NCSA Faculty Fellows 2020 Kick off Presentation

Amanda Lombardo
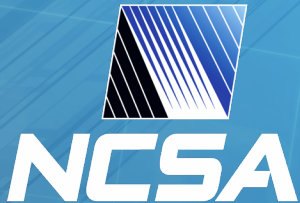
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National Center for Supercomputing Applications
University of Illinois at Urbana–Champaign

NCSA Strategic Plan

- **NCSA Mission:**

NCSA leads and supports partnerships around campus, the nation, and the world by leveraging and further developing our expertise, and experience, and innovation in digitally-enabled scholarship to solve the most scientifically and societally important and challenging problems.

-> A deeper and integrative connection to the Illinois campus with faculty, postdocs and students.

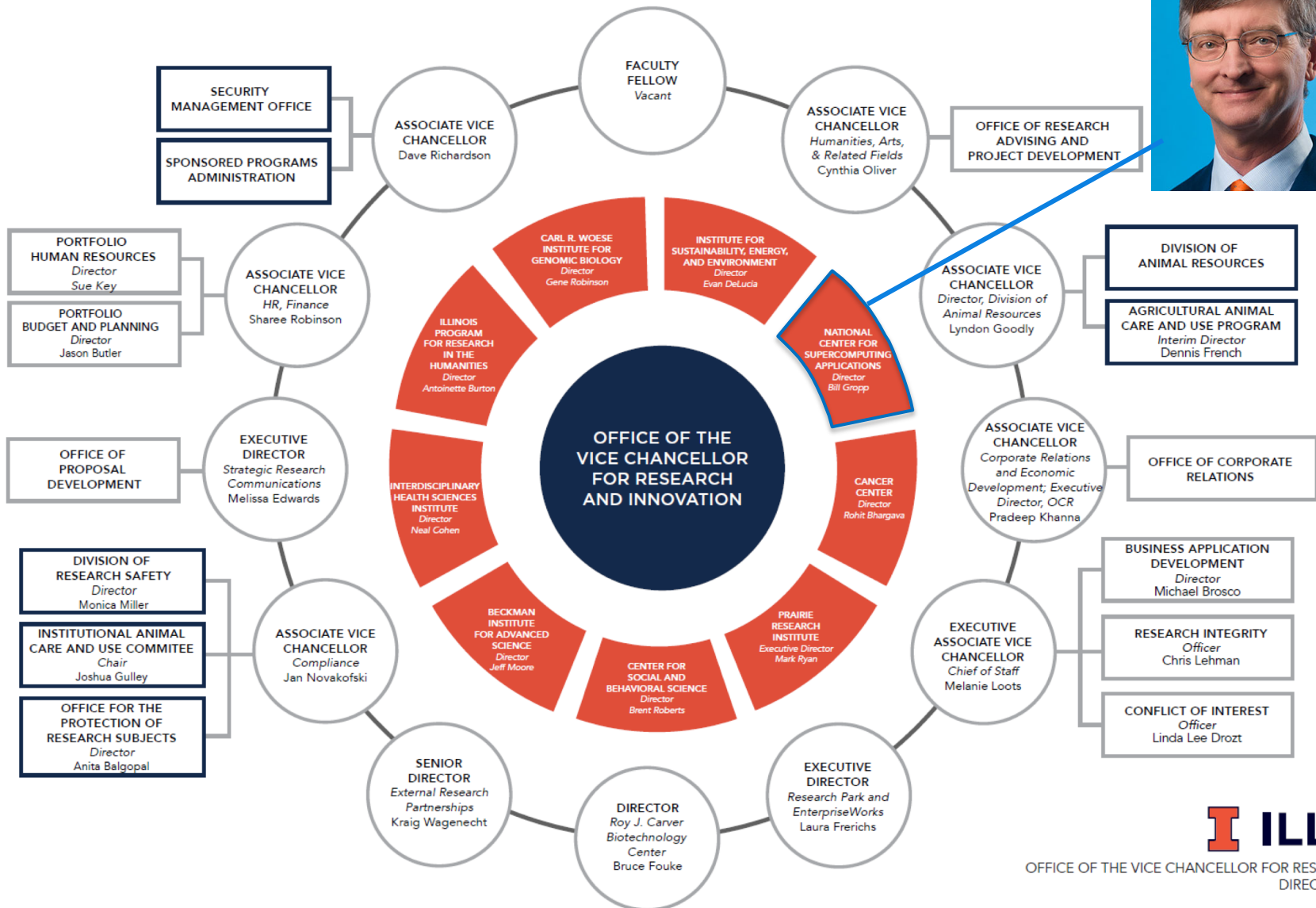# National Center for Supercomputing Applications

