ODETTE SWEDEN

Training course, slides version 2.4

EDI for supply chain collaboration in the automotive industry

24th of October, 2017
Scandic Europa
Göteborg

Nätverk för Affärsutveckling i Försörjningskedjan

Introduction

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Language that we will use today?

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Introduction to this day, presentation of lecturers and participants

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- 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

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Presentation of participants

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

Agenda walkthrough

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Agenda

09.00	**Introduction**
09.15	**EDI – why and what is it?** ■ Introduction to Odette ■ EDI standards and organisations behind ■ Odette - future development and vision ■ Example of tools (WebChecker and FAI)
10.00-11.30	**General overview of tools used for data exchange (messages, auto-id concepts)**
10.00	**Messages** ■ EDI messages, standards, structure, segments ■ EDI Components/requirements ■ Automotive industry compared to Food & Beverage
10.30	**Coffee**
	Messages - continues
11.00	**AUTO-ID Concepts** ■ 1D and 2D symbols ■ Data Identifiers ■ AUTO-ID Labels and Barcodes ■ Equipment for generating and reading labels ■ RFID – Passive and Active technology ■ RFID - standards/alternatives

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Agenda

12.00	**Lunch**
13.00	**Business processes and procurement methods in the automotive supply chain** ▪ Roles of the involved partners ▪ Batch delivery ▪ JIT/JIS process ▪ VMI and CMI processes
14.00	**Coffee Break**
14.30	**EDIFACT Format and syntax, detailed walkthrough Segment architecture**
15.15	**Practical tasks**
16.15	**Implementation issues** ▪ Driving forces behind EDI ▪ Supplier challenges ▪ IT solutions for EDI and labels ▪ Conclusion
16.30-17.00	**Summary & discussion**

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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/kurser-seminarier_1/endast_tillganglig_for_kursmedlemmar
User name: odette
PW: book12

EDI – Why?

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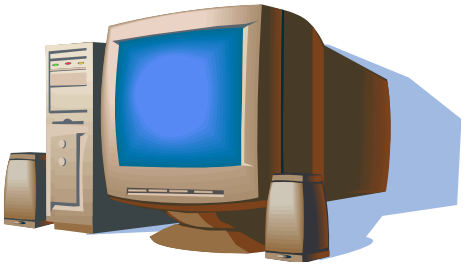

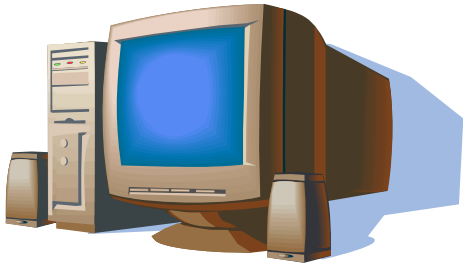

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What is EDI all about?

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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.

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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:

Leverans på väg till dig.
Avsändare
Namn **Lampan AB**
Epost **kontakt@lampan.se**

Kollinummer
696XXXXXX48SE

Här är fakturan för ditt köp hos Lampan i Uddevalla. Vi behöver din betalning senast 3 december. Se fakturan på Mitt Klarna eller öppna den som pdf här.

Ordernummer: 88408
Orderdatum: 2015-10-29

Sändning

Datum	**2015-11-19**
Sändningsreferens	**88408**
Ordernummer	**88408**
Transportör	**Posten Sverige**

OBS!
Detta e-postmeddelande är skickat till dig från Lampan AB via Unifauns EDI-växel.

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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

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VOLVO
Volvo Car Corporation

- 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

National Electric Vehicle Sweden

- 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.

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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://microsite.hcltech.com/EDI/cars/index.html	EDI specifications at Volvo Cars
https://supplier.scania.com/wps/portal/Home/Supplying-to-Scania/EDI/	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

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Introduction to Odette, historical walkthrough

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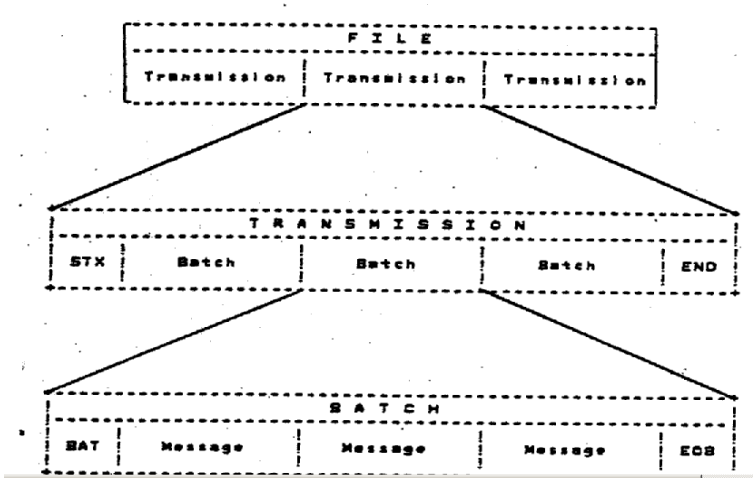
Introduction to Odette

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

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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

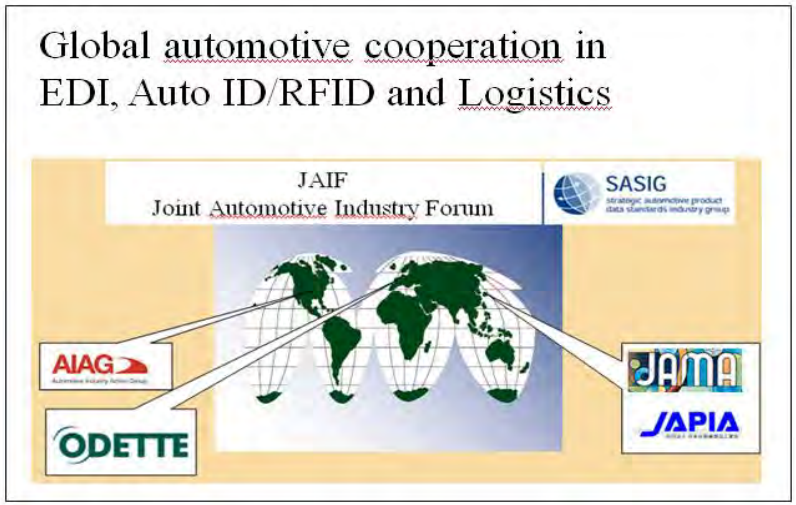
- **Axway**
- **QAD**

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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WebChecker

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

LG07 – Forecast Accuracy Measurement

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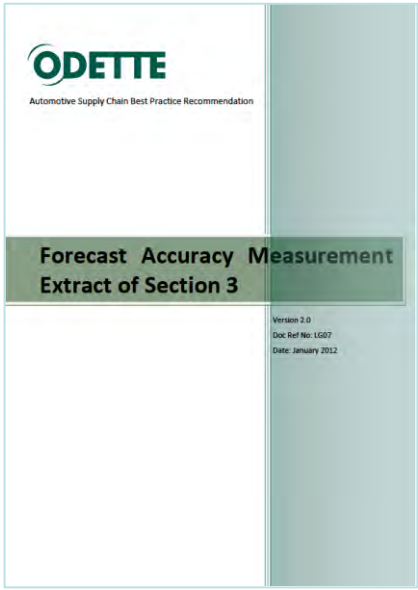
Definitions according to LG07



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

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

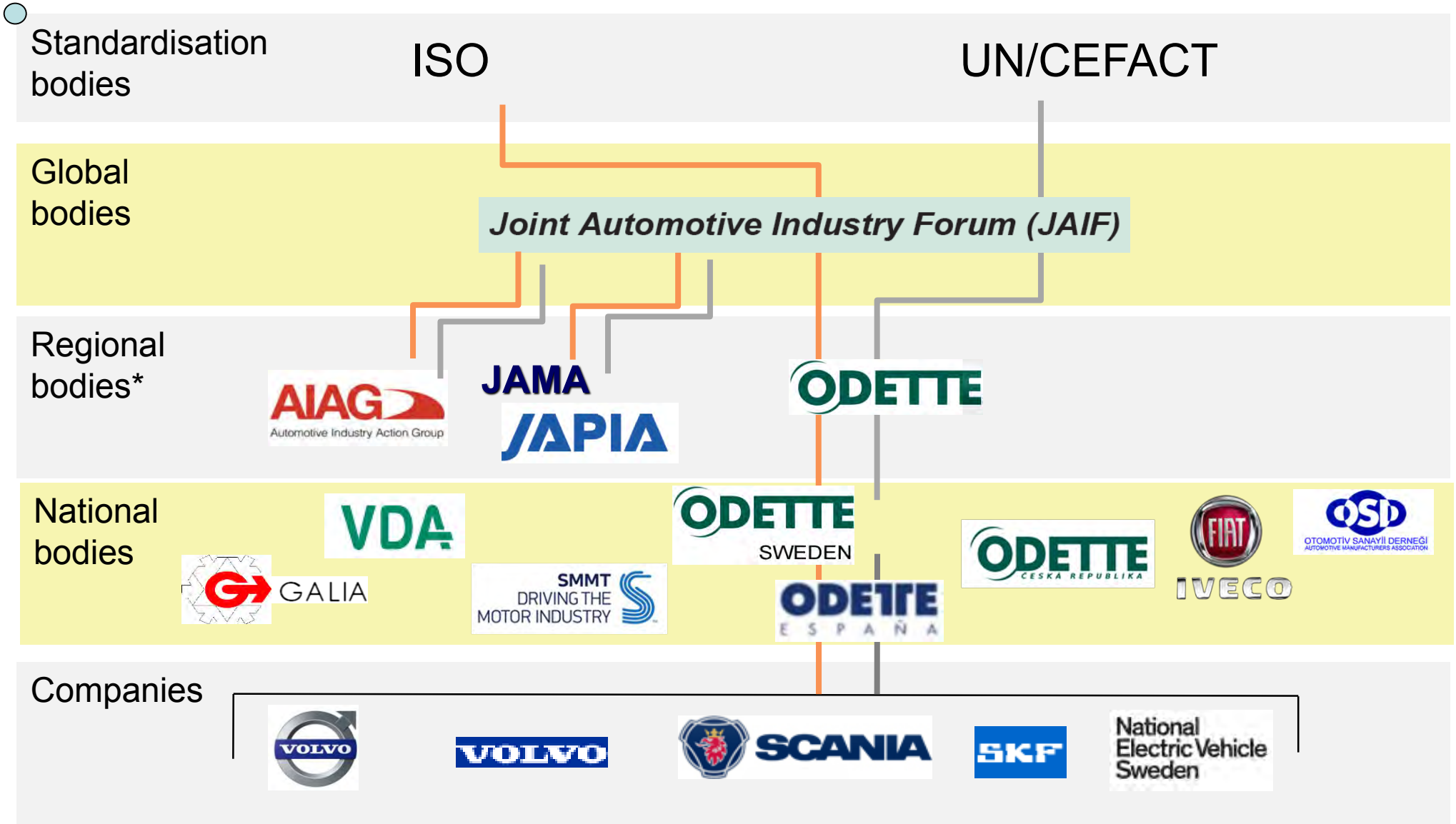
- Groupement pour l'Amélioration des Liaisons dans l'Industrie Automobile

