



Experience Design in Ubiquitous Retail

Panos Kourouthanassis
pkour@aubg.gr

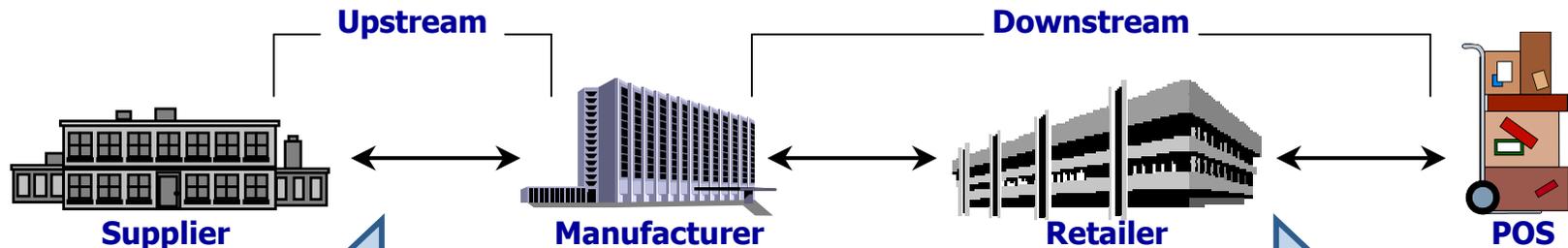
George Roussos
g.roussos@bbk.ac.uk

Overview

- Motivation
 - MyGrocer: Ubiquitous FCMG retail project
 - New technical opportunities
- Lessons learnt and future work
 - Fieldwork and trials
 - Challenges ahead
 - What seems to be important

Motivation: Business Process

In today's supply chains of FMCG, numerous inefficiencies exist in the collaboration with trading partners



- High inventory levels
- High returns
- Rush orders
- Unstable production plan
- Frequent changeovers
- High out of stocks
- High production and order cycle-times
- Lack of communication
 - Material needs
 - Order generation
- Long lead times
- Lack of visibility

- High inventory levels
- Lack of communication
 - Promotion plans
 - Forecast
 - Order generation
- Low forecast accuracy
- Rush orders
- Lost sales due to high out of stock levels
- High promotion leftovers and obsoletes
- Low on-shelf availability
- Low service level to POS
- Replenishment not consumer based

Ubiquitous Retail

- Originally introduced by IBM (project Smart Pad)
- Many projects today: Metro's *Supermarket of the Future*, Auto-iD's centre *Electronic Product Code* network infrastructure, *Easy Order* developed by IBM for Safeway, Accenture's *Shoppers Eye* and the *Smart Self* by Tesco and Gillete, Georgia Tech, Florida State
- Aim to enhance the consumer shopping experience
 - Maximize of **shopping efficiency**
 - Provision of a more **entertaining** shopping trip

Features

- ✓ RF-ID tagged products
- ✓ Interactive Shelf Labels
- ✓ Virtual "Endless" Aisles
- ✓ Multi-channel Retailing
- ✓ Self Check-Out & Scanning Mechanisms
- ✓ Images from Metro's *Store of The Future*



MyGROCER



POULIADIS
ASSOCIATES CORP.

NOKIA

UNISYS

AIMEL

P&G

SUPER MARKETS
ΣΥΓΗΤΕΚ
Καθε μπαρο φερναι!

