

Engineering and Cyberinfrastructure

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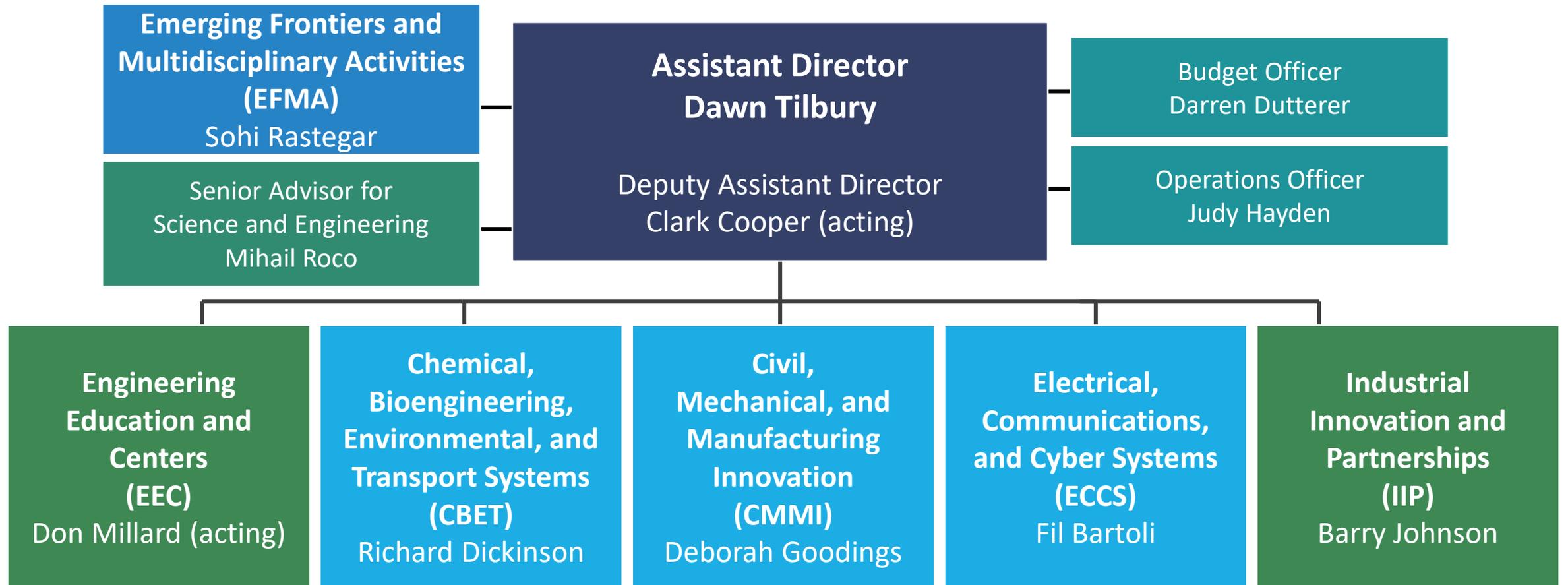
Outline

Overview of ENG Directorate

Materials research

Nanohub

NSF Directorate for Engineering



Materials Data Opportunities

Research to design materials computationally using data derived from experiments and computer simulations

Databases produced by rapid throughput experimental assessment of materials properties and compound formation are now commonplace

How can such large datasets be shared?

How can they be explored?

How can they be easily accessed?

TMS report on Materials Data Infrastructure

- Repositories: hardware, software, standards, protocols to make materials data available
- Tools: Software to enable data handling and analysis
- E-collaboration platforms: Mechanisms to actively share data



