



INTRODUCING STAMP-BASED LEADING INDICATORS OF ORGANIZATIONAL SAFETY RISK TO AN AIRLINE

2025 STAMP Workshop

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DISCLAIMER

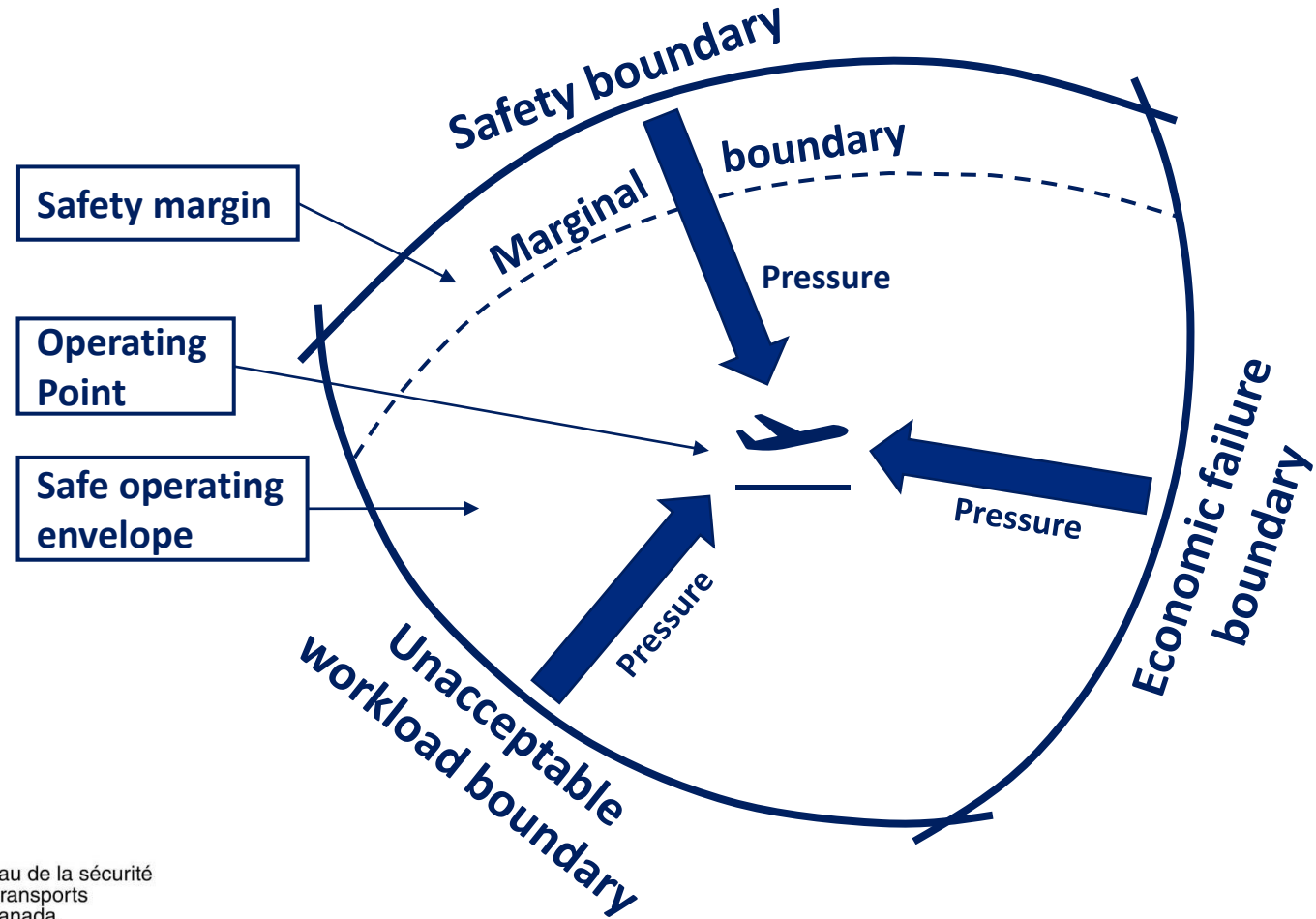
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TERMINOLOGY

What is a leading indicator?

What is organizational safety risk?

