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Personas in uniform: police officers as users of information technology

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PERSONAS IN UNIFORM: POLICE OFFICERS AND INFORMATION TECHNOLOGY

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Abstract

This paper apply personas to explore and analyze the highly regulated and (seemingly) uniform work practice of police officers. Historically, many information systems and information technology applications for the police has failed to meet the requirements of officers working in the field. It is claimed that a richer understanding of the practice outside the police station can result in more successful implementations of information systems for the police. An analysis of police practice is conducted through four personas of officers. The personas are derived through an analysis of an extensive set of qualitative data data from both police experience, and from observations and interviews. The personas are then situated in scenarios to visualize information related problems in the practice. The paper conclude that persona is a useful technique to analyze police work for design purpose.

Keywords: Personas, Temporal structures

1   INTRODUCTION

Computer technology in the policing domain has been on the agenda for more than 50 years. In the 1950s it became increasingly clear that computers would enable the storage and retrieval of large amounts of data contained in various criminal records and files (Benson, 1993). Already in 1964 real time inquiry systems for patrolmen in the field were in operation in some police departments. In 1967 the President's commission on Law enforcement suggested that computer technology *might* be an important tool for police work. Computers have the potential to aid law enforcement activities through rapid communication of accurate and complete information, and perhaps also support the decision making (Colton, 1979). However, "it should be remembered that the field of computer technology is still in its infancy" (Colton, 1973).

They use of computers in the police domain has since then been researched from a vast number perspectives. A strong strand of research concerns the use of computers and information systems (IS) as a tool for measuring organizational performance and enhancing management control (Benson, 1993), for instance the use of balanced scorecard (Carmona & Grönlund, 2003). There are also extensive research on pattern of crimes and various IT applications based on geographic information systems (GIS) to visualize and analyze crime (c.f., Goldsmith et. al., 2000). And as a reaction to the advanced use of technology it is claimed that there is a risk in handling data in police systems in terms of integrity and privacy for ordinary people (Schellenberg, 1997). However, others suggests that we may have to let go of a few liberties to get the effect of information technologies (IT) used by the police (Stephens, 2005).

In some research it is claimed that the culture of police has not changed due to the increased use of IT (Manning, 2003), others have claimed the opposite (Chen, 2001). Particularly it is suggested that MDTs (mobile data terminals) has changed the work of police officers and alter authority relationships, particularly between street officers and radio dispatchers, and their supervisors (Meehan, 1998). It is also shown how a MDT based incident reporting system used to capture and report near the source improves the quality of the information and the efficiency in terms of reporting (Williams & Aasheim, 2005). But measuring the efficiency is difficult in a non-profit organization such as the police. The reason for this is that most police agencies have no mission statement or a clear goal, merely a list of functions to be performed, such as *protection of the community from violence* (Golden, 2000). However, methods for analyzing and evaluating the benefits of mobile IT-based services in the police have been proposed (Höck et. al., 2004). Despite different perspectives and findings in the body of research, there seem to be an agreement that much stronger grasp on emerging technologies will be crucial to successful policing in the future (Stephens, 2005). There is also a more straight forward technical strand of research where technologies such as speech based interface in the vehicle to operate MDTs, lights, siren and radio to increase the traffic safety for officers (Kun et. al, 2004). The challenge seems to be *"to provide the tools and information resources to officers in the field so that they* [beat officers] *can function as effectively as if they were in the office"* (Chu, 2001).

The important issue then is how this technology should be designed or re-designed. Normative police management literature stress that police supervisors must be able to articulate to the technical staff, the needs of the beat officers who may be frustrated by the peculiarities of an application (Chu, 2001). Requirements engineering has been used in design oriented research to identify problems that are experienced by individual officers. These problems are then to be solved through design of IT for the officers. In a study, ten respondents were in 30 minute long interviews asked to recall critical incidents experienced over the past six months. The translation of requirements into a design space was found difficult in the study (Baber et. al, 2001). The probable reason for this is the limited understanding gained by theses researchers of the actual practice of the officers. The recall of incidents can give a fragmented image and retrospective description of the practice.

