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**ODETTE Best practice recommendation for  
RFID in supply chain container management**

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# Odette Sweden: Part of a global automotive network

Global automotive cooperation in  
EDI, Auto ID/RFID and Logistics



Czech Republic    France    Germany    Spain  
Sweden            UK        Romania    Turkey

# Odette Sweden

**SCANIA CV**



**Volvo Car Corporation**



**Saab Automobile AB**



**AB VOLVO**



**AB SKF**

**Lawson**

**Encode**

**GBC**

**PipeChain**

**Viaduct**

**Data Interchange Sweden**



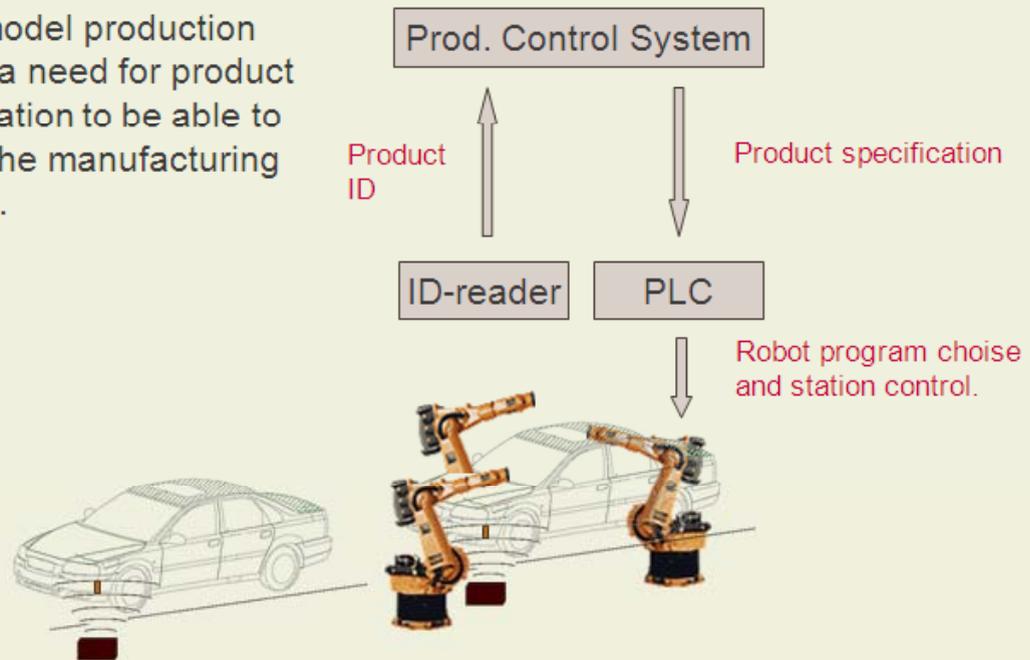
- Created in 1984, owned by BIL Sweden
- Funded and governed by members
- Member in Odette International and in SASIG
- Runs the Supplier Network “NAF” together with FKG (Suppl. Ass.)

# Usage of RFID in Automotive, some examples

RFID has been used since long in controlling manufacturing processes

## Product identification

Mixed model production creates a need for product identification to be able to control the manufacturing process.



