

# DARPA Vision

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Dev Palmer, Deputy Director  
Microsystems Technology Office  
JUMP 2.0 Program Manager

Briefing prepared for JUMP 2.0 SAB/Center Leadership Face to Face

April 25, 2023





# Breakthrough technologies and capabilities for national security

**Create breakthrough, paradigm-shifting solutions**

**Accept and manage significant technology risk**

**Disrupt or massively accelerate technology roadmaps**





# Breakthrough technologies and capabilities for national security

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## PEOPLE

- Exceptional technologists
- Limited tenure
- Autonomy

## PROCESSES

- No in-house labs
- Metrics-based
- Programs have end-dates

## CULTURE

- Drive for off-scale impact
- Risk tolerant
- Honor in public service

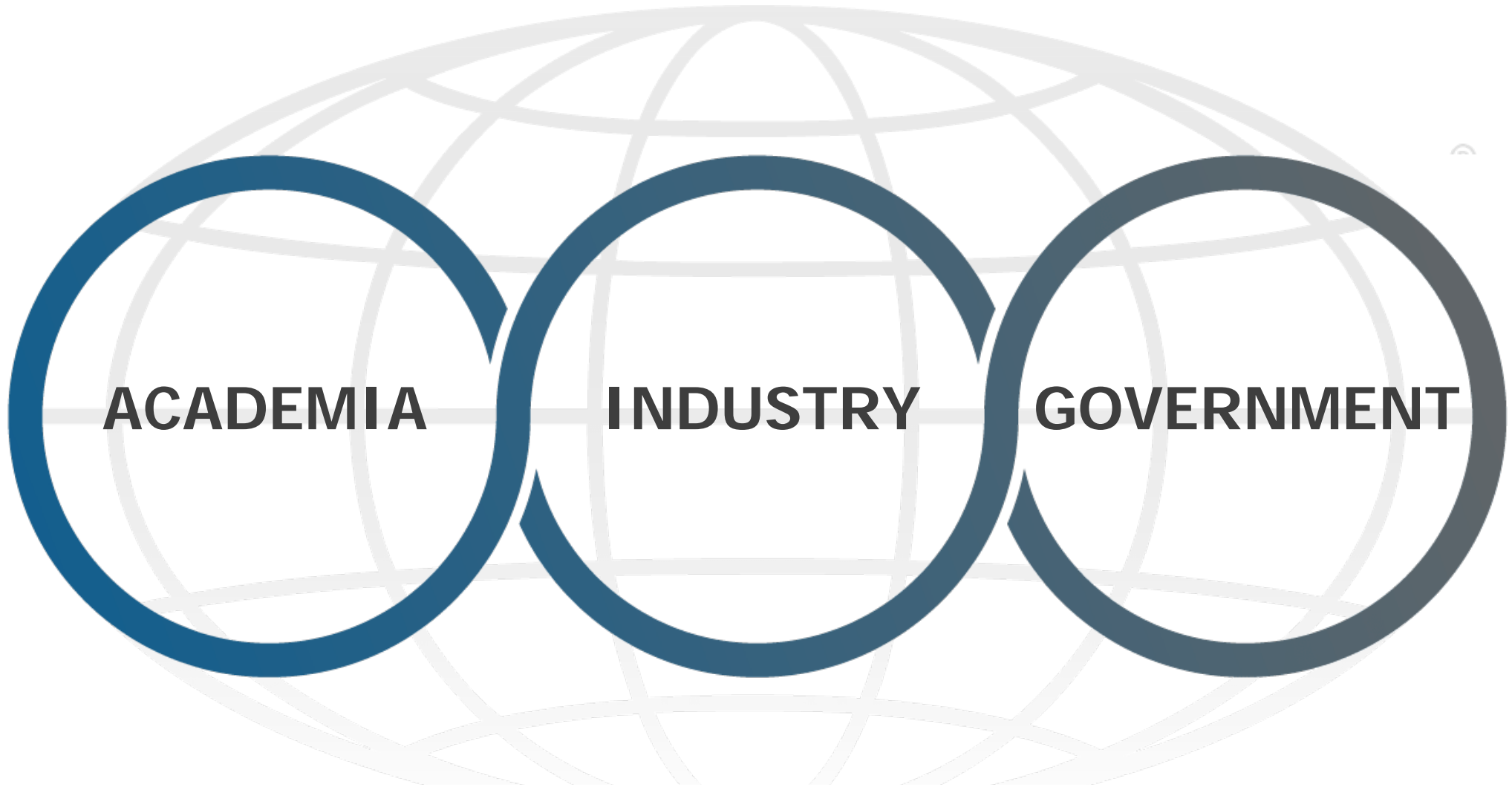
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DARPA's culture persists and the agency delivers



