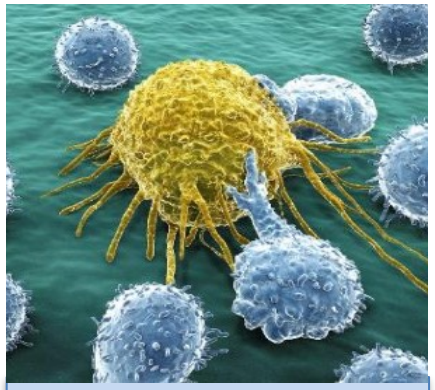
The Future of Work at the Human-Technology Frontier

One of the National Science Foundation's 10 Big Ideas

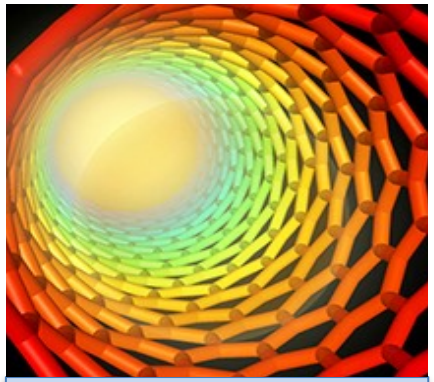
Dawn Tilbury
Assistant Director, Engineering
June 5, 2019

Image: AB Volvo

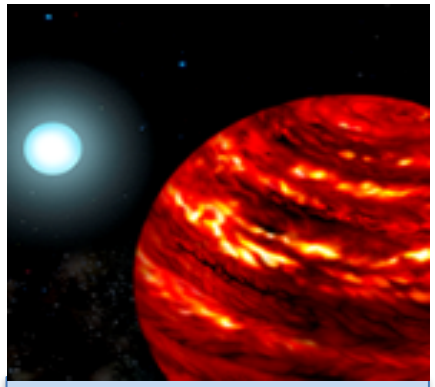
NSF champions research and education across all fields of science and engineering



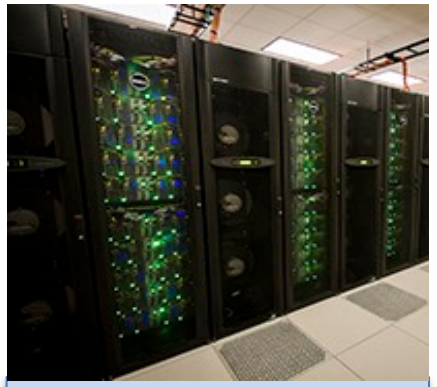
Biological Sciences



Engineering



Mathematical & Physical Sciences



Computer & Information S&E

Geosciences (including Polar)

