Training course, slides version 2.5

EDI for supply chain collaboration in the automotive industry

18th – 19th of April, 2018
Scandic Europa
Göteborg
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
Presentation of participants

- Your company and your role in the company
- Your experience in logistics, ERP – EDI, technical issues
Agenda walkthrough
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.00</td>
<td>Introduction</td>
</tr>
<tr>
<td>09.15</td>
<td>EDI – why and what is it?</td>
</tr>
<tr>
<td></td>
<td>- Introduction to Odette</td>
</tr>
<tr>
<td></td>
<td>- EDI standards and organisations behind Odette</td>
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<tr>
<td></td>
<td>- Odette - future development and vision</td>
</tr>
<tr>
<td></td>
<td>- Example of tools (WebChecker and FAI)</td>
</tr>
<tr>
<td>10.00-11.30</td>
<td>General overview of tools used for data exchange (messages, auto-id concepts)</td>
</tr>
<tr>
<td>10.00</td>
<td>Messages</td>
</tr>
<tr>
<td></td>
<td>- EDI messages, standards, structure, segments</td>
</tr>
<tr>
<td></td>
<td>- EDI Components/requirements</td>
</tr>
<tr>
<td></td>
<td>- Automotive industry compared to Food &amp; Beverage</td>
</tr>
<tr>
<td>10.30</td>
<td>Coffee</td>
</tr>
<tr>
<td></td>
<td>Messages - continues</td>
</tr>
<tr>
<td>11.00</td>
<td>AUTO-ID Concepts</td>
</tr>
<tr>
<td></td>
<td>- 1D and 2D symbols</td>
</tr>
<tr>
<td></td>
<td>- Data Identifiers</td>
</tr>
<tr>
<td></td>
<td>- AUTO-ID Labels and Barcodes</td>
</tr>
<tr>
<td></td>
<td>- Equipment for generating and reading labels</td>
</tr>
<tr>
<td></td>
<td>- RFID – Passive and Active technology</td>
</tr>
<tr>
<td></td>
<td>- RFID - standards/alternatives</td>
</tr>
<tr>
<td>Time</td>
<td>Session Title</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>11.45</td>
<td>Business processes and procurement methods in the automotive supply chain</td>
</tr>
<tr>
<td></td>
<td>- Roles of the involved partners</td>
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<td>- Batch delivery</td>
</tr>
<tr>
<td>12.00</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.00</td>
<td>Business processes and procurement methods in the automotive supply chain - continued</td>
</tr>
<tr>
<td></td>
<td>- JIT/JIS process</td>
</tr>
<tr>
<td></td>
<td>- VMI and CMI processes</td>
</tr>
<tr>
<td>14.00</td>
<td>EDIFACT Format and syntax, detailed walkthrough Segment architecture</td>
</tr>
<tr>
<td>14.30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15.00</td>
<td>Practical tasks</td>
</tr>
<tr>
<td>16.30</td>
<td>Implementation issues</td>
</tr>
<tr>
<td></td>
<td>- Driving forces behind EDI</td>
</tr>
<tr>
<td></td>
<td>- Supplier challenges</td>
</tr>
<tr>
<td></td>
<td>- IT solutions for EDI and labels</td>
</tr>
<tr>
<td></td>
<td>- Conclusion</td>
</tr>
<tr>
<td>16.45-17.00</td>
<td>Summary &amp; discussion</td>
</tr>
</tbody>
</table>
Documentation

Available during training
- Agenda
- Participants
- Slides
- Detailed samples of EDI messages
- Training course evaluation

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

Odette current publications
https://www.odette.org/publications

Download documents at
http://www.odette.se/kurser-seminarier_1/endast_tillganglig_for_kurs_medlemmar
User name: odette
PW: book12
EDI – Why?
What is EDI all about?

**Benefits**
- Without EDI, it is not possible to handle the data volumes required in today's 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.
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:

---

**Example of EDI**

Leverans på väg till dig.
Avsändare: Lampan AB
E-post kontakt@lampan.se

Kollinummer 696XXXXXX8SE

Sändning

Datum 2015-11-19
Sändningsreferens 88408
Ordernummer 88408
Transportor Posten Sverige


Ordernummer: 88408
Orderdatum: 2015-10-29

OBS! Detta e-postmeddelande är skickat till dig från Lampan AB via Unifauns EDI-växel. Detta e-postmeddelande är tryckt och skickat från e-posten kontakt@lampan.se. Om du vill av期限戳markeringar, kontakta Lampan AB.
EDI – a must in the automotive industry

- 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 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).
- Almost no production at the moment, but are prepared to implement when the production starts.
  - EDI-communication with 1 supplier
Examples of information sources
(Some are pass-word protected)

<table>
<thead>
<tr>
<th>URL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="https://www.odette.org/publications">https://www.odette.org/publications</a></td>
<td>All Odette publications available for Odette members (pass-word protected)</td>
</tr>
<tr>
<td><a href="http://www.odette.se/implementering">http://www.odette.se/implementering</a></td>
<td>Information about national profiles and guidelines issued by Odette Sweden</td>
</tr>
<tr>
<td><a href="http://microsite.hcltech.com/EDI/cars/index.html">http://microsite.hcltech.com/EDI/cars/index.html</a></td>
<td>EDI specifications at Volvo Cars</td>
</tr>
<tr>
<td><a href="https://supplier.scania.com/wps/portal/Home/Supplying-to-Scania/EDI/">https://supplier.scania.com/wps/portal/Home/Supplying-to-Scania/EDI/</a></td>
<td>EDI specifications at Scania</td>
</tr>
<tr>
<td><a href="https://www.vda.de/en/services/Publications.html">https://www.vda.de/en/services/Publications.html</a></td>
<td>Information about national profiles and guidelines issued by VDA in Germany</td>
</tr>
<tr>
<td><a href="http://www.galia.com/dyn/s_recommandations.asp">http://www.galia.com/dyn/s_recommandations.asp</a></td>
<td>Information about national profiles and guidelines issued by GALIA in France</td>
</tr>
<tr>
<td><a href="http://www.unece.org/tradewelcome/home.html">http://www.unece.org/tradewelcome/home.html</a></td>
<td>UNECE main page</td>
</tr>
</tbody>
</table>
Introduction to Odette, historical walkthrough
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.
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
Membership

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

**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

**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

**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

**Data Exchange**
- EDI messaging
- EDI messaging support services
- OFTP2 File Transfer protocol

**Services**
- OSCAR code issuing service for unique identification of companies or locations
- Odette as a Certification Authority (CA)
- Trust Bridge for listed CAs
Odette Sweden is running a service for checking test EDI files for most frequently used messages:

<table>
<thead>
<tr>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Invoice Sweden AP</td>
</tr>
<tr>
<td>SMSI Freight</td>
</tr>
<tr>
<td>SMSI General (NAP)</td>
</tr>
<tr>
<td>Global DESADV Sweden</td>
</tr>
</tbody>
</table>
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

\[
FAI := \alpha_1 \cdot \max \left\{ 0; 1 - \frac{\Delta_1}{d_o} \right\} + \alpha_2 \cdot \max \left\{ 0; 1 - \frac{\Delta_2}{d_o} \right\} \\
+ \alpha_3 \cdot \max \left\{ 0; 1 - \frac{\Delta_3}{d_o} \right\} + \alpha_4 \cdot \max \left\{ 0; 1 - \frac{\Delta_4}{d_o} \right\}
\]

100% = What you knew was completely correct.

