

We-centric services for police officers and informal carers

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ABSTRACT

This paper introduces *we-centric* ICT services, which are meant to help people to communicate and cooperate with others in dynamic or spontaneous groups. *We-centric* services make people aware of each other's contexts, so that they can experience "we" – and "we" changes dynamically. This R&D effort is executed in the domains of public safety and of health care, and in close cooperation with potential end-users: police officers and informal carers. This paper is about fieldwork, about two *we-centric* services we develop and evaluate, and about our future research agenda.

Keywords

CSCW, we-centric, police, health care.

H.5.3 Group and Organization Interfaces

INTRODUCTION

In this paper we present our current research into *we-centric* services, which is part of the Freeband FRUX project, in which over 40 people from 10 organizations work, and which runs from 2004 until 2007 [4]. The project has three tracks: *we-centric* services, end-users and experiences; service bundles and provisioning; and technology and application building. This paper is about the first track.

People are social beings, they belong to different groups, such as family, friends, colleagues, clubs or interest groups, and they want to, or have, to combine roles and tasks. You may think of people combining private and work roles, or balancing different tasks within one job. Furthermore, many groups are dynamic or spontaneous, and people move in and out of groups – therefore we rather speak of *dynamic personal social contexts* [5], see Fig. 1. We study how *we-centric* ICT services may help people to communicate and cooperate with others in different groups, and to combine and balance tasks and roles effectively, efficiently or pleasantly. Our research started conceptually, when we envisioned what *we-centric* services may look like and speculations about their added value, and we are currently becoming more practical, developing and evaluating such services in close cooperation with end-users.

In the next section we characterize *we-centric* services. In the two sections after that we present some of our research in two domains. We close the paper with setting a research agenda for the remainder of our project.

CHARACTERIZING WE-CENTRIC SERVICES

We-centric services are meant to support people when they communicate and cooperate with other people in different, dynamic or spontaneous groups. People can of course use groupware or e.g. *MSN Messenger* to do something similar. However, we think that *we-centric* services are different and may offer some added value [3:pp.30-40].

With *MSN Messenger* one user manually creates a list of people who are relevant to her, and this list is static, until she changes it manually. A *we-centric* service would automatically compose and present you a *dynamic* list of people that are potentially relevant for you – relevant in the sense that you may want to contact them or they may want to contact you. In addition to that, a *we-centric* service presents you *useful* information about the contexts of these different people – useful in the sense that it helps you to find effective, efficient or pleasant ways to communicate or cooperate with them. From a precursor of the current project there is evidence that sharing information about people's contexts indeed helps them to find ways to communicate or cooperate [10].

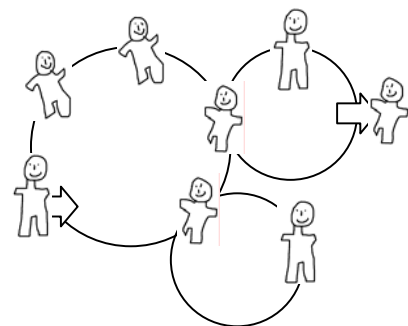


Fig. 1. *We-centric* services, for dynamic, social contexts

We-centric services are meant to help also before and after the actual communication – e.g. by providing a hint to contact someone, whom you do not know yet, because she may help you with what you are currently doing, or by providing a logging of the information you have been sharing during the conversation.

In order to further characterize the concept of *we-centric*, it may be compared to traditional groupware or to *I-centric* services. Traditional groupware aims to support a stable group with a stable set of tasks. As a result such systems rarely support people to do roles and tasks outside this group or set of tasks, or support people to cooperate in dynamic or spontaneous groups, e.g. because they require obtaining membership of some sort. And our notion of *we-centric* is very different from *I-centric*, which is associated with an individual who controls the environment, including other people [1]. Our thinking is about people who interact with one another in relations that are potentially reciprocal.

Functionality

A key function of a *we-centric* service is that it composes automatically and dynamically a set of people who are potentially relevant to each other (“we”), based upon shared *context elements*. These lists are composed by an application that combines information of people’s contexts (*context elements*), and searches for similarities or commonalities. Additionally, some of the *context elements* are made available to these people, in order to help them to experience “we”. One example: Paul and Susan are working on a similar project, and Susan needs some help. Paul’s schedule is then made available to Susan, and she can see whether he is in the office, and she can then decide whether, when or how to contact him. Another example: Alan and Karen are working on the same case and are currently geographically close to each other, and they both receive a notification that the other is near. Examples of *context elements* are: presence or availability, geographical or social proximity, location, schedule or plans, mood, shared task or similar interests.

