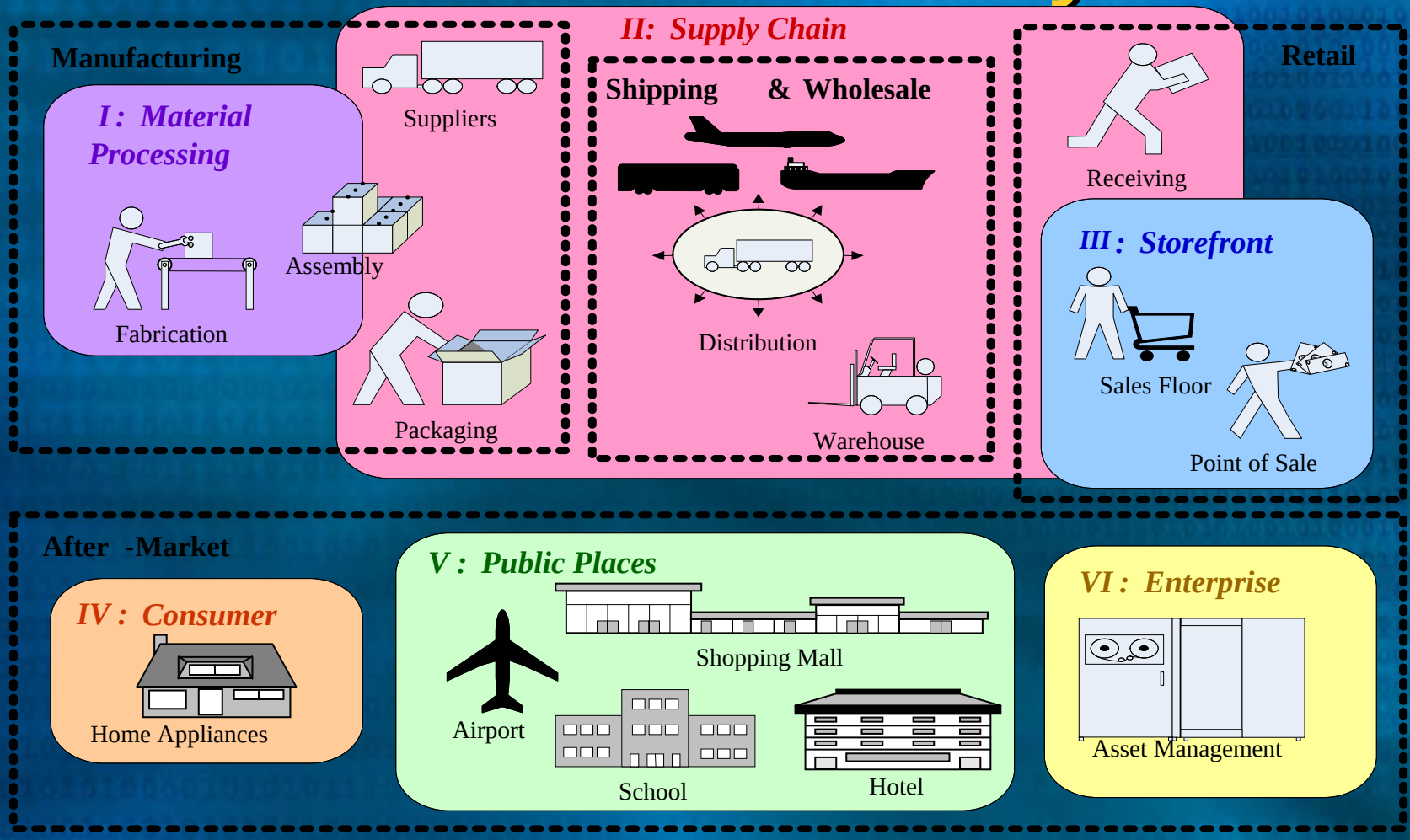
RFID Market Evolution

Figure 2: RFID market evolution



Source: AMR Research, 2003

Microsoft RFID Industry Focus



RFID in Retail – innovation at the edge of the enterprise – The Future Store

Store

- ePOS
- Self Checkout
- Unattended Checkout
- Electronic Signage
- Digital Assistants
- Smart Shelves
- Cross-Channel integration
- RFID

Merchandise Supply Chain

- Closed Loop Systems for Synchronizing Supply and Demand
- Information Transparency Across Trading Partners
- RFID

Core Operations

- ERP
- Merchandising Systems
- Inventory Management
- Promotions Management
- Traditional Replenishment Systems
- Human Resource Systems
- Labor Management
- Enterprise Data Warehousing

Consumers

- Multi-Channel Shopping (shop online/buy offline)
- Assisted Shopping
- Personal Digital Assistants
- Mobile/Wireless-Enabled

