

WG7 Report: Multiscale Imaging and Image Analysis

MSM PI Meeting

April 11, 2007

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General Topics

- Usefulness of the group discussions: How to refocus?
 - Where does image analysis stop and modeling begin?
 - Need some initiative to continue with this kind of activity (is there some long-term payoff).
- Data repository to support multiscale modeling and collaboration.
- Meta data collection and management.

Data Repository for Multiscale Modeling and Collaboration

- Standardization of data organization and storage of multiscale, multispecimen, multimodality data.
- Mapping across different scales, specimen, modality.
- Linking between repositories.
- Image data sharing: how to make public terabytes of data?
- Framework for browsing and flying through the dataset at multiple scales: Enable scientific discovery based on “soft” hypotheses.
- From repository (data) to modeling (model) back to the repository (for verification).

Expandability of Data and Metadata

- Mechanisms for contributing data to existing data repositories.
- Data alone is not sufficient: Metadata/annotation is what really makes the data (image) useful for modeling, simulation, and discovery.
- Expandable metadata:
 - Similar to “tag cloud” in online communities.
 - Issues with scientific integrity: who should be allowed to add the metadata? Who will enforce integrity/quality? Resolving potential conflicts?
 - Utilizing human-powered computing.

Other Points Made

- High-performance computing needs, use of GPU, etc.
- Distributed computing: depend on decomposability/locality of data.
- Looking at other existing repositories, such as genetic databases.
- Accompanying publications with multiscale image data and models?

Plan

- Refocus WG theme.
- Draw up a general data/model repository framework to allow image data coordination, metadata entry/curating, modeling, and sharing.
- Draft a white paper with the ideas discussed in the WG meeting:
Possibly make it a proposal.

References