Building a
Materials Data
Infrastructure

Opening New Pathways to Discovery and
Innovation in Science and Engineering

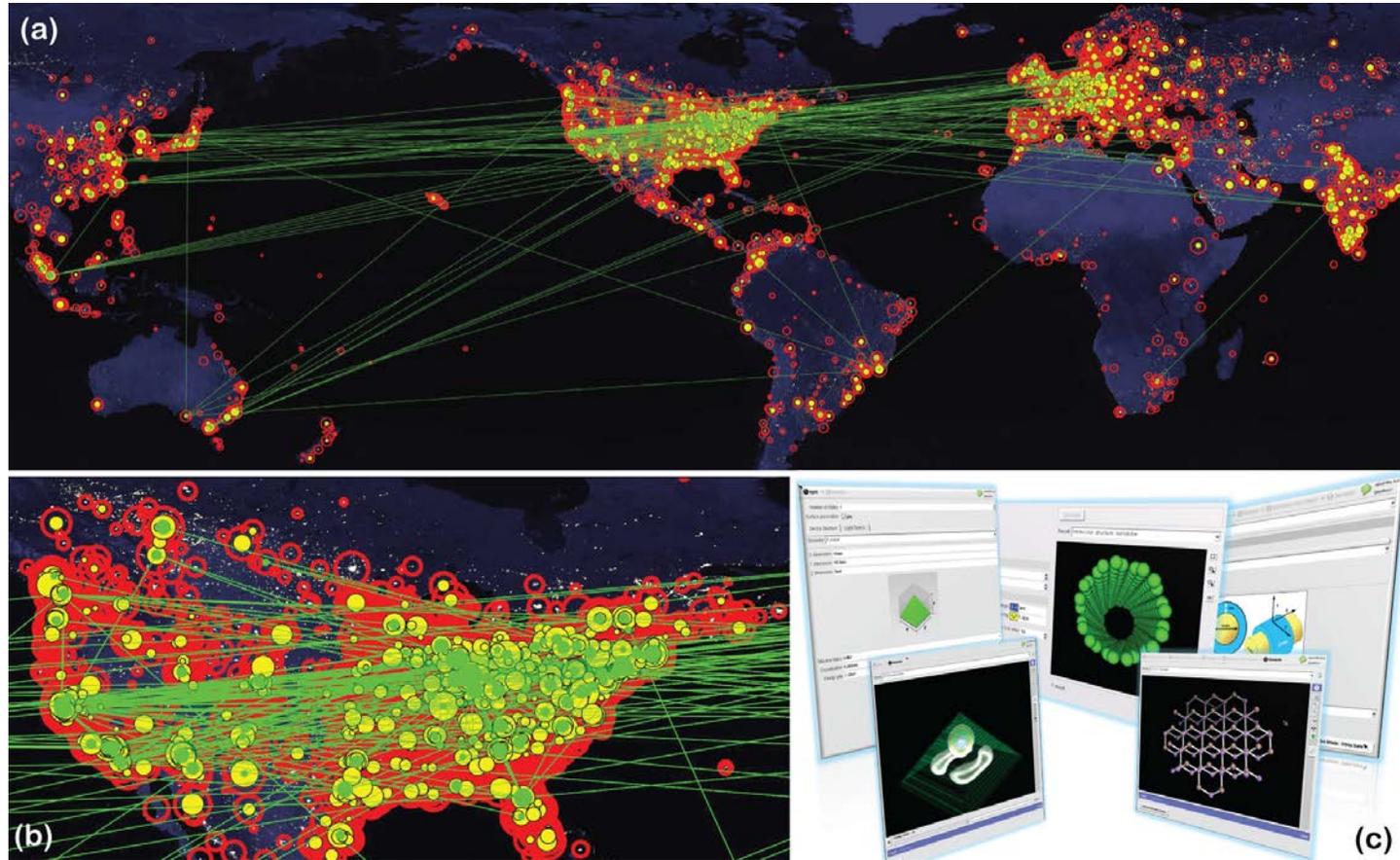


What IS nanoHUB? tools (science “apps”) & more

An infrastructure for the nano community to access and share computational code with minimal barriers

- Bring Your Own Interface OR Wrap a straight-forward GUI and I/O management around the code using Rappature Builder
- Users access code directly through nanoHUB – no need to install
- Users access computational power “under the hood” – local and grid resources utilized transparently
- **Tools indexed in Web of Science Data Citation Index and Google Scholar**

Knowledge Transfer in nanoHUB



- Simulation Users
- Tutorial / Lecture Users
- Author-author connections

“nano-App Store”

- interactive tools / not web forms
- running in the cloud
- no installation needed



Beyond tools/apps

nanoHUB provides access to over 5500 non-tool resources – primarily lecture and educational content

- Share cutting edge material years before it reaches textbooks
- Publish single topic content or structured courses

Public or private collaborative environments

- Groups, projects, repositories

nanohub.org

Analytics provide clear impact for content and for content authors

