



विद्याविनियोगाद्विक्रमः

Governance of AI Systems

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Expected Takeaways

- AI beyond Technology
 - The efficacy of AI is a crucial yet partial determinant of AI system success
- Understanding AI Governance
 - Multidimensional attribute
- Operational Governance of AI Systems
 - A framework classifying AI systems on **decision** and **enforcement**

Artificial Intelligence (AI) in Defense

Navy's new 'Project OpenShip' aims to swiftly apply AI to data captured by vessels at sea

Members of Task Force Hopper recently launched a new program to build "low lift, high impact" artificial intelligence and machine learning applications. DefenseScoop was briefed on this effort.

<https://rb.gy/a8ann>

How US Central Command's task forces are shaping the future of operational AI

The Navy's Task Force 59, the Air Force's Task Force 99 and the Army's Task Force 39 are exploring cutting-edge technologies that could give the U.S. military an edge in future fights — in any region of the world.

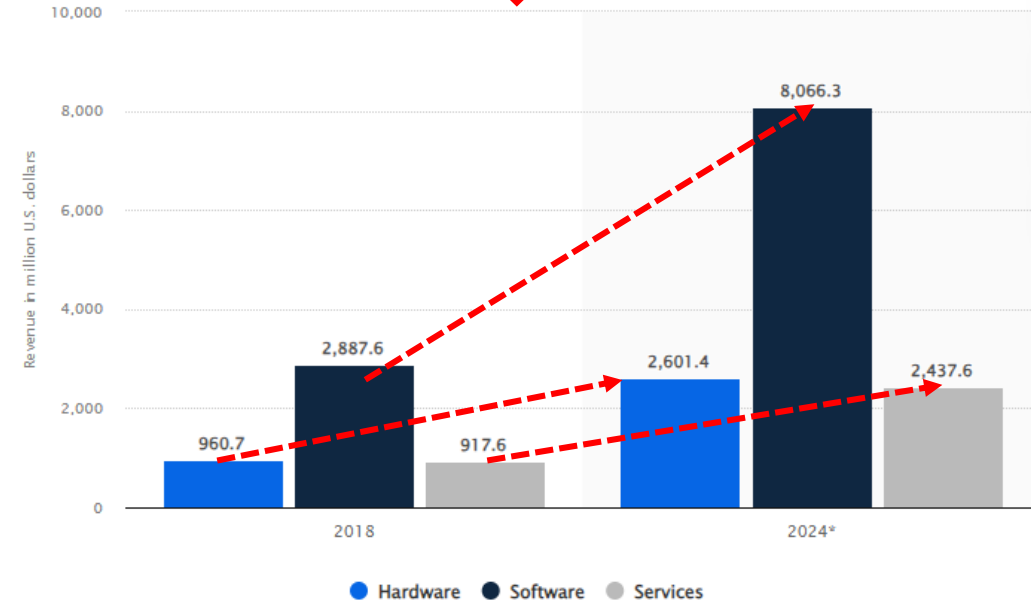
<https://rb.gy/clhow>

AI task force for Navy surface fleet devising comprehensive data catalog

It's one part of a broad, federated model the Naval Surface Force is applying to accelerate AI adoption.

