Electronic Business Challenges

Electronic Business is defined as the processing of business transactions over the Internet.
**Electronic Business Scope**

<table>
<thead>
<tr>
<th>Company Promotion</th>
<th>National Electronic Distribution</th>
<th>International Electronic Distribution</th>
<th>Sales/Simple Transactions</th>
<th>Shared Business Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre/Post Sales Support</td>
<td>National Payment</td>
<td>International Payment</td>
<td>Electronic Presence</td>
<td>Shared Business Processes</td>
</tr>
</tbody>
</table>

“Standard”, simple many instances custom, complex few instances

Source: [http://www.ispo.cec.be/ecommerce](http://www.ispo.cec.be/ecommerce)

**Electronic Business is the processing of business transactions over the Internet**

- **Electronic Business delivers**
  - Lower sales cost via direct customer access
  - Improved customer service by providing a “self-service” view of business processes
  - Reduced IT cost due to re-use of Internet standards

- **Electronic Business requires**
  - Building new applications with new data
  - Integrating existing applications and DBMS
  - Managing any kind of new data required on the WEB
Major Issues for Electronic Business

- High risk ...
  - of not being able to react fast enough to consumers
  - of building an application that is not scalable enough
  - of duplicating business applications

- High cost ...
  - of programming with new WEB data types
  - of integration across various DBMS and applications
  - of management of content, structure and relationships of Electronic Business Information

Hi Chris!

ThanX for your presentation in our office last week. I was so impressed, that I herewith order 5 of the model shown here for my Public Service.

Shipment address is my house in Kansas in Big Rock at Muddy Water Street 666.

Best regards
Will

WEB transactions
Bill Smith
30 White Road
Oldtown, MA 39900

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Best regards
Will

Electronic Business Requirement:
Building new applications incl. WEB data

Electronic mail
Joe Miller
20 Sample Road
Newtown, CA 94099
Customer ID # 08/15-4711

Gentlemen!

Please process the following order:

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1x Car777iA</td>
<td>120.500,00 €</td>
</tr>
<tr>
<td>2</td>
<td>2x Car444i</td>
<td>88.000,00 €</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>208.500,00 €</td>
</tr>
</tbody>
</table>

Please send the shipment and invoice to the above address.

Best regards

CARs Inc.
Electronic Business Requirement: Integrating existing applications quickly

<table>
<thead>
<tr>
<th>Supply code</th>
<th>Seat Database</th>
</tr>
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<tbody>
<tr>
<td>50</td>
<td>Seat, front</td>
</tr>
<tr>
<td>78</td>
<td>Seat, child</td>
</tr>
<tr>
<td>45</td>
<td>Seat, rear</td>
</tr>
<tr>
<td>15</td>
<td>Seat, passenger</td>
</tr>
<tr>
<td>0</td>
<td>Seat, Sport</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Car555iA</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>1x Engine 5.5 Liter</td>
</tr>
<tr>
<td>200</td>
<td>4x Wheels 235/40</td>
</tr>
<tr>
<td>33</td>
<td>1x Generator 12V</td>
</tr>
<tr>
<td>50</td>
<td>2x Front Seat Typ 555</td>
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<tr>
<td>45</td>
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</tr>
</tbody>
</table>

Electronic Business Requirement: Managing any kind of WEB data easily
Introduction

New concepts for WEB Information Management

Evolution of DBMS Models

Extended/Object Relational Data Model
- Structured Relations
- User-defined
- Complex/Structured Types
- User-defined Functions

Relational Data Model
- Flat Relations
- Predefined, simple Types

NF2 Data Model
- Multi-valued Fields, Nested Relations
- Hierarchical Fields
- Predefined simple Types

Predefined complex Types
- Text, HTML

XML Data Model
- Self-defining Data
- Standard DDL

WEB Data
The new W.O.R.L.D. of Information for Electronic Business

- **WEB Information**
  - WEB pages and context information

- **Object Information**
  - Fingerprints, Voice Prints, Retina Images

- **Relational Information**
  - Text and Numbers

- **Legacy Information**
  - Business Rules and OLTP Data

- **Document Information**
  - Letters, Faxes, Spreadsheets

Why the WORLD needs a new DBMS concept

- **Existing DBMS**
  - cannot manage new WEB data types efficiently
  - cannot be replaced due to huge investments made
  - cannot be quickly integrated with Electronic Business processes without extensive programming

- **New DBMS**
  - must support new WEB data “natively” to ensure high performance and low programming effort
  - must use self-describing data to facilitate constant addition of new data types into the application
  - must allow easy information transformation and exchange
XML revisited ...