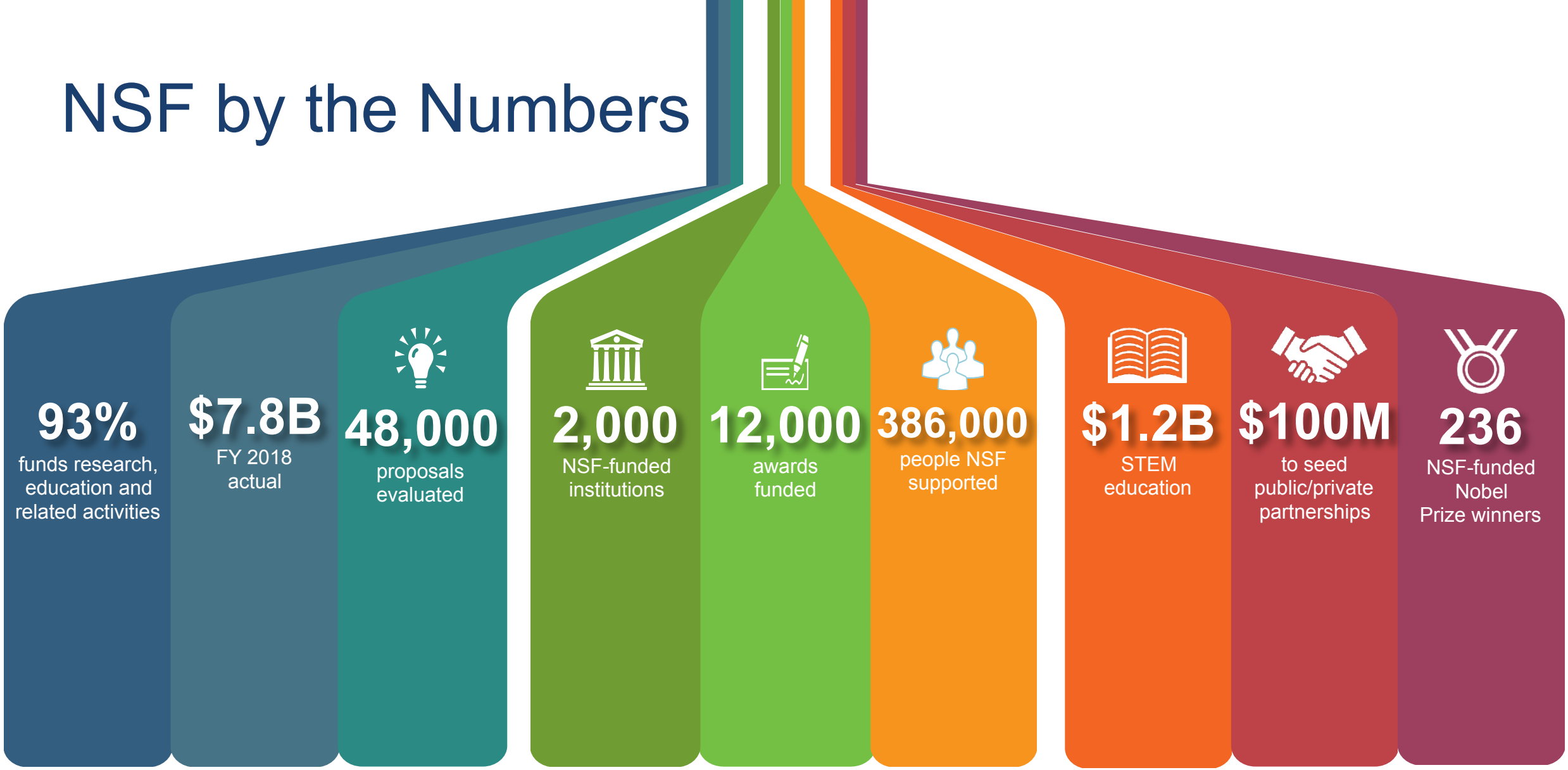
Integrative Activities

Education & Human Resources

Social, Behavioral & Economic Sciences

International Science & Engineering

NSF by the Numbers



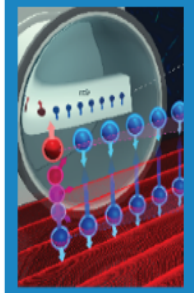
Numbers shown are estimates based on FY 2018 activities.

NSF's 10 Big Ideas

Harnessing the Data Revolution

The Future of Work at the Human-Technology Frontier

Navigating the New Arctic



The Quantum Leap: Leading the Next Quantum Revolution

Understanding the Rules of Life: Predicting Phenotype

Windows on the Universe: The Era of Multi-messenger Astrophysics

Mid-scale Research Infrastructure

NSF 2026: Seeding Innovation

Growing Convergence Research at NSF

NSF INCLUDES: Enhancing STEM through Diversity an Inclusion

The grand challenges of today will not be solved by one discipline working alone.

