The DiY Smart Experiences Project

A European Endeavour Removing Barriers for User-generated Internet of Things Applications

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Abstract In this chapter we discuss the wide range of challenges in user-generated Internet of Things applications, as being worked on among the large consortium of the DiY Smart Experiences (DiYSE) project (DiYSE, ITEA2 08005). The chapter starts with a discussion on the context of ‘DiY’ as a phenomenon to be leveraged, and eco-awareness as an example application area. The main body of the chapter is devoted to the technical outline of the DiYSE architecture, starting at the lower Internet of Things layers of sensors, actuators and middleware, over the role of semantics in device and service interoperability, up to requirements for the service framework and the application creation process. Furthermore, the chapter adds
considerations concerning tangible interaction in the smart space, assumed in DiYSE both for the context of experiencing as well as shaping the user experience. With the chapter, we thus take a holistic view, sampling the range from lower-layer technical implications of enabling DiY creation in the Internet of Things, up to the human-level aspects of creative communities as well as tangible interaction.

11.1 Drivers, Motives and Persona in the DiY Society

With the ‘DiY society’ (Von Hippel 2005) a world is imagined where anybody could become a creator of objects. With the DiYSE project taking the Do-it-Yourself (DiY) phenomenon as a starting point, we discuss its broader context in this section.

At first sight, the idea of creating objects might seem like nothing new. People have been creating things from the very start of civilisation, dating back to the prehistoric ages where people created very basic tools out of materials at their disposal. Ever since, the process of creating things has evolved and has become more complex, as the world and society itself became more complex (Sterling 2005). If we make a time warp to today’s modern world, we see that the introduction of technology into our lives is at least one of the aspects that have influenced the way we create, use and perceive objects. Computerised systems are nowadays allowing us to create very complex products that not everyone is capable of creating from scratch anymore. In order to incorporate a computerised, electronic system into an object a certain amount of expertise is needed for programming the system or to integrate the various hardware and software elements.

So, a major challenge to make the DiY society possible is to make people more capable of creating meaningful objects again in the context of today’s object complexity, beyond the intended use as driven and orchestrated by solution vendors, opening up e.g. the physical and electronic customisation possibilities. In an optimal utopian scenario, this means that the creation of technological and purely physical ‘analogue’ products should be a seamless activity, allowing people to create things that enhance their lives in a pervasive world. The way this process of creation is done by someone is inherently linked to characteristics such as personal background, intention, expertise and motivation.

Of course, all this is to be seen in the context of a complete next generation ‘manufacturing’ ecosystem, of which the viability depends on finding a sustainable balance, a multi-sided ‘win-win’, between the various involved actors. This will eventually determine the economical, next to the evident societal impact.