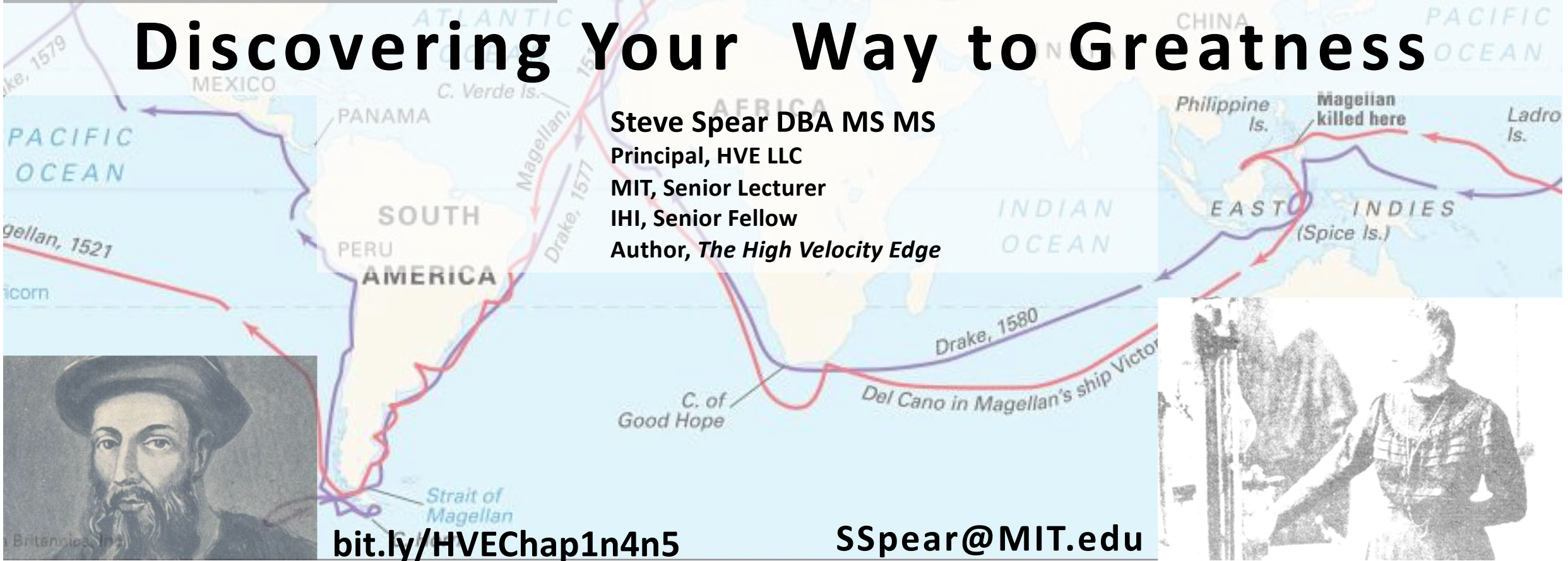


# Discovering Your Way to Greatness



**Steve Spear DBA MS MS**  
Principal, HVE LLC  
MIT, Senior Lecturer  
IHI, Senior Fellow  
Author, *The High Velocity Edge*

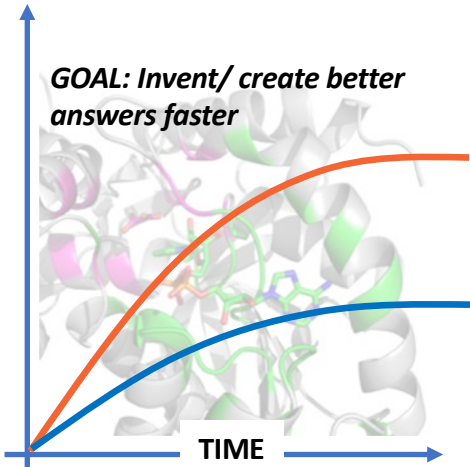
[bit.ly/HVEChap1n4n5](http://bit.ly/HVEChap1n4n5)

[SSpear@MIT.edu](mailto:SSpear@MIT.edu)

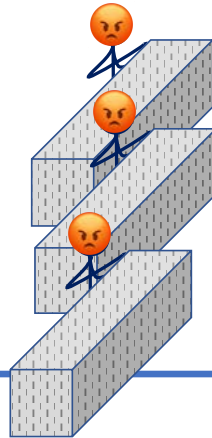


**Disease & treatment knowledge**

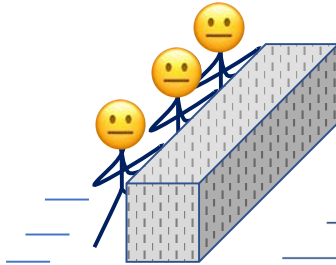
*GOAL: Invent/ create better answers faster*



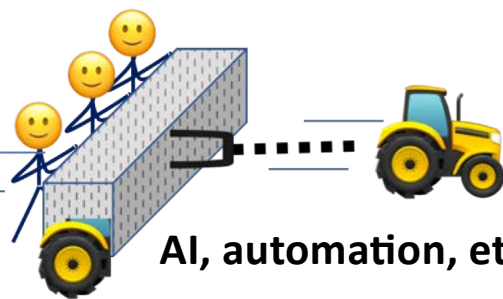
**Diffusion:**  
Pushing on too many things at once



**Portfolio focus:**  
critical mass on fewer things



**Capabilities:** Add tools to accelerate discovery and development



AI, automation, etc.