- Replacing HTML
  - Meta Data Language
  - Readable, simple
  - Any type of data
  - Self-describing structure
- Broad Vendor Support
  - Software AG, Microsoft, Netscape, SAP, PeopleSoft
- Broad User support
  - XML-EDI, HL7, CML, OFX, XMI

```xml
<?xml version=1.0!>
<weather-report>
  <date>August 1,1999</date>
  <time>11am</time>
  <area>
    <city>Brussels</city>
    <country>Belgium</country>
  </area>
  <measurements>
    <skies>sunny</skies>
    <temp scale=C>23</temp>
  </measurements>
</weather-report>
```

WEB Application Architecture revisited

- Browser, a universal “shell” for running the user interface
- HTML, moving to XML, the Standard Application Protocol for delivering content
- HTTP, the WEB protocol used to access WEB Servers via URL’s (Uniform Resource Locators)
- TCP/IP, the network protocol used to address computers on the internet
- WEB Application Servers, the infrastructure to provide application logic
Typical Internet Solutions today

- WEB Server Scripting
  - Too hard to develop and manage

- Database Gateways
  - Insufficient throughput and availability

Danger!
Road narrows

Enabling Technologies for Electronic Business Applications

- Internet
  - Enabling Electronic Business with standards

- WEB Servers
  - Providing entry points to the IT infrastructure

- Application Servers
  - Providing back-end application processing

- Information Servers
  - Converting any data source into Internet-Objects
What is an Information Server?

The missing link between the Internet and existing corporate DBMS

INternet
Information
Integration

Scalability
Ease of use
Remote data access
Versatility
Extensibility
Reliability

Information Server Application Types

- Data Staging
  - Caching WEB information for high performance

- Data Integration
  - Retrieval of heterogeneous data

- Data Exchange
  - Conversion and mapping of XML data
Product Overview

The Software AG Information Server for Electronic Business

Introducing …

Tamino
Electronic Business Requirements ...

- A standards-based, but extensible meta format …
  - to describe any data and information
- An open architecture …
  - for processing transactions even between different corporations
- An easy to use DBMS technology …
  - to manage new and existing information over the Internet
- A flexible integration solution …
  - that delivers secure heterogeneous data access

R&D Design Goals for Tamino

- Data management for Electronic Business
  - High performance DBMS
  - Data integration engine
  - WEB standards - HTTP, URLs
- Focus on XML
- Deliver value-add between WEB server and corporate DBMS systems
- Priority on performance and ease-of-use
- Leverage Software AG expertise

“HTML documents made the WEB the world’s library. Now XML data is making the WEB the world’s financial hub.”
Charles Goldfarb
Inventor of SGML
Tamino stands for ...

Transaction Architecture for Management of INternet Objects

- **Transaction Architecture**
  for data access with highest reliability, performance and integrity

- **Management**
  for easy description, administration and distribution of data

- **Internet Objects**
  for standardized representation, storage and mapping of data across business boundaries

Tamino ...

- … is the Information Server for Electronic Business
- … is the world’s fastest XML Server
- … turns any data source into Internet objects
Tamino ...

- is the Information Server for Electronic Business
  - is the first native XML DBMS
  - can store and manage any data
  - attaches directly to the Internet without programming

- turns any data source into Internet objects
  - can access and integrate any existing data source
  - supports XQL as well as SQL for relational data
  - supports NT, Unix and Mainframe systems

Tamino Architecture
Tamino Technology Components

- Tamino SDK
  - Allows access to Tamino from XQL, SQL or OO applications
- X-Port Technology
  - Attaches Tamino to the internet without programming
- X-Machine Technology
  - Provides native XML storage
- X-Node Technology
  - Provides Data Mapping and heterogeneous data access
- Tamino Manager
  - Provides Internet based administration