<https://shorturl.at/bcfk8>

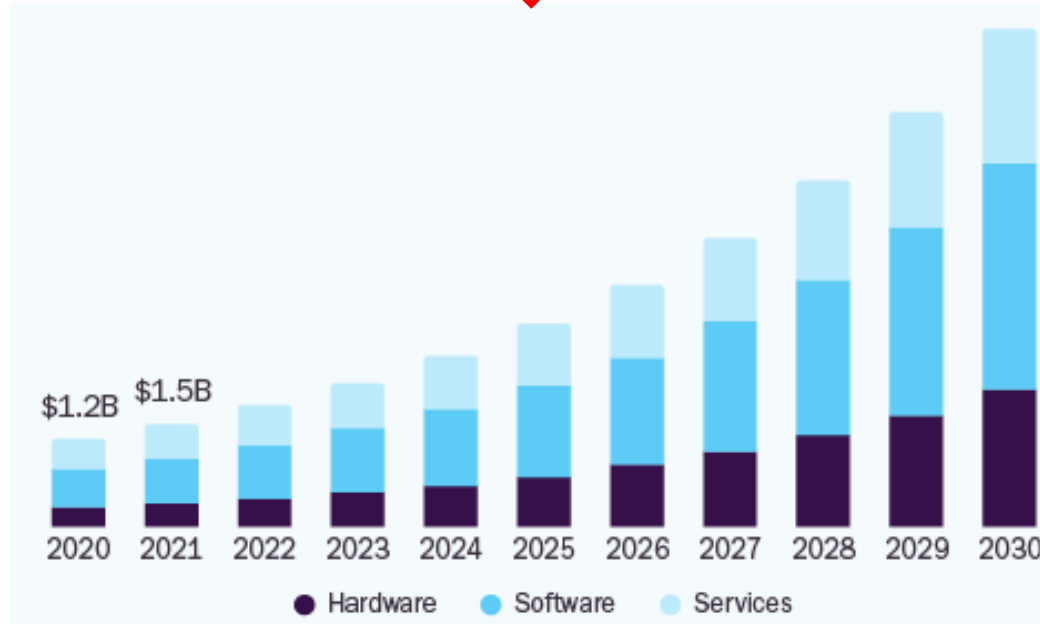
<https://shorturl.at/bFOV6>



Global Military Artificial Intelligence (AI) and Cybernetics market revenue

AI in Defense– Closer to Home

<https://shorturl.at/fqPSZ>



Artificial Intelligence in Asia Pacific Military Markets

TECHNOLOGY

India ‘Increasingly Focusing’ on AI for Military Applications

<https://shorturl.at/qJR67>

Artificial Intelligence is Indian Navy’s new strategic frontline

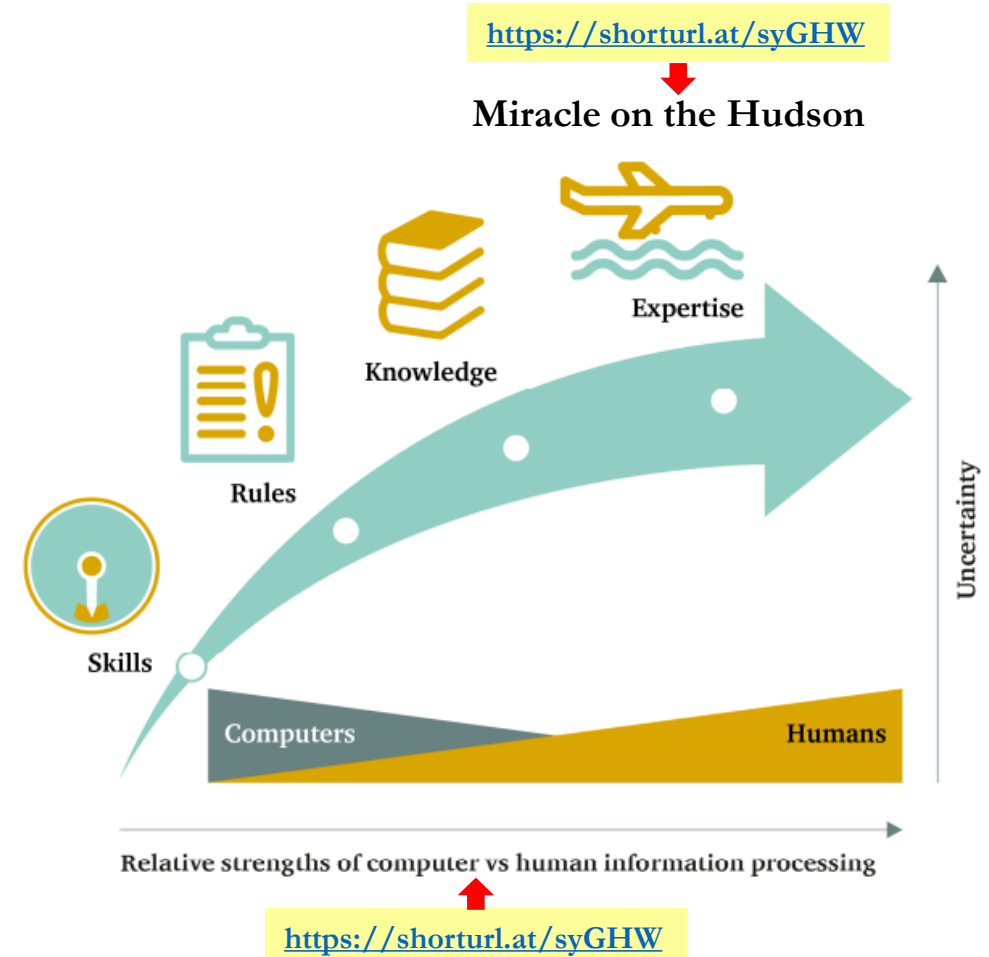
The Indian Navy is serious about AI and advanced intelligent technologies, wants to execute with “Capability-Enhancement-Objective (C-E-O)” to increase the situational awareness and situational reactions of the sea operations. In that background, AI is a major drive for the future battles and could change the internal dynamics of the war with the broader concept.