# Why is RFID an interesting technology in the automotive supply chain? Some examples:

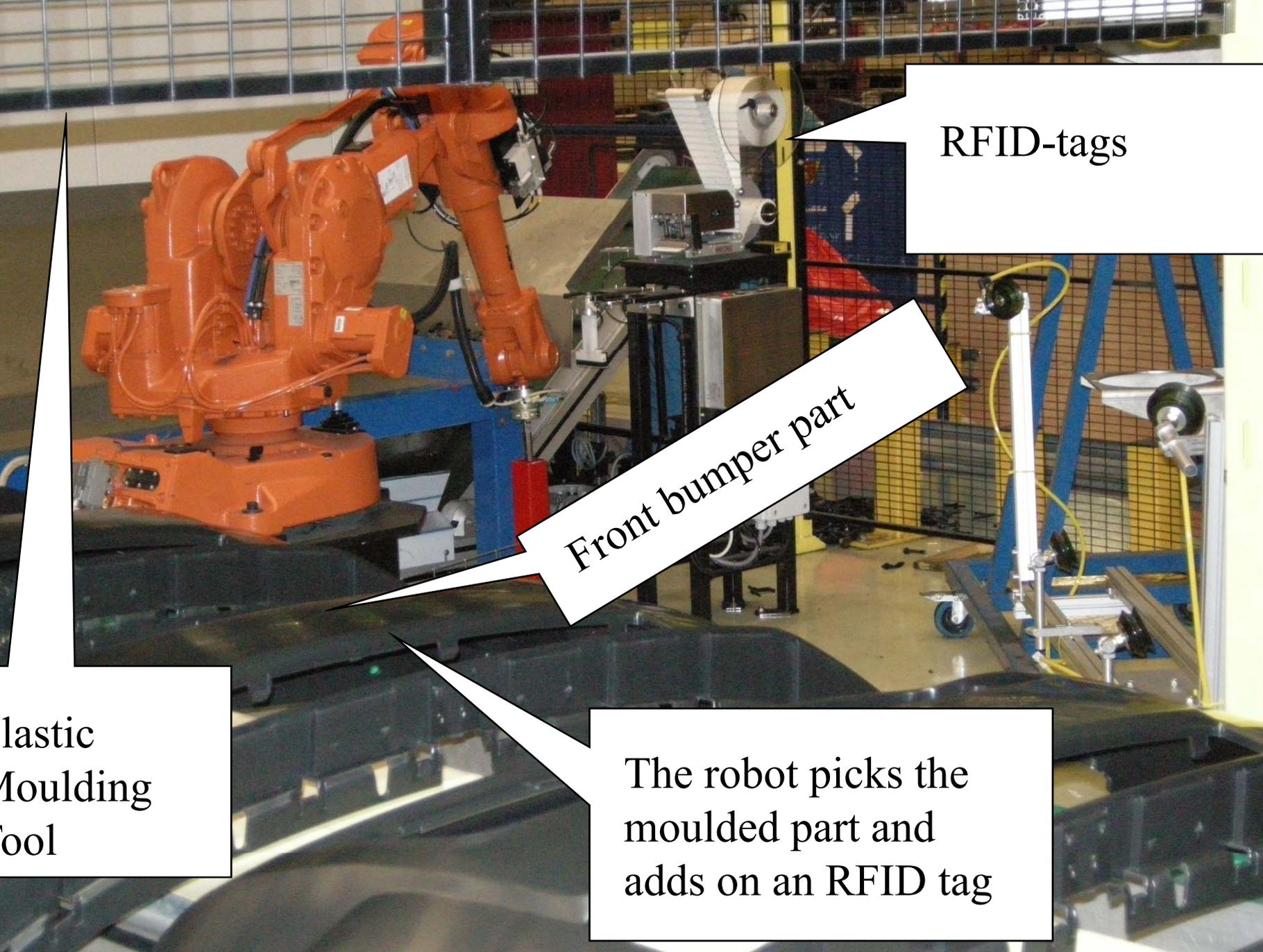
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## **A Customer** could use RFID for:

- Wireless reading of information about goods received
- Managing and monitoring internal flows of material
- Verifying content of final product, create traceability data

## **A Supplier** could use RFID for:

- Supporting automatic flows to/from stocks, incl stock level information
- Verifying correct assembly of parts
- Verifying correct content of goods in packaging



