

Number	LANCS-D4.1-RN-C.1	A-PI--
Title	Research Note (RN) for D4.1	
Subtitle	Ethical aspects of development C : <i>Internet of Things</i>	

PROBLEM	<input type="checkbox"/>	SOLUTION	<input type="checkbox"/>	Research Note	<input checked="" type="checkbox"/>	Selected Annotation	<input type="checkbox"/>
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Categories: | | |

Summary:

This note addresses some of the assumptions underpinning the vision of an internet of things and takes issue with confused understandings of what an internet of things can and cannot accomplish.

CONTEXT

The internet of things is a vision of both mundane and specialised objects being fitted to a network or infrastructure, interconnected to exchange information, sensory data and share data-handling capabilities. Accordingly, having an internet of things proposes an extension of the internet as we know it in ways which resemble Weiser's vision of ubiquitous computing and IBM's vision of pervasive computing. It is a vision projecting the disappearance of computational functions into wired and wireless networks, a vision of seamless integration of technology into everyday life (Denning, 2002; Weiser, 1991). It is also the prerequisite for developing seamless intelligent environments (ISTAG, 2001)

FACTS

Significantly expanding the range of objects and devices that are connected to a data/information processing infrastructure, changes the ways in which objects in transit can be tracked and monitored, and the ways in which objects can interact with other objects in the environment. This is evident already in a range of commercial and occupational practices, for example:

1. the use of RFID embedded in products for identification and location purposes.
2. the use of sensory devices attached to industrial containers to manage volume and proximity of hazardous materials.
3. the use of biosensors in environmental monitoring

The internet of things is also changing what counts as a 'thing', for example, the use of microchips with RFID, biosensors and positioning devices for implantation in animals and humans.

(Key readings include Aarts and Encarnaç o, 2006; Bibel, 2005; European Communities, 2007; European Commission, 2008; Robinson et al, 2009; Aarts and Marzano, 2003; European Commission, 2007; European Commission, 2010; European Policy Outlook RFID, 2007; Hildebrandt, 2009; Van De Garde-Perik et al, 2008).

COMMENT

A key issue is the impossibility of fully seamless environments (see e.g., Bell and Dourish, 2007). Visions of such environments leaves them 'in the future' or in perpetuate postponement which draws attention away from actual achievements to-date. The lack of seamlessness relates to problem-solving in areas such as:

1. reliability in operation and maintenance of hardware and software
2. correctly capturing the identity and state of objects
3. correctly capturing the state of bodies and/or identity of persons
4. correctly processing information in order to 'notify' other objects and humans what is the case and what to do next

Another evident problem is the limits for which 'smartness' is meaningful and relevant, thus, a feasible business model. Does anyone want a toaster that talks or a juicer with an email address? (Marzano, 2003). Attempts to design proactive 'smartness' to enhance everyday experiences in common environments could easily result in irrelevant and potentially awkward device interception (see Gunnarsdóttir and Arribas-Ayllon, forthcoming). There are significant challenges as well associated with the level of purpose designed into 'smart' things because substantiated purposes preconfigure use, even bootstrap an activity rather than facilitate it (Akrich, 1992).

The conditions that crystallize the 'seams' in an ICT infrastructure of interconnected things, open the doors to reflection on a range of issues that relate to the protection of privacy and, also, what the challenges are to existing data protection directives (European Communities, 2007; European Commission, 2008; Robinson et al, 2009). The main concern already is the lack of transparency with respect to how existing infrastructures are managed and governed. There are also issues relating to changes in organisational memory in occupational settings, the management of memory over time, and reconfigurations of employer-employee relations.

1. Who or what intercepts the 'things' on the internet of things (legitimately and illegitimately)?
2. Who is responsible and who controls data that propagate through constellations of service provisions operating on the internet of things?