**How Robots are Making Better Drugs, Faster** Companies like Eli Lilly and GlaxoSmithKline are investing in automation with the hope of transforming drug discovery  
*WSJ June '18*

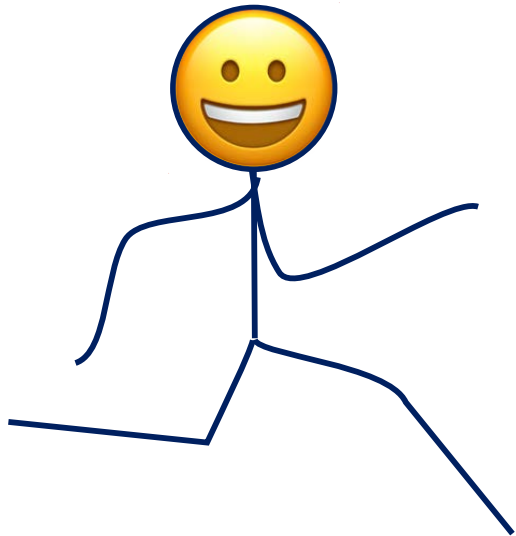
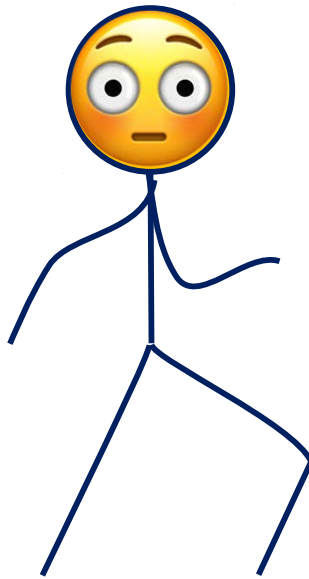
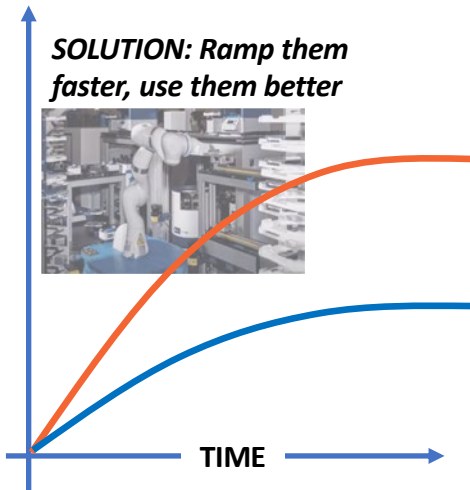


If everyone can buy them, capabilities aren't an advantage, they're just a necessity.

