ODETTE SWEDEN

# Training course, slides version 2.4

# EDI for supply chain collaboration in the automotive industry

October 26, 2016
Scandic Europa
Göteborg

Nätverk för Affärsutveckling i Försörjningskedjan

# Introduction

Language that we will use today?

# Introduction to this day, presentation of lecturers and participants

- Michael Bogren, Encode AB
  - Developer of EDI and logistics support, services and applications, since 1987
  - EDI implementations at over 300 EDI-partners
  - Founder of GeBC AB – one of the first Web-EDI providers globally.

- Ingrid Lundberg, Odette Sweden AB
  - CEO of Odette Sweden AB since February 2015
  - Former CIO of Volvo Logistics AB (since 1987)
  - Long experience in EDI, SCM, Auto ID, Customer/Supplier relations
  - Much involved in international automotive EDI organisations

- Björn Lantz
  - Developer of EDI and logistics support, services and applications, since 1987
  - Founder of Encode Networks Svenska AB
  - Creator of OFTP – Encode OFTP/OFTP2 software

# Presentation of participants

- Your company and your role in the company
- Your experience in logistics, ERP – EDI, technical issues

| Deltagare: | |
|---|---|
| | |
| Autoliv Sverige AB | Anna Hansson |
| Autoliv Sverige AB | Niklas Palmgren |
| AB SKF | Joakim Bergelin |
| AB SKF | Gibril George |
| AB SKF | Lise-Lotte Johansson |
| AB SKF | Suzanna Johansson |
| Continental Däck Sverige AB | Joakim Frostelind |
| Continental Däck Sverige AB | Hans Karlsson |
| Continental Däck Sverige AB | Tomas Östberg |
| Combitech AB | Oskar Blomgren |
| Scania CV | Miikka Nykänen |
| Scania CV | Michael Wehlin |
| Volvo Constructional | Pär Wikström |

# Agenda walkthrough

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# Agenda Day 1

| | |
|---|---|
| 09.30 | **Coffee** |
| 10.00 | **Introduction** |
| 10.30 | **EDI – why and what is it?**<br>▪ Introduction to Odette<br>▪ EDI standards and organisations behind<br>▪ Odette - future development and vision |
| 10.45 | **General overview of tools used for data exchange (messages, labels, RFID)**<br>▪ EDI structure<br>▪ EDIFACT key information and components/requirements |
| 11.15 | **Implementation issues**<br>▪ Supplier challenges<br>▪ IT solutions for EDI and labels<br>▪ ERP systems<br>▪ Automotive industry compared to Food & Beverage<br>▪ Procurement Methods<br>▪ Driving forces behind EDI |
| 12.15 | **Lunch** |

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# Agenda Day 1

| | |
|---|---|
| 13.00 | **Procurement methods**<br>■ Roles of the involved partners<br>■ Batch delivery<br>■ JIT/JIS process<br>■ VMI and CMI processes |
| 14.00 | **AUTO-ID Concepts**<br>■ 1D and 2D symbols<br>■ Data Identifiers<br>■ AUTO-ID Labels and Barcodes |
| 14.30 | **Coffee Break** |
| 14.45 | ■ Equipment for generating and reading labels<br>■ RFID – Passive and Active technology<br>■ RFID - standards/alternatives |
| 15.00 | **Communication solutions**<br>■ OFTP general overview and history |
| 15.30 | **TSL and SSL general overview**<br>■ Trust levels<br>■ Odette secure certificate handling policy |
| 16.00 | **New processes by the various OEMs or tier 1 suppliers, examples**<br>■ WebChecker<br>■ Forecast Accuracy Measurement |
| 16.30 | **Summary & discussion** |

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# Agenda Day 2

| | |
|---|---|
| 09.00 | **Introduktion OFTP** |
| 09.15 | **Communication services for B2B Data Exchange (EDI)** |
| | **The OFTP-protocol and alternatives - Introduction** |
| | **The OSI-model** |
| | **Security** |
| | **Introduction to PKI**<br>- CA-function and certificate administration<br>- PKI<br>- How to use the certificate<br>- Signatures and encryption/decrypting |
| | **Introduction to TSL and SSL**<br>- Odette SCX<br>- OFTP2 – Certificate administration |
| 10.30 | **Coffee** |

# Agenda Day 2

| | |
|---|---|
| 10.45 | **Detailed walkthrough of SCX and OFTP protocol and codes** |
| | **Odette security Certificate Exchange**<br>- Role and responsibility<br>- PKI<br>- How to use the certificate<br>- Signing, encryption |
| 11.30 | **OFTP2 and the exchange of security**<br>- The security policy of Odette (Odette SCX)<br>- OFTP2 and the certificate administration |
| | **Implementation issues** |
| 12.15 | **Lunch** |

# Agenda Day 2

| | |
|---|---|
| 13.00 | **Introduction EDI (deep dive)** |
| | **Deeper info format and syntax**<br>▪ EDI structure<br>▪ EDIFACT format and syntax, terminology<br>▪ Practical tasks |
| 15.00 | **Coffee Break** |
| 15.20-<br>16.00 | **Deeper info and syntax**<br>▪ Practical tasks and summary |

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# Documentation

**Available during training**

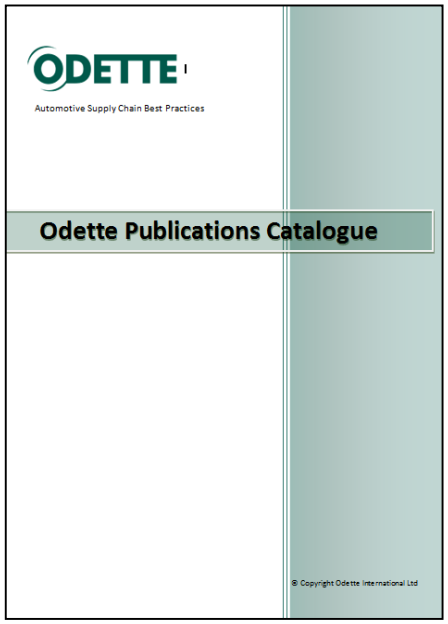
- Agenda
- Participants
- Slides
- Detailed samples of EDI messages
- Sample goods labels

**For download**

- Training course presentation slides
- OFTP2 explained
- OFTP2 Implementation Guidelines
- Comparison of File Transfer Alternatives
- Training course evaluation

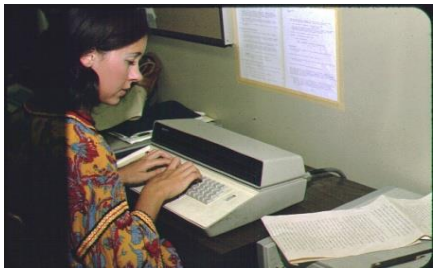
**Odette current publications**

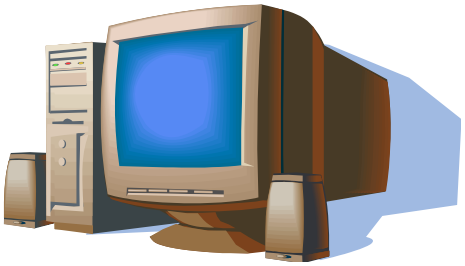
https://www.odette.org/publications

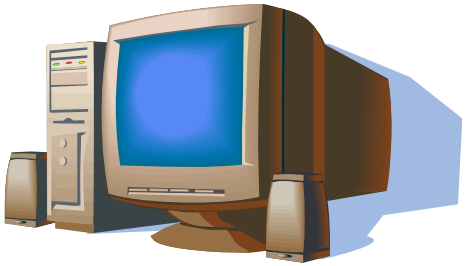



Download documents at http://www.odette.se/om-oss/filarkiv_1
User name: odette
PW: book12

# EDI – Why?





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# The realisation of EDI

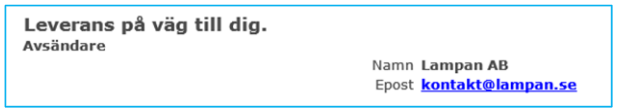
The automotive industry was a pioneer in implementing EDI due to:

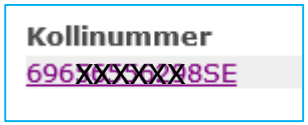
- Heavily growing amounts of information to be exchanged with trading partners
- High IT and management skills
- Being a large scale activity

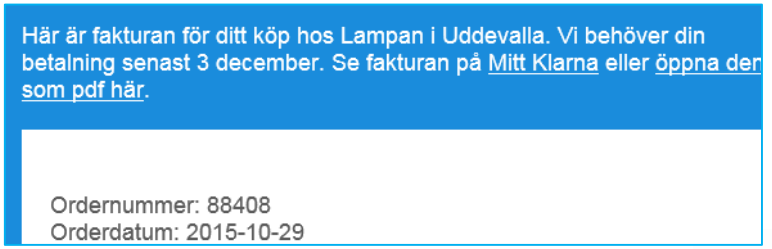
Another early adopter of EDI was the retail sector

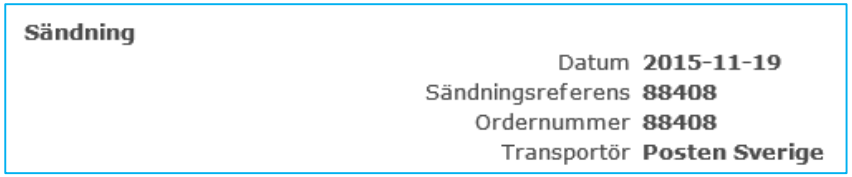
From this adoption of EDI has spread to any part of the economy like building and construction, transports, customs, finance,….

***Today EDI could be seen as a basic infrastructure factor in almost any administrative function in society, not least in On Line shopping:***




# EDI – a must in the automotive industry

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VOLVO

- AB Volvo participates in the Odette (Organisation for Data Exchange by Tele Transmission in Europe) organisation (Board and the forums).
- AB Volvo homepage: To support reducing development and order to delivery lead-times EDI (Electronic Data Interchange) communication throughout the supply chain is considered as a key success factor to support this.
- Actual yearly figures:
  - Delivery Plan: 4600 suppliers via web EDI + EDI (1261 suppliers with traditional EDI)
  - Despatch Advice: 3600 suppliers
  - Invoice: 1700 suppliers

SCANIA

- Scania participates in the Odette (Organisation for Data Exchange by Tele Transmission in Europe) organisation (Board and the forums).
- Actual yearly figures:
  - EDI-communication with 900 suppliers

# EDI – a must in the automotive industry

- Volvo Cars Corporation participates in the Odette (Organisation for Data Exchange by Tele Transmission in Europe) organisation (Board and the forum).
- Actual yearly figures:
  - EDI-communication with 1300 suppliers

- NEVS participates in the Odette (Organisation for Data Exchange by Tele Transmission in Europe) organisation (Board and the forum).
- No production at the moment, but are prepared to implement when the production starts.

# Examples of information sources

(Some are pass-word protected)

| | |
|---|---|
| https://www.odette.org/publications | All Odette publications available for Odette members (pass-word protected) |
| http://www.odette.se/implementering | Information about national profiles and guidelines issued by Odette Sweden |
| http://www.volvo.com/volvoit/edi/en-gb | EDI specifications at Volvo Group |
| http://www.volvoit.com/volvoit/edi/en-gb/vcc/specifications/Pages/Specifications2.aspx | EDI specifications at Volvo Cars |
| https://supplier.scania.com/wps/portal/Home/Supplying-to-Scania/EDI/!ut/p/a0/04_Sj9CPykssy0xPLMnMz0vMAfGjzOI9DB0NDI0sDLwsPELNDBwtjIMNPJ1MjU1czfQLsh0VAdCScjQ!/ | EDI specifications at Scania |
| https://www.vda.de/en/services/Publications.html | Information about national profiles and guidelines issued by VDA in Germany |
| http://www.galia.com/dyn/s_recommandations.asp | Information about national profiles and guidelines issued by GALIA in France |
| http://www.unece.org/tradewelcome/home.html | UNECE main page |

# Introduction to Odette, historical walkthrough

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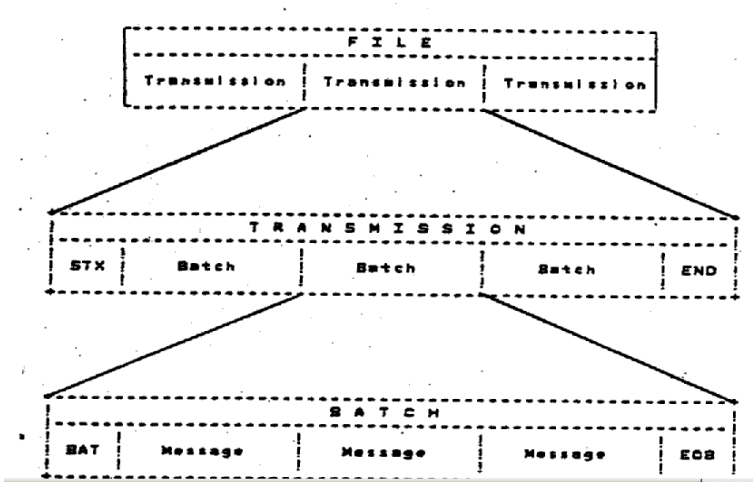
# Introduction to Odette

Odette started in 1984, when DOS was the dominating Operating System and well before Internet and email became available

The basic concepts that EDIFACT builds upon were initially developed in Odette


Så här ser ett ODETTE-meddelande ut på bildskärmen.

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# Introduction to Odette

Odette" is an abbreviation for "*Organisation for Data Exchange by Tele Transmission in Europe*"

Odette today:

- An organisation working for the European automotive industry with close relations to its counterparts in North America and in Japan
- An issuer of common guidelines and recommendations for logistics and data exchange in the supply chain:
  - EDI messages based on EDIFACT or XML
  - File transfer protocol
  - Usage of Auto Id with bar codes, 2D and RFID
  - Logistics scenarios

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# Membership

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## National Organisations

- **Germany (VDA)**
- **France (GALIA)**
- **Sweden (Odette Sweden)**
- **Spain (Odette Spain/ANFAC)**
- **Czech Republic (AIA)**
- **United Kingdom (SMMT)**

## Associate National Members

- **Turkey (OSD)**

## Associate IT Members

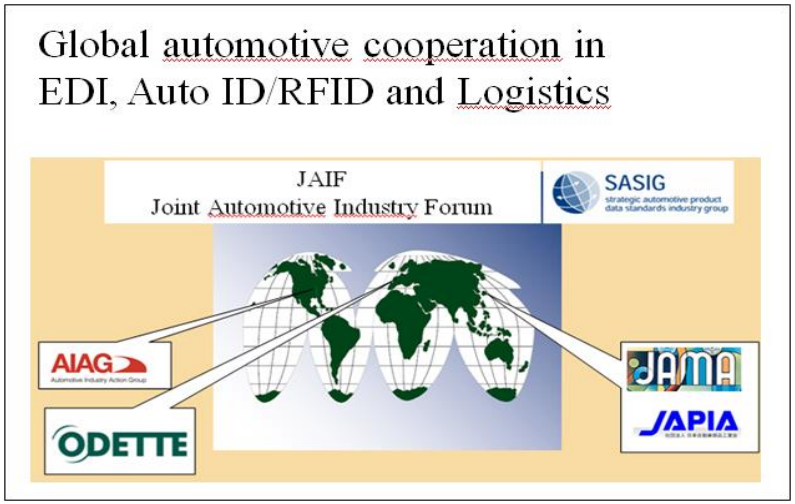
- **Axway**
- **QAD**

## Interest Group Members

- **FCA & CNH (FIAT-Chrysler, IVECO)**

*Representing more than*

*4000 companies in Europe*



# Odette organisation

Odette Sweden was founded in 1984, the company is owned by the trade association BIL Sweden AB
Around 50 members: OEMs, suppliers, IT Providers and LSPs

Network for common development of the Swedish/Scandinavian supply chain

Odette International

Joint Automotive Industry Forum, the platform for global collaboration between the American AIAG and Japanese JAMA and JAPIA

# Odette introduction, working areas

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## Assessment Tools

- Global MMOG/LE
- Global Logistics Evaluation for Carriers and Logistics Service Providers

## Key Performance Indicators

- KPIs for Global Materials Management and Logistics
- KPIs for Carriers and Logistics Service Providers
- Forecast Accuracy Measurement

## Data Exchange

- EDI messaging
- EDI messaging support services
- OFTP2 File Transfer protocol

## Applications

- Demand Capacity Planning
- Supply Chain Monitoring
- Vendor Managed Inventory
- Global Collaboratively Managed Inventory Min/Max

## Packaging

- Container Management

## General

- Global Materials Management and Logistics Agreement
- Guidelines for Reporting Freight Greenhouse Gas Emissions

## Services

- OSCAR code issuing servicefor unique identification of companies or locations
- Odette as a Certification Authority (CA)
- Trust Bridge for listed CAs

## Auto ID /RFID Transport Labelling

- Global Transport Label
- OTL1 Transport Label
- OTL3 Transport Label
- Aftermarket Label
- Traceability of Vehicle Components
- Unique Parts Identification
- RFID in Vehicle Distribution Processes
- RFID for Parts Marking
- RFID in Supply Chain Container Management

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# EDI standards and organisations behind

**UNCEFACT (**United Nations Centre for Trade Facilitation and Electronic Business)

- EDIFACT, Electronic Data Interchange For Administration Commerce and Transport
- XML

**ODETTE**, European standard

- Organisation for Data Exchange by Tele Transmission in Europe

**GALIA**, the French part of Odette

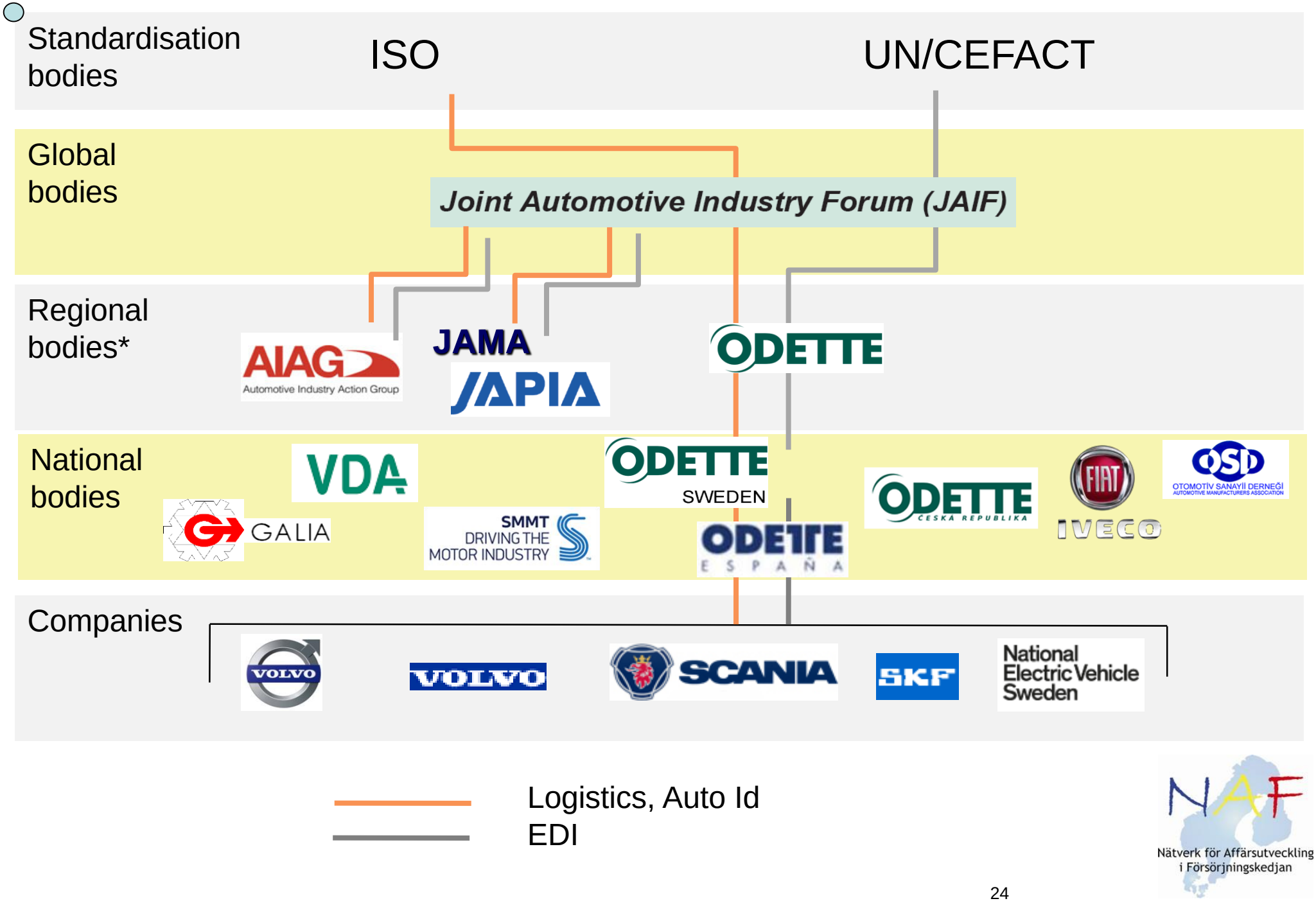
- Groupement pour l'Amélioration des Liaisons dans l'Industrie Automobile

**VDA**, the German part of Odette, also publisher of one of the earliest EDI standards

- Verband Der Automobilindustrie

**ANSI**, (old) American standard

- American National Standards Institute


Standardisation bodies
ISO
UN/CEFACT
Global bodies
Joint Automotive Industry Forum (JAIF)
Regional bodies*
AIAG
Automotive Industry Action Group
JAMA
JAPIA
ODETTE
National bodies
VDA
ODETTE
SWEDEN
ODETTE
ČESKÁ REPUBLIKA
FIAT
IVECO
OSD
OTOMOTİV SANAYİİ DERNEĞİ
AUTOMOTIVE MANUFACTURERS ASSOCIATION
GALIA
SMMT
DRIVING THE
MOTOR INDUSTRY
ODETTE
ESPAÑA
Companies
VOLVO
VOLVO
SCANIA
SKF
National
Electric Vehicle
Sweden
Logistics, Auto Id
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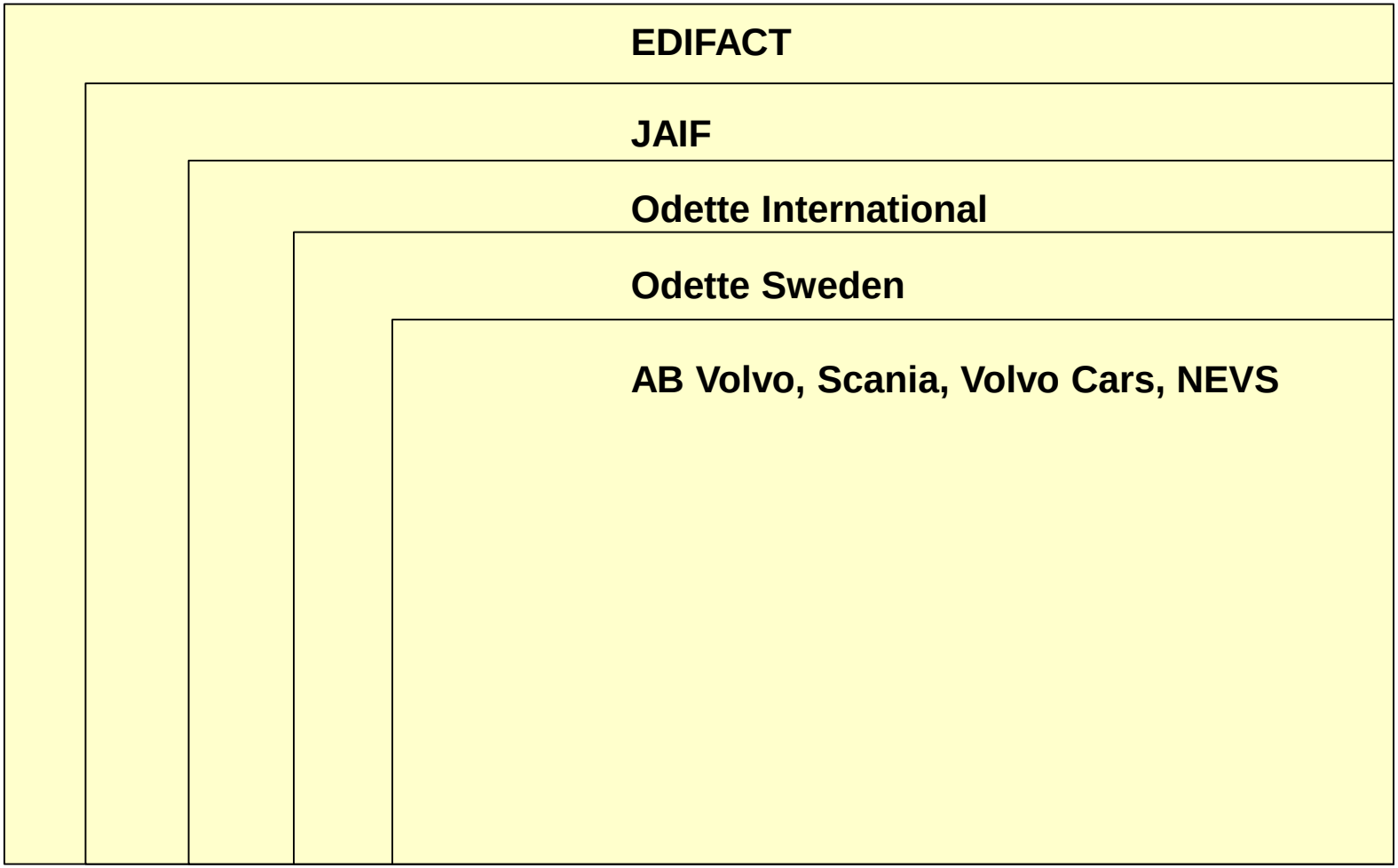
# EDI messages standards development and implementation



# Odette - future development and vision

# Main developments in the Odette environment

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## Syntax

- EDIFACT was the main syntax from the start
- Still EDIFACT is the most commonly used syntax
- XML syntax in use for more than 15 years
- Syntax is a specialist issue that most EDI users do not need to get into

## EDI messages

- The first generation of messages came from VDA in 1980. Still well before EDIFACT until recently still in (some) use but being phased out now
- The first Odette messages were published in 1986, still in (some) use
- Odette messages based on EDIFACT came in 1990, some are still used
- Global automotive EDI messages (Odette/JAIF based on EDIFACT) were first published around year 2000, these are in considerable use
- Odette/JAIF messages are also available in XML syntax

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# Main developments in the Odette environment

## Data exchange

- Odette has developed its own file transfer protocol (OFTP)
- OFTP1 was made for ”telecom” services (ISDN/X.25)
- OFTP2 is made for Internet services

## Integration technologies

- From the beginning Odette has developed solutions aimed for direct data exchange between parties and assuming each party is connecting EDI to their ERP systems
- Simplified solutions are also available:
  - Data exchange plus eventually also other services like syntax translation via third parties (VAN), common in the US
  - Web portals

# Future tendencies

## Syntax

- EDIFACT still the main option but increasing use of XML
- More messages in XML format will mean more subsets and increasing complexity

## EDI messages

- Message functionality only changing slowly
- More global standards
- More interactivity

## Data exchange

- OFTP2 and Internet will become a global standard within automotive
- More cloud services, more interactivity

## Integration technologies

- Portals will be less used
- More cloud services, more interactivity

# General overview of tools used for data exchange (messages, labels, RFID)

EDI – Electronic Data Interchange

Electronic, predefined documents exchanged between parties.

