PersoBOX:
A Personalization Engine Between ERP System and Web Frontend

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Agenda

- Introduction: What is Personalization?
- The PersBOX Project
  - Relevance
  - Prior projects
  - Architectonical overview
- Future research
- Questions?
What is Personalization?
What is Personalization?

Personalization is …

“about building customer loyalty by building meaningful one-to-one relationships; by understanding the needs of each individual and helping satisfy a goal that efficiently and knowledgeably addresses each individual’s need in a given context.”

Riecken, 2000

”the adjustment and modification of all aspects of a website that are displayed to a user in order to match that users needs and wants.”

Wu et al., 2003
Additional definition of Personalization

According to prior projects we define Personalization as...

... the individual adaptation of content and functionalities of (e-commerce) applications to the needs of a user. The adaptation is based on implicitly or explicitly received and stored user data.

according to Risch, 2007
Personalization Framework

Better preference match
Better service
(Better products)
Better Communication
Experience of one
Benefit for customer

Privacy risks
Spam risks
Spent time
Extra fees
(Waiting costs)
Cost for customer

Customer

Personalized Marketing Output
Promotion / Communication
Price
Place / Delivery
Product / Services

Relation

Transaction

Interaction

Value for customer

Business

Value for business

Benefit for business

Customer loyalty
Higher Turnover (Cross-/Up-Selling)
Better response rates
Higher Prices
Differentiation
Investments in technology
Investments in education
Risk of irritating customers
Channel conflicts
Risk of loosing trust

Cost for business

Customer transaction

Value for customer

Benefit for customer

Cost for customer

Better preference match
Better service
(Better products)
Better Communication
Experience of one

Source: Risch 2007 - Following Vesansen 2005
Business View of the PersoBOX

Company with ERP system
- master data administration
- data transmission

PersoBOX operator
- basic settings
- update Data Store
- start personalization
- process data
- send data as personalized functions (combine data + functions)

E-Shop operator
- master data administration
- page request
- page creation
- data transmission
- page assembly

Customer
- page visit
- page display
- select personalized info

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Customer Profile Life Cycle

Input for Redesign

Planning and Modelling
        Gathering and Integration
        „Input“

Analysis and Processing
        „Processing“

Usage and Application
        „Output“

Learning from user behaviour / interaction

<table>
<thead>
<tr>
<th>Plan/Model</th>
<th>Gathering</th>
<th>Input Profile</th>
<th>Methods and Techniques</th>
<th>Output Profile</th>
<th>Application</th>
</tr>
</thead>
</table>
| • Requirements / Availability
  • Source
  • Structure
  • Storage | • explicit
  • implicit Integration
  • ETL
  • Data Warehouse | • Identification
  • Preferences
  • Interaction
  • Transaction
  • Context
  • Ratings | • Data Mining
  • OLAP
  • Web Analytics
  • Rule Engines | • Customer Value
  • Priority
  • Recommendations
  • Clusters
  • Classifications | • Personalization
  • Customization
  • Segmentation
  • Marketing Campaigns
  • Documentation
  • Selling |

Source: according to Schubert/Kummer/Leimstoll 2006, 208
Customer Profiles and Personalization

1. ETL (Input Profiles)
   - Web Logfile
   - User Settings & Preferences
   - ERP Transactions
   - ERP Products
   - ERP Cust. Profiles & Conditions
   - CRM
   - External Data

2. Data Marts containing individual profiles and content (Output Profiles)

3. Data Warehouse
   - Meta-Data
     - User Profile
     - Product Data
     - Page Content

4. Processing
   - Rule Engine
   - Automated
   - Rules

5. E-Shop DB

6. E-Shop

7. Other Applications / Services

8. User Settings & Preferences

Source: according to Risch / Schubert / Leimstoll 2006, p. 5
Data processing for personalization purposes

- Defining input Interfaces (Customizing)
- Input processing
  - Unifying
  - Filtering
  - Storing
- Output processing
  - Generating and using of customer profiles
  - Generating function instances
  - Applying data to instances
  - Deployment
Architecture of PersoBOX

