

NCSA Director Presentation Committee on Research and Education at NCSA

Ed Seidel, NCSA Director
Founder Professor of Physics
Professor of Astronomy



National Center for Supercomputing Applications
University of Illinois at Urbana-Champaign

Slides from Thom Dunning

NCSA 2013



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Compliance & Research Support Units

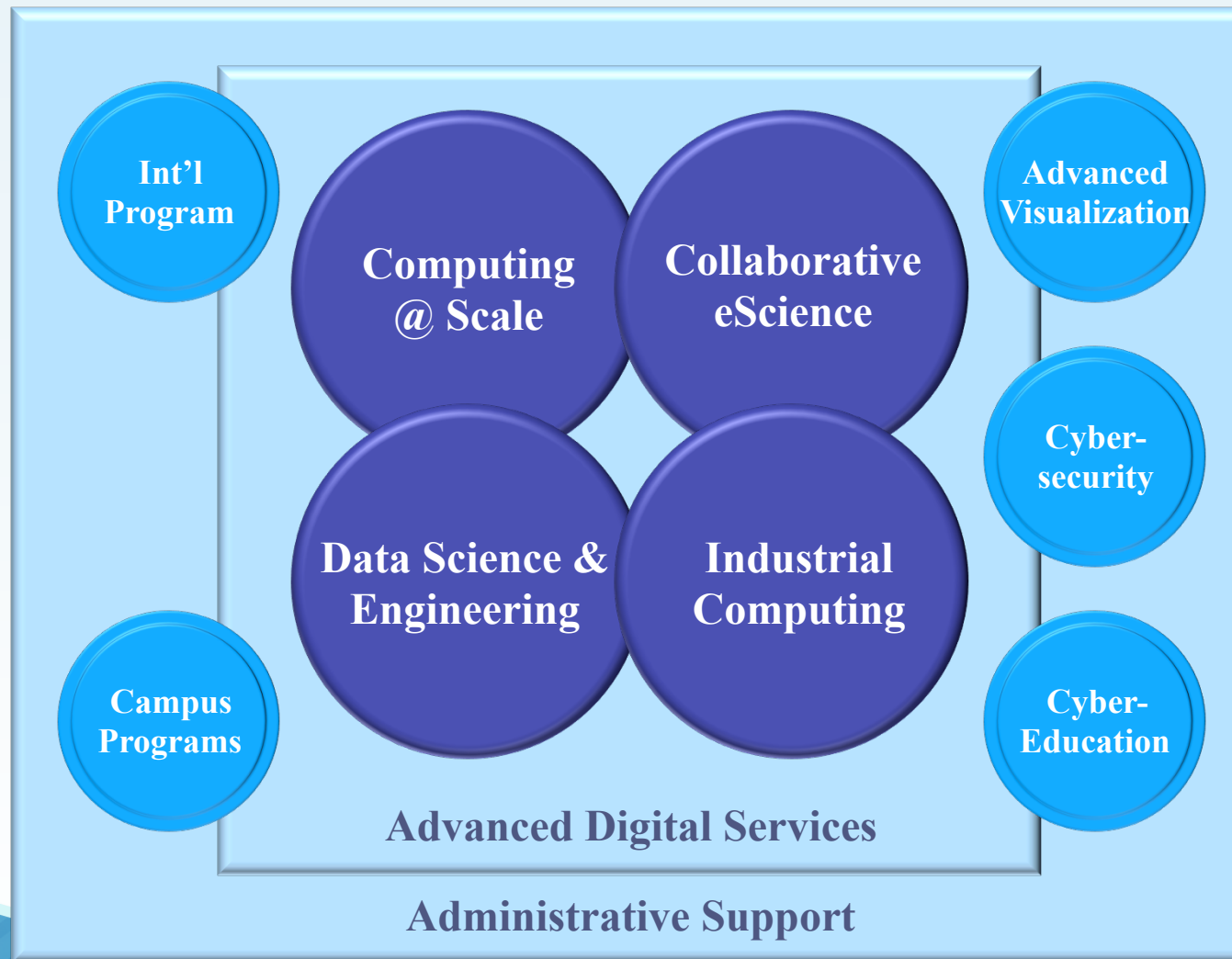


- NCSA
 - R&D unit of the University of Illinois at Urbana-Champaign
 - One of original five NSF-funded supercomputing centers
 - **Mission:** Provide state-of-the-art computing capabilities (hardware, software, hpc expertise) to nation's scientists and engineers
- The Numbers
 - Approximately 200 staff (160+ technical/professional staff)
 - Approximately 15 graduate students (+ new SPIN program), 15 undergrad students
 - Two major facilities (NCSA Building, NPCF)
 - Operating NSF's most powerful computing system: Blue Waters
 - Managing NSF's national cyberinfrastructure: XSEDE

Source: Thom Dunning



NCSA Major Activities



Source: Thom Dunning



Petascale Computing Facility: Home to Blue Waters, Research Platform for Nation



- **Blue Waters**

- Funds 50 staff!!
- 13PF, 1500TB, 300PB
- >1PF On real apps
- NAMD, MILC, WRF, PPM, NWChem, etc

- **Modern Data Center**

- 90,000+ ft² total
- 30,000 ft² raised floor
- 20,000 ft² machine room gallery

- **Networking**

- 400 Gbits to outside world

Source: Thom Dunning



NCSA 2014 AND BEYOND



My Background

- NCSA Numerical Relativity Group (1989-1996)
- Albert-Einstein-Institut (1996-2005)
- Center for Computation and Technology, LSU (2003-2008)
- NSF OCI and MPS (2008-2012)
- Senior VP for Research and Innovation, Skoltech (2012-14)
- NCSA Director (2014-present)

Lessons Learned

My career transformed as NCSA led CSE revolution

- Universities now transformed by profound, rapidly changing world
 - Computation, and now Data, revolution → Expanding universe of computing!
 - Interdisciplinarity for complex problems → Increased collaboration
 - Impact on society, economy → Engines for innovation
- CCT, NSF, Skoltech...this is very hard
- NCSA as catalyst for UIUC to adapt to this world



Vision in Nutshell

- NCSA perfectly poised for future
