



Grand Challenge 2005

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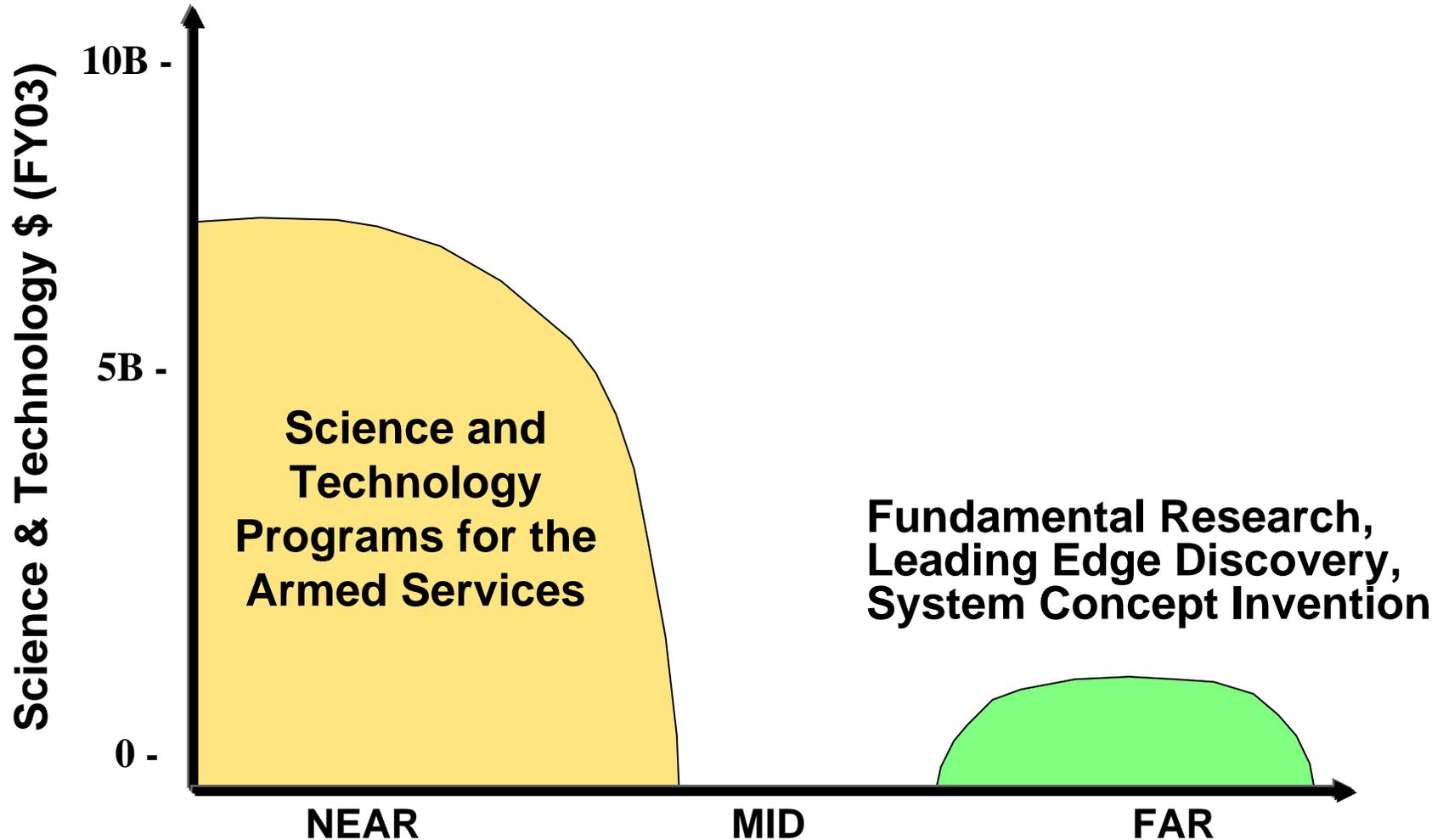
What is DARPA?

The Defense Advanced Research Projects Agency is the central R&D arm of the Department of Defense with the primary responsibility to conceive, explore, and demonstrate breakthrough system concepts and the most advanced technologies.