Grand challenges require **Convergence**

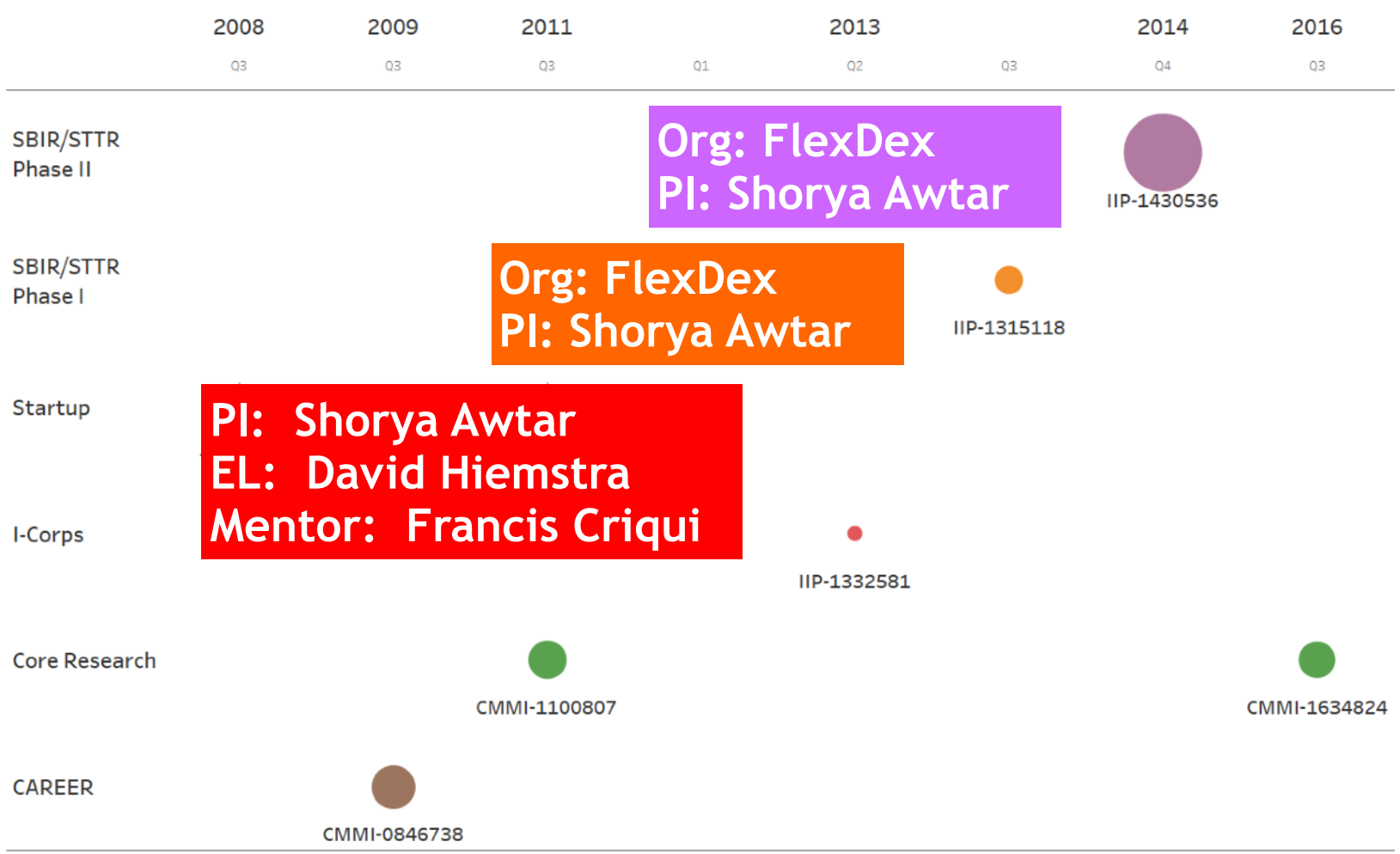
the merging of ideas, approaches and technologies from widely diverse fields of knowledge to stimulate innovation and discovery