- Interdisciplinary institute at Illinois reporting to OVCRI
  - One of original five NSF supercomputing centers: Provide state-of-the-art computing capabilities (hardware, software, HPC expertise) to nation's scientists and engineers
- In total, > $1 Billion brought to U. Illinois since 1985
  - Approximately 220 staff (160+ technical/professional staff), two facilities

- Managing NSF's national cyberinfrastructure: XSEDE ($145M)

- NCSA Industry: over 40 partners

NCSA

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DIRECT REPORTS AND UNITS
DECEMBER 2019

Research Institutes | VCR Administration | Compliance and Research Support Units

NCSA Leadership

Bill Gropp
NCSA Director

Ruth Sosnoff
Associate Director
for Administration

Amy Schuele
Interim Associate
Director, Integrated
Cyberinfrastructure;
User Services

Kenton McHenry
Associate Director
for Software

John Towns
Executive
Associate Director
for Engagement

Example Projects, Centers, Facilities

XSEDE, national cyberinfrastructure

Data analysis for large scale simulation data

- **Innovative Systems Laboratory**

- **Center for Artificial Intelligence Innovation**

- **Healthcare Innovation Program Office**

- **Visualization:**
  - **Advanced Visualization Laboratory**
  - **Data Analysis and Visualization**
  - **Visual Intelligence for Bio**

- **eDream - Emerging Digital Research & Education in Arts Media Institute**

- **NCSA Industry program**

- **Partnership with the Center for Digital Agriculture**

LSST Data pipeline

Clowder: Open source data management for long-tail data

NCSA

Offers access to a variety of computing resources from campus level to the Nation

- **Petascale Computing Facility : Blue Waters**
  - 13PF, 1500TB, 300PB
  - Apply to allocations in the Fall

- **Campus Cluster**: 4 nodes dedicated to NCSA Faculty Fellows + access to NCSA allocation queue

- **HAL Cluster** for Deep Learning research on campus

- **XSEDE**
  - Access to various machines and services (storage, software, etc.)
  - Trainings

NCSA

NCSA Engagement

- Formerly the Research and Education directorate

- Establishing new organization and continuing the mission of connecting with faculty, staff, and students on campus

- Pursue external funding opportunities through NCSA's current Research Focus Areas
    - Astronomy and Astrophysics
    - Computational Biology and Health
    - Culture and Society
    - Food, Energy, and Water
    - Computational Engineering

NCSA Education

- 120 affiliate faculty
- 10 postdoctoral scholars with a postdoc program
- Graduate and undergraduate students
  - SPIN program : NCSA undergraduates internship program
  - Contact: Olena Kindratenko

Grants run through NCSA do not impact the F&A returned to your home unit.

100% Earned

HOME UNIT

NCSA

27% Central Admin.

55% Central Admin.

