



# Human-Computer Interaction influences on my Visualization work

Beatriz Sousa Santos

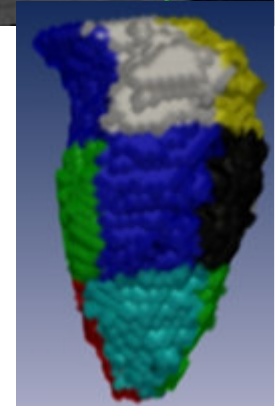
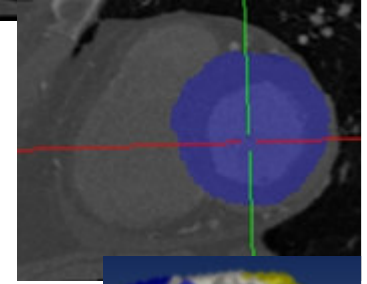
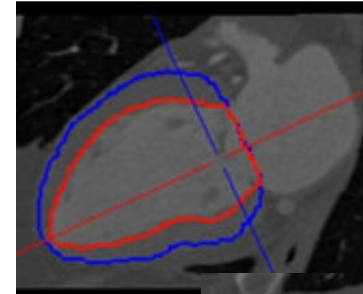
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# The team and application areas

- Beatriz Sousa Santos
  - Joaquim Madeira, Paulo Dias, Carlos Ferreira
  - Samuel Silva, Vítor Gonçalves
  - Domain experts (radiologists, radiographers, geophysicists)
  - ...
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- Medical data – Computer Tomography from heart and lungs
  - Geophysical and Geotechnical data – (Ground Penetration Radar, Electrical and Mechanical Resistivity, ... )

# The problem

- **Large amounts of data:**
  - e.g. Left Ventricle Segmentation of 4D MDCT Images of the Heart to LV functional analysis:  
10+ heart volumes (512x512x256+ voxels) per cardiac cycle;
- Data visualization/exploration is supposed to foster insight and support users in **complex procedures:**
  - Getting a general overview of the data
  - Performing specific tasks (accessing specific indices, diagnosing specific conditions, ...)
- **Domain experts are not computer experts!**



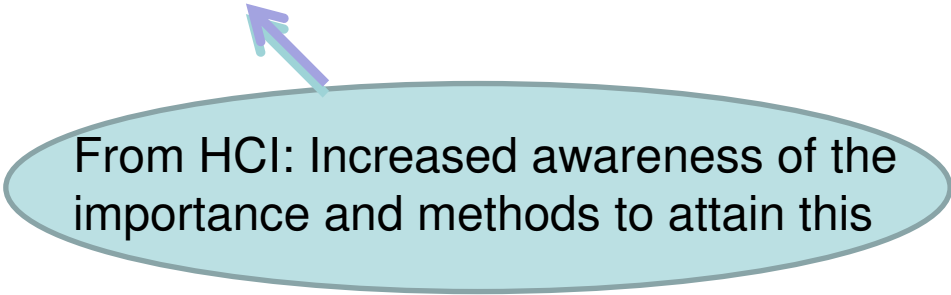
# Visualization applications

The focus should not be only on:

- data types,
- visualization techniques,
- algorithms,
- architecture...

But firstly on:

- **understanding and meeting the user needs**



From HCI: Increased awareness of the importance and methods to attain this

# Main contributions from HCI

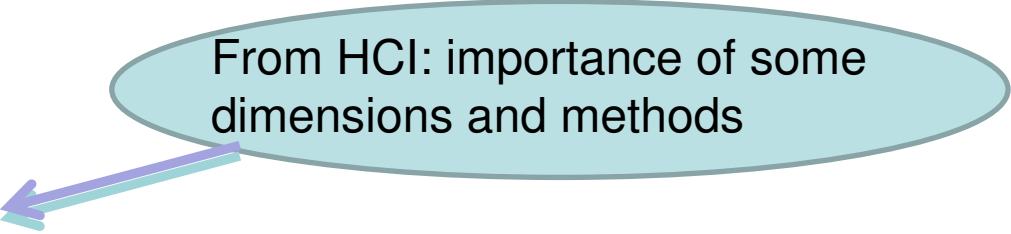
- Try (hard) to understand user needs
- Know the user (study them as a unknown species):  
invest in conversations and observation
- Take into consideration the Human Information Processing System  
(memories, attention, pattern recognition, ...)
- Study the users' work flows, tasks and tools: discuss them with the users:  
(what are the limitations, how to improve and extend the current ones?)

# Main contributions from HCI (cont)

- Try (hard) to meet user needs
- Consider usability as a fundamental requirement
- Adopt User Centered Design including several evaluation rounds
- Incorporate users in the team
- Try to improve the whole process (not only a part of it)
- Produce guidelines

# Evaluation in Visualization

- Fundamental
- Multidimensional
- Complex



From HCI: importance of some dimensions and methods

- Thank you!