# Breakthrough technologies and capabilities for national security

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DARPA thrives in a healthy R&D ecosystem



# JUMP 2.0 Center theme alignment with ERI 2.0/MTO

## MTO Thrust

## ERI 2.0 Focus Area

## JUMP 2.0 Centers



**TALK**  
Securing communications

**COMPUTE**  
Increasing information processing efficiency at the edge

**DECIDE**  
Accelerating innovation in AI hardware

**BUILD**  
Manufacturing complex 3D microsystems

**COMPOSE**  
Optimizing design and test for complex circuits

**SECURE**  
Overcoming security threats across the entire hardware lifecycle

**HARDEN**  
Developing electronics for extreme environments

**CUBIC**  
Center for Ubiquitous Connectivity

**PRISM**  
Center for Processing with Intelligent Storage and Memory

**COCOSYS**  
Center for the Co-Design of Cognitive Systems

**CHIMES**  
Center for Heterogeneous Integration of Micro Electronic Systems

**COGNISENSE**  
Center on Cognitive Multispectral Sensors

**ACE**  
Evolvable Computing for Next-Generation Distributed Computer Systems

**SUPREME**  
Superior Energy-efficient Materials and Devices



# DARPA Program Manager (PM) Mentors in JUMP 2.0

## DARPA PM Mentors will engage JUMP 2.0 centers

- Attend yearly center reviews and SAB caucus discussions
- Interact with center researchers and industry liaisons
- Identify breakthrough ideas to seed DSSPs and new DARPA programs

### COCOSYS



John Davies  
*EW/Adv. Processing*

### CUBiC



James Wilson  
*Integration*

### CogniSense



Thomas Ehrenreich  
*Directed Energy*

### ACE



Lok Yan  
*Hardware Emulation*

### PRISM



Matt Wilding  
*Software Engineering*

### CHIMES



Todd Bauer  
*MEMS/Rad-Hard*

### SUPREME



Jason Woo  
*CMOS/Processing*

### JUMP 2.0 PM



Dev Palmer  
*MTO Deputy Director*

#### PM

#### DARPA web bio

John Davies	<a href="https://www.darpa.mil/staff/mr-john-davies">https://www.darpa.mil/staff/mr-john-davies</a>
James Wilson	<a href="https://www.darpa.mil/staff/dr-james-wilson">https://www.darpa.mil/staff/dr-james-wilson</a>
Thomas Ehrenreich	<a href="https://www.darpa.mil/staff/dr-thomas-ehrenreich">https://www.darpa.mil/staff/dr-thomas-ehrenreich</a>
Lok Yan	<a href="https://www.darpa.mil/staff/dr-lok-yan">https://www.darpa.mil/staff/dr-lok-yan</a>

#### PM

#### DARPA web bio

Matt Wilding (I2O)	<a href="https://www.darpa.mil/staff/dr-matthew-wilding">https://www.darpa.mil/staff/dr-matthew-wilding</a>
Todd Bauer	<a href="https://www.darpa.mil/staff/dr-todd-bauer">https://www.darpa.mil/staff/dr-todd-bauer</a>
Jason Woo	<a href="https://www.darpa.mil/staff/dr-jason-woo">https://www.darpa.mil/staff/dr-jason-woo</a>
<b>Dev Palmer</b>	<a href="https://www.darpa.mil/staff/dr-dev-palmer">https://www.darpa.mil/staff/dr-dev-palmer</a>