Input
- Request
- System Input Profile

Input processing
- Input Schema Data ERP System
- Input Schema Data web shop
- Input profile 3rd Party System Data 3rd Party System

Input for Redesign
- Process understanding engine
  - General knowledge about different processes being supported by personalisation functions – especially by the code generation and filtering/normalizing process

Output
- Output profile personalized set of applications
- Data transfer Scheduler: Transfers relevant data into a working database for not corrupting existing data

Learning from user behaviour / interaction
- Customer Preferences (output dependant): Function as interface for Function chooser and Profile Builder
  - e.g. dislikes, background-driven implicit settings or explicit User-settings (e.g. user dislikes general advertisements on first page or user dislikes popups)

Usage and Application
- Output forecast:
  - A.1 e.g. platform, functions, design or callback functions
  - A.2 e.g. platform, functions, design or callback functions
  - A.3 e.g. platform, functions, design or callback functions
  - A.4 e.g. platform, functions, design or callback functions

Processing
- System Input Profile
- Output Profile: e.g. platform, functions, design or callback functions

Gathering and Integration
- Output processing
- Request scheduler
- Input profile
- Customizing profile
- Filtering rules
- Input profile 3rd Party System Data 3rd Party System
- Input Schema Data ERP System
- Input Schema Data web shop
- Input profile 3rd Party System Data 3rd Party System

Analysis and Processing
- Function chooser: Based upon the output forecast and the analysis of the user preferences a set of personalisation functions can be loaded with reference to the unified data
- Preference Profile Builder: Influence on user preferences based on input profile analysis
- Filter rules: Eliminating useless data based on the output forecast
- Pattern based filtering: Saving of data in structures, based upon patterns found in a matching database
- Rule based filtering: Unifying patterns

Deployment process:
- Dynamic Personalized Application Generator: Dynamic implementation dependent on user preferences an output forecast

Dynamic Personalized Application Generator

Deployment process:
- Static or dynamic deployment using different techniques (e.g. as applett)

Deployment process:
- Static or dynamic deployment using different techniques (e.g. as applett)
Future Research

- Creating a fine planned architecture
- Identifying potential project partners
- Implementing a prototype fulfilling different aspects of the PersoBOX architecture
  - Taxonomies for filtering or unifying the data
  - Automatic code generation
  - Intelligent function choosing
  - Intelligent connection of stored data with functions
Thank you for your attention.

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Literature

Customers influence on personalization process

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### Customer Profile

**Web site (E-Shop)**
- Registration
  - Interests {tennis, golf, DVDs, ...}, age, region {Basel, Zurich, ...}
- ClickStream
  - ProdCat, ProdGroup, ...

**Customer value card**
- Shopping transactions
  - Date, ProdCat, ProdGroup, PriceCat, ...

**Marketing measures**
- Customer reaction towards offers and discounts e.g.
  - event (region, type, ZIP, ...)

### Product Profile

**Organization of Product Database**
- ProdCat {sports, events, garments, shoes, electronics, food, ...}
- PriceCat {low, middle, high}
- ProdGroup SPORTS {tennis, golf, joggin, ski, trekking, ...}
- ProdGroup EVENTS {region, type, ...}

**Marketing Rules**
   → Tickets Swiss Indoors Basel
2. Sports.Tennis + High turnover for ProdGroup Sports.Tennis
   → New Nike indoor tennis shoes
3. Purchased Electronics.DVDs.Fantasy
   → New Harry Potter DVD

**INPUT Profile**
  Electronic.DVDs.Fantasy, Electronic.DVDs.ScienceFiction,
  Turnover.Sports.Tennis=high
  Turnover.Electronics.DVDs.Fantasy=yes

**OUTPUT Profile**
- Deduction of customer attributes
- Application of rules on products

**OUTPUT Profile**
- 1. Tickets 27.10.2005
  - Swiss Indoors Basel
- 2. New Nike indoor tennis shoes
- 3. All Electronic.DVDs.Fantasy

Source: according to Risch 2007