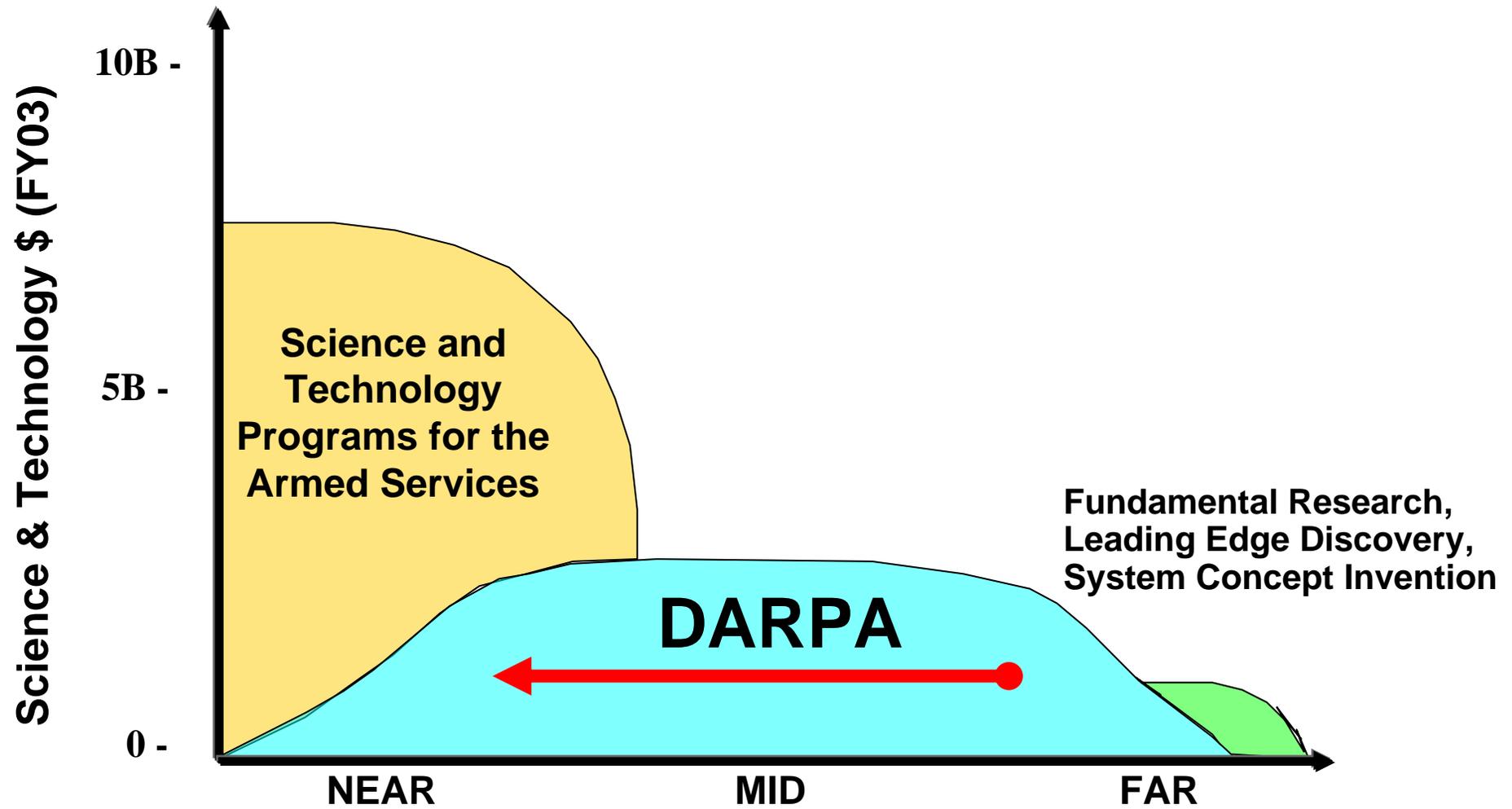


DARPA Role in Science and Technology





DARPA Role in Science and Technology





DARPA Accomplishments



Saturn



M-16 Rifle



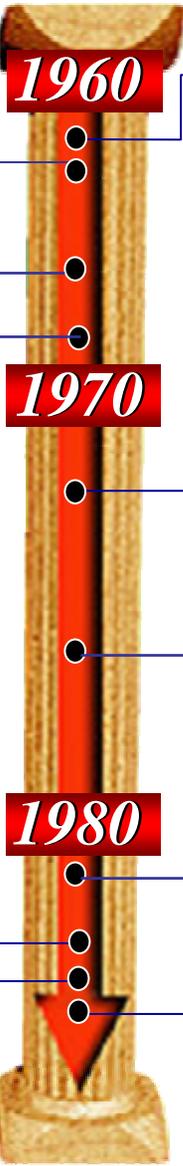
Ground Surveillance Radar



Stealth Fighter



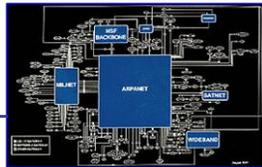
Sea Shadow



Vela Hotel



ATACMS



Arpanet



JSTARS



GPS



X-45



Mobile Robots



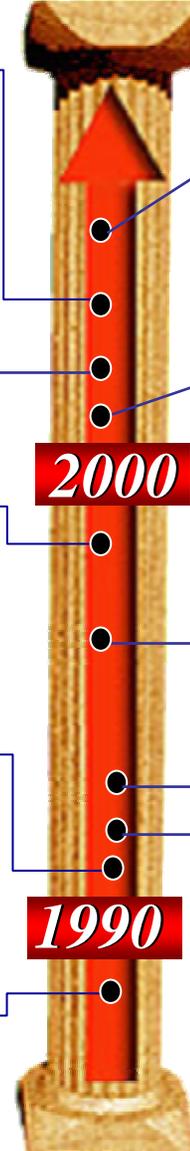
JSF Engine



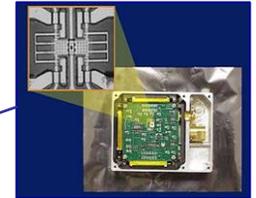
Uncooled IR