DELFOR

DESADV

INVOIC

DELJIT

Labels with bar codes and plain text information


RFID tags

# What is EDI all about?

## Benefits

- Without EDI, it is not possible to handle the data volumes required in todays logistic solutions.
- With good systems, manual handling can be completely excluded and data can be sent from system to system, from Tier to Tier.

## Issues

- If EDI is used incorrectly, benefits are limited throughout the supply chain.
- One problem is when one party forces another party to use a web portal.
- Another problem is the number of different applications of formats.
- A third problem is inadequate applications, when rules are not followed.

# What is EDI

EDI – Electronic Data Interchange

- *The transfer of structured data, by agreed message standards, from one computer system to another*

- *EDIFACT – **E**lectronic **D**ata **I**nterchange for **A**dministration, **C**ommerce and **T**ransport – main European standard.*

*Other standard formats:*

*Odette – Older EDIFACT subset*

*VDA – German Industry standard*

*ANSI X.12 – US standard*

*Some XML applications (UBL, cXML, SAP IDOCS and so on)*

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# EDI structure

- EDIFACT is developed and maintained by UNECE – United Nations Economic Commission for Europe.
- The standard D.13A contains 194 different business documents

http://www.unece.org/trade/untdid/d13a/trmd/trmdi2.htm

The most common in the Automotive Industry are:

DELFOR – **DEL**ivery **FOR**ecast

DELJIT – **DEL**ivery **J**ust **I**n **T**ime

DESADV – **DES**patch **ADV**ice

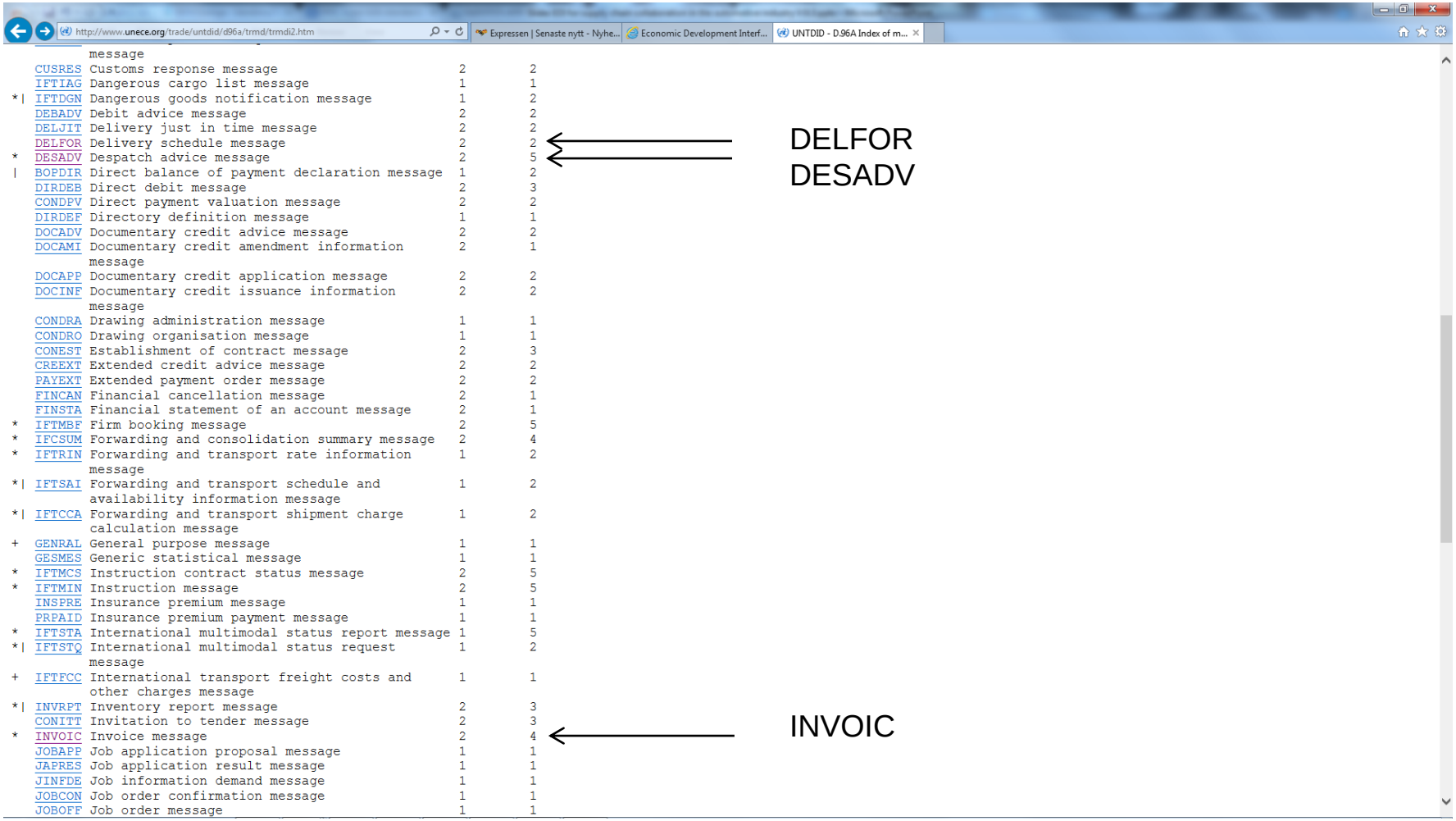
INVOIC - **INVOIC**e

# EDI structure

- Envelope — One for each partner and location
- Message: — One per message (sets standard)
- Header: — Partner and message information
- Line — Detail/Item/Package data
- Sub line — Multiple details on line

- EDI standards like EDIFACT describe the structure of messages, gives information on how to interpret data and and what segments and tags are mandatory, conditional and optional.

# EDI structure – Messages

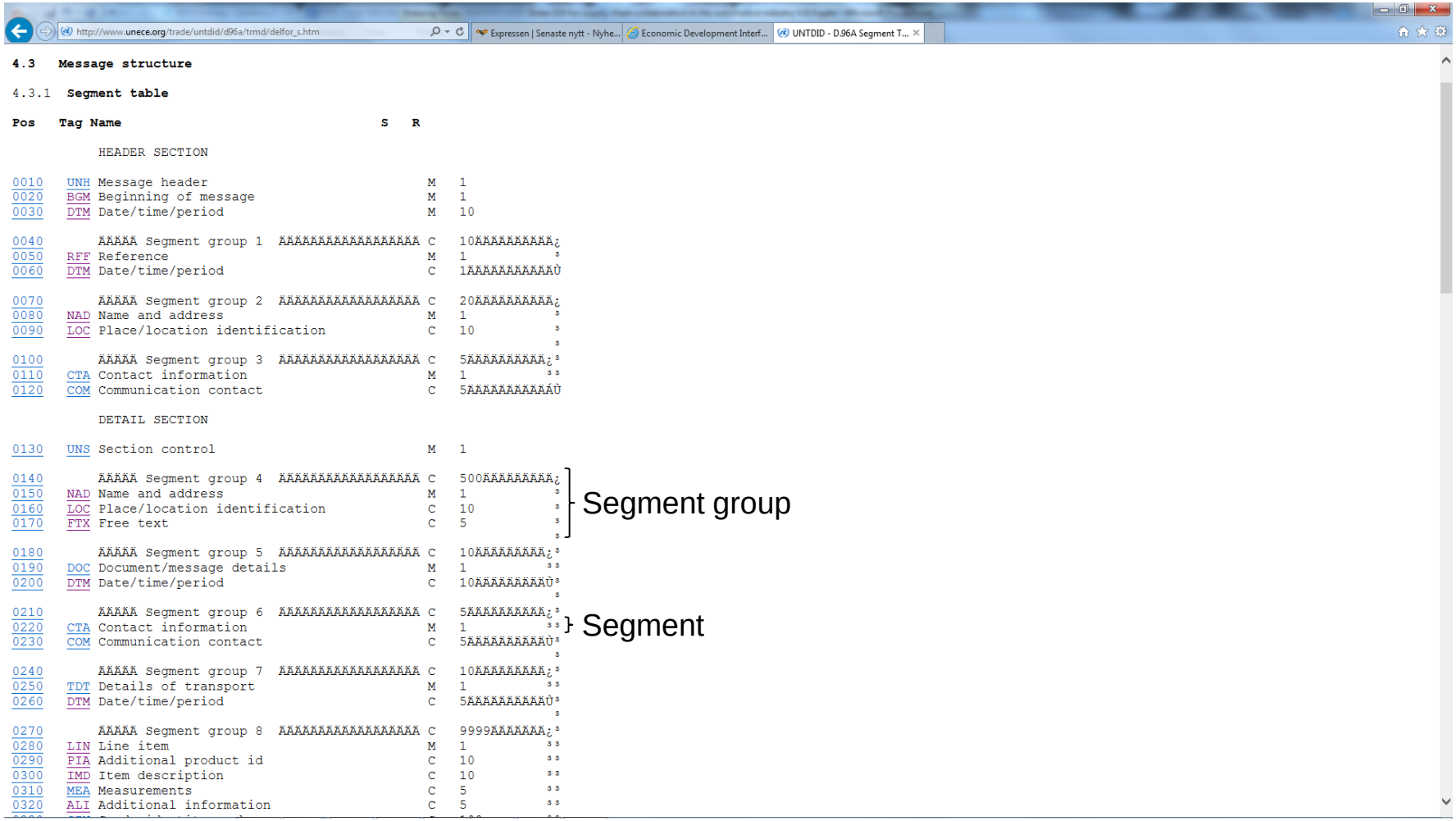


| | | | | |
|---|---|---|---|---|
| | | message | | |
| | CUSRES | Customs response message | 2 | 2 |
| | IFTIAG | Dangerous cargo list message | 1 | 1 |
| *\| | IFTDGN | Dangerous goods notification message | 1 | 2 |
| | DEBADV | Debit advice message | 2 | 2 |
| | DELJIT | Delivery just in time message | 2 | 2 |
| | DELFOR | Delivery schedule message | 2 | 2 |
| * | DESADV | Despatch advice message | 2 | 5 |
| \| | BOPDIR | Direct balance of payment declaration message | 1 | 2 |
| | DIRDEB | Direct debit message | 2 | 3 |
| | CONDPV | Direct payment valuation message | 2 | 2 |
| | DIRDEF | Directory definition message | 1 | 1 |
| | DOCADV | Documentary credit advice message | 2 | 2 |
| | DOCAMI | Documentary credit amendment information message | 2 | 1 |
| | DOCAPP | Documentary credit application message | 2 | 2 |
| | DOCINF | Documentary credit issuance information message | 2 | 2 |
| | CONDRA | Drawing administration message | 1 | 1 |
| | CONDRO | Drawing organisation message | 1 | 1 |
| | CONEST | Establishment of contract message | 2 | 3 |
| | CREEXT | Extended credit advice message | 2 | 2 |
| | PAYEXT | Extended payment order message | 2 | 2 |
| | FINCAN | Financial cancellation message | 2 | 1 |
| | FINSTA | Financial statement of an account message | 2 | 1 |
| * | IFTMBF | Firm booking message | 2 | 5 |
| * | IFCSUM | Forwarding and consolidation summary message | 2 | 4 |
| * | IFTRIN | Forwarding and transport rate information message | 1 | 2 |
| *\| | IFTSAI | Forwarding and transport schedule and availability information message | 1 | 2 |
| *\| | IFTCCA | Forwarding and transport shipment charge calculation message | 1 | 2 |
| + | GENRAL | General purpose message | 1 | 1 |
| | GESMES | Generic statistical message | 1 | 1 |
| * | IFTMCS | Instruction contract status message | 2 | 5 |
| * | IFTMIN | Instruction message | 2 | 5 |
| | INSPRE | Insurance premium message | 1 | 1 |
| | PRPAID | Insurance premium payment message | 1 | 1 |
| * | IFTSTA | International multimodal status report message | 1 | 5 |
| *\| | IFTSTQ | International multimodal status request message | 1 | 2 |
| + | IFTFCC | International transport freight costs and other charges message | 1 | 1 |
| *\| | INVRPT | Inventory report message | 2 | 3 |
| | CONITT | Invitation to tender message | 2 | 3 |
| * | INVOIC | Invoice message | 2 | 4 |
| | JOBAPP | Job application proposal message | 1 | 1 |
| | JAPRES | Job application result message | 1 | 1 |
| | JINFDE | Job information demand message | 1 | 1 |
| | JOBCON | Job order confirmation message | 1 | 1 |
| | JOBOFF | Job order message | 1 | 1 |

DELFOR
DESADV

INVOIC

# EDI structure – Segment Groups and segments



http://www.unece.org/trade/untdid/d96a/trmd/delfor_s.htm

**4.3 Message structure**

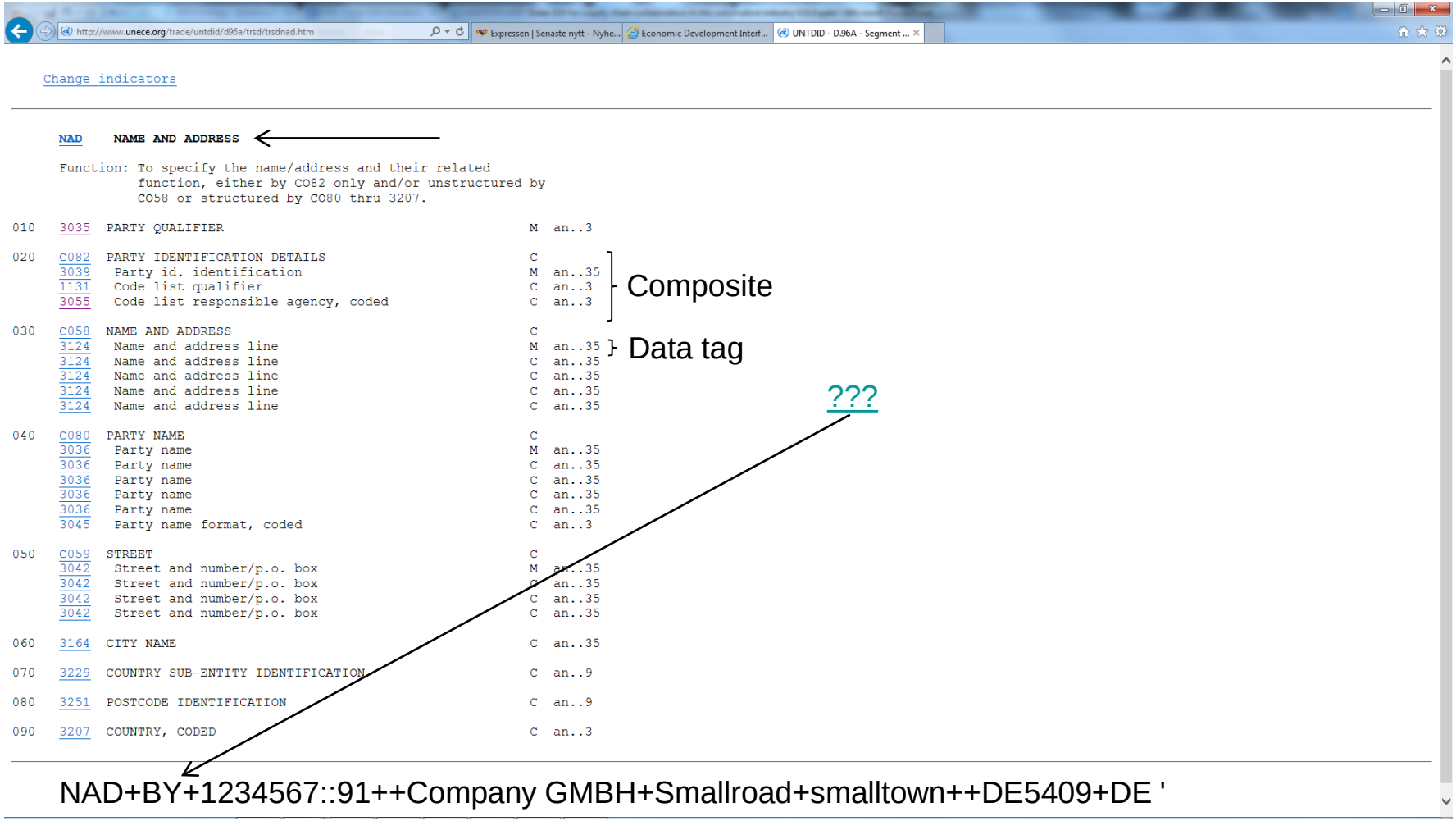
**4.3.1 Segment table**

| Pos | Tag | Name | S | R | |
|---|---|---|---|---|---|
| | | HEADER SECTION | | | |
| 0010 | UNH | Message header | M | 1 | |
| 0020 | BGM | Beginning of message | M | 1 | |
| 0030 | DTM | Date/time/period | M | 10 | |
| 0040 | | Segment group 1 | C | 10 | |
| 0050 | RFF | Reference | M | 1 | |
| 0060 | DTM | Date/time/period | C | 1 | |
| 0070 | | Segment group 2 | C | 20 | |
| 0080 | NAD | Name and address | M | 1 | |
| 0090 | LOC | Place/location identification | C | 10 | |
| 0100 | | Segment group 3 | C | 5 | |
| 0110 | CTA | Contact information | M | 1 | |
| 0120 | COM | Communication contact | C | 5 | |
| | | DETAIL SECTION | | | |
| 0130 | UNS | Section control | M | 1 | |
| 0140 | | Segment group 4 | C | 500 | |
| 0150 | NAD | Name and address | M | 1 | |
| 0160 | LOC | Place/location identification | C | 10 | |
| 0170 | FTX | Free text | C | 5 | |
| 0180 | | Segment group 5 | C | 10 | |
| 0190 | DOC | Document/message details | M | 1 | |
| 0200 | DTM | Date/time/period | C | 10 | |
| 0210 | | Segment group 6 | C | 5 | |
| 0220 | CTA | Contact information | M | 1 | |
| 0230 | COM | Communication contact | C | 5 | |
| 0240 | | Segment group 7 | C | 10 | |
| 0250 | TDT | Details of transport | M | 1 | |
| 0260 | DTM | Date/time/period | C | 5 | |
| 0270 | | Segment group 8 | C | 9999 | |
| 0280 | LIN | Line item | M | 1 | |
| 0290 | PIA | Additional product id | C | 10 | |
| 0300 | IMD | Item description | C | 10 | |
| 0310 | MEA | Measurements | C | 5 | |
| 0320 | ALI | Additional information | C | 5 | |

Segment group

Segment

# EDI structure – Segment structure



Change indicators

**NAD** **NAME AND ADDRESS**

Function: To specify the name/address and their related function, either by CO82 only and/or unstructured by CO58 or structured by CO80 thru 3207.

| | | | | | |
|---|---|---|---|---|---|
| 010 | 3035 | PARTY QUALIFIER | M | an..3 | |
| 020 | C082 | PARTY IDENTIFICATION DETAILS | C | | |
| | 3039 | Party id. identification | M | an..35 | Composite |
| | 1131 | Code list qualifier | C | an..3 | Composite |
| | 3055 | Code list responsible agency, coded | C | an..3 | Composite |
| 030 | C058 | NAME AND ADDRESS | C | | |
| | 3124 | Name and address line | M | an..35 | Data tag |
| | 3124 | Name and address line | C | an..35 | |
| | 3124 | Name and address line | C | an..35 | |
| | 3124 | Name and address line | C | an..35 | |
| | 3124 | Name and address line | C | an..35 | |
| 040 | C080 | PARTY NAME | C | | |
| | 3036 | Party name | M | an..35 | |
| | 3036 | Party name | C | an..35 | |
| | 3036 | Party name | C | an..35 | |
| | 3036 | Party name | C | an..35 | |
| | 3036 | Party name | C | an..35 | |
| | 3045 | Party name format, coded | C | an..3 | |
| 050 | C059 | STREET | C | | |
| | 3042 | Street and number/p.o. box | M | an..35 | |
| | 3042 | Street and number/p.o. box | C | an..35 | |
| | 3042 | Street and number/p.o. box | C | an..35 | |
| | 3042 | Street and number/p.o. box | C | an..35 | |
| 060 | 3164 | CITY NAME | C | an..35 | |
| 070 | 3229 | COUNTRY SUB-ENTITY IDENTIFICATION | C | an..9 | |
| 080 | 3251 | POSTCODE IDENTIFICATION | C | an..9 | |
| 090 | 3207 | COUNTRY, CODED | C | an..3 | |

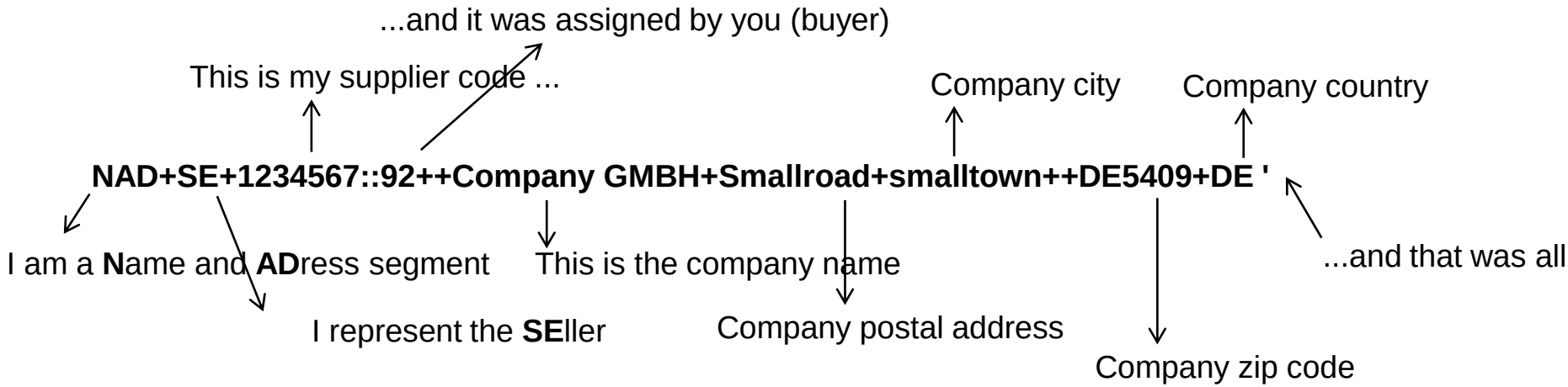
???

NAD+BY+1234567::91++Company GMBH+Smallroad+smalltown++DE5409+DE '

# What is EDI?

- *EDI is a way to pack and label data in business information in a standardized manner, so that the information can be interpreted and imported to/exported from ERP or other superior systems.*