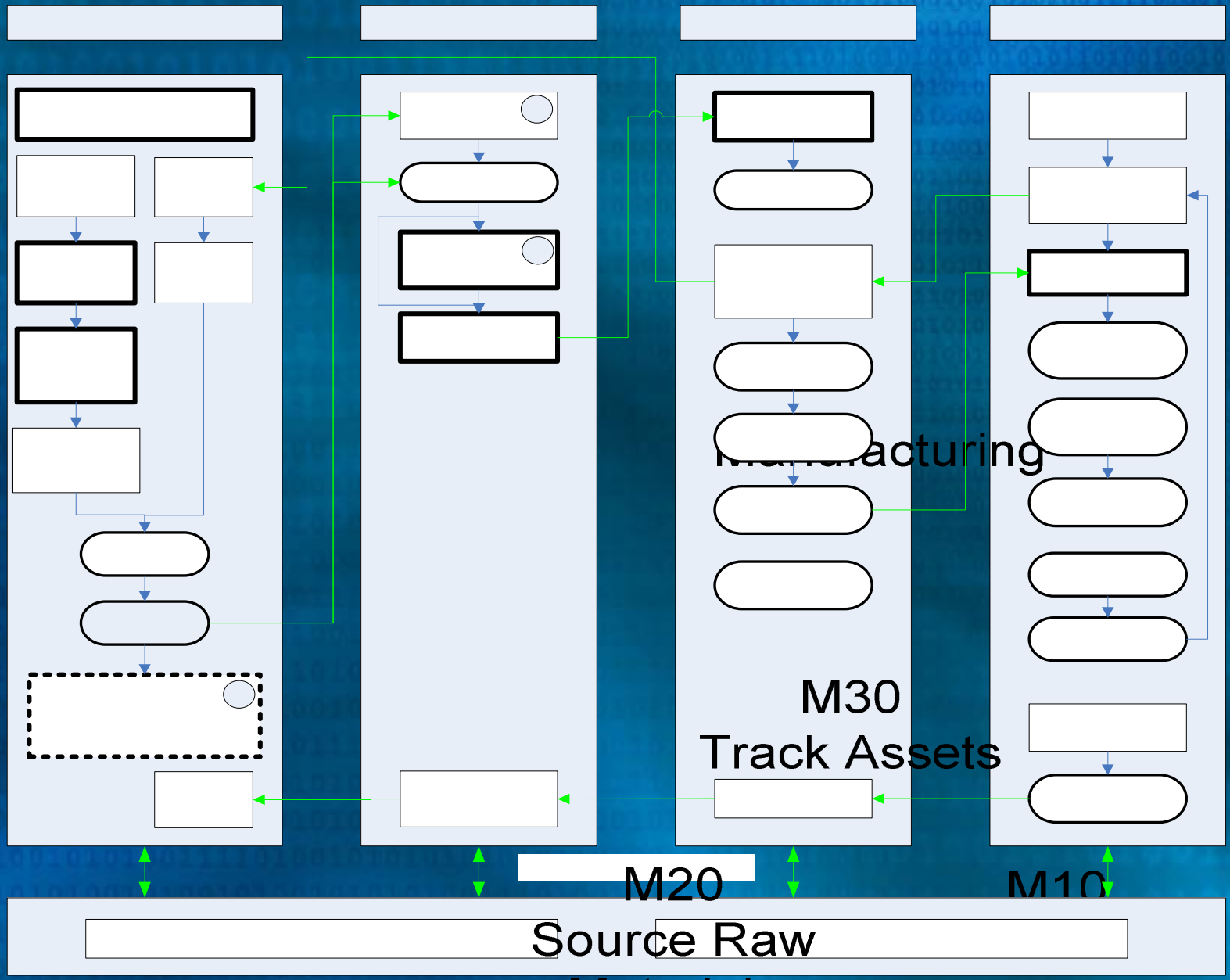
4 Steps for RFID Data Mgmt.

- Educate Your Team
- Define Business Requirement (Data)
- Using SOA to against with Complexities
- Capacity Planning

Educate Your Team

- RFID Data Characteristics
  - Each Item has unique ID
  - Online Data Lifecycle
  - Unique ID with multiple readings (even in one location / process)
  - Legacy ERP is not for handling Unique Item
- Special notices on RFID Data
  - Attributes to be collected (BI / Mining)
  - Back Traceable
  - Versioned Data for one product (even Item)
  - Fault Tolerance for On-line Data