From a technical perspective, *we-centric* services are context-aware and adaptive. They monitor specific *context elements* of different people, and, based on similarities, adapt the service dynamically, by composing and presenting a (dynamic) list of people and plus some (dynamic) information about their contexts.

Hypothesis and question

Our working hypothesis is that a *we-centric* service – by presenting a list of relevant people and hints about their contexts – supports people to communicate and cooperate, to combine and balance roles and tasks. These lists and hints are suggestions only – people can choose to follow these suggestions or not. In order to create *we-centric* services that indeed deliver the putative added value, we have to answer this research question: *How can a we-centric service automatically and dynamically put people together into a “we” in such a way that people indeed feel relevant to each other, given their different, but partly shared, contexts, roles and tasks?*

This question must be addressed from both a technical angle (“How can the system determine who is part of this group?”) and a (social) psychological angle (“Do you feel part of this group, and who else do you feel is part of it?”).

WE-CENTRIC SERVICES FOR POLICE OFFICERS

In the domain of public safety, we study how police officers may cooperate better. We cooperate with potential end-users. We did a workshop with managers to identify problems in police officers’ work, all project team members spent a day with a police officers, and we did a workshop with these police officers to validate our observations [12].

In this paper we focus on one problem and opportunity which we found, and which was also found in a large ethnographic study of police work [13:p.143]: the problem that police officers on the beat (*gebiedsgebonden*) and police officers within emergency response (*noodhulp*) communicate or cooperate relatively little, and the opportunity to improve communication and cooperation between these police officers in order to improve their performance, and to provide a better service to citizens.

In many occasions police officers need to cooperate with other police officers, and with e.g. people from the municipality, school directors. Police officers on the beat often work for many years in one area and have contacts there, so they gain a lot of knowledge about this area, whereas police officers within emergency response go to emergencies in different areas around the clock, and gain another type of knowledge about more than one area.

Experts from the police speculate that the performance of these two police tasks will improve if these different police officers could more easily access each other’s knowledge, and if they would be more aware of each other. Here are some examples: One police officer urgently requires some information that can only be obtained from a colleague who is currently *not* in the area. Or a police officer may want to know more about a specific topic but does not know who has this information. One police officer would be able to help a colleague, if only she knew that he needs this help, e.g. because he is working on a case with which she has experience with.



Fig. 2. The WijkWijzer (prototype)

In order to improve communication and cooperation in such cases, we developed the *WijkWijzer*. This name (in English: *NeighbourhoodPointer/Wizard*) refers to the function that it points you to people who are relevant for you, given your context, and whom you may contact, or who may contact you. The *WijkWijzer* taps into the police’s

real-time database of reports (e.g. emergency calls by citizens), and combines current reports, a history of reports, and the current availability of police officers, and, composes a list of people who are potentially relevant for each other in working on that report. The *WijkWijzer* presents these people, and hints to contact them, on a PDA, see Fig. 2.

We are currently doing workshops together with police officers in which we apply role-playing [cf. 7] as a method to validate together with end-users the added value of this *we-centric* service. During these workshops we present the *WijkWijzer* and ask them to play the roles of a police officer on the beat, a police officer within emergency response, and a person at the police's emergency room (*meldkamer*). Here is an example of one storyline that they enacted – first without the *WijkWijzer*, and then with it:

At 9.00 AM the emergency room receives this report:
Burglary at Vinkenstraat 34. They used a ladder to enter the apartment via the back garden.

The emergency room then calls Nick, a police officer within response, to go to this address.

The *WijkWijzer* may then send a hint to Nick:

Report: Burglary at Vinkenstraat 34.

William knows more about this (click to contact)

The *WijkWijzer* may also send a hint to William, a police officer on the beat:

Report: burglary, Vinkenstraat 34.

Nick is working on this case (click to contact)

Without the *WijkWijzer*, Nick would probably do his task without William's help or advice, but with the *WijkWijzer*, Nick may contact William to seek his advice, or William may contact Nick to offer his help.

In the workshop the police officers recognized the problem and the opportunity. However, they had critical questions about whether police officers would indeed contact each other based on these hints. This means that it is critical that the *WijkWijzer* is able to compose a list of people who are indeed relevant.

In the next months project team members from Freeband FRUX project, including ourselves, will develop an application that can do that, by an optimal use of context information of different people. With this application we will be able to evaluate the *WijkWijzer* in 2006 in a field test of several weeks with some 20 police officers.

