Software as Cyberinfrastructure at NSF

Daniel S. Katz

Program Director, Division of Advanced Cyberinfrastructure

dkatz@nsf.gov

@danielskatz

Cyberinfrastructure

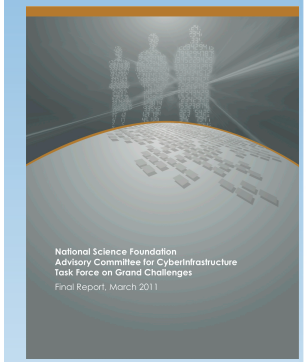
- *"Cyberinfrastructure consists of computing systems, data storage systems, advanced instruments and data repositories, visualization environments, and people, all linked together by software and high performance networks to improve research productivity and enable breakthroughs not otherwise possible."*

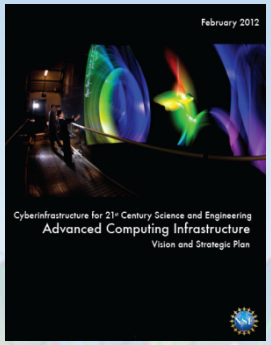
  -- Craig Stewart

  Indiana University

- Infrastructure elements:
  - parts of an infrastructure,
  - developed by individuals and groups,
  - international,
  - developed for a purpose,
  - used by a community

Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21)

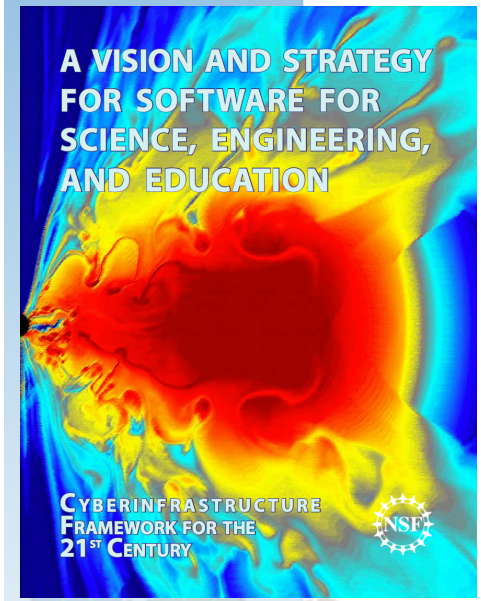




- Cross-NSF portfolio of activities to provide integrated cyber resources that will enable new multidisciplinary research opportunities in all science and engineering fields by leveraging ongoing investments and using common approaches and components (http://www.nsf.gov/cif21)

- ACCI task force reports (http://www.nsf.gov/od/oci/taskforces/index.jsp)
  - Campus Bridging, Cyberlearning & Workforce Development, Data & Visualization, Grand Challenges, HPC, Software for Science & Engineering
  - Included recommendation for NSF-wide CDS&E program
- Vision and Strategy Reports
  - ACI - http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf12051
  - Software - http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf12113
  - Data - http://www.nsf.gov/od/oci/cif21/DataVision2012.pdf
- Implementation
  - Implementation of Software Vision http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504817

Software Vision



NSF will take a leadership role in **providing software as enabling infrastructure** for science and engineering research and education, and in **promoting software** as a principal component of its comprehensive CIF21 vision

...

Reducing the complexity of software will be a unifying theme across the CIF21 vision, **advancing** both the **use and development of new software** and **promoting the ubiquitous integration of scientific software across all disciplines**, in education, and in industry

- A Vision and Strategy for Software for Science, Engineering, and Education – NSF 12-113

Software Infrastructure Role & Lifecycle