

Summary

A NSF Data Infrastructure Building Blocks PI Workshop (DIBBs17) will be convened in Arlington, VA on January 11-12, 2017 to exchange results and lessons learned from the projects, and to consider the implications of project results for advances in the vision and goals for data cyberinfrastructure. Prior to the workshop, each PI will submit a PDF of a poster on their DIBBs successes and a short white paper describing current and future challenges. A Program Committee comprised of a representative set of PIs will use these project-specific materials to organize the workshop panels and small discussion groups. Panels will discuss significant and innovative DIBBs results, current DIBBs challenges and solutions, and future DIBBs challenges, including sustainability issues. Each panel will be immediately followed by small group discussions and report-outs to increase PI/Co-PI participation and facilitate DIBBs community building. A 2017 DIBBs PI Workshop report will summarize the progress and challenges of the DIBBs projects and describe potential gaps and future opportunities that were discussed during the one and one half days workshop. Links to PDFs of all PI white papers and posters will be included in the report as well as the workshop website.

1.0 Overall Organization

David Lifka, Vice President & CIO and Director Center for Advanced Computing, Cornell University will serve as the workshop Chair [1]. Lifka is PI of CC*DNI DIBBs award #1541215 [2]. He and his team will be responsible for workshop planning and logistics. Lifka will work with NSF Advanced Cyberinfrastructure (ACI) Program Directors to assemble a Program Committee of representative DIBBs awardees covering the time span of the program, and representing the types of challenges addressed or future challenges anticipated. A maximum of 2 PIs/Co-PIs per DIBBs project will attend the invitation-only event for a maximum workshop attendance of 80 (40 projects x 2 attendees per project). Invitations will be distributed by NSF to DIBBs project PIs and will point to the workshop website as the source for all workshop information, registration, and requirements.

2.0 Project-Specific Materials

Each project will be asked to provide two inputs: (1) a poster describing the most significant successes to date, and (2) a short white paper identifying remaining challenges and future directions.

- **Posters:** PIs are asked to summarize progress on their awards by preparing a required poster addressing the question: “What are you most proud of about your DIBBs project?” Responses can be advances in science, innovative technologies, new capabilities for the community, major findings, or similar topics. A PDF of the poster is due December 6, 2016; PDFs will be submitted via the workshop website. The project title, PI name, and NSF award number is required at the top of each poster. Posters will be 36”H x 48”W (required size) and be displayed by the PI just prior to the Day 1 breakfast so that workshop attendees can (1) visit the posters during workshop breaks, and (2) PIs and Co-PIs can mingle and share their project successes with NSF program officers and their DIBBs colleagues at the Poster Reception scheduled at the end of Day 1.
- **White Papers:** PIs are also asked to submit a short (maximum 1-page) required white paper that addresses two questions: (1) What is the most significant challenge(s) encountered in your DIBBs project and how did you overcome it? (2) What future DIBBs challenges do you envision and are there sustainability issues or other barriers to success? PIs who just received a DIBBs award may write about anticipated challenges and how they might overcome them, in addition to whatever future challenges they envision. A PDF of the white paper is due Dec. 6, 2016; PDFs will be submitted via the workshop website. The project title, PI name, and NSF award number is required at the top of each white paper. Papers may not exceed 1-page in length; the format is 11pt New Times Roman.

3.0 Panel & Small Group Organization and Process

The workshop Program Committee will review the white papers and posters to identify commonalities in results and unique innovations, commonalities in challenges and solutions, and, insightful visions of the future of DIBBs and invite the suitable PIs/Co-PIs to moderate or participate in three panel discussions. Each panel discussion will be followed by small group discussions (round tables of 8 or less) that will afford an opportunity for all attendees to contribute useful observations.

4.0. Proposed Dates and Location

The one and one half days workshop will occur Wednesday, January 11 and Thursday morning, January, 12, 2017 in Arlington, VA, near NSF headquarters, at the Westin Arlington Gateway Hotel [3].

5.0. Agenda

The workshop will feature a series of panel discussions organized by the Program Committee around the white papers and posters submitted by PIs from all active DIBBs awards at the time of the workshop. After each panel discussion, individuals at each table will share their project experiences with each other. A volunteer at each table will summarize that table's discussion. We will assign attendees to different tables for each of the 3 small group discussions to mix up the discussion groups. This will provide attendees the opportunity to meet more people, share project experiences, and, potentially, spark future collaborations.

Day 0 - Tuesday, Jan. 10, 2017

Day/Evening Attendees Arrive at Westin Arlington Gateway Hotel (no scheduled activities)

Day 1- Wednesday, Jan. 11, 2017

7:30-9:00	Badges, Poster Setup & Continental Breakfast F. Scott Fitzgerald Ballroom A/B/C (all events)
9:00-9:15	DIBBs17 Welcome David Lifka, Workshop Chair; Vice President & CIO and Director Center for Advanced Computing, Cornell University
9:15-10:00	Keynote: DIBBs Successes & Future Challenges Irene Qualters, Division Director, ACI/CISE, National Science Foundation
10:00-10:45	Panel 1: Most Significant/Innovative DIBBs Results
10:45-11:15	Coffee Break
11:15-11:45	Small Group 1 Discussions: Most Significant/Innovative DIBBs Results
11:45-12:15	Small Group 1 Report-Outs
12:15-1:30	Lunch Buffet
1:30-2:15	Panel 2: Most Significant DIBBs Challenges/Solutions
2:15-2:45	Coffee Break
2:45-3:15	Small Group 2 Discussions: Most Significant DIBBs Challenges/Solutions

- 3:15-3:45 Small Group 2 Report-Outs
- 3:45-4:15 Discussion of Main Takeaways from Day 1
David Lifka & Program Committee
- 4:15-5:00 Break
- 5:00-6:30 Poster Reception for All DIBBs Attendees - hors d'oeuvres and cash bar
- 6:30 Dinner on Your Own