We like to stress two significant aspects of police and police culture that are of importance for interventional research in the police domain. First, the police has been and still is a closed organization and community, and police officers do have a pending and even sceptic attitude towards outsiders. Especially when critical questions are raised. This can cause a problem of access for researchers with an agenda that can pose any threat to the officers.

Second, the "police" is constantly in the media. Researchers with an interest in police practice are of course influenced by the dramatic images of the police in the media. It is highly unlikely that a researcher can ignore the massive stream of police related matters from television and other channels. A strong claim made here is that media (in general) give a distorted impression of police work. Police work on the beat is to the largest extent mundane "dull" work. 95 percent of the work police officers do will never make the news. Most cops see little actual action and violence, but they are in a world that potentially may become violent (Perlmutter, 2000). "Police work consists of hour upon hour of boredom, interrupted by moments of sheer terror" (Felson, 1998). Television influences also those in front of the camera. Police officers watch TV too. Police and media are in a circular and mutually reinforcing relationship. Officers are influenced by the images of the police that are communicated through media. So their own experience of a *dull and mundane job* is put in sharp contrast with the 'cops on the box' (Mawby, 2003) image of the job they see in media (c.f., Doyle, 2004, Permutter, 2000, Manning, 2003, McCahill, 2003 for a more lengthy discussion on police and the media). The consequence of this dual perspective of the practice might be that officers in interview situations depict their practice more in line with the media image than their own image of the work. So the hypothesis here is that data from non-situated interviews, that is, detached from the practice, will result in poor data for design oriented research in the police domain.

The research presented in this paper is based on actual police experience, and on participative observations and interviews. A large qualitative data material is collected and for the purpose of this research, we utilize three concepts: social actors, temporal structures and personas to analyze this data material.

In much of the related research it can often be noted that officers are treated "uniformly" and as uniform potential users of information technologies. We suggest that a more individual oriented perspective could be of value for applied research in the police domain. However, the most common conception of a 'user' in IS/IT research is claimed to be an atomic individual with cognitive limits, but well specified and well articulated preferences to choose and use information technology, but most 'users' see themselves as having very little to do with computers, rather these people see themselves as professionals, working with others, and using computers and other IT to support their interactions, i.e. social actors (Lamb & Kling, 2003). For the purpose of this paper, the notion of social actor serve to aid the understanding of beat officers and their use of information technology.

Efficient information management is crucial in organizations where 'time' has a central role. Time and temporal structures has received extensive interest from the information systems research community (c.f. Ancona et al., 2001; Orlikowski & Yates, 2002; Reddy et al., 2002). Two temporal structures in the police are of central interest for the purpose of this paper: first, the overall structuring of the police mandate, and second, the scheduling of officers work shifts.

To visualize and analyze social actors in the temporal police structure, personas is used as a technique. Personas are a hypothetical archetypes or characters of actual people. The characters designed are fictional but their behaviour is based on real data from the data collection part of this research. The reason for using personas instead of excerpts from the field work in this paper is a focus on archetypes of police work rather than analyzing specific situations from the field. Personas as a technique is also expected to be valuable in further work with the police organization.

The following research question guided the research: How can personas be applied in the design space for information technology for police officers?

The reminder of the paper is organized as follows: First a brief section on the research method applied. Then, the concept of temporal structures and persona technique are presented in two sections. We then present the results as four police personas and four scenarios where the personas act. The paper end with a discussion section.

2   RESEARCH METHOD

The data collection and analysis is a joint effort of two researchers. One practicing police officer and one visitor who investigated the police practice through extensive observations in the field. The data collected has then in this paper been analyzed through personas in temporal structures.

The practitioner has 15 years of experience within the police domain, from three main areas of the police. Patrol duty in Stockholm, operational work at the national SWAT unit, patrol duty in a smaller Swedish city. For the last 2 years the practitioner has doing full time research, and only minor police work, and during that period the police practice has been observed both by a practitioner's perspective and from a researcher's perspective. Being a sworn officer returning to practice as a full participant and observer has not introduced any problems or doubts from the colleagues. The dual role, officer and researcher, has been that of a reflective practitioner (Schön, 1983). Research notes have been taken parallel to police notes during the shifts. Reflective informal minutes have been compiled after most of the shifts.

