



Hovering: Visualising RFID Hyperlinks in a Mobile Phone

MIRW 2006 Workshop, Espoo, Finland, 12.9.2006

Pasi Väikkynen



Contents

1. Physical selection
2. Visualising links
3. What is hovering?
4. User interaction
5. Implementation notes
6. Future plans
7. Summary

Physical selection

- 'Clicking' a link in a physical environment by using the mobile terminal to read a tag
- Analogous to "clicking a link" in a web page
- Selection methods:
 - **Touch, "this one here"**
 - Point, "that one there"
 - Scan, "one of these"
 - Others, for example tag or terminal initiated selection methods
- Result of selection is one link for further action



Visualising physical hyperlinks

- Making things visible
- Showing what is available and how
- Services and information are related to the physical world → the physical objects help the users guess what is available
- Affordances: what functionality the object *appears* to allow
- Key questions:
 - Are there "physical links" available?
 - Where are the links located?
 - How do I select a link? Should I touch it? Should I point at it?
 - What happens if I select it?
- The link can be visualised in the environment and/or in the terminal

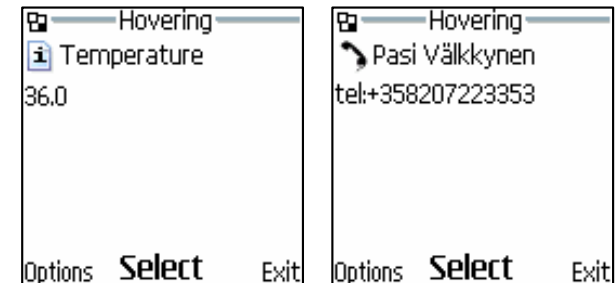
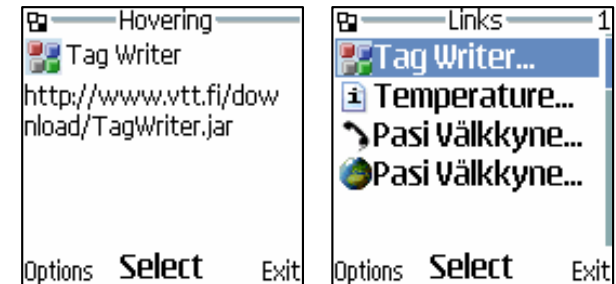
Hovering

- A technique for visualising the action of the link in the terminal before the link is selected
- Suitable for touch-based selection
- The user can quickly check the contents of several links before actually selecting any of them
- Analogous to hovering the cursor over a link in a desktop WWW browser



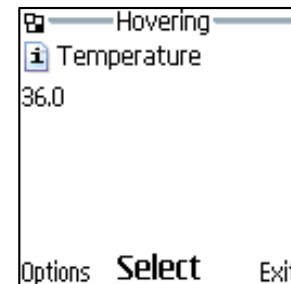
User interaction in the hovering prototype

- Two display modes:
 - Single shows a detailed view of the latest link
 - List view shows all collected links at a time
- The link is activated only after the user presses "Select"
- Displayed: Icon, Title, Actual content
- Content types
 - Remote information, e.g. web
 - Local information, e.g. sensor
 - Telephone
 - Downloadable application
 - Others easily added



About the implementation

- Nokia 3220 + NFC shell
- Java MIDlet on Series 40 software platform
- NFC records used to store the data: Title and URI fields
- Icon is determined from the URI
- "Fake" sensor reading for showing the user how interaction with RFID sensors might look and feel
- Similar to the default "Service Discovery" application, but with extended visualisation options



Future plans

- Design example link visualisations with different amounts of information in them
- Create linked environments in the real world
- User study:
 - Does hovering really help?
 - How does the "visualisation chain" work?
 - perceived affordances of the object
 - visualisation on the tag
 - hovering
 - other visualisation and feedback in the phone

Summary

- Hovering can help in
 - visualising the link action if it is not visualised in the tag
 - give additional information that can not usually easily and aesthetically be included in the tag visualisation

If you want to see it in action, come talk to me!