Multiple Readings for Unique RFID

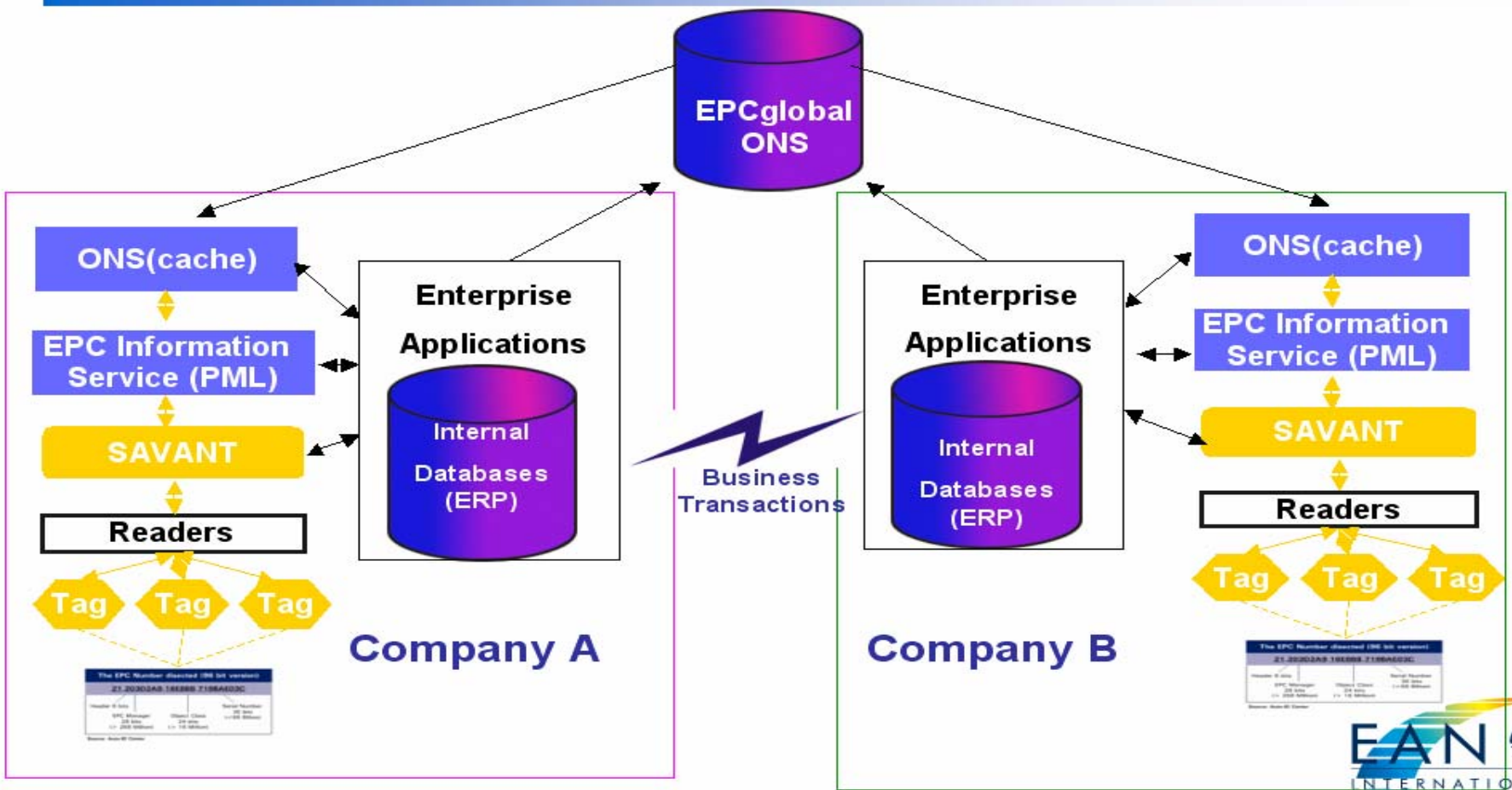


EPCglobal Data Online Model

EAN TAIWAN

EPCglobal TAIWAN

The EPCglobal Network



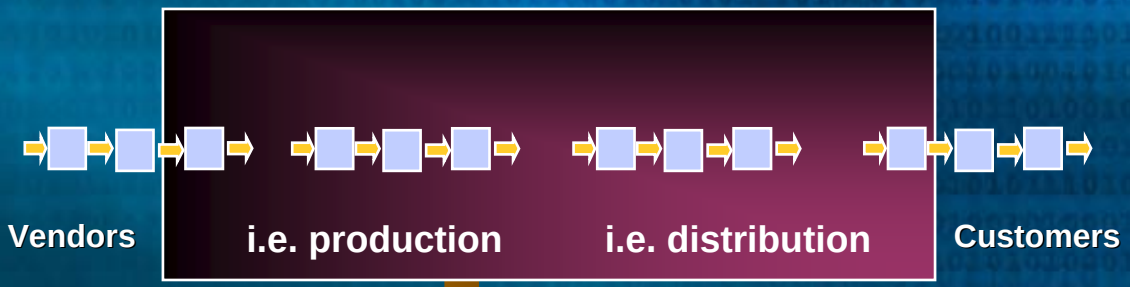
EAN INTERNATIONAL 25 YEARS

Define Business Requirement

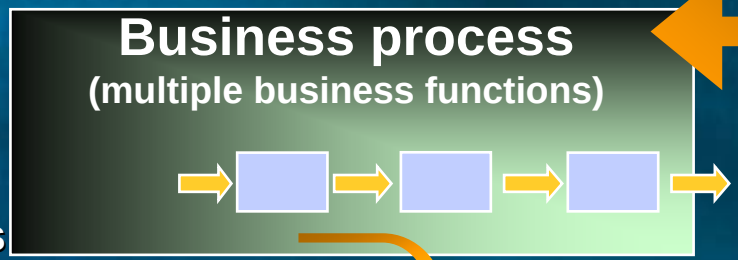
- Focus on ROI model / Scale Forecasting
- Business Process / Information Flow
- Privacy requirement
- Define Historical Data Handling

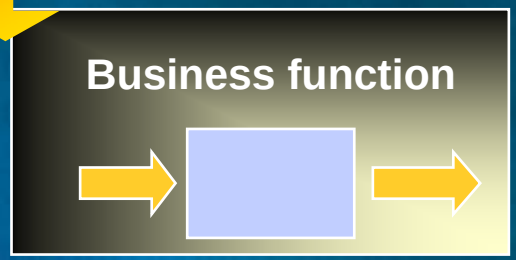
Process Analysis

First: identify few critical processes with impact on CSF/KPI



Second: identify Bottlenecks, and operational areas to improve the business process