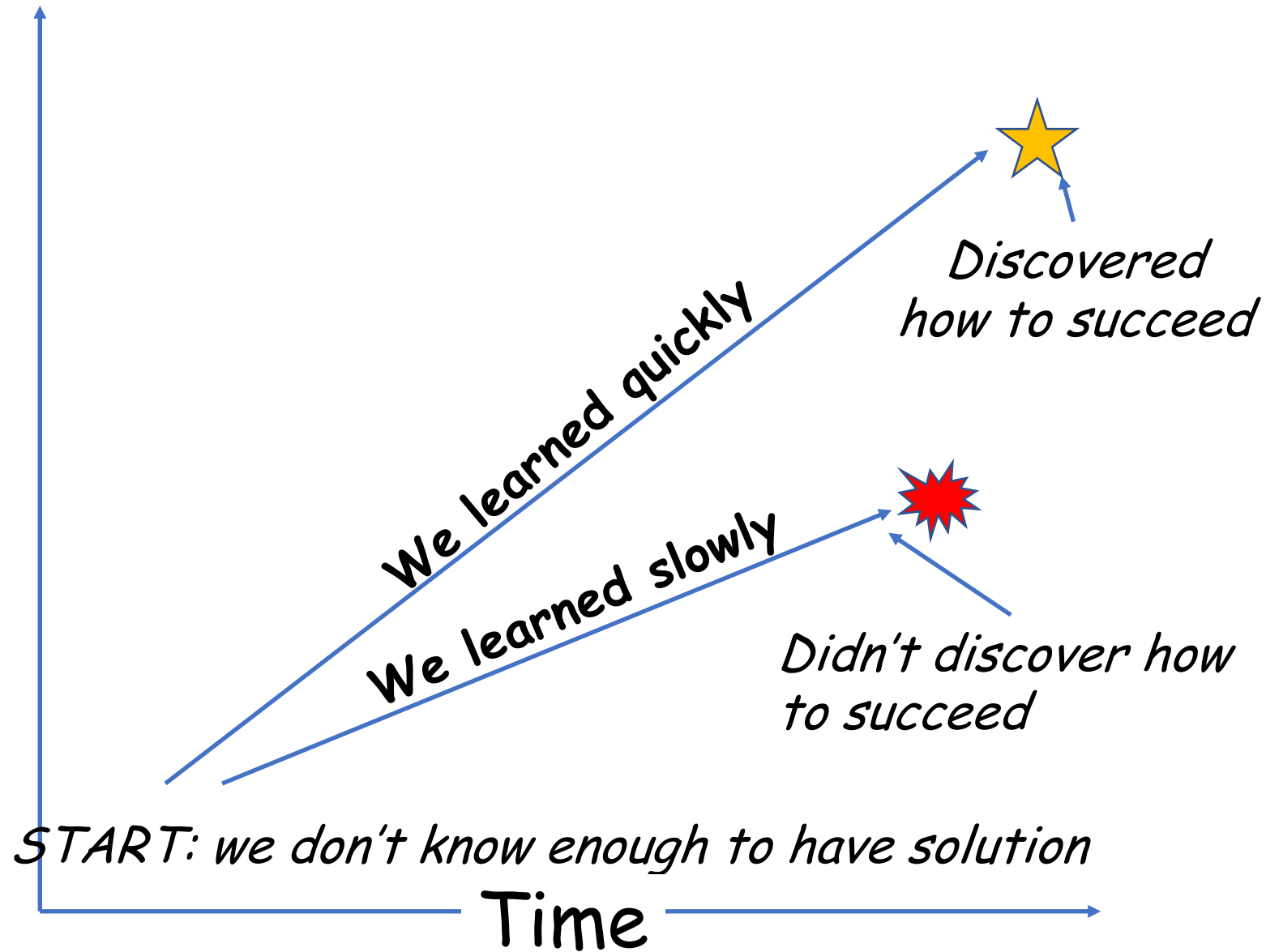
**Disease & treatment knowledge**

Capabilities

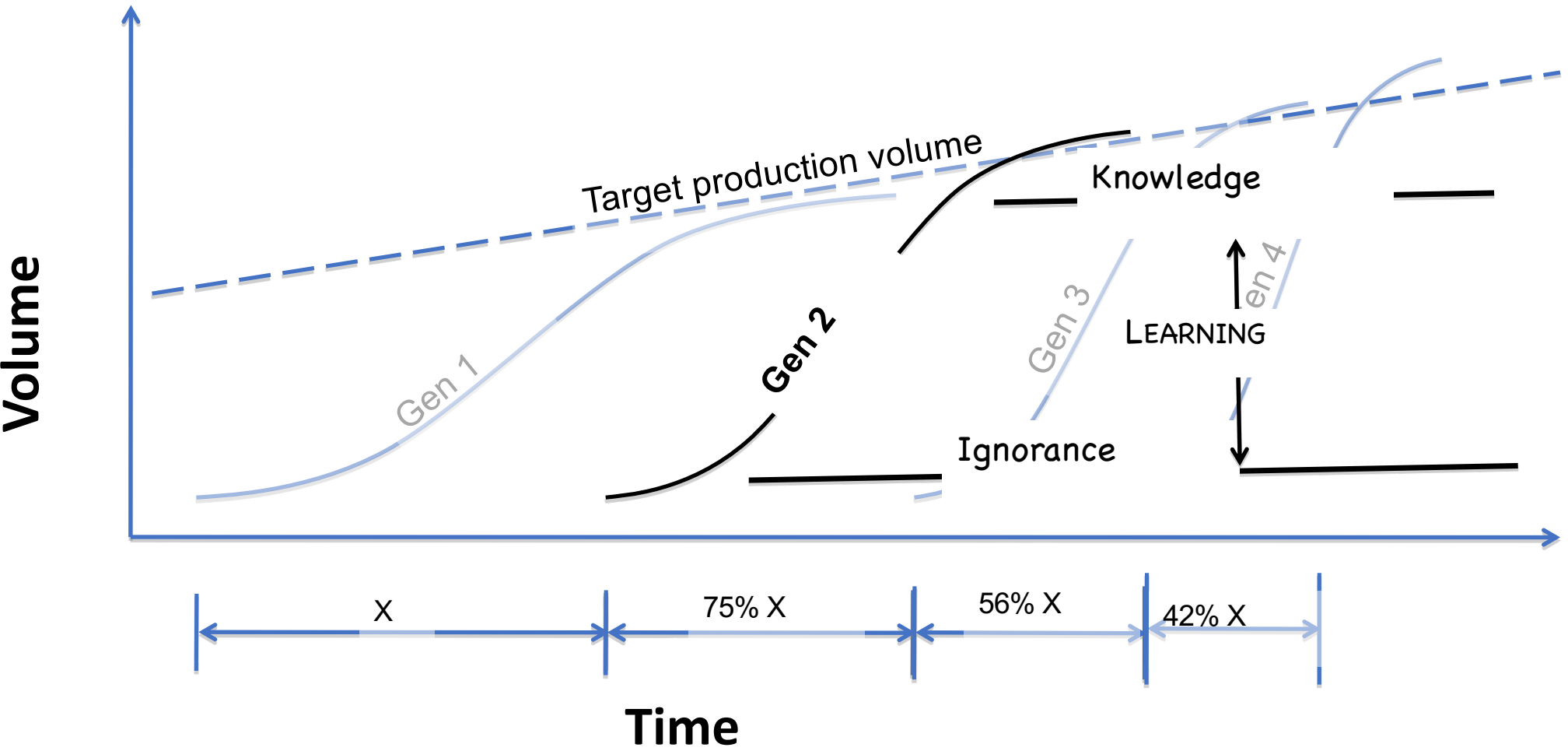
*SOLUTION: Ramp them faster, use them better*