0% = What you thought you knew was completely wrong
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
EDI messages standards development and implementation

<table>
<thead>
<tr>
<th>EDIFACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAIF</td>
</tr>
<tr>
<td>Odette International</td>
</tr>
<tr>
<td>Odette Sweden</td>
</tr>
<tr>
<td>AB Volvo, Scania, Volvo Cars, NEVS</td>
</tr>
</tbody>
</table>
Odette – developments and future trends
Main developments in the Odette environment

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

EDI – Electronic Data Interchange
Electronic, predefined documents exchanged between parties.

DELFOR
DESADV
INVOIC
DELJIT

RFID tags

Labels with bar codes and plain text information
EDI messages - standards

EDI – Electronic Data Interchange

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

- EDIFACT – Electronic Data Interchange for Administration, Commerce and Transport – main European standard.

Other standard formats:

- Odette – Older EDIFACT subset
- VDA – German Industry standard (not further developed)
- ANSI X.12 – US standard
- Some XML applications (UBL, cXML, SAP IDOCS and so on)
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/trmd2.htm](http://www.unece.org/trade/untdid/d13a/trmd/trmd2.htm)

The most common in the Automotive Industry are:

- DELFOR – DELivery FORecast
- DELJIT – DELivery Just In Time
- DESADV – DESpatch ADVice
- INVOICe - INVOICe
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. Also functional codes are defined.
EDI messages – structure

- DELFOR
- DESADV
- INVOIC
### 4.3 Message structure

#### 4.3.1 Segment table

<table>
<thead>
<tr>
<th>Pos</th>
<th>Tag</th>
<th>Name</th>
<th>S</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>0010</td>
<td>000</td>
<td>UNH</td>
<td>Message header</td>
<td>M</td>
</tr>
<tr>
<td>0020</td>
<td>004</td>
<td>UNM</td>
<td>Beginning of message</td>
<td>M</td>
</tr>
<tr>
<td>0030</td>
<td>005</td>
<td>DTM</td>
<td>Date/time/period</td>
<td>M</td>
</tr>
<tr>
<td>0050</td>
<td>006</td>
<td>RFF</td>
<td>Reference</td>
<td>M</td>
</tr>
<tr>
<td>0060</td>
<td>007</td>
<td>DTM</td>
<td>Date/time/period</td>
<td>C</td>
</tr>
<tr>
<td>0070</td>
<td>008</td>
<td>NAD</td>
<td>Name and address</td>
<td>M</td>
</tr>
<tr>
<td>0090</td>
<td>009</td>
<td>LOC</td>
<td>Place/location identification</td>
<td>C</td>
</tr>
<tr>
<td>0100</td>
<td>010</td>
<td>AAAAA</td>
<td>Segment group 1</td>
<td>C</td>
</tr>
<tr>
<td>0110</td>
<td>011</td>
<td>CTA</td>
<td>Contact information</td>
<td>M</td>
</tr>
<tr>
<td>0120</td>
<td>012</td>
<td>CRM</td>
<td>Communication contact</td>
<td>C</td>
</tr>
<tr>
<td>0130</td>
<td>013</td>
<td>UNS</td>
<td>Section control</td>
<td>M</td>
</tr>
<tr>
<td>0140</td>
<td>014</td>
<td>NAD</td>
<td>Name and address</td>
<td>M</td>
</tr>
<tr>
<td>0150</td>
<td>015</td>
<td>LOC</td>
<td>Place/location identification</td>
<td>C</td>
</tr>
<tr>
<td>0160</td>
<td>016</td>
<td>TXT</td>
<td>Free text</td>
<td>C</td>
</tr>
<tr>
<td>0170</td>
<td>017</td>
<td>DTT</td>
<td>Document/message details</td>
<td>M</td>
</tr>
<tr>
<td>0180</td>
<td>018</td>
<td>DTM</td>
<td>Date/time/period</td>
<td>C</td>
</tr>
<tr>
<td>0190</td>
<td>019</td>
<td>AAAAA</td>
<td>Segment group 2</td>
<td>C</td>
</tr>
<tr>
<td>0200</td>
<td>020</td>
<td>AAAAA</td>
<td>Segment group 3</td>
<td>C</td>
</tr>
<tr>
<td>0210</td>
<td>021</td>
<td>AAAAA</td>
<td>Segment group 4</td>
<td>C</td>
</tr>
<tr>
<td>0220</td>
<td>022</td>
<td>AAAAA</td>
<td>Segment group 5</td>
<td>C</td>
</tr>
<tr>
<td>0230</td>
<td>023</td>
<td>AAAAA</td>
<td>Segment group 6</td>
<td>C</td>
</tr>
<tr>
<td>0240</td>
<td>024</td>
<td>AAAAA</td>
<td>Segment group 7</td>
<td>C</td>
</tr>
<tr>
<td>0250</td>
<td>025</td>
<td>AAAAA</td>
<td>Segment group 8</td>
<td>C</td>
</tr>
<tr>
<td>0260</td>
<td>026</td>
<td>LIN</td>
<td>Line item</td>
<td>M</td>
</tr>
<tr>
<td>0270</td>
<td>027</td>
<td>FTA</td>
<td>Additional product id</td>
<td>C</td>
</tr>
<tr>
<td>0280</td>
<td>028</td>
<td>IND</td>
<td>Item description</td>
<td>C</td>
</tr>
<tr>
<td>0290</td>
<td>029</td>
<td>MRS</td>
<td>Measurements</td>
<td>C</td>
</tr>
<tr>
<td>0300</td>
<td>030</td>
<td>ASI</td>
<td>Additional information</td>
<td>C</td>
</tr>
</tbody>
</table>

