



**International Council on Systems Engineering**  
*A better world through a systems approach*

# Enhancing Healthcare Delivery through Systems of Systems Governance: A Multi-Layered Governance Framework

**Mohamed Mogahed & Mo Mansouri**  
**Stevens Institute of Technology**

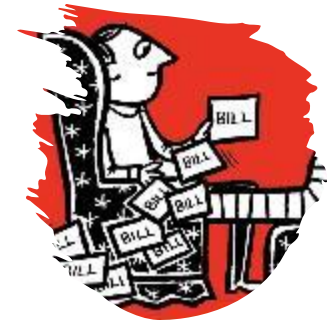


# Today's Agenda

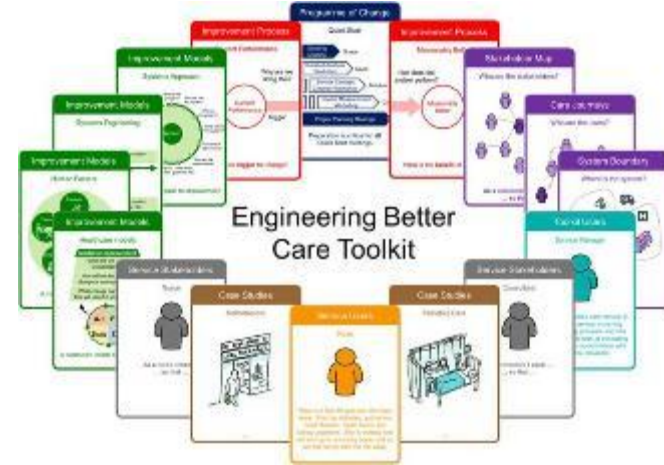
- Introduction & Motivation
- Background & SoS Perspective on Healthcare
- Research Basis
- Enhanced Multi-Layered Governance Framework
- Discussion & Future Work
- Conclusion & Q&A

# Motivation & Problem Statement

- Healthcare faces fragmentation, inefficiencies, and escalating costs.
- Lack of coordinated governance across independent entities.
- Systems Engineering offers holistic frameworks to optimize delivery.

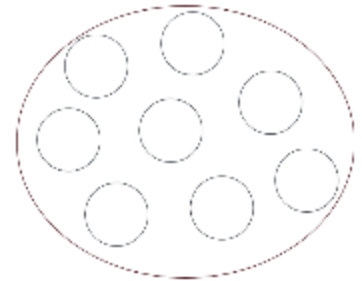


- SEBoK and INCOSE highlight Healthcare Systems Engineering.
- Traditional approaches (Lean Six Sigma, Industrial Engineering) have limitations.
- A holistic SoS approach enables better integration and performance.



# Healthcare as a System of Systems

- Healthcare functions as a Collaborative SoS.
- Independent yet interdependent entities: providers, regulators, suppliers, IT systems.
- Fragmentation stems from misaligned goals.



# Research Basis & Scoping Review

- Scoping review of 45 studies, 37 governance frameworks.
- Identified structural elements: meta-governance, governing system, feedback loops.
- Built a foundation for a tailored healthcare governance model.



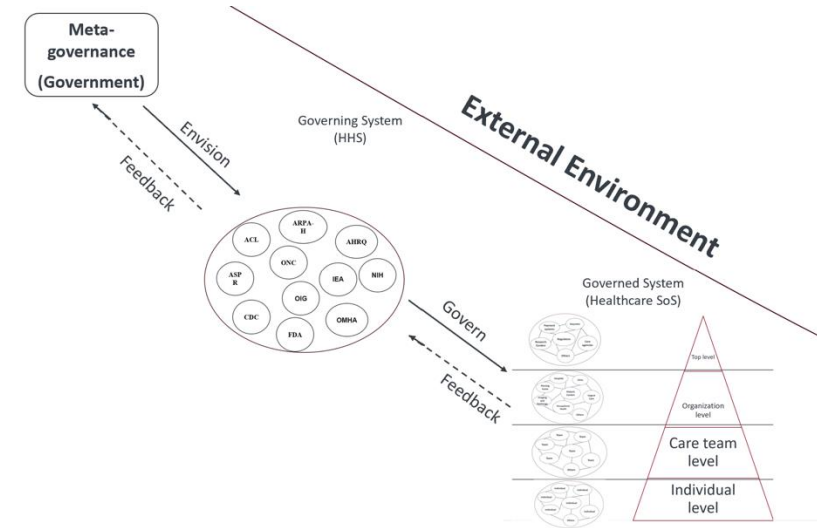
# Enhanced Governance Construct

# Enhanced Governance Construct (Overview)

Three-tier structure:

- Meta-Governance (Government)
- Governing System (HHS)
- Governed System (Healthcare Delivery SoS)

Ensures strategic direction, operational coordination, and autonomy.



