

# Briefing News Reporting with Mobile Assignments – Perceptions, Needs and Challenges

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## ABSTRACT

Mobile handheld devices are an increasing part of everyday fieldwork of news professionals. Mobile assignments delivered to mobile journalists' smartphones are one potential future development step. We present findings on using mobile assignments from two exploratory user studies in which smartphones were used as news reporting tools. Mobile assignments were perceived as handy for fast reporting situations and simple stories but challenging in case of more complex tasks. Structured information content of assignments, process phase based information and supporting situation and activity awareness would support the work of both editorial staff and mobile journalists. The locationing of reporters for sending location-based assignments was found acceptable for coordinating the work although some privacy concerns were expressed. The findings provide new information on using mobile assignments in work where carrying out tasks involves creativity and the tasks may be complex, not strictly limited or they may not have clear completion criteria.

## Author Keywords

News; journalist; smartphone; mobile; assignment; task; work; location; professional; crowdsourcing; privacy.

## ACM Classification Keywords

H5.3. Computer-supported cooperative work.

## General Terms

Design; Experimentation; Human Factors.

## INTRODUCTION

Mobile devices and services are increasingly being adopted for keeping track of the mobile work force, coordinating work, enabling group cooperation and awareness, distributing tasks to workers and following up on the accomplished work in various fields of work [2,3,24,22,23]. Mobile assignments, that is, tasks sent to mobile, handheld devices such as smartphones and tablets, are being taken into use in organizational settings such as home care, maintenance, and emergency response.

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CSCW'12, February 11–15, 2012, Seattle, Washington, USA.  
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Due to economic pressure news industry is facing changes in how news are made. For example, the editorial staff numbers are reported to have fallen since 2007 by 27% in British news media industry [4], with an increase in subcontracting, freelancing and reader participation. Mobile and location-based assignments therefore seem one attractive alternative for coordinating news reporting work. Not only reporters employed in news organizations but also freelancers and reader reporters could be reached for carrying out tasks. As a new story to cover comes up, the closest available reporter could undertake the assignment. However, little is known about how mobile assignments fit to a professional mobile journalists' work, which can be characterized as creative, relying on professional's skill and autonomy and being a collective effort [6]. Furthermore, in news journalism the tasks to be carried out may not be strictly limited, or the completion criteria may not be clear at the time of creating the assignment. This is the case, for example, when reporting breaking news like catastrophes.

Mobile assignments change the current work practices, introducing challenges and needs related to the content of mobile assignments, news production processes and for mobile technology and services to be utilized. Professional reporters' own insight and experience as well as negotiation with the newsroom are traditionally important aspects of news making. Mobile assignments therefore not only change the current work processes, but also potentially change the roles and responsibilities of reporters and the editorial team in the newsroom as well as their workflows.

This paper explores reporters' perceptions and needs as well as emerging challenges on information content and assignment related processes when using mobile assignments for briefing news assignments to professionals. Furthermore, we address a possible future scenario on utilizing reporters' location information in organizing news reporting work. We present here the findings on mobile and location-based assignments from two field studies in which smartphones were used for making news. Reported two field studies are from a set of ten case studies related to professional news making with smartphones [29].

The paper is structured as follows. We first present the background of the study with a discussion on how mobile systems and assignments may change the current news making practices followed by a review of related work. Then the two user studies are introduced with findings on

using mobile assignments and locationing in news reporting. We conclude with a discussion of the findings and the potential effect of the mobile information and communication technology (ICT) on work practices as well as proposals for future work.

**BACKGROUND**

The goal of our work was to support the development of a mobile service for mobile content co-creation and mobile work with a specific focus of our studies being in the context of news journalism. The first mobile service prototype was originally developed in 2007 at Nokia Research Center in close collaboration with journalists at Reuters for creating and delivering news stories.

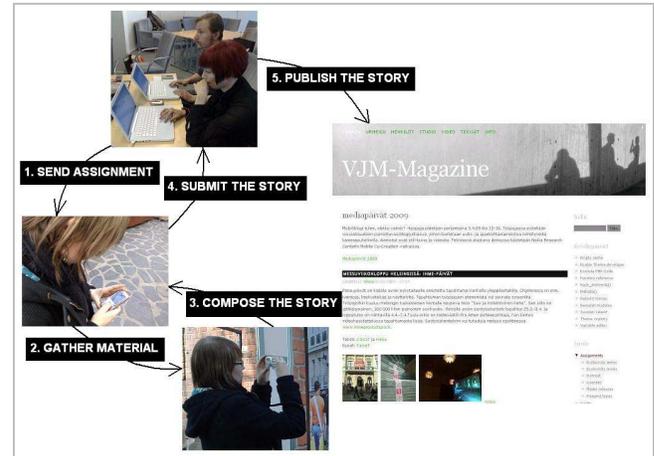
During our first user studies in 2008 [12,27,29,30,31], newspapers were increasingly receiving user-generated content based on readers’ own initiative. However, no mobile service clients existed for systematic requests for readers’ content by a mobile phone, such as for example Tackable<sup>1</sup> today. In addition, indications from news organizations suggested that mobile assignments could be useful for professionals and freelancers. These needs motivated the development of an online and mobile production solution with an online assignment desk (dashboard) resembling the solution provided by kapost<sup>2</sup> and the Assignment Desk<sup>3</sup> plugin for WordPress. To support the mobile news content creation, mobile service client prototypes were developed which aimed to fit both crowdsourced news content creation and professional use. Mobile assignments and the usage of location information are currently implemented to a generic solution for mobile work processes for fieldworkers<sup>4</sup>.