 - Fantastic people, facilities, international reputation
 - Today we start a process to plan next steps; you are all critical
- Build on excellence with three major pillars: each needed
 - Big Research: Strong research and education ecosystem as integral part of campus
 - Big Data: Lead Big Data revolution on campus and nationally
 - Big Compute: Continue to lead in application of highest end systems
- On these pillars, NCSA will drive *innovation* on campus and across nation
 - Enhanced capacity to grow, e.g., in software...
- NCSA will continue to be an exciting place to be!

The Three Pillars

- Big Research and Education Ecosystem
 - Combine best strengths of the cultures of Professional Staff with Faculty, Postdocs, and Students
 - Interdisciplinarity and Innovation
 - Integral to campus: a great environment draws campus *inside* NCSA
- Big Data
 - 21st century digital campus, region, nation
 - Instruments, MREFC projects
 - Services, tools, software
 - Research and education
- Big Compute
 - Highest end systems and Applications
 - Tools and software expand to all parts of ecosystem

All with with innovation throughout; PSP and innovation programs

March 8, 2014

Edward H. Seidel
Director, National Center for Supercomputing Applications
1205 W. Clark Street
Urbana, IL 61801

Dear Ed:

As you begin your tenure as Director of NCSA, I would like for you to convene a committee of senior faculty and researchers from across campus to advise you as you develop your vision for the future of NCSA particularly in regard to developing research and education partnerships with other campus units. I would like for you to form a committee of your choosing to act upon the attached charter and report back to me one month after the committee delivers its report to you. NCSA has a rich history here at Illinois and across this nation. I look forward to working with you as you advance this great center into the future. Please let me know if there is anything that I can do to assist in this process.

Best Regards,

A handwritten signature in black ink, appearing to read "Peter Schiffer". The signature is fluid and cursive, with the first name "Peter" being more legible than the last name "Schiffer".

