Trust, Confidence, and Organizational Decisions about Artificial Intelligence Adoption: The Impact for US Defense

Prepared for SMA Speaker Series

October 20, 2020

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Presentation Overview

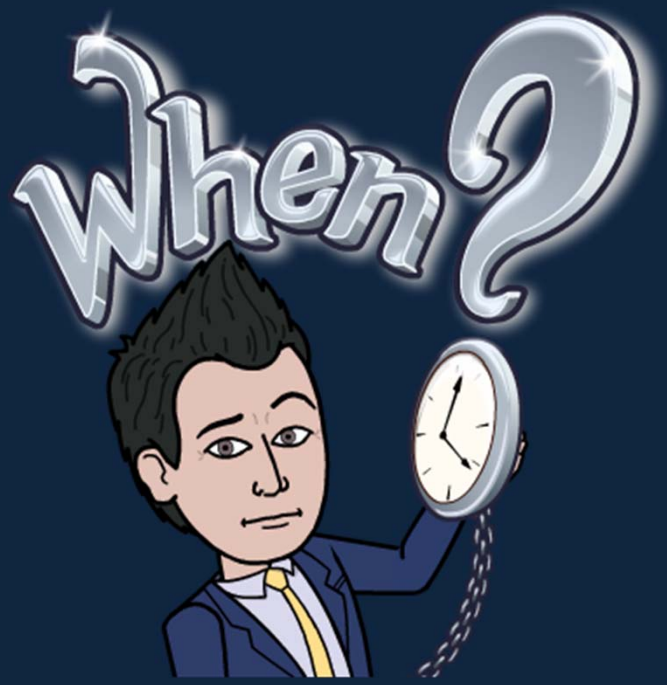
- Overview
- Military power today
- What is AI?
- General Purpose Technologies and Global Power
- Trust and the Adoption of Artificial Intelligence
- The Impact for US Defense

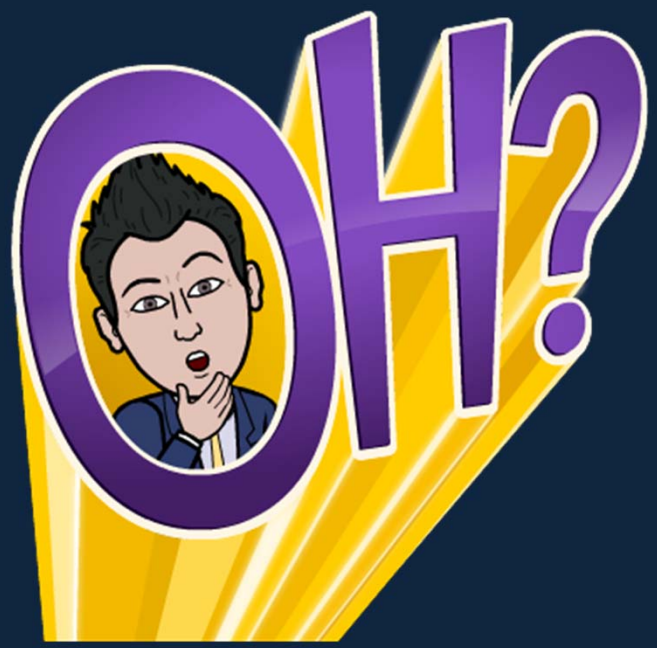
Bottom Line Up Front

- The key challenges in adopting military innovations are often organizational, rather than financial or technological
- Great power competitors and non-state actors view AI and robotics as technologies with the potential to disrupt US military and economic superiority
- Gap between innovation rhetoric and action within the United States defense complex generates risk for US conventional military superiority in the coming decades

Key Question: How will human, organizational, and political factors impact the willingness of individuals and bureaucracies to adopt autonomous systems and applications of artificial intelligence?

Who am I?