Better faster: What we know. What we can do.



# Better faster is necessary





# Better much faster is possible...



Goal: Double fuel efficiency  
Means: Hybridized drive train of electric motor +  
internal combustion engine



[bit.ly/HVEChap1n4n5](http://bit.ly/HVEChap1n4n5)

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# Much better much faster is possible...



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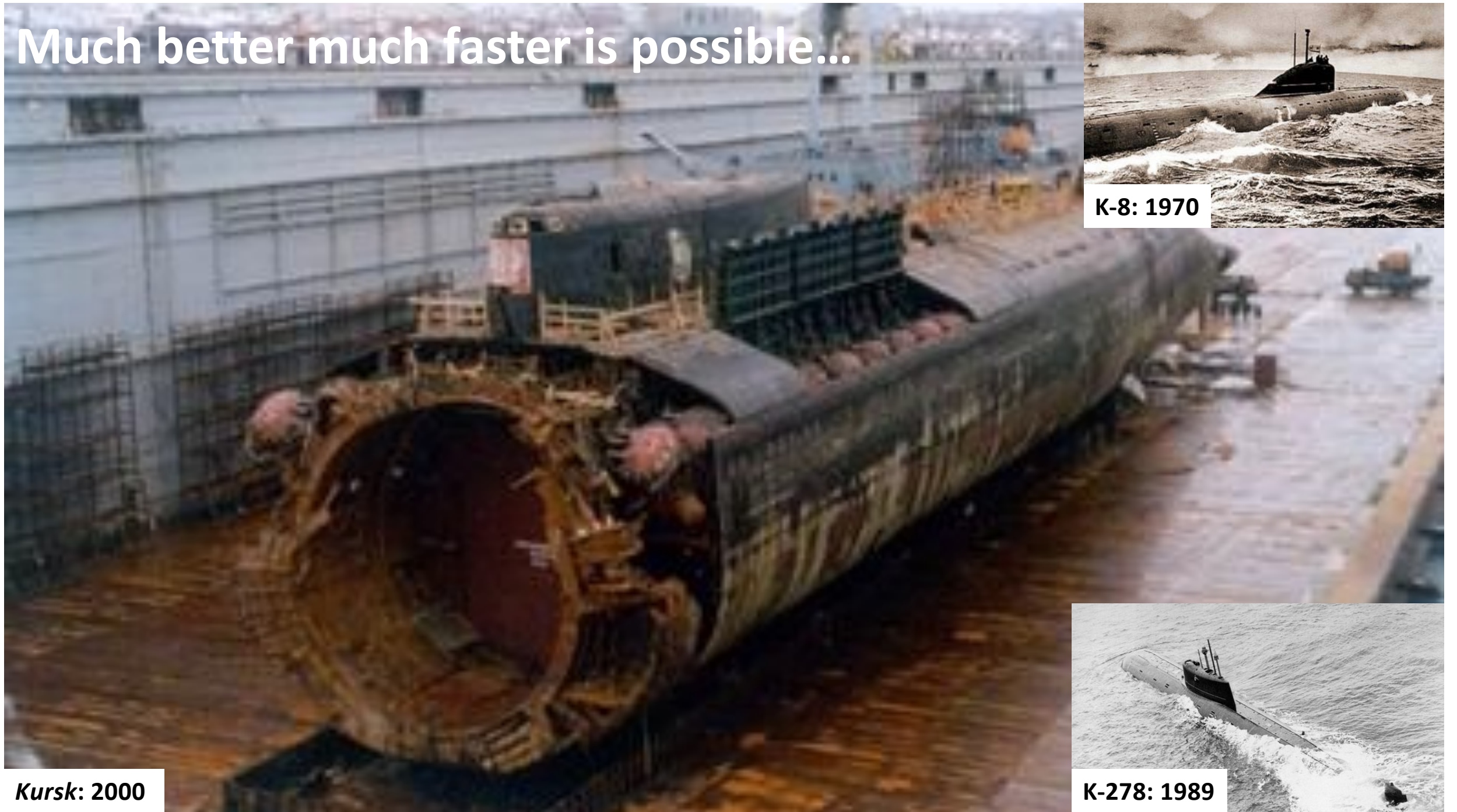
**Much better much faster is possible...**