RFID-tags

Front bumper part

Elastic  
Moulding  
Tool

The robot picks the  
moulded part and  
adds on an RFID tag

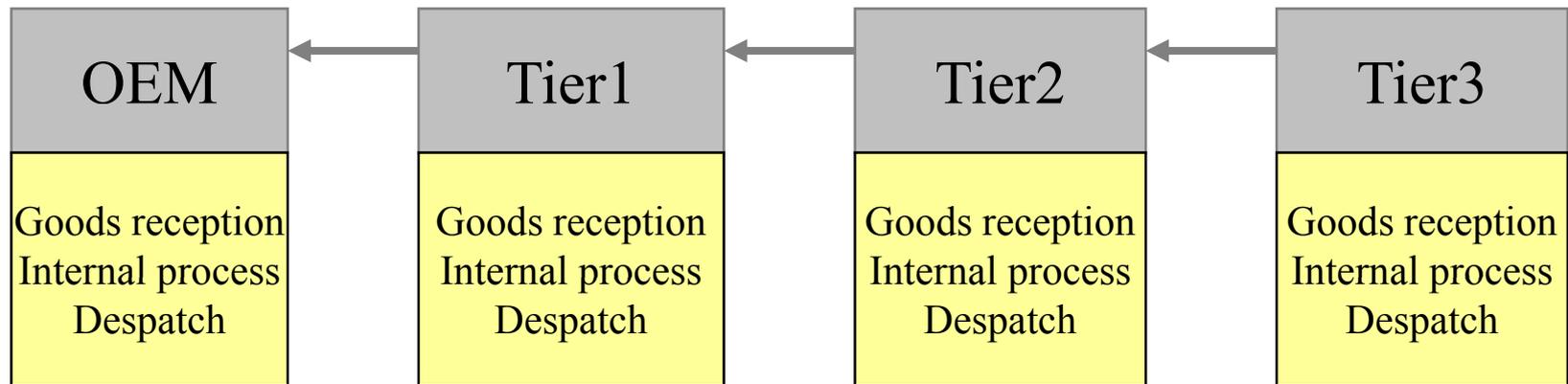
# Odette Sweden and RFID

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- Odette Sweden has been actively involved since the beginning in European and global automotive RFID developments
- Also very active in the development of three Odette RFID recommendations
- One project on RFID for automotive suppliers
- One project on verifying encoding schemes
- A project in preparation on RFID for Returnable Transport Items (RTI:s)

# RFID for Automotive Suppliers, RFIDNU 2007 - 2008

- Study of RFID potential in real manufacturing environment
- Analysis of information needs in various application fields and then "translated" into data formats that would work in commercially available RFID technology
- Tests of readability in real environment



Volvo Cars

Plastal  
Lear

Nolato  
Fehrer

# RFIDNU results

## Testing RFID parts marking at Nolato



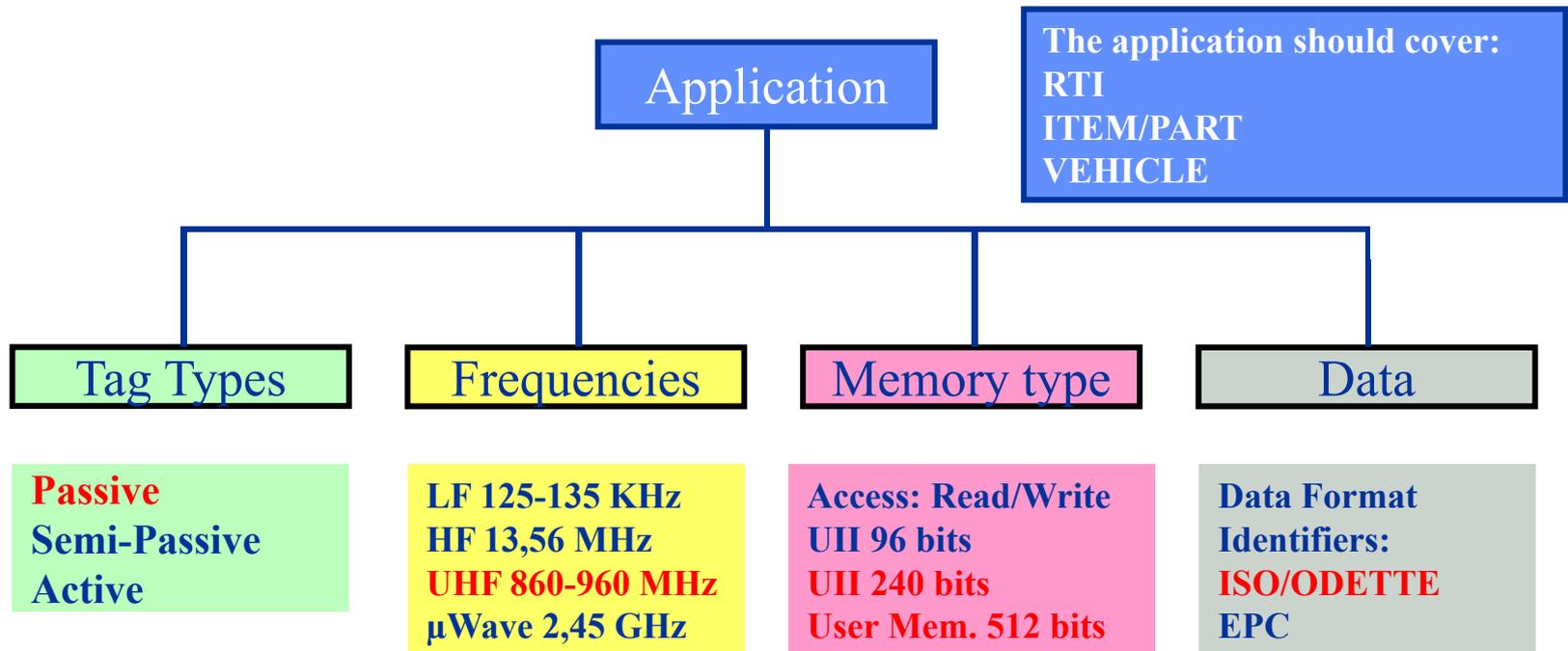
One pallet with 128 parts, each marked with an RFID tag