- *Let's dissect one single EDIFACT segment:*




http://www.unece.org/trade/untdid/d96a/trmd/trmdi2.htm

# EDIFACT Format and syntax, detailed walkthrough Segment architecture

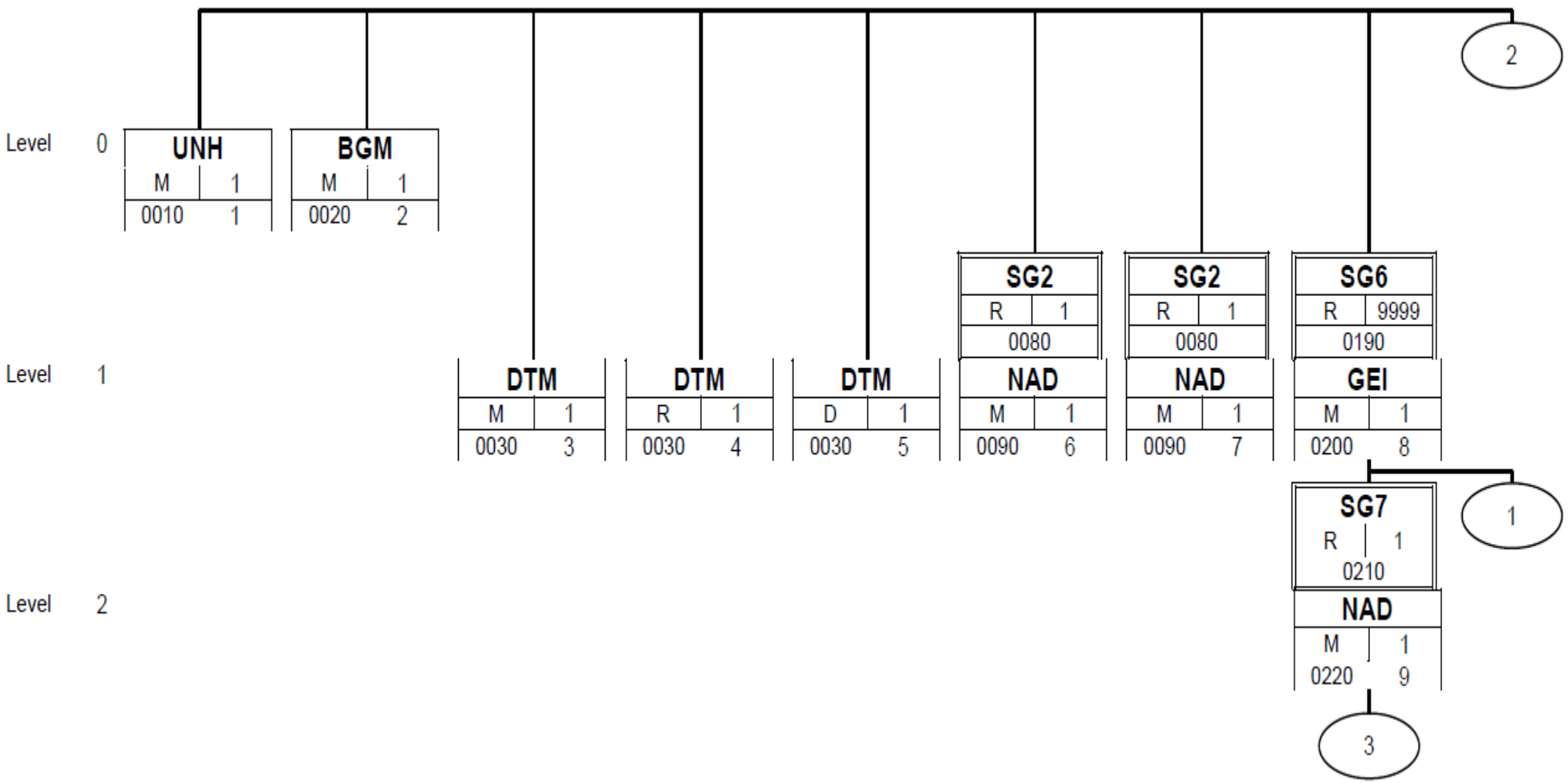
# Terminology

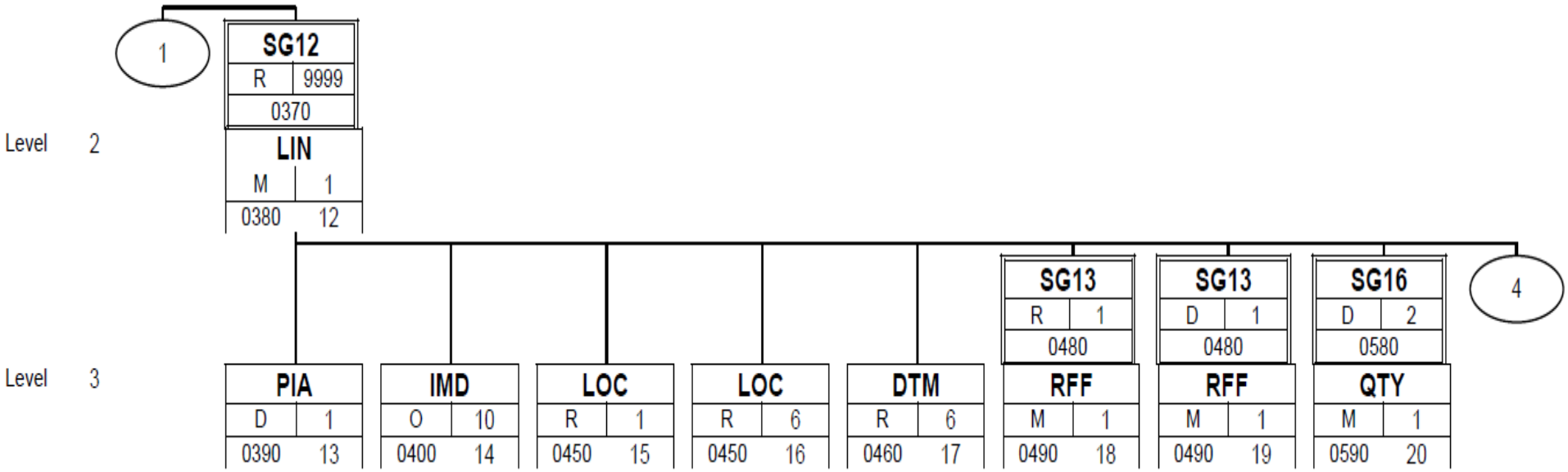
**DELFOR D04A**

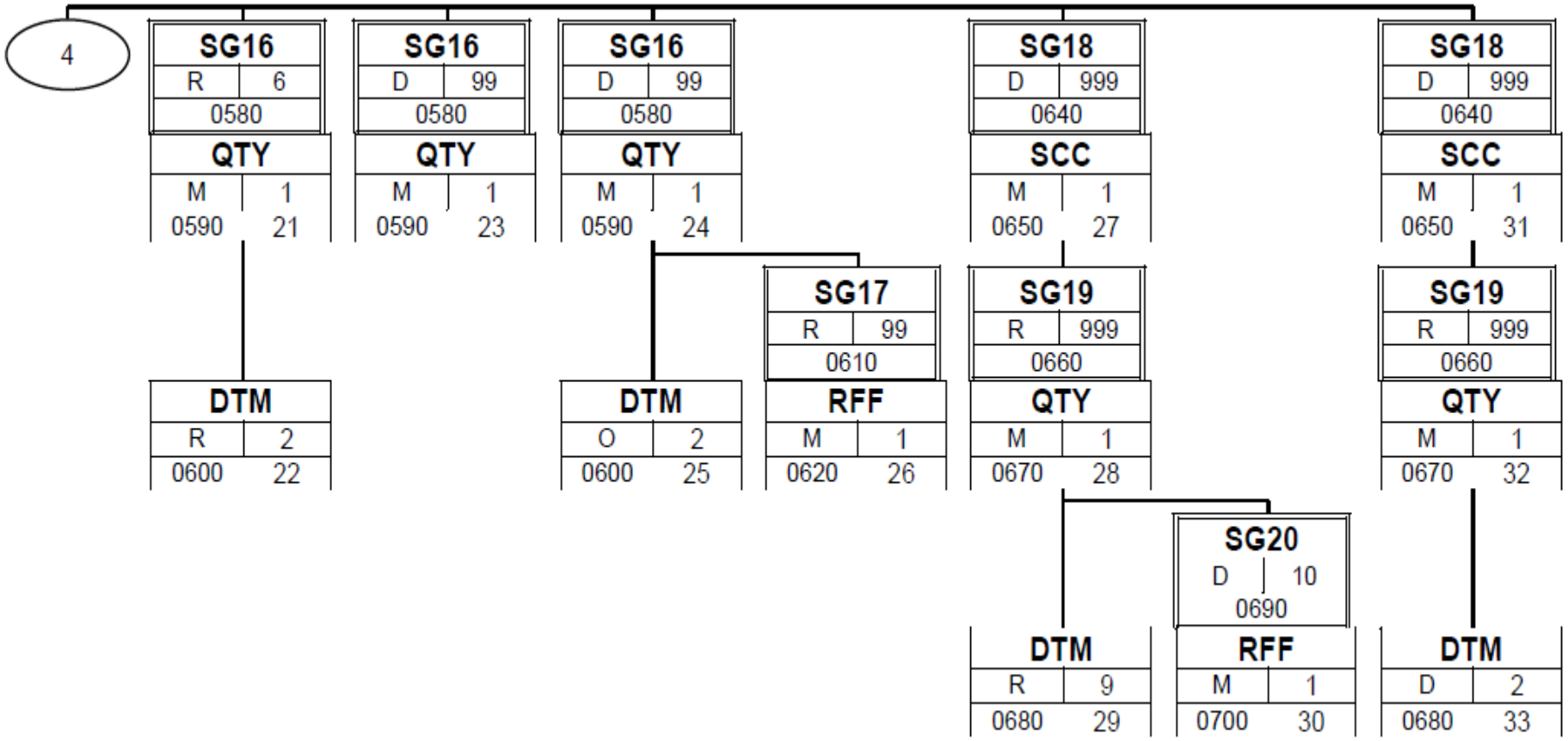
Message type Status Catalogue Revision

TAX+7+VAT++++:::0.00+AAC'

Segment Element separator Data element Sub-element Composite Segment delimiter


Level 0
Level 1
Level 2
UNH
M 1
0010 1
BGM
M 1
0020 2
DTM
M 1
0030 3
DTM
R 1
0030 4
DTM
D 1
0030 5
SG2
R 1
0080
NAD
M 1
0090 6
SG2
R 1
0080
NAD
M 1
0090 7
SG6
R 9999
0190
GEI
M 1
0200 8
SG7
R 1
0210
NAD
M 1
0220 9
2
1
3


1
SG12
R 9999
0370
Level 2
LIN
M 1
0380 12
SG13
R 1
0480
SG13
D 1
0480
SG16
D 2
0580
4
Level 3
PIA
D 1
0390 13
IMD
O 10
0400 14
LOC
R 1
0450 15
LOC
R 6
0450 16
DTM
R 6
0460 17
RFF
M 1
0490 18
RFF
M 1
0490 19
QTY
M 1
0590 20




Nätverk för Affärsutveckling i Försörjningskedjan

ODETTE SWEDEN

| | | | | | | |
|---|---|---|---|---|---|---|
| **Group:** | **SG6** | Status: R | | Max. Occ.: | 9999 | Ship-to level (instruction line) |
| **Segment:** | **GEI** | Seq. No.: | 8 | Level: | 1 | **Processing information** |
| | | Status: | M | Max. Occ.: | 1 | |
| | | Counter: | 0200 | | | |

**Name:** **Processing information**

**Description of segment:**

| UN/EDIFACT | | | Implementation | |
|---|---|---|---|---|
| | Name | St Format | St Format | Use / Remarks |
| GEI | | | | |
| 9649 | Processing information code qualifier | M an..3 | M an..3 | **3 = Scheduling type information** |
| C012 | Processing indicator | C | N | not used |
| 7365 | Processing indicator description code | C an..3 | N | not used |
| 1131 | Code list identification code | C an..17 | N | not used |
| 3055 | Code list responsible agency code | C an..3 | N | not used |
| 7364 | Processing indicator description | C an..35 | N | not used |
| 7187 | Process type description code | C an..17 | N | not used |

**Remark:**
An instruction line gives the delivery instruction details (schedule dates, scheduled quantities etc.) for one individual ship-to party e.g. a plant in a delivery instruction or forecast.

**Example:**
```
GEI+3'
```

Nätverk för Affärsutveckling i Försörjningskedjan

**Group:** SG12 Status: R Max. Occ.: 9999 Scheduled Article Details

**Segment:** LIN Seq. No.: 12 Level: 2 **Line item**
Status: M Max. Occ.: 1
Counter: 0380

**Name:** **Line item**

**Description of segment:**

| UN/EDIFACT | | | Implementation | |
|---|---|---|---|---|
| | Name | St Format | St Format | Use / Remarks |
| LIN | | | | |
| 1082 | Line item identifier | C an..6 | N | not used |
| 1229 | Action request/notification description code | C an..3 | R an..3 | Code indicating action required as a result of the new instruction.<br>Code 9 - Amendments - means the schedule lines of a previous forecast/ instruction are replaced only for the specific horizon indicated. All figures before and after remain valid. This requires an effective from and an effective to date on header level.<br>Code 38 - the complete previous forecast / instruction for this line item is replaced by new figures for the full horizon.<br><br>It is business practice to use at least one time a zero quantity schedule line for articles that have been part of previous schedules but are now no longer part of the schedule in the case of the 'complete replacement' situation.<br><br>**9 = Amendments**<br>**38 = Replaced** |
| C212 | Item number identification | C | R | Article ID(s) as assigned by one or more of the involved parties. |
| 7140 | Item identifier | C an..35 | R an..35 | Information directly relating to the identification of an article by the buyer's identification system.<br>Note: The term article is synonym with the term item. Since in Odette and in the global joint automotive projects the term article has been used, this naming convention has been continued.<br>Volvo's Article number. |
| 7143 | Item type identification code | C an..3 | R an..3 | **IN = Buyer's item number** |
| 1131 | Code list identification code | C an..17 | N | not used |
| 3055 | Code list responsible agency code | C an..3 | N | not used |
| C829 | Sub-line information | C | N | not used |
| 5495 | Sub-line indicator code | C an..3 | N | not used |
| 1082 | Line item identifier | C an..6 | N | not used |
| 1222 | Configuration level number | C n..2 | N | not used |
| 7083 | Configuration operation code | C an..3 | N | not used |

**Remark:**
A product required by the buyer, which is scheduled to be delivered
All segments in the detail section following the LIN segment refer to the line item.
The supplier is responsible for converting Volvo's article number into the supplier's own internal number.

# Key information in the DELFOR message

| | |
|---|---|
| BGM+241+**20131001113000**' | Message Number. |
| DTM+137:**20131001**:102' | Message Date/time. |
| DTM+157:**20131001**:102' | Validity start date. |
| NAD+BY+**8442**::92' | Buyer number, allocated by Volvo. |
| NAD+SE+**46243**::92' | Seller number , allocated by the Volvo. |
| GEI+3' | |
| NAD+ST+**8442**::92++VOLVO TRUCK CORP - KALUGA' | Ship to Volvo plant No. |
| LIN++38+**1083377**:IN' | Item number. |
| LOC+11+**051**::92' | Place of discharge. |
| LOC+159+**00 051**::92' | Additional internal destination. |
| DTM+257:**20131001**:102' | Calculation Date/Time |
| RFF+ON:**000000000051**' | Volvo Order No. |
| RFF+AIF:**201309281131**' | Previous delivery instruction number. |
| QTY+70:**1616**' | Cumulative quantity received. |
| DTM+51:**20130101**:102' | Cumulative start date. |
| QTY+12:**12**' | Despatch quantity. |
| QTY+48:**12**' | Received quantity. |
| DTM+11:**20130927**:102' | Despatch date. |
| RFF+AAK:**83050542**' | Despatch Note No. |
| QTY+12:3' | ** Note the group QTY,QTY,DTM,RFF could be repeated 0 - 3 times |
| QTY+48:3' | depending on the number of recevied despach notes. |
| DTM+11:20130925:102' | |
| RFF+AAK:83044602' | |
| QTY+12:7' | |
| QTY+48:7' | |
| DTM+11:20130925:102' | |
| RFF+AAK:83044587' | |
| SCC+**24**' | Forecast indicator. |
| QTY+113:**7**' | Quantity to deliver. |
| DTM+10:**20121001**:102' | Delivery date. |

# Key information in the DELJIT message

| | |
|---|---|
| BGM+30::10+**20121023200745**' | Message number. |
| DTM+137:**201210232007**:203' | Message Date/time. |
| NAD+CZ+**46243**::92' | The supplier number , allocated by Volvo. Use in DESADV and on Odette label. |
| NAD+BY+**1020**::92' | The buyer number , allocated by Volvo. Use in DESADV |
| NAD+CN+**8442**::92++VOLVO TRUCK CORP' | Volvo's plant number. Use in DESADV and on Odette label |
| LOC+11+0**51**' | Place of discharge. Use in DESADV. |
| SEQ+3+**482118**' | Production sequence number. |
| DTM+194:**201311272030**:203' | Assembling Date/Time. Use on Odette label |
| GIR+4+**109385**:VV' | Vehicle identification number. Use in DESADV and on Odette label |
| LIN+++**20755211**:IN' | Item number. Use in DESADV and on Odette label |
| IMD+++:::**PROPELLER SHAFT C2060/235**' | Detailed Description. |
| LOC+159+**L41 14030 051**' | Additional internal destination.Stated on Odette Label |
| QTY+131:**1**' | Quantity. Use in DESADV and on Odette label |
| SEQ+40+**482102**' | |
| DTM+194:**201311270949**:203' | |
| GIR+4+**109369**:VV' | |
| LIN+++**1068154**:IN' | |
| IMD+++:::**PROPELLER SHAFT C2060/170**' | |
| LOC+159+**L41 14040 051**' | |
| QTY+131:**1**' | |
| SEQ+40+**482104**' | |
| DTM+194:**201311271051**:203' | |
| GIR+4+**109371**:VV' | |
| LIN+++**1067758**:IN' | |
| IMD+++:::**PROPELLER SHAFT C2055/180**' | |
| LOC+159+**L41 14040 051**' | |
| QTY+131:**1**' | |

For each new Chassi number there will be a repetition of SEQ,DTM,GIR,LIN,IMD, LOC and QTY.

Nätverk för Affärsutveckling i Försörjningskedjan

# Key information in DESADV

| | |
|---|---|
| BGM+351+**102698**' | Despatch Note Number. Printed on Odette Label |
| DTM+137:**201310010904**:203' | Despatch Date/time. Printed on Odette Label |
| RFF+AAS:**21627**' | Transport document number. |
| NAD+ST+**8442**::92' | Volvo's plant number, allocated by Volvo. |
| NAD+SE+**46243**::92' | The Seller number , allocated by the Volvo. |
| NAD+SF+**46243**::92' | The supplier number. Printed on Odette Label. |
| LOC+11+**051**::92' | Place of discharge. |
| NAD+CA+**NIL**::92' | Carrier Coded |
| CPS+1++1' | |
| PAC+1++NIL::92' | |
| QTY+52:4:PCE' | |
| PCI++++S::92' | |
| GIR+3+**428089**:ML' | Package serial number. Printed on Odette Label |
| LIN+++**21522366**:IN++0' | Item number. Printed on Odette Label. |
| QTY+12:**4**:PCE' | Quantity in package. Printed on Odette Label. |
| ALI+**RU**' | Country of origin. |
| GIN+VV+**638960**' | Vehicle identification number connected to this package.Printed on Odette Label. |
| RFF+ON:**340904758051**' | Volvo Order No. |
| LOC+159+**051**::92' | Additional internal destination. Printed on Odette Label. |

# Information heritage between DELFOR , DESADV and INVOIC

ODETTE SWEDEN

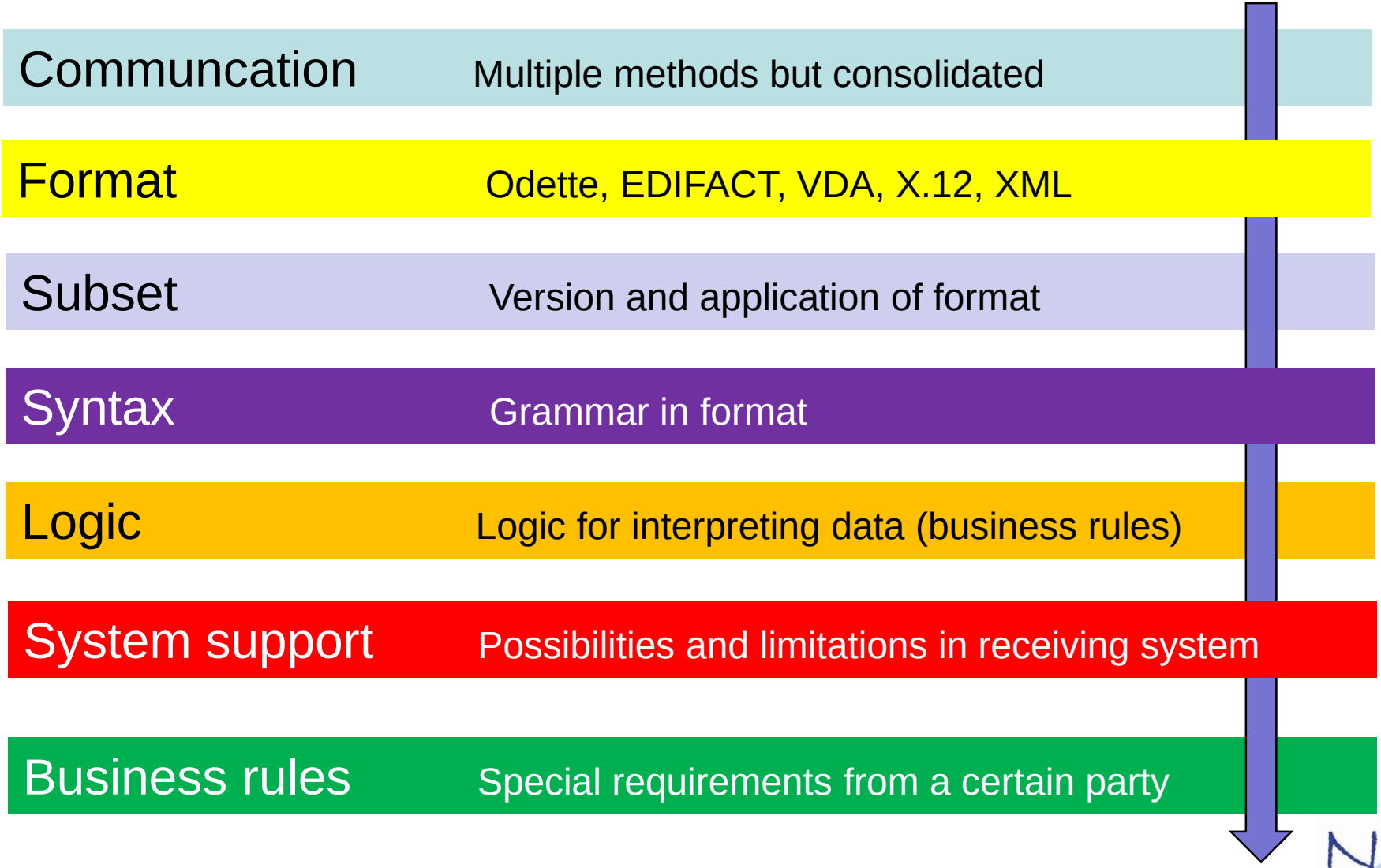
BGM+241+20120131'
DTM+137:20120131:102'
DTM+157:20120131:102'
NAD+BY+10206::92'
NAD+SE+35850::92'
GEI+3'
NAD+ST+10206::92'
LIN++38+2002773:IN'
LOC+11+632::92'
LOC+159+PORT 2::92'

BGM+351+102031'
DTM+137:201201311315:203'
MEA+AAX+AAD+KGM:5139'
MEA+AAX+ABJ+MTQ:0.0'
RFF+AAS:1000002251'
NAD+ST+10206::92'
LOC+11+632::92'
NAD+SF+35850::92'
NAD+SE+35850::92'
NAD+CA+2008::92'
CPS+1++1'
PAC+1++NIL::92'
QTY+52:30:C62'
PCI++++S::10'
GIN+ML+87485'
LIN+++1002075:IN'
QTY+12:30'
ALI+SE'
RFF+ON:1000157540'
RFF+AAP:1000157540'
LOC+159+PORT 2::92'

BGM+380+572200001'
DTM+137:20120130:102'
GEI+PM+::272'
NAD+SE+35850::92'
RFF+VA:BR59280685000110'
NAD+BY+10206::92'
RFF+VA:SE556013970001'
NAD+ST+10206::92++VOLVO
CUX+2:EUR:4'
LIN+1++20550355:IN'
RFF+AAK:102031'

Nätverk för Affärsutveckling i Försörjningskedjan

# Components/requirements – top level



# Implementation issues

# Suppliers reality – differences at OEM

- One OEM gives status 4, one gives status 9.
- One OEM gives 1 for firm order another gives 4.
- One OEM gives ship-from-date another gives deliver-to-date.
- One OEM uses a packaging reference code, the package owner uses another code
- One OEM respects the frozen period, another does not.
- Some OEM:s give feedback on previous despatches, some give feedback on received goods, some give both.
- Some OEM never give zero for the demands when moving a part to a different location.
- One factory gives firm orders, another does not.

# Supplier challenges

- No or little understanding of data exchange and system integration.
- No competence and experience from formats (EDIFACT).
- Using an ERP system with no automotive vertical.
- Differences in business rules between customers.
- Less specialization in systems further down in the supply chain.
- Different communication protocol requirements.
- Differences between different plants of a customer.
- Different label demands from different customers.
- Different label demands depending on packaging type.
- Bad or no history on previous schedules/forecasts.
- Bad understanding between IT and business.

# Supplier challenges and possible solutions

- Multiple formats - Using a service that handles all formats and subsets.
- Different commercial terms – Requires a system with automotive vertical.
- Different lead time, frozen period and transport lead time – Requires a system with automotive vertical.
- Bad or no logical support – Change system or get side system.
- Multiple systems – Islands of functionality – Consolidate to one system or migrate to a different.
- Different labelling requirements – Requires a system with automotive vertical.
- Different packaging material, different packaging procurement – Requires a system with automotive vertical.
- Different communication requirements (OFTP2, VAN, FTP/SFTP) Using a service that can handle multiple communication methods.
- MRP based on bad forecasting – Measure forecast accuracy.

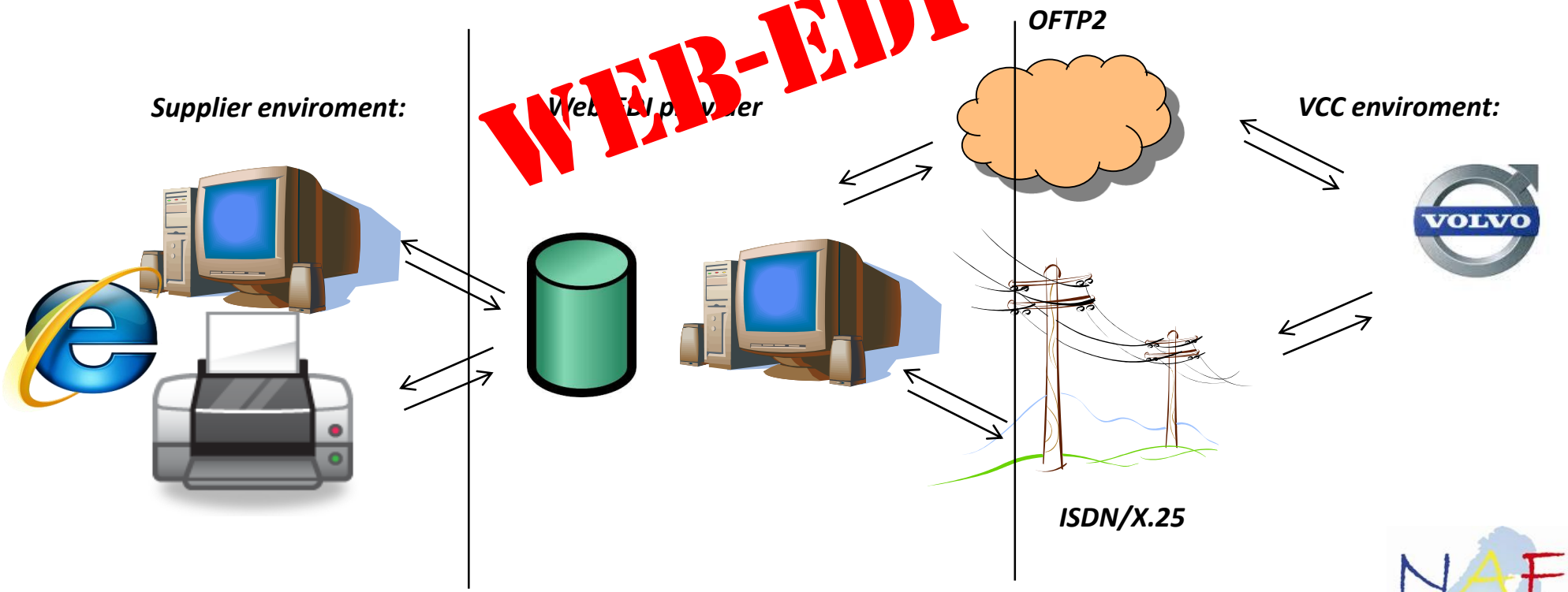
# Solutions for EDI and labels

***Stand alone solution***

Web-EDI – browsed solution for single or multiple OEM

Web-EDI for unique OEM (portal) – browsed solution for single OEM

Speacialized systems for EDI handling outside ERP/APS – stand alone system with functionality to handle and satisfy OEM demands (multiple).