The visitor has gained knowledge and experience from the police domain through participatory observation over a period of four years. The time spent in the field is equivalent to 26 weeks of full time of first hand observations following an ethnographical approach (Agar, 1996; Ferrell & Hamm, 1998; Hammersly & Atkinsson, 1995; Orr, 1996). The observations and participation have been mainly as "third" person in a two officer patrol, with a small group of detectives, and as observer in several dispatch centers. In Sweden, most officers work in pairs so when referring to a patrol we mean two officers (usually in uniform) in a (marked) police car. Sometimes a greater degree of participation than anticipated has been necessary (such as driving police vehicles, searching people for drugs, guarding arrested suspects, etc.) Notes have been taken during observations when possible. A small black notebook, the same model as the officers, has been used. Any time it has been difficult to take notes due to a sensitive or chaotic situation or during night when it has been to dark, or when the officers gave the note taking some suspicious glances, notes had to be written down after the shift. Informal conversational interviews with officers during patrol have been conducted. Observations of operators, and listening to the conversations, both with caller and with the patrols, have been performed at several different dispatcher centrals.

The notes from the observations and interviews has then been analyzed and categorized, and re-categorized. The vast amount of data collected during this research is to a large extent embedded in the experience of the researchers, and mainly in the experience of the practitioner. The analysis process is therefore not completely visible as participant observation is both a data collection and a analytic tool. It is important to note the the reported findings concerning police officers as personas in this paper is only one result of this research effort. Other findings from this research are reported elsewhere.

In the next section we give brief overview of temporal structures which are used to frame the personas.

3   TEMPORAL STRUCTURES

The notion of temporal structuring is suggested as a way to study and understand the role of time in organizations. It should be emphasized that the notion of temporal structures is used instrumentally in this paper and there is no intention to contribute to theory. Actors in organizations produce and reproduce a variety of temporal structures which in turn make the temporal rhythm and form the ongoing practice (c.f., Ancona et al., 2001; Orlikowski & Yates, 2002; Reddy et al., 2002; Fisher &

Dourish, 2004). Organizations have different temporal structures and rhythms that are core of the practice. In this research police practice were studied and two overall temporal structures are of interest. The first temporal structure concerns whether the focus of the police should be on reacting when something has happened, or if the focus should be on proactive work where the aim is to act before things are happening. The overall organization of police practice is either reactive (911 policing) i.e., the police is to react **after** something has occurred, or it is proactive (community policing) i.e., the police prevent things from occurring by acting **before** it happens.

The dichotomy of, on the one hand, reactive incident driven policing and, on the other hand, proactive problem oriented policing has been on the police agenda for two decades. The problem oriented policing model, and especially variations of "community policing" has received massive interest from researchers. A large number of studies has been conducted to investigate the outcome and effects of community policing initiative (Frank *et al.*, 1997; Oliver & Bartgis, 1998; Ponsares, 2001; Seagrave, 1996). The studies generally conclude that community policing has potential, but there are various challenges in the implementation. In much of the research, the incident driven, professional, reactive policing model receives extensive critique for being passive, paramilitary and outdated by the problem oriented model.

The second temporal structure concerns the work scheduling of police officers. Whereas the first temporal has received massive interest, this second temporal structure has not. In Sweden, there are two main ways of scheduling this, either through a **rolling schedule**, where officers work according to a set sequence, i.e., first morning shift, then nightshift, and then dayshift, this is followed by three days off, and then the cycle starts again. Or either through **period planning** where the individual officer, together with colleagues and sergeants plan the work for the period (usually a month). Tools for period planning are both computer based and manual. Some districts use a large full wall white board with a large matrix covering all days of the month divided by shifts. Every officer has the same number of magnets as she is to work the coming month. The magnets are placed on the open shifts on the white board. The sergeant makes sure that all shifts are manned and solve potential conflicts in the process.

The two structures direct the practice of police work and consequently the need for computer support. Rather making a distinction of the two structures, this paper attempts to examine how they are related in the daily police practice, and pragmatically suggest how they could be related. Using these structures four archetypes of officers can be identified. Each of these archetypes have different needs in terms of computer support. The four archetypes are proposed with the following basic parameters.