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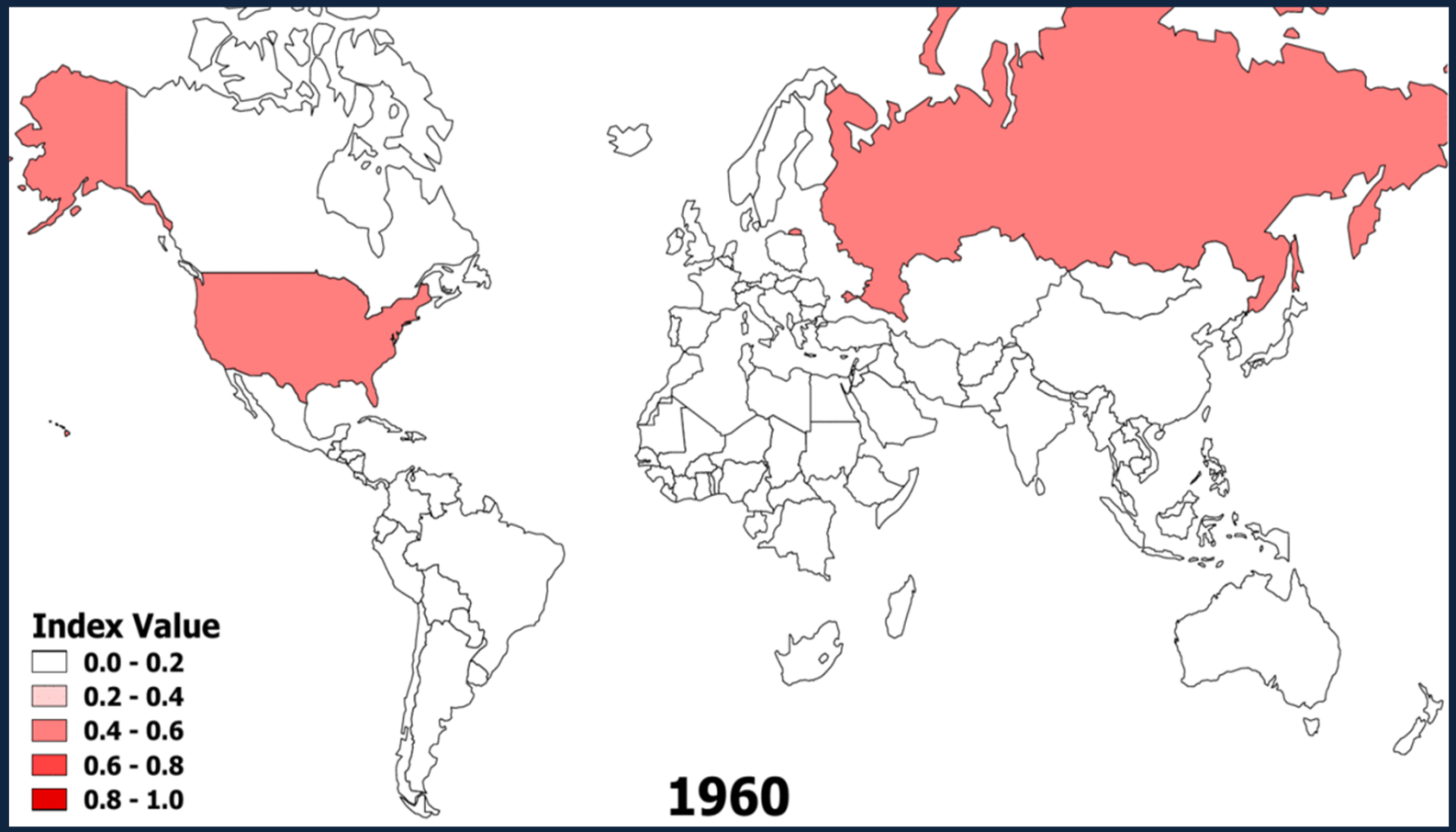
Power Today: The Spread of Precision Strike



