Designing for Community Appropriation: The Case of Nomadic Blogging

Position Paper

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ABSTRACT
In this position paper we present selected results regarding evolutionary designing for community appropriation in an ongoing nomadic media project.

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Appropriation, nomadic media, evolving systems.

ACM Classification Keywords
H.5.1 Multimedia Information Systems; H.5.2 User Interfaces; H.5.3 Group and Organization Interfaces.

INTRODUCTION
Throwing just more and more ubiquitous systems at users is not enough to assure successful community appropriation. According to our experience, systems with capability to evolve through various development and operation conditions may have more chances. Paraphrasing Darwin [1], it is not the strongest of the species that survives nor the most intelligent, but the one most responsive to change. Responsiveness to change should be built much deeper into the fabric of our systems so that there's more chance to survive the "negotiated social process" [3] of design, with people as designers. We propose an evolutionary design process with the decisions regarding both evolutionary variation and selection ultimately taken by users. The systems under design should be available and adaptive - we call such systems resilient. Our current research on this approach focuses on ubiquitous media [2,4] and a variant of blogging function [5] called nomadic blogging..

EVOLUTIONARY UBIQUITOUS SYSTEMS
In our work on community appropriation we follow an evolutionary approach - particularly suitable for new and unexpected interactions in ubiquitous computing. The evolutionary approach delivers the product iteratively and incrementally, and includes two basic stages of development: evolutionary variation and selection. A major difference between evolutionary systems in various domains which we have constructed for some time and the ubiquitous domain is the emphasis on user interaction and the capability to support user-centered feature variation and selection.

VARIATION
The variation part is a natural extension of conventional ubiquitous system functionality that anyway supports various changes to context, devices, user groups and functionality. Now we face more extensive changes as our aim is to design for new and unexpected interactions. We build into our systems multiple variability points that include references to our experience, benchmarks, competition reports, and feasibilty investigations. Variability points generate the system's evolution space. Variability is handled explicitly and designers are encouraged to contribute to variability point specifications even if that does not immediately contribute to a current deliverable. Users may also define their own variability points.

Nomadic blogging is a kind of context sensitive personal publishing supporting a travelling user, but usually focusing on current location. Variabillity points connected with this function typically include:

- Creating media in various formats (voice, music, graphics, video, etc., e.g., by taking pictures). Media may be created for a multitude of reasons such as advertisment, chat, professional advice, emergency, etc.
- Retrieving media from a range of local or remote content servers, possibly over secure links, and from dedicated servers, e.g., a home server, or from existing blogs
- Annotating and aggregating media in various ways
- Publishing media with a variety of spatial and temporal scopes possible, to various user groups (also including

individuals only) with three awareness modes: inline, online, and offline. A publication can be demonstrated on various devices such as personal devices, pc's, or large public screens.

- Accessing media one at a time or in clusters; clustered media may have a sorting order defined. to show, e.g., various ranking lists. Media can be sorted explicitly by users to express preferences with regard to media instances or methods used to derive them
- Blogging – creating a collection of media to be accessed with a sequential or random access method. Blogs can be accessed, as other content sources, for content retrieveal for subsequent personal pulishing iterations thus implementing commented blogs. Extensive blogs constitute virtual models, e.g., of locations, travels, etc.
- Users may define their own functions with respective variability points.

While the above is very much specific to nomadic blogging, we may as well expect variability that is common to all nomadic applications, which is connected with awareness types (inline, online, offline), context changes, user roles and groups, device categories, media modes, etc. Variability constitutes a type hierarchy that may be pre-tailored for a particular function.

Another kind of variability, mostly orthogonal to the functional one, is formed by the system attribute hierarchy. Attributes represent global properties, such as security or reliability, design issues, such as interacting features, or classic low-level issues that crosscut a system, such as error-handling or transaction code. Typical for an evolving nomadic system are the following attributes and their respective variability:

- Resilience (which is an aggregation of availability and adaptability and expresses the ability of the system to be operational under changes and responsive to changes)
- Usability
- Security
- Privacy
- Resource consumption
- Users may define their own attributes by supplying the necessary measurement concept and test definition. With community appropriation in focus, metrics such as, for instance, 'Time to Appropriation' can be defined.

SELECTION

The selection stage is not as common to conventional systems. Such practices as runtime system reconfiguration demonstrate certain similarity but hardly are done with active end-user participation - which is one of fundamental assumptions in our case. Various implicit and explicit methods can be used here, e.g. measurable indicators, voting, priorities, etc. For instance, voting may be connected with vieving a media snippet; also priorities may be derived from user viewing behaviour. In order to minimize the overall change to the system which might compromise viability of the evolving system, the selection stage tends to be opportunistic.

Can users actually design the system? In the evolutionary approach users are collective re-designers, whose contributions become evident in longer time scale as each evolutionary iteration results in a relatively small change to the system. Moreover in the nomadic blogging solution proposed in our project changes occur first locally, to be later tried on a larger scale.

PROJECT AND TECHNOLOGY

The Nomadic Media project aims to 'find solutions that allow consumers to enjoy content and interactive services at the times and in the places they prefer, using the devices that best suit their context, at home or on the move'. One of assets being developed is evolutionary technology for nomadic blogging with the focus on two aspects:

- Architectural solutions and proposed extensions to relevant standards
- User Centred Design guidelines for process, methods and techniques.

The nomadic blogging function is used, for example, to investigate modes of communication in nomadic groups and local service areas in a city, and in that context community appropriation processes. The evolutionary cycle with explicit variation and selection is supported by four general functions: goal setting, incremental solution specification, evolutionary delivery design, and inspection. Several practical scenarios are assumed including, for instance, Airport, Bilbao Shopping, and Ski Resort. The nomadic blogging application is built as an extensible framework to be instantiated to a sequence of evolutionary deliveries. Solutions for specification and implementation of the variation stage have already been proposed. At present the selection stage is being investigated.

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