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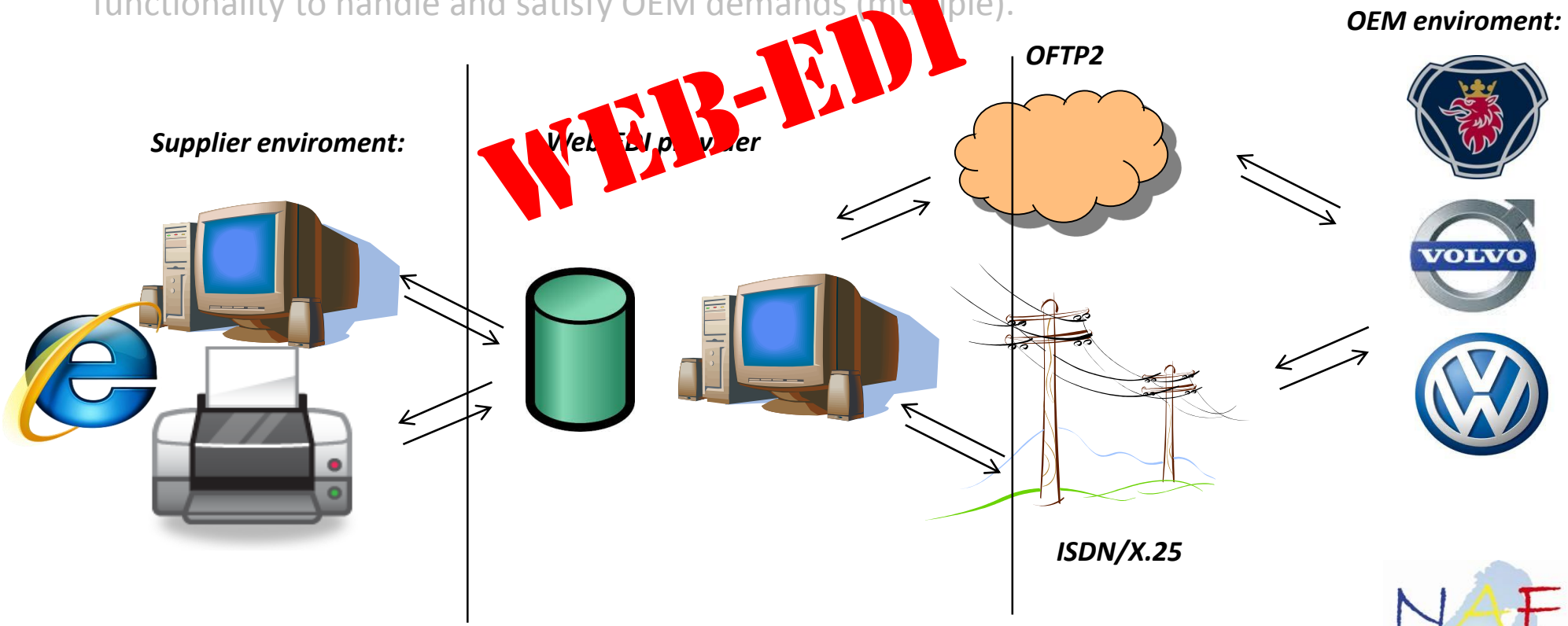

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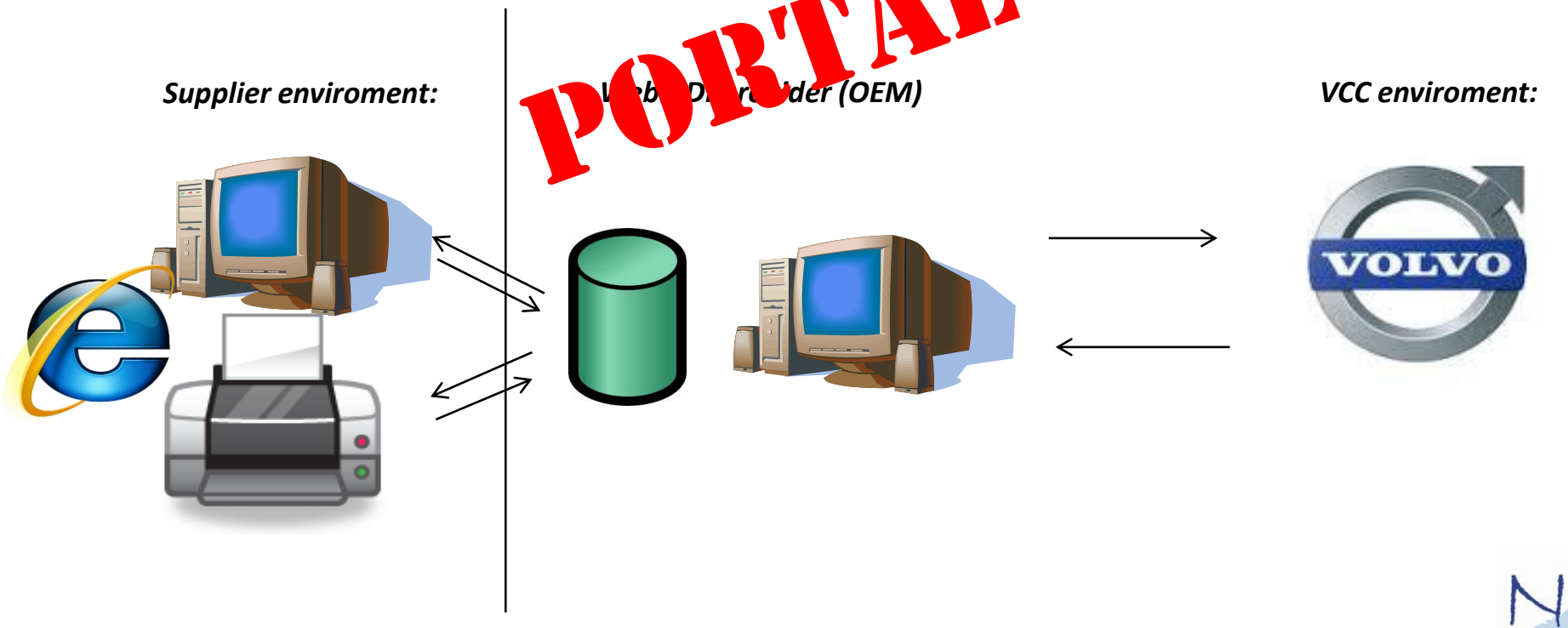

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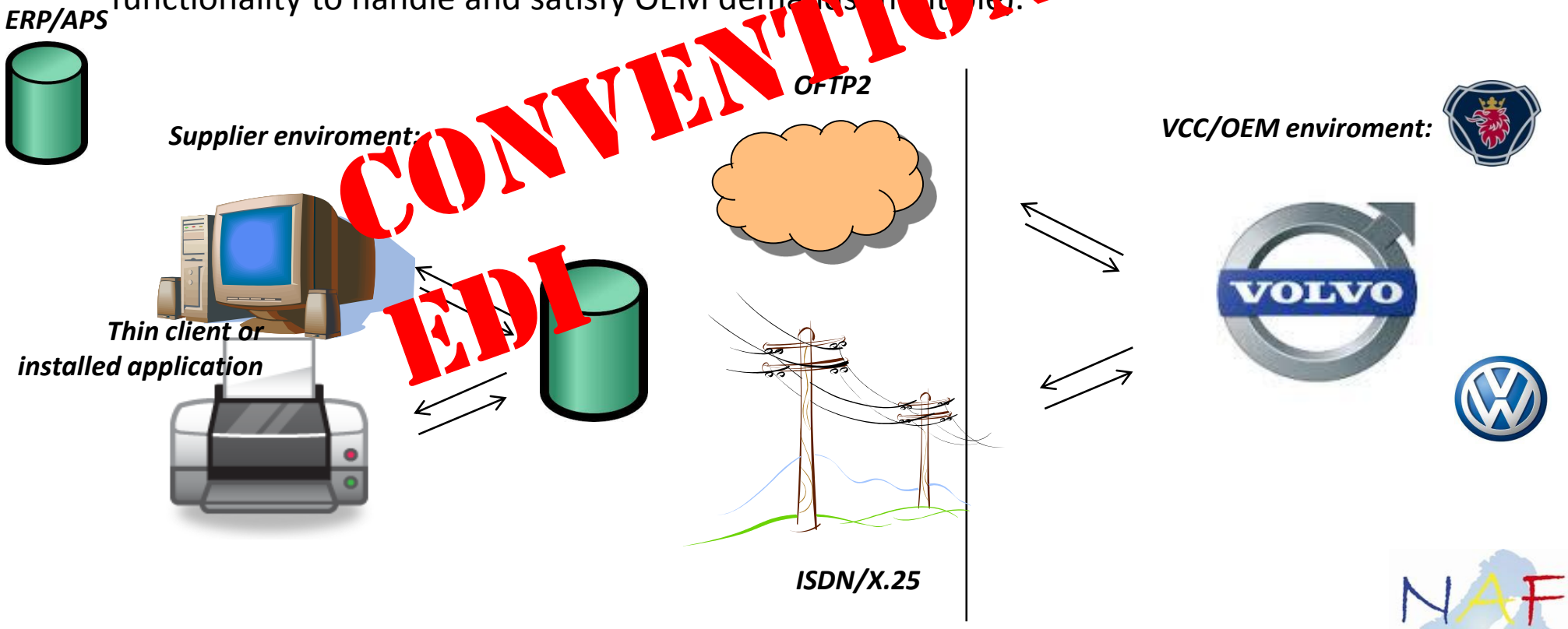


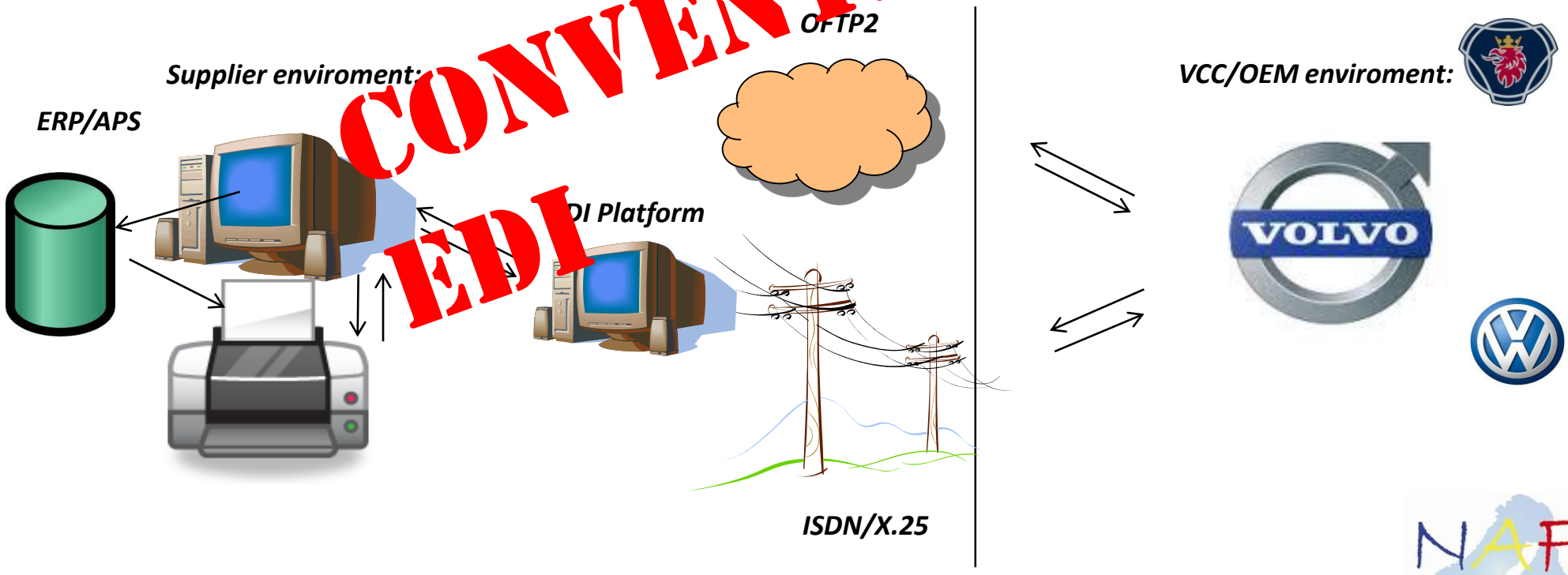
# Solutions for EDI and labels

***Integrated solutions***

Integration via application at supplier premises – EDI platform for conversion

Integration via application at outsouced location – EDI platform for conversion

Integration via EDI Service – Central EDI platform for conversion



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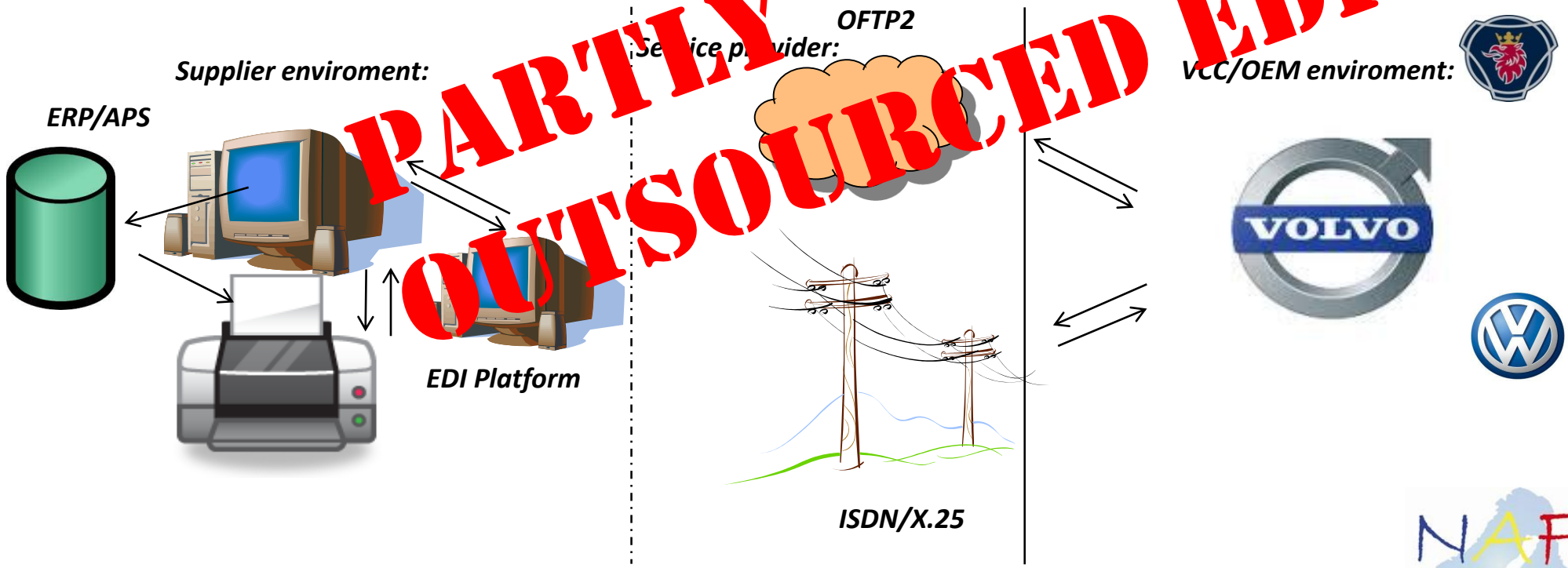

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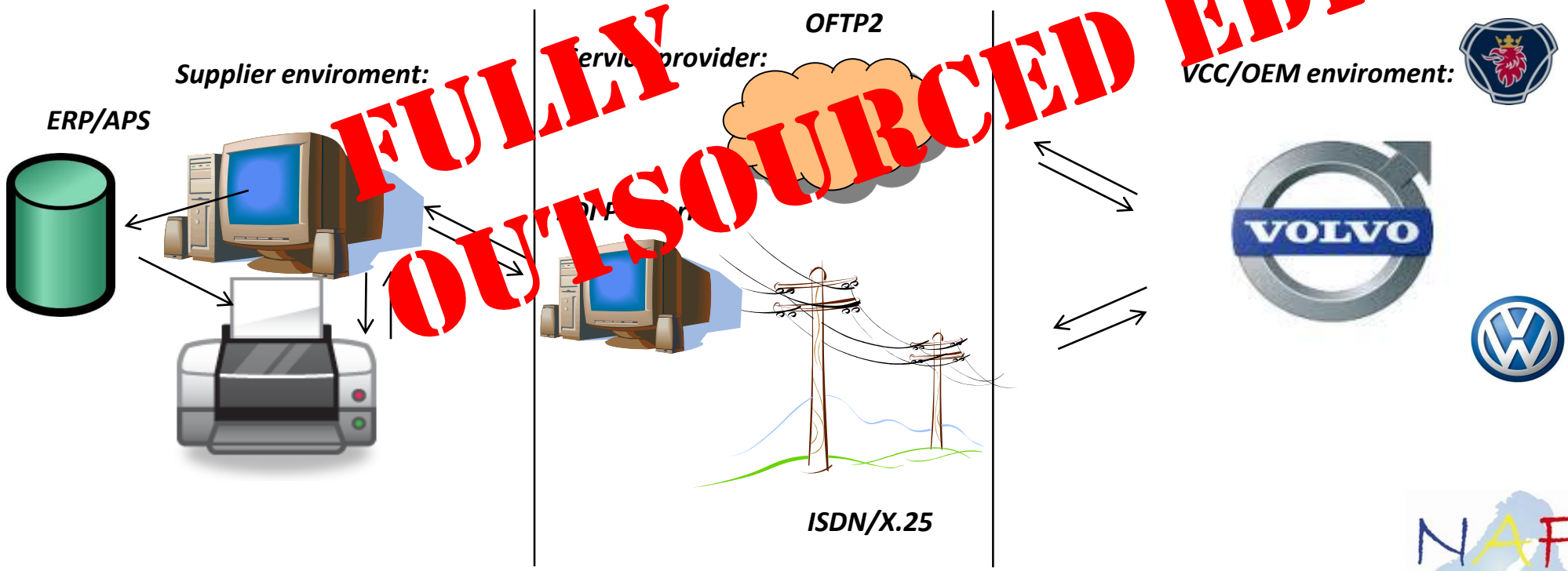


# Supplier practical solutions

ODETTE SWEDEN

## Conventional EDI vs partly Outsourced vs Fully outsourced vs web-EDI vs Portal

| | Conv. EDI | Half outs. EDI | Fully outs. EDI | Web-EDI | OEM Portal |
|---|---|---|---|---|---|
| **Initial cost** | High | Low | Low | Low | Low/none |
| **Running cost** | Medium | Medium | Medium | Medium/low | Low/none |
| **Internal competence** | High | Medium | Medium/low | Medium/low | Low |
| **Strategic control** | High | Medum | Medium/low | Low | Low/none |
| **Communication requirement** | Multiple | One | One | None | None |
| **Change management** | High | Medium | Medium | Medium/low | Low/none |
| **Integration possibilities** | High | High | High | Low/none | Low/none |

Nätverk för Affärsutveckling i Försörjningskedjan

# Conclusion

- Focus on the processes and legal requirements and information to exchange to support this.
- There are standards and static processes, use those.
- Discuss with suppliers – if possible in multiple levels – do NOT implement impossibilities!
  - Note the differences between:
    - Standardizing organization (UNCEFACT, ODETTE, ANSI, VDA)
    - Message standard (DELFOR, DELINS, 830)
    - Methods (classic EDI, XML, flat files, web portals etc)
    - Exchange method (protocol, VAN services, etc)
    - Logic/business rules (data, codes, qualifiers, etc)

# ERP – Limitations in logic in Automotive Industry

| Attribute | Bad | Medium | Good | Special |
|---|---|---|---|---|
| Status | 1 | 3 | 4 | 5 |
| Item | 1 | 3 | 4 | 5 |
| Replacement | 1 | 2 | 3 | 5 |
| Statistics | 2 | 3 | 4 | 5 |
| History | 0 | 1 | 2 | 5 |
| MRP | 0 | 0 | 4 | 2 |
| Integration | 0 | 1 | 4 | 5 |

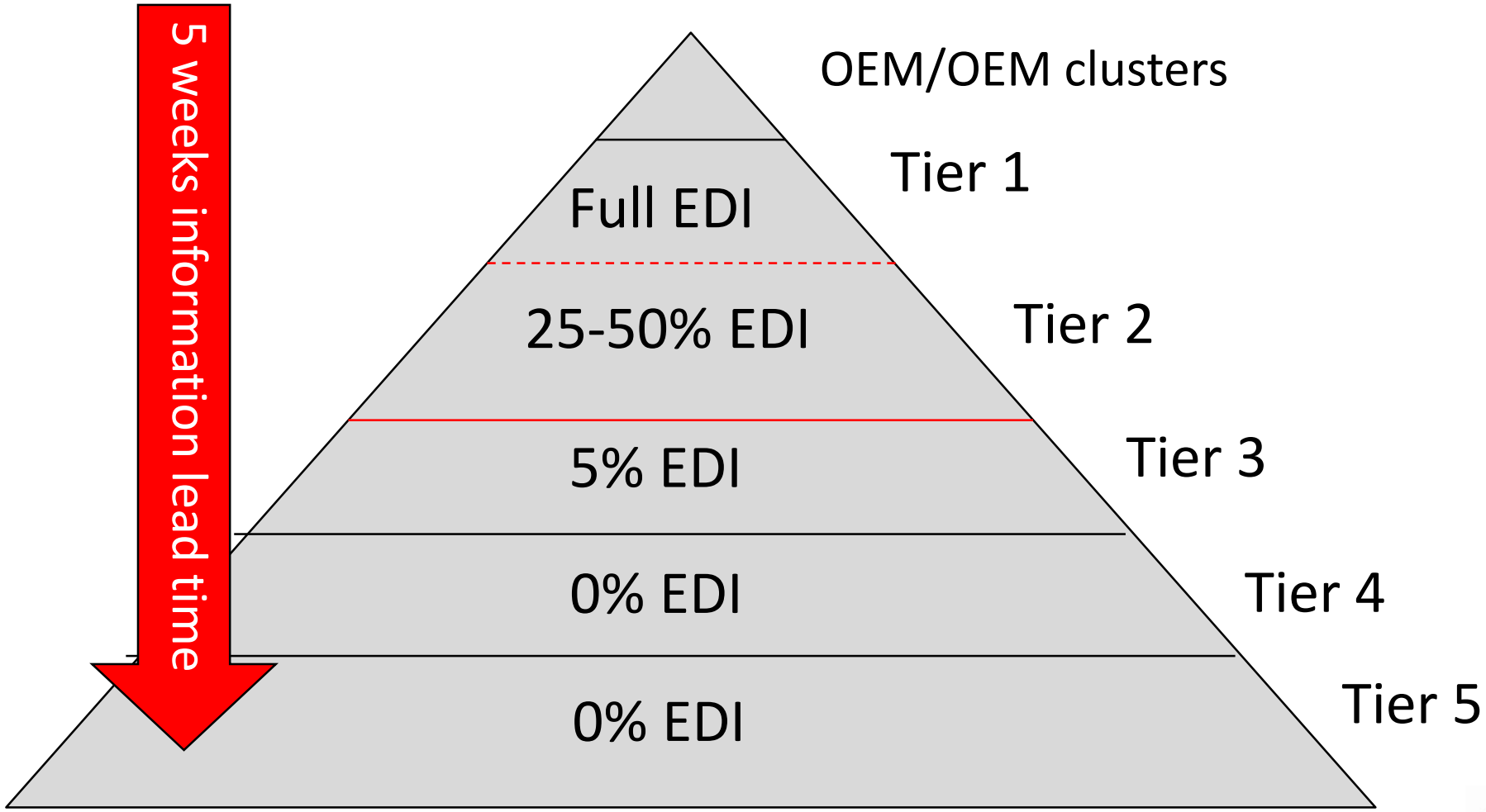
# Automotive industry compared to Food & Beverages

# Comparison with Food and beverage industry: Other requirements, other messages

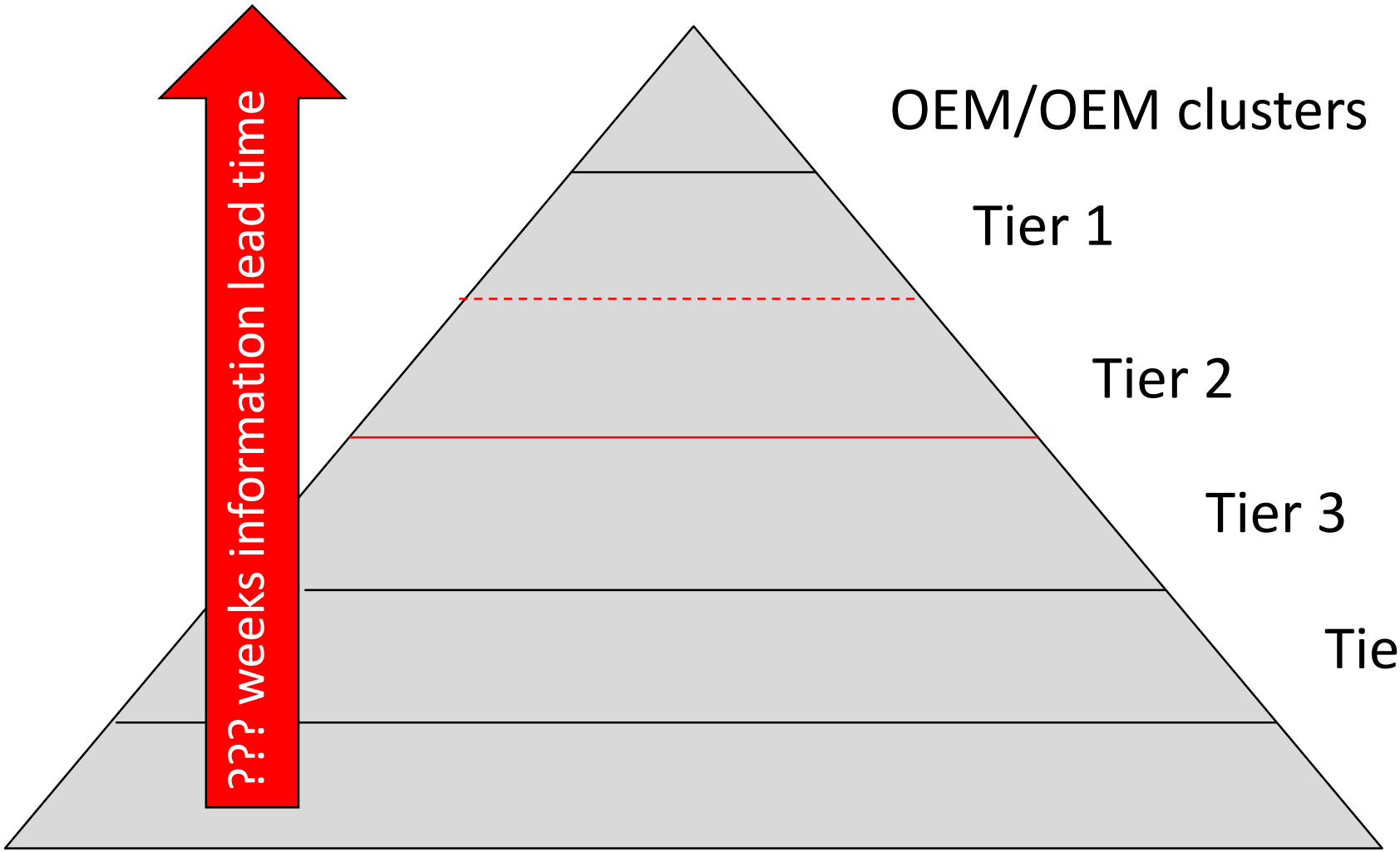
- Automotive industry – Continous loop until some term changes.
  - Delivery Schedule/Delivery Forecast – DELFOR – Long horizon
  - Call-off – DELFOR – Short horizon (firm orders)
  - ASN: Despatch Advise – DESADV – Multiple deliveries on same Order No.
  - Invoice/SBI – Multiple invoices per order, one per delivery.

- Food and beverage/Retail – One loop concludes a requirement.
  - Order: Discrete order – ORDERS – One timer
  - Order response: Order Confirmation – ORDRSP – One timer
  - ASN: Despatch Advise – DESADV – One delivery on one Order No.
  - Invoice – one invoice per one order/delivery

# Driving forces - Complete supply chain penetration



# Driving forces - Complete supply chain penetration



# Procurement methods in the Automotive Industry

- Roles of the involved partners

- Detailed review including technical aspects like data exchange, formats, subsets, syntax, Auto Id and labelling, message functions and logics, systems support
- Batch delivery
  - Direct
  - Via X-docks
  - Via sub-contractor
- JIT/JIS process
  - KanBan
  - Caldel
  - Sequence
- VMI and CMI processes

# What is a batch delivery?

- A delivery of items that are kept in stock by the consignee.

- Medium to high volume items with low to medium cost
- Steady consumption
- Generic item for all individuals/models
- Regular (scheduled) deliveries

**Incentives**

- Long distance
- High consumption

# Basic Scenario for information flow.

DELINS / DELFOR

## Information flow

## OEM

Commercial agreement, paper document with business rules.

Long horizon forecasts on requirements.

Firm orders to deliver.

Self billing invoice, monetary transaction message based on one despatch note.

Order (Blanket order)

Forecast

Call-offs

ASN & Labels

Invoice

Self billing invoice

## Supplier

Electronic despatch note/delivery note with Item and package information with corresponding labels.

Commercial invoice based on one despatch note.