**From traditional practice to mobile reporting**

Traditional newsroom assignments are generally agreed at news conferences. The editorial angle, the duration or length of the story and its position in the running order or prominence in the paper is agreed by the editor. A resource is committed to cover the story in line with its scale and importance. In the case of a print story this may require a reporter and a photographer. A video or a mobile journalist working for a local paper will be expected to record audio and video. If the mobile journalist uses a mobile handset to record audio and video, it is likely they will also be expected to shoot still images and provide a copy in the field. Consequently, the assignment brief from the editorial team must be specific about what media is required.

A mobile journalist working with the small keyboard built into a smartphone will not easily or quickly be able to type a 400-word story. The story may be better compiled by a production journalist in the newsroom with access to a full size keyboard. However, she/he will require factual details

and might prefer written quotes from interviewees along with captions that are spelled correctly in text form. This approach to the editorial workflow changes the nature of the assignment briefing breaking an assignment down into component parts. In addition, this workflow enables the newsroom to reflect the emerging story by quickly adding rich media (audio, video) elements as the story develops.



**Figure 1. Simplified work process phases with mobile assignments from Study 1 [19].**

Reporters using traditional methods for reporting stories do not generally ‘drip feed’ information to the newsroom in the manner that mobile journalism enables them to. The new process also opens the possibility for dialogue with the editorial team in the newsroom, who can respond to the information as it comes in and further refine the assignment brief by offering specific instructions to reporters. For example, after bringing together elements of a story in the newsroom, possibly from a number of reporters as well as readers, the team might assign a mobile journalist to shoot three ‘vox pop’ interviews as a reaction to an event. The editor could even go as far as sending the question to be asked of the interviewees to the reporter as part of the brief, knowing exactly where the video content will fit within the story once the reporter sends it back.

From within the editorial platform, the editorial team can evaluate the quality of the material sent by the reporter from the handset whilst they are in the field. The reporters can respond to requests from the newsroom and/or reshoot material or gather further information from contributors without leaving the scene. Consequently, the mobile assignment briefing of reporters differs fundamentally from the traditional practice partly because the mobile device and the reporter using it provide the editorial team with an open channel to direct the acquisition of content and to receive it from the field in a more interactive manner. This changes the role of the editorial team in the newsroom who can now be more directive if they so choose. It changes the role of the reporter, who may sometimes be responding to specific requests for particular media or interviews with contributors, and who may sometimes work proactively by

<sup>1</sup> <http://www.tackable.com>  
<sup>2</sup> <http://kapost.com>  
<sup>3</sup> <http://openassignment.org>  
<sup>4</sup> <http://www.newelo.com>

feeding material to the newsroom more regularly. And with the evolution of these roles comes a change in the relationship between the reporter and the newsroom staff commissioning stories.

In this paper we focus primarily on the front-end of the mobile news reporting process (see Figure 1), concentrating on the issues related to mobile assignments. Our research covers the phases when creating and sending mobile assignments as well as when receiving and acting on a received assignment. In addition, we touch upon the needs when reporters have covered and submitted the story or material for the assignment.

#### RELATED WORK

Much of the HCI and CSCW research in the context of news reporting has concentrated on the work practices and organizing the editorial work, e.g., [10,13,11]. Mobile pocket-sized devices, like PDAs (personal digital assistants) or mobile phones, have in recent years received increasing attention [8,9,12,16,27,28,29,30,31].

Fagrell et al. [8] and Forsberg [9] studied PDAs with service prototypes for knowledge management in the first phases of reporting when transforming events into newsworthy stories. The aim is to provide mobile users with timely, contextual information related to the story they are covering. The provided information is related to the background information, such as previous reports on the topic, available expertise of others, and coordinating reporting with other reporters. In their solution, the worker creates him/herself a To Do item on the application, based on, for example, a phone call they receive, or after an editorial meeting. In our work the assignments are created by editors, producers or others responsible for coordinating the news production. Mobile assignments are then delivered to the mobile journalists' mobile devices, such as smartphones or tablets, via a mobile service. Our work, therefore, complements the work of Fagrell et al. and Forsberg by concentrating on the needs and challenges that arise especially for information delivered in the assignments and the related process when using mobile assignments for briefing news reporting.

Verburg et al. [26] studied the mobile virtual work of mobile customs employees, elevator service engineers, facility management and home care. They report the benefits of mobile virtual work to be, for example, increased efficiency experienced by employees and for organizations the possibility to track employees on the move and allocate unscheduled work better. Furthermore, Koponen et al. [16] report that the motivation to use mobile phones for writing text for news was the more efficient use of time and independence of time and place; "whenever inspiration hits".

A number of studies have been conducted on developing and evaluating context-aware and/or location-based services [8,24,22] for mobile field work. Our interest lies in

reporters' perceptions on locationing, for example, when sending location-based assignments to the reporter closest to the scene of a newsworthy event. Previous studies on sharing location information show contradictory results on users' perceptions and concerns. For example, Consolvo et al. [5] report as the most important factors affecting willingness to disclose location information to be the identity of the requester, the reason for requesting and the precision of the request. In the study by Raento et al. [18] with two groups of office workers, users had no expressed concerns for automatic location disclosure when the revealed location was approximate on the level of the district and city. However, the organizational culture at the work place, trust and authority issues, as well as perceived benefits may influence results significantly in practice.

#### METHODOLOGY

We used a case study approach [32] to conduct two field studies where briefing news with mobile assignments and locationing were included as research themes. In both studies (Table 1), smartphones were used for delivering news briefings through mobile assignments, as well as for capturing, editing and delivering news content.

**Setting.** The field studies were conducted with postgraduate students of journalism and visual journalism within university course curricula. We used students as our sample because the system prototypes could not be integrated to the editorial systems with reasonable time and effort. Within their studies, students carry out practical news reporting tasks and publish real news stories with an editorial team and mobile reporters. Using the system in realistic, collaborative news reporting situations brings out usability issues, perceptions, and needs that usability tests in a laboratory [17] or heuristic evaluations [15] may not reveal.

