Oracle NoSQL Database for personalization

Munich, January 2014
Agenda

**TOPIC 1**
- Overview of PAYBACK

**TOPIC 2**
- lightweight personalization

**TOPIC 3**
- Profil of Oracle NoSql Database

**TOPIC 4**
- project experience and current work
Overview of PAYBACK
Data protection comes first at PAYBACK

1. PAYBACK does not sell data
2. PAYBACK does not pass on data within its partner network without the consumer's explicit authorization
3. PAYBACK does not cause a flood of advertising material in the post
As Trialogue® Company, PAYBACK offers triple success via offline, online and mobile communication

- PAYBACK has enhanced its customer communication and communicates simultaneously via all three customer channels: online, offline and on the move.

- The result: Highly efficient multichannel marketing that reaches over 20 m customers in Germany, providing tailored and highly relevant offers.
As one of the worldwide largest multichannel platforms, PAYBACK combines range and personalization

**Online**
- PAYBACK.de: 3.9 m unique visitors per month
- >1 bn ad impressions per year

**Mobile App:**
- > 2.5 m downloads
- iPhone & Android
- Mobile Couponing
- Mobile Services
- Apple Passbook Integration

**Offline**
- Coupons:
  - 7.7 bn coupons thereof
  - 6.2 bn digital
- Point Statements
  - circulation of 60 m
  - 12 x p.a.
  - up to 12 m per dispatch
- Print Mailings and Inserts:
  - circulation of 70 m
  - individual design
  - various formats
- Points of Sale:
  - 37.000 stores that offer points
  - Terminals for costumers
  - point statements
  - vouchers
  - ecoupons

**Social Media:**
- 720.000 Facebook fans

**Newsletter:**
- > 4.8 m impressions
- > 550 m p.a.

**PAYBACK.de:**
- 3.9 m unique visitors per month
- >1 bn ad impressions per year
More than 50 m cards are issued worldwide

Launch: 2000
Cards: 20,000,000

Launch: 2009
Cards: 11,000,000

Launch: 2012
Cards: 3,700,000

Launch: 2011
Cards: 15,500,000

NEW: Oracle NoSQL Database
lightweight personalization
PAYBACK lays the foundation for a better understanding of customer needs and thus for successful customer dialogue.

**SUBSCRIBER BASE**

- **Step 1**: Structured data warehouse
- **Step 2**: Understand customer behaviour
- **Step 3**: Predict customer behaviour
- **Step 4**: Develop new product ranges

Identification of gaps in demand and motivators

**Customized direct marketing activities**
Coupons help build up points quickly

» Offline Coupons

» Online Coupons

» Mobile Coupons
for each customer we have up to 1,000 attributes.
we use them to add promotions/campaigns dynamically
to the customer.

if necessary we add additional statistical data for the offers.

All information and coupons are stored high available in one central place for all channels.
Overview of the classic way

DWH provides output files with member attributes per member

OLTP System as central place for all queries against member profiles and member attributes

Table1 (activ)
Table2 (passiv)

Views

Export
Import
Detail Closed-Loop DWH ↔ OLTP (Oracle Database)

1. **Output Data**
   - preparation on DWH
   - Output to flatfile
     - simple Key-Value Structure
     - Per customer up to 1,000 attributes

2. **Load the data**
   - SQL*Loader
     - Direct Path
   - 2 Tables
     - Read-Access (active)
     - loading (inactive)

3. **Index Maintenance**
   - Index maintenance for the loading table

4. **Switch**
   - switch Synonym of table
   - Loading (inactive) → Read-Access (active)

**Pro**
- easy and well known technology
- access via JDBC and SQL

**Contra**
- Only full load, no partial load or subset
- Load on the OLTP during data loading and index maintenance
- needs doubled space
Queries on member attributes

- Access to the member attributes parallel on all channels
  - only read
  - high rate of queries
  - in parallel all at the same time

- Expectation
  - fast response
  - same result at any time on all channels

each single query connects the OLTP-database
Overview of the new way

DWH provides output files with member attributes per member

Key-Value Store as central place for all queries against member profiles and member attributes

Export Import
Closed-Loop DWH ↔ OLTP (Oracle NoSQL Database)

Output Data
- preparation on dwh
- output to flatfile
  - different record types
  - complex structures in JSON format

Load the data
- Java-Programm
  - simple API
    - get, put, delete
- options for tuning
  - Consistency
  - Durability

Pro
- more flexible with JSON format
- Full Load and partial load with **one** interface
- low load factor, good scalability
- decoupling from the RDBMS (Oracle Database)

Contra
- Java-API instead of JDBC/SQL
- triple storage footprint (master + 2 replica)
Queries on member attributes

- Access to the member attributes parallel on all channels
  - only read
  - high rate of queries
  - in parallel all at the same time

- Expectation
  - fast response
  - same result at any time on all channels

Key-Value Store has enough resources available to deal with the planned requirement and is easy to scale
PAYBACK Mobile enables creative, regional and very flexible marketing campaigns, such as the real,- campaign for the Football World Cup.