Taurus Launch Vehicle



Future Combat System



MEMS



Global Hawk



Predator



BAT



DARPA's Legacy of Successful Unmanned Platforms



PRAEIRE

70's



AMBER

mid 80's



CONDOR

late 80's



Global Hawk

mid 90's



UCAV

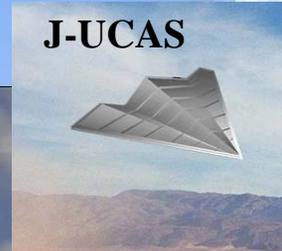
2002



A 160

Hummingbird A160
29 Jan 2002

2003



J-UCAS

2007



Unmanned Ground Vehicle Research

R&D Thrust Areas

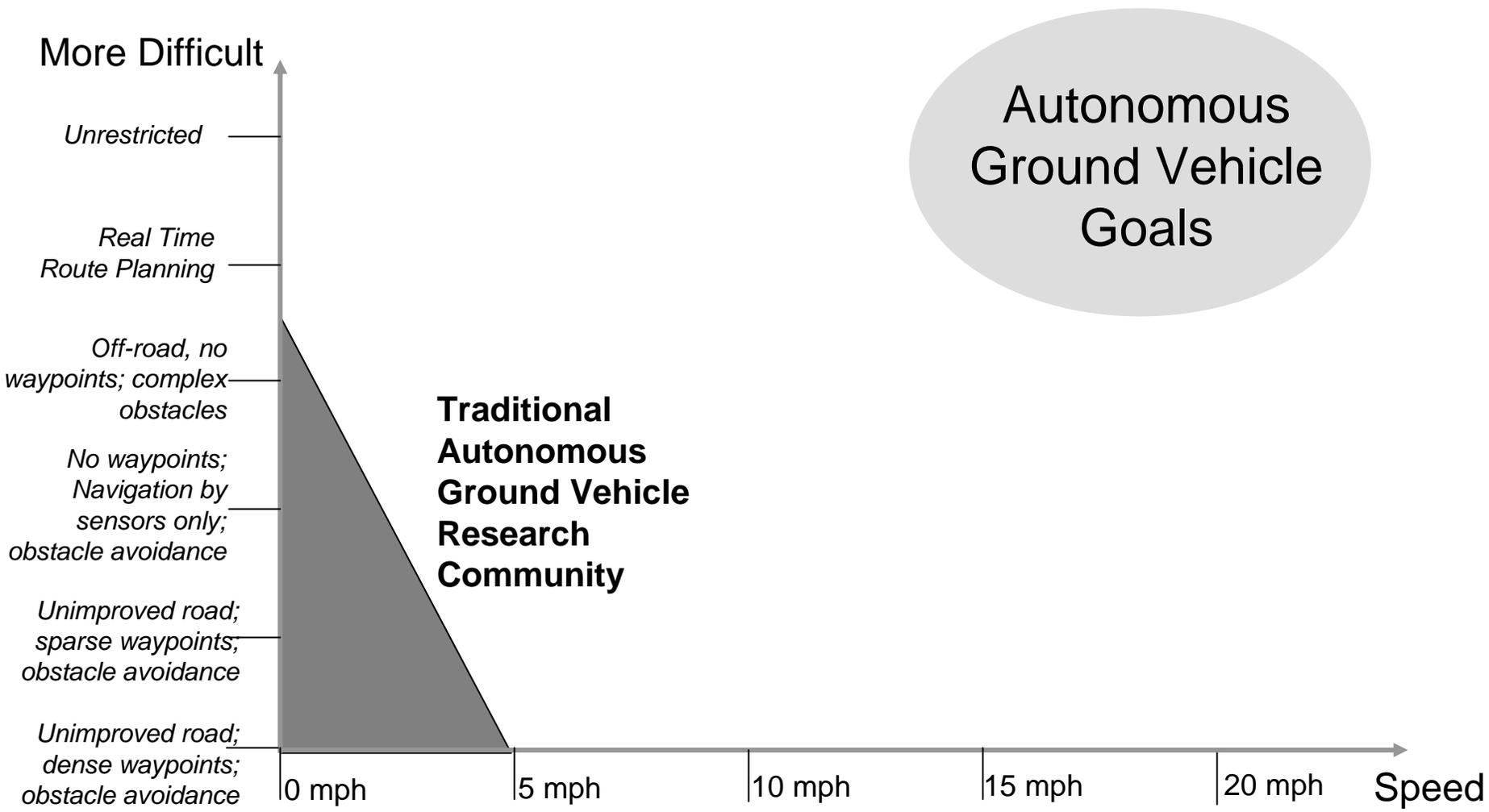
- Versatile ground robotic platforms
- Autonomous navigation and guidance control