# Business processes in the automotive supply chain – Direct Batch Delivery – Parties

- Buyer
- Supplier
- Carrier/LSP

# Business processes in the automotive supply chain – X-docks Batch Delivery - Parties

- Buyer
- Supplier
- X-dock
- Carrier/LSP

# Business processes in the automotive supply chain – Subcontractor Batch Delivery - Parties

- Buyer
- Supplier
- Sub-contractor
- Carrier/LSP

# Business processes in the automotive supply chain – Batch Delivery - Roles

Buyers responsibilities:

- calculation of demands
- transmitting information
- providing carrier/LSP (normally)
- reporting deviations
- packaging instructions
- payments
- customs issues

# Business processes in the automotive supply chain – Batch Delivery - Roles

ODETTE SWEDEN

Supplier responsibilities:

- receiving and interpreting demands
- delivering according to demands
- following packaging instructions
- ordering transport
- ordering packaging material
- transmitting ASN
- labelling of goods
- all transport related documentation

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# Business processes in the automotive supply chain – Batch Delivery - Roles

ODETTE SWEDEN

Carrier responsibilities:

- transport booking system
- pickup
- keeping transport lead time
- occasionally for packaging material
- occasionally for packaging material replenishment
- report deviations

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# Business processes in the automotive supply chain – Batch Delivery - Roles

X-docks responsibilities:

- stock keeping
- outbound transport to OEM
- repackaging when required
- relabelling when required
- transport or transport booking
- report deviations

# Business processes in the automotive supply chain – Batch Delivery - Roles

ODETTE SWEDEN

Sub-contractor / LSP responsibilities:

- delivering according to demands on the actual supplier
- act as the supplier when generating ASN and labels
- ordering transport
- send ASN and label goods
- report back to actual supplier

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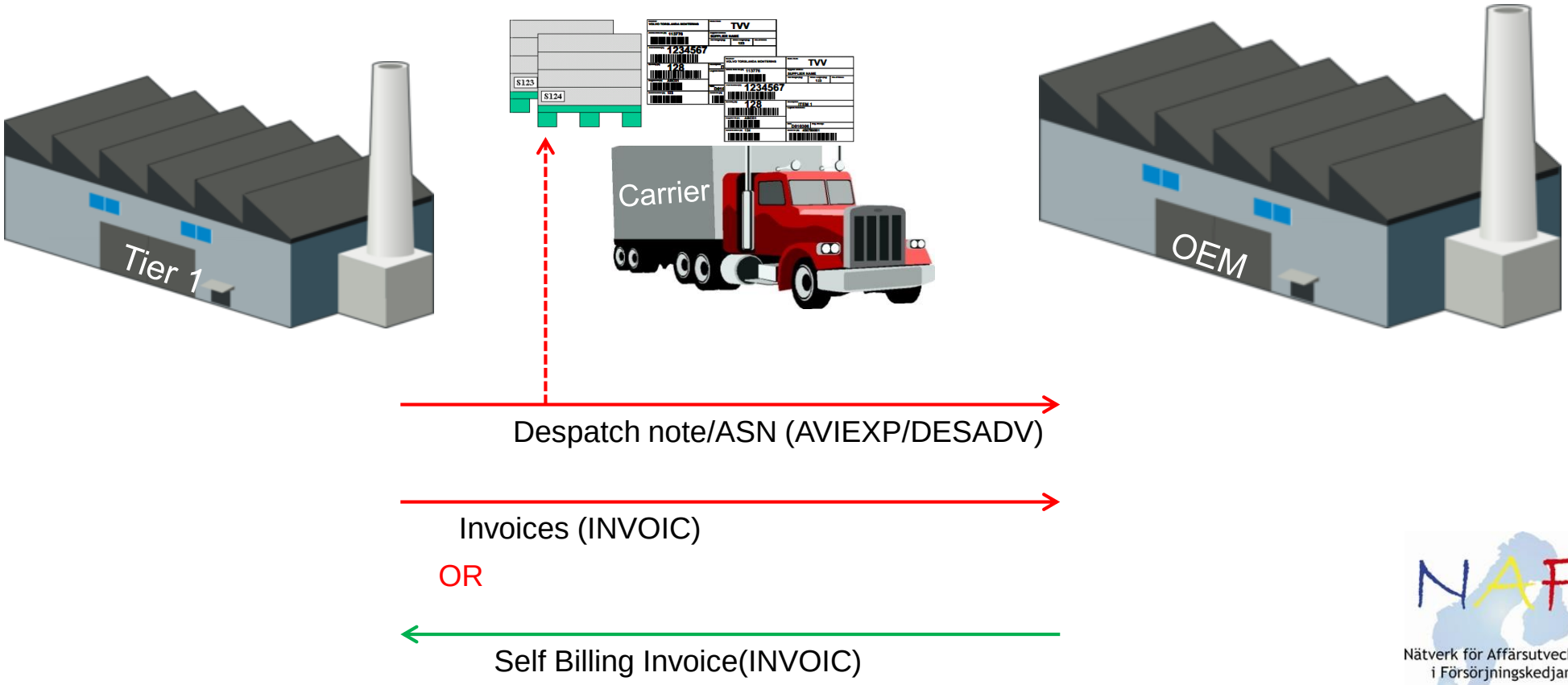
# Business processes in the automotive supply chain – Batch Delivery - Flow



# Business processes in the automotive supply chain – Batch Delivery - Logic

The DELINS/DELFOR message normally contains both forecasts and firm orders. Objective is to give Tier 1 suppliers and their sub suppliers the current situation on deliveries, in the short horizon and a chance to plan and secure resources in the long horizon.

Structure (DELINS/DELFOR):
HEAD: Consignee – Consignor – Carrier – Validity (horizon)
LINE: Part No – Previous deliveries – Cumulative quantity – Delivery point
REQ: Quantity – Date – Status - Reason

# Business processes in the automotive supply chain – Batch Delivery – Logic DELFOR

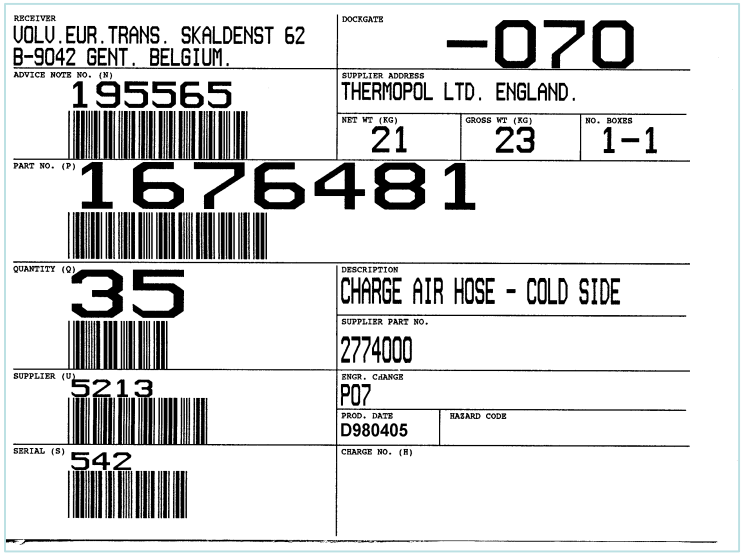
| | | |
|---|---|---|
| UNH+123456+DELFOR:D:04A:UN:GMI051 | Message header | |
| BGM+241+201101170102' | Delivery schedule number | |
| DTM+137:20110117:102' | Issue date | |
| DTM+157:20110117:102' | Effective from | HEAD |
| NAD+BY+1020::92' | Legal Buyer | |
| NAD+SE+6128::92' | Seller | |
| GEI+3' | Section separator | |
| NAD+ST+1001::92++TUVE' | Ship to | |
| LIN++38+1137005:IN' | Buyer's Article number | LINE |
| PIA+1+P04:DR' | Drawing information | |
| LOC+11+020' | Place of discharge | |
| LOC+159+F-11 020' | Final delivery point | |
| DTM+257:20110117:102' | Calculation date | |
| RFF+ON:371906128020' | Purchase Order Number | |
| RFF+AIF:201101120210' | Previous delivery schedule number | |
| QTY+83:500' | Quantity in Backorder | |
| QTY+70:23000' | Cumulative quantity received | |
| DTM+51:20110101:102' | Accumulation start date | |
| QTY+12:500' | Delivered quantity (according to DESADV) | |
| QTY+48:500' | Received quantity | |
| DTM+11:20110108:102' | Date of despatch | |
| RFF+AAK:12785' | Despatch advice number | |
| QTY+12:500' | Delivered quantity (according to DESADV) | |
| QTY+48:500' | Received quantity | |
| DTM+11:20110105:102' | Date of despatch | |
| RFF+AAK:12760' | Despatch advice number | |
| QTY+12:500' | Delivered quantity (according to DESADV) | |
| QTY+48:500' | Received quantity | |
| DTM+11:20110102:102' | Date of despatch | |
| RFF+AAK:12725' | Despatch advice number | |
| SCC+1' | Firm | |
| QTY+113:500' | Quantity to be delivered | |
| DTM+10:20110203:102' | Date of despatch | REQ |
| SCC+1' | Firm | |
| QTY+113:500' | Quantity to be delivered | |
| DTM+10:20110210:102' | Date of despatch | |
| SCC+1' | Firm | |
| QTY+113:500' | Quantity to be delivered | |
| DTM+10:20110217:102' | Date of despatch | |
| SCC+4' | Forecast | |
| QTY+113:500' | Quantity to be delivered | |
| DTM+10:20110225:102' | Date of despatch | |
| SCC+4' | Forecast | |
| QTY+113:500' | Quantity to be delivered | |
| DTM+10:20110304:102' | Date of despatch | |

# Business processes in the automotive supply chain – Batch Delivery - Logic

The AVIEXP/DESADV message is a pre advise (ASN, Advanced Shipping Note) on a delivery. Objective is to have the ASN in the OEM system before the goods arrive and use the corresponding goods labels (with the same serial No's as transmitted in the ASN), to achieve a highly automated goods reception process.

Structure (AVIEXP/DESADV):
HEAD: Consignee – Consignor – Carrier – Date
PACK: Package (Inner) – Package (Outer) – Serial No – ASN No
PART: Part No – Quantity in pack – Quantity total – Revision (optional)

Structure (LABEL):
Consignee/Destination
Supplier
Serial No (of package)
ASN No
Part No (dependant)
Quantity (dependant)



# Business processes in the automotive supply chain – Batch Delivery – Logic - DESADV

| | | |
|---|---|---|
| UNH+XFR16786+DESADV:D:00A:UN:GMI021' | Service segment | |
| BGM+351+1400009714' | Document (ASN) No | |
| DTM+137:201410131641:203' | Document (ASN) No | |
| MEA+AAX+AAD+KGM:41000' | Gross weight of consignment | |
| MEA+AAX+ABJ+MTQ:0.0' | Gross volume of consignment | HEAD |
| RFF+AAS:000000010659046' | Reference to Transport document No | |
| NAD+ST+1622::92' | Ship-To plant | |
| LOC+11+200::92' | Dock (at plant), place of discharge | |
| NAD+SF+45755::92' | Ship-From | |
| NAD+SE+45755::92' | Supplier | |
| NAD+CA+VOT::92' | Carrier | |
| CPS+1++1' | Package level | |
| PAC+1++NIL::92' | No of packages – package type | |
| QTY+52:3000:C62' | No of items In each package | PACK |
| PCI++++S::10' | Type of Package (configuration) | |
| GIN+ML+600017548' | Serial No (identity) of package | |
| LIN+++5753120:IN' | Item No | |
| QTY+12:3000' | Total quantity of part | |
| ALI+UK' | Country of origin | |
| RFF+ON:684945755200' | Reference to blanket order | |
| LOC+159+200::92' | Final destination (gate) | ITEM |
| UNT+22+XFR16786' | Service segment | |
| UNZ+1+39516' | Service segment | |

# Business processes in the automotive supply chain – Batch Delivery - Logic

The INVOIC message is normally in a one-to-one relation with an ASN to create balance with what has been delivered. The SBI invoice is more a transaction information from buyer to vendor that a monetary amount will be transferred on a certain date.

Structure (INVOIC):
HEAD: Buyer – Vendor – Consignee – Date - Terms
LINE: Part No – Quantity – Price
SUM: Summary - Taxes

# Business processes in the automotive supply chain – Batch Delivery – Logic INVOIC

| | |
|---|---|
| UNH+39622+INVOIC:D:03A:UN:GMI012' | Service segment |
| BGM+380+00119237' | Document (Invoice) No |
| DTM+137:20141008:102' | Document (Invoice) date |
| GEI+PM+::272' | Processing information (PM=Production material) |
| NAD+SE+45755::92++ESSENTRA COMPONENTS AB - SE+VERKSTADSVAG 13+ASKIM SWEDEN++SE-436 34+SE' | Supplier code, name and address |
| RFF+VA:SE556915024501' | Supplier VAT No |
| NAD+FH+++ESSENTRA COMPONENTS AB - SE+VERKSTADSVAG 13+++SE-436 34+SE' | Seller (as legally registered) code, name and address |
| NAD+PE+45755::92++ESSENTRA COMPONENTS AB - SE+VERKSTADSVAG 13+ASKIM SWEDEN++SE-436 34+SE' | Payee code, name and address |
| FII+BF+33551700796:ESSENTRA COMPONENTS AB - SE+::::::NORDEA BANK' | Payee, payment (beneficiary) bank and account |
| NAD+BY+1705::91++VOLVO LOGISTICS CORP. (23596)+2800VDB1705+GOTEBORG++SE-405 08+SE' | Buyer code, name and address |
| RFF+VA:SE556197973201' | Buyer VAT No |
| NAD+ST+23596::92++VOLVO LOGISTICS CORP. (23596)+2800VDB1705+GOTEBORG++SE-405 08+SE' | Ship-To code, name and address |
| CUX+2:SEK:4' | Currency information |
| LIN+1++20428724:IN' | Line No and Item No |
| IMD+++:::PLASTPLOMB' | Item description |
| QTY+47:10000:PCE' | Invoiced quantity |
| ALI+SE' | Country of origin |
| MOA+38:3110,00' | Line total amount (price * quantity) |
| PRI+AAB:311,00:::1000:PCE' | Item price (per 1000) |
| RFF+AAK:1400009709' | Reference to delivery note/despatch advice |
| DTM+171:20141008:102' | Date of above referenced document |
| RFF+ON:056945755525' | Reference to order (blanket order) |
| TAX+7+VAT+++:::25.00+S' | TAX (VAT) details for line |
| MOA+124:777,50' | Tax (VAT) amount for line |
| UNS+S' | Service segment |
| MOA+77:3887,50::4' | Invoice amount (invoice total) |
| MOA+125:3110,00::4' | Taxable amount |
| MOA+176:777,50::4' | Tax amount |
| MOA+79:3110,00::4' | Total lines item amount |
| TAX+7+VAT+++:::25.00+S' | TAX (VAT) summary details |
| MOA+124:777,50::4' | TAX (VAT) amount |
| MOA+125:3110,00::4' | Taxable (VAT) amount |
| UNT+33+39622' | Service segment |
| UNZ+1+39352' | Service segment |

HEAD

LINE

SUM

# Procurement processes in the automotive supply chain batch – Messages

- DELFOR — A delivery schedule/instruction, often with embedded firm orders
- DESADV — An electronic delivery/despatch note with information on the shipment with unique identities on each package, corresponding with labels on the goods
- INVOIC — A debit invoice from supplier to buyer or buyers agent normally under the concept of one delivery note (one DESADV) equals one invoice
- SBI — A credit advise from buyer to supplier normally under the concept of one delivery note (one DESADV) equals one credit advise

# Sample and reference of Odette label (OTL1)


*=special agreements

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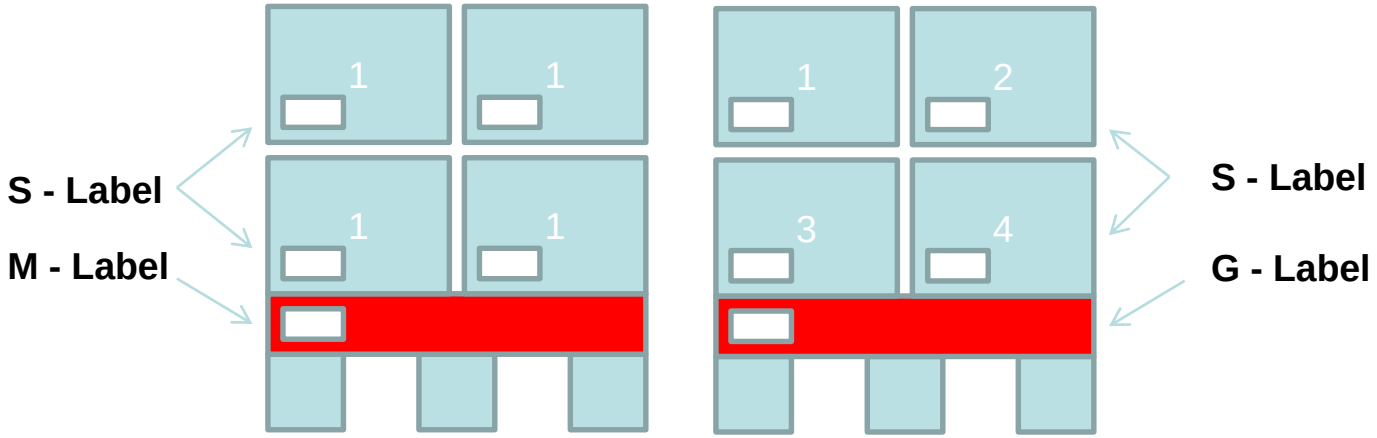
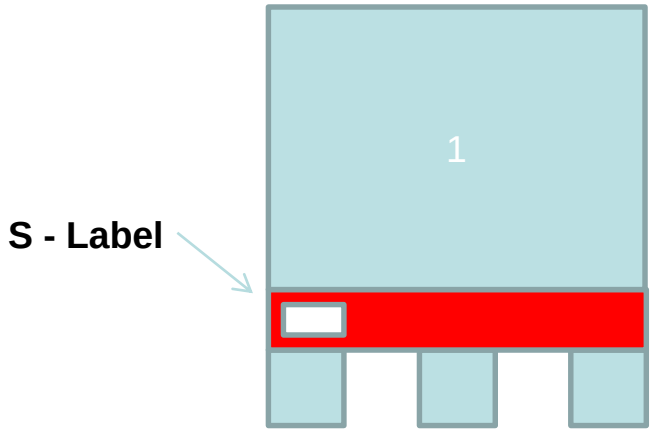
# Smallbox handling

**Homogenous handling unit**
**One part per pallet**

**Mixed handling unit**
**Multiple parts per pallet**




**Simplified handling unit**
**One part directly on pallet**

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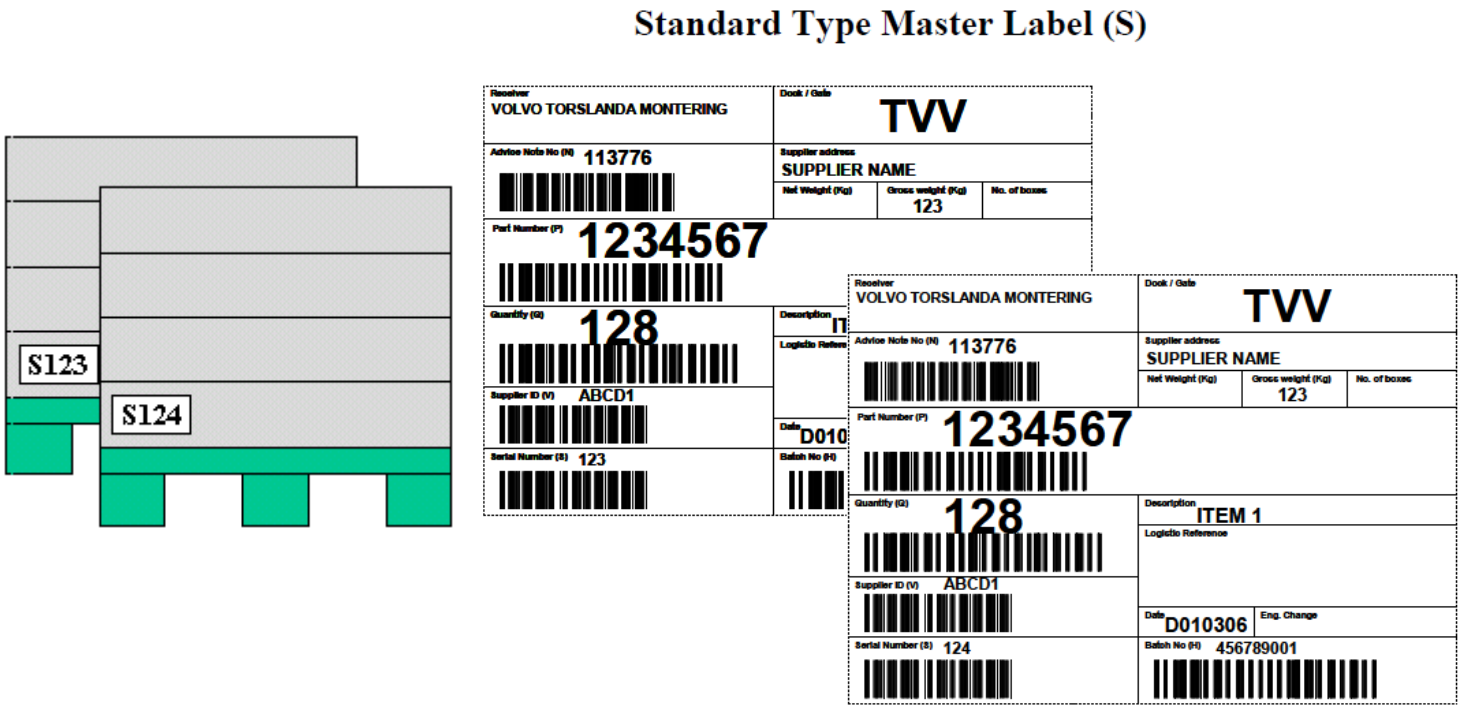
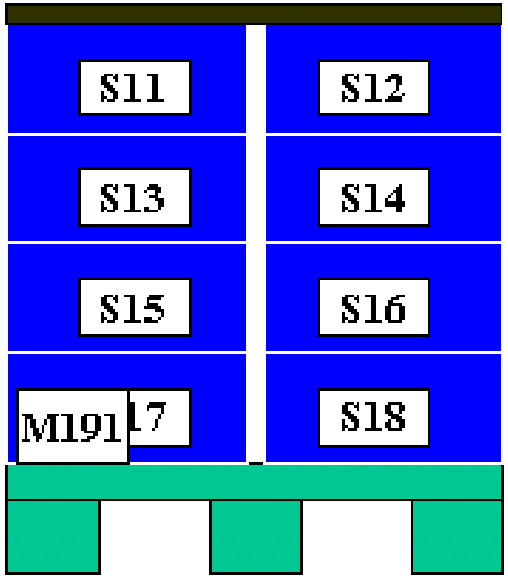
# Package configurations

## Simpliefied handling unit

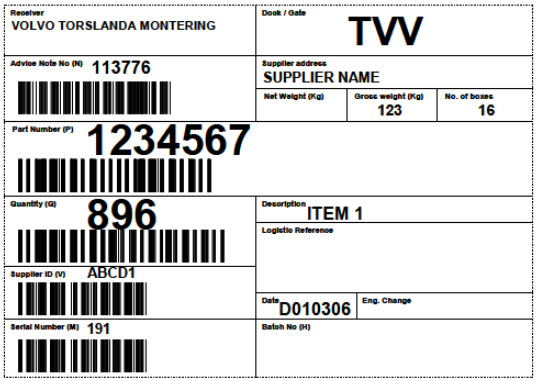


# Package configurations

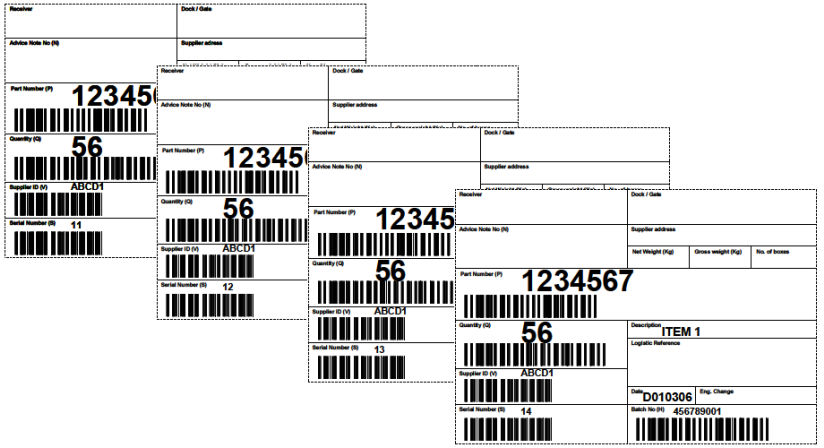
## Homogeneous handling unit (1 pallet, 16 smallboxes)




**Master Type Label (M)**




**Standard Type label (S) - 4 OTL out of 16**



- General overview and explanation. Reason for method

JIT/JIS

# Differences in Sequencing Cars & Trucks

## Car producer (Volvo Cars)

- DELFOR: Forecast information
- VCCBOM: Containing information of ingoing parts in a modul
- Lineup Message. Containing preliminary production information for 24h ahead
- DELJIT: Sequence message
- Approx 4h before assembly of a part
- One message per car.
- Frequence 3 – 4 minutes
- No ASN

## Truck production (AB Volvo & Scania)

- DELFOR: Forecast information
- PRODAT: Containing information of ingoing parts in a modul (Only AB Volvo)
- DELJIT: Sequence message
- Approx 8 – 24 days before assembly of part
  (AB Volvo only firm orders. Scania both preliminary and firm orders)
- Frequence one per day
- ASN with chassi numbers

# Sequence (JIS)

Sequencing is a forecast driven concept mainly used for:

- Bulky or heavy items
- High price components
- Item variants:
  - Colour
  - Model
  - Chassi/body specific

# Kanban (JIT)

Kanban is a consumption driven concept mainly used for:

- Bulky items
- Items where consumption is very varying
- Common in internal flows . Not that often in external flows

# CALDEL

CALDEL is mainly used for:

- Deliveries from nearby Hubs or 3PLs
- Items where consumption is very varying
- Items that are not Chassi/body specific

- Forecasts are given in DELFOR on a day by day basis
- Firm orders are given in CALDEL
- Message frequency depending on agreement between parties

# JIT/JIS Scenario information flow

ODETTE SWEDEN

## OEM

Commercial agreement, paper document with business rules.

Long horizon forecasts on requirements.

Firm orders to deliver.

Self billing invoice, monetary transaction message based on one despatch note.

## Information flow

Order (Blanket order)

Forecast

JIT/JIS Instructions

ASN* & Labels

*only in trucks sequencing

Invoice

Self billing invoice


## Supplier

Electronic despatch note/delivery note with Item and package information with corresponding labels.

Commercial invoice based on one despatch note.