The students' goal was to create, edit and deliver news content from the location of the news event with smartphones and an application dedicated for mobile news assignments and news content delivery. The researchers did not assign tasks to the participants. Instead, the reporting tasks were assigned within the course setting. The created news material was published in course-related online publications (Studies 1 and 2) and in a printed course-related newspaper (Study 2).

**Participants.** Most participants had extensive part and/or full-time work experience in the field of journalism (see Table 1). Work experience had been gained as freelancer work before or during the studies, working as a part-time or full-time, as internships and as summer traineeships.

**Mobile devices and applications.** The smartphones used in the field studies (see Table 1) were Nokia models N82 and N900 with multimedia capabilities. The iteratively developed mobile client application prototype versions used in the studies for mobile assignments and content delivery were fully functional prototypes developed at Nokia Research Center for Study 1 and at Newelo for Study 2.

Study	Nr of part.	Mobile Phone	Mobile client	Collected data (as hours or number of participants)	Research themes on mobile assignments	Participants (based on number of questionnaire respondents)	Other information
1 (Case 4, spring 2009)	8	Nokia N82 (Symbian): 2.4 inch display, numeric keypad, BT keyboard	MCC pre1	o (36 h), fc (8), q (8)	Information needs, locationing	Gender: female (7), male (1) Age: min-max=24-46 yrs, mean=30.4 yrs Work exp.: (part and full time): min-max=1-25 yrs, mean=6.6 yrs	Students of visual journalism (photographers) used the mobile system on two pre-trial days and during one day in a media conference workshop demonstrating mobile journalism
2 (Case 10, fall 2010)	11	Nokia N900 (Maemo): 3.5 inch touch-screen display, full keyboard	N4F pre1	o (32 h), i (4), q (11)	Perceptions, needs, challenges and feasibility of assignments, locationing	Gender: female (6), male (5) Age: min-max=21-30 yrs, mean=25.0 yrs. Work exp. (part and full time): min-max=1-27 months, mean=12.7 months	4 participants in Finland (students of visual journalism) used the mobile system over a period of one month; 7 participants in Great Britain for 5 days (6 print journalism students, 1 broadcast).

o = observation, i = interview, q = questionnaire, fc = focus group  
MCC pre1= MCC prerelease version 1, N4F pre1=Need4Feed client prerelease1

Table 1. The conducted user studies addressing the usage of mobile assignments and locationing.

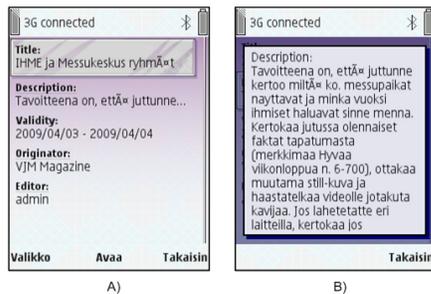


Figure 2. Study 1: A) The main UI of the MCC mobile client and B) The task description field.

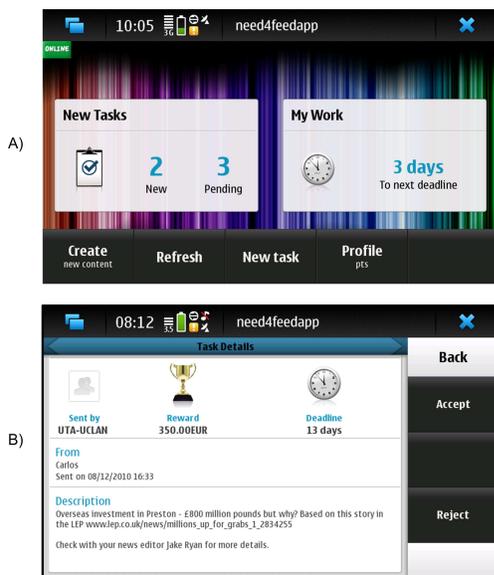


Figure 3. Study 2: A) Opening UI of the Need4Feed mobile client and B) an opened assignment with details.

Both prototypes enabled the receiving of mobile assignments, accepting and rejecting them as well as replying to the assignment with news content (complete stories, photos, videos). The MCC prototype (Figure 2, Study 1) includes as assignment information fields “Title”, “Description” of the assignment as a free text field, time for the “Validity” of the assignment, “Originator” for the publication and “Editor”. The N4F prototype (Figure 3, Study 2) has as an opening interface an overview of the task situation. Main differences on information of the assignment compared to MCC prototype are “Reward” aimed for freelancers and crowdsourcing and “Deadline” indicating the time left to deadline. A major functional difference between versions is in the UI which is intended for touch screens in Study 2. In both studies, smartphones were used for the capturing and creating of news content (text, photos, video clips) either as the only devices used, or as one system among the others. Participants were free to use any other feature or functionality of the devices as well.

**Data collection.** The data collection methods varied depending on the study (see Table 1). In the first study, four researchers observed the participants on three days, whereas in the second study, one researcher observed selected participants on six days, during one day in Finland and five in Great Britain. The observations covered mobile system usage in field conditions as well as editorial work. At the end of Study 1, a focus group was held and a printed questionnaire was used to collect background information. In Study 2, four interviews were conducted in Finland and an online questionnaire was conducted with both Finnish and British students covering a wider range of themes related to perceptions on using mobile phones and services in news reporting. Privacy issues were not addressed directly by the researchers in the interviews and focus

group, but they arose spontaneously in the participants' comments on locationing related themes.

**Analysis.** The hand-written field observation notes as well as audio recordings of the interviews and the focus group were transcribed. This data as well as data from the open-ended questions in the questionnaire were analysed by data-driven content analysis using open coding for emerging themes and grouping these under higher level categories. Closed ended questions from the questionnaire were analyzed by descriptive statistics.