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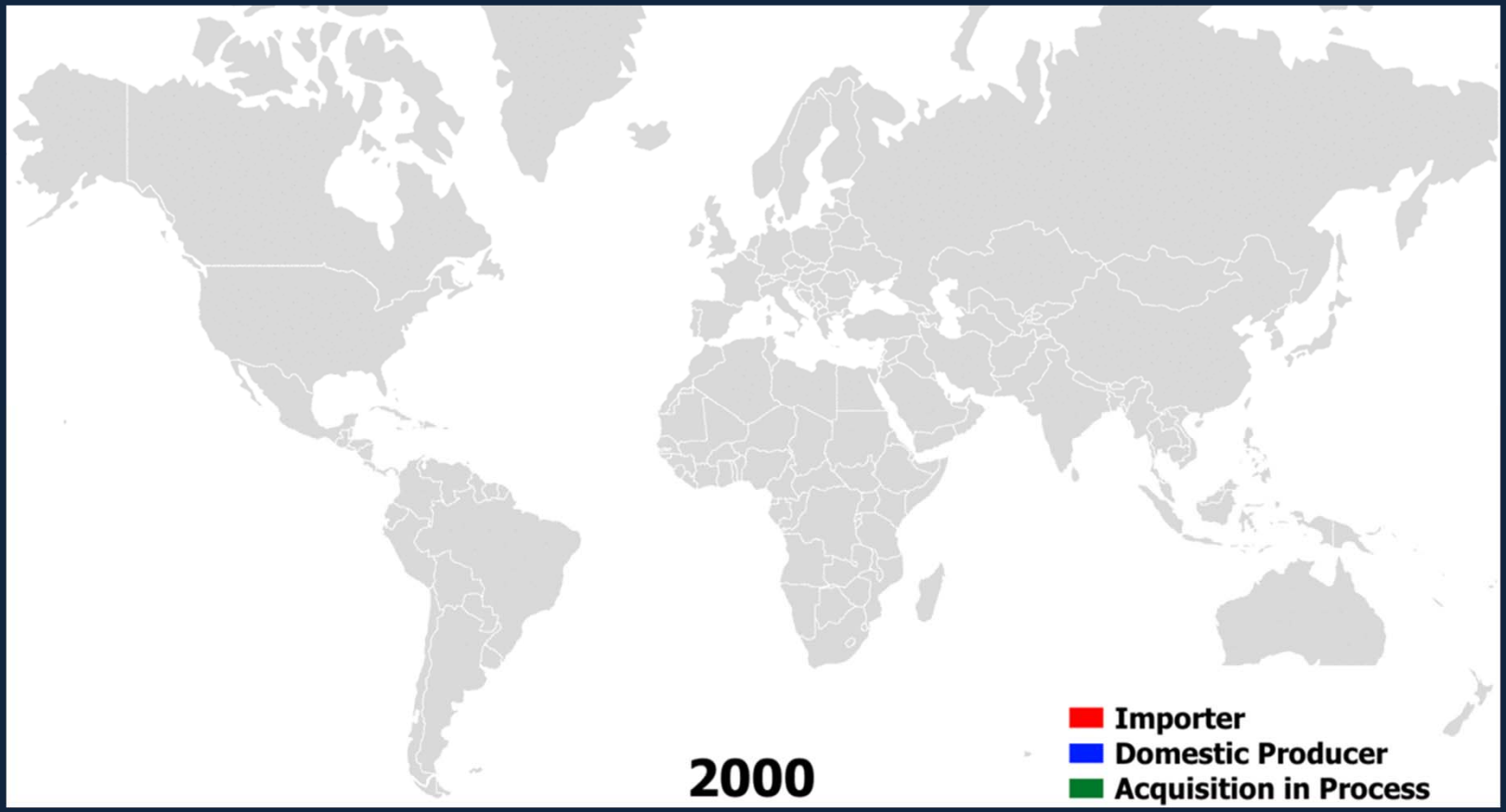
Armed Drone Proliferation: China's Role



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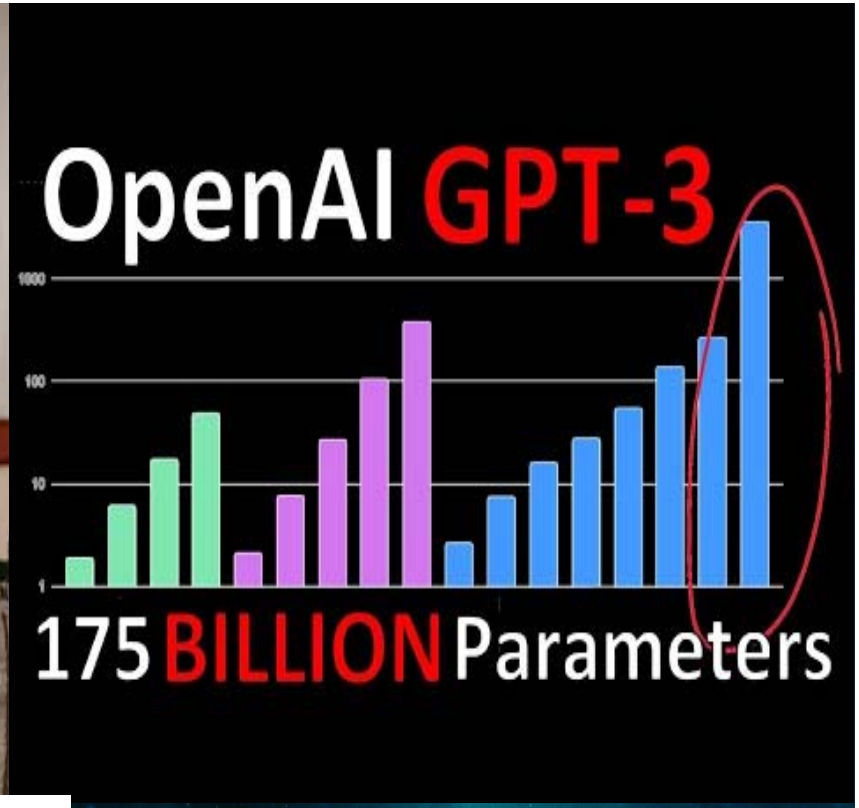
WHAT IS A.I.?