A result-dependent coupon was issued immediately after each game, with the incentive rising from game to game (from 3-fold to 9-fold points).

A number of campaign options were predefined for this purpose:

- **Win**: 5FACH PUNKTE - AUSSER AUF TRÖTEN!
  - 5x°P
  - Noch 3 Tage gültig!

- **Draw & still in competition**: UNENTSCHIEDEN? 5FACH PUNKTE!
  - 5x°P
  - Noch 3 Tage gültig!

- **Lost but still in competition**: HAUPTSACHE ACHTELFINALE - UND 5FACH PUNKTE!
  - 5x°P
  - Noch 3 Tage gültig!

- **Draw & out**: TROSTPFLASTER BENÖTIGT? 5FACH PUNKTE!
  - 5x°P
  - Noch 3 Tage gültig!
Project experience and current work
Project experience

» Oracle NoSQL Database, 11g Release 2
  Version 11gR2.1.2.123

» Oracle NoSQL Database, 12c Release 1
  Version 12cR1.2.1.8

» KVLite für local
  Development Environments

04/2013
Roll-Out in
Mexico

07/2012
Prototyping

10/2013
Roll-Out in
Mexico

» Avro-Schemas

» Configuration
  all Port Ranges

» Data Command
  Line Interface

Schema
Evolution
Current work packages

- **Plugin for OEM**
  - In-House developed for OEM 12c; Outstanding is a cluster functionality
  - summary, storage entries, store node information, storage size, storage entries, ops/sec

- **Extensions**
  - OAuth 2.0 token-information
  - failed login attempts saved for realtime fraud detection
  - Beta: authentication-tokens for double-opt-in or password reset

- **Wishlist to Oracle for version 3.0?**
  - mechanism for authentication/authorization
  - secondary indexes
DONE!
THANK YOU!
Milestones in PAYBACK's history

2000
- Launch; after 1 month 1 m cards; launch of website payback.de
- PAYBACK is already the most popular loyalty program (SternTrend Profile)
- Launch of PAYBACK Visa card
- Launch of PAYBACK Newsletter
- PAYBACK leads the way in terms of brand awareness, likeability and benefits (TNS-Emnid)

2001
- LINDA pharmacies join PAYBACK.
- Via payback.de, customers can collect points with Amazon
- Aral joins PAYBACK.
- payback.de grows successively

2002
- The Account Statement is becoming more and more tailored to customers and sent out in 2 m different variations
- Via payback.de, customers can collect points with iTunes

2003
- Launch of PAYBACK Poland; launch of PAYBACK Maestro card; launch of the PAYBACK charity platform
- Launch of digital coupons; launch of Facebook fanpage

2004
- Launch of PAYBACK app; India opened up as a new market; PAYBACK Maestro card wins "Best customer card" award
- Launch of digital coupons via all channels and becomes the largest multichannel marketing platform

2005
- PAYBACK leads the way in terms of brand awareness, likeability and benefits (TNS-Emnid)
- Launch of PAYBACK Newsletter
- PAYBACK is one of the most popular brands in Germany (Young & Rubicam)
- LINDA pharmacies join PAYBACK.
- Via payback.de, customers can collect points with Amazon
- Aral joins PAYBACK.
- payback.de grows successively

2006
- The Account Statement is becoming more and more tailored to customers and sent out in 2 m different variations
- Via payback.de, customers can collect points with iTunes

2007
- Launch of PAYBACK Poland; launch of PAYBACK Maestro card; launch of the PAYBACK charity platform
- Launch of digital coupons; launch of Facebook fanpage

2008
- Launch of PAYBACK app; India opened up as a new market; PAYBACK Maestro card wins "Best customer card" award
- Launch of digital coupons via all channels and becomes the largest multichannel marketing platform

2009
- Launch of PAYBACK app; India opened up as a new market; PAYBACK Maestro card wins "Best customer card" award
- Launch of digital coupons via all channels and becomes the largest multichannel marketing platform

2010
- Launch of PAYBACK Mexico. PAYBACK distributes coupons via all channels and becomes the largest multichannel marketing platform

2011
- Launch of PAYBACK Mexico. PAYBACK distributes coupons via all channels and becomes the largest multichannel marketing platform

2012
- Launch of PAYBACK Mexico. PAYBACK distributes coupons via all channels and becomes the largest multichannel marketing platform

2013
- Launch of PAYBACK Mexico. PAYBACK distributes coupons via all channels and becomes the largest multichannel marketing platform