



Shared Experience was specified as part of the UbiCompForAll project in order to identify potential users of the technology that will be developed in the project and to generate design ideas for the services these users might compose.

Summary

Kristina composes a “shared experience” service that combines pictures from her digital camera with positioning data from her GPS, and annotations entered on her PDA. This is more efficient for her than writing long emails with attachments.

Problem description

The need to position, annotate and share pictures is a common need that is well understood. Indeed, the newest devices provide integrated support for this in the device itself, combining camera, GPS position / device orientation.

However, in this scenario the Sharing Experience service is realised as a composition of elementary services related to different pieces of equipment, so that the user achieves advanced functionality combining several devices rather than using a single advanced device.

Main actor (s)

In her free time Kristina (29) is keen on improving conditions for cyclists in Trondheim, and often sends reports about problem areas to the local municipality and other interested parties (in this case an interest group on a social networking site).

Although she sees the need for one, Kristina does not have a mobile device that includes camera with picture viewpoint orientation, nor any integrated annotation facilities. However, she is not completely old fashioned: she has a smart phone with GPS positioning facilities, a digital camera with which she can transfer pictures to her smart phone, and a great bike. (The bike has no ICT in it apart from a mileage counter, though ;-).

Activity scenario

An end user with a need to position, annotate and share pictures will be the one desiring such a service composition, and will want to compose the service from elementary parts that fit the user's equipment. I.e. we envision many implementations of the elementary services, depending on photo equipment, positioning technology, and the end user's device (PC, mobile terminal).

Kristina finds that she keeps on putting together the same kind of information: “at this or that location there is a problem experienced by cyclists that should be addressed, here is a picture of it, here is it's location on a map, and here is a description of the problem and what might be a solution to it

Composition scenario

The first composition Kristina makes combines the current position of her smart phone and a text message she is writing. The result is encapsulated in an email she sends using her smart phone.



She later improves this by making a service composition that associates the current position of her smart phone with a picture she has taken with her digital camera and subsequently transferred to the phone. This augments the annotation and sending of the first composition.

Alternative stories

Thomas makes use of Kristina's composition in order to report incidents to the police. He combines a picture (with embedded metadata that gives the exact time the picture was taken) with a textual annotation, inserts a link to a position on an electronic map, and sends it by MMS to a police tip line. His modification is to use an electronic map (since his device is without GPS), and to replace the sending of an email with the sending of an MMS.

Properties

Some elements of the basic functionality involved in these scenarios are typically supported by a number of separate applications, such as annotation by stand-alone photo applications like ACDSee, by picture sharing applications like Flickr, by mobile phone software for phones including cameras, and by social networking applications like Facebook in addition to email. With such applications a photograph can be annotated and shared with other through social applications or by sending emails with embedded hyperlinks.

However, few (if any) of these applications support positioning, and few lend themselves to flexible composition.

The need to position, annotate and share pictures is well understood and not original. The contribution the UbiCompForAll seeks to provide is to allow users to achieve such functionality by composing services related to a set of devices (e.g. digital camera & smart phone with GPS).

External evaluation

The scenario was evaluated by an eager amateur photographer KJ (58).

- KJ did not understand at once that he could store the composed service and use it several times. He thought he would have to compose every time he uses the service.
- Then after clarification of this point, KJ understood that would have to compose on his mobile, and found it not practical.
- Then after clarifying that he would compose on a PC using an editor, and download the new service to his mobile, he wondered how the editor could be aware of the capabilities of his mobile.

KJ offered the following comments:

Avoid too many different service variants and service icons

Different variants of the sharing experience service might be created for different situations (e.g. for work, for reporting accidents or violence events, for sharing information with friends, etc). KJ finds it cumbersome having many programs (and related icons) for performing related tasks.

It would be a good thing to be able to group applications in folders (e.g. work, friends, etc). But it should not take much time to navigate between folders. An icon for urgency situations is okay.



Controlling the steps in the service

KJ does not want service steps to happen automatically in a sequence. After taking a picture KJ would like to choose the next step i.e. storing, annotating with text, sending, etc. However, more automatic support is good for urgency situations.

Annotating picture with position

This is a useful service. KJ also expects support for annotating with **date**. However he would never compose such a service himself! It is a basic functionality that he expects from an advanced mobile phone.

