

Report 67: Informatics partnerships, services and infrastructure for intramural and extramural EHS research

Convener: Ken Fasman

Brief History: As with many other areas of science, the pace of data generation in environmental health sciences (EHS) has outstripped the existing resources for information acquisition, management, analysis, visualization and dissemination. There seems to be a broad consensus in the community that more informatics expertise and resources are required to support both intramural and extramural NIEHS research.

Discussion Highlights:

- Relationship with NCBI and other organizations/groups with significant informatics expertise
- Promoting EHS informatics – building on existing bioinformatics and cheminformatics disciplines but taking into account particular needs of EHS research, such as the role of GIS information
- Education and training – how to create the next generation of EHS informaticians, how to spread these skills and techniques throughout the community to address broad needs
- How best to provide EHS informatics services to both intra- and extramural research? (“There’s a great bioinformatician down the hall from me, but he’s only interested in his own research questions. I need a consultant – even better, a scientific collaborator -- to help me organize/analyze/visualize my data.”) There are a number of models to choose from:
 - NIEHS intramural informatics group supporting intramural research only
 - Intramural informatics group supporting both intramural and extramural research
 - Contracting with commercial informatics companies to provide service to intramural and/or extramural activities
 - Funding a network of one or more academic groups as national centers of EHS informatics (e.g., as the biomedical imaging community have done) – look for groups that are already doing this well at the local, institutional or regional level
- Creating registries for EHS data resources, informatics tools, and services so that the community can be aware of, and effectively utilize, already existing resources
- Advising and guiding both intramural and extramural investments in IT hardware (storage, high throughput computing, networking, etc.) about in-house investment vs. cloud computing. Individual NIEHS grantees shouldn’t have to answer these questions again and again on their own.

- Creating the infrastructure for an “EHS network” sharing data, storage and computational capacity, along the lines of caBIG for NCI research -- without repeating the specific mistakes of the caBIG program!
- Improving NIEHS’s ability to connect, collaborate and leverage related activities in other NIH institutes and peer organizations (EPA, CDC, FDA, etc.) despite the Institute’s geography

Recommendations:

- NIEHS should make environmental health science informatics a priority to make the most of its research investments. Investment is required in order to foster the development and expansion of this discipline to meet the needs of the scientific community.
- This investment needs to take the full life-cycle of scientific data into account. Once we fund scientific studies to generate new data, we should consider how the data will be organized and disseminated, visualized, and integrated with other related information. We must also consider the useful life span of the information, and provide for its maintenance during that lifetime.
- Please don’t reinvent the wheel. Leverage the existing NIEHS intramural informatics service model, as well as the considerable expertise of NCBI and other organizations and academic groups with significant informatics expertise. Don’t “go it alone.”
- Successful partnerships among (EHS) informatics, traditional Information Technology, and Library and Informatics Sciences are difficult to achieve; many organizations have stumbled here. There are various models for implementing this, but success usually depends on active sponsorship from the organizational leadership as well as strong, mutual respect among the disciplines.
- These and related informatics issues seem to run through many of the topics over the past two days. These threads could be braided together to create a unifying informatics theme for NIEHS.

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