What is Artificial Intelligence?

- Things AI can do. . . .
  - Direct physical objects
  - Process data
  - Overall information management (decision-making)
- Things AI is not
  - A gun
  - A plane
- Impact: AI is much broader than particular military technologies

What Will Drive Innovation In AI and Robotics?

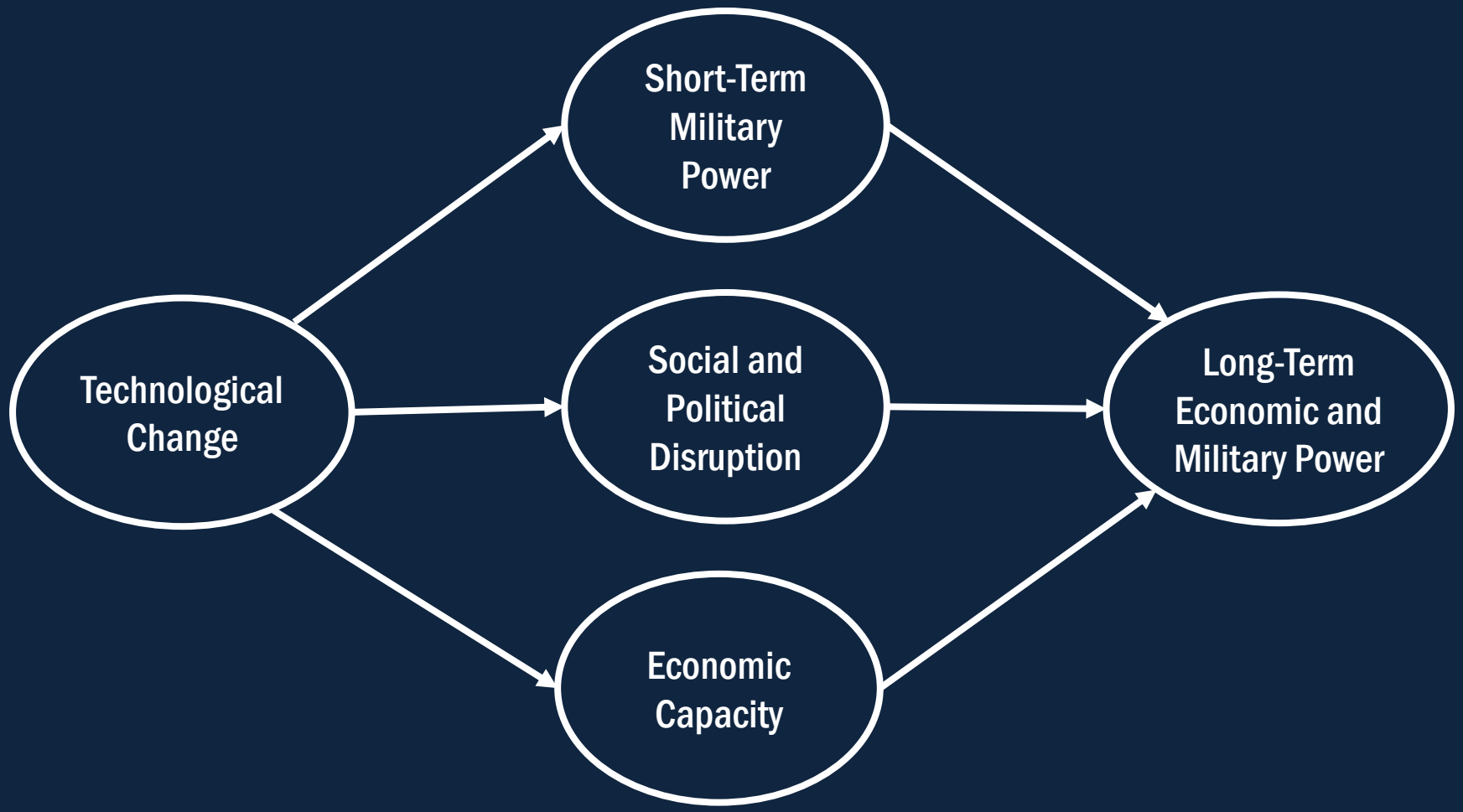


DeepMind

What are General Purpose Technologies?