**RESULTS FROM STUDY 1**

In the first study, two participants acted as editors of a mobile newsroom for an online publication, editing and publishing the material, and a producer (course leader) sent the mobile assignments to the reporters. The rest (six) were mobile reporters, who carried out the assignments in a mobile context. We present the findings on the editors' and reporters' needs in the mobile assignment process, as well as on locationing.

**Needs in a mobile assignment process**

*Coordinating news reporting*

Table 2 presents the information needs of the editorial staff and the willingness of the reporters towards sharing this information when sending mobile assignments to reporters. The reporters were willing to disclose information that could be used for profiling, but wanted to remain in control of their availability as well as of the locationing.

Editors' information needs	Reporter's willingness to share
Availability for carrying out assignments	Conditional: When on duty; As a freelancer when ready to undertake a job
Reporters' equipment	OK
Reporters' skills, special expertise or interests	OK
Location of reporter(s)	Conditional: Not all the time; In urgent reporting needs; When on duty and/or chooses to enable locationing; As a freelancer when ready to undertake a job; If the precision of the locationing can be approximate; In dangerous areas with safety risks.

**Table 2. Information needs when assigning news reporting tasks.**

The locationing of reporters raised primarily strong negative first reactions in the focus group participants, such as "annoying", or an expression of disgust, covering issues like "feeling of being monitored" or "tracked". As the participants continued the discussion, they mentioned specific cases or conditions in which they would allow the locationing, as exemplified in Table 2. The participants wanted to remain in control of the locationing and its precision, but some also mentioned that during working hours, the locationing of reporters would be acceptable, and sometimes even desirable for increasing the feeling of safety in dangerous areas. In addition, the participants expressed concerns indirectly, for example, related to losing freedom of how they spend their time.

*Making sure that news material will be delivered*

Traditionally, news reporting involves a high degree of planning, at the same time being prepared for rapid and unexpected changes to the plans. The participants emphasized that it is essential that the newsroom staff is aware of the current situation with the mobile assignments. The editors expressed that they felt unsure and nervous whether the reporters were going to carry out the assignments. In the study we found that the reporters read the assignment, but even though accepting and rejecting was enabled in the application, the reporters did not always remember to do it. The editors felt an urge to call or send a text message to make sure that the assignments were received and understood. Support was therefore needed for knowing whether the respondent(s) 1) has read the assignment, 2) has understood the assignment or needs clarification and 3) is going to carry out the assignment, especially if it is sent only to one or a few reporters.

In addition, the editors wished for information on 1) when to expect the story or the material, 2) whether there were significant problems in carrying out the assignment to negotiate the issues and 3) whether the story or material will be on time or delayed. This enables the editors to foresee changes in the publishing schedules, or a need for replacing the planned story with a new topic if needed, using photos from a photo agency or their own archives, for example, instead of the content that was planned.

*Is someone else already covering the story?*

One possible scenario is that the assignment could be delivered to a number of reporters, such as freelancers, to increase the possibility of someone undertaking the assignment, for example, in fast reporting situations. First, we found that the reporter would need to know whether he/she was the only one getting the assignment or whether it was sent to a number of reporters. The participants mentioned that their attitude towards the assignment is completely different if they know that they are the only receiver or if it is sent to a larger group for one to undertake. Second, if the assignment is sent to a number of reporters but intended for only one or a few to carry out the reporters need to get information if the assignment has been undertaken. Therefore, the mobile service should support delivering this information to others, as implemented in the study by Alt et al. [1], for example, in the case of mobile crowdsourcing.

*Is further action by the reporter needed after submission?*

The feedback provided by the MCC prototype when submitting news stories and media was found insufficient. The reporters wished for an automatic confirmation that the material was received by the editorial system. After the news story or material has been delivered by reporters, the editors may need to check some facts or details related to the stories from the reporters or ask for updates, or for more material. The reporters mentioned that they would need to know whether the assignment was completed as is or whether further action or information is needed. In most

cases, the participants mentioned phone calls as the natural solution for this communication, but also chat, text messages (SMS) and email were mentioned which are already offered on most smartphones.

#### *The newsroom needs to stay in control of news reporting*

The MCC prototype enabled the creation of assignments from the mobile journalism client. The participants found creating news assignments with a mobile client as a possible scenario in the case of an urgent, newsworthy event. However, they seemed strict in their opinion that this is used to notify the editorial staff in the newsroom, which should remain in control of organizing news reporting and the delivering of assignments. For example, a reporter working in the field should not create a new assignment or delegate a reporting assignment he/she had received to a colleague. This was justified by the fact that the editorial team is responsible for coordinating the production. If assignments would be delegated between reporters, the newsroom could not stay up to date on the current situation, who is covering an assignment or a news topic, and take action if needed.

#### **Reporters' needs for information in mobile assignments**

The participants found the free text field of the prototype for assignment description to increase the possibility that important information is missing from the sent assignment. Similarly, structured information was mentioned to help reporters in using the assignment as a checklist in a mobile context. Identified needs for the information content are:

- The topic to be covered with (1) Basic information on the location (address), event/interviewee, (2) Background information such as links to information, old articles, etc;
- What kind of content is asked for (text, photos, video, audio), e.g. the (1) Length of text (e.g. nr of characters), (2) Number of photos and video clips, (3) Length of audio and video, and (4) desired quality or special requests for the media content;
- The reporting schedule and deadline(s), including information such as whether a fast report with certain material is wanted first and more material or updates later.

This information is similar to the information that reporters and freelancers in the current work process get and take along as notes when they leave to cover a story. However, when designing for a mobile phone's relatively small screen and for mobile usage situations, the design needs to have a clear and simple structure and provide the most important information preferably with one glance.