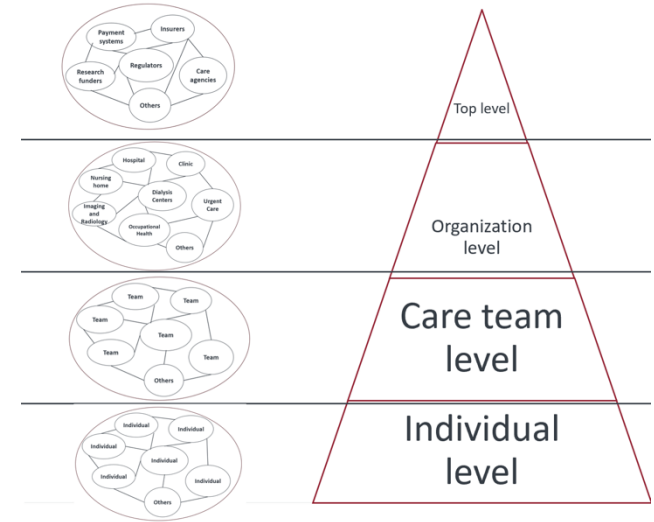


# Meta-Governance System (Government)

- Sets high-level goals, values, and resources.
- Kennedy's moonshot as an analogy for visionary leadership.
- Ethical and organizational oversight.

# Governed System (Healthcare Delivery SoS)

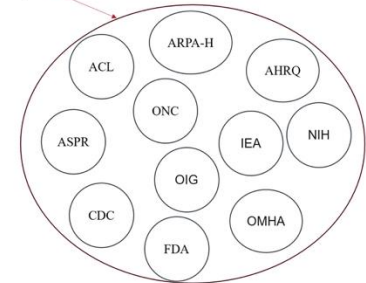
- Multi-layered structure: patients, care teams, organizations, networks, and national level.
- Each layer requires bespoke governance mechanisms.



# Governing System (HHS)

- HHS bridges policy and healthcare delivery.
- Agencies like CDC, FDA, CMS, ONC provide targeted oversight.

Department of Health  
and Human Services  
(HHS)



## Examples of HHS Roles

- Patient Level: OCR (privacy), ACL (care needs).
- Care Team Level: CDC (guidelines), HRSA (training).
- Organization Level: CMS (standards), AHRQ (quality).
- System Level: ONC (IT), NIH (research), FDA (regulation).

# Discussion & Implications

## Discussion & Implications

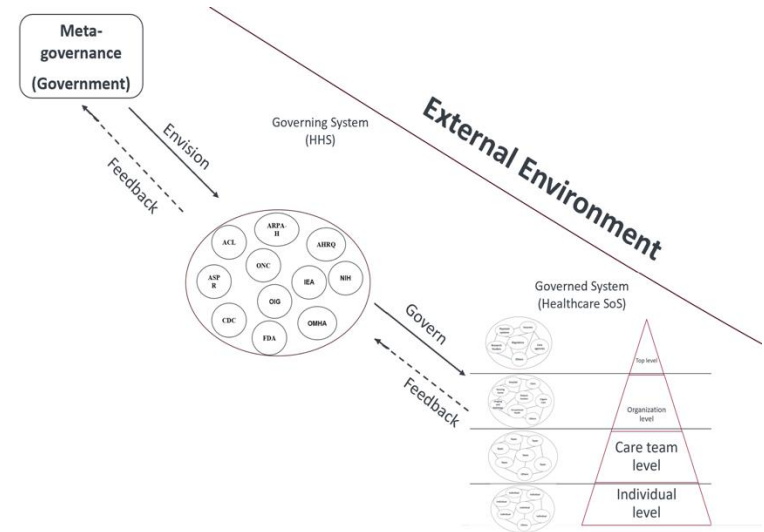
- Shift from control to coordination (trust-based governance).
- Reduces fragmentation and improves efficiency.
- Enables cohesive, sustainable healthcare delivery.

## Limitations & Future Work

- Requires empirical validation across healthcare contexts.
- Future work: agent-based modeling, policy testing, and sustainability links.

# Conclusion

- Multi-scale approach: macro-level + granular focus.
- Provides foundation for future governance models.
- Advances Healthcare Systems Engineering.





# Thank you!



# 35<sup>th</sup> Annual **INCOSE** international symposium

hybrid event

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