Exploration of Fundamental Issues

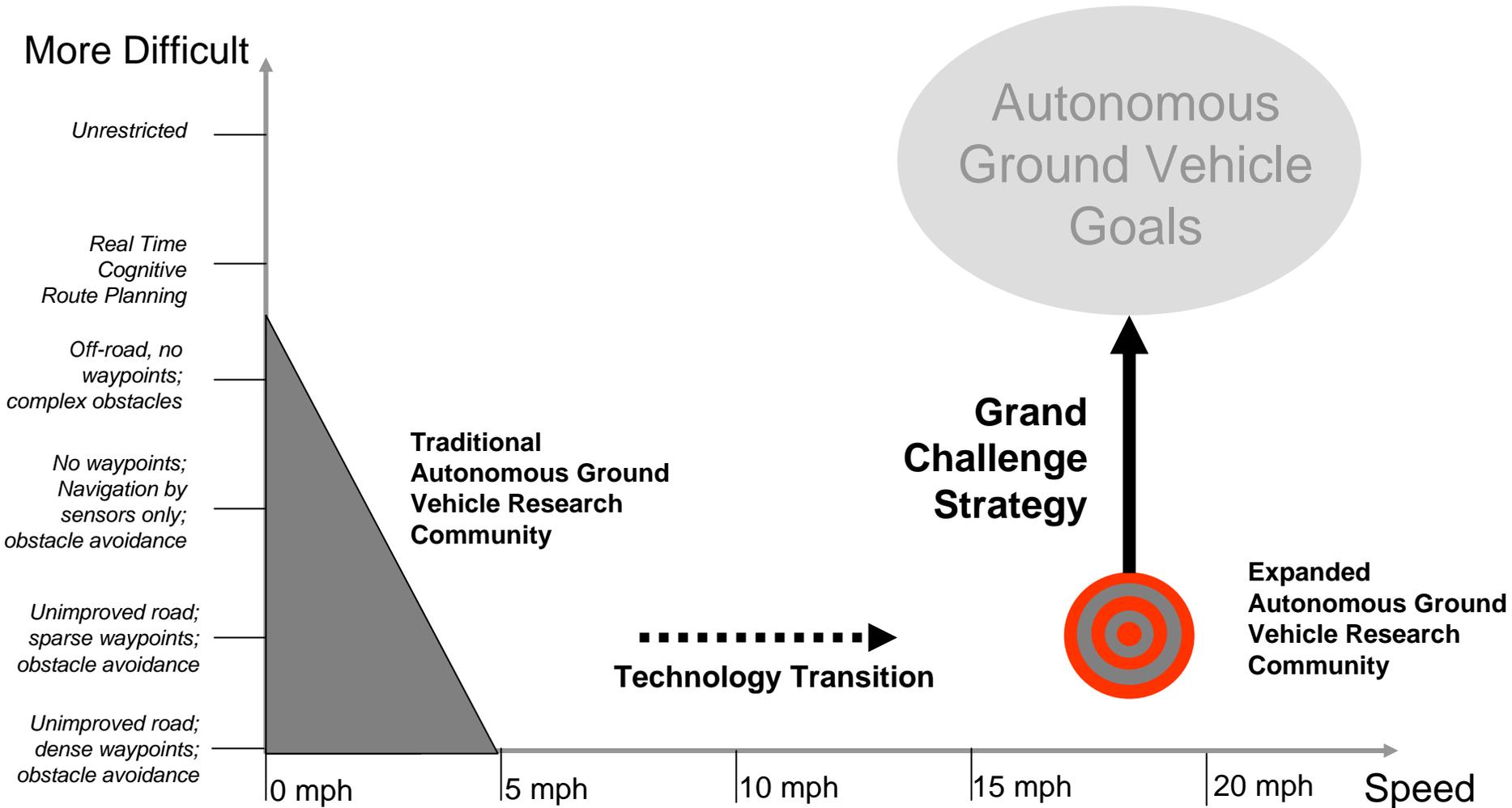


DARPA Grand Challenge





DARPA Grand Challenge





Grand Challenge Goals

- Accelerate autonomous ground vehicle technology
 - Sensors
 - Navigation
 - Control Algorithms
 - Vehicle Systems
 - Systems Integration

- Enlarge the autonomous ground vehicle community

- Build an existence proof

An autonomous ground vehicle that can travel significant distances across difficult terrain with only two commands – start and stop



Grand Challenge Route

- Varied Terrain
 - Desert
 - Switchbacks
 - Dry lakebed
 - Mountainous roads
- Obstacles
 - Gullies and washes
 - Stopped vehicles
 - Underpasses
 - Utility towers
 - Manmade obstacles