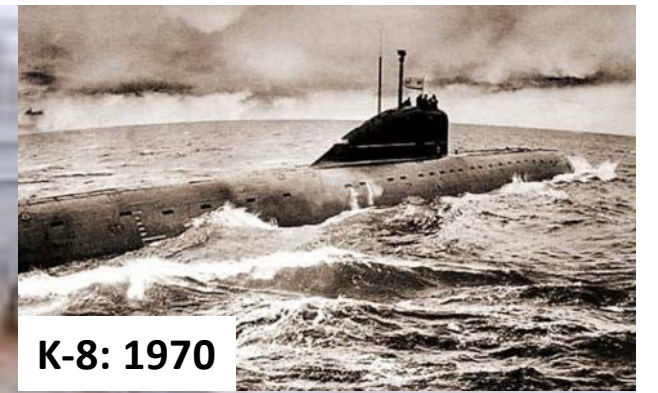
**"UNDERWAY ON NUCLEAR POWER"**  
- CDR EUGENE WILKINSON, 1955



Much better much faster is possible...



**Kursk: 2000**

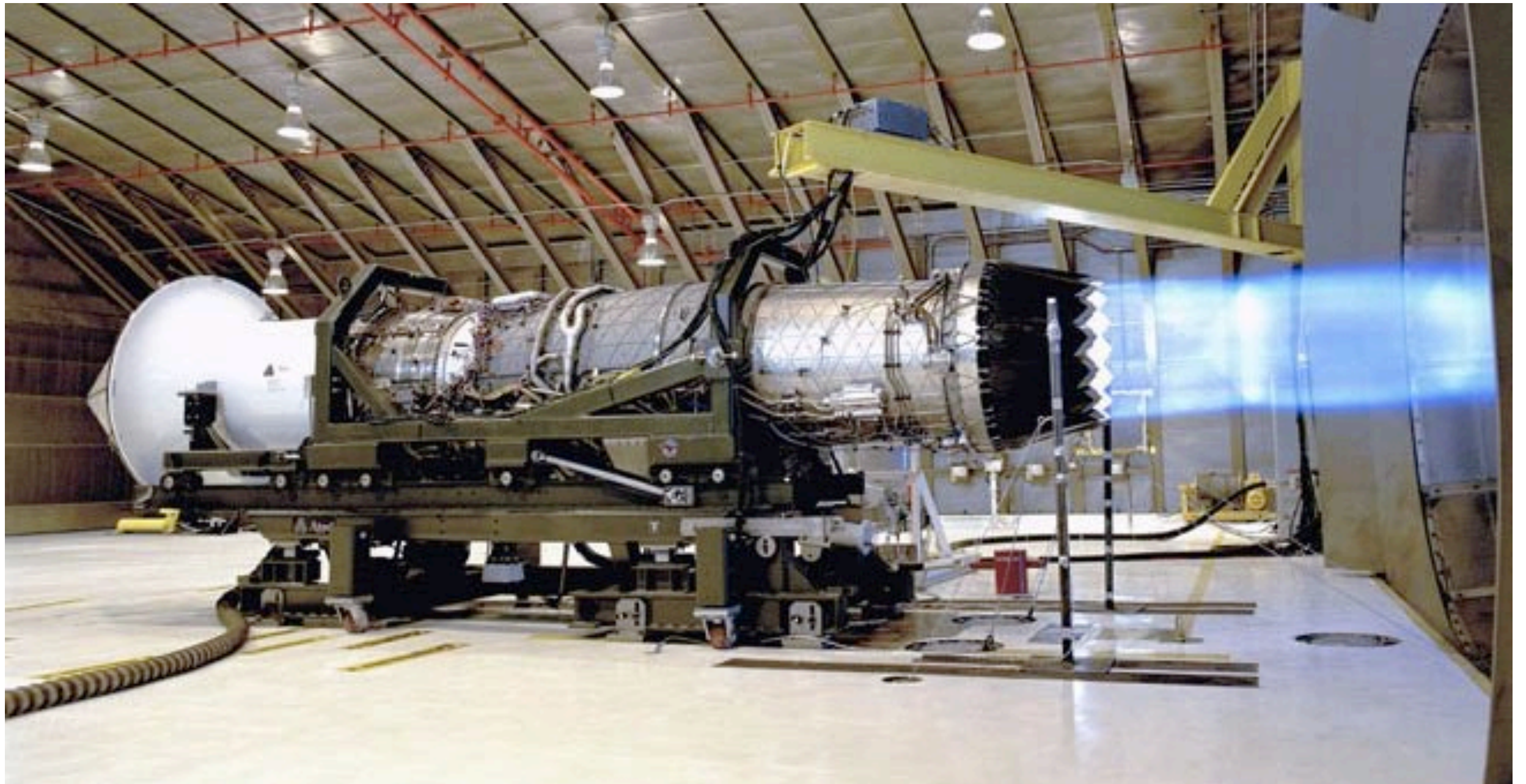


**K-8: 1970**



**K-278: 1989**

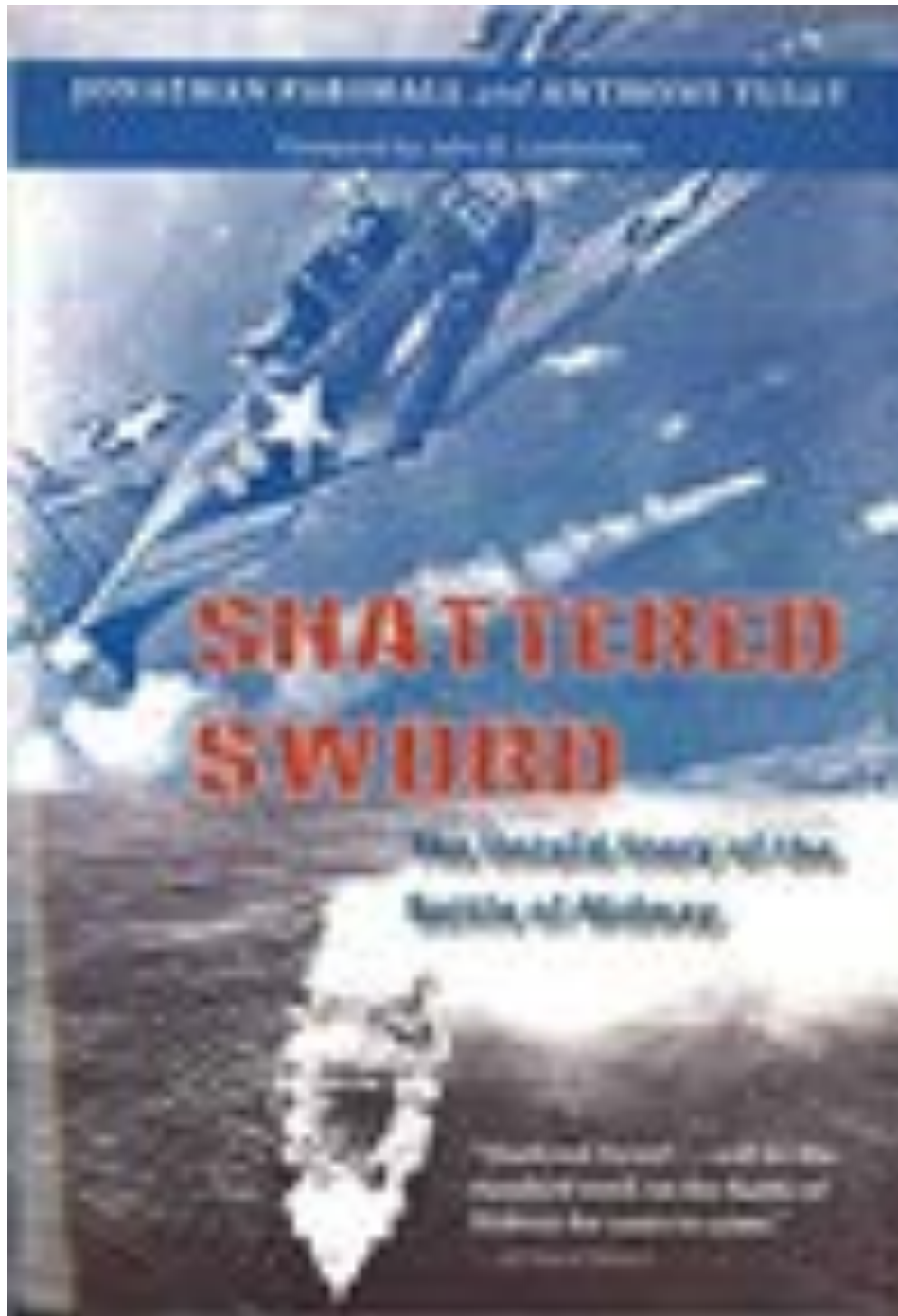












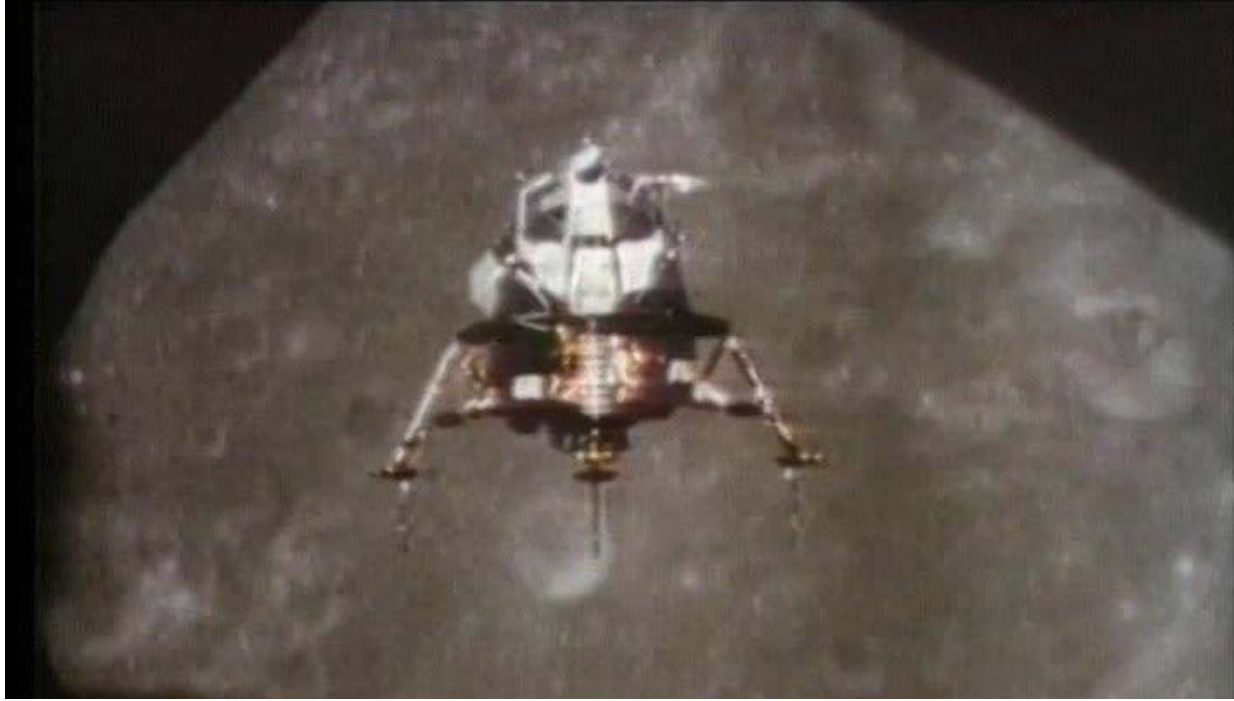