SAFE OPERATING ENVELOPE

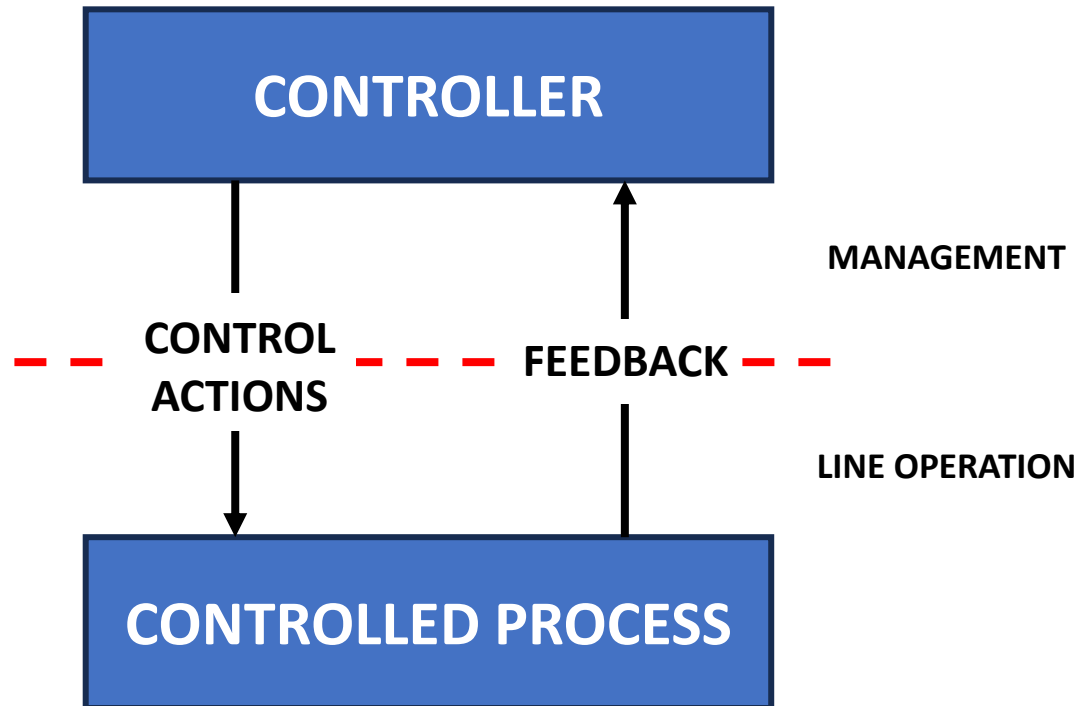


Transportation
Safety Board
of Canada

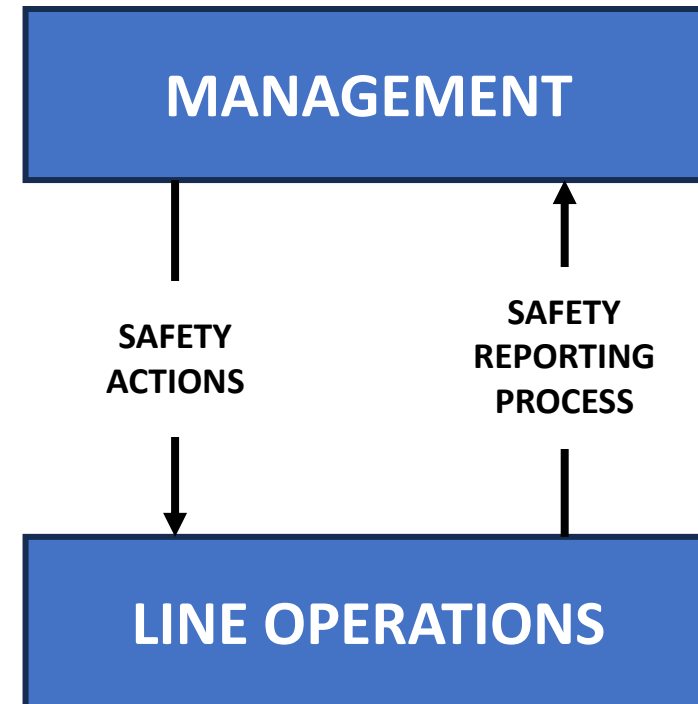
Bureau de la sécurité
des transports
du Canada