Grand Challenge Course

■ Terrain

- Desert
- Urban
- Flat
- Mountainous

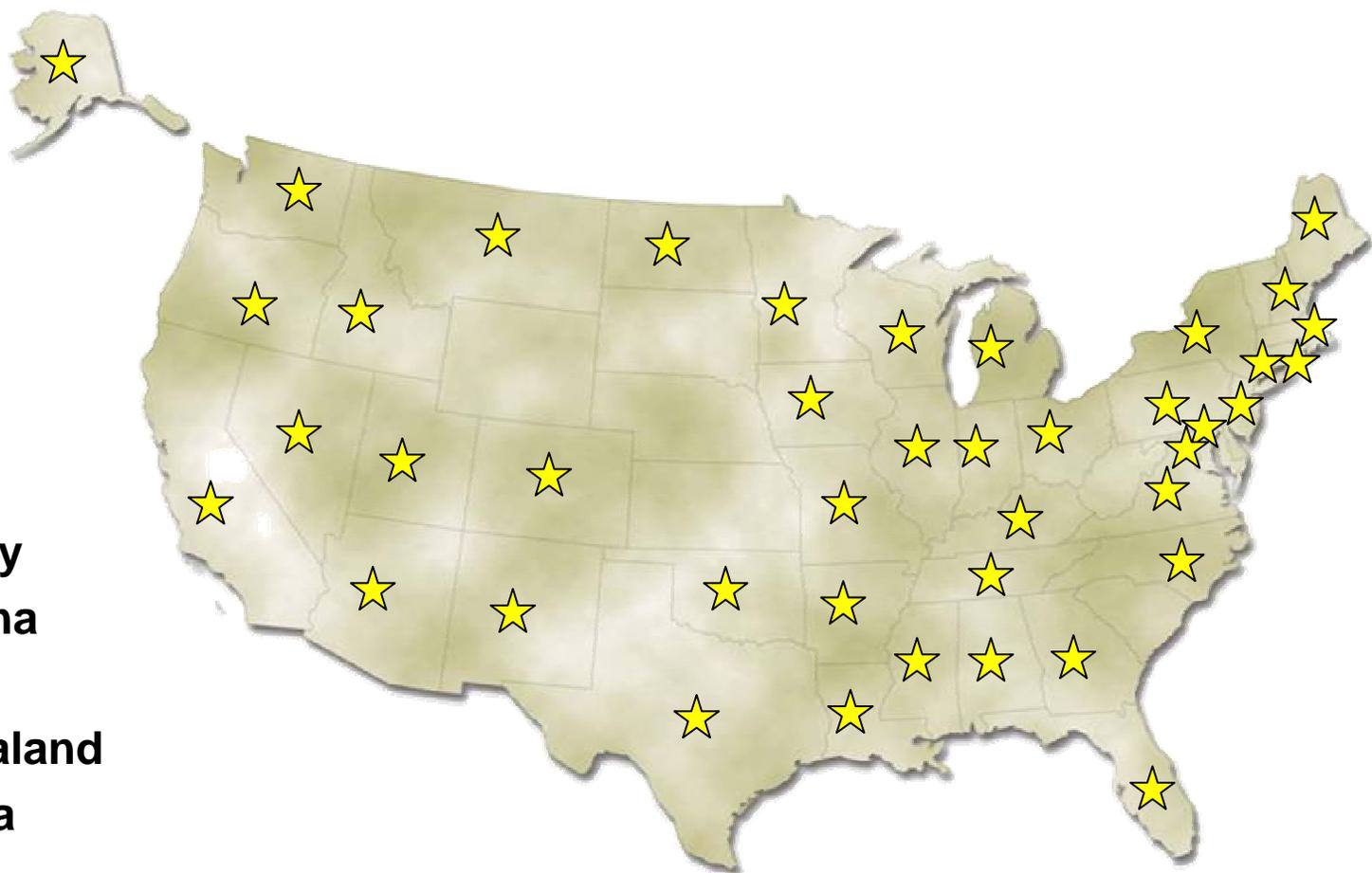
■ Obstacles

- Bridges
- Underpasses
- Highway interchanges
- Debris
- Paved roadways
- Poor roadways
- Other Vehicles