Fundamental research feeds new technologies

Basic research to commercialization

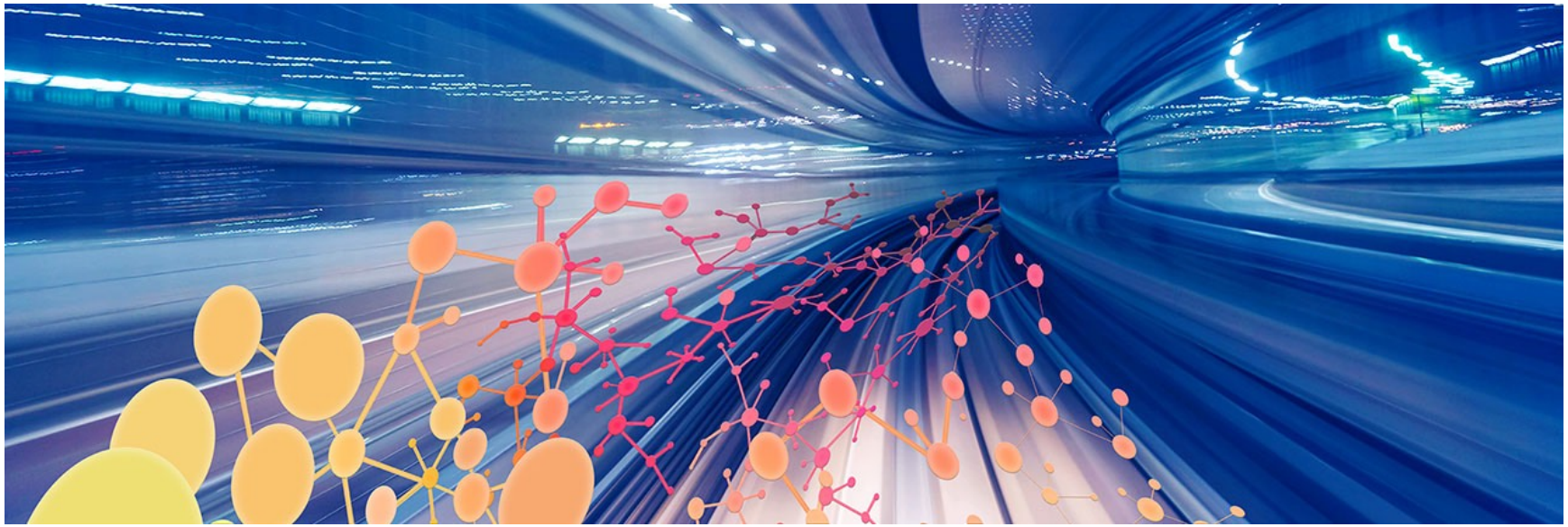
Dr. Shorya Awtar
University of Michigan
Ann Arbor

FlexDex SURGICAL™



NSF wants to accelerate use-inspired, convergence research in areas of national importance

Ideas advance from concept to deliverables through **NSF Convergence Accelerators**



Fed by basic research, integrated teams – including industry, academics, not-for-profits, government entities, and others – focus on deliverables