ELTRON



HELSINKI UNIVERSITY OF TECHNOLOGY
FINIT - Industrial Information Technology Laboratory

- ✓ Grocery Shopping and home supply replenishment
- ✓ Uses: RF-id, Automatic Product Identification & Wireless Networking Technologies

MyGROCER (IST-2000-26239) is a European Commission funded project under the Information Society Technologies (IST) Programme



Shopping Cart



- ✓ **An RF reader and a Tablet PC are attached on the shopping cart**
- ✓ **WLAN interconnectivity with the supermarket backend**
- ✓ **Benefits:**
 - + **Reduced implementation cost**
 - + **Feasible implementation**
 - + **Low power consumption**
- ✓ **Disadvantages:**
 - **Requires high consumer involvement (self-scanning)**
 - **Security concerns (checking mechanisms at exit should be implemented - automated re-scanning)**

Promotions



- ✓ If a product has an attached promotion, the system displays the promotional message at the time the consumer scans the product
- ✓ If a promotional rule is satisfied then the promotion is "activated"
- ✓ Promotions are personalized based on profiles

Promotions Management

The screenshot shows the MyGrocer website interface. At the top, there's a navigation bar with the MyGrocer logo. Below it, the 'My Shopping Cart Contents' section displays a table of items. To the right, the 'My Shopping Cart Total' section shows the initial price and the current total after a reduction. A green box highlights the 'Reductions: 1.4 €' text. Below the cart, there's a 'View Promotions' section with a list of categories and a specific promotion highlighted. The 'Promotion Information' section provides details about the selected promotion. At the bottom, there are three buttons: 'My Shopping List', 'Deactivate Promotions', and 'Check Out'.

Product Name	Amount	Quantity	Unit Price
TWIN LEMON	750.0 ml	1	1.04 €
TIDE ZK POWDER	900.0 gr	2	1.32 €
FAIRY ULTRA	500.0 ml	1	1.4 €
ORGANICS BODY BOOSTING SHA...	400.0 ml	1	4.06 €
COCA COLA REGULAR	500.0 gr	1	0.59 €
LAYS SALTED	120.0 gr	1	1.17 €

My Shopping Cart Total
Initial Price: 10.9 €
Reductions: 1.4 €
Total: 9.5 €

View Promotions

- Health & Beauty Care
- Laundry & Cleaning
- BUY TWO TIDE 900GR AND GET A FAIR...**
- Food

Promotion Information

-BUY TWO TIDE 900GR AND GET A FAIRY 500ML FOR FREE!

*- Click on product to see additional product info
- Select a category to see available promotions!
- Select a promotion to see details!*

My Shopping List **Deactivate Promotions** **Check Out**

**Reductions
From
Promotions**

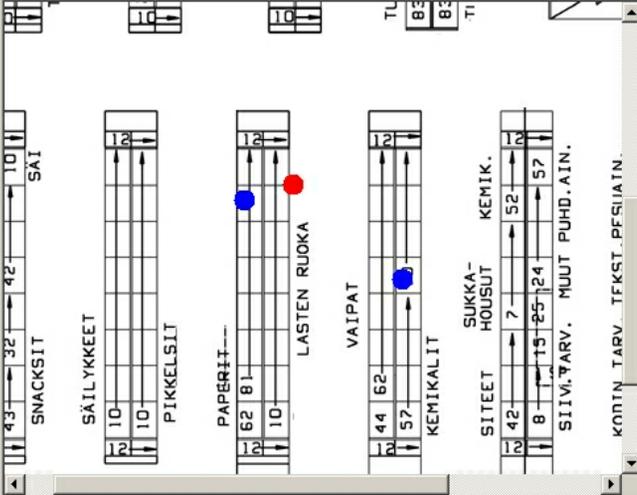
Store Navigation

MyGROCER Shopping System

My shopping list content:

1. *****
2. *****
3. *****
4. Palmolive liquid soap 2 btl
5. Serla 3-pack paper towels 3 pcs

Show All Products



BLUE points are products. RED point is my position.

Push <<Show All Products>> button for see locations of all products in list.