> Proactive and period planning
>
> Proactive and rolling schedule
>
> Reactive and rolling schedule
>
> Reactive and period planning

Each of these archetypes is below conceptualized as a persona, and are what Cooper (2004, p. 137) define as primary personas.

4   PERSONAS

In this paper personas serve as a technique in the process of investigating 'work-practice' (Button and Harper, 1996) and as technique for 'making work visible' (Suchman, 1995) to design IS. Personas are "hypothetical archetypes of actual users" (Cooper, 2004, p. 124) and are an interaction design technique applicable for IS design. The idea behind persona is that they represent non existing persons in real life, but they represent intended users of the design object, in our case IS. The characters designed are fictional but their behaviour is based on real data. According to Cooper (2004) you have greater success in design targeting a small group instead of a large. Personas enable this small targeting. Designing for any one persona is better than trying to design vaguely for everyone of

specifically for oneself (Grudin and Pruitt, 2002). A persona is used as a technique to represent a hypothetical user of the design object. Instead of interact with real persons selected from a large population, the large population is represented by a number of personas, given certain characters. It is necessary that the personas should represent the user of the artefact that is designed, and not someone that only are physical close to the artefact. Personas are claimed to force designers to consider social and political aspects of design that otherwise often go unexamined (Grudin & Pruitt, 2002).

You should name the persona, and give the persona a short life story. Scenarios can be used to describe situations and events a persona could be part of. It is argued that scenarios are less effective when they not built on personas. Scenarios can be constructed around personas, but the personas come first (Grudin & Pruitt, 2002). Pruitt and Grudin (2003) based their design of personas on existing knowledge and research results of potential users. They limited the number of personas to 3-6 to make them manageable. When designing the persona anecdotes from previous research can be useful to give life to this fictive person (Pruitt & Grudin, 2003).

5 POLICE PERSONAS

The result of the participation, observation and interviews in the field resulted is a large amount of data in various formats. The temporal structure was defined and the data material was analyzed with the purpose of populating the temporal structures with archetypes of social actors, i.e., police officers. This section presents the four police officer personas derived from the analysing the empirical data through a lens consisting of the dominating temporal structures in the police context.

5.1 Persona of female officer working proactive and is on a period planning schedule

Karin, 45 years old is living in a small suburb of a medium sized city. She speaks several languages, has teenagers in the same community where she works and is therefore well-known by the kids in the community. Karin works together with other actors such as social workers and schools. She plans her work in line with the members of her family. After finishing high school she started to study French and Spanish at the university. After three years of study she was accepted as a police candidate at the National police academy. The first years she was working on rolling schedule in a patrol car, but when she got pregnant she worked with criminal investigations. In 1994, when the Problem oriented Policing (POP) reform came, Karin was one of the pioneers working problem oriented. As her children became older, Karin wanted to be involved in the attempts to decrease numbers of crime in the area where she and her family lived. Karin is now second officer in command at the local police station, and work in tight cooperation with other agencies with proactive policing. Karin thinks period planning is optimal, when both the needs from the family and her police work can be combined. The period planning enables Karin to take an active part of her children's activities, which also makes Karin a well-known person by others in the community, due to her engagement for her children.

5.2 Persona of a male officer working proactive and is on a rolling schedule

Leif, 53 years old, have been a police since he was 19. He started at the National police academy directly after finishing the military service. He has been working the majority of his police carrier as a police in uniform, except a period of 2 years he worked in a surveillance team. He is divorced and is father of two grown up boys. Leif have been on three United Nations missions as civil police, in Cambodia, Cyprus, and East Timor. During childhood and adolescence of his two boys he was engaged in their sport activities, he was even a soccer coach for them both when they were very young. He has always tried to be engaged in young people as Leif describe to be our future. Even if Leif have been working on Rolling Schedule for almost 34 years, he does not want to change: "Why try something new, when this is working" is his argument. Leif may not be active as he was, but as his colleagues explain: "Have you been working on rolling schedule for 34 years, and always in uniform,

you have right to be laid back". Leif is not lazy but he is not the first police officer to respond to open dispatch calls. When Leif is working dayshift, he is responsible for information in schools and work in dialogue with principals of all schools in his area of responsibility. During evening shifts he works with sports associations of different types. He is responsible for information about doping and other drugs.