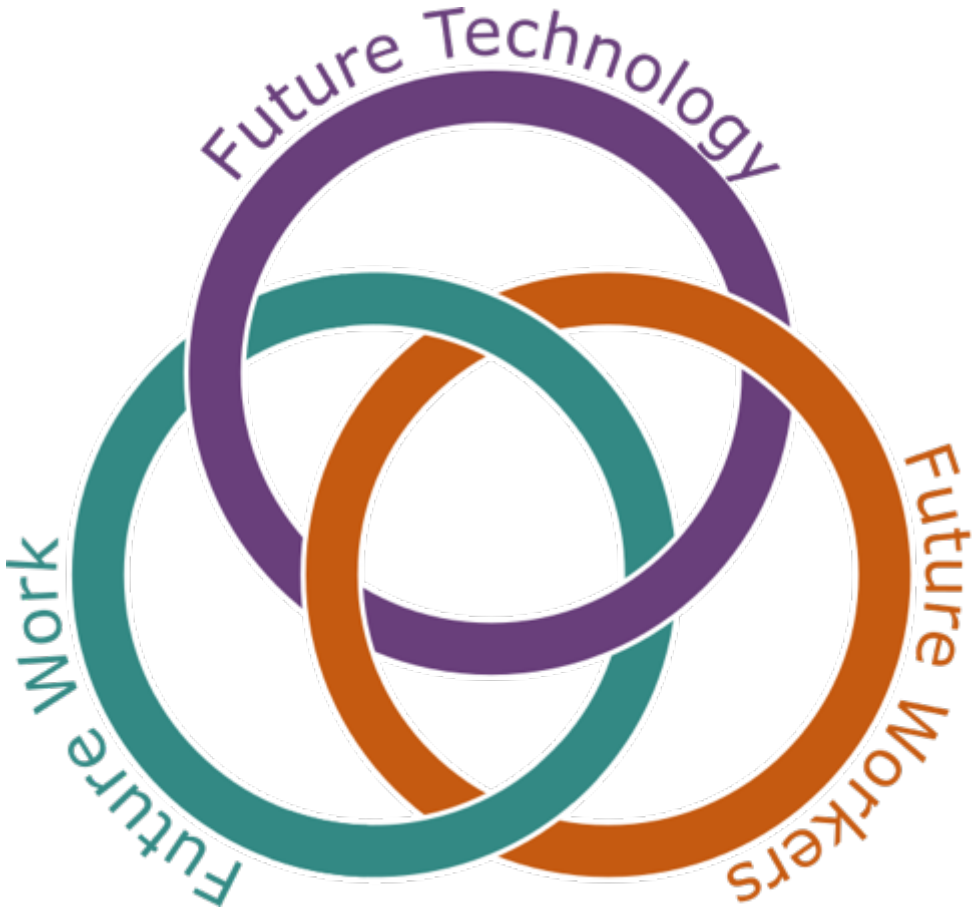
NSF wants to shape the Future of Work at the Human-Technology Frontier

NSF's investment focuses on difficult and complex research questions surrounding

- technology innovation,
- workers, and
- the interdependencies of technology, human work, lifelong learning, and society.

Convergence Research for the Future of Work

Analyses of societal, economic, educational and national contexts, including benefits and risks



Engineering & computer science technologies to create human-technology work partnerships

Fundamental principles and support of individual workers, work teams, workplaces, and work organizations