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
GALIA
SMMT
DRIVING THE MOTOR INDUSTRY
ODETTE
SWEDEN
ODETTE
ESPAÑA
ODETTE
ČESKA REPUBLIKA
FIAT
IVECO
OSD
OTOMOTİV SANAYİİ DERNEĞİ
AUTOMOTIVE MANUFACTURERS ASSOCIATION
Companies
VOLVO
VOLVO
SCANIA
SKF
National Electric Vehicle Sweden
Logistics, Auto Id
EDI
NAF
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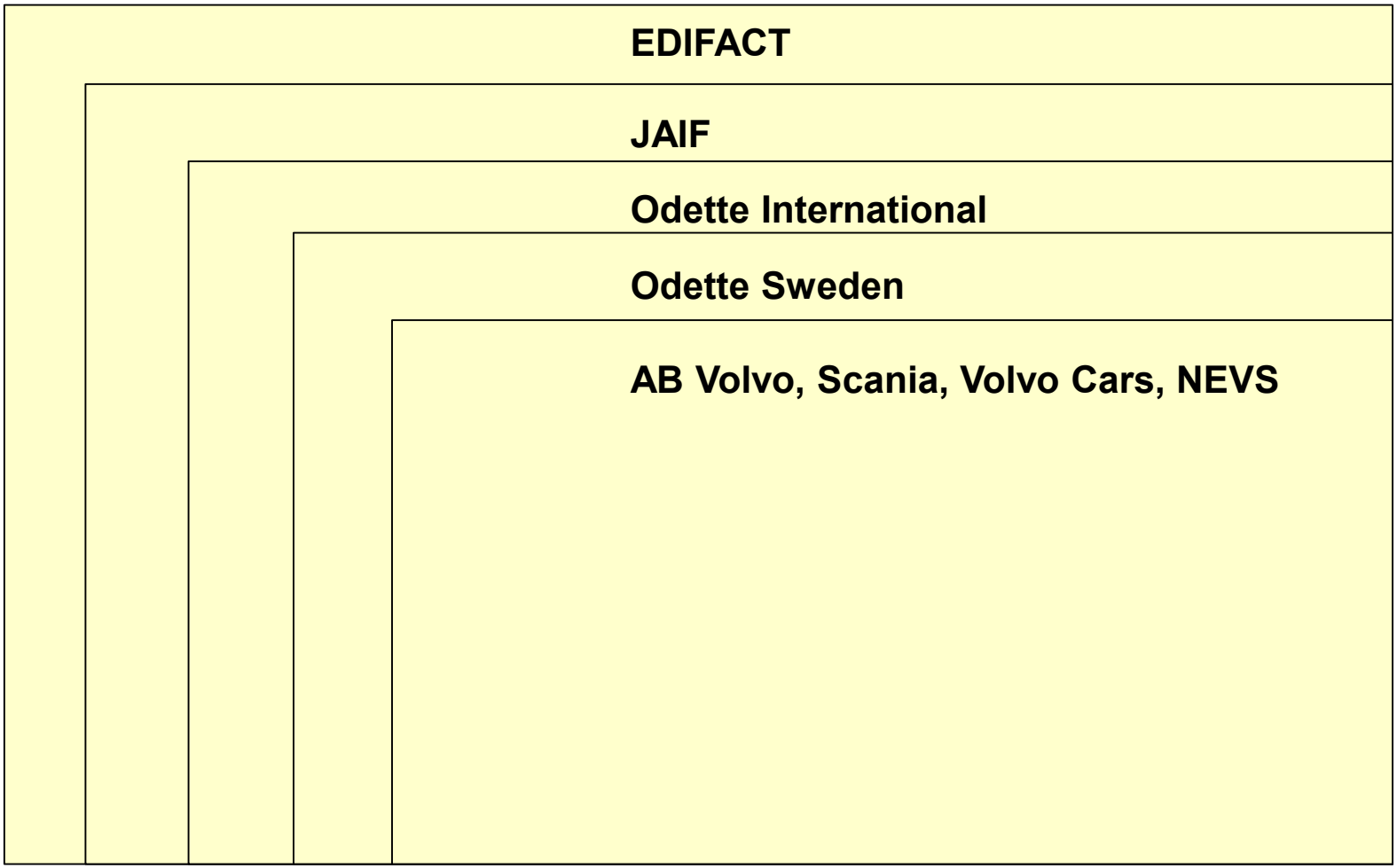
EDI messages standards development and implementation



Odette – developments and future trends

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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

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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

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Future tendencies

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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

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

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General overview of tools used for data exchange (messages, auto-id concepts)

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EDI – Electronic Data Interchange

Electronic, predefined documents exchanged between parties.

DELFOR

DESADV

INVOIC

DELJIT

Labels with bar codes and plain text information

RFID tags

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EDI messages - standards

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 messages - standards

- 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 messages - 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 what segments and tags are mandatory, conditional and optional.

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EDI messages – structure

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

		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

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EDI messages – Segment Groups and segments

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http://www.unece.org/trade/untdid/d96a/trmd/delfor_s.htm | Expressen | Senaste nytt - Nyhe... | Economic Development Interf... | UNTDID - D.96A Segment T...

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       ÄÄÄÄÄ Segment group 1  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   10ÄÄÄÄÄÄÄÄÄÄ¿
0050   RFF Reference                          M   1          ³
0060   DTM Date/time/period                   C   1ÄÄÄÄÄÄÄÄÄÄÄÙ

0070       ÄÄÄÄÄ Segment group 2  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   20ÄÄÄÄÄÄÄÄÄÄ¿
0080   NAD Name and address                   M   1          ³
0090   LOC Place/location identification      C   10         ³
                                                             ³
0100       ÄÄÄÄÄ Segment group 3  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   5ÄÄÄÄÄÄÄÄÄÄ¿³
0110   CTA Contact information                M   1          ³³
0120   COM Communication contact              C   5ÄÄÄÄÄÄÄÄÄÄÄÁÙ

