



## **Configuration and Introspection of Situated User Support**

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### **Outline**



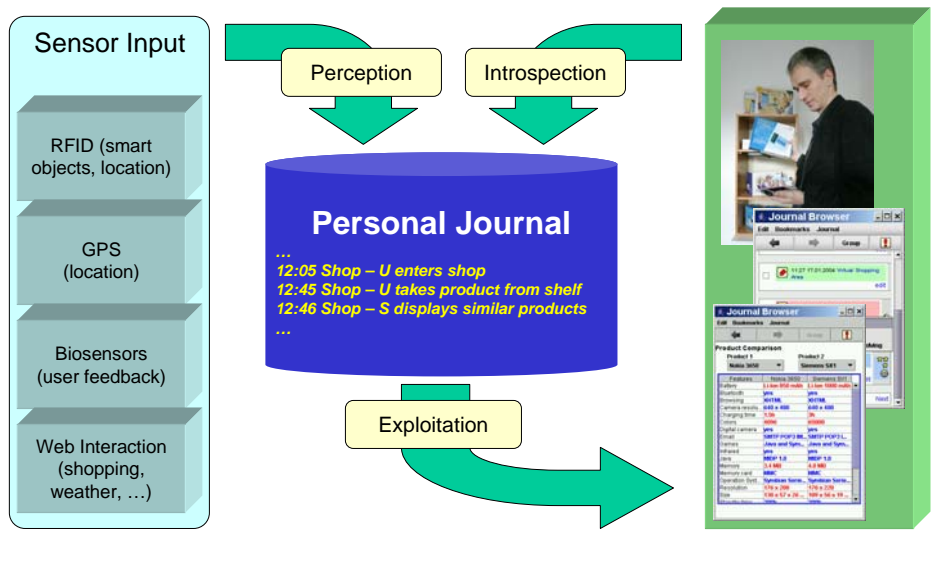
- **About SPECTER**
  - Creation and exploitation of an episodic memory
- **Introspection**
  - Perception and user support
- **User study**
  - Goals, structure, and first impressions

## What Is SPECTER?



- SPECTER is about...
  - ... context- and affect-aware personal assistance
  - ... in instrumented environments
  - ... using an episodic memory (“personal journal”)

## Building and Using a Personal Journal



## Sample Interaction With SPECTER



- S-enabled Web browser, PDA with access to S
- Instrumented shop with tagged items and RFID sensors integrated into shelf and basket
- Scenario: U interested in acquiring information about a certain kind of product



U: User  
S: SPECTER  
PJ: Personal Journal



U visits a Web store; S logs the visit and acquires additional information



In a shop: U inspects a product



S uses the PJ to create a comparison with previously seen products



Home again: Accompanied by S, U reviews the course of the day and S's performance

## Introspection in SPECTER

Exploring the personal journal



## Introspection – Why?



- SPECTER may perceive other information than the user
  - The available sensors are usually different
  - SPECTER performs actions on its own, which are not necessarily perceived by the user

⇒ *Understanding SPECTER's perception*

- SPECTER may interpret events differently than the user
  - SPECTER's situated user support depends on a classification of situations, which may be different from the one of the user

⇒ *Configuring of situated user support*

## Introspection Components (1) The Journal Browser



- Purpose
  - Querying of events & resources
  - Accessing the environment
  - Mobile and desktop use
- Ex. 1: Events
  - Context of an event, observed action, feedback
- Ex. 2: Details
  - Data, services related to resource and context
- Ex. 3: Resource lists
  - Resources selected from the personal journal
  - Services related to listed resources
  - Services related to list management

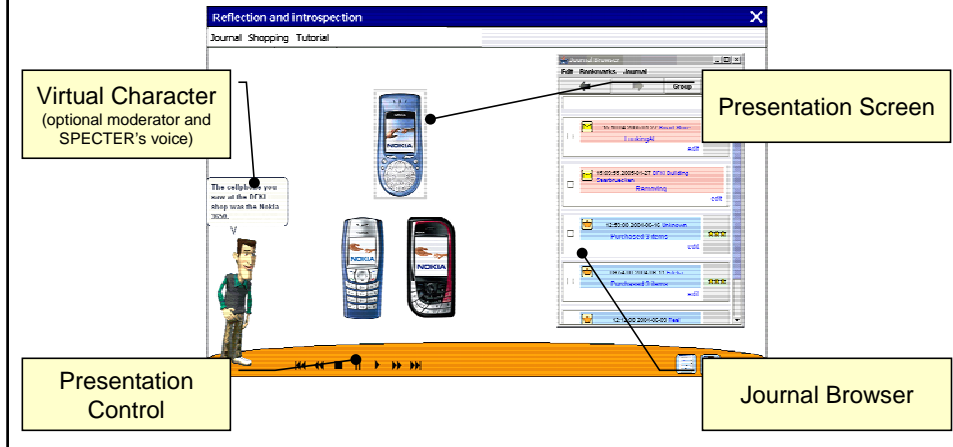
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## Introspection Components (2) Introspection Environment