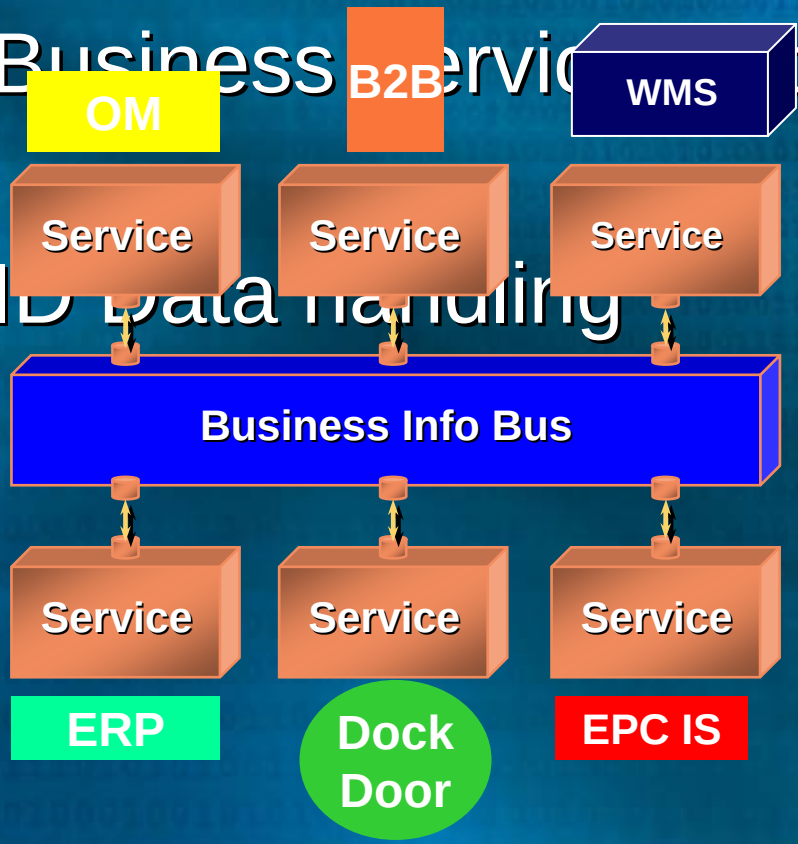
Third: identify steps

That generates improvement

(Measured Data Attributes + Business Attributes for BI)

