

# Using the MOWAHS Characterisation Framework for Development of Mobile Work Applications

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**Abstract.** This paper describes an evaluation of a characterisation framework to analyse mobile work scenarios in order to make corresponding software systems. The framework identifies complexity issues to be taken into account when implementing a system. The framework can also be used to elicit requirements from a scenario. Three research questions are investigated in this evaluation: 1) Can the framework be used to identify relevant challenges in the final system? 2) Can the framework be used to identify functional requirements for the final system? and 3) Can the framework be used to identify non-functional requirements for the final system? The evaluation was performed using the framework to analyse and implement an IT-support scenario. The paper also describes a web-tool for this framework that makes the characterisation process simpler. The tool introduces consistency rules to ensure stricter characterisation of the scenarios.

## 1 Introduction

The explosive development the last decade in mobile computing has changed the way we communicate, learn, entertain and work. Mobile phones and PDAs have become necessary tools to make life easier through functionality such as SMS, calendars, WAP-browsers etc. As mobile devices have become more powerful, it is now possible to create software systems for mobile workers that can improve the work processes. Such systems typically consist of various mobile clients connected to a server. They provide the mobile worker with necessary information and opportunity for filling in forms and reports on various locations. Development of mobile systems is different from development of distributed systems. When designing a mobile system, we have to overcome challenges in wireless communication, physical mobility, and portability [1]. Thus, it is important that these issues are examined carefully when considering the system requirements. In this paper, we review a framework that is used to identify challenges and possible requirements related to system development for mobile work. By mobile work, we consider work where the worker must move physically to some location to carry out his task. The goal of this framework is to identify the parts that are most complex and probably would be hardest to implement in a mobile support system. The framework has previously been used successfully to analyse mobile scenarios (like mobile journalist, mobile

researcher, mLearning [6]) to compare their characteristics. Although we found this analysis useful, it did not imply that the framework is adequate for developing software to support mobile work. The framework itself has been published before, and the contribution of this paper is the **m** tool used to apply the framework on scenarios, consistency rules to improve the quality of the characterisation, and most important an evaluation of the framework. In this evaluation, we want to investigate three research questions:

- RQ1: Can the framework identify *relevant challenges* related to the development of mobile support systems for mobile work?
- RQ2: Can the framework introduce *new functional requirements* related to the development of mobile support systems for mobile work?
- RQ3: Can the framework introduce *new non-functional requirements* related to the development of mobile support systems for mobile work?

The first question investigates whether the framework does what it is supposed to do i.e. to identify complexity in a system. The next two questions investigate whether new functional and/or non-functional requirements can be derived from using the framework. To answer the questions, we used the framework to analyse mobile scenarios when developing a system for mobile work.

The rest of the paper is organised as follows: Section 2 describes the characterisation framework, Section 3 describes how the framework was applied on the IT-support scenario. Section 4 describes the results of the evaluation, Section 5 relates this paper to similar work, and Section 6 concludes the paper.

## 2 The Characterisation Framework

The MOWAHS characterisation framework is a tool for analysing mobile work scenarios to create a mobile computing system supporting these scenarios. Such a system will typically be a process support system tailored for supporting mobile professions, and consists of one or more servers and some mobile clients (laptops, PDAs, mobile phones etc.). The framework can be used in at least two ways: *Firstly*, it can be used as a check-list of issues you should consider when making computer support for mobile work. *Secondly*, the framework can be used to perform a more careful examination of the requirements for making a system to support mobile scenarios. This examination will produce requirement indicators to identify complex parts of the system, type of client device, type of network, services needed etc. To use our framework, a mobile scenario must be described as a set of tasks. A task is here similar to a use case in design of software systems. To apply our framework to a mobile scenario, we use the following steps:

1. Select the mobile scenario and identify the different roles/actors
2. For each role identify tasks
3. For each task:
  - a) Write a task description using a task description template
  - b) Assign task priority (1-5, where 5 is most important)