<https://shorturl.at/jAJ01>

Use Cases of AI in Defense

- Use of AI as an *autonomous* artifact
 - autonomous combat management systems (CMS) ([link](#))
- Use of AI as a *decision* aid
 - Enhance the impact of Air and Missile Defense (AMD) decisions by prioritizing threats ([link](#))

<https://shorturl.at/cotU5>



The efficacy of AI is acknowledged with reasonable uniformity

However, there are inhibitors!

Is Technological Efficacy Sufficient?

- The "Best" technology may not get adopted
 - X-47, designed to be an autonomous combat aircraft, was eventually used for refueling [the shift cost more than 700 Million USD]

<https://shorturl.at/fvGKR>



<https://shorturl.at/EFIY0>

Is Technological Efficacy Sufficient?

- The Battle of Gravelines (1588)
 - Involved British and Spanish ships with *guns*
- Why did the British win the battle?
 - Spanish, while using guns sparingly, relied on "boarding" enemy ships
 - Spanish ships were so closely huddled that reloading was problematic



<https://shorturl.at/bxLVZ>

<https://shorturl.at/biAE0> (p. 88)

alone
IT
Doesn't
Matter

by Nicholas G. Carr

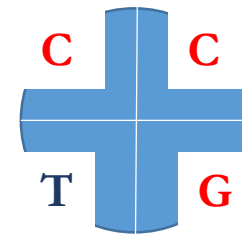
As information technology's power and ubiquity have grown, its strategic importance has diminished. The way you approach IT investment and management will need to change dramatically.

<https://shorturl.at/ejlnl>

As the world races to develop AI technology, **are access and acquisition sufficient?**