#### **Reporter as an orchestrated "puppet"**

Focus group discussion on mobile assignments and mobile reporting raised also a spontaneous and lively discussion on future work practices and the role of the professional reporter in case when news briefing would be mediated for example by phone or video calls and live streamed videos. Participants envisioned reporting scenarios ironically where the reporter would not use their own professional judgment and instinct in reporting. Instead, the reporter would ask the editorial staff should they take live video footage of the situation, what angles to capture and so forth. Participants

spontaneously ideated a reporting situation on an accident scene, where people would be screaming in pain and the reporter would continuously ask for directions from the newsroom what to report and how. It appears that in this exaggerated future vision participants expressed their fears related to the effect of new technological solutions on their work. Technology would enable the newsroom to orchestrate the reporting more than reporters wished for and change the work practices and role of reporters fundamentally from a creative, skilled and relatively autonomous professional to a puppet that could in practice be anyone present at the scene of the happening.

#### **RESULTS FROM STUDY 2**

The second field study presented here was conducted in Finland and Great Britain (see Table 1). This study was used to complement and extend the previous findings with a new prototype version and to identify possible changes in the perceptions to support further development, with locationing as a special focus of the study. The Finnish participants (4) relied solely on mobile phones for the entire news reporting process. All their news reporting was based on news briefings sent as mobile assignments. The participants in Great Britain used the mobile phones as one device among their usual news reporting gear.

We first report the participants' general perceptions on mobile assignments. We continue with discussing the perceived benefits and disadvantages of mobile assignments, followed by a set of new information needs identified when using mobile news briefings. At the end of this section, we report the locationing related results.

#### **Mobile assignments in general**

The general perceptions of the respondents towards receiving mobile assignments on a mobile phone were assessed with sentence completion [21]. The respondents were asked to complete the sentence "*Receiving mobile assignments on a mobile phone is...*" with 1-3 endings. The responses (29) are presented in Table 3 and categorized into positive (11) and negative (18) perceptions. Four of the respondents completed only negative sentence completions, two only positive ones and the rest had both positive and negative sentence completions. The total number of negative perceptions is higher than of positive perceptions. Finns (4) created more positive completions than the British students (7), and considerably fewer negative completions. This may be due to the Finns relying solely on the smartphone-based solution, therefore getting more hands-on, real-life usage experiences. We discuss the results presented in Table 3 more closely in the following subsections, combined with the interview findings.

#### *Benefits of using mobile assignments*

The advantages of mobile assignments were described in the sentence completions to be related to quickness, as well as to ease-of-use and practicality (see Table 3). Some respondents (3/8) also found mobile assignments in general a good and important feature.

The interviewees mentioned as an advantage from the editors' viewpoint to be able to reach a reporter with mobile assignments instantaneously, independent of his/her whereabouts, needing no other equipment than a mobile phone. Furthermore, by being able to reach several reporters simultaneously, it is faster to find a person to undertake the assignment than by calling. Similarly to the first study, the mobile assignments were mentioned to be suitable as memory aids or notes, supporting mobile work. Compared to emails, the mobile client was also mentioned to be faster and more effective in finding assignment related information than browsing through the emails.

The interviewees perceived the usage of mobile assignments is especially suitable for catastrophe and accident journalism or similar fast news reporting situations. In addition, one of the interviewees described how mobile assignments remove the need to go the newsroom for news briefings:

*"It is surely useful, at least in very fast news reporting work. And with small stories it is surely cost-effective that one can do the whole job, that one does not need to go back to the newsroom and the computer there, but you can do it all in a café and then go to the next news reporting gig. And you do not need to go and listen to the briefing at a certain location, and all this, at least for a fast pace it fits well."* P-123

**Drawbacks of using mobile assignments**

The most commonly mentioned disadvantages in using mobile assignments based on the questionnaire answers were: 1) disturbing the process, 2) usage inefficient compared to a phone call which is traditionally used, 3) disrupting communication, and 4) seeing no clear benefit in using mobile assignments. One of the responses refers to the role and skills of the reporter in the changing work practice, by mentioning that assignments constrain the reporters's own instinct.

In addition, the interview and questionnaire results on development needs reflect our findings from Study 1 on the importance of clear and sufficient instructions. Missing or unclear information leads to a need for contact and communication. In addition, some participants perceived it to be faster and easier to call a person than to fill in a form online and follow up its completion. Overall, if the goal is to limit, minimize or even remove the need for communication, for example in the case of crowdsourcing, then the information and instructions given in assignments need to be paid attention to.

The participants also found the feasibility of mobile assignments to be related to the type of stories covered. As previously mentioned, small stories and fast news reporting situations were found to be suitable cases for getting news briefings in mobile assignments. However, larger feature stories were felt to not fit as a story type into the mobile assignment delivery. One interviewee explained:

*"I feel it would not fit an extensive feature story like when one gets a given assignment from somewhere, so that the certain type*

*of ideal..., and discussion, when in some kind of meeting it is discussed what will be in the story, when it is completely left out, then it does not fit like that, it does not correspond to what my experience is, how these big stories are done. When the assignment is sent, they do not have any idea of what I intend to do when it is not limited like that. Or the other way around, I do not have a slightest idea of what is really wanted."* P-123

Perceptions	Categories	Sentence completions
Positive (11): Finland (6) GB (5)	Quickness (4)	Quick, instant, time saving, fast
	Easy, Simple, Practical (4)	Easy (2), simple, practical with basic stories
	Good, important (3)	A good idea, important, excellent feature
Negative (18): Finland (4) GB (14)	Disturbs process (4)	Hassle; not ideal; impossible for unexpected topics; sometimes full of technical problems
	Inefficient (3)	A waste of time; unnecessary extra layer of bureaucracy; most effective with a phone call
	Prevents or disrupts communication (5)	Easier to speak directly to be able to clarify aspects of story; difficult if one has questions and needs to discuss the assignment; most effective with a phone call; demanding in case of needing more information; possibility for misunderstanding
	Diminishes professional skill (1)	Constraining the reporter's own instincts
	Sentiment (2)	Impersonal, annoying
	No benefit (3)	Pointless, unnecessary, not giving clear benefit

**Table 3. The results of sentence completion for "Receiving mobile assignments on a mobile phone is..."**

**Reporters' needs for information in mobile assignments**

As in the previous results, the participants emphasized the importance of a deadline as it gives the reporter an easy indication of "...whether I have the possibility to undertake it" (P-123). In addition, the participants found it useful to see the remaining time to the set deadline as provided. Further information needs found are:

- The intended usage context of the story/material, e.g. online, print, TV, radio/audio
- The type of the story– this can be described, for example, by (1) the intended department or category in the publication, or (2) using journalistic language and/or language of publications' staff, such as main/local news, column, first page, feature, short interview, premium, "grab by the sleeve" profile.
- The viewpoint or perspective to take to cover the story - for instance a lead, or whether it is up to the reporter to decide it
- What is wanted to be the object, target or angle of capturing photos or videos

Results corroborate and extend the results from the first study by showing that more contextual descriptions related to the intended usage and perspectives of reporting are needed in the assignment descriptions of professionals.

**Locating related results from the questionnaire**

To study further the locating related themes in mobile assignment processes, we included these themes both in the online questionnaire and the interviews.

*Sharing location is risky, but not particularly worrying*

To gain an assessment of the participants’ perceptions on sharing location, we asked three questions. We followed the approach by Tsai et al. [25] for the general questions and scales. The following questions were asked:

- *How useful do you find sharing your location with others based on your mobile phone location?* (1=Not useful-7=Extremely useful) Md=2, M=1.91, SD=0.94
- *How concerned are you about sharing your location with others based on your mobile phone location?* (1=Not concerned-7=Extremely concerned) Md=5, M=4.36, SD=2.20
- *In general, what do you think about sharing your location with others based on your mobile phone location?* (1=Risk far outweighs the benefit,7=Benefit far outweighs the risk) Md=3, M=2.73, SD=1.35

In general, sharing one’s location was not rated as useful, in addition to it being assessed as somewhat risky. The responses regarding concern about sharing location were more neutral, but also more dispersed. Furthermore, we asked whether the participants would want to stay in control when their mobile phone can be located in news production. Most respondents (8/11) wanted to stay in control of locationing, reflecting findings from earlier privacy studies.

*Acceptability of locationing*

We also asked for general perceptions on the locationing of the mobile phone with an open-ended question: *“In general, how do you feel about the locationing of your mobile phone?”* Six (6) respondents were negative towards locationing, whereas five (5) respondents were positive under specific conditions. The concerns mentioned in the responses were described as 1) Feeling uncomfortable or stressed about someone being able to know where one is, 2) Unnecessary monitoring, and 3) Invasion of privacy.

Locationing was mentioned in the answers to be acceptable for keeping track and organizing the workforce, proving the authenticity of the narrative from the scene, mapping a reporter online or on TV, or when covering something dangerous, in a life-threatening situation, when missing.

In the questionnaire, we asked with an open-ended question, *“Whom would you give a permission to locate your mobile phone?”* Five respondents mentioned *editor, producer or a similar senior figure*, one of these adding *“...if absolutely necessary as a freelancer”*. In addition, the participants mentioned *a trusted colleague or fellow reporters* (3), *authorities* (3), *a friend* (1) and *no-one* (1).

Acceptable situations for locationing were asked with the open-ended question *“In what situations would you give permission to locate your mobile phone?”* The reasons mentioned were related to 1) foreseeable benefits in organizing work, for instance, to keep tab of the area to be

covered or dividing an area between reporters, or for the reporters themselves, for instance to be directed to a story, and 2) protecting one’s safety in a dangerous area. In addition, the participants mentioned acceptable situations, such as when on-call duty or when covering a story. The results are similar to the previous study, with potential tensions between privacy related issues, such as a feeling of being monitored and the possible foreseeable benefits.

*Locationing reporters assessed as useful*

To gain an understanding of the participants’ perception of the usefulness of locationing, we asked them to rate three statements with a 7-point Likert scale (see Table 5). The first statement is from the point of view of the newsroom locationing the reporters in the field. Most respondents agreed at least to some extent with this statement. Similarly, most respondents agreed to some extent about the usefulness of locationing fellow reporters.

Statement – It would be useful...	Md	M	SD
..., if the newsroom could locate the reporters working in the field.	5	4.64	1.63
..., if the reporters could locate each other when working in the field.	5	4.55	1.51
..., if the reporters could locate their informants.	5	3.82	1.78

**Table 4. Usefulness of locationing.**

**Locationing related results from the interviews**

The benefits of locationing mentioned in the interviews were similar to the questionnaire answers and the results of Study 1. Location-based assignments were described as useful and handy to find the reporter closest to the scene of an event, as well as for finding out where reporters or freelancers are and using this information for coordinating news reporting. In addition, locationing was found useful in fieldwork for the locationing of a colleague working in the field to coordinate the work with them, such as meeting up when covering stories, or more generally sharing progress related information.

The interviewees seemed to consider whether locationing really is acceptable, but at the same time agreeing on possible benefits under certain conditions. One interviewee discussed how it depends on the country whether she would consider it safe and would trust to share one’s location even in a professional context:

*“...I do not know if it is a problem like, in conditions such as in Finland because this is a constitutional state... but since I have lived for quite a long time in Latin America, I would indeed not want that anyone could locate me since the risks there are much more substantial, or if one thinks about the political situation in [removed]. It would be really easy to locate certain reporters... it is not like your employer is... there are all these kind of hackers that can find out the information, then... it would work in Finland, but if one thinks in a bit wider context, then it is not good.”* P-124

The privacy related themes are otherwise similar to those found in the first study and in the questionnaire results of this study. The results therefore corroborate those findings.

## DISCUSSION

In this section we discuss the themes and findings that emerged in the studies and point paths for future work.