**Segment group**

**Segment**
EDI messages – Segment structure

<table>
<thead>
<tr>
<th>Segment</th>
<th>Description</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>010</td>
<td>PARTY QUALIFIER</td>
<td>N an..3</td>
</tr>
<tr>
<td>020</td>
<td>PARTY IDENTIFICATION DETAILS</td>
<td>C an..35</td>
</tr>
<tr>
<td>030</td>
<td>NAME AND ADDRESS</td>
<td>M an..35</td>
</tr>
<tr>
<td>040</td>
<td>PARTY NAME</td>
<td>C an..35</td>
</tr>
<tr>
<td>050</td>
<td>STREET</td>
<td>C an..35</td>
</tr>
<tr>
<td>060</td>
<td>CITY NAME</td>
<td>C an..35</td>
</tr>
<tr>
<td>070</td>
<td>COUNTRY SUB-ENTITY IDENTIFICATION</td>
<td>C an..9</td>
</tr>
<tr>
<td>080</td>
<td>POSTCODE IDENTIFICATION</td>
<td>C an..9</td>
</tr>
<tr>
<td>090</td>
<td>COUNTRY, CODE</td>
<td>C an..3</td>
</tr>
</tbody>
</table>

Composite Data tag:
NAD+BY+1234567::91++Company GMBH+Smallroad+smalltown++DE5409+DE'
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:*

  
  ```
  NAD+SE+1234567::92++Company GMBH+Smallroad+smalltown++DE5409+DE 'I am a Name and Address segment
  This is my supplier code ... and it was assigned by you (buyer)
  I represent the Seller
  ...and that was all
  ```

  ![Diagram of EDIFACT segment](http://www.unece.org/trade/untdid/d96a/trmd/trmd2.htm)
## EDI messages - Components/requirements – top level

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Multiple methods but consolidated</td>
</tr>
<tr>
<td>Format</td>
<td>Odette, EDIFACT, VDA, X.12, XML</td>
</tr>
<tr>
<td>Subset</td>
<td>Version and application of format</td>
</tr>
<tr>
<td>Syntax</td>
<td>Grammar in format</td>
</tr>
<tr>
<td>Logic</td>
<td>Logic for interpreting data (business rules)</td>
</tr>
<tr>
<td>System support</td>
<td>Possibilities and limitations in receiving system</td>
</tr>
<tr>
<td>Business rules</td>
<td>Special requirements from a certain party</td>
</tr>
</tbody>
</table>
Automotive industry compared to Food & Beverages
Comparison with Food and beverage industry: Other requirements, other messages

- **Automotive industry** – Continuous loop until some term changes.
  - Delivery Schedule/Delivery Forecast – DELFOR – Long horizon
  - Call-off – DELFOR – Short horizon (embedded 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
Coffee Break
General overview of tools used for data exchange (messages, auto-id concepts) - AUTO-ID Concepts
Auto-ID concepts

Definition:
Auto ID stands for various technologies for automatic data capture from physical objects.

Ex. of concepts:
2 D symbols

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-1 with 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
- 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
# Auto-ID concepts

## Labelling guidelines: overview

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

OTL1, Odette Transport Label

GTL, Global Transport Label, small

OTL3, Odette Transport Label 3

GTL, Global Transport Label A5

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

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

A5/Half letter

A6/6x4 inches

SLC 1 – 210x74 mm

SLC 2 – 210x42 mm
Labelling in the European automotive industry

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

---

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

- Part No.: **3381320005**
- Quantity: **210**
- Index: AA
- Add. Info: 5003020
- Part Name: 10KOhm 5%
- Ordering Code: A294969309345
- Man Date: 20090218
- Exp. Date: 20110218
- Supplier-ID: 850
- Package-ID: S123456789012
- 1. Batch: 750160430
- 2. Batch: 750160544
- Shipping Note: 122584
- Manufacturer Part Number: SL105103MAA-S

---

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

- Part No.: **3381320005**
- Quantity: **200**
- Man. Part Nr.: SL105103MAA-S
- MS-Level: 1
- Package-ID: S123456789012
- Supplier-ID: 815

---

**Very small Label (74 x 22 mm)**

- Part No.: **3381320005**
- Quantity: **200**
- Package-ID: S123456789012
- Supplier-ID: 815
- MS-Level: 1
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 (Retails and food and beverage)

- **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 (Manufacturing)

| 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

Application

Technology
- Active, passive, WiFi, GPS, Infrared

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

Memory type
- RO
- WORM
- RW

Data structure
- Unique identifier
- ISO
- Odette/JAIF
- GS1/EPC

Localization
- Returnable packaging
- Parts marking

Odette/JAIF recommendations are referring to passive technology for 860 till 960 MHz
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
- 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
Business processes and procurement methods in the automotive supply chain

- Batch delivery
- JIT/JIS process
- VMI and CMI processes
Business processes and procurement methods - Batch delivery

- Batch delivery
  - Incentives
  - Information flow
  - Roles of the involved parties
  - Detailed review including technical aspects like data exchange, formats, subsets, syntax, Auto Id and labelling, message functions and logics, systems support.
- Via deliveries
  - Direct
  - Via X-docks
  - Via sub-contractor
- Label requirements
- Package types
Business processes and procurement methods – Batch delivery incentives

- 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).

**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.

**Supplier**
- Electronic despatch note/delivery note with item and package information with corresponding labels.
- Commercial invoice based on one despatch note.

**Information flow**

1. **Order (Blanket order)**
2. **Forecast**
3. **Call-offs**
4. **ASN & Labels**
5. **Invoice**
6. **Self billing invoice**

**DELINS / DELFOR**
Business processes and procurement methods
- 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
Business processes
– Direct Batch Delivery – Parties

- Buyer
- Supplier
- Carrier/LSP
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

Buyers responsibilities:

- calculation of demands
- transmitting information
- providing carrier/LSP (normally)
- reporting deviations
- packaging instructions
- payments
- customs issues
Business processes – Batch Delivery - Roles

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
Business processes – Batch Delivery - Roles

Carrier responsibilities:

- transport booking system
- pickup
- keeping transport lead time
- occasionally for packaging material
- occasionally for packaging material replenishment
- report deviations
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
- scrap handling
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 on behalf of main supplier
- report back to actual supplier
Business processes
– Batch Delivery – Detailed review – Information flow

- Delivery schedule/forecast (DELINS/DELFOR)
- Despatch note/ASN (AVIEXP/DESADV)
- Invoices (INVOIC)
  - OR
  - Self Billing Invoice (INVOIC)
Lunch
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 – Detailed review - Logic DELFOR