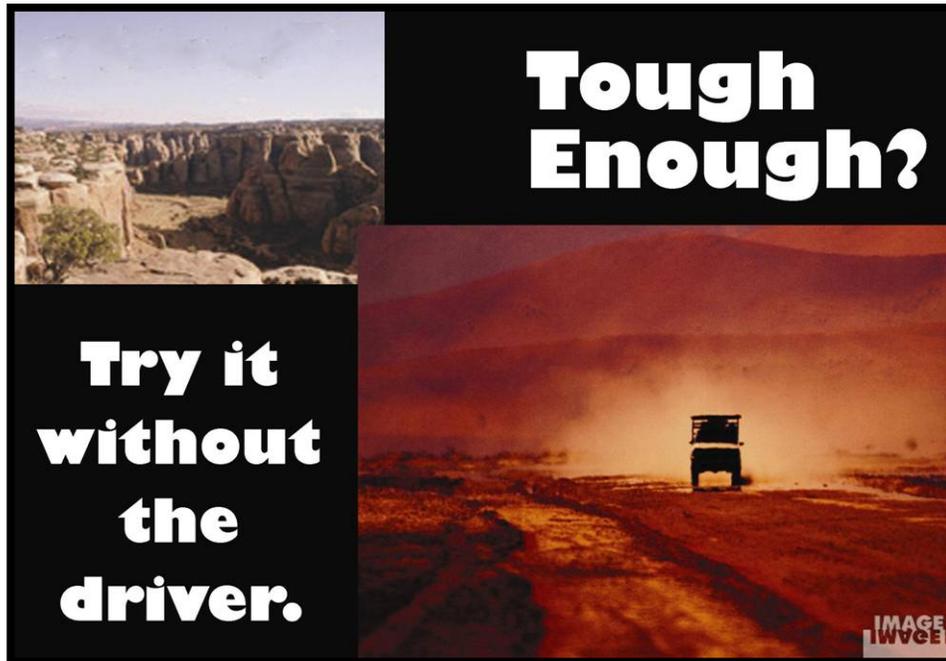


Conference Participation



- ★ Canada
- ★ Germany
- ★ Argentina
- ★ Israel
- ★ New Zealand
- ★ Malaysia

Representatives from 42 states and 7 nations are here today



\$2 Million Prize

Fastest Finish under 10 Hours