*Join us in person as we focus on reinventing microelectronics manufacturing*

# ERI 2.0

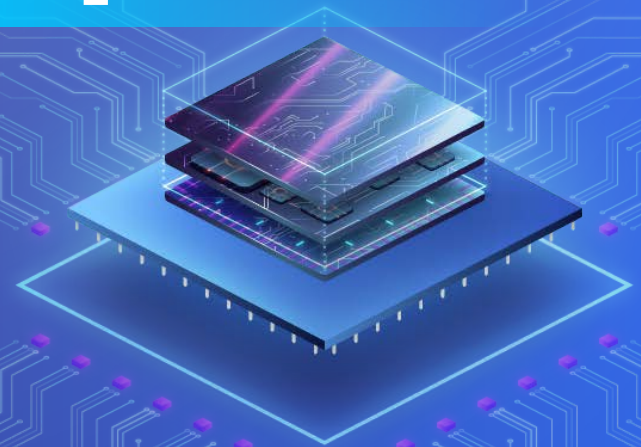
ELECTRONICS  
RESURGENCE  
INITIATIVE

# SUMMIT

August 22-24, 2023 | Seattle, WA

<https://eri-summit.darpa.mil>

**Registration opens in May**





## Forbes

BREAKING • BUSINESS

### CHIPS Act Passes: House Approves \$280 Billion Bill To Boost Microchip Production And Counter China

Brian Bushard Forbes Staff  
I cover breaking news for Forbes

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Jul 28, 2022, 03:26pm EDT

Source: Forbes



Source: CNET

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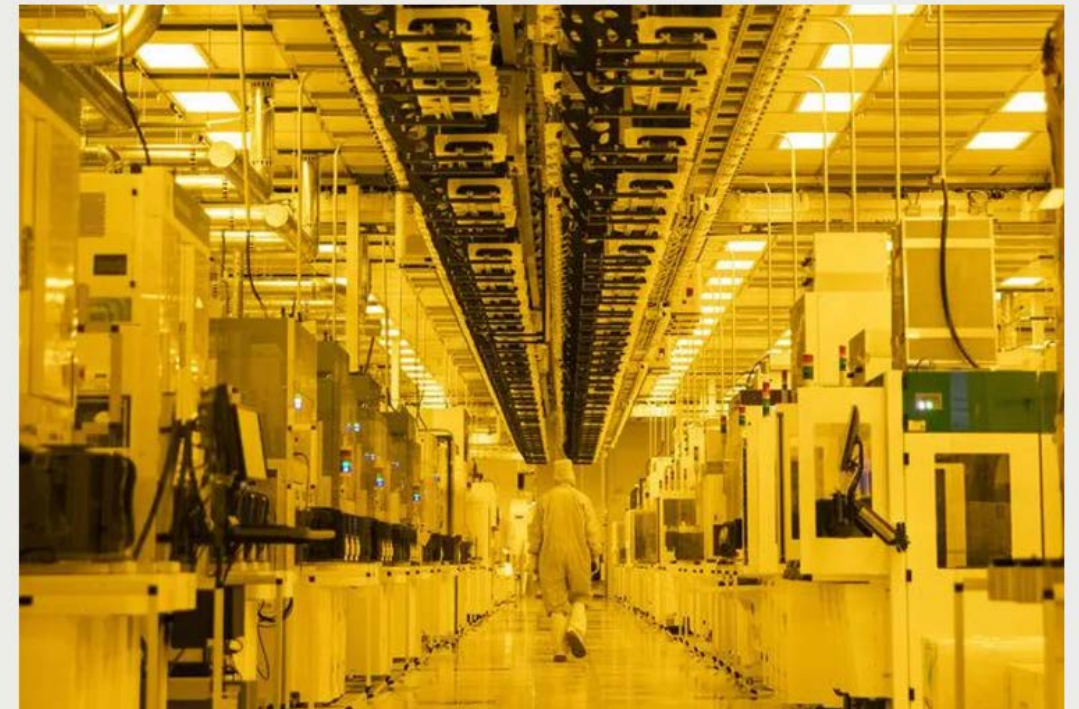
IEEE Spectrum FOR THE TECHNOLOGY INSIDER

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NEWS SEMICONDUCTORS

### U.S. Passes Landmark Act to Fund Semiconductor Manufacturing >CHIPS and Science Act of 2022 provides billions for new fabs and other incentives

