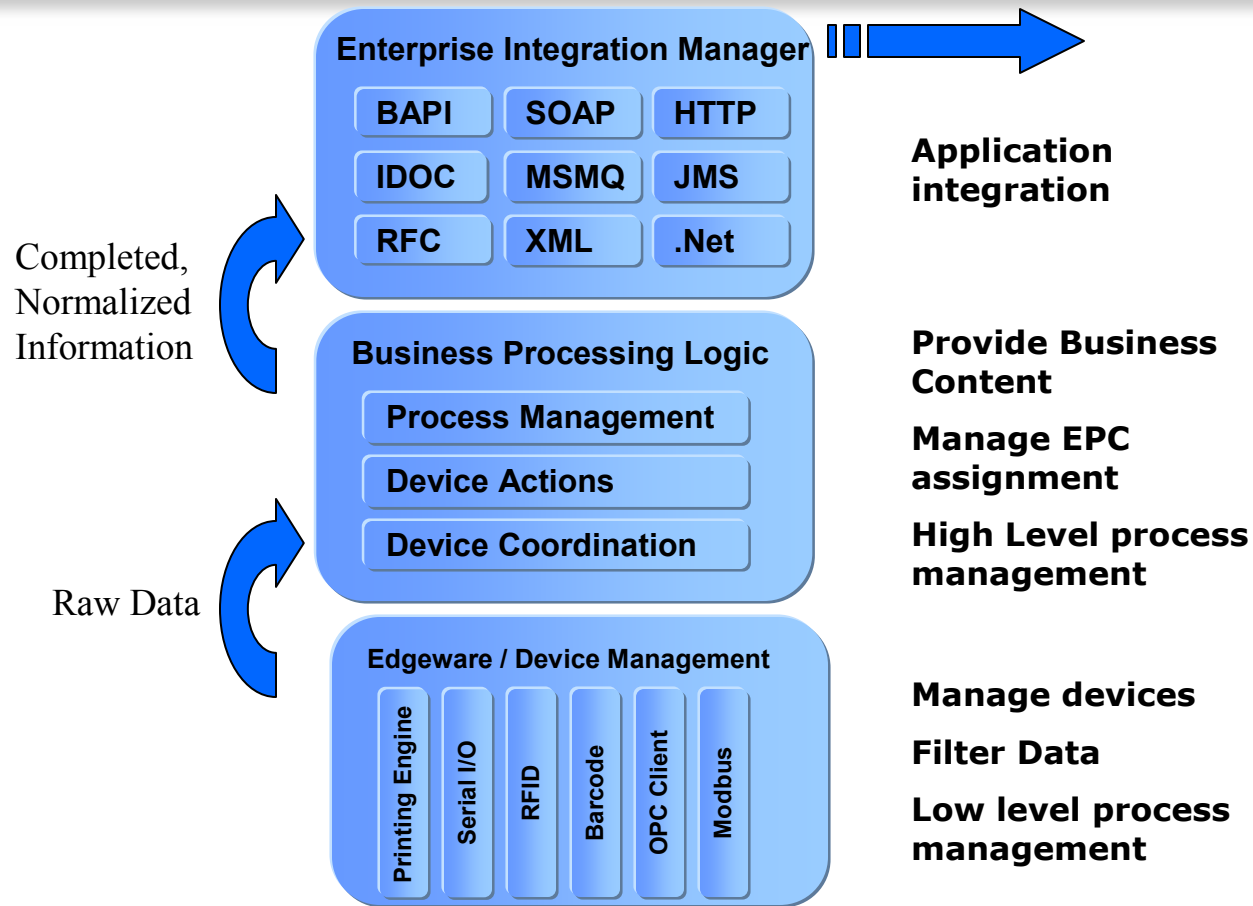# RFID Middleware

John DiPalo

Vice President of Technical Sales
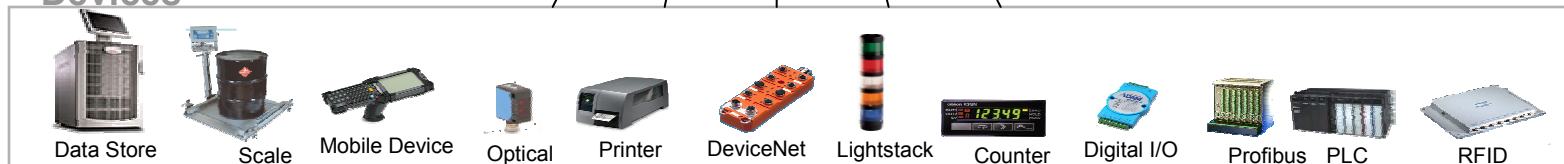
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- Introductions
- The role of middleware in a RFID solution
- Implementation Examples
- Question and Answers

- A communications layer that allows applications to interact across hardware and network environments

- Middleware is the "mix-and-match" communications software that acts as a universal translator between diverse radio frequency technologies and protocols. Middleware physically resides on the remote client and on a communications server, located between the client and the applications server. The software eases computing and communicating with corporate information and encourages applications development, making wireless data more attractive to corporate customers.

- Software that helps diverse software programs and networked computer systems work together, thus promoting their interoperability

The role of Middleware in
a RFID system

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Enterprise Integration Manager

BAPI	SOAP	HTTP
IDOC	MSMQ	JMS
RFC	XML	.Net

Application integration

Completed, Normalized Information

Business Processing Logic

Process Management

Device Actions

Device Coordination

Provide Business Content

Manage EPC assignment

High Level process management

Raw Data

Edgeware / Device Management

Printing Engine | Serial I/O | RFID | Barcode | OPC Client | Modbus

Manage devices

Filter Data

Low level process management

Devices

Data Store | Scale | Mobile Device | Optical | Printer | DeviceNet | Lightstack | Counter | Digital I/O | Profibus PLC | RFID

- The question of middleware connectivity to the outside world depends on the level of integration achieved
- EDI / WAWF
  - The ability to provide EPC information via EDI is critical to your RFID solution
  - For DOD suppliers there is a good overview of the requirements at
  http://www.acq.osd.mil/log/rfid/supplierguide.htm

- EPC Network

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EPC compliant RFID tags are placed on products, cases or pallets during distribution or manufacturing

Supplier's Internal Supply Chain

Customer's Internal Supply Chain

Customer's RFID system reads the EPC information and requests additional data from the EPC Network

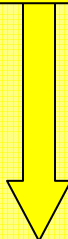**The EPC-enabled product is received at the customer site**

