

Human-centered Technologies and Services

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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**

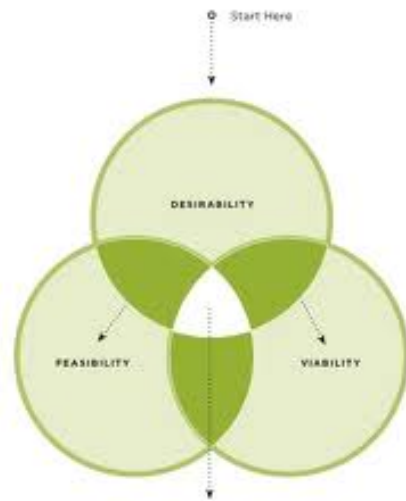
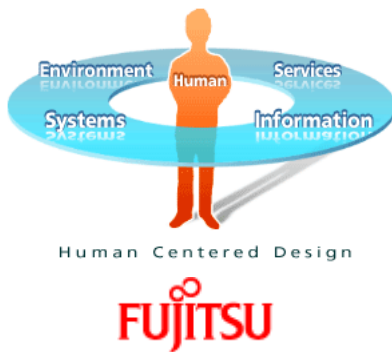
- Human-centered design for interactive systems ISO 9241-210, 2010.

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:



Human-centered Technologies and Services concerning whom?

- Also, several projects of great consortia, like:

MAYA (kids-centered) at Pittsburgh, USA.



In Southeast and Argentina.



For healthcare, in France.

Human-centered Technologies and Services concerning whom?

- Some university programs:



UMBC

AN HONORS UNIVERSITY IN MARYLAND

*Master of Science in
Human-Centered Computing*

Michigan Tech Michigan Technological University
Department of Cognitive and Learning Sciences



MA in Human Centered Informatics



TAMPERE UNIVERSITY OF TECHNOLOGY
Human-Centered Technology

Human-centered Technologies and Services broadly speaking, concern: ALL OF US!!!

- **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?*

**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

Renzo Davoli

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Basic Definitions

- Hardware
 -
- Software
 -
- Human

Basic Definitions

- Hardware
 - It 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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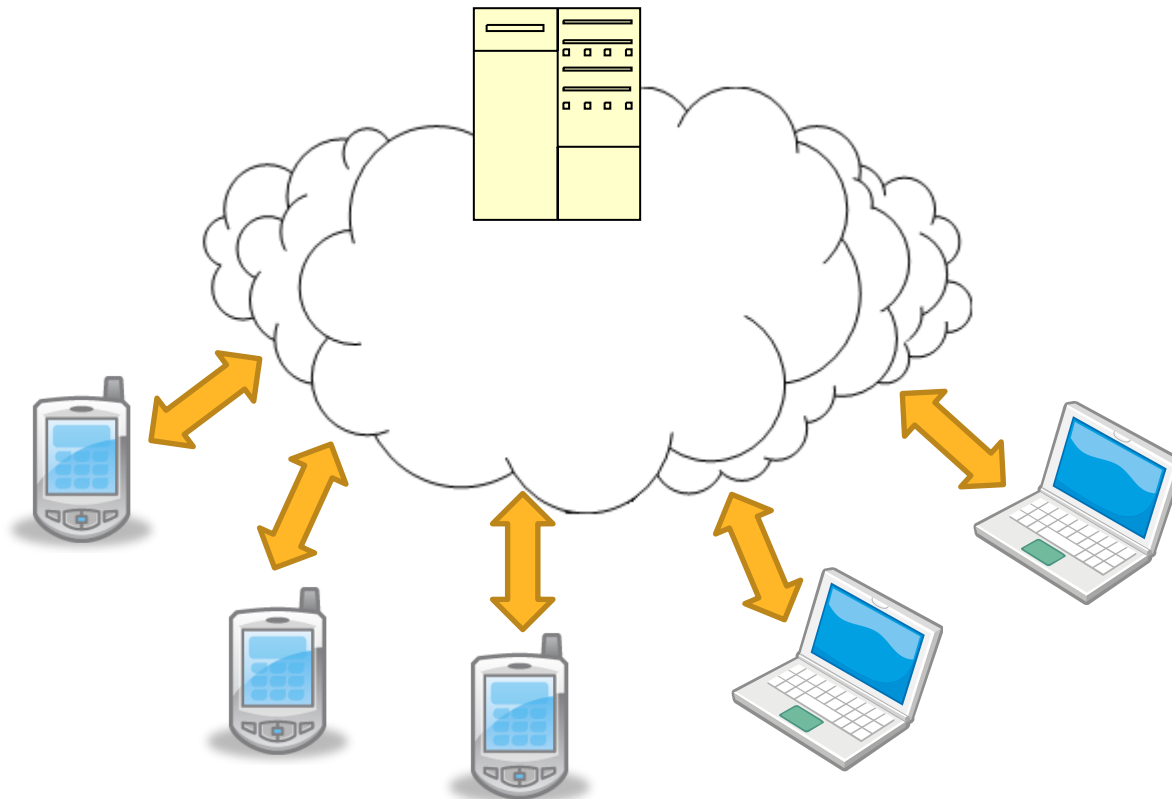
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From UGC to UGSA

- **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:
A Healthcare App.