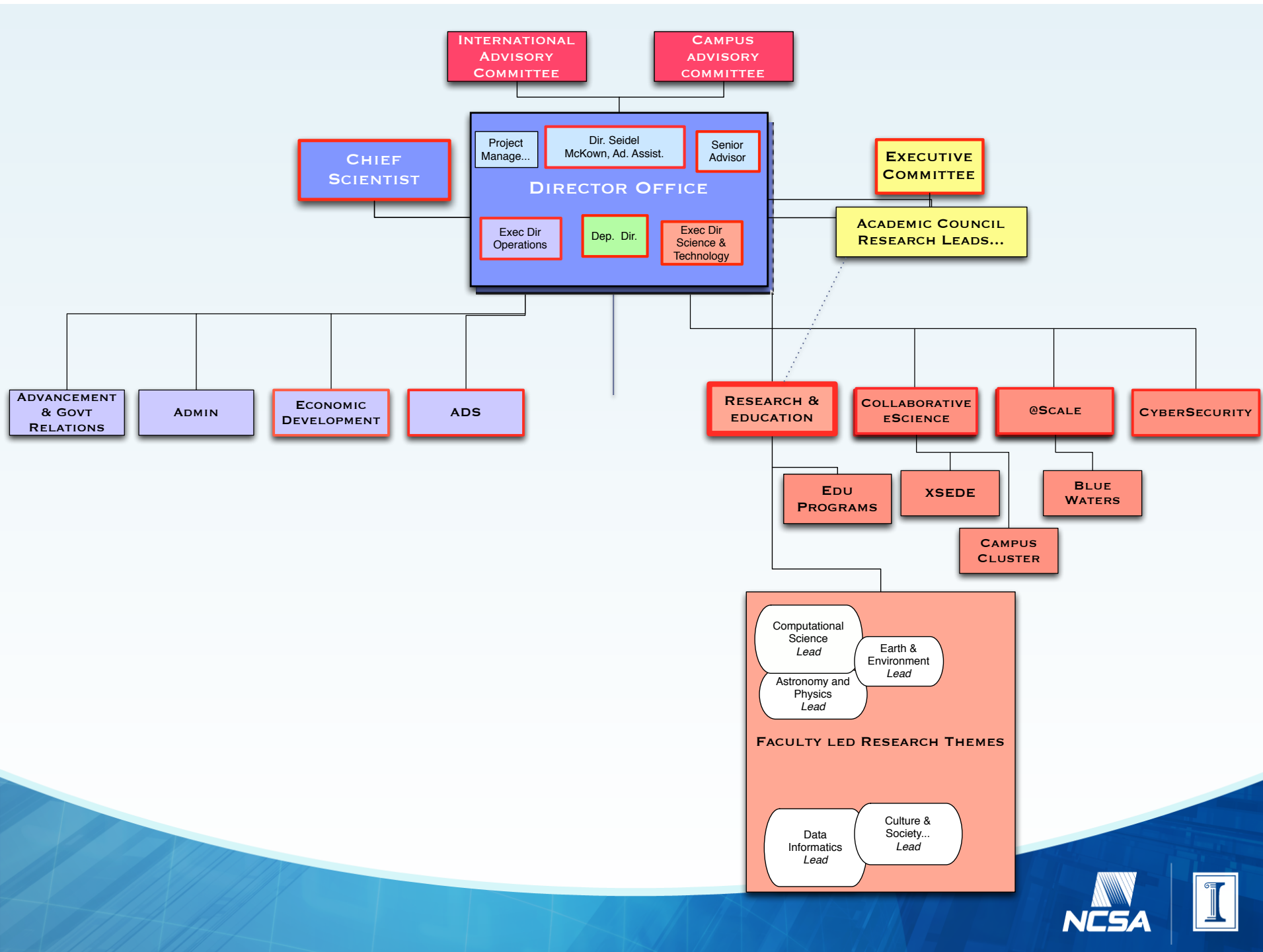
Peter Schiffer
Vice Chancellor for Research

CC: Ilesanmi Adesida, Vice Chancellor for Academic Affairs and Provost

How NCSA can become an interdisciplinary connecting hub for UIUC

- We are not an academic unit, e.g., as is Physics... but...
- We will have faculty, students, and postdocs...
- What we will have to offer:
 - Compelling intellectual environment that integrates different disciplines, on a foundation of:
 - World class facilities
 - Expert staff
 - ...all in the same building
- You can help us determine how to best develop this vision...