The product enters the supply chain with the EPC information attached

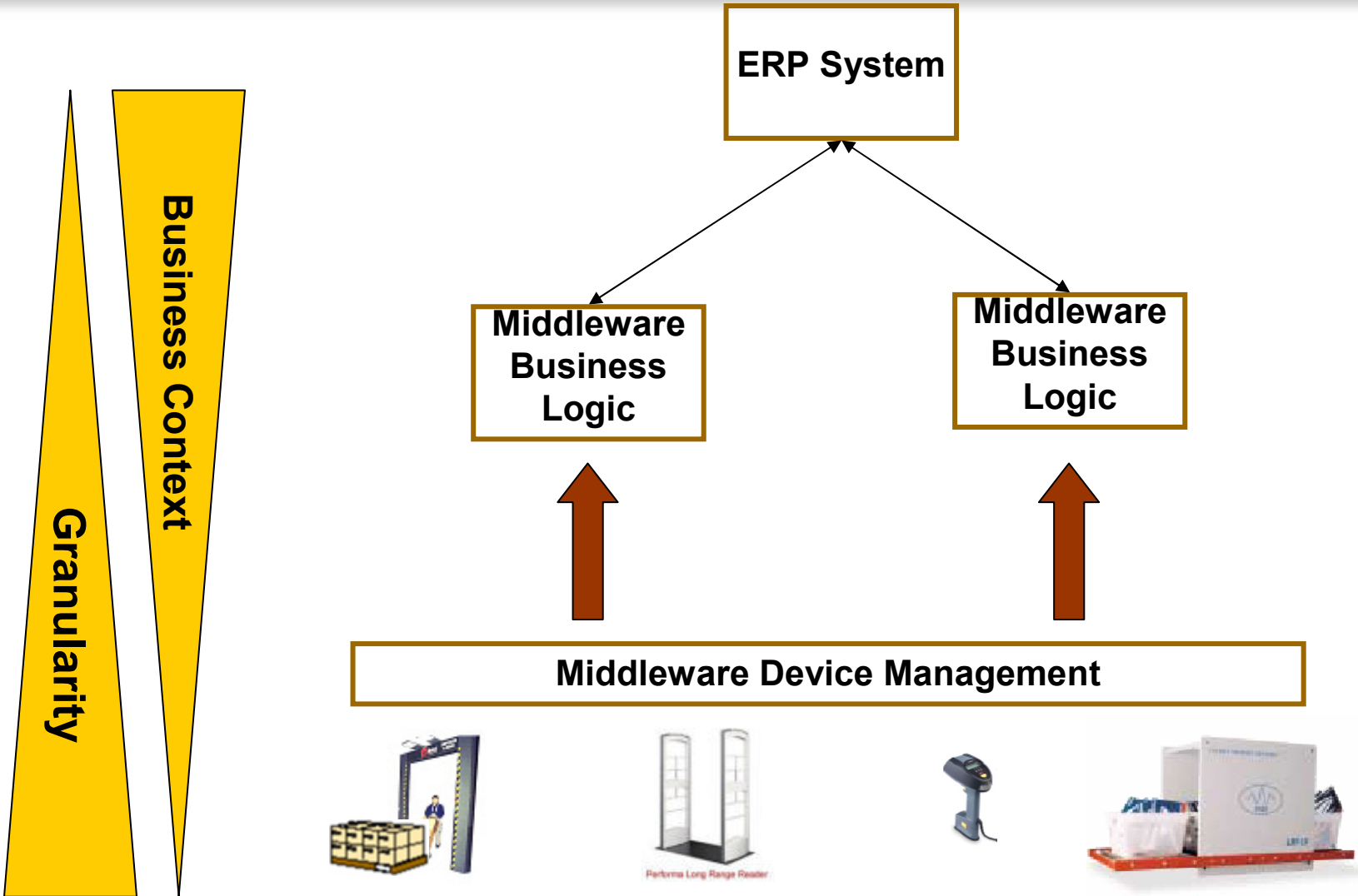**The receiving customer's RFID system reads the EPC Tag and sends a request via the Internet to an ONS server**

Web Services

ONS server acts as a directory to "Lookup" manufacturer's or supplier's "EPC address"