45% Home Academic College/Unit

28% NCSA
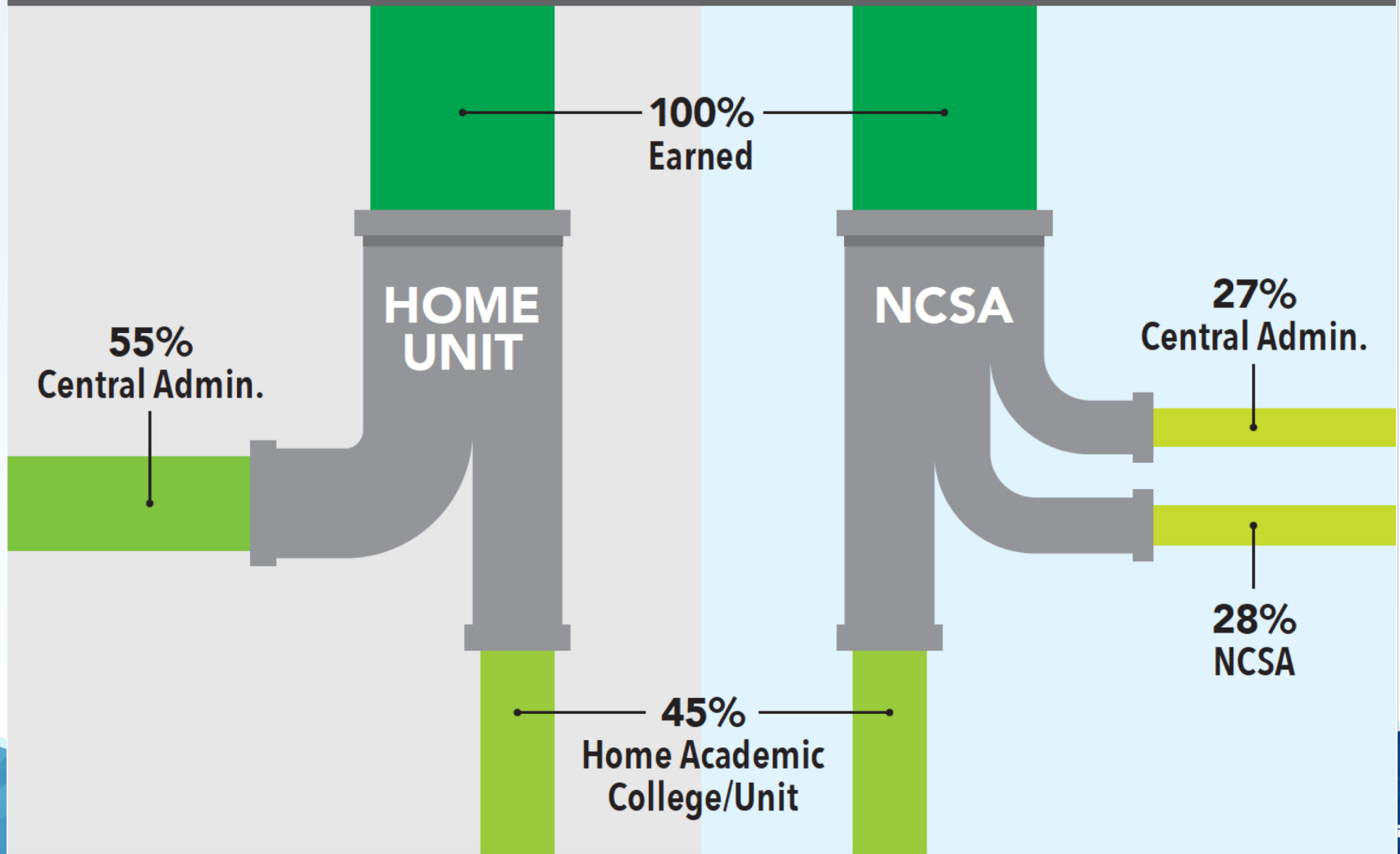
NCSA

NCSA Faculty Fellows Program (est. 1999)

- Competitive program provides seed funding (up to $25K/award) for demonstration, start-up projects, workshops, and/or other activities with the potential to lead to longer-term collaborations and externally funded activities around research and development.

- Anticipate funding for 6 fellows for the 2020-2021 cohort

Important Dates

- **Jan. 31, 2020:** NCSA Faculty Fellows kickoff: solicitation goals and focus, help potential applicants understand its scope, answer questions

- **Feb. 7, 2020: NCSA Fellowships Ideas Accelerator Workshop.**
  10 am-12 pm, NCSA Lobby. Speed match-making event between potential applicants and NCSA staff and researchers.