8 plastic boxes, each part also marked



Result: Everything could be read within reasonable time window

# Proof of Concept leading to a Demonstrator



The tag chosen by the automotive industry is a passive UHF 860-960 MHz tag, ISO 18000-6C with a UII Memory Bank (MB01) of 240 bits and a User Memory Bank (MB11) of 512 bits capacity. This tag will be encoded in Europe according to the ISO/ODETTE encoding scheme.

## Background

- RFID has been a topic in Odette since at least 2005
- This year we held a global meeting in Amsterdam together with representatives from the US (AIAG) and from Japan (JAMA/JAPIA)
- When looking back we can see that the general picture was already available at that time. (Draft ISO standards were presented, VDA had made videos, VW intended to use RFID on RTI.s etc)

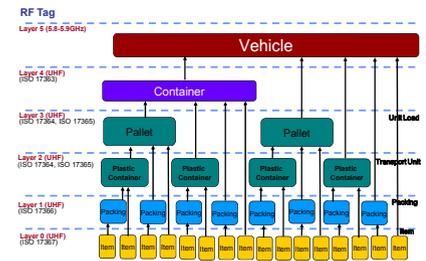
But .... It has been a long travel since then

# Why did it take nearly 5 years?

The answer is that there were some major obstacles:

- We had difficulties organising the work, one or three groups? (RTI:s, Vehicles, Components)
- We had serious lack of technical expertise
- We had long discussions about GS1/EPC in Automotive
- There were too many unresolved issues within the ISO process. We got different answers depending on who we asked within ISO\*

\* This might still be the case, there are application oriented standards like ISO 1736x-series and then there are horizontal standards for syntax and air interface etc..



# Where is the potential for RFID in automotive?

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As already mentioned (active) RFID has been used since long.

The introduction of passive technology around 2004 lead to a growing interest.

Until now three main types of usage have been identified (when it comes to passive technology in open systems):

- RTI:s
- Vehicle distribution
- Parts marking

# Odette International RFID

## RFID in Supply Chain Container Management



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Automotive Supply Chain Best Practice Recommendation