UNH+123456+DELFOR:D:04A:GM051
BGM+241+201101170102’
DTM+137:20110117:102’
DTM+157:20110117:102’
NAD+BY+1020::92’
NAD+SE+6128::92’
GEI+3’
NAD+ST+1001::92++TUVE’
LIN++38+1137005:IN’
Pia+1+P04:DR’
LOC+11+020’
LOC+159+F+11+020’
DTM+257:20110117:102’
RFF+371906128020’
RFF+AF:201101120210’
QTY+83:500’
QTY+70:23000’
DTM+51:20110101:102’
QTY+12:500’
QTY+48:500’
DTM+11:20110108:102’
RFF+AAK:12785’
QTY+12:500’
QTY+48:500’
DTM+11:20110105:102’
RFF+AAK:12760’
QTY+12:500’
QTY+48:500’
DTM+11:20110102:102’
RFF+AAK:12725’
QTY+113:500’
DTM+10:20110203:102’
SCC+1’
QTY+113:500’
DTM+10:20110210:102’
SCC+1’
QTY+113:500’
DTM+10:20110217:102’
SCC+4’
QTY+113:500’
DTM+10:20110225:102’
SCC+4’
QTY+113:500’
DTM+10:20110304:102’

Message header
Delivery schedule number
Issue date
Effective from
Legal Buyer
Seller
Section separator
Ship to
Buyer’s Article number
Drawing information
Place of discharge
Final delivery point
Calculation date
Purchase Order Number
Previous delivery schedule number
Quantity in Backorder
Cumulative quantity received
Accumulation start date
Delivered quantity (according to DESADV)
Received quantity
Date of despatch
Despatch advice number
Delivered quantity (according to DESADV)
Received quantity
Date of despatch
Despatch advice number
Delivered quantity (according to DESADV)
Received quantity
Date of despatch
Despatch advice number
Firm
Quantity to be delivered
Date of despatch
Firm
Quantity to be delivered
Date of despatch
Firm
Quantity to be delivered
Date of despatch
Forecast
Quantity to be delivered
Date of despatch
Forecast
Quantity to be delivered
Date of despatch

HEAD

LINE

REQ
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 – Detailed review – ASN Logic DESADV

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

<table>
<thead>
<tr>
<th>Service segment</th>
<th>Line No and Item No</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNH+39622+INVOIC:D:03A:UN:GM1012’</td>
<td>Line No and Item No</td>
</tr>
<tr>
<td>BgM+380+00119237’</td>
<td>Line No and Item No</td>
</tr>
<tr>
<td>DTM+137:20141008:102’</td>
<td>Line No and Item No</td>
</tr>
<tr>
<td>GE+PM+::272’</td>
<td>Line No and Item No</td>
</tr>
<tr>
<td>NAD+SE+45755::92++ESSENTRA COMPONENTS AB - SE+VERKSTADSVAG 13+ASKIM SWEDEN++SE+436 34+SE’</td>
<td>Supplier code, name and address</td>
</tr>
<tr>
<td>RFF+VA:SE566915024501’</td>
<td>Supplier VAT No</td>
</tr>
<tr>
<td>NAD+FH++ESSENTRA COMPONENTS AB - SE+VERKSTADSVAG 13+SE+436 34+SE’</td>
<td>Seller (as legally registered) code, name and address</td>
</tr>
<tr>
<td>NAD+PL+45755::92++ESSENTRA COMPONENTS AB - SE+VERKSTADSVAG 13+ASKIM SWEDEN++SE+436 34+SE’</td>
<td>Payee code, name and address</td>
</tr>
<tr>
<td>FI+BF+33551700796:ESSENTRA COMPONENTS AB - SE+:::NORDEA BANK’</td>
<td>Payee, payment (beneficiary) bank and account</td>
</tr>
<tr>
<td>NAD+BV+1705::91++VOLVO LOGISTICS CORP. (23596)++SE+405 08+SE’</td>
<td>Buyer code, name and address</td>
</tr>
<tr>
<td>RFF+VA:SE566197973201’</td>
<td>Buyer VAT No</td>
</tr>
<tr>
<td>NAD+SI+23596::92++VOLVO LOGISTICS CORP. (23596)++SE+405 08+SE’</td>
<td>Ship-To code, name and address</td>
</tr>
<tr>
<td>CUX+2:SEK:4’</td>
<td>Currency information</td>
</tr>
<tr>
<td>UN+1+20428724:IN’</td>
<td>Line No and Item No</td>
</tr>
<tr>
<td>IMD++++PLASTPLOMB’</td>
<td>Item description</td>
</tr>
<tr>
<td>QTY+47:10000:PCE’</td>
<td>Invoiced quantity</td>
</tr>
<tr>
<td>AL+SE’</td>
<td>Country of origin</td>
</tr>
<tr>
<td>MOA+38:3110,00’</td>
<td>Line total amount (price * quantity)</td>
</tr>
<tr>
<td>PRI+AA+311000:1000:PCE’</td>
<td>Item price (per 1000)</td>
</tr>
<tr>
<td>RFF+AAK:1400009709’</td>
<td>Reference to delivery note/despatch advice</td>
</tr>
<tr>
<td>DTM+171:20141008:102’</td>
<td>Date of above referenced document</td>
</tr>
<tr>
<td>RFF+ON:056945755525’</td>
<td>Reference to order (blanket order)</td>
</tr>
<tr>
<td>TAX+7+VAT++:25.00+5’</td>
<td>TAX (VAT) details for line</td>
</tr>
<tr>
<td>MOA+124:777,50’</td>
<td>Tax (VAT) amount for line</td>
</tr>
<tr>
<td>UNS+5’</td>
<td>Service segment</td>
</tr>
<tr>
<td>MOA+77:3887,50:4’</td>
<td>Invoiced amount (invoice total)</td>
</tr>
<tr>
<td>MOA+125:3110,00:4’</td>
<td>Taxable amount</td>
</tr>
<tr>
<td>MOA+176:777,50:4’</td>
<td>Tax amount</td>
</tr>
<tr>
<td>MOA+79:3110,00:4’</td>
<td>Total lines item amount</td>
</tr>
<tr>
<td>TAX+7+VAT++:25.00+5’</td>
<td>TAX (VAT) summary details</td>
</tr>
<tr>
<td>MOA+124:777,50:4’</td>
<td>Tax (VAT) amount</td>
</tr>
<tr>
<td>MOA+125:3110,00:4’</td>
<td>Taxable (VAT) amount</td>
</tr>
<tr>
<td>UNT+3+39622’</td>
<td>Service segment</td>
</tr>
<tr>
<td>UNZ+1+39352’</td>
<td>Service segment</td>
</tr>
</tbody>
</table>