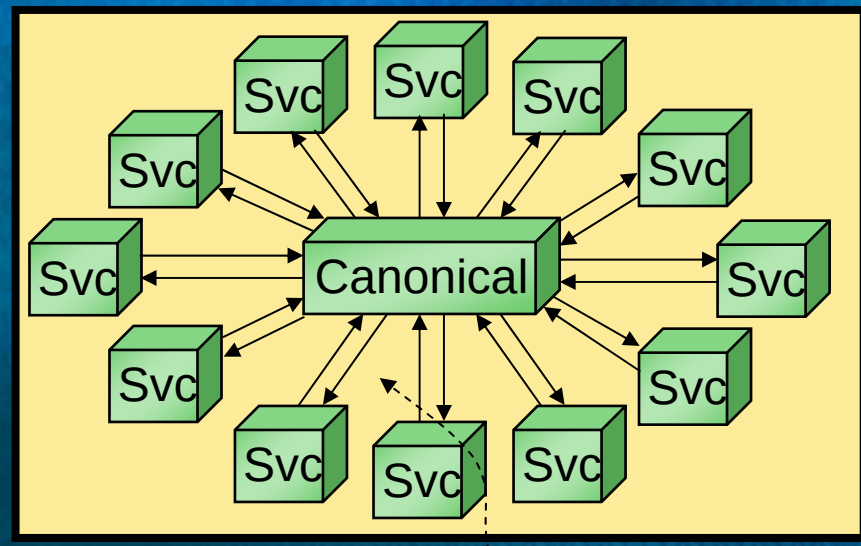
Using SOA against with Complexity

- Mapping Business Service to SOA
- Layer RFID Data handling

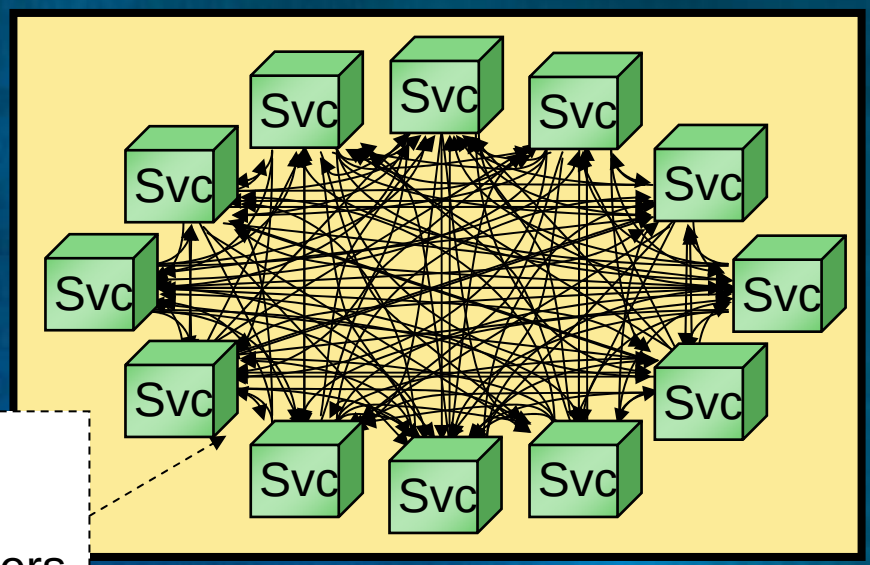


Put SOA in mind

- SOA will decrease RFID integration data complexity



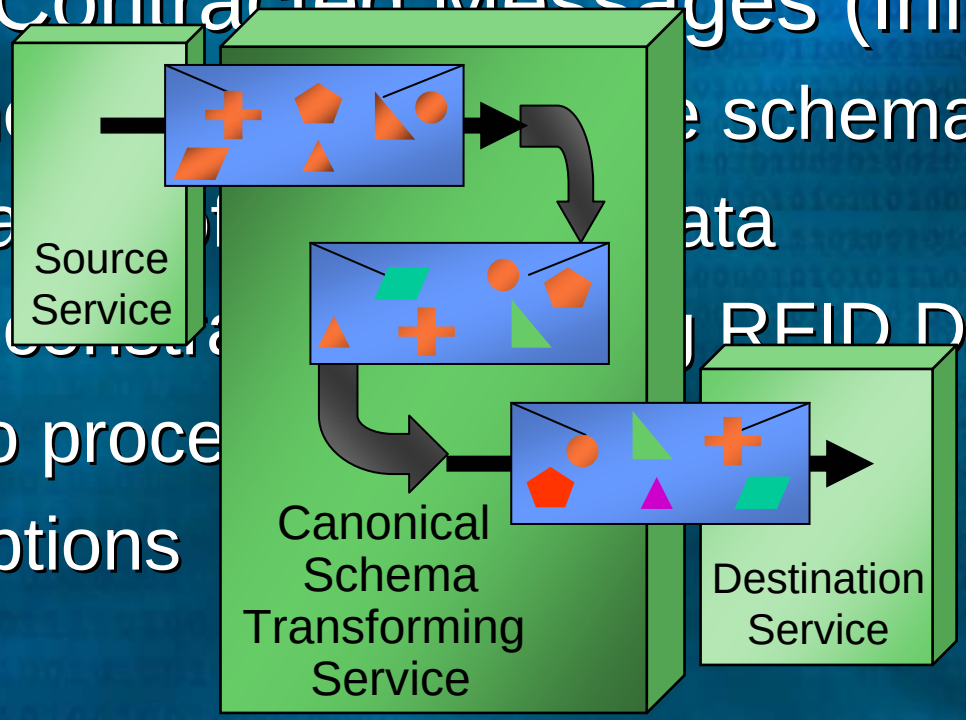
12 Services
2 * N; 2*12=24
message transformers