5.3   Persona of a male officer working reactive and is on a rolling schedule

John 33 year have been working as a police officer for 8 years. He lives with his girlfriend and their 18 months old daughter in an apartment in the central part of the city. He enjoys his work, and think working by a rolling schedule is much better than period planning. "You know when to work in advanced, and you have several days off in a row, which is good if you want to spend extra time with your family". John is tactical when he takes his vacation, due to his rolling schedule he can get long periods of free time without a need to take all his days for vacation. John likes to take care of his physical health and do weight lifting or plays floor ball before almost every working shift. John is technical interested and likes to test and use new innovative things. He describes him self as above average in computer skills, he have an advanced PC at home, mainly used to play online first person shooter games. John is not impressed by the IS/IT that he uses on daily basis working as police officer. He thinks the systems are old and must be designed and developed by people that knows nothing about police work. He has a notebook where he records information about criminals, vehicles, and other information that "could be of value in future work situations". He has made his own manual where he keep police related legislation and he keep this manual up to date, and in a portable format. John is critical against the way police in general is managed, and he does not think problem oriented policing is real police work. He assume that he together with his fellow police colleagues perform real police work.

5.4   Persona of a female officer working reactive and is on a period planning schedule

Susan is 38 years old, finished the police academy at age of 29, she was then mother of two children. She has always dreamt of becoming a K9 handler, this dream was reached when she was 32, and was accepted as a candidate at the national K9 handler basic course. She have since then been partner to Bronco, a male German shepherd. Susan is working on a period planning schedule, and are together with the other K9 handlers responsible to ensure that there always are at least one K9 with handler on duty. The period planning works well thinks Susan, and it gives her possibilities to spend more time with her children and husband. Being a K9 handler brings a lot of extra work on free time. Susan train Bronco every day to be a better K9 unit together with Bronco. Susan spends the rest of her free time with her family and mainly her two children. Susan sometimes thinks that it is like an unsolvable puzzle to get every family members schedule to fit together. Without the possibilities of period planning, Susan might have been forced to choose between being a K9 handler or being with her family. Now both can be combined and therefore Susan thinks she is well favoured. The only negative by being on period planning is that Susan must use the computer program Time Care to plan her work. Susan has never been interested in technical stuff as she self state. She gets irritated when she must spend time in front of a computer instead of being out on the streets with Bronco.

5.5   Personas in action

In this section each of the personas is acting in a scenario typical for the temporal structure. Each scenario illustrates an information related problem.

Scenario 1: Karin is on a single foot patrol in her local police district. One teacher from the high school stops her and starts to talk. The teacher wants to inform Karin that they suspect two students of using narcotics. Those students have also brought with them the problem of narcotic distribution at the

high school. Karin picks up her notebook and writes down the information. The notebook is full with different notes mainly about problems, tip about criminal activities, and names of persons Karin have controlled during work. This day Karin has a scheduled meeting with the local business association which takes longer time than planned. Karin leaves the meeting two hours after her scheduled working hours. Karin has now four days off, and when she comes back to work, she has forgotten the tips she received from the high school teacher.

This scenario show how important information is delayed due to individual and manual routines for information management. Information management within the police is highly regulated. The use of computer based systems for local information is restricted