          DETAIL SECTION

0130   UNS Section control                    M   1

0140       ÄÄÄÄÄ Segment group 4  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   500ÄÄÄÄÄÄÄÄÄ¿
0150   NAD Name and address                   M   1          ³
0160   LOC Place/location identification      C   10         ³
0170   FTX Free text                          C   5          ³
                                                             ³
0180       ÄÄÄÄÄ Segment group 5  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   10ÄÄÄÄÄÄÄÄÄ¿³
0190   DOC Document/message details           M   1          ³³
0200   DTM Date/time/period                   C   10ÄÄÄÄÄÄÄÄÄÙ³
                                                             ³
0210       ÄÄÄÄÄ Segment group 6  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   5ÄÄÄÄÄÄÄÄÄÄ¿³
0220   CTA Contact information                M   1          ³³
0230   COM Communication contact              C   5ÄÄÄÄÄÄÄÄÄÄÙ³
                                                             ³
0240       ÄÄÄÄÄ Segment group 7  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   10ÄÄÄÄÄÄÄÄÄ¿³
0250   TDT Details of transport               M   1          ³³
0260   DTM Date/time/period                   C   5ÄÄÄÄÄÄÄÄÄÙ³
                                                             ³
0270       ÄÄÄÄÄ Segment group 8  ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ C   9999ÄÄÄÄÄÄ¿³
0280   LIN Line item                          M   1          ³³
0290   PIA Additional product id              C   10         ³³
0300   IMD Item description                   C   10         ³³
0310   MEA Measurements                       C   5          ³³
0320   ALI Additional information             C   5          ³³
```

Segment group

Segment

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EDI messages – Segment structure

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http://www.unece.org/trade/untdid/d96a/trsd/trsdnad.htm

Change indicators

NAD NAME AND ADDRESS

Function: To specify the name/address and their related function, either by C082 only and/or unstructured by C058 or structured by C080 thru 3207.

010	3035	PARTY QUALIFIER	M	an..3
020	C082	PARTY IDENTIFICATION DETAILS	C	
	3039	Party id. identification	M	an..35
	1131	Code list qualifier	C	an..3
	3055	Code list responsible agency, coded	C	an..3
030	C058	NAME AND ADDRESS	C	
	3124	Name and address line	M	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
	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

Composite

Data tag

???

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

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EDI messages - segments

- *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:*

...and it was assigned by you (buyer)

This is my supplier code ...

Company city

Company country

NAD+SE+1234567::92++Company GMBH+Smallroad+smalltown++DE5409+DE '

I am a **N**ame and **AD**ress segment

This is the company name

...and that was all

I represent the **SE**ller

Company postal address

Company zip code

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

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EDI messages - Components/requirements – top level

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Communcation	Multiple methods but consolidated
Format	Odette, EDIFACT, VDA, X.12, XML
Subset	Version and application of format
Syntax	Grammar in format
Logic	Logic for interpreting data (business rules)
System support	Possibilities and limitations in receiving system
Business rules	Special requirements from a certain party

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Coffee Break

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Nätverk för Affärsutveckling i Försörjningskedjan

Automotive industry compared to Food & Beverages

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

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- 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

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- General overview of tools used for data exchange (messages, auto-id concepts)
  - AUTO-ID Concepts

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Auto-ID concepts

Definition:

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

Ex. of concepts:

2 D symbols

Data Matrix

Bar codes

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

…….

Auto-ID concepts
- 1D and 2D

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 2D like QR or Datamatrix
Reading and scanning – (when to use what)	Laser scanning of bar codes Camera technology for 2D 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

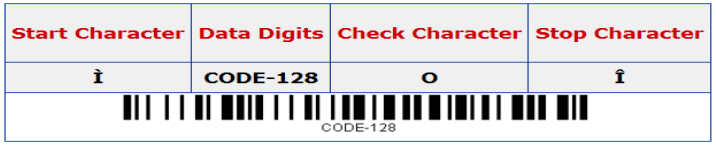
Auto-ID concepts
1D and 2D symbols