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# Business processes in the automotive supply chain – JIT/JIS - Parties

- Buyer
- Carrier/LSP
- Supplier
- Ship From
- Ship To
- Assembly station

# Business processes in the automotive supply chain – JIT/JIS - Roles

ODETTE SWEDEN

Buyers responsibilities:

- calculation of demands
- sequence order / Kanban loop administration
- transmitting information
- providing carrier/LSP (normally)
- reporting deviations
- packaging instructions
- payments
- customs issues

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# Business processes in the automotive supply chain – JIT/JIS

ODETTE SWEDEN

Suppliers responsibilities:

- receiving and interpreting demands
- delivering according to demands
- following packaging instructions
- following sequence order /Kanban loop order
- ordering transport
- ordering packaging material
- transmitting ASN (only in trucks sequencing)
- labelling of goods
- all transport related documentation

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# Business processes in the automotive supply chain – JIT/JIS

ODETTE SWEDEN

Carrier responsibilities:

- booking system
- pickup
- keeping transport lead time
- occasionally responsible for packaging material.
- occasionally responsible for packaging material replenishment

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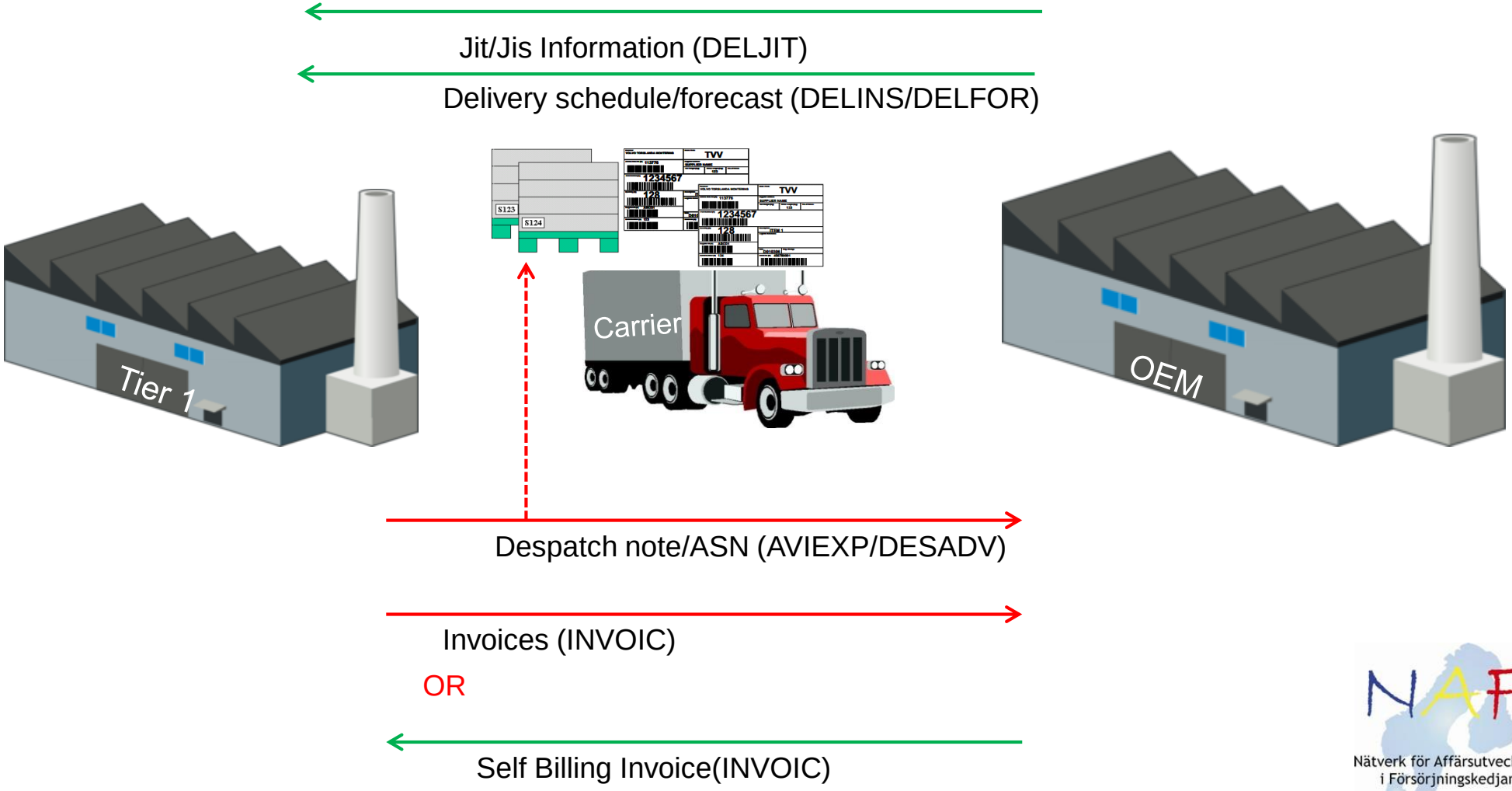
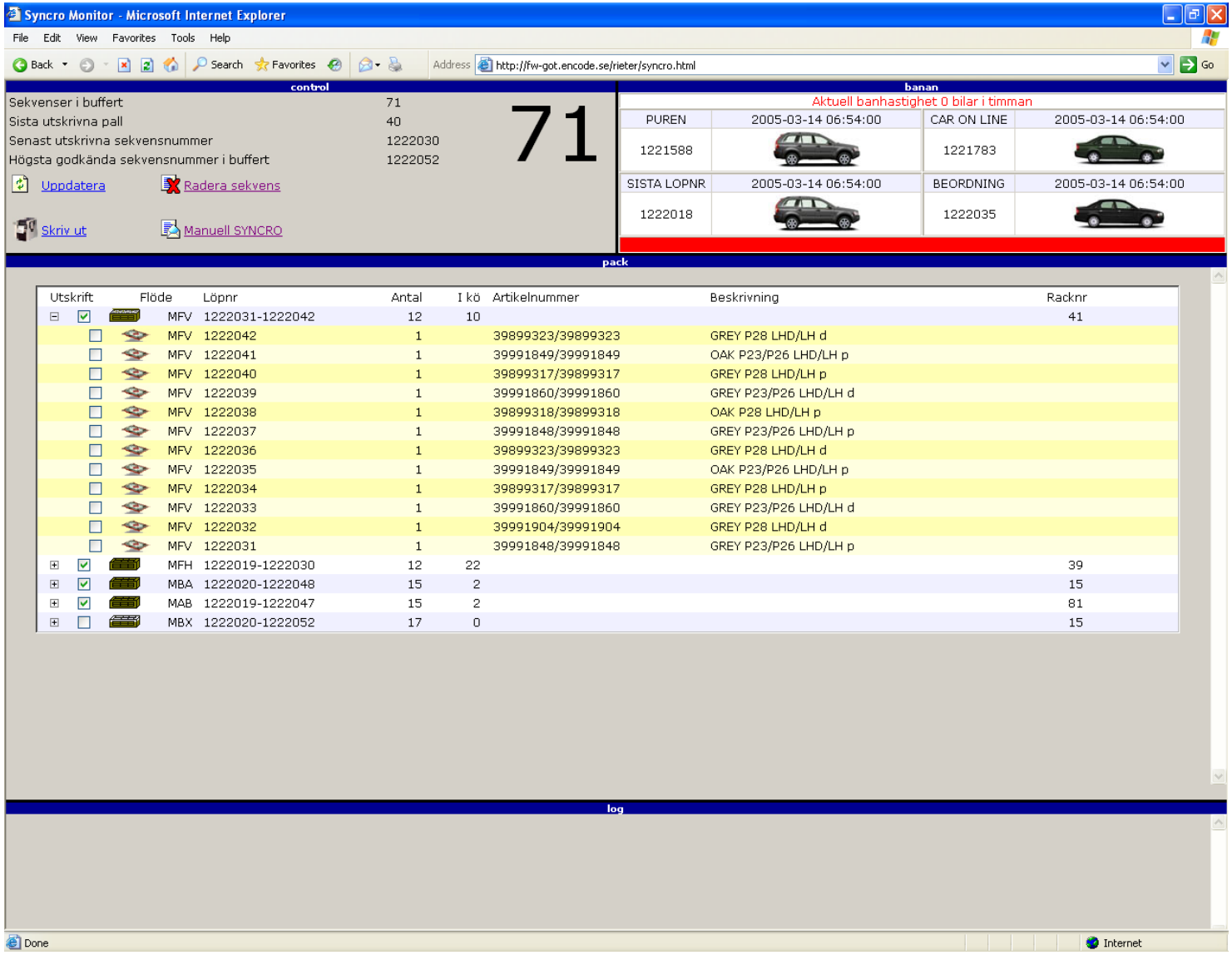
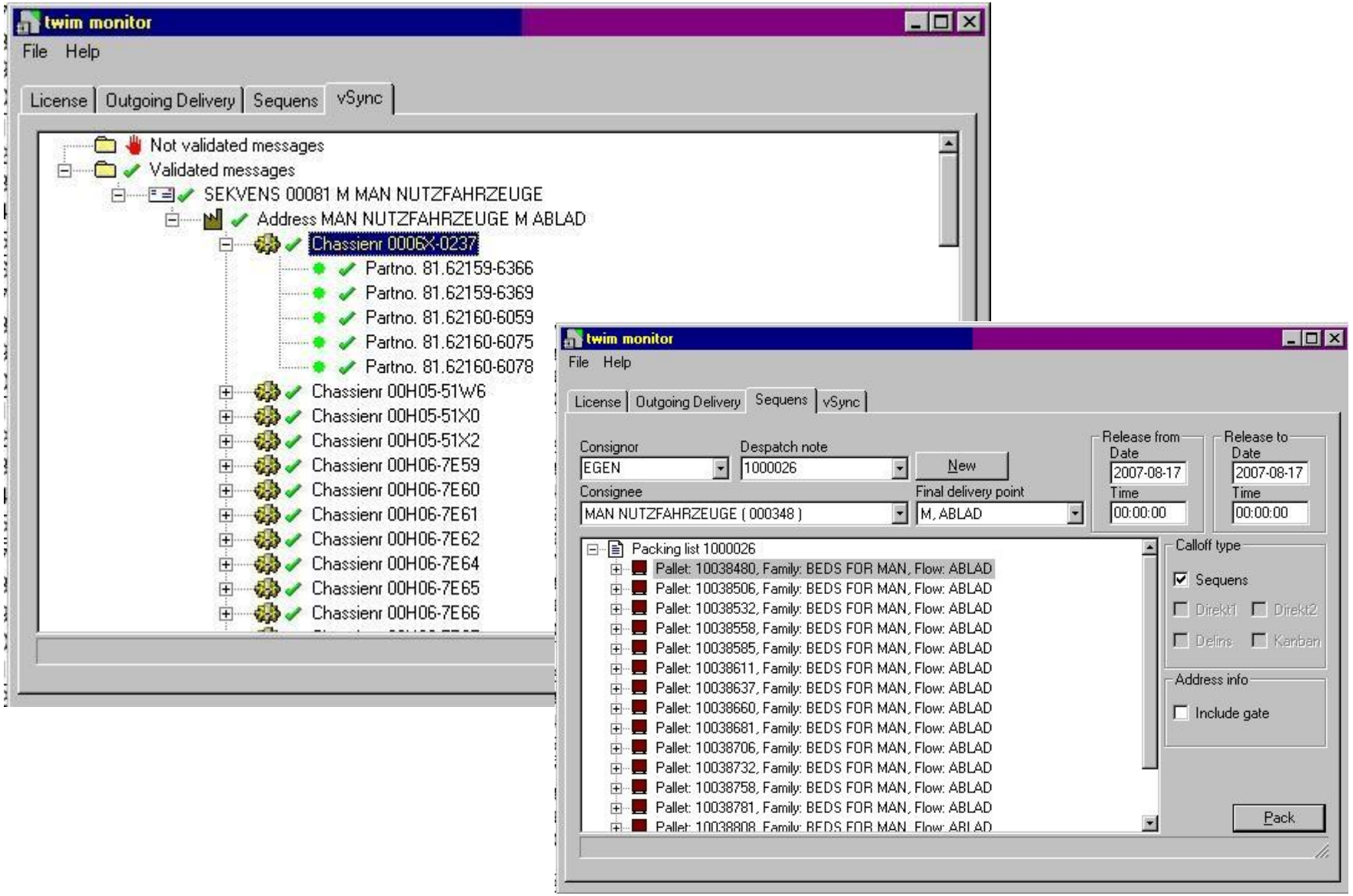
# Business processes in the automotive supply chain – JIT/JIS - Flow



# Sequence Car producer



# JIT/JIS Truck producer



# Business processes in the automotive supply chain – JIT/JIS - KanBan

The DELINS/DELFOR message contains forecasts Information. Objective is to give Tier 1 suppliers and their sub suppliers the current situation on deliveries, in the short horizon and a chance to plan and secure resources in the long horizon.

Structure (DELINS/DELFOR):
HEAD: Consignee – Consignor – Carrier – Validity (horizon)
LINE: Part No – Previous deliveries – Cumulative quantity – Delivery point
REQ: Quantity – Date – Status - Reason

The DELJIT(KANBAN) message contains consumtion Information and package instructions.

Structure (DELJIT/KANBAN):
HEAD: Ship From – Ship To – Date
LINE: Part No - Delivery point
REQ: Quantity – Date - KANBAN card No

# Business processes in the automotive supply chain – JIT/JIS - CALDEL

The DELINS/DELFOR message normally contains forecast. Objective is to give Tier 1 suppliers and their sub suppliers the current situation on deliveries, in the short horizon and a chance to plan and secure resources in the long horizon.

Structure (DELJIT(CALDEL):
HEAD: Ship From – Ship To
LINE: Part No – Delivery point
REQ: Quantity – Referens No or Pickup date/Time

# Business processes in the automotive supply chain – JIT/JIS - Sequence

The DELINS/DELFOR message contains forecasts information. Objective is to give Tier 1 suppliers and their sub suppliers the current situation on deliveries, in the short horizon and a chance to plan and secure resources in the long horizon.

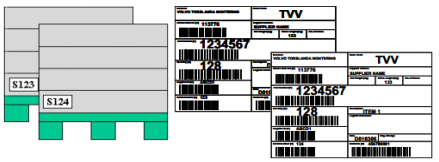
Structure (DELJIT (Sequence):
HEAD: Ship From – Ship To .
LINE: Sequence No – Chassi No- Assembly date/time – Variant instructions..
REQ: Part No - Quantity – Variant Instructions – Assembly Station address.

# Business processes in the automotive supply chain – JIT/JIS - Logic

The AVIEXP/DESADV message is a pre advise (ASN, Advanced Shipping Note) on a delivery. Objective is to have the ASN in the OEM system before the goods arrive and use the corresponding goods labels (with the same serial No's as transmitted in the ASN), to achieve a highly automated goods reception process.

Structure (AVIEXP/DESADV):
HEAD: Buyer – Seller - Ship From – Ship To – Carrier – Date – Place of discharge.
PACK: Package (Inner) – Package (Outer) – Serial No – ASN No – Kanban car No – Sequence No
Chassi No - Production reference No
PART: Part No – Quantity in pack – Quantity total – Revision – Part consignment No.

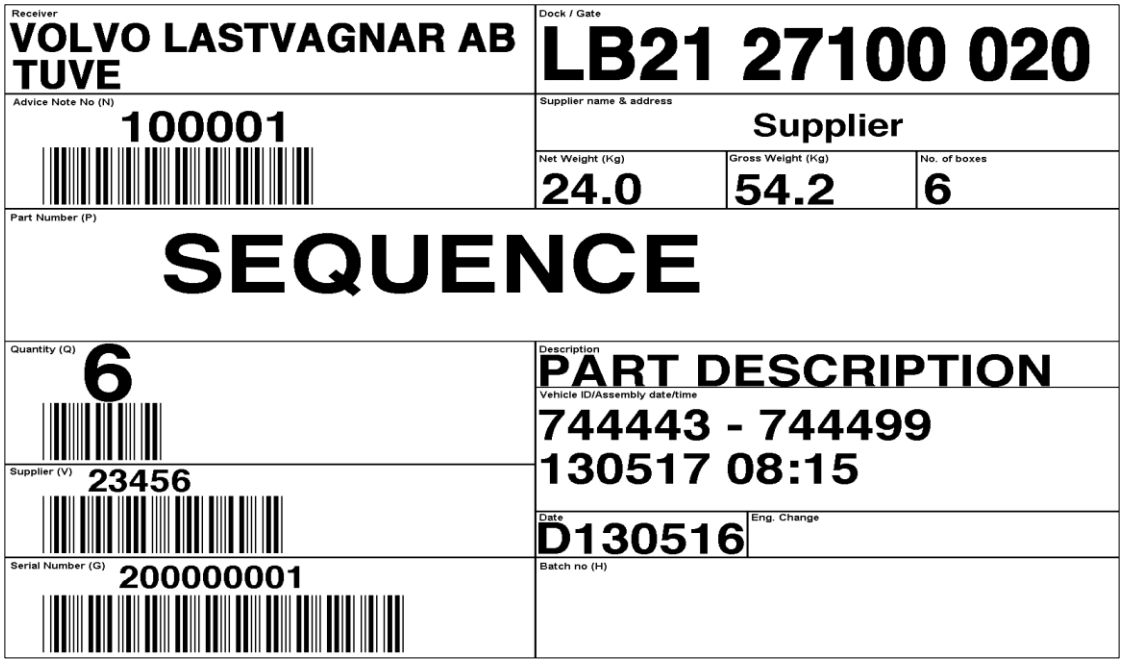
Structure (LABEL):
Consignee/Destination
Supplier
Serial No (of package)
Kanban card No or Sequence No or
Chassi No or Production reference No
ASN No
Part No (dependant)
Quantity (dependant)





Nätverk för Affärsutveckling i Försörjningskedjan

# Example of Odette label(Sequence)

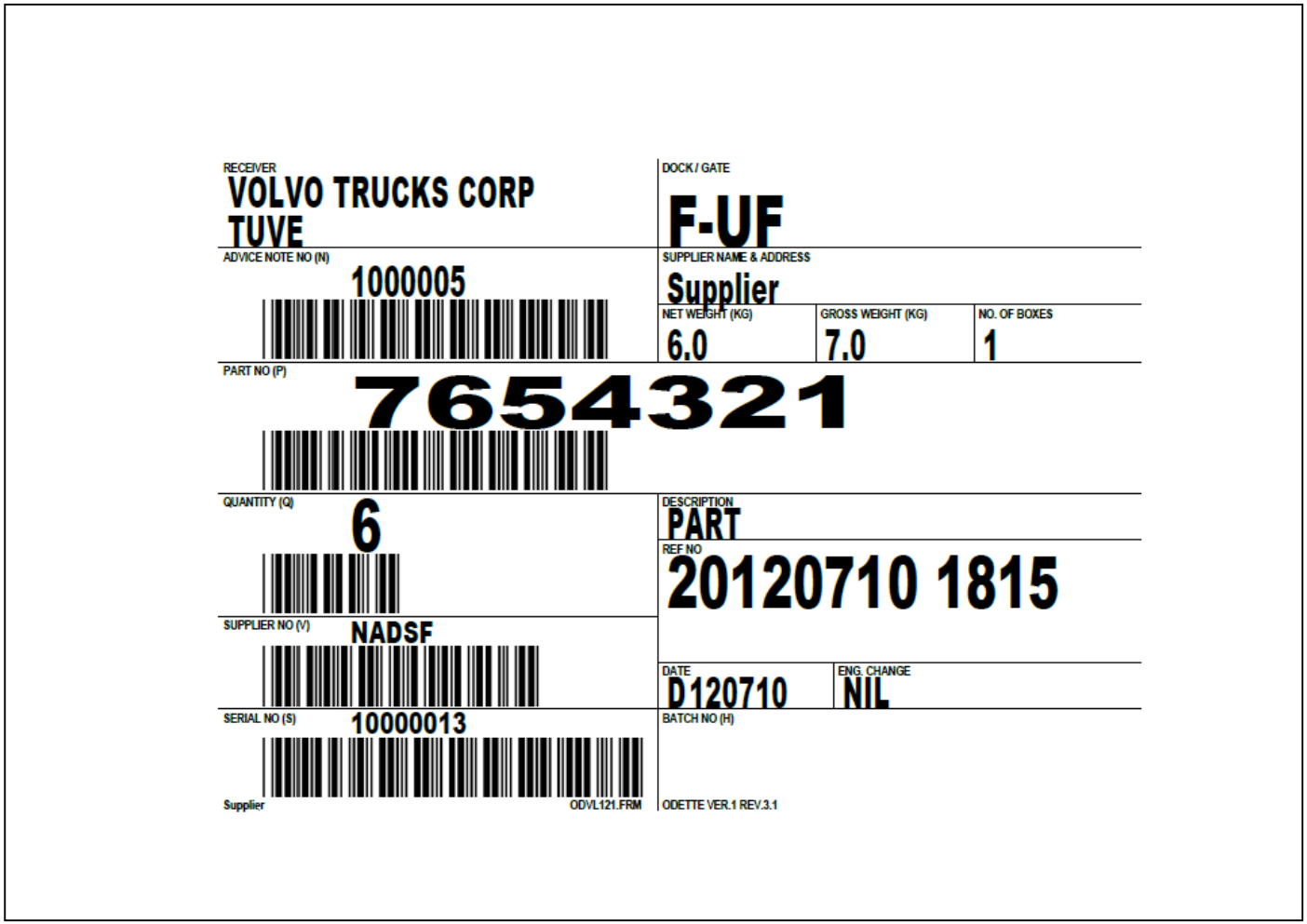


# Example of Part label

| Vehicle no. | Date & Time | Part no./Module no. |
|---|---|---|
| 744443 | 130517 0815 | 21562461 |
| **Additonal Internal Destination** | **Serial no.** | **Variant** |
| LB21<br>27100 020 | 100000006 | L-STWP |

# Example of Odette label (Kanban)

# Example of Odette label (CALDEL)



# Business processes in the automotive supply chain – JIT/JIS - Logic

The INVOIC message is normally in a one-to-one relation with an ASN to create balance with what has been delivered. The SBI invoice is more a transaction information from buyer to vendor that a monetary amount will be transferred on a certain date.

Structure (INVOIC):
HEAD: Buyer – Vendor – Consignee – Date - Terms
LINE: Part No – Quantity – Price
SUM: Summary - Taxes

Nätverk för Affärsutveckling i Försörjningskedjan

# Procurement processes in the automotive supply chain JIT/JIS – Messages

- DELFOR — A delivery schedule/instruction
- DESADV — An electronic delivery/despatch note with information on the shipment with unique identities on each package, corresponding with labels on the goods
- DELJIT — Firm order and packing instructions (sequencing)
- INVOIC — A debit invoice from supplier to buyer or buyers agent normally under the concept of one delivery note (one DESADV) equals one invoice
- SBI — A credit advise from buyer to supplier normally under the concept of one delivery note (one DESADV) equals one credit advise

- VMI Batch Delivery, general overview and explanation. Reason for method

# Business processes in the automotive supply chain – VMI / CMI (Vendor (Collaborative) Managed Inventory)

The DELINS/DELFOR message contains forecasts information. Objective is to give Tier 1 suppliers and their sub suppliers the current situation on deliveries, in the short horizon and a chance to plan and secure resources in the long horizon.

- Customer gives gross quantity demand adapted to agreed unit load
- VMI signal indicates the net quantity demand

- INVRPT and DELFOR in conjunction

# AUTO-ID Concepts

# What is Auto Id?

Auto Id stands for various technologies for automatic data capture from physical objects

Bar codes


2D symbols


RFID


**Examples of usage in Automotive**

- Labelling of packaging like pallets and small-boxes
- Labelling of transport handling units
- Parts marking
- Identification of vehicles
- Manufacturing operations
- Assets marking

…….

# What is Auto Id?

Auto Id stands for various technologies for automatic data capture from physical objects, some of the main aspects are:

| | |
|---|---|
| Symbology | 1D like Code 39 or Code 128<br>2D like QR or Datamatrix |
| Reading and scanning | Laser scanning of bar codes<br>Camera technology for 2D<br>Wireless communication for RFID |
| Data structure | According to ISO including Data Identifiers |
| Data content | Rules for uniqueness, entities, field formats according to ISO plus user group guidelines |
| Label layout | Various standard labels according to user group guidelines |

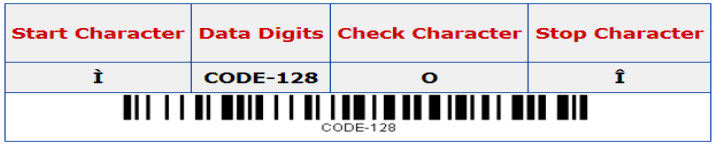
# 1D and 2D symbols

**Code 39** .

- Defines 43 characters

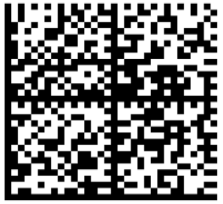

**Code 128**

- All 128 characters of ASCII, also Latin-1with extension, Contains check character




**Data Matrix (ECC200)**

- Up to an..2335 or n..3116 characters, error* correction



**QR**

- Up to an..4296 or n..7089 characters, error* correction

**PDF417**

- Up to an..1800 or n.. 2710 characters, error* correction

*Reconstruction of the encoded data string when part of the symbol is damaged

# 1D codes compared to other Auto Id technologies

| | |
|---|---|
| Symbol | 1D like code 39 or code 128<br>Stacked linear 2D code: PDF417<br>2D like QR or Datamatrix |
| Capacity | code 39 <25 characters<br>code 128 < 40 characters<br>2D: > 1000 characters |
| Character sets | code 39: 43 characters (A - Z), (0 - 9) (-, ., $, /, +, %, space)<br>code 128: 128 characters of ASCII and Latin-1, by use of an extension character<br>Datamatrix: Full ASCII code<br>QR: Full ASCII code and some Asian character sets (kanji/kana) |
| Density | code 39: very low<br>code 128: low<br>PDF417: high<br>QR or Datamatrix: very high |

# 2D codes compared to other Auto Id technologies

| | |
|---|---|
| Printing | Laser printers<br>Thermal transfer printers (melting a coating )<br>Thermal Printers (selectively heating coated paper) |
| Reading /Scanning Technology | Laser scanning for 1D barcodes and PDF417<br>2D scanners (camera technology) for 2D, but modern readers read all |
| Data structure | According to ISO with e.g. identifiers |
| Data content | Rules for uniqueness, entities, field length etc. according to ISO and to business sector groups (user groups) |
| Label layout | Labels as specified by business sector groups |

# Composition of a bar coded field


Data Identifier

Data (data format)

# Data Identifiers

**Data Identifier (DI)**

- Data Identifiers are published in the ANSI document ASC MH10 Data (referred to in ISO/IEC 15418)
- A DI defines the general category or intended use of the data that follows
- Format: One alphabetic character alone, or one alphabetic character prefixed by one, two or three numeric characters.