---

**HEAD**

**LINE**

**SUM**
Sample and reference of Odette label (OTL1)

- DELFOR - NAD 3036 - (CN)
- DELFOR - LIN 7140 (IN)
- DESADV - QTY 6060 (52)
- DELFOR - NAD 3039 (SE)
- DESADV - RFF 1154
- GIR 7402

- DESADV - BGM 1004
- DELFOR - LOC 3225 (159)
- DESADV - LOC 3225 (159)
- DESADV - PIA 7140*

* = special agreements
Smallbox handling

Homogenous handling unit
One part per pallet

Mixed handling unit
Multiple parts per pallet

S - Label
M - Label

Simplified handling unit
One part directly on pallet
Package configurations

Simplified handling unit
Package configurations

Homogeneous handling unit (1 pallet, 16 smallboxes)

Master Type Label (M)

Standard Type label (S) - 4 OTL out of 16
Business processes and procurement methods - JIT/JIS
Business processes and procurement methods – JIT/JIS process

- Incentives
- Information flow
- JIS application samples
- Roles of the involved parties
- Detailed review including technical aspects like data exchange, formats, subsets, syntax, Auto Id and labelling, message functions and logics, systems support.
- JIT/JIS process
  - KanBan
  - Caldel
  - Sequence
  - Long distance
- Label requirements
Business processes – Sequence (JIS) incentives

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) incentives

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

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.

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

Commercial invoice based on one despatch note.

Information flow
- Order (Blanket order)
- Forecast
- JIT/JIS Instructions
- ASN* & Labels
  *only in trucks sequencing
- Invoice
- Self billing invoice
Procurement processes
- 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
Business processes
- Differences in Sequencing Cars & Trucks (JIT/JIS)

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
- Business processes – JIS applications
- Sequence Car producer
Business processes – JIS Applications – JIT/JIS Truck producer
Business processes – JIT/JIS - Parties

- Buyer
- Carrier/LSP
- Supplier
- Ship From
- Ship To
- Assembly station
Business processes
– JIT/JIS - Roles

Buyers responsibilities:

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

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
Business processes – JIT/JIS - Roles

Carrier responsibilities:

- booking system
- pickup
- keeping transport lead time
- occasionally responsible for packaging material.
- occasionally responsible for packaging material replenishment
Business processes
– JIT/JIS – Detailed review - Information flow

- Delivery schedule/forecast (DELINS/DELFOR)
- Jit/Jis Information (DELIJIT)
- Despatch note/ASN (AVIEXP/DESADV)
- Invoices (INVOIC)
- OR
- Self Billing Invoice (INVOIC)
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 consumption 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 process - 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 process – AVIEXP/DESADV 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

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)
Business processes
– JIT/JIS process – INVOIC 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
- Example of Odette label (Sequence)
## Business processes
- Example of Part label

<table>
<thead>
<tr>
<th>Vehicle no.</th>
<th>Date &amp; Time</th>
<th>Part no/Module no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>744443</td>
<td>130517 0815</td>
<td>21562461</td>
</tr>
<tr>
<td>Additional Internal Destination</td>
<td>Serial no.</td>
<td>Variant</td>
</tr>
<tr>
<td>LB21</td>
<td>1000000006</td>
<td>L-STWP</td>
</tr>
<tr>
<td>27100 020</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

"NAF"
Nätverk för Affärsutveckling i Försörjningskedjan
Business processes
- Example of Odette label (Kanban)

<table>
<thead>
<tr>
<th>Receiver</th>
<th>VOLVO LASTVAGNAR AB TUVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advice Note No (N)</td>
<td>100001</td>
</tr>
<tr>
<td>Supplier</td>
<td>Supplier name &amp; address</td>
</tr>
<tr>
<td>Part Number (P)</td>
<td>2345678</td>
</tr>
<tr>
<td>Quantity (Q)</td>
<td>6</td>
</tr>
<tr>
<td>Supplier (V)</td>
<td>23456</td>
</tr>
<tr>
<td>Serial Number (S)</td>
<td>10000002</td>
</tr>
<tr>
<td>Dock / Gate</td>
<td>F-11 020</td>
</tr>
<tr>
<td>Supplier</td>
<td>Supplier name &amp; address</td>
</tr>
<tr>
<td>Net Weight (Kg)</td>
<td>24.0</td>
</tr>
<tr>
<td>Gross Weight (Kg)</td>
<td>45.0</td>
</tr>
<tr>
<td>No. of boxes</td>
<td>1</td>
</tr>
<tr>
<td>Description</td>
<td>PART DESCRIPTION 001</td>
</tr>
<tr>
<td>Date</td>
<td>D130516</td>
</tr>
</tbody>
</table>

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
EDIFACT Format and syntax, detailed walkthrough Segment architecture
Terminology

DELFOR D04A

Message type  Status  Catalogue  Revision

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

Segment  Composite separator  Data element  Sub-element  Composite  Segment delimiter
### Description of segment:

#### UN/EDIFACT

<table>
<thead>
<tr>
<th>Name</th>
<th>Sl. Format</th>
<th>St. Format</th>
<th>Use / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1082 Line item identifier</td>
<td>C an.6</td>
<td>N</td>
<td>Code indicating action required as a result of the new instruction.</td>
</tr>
<tr>
<td>1229 Action request/identification code</td>
<td>C an.3</td>
<td>R an.3</td>
<td>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 an 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.</td>
</tr>
<tr>
<td>C212 Item number identification</td>
<td>C</td>
<td>R</td>
<td>Article ID(s) as assigned by one or more of the involved parties.</td>
</tr>
<tr>
<td>7140 Item identifier</td>
<td>C an.35</td>
<td>R an.35</td>
<td>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.</td>
</tr>
<tr>
<td>7143 Item type identification code</td>
<td>C an.3</td>
<td>R an.3</td>
<td>IN = Buyer's item number</td>
</tr>
<tr>
<td>1131 Code list identification code</td>
<td>C an.17</td>
<td>N</td>
<td>not used</td>
</tr>
<tr>
<td>3055 Code list responsible agency code</td>
<td>C an.3</td>
<td>N</td>
<td>not used</td>
</tr>
<tr>
<td>C629 Sub-line Information</td>
<td>C</td>
<td>N</td>
<td>not used</td>
</tr>
<tr>
<td>5495 Sub-line indicator code</td>
<td>C an.3</td>
<td>N</td>
<td>not used</td>
</tr>
<tr>
<td>1082 Line item identifier</td>
<td>C an.6</td>
<td>N</td>
<td>not used</td>
</tr>
<tr>
<td>1222 Configuration level number</td>
<td>C n.2</td>
<td>N</td>
<td>not used</td>
</tr>
<tr>
<td>7083 Configuration operation code</td>
<td>C an.3</td>
<td>N</td>
<td>not used</td>
</tr>
</tbody>
</table>

### 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'  DTM+137:20131001:102'  DTM+157:20131001:102'  NAD+BY+8442::92'  NAD+SE+46243::92'  GEI+3'
NAD+ST+8442::92++VOLVO TRUCK CORP - KALUGA'  LIN++38+1083377:IN'
LOC+11+051::92'  LOC+159+00 051::92'  DTM+257:20131001:102'  RFF+ON:000000000051'  RFF+AIF:201309281131'
SCC+24'  QTY+113:7'  DTM+10:20121001:102'
```

Message Number.
Message Date/time.
Validity start date.
Buyer number, allocated by Volvo.
Seller number, allocated by the Volvo.
Ship to Volvo plant No.
Item number.
Place of discharge.
Additional internal destination.
Calculation Date/Time
Volvo Order No.
Previous delivery instruction number.
Cumulative quantity received.
Cumulative start date.
Despatch quantity.
Received quantity.
Despatch date.
Despatch Note No.
** Note the group QTY,QTY,DTM,RFF could be repeated 0 - 3 times depending on the number of received despatch notes.

Forecast indicator.
Quantity to deliver.
Delivery date.
Key information in the DELJIT message

For each new Chassi number there will be a repetition of SEQ, DTM, GIR, LIN, IMD, LOC and QTY.
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'**: Package serial number. Printed on Odette Label
- **PAC+1++NIL::92'**: Item number. Printed on Odette Label.
- **QTY+52:4:PCE'**: Quantity in package. Printed on Odette Label.
- **PCI++++S::92'**: Country of origin.
- **ALI+RU'**: Vehicle identification number connected to this package. Printed on Odette Label.
- **GIN+VV+638960'**: Volvo Order No.
- **RFF+ON:340904758051'**: Additional internal destination. Printed on Odette Label.
- **LOC+159+051::92'**:
Information heritage between DELFOR, DESADV and INVOIC

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'
Coffee Break
Practical tasks

- [http://www.unece.org/trade/untdid/d96a/trmd/trmdi2.htm](http://www.unece.org/trade/untdid/d96a/trmd/trmdi2.htm)
- EAN is now GS1 (example www.gs1.se)
Implementation issues
Implementation issues
- Driving forces
- Driving forces
- Complete supply chain penetration

Tier 5
- 0% EDI

Tier 4
- 0% EDI

Tier 3
- 5% EDI

Tier 2
- 25-50% EDI

Tier 1
- Full EDI

OEM/OEM clusters

5 weeks information lead time
Implementation issues
- Driving forces  - Complete supply chain penetration

OEM/OEM clusters
- Tier 1
- Tier 2
- Tier 3
- Tier 4
- Tier 5

?? weeks information lead time
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.
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

- 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.
## Implementation issues
- Supplier practical solutions

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

<table>
<thead>
<tr>
<th></th>
<th>Conv. EDI</th>
<th>Half outs. EDI</th>
<th>Fully outs. EDI</th>
<th>Web-EDI</th>
<th>OEM Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial cost</strong></td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low/none</td>
</tr>
<tr>
<td><strong>Running cost</strong></td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium/low</td>
<td>Low/none</td>
</tr>
<tr>
<td><strong>Internal competence</strong></td>
<td>High</td>
<td>Medium</td>
<td>Medium/low</td>
<td>Medium/low</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Strategic control</strong></td>
<td>High</td>
<td>Medium</td>
<td>Medium/low</td>
<td>Low</td>
<td>Low/none</td>
</tr>
<tr>
<td><strong>Communication requirement</strong></td>
<td>Multiple</td>
<td>One</td>
<td>One</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Change management</strong></td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium/low</td>
<td>Low/none</td>
</tr>
<tr>
<td><strong>Integration possibilities</strong></td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Low/none</td>
<td>Low/none</td>
</tr>
</tbody>
</table>
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)
Implementation issues
- Solutions for EDI and labels

*Stand alone solution – No integration with superior systems*
Web-EDI – browsed solution for multiple OEM
Definition: The web-edi provider have direct communication with OEM or its VAN and provide an interface for interpreting item requirements and an interface for generating ASN and goods labels. No integration towards supplier ERP.
Implementation issues
- Solutions for EDI and labels

Stand alone solution – OEM Portal
Web-EDI for unique OEM (portal) – browsed solution for single OEM
Definition: The OEM provide an interface for interpreting item requirements and an
interface for generating ASN and goods labels. No integration towards supplier ERP.

Supplier enviroment:
Web-EDI provider (OEM)
VCC enviroment:
Implementation issues
- Solutions for EDI and labels

**Stand alone solution**
Specialised systems for EDI handling outside ERP/APS – stand alone system with functionality to handle and satisfy single or multiple OEM demands.
Definition: An installed application or SaaS specialized for handling EDI demands with no integration to ERP. Interfaces for requirements, ASN and labelling in application/SaaS.
Implementation issues
- Solutions for EDI and labels

**Integrated solutions**
Integration via application at supplier premises – EDI platform for conversion. Definition: An installed application with full integration to supplier ERP. Requirements imported to ERP where MRP can be processed and requirements can be forwarded down to next tier.

Supplier enviroment:
- ERP/APS
- EDI Platform
- ISDN/X.25

OFTP2

VCC/OEM enviroment:
- Volvo
- NAF

Requirements import to ERP where MRP can be processed and requirements can be forwarded down to next tier.
Implementation issues
- Solutions for EDI and labels

*Integrated solutions – Communication outsourced*
Integration via application at supplier premises – EDI platform for conversion. Definition: An installed application with full integration to supplier ERP. Requirements imported to ERP where MRP can be processed and requirements can be forwarded down to next tier. Communication outsourced to VAN Service.

---

**Supplier environment:**
- ERP/APS
