Human-centered Technologies and Services

- What’s the target?
  - Investigation of user needs, values and requirements for a better human-life.

- How this target could be achieved?
  - By developing methods for designing, evaluating and implementing highly usable and brilliant systems.

- What skills are required?
  - Multidisciplinary skills of high variety – e.g. engineering, financial analyst and psychologist.

- Possible applications?
  - ALL: mobile technologies, Internet services, machine automation, digital systems especially in healthcare, business management, …
Human-centered Technologies and Services in more details

- **The meaning of Human-centered Design**
  - To design products and services by taking into account in an absolute way, what is of paramount importance:
    - the users' opinions and
    - the desired characteristics on products and services.
  - To design products and services not only of high performance, but also of a proper functionality in order to become readily accessible for everybody.

- **Developing strategy of Human-centered Services**
  - Throughout its development process, the service is based on user needs and expectations, which are evaluated by potential final users in order to provide feedback to the service design process.

- **ISO Standard**
Human-centered Technologies and Services concerning whom?

- Mostly companies
  - Since they are strongly related to the final product.

Indeed several advertisements are emerging in the INTERNET:

Fujitsu

T-Mobile

Finland
Human-centered Technologies and Services concerning whom?

- Also, several projects of great consortia, like:
  - MAYA (kids-centered) at Pittsburgh, USA.
  - InSEEDD iLab Southeast Asia in Southeast and Argentina.
  - SMART for healthcare, in France.
Human-centered Technologies and Services concerning whom?

- Some university programs:
  - Master of Science in Human-Centered Computing
  - Michigan Technological University
  - Department of Cognitive and Learning Sciences
  - MA in Human Centered Informatics
Every research activity should be useful.

Are all technological innovations good or bad?

Usually new technologies results in new specializations and new knowledge requirements. Are people who can follow new technologies really smart?

Are new technologies and services helpful in human cognition, or, instead, create confusion?

Often new technologies and services make us feeling inferior, because of the human inadequacy to memorize huge information like a computer. How can we cope with it?

What specific features should the new technologies and services have in order to help us?

**Human-centered Technologies and Services broadly speaking, concern: ALL OF US!!!**
I am looking forward to hearing your answers on these specific questions or any other remark, comment or information on Human-centered Technologies and Services.
Panel ICIW: Human-centered Technologies and Services

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Introduction

● Industrialization of software development
  ● Transition from craftsmanship to manufacturing
  ● Transition from standalone application to cloud computing

● Questions
  ● Is software engineering & industries discipline enough mature to successfully make this move?
  ● How bring computers together to build a more powerful computational engine that is capable of processing large-problems and multiple tasks concurrently?
  ● Are we ready to construct software based on service oriented computing & Quality Attributes?

● Moving Object to Component to Service Oriented design
● Moving client-server to P2P to Cloud Computing architecture

● Software crisis: is a permanent state [Grady Booch]
  ● Complexity, lack of traceability, software quality, reusability, maintainability, ...
  ● Software architecture
  ● Connectivity
  ● ...
Trends & Technologies

- Aspect-oriented computing, Model Driven Engineering, Agile methodologies, Software architecture, Service oriented computing, Business Process reengineering, ...
- Web services, Cluster, Grid, Cloud computing
- Specific questions:
  - How to select proper patterns/styles to satisfy Quality attributes for software architecture?
  - How can we develop a software based on service oriented computing?
- Non-functional properties driving software architecture
  - Portability, performance, availability, reliability, transparency, security, ...
  - Example: interceptor pattern, which I have found to be crucial for creating distributed objects middleware that provides extensibility and modularity without scarifying performance. Steve Vinoski, Chief Engineer, Iona technologies, 2004
- The use of SOA for Cloud deployable services presents an advanced architectural concept with significance for a system’s transition from legacy state to a Cloud system state
- Companies around the world have turned to technology to increase business efficiency while boosting their competitive edge
ICIW 2013 PANEL:
Human-centered Technologies and Services

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Basic Definitions

- Hardware
- Software
- Human
Basic Definitions

- **Hardware**
  - If is made of atoms

- **Software**
  - It is made of knowledge

- **Human**
  - It is made of both
  - The human brain is the only hardware able to create software
Human or Humanity

- Which is the scale of the problem?
  - Often human centered technologies refer to:
    - HCI, wearable computers, smart houses, help for disabilities
    - Interesting applications, some of them really needed, most of the time they are just gadgets
      - (Human centered or supplier company centered?)
  Beware the Pinocchio's Land of Toys effect.
    - (e.g. prism project!)
- But which are the characteristics of the technology needed by the humanity?
Human Rights

- Freedom
- Creativity

- Technologies and services are Human Centered when they preserve these fundamental rights
Creativity = Grey Gold
(after gold, black gold, blue gold a new kind of gold)

- Knowledge is not provided in limited quantity.
- The more knowledge is available, the more it is possible to create new knowledge
- (knowledge=software)
Ecology of Creativity and Knowledge

- Elimination of the Babel effect.
- Increase of Logo-diversity.
- Real awareness of real problems.
- Reduction (elimination) of censorship lobbies.
- Better efficiency, less need for energy: nobody will use an inefficient solution when a better one exists.
- Better chances to solve problems
- Better intellectual productivity: it is possible to know the tallest giants.
- Less costs and delays due to discussions and trials regarding limitations to intellectual freedom.
Human-centered Technologies and Services

- Libre Software, Libre Data, Libre Formats
- Creativity first: πάντα πνεύμα
  - It is human centered what preserves freedom
- Proprietary technologies and services which hide their constructive details (hw&sw) cannot be human-centered:
  - It is like a drug without its composition (red pill or blue pill?)
Infrastructure for User Generated Service Application Developing

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From UGC to UGSA

- **User generated contents (UGC)**
  - Blog
  - Wiki
  - Web pages

- **User generated media (UGM)**
  - Music
  - Sound
  - Movie

- **User generated applications (UGA)**
  - PC
  - Android

- **User generated service applications (UGSA)**
  - Mashup
  - Web application hybrid
Our project: Mission

- Creating infrastructure for non-ICT specialist developers developing practically usable applications

Example: