Price Modeling in Standards for Electronic Product Catalogs Based on XML

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USA, Hawaii – Honolulu – May 9, 2002
What is a „Price Model“?

Simple:

**Amount & Currency**

*e.g. $45,00*

Complex:
Agenda

1. Electronic Product Catalogs
2. Development of a General Price Model
3. Instruments of Pricing
4. E-Business XML Standards
5. Price Modeling
6. Conclusion
1 Electronic Product Catalogs

Electronic Product Catalogs are representations of information about products and services of a company.

Catalog Document

**Document Information**
- Default Values
- Sender / Receiver
- References to Contracts

**Product Information**
- Flat Structures
  - Identifiers
  - Product Names, Descriptions
  - Attributes & Values
- Complex Structures
  - Variants & Configurations
  - Packing & Ordering Info
  - Price Information

**Product Relationship Information**
- Hierarchical Structures
  - Product Classification Systems
  - Catalog Group Systems
- Net Structures
  - References from/to Products
E-Catalogs in B2B

Characteristics:
- Starting Point for Procurement Decisions and Order Transactions
- Exchange of Catalog Data
- Processing in Market Places and E-Procurement Systems
- Many XML Business Document Standards for Catalogs
- Large Documents (100+ MB possibly)
- High Degree of Customization
- Multi-Supplier-Catalogs
- Multi-Buyer-Catalogs
Price Information in E-Catalogs

• **Differences to Paper-based Catalogs:**
  – Smaller Intervals of Update → synchronous Price Calculation
  – More complex Price Models
  – Higher Granularity of Prices
  – More Customization / Individuality

• **Determination at Build-Time:**
  – unlike Auctions, Stock Exchanges and Tenders
  – Hybrid: Price Formulas with dynamic components
    → calculable in the target systems only at run-time

• **in general:** Product-related Price Information
  → unlike E-Contracting
2. Development of a General Price Model

Motivation:
- Many B2B E-Catalog Standards
- Different Power
- Different Concepts
- Limited Price Models
→ Goals: Comparison, Evaluation, Improvement & Integration

Procedure:
1. Requirements of Pricing
2. Requirements of E-Procurement
3. Empirical Analysis of E-Catalog Standards
4. Identification of Modeling Concepts
5. Modeling of Price Information using XML-Schema
6. Comparison & Evaluation of E-Catalogs
3. Instruments of Pricing

Marketing-Mix

„4P“

Product
Price
Promotion
Place

Pricing

Individual
Product Form
Quantity
Bundles
Customer Segments
Geographical
Promotional
4. E-Business XML Standards

Further E-Catalog Standards: CatXML, CIDX, eCX, eCo, ECOS, OCI, OCP/OCF, OFX, PDM, PDML, PDX, Pricat, XEDI, XML/EDI, …
5. Price Modeling: Concept of Levels

**Level: Product**
- Product 1
- Product 2
- Product 3
- Product 4
- Product n

**Level: Transaction**
- Order 1
- Order 2
- Order n

**Level: Contract**
- Contract 2002-01-01 – 2002-06-30

- e.g. Project Discounts
- e.g. Charges for Package & Transport
- e.g. Product Prices, Quantity Scales, Taxes

WWW2002: Price Modeling in Standards for Electronic Product Catalogs Based on XML
Price Modeling: Concept of Dependence

Implicit: Order Quantity and Order Unit
Price Modeling: Concept of Allowances and Charges

- **Basis**
  - Relative – Percent
  - Relative – Amount
  - Absolute
  - Natural

- **Calculation Order**
  - relevant
  - not relevant

- **Type**
  - functional
  - Volume-based
    - Quantity
    - Value

- **Kind of Calculation**
XML-Schema for Price Information

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<xs:element name="Agreement">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="AgreementID"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

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    <xs:sequence>
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      <xs:element name="EndDate" type="xs:dateTime"/>
      <xs:element name="ValidityTimePeriod"/>
    </xs:sequence>
    <xs:simpleType>
      <xs:restriction base="xs:string">
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        <xs:maxLength value="50"/>
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</xs:element>

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    </xs:sequence>
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  </xs:complexType>
</xs:element>

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```
## Comparison of E-Catalog Standards

### Determining Factors:

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<th>Territory</th>
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<th>Interval</th>
<th>Contract</th>
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<tr>
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<tr>
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### Allowances and Charges:

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<th>Scale</th>
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<tbody>
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</tr>
</tbody>
</table>
6. Conclusion

• None of the selected standards covers all requirements.
• Extended product models will lead to extended price models.
• A model for price information should be part of any reference model for E-Catalogs.

→ The developed model can be used for a comparison and evaluation of B2B E-Catalog Standards.
→ The developed model is an improvement of price models in E-Catalog Standards.
→ The integration of different E-Catalog standards is reached by mapping their price models to the developed model.
Mahalo!
Any questions?

- Oliver
- Jörg
- Volker