Examples:

| | |
|---|---|
| I | Vehicle Identification Number (VIN) |
| 1J | Unique license plate number assigned to a transport unit which is the lowest level of packaging, the unbreakable unit |
| 4I* | ID for the transport vehicle and the transported vehicle(s) |
| L | Storage Location |
| 1P | Item Identification Code assigned by Supplier |

* Proposal

# AUTO-ID Labels and Barcodes

# Labelling guidelines

**All packaging used in the supply chain are marked with labels**

**Most commonly used labels in automotive SCM:**

*Year when first version was published

- Global Transport Label (GTL) V2,V3 (Year 2000*)
- OTL 1, Odette Transport Label 1.4 (Year 1986*)
- OTL3, Odette Transport Label 3 (Year 2004*)
- KLT- label (Year 1994*)
- New European GTL (Year 2016*)

# Labelling guidelines

**Other labels (new, proposed)**

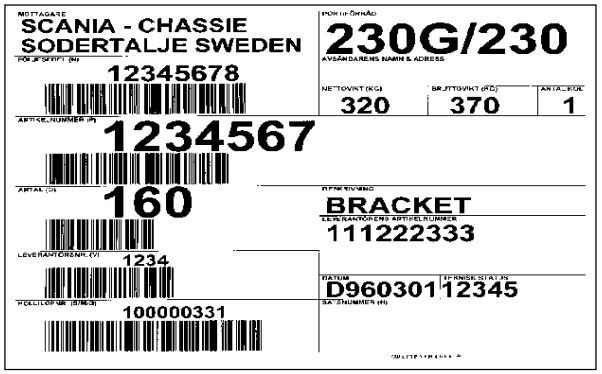
- MAT label (For manufacturing traceability)

- Smart Label (concept that combines 2D, RFID and human readability)

# Labelling in the European automotive industry

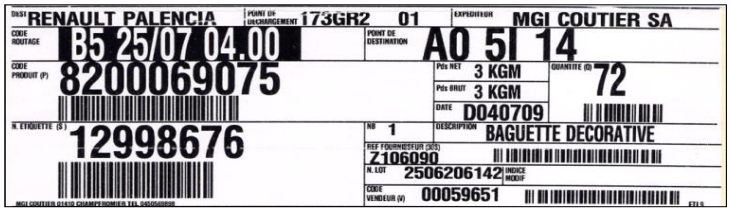
ODETTE SWEDEN

## OTL1, Odette Transport Label

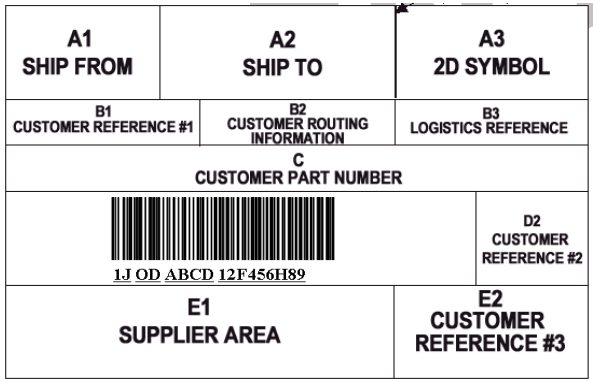



## GTL, Global Transport Label, small


## OTL3, Odette Transport Label 3




## GTL, Global Transport Label A5




## KLT (VDA 4902 version 4)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# Labelling in the European automotive industry

## GTL, Global Transport Label – New European Profile in four sizes

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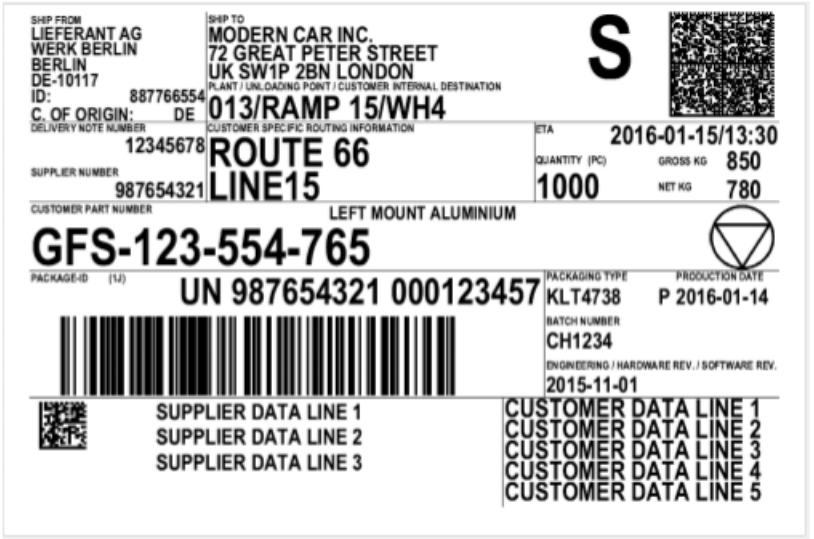
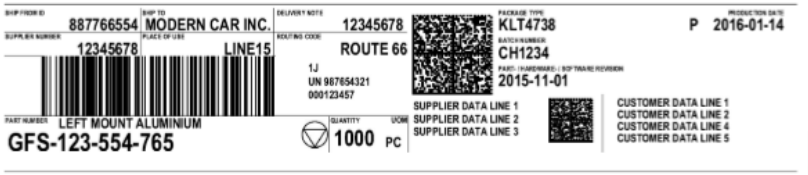
A5/Half letter


A6/6x4 inches




SLC 1 – 210x74 mm


SLC 2 – 210x42 mm

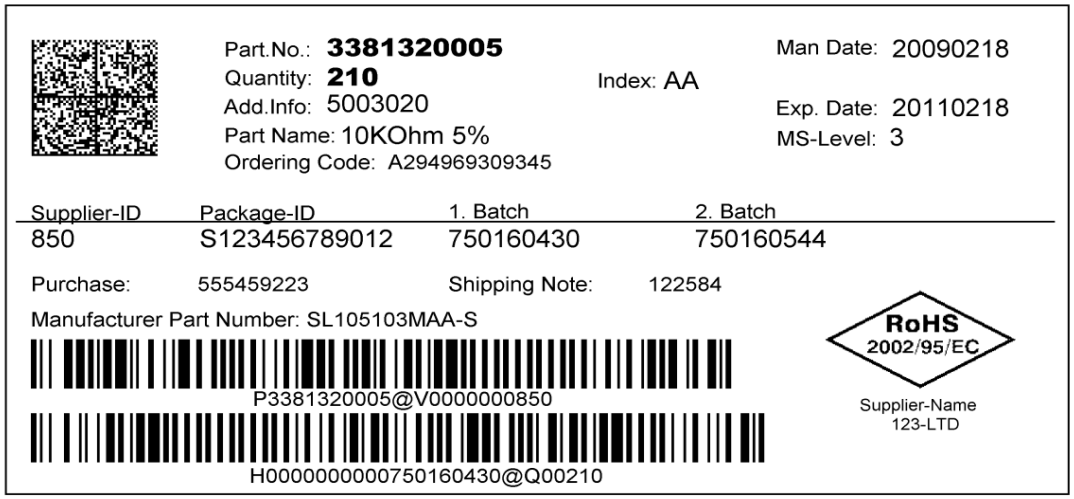



NAF
Nätverk för Affärsutveckling i Försörjningskedjan

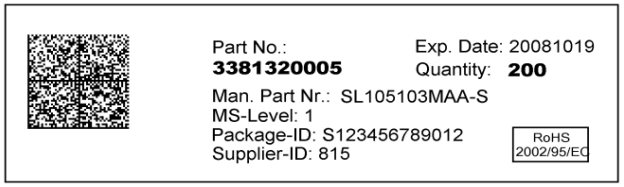
# **MAT Label**: No fixed size – label examples (*on smallest package unit*)

ODETTE SWEDEN

## Bosch/Hella sample (large 120 x 60 mm)




## Small Label (80 x 25 mm, as sample):




## Very small Label (74 x 22 mm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# Labelling guidelines: overview

| Label | Issuer | Application/parties | Symbology | Licens Plate |
|---|---|---|---|---|
| OTL1, Odette Transport Label V 1.4 | Odette International | For labelling of packaging between suppliers and customers | Code 39 | |
| GTL, Global Transport Label, GTL | AIAG, Odette International, JAMA | For labelling of packaging between suppliers and customers, contains globally unique package id (License Plate mandatory) | Code 128, 2D | x |
| OTL3 | Odette International | For labelling of packaging between suppliers and customers, contains globally unique package id (License Plate optional) | Code 128, 2D | (x) |
| KLT (VDA 4902 version 4) | VDA | For labelling of packaging (only KLT) between suppliers and customers | Code 39 | |
| MAT label | VDA | For labelling of packaging (smallest package unit) between suppliers and customers | Code 128, 2D | |
| New European GTL | Odette International | For labelling of packaging between suppliers, LSPs and customers, contains globally unique package id (License Plate mandatory) | Code 128, 2D, Datamatrix | x |

# Application of the License Plate

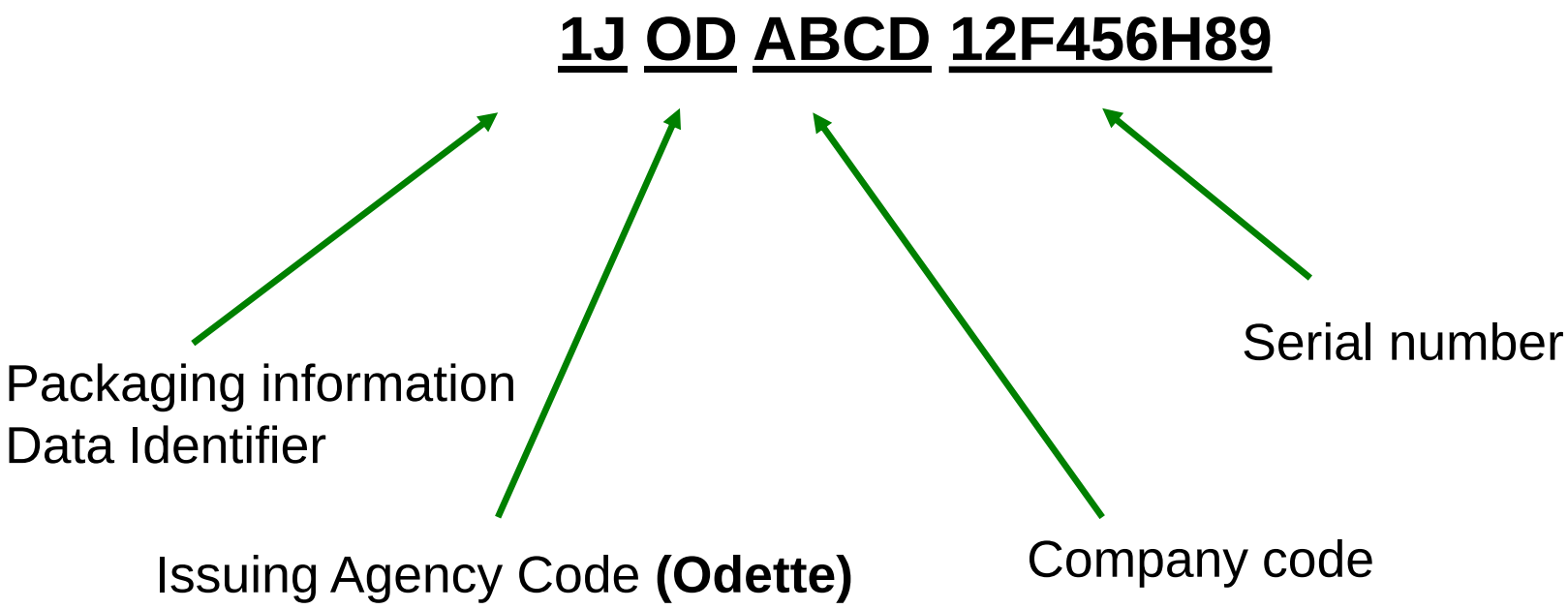
- A license plate is assigned to a transport unit by its issuer. The license plate is used for globally unique identification of transport units but could also be used in other applications. Among the most used license plate schemes are:

- **SSCC**: Serial Shipping  Container Code, issued by GS1, format is 18 numeric characters. SSCC consists of: Application Identifier (00)+Extension Digit+ GS1 Company Prefix + Serial Reference+Check Digit

- **License Plate in GTL**: Issued by JAIF (Joint Automotive Industry Forum) format is up to 22 alpha-numeric characters. License Plate consists of Data Identifier (1J, 5J or 6J)+Issuing Agency Code (OD, UN or LA)+Serial Number

| | |
|---|---|
| OD | Odette |
| UN | DUNS |
| LA | JIPDEC |

# License Plate:
# Unique Package ID based on Odette



- Comparison on different equipment for generating and reading labels

# Printing and label formats

## Thermal transfer printers and thermal printer

- These are more advanced printers that contain bar code fonts (drivers) plus other software needed, like syntax handling. They support user defined label layouts.

## Laser printers

- Laser printers depend on printer software with a link to an IT system (PC, ERP, EDI or similar). Paper quality is very important. Laser printers might not fit into certain demanding manufacturing environments.

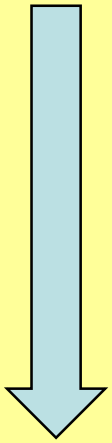
| Comparison | Thermal transfer printers and thermal printers | Laser printers |
|---|---|---|
| Printer cost | 0,5 K€ - 4 K€ OK | From 0,5 K€ |
| Printer lifetime | 10 + years | 2 years |
| Printing cost per label | 0,15 € | 0,02 € |
| Handling aspects | ■ Only option for smaller labels<br>■ Easily integrated with post printing processes | ■ Not suitable for smaller labels<br>■ Mainly used for A4/A5 with manual handling of printed labels |
| Label material sustainability | ■ Thermal transfer printing better sustainability<br>■ Thermal printing climate sensitive | |

# Reading / scanning

| | | |
|---|---|---|
| Reading distance: | Handheld | 50 – 60 cm |
| | Fixed | < 100 cm |

Price range

Low



Higher

| | |
|---|---|
| Cheap handheld reader (only 1D codes) | 0.1 K€ |
| Smartphone (2D, 1D) | 0,4 K€ |
| Advanced handheld reader (1D, 2D) | 0,5 K€ |
| Handheld RFID reader | 1 K€ |
| Handheld PC | 1,5 – 3 K€ |
| Fixed readers (reading 1D, 2D) | 3K€ - |
| RFID scanners (fixed) | 3K€ - |

# Web-labelling

- Some larger customers are offering support for printing of labels through a web interface, normally the information would come from the DESADV message
- Toyota is one example, VW is investigating this too
- Cloud-based solutions next step? (Would open for more flexible solutions)

# Hand out label examples

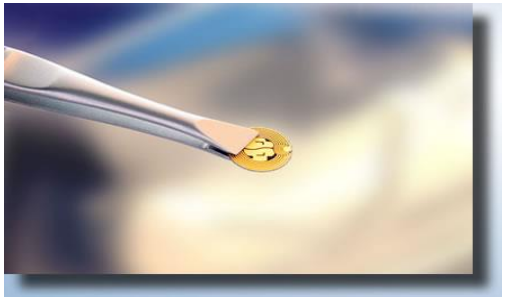
# Coffee Break

# What is RFID?

- RFID is a technology for automatically identifying and tracking tags attached to objects.
- The tags contain electronically stored information.

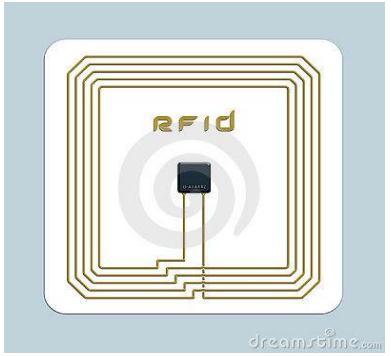
# Passive tags

- Are powered by electromagnetic induction from magnetic fields produced by the reader
- Consist of chip and antenna
- Work on small reading distances up to some meters
- Could be read even if not seen, but certain materials might hinder reading (fluids, metals)
- Are cheap
- Could only contain very little information




**Examples of usage**

- Access cards
- Keys
- Parts marking
- Theft protection
- Returnable packaging
- VIN number



# Active tags

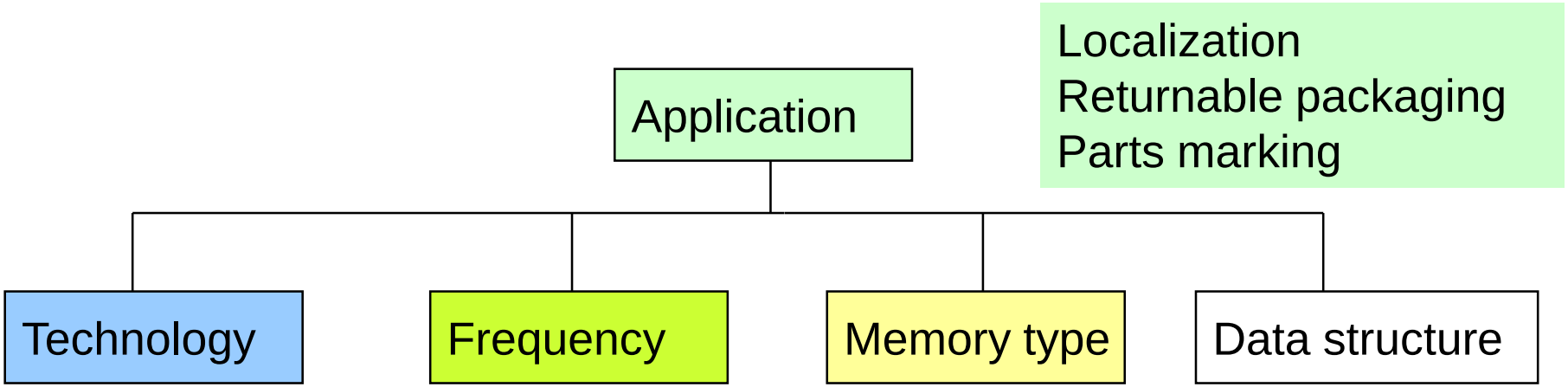
- Active tags have a local power source such as a battery
- They may operate at hundreds of meters from the reader
- Larger memory
- More expensive

**Examples of usage**

- RTLS (Real Time Location)
- Containers
- Manufacturing systems

# RFID Standards

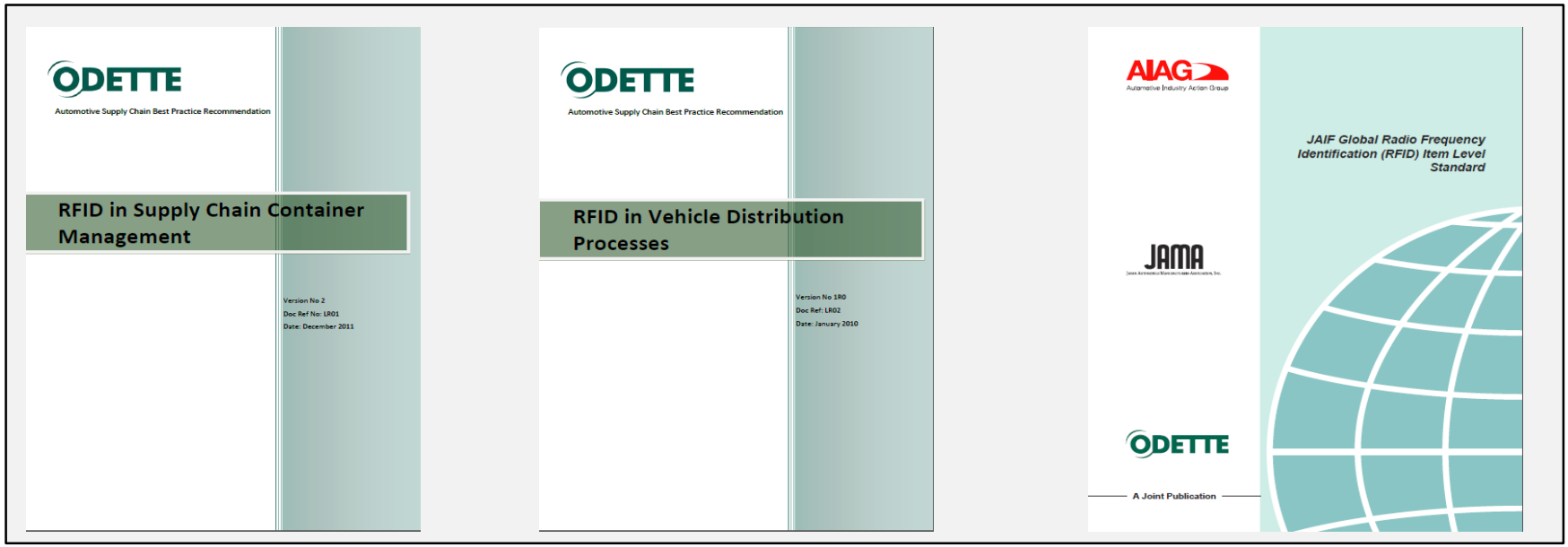
# RFID standards/alternatives




Odette/JAIF recommendations are referring to passive technology for 860 till 960 MHz

# Odette and JAIF recommendations

# Odette and JAIF recommendations






All documents build on ISO/IEC 18000-63, Parameters for air interface communications at 860 MHz to 960 MHz Type C

Nätverk för Affärsutveckling i Försörjningskedjan

- Comparison of techniques for AUTO-ID Labels & RFID

# 1D and 2D codes compared to RFID

| 1D and 2D codes | RFID |
|---|---|
| | Each tag is unique |
| Bar coded information about a product normally represents an article number | Information about a product in RFID could represent an article number plus serial number |
| Information in bar code can´t be changed | Information in RFID tags could under certain circumstances be changed |
| Bar coded information could only be read when the scanner “sees” the code | Information in tags could under certain circumstances be read without the scanner directly seeing the tag |
| The bar code scanner can only read one code at a time | The RFID scanner can read several tags at the same time |
| Rules for data structure and content as defined by ISO, Odette/JAIF | Rules for data structure and content as defined by ISO, Odette/JAIF |

# WebChecker


ODETTE SWEDEN

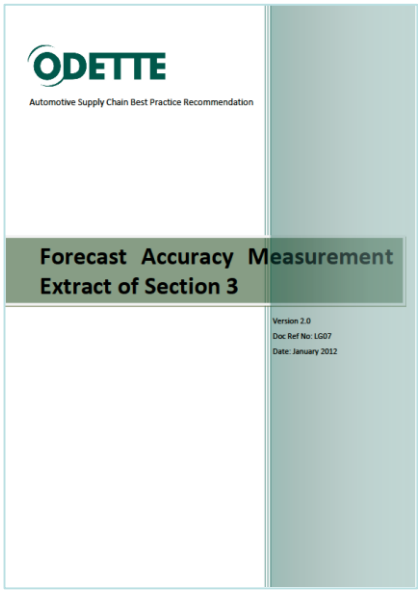
Odette Sweden is running a service for checking test EDI files for most frequently used messages:

| |
|---|
| Global Invoice Sweden AP |
| SMSI Freight |
| SMSI General (NAP) |
| Global DESADV Sweden |

Nätverk för Affärsutveckling i Försörjningskedjan

# LG07 – Forecast Accuracy Measurement

## Definitions according to LG07




**FAI**: Measures the forecast against the firm order

**WTS**: Over- or under forecasting compared to firm order

If: $d_0 \neq 0$

$$FAI := \alpha_{1|} \cdot \max\left\{0; 1 - \frac{|\Delta_1|}{d_0}\right\} + \alpha_2 \cdot \max\left\{0; 1 - \frac{|\Delta_2|}{d_0}\right\}$$
$$+ \alpha_3 \cdot \max\left\{0; 1 - \frac{|\Delta_3|}{d_0}\right\} + \alpha_4 \cdot \max\left\{0; 1 - \frac{|\Delta_4|}{d_0}\right\}$$

**100% = What you knew was completely correct.**

**0% = What you thought you knew was completely wrong**

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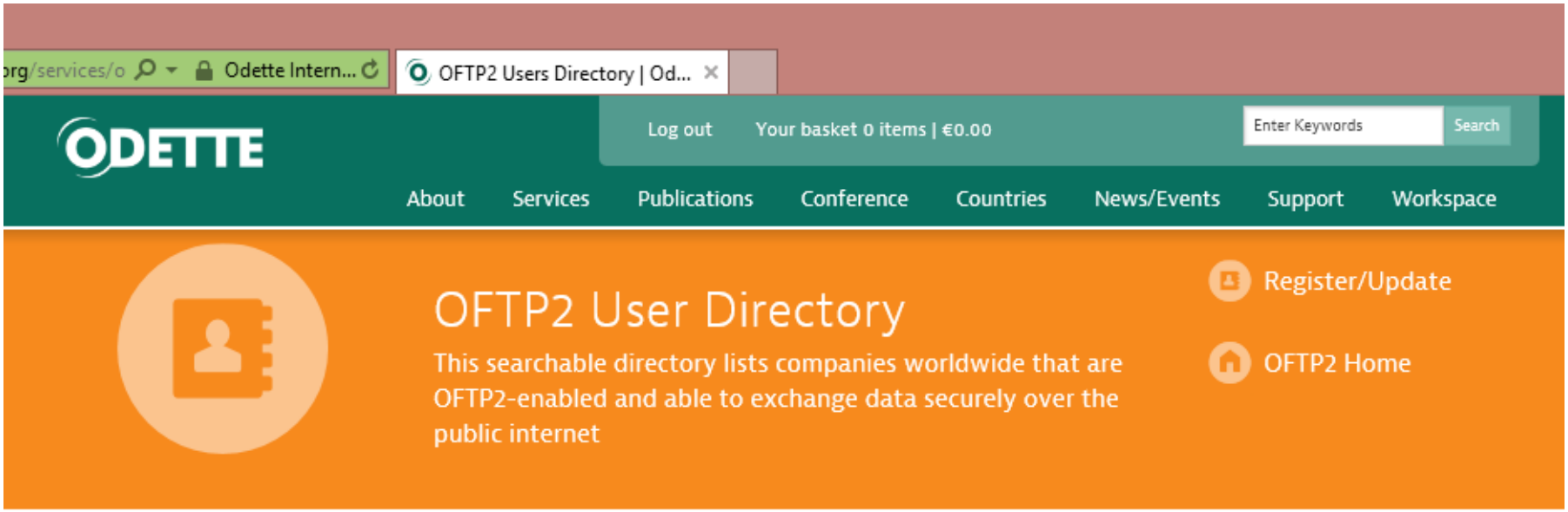
Animation_P03177.avi


An example of how demands for a specific time period are varying over time (green bars)

The blue sign indicates when information about a specific future demand was given

# OFTP general overview

# http://www.odette.org/services/oftp2-directory/users




Search OFTP2 users

-- All --

-- Choose a country --

Search

Reset search

There are currently 2923 registered OFTP2 users.

| Company | Location | Country |
|---|---|---|
| 1TNC | Wolfsburg | Germany |
| 1zu1 Prototypen | Dornbirn | Austria |
| 3 Dimensional Services | Bad Homburg | Germany |
| 3con Anlagenbau | Ebbs/Kufstein | Austria |

# http://www.odette.org/services/oftp2/software

- List of Certified (interoperability tested) OFTP2 SW Providers (19 companies)
- Find your OFTP2 SW Provider


Natverk för Affärsutveckling i Försörjningskedjan

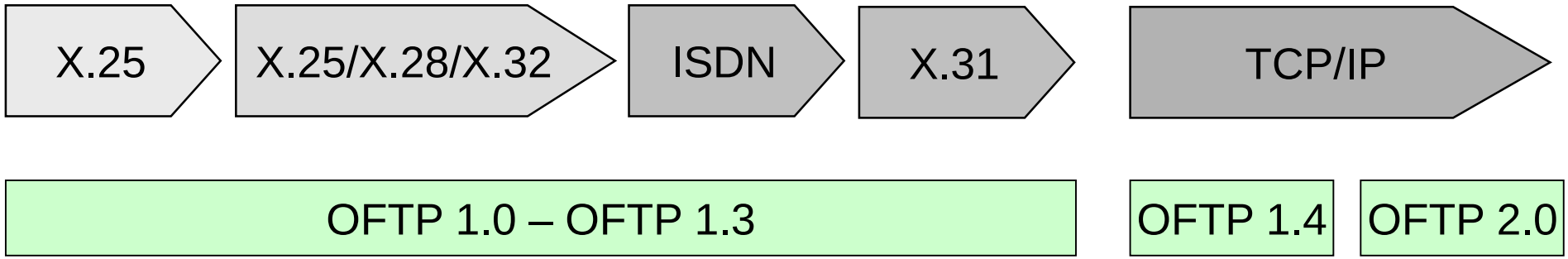
- OFTP history

# OFTP (Odette File Transfer Protocol) - history

- 1986 OFTP V1 created by Odette International
  - Most common solution for B2B File Transfer in Europe
  - Originally used over secure telecom services (X.25, ISDN, VPN, ENX)
  - No encryption
- 2004 OFTP2 Odette WG started
- 2007 Odette SCX (Security Certificate Exchange) project team started
- 2008 First OFTP2 pilot started
- 2014 Certificates migration to SHA-256 algorithm

# OFTP and B2B

- OFTP is still the most common solution for B2B File Transfer in Europe
- OFTP in use since 1986
- OFTP developed in parallel to developments of new ICT technologies and services:



# What is the advantage of using OFTP2?

- With OFTP2 users can take advantage of secure transmission at low cost, high bandwidth and global availability
- OFTP2 was designed to meet high, automotive specific requirements related to mission-critical aspects
- Such requirements include ability to handle large files, restart, technical acknowledgement, confirmation of receipt and non-repudiation

# State of the Industry usage of EDI and OFTP

- EDI is widely used in Europe among OEM:s and 1st, 2nd and 3rd Tier suppliers, based on European and/or global automotive recommendations (mainly EDIFACT based)

- The preferred solution is direct data exchange using the OFTP protocol (version 2).