- **Feb. 28, 2020:** Deadline to submit to the NCSA Fellowships Program – Link to submit will be posted on our website following the Idea Accelerator Workshop

- **Late April 2020:** Target date for decisions

Current Fellows

- **Kevin Leicht**, Sociology and **Brant Houston**, Journalism
  - *The War on Professional Expertise: The Global Spread of Online Myths about Medicine and Health*
  - NCSA Staff: Loretta Auvil (Industry program)

- **Yumeng Li**, Industrial and Enterprise Systems Engineering
  - *Discovery of Advanced Nanodielectrics through AI-accelerated Multiscale Simulations from First Principles*
  - NCSA Staff: Erman Guleryuz (Engagement Directorate)

- **Rini Mehta**, Comparative and World Literature
  - *The Big Picture: Media, Capital, and Networks of Influence*
  - NCSA Staff: Kalina Borkiewicz (Advanced Visualization Lab), Luigi Marini (Software Directorate) and Sandeep Puthanveetil Satheesan (Software Directorate)

Current Fellows (cont'd)

- **Hope Michelson**, Agricultural and Consumer Economics
  - *Predicting International Food security crises: A Data-Driven Approach*
  - NCSA Staff: Liudmila Mainzer (Engagement Directorate), Aiman Soliman (Engagement Directorate)

- **Diwakar Shukla**, Chemical and Biological Engineering
  - *Enabling long-term reuse of experimental and computational datasets on protein dynamics*
  - NCSA Staff: Luigi Marini (Software Directorate)

- **X. Shelly Zhang,** Civil and Environmental Engineering
  - *High-performance, multi-objective and multi-physics design optimization of next-generation patient-specific implant scaffold at scale*
  - NCSA Staff: Erman Guleryuz (Engagement Directorate)

NCSA

Projects are encouraged to partner with NCSA groups

- NCSA major projects and programs:
  - Center for AI Innovation (Contact: Eliu Huerta)
  - XSEDE (Contact: Jay Alameda)
  - Innovative Systems Laboratory (Contact: Volodymyr Kindratenko)
  - Advanced Visualization Laboratory (Contact: Donna Cox)
  - Blue Waters (Contact: Greg Bauer)
  - Cybersecurity (Contact: Alex Withers)
  - Midwest Big Data Hub (Contact: John MacMullen)
  - Software Directorate (Contact: Kenton McHenry)
  - NCSA Industry Application Domains (Contact: Seid Koric)
  - Visual Intelligence for Biology Group (Contact: Colleen Bushell)
  - Data Analysis and Visualization (Contact: Rob Sisneros)

NCSA

Fellows Responsibilities to NCSA

- Responsible for contributing to the NCSA academic core;

- Contribute to and take part in large collaborative funding efforts;

- Act as liaisons with their home departments.

NCSA Responsibilities to Fellows

- Provide a 0% NCSA appointment;

- Fellows are provided drop-in office space at NCSA;

- Have direct access to NCSA research scientists, staff, and services;

- Where possible, NCSA will provide access to compute, data, and other cyberinfrastructure, including software licenses, needed for fellowship projects.

Collaboration with NCSA Staff

- Strongly encouraged to maintain an active, close collaboration with NCSA staff for the duration of the fellowship, **discuss these collaborations in detail with the NCSA staff involved before submitting proposals**.

- Describe the nature of the collaboration, anticipated staff time commitment, source of support for staff involvement.

- Support for NCSA staff can come from existing project or grant funds or can be requested as part of the proposal from the NCSA Director's Office*.

*Requests for funding for staff time should be limited to one month of effort. Staff should discuss their plans with their supervisor.