Robots that augment human capabilities

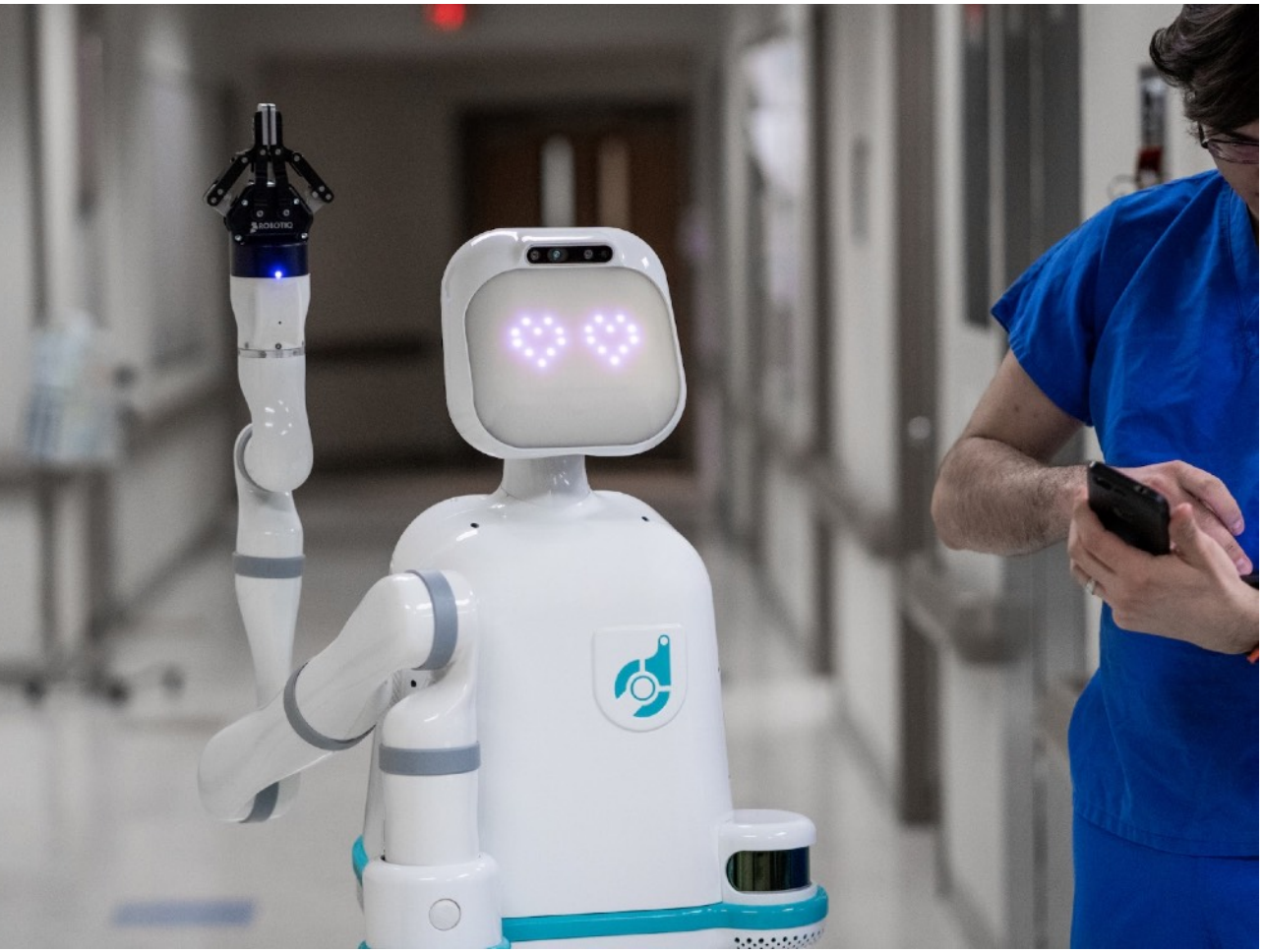
Image: Ekso Bionics, Ford

Robots that deploy for disaster rescue, remote monitoring and exploration*

*And education

Image: Squishy Robotics

Robots that assist with chores so people can focus on the work they care most about



