

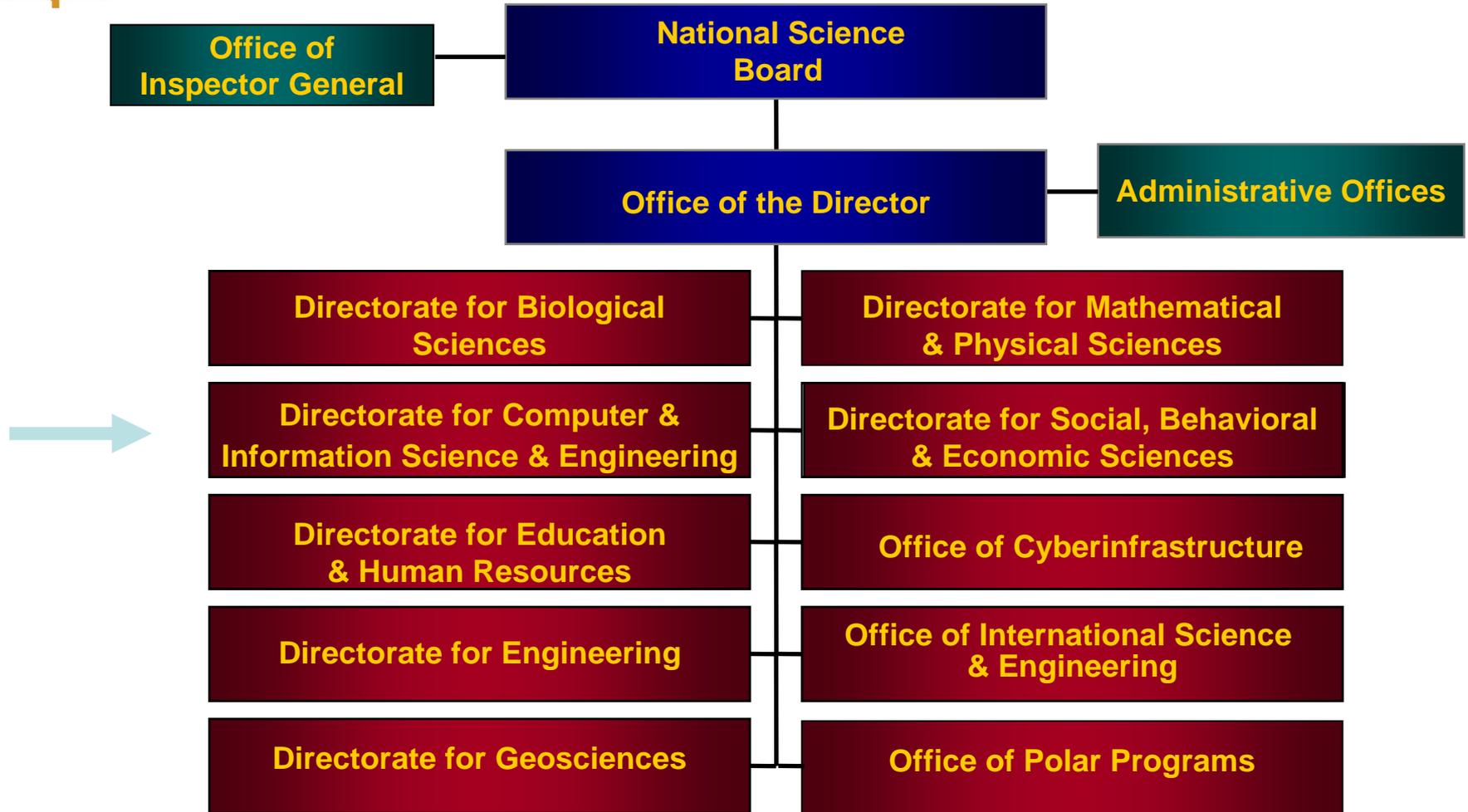
NSF/CISE and HECURA

Sampath Kannan

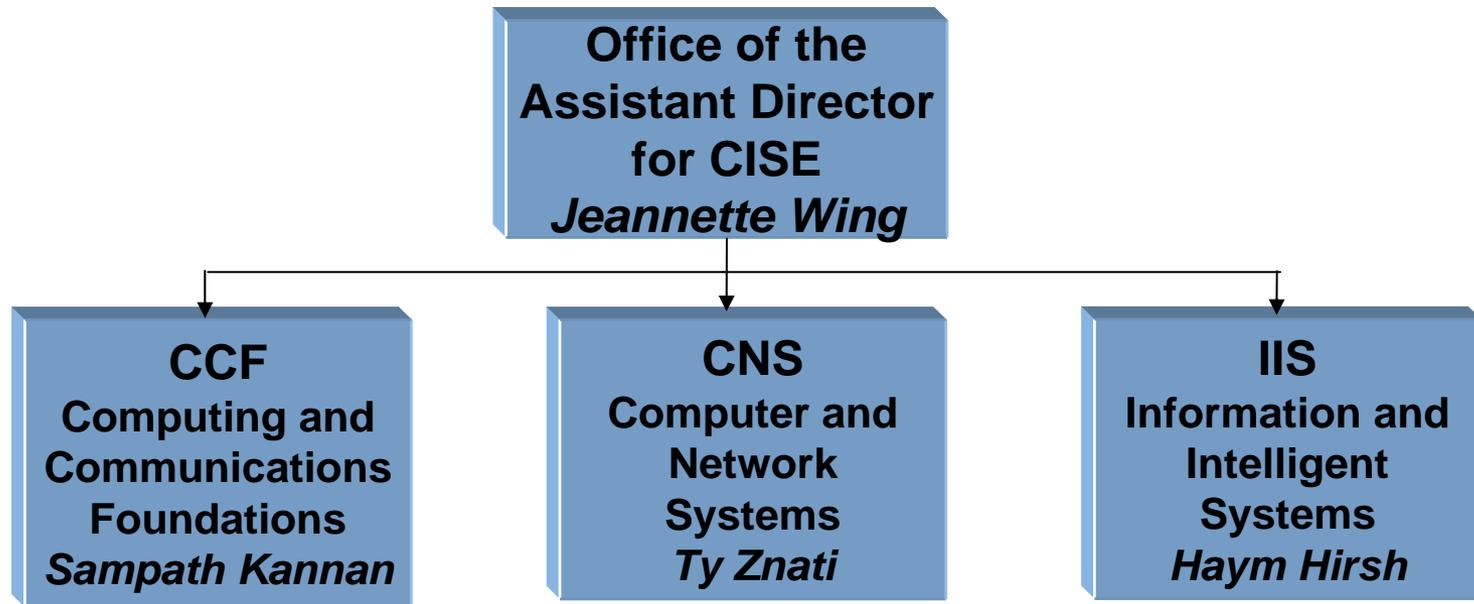
Director, Computing and
Communication Foundations



National Science Foundation



CISE Organizational Chart and Core Research Programs



- Emerging Models and Technologies for Computation
- **Foundations of Computing Processes and Artifacts**
- Theoretical Foundations

- **Computer Systems Research**
- Cyber Trust
- Education and Workforce
- Networking Technology and Systems

- Human-Centered Computing
- Information Integration and Informatics
- Robust Intelligence

~ 70-75% of CISE Budget in these Core Programs

CCF Reorganized

- Algorithmic Foundations
- Communication and Information Foundations
- Software and Hardware Foundations

Importance of HECURA

- Processor performance improvements winding down
- High-end computing needs new ideas beyond multicore and grid computing
- Need languages, compilers, environments to exploit new architectures
- Need to deal with massive data sets
- And most of all ...

HEC FSIO

- ... Need to deal with I/O, access across memory hierarchy
- Provide Fault-tolerance and Quality of Service guarantees for both processing and data

These are the bottlenecks in High-End Computing

History shows ...

Today's High-End Computer is tomorrow's ho hum computer.

This community can help the transition ...

- Please think about how your research applies to general computing
- Integrate your research seamlessly with research in SHF (CCF) and CSR (CNS)

NSF commits \$10 M to HECURA FSIO. This dwarfs the commitment to I/O and Storage in Core Programs in CISE!