# Chapter 18
# Realising the Potential of SERENITY in Emerging AmI Ecosystems: Implications and Challenges

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**Abstract**   In this chapter we describe the potential of SERENITY in Ambient Intelligence (AmI) Ecosystems. As a proof of concept, we describe the implementation of a prototype based on the application of the SERENITY model (including processes, artefacts and tools) to an industrial AmI scenario. A complete description of this prototype, along with all Security and Dependability (S&D) artefacts used is provided in this chapter. Besides, the chapter also provides a complete description of one of the S&D Patterns used in the prototype, in order both, to give a global view of SERENITY and to provide useful details about the realization of this scenario.

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## 18.1 Introduction

This chapter is focused on describing the potential of SERENITY in emerging AmI Ecosystems. In order to illustrate this potential we use the description of a communication scenario. This communication prototype has been developed as a significant example in which we realize an AmI scenario with certain Security and Dependability (S&D) requirements. In order to better show the need for fulfilling S&D properties, as well as to highlight the AmI features, the scenario has been defined to take place in an office-like environment of a company, where several levels of security may be defined, and a certain control of equipments and devices can be easily assumed. Then, we present the list of S&D requirements for this AmI communication scenario. Additionally, we include detailed descriptions of the architecture of the prototype, of each component, as well as a complete description of the S&D artefacts that are required in this prototype. Finally, we also provide a concrete example of the S&D artefacts from the prototype.

## 18.2 Ami Ecosystems as a Paradigm of Open, Dynamic Heterogeneous Systems

AmI refers to electronic environments that are sensitive and responsive to the presence of people. It is expected that, as these devices grow smaller, more connected and more integrated into our environment, the technology will progressively *disappear* from the users perspective until only the user interface remains perceivable by users. The concept of AmI is built on three recent key technologies: Ubiquitous Computing, Ubiquitous Communication and Intelligent User Interfaces[1].

- Ubiquitous Computing (a.k.a. ubicomp). This concept was coined by Mark Weiser [1] around 1988. Ubicomp is a post-desktop model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities. Ubiquitous computing means integration of microprocessors into everyday objects like furniture, clothing, white goods, toys, and even paint.

- Ubiquitous Communication enables these objects to communicate with each other and the user by means of ad-hoc and wireless networking.

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[1] Some of these concepts are barely a decade old and this is reflected on the focus of current implementations of AmI.