Tamino Technology Components

- Tamino SDK
  - XQL Query Language
  - ODBC, OLE DB, Java
  - XML data maps
- X-Port Technology
  - Integrated Web Server
- X-Machine Technology
  - Native XML implementation
  - Buffer pool management
  - Transaction Support
- X-Node Technology
  - Relational, XML or Object view of data
  - Programmable server extensions
  - Access to remote DBMS
- Tamino Manager
  - Browser based administration
  - Single point of control
  - Event broadcasting
Example of a Tamino XML-Object

```xml
<Order>  
  <Customer>  
    <C_ID>C4711</C_ID>  
    <Name>Software AG</Name>  
    <Address>Uhlandstr. 12</Address>  
  </Customer>  
  <Product>  
    <Product_Id>18</Product_Id>  
    <Product_Name>Tamino</Product_Name>  
    <Product_Desc>The Information Server for Electronic Business</Product_Desc>  
  </Product>  
</Order>
```

Tamino makes it easier for customers and partners to do business with you!
Tamino - The Information Server for Electronic Business

Application Example

Tamino Application Example

- Electronic Banking Application
- Intended to ...
  - Provide voice print authentication of users
  - Provide personalized, up-to-date WEB content
  - Provide secure transactions delegation
  - Provide history information of customer actions and preferences
Tamino Electronic Banking Example

**Step 1: Application Development**

1. Tamino Administrator defines XML maps to describe the application information needed
2. Tamino Administrator loads “voice prints” into Tamino that will be used to authenticate the user
3. Application programmer develops WEB Interface and authentication routines using the Tamino SDK

**Step 2: Customer Login**

1. Customer accesses Tamino X-Port using an URL
2. Tamino X-Machine parses XML request to retrieve personalized WEB page stored locally in Tamino
3. Application requests a password and a “voice print” to authenticate the customer
Tamino Electronic Banking Example

**Step 3: Customer Authentication**

1. Tamino passes stored voice print to the application
2. Application compares voice print using Tamino extension or custom programming
3. Application rejects or approves user request for information access

**Tamino Electronic Banking Example**

**Step 4: Customer Session**

1. Customer browses through application content
2. Tamino keeps track of “viewed content” for next customer visit
3. Tamino keeps application state and waits for transaction completion
1. Application issues local update
2. Application issues remote update request on behalf of the authenticated user via Tamino X-Node
3. Application retrieves updated customer information to prepare for next customer session

**Tamino Electronic Banking Example**

**Step 5: Customer Transaction**

- Application issues local update
- Application issues remote update request on behalf of the authenticated user via Tamino X-Node
- Application retrieves updated customer information to prepare for next customer session

**Benefits of using Tamino**

- OLTP data remain in existing DBMS
- Increased security with advanced authentication
- High performance WEB content retrieval
- Personalized content for each customer
- No complex WEB scripting or gateway administration
- New data types can be easily added to application
  - Voice, Fingerprint, Retina Images
- Tamino X-Node technology facilitates data integration and mapping
In Summary

Electronic Business and Tamino: Easier content definition

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Order processing

CARs Inc.

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Electronic Business and Tamino:
Faster data integration

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<td>Seat, passenger Type O66</td>
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<td>0</td>
<td>Seat, Sport Type wnr</td>
</tr>
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Electronic Business and Tamino:
Easier management of any data
Electronic Business Enabling Technologies

- Application Factory
  - Providing a framework for assembling commercial applications
- Integration Technology
  - Providing a single view of multiple applications
- Information Server
  - Converting any data source into internet-ready information

Software AG Electronic Business Products

- Application Factory
  - Providing a framework for assembling commercial applications
- Integration Technology
  - Providing a single view of multiple applications
- Information Server
  - Converting any data source into internet-ready information
Electronic Business and Software AG

- Software AG has the most complete solution portfolio to enable Electronic Business with...
  - Integration, Application Development and Database Technology
  - specifically focused on Electronic Business
- Software AG is the only independent software vendor with...
  - 30 years of experience in supporting mission-critical applications that scale across any platform
  - a world-wide presence of partners and professional services

Tamino ...

- *is the Information Server for Electronic Business*
- *is the world’s fastest XML Server*
- *turns any data source into Internet objects*
www.softwareag.com