Scenario 2: Leif starts his dayshift by taking a cup of coffee. His colleagues tease him of being a kindergarten cop, but Leif take no notice of there critical voices. He is aware that the proactive police work has a low reputation among polices' in general, but Leif know that the work he performs is important. Leif is used to always use old equipment as a proactive working police officer. When he is going to have a one day lecture at a school 35km away he not even can use a striped police car because the only available is a non striped police car, without working police radio. Leif always bring an own portable police radio when he works, but the battery status are rarely as it should be. After Leif have had his lecture six hours later he is heading back to the station. He hears on his portable police radio that there has been a robbery of a seven eleven store near by and that the dispatch central is presenting description of the suspects and their runaway car. Leif as drives an unmarked police car is reporting for duty on the special radio channel for the robbery. He gets order to drive just outside the outer perimeter and to notice suspicious behaviours and take notes of every such cars registration number. Leif is driving the car with one hand and use the other for the radio. He realizes that he would have liked to be able to note every registration number of cars that he meet but it is impossible for him to perform such thing alone with only two hands. After one hour of work the dispatch central calls of the large search and Leif can drive back to the station to finish his day. He saw no suspicious cars and has nothing to report related to the robbery. Leif ends his shift and receives a question from a younger colleague: "Have you done any real police job today Leif?" Leif answer no, to satisfy the young police, and then he leave the station.

This scenario illustrates that even if police officers have different work assignments they can at any time be part of a different operational police work.

Scenario 3: John and his colleague are working a mid week night shift. They get a call from dispatcher: "7660 ... we have a suspected drunken driver heading north of the freeway, it is a white Volvo ABC123 and it just passed the mall." They write down the registration number on a paper, and head to the last known position of the suspected car. After a couple of minutes, they find the car and perform a stop of the car. The driver can identify himself with a valid drivers licence and is not wanted according to the dispatcher, and is, after test, suspected for driving under the influence of drink. John pushes the call button: "80 [the disptcher] …from 7660, we are heading in to do the paperwork." John and his colleague take the suspected driver to the police station for further analysis of the level of intoxication. The analysis resulted in confirmation of the driver's intoxication and his was reported for driving under the influence of drink. A report, analysis report, written interrogation of the driver, and the report of that the driver was brought to the police station are documentations needed to be made. While at the station, John completes the paper work which should take less than an hour, but due to computer problems it takes twice as long. His colleague let the driver go after the short interrogation. Half way in the paper work the dispatcher calls John. "7661, how's it going, ready soon? You have to postpone what you are doing. I need you to head down to the warehouse by the river. We have a burglary in progress. According to the caller, three guys just jumped in through a window."

This scenario illustrates how the patrols are dispatched to situations and how the work of the officers can be interrupted in finishing their paper work. In this scenario they have to set a side what they are doing to go for the new call, which in turn will result in additional paper work to be completed at the station.

Scenario 4: Susan and Bronco have their scheduled training day. Near by is an ongoing search for a lost child taking place. The dispatch central have no knowledge that Susan is near by, though they must use another menu on the command and control system to see all police units on duty, and not only on active duty. When Susan goes back to the police car for getting some water she receives the information of the search of the lost child. Susan drives to the command post, to meet up with officer in charge. He is standing beside his car, with a large map on the hood and has a cellular telephone in one hand and a radio in the other. The commanding officer, Joel, welcomes Susan. This search had been going on for 3 hours and it gets dark in 1½ hour. First Joel only had 4 police patrols, but now he is in charge of 9 units and the police helicopter is on their way with a heat camera mounted. Joel has difficulties to give Susan any specific tasks, though he has problems to know which areas that have been searched trough. Each unit involved in the search for the young child have got a specific search area, and a photocopy of a map. But when the majority of the officers don't have a compass, and none a GPS, it is difficult to specify in detail what parts have been searched through. Joel says:" At least the immediate surroundings of the place where the child was seen last have been carefully searched, by both another K9 unit and 7210". When Joel can not give any assignment Susan decides to start from last known position of the child. After 30 minutes, Bronco finds the child asleep under a fallen tree. When Susan and the other K9 unit compare their coordinates of the GPS they both realize that the other unit did not search where Joel said they did.

This scenario illustrates how the dispatcher was not aware of all recourses available. The scenario also exemplifies how quick a situation can change from a small search to a full scale search and rescue operation commanded from a field command post.

6   DISCUSSION

This section discusses the four scenarios in terms of the challenges they pose on the police organization.

The first scenario illustrates the problem of individual and local information management. Current legislation regulates what information can be captured and stored; who has the right to store and delete information; and how the information can be stored. The use of computer based applications, such as for instance a CRM (customer relation management, or in this context *criminal* relation management) would be of great help for individual officers to manage the local information. Possible consequences of this is that information becomes very *individual*, police officers manage their own collected information and if they forget, don't want, or can store or distribute the information, it can not be used by other police officers.