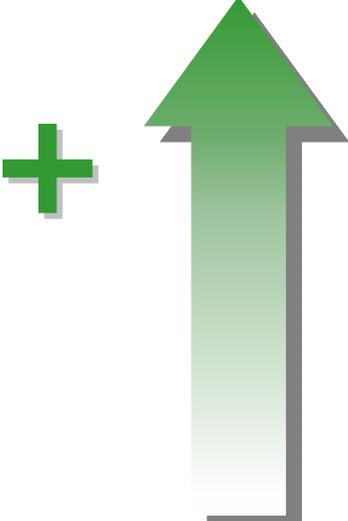
Shopping Navigation Check-out

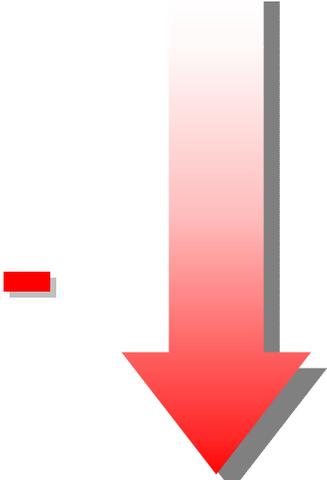
- ✓ Consumer can locate themselves on a map
- ✓ Can see location of products
- ✓ Navigation and location sensitivity are enabled through WLAN

Exploratory Evaluation

- Objectives
 - Receive early feedback on the design by real supermarket shoppers
- Time-Frame – May 2001
- Research Methodology
 - Qualitative – Focus Groups Analysis
- System functionality (paper mock-up – storyboards)
- Overall acceptance of conceptual scenario
 - “It comprises the shopping of the future”
 - “Helps to conduct shopping faster, easier, and at better value for money”
- Introduction of security and privacy concerns
 - The system was perceived to be too patronizing
 - Considerable concerns on use of personal information

Full Trial

- 
- ✓ ***MyGROCER services appeared to be highly appreciated by the shoppers (average 4.6/5)***
 - ✓ ***Elimination of queues (4.93/5) and continuous monitoring of the total shopping cart value (4.9) appear to be the most highly appreciated services***
 - ✓ ***Item price monitoring (4.72) and regular shopping list reminder (4.7) monitoring are second runners***
 - ✓ ***Greek shoppers are willing to adopt the system even in its prototype form***

- 
- ✓ ***MyGROCER was considered by some shoppers simply as a new "gadget"***
 - ✓ ***Concerns for elderly people***
 - ✓ ***Severe concerns for privacy implications and personal information sharing***
 - ✓ ***In small / medium supermarkets with no queues MyGROCER might increase the total shopping time!***

Technology Perspective

- **Technical issues**

- Integration with backend systems
- Context-awareness and adaptable software
- Privacy, security and trust management mechanisms
- RFID and WLAN limitations

- **Standardization**

- Product description languages and classification protocols
- Data exchange between partners

- **Product Packaging**

- Security (tampering, destruction of tags)
- Product environment & packaging issues (e.g. frozen products, aluminum packaging)

Business Perspective

- Real-time information provision regarding the products' lifecycle within the retail outlet
 - Efficient forecasting of future demand
- Real-time information provision regarding the shopper's shopping trip
 - Identification of shoppers emerging needs
- Personalized promotions management
 - Monitoring promotions effectiveness
- Possible decrease of out-of-shelf / out-of-stock conditions
- Possible decrease of theft in the store

Consumer Perspective

- **Privacy challenges**

- Protection of privacy and personal information
 - Data management, ownership, accessibility and security challenges
 - Full information sharing among the value chain members
- Necessity for increased trust levels (e.g. contractual obligations, enforcement)
- Perceived value vs. letting go ones privacy

- **Social challenges**

“The system offers a patronizing shopping experience leading towards a high-tech, fully standardized life-style which limits the experience of being human”

Changes family roles

Changes purpose of retailing (replenishment to lifestyle)

Future Directions

- Balance between technology, business and interaction
 - Balance perceived value and operational efficiency
- Technology implementation negotiates rather than defines agenda (infrastructure to professional to personal->consumer consent required)
- New business models (friction-free competition)
- Living with vs. using systems
 - Longer term research required
 - Personal
 - Revisiting some old themes: identity and trust
- Personalization and the law