

CIF21 Software Working Group

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Who are We?

Natural evolution of the "SI2" software working group

- Gabrielle Allen OD/OCI
- Daniel S. Katz OD/OCI
- Tom Russell OD/OIA
- Jean Cottam-Allen MPS/PHY
- Evelyn Goldfield MPS/CHE
- Daryl Hess MPS/DMR
- Andrew Pollington MPS/DMS
- Tom Statler MPS/AST
- Peter McCartney BIO/DBI
- Sol Greenspan CISE
- Almadena Chtchelkanova CISE & GEO/OAD
- Sumanta Acharya ENG/CBET
- Clark Cooper ENG/CMMI
- Jennifer Schopf GEO/OAD
- Barbara Ransom GEO/OCE
- Cheryl Eavey SBE

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 first class citizen in its comprehensive CIF21 vision.
- This includes providing comprehensive, usable, and secure software and services to further new scientific discovery and innovative education approaches by its researchers working in a globally connected and data-enabled world; building sustainable communities of software users, researchers, developers, educators, and students that span disciplines, professions, and regions/countries; and promoting new approaches to learning and workforce development in software, and supporting investigations in the use of software for novel learning mechanisms.

Current Programs

- Software Infrastructure for Sustained Innovation (SI2)
 - FY10 SSE and SSI awards (12+7)
 - FY11 SSE and SSI awards (almost complete)
 - Around 18 SSE and 12 SSI, ~\$33M
 - FY12 S2I2 conceptualization awards (in progress)
- FY12 Internal Venture Fund for Software Reuse
- Building catalog of software
 - Funded by SI2 and previous solicitations, e.g., STCI, SDCl, PetaApps and Reuse Venture Fund (FY10-12)

Questions for ACCI

1. What are your recommendations for creating better ties through the community for user-enabled software development? What incentives to end users to work with production quality software groups can you recommend? What incentives to researchers to produce quality software can you recommend?
2. What are the concerns of the institutions or disciplines you represent about the current NSF approach to software?
3. How do we encourage software production and support to be seen as a valuable scientific product in an academic context, similar to publications, and one of the inputs in tenure and promotion decisions? How do we encourage universities to develop and support career paths for software professionals?

Extra Slides

Task Force Recommendations

Summary of task force recommendations

- NSF should develop a multi-level ((individual, team, institute), long-term program of support of scientific software elements ranging from complex applications to tools of use in multiple domains. Such programs should also support extreme scale data and simulation and the needs of MREFCs.
 - *Multi-tier crosscutting SI2 program established*
- NSF should take leadership with promoting verification, validation, sustainability, and reproducibility of software with federal support.
 - *Essential element of SI2 solicitation*
- NSF should develop a consistent policy on open sources software that promotes scientific discovery and encourages innovation.
 - *SI2 requires open source unless a compelling exception is described. Vision document includes statement on embracing open source across NSF.*
- NSF support for software should entail collaborations among all of its divisions, related federal agencies, and private industry.
 - *SI2 involves most divisions and directorates, gaps in representation are being addressed.*
- NSF should utilize the Advisory Committees to obtain community input on software priorities through workshops and town hall meetings involving the broad community.
 - *DCL invited community software workshops. Solicitations call for, and encourage, expression of community interest for software.*

Need more attention:

- NSF should proactively support projects that merge proven simulation methods and proven data (experiments, observations, sensor inputs, etc.) at scale.
- NSF should focus attention on the data and software needs of the major NSF research facilities (MREFCs).
 - *Workshop last week*
- NSF should promote discussion amongst its own personnel and with leadership at institutions where its principal investigators are employed, to consider development and provisioning of Complex Software Infrastructures activities, as meritorious in promotions and raises.
- NSF should foster a healthy software industry through [software for science and engineering programs] through: (1) avoiding competition with commercial industry when adequate software already exists, (2) sponsoring the acquisition of commercial software as part of the cost of doing research when adequate software exists, (3) encouraging collaborative University-Industry innovation, and transitioning into the commercial marketplace software developed under the [software for science and engineering programs] umbrella, (4) promote close communication between chip designers, system builders, and software developers, (5) encourage the formation of public- private transitions through new and innovative partnerships between academe and industry, and (6) provide SBIR-like programs to facilitate the commercialization process.