**Mobile systems and mobile assignments change work practices, including roles and responsibilities of both mobile journalists and newsroom staff.** These changes on one hand provide new opportunities but on the other hand may appear as threats to the traditional role and responsibilities of the professional and his/her professional identity. These issues are not only driven by technology push, but also due to the organizational pull for enhanced performance. In our studies performance related impacts mentioned by participants were for example the diminished need to go to the newsroom for picking up assignment sheets as well as less need to participate editorial meetings. Being able to submit news content wirelessly from the field “anywhere, anytime” enables time savings for the journalist and makes news publishing faster. In addition, sharing of situational and activity related information enabled by locationing enhances not only coordination of work, but also knowledge sharing and collaboration of mobile reporters. There is a clear paradigm shift in news media industry due to changes in both consuming and producing news that drives towards new forms of production. These include outsourcing news content creation to freelancers and crowdsourcing or co-creating news with readers. ICT solutions need to support these needs (e.g. [28]).

**New forms of mobile reporting are enabled by mobile technology and mobile assignments.** In our studies participants compared the capabilities of the mobile systems and mobile assignments to traditional news making processes and how they fit into and can be used in these processes. The theme of “journalistic ideal” appears directly and indirectly in the perceptions of the participants. It is also related to their professional identity and role [7]. For example, in the first study participants perceived reporters passing assignments forward or creating new ones directly to colleagues as not acceptable. The possibilities of new work practices, for example with ad-hoc, mobile reporting and editorial teams, where the roles and responsibilities could be mixed and traditional teams could in fact vanish from existence were not mentioned by participants. As described in the Background section, reporting could at extreme shift to being more like material gathering at the scene of a happening and “drip-feeding” pieces to the newsroom where actual stories would be created from these pieces to emerging online stories.

**Locationing is acceptable on agreed terms and if it does not threaten safety.** Both the newsroom and the reporters in the field can benefit from locationing, not only when location-based news reporting assignments are used. The reporter may feel safer if he/she is tracked in a dangerous area. On the other hand, misuse of location information by outsiders may compromise the safety of the reporter as well as the anonymity of the informant in certain countries. As

earlier studies suggest user initiated control for locationing and its preciseness is required. In addition, the consent and terms of when to allow locationing need to be agreed on.

**Mobile assignments are suitable and cost-effective when briefing small, relatively simple stories and for fast reporting situations.** However, they were perceived inefficient in communication compared to phone calls especially if further information or clarification is needed. It also seems that communicating the goals and perspectives of reporting are more challenging especially if the topic or story to be covered is large and can take multiple perspectives. If crowdsourcing, that is, using the audience as a means to carry out news reporting tasks, is considered to require similar activity, complexity and creativity [20] in carrying out complete assignments as with professionals, the needs and challenges regarding the mobile process and news briefings are likely to be similar to professionals. Structured information content and contextual information on the type of the story may be useful for them as well. However, at the moment the mobile assignments to reader reporters are in most cases relatively simple, usually asking for photos (see Tackable, and [28]). For crowdsourcing of complex and interdependent tasks in micro-task markets, such as MechanicalTurk, Kittur et al. [14] propose a solution called CrowdForge that enables task partitioning. They demonstrate successfully its use in two types of article writing: an encyclopedia article on New York city and in turning a scientific article into a popular press article. Further studies are needed in the case of crowdsourced news reporting on task complexity and needed creativity affecting task formulation and the ways to carry out news reporting tasks, as well as on the quality of contributions.

**Limitations and future work.** As the first limitation, the participants were students and the studies were carried out in university course settings. Although deadlines for reporting, for example, were set in addition to assigning news tasks to be carried out in realistic mobile news reporting situations, the real context of news reporting would reveal aspects that cannot be created in the current settings. Second, adopting the mobile and location-based assignments into use in a news organization and carrying out a longitudinal study would give firmer evidence on the perceptions, suitability and development needs. Future studies in the context of news journalism could address 1) freelancers and crowdsourcing as potential cases for mobile news assignments: in our studies, contract and rewarding related issues, for example, were not covered, 2) new emerging work practices and workflows with new mobile technologies, 3) impacts on roles and responsibilities of reporters and newsroom staff, 4) new types of news reporting and publishing enabled by mobile technology and 5) further studies on mobile assignments, that may require creativity, may not have clear completion criteria or criteria are situationally bounded.

## CONCLUSIONS

We presented results from two user studies which explored the users' perceptions and needs as well as challenges when using mobile assignments in briefing news to cover. We found that mobile assignments sent to mobile phones were perceived as useful for small and simple assignments, whereas for more complex and larger themes they were found inefficient due to the lack of a possibility for discussing the topic. The information in the assignment description needs to be paid attention to in order to provide enough relevant information for the reporter to carry out the work and to take into account the mobility of the users and limitations for example in the size of the display for UI design. Both editors and reporters need process phase related information and updates on the phase, progress and further actions in the assignment and reporting process. Locationing was found somewhat acceptable, although privacy related concerns were expressed.

The findings of the study are applicable not only in a news reporting context, but in other fields of work where tasks may be complex, not strictly limited or completion may depend on situational issues. In addition, the results on, for example, process related issues may be applicable also to fields where "pro-ams" (professional amateurs) are carrying out assignments and participating in crowdsourcing, such as reader reporters in a news context [28].

## ACKNOWLEDGMENTS

We thank Anssi Männistö and Timo Koskinen for co-operation in the studies and Tiina Koponen, Anni Uusitalo and Katja Suhonen for their assistance in Study 1. Special thanks to Kaisa Väänänen-Vainio-Mattila and Tiina Koponen for comments with the manuscript. This research was supported by Finnish Ministry of Education, Finnish Doctoral Program in User-Centered Information Technology (UCIT) and Nokia Research Center.