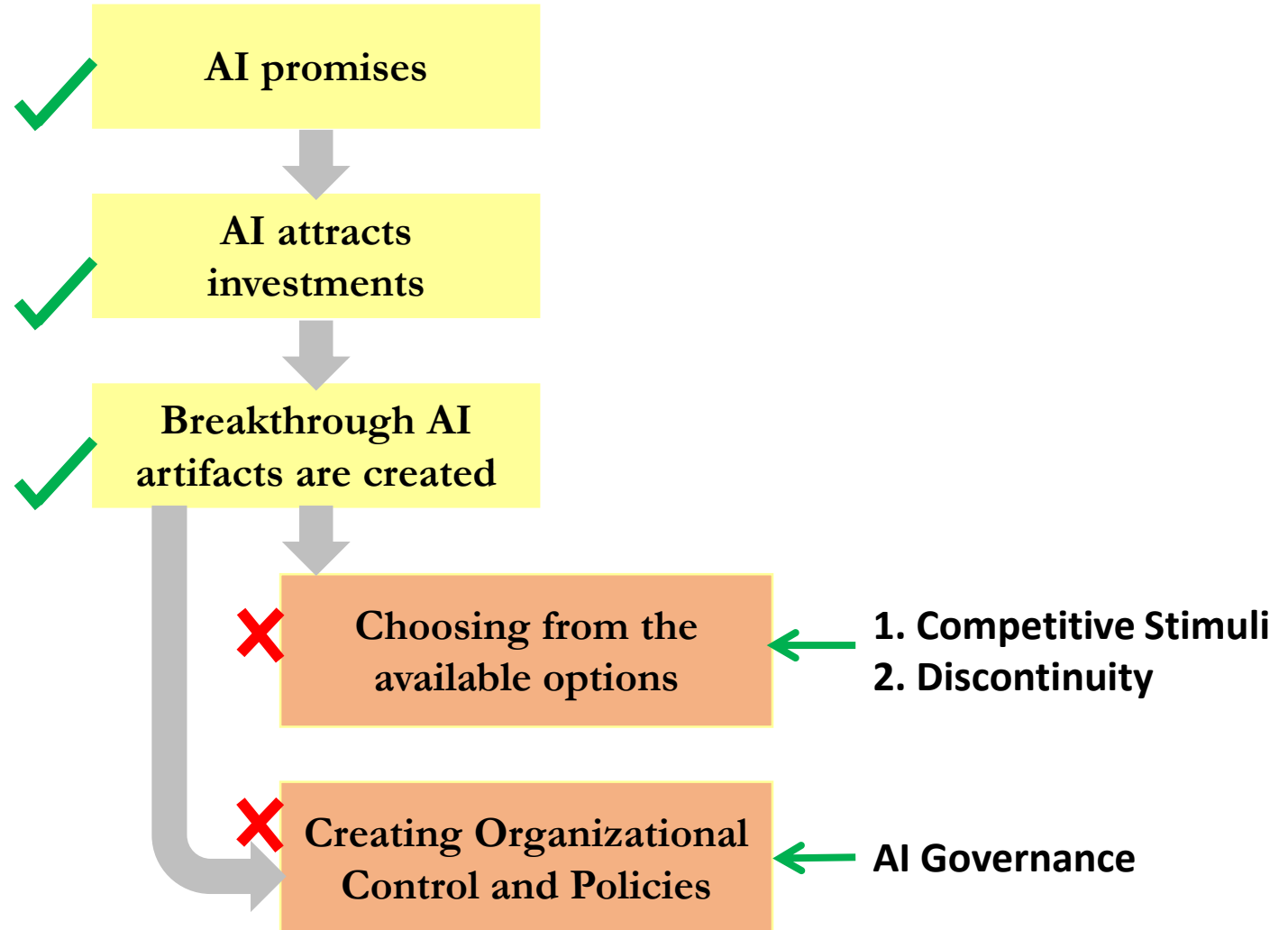
Going Beyond AI Technology

- The issues around AI are not merely technological
 - "There are many reasons for the lack of success in bringing these technologies to maturity, including cost and unforeseen technical issues, but equally problematic are organizational and cultural barriers" (Cummings et al., 2017; p. 9)
- This is not a new problem
 - Information Systems discipline has, for years, explored the questions of "why some institutions benefit from the technology than others"
- Quintessential Success Factors
 - Culture, Cost, **Governance**



For realizing the promised value of technology, a robust layer of organizational control and policies is essential.

Summary so far...



Defining AI Governance

- Governance pertains to *decision* and *accountability*
 - Ax-ante, fixing decision authority and accountability for consequences
- In AI systems, governance becomes relevant on two fronts
 - Governance of AI projects
 - Governance of AI operations
- Governance in AI projects is similar to similar issues concerning other IS projects
 - Not the focus of this discussion
- Governance of AI Operations
 - Crucial because multiple decision agents exist

We emphasize **operational governance** as a success factor for AI

Governance of AI

- Regulations represent the normative aspect
 - They rarely adopt the same approach
- Other aspects of AI Governance [some of which get inculcated in AI regulations]
 - Explainability
 - Fairness
 - Safety
 - Collaboration
 - Liability
- In a defense setting, these concerns can become pivotal in growing the use of AI

<https://18.nu/sju->

<https://shorturl.at/isJX7>

AI applications that are **"hard to govern"** would have a lower chance of survival.

Why Does Governance of AI Matter?



