

# Overview



NSF's Approach to Workforce Development



NSF Support for the Workforce

- Across the Career Continuum
- Partnerships with Industry



Lessons Learned



# NSF's Approach to Workforce Development



Focus on Individuals at Career Transition Points



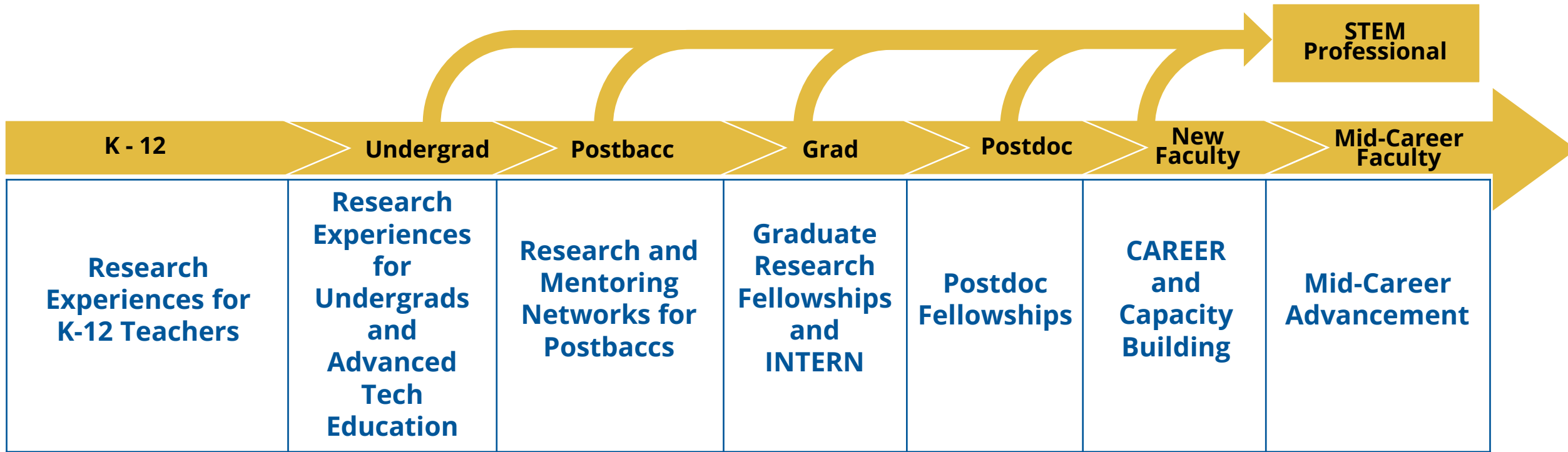
Create Opportunity Everywhere



Develop Partnerships



# NSF's Support for the Workforce



Education and training components of all awards

Broader Impacts components of all awards



# Partnerships with Industry

Aarna  
networks

alef

AMERICAN TOWER

Anritsu

amazon

atis

BLACK & VEATCH

CARLSON  
WIRELESS TECHNOLOGIES

COLOSSEUM  
at Northeastern University

COMMSCOPE

CROWN  
CASTLE

ctia  
Everything Wireless

ERICSSON



FACEBOOK

htc

intel

INTERDIGITAL

JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY

JUNIPER  
NETWORKS

KEYSIGHT  
TECHNOLOGIES

MathWorks  
Accelerating the pace of engineering and science

NATIONAL  
INSTRUMENTS

BOEING

ORACLE

Polaris  
Networks  
5G - Connecting the Future

QUALCOMM

SAMSUNG

sigfox  
Make Things Come Alive

SIRADEL  
ENGIE

Sprint

T-Mobile



vmware

SRG

TIA

Vapor

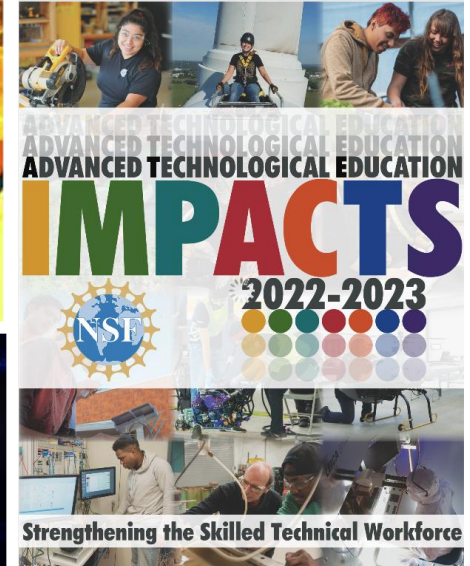
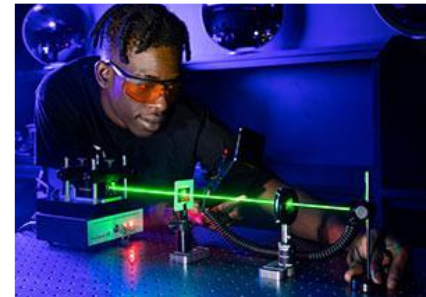
verizon

VIavi



# Advanced Technological Education (ATE) Program

- Largest two-year college investment agency's portfolio
- Mission to improve skills of a diverse set of technicians for high-technology fields
  - Facilitates acquisition of industry-endorsed credentials
  - Develops regional and national approaches to meet employers' needs for skilled technical workers