## RFID in Vehicle Distribution Processes

Version No 190  
Doc Ref: LR02  
Date: January 2010



Automotive Supply Chain Best Practice Recommendation

## RFID for Tracking of Parts and Assemblies

Version No 190  
Doc Ref: LR03  
Date: February 2010

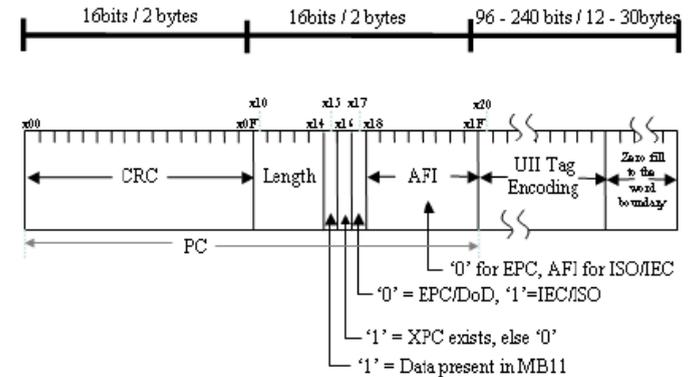


# What kind of content in Odette recommendations?

## Detailed rules for data structure in memory banks

		MB01 <sub>2</sub> , Bit 17 <sub>1</sub> "UII"	
		0 = EPC-based data in MB01 <sub>2</sub>	1 = Monomorphic ISO AFI-based data in MB01 <sub>2</sub>
MB01 <sub>2</sub> , bit 15 <sub>h</sub> "User Memory"	0 = No data in MB11 <sub>2</sub>	- EPC-based UII Data in MB01 <sub>2</sub> - No User Data in MB11 <sub>2</sub>	- Monomorphic ISO AFI-based UII Data in MB01 <sub>2</sub> - No User Data in MB11 <sub>2</sub>
	1 = Data in MB11 <sub>2</sub>	- EPC-based UII Data in MB01 <sub>2</sub> - User Data in MB11 <sub>2</sub>	- Monomorphic ISO AFI-based UII Data in MB01 <sub>2</sub> - User Data in MB11 <sub>2</sub>

## ISO/IEC 18000-6C MB01 layout



## Detailed encoding examples

### 8.1 ODETTE EXAMPLE

This example describes the encoding schema for the Odette monomorphic UII in MB01.

The data used are: DI is 25S, IAC is OD (Odette), CIN is 1101 (AB Volvo code from Oscar), Part number 948216 and Object Sequence Number is 4652. Note that the blanks shown below are there for readability. The tag content is one large bit string.