NCSA

Proposal Preparation and Submission

- Competitive proposals will include:
  - Individual or multiple Illinois faculty
  - A well-defined activity that requires close collaboration with NCSA application and technical staff and possible use of NCSA computational resources or facilities.
  - A plan that will lead to new external funding

- Easychair used for proposal submission, beginning February 7th (see "Proposal Preparation and Submission" on Fellow Program website)

Review Criteria

- Significance
  - Does the project address an important problem or a critical barrier to progress in the field?
  - Is the project interdisciplinary and relevant to the Illinois campus and to NCSA strategic plan?
  - Is there a strong scientific promise for the project?
  - If the aims of the project are achieved, how will scientific knowledge, technical capability, and or clinical practice be improved?

- Investigators

- Innovation

- Approach

- Environment

Review Criteria (cont'd)

- Significance

- Investigators

  - Does the project include NCSA staff as integral contributor to the project?

  - Are the PI(s), collaborators, and other researchers well suited to the project?

  - Does the project include plan(s) to leverage NCSA scientific, technical, and management expertise, and/or leverage NCSA facilities and other major ongoing activities and programs?

  - Does the project include plan(s) for continued collaboration and pursue of external funding from Federal agencies, Foundations, or Industry?

- Innovation

- Approach

- Environment

Review Criteria (cont'd)

- Significance

- Investigators

- Innovation
  - Does the project challenge to seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions?
  - Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense?

- Approach

- Environment

Review Criteria (cont'd)

- Significance

- Investigators

- Innovation

- Approach
  - Are the overall strategy, methodology, and analysis well-reasoned and appropriate to accomplish the scientific aims of the project?
  - Are potential problems, alternative strategies, and benchmarks for success presented?
  - If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed?

- Environment

Review Criteria (cont'd)

- Significance

- Investigators

- Innovation

- Approach

- Environment
    - Will NCSA in which the work will be done contribute to the probability of success?
    - Does the project demonstrate a compelling need for the NCSA funding and involvement?
    - Are NCSA support, equipment and other physical resources available to the investigators adequate for the project proposed?

Proposal Preparation- Required Documents

Proposals should consist of:

A. Abstract …………………………………………(1/2 page)

B. Project Description …………………………(4 pages)

    B.1 Project Significance

    B.2 Investigators

    B.3 Innovation

    B.4 Approach

    B.5 Environment

C. References (avoid using et. al)

D. Bios – each PI/co-PI ……………………….(2 pages)

E. Budget and Budget Justification

F. *Letter(s) of Commitment ……………………(1 page)

*Template may be found on the "Proposal Preparation and Submission" web page

Budgets

- Up to $25,000 over 12 months (appointments begin July 1, 2020).

- Fellowship funds can be used for the following purposes:
  - Research assistant support (GRA, postdoc, etc.)
  - Workshop support (to be held at NCSA)
  - Travel support—maximum of $1,500 for conference travel or travel to other sites
  - Faculty summer salary

- Project budgets do not need to include benefits, tuition remission, or overheads.

- Awards made are subject to the availability of funds, and review panel's recommendations.

Program Oversight

- **Faculty Fellows Program**
  - Alice Delage
  - Amanda Lombardo
- **Faculty Fellow account management**
  - Shawn Quigley, Grants and Contracts Specialist
  - sfquigle@illinois.edu
- **Student Appointments**
  - Ellen Longworth, HR Office Manager
  - longwort@illinois.edu
- **Proposal Development for External Funding**
  - Janessa Gentry, Grants and Contracts Specialist
  - janessag@illinois.edu

Next Week: Idea Acceleration Workshop – February 7, 10am-12pm, NCSA Lobby

- Potential applicants encouraged to present 1 slide on:
  - project ideas and/or skills/resources needed from NCSA
  - Picture of yourself
  - Contact information (e.g. email address)
  - Submit slide to Alice Delage (adelage@illinois.edu) by 5pm on February 6th.

- NCSA staff will be on hand to share information on major NCSA program areas

Questions/Comments??

- All information from today and next Friday will be available on the NCSA Wiki via the Faculty Fellows website: http://www.ncsa.illinois.edu/about/org/fellowships