- EDI Platform

**Service provider:**
- OFTP2

**VCC/OEM environment:**
- ISDN/X.25
Implementation issues
- Solutions for EDI and labels

*Integrated solutions - SaaS*
Integration via SaaS.
Definition: Using a SaaS solution for communication and conversion, where SaaS interfaces are used for interpreting item requirements however are also integrated to ERP. ERP generates an ASN however, SaaS interfaces are used to print labels and generate ASN. MRP can be performed in ERP and requirements forwarded to next tier via SaaS or other solution.
Summary & discussion
<table>
<thead>
<tr>
<th>Term/abbreviation</th>
<th>Meaning</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIAG</td>
<td>Automotive Industry Action Group</td>
<td>North American Automotive EDI Association</td>
</tr>
<tr>
<td>APS</td>
<td>Advanced Planning System</td>
<td>A business system with advanced MRP capability</td>
</tr>
<tr>
<td>AS2</td>
<td>Applicability Statement 2</td>
<td>Internet standard for file transfer communications, mainly used in retail and trading</td>
</tr>
<tr>
<td>ASN</td>
<td>Advanced Shipping Note</td>
<td>Electronic Despatch Note, equal to DESADV message</td>
</tr>
<tr>
<td>Bill of lading</td>
<td></td>
<td>A document which evidences a contract of carriage by sea</td>
</tr>
<tr>
<td>Call-off</td>
<td>Call-off/Call-in/Daily Shipping instruction</td>
<td>Short horizon order/requirement document</td>
</tr>
<tr>
<td>Carrier</td>
<td>Transporter</td>
<td>Party undertaking transport of goods from one point to another</td>
</tr>
<tr>
<td>CMR note</td>
<td>Convention relative au contrat de transport international de Marchandises par route</td>
<td>A document which evidences a contract of carriage by road</td>
</tr>
<tr>
<td>Consignee</td>
<td></td>
<td>Party to which goods is to be shipped to</td>
</tr>
<tr>
<td>Consignment</td>
<td></td>
<td>Load of one or more shipments to one consignee</td>
</tr>
<tr>
<td>Consignment note</td>
<td></td>
<td>A document which evidences a contract of carriage by any means</td>
</tr>
<tr>
<td>Consignor</td>
<td>Despatch party</td>
<td>Party sending goods</td>
</tr>
<tr>
<td>Consolidation Point</td>
<td>Consignment point/Grouping center</td>
<td>Location where consolidation of consignments takes place.</td>
</tr>
<tr>
<td>Data Element</td>
<td></td>
<td>Lowest level of data occurrence</td>
</tr>
<tr>
<td>Data Element Separator</td>
<td></td>
<td>The special character used to separate data elements in a data format.</td>
</tr>
<tr>
<td>DI</td>
<td>Data identifier</td>
<td>Character(s) to qualify a meaning of data for Auto ID</td>
</tr>
<tr>
<td>DM</td>
<td>Data model</td>
<td>Information model connecting data to business process</td>
</tr>
<tr>
<td>DELFOR</td>
<td>Delivery forecast/Delivery Instruction</td>
<td>Electronic order/requirement document</td>
</tr>
<tr>
<td>Term/abbreviation</td>
<td>Meaning</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>Delivery party</td>
<td></td>
<td>Sub-contractor/hub/LSP/supplier</td>
</tr>
<tr>
<td>DESADV</td>
<td>Despatch advise</td>
<td>Electronic despatch/delivery note (ASN)</td>
</tr>
<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
<td>Means to electronically transmit structured data</td>
</tr>
<tr>
<td>EDIFACT</td>
<td>Electronic data interchange for administration, commerce and transport</td>
<td>Framework for EDI Exchange, developed by UNECE</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise resource planning (system)</td>
<td></td>
</tr>
<tr>
<td>(S)FTP</td>
<td>(Secure) File transfer protocol</td>
<td>Commonly used file transfer protocol over Internet</td>
</tr>
<tr>
<td>Forwarder</td>
<td>Carrier, transporter</td>
<td>Party arranging the carriage of goods</td>
</tr>
<tr>
<td>Freight</td>
<td>Goods in transit</td>
<td></td>
</tr>
<tr>
<td>Freight invoice</td>
<td>Invoice issued by carrier for transport cost</td>
<td></td>
</tr>
<tr>
<td>FCL</td>
<td>Full container load</td>
<td></td>
</tr>
<tr>
<td>FTL</td>
<td>Full trailer load</td>
<td></td>
</tr>
<tr>
<td>Hub</td>
<td>Hub/cross docking</td>
<td>Central collection point of goods for further distribution</td>
</tr>
<tr>
<td>HRI</td>
<td>Human readable interpretation</td>
<td>Characters readable to the human eye</td>
</tr>
<tr>
<td>Incoterm coded</td>
<td>Code specifying terms of delivery and/or transport</td>
<td></td>
</tr>
<tr>
<td>Packaging item</td>
<td>Package/kolli</td>
<td>Package identified by unique label number</td>
</tr>
<tr>
<td>Intermodal transport</td>
<td>Load of goods forwarded by more than one mode of transport</td>
<td></td>
</tr>
<tr>
<td>INVOIC</td>
<td>Commercial invoice message</td>
<td></td>
</tr>
<tr>
<td>Invoicee</td>
<td>Party to which invoice is addressed</td>
<td></td>
</tr>
<tr>
<td>JAMA</td>
<td>Japan Automobile Manufacturers Association</td>
<td></td>
</tr>
<tr>
<td>Kanban</td>
<td>A pull replenishment system, with Kanban card indicating minimum stock.</td>
<td></td>
</tr>
<tr>
<td>Term/abbreviation</td>
<td>Meaning</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>Kanban number</td>
<td>Card number</td>
<td>Unique identifier for a pull signal from buyer</td>
</tr>
<tr>
<td>License Plate</td>
<td></td>
<td>Unique transport unit identifier</td>
</tr>
<tr>
<td>Linear symbol</td>
<td></td>
<td>One dimensional bar code symbol</td>
</tr>
<tr>
<td>LSP</td>
<td>Logistic service provider</td>
<td>Party taking consignment responsibility for other party</td>
</tr>
<tr>
<td>Master Load</td>
<td>Master load/transport carrier</td>
<td>Unit that hold inner packages with same items.</td>
</tr>
<tr>
<td>Material release</td>
<td>DELFOR/CALLOFF/ORDER</td>
<td>An order against a blanket order for a requirement</td>
</tr>
<tr>
<td>Message</td>
<td></td>
<td>A continuous stream of data elements</td>
</tr>
<tr>
<td>Message envelope</td>
<td></td>
<td>Message header and trailer surrounding message</td>
</tr>
<tr>
<td>Message Function Coded</td>
<td></td>
<td>A code specifying function (purpose) of message</td>