12 Services
12 * 11 = 132
message transformers

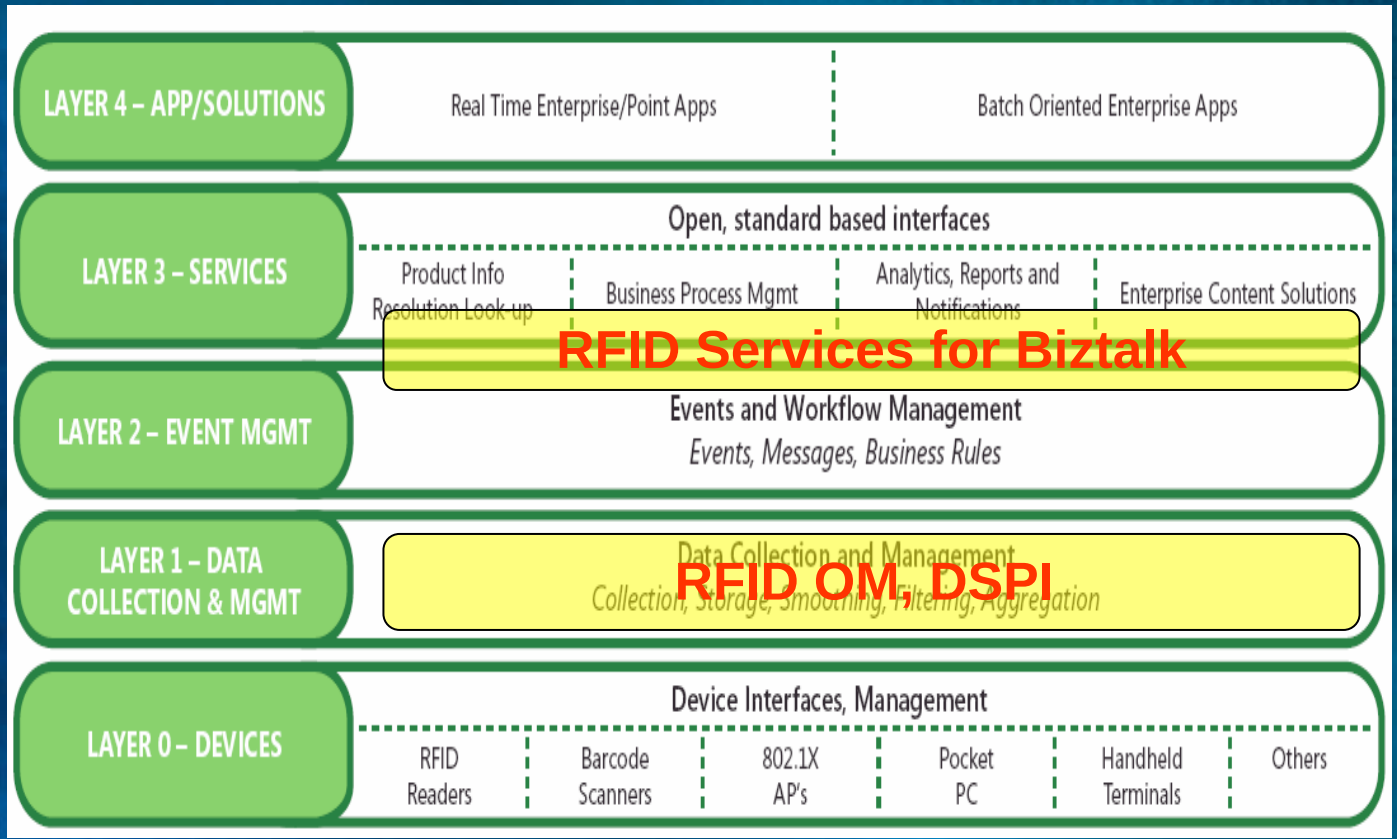
Messages Among Services

- Define Contracted Messages (Infoset XML)
  - Busin e schema (versioned)
  - Excha ata
  - Time RFID Data
  - Re-do proce
  - Exceptions



Layered RFID Data Handling

- Deliver business event data into CEP (Complex Event Processing)



- Digest RFID data from source

Capacity Planning

- RFID Data Capacity
  - Schema definition (business attributes) for each phased services
  - Consider Message (event) Data sizing
  - Data Characteristics
  - Encryption (Data / Messages)
  - Define Data Lifecycle
- Processing Capacity
- Strategy for Scalabilities