The request is directed to a PML server to get detailed product information from the supplier
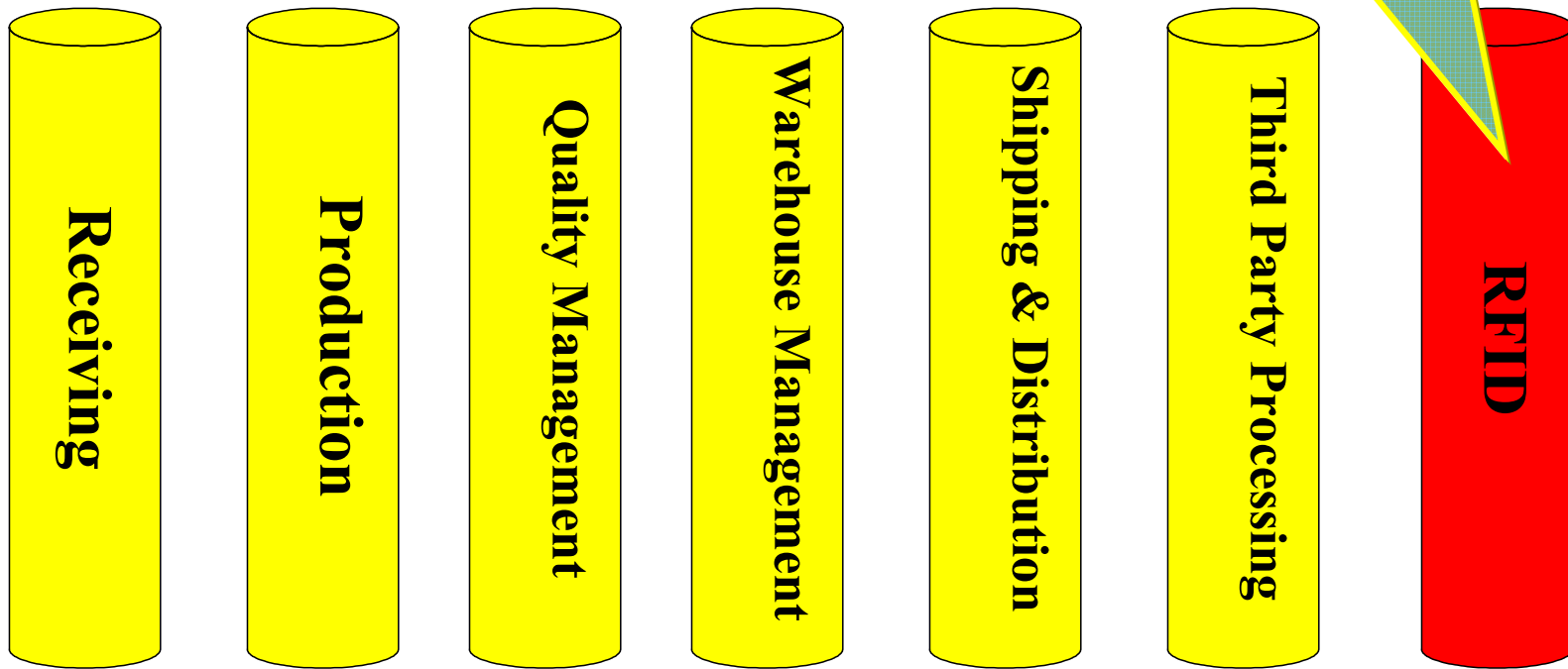