Harzardous Y or?      N                                      AFI      A1

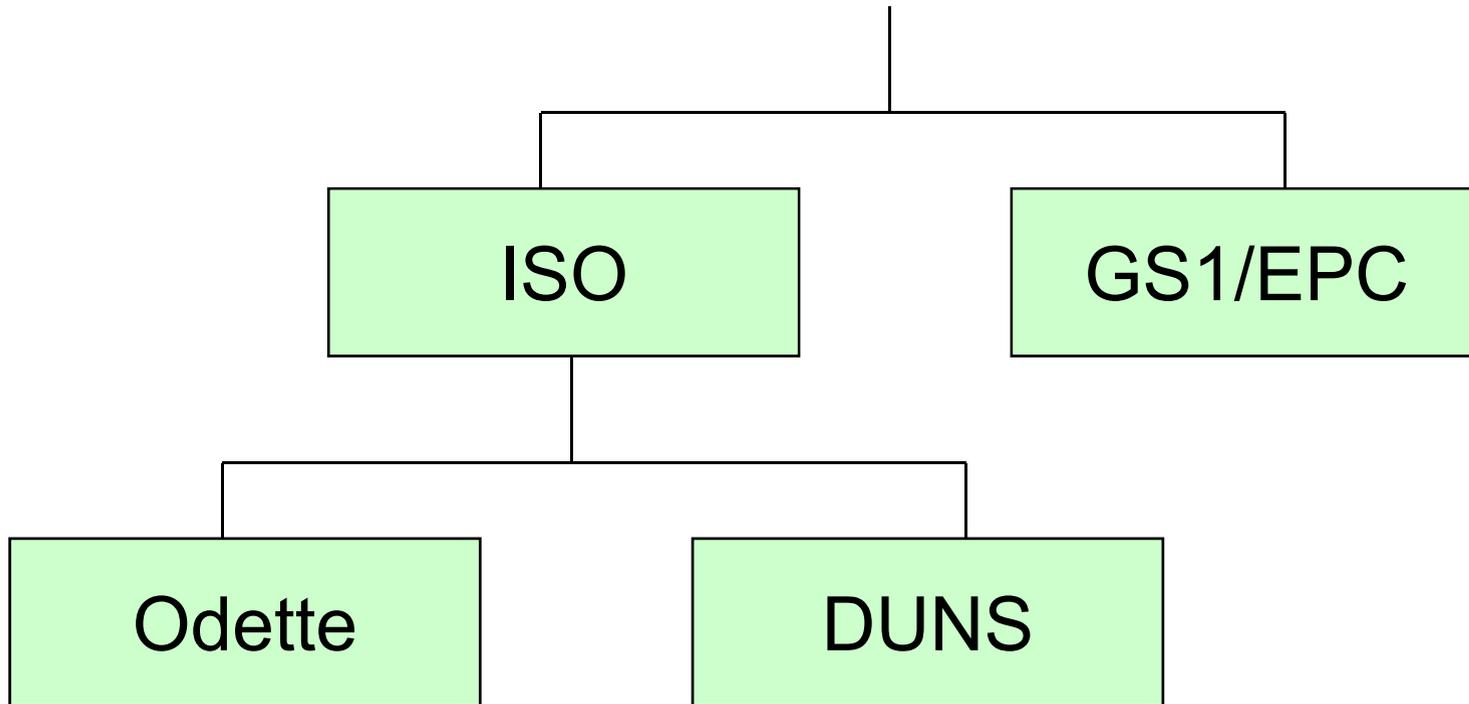
#### Basic String

25SOD1101      9482164652

#### Hexadecimal Format

32	35	53	4F	44	31	31	30	31	20	20	20	20
20	20	20	20	20	20	20	39	34	38	32	31	36

# Numbering system – how to decide?



Odette primarily recommends the ISO route  
Odette offers company codes "OSCAR"

# Usage of OSCAR Codes

## AutoID

Consignment ID (Licence Plate)

Asset ID (e.g. Containers)

Product ID (Parts Marking)

## Organisation codes:

Trading partners

Locations, business functions and departments within a company

Logistics handling units

Company Assets

Individual parts/components

Computer network addresses

Engineering changes

## EDI messaging

Technical Partner ID (Sender/Receiver)

Business process related Party ID (NAD ID)

File transfer station identification (OFTP)

Maintain Business Entity Datasets

Provide Business Entity Datasets for use in Partner Databases

# An introduction to NAF

- “NAF” is a network of companies aiming at strengthening the competitiveness within the manufacturing industry through improved and more integrated supply chains.
- There are similar bodies in countries like France, Germany and UK.
- The target group is primarily automotive suppliers in Sweden/Scandinavia.
- NAF was created by FKG (Automotive Supplier Association) together with Odette Sweden and BIL Sweden with funding from *Tillväxtverket*.

*Deltagande företag*



HardTech

FINNVEDEN



Haldex

DB SCHENKER

KONGSBERG AUTOMOTIVE



VOLVO



Transportindustri-  
förbundet



ODETTE  
SWEDEN

TILLVÄXT  
VERKET

MERIDION

# Odette International – Portal Survey

## 2.10 POTENTIAL TO STANDARDISE THE PROCESS AND APPLICATION LAYOUT OF PORTAL APPLICATIONS

For which portal applications do you see a potential to standardise the process and application layout?

	Total	France	Germany	Spain	Sweden
Package Management (RTI, empty containers)	25	6	6	10	3
Quality data and complaint (warranty) processing	24	3	6	11	4
Order	22	4	3	12	3
Delivery notes	21	1	4	14	2
Call-off order (delivery instruction)	18	1	4	11	2
Invoice data	16	2	2	11	1
Forecast	15	4	0	11	0
Supplier evaluation / logistics performance	15	5	3	7	0
CAD	14	5	0	7	2
Incident tracking (quality and logistics)	11	5	0	6	0
CMI	10	0	2	8	0
Quality of Despatch Advice data exchange	9	0	2	7	0
Price information	8	2	2	4	0
Request for quote	7	0	2	5	0

Odette made a survey about EDI and Portals, one of the main results was that Packaging Mgmt has a potential for improvement.



Nätverk för Affärsutveckling  
i Försörjningskedjan

We have made a recommendation for improving Packaging Management processes by replacing Web Portals with EDI. Auto Id/RFID would fit well into this concept

## Recommendation: Packaging Management in the Automotive Industry

*Initiators & principals:*



*Consultant partner:*



# NAF RFID for RTI: Proposed project structure

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## Project Management

- Managing and administrating the project
- "Awareness" and information
- Planning for next project phase

## Pilot project

- Analys a "Business Case" for a pilot projekt
- Adapting our Odette RFID-standard-encoder/decoder software component to pilot project requirements

## Information sharing

- Define suitable structure for logistics processes and information exchange concerning RFID for RTI:s
- Propose a service oriented infrastructure for storing and access to information for RFID transactions

## Expected project partners

AB Volvo companies, SKF and other large suppliers

# Thank you for listening!

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