BY SAMUEL K. MOORE | 29 JUL 2022 | 3 MIN READ



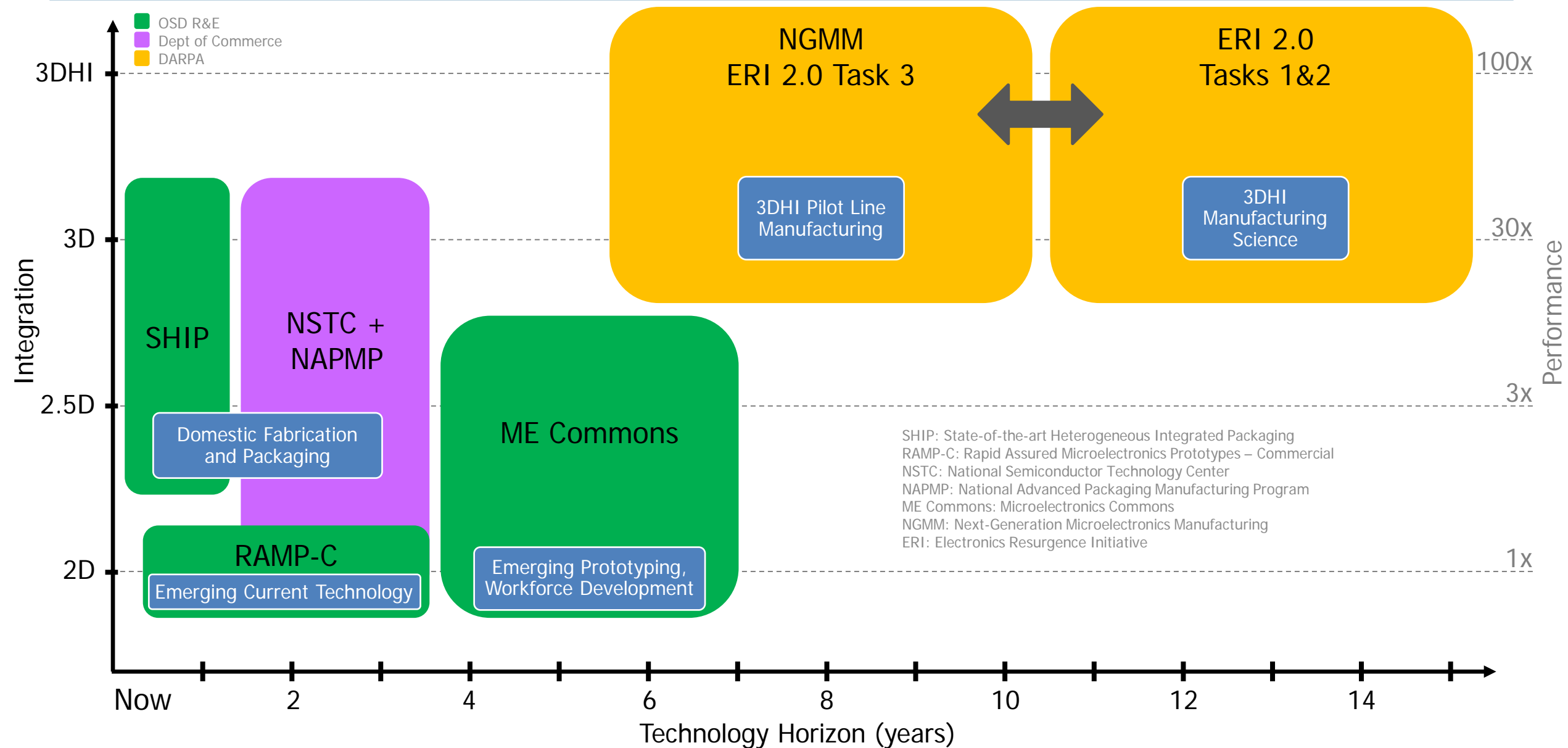
Chip manufacturers are hoping their expansions will be less costly now. GETTY IMAGES

Source: IEEE





# A long term vision for advanced microelectronics manufacturing





# Interested in becoming a DARPA program manager?

## What does it take?

A desire to make an impact in national security

Revolutionary ideas in advanced microsystems

Ability to lead and manage technical support and contracted performers for executing the vision of your program

## What is the process?

Initial idea discussion with the MTO Director and/or Deputy Director

Program pitch development with MTO guidance

Program presentation to MTO leadership and program managers

## Who do you contact?

Email the MTO Director and Deputy Director  
[MTO-Leadership@darpa.mil](mailto:MTO-Leadership@darpa.mil)

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For more information, speak to a current program manager, or contact the MTO Recruitment Coordinator  
[contact-MTO@darpa.mil](mailto:contact-MTO@darpa.mil)

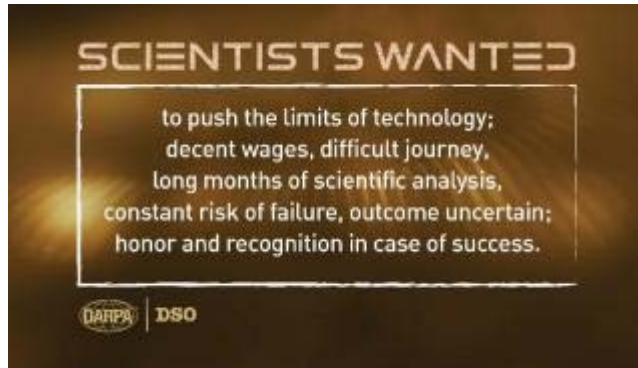


# DARPA initiatives

For more information,  
visit our website!



## Innovation Fellowship



## Advanced Research Concepts (ARC)



## Bringing Classified Innovation to Defense and Government Systems (BRIDGES)



## DARPAConnect



## DARPA Triage Challenge (DTC)



## AI Forward





# Innovation and impact



## JUMP 2.0 has an amazing team

## Let's do amazing things!





[www.darpa.mil](http://www.darpa.mil)