



Festival della Scienza **Imagination**

Genoa, october 25th _ november 4th 2012



From Imagination to Knowledge Visualization in Multiscale Human Body Modelling

FP7 ITN MultiScaleHuman Workshop

Festival della Scienza 2012

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Inter@tics
Flagship Project

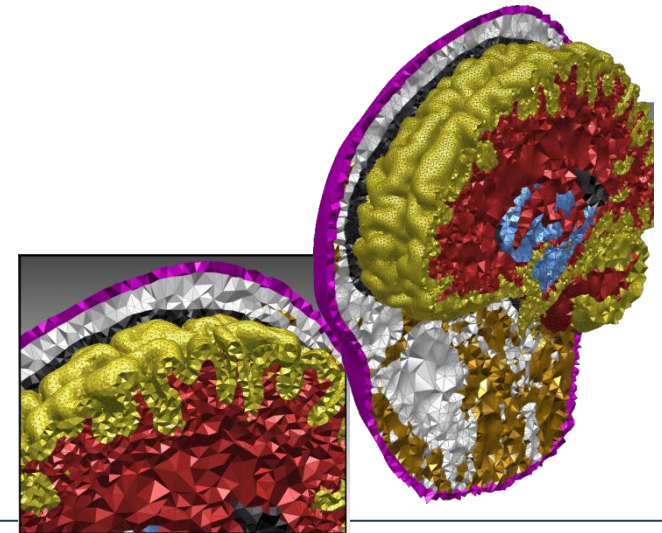
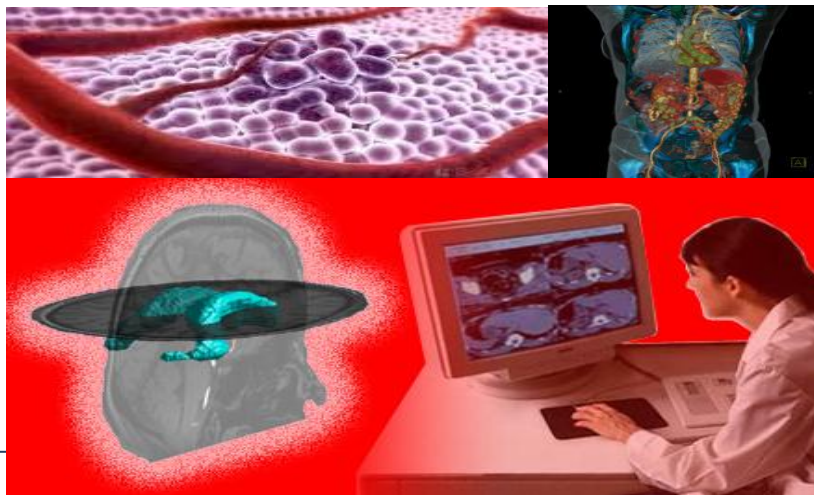
Imati

Politecmed



Computer aided medicine

- A large amount of digital medical data is produced
 - physiological measurements, genetic data, medical images, laboratory examinations, ...
- Many activities are carried out with the support of software tools:
 - patient-specific documentation, diagnosis, simulation, assisted surgery, ...





Digital Patient

Challenges

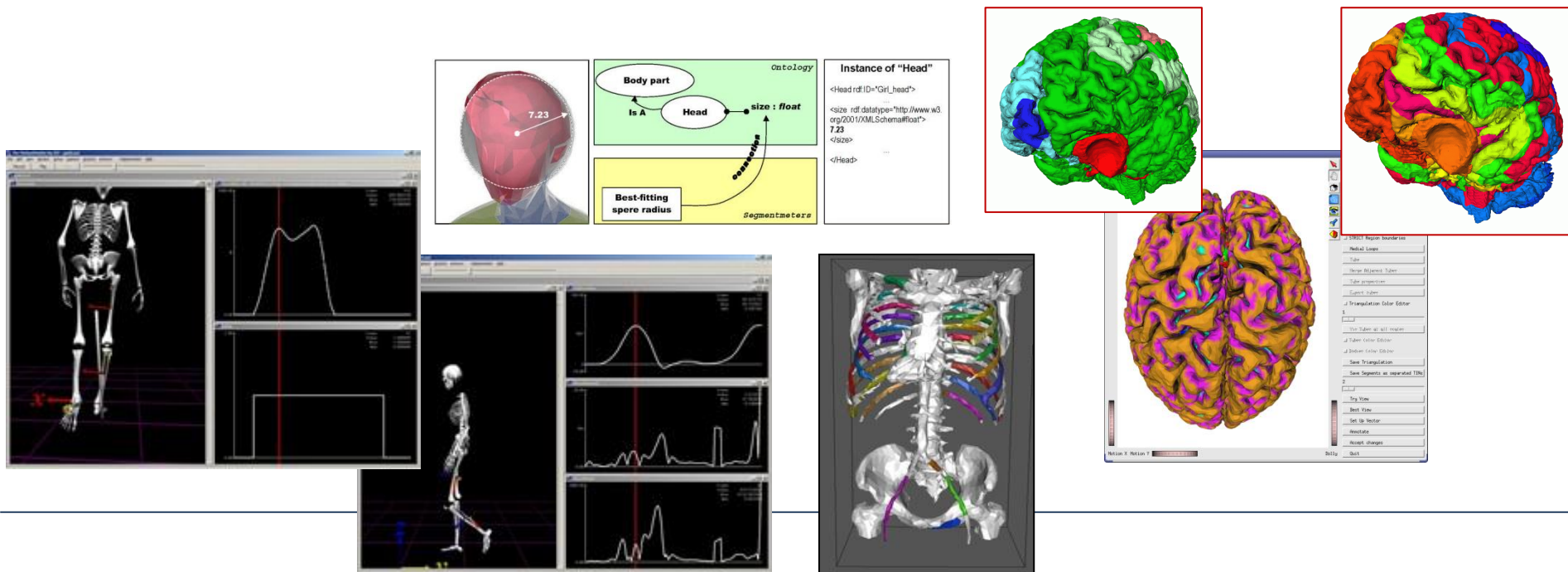
- *Integration of patient-specific models* for better prediction and treatment of diseases
- *Context-aware monitoring, analysis, interpretation and use* of different health *parameters*
- *Shared patient-doctor decision support* systems to combine multi-parametric data together with established or newly created medical knowledge
- *Semantic interoperability* among systems to enable integration of patient information from multiple sources