Code 39 .

- Defines 43 characters

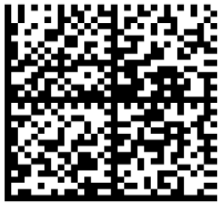
Code 128

- 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

Auto-ID concepts
- 1D codes compared to other Auto Id technologies

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

Auto-ID concepts
- 2D codes compared to other Auto Id technologies

Printing	Laser printers Thermal transfer printers (melting a coating) Thermal Printers (selectively heating coated paper)
Reading /Scanning Technology	Laser scanning for 1D barcodes and PDF417 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

Auto-ID concepts
- Bar codes - 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 concepts - labelling

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Auto-ID concepts
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

Auto-ID concepts
- 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*)

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Auto-ID concepts
- Labelling guidelines

Other labels (new, proposed)

- MAT label (For manufacturing traceability)

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

Auto-ID concepts
- Labelling in the European automotive industry

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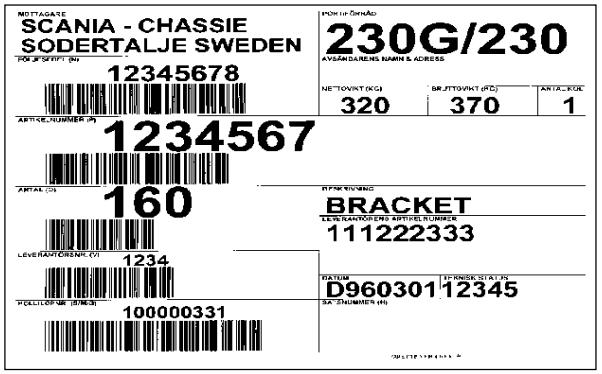
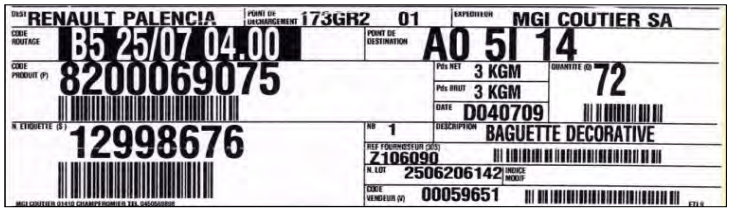
OTL1, Odette Transport Label

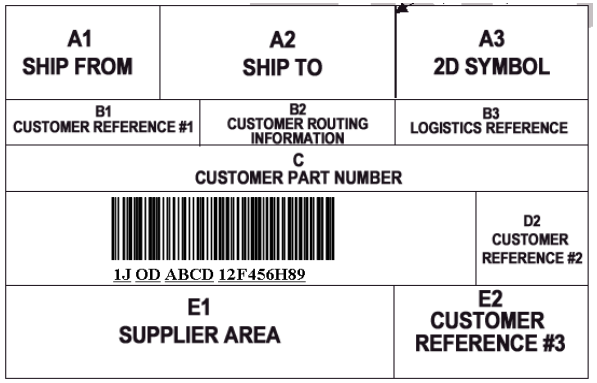


GTL, Global Transport Label, small

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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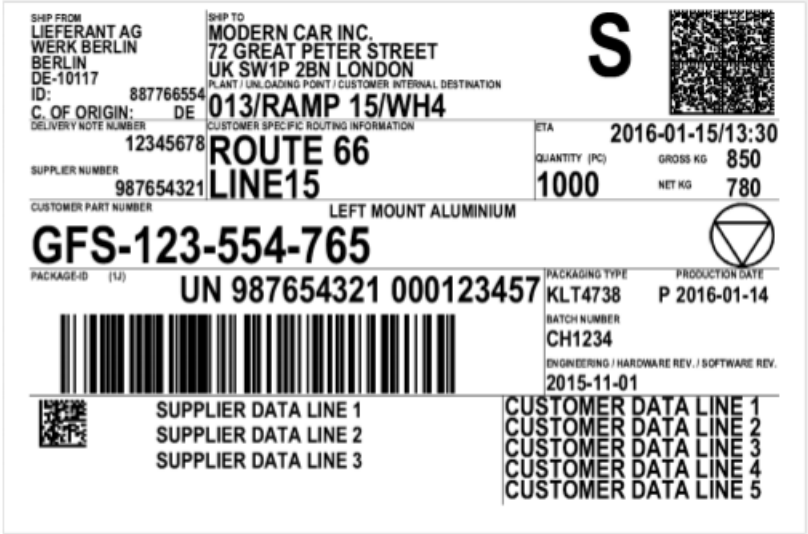
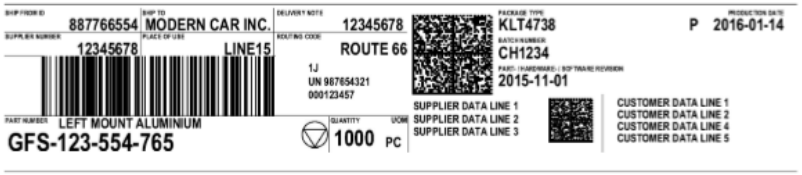
A5/Half letter

A6/6x4 inches



SLC 1 – 210x74 mm

SLC 2 – 210x42 mm



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Labelling in the European automotive industry

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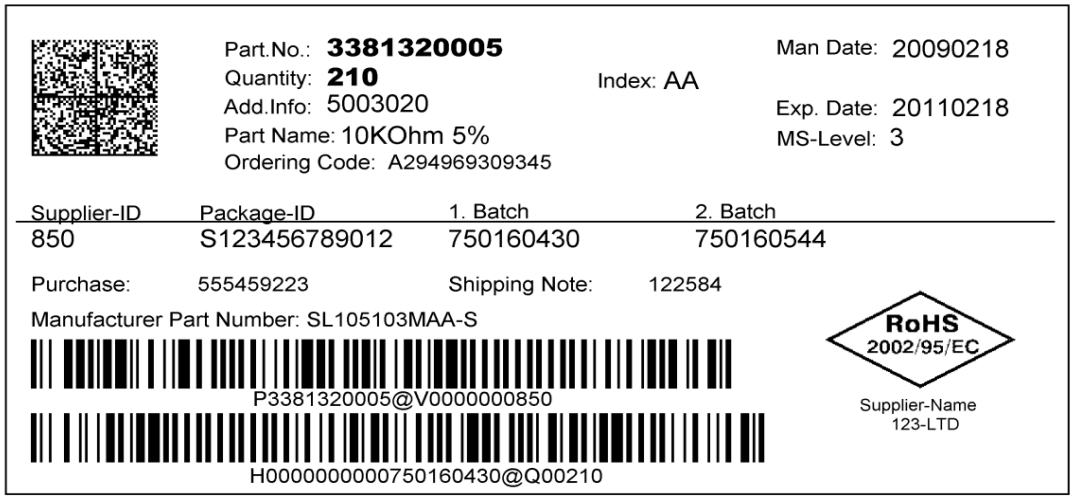
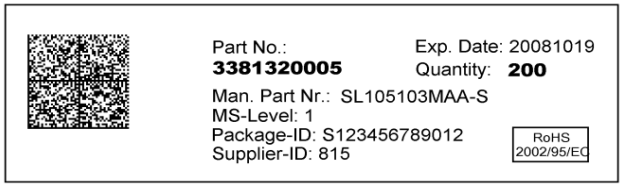
MAT Label: No fixed size – label examples (*on smallest package unit*)

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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Auto-ID concepts
- 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

Auto-ID concepts
- License Plate: Unique Package ID based on Odette

1J OD ABCD 12F456H89

Packaging information
Data Identifier

Issuing Agency Code **(Odette)**

Company code

Serial number

Auto-ID concepts
- RFID

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

Auto-ID concepts
- RFID standards/alternatives

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Application

Localization
Returnable packaging
Parts marking

Technology

Frequency

Memory type

Data structure

Active, passive, WiFi, GPS, Infrared

13.56 MHz, 2.45 GHz, 860 to 960 MHz (UHF), 433 MHz (UHF)

RO
WORM
RW

Unique identifier
ISO
Odette/JAIF
GS1/EPC

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

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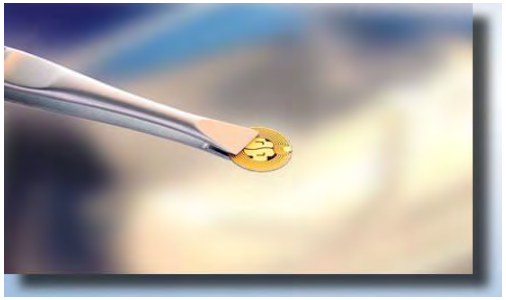
Auto-ID concepts
- RFID - Passive tags

- 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

Auto-ID concepts
- RFID - 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

Auto-ID concepts
- Comparison of techniques for AUTO-ID Labels & RFID

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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

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Auto-ID concepts
- Odette and JAIF recommendations

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Odette and JAIF recommendations

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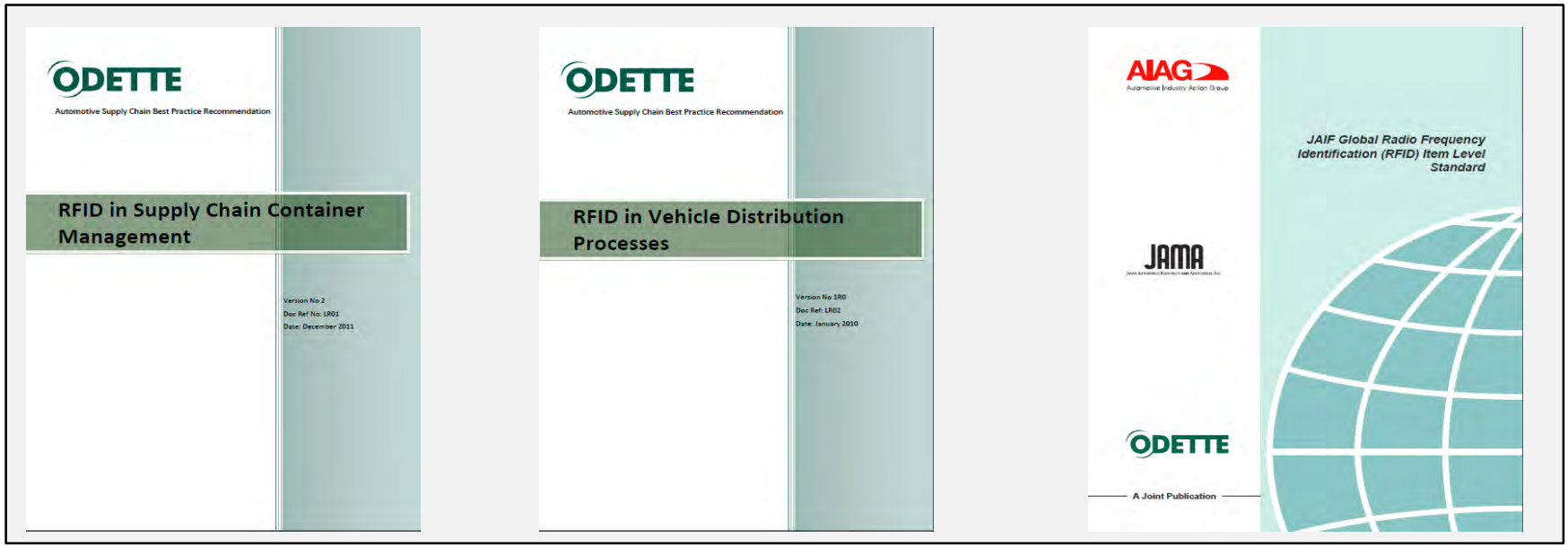

All documents build on ISO/IEC 18000-63, Parameters for air interface communications at 860 MHz to 960 MHz Type C

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Business processes and procurement methods in the automotive supply chain

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Business processes and procurement methods

- 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

Business processes and procurement methods - Batch delivery

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Business processes and procurement methods - Batch delivery

- A batch delivery is 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

Business processes and procurement methods - Basic Scenario for information flow (batch).

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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.

DELINS / DELFOR

Information flow

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.

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Business processes
– Direct Batch Delivery – Parties

- Buyer
- Supplier
- Carrier/LSP

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Business processes
– X-docks Batch Delivery - Parties

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

Business processes
– Subcontractor Batch Delivery - Parties

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

Business processes
– Batch Delivery - Roles

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Buyers responsibilities:

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

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Business processes
– Batch Delivery - Roles

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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
– Batch Delivery - Roles

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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
– 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
– Batch Delivery - Roles

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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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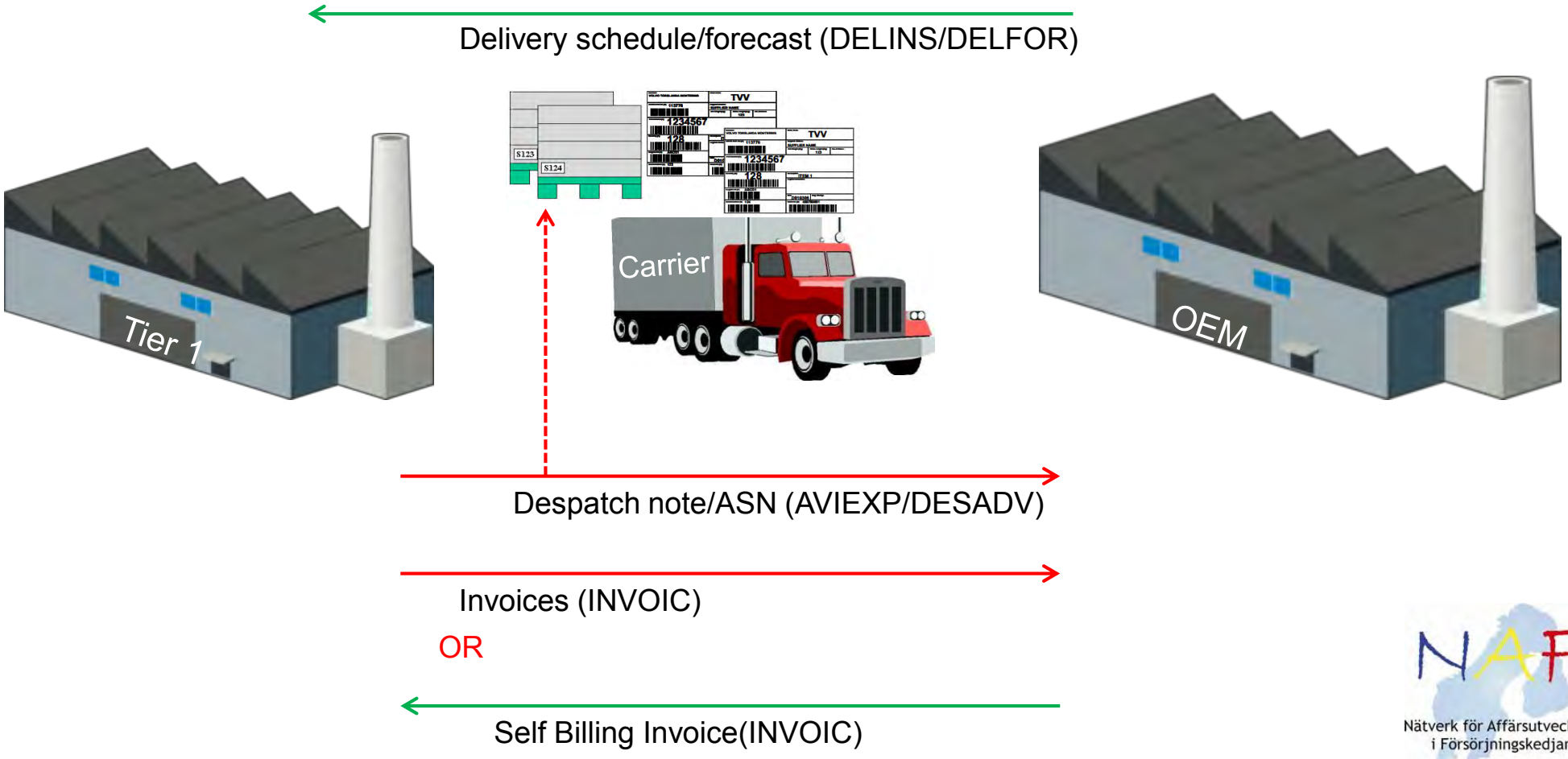
Business processes
– Batch Delivery - Flow



Business processes
– 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
– Batch Delivery – Logic DELFOR

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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	

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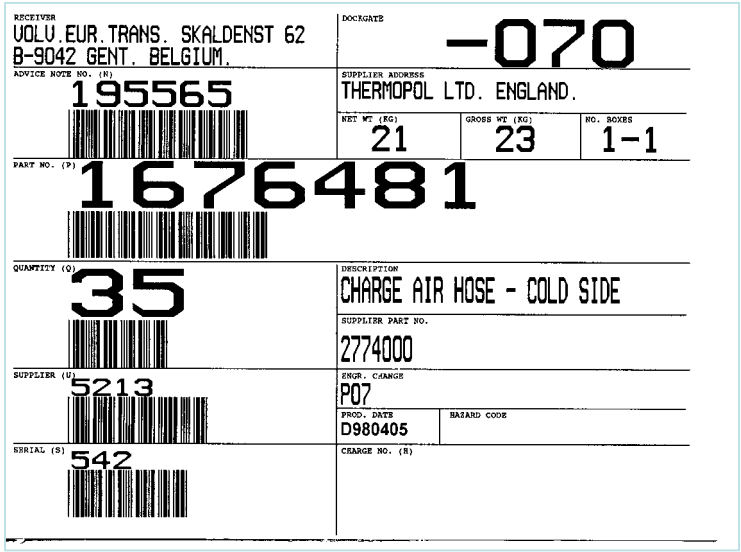
Business processes
– Batch Delivery - Logic

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
– Batch Delivery – Logic - DESADV

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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)	
UNT+22+XFR16786'	Service segment	ITEM
UNZ+1+39516'	Service segment	

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Business processes
– 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
– 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	HEAD
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	LINE
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	SUM
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	

ODETTE SWEDEN

NAF Nätverk för Affärsutveckling i Försörjningskedjan

Procurement processes
- 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)

ODETTE SWEDEN

DELFOR - NAD 3036 - (CN)

DELFOR - LOC 3225 (159)
DESADV - LOC 3225 (159)

DESADV - BGM 1004

DELFOR- LIN 7140 (IN)
DESADV - LIN 7140 (IN)

DESADV - QTY 6060 (52)

DELFOR - NAD 3039 (SE)
DESADV - NAD 3039 (CZ)

DESADV - RFF 1154
GIR 7402

DESADV - PIA 7140*

RECEIVER
VOLV.EUR.TRANS. SKALDENST 62
B-9042 GENT. BELGIUM.

DOCKGATE
-070

DEVICE NOTE NO. (N)
195565

SUPPLIER ADDRESS
THERMOPOL LTD. ENGLAND.

NET WT (KG)	GROSS WT (KG)	NO. BOXES
21	23	1-1

PART NO. (P)
1676481

QUANTITY (Q)
35

DESCRIPTION
CHARGE AIR HOSE - COLD SIDE

SUPPLIER PART NO.
2774000

SUPPLIER (U)
5213

ENGR. CHANGE
P07

PROD. DATE
D980405

HAZARD CODE

SERIAL (S)
542

CHARGE NO. (H)

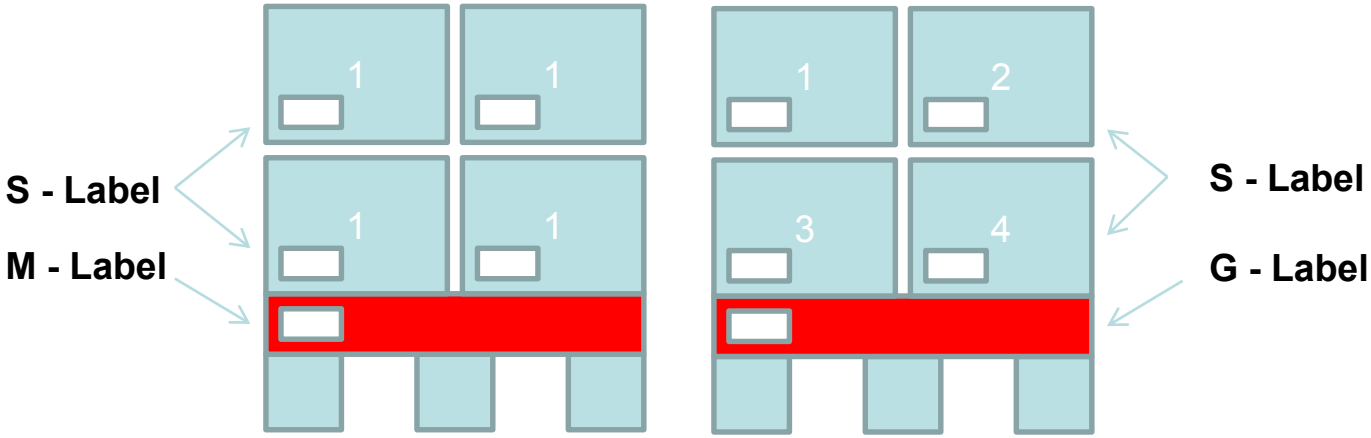
*=special agreements

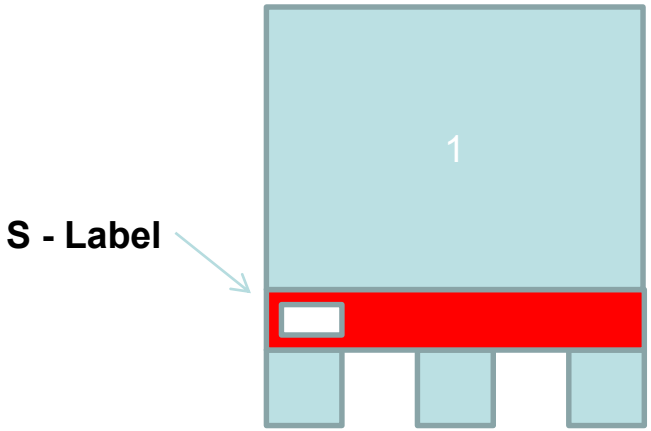
NAF
Nätverk för Affärsutveckling i Försörjningskedjan

Smallbox handling

Homogenous handling unit
One part per pallet

Mixed handling unit
Multiple parts per pallet





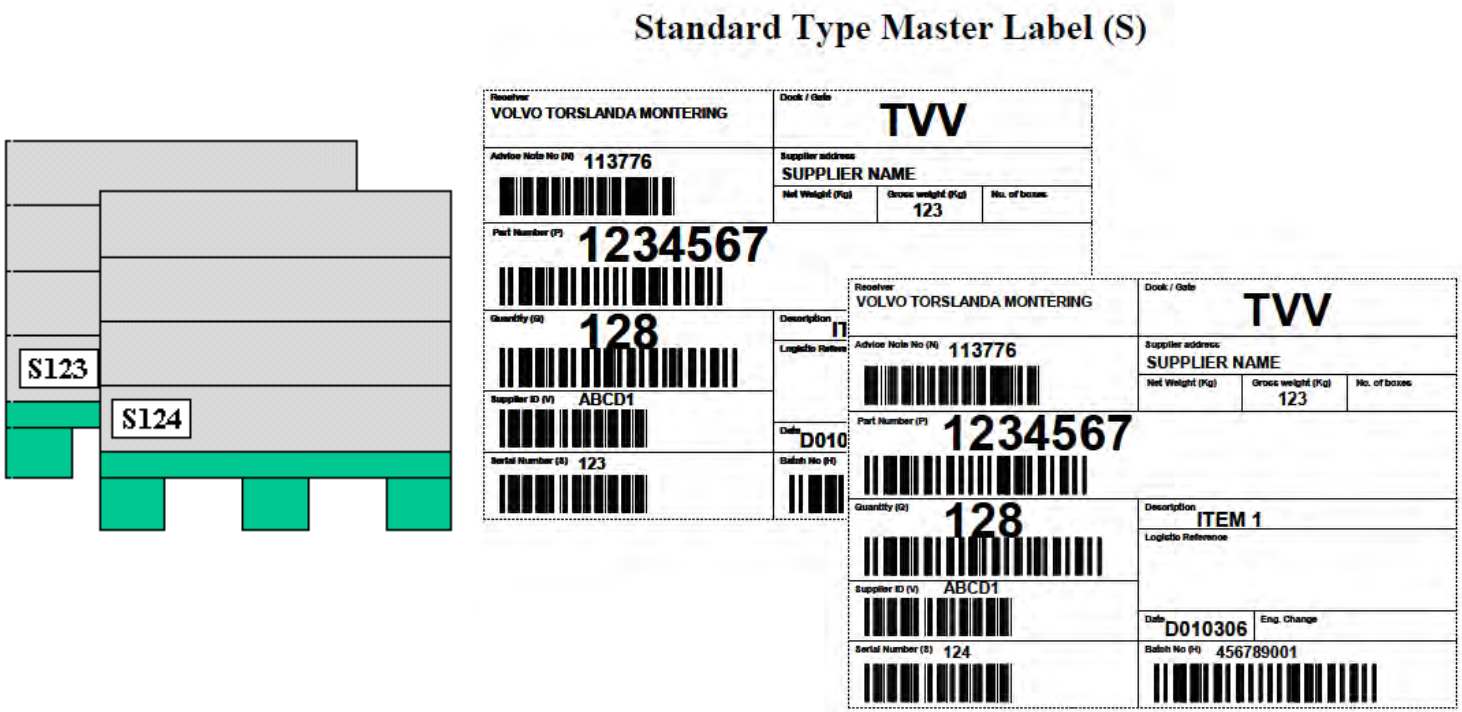
Simplified handling unit
One part directly on pallet

Nätverk för Affärsutveckling i Försörjningskedjan

Package configurations

ODETTE SWEDEN

Simpliefied handling unit



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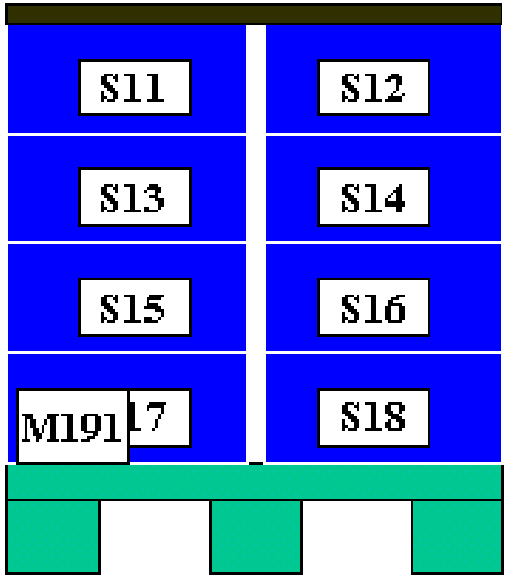
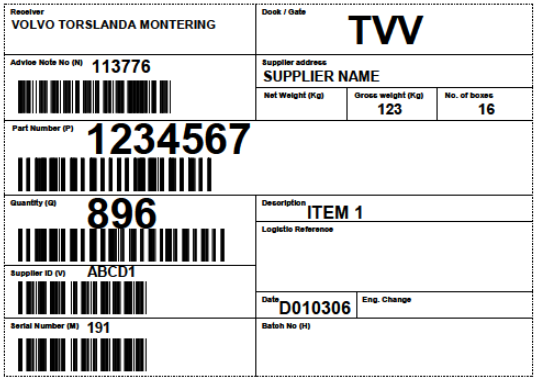
Nätverk för Affärsutveckling i Försörjningskedjan

Package configurations

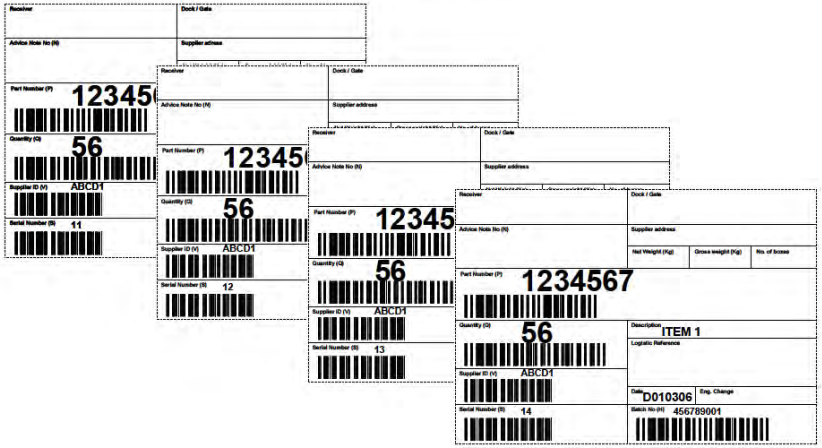
Homogeneous handling unit (1 pallet, 16 smallboxes)



Master Type Label (M)



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



Lunch

ODETTE SWEDEN

NAF
Nätverk för Affärsutveckling i Försörjningskedjan

Business processes and procurement methods - JIT/JIS

ODETTE SWEDEN

Nätverk för Affärsutveckling i Försörjningskedjan

Business processes
- Differences in Sequencing Cars & Trucks (JIT/JIS)

ODETTE SWEDEN

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

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Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – 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

Business processes
– 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

Business processes
– 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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Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – JIT/JIS - Parties

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

Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – 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

NAF
Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – JIT/JIS - Roles