- Technology umbrellas with broad applications across many areas of the world. Examples:
  - Combustion Engine
  - Electricity
  - Computing
- General Purpose Technologies have significant consequences for global power
  - Direct
  - Indirect
  - Over time

General Purpose Technologies and the Balance of Power



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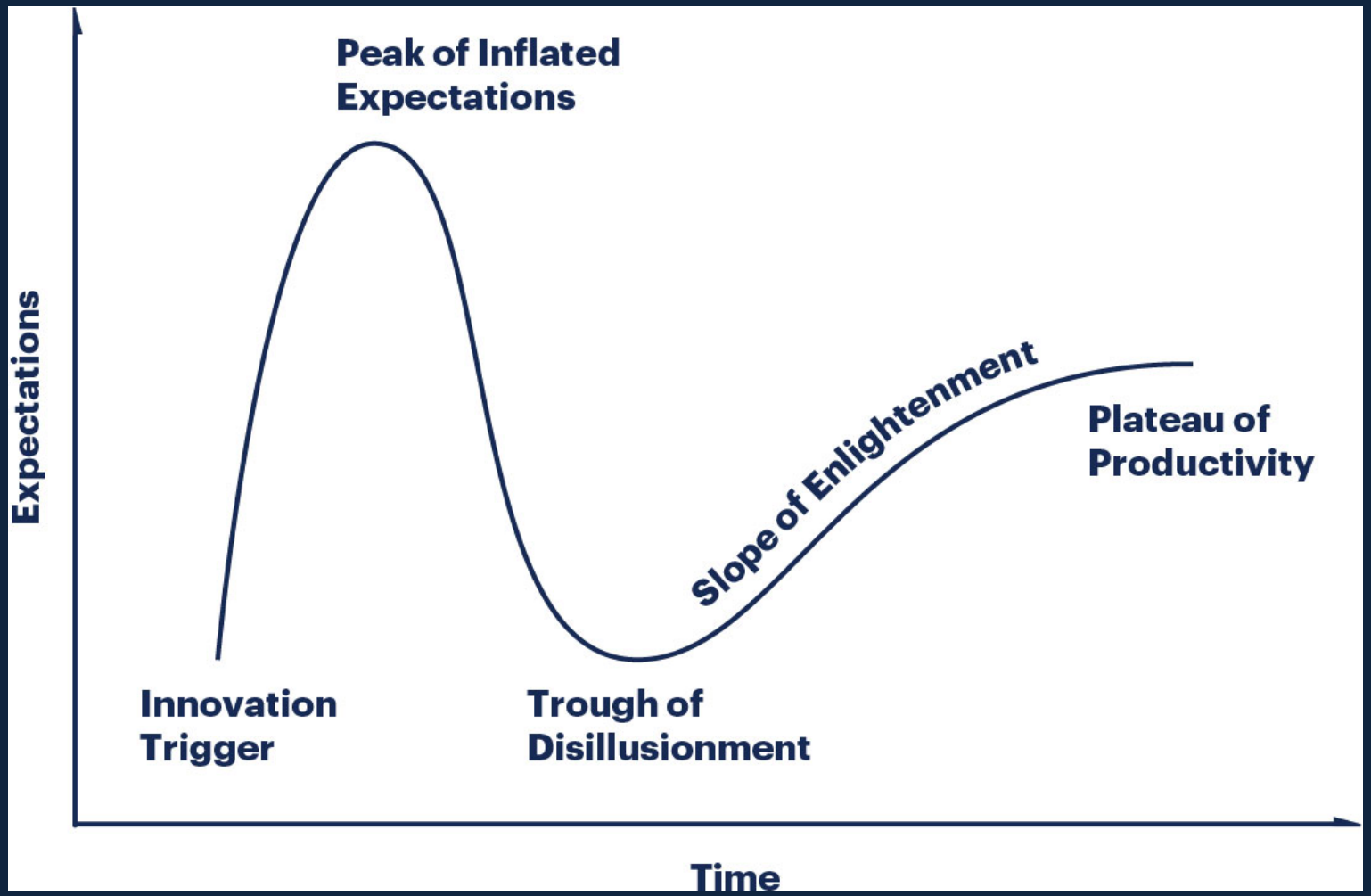
Stage 1: Technology Hype



