GS1 eCom for the retail industry

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ECR Baltic/GS1 Latvia 2011-09-15
Agenda

- Short introduction to GS1 and GS1 Sweden
- Overview of GS1’s global standards
- Introduction to eCom and GS1 Sweden’s eCom user profiles
- Overview of eCom based business processes
- Master Data and the use of a data pool
- Ordering of goods
- Delivering goods
- Invoicing of goods
- General principles and conditions
- Wrap-up and discussion
SHORT INTRODUCTION TO GS1 AND GS1 SWEDEN
GS1 in a nutshell

GS1 is a not-for-profit organisation that develops global standards for the identification of goods and services.

GS1's standards foster cooperation and encourage information-sharing worldwide.

GS1 helps businesses and organisations improve the efficiency of their supply and demand chains by adding useful information to any exchange of goods or services.
110 Member Organisations.
150 Countries served.
Local services, global reach.

Countries with a GS1 Member Organisation

Countries served on a direct basis from GS1 Global Office (Brussels)
International organisation created in 1977 (EAN International)

- Over **30** years of experience
- **110** member organisations spanning 5 continents
- Over a **million** companies doing business across **150** countries
- Serving **all points** in the supply chain
- Over **20** sectors (FMCG, healthcare, transport, defence…)
- Over **5 billion** transactions daily
GS1 Values

• GS1 is a not-for-profit organisation
• GS1 is neutral from our business partners
• GS1 is user-driven and user-governed
• GS1 serves all companies: from multinationals to SMEs
• GS1 is a platform for collaborative agreement between partners
### Some key user companies

<table>
<thead>
<tr>
<th>Retail</th>
<th>Consumer Goods</th>
<th>Food &amp; Beverage</th>
<th>Healthcare &amp; Life Sciences</th>
<th>Electronics &amp; High Tech</th>
<th>Logistics &amp; Transport</th>
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<tbody>
<tr>
<td>METRO Group</td>
<td>P&amp;G Gillette</td>
<td>Nestlé</td>
<td>Johnson &amp; Johnson</td>
<td>SONY</td>
<td>DHL</td>
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<td>Kellogg's</td>
<td>Bayer</td>
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<td>Coca-Cola</td>
<td>Pfizer</td>
<td>HP</td>
<td>EUROPOOL SYSTEM</td>
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<td>groupe carrefour</td>
<td>LEGO</td>
<td>Cadbury Schweppes</td>
<td>Baxter</td>
<td>Samsung</td>
<td>FedEx</td>
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<tr>
<td>WALMART</td>
<td>BEST BUY</td>
<td>GENERAL MILLS</td>
<td>AstraZeneca</td>
<td>Microsoft</td>
<td>MAERSK LINE</td>
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<td><strong>© 2011 GS1 Sweden</strong></td>
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</tbody>
</table>
Some key user companies

- Aerospace & Defense
  - Boeing
  - Lockheed Martin
  - Honeywell
  - Pratt & Whitney

- Chemical
  - Dow
  - Rohm & Haas
  - ExxonMobil
  - BP

- Industrial
  - 3M
  - Tyco
  - eB
  - Weyerhaeuser
  - Black & Decker

- Footwear & Apparel
  - Galeria Kaufhof
  - Levi Strauss & Co.
  - Esprit
  - Perry Ellis
  - C&A

- Automotive
  - Goodyear
  - Michelin
  - Johnson Controls
  - John Deere
“GS1 Sweden simplifies companies’ local and global trade”

Through cooperation, GS1 develops sector-neutral standards and services which enable efficiency improvements in the flow of information and goods.
Our development in Sweden

- Started in Sweden in 1977
- Focus on supply chain
- Formerly known as EAN Sweden
- 10,000 customers
- Owned by the Consumer Goods Retail Industry
Some of our customers
Validoo – Our Business Services

Used by suppliers and retailers for exchange of high quality master data and verification of GS1 standard compliance

- **Validoo Item** checks, stores and distributes trade item master information
- **Validoo Q-lab** verifies that trade item master data is aligned with the actual trade item
- **Validoo Directory** allows users to publish and search for party and location information
- **Validoo BarCodeCheck** verifies barcode quality and readability
OVERVIEW OF GS1’S GLOBAL STANDARDS
The GS1 System

- **Document type**
- **Service relation**
- **Individual asset**
- **Returnable asset**
- **Consignment**
- **Shipment**
- **Shipping container**
- **Location**
- **Trade Item**