- A desktop application, which provides services explicitly tailored for introspecting the personal journal
  - Querying and reviewing events
  - Guiding the user through the introspection process



Reflection and Introspection

Then you looked at some CDs on the amazon pages about Soundtracks.

Ex. 2: Summarizing  
SPECTER summarizes information extracted from events

Reflection and Introspection

Next phase

Ex. 3: Evaluation  
SPECTER assigns evaluations to CDs the user may want to review

Reflection and Introspection

Journal Browser

List

[1][2]

Angel Live Fast, Die Never - Music from TV Series  
Remove | Context | Rate

Various Artists - Soundtracks - Buffy The Vampire Slayer: The Album (1999 Television Series)  
Remove | Context | Rate

Star Wars Episode III: Revenge of the Sith - Original Motion Picture Soundtrack  
Remove | Context | Rate

Star Wars Episode III: Revenge of the Sith - Original Motion Picture Soundtrack  
Remove | Context | Rate

[1][2]

Similar CDs

Next phase

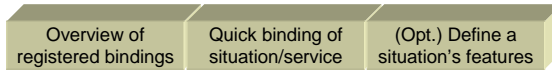
Ex. 4: Memory Browsing  
SPECTER provides queries tailored for journal access

## Situated User Support in SPECTER

- Binding situations to services
- Examples
  - If the user has entered a shop  
⇒ Look for interesting items on sale
  - If shop==SmartShop and value of basket >100€  
⇒ Check bank account
- Approach: interactive definition of classifiers for situations

You looked for a new phone – this shop has a phone on sale: ...

## Binding Services to Situations



- Determining a situation's features
  - Candidate feature set created by the system based on statistical relevance
  - User may criticize this set and add semantically related features from SPECTER's ontology

Ex. 5.4: User Support  
 U can accept or dismiss the proposal; alternatively, the situational trigger can be manually edited (cf. Trigger Editor)

Would you like me to do that for you?

Journal Browser

| Time     | Area                    | Trigger   | Rate |
|----------|-------------------------|---|------|
| 15:58:41 | 2005-04-19 ShoppingArea | Trigger CompareProducts 1 fred! Handspring Visor Edge |      |
|          |                         | Trigger   | Rate |
| 15:59:05 | 2005-04-19 ShoppingArea | Trigger CompareProducts 1 fred! Nokia 3650            |      |
|          |                         | Trigger   | Rate |





## Evaluation of SPECTER

Goals, structure, and first impressions

### Evaluation Study Goals



- Which are the tasks people use the personal journal for?
  - Recall, introspection,...
- How do users interact with the personal journal?
  - Usage patterns, user interface issues
- Are there specific advantages of this approach?
  - Comparison with a system without journal

## Evaluation Study Structure

- Scenario
  - CD shopping; focus on the genre “soundtracks”
  - SPECTER group and control group; the latter one equipped with a simple recommendation system
  - Task: “purchase” of 6 CDs; of these the subject obtained a selection in the value of 30€
- Installation
  - Simulation of 2 shops, each one equipped with one RFID antenna and about 250 tagged CDs
- 3 Phases
  - Browsing Amazon.com
  - Introspection of the result (SPECTER group only, optional)
  - Browsing the shops



## Evaluation Study First Impressions

- People make use the personal journal
  - Recall and introspection of events
- No evidence that the personal journal approach is superior to the control approach
  - Confidence: did control subjects knew what they've missed?
- Widely differing usage patterns
  - Interaction focused on the shop, followed by a “closing” introspection of SPECTER's records
  - Interaction focused on the shopping assistant, no introspection
  - ...



## Outlook



- Ongoing Work
  - Extraction of information from logs and journals created during the study
- Future Work
  - Revision of SPECTER according to the results of the study
  - Under discussion: a second study for analyzing the impact of the expected changes