Day 2 - Thursday, Jan. 12, 2017

- 8:00-9:00 Continental Breakfast
- 9:00-9:45 Panel 3: Remaining Challenges and Future Directions
- 9:45-10:15 Small Group 3 Discussions: Remaining Challenges and Future Directions
- 10:15-10:45 Small Group 3 Report-Outs
- 10:45-11:00 Coffee Break
- 11:00-11:30 Summary Discussion & Wrap Up
David Lifka & Program Committee
- 11:30-11:45 Closing Comments
Amy Walton, Program Director, NSF
- 11:45 Box Lunches to go

6.0 Other Details

6.1 Hotel Meeting Room & Food Provided

The workshop is expected to take place in the F. Scott Fitzgerald Ballroom (sections A/B/C) of the Arlington Westin Gateway Hotel. Food provided will include 2 breakfasts, a luncheon buffet, hors d'oeuvres at the Poster Reception, coffee breaks, and a box lunch at the end of the workshop.

6.2 Workshop Website

There will be a workshop website hosted on Red Cloud at the Cornell Center for Advanced Computing (DIBBs17.org). Costs to host and maintain this site for five years are included as staff logistical support. The website will include workshop purpose, theme, PI paper and poster requirements/submittal forms, workshop agenda, registration, PDFs of white papers and posters, and the final workshop report.

7.0. Workshop Outcomes

The workshop outcomes and products will include:

1. White papers and posters from each PI covering topics such as successes (including new and innovative methods), challenges encountered and strategies to address them, and challenges and opportunities for future research to continue the progress made thus far.
2. A concise workshop report will summarize current project progress and challenges as well as gaps that represent future opportunities. The report will help the community and NSF better understand how DIBBs project developments advance a vision and goals for data cyberinfrastructure and advance science and engineering across disciplines.

A draft of the workshop report will be shared as a Google Doc for all to comment on for 4-weeks. A final report will be submitted to the NSF and shared with attendees and the research community within 3 months of the completion of the workshop.

Justification

The National Science Foundation *Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21)* considers an integrated, scalable, and sustainable cyberinfrastructure to be crucial for the advancement of new research practices and transformative advances across all fields of science and engineering [4]. A *Data Vision for CIF21* outlines data-specific strategies to provide a national data infrastructure [5]. The Data Infrastructure Building Blocks (DIBBs) program supports that vision by encouraging the development of robust and shared data-centric cyberinfrastructure capabilities [6]. Four DIBBs program solicitations (2012, 2014, 2015, and 2016) have resulted in 40 active awards ranging in funding from approximately \$100,000-\$10,000,000.

Dr. Lifka will serve as workshop chair. He is the PI for one of the 40 DIBBs awards (#1541215), developing advanced data-driven capabilities supporting seven major scientific user communities. This workshop provides an opportunity for the current set of DIBBs investigators, which are addressing similar data-driven issues, to discuss project results and identify best practices and gaps. The workshop website will be hosted on Red Cloud at the Cornell Center for Advanced Computing, providing access to all PI papers and posters developed for the workshop, as well as the final workshop report.

Intellectual Merit

This workshop provides an opportunity for PIs, Co-PIs, and NSF program directors to consider DIBBs project results, identify and recognize achievements, understand current challenges (technical, financial, and social), and discuss future challenges and models to address them, with the goal of informing a future vision for data cyberinfrastructure and the science and engineering disciplines it enables. This will be the first ever collective assembly of DIBBs PIs and Co-PIs awardees and, as such, it has the potential to advance the knowledge of the DIBBs program and to generate new ideas to ensure that discovery stimulated by data is properly supported by an integrated and sustainable data cyberinfrastructure. The community will gain insights into the successes and challenges faced by DIBBs projects as they address the needs of both existing and emerging research domains.

Broader Impacts

A workshop website consisting of DIBBs project posters, white papers, and a final workshop report will inform the community of data cyberinfrastructure innovations being undertaken by DIBBs projects and convey future data infrastructure needs and potential strategies to meet them. The workshop itself will help to develop a DIBBs community in which potential synergies and future partnerships may be explored. The workshop will also help NSF program officers in this cross-cutting program envision future data cyberinfrastructure program needs. The continual evolution of the DIBBs program is essential to the achievement of CIF21 goals. This workshop will further clarify the role of DIBBs in enabling data-focused services and capabilities to broadly impact and strengthen NSF's research portfolio.

References

- [1] Cornell University Office of CIO and Vice President for Information Technologies: About the CIO. Available from: <http://cio.cornell.edu/community/office-cio-and-vice-president-information-technologies>.
- [2] NSF Award Abstract #1541215 – CC*DNI DIBBs: Data Analysis and Management Building Blocks for Multi-Campus Cyberinfrastructure through Cloud Federation. Available from: https://www.nsf.gov/awardsearch/showAward?AWD_ID=1541215&HistoricalAwards=false.
- [3] The Westin Arlington Gateway Hotel. Available from: <http://www.westinarlingtongateway.com/>.
- [4] Cyberinfrastructure Framework for 21st Century Science and Engineering: Vision. May 2012 [PDF]. Available from: <http://www.nsf.gov/cise/aci/cif21/CIF21Vision2012current.pdf>.
- [5] Data Vision for CIF2: Cyberinfrastructure Framework for 21st Century Science and Engineering – A Vision and Strategy for Data in Science, Engineering, and Education. April 2012 [PDF]. Available from: <https://www.nsf.gov/cise/aci/cif21/DataVision2012.pdf>.
- [6] National Science Foundation: Data Infrastructure Building Blocks (DIBBs). Available from: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504776.