

Do we really need cheap, power efficient hardware for network embedded systems?

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November 19, 2012

1 Abstract

In the last 10 years, network embedded systems have been the focus of intense research in the context of wireless sensor networks, ubiquitous computing, or the Internet of Things. Initially, these systems were foreseen as large networks of tiny, low-powered and cheap devices replacing stand-alone data loggers. One of the key assumptions underlying these predictions was the size, energy consumption and price of sensors would decrease exponentially in time. However, today, the number of sensor nodes in any given deployed network embedded system is orders of magnitude below the original predictions. What is interesting though is that the early assumptions still shape current research communities. In this talk, I will review the assumptions that led to the current mismatch between current research directions and the actual needs of different sensing communities. I will dig into the consequences of these assumptions on logical and physical system design. More specifically, I will discuss the necessary relationship between (i) hardware characteristics and software abstractions, and between (ii) programming frameworks and application needs.

2 Bio

Javier Gonzalez is a Ph.D candidate at the IT University of Copenhagen, where he also wrote his M.Sc. Thesis in the context of MANA, a research project for improving scientific data acquisition in polar regions. His Ph.D is partly founded by INTERACT -a FP7 infrastructure project- and supervised by associate professor Philippe Bonnet. Javier carried out his B.Sc and M.Sc. in Computer Science at the University of Valladolid, being awarded with the best student award in the latter (2011). His research is

focused on scientific data: its acquisition, analysis and manipulation. In this context, he has experience in network embedded system programming (TinyOS and Arduino) and contributes to the Wireless Sensor Network community. At the moment he is exploring ways of integrating these same network embedded systems with a data management infrastructure.