Identify

- EAN-13
- EAN-8
- GS1 DATABAR
- GS1-128
- RFID/EPC

Capture

Share

GS1 XML

EPCIS

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INTRODUCTION TO ECOM AND GS1 SWEDEN’S USER PROFILES
Cooperating IT systems and organisations
GS1 Sweden’s harmonized business processes

- Call-off against frame contract
- Periodic invoicing
- Retail supply chain
  - Basic retail supply chain
  - Contract settlement
  - Returns
- 3rd Party Logistics
Basic Retail Supply chain

• A structured business process designed to improve supply chain efficiency by electronic document exchange
  • Efficient logistics
  • Traceability
  • Automated invoice processing

• Measurable effects
  • Example: Konsum Nord – 90% savings on administration (small Swedish retailer)
OVERVIEW OF ECOM BASED BUSINESS PROCESSES
Basic Retail Supply Chain

Buyer

- Buyer's party information
- Supplier's party information
- Trade item declaration
- Price list
- Order
- Order response
- Despatch advice
- Invoice

Supplier

- Planning
- Identification
- Negotiation
- Identify basic information
- Order/negotiation
- Deliver
- Pay
- Post-processing

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Returns process
Periodic invoicing (electricity, telephony)
Business Process Interaction

Supplier
- Salesman
- Order recipient
- Delivery planner
- Invoice issuer

Buyer
- Purchasing officer
- Order issuer
- Good recipient
- Invoice administrator

Contract
- Party information
- Trade Item Declaration
- Price list
- Order

Receive order
- Order response

Deliver
- Despatch Advice
- Pallet label

Request payment
- Invoice

Receive invoice

Receive delivery
Chain of references between business documents
Chain of references between business documents
MASTER DATA AND THE USE OF A DATA POOL
Master Data

- **Master Data**
  - Contracts (not a GS1 standard)
  - Supplier – Customer data (party information)
  - Trade Item Information
  - Price

- **Automatic processing**
  - No manual data entry at recipient side
  - Requires manual verification and approval
Ownership of Master Data

- The Information Provider **owns** the master data
- If the master data is incorrect, the **information provider** is asked to correct the information and resend
- Master Data must be synchronized
Identification of locations enables an effective **flow of goods and information** between trading partners:

- Exchange of EDI messages
- Route information
- Physical marking of locations
Party Master Data

Example
- Information from seller to buyer
  - GLN global location number
  - Name
  - Addresses
  - Payment instructions (account number, etc)
  - ...
- Information from seller to buyer
  - GLN global location number
  - Role
    - Commercial buyer (Axfood)
      » Name
      » Address
    - Consignee information (Dagab)
    - Delivery place (t ex Dock no 12)
  - ...

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THE FLOW OF ITEM MASTER DATA
Inbound deliveries to DC
Outbound deliveries from DC
Retail store operations
Retail Supply Chain - ESAP 20
Standardized interface, specified by users and GS1:
- scenario
- content standard
- message format standard
- communication methods

Anything crossing this line must comply with the standard.
Standardized interface, specified by users and GS1:
- scenario
- content standard
- message format standard
- communication methods
Flow through Validoo Item

Supplier

Item data

Validoo Item

No

OK?

Yes

Guideline

GS1 XML Trade Item

Mapping specification

Validation rules

Receipt NOK

Receipt OK

Retailer

Receive

Receipt messages
EAN.UCC Response
GDSN Exception
Catalogue Item
Confirmation

All documentation available at www.gs1.se
Suppliers: 1377 connected
Recipients: Axfood, COOP, ICA, Konsum Nord, Konsum Värmland, Konsum Gävleborg, Bergendahls, Menigo, Apoteket, Kuponginlösen, Nielsen
10 verified supplier solutions
96% of all new FMCG items for FMCG retailers
CONTENT OF GS1 TRADE ITEM INFORMATION
Item hierarchy - example

Base unit  Case  Pallet
Item hierarchy - example

Base unit  Case 1  Case 2  Pallet
Trade Item Status

Each trade item can be a:

- Consumer unit
- Orderable unit
- Despatch unit
Item hierarchy – examples with status

Base unit
Consumer item

Case
Orderable item

Pallet
Despatch unit
Item hierarchy – examples with status

Base unit
Consumer unit

Case 1
Consumer unit

Case 2
Orderable unit

Pallet
Despatch unit
Item hierarchy – example display full pallet

Base unit
Consumer unit

Pallet
Orderable unit
Despatch unit
Item hierarchy – example food service item

- Case unit
- Orderable unit
- Pallet
- Despatch unit
Item information structure

1 = exactly 1
1:n = one or more
0:n = zero, one or more
Item structure

**Trade Item header**

- **Trade Item Declaration date**
- **Validity start date**
- **Supplier ID (GLN)**
- **Validity start date**
- **Buyer ID (GLN)**