Images: Diligent Robotics

Robots that collaborate with people

Empower workers

Improve productivity

Increase performance

Decrease injury

Expand access

Image: Sarcos Robotics

Healthcare

Power Grids

Farming

Learning

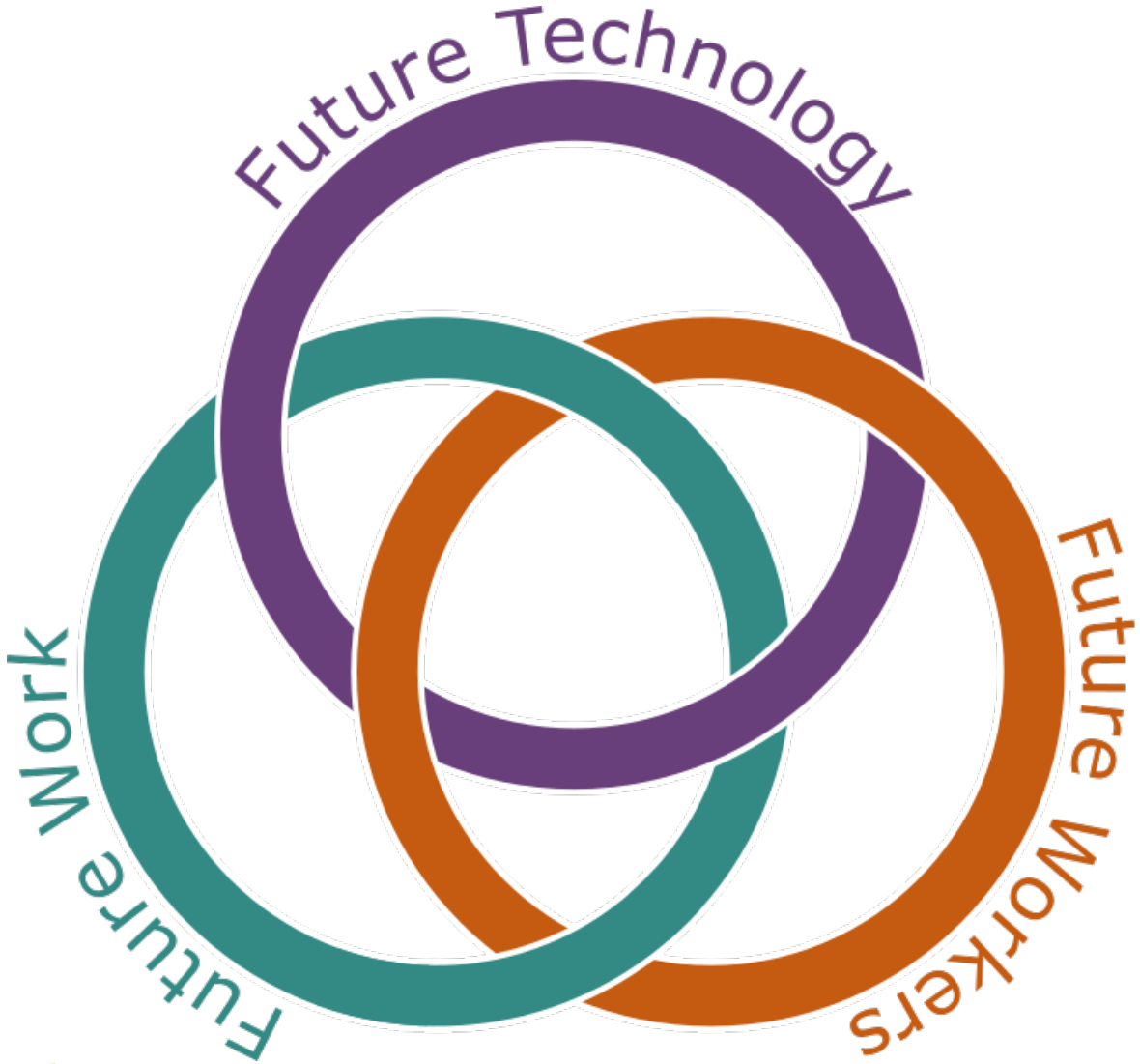
The Future of Work is just beginning

Science

Transportation

Response

Manufacturing



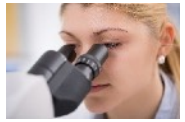
NSF's investment will accelerate progress and enable the Nation's workforce and economy to lead in a future that is increasingly and unavoidably driven by technology and knowledge.

THANK YOU

NSF Convergence Accelerator

Pilot (2019 – 2022)

Future (2020 -)

Open Knowledge Network	AI and Future Jobs	National Talent Ecosystem	Tracks: TBD
Example: MMA*  *Multi-Messenger Astrophysics	 Example: AI for Job Matching 	  Luschen-Dreamstime Example: Tools for retraining	• RFI (~Jun-19) to elicit community input • Workshop Series (~Oct-19) with SME • 2-Phase Solicitation (Early 2020)

PILOT

Phase 1: Team formation and research plan development

Blue Ribbon Panel

Phase 2: Creating deliverables

Phase 1 Dear Colleague Letter

Phase 1 Awards

Phase 2 Solicitation

Pitch Competition

Phase 2 Awards

Full Program Operation

2019: Mar Jun Sept 2020: Feb May Pilot Ends April 2022