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

NAF Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – JIT/JIS - Roles

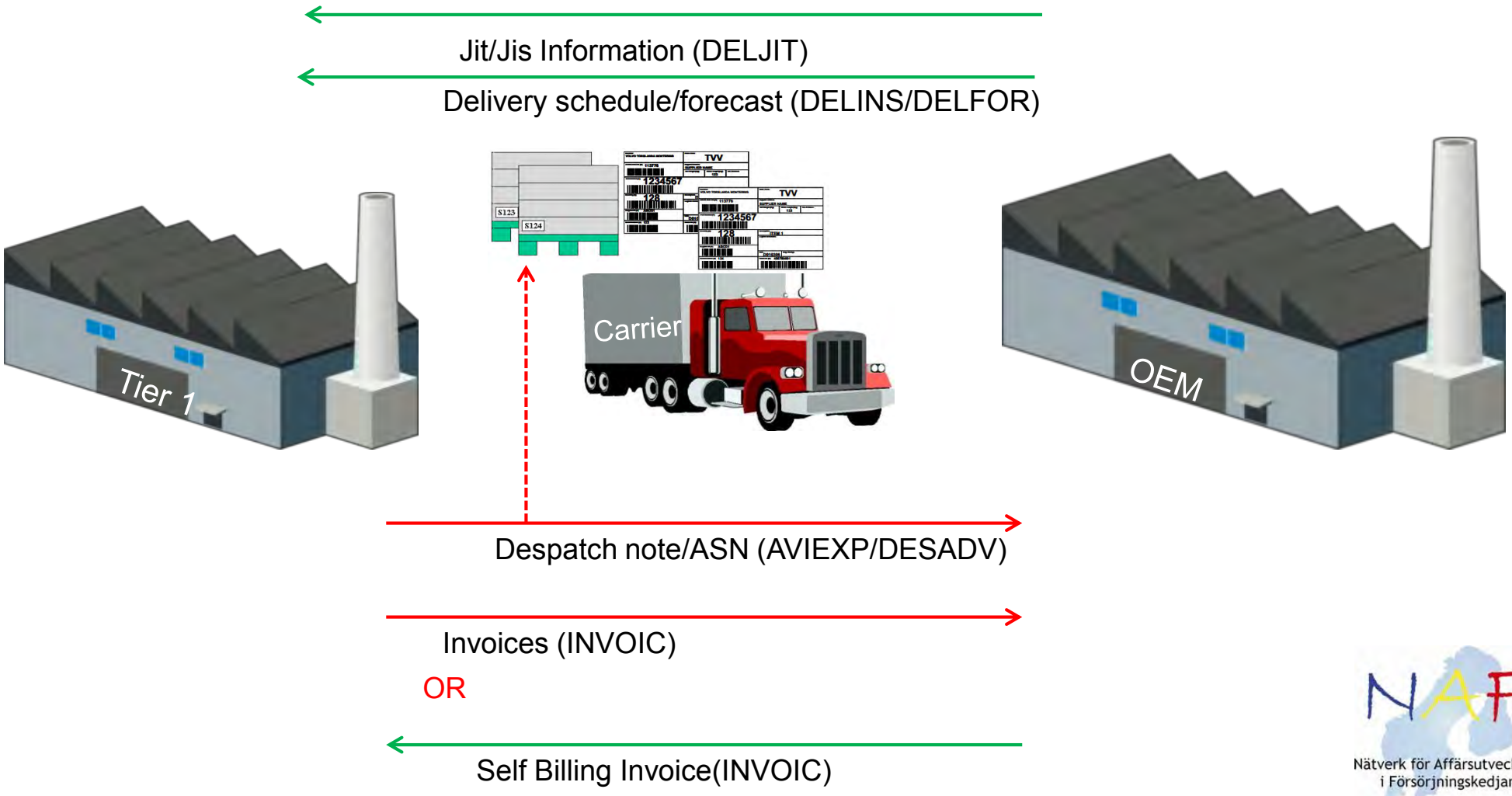
ODETTE SWEDEN

Carrier responsibilities:

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

Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – JIT/JIS - Flow



Business processes
– Sequence Car producer

ODETTE SWEDEN

Syncro Monitor - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Address http://fw-got.encode.se/rieter/syncro.html Go

control

Sekvenser i buffert	71
Sista utskrivna pall	40
Senast utskrivna sekvensnummer	1222030
Högsta godkända sekvensnummer i buffert	1222052

71

Uppdatera Radera sekvens

Skriv ut Manuell SYNCRO

banan

Aktuell banhastighet 0 bilar i timman

PUREN	2005-03-14 06:54:00	CAR ON LINE	2005-03-14 06:54:00
1221588		1221783	
SISTA LOPNR	2005-03-14 06:54:00	BEORDNING	2005-03-14 06:54:00
1222018		1222035	

pack

Utskrift	Flöde	Löpnr	Antal	I kö	Artikelnummer	Beskrivning	Racknr
☑	MFV	1222031-1222042	12	10			41
☐	MFV	1222042	1		39899323/39899323	GREY P28 LHD/LH d	
☐	MFV	1222041	1		39991849/39991849	OAK P23/P26 LHD/LH p	
☐	MFV	1222040	1		39899317/39899317	GREY P28 LHD/LH p	
☐	MFV	1222039	1		39991860/39991860	GREY P23/P26 LHD/LH d	
☐	MFV	1222038	1		39899318/39899318	OAK P28 LHD/LH p	
☐	MFV	1222037	1		39991848/39991848	GREY P23/P26 LHD/LH p	
☐	MFV	1222036	1		39899323/39899323	GREY P28 LHD/LH d	
☐	MFV	1222035	1		39991849/39991849	OAK P23/P26 LHD/LH p	
☐	MFV	1222034	1		39899317/39899317	GREY P28 LHD/LH p	
☐	MFV	1222033	1		39991860/39991860	GREY P23/P26 LHD/LH d	
☐	MFV	1222032	1		39991904/39991904	GREY P28 LHD/LH d	
☐	MFV	1222031	1		39991848/39991848	GREY P23/P26 LHD/LH p	
☑	MFH	1222019-1222030	12	22			39
☑	MBA	1222020-1222048	15	2			15
☑	MAB	1222019-1222047	15	2			81
☐	MBX	1222020-1222052	17	0			15

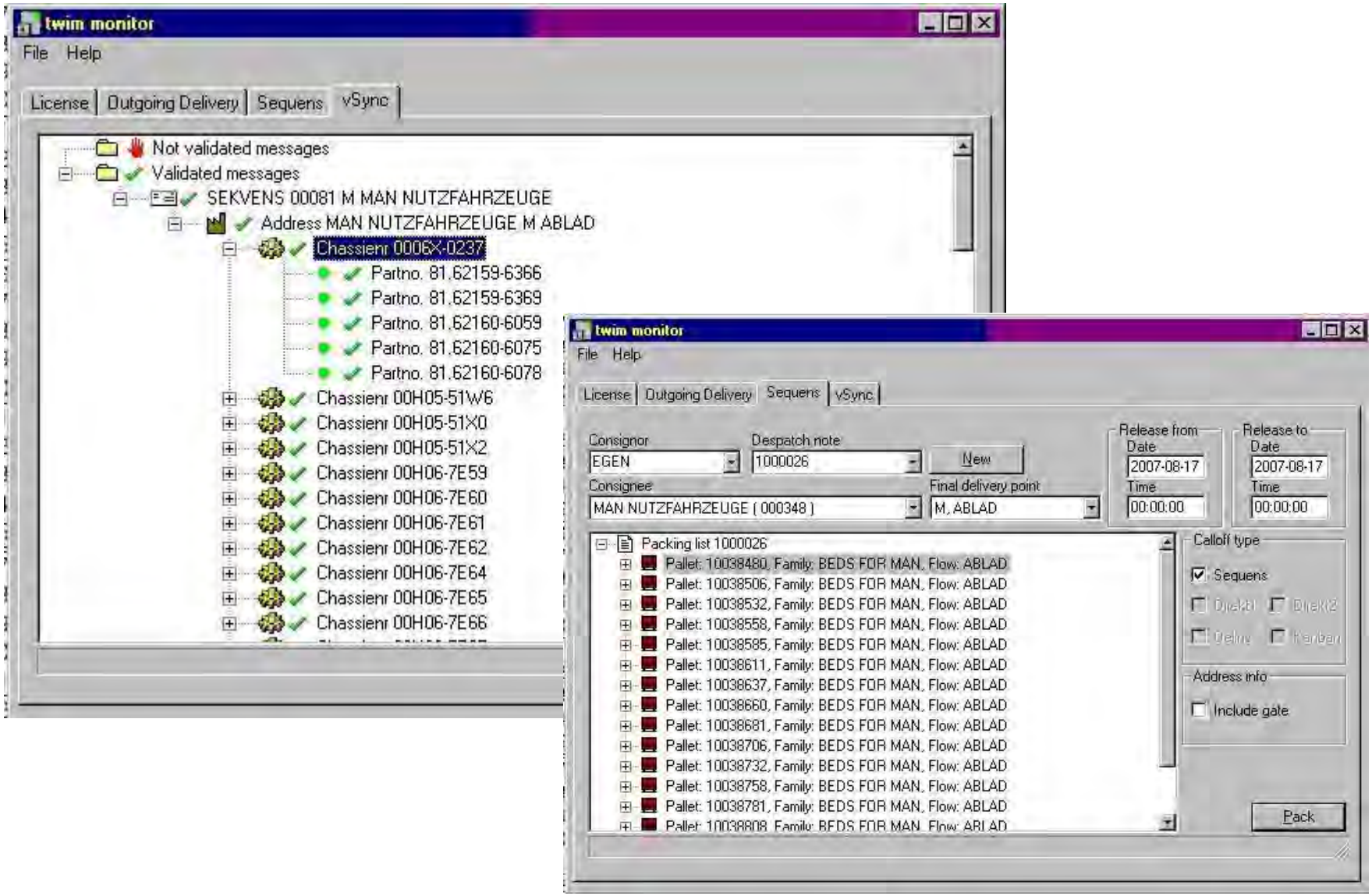
log

Done Internet

NAF
Nätverk för Affärsutveckling i Försörjningskedjan

Business processes
– JIT/JIS Truck producer

ODETTE SWEDEN



NAF
Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – 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 – 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.

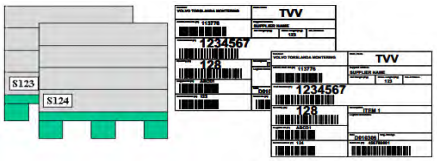
Structure (DELJIT (Sequence):
HEAD: Ship From – Ship To .
LINE: Sequence No – Chassie No- Assembly date/time – Variant instructions..
REQ: Part No - Quantity – Variant Instructions – Assembly Station address.

Business processes – 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.

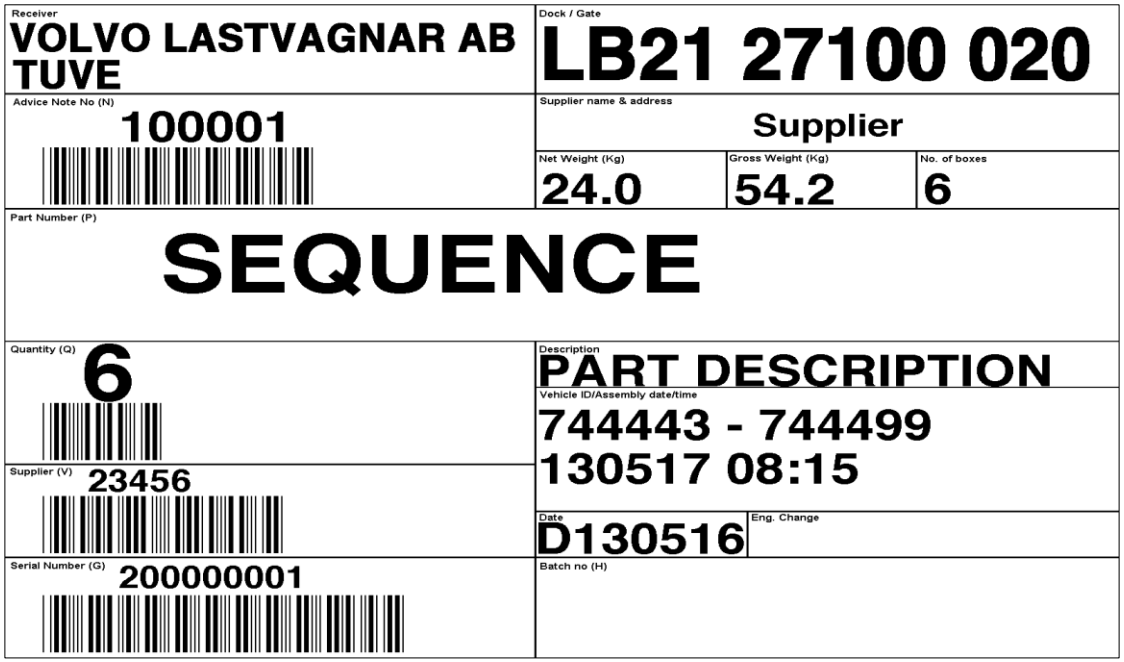
Structure (AVIEXP/DESADV):
HEAD: Buyer – Seller - Ship From – Ship To – Carrier – Date – Place of discharge.
PACK: Package (Inner) – Package (Outer) – Serial No – ASN No – Kanban car No – Sequence No
Chassi No - Production reference No
PART: Part No – Quantity in pack – Quantity total – Revision – Part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

Business processes
- Example of Odette label(Sequence)



Business processes
- Example of Part label

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

Business processes
- Example of Odette label (Kanban)

ODETTE SWEDEN

Receiver **VOLVO LASTVAGNAR AB TUVE**	Dock / Gate **F-11 020**
Advice Note No (N) **100001**	Supplier name & address **Supplier**
	Net Weight (Kg) **24.0** / Gross Weight (Kg) **45.0** / No. of boxes **1**
Part Number (P) **2345678**	
Quantity (Q) **6**	Description **PART DESCRIPTION**
Supplier (V) **23456**	KANBAN card No (15K) **001**
	Date **D130516** / Eng. Change
Serial Number (S) **10000002**	Batch no (H)

Nätverk för Affärsutveckling i Försörjningskedjan

Business processes – 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
- JIT/JIS – Messages

ODETTE SWEDEN

- 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

NAF
Nätverk för Affärsutveckling i Försörjningskedjan

Business processes
– 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

Nätverk för Affärsutveckling i Försörjningskedjan

EDIFACT Format and syntax, detailed walkthrough Segment architecture

ODETTE SWEDEN

Nätverk för Affärsutveckling i Försörjningskedjan

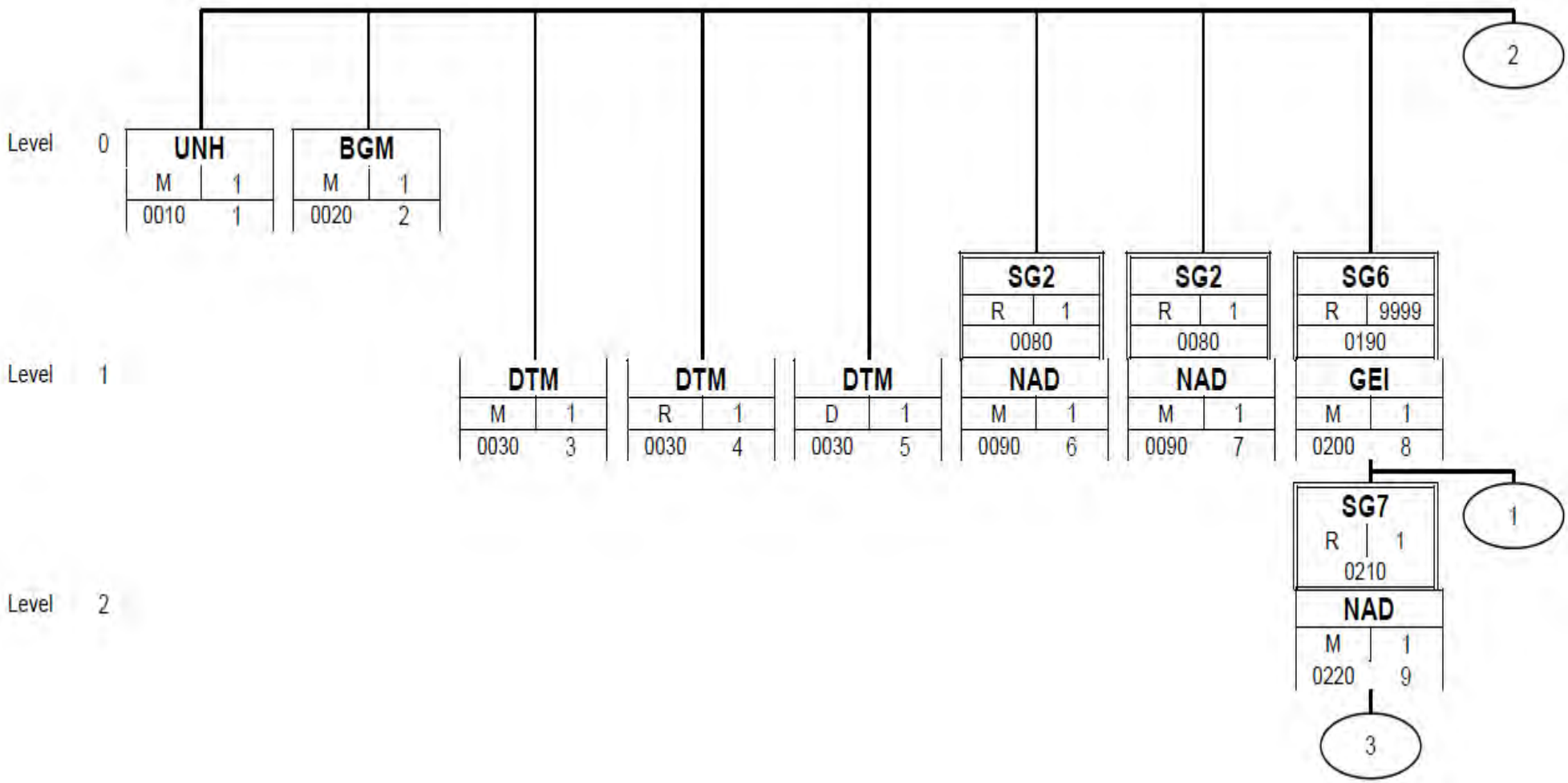
Terminology

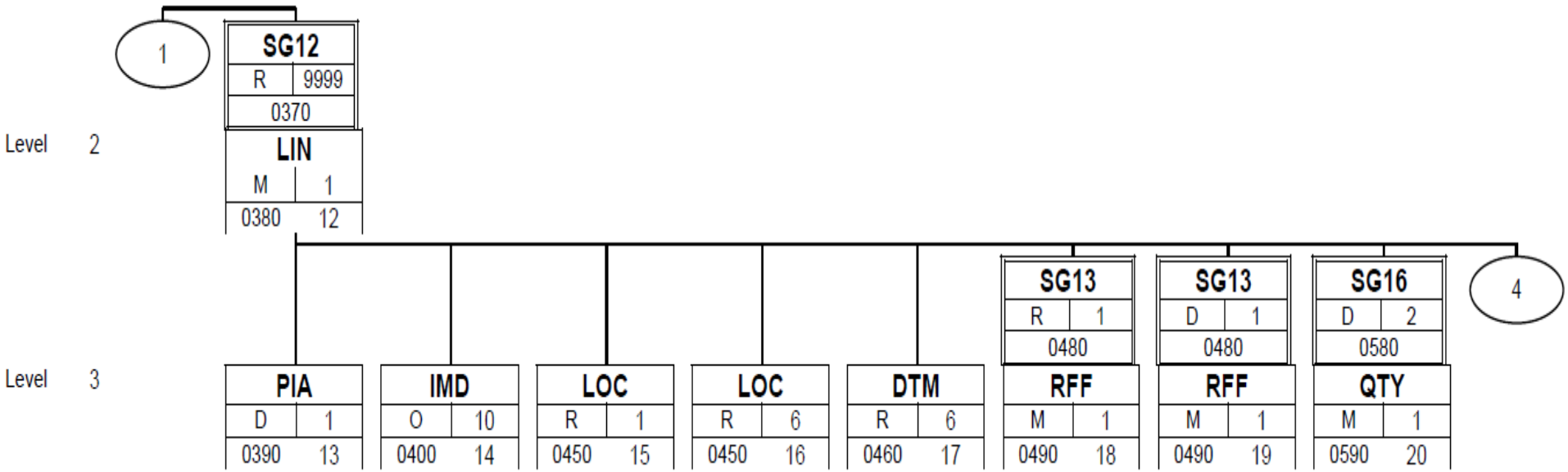
DELFOR D04A

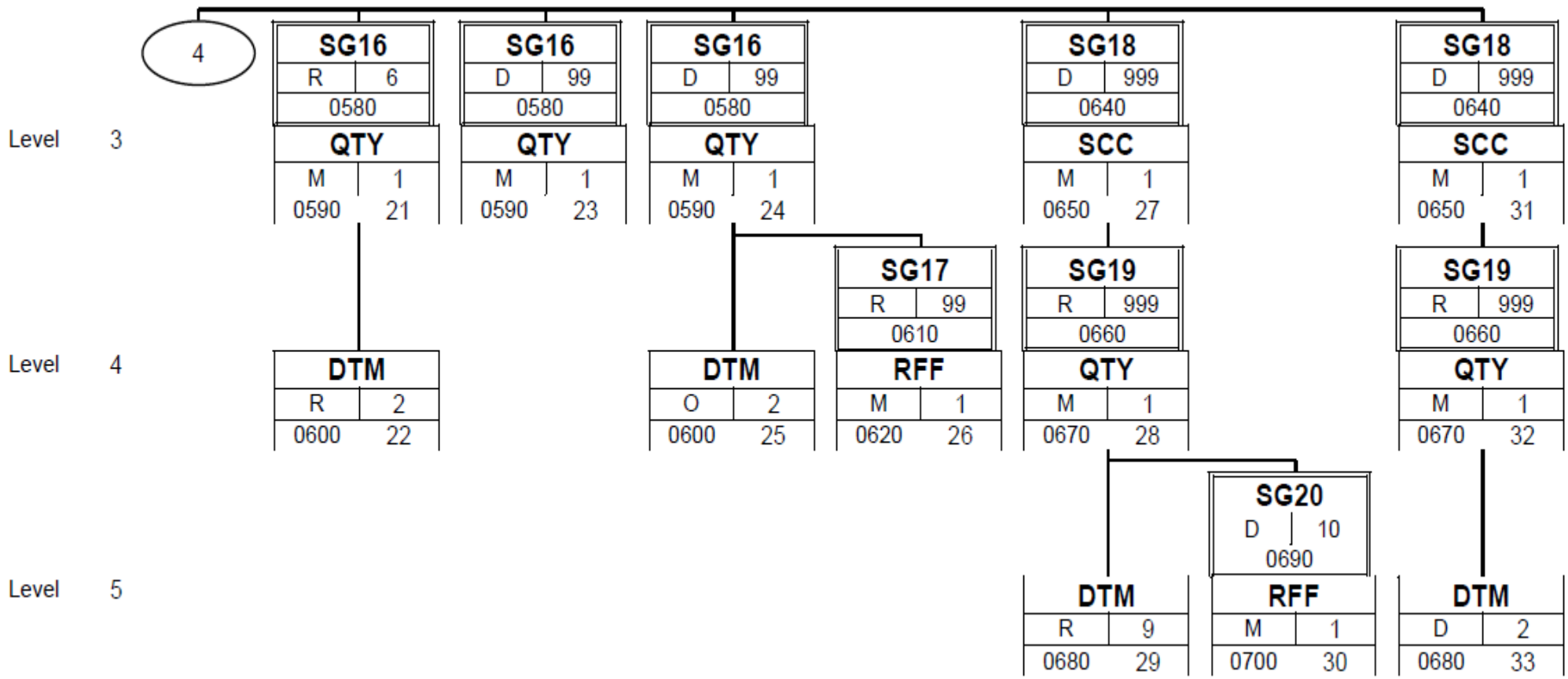
Message type Status Catalogue Revision

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

Segment Composite 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
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
SG13
R 1
0480
RFF
M 1
0490 18
SG13
D 1
0480
RFF
M 1
0490 19
SG16
D 2
0580
QTY
M 1
0590 20
4



ODETTE SWEDEN

NAF Nätverk för Affärsutveckling i Försörjningskedjan

Coffee Break

ODETTE SWEDEN

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'
```