Digital model of human body

Challenge: a virtual human body as a complex system modelling all its characteristics and functions

- *We measure much more than what we understand*
- Coding geometric data and knowledge is beneficial to the development of patient-specific predictive digital models



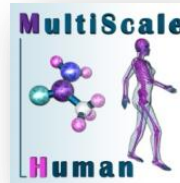


Introduction

- Other initiatives
 - EU calls



- Initiatives discussed in the workshop
 - MultiScaleHuman
 - Virtual Physiological Institute
 - Interomics
 - Regional Initiatives





The Virtual Physiological Human: challenges and state-of-the-art

- | | |
|---------------|---|
| 9:25 – 9:50 | MultiScaleHuman (<i>Nadia Magnenat-Thalmann, MIRALab, MSH Coordinator</i>) |
| 9:50 – 10:15 | From clinical data to digital repository and to disease modeling (<i>Giacomo Pongiglione, I.R.C.C.S. Ospedale Bambino Gesù</i>) |
| 10:15 – 10:40 | The CNR Flagship Project INTEROMICS (<i>Luciano Milanesi, CNR ITB</i>) |
| 10:40 – 11:00 | Regional initiatives of CNR in the biomedical domain (<i>Bianca Falcidieno, CNR IMATI</i>) |



The Virtual Physiological Human: from medical data to models

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|---------------|--|
| 11:20 – 11:45 | Medical imaging analysis and 3D data visualization tools (<i>Loris Vosilla, Softeco Sismat srl, Sergio Paddeu, Esaote</i>) |
| 11:45 – 12:10 | 3D shape analysis and semantic annotation (<i>Michela Spagnuolo, CNR-IMATI</i>) |
| 12:10 – 12:35 | MyCorporisFabrica: an integrative functional description of human anatomy (<i>Olivier Palombi, IMAGINE, LJK, INRIA, UJF</i>) |
| 12:35 – 13:00 | Visualization and Understanding of Medical and Scientific Data (<i>Franz E. Wolter, Leibniz University of Hannover</i>) |
| 14:00 – 14:25 | Simulation technologies in medicine: mechanical and physically-based simulation (<i>Nadia Magnenat Thalmann, MIRALab, University of Geneva, MSH Coordinator</i>) |
| 14:25 – 14:50 | New approaches for Tissue Engineering and Regenerative Medicine (<i>Miguel Oliveira, Universidade do Minho</i>) |



Demos & Round table

Demonstration of MRI data visualisation, segmentation and interpretation tool (Esaote/Softeco Sismat Srl/DIMI-Università degli Studi di Genova) as well as the simulation software of MIRALab

Round Table: from imagination to knowledge visualization in multiscale human body: the quest for a unique model of the whole picture

Moderator: Dr. Michela Spagnuolo

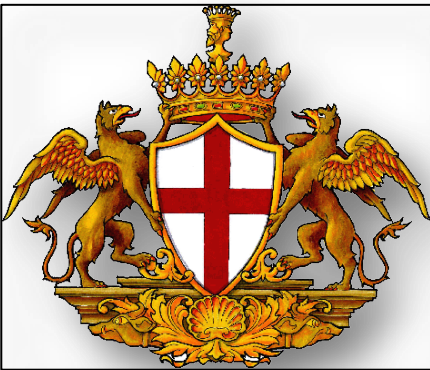
Panelists:

- *Prof. Nadia Magnenat-Thalmann – Miralab, University of Geneve, Switzerland*
- *Prof. Jean-Claude Leon, Grenoble Institute of Technology – INRIA*
- *Dr. Luciano Milanesi, CNR-ITB, Italy*
- *Prof. Miguel Oliveira, Universidade do Minho, Portugal*
- *Dr. Sergio Paddeu, Esaote, Italy*
- *Prof. Olivier Palombi, IMAGINE, LJK, INRIA, UJF, France*
- *Prof. Giacomo Pongiglione - I.R.C.C.S.Ospedale Bambino Gesù, Italy*
- *Prof. Daniel Thalmann - NTU, Singapore*



Festival della Scienza & Genova Aquarium

- Hosting City & Event



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- Hosting location



Free visit after the MSH Workshop



MSH Project @ Piazza Europa



- The Italian Regional Hub POLITECMED and Festival della Scienza host a presentation of the main aims and activities of FP7 European Projects.
 - You can visit the FP7 MultiScaleHuman stand at Sala dei Telegrafi, Palazzo della Borsa (Piazza de Ferrari).
- POLITECMED Conference “*The body cut into slices: imagine yourself inside*”
 - October 27th at 2.00 p.m. in the Sala del Telegrafo inside Palazzo della Borsa.