</tr>
<tr>
<td>Message Header</td>
<td></td>
<td>Group of characters defining start of message</td>
</tr>
<tr>
<td>Message trailer</td>
<td></td>
<td>Group of characters defining end of message</td>
</tr>
<tr>
<td>Message Type Code</td>
<td></td>
<td>Code specifying type of message</td>
</tr>
<tr>
<td>Message version</td>
<td></td>
<td>Code specifying version of message</td>
</tr>
<tr>
<td>Mixed load</td>
<td>Mixed load (G pallet)</td>
<td>A transport carrier with inner packages with different items</td>
</tr>
<tr>
<td>ODETTE</td>
<td>Organisation for Data Exchange by TeleTransmission in Europe</td>
<td>Organization for EDI and Auto-ID in the European Automotive Industry</td>
</tr>
<tr>
<td>OEM</td>
<td>Original equipment manufacturer</td>
<td>Commonly used to describe actors in top of value chain</td>
</tr>
<tr>
<td>OFTP/OFTP2</td>
<td>Odette file transfer protocol (2)</td>
<td></td>
</tr>
<tr>
<td>Packaging instruction</td>
<td>Package instruction</td>
<td>Agreed packaging instruction for an item, equipment or module</td>
</tr>
<tr>
<td>Term/abbreviation</td>
<td>Meaning</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>Packaging type code</td>
<td>A code to specify a packaging type</td>
<td></td>
</tr>
<tr>
<td>Packing list</td>
<td>Document specifying individual packages and content</td>
<td></td>
</tr>
<tr>
<td>Payee</td>
<td>A party to which payments are made</td>
<td></td>
</tr>
<tr>
<td>Place of delivery</td>
<td>Place of delivery/discharge</td>
<td>Place of delivery according to terms of transport</td>
</tr>
<tr>
<td>Place of despatch</td>
<td></td>
<td>Place where goods is taken over for carriage</td>
</tr>
<tr>
<td>Proforma Invoice</td>
<td></td>
<td>Invoice document with same info as conventional invoice. Mostly used for customs declarations</td>
</tr>
<tr>
<td>Proof of delivery</td>
<td></td>
<td>Signed copy of delivery receipt (reception receipt)</td>
</tr>
<tr>
<td>Pull method</td>
<td></td>
<td>Order based on static stock and replenishment order is immediate upon consumption</td>
</tr>
<tr>
<td>Push method</td>
<td></td>
<td>Order based on specified due dates and est transport lead time.</td>
</tr>
<tr>
<td>Quiet zone</td>
<td></td>
<td>Blank space surrounding a bar code</td>
</tr>
<tr>
<td>Reader</td>
<td></td>
<td>Equipment to read and decode bar codes</td>
</tr>
<tr>
<td>RECADV</td>
<td>Reception advise</td>
<td>Reception advise from buyer to supplier on received goods (corresponding with DESADV)</td>
</tr>
<tr>
<td>RFID</td>
<td>Radio Frequency identity</td>
<td>Wireless electromagnetic method for data transfer</td>
</tr>
<tr>
<td>SBI</td>
<td>Self billing invoice</td>
<td>Invoice (monetary transfer) document from buyer to supplier</td>
</tr>
<tr>
<td>Shikyu process</td>
<td>Shikyu process</td>
<td>Shipment of components to a supplier for assembly to a larger component ready for final assembly</td>
</tr>
<tr>
<td>Ship-from</td>
<td>Ship-from (Consignor)</td>
<td>Shipping party</td>
</tr>
<tr>
<td>Term/abbreviation</td>
<td>Meaning</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ship-to</td>
<td>Ship-to (Consignee)</td>
<td>Receiving party</td>
</tr>
<tr>
<td>Shipment</td>
<td></td>
<td>Load of one or multiple transport carriers shipped from one consignor to one consignee</td>
</tr>
<tr>
<td>Shipper</td>
<td>Shipper (Consignor)</td>
<td>Party sending goods</td>
</tr>
<tr>
<td>Subset</td>
<td>Subset/application of framework</td>
<td>Framework (business rules) within larger framework</td>
</tr>
<tr>
<td>Symbology</td>
<td></td>
<td>Framework for bar codes standard</td>
</tr>
<tr>
<td>Syntax</td>
<td>Data grammar</td>
<td>Data grammar, data sequence framework</td>
</tr>
<tr>
<td>TOD</td>
<td>Terms of delivery</td>
<td>Conditions agreed between buyer and seller on delivery</td>
</tr>
<tr>
<td>TOF</td>
<td>Terms of freight</td>
<td>Conditions agreed between buyer of transport and carrier</td>
</tr>
<tr>
<td>TOT</td>
<td>Terms of transport</td>
<td>Conditions agreed as above for physical transport of goods</td>
</tr>
<tr>
<td>Tracing</td>
<td>Tracing (traceability)</td>
<td>Function to trace goods, items, consignments and so on</td>
</tr>
<tr>
<td>Tracking</td>
<td></td>
<td>Function to maintain trace of goods, items, consignments and so on</td>
</tr>
<tr>
<td>Transshipment</td>
<td></td>
<td>Transition from one means of transport to another</td>
</tr>
<tr>
<td>THU</td>
<td>Transport handling unit</td>
<td>One separately identifiable transport unit (e.g., pallet)</td>
</tr>
<tr>
<td>Transport instruction</td>
<td></td>
<td>Generic term document with details to arrange transport</td>
</tr>
<tr>
<td>Tier</td>
<td>Tier 1, Tier 2 …</td>
<td>Level in supply/value chain</td>
</tr>
<tr>
<td>VAN</td>
<td>Value added network</td>
<td>Communication hub with features added</td>
</tr>
<tr>
<td>VDA</td>
<td>Verband Der Automobilinustrie</td>
<td>German Automobile Manufacturers Association</td>
</tr>
<tr>
<td>Web-EDI</td>
<td>Web-EDI</td>
<td>Web accessible EDI system (via Portal)</td>
</tr>
<tr>
<td>Term/abbreviation</td>
<td>Meaning</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>Ultimate consignee</td>
<td>Final place of discharge (consumption place)</td>
<td></td>
</tr>
<tr>
<td>UML</td>
<td>Unified modeling language</td>
<td>Set of diagrams communication requirements of a business process</td>
</tr>
<tr>
<td>UN/CEFACT</td>
<td>United Nations Centre for Trade Facilitation and Electronic Business</td>
<td></td>
</tr>
<tr>
<td>Waybill</td>
<td>Consignment note</td>
<td>A document which evidences a contract of carriage by any means</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible markup language</td>
<td>Data format</td>
</tr>
<tr>
<td>X.12</td>
<td>American EDI framework for EDI</td>
<td></td>
</tr>
<tr>
<td>X.25</td>
<td>X.25</td>
<td>Datapak, older analog communication network</td>
</tr>
<tr>
<td>X.400</td>
<td>X.400</td>
<td>Older but still existing communication network</td>
</tr>
</tbody>
</table>