NAF 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. 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. Code 38 - the complete previous forecast / instruction for this line item is replaced by new figures for the full horizon. 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. **9 = Amendments** **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. 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. 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.

Nätverk för Affärsutveckling i Försörjningskedjan

Key information in the DELJIT message

ODETTE SWEDEN

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.

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Key information in DESADV

ODETTE SWEDEN

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.

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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'
```

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Practical tasks

Implementation issues

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Implementation issues
- Driving forces

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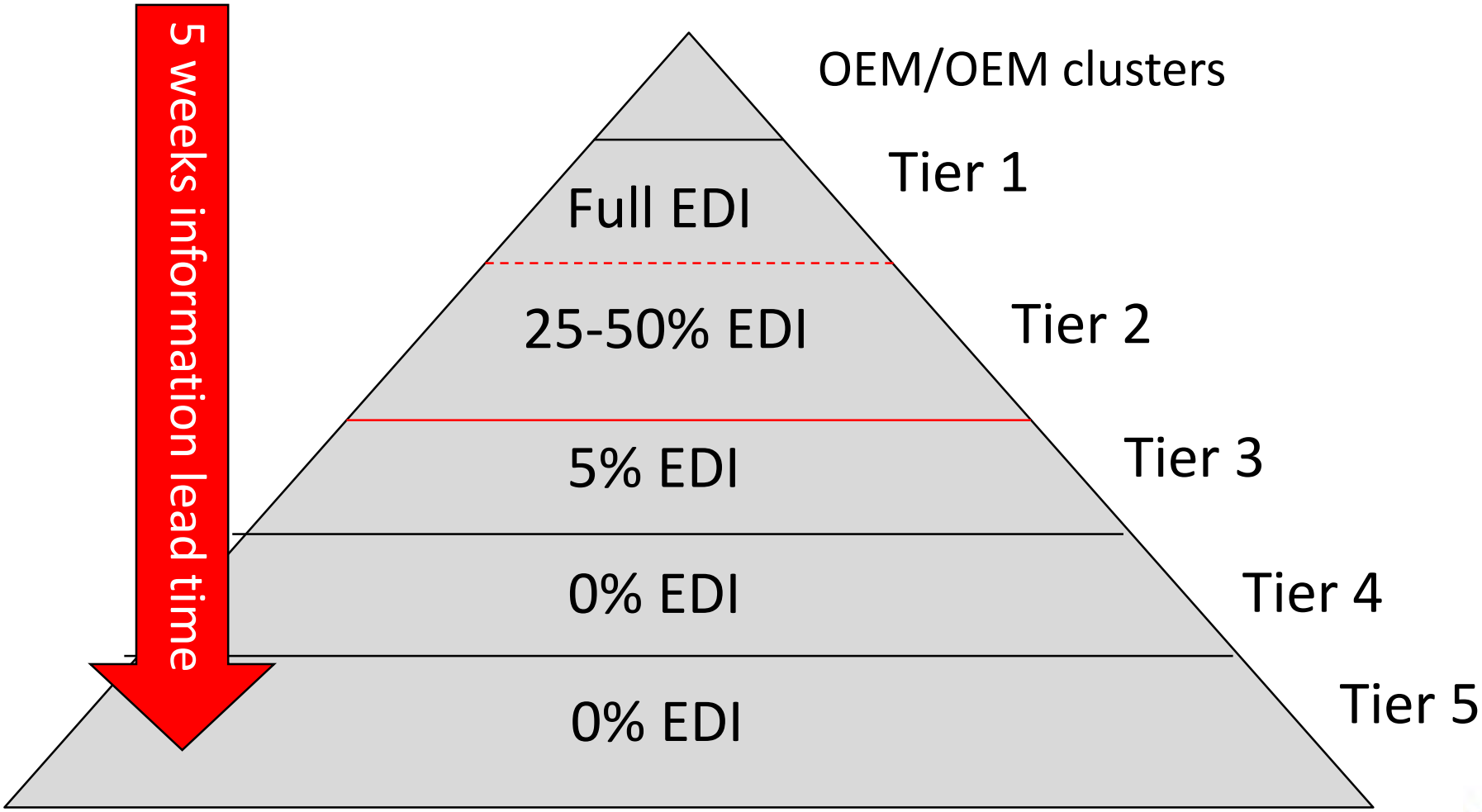
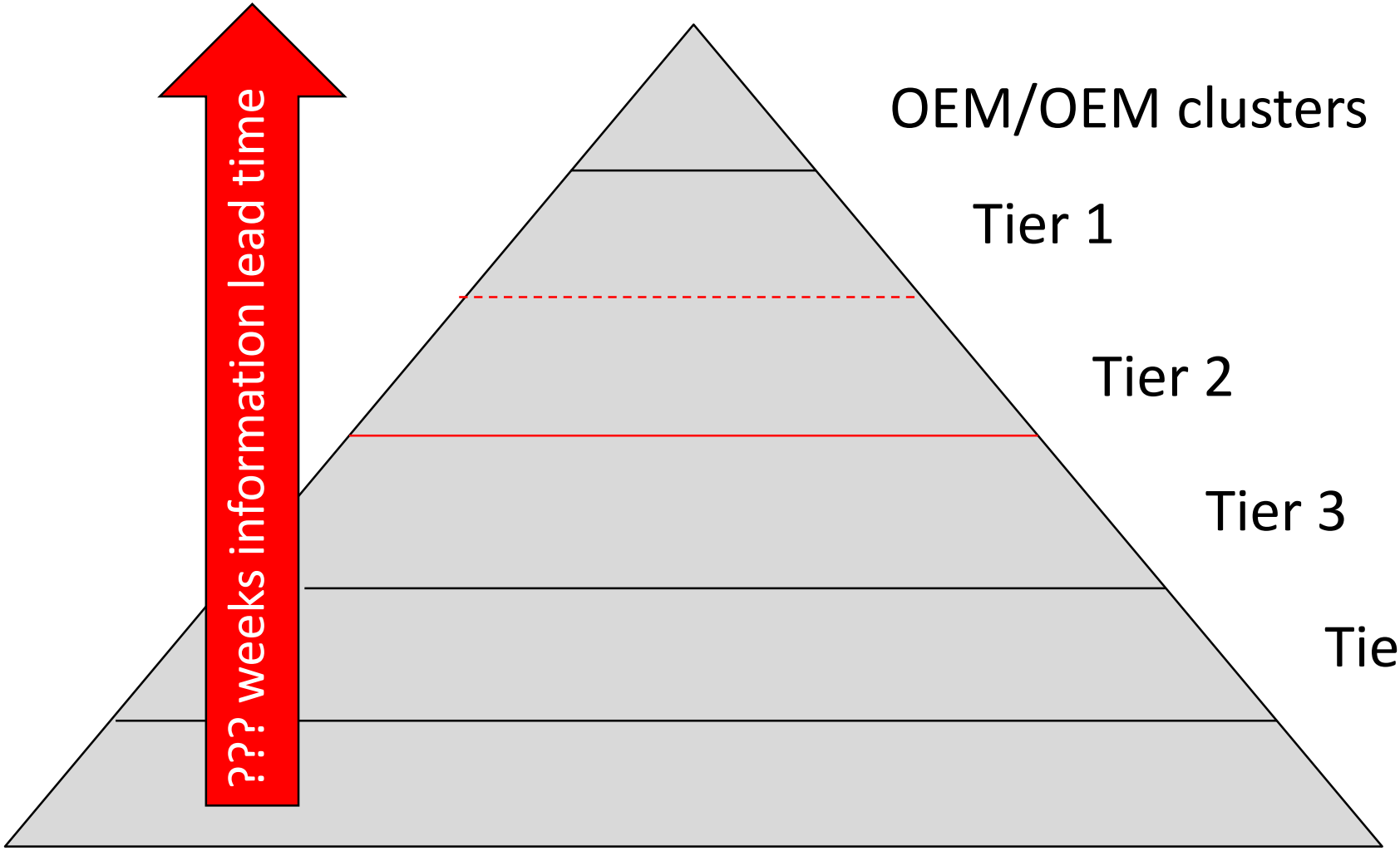
Implementation issues

- Driving forces - Complete supply chain penetration



Implementation issues

- Driving forces - Complete supply chain penetration



Implementation issues
- Suppliers reality – differences at OEM

ODETTE SWEDEN

- 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.

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Implementation issues
- 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.

Implementation issues
- Supplier challenges and possible solutions

ODETTE SWEDEN

- 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.

