Number	LANCS-D4.1-RN-B-Flagship.2	A-PI--

Title	Research Note (RN) for D4.1
Subtitle	Ethical aspects of development **B : Flagship Development** : *Assistive Robotics*

PROBLEM		SOLUTION	

Research Note	X	Selected Annotation	

Categories: | | |

Summary:

This note addresses implant technologies and lists some of the ethical considerations with respect to their medical, modification and security applications.

CONTEXT

Implants are designed to communicate directly with the body or the brain and in many cases also with computer programmes. Implant technologies include invasive interfaces to control the body, objects and devices, and microchips with embedded records, sensors, positioning and tracking devices. This range of applications raises questions about the technical potentials and limitations of:

- inserting signals into the brain
- extracting signals from the brain
- storing and using data and electrical signals inside the body
- cultivating neuronal cells on microchips

FACTS

Implant technologies can be used for therapeutic, security and modification purposes and are generally seen as important to the future of individual and social well-being. However, they are far from risk-free. There are well known complications in medical setting, individual, social and organisational settings, and they pose significant ethical challenges including concerns about the future of humans.

Implants can be passive or active. They can store, receive (perceive), process and transmit data, and they can potentially be conjoined with other technologies in advanced therapies. Latest developments in body/brain modification, for medical or other purposes, beg the question of how far the convergence of physical, mental and virtual phenomena can progress towards complete disappearance of human-device interfaces.

(Key readings include: Barad, 2003; Beauchamp and Childress, 2001; Bell et al, 2009; Bostrom, 2005; Dobelle, 2000; European Group on Ethics in Science and New Technologies to the European Commission, 2005; Fletcher and Greferath, 2010; Fuller, 2011; Garreau, 2005; Giordano et al, 2009; Giordano and Gordijn, 2010; Gunnarsdóttir, 2010; Haselager et al, 2009; Holm, 2007; Roco and Bainbridge, 2002; Rodotà and Capurro, 2005; Savulescu, 2009; Schermer, 2009; Tamburrini, 2009; Warwick, 2000; Warwick, 2010; Wolpe, 2002).

COMMENT

Ethical questions associated with the development of implant technologies, centre on issues of human dignity, equality and justice on the one hand, and data protection and data management on the other hand. They imply a host of concerns for reflection and debate:

Technicalisation of the body
Access to advanced therapies
Quality of Life
Autonomy and independent living
Brain-device interdependence
Risk management
(Ir)reversibility
Safety and liability
Human self-understanding and identity
The idea of 'man'
Human enhancement / transhumanism
Body sanctuary and body resource
Social pressure: for and against
Dignity and privacy
Data protection
Implants in selected social groups
Implants for security
Implants for tracking
Implants for managing health and illness
Healthcare equality
Technological 'fix'

1. Implant technologies draw attention to the modification question. When is the modification of a body or a mind an enhancement and how is it a new experiential avenue to be lived and explored?
    - What is the role of self-experimentation in this respect?
    - What is the role of sports and the arts?
    - How far can body modification artists take their art?

2. Implanting personal/health records, positioning devices or biosensors draws attention to the fact that informed consent on the use of remote monitoring does not resolve controversial issues surrounding the collection and management of data, using advanced sensory systems, highly distributed protocols for data transmission, processing and service response. It becomes increasingly more difficult to define data jurisdictions and control which kind of information becomes readily available and to whom / what. These factors are critical in:
    - health-related situations
    - security and safety-critical situations

    1. Who is responsible, when implants fail to deliver the desired result or experience?
    2. Who owns data implanted in the body or collected from bodily functions?
    3. Who and what accesses these data?
    4. What are the risks when data propagate through constellations of services or get lost in the infrastructures?