Annotating picture with text

This is useful. Providing support for editing text should however not be performed automatically after taking a picture.

What about voice information?

Writing text is not always easy. KJ would prefer to be able to add voice messages in work situations, e.g. "Notice the fissure above left corner of the window."

Support for managing address list

KJ wishes support for easily managing groups of people (e.g. building teams or friends) and creating address lists (e.g. email/SMS groups).

Voice recognition: adding tags to pictures and selecting addressee

It would be useful to be able to add tags to pictures e.g. "landscape", "mountain", "summer", and "family". In that way storing pictures in a database would be simplified. KJ was not sure whether he would always do it when taking the picture though. Again choice is important.

Voice recognition is useful both when adding tags and when selecting an addressee. In general KJ finds it cumbersome to write on a small device.

Smart phone vs. camera

As a user of an advanced camera, KJ would prefer to take pictures with his camera rather than with a mobile phone.

Picture size

So KJ raises the question about size: how big pictures can be transferred? In many cases, such as reporting cycle conditions, he thinks that high resolution is not needed. When sharing with friends, KJ is not sure he would send a low resolution picture. If bandwidth is limited, it does not make sense to transfer a 2MB picture.

More details

The following lists the set of components / services / enablers identified:

- Picture taking, hardware involved:

- Digital camera on mobile device, or
- Single-purpose digital camera with means to transfer picture file to user's device (PC or mobile terminal)
- Positioning, hardware/systems involved:
 - Digital camera with positioning system (e.g. GPS), or
 - User's mobile device with positioning system (e.g. GPS or GSM/UMTS positioning), or
 - Map positioning system on user's device (PC or mobile terminal)
- Annotating, hardware/systems involved:
 - Notepad application on user's device (PC or mobile terminal)
- Informing, hardware/systems involved:
 - Messaging application on user's device (PC or mobile terminal), e.g. mail system, MMS or similar

A visualization of the composition (from an engineering viewpoint) is as follows:

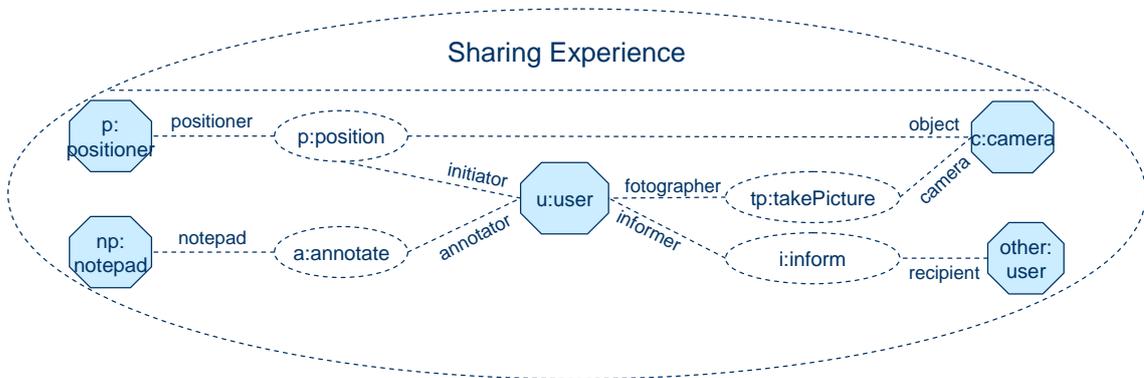


Figure 1 – Composite collaboration for the Sharing Experience scenario

The goal sequence for the Sharing Experience is as depicted below. The taking of the picture and the positioning of the scene can take place in any order, followed by the annotation and finally the informing of recipients (other user(s)).

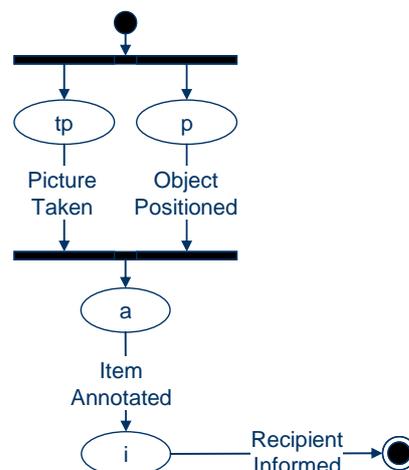


Figure 2 – Goal sequence for Sharing Experience scenario