MINISTRY OF DEFENCE
MILITARY AIRCRAFT ACCIDENT SUMMARY

**AIRCRAFT ACCIDENT TO ROYAL AIR FORCE TORNADO
GR MK4A ZG710**

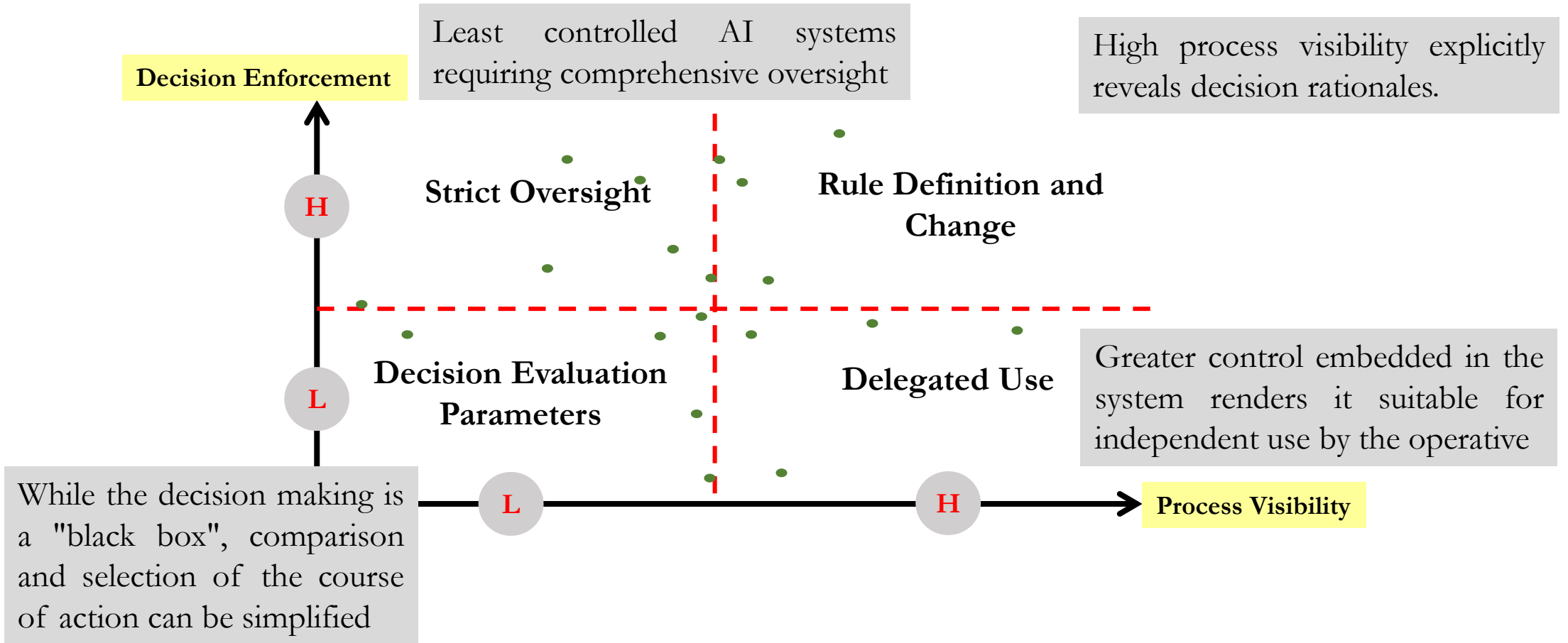
<https://shorturl.at/imoAX>

On March 22, 2003, two days into the U.S.-led invasion of Iraq, American troops fired a Patriot interceptor missile at what they assumed was an Iraqi anti-radiation missile designed to destroy air-defense systems. Acting on the recommendation of their computer-powered weapon, the Americans fired in self-defense, thinking they were shooting down a missile coming to destroy their outpost. What the Patriot missile system had identified as an incoming missile, was in fact a UK Tornado fighter jet, and when the Patriot struck the aircraft, it killed two crew on board instantly. The deaths were the first losses suffered by the Royal Air Force in the war and the tragic result of friendly fire.

<https://shorturl.at/fntMX>

The first-order question of AI Operational Governance is **what should be the oversight?**

Formulating Oversight for AI Artifacts



Conclusion

- Technology, including AI, creates discontinuities and new equilibria
 - But is insufficient to afford competitive advantage (superiority)
- AI will continue to evolve as the centerpiece of Defense operations
 - Its success is not solely dependent on the technological efficacy
- Formulating Governance for AI Artifacts
 - **Decision Enforcement** and **Process Visibility** as key dimensions
- What would The Fleet of the Future Look Like?
 - One cannot predict the technological makeup, but **AI operational governance**, as part of organizational control and policies, would remain crucial

Thank you!