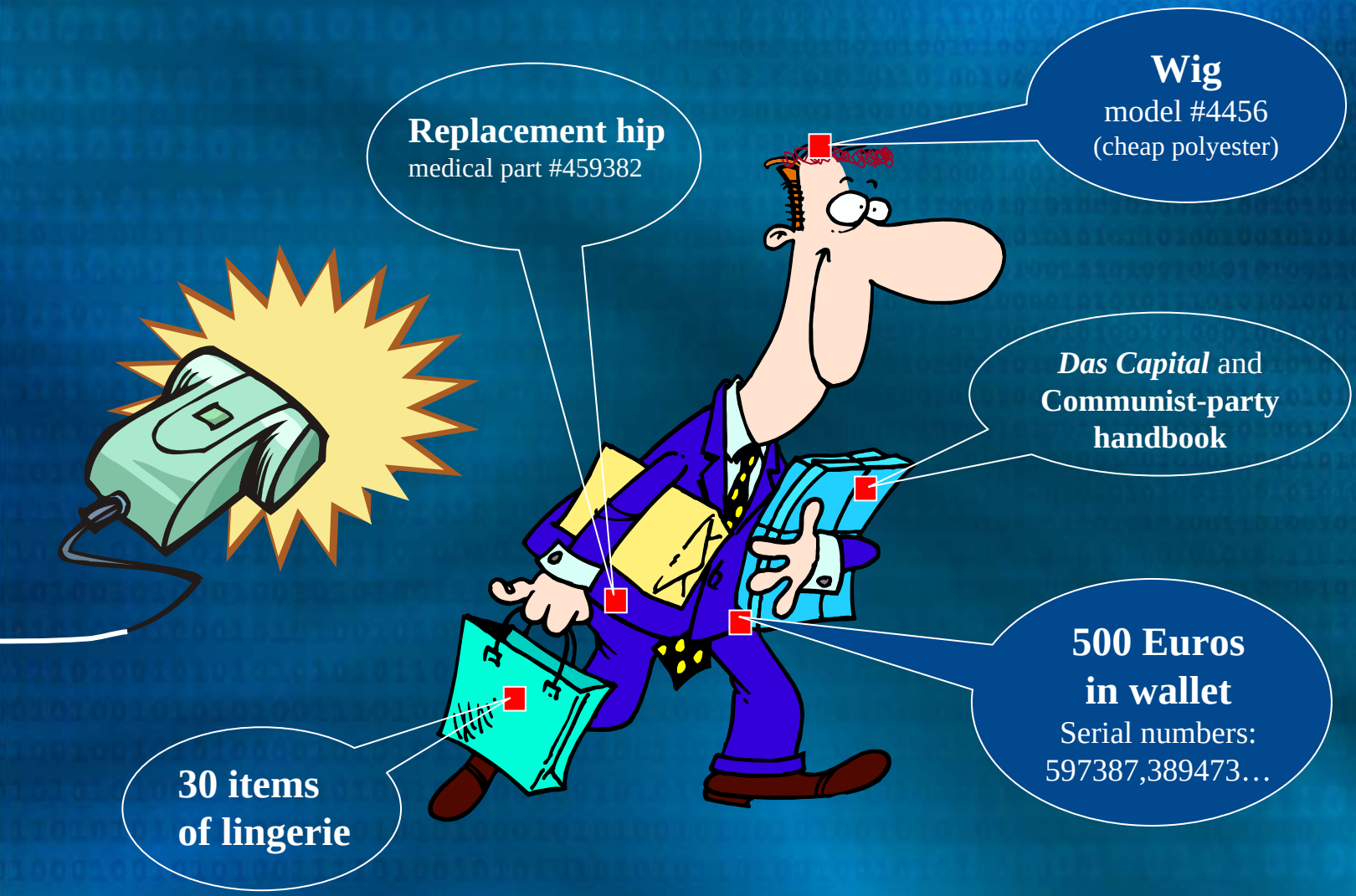
Kinds of Data

	Stable	Normal-ized	Immutable	Con-current Update
Resource-Oriented Data	Usually Not	Yes	No – Often Volatile	Highly Con-current
Versioned Reference Data	Yes	Maybe	Yes: Each Version Written Once	No Update
Messages (Business Activity)	Yes	Maybe	Yes: Written Once	No Update
Activity-Oriented Data	Maybe Not	Maybe	No (e.g. shopping basket)	Very low Con-current

Activity data is rarely concurrently updated; tends to have simple structures

Note that versioned reference data and messages never change

RFID Privacy ?



http://www.microsoft.com/twc

Typical RFID Solution Scenario

11. All DW/BI databases, analytics and on-line Dashboards updated

10. When necessary, transmit RosettaNet B2B messages to Trading partner

9. When BRE notifies below threshold inventory level, Purchasing system alerted

8. ERP/SCM systems updated including the A/R, G/L, WMS/Inventory, apps.

7. BizTalk launches BRE and Orchestration process

6. Order/Invoice system updated with customer info

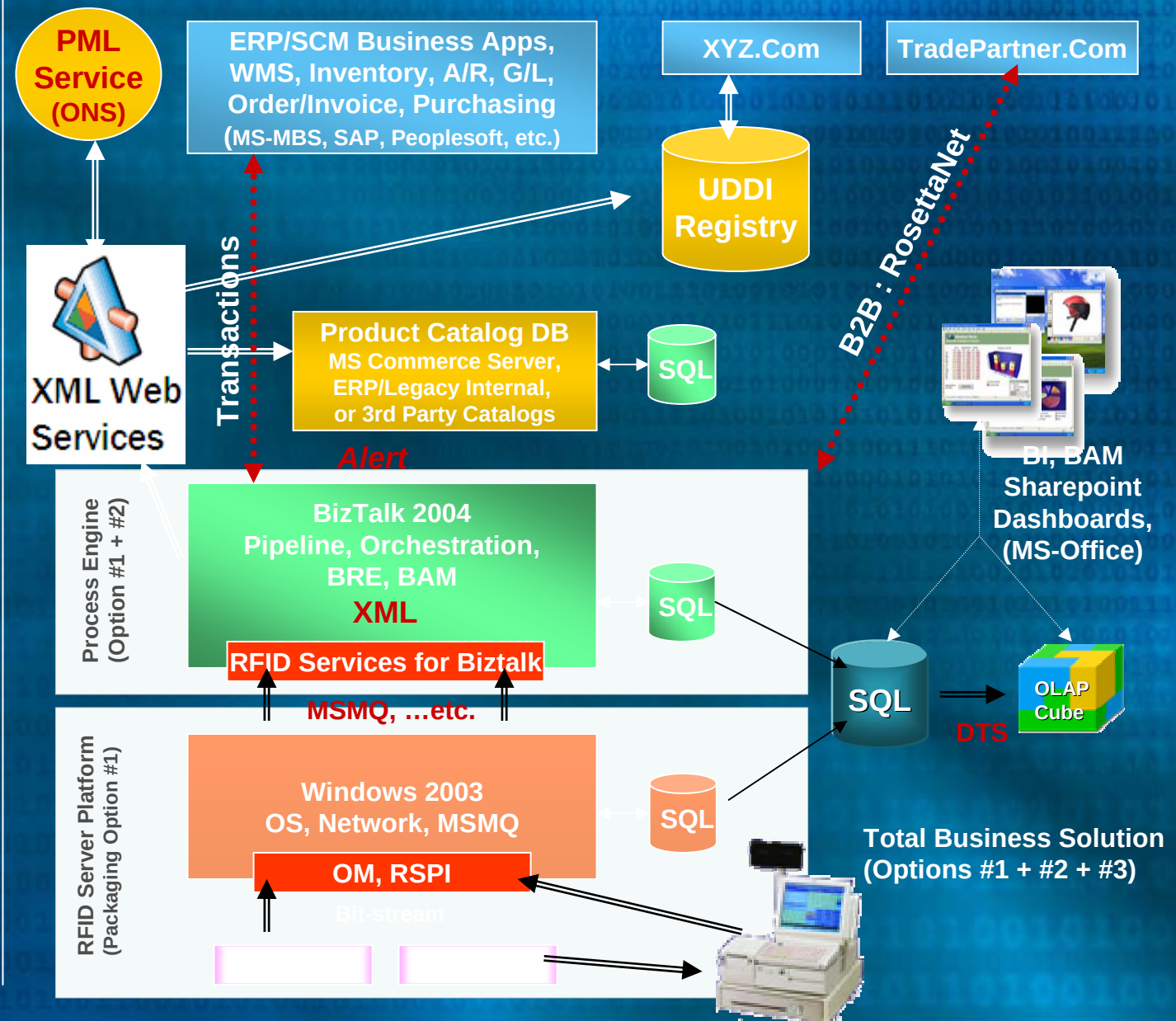
5. If needed, BizTalk invokes product info look-up Webservice(s) into UDDI (and also PML Service/ONS)