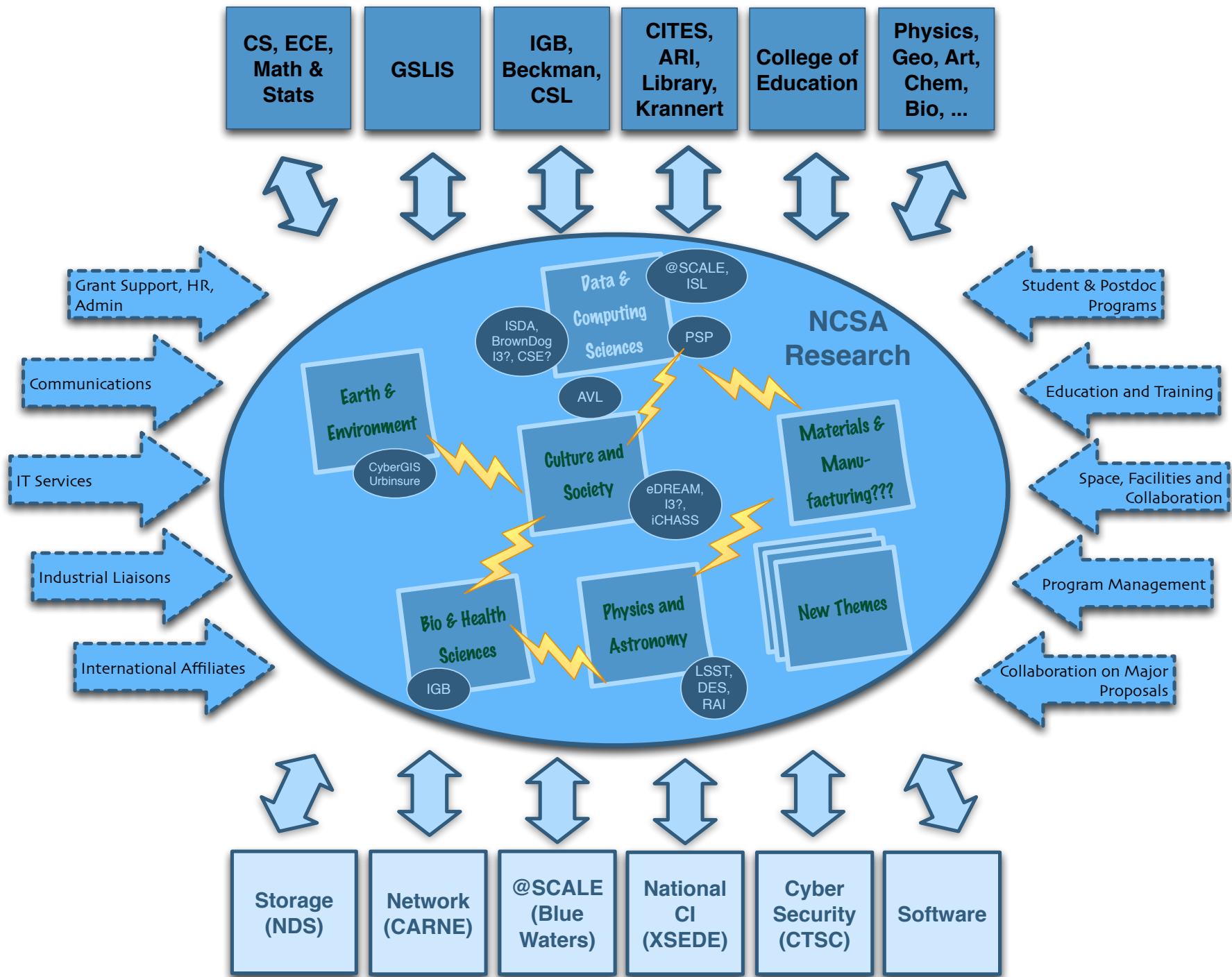




CCT Focus Areas and Research Clusters

Assistant Director for Computing Applications:
G. Allen





NATIONAL
&
INTERNATIONAL