- Failure to Learn
- Failure to Anticipate
- Failure to Adapt





AF 447











**4: During execution, don't work around problems. Identify, diagnoses**

- Identify
- Diagnosis
- Develop/propose/employ corrective action.



Avoid work around culture by which small recurring problems cause terrible tragedy.

**Amplified in practice**

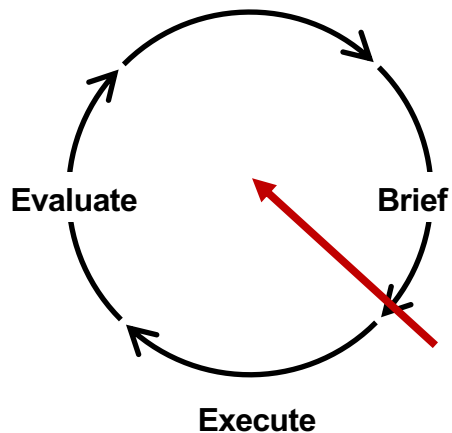
**Honed in performance**

**Dynamic Planning**

(Re)Plan

**High velocity learning  
High velocity outcomes**

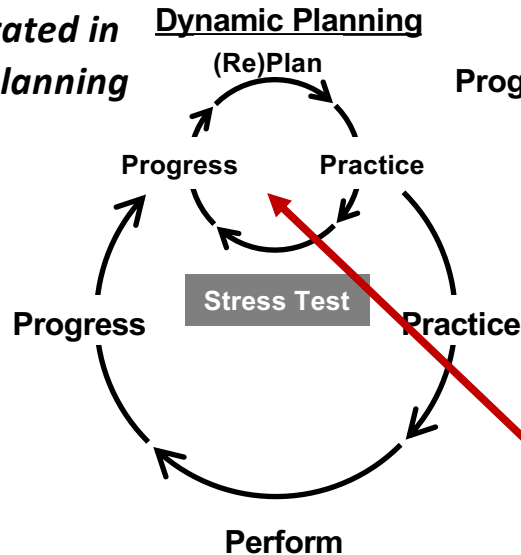
**Slow learning (Re)Plan**



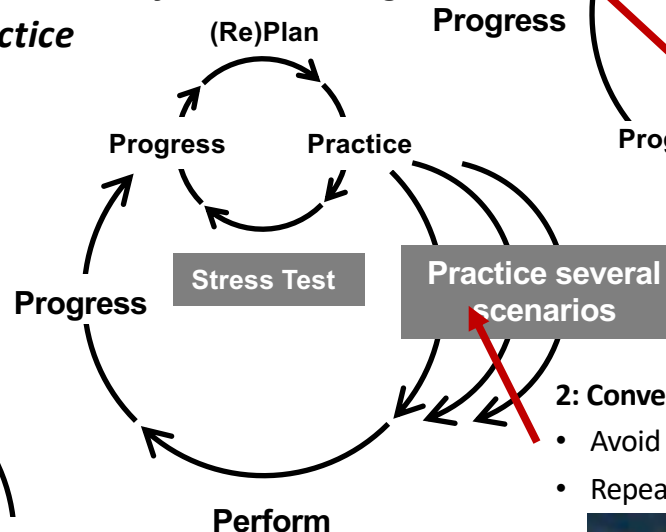
**0: Failure modes of normal approach:**