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Stage 2: Trust Gap

Trust Gap

- Inability to trust machines to do work of people
- Unwillingness to deploy or properly use systems
- Example: Ground Tactical Air Controllers

Stage 3: Over Confidence

Trust Gap

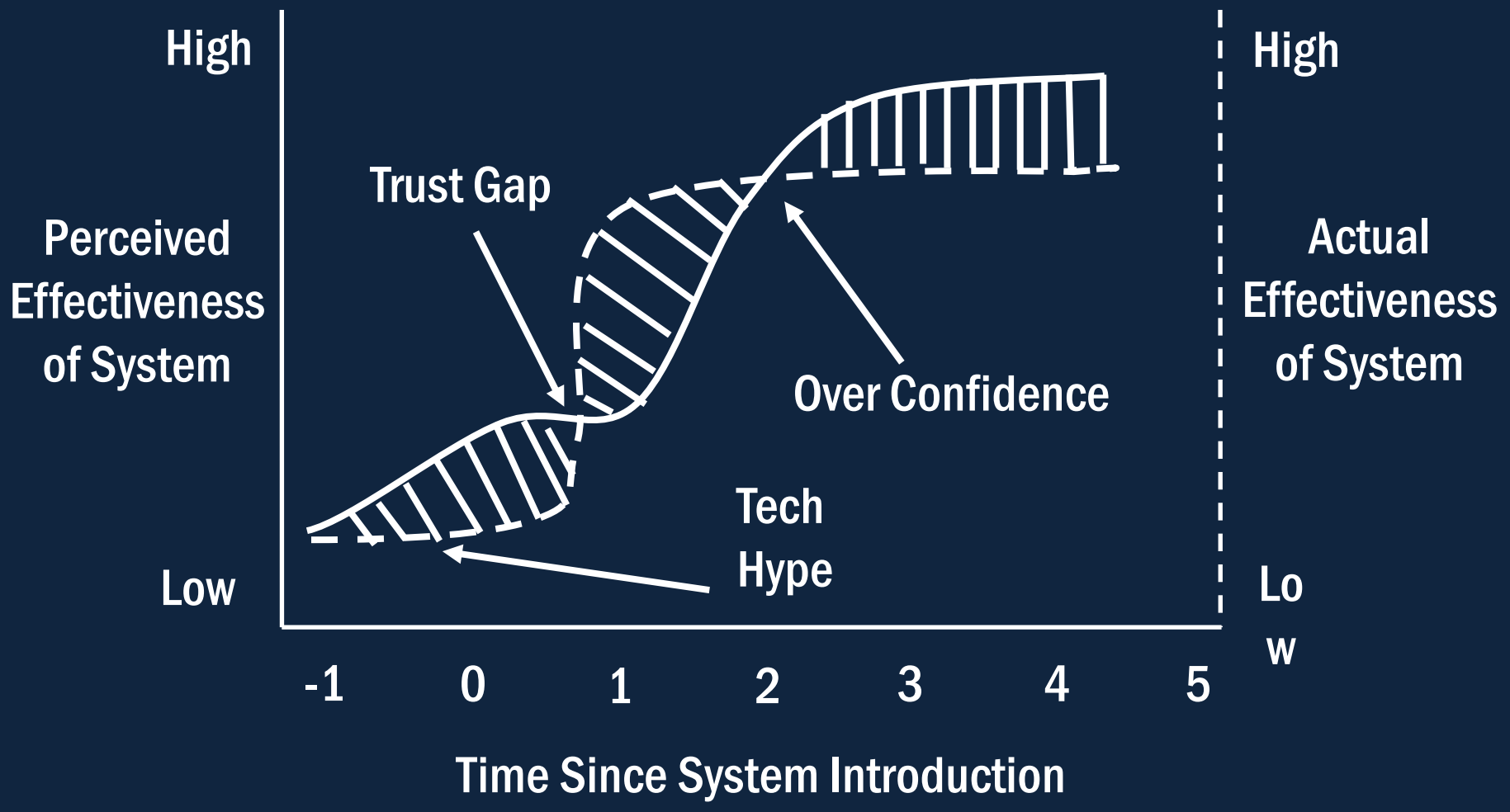
- Inability to trust machines to do work of people
- Unwillingness to deploy or properly use systems
- Example: Ground Tactical Air Controllers