**Document**

**Trade Item header**

- **Item identities**
- **Item status**
- **Product characteristics**
- **Package**
- **Dimensions**
- **Storage and handling**
- **Dangerous goods**
- **Origin**
- **Marks**
- **Taxes, subsidies**
- **Price**

**Product classification**

**Package material**

**Net content**

**Trade item hierarchy**

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Item structure

**Item identities**

- Trade Item identification (GTIN)
- Replaced trade item (GTIN)
- Item variant master (GTIN)
- Item name
- Shelf-edge/till-roll ext
- Brand name
- Article size, text

**Item structure diagram**

```
+-----------------+                  +--------------------+
| Item identities |                  | Item status        |
+-----------------+                  +--------------------+
| Item identities |                  | Product characteristics |
| Item identities |                  | Package             |
| Item identities |                  | Dimensions          |
| Item identities |                  | Storage and handling |
| Item identities |                  | Dangerous goods     |
| Item identities |                  | Origin              |
| Item identities |                  | Marks               |
| Item identities |                  | Taxes, subsidies    |
| Item identities |                  | Price               |
```

**Hierarchy header**

```
+-----------------+                  +--------------------+
| Trade item hierarchy |
```

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Item structure

**Item status**

*Is trade item a consumer unit*

*Orderable indicator*

*Is trade item a despatch unit*

*Is trade item an invoice unit*

---

**Availability date**

*Latest availability date*
Item structure

**Package**

- Package type
- Pallet type
- Display unit indicator
- Deposit code

Item identities
- Item status
- Product characteristics
- Package
- Dimensions
- Storage and handling
- Dangerous goods
- Origin
- Marks
- Taxes, subsidies
- Price

Document

Trade item header

Product classification
- Package material
- Net content

Hierarchy header

Trade item hierarchy
Item structure

Dimensions

Trade item height
Trade item width
Trade item depth
Trade item gross weight

Packaging weight
Variable measure indicator

Item identities
Item status
Product characteristics
Package
Dimensions
Storage and handling
Dangerous goods
Origin
Marks
Taxes, subsidies
Price
Hierarchy header

Document
Trade item header

Product classification
Package material
Net content
Item structure

Storage and handling

Shelf life total/minimum
Date marking
Storage temperature max/min
Transport temperature max/min
Storage humidity max/min

Quantity of complete layers
Packages per layer
Item structure

Marks

Barcode standard
Package marks

Document

Trade item header

Item identities
Item status
Product characteristics
Package
Dimensions
Storage and handling
Dangerous goods
Origin
Marks
Taxes, subsidies
Price
Hierarchy header

Product classification
Package material
Net content

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Consumer items

Base or case level trade item
Information used for:
• Shelf planning
• Temperature management
• Till roll/receipt information
• Shelf edge labels
• Etc.
Orderable units

Base, case or pallet level trade items

• For transport capacity management
• For optimal packing in roll cages
• For correct storage (temp/humidity/special handling)
Despatch unit

Case or pallet level trade items

• Management of inbound logistics
• Temperature zones
• Optimization of order quantities
Solutions for more product information

• Traditional Master Item Data
  • Supports all processes up to consumer point-of-sale
  • Information about the trade items outside characteristics

• Expanded information
  • More product types
  • More processes
  • Product properties
  • Achieved by extensions to GS1 Trade Item
Extensions

• Current extensions
  • Apparel & Home Fashion
  • Hardlines
  • Office Supplies
  • Promotional Trade Items
  • Food & Beverage
  • Electronic Games
  • Movie Publications
  • Music Recordings
  • Healthcare items

• Under development
  • Books
  • Chemical ingredients
  • Plumbing HVAC

Food & Beverage launched in Sweden November 1st, 2009
### Example of Food & Beverage Extension

#### Marketing information
- Nutrition claim: -
- Health claim: -
- Servings suggestion: -

#### Serving information
- Number of servings: -
- Number of smallest units: 180
- Max number of smallest units: -

#### Ingredients
- 1 Glucose – fructose syrup
- 2 Sugar
- 3 Gelatine
- 4 Surface enhancer (vegetable oil and E903)
- 5 Aroma (vanillin)
- 6 Acid control agent (lemon acid)