- Assuming planner can arrive at 'right' answer,
- Briefing is to get others to absorb right answer,
- Execute to the plan, and
- Evaluate the performers (not necessarily with planners)

**Accelerated in planning**

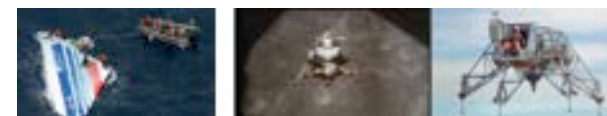


**Dynamic Planning**



**2: Convert practice from rehearsal of few routines to mastering many.**

- Avoid Air France tragedy of figuring out crisis 'on the fly'
- Repeat Apollo 11 success of being prepared for many eventualities.



**1: Insert learning loops into planning.** Repurpose it from 'developing the right answer' to finding faults in best known answers

- Have planner make declarations about expectations, hypotheses, etc.
- Expose 'best known answer' to stress testing, bona fide red teaming.
- Modify plan in response to exposed flaws in thinking.

Eg: Avoid the self reinforcing/self aggrandizing behavior INJ admiralty in advance of Midway so faults in thinking can be exposed before they become faults in doing.





**A: What are you doing?  
Why?  
How?**

**B: What's not working?**

**C: Why not?**

**D: What should change?**

**E: Who have we taught?**

*High Velocity Learning Leadership*

<http://bit.ly/HighVelocityLeadershipK-12>

*Navy and Pratt and Whitney Examples*

<http://bit.ly/HVEChap1n4n5>

*Low Velocity Learning Leadership*

<http://bit.ly/TheHillSpearGM>

*Innovating at Speed*

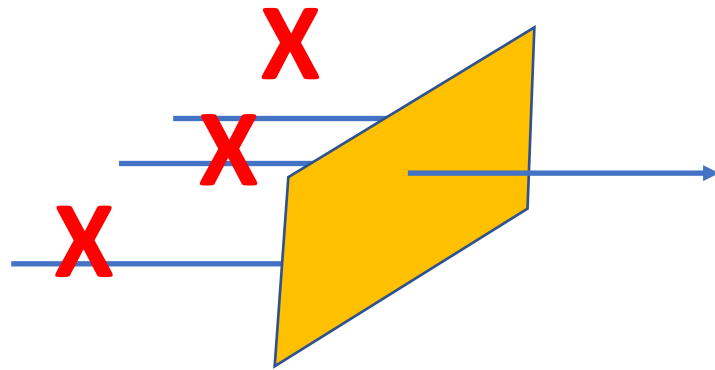
<http://bit.ly/InnovatingAtSpeed>

UPPER lowerCaSe MaTTeR

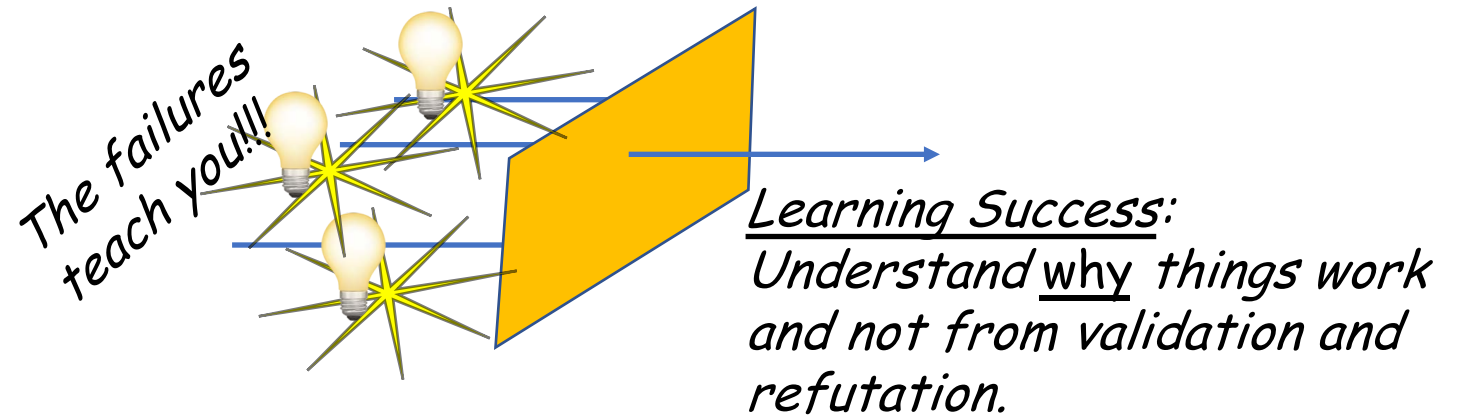


# High velocity learning in R&D

TRIAL AND ERROR X



SCIENTIFIC METHOD ✓





**A: What are you doing?  
Why?  
How?**

**B: What's not working?**

**C: Why not?**

**D: What should change?**

**E: Who have we taught?**