
Personal Informatics for Discovering Human-centered Lifecare System Opportunities

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Abstract

We present our ideas for a ubiquitous computing application for family life and happiness driven by human-centered discovery. We are particularly interested in the potential of personal informatics on discovering how “knowing thyself” can help us understand what people truly value in their lives. In this position paper, we discuss a new prototyping approach in which we apply the concept of personal informatics to enable designers and developers to discover potentially viable opportunities for personal lifecare systems for family members to promote their *happiness* and *family values* by using the tools of ubiquitous computing.

Keywords

Personal informatics, lifecare systems, discovery-driven, family values

ACM Classification Keywords

H5.2. Information interfaces and presentation (e.g., HCI): User Interfaces.

General Terms

Ubiquitous computing, prototyping, human-centered design

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Introduction

Based on Alahuhta and Ailisto [1], figuring out the user values of ubiquitous computing becomes more important than exploring new technologies or technical application developments in ubiquitous computing. In spite of it, we do not know how exactly such technologies can be translated into actual product and service ideas to be accepted by people for their daily lives. This would be even truer in the case for personal informatics. Sterling introduced a new concept of an artifact, “spime” [6], which basically archives every data generated anytime anywhere by us and around us. However, it is not clear at all what exactly the spime will be as a product and how people will utilize it.

In this position paper, we focus on the potential of promoting the idea of personal informatics itself as means to effectively discover human-centered opportunities in designing such systems. We are particularly interested in promoting family values by developing personal lifecare systems as a good example domain for exploring opportunities for personal informatics and their design strategies. As a part of this attempt, we propose our idea of addressing the primary issues this workshop will discuss. That is, how can we provide effortless recording of personal information that is especially meaningful to users themselves, and what are the effective feedback approaches that can support fulfilling their values.

In the next section, we discuss what we need to focus on in developing personal informatics systems to promote family values and happiness. Then, we will discuss how to help users to discover effective and usable lifecare system ideas for family members, applying the idea of personal informatics. Through this process, we expect to

figure out how we can define such products like spimes and what can be the strategies for successfully designing its HCI-related factors.

Happiness, Family Values, and Personal Informatics

In Gladwell’s recent book, *Outliers* [2], he introduces a very interesting story about Roseto, Pennsylvania, a small town in US. The story of this town breaks the common sense about what determines people’s health. Based on what a medical doctor, Wolf, and a sociologist, Bruhn, found out, what determines people’s lifespan may not be on individual controls of diets and exercises, but may be more on “the culture he or she was part of, who their friends and families were, and what town their families came from” (p.10). Basically, we can look for the causes of our health in the culture that we surround ourselves with. And we think that the potential of personal informatics lies on the fact that it can help capture what is going on around us and help ourselves reflect on such information for improving our lives.

We see the potential of personal informatics to help people discover themselves ways to achieve happiness, and further, quality of life. It will be through the interaction between person himself/herself and the information provided by the personal informatics systems. We view the potential for this not on just a pure representation of what are monitored and captured from individuals themselves but more on *intelligent interpretation of the surrounded situations and the interactions among people*, as we are inspired by Roseto’s story.

In our previous study [3], we observed two families to figure out what they truly value to achieve their

happiness, and they care mostly health, safety, convenience, self-development, emotional well-being, communication, and family bonding. In our current research, we are working on developing a way to help family members fulfill such values through the use of a personal informatics system. Our aim is not to predefine all the types of information that needs to be monitored but to have the users *discover* and define appropriate types of information to support those family values. And we believe that discovering them will be the starting point for discovering human-centered opportunities for lifecare systems for families. This is because a lifecare system can be effective only if it can capture and present information that is meaningful to the users of the system.

Our idea of enabling such discovery follows two principles: 1) users themselves (not designers, researchers, or developers) actively determine what information should be captured and monitored, and 2) users themselves actively manipulate, integrate, and reflect on the information that was provided to them.

As Means to Discover Human-centered Lifecare System Opportunities

We propose a new prototyping approach that satisfies these two principles (above) through which we hope to use them as means to discover human-centered opportunities for lifecare systems design.

This prototyping approach consists of two major parts: 1) a portable sensor kit to capture information through a DIY (Do-It-Yourself) approach (which addresses the first principle) and 2) feedback outputs printed in cards to provide a way for users to rearrange and to reinterpret them for their own reflection as if they do with journaling (which addresses the second principle).

For the idea of DIY, there are some examples of such an approach in prototyping for tangible interfaces and ubiquitous computing, including Teardrop [7] and bYOB [4], and these examples show the benefits of economically and effectively manifesting one's own ideas and experiencing them. We see the potential of such an approach in personal informatics as well, and this is what we applied for our prototyping approach.

Sterling [6] (also in Norman [5]) talked about how the ways of addressing people have changed along the evolution of artifacts. Until we have the idea of "gizmos" and "spimes," people have not had a choice to manipulate and change the artifacts they use. Now and in near future, people can instantly create and modify parts or even the whole of artifacts they use. People themselves will define their own artifacts, and customization may become not an issue anymore. In this line of artifact evolution, we expect that our strategies for prototyping can enable people's prototype usage ideas themselves directly to become the ideas of new personal informatics products, and this will naturally be human-centered since those ideas are the expressions of what they themselves want in their lives. Furthermore, we expect that the findings from users' DIY results of the sensor kit will help us enable effortless discovering of which information will be meaningful to be captured for personal informatics. For the feedback part, we expect that our approach will support the discovery of effective ways for representing and interpreting the captured data that can fulfill their values eventually.

To implement our prototyping system, we must have expertise from various disciplines. For this research project, we are funded by our university which promotes interdisciplinary research projects. The researchers for

this project consist of designers and computer scientists. Designers know how to manifest the prototype ideas to make people actually use. Computer scientists know how to develop the algorithm for interpreting the captured data in meaningful ways. We are very much looking forward to develop this prototyping system and test it in real situations.

Conclusion and Further Studies

The key idea we proposed here is that we discover human-centered opportunities for personal informatics systems (especially for lifecare systems) by empowering users themselves to figure out and express the meaningful information they want to capture and interpret through the prototypes we provide. And this line of idea is also supported by what is expected for future where users themselves will define their own artifacts to use and the history of pervasively archived information itself becomes a product.

We expect that this research will be a starting point for discovering viable opportunities for personal informatics systems for people, and hope that this will help us discovering also what exactly the idea of “spimes” in the actual use situations and what then the roles of designers and developers to design such artifacts. We expect that we can share some of the actual results of developing this prototyping system when we present our work at the workshop.

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