WE-CENTRIC SERVICES FOR INFORMAL CARERS

In the domain of health care, we focus on how people provide informal care to people with dementia who live in their homes (not in institutions). Project team members from Freeband FRUX (other than the authors) are currently interviewing a large number of informal carers and the people they care for, in order to study their needs [11]. One problem that was identified in these interviews, and in desk

research, is that for informal carers the offer different providers of care and other services are fragmented and not transparent. In order to help to solve that, a *dynamic interactive social chart* is proposed, which is help to attune demand and supply [2].

In addition to that, we are interviewing informal carers in order to explore how *we-centric* services may support them. In this paper we focus on another range of problems that we identified during these interviews, namely emotional or social problems related to the role and task of an informal carer. In roughly half of the cases there is *one* person who is, or feels, responsible for providing all the care, both structural and incidental. Several problems follow from this: The informal carer never chose for this role or task, and may not feel, or be, equipped for it. The person they take care of is often a close relative, or even their partner, so providing this care is often emotionally stressful. And dementia is a progressive disease, which means that the patient becomes increasingly dependent, and the informal carer must cope with a worsening situation. The informal carer is likely to experience friction – she wants, or *needs*, to have a life besides providing care, to meet friends or to do sports, whereas the life of the patient becomes smaller and smaller.

Domain experts speculate that informal carers can cope better with their roles and tasks when these are divided between more people, and that this will improve the quality of life of both informal carers and patient. We are currently developing *we-centric* services that aim to improve communication and cooperation between informal carers and others, to create dynamic or spontaneous networks ("*we*") around a patient. This is meant to help people to better divide roles and tasks, also dynamically.

These services will make people from the periphery – who may currently feel relatively little involvement – more aware of the patient's context and needs. We think that this will mobilize them to provide care (probably incidental like paying a visit, rather than structural). We heard the example of one patient who forgot his key and could not enter his home, he then asked the neighbor to call the "main" informal carer, who then brought the key, plus a copy for this neighbor. The neighbor thus became part of the network around this patient, and now feels responsible for one role or task: to have the key in case it's needed. Would such a case happen, then a *we-centric* service would e.g. notify people that this neighbor has the key and is available, so that they can ask him to help.

In the next months we plan to develop a *we-centric* service that is meant to support a dynamic or spontaneous group of people around one patient (both informal and formal carers) to distribute roles and tasks more efficiently, effectively or pleasantly. Such a *we-centric* service would run on mobile or fixed devices and present a list of relevant people and useful information about their context. Here is one example: Suppose you provide informal care

for your mother who has dementia and lives alone. It's Saturday morning, your weekly social event, and just before you enter the field your mother calls you, she needs you. Then a *we-centric* presents a list of available people, and ways to contact them, to see whether you can rearrange tasks, and help your mother.

In the next months, we will do workshops with informal carers, umbrella organizations, and health service providers, in order further develop and evaluate such services. We will also be able build upon the experience of creating the *Storytable* and *Pilotus* by one of the project partners [14].

FUTURE RESEARCH AGENDA

In 2006 we plan to do several larger scale evaluations (pilot projects) together with police officers and informal carers in order to evaluate the added value of *we-centric* services in daily life settings. In this research we will address the following three questions:

1. How can a *we-centric* service compose a list of people (“we”) who are indeed relevant? Plus related questions like: What do membership or engagement mean in dynamic or spontaneous groups? What happens when you balance roles or tasks between groups? What is socially appropriate in different groups?
2. Which *context elements* (information about peoples’ contexts) are best used to compose these lists? Plus related questions like: Which context elements are most decisive for determining “we”? Should the application convey, or aggregate, combine or interpret *context elements*? How to deal with control, trust and privacy when sharing *context elements* between people, and how do people experience that?
3. How can this list of people and information about their contexts best be presented? Plus related questions like: What kind of explanation is needed to understand the rationale behind a certain “we” (e.g. “we are working on the same case”)? How to present people and *context elements* on a mobile device (e.g. with text or images)?

Our research focuses on how people use and experience the *we-centric* services while they use them in their daily lives and work as tools to communicate and cooperate [9:pp22-28], and how that effects their roles and tasks and work. In order to study how people experience these services in their daily lives (in-situ) we are developing innovative tools to do that [6,8]. An extra benefit of doing our research in two domains is that we will be able to compare how people use and experience *we-centric* services in professional or work situations versus informal or private situations.

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