#### Nutrient information
- Preparation state: PREPARED
- Household serving size: -
- Daily value intake reference: -
- Serving size: 100 grams
- Energy: 1550 kJ
- Protein: 3.0 g
- Carbon hydrate: 87 g
- Fat: 0.5 g

#### Allergen information
- Allergen claim: -
- Allergen specification

#### Diet type
- -

#### Preparation type
- READY_TO_EAT

#### Yield
- Yield:
- Yield type: -
- Yield variation: -
Master Data for Price

- Negotiation: Agreement on prices between buyer and seller
- Transmission of master data: The seller creates a price list and sends it to the buyer
- Processing and approval: The buyer checks the prices
  - Error handling: If there are errors – the seller is contacted
  - The seller sends a corrected price list
- Price updates: Both buyer and seller must store price history in their systems

- The same prices at both parties!
Price types

- List pris (catalogue price)
- Contract price
- Discounted contract price
- Current price (today’s price)
- Discounted current price
# Tolerances for invoice matching

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<th>Invoice</th>
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<tbody>
<tr>
<td><strong>Contract price</strong></td>
<td></td>
<td>Max</td>
</tr>
<tr>
<td><strong>Current price</strong></td>
<td></td>
<td>Min</td>
</tr>
<tr>
<td><strong>Discount price</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Processing price lists

➢ Original price list
  • Always for a new contract
  • All price information about all trade items
    – Prices
    – Discounts
    – Quantities required for discounts
    – Etc
Processing price lists

- Change price list
  - Only changed trade items included
  - Complete price information about trade items that are changed
  - Reference to previous price list
  - Processing a change price list
    - 1  Make copy of previous price list
    - 2  Update copy with change information
    - 3  Save copy, identify with ID from Change price list
Processing price lists

- Replace price list
  - Complete price information about all trade items
    - Including unchanged trade items
    - Replaces previous price list completely
    - Includes reference to previous price list
ORDERING OF GOODS
Placing an order

- Requirements identified
- Propose order
- Acknowledge receipt of order
- Confirm order
- Confirm order with changes
- Specification for delivery/receipt available
Connection to Master Data

- Party identities
  - Stored in a database for party information (supplier registry)
    - GLN

- Prices
  - Stored in a price/contract database
  - Reference to contract (price list) included in order

- Item information
  - Stored in a database
    - GTIN
    - Supplier’s item number
    - Item name
    - Hierarchies
    - Package type
    - Orderable unit
    - etc
Basic Retail Supply Chain - Order (1)

- Order header
  - Order number
  - Order date or Order time
  - Supplier ID
  - Buyer ID
  - Consignee ID
  - Delivery place ID
  - Invoicee ID
  - Invoice recipient ID
  - Reference to price list
  - Reference to contract
  - Requested delivery date or time for the whole order
  - Availability date/time
  - Shipping marks
  - Ultimate consignee (store) ID
Basic Retail Supply Chain - Order (2)

- **Order line**
  - Line number
  - Ordered item GTIN
  - Supplier’s item number (optional)
  - Ordered quantity
  - Unit of measure for ordered quantity
  - Price mark
  - Unit price basis for price mark
  - Unit of measure for price mark
  - Discounted price

- **Control total**
  - Total quantity
  - Number of order lines
Basic Retail Supply Chain – Order Acknowledgement

- Order acknowledgement
  - The order has been entered into the ordering system
  - Ordered trade items not verified for availability
Basic Retail Supply Chain - Order Confirmation

- The order has been processed in the system
  - Ordered item quantities verified for availability

- Multiple order confirmations can be sent before delivery
  - Depends on timing and contract terms

Order confirmation must be sent before it is too late for the buyer to order another trade item (avoid empty shelves in stores)
Basic Retail Supply Chain - Order Confirmation

- Change of delivery date
- Different delivery dates for different trade items
- Replacement trade items
- Quantity variances or back order
  - Back ordered (will be delivered later)
  - Quantity variance (will not be delivered)
- Change reason
DELIVERING GOODS
Deliver

- Advise delivery
- Order/call-off confirmed
- Make delivery
- Transport shipment
- Goods receipt recorded

Despatch advice
Pallets
Despatch advice

Multiple business benefits:

- **Efficient logistics**
  - Refer to the right order
  - Updated delivery time (may differ from order/confirmation)

- **Traceability**

- **Invoice matching**
  - The exact trade items and quantities that will appear in the invoice
  - Deviations handled separately or in Returns process
Despatch advice

- Expected inbound delivery
  - According to order (including updates from order confirmation)

- Despatch advice
  - Reports exactly what is being delivered
    - Batch numbers
    - Best before dates
    - Enables reporting of late changes to the delivery

