

Places, People, the World – Tracking and Visualizing the Context of Mobile Users

Project Objectives

The goal of this project is the realization of infrastructure components to mediate between the ContextWatcher application and map-based visualization services such as Google Maps or Google Earth. ContextWatcher is a mobile client collecting information related to its user's daily life. A flexible communication and visualization platform needs to be designed and implemented on top of an existing Web service infrastructure.

Visualizations

Possible visualizations include user traces, buddies and relationships, automatic tours replaying recorded traces, regular context conditions or exceptions, situations, the presence of other users of interest, location tags, and points of interest in the neighbourhood, just to name a few.

ContextWatcher

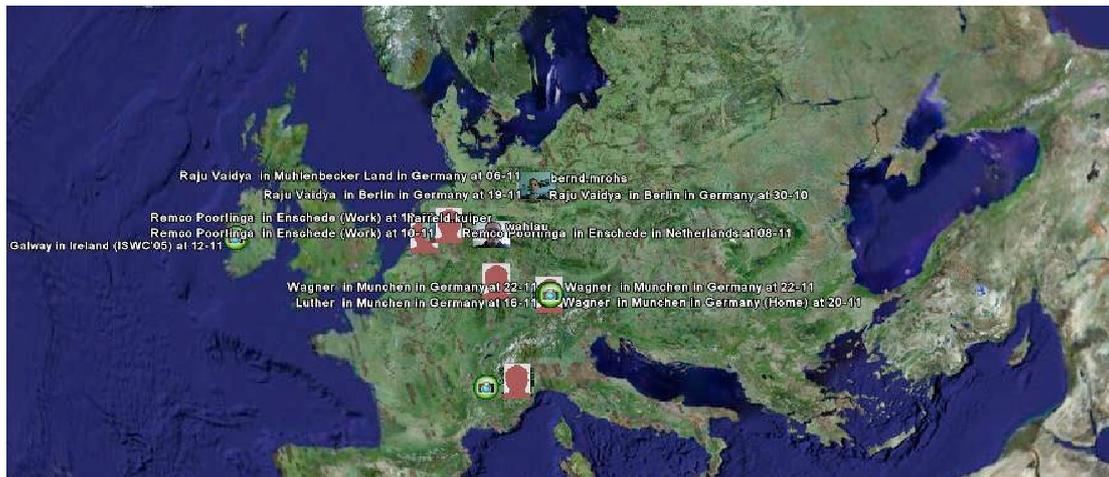
ContextWatcher is an extendable application that runs on any Nokia Series 60 phone. It allows end-users to automatically record, store, and utilize context information. Context data can be used for personalization, as further input to remote services, to share with family, friends, or colleagues, or to discover other relations not visible previously.

Currently, ContextWatcher is able to record information about its user's location (based on GPS or GSM cell information), mood (based on user input), activities and meetings (based on reasoning), local points-of-interests (POIs) and maps, body data (based on heart and foot sensors), buddies and their presence (based on a social network), local weather information (through Web services), or context-annotated pictures. ContextWatcher users can log their collected context information for future use such as statistical analysis, with healthcare as only one of many fields of application.



Google Earth

Google Earth is Google's desktop interface to planet earth. It provides the display of and access to geo-tagged and localized Web resources via a 3D interface to satellite image data. Additional graphical overlays can be described using KML, an XML-based modelling mechanism to define extensions to Google Earth. Currently, there is a simple interface of ContextWatcher to Google Earth allowing users to see their buddies (name and image) at their current position. Recent pictures taken by buddies are displayed together with the buddies' current state and presence information.



Implementation

The project is to be implemented in Squeak, taking advantage of Seaside and SoapOpera if possible. ContextWatcher's Python implementation will be available so it can be extended if necessary. Seaside provides a layered set of abstractions over HTTP and HTML that let you build highly interactive Web applications. Seaside includes programmatic HTML generation, callback-based request handling, embedded components, and modal session management. SoapOpera is a SOAP-based object request broker. Both Seaside and SoapOpera are implemented in Squeak, a modern, open source, highly portable, fast and full-featured implementation of Smalltalk.

Organization

A group of about four to six (4-6) students may participate in the project. Organization and tasks are determined by the project participants. The project will be carried out at the Hasso-Plattner-Institut in Potsdam. Project participants are expected to communicate with our partner via email or phone on a regular basis. In SS 2006, participants will work on initial design sketches and prototypes. In WS 2006/2007, main steps in the design and implementation are to be executed. The expected result includes a working software system including appropriate documentation.

Partner & Contact

Dr. Matthias Wagner, Evolutionary Systems, DoCoMo Euro-Labs, Munich
(www.docomoeurolabs.de, wagner@docomolab-euro.com)

Prof. Dr. Robert Hirschfeld, Software Architecture Group, Hasso-Plattner-Institut,
Potsdam (www.hpi.uni-potsdam.de, office-hirschfeld@hpi.uni-potsdam.de)