The challenges here are: to find solutions on how to design IT that support information management for individual police work, technology supporting capturing, storing, distributing and use of information in a variety of situations and in different temporal structures as discussed in this paper.

The second scenario illustrates how the working conditions rapidly can change. The officer in the scenario is suddenly getting involved in a situation where the available technology is insufficient. The scenario shows that officers can, and will be involved if a situation requires extra resources. It is also common that community officers and detectives engage from their own initiative when a more spectacular situation occurs. The result of this is that a large number of officers become involved but many times the technology used for communication among them fails to accommodate the diversity of people. There are two different radio systems used in parallel and a significant portion of the communication is through cell phones. The implementation of a new digital communication system is in progress and will be fully implemented in 2010.

The challenges are to find the lowest level of informational technical infrastructure every police officer must have in order to be able to act and work in different conditions. This technical infrastructure must also support their main work task. This challenge cover IT, but it also covers a more organizational perspective, an organizational perspective where police officers dependent of

main work tasks also are equipped with police equipment that not are too uniform and unit specific. The variety of work conditions must be identified to be able to identify basic IT needs.

The third scenario show how the officer's access to computers is exclusively at the police stations. A common pattern is the following: the patrol receive a call from the dispatcher, the patrol drive to the place for the situation, they send a "on site" status code when they arrive a scene, the patrol deal with the situation, and when done and back in the police cruiser they call the dispatcher saying: *"80 .. 7660* [call sign for dispatcher and patrol] *we are done at the scene and head in to do the paper work."* Many times very limited time is required at the scene. For instance a shoplifter who is over 18, can identify himself and confess to the crime, requires only about ten minutes of police work at the scene. However, when the patrol is ready at the scene they drive back to the station, which, depending on the distance of course, take time. Parking, getting in to the station through several locked doors, log in to the computer, completing a number of forms depending on the crime, and then getting back out again take time. During the research, several different officers said the same thing: *"Ten minutes of police work can result in hours of paper work."*

The challenges are to find solutions of how police officers could complete more work at the crime scene. The information collected and the documentation at the scene are entered into different forms and systems at the police station. There is a challenge to minimize this double entry of information. At the police station identical information are often needed to be filled in to different forms manually, which implicit also must be covered by this challenge.

Finally the fourth scenario show how the dispatcher centre is equipped with advanced IT but fails to utilize it fully. In Sweden it is clear that IT is a *technology for centralization*. In the scenario, a rather small situation escalates to become a large search and rescue operation. There is a need to control the operation at scene, and not from a centralized position. The police organization are based on regional geographic areas with a dispatch centre and . When a situation within that area occurs, they are the one in command for the work. Between such situations these commanding officers act as ordinary police officers reacting to calls from the dispatch central.

The challenges are to find an organization structure supporting this situation dependent move from a centralized command of police work to a field based command situation. This implies a need for design of IT supporting these decentralized commanding situations in balance with the centralized structure. The design of IT should also be covering the diversity of work situations a commanding officer as Joel can be involved in. Such IT should be able to collect, store and process information from police officers involved in the work, police officers that may come from different units and represent different temporal structures.

7 CONCLUSION

Four personas based on four temporal structures were presented in this paper. Four scenarios were used to exemplify work situations for these personas. We have discussed each scenario and from them pointed out challenges where the current IT used by the police have limitations. Through the personas and the scenarios above, we do claim that there are fundamental challenges in the Swedish police in terms of IT use. These challenges are solely not technical, rather also legal and organizational.

The research question raised was: How can personas be applied in the design space for information technology for police officers?

Personas add a dimension in this seemingly uniform work context. By using personas to develop a set of scenarios in temporal structures we have pointed out problems related to IT and the use of IT. The scenarios are examples of how the variety and the complexity of police work within different police temporal structures. Police practice is not easily described and it is posit that personas together with temporal structures are a viable way to describe police work to understand the different needs of the

social actors, i.e. the officers in terms of IT supporting current practice, but also enabling new ways of working.

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