4. BizTalk invokes product info look-up Webservice into Commerce Catalog DB

3. XML document into BizTalk Receive-Port

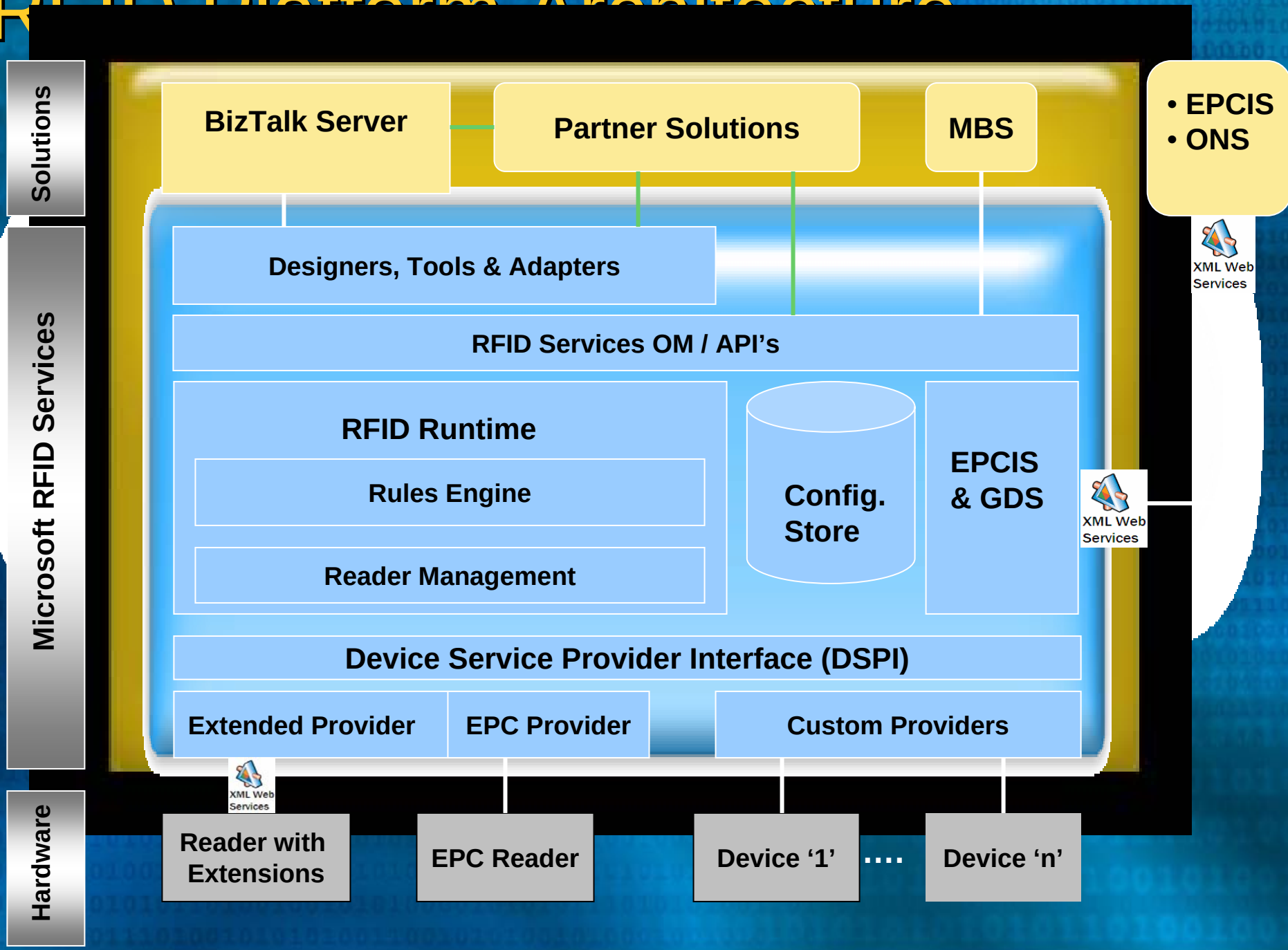
2. Smoothing/filtering and MSMQ (if needed)

1. Product cases are moved, RFID tags are read



Microsoft RFID Platform Services

RFID Platform Architecture



RFID Platform Roadmap

Today

- Partner .NET based RFID Platform
- Developer and Architectural Guidance
- API Details for solution development on Microsoft RFID Services

May ‘05

- Early bits for partners and select customers though Technical Adoption Program (TAP)
  - Devices Service Provider Interface
  - Process Engine for Logical Source execution
  - Rules Engine Framework for Filters, Alerts
  - Design and Runtime APIs
  - Management APIs

Oct ‘05

- Production Beta
  - Support for EPC Global Reader Mgmt, Reader Protocol and ALE standards (based on availability)

Conclusion

- Understand Data Management Challenge
  - Educate your team
- Get Data Model from Business Use Case
  - Define business requirement
- Scratch Your Architecture Blueprint
  - Construct SOA accordingly
- Build Scalable System
  - Capacity planning
- Microsoft has full product line to support your business!!!

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