# Convergence Accelerator

**PI-identified partners:**  
identified by teams

+

**NSF-identified partners:**  
proactively engaged by NSF  
via **public events**



# Industry/University Cooperative Research Centers (IUCRC)



## **Government**

Governance structure,  
Additional research projects,  
funding



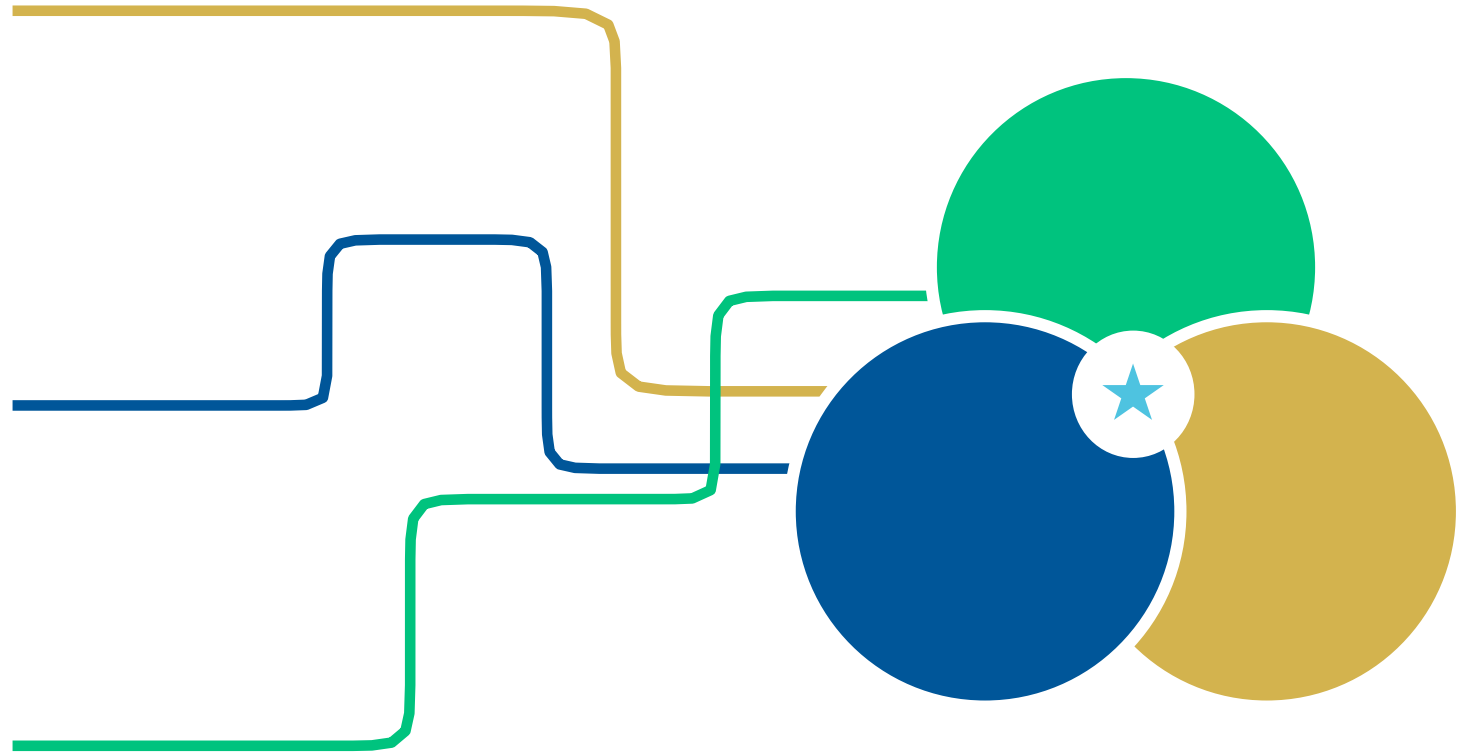
## **Universities**

Infrastructure, human capital,  
technical expertise



## **Industry**

Research projects, funding



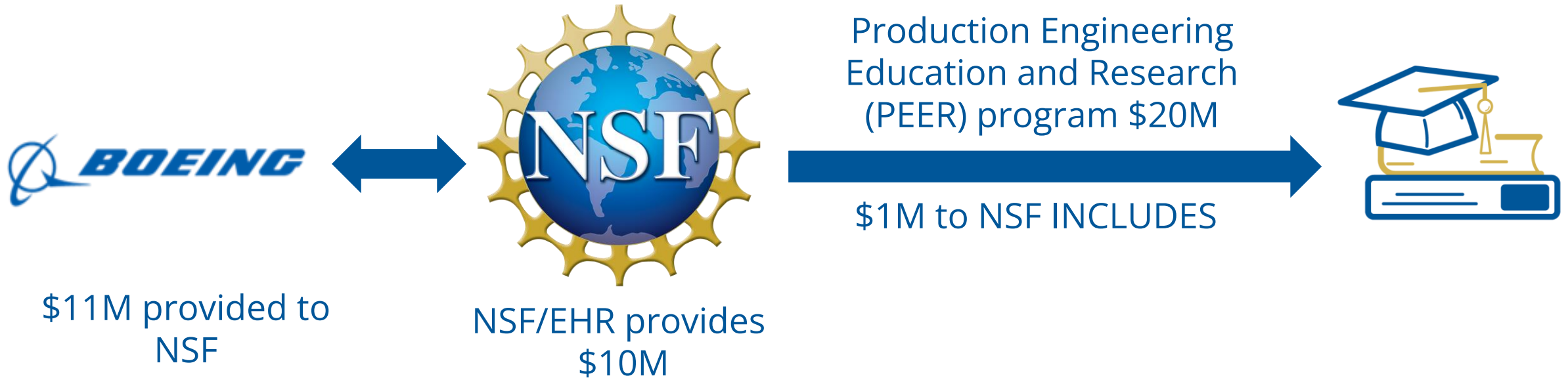
# Regional Innovation Engines

- Catalyzes and fosters regional innovation ecosystems across the U.S. to:
  - Advance critical technologies
  - Address national and societal challenges
  - Foster partnerships
  - Promote and stimulate economic growth and job creation
  - Spur regional innovation and talent
- Nearly 700 concept outlines published





# Gift Model: NSF and Boeing



Roughly 3,000 students (graduate and undergraduate) as well as 130 faculty members have benefited each year from PEER initiative awards.




# Joint Program Model: NSF and Intel

## Joint Programs:

- Cyber-Physical Systems Security and Privacy
- Visual and Experiential Computing
- Computer-Assisted Programming for Heterogeneous Architectures
- Information-Centric Networking in Wireless Edge Networks
- Foundational Microarchitecture Research
- Machine Learning in Wireless Networks

## Typical model for *each* joint solicitation:

- Total investments: \$6-8 million
- Funding ratio: 1:1 NSF: 
- Awards: ~2-6 awards, \$500,000-\$3 million used over 3 years

**New investment of \$10 million  
in semiconductor workforce  
and technologies**



# Lessons Learned



Recruitment and Retention



Mutual Benefits



Varying Models