

Ospedale 4.0: Servizi per la salute centrati sulla persona basati su alta digitalizzazione e automazione dei processi sanitari

Hospital 4.0: Person-centered services for health, based on high digitization and automation of sanitary processes

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We propose to our Research Units for the next three years a research agenda that it is inspired to what is happening in the context of industrial production

“The term ‘Industry 4.0’ refers to the fourth industrial revolution, a new phase in the **organisation and management of the entire value chain over the full product life cycle**. This cycle is increasingly oriented towards **individual customer requirements** and extends from ideas, orders, development and manufacturing to end-customer product delivery and recycling, including all associated services. **The framework is provided by networking all the elements involved in the value chain** so that all relevant information is available in real time, and using the data to derive the optimum value adding stream at all times. **Linking people, objects and systems produces dynamic, self-organising and cross-company value adding networks** that can be updated in real time and optimized on the basis of different criteria including costs, availability and consumption of resources.”

The internet of things: a fully interconnected network

Anyone, Anywhere, Anytime, Anyhow ... Anything

This rich network of people and things enables easy implementation of a flexible, application-oriented logic over cyber-physical infrastructure

In process design there is no longer a clear separation between physical and virtual entities

IC technologies play a fundamental role in this revolution, but also those fields of science and engineering that deal with the physical world can provide significant contributions

In this fully interconnected world, people and things can interact providing several advantages

- Independence of physical location and time
- Cooperation
- Context awareness
- Adaptivity
- Self-management
- Resilience and self-healing

Sanitary processes are substantially different from production processes, but ...

... the driving forces in Industry 4.0 may play a relevant role in the health context

- Attention for every single patient and personalization of treatments
- Networking all the actors and devices involved in the processes can revolution the way health services are implemented and delivered
- Increase of effectiveness, safeness and efficiency

How will be Hospital 4.0?

A distributed system where the sanitary processes highly rely upon technology according to the Internet of Things paradigm

A “hub” that coordinates a rich network of relations among patients, caregivers, sanitary operators

A place where high-intensity sanitary services are provided, whereas “ordinary” services are provided near or at patients’ home

Hospital 4.0 is a challenge

- Design innovative services that answer real needs of patients, sanitary personnel, but also ordinary people who are involved in prevention programs
- Guarantee economic sustainability and organizational feasibility
- Ensure protection against any kind of threats

Preserve the social value of human care as a human act that

- Characterizes sanitary processes
- Cannot be altered in its ethical and moral nature by the introduction of new technologies

The *Centro Integrato di Ricerca* can tackle the challenge

Competences

- Materials and sensors
- Mathematical models
- Robotics
- IC technologies
- Humanities

All these skills are well integrated with RUs of Medicine and Biology that have to be involved to reach the expected goals