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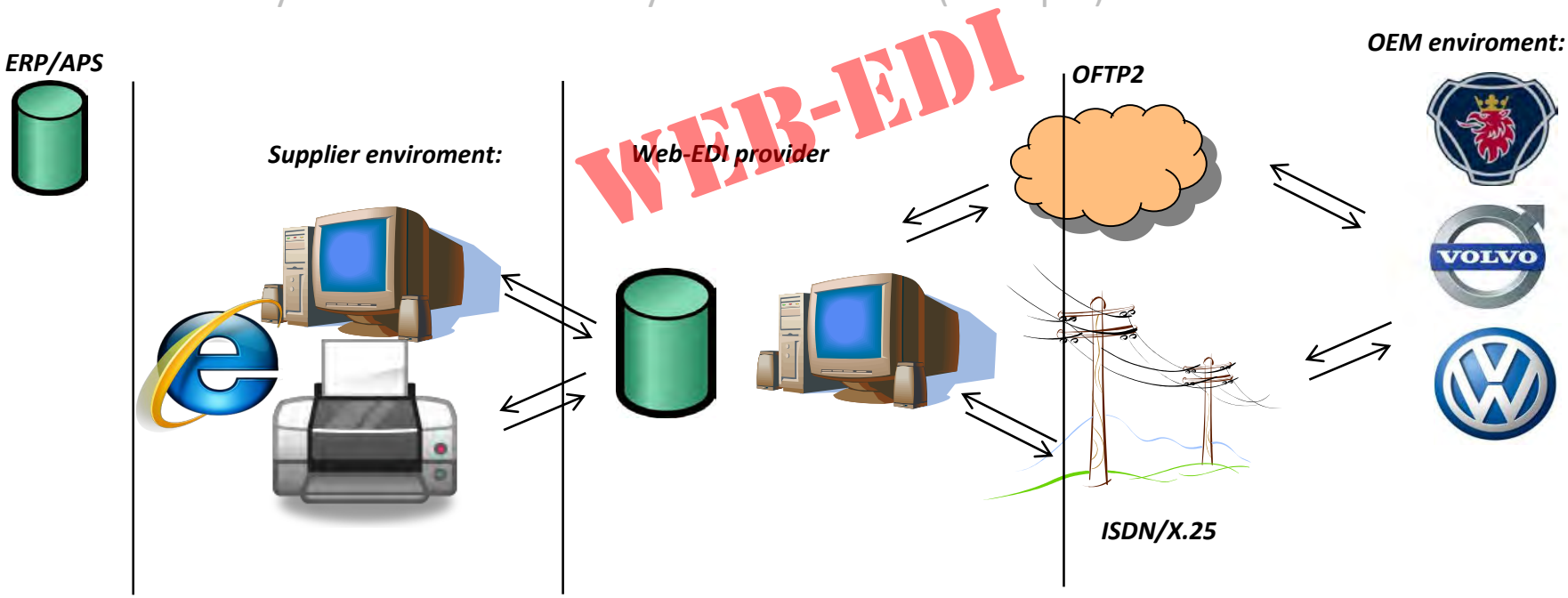
Implementation issues
- Solutions for EDI and labels

Stand alone solution – No integration with superior systems

Web-EDI – browsed solution for multiple OEM

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

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



Implementation issues
- Solutions for EDI and labels

Stand alone solution

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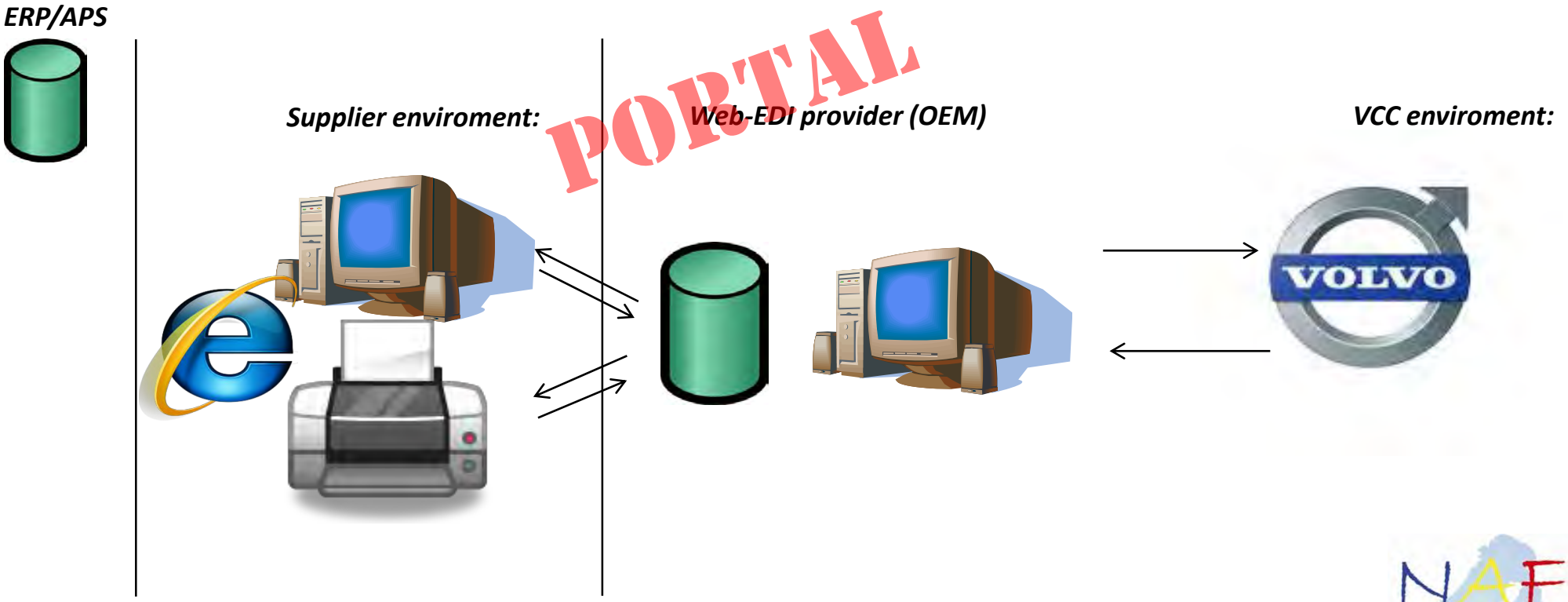

Implementation issues
- Solutions for EDI and labels

Stand alone solution

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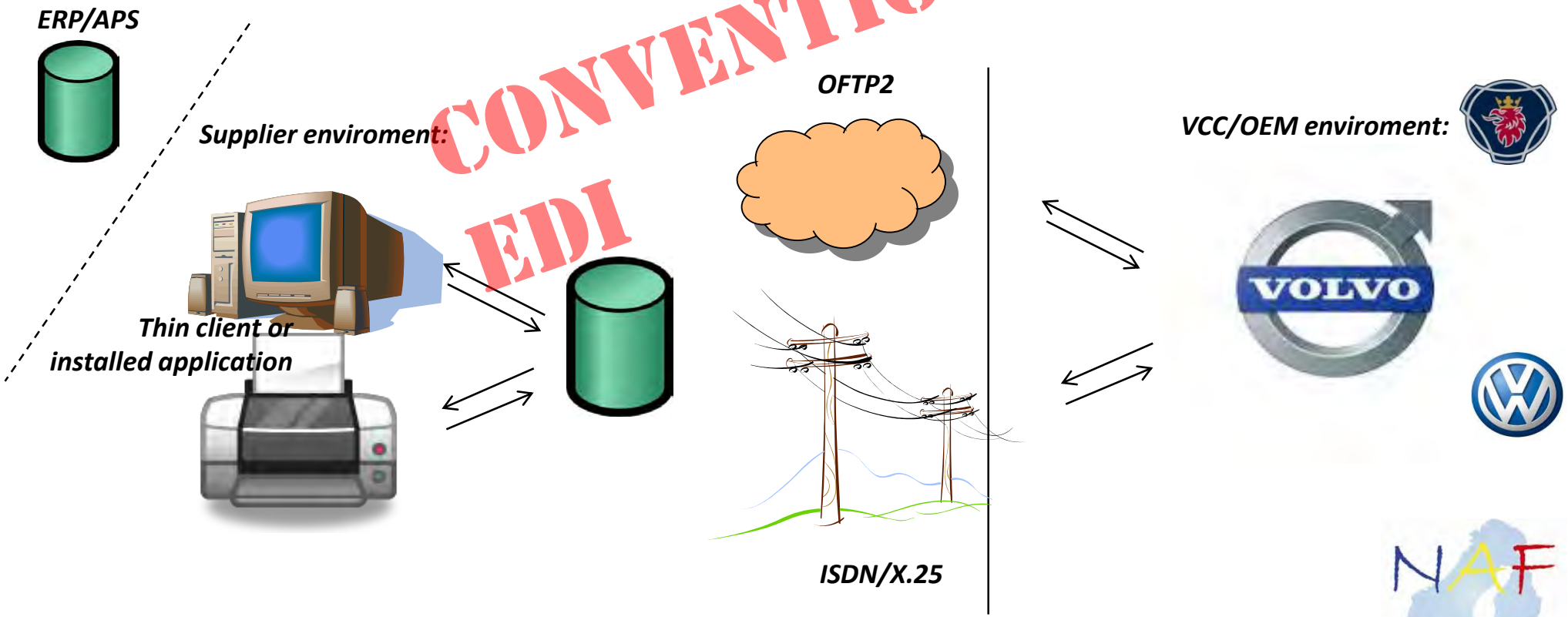


Nätverk för Affärsutveckling i Försörjningskedjan

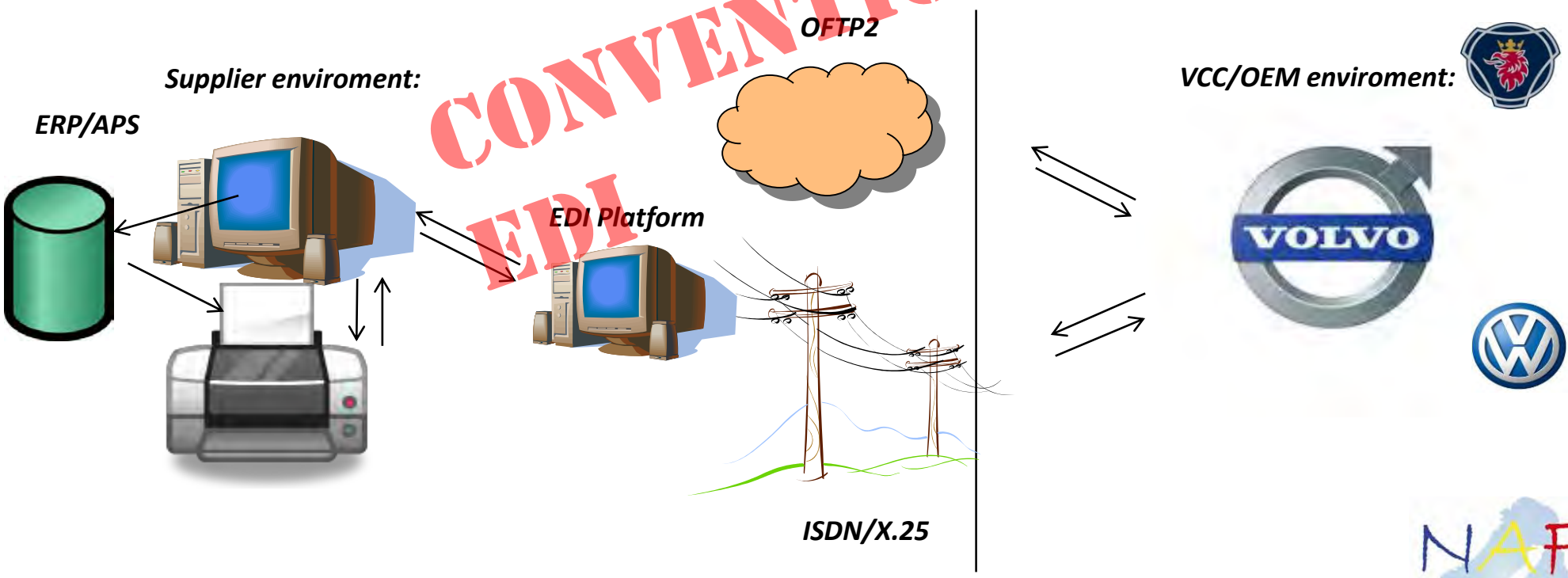
Implementation issues
- Solutions for EDI and labels

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



Implementation issues
- Solutions for EDI and labels

ODETTE SWEDEN

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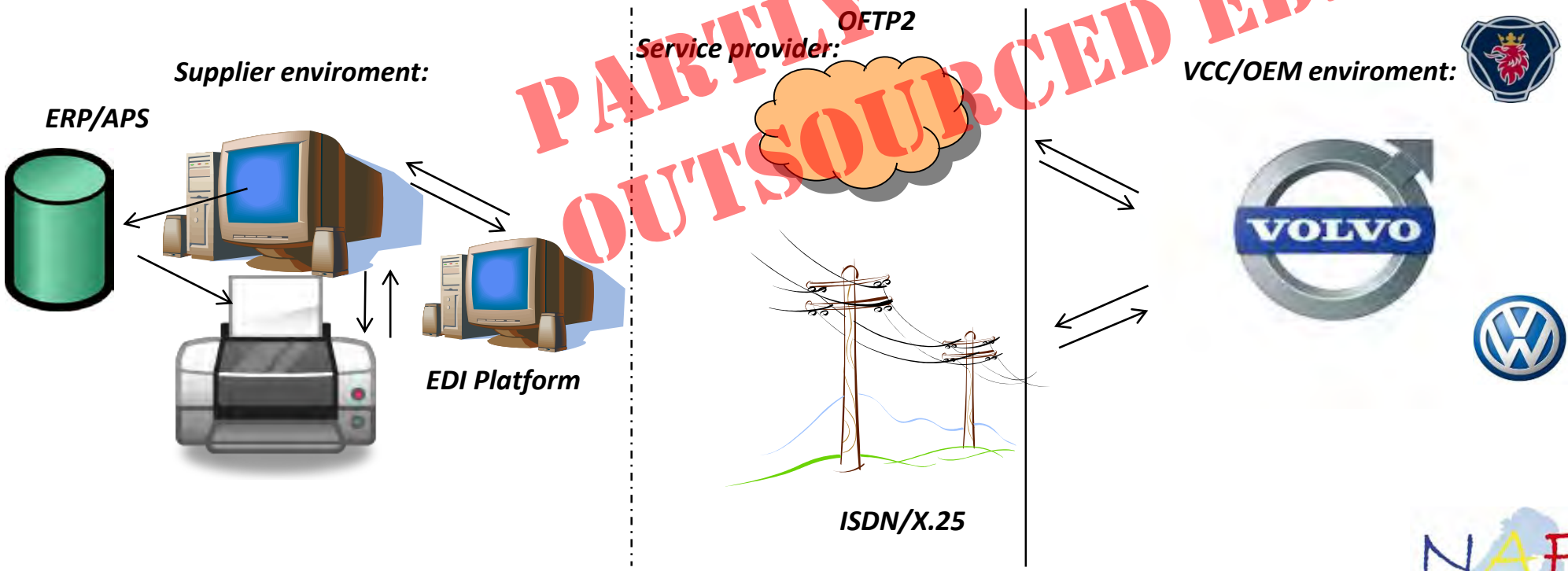

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Nätverk för Affärsutveckling i Försörjningskedjan

Implementation issues
- Solutions for EDI and labels

ODETTE SWEDEN

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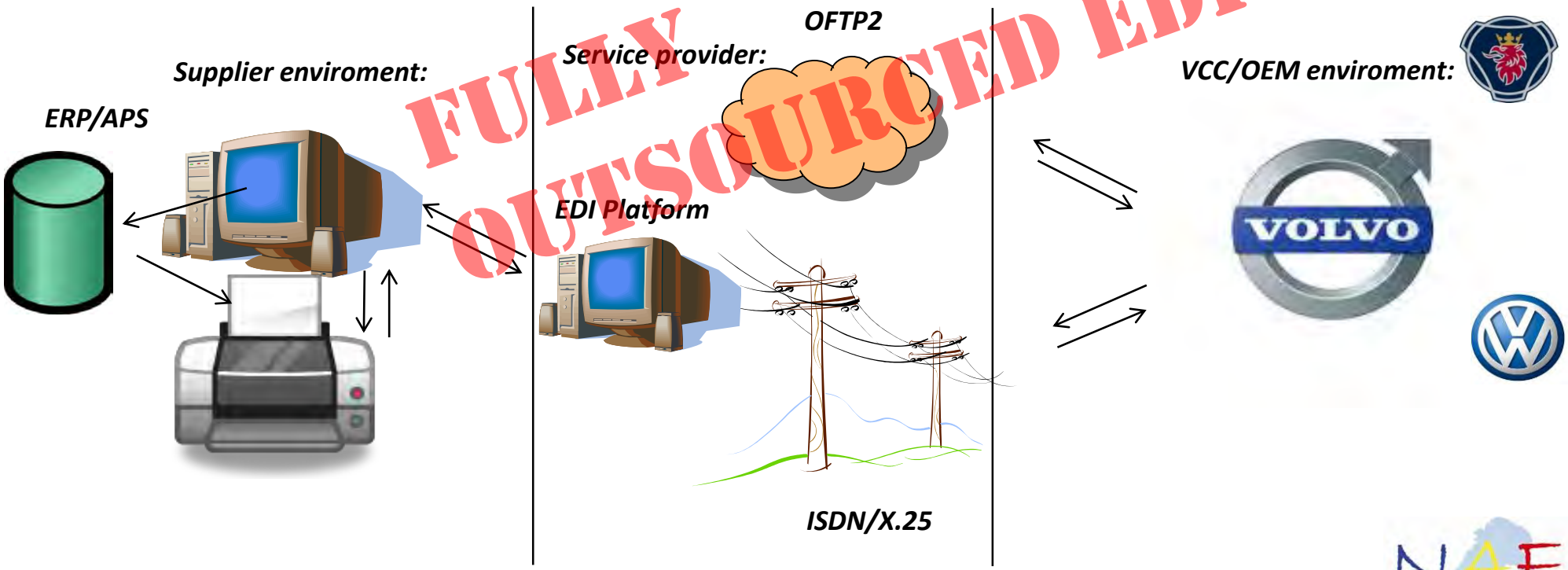

Nätverk för Affärsutveckling i Försörjningskedjan

Implementation issues
- Supplier practical solutions

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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

Implementation issues
- 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)

Summary & discussion

ODETTE SWEDEN

Nätverk för Affärsutveckling i Försörjningskedjan

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