Acsis

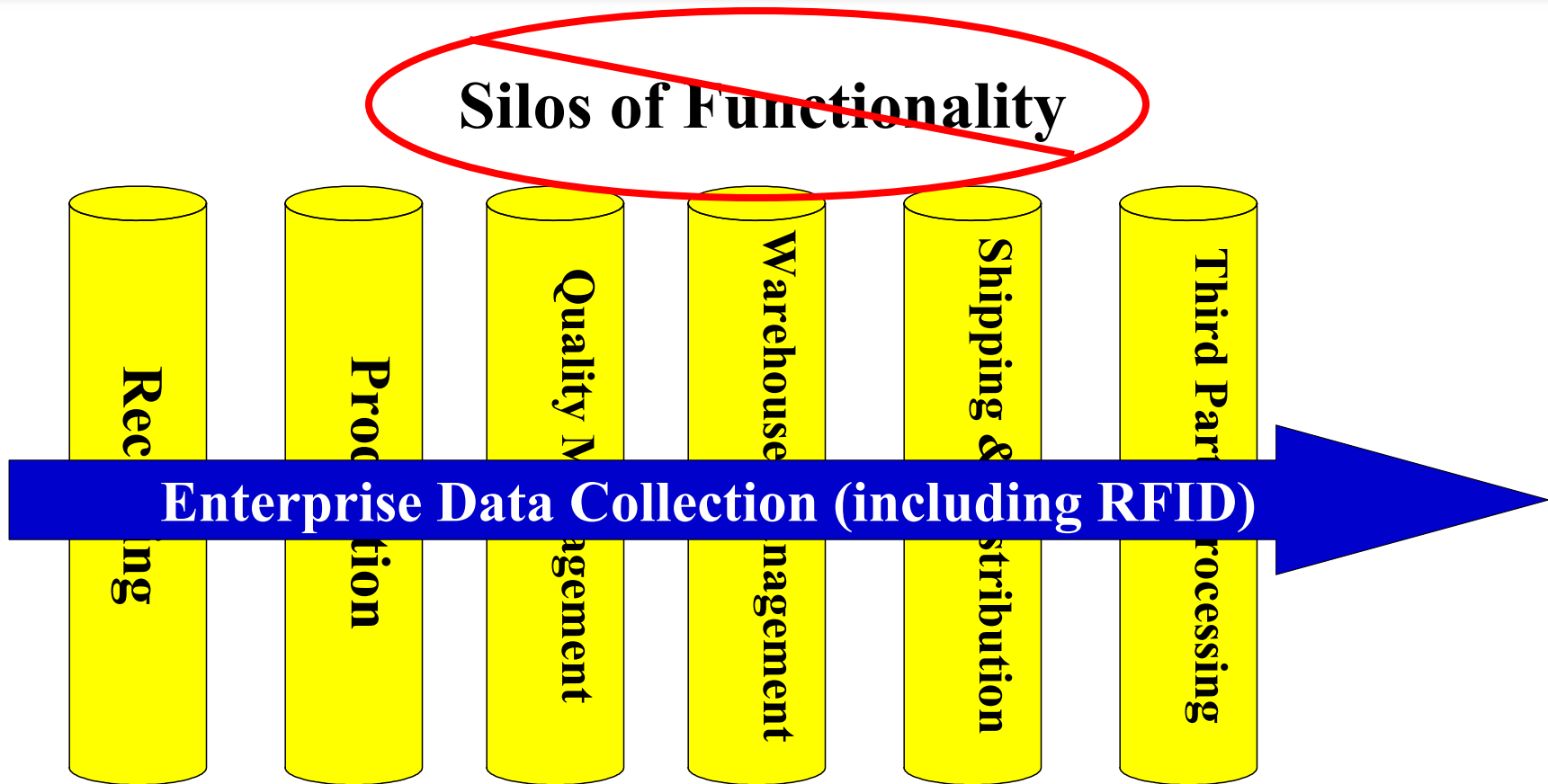## Where do things fit in an integrated solution