- Delivery changes, backlog (if agreed in the contract)
  - One despatch advice per delivery
  - One truck = one delivery
Homogeneous pallet

- GS1 pallet label
  - Each pallet is identified with an SSCC
  - GTIN of trade items on the pallet
  - Number of trade items
  - Best before date
  - Batch number

- Despatch advice
  - Pallet level
    - SSCC
    - Gross weight of pallet
  - Item level
    - GTIN
    - Number of trade items
    - Best before date
    - Batch number

<table>
<thead>
<tr>
<th>FREE INFORMATION</th>
</tr>
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<tbody>
<tr>
<td>e.g. Company Name of Sender, Address, Product Description, ...</td>
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<tr>
<td>SSCC: 390123451234502013</td>
</tr>
<tr>
<td>CONTENT: 9012345057879</td>
</tr>
<tr>
<td>COUNT: 160</td>
</tr>
<tr>
<td>BATCH/LOT: 887622</td>
</tr>
<tr>
<td>BEST BEFORE: 21.4.2008</td>
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Mixed pallets

- GS1 pallet label
  - Pallet identified by its SSCC
  - Shipping marks (text from order)

- Despatch advice
  - Pallet level
    - SSCC
    - Cross weight of pallet
  - Item level
    - GTIN
    - Number of trade items
    - Best before date
    - Batch number
INVOICING OF GOODS
Invoicing of goods

Invoice delivery
- Shipment despatched by supplier
- Request payment
- Wait for payment or credit of invoice

Buyer
Supplier
Invoice
Invoice header

- Invoice number
- Dates (invoice date, due date, despatch date, etc)
- Tax exempt reason
- References to price list, order, etc.
- Identification of parties (supplier, buyer, consignee, etc)
- Invoice discount
- Charges (freight, service)
Invoice line

- Invoiced item, ID
- Quantity
- References to order and order line
- Price
Invoice summary

- Amount due
- Tax information
- Control totals
Invoice and price matching

- Price deviation tolerance
  - Contract price
    - 0%
  - Current price
    - Establish max limit
      - Signal "stop buying"
      - Pay invoice (if not incorrect)
      - Inform purchasing officer
  - Manually discounted price, i.e. short best before date
    - Can not be matched with price list
    - Matched with "Discount price" in order
Tolerances for invoice matching

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Business Process Interaction

Supplier

Contract ➔ Receive order ➔ Deliver ➔ Request payment

Party information ➔ Trade Item Declaration ➔ Order ➔ Order response ➔ Despatch Advice Pallet label ➔ Invoice

Price list ➔ Confirmed order ➔ Make delivery ➔ Wait for payment

Buyer

Contract ➔ Order ➔ Receive delivery ➔ Receive invoice

Place order ➔ Match & approve ➔ Approved delivery ➔ Payment process

Master data ➔ Confirmed order ➔ Match & approve ➔ Create invoice

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GENERAL PRINCIPLES AND CONDITIONS
GS1 Sweden’s harmonized business processes – open de facto standards

- Focused around market demands on common business processes
- Many to many
- IT system independent
- Enables standardized IT system components or modules
- Facilitates connecting new trading partners
Local guidelines for EANCOM and GS1 XML

• Why make local guidelines?
  – Clarifications
  – Examples
  – Legal requirements
  – Language
  – Common business practice

• User groups
  – Contribution from all involved parties
  – Balanced representation

• Restrictions of the global standard

• Experiences are fed back to the global standard
Net and gross information

- Master data
  - Exchanged first
  - Updated when needed during contract period

- Transaction data
  - Exchanged as business transactions
  - Internally all information is available and used
    - Code values
    - Text information
  - Business transaction contains only the code

- The receiving system uses the net information to find the corresponding gross information
- When presented to the user, all necessary information is available
Example net information

Invoice message:

- Reference to price list
- Only GLN to identify parties
  - No text information
- Only Item Number to identify Trade Items
  - No item name or size
- Internal information is not sent
  - I.e. internal account number, name of contact person
- No clear texts
  - I.e. addresses, item name, contract conditions, payment terms, delivery conditions
Teknisk information

Specifikationer och handledning finns på
www.gs1.se/ESAP20
WRAP-UP AND DISCUSSION
eCom Deployment Status

Survey 2011 – Major Swedish FMCG retailers doing business with around 1400 suppliers

- Trade Item  96 %
- Order       82 %
- Order Response  43 %
- Despatch Advice  11 %
- Invoice      70 %
Contakt information

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