- OFTP2 is accepted by most actors in the European automotive industry for logistics as well as for engineering data (*BMW, Daimler, Ford, GM Europe, MAN, Peugeot Citroën, Scania, Volvo Group, Volvo Cars, VW Group. ….*)

- There is also some usage outside Europe. One example is VW who established connections in Brazil, US, China, India, Russia

# TSL - Trustservice Status List

- An ETSI standard using XML syntax
- Contains the list of the issuing CA:s and their certificates, which are recognised as “trustable”, according to an agreed policy
- The list is signed by a trusted authority (Odette)
- This list is used by the software to trust or reject automatically CA signed certificates

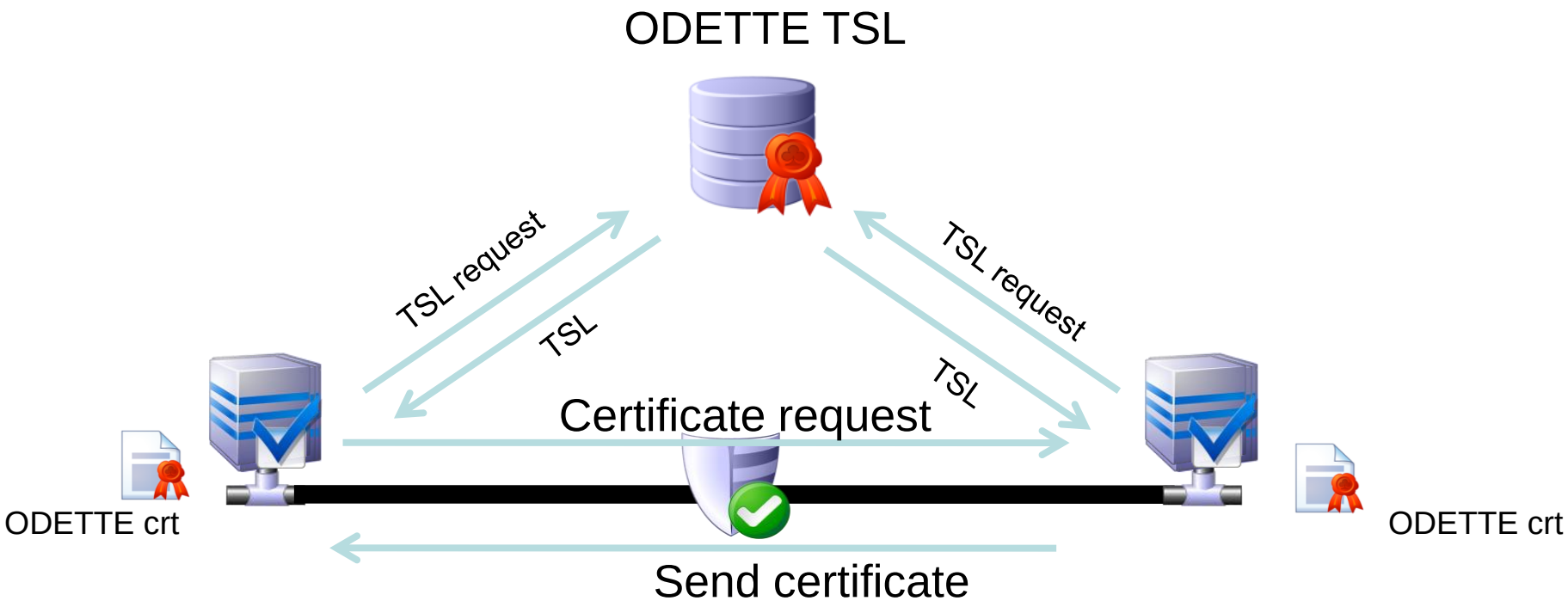
# Trust levels

- A certificate identifies and contains information about the holder of a certificate
- Most certificates apply same basic technical standards
- To trust or not to trust then is a matter of who issued the certificate
- Since there are hundreds of CA:s it will be difficult to evaluate who to trust

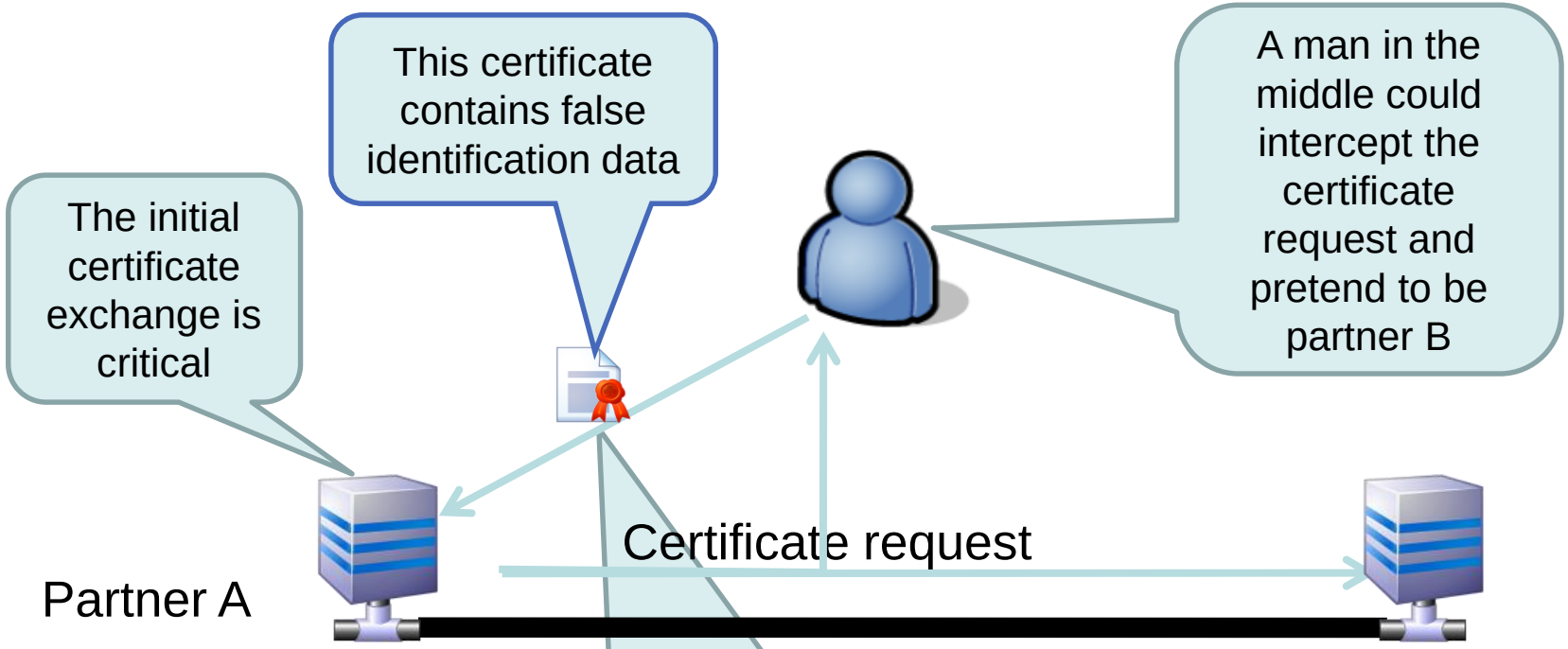



Nätverk för Affärsutveckling i Försörjningskedjan

# Odette – Trust Status signed List –TSL Administration



# TSL helps to prevent Man-in-the-middle Attacks




That‘s why it is important to accept only certificates of trustable CA:s : they will not sign / issue certificates with wrong identification data!

# Odette SCX recommendation

## Secure certificate handling targets:

- Allow for automatic exchange and administration of certificates
- Use **industry standards**
- Smooth solution easy to implement to achieve fast migration to **OFTP2**

# Odettes role

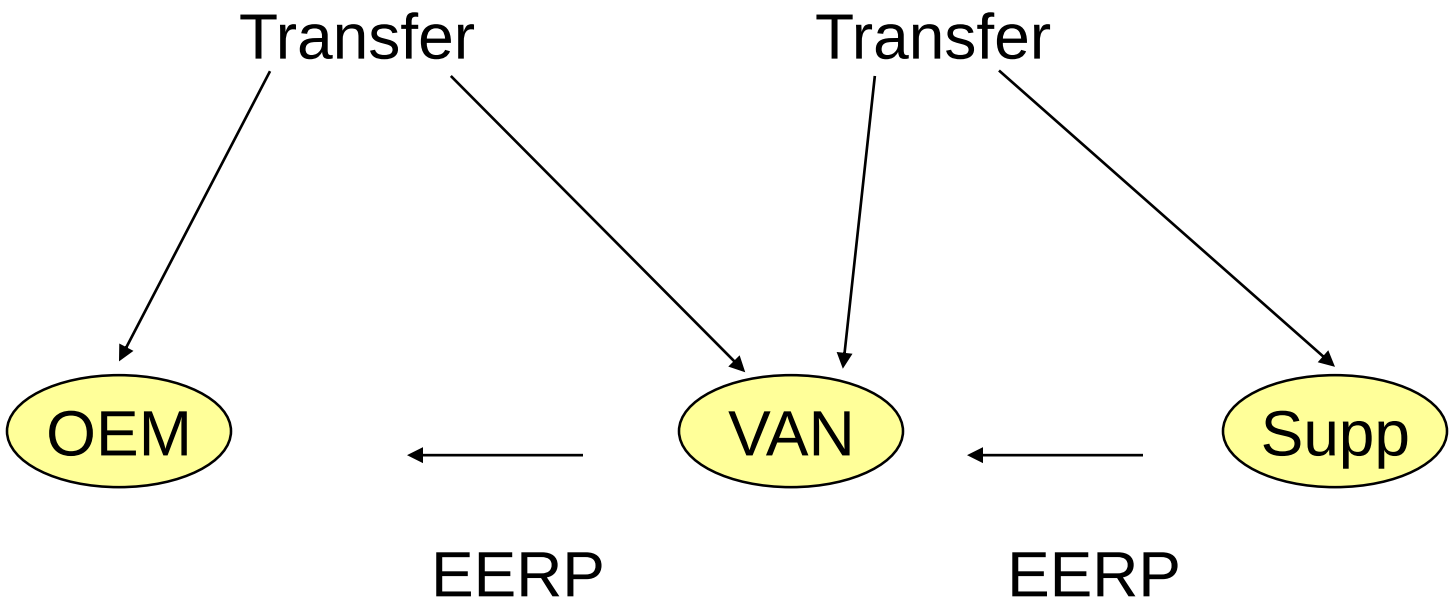
- Distribute “Odette security policy” for TSL and for  CA-organisations (issuers)
- Create a TSL list based on usage of certificates from trusted CA:s Odette

**TSL OFTP2 - Trusted CA:s**

Odette International Ltd
BMW AG
C-works
Encode AB
Global Sign NV/SA
Godaddy.com, LLC
INTERCAMBIO ELECTRÓNICO DE DATOS YCOMUNICACIONES
Numlog
PSA Peugeot Citroen
Symantec - Verisign
Volkswagen AG

# Overview of OFTP protocol and codes

# Important routing rules




EERP: End to End Respons

# **OFTP code:** Unique identification of an OFTP-system

It identifies in a unique way the Initiator (sender) and the Responder (receiver). The coding scheme is based on ISO standard 6523 : Data Interchange - Structure for the identification of Organisations.

| | | | |
|---|---|---|---|
| ISO ICD* | 0942 | 0060 | 0177 |
| ↓ | | | |
| Issuing Agency | ”Organisations -nummer” VAT number | Dun & Bradstreet | Odette International (OSCAR) |
| ↓ | | | |
| Company/organisation | | | |
| ↓ | | | |
| Sub entity | | | |

*ICD, International Code Designator

# OFTP code: Example

O 0942 0000 5503075710 ODTSWE

| | |
|---|---|
| 0942 | ICD-code representing Swedish VAT-number, “Organisationsnummer”, issuer |
| 0000 | zero filled space |
| 550375710 | Company number |
| ODTSWE | Internal coding |

0177 Odette OSCAR codes could also be used (presented later)

Other European examples:

O001300005560GERMANY

O0931000009182344552515 51

O0932000000000341001AND001

# OFTP implementation

ODETTE SWEDEN

Nätverk för Affärsutveckling i Försörjningskedjan

# OFTP2 migration – impact on costs and performance

| | **EDI Gateway** | **Network Service** |
|---|---|---|
| What do you need to do | Upgrade to OFTP2 | Internet replaces ISDN/X.25 |
| Costs for migrating to OFTP2 | No extra costs if covered in maintenance agremeent<br><br>If not there will be a cost for upgrading and installation | |
| Certificate handling | Certificate: Initila cost around 5K SEK for an SME | |
| Impact on bandwidth | | OFTP2 over Internet will increase speed at least 25 times while network services costs will be heavily reduced |
| Impact on costs | | Most companies would be able to use existing services and infrastructure |

# What is needed for Data Exchange / File Transfer for B2B?

- OFTP2 Software, see list of suppliers at http://www.odette.org/services/oftp2/software
- Network service
- Hardware
- “Application agreement” plus specifications from trading partners
- “Communications agreement” plus specifications from Communications partners
- Certificate
- Delivery dates for solutions, components and services
- You would normally need support from several providers, need for time plan for each of them

# Practical implementation issues

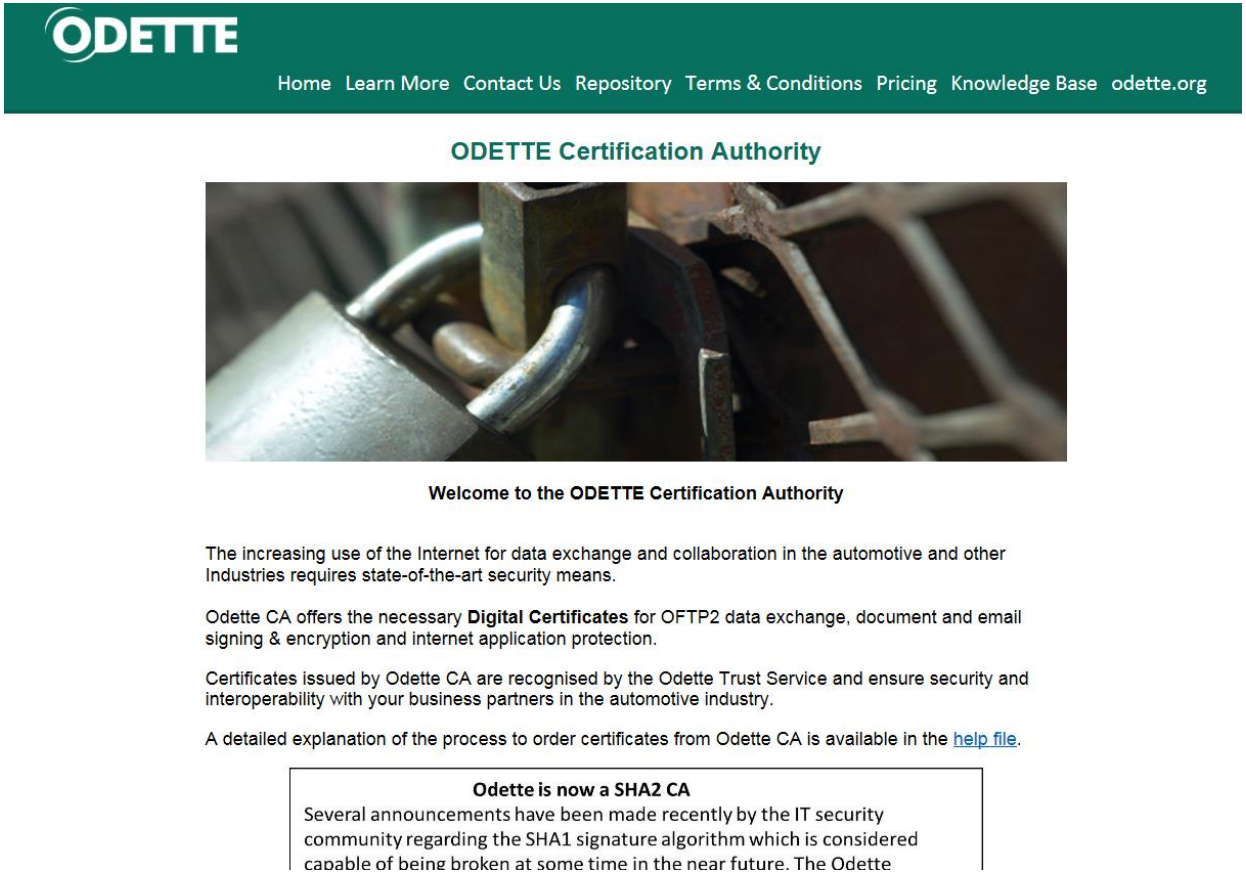
Security solutions (Certificates)

- Important to clarify trading partner policies for:
  - Usage of security certificates and CA services, important to keep the number of alternatives limited
  - Trading partner requirements vary for certain security functions (session encryption, file encryption, digital signatures, confirmation of receipt)

# How to use security certificates for OFTP2

- Only certificates issued by CA:s listed in Odette TSL (Trust Service Status Lists) are allowed for OFTP2
- As a first step check this list
- As a second step it is recommended to investigate if your company already has a certificate that could be used for OFTP2
- If your company is relying on a CA service not listed it is recommended to suggest adding the new CA to the list (after checking and review)
- Until now most OFTP2 users have decided to either use Odette CA services or CA services offered by OFTP2 software vendors

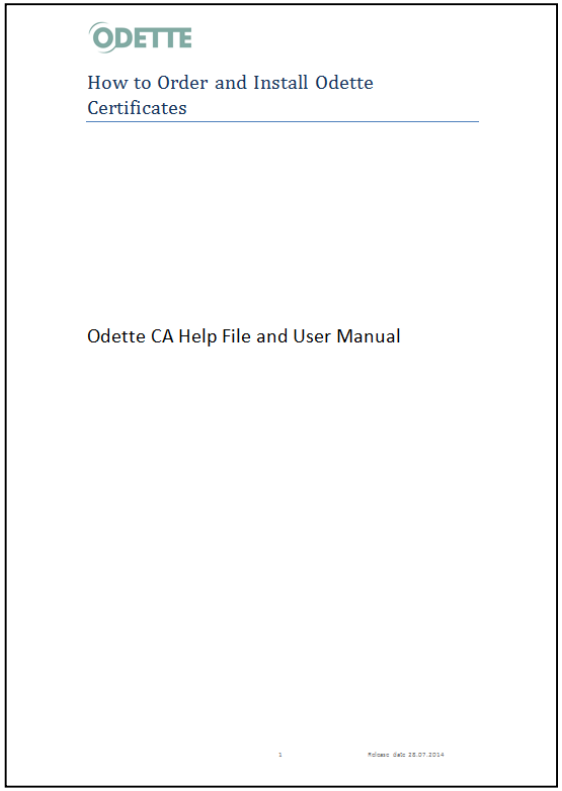
# https://www.odetteca.com/




Additional information is also available on the Odette Sweden website, http://www.odette.se/implementering/oftp2_bestall_sakerhetscertifikat

# Order certificate

# Help and User Manual available


ODETTE

How to Order and Install Odette Certificates

Odette CA Help File and User Manual

Due to increasing complexity and security concerns you will need to create your key pair and CSR with a third party tool, such as openSSL, Keystore Explorer or Portecle before ordering or renewing a certificate via the Odette CA Service website

# Summary & discussion

# Glossary

| Term/ abbreviation | Meaning | Definition |
|---|---|---|
| AIAG | Automotive Industry Action Group | North American Automotive EDI Association |
| APS | Advanced Planning System | A business system with advanced MRP capability |
| AS2 | Applicability Statement 2 | Internet standard for file transfer communications, mainly used in retail and trading |
| ASN | Advanced Shipping Note | Electronic Despatch Note, equal to DESADV message |
| Bill of lading | | A document which evidences a contract of carriage by sea |
| Call-off | Call-off/Call-in/Daily Shipping instruction | Short horizon order/requirement document |
| Carrier | Transporter | Party undertaking transport of goods from one point to another |
| CMR note | Convention relative au contrat de transport international de Marchandises par route | A document which evidences a contract of carriage by road |
| Consignee | | Party to which goods is to be shipped to |
| Consignment | | Load of one or more shipments to one consignee |
| Consignment note | | A document which evidences a contract of carriage by any means |
| Consignor | Despatch party | Party sending goods |
| Consolidation Point | Consignment point/Grouping center | Location where consolidation of consignments takes place. |
| Data Element | | Lowest level of data occurrence |
| Data Element Separator | | The special character used to separate data elements in a data format. |
| DI | Data identifier | Character(s) to qualify a meaning of data for Auto ID |
| DM | Data model | Information model connecting data to business process |
| DELFOR | Delivery forecast/Delivery Instruction | Electronic order/requirement document |

# Glossary

| Term/ abbreviation | Meaning | Definition |
|---|---|---|
| Delivery party | | Sub-contractor/hub/LSP/supplier |
| DESADV | Despatch advise | Electronic despatch/delivery note (ASN) |
| EDI | Electronic Data Interchange | Means to electronically transmit structured data |
| EDIFACT | Electronic data interchange for administration, commerce and transport | Framework for EDI Exchange, developed by UNECE |
| ERP | Enterprise resource planning (system) | |
| (S)FTP | (Secure) File transfer protocol | Commonly used file transfer protocol over Internet |
| Forwarder | Carrier, transporter | Party arranging the carriage of goods |
| Freight | | Goods in transit |
| Freight invoice | | Invoice issued by carrier for transport cost |
| FCL | | Full container load |
| FTL | | Full trailer load |
| Hub | Hub/cross docking | Central collection point of goods for further distribution |
| HRI | Human readable interpretation | Characters readable to the human eye |
| Incoterms coded | | Code specifying terms of delivery and/or transport |
| Packaging item | Package/kolli | Package identified by unique label number |
| Intermodal transport | | Load of goods forwarded by more than one mode of transport |
| INVOIC | | Commercial invoice message |
| Invoicee | | Party to which invoice is addressed |
| JAMA | | Japan Automobile Manufacturers Association |
| Kanban | | A pull replenishment system, with Kanban card indicating minimum stock. |

# Glossary

| Term/ abbreviation | Meaning | Definition |
|---|---|---|
| Kanban number | Card number | Unique identifier for a pull signal from buyer |
| License Plate | | Unique transport unit identifier |
| Linear symbol | | One dimensional bar code symbol |
| LSP | Logistic service provider | Party taking consignment responsibility for other party |
| Master Load | Master load/transport carrier | Unit that hold inner packages with same items. |
| Material release | DELFOR/CALLOFF/ORDER | An order against a blanket order for a requirement |
| Message | | A continuous stream of data elements |
| Message envelope | | Message header and trailer surrounding message |
| Message Function Coded | | A code specifying function (purpose) of message |
| Message Header | | Group of characters defining start of message |
| Message trailer | | Group of characters defining end of message |
| Message Type Code | | Code specifying type of message |
| Message version | | Code specifying version of message |
| Mixed load | Mixed load (G pallet) | A transport carrier with inner packages with different items |
| ODETTE | Organisation for Data Exchange by TeleTransmission in Europe | Organization for EDI and Auto-ID in the European Automotive Industry |
| OEM | Original equipment manufacturer | Commonly used to describe actors in top of value chain |
| OFTP/OFTP2 | Odette file transfer protocol (2) | |
| Packaging instruction | Package instruction | Agreed packaging instruction for an item, equipment or module |

# Glossary

| Term/ abbreviation | Meaning | Definition |
|---|---|---|
| Packaging type code | | A code to specify a packaging type |
| Packing list | | Document specifying individual packages and content |
| Payee | | A party to which payments are made |
| Place of delivery | Place of delivery/discharge | Place of delivery according to terms of transport |
| Place of despatch | | Place where goods is taken over for carriage |
| Proforma Invoice | | Invoice document with same info as conventional invoice. Mostly used for customs declarations |
| Proof of delivery | | Signed copy of delivery receipt (reception receipt) |
| Pull method | | Order based on static stock and replenishment order is immediate upon consumption |
| Push method | | Order based on specified due dates and est transport lead time. |
| Quiet zone | | Blank space surrounding a bar code |
| Reader | | Equipment to read and decode bar codes |
| RECADV | Reception advise | Reception advise from buyer to supplier on received goods (corresponding with DESADV) |
| RFID | Radio Frequency identity | Wireless electromagnetic method for data transfer |
| SBI | Self billing invoice | Invoice (monetary transfer) document from buyer to supplier |
| Shikyu process | Shikyu process | Shipment of components to a supplier for assembly to a larger component ready for final assembly |
| Ship-from | Ship-from (Consignor) | Shipping party |

# Glossary

| Term/ abbreviation | Meaning | Definition |
|---|---|---|
| Ship-to | Ship-to (Consignee) | Receiving party |
| Shipment | | Load of one or multiple transport carriers shipped from one consignee to one consignor |
| Shipper | Shipper (Consignor) | Party sending goods |
| Subset | Subset/application of framework | Framework (business rules) within larger framework |
| Symbology | | Framework for bar codes standard |
| Syntax | Data grammar | Data grammar, data sequence framework |
| TOD | Terms of delivery | Conditions agreed between buyer and seller on delivery |
| TOF | Terms of freight | Conditions agreed between buyer of transport and carrier |
| TOT | Terms of transport | Conditions agreed as above for physical transport of goods |
| Tracing | Tracing (traceability) | Function to trace goods, items, consignments and so on |
| Tracking | | Function to maintain trace of goods, items, consignments and so on |
| Transshipment | | Transition from one means of transport to another |
| THU | Transport handling unit | One separately identifiable transport unit (eg pallet) |
| Transport instruction | | Generic term document with details to arrange transport |
| Tier | Tier 1, Tier 2 … | Level in supply/value chain |
| VAN | Value added network | Communication hub with features added |
| VDA | Verband Der Automobilinustrie | German Automobile Manufacturers Association |
| Web-EDI | Web-EDI | Web accessible EDI system (via Portal) |

# Glossary

| Term/ abbreviation | Meaning | Definition |
|---|---|---|
| Ultimate consignee | | Final place of discharge (consumption place) |
| UML | Unified modeling language | Set of diagrams communication requirements of a business process |
| UN/CEFACT | | United Nations Centre for Trade Facilitation and Electronic Business |
| Waybill | Consignment note | A document which evidences a contract of carriage by any means |
| XML | Extensible markup language | Data format |
| X.12 | | American EDI framework for EDI |
| X.25 | X.25 | Datapak, older analog communication network |
| X.400 | X.400 | Older but still existing communication network |
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