

Requirements and Metrics for Location and Tracking for Ambient Assisted Living

Samih Eisa, Adriano Moreira

Mobile and Ubiquitous Systems research group,

Centro Algoritmi,

University of Minho,

Guimaraes, Portugal

sameheisa@gmail.com, adriano.moreira@algoritmi.uminho.pt

ABSTRACT

Location and tracking services for Ambient Assisted Living (AAL) are becoming fundamental components in healthcare solutions. They facilitate patients' tracking and monitoring processes and allow for better and long-term daily activity recognition. Such services play a significant role in detecting and anticipating any kind of abnormal behaviours that might happen to patients, especially elderly patients, who are suffering from chronic diseases and are more likely to have critical situations such as heart attacks, strokes, and sudden falls. Continuous healthcare services for those elderly helps in monitoring their health status inside/outside houses as well as contributing for their autonomy while increasing their safety feelings. Various location and tracking solutions have been developed, with vary capabilities, to provide real time localization. However, most of these solutions have not been designed particularly to comply with all the requirements of AAL. They are designed only for professional environments. The simple home and residential environments are not fully considered.

In this paper, we set out the general requirements for location and tracking services for AAL in home environments. Then we identify a set of metrics that could be used as evaluation criteria. If these requirements and metrics are to be widely adopted, we believe that potential applications will fit the needs of AAL in home environments, even if some of these applications do not need to fulfil all the requirements. Moreover, we evaluate two of the existing solutions through the use of the proposed metrics. The aim of the evaluation is to assess to which level these solutions fulfil the identified requirements. As a result, we found that, most of the existing location and tracking services are not quite adequate for AAL in home environments. There is a remarkable gap between the current solutions and the real requirements.

KEYWORDS: AAL requirements; home environments; indoor Location and tracking;