V

Over Confidence

- Leads to risky bets on technology
- Delegation of cognitive judgment to machine – trusting too much
- Failure to question algorithms if they make mistakes
- Example: Air France Crash
- Example: Patriot Missile fratricide

Trust, Confidence, and AI Adoption: 3 stages



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Who Wants AI & Robotics? Everyone

Democracies

Autocracies

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Ongoing International Competition

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The Military Innovation Process

Invention → Incubation → Implementation → Diffusion

- Innovations have a “debut” point
- Key shift from incubation period to implementation period
- Example: Blitzkrieg

So What About US Innovation Adoption?

- Adoption capacity checklist
- Example: Joint Artificial Intelligence Center (JAIC)
- Moving from invention to incubation and implementation
  - Rhetoric v. Investments
  - Experiments v. Programs of Record
  - Doctrine? Training?

Innovation Adoption and AI

- Potential areas of impact: Recruiting, training, promotion, doctrine
- Examples
  - Image processing (sustaining)
  - Swarms (disruptive)
  - Battle networks (disruptive)

Who is best positioned, organizationally?

Two Pathways

Dual Use AI/Robotics

- Example: Image recognition
- Commercial incentives for technological invention
- Relatively multilateral competition
- More rapid diffusion
- First mover advantages relatively limited
- Fast followers could plausibly catch up

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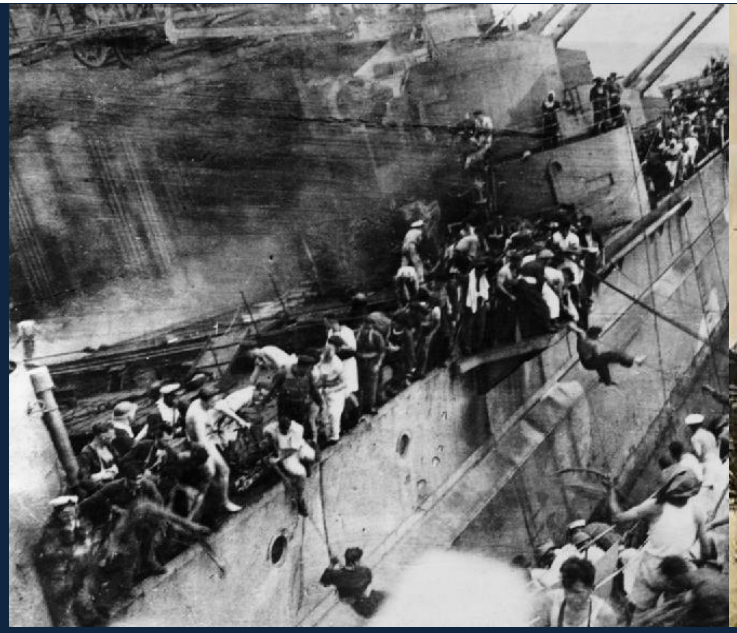
Militarily-Exclusive AI/Robotics

- Example: Battle management
- Commercial spillovers could be relevant, but unclear
- Relatively bilateral competition
- Less rapid diffusion
- First mover advantages much larger
- More plausible to “lock in” advantages

Military Superiority Is Not An American Birthright



Past

Future?

When the X47-B Became the MQ-25

Conclusion

- History suggests that organizational politics will heavily impact how technological change impacts the balance of power
- Adoption challenges of Robotics and AI could vary widely, depending on the specific usage:
  - Image recognition v. Battle management
- Key question: can the US get innovation adoption right when it comes to artificial intelligence?