## REFERENCES

- Alt, F., Shirazi, A. S., Schmidt, A., Kramer, U., and Nawaz, Z. Location-based crowdsourcing – Extending crowdsourcing to the real world. *Proc. NordiCHI2010*, ACM (2010), 13-22.
- Bardram, J.E., and Hansen, T. Context-based workplace awareness. *CSCW*, 19 (2010), 105-138.
- Carroll, J. M., Rosson, M. B., Farooq, U., Xiao, L., Beyond Being Aware. *Information and Organization*, 19, 3, (2009), 162-185.
- Chisholm, J. The Future is Yours: a survey of editors' attitudes. Society of Editors, retrieved 15 Nov 2011, <http://www.societyofeditors.co.uk/userfiles/files/SoESurveyreport.pdf>
- Consolvo, S., Smith, I.E., Matthews, T., LaMarca, A. Tabert, J., Powledge, P. Location disclosure to social relations: Why, when, & what people want to share. *Proc. CHI 2005*, ACM (2005), 81-90.
- Deuze, M. The professional identity of journalists in the context of convergence culture. *Observatorio (OBS\*) J.*, 7 (2008), 103-117.
- Dinka, D., Lundberg, J. Identity and role – A qualitative case study of co-operative scenario building. *Int. J. of Human Computer Studies*, 64 (2006), 1049-1060.
- Fagrell, H., Forsberg, K., Sanneblad, J FieldWise: a mobile knowledge management architecture. *Proc. CSCW '00*, ACM (2000), 211-220.
- Forsberg, K. 1999. Navigating in the NewsSpace. *Proc. CSCWD99*, (1999) 329-336.
- Helle, M. Disturbances and contradictions as tools for understanding the work in the newsroom. *Scandinavian Journal of Information Systems*, 12 (2000), 82-114.
- Hössjer, A., and Severinson Eklundh, K. Making space for a new medium: On the use of electronic mail in a newspaper newsroom. *CSCW*, 18, 1 (2009), 1-46.
- Jokela, T., Vääätäjä, H., and Koponen, T. Mobile Journalist Toolkit: a field study on producing news articles with a mobile device. *Proc. MindTrek '09*. ACM Press (2009), 45-52.
- Kensing, R., Simonsen, J., and Bodker, K. Participatory Design at a Radio Station. *CSCW*, (1998), 243-271.
- Kittur, A., Smus, B., Khamkar, S., and Kraut, R.E.. CrowdForge: crowdsourcing complex work. *Proc. UIST '11*. ACM (2011), 43-52.
- Kjeldskov, J., Graham, C., Pedell, S., Vetere, F., Howard, S., Balbo, S., Davies, J. Evaluating the usability of a mobile guide: the influence of location, participants and resources. *Behaviour & Information Technology*, 24, 1 (2005), 51-65.
- Koponen, T. and Vääätäjä, H. Early adopters' experiences of using mobile multimedia phones in news journalism. In *Proc. of ECCE 2009*. VTT, Finland (2009), 65-68.
- Nielsen, C. M., Overgaard, M., Pedersen, M. B., Stage, J., Stenild, S. It's worth the hassle!: the added value of evaluating the usability of mobile systems in the field. *Proc. NordiCHI '06*, (2006) , 272-280.
- Raento, M. and Oulasvirta, A. Designing for privacy and self-presentation in social awareness. *Personal and Ubiquitous Computing*, 12, 7 (2008), 527-542.
- Sarjala, A. Supporting work processes of journalists: Design implications for mobile system development. MSc Thesis, May 2010. Tampere University of Technology. 112p.
- Schenk, E. and Guittard, C., Towards a characterization of crowdsourcing practices. *J of Innovation Econ.*, 7, 1, (2011), 93-107.
- Soley, L. C., and Smith, A.L. *Projective Methods for Social Science and Business Research*. The Southshore Press, (2008).
- Sorensen, C., and Pica, D. Tales from the police: Rhythms of interaction with mobile technologies. *Information and Organization* 15 (2005), 125-149.
- Straus, S.G., Bikson, T.K., Balkovich, E., and Pane, J.F. Mobile Technology and Action Teams: Assessing Blackberry Use in Law Enforcement Units. *CSCW*, 19, (2010) 45-71.
- Streefkerk, J.W., Van Ench-Bussemakers, M.P., and Neerinx, M.A. Field evaluation of a mobile location-based notification system for police officers. *Mobile HCI 2008*, ACM (2008).
- Tsai, J., Kelley, P., Cranor, L., and Sadeh, N. Location-Sharing Technologies: Privacy Risks and Controls. *Proc. TPRC 2009* (2009).
- Verburg, R.M., Testa, S., Hyrkkänen, U. and Johansson, N. Case Descriptions of Mobile Virtual Work in Practice. In Andriessen, J.H.E. and Vartiainen, M. (Ed.) *Mobile Virtual Work: A New Paradigm?* Springer (2006), 267-288.
- Vääätäjä, H., Männistö, A. A. Bottlenecks, usability issues and development needs in creating and delivering news videos with smart phones. *Proc. MoVid 2010* (2010) ACM, 45-50.
- Vääätäjä, H., Vainio, T., Sirkkunen, E., and Salo, K. Crowdsourced news reporting – Supporting news content creation with mobile phones. *Proc. MobileHCI 2011*, (2011) ACM, 435-444.
- Vääätäjä, H. Mobile work efficiency – Balancing between benefits, costs and sacrifices. To be published in *International Journal of Mobile Human Computer Interaction (IJMHCI)*.
- Vääätäjä, H. User experience evaluation criteria for mobile news making technology – Findings from a case study. *Proc. OZCHI 2010*, ACM, 152-159.
- Wigelius, H., and Vääätäjä, H. Dimensions of Context Affecting User Experience in Mobile Work. In *Proceedings of INTERACT 2009*, part II, LNCS 5727, ACM (2008), 604-617.
- Yin, R.K. 2003 *Case Study Research – Design and Methods*. 3rd ed. Sage Publications, USA.