Business Context

Granularity

ERP System

Middleware Business Logic

Middleware Business Logic

Middleware Device Management

Implementation Thoughts

Silos of Functionality

Are you adding another island with a stand alone RFID solution

Receiving

Production

Quality Management

Warehouse Management

Shipping & Distribution

Third Party Processing

RFID

Data collection systems tend to be implemented at the warehouse or manufacturing level as islands of automation.

Silos of Functionality

Receiving

Production

Quality Management

Warehouse Management

Shipping & Distribution

Third Party Processing

Enterprise Data Collection (including RFID)

Data collection systems need to be implemented at the enterprise level in order to remove the islands of automation.

- Follows existing shop floor practices, little or no addition steps required to RFID enable products
- Uses information from your central ERP solution to drive the solution
- Provides the central ERP system with real time information
- Provides all the necessary item, case and pallet aggregation of EPC data to support current and future mandates
- Scaleable, Flexible and Adaptive

- Two approaches

  - Stand Alone Systems
    - Slap and Ship
    - Semi Automated

  - Fully Integrated Solution

- ## Slap and Ship

  - Product is picked and assembled for a shipment

  - A user then manually commissions a RFID tag for each RFID enabled item.

  - The shipment is then reassembled and shipped to the customer

- ## Slap and ship middleware role
  - EPC management for the tagged product
  - Limited device management and control
  - Ability to forward the data to the outside world from within the middleware platform

- ## Semi Automated
  - Product is picked for shipment
  - Product is staged at a tagging station
  - Product is sent down a automated line for processing
  - Tags are applied and encoded automatically
  - Product is then moved to the shipment staging area

- Semi Automated Solution middleware role
  - EPC management for the tagged product
  - More extensive device management and control
  - Ability to forward the data to the outside world from within the middleware platform

- Complete ERP System Integration
- No additional process required for RFID tagging, the system decides what is to be tagged
- Tagging is done during manufacturing or distribution process without any additional manual steps
- Communication to the outside world is done through the existing ERP platform with the required integration on information from the middleware platform

Questions and Answers or maybe just more questions . . .

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