MODELING THE CONTROL STRUCTURE

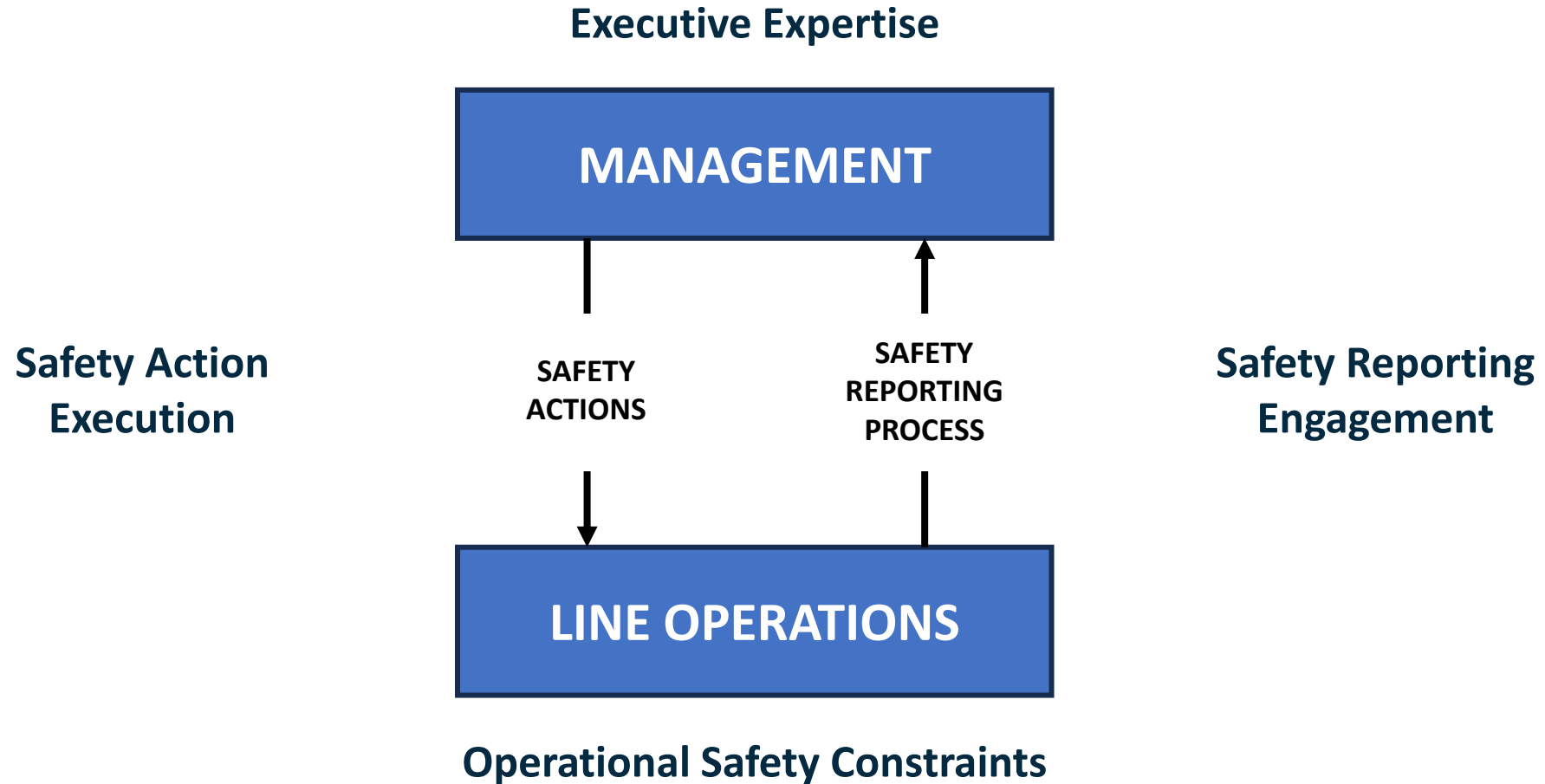
Generic Control Loop



Safety Management Control Loop



SELECT LEADING INDICATORS



PowerBI DASHBOARD

Leading Indicators of Organizational Safety Risk



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OPERATIONAL SAFETY CONSTRAINTS

Assumption: Operational safety constraints in place to prevent incidents and accidents are assumed to be effective.



Safety Risk Matrix						
Severity	5	Low (5)	Medium (10)	High (15)	High (20)	High (25)
	4	Low (4)	Medium (8)	Medium (12)	High (16)	High (20)
	3	Low (3)	Medium (6)	Medium (9)	Medium (12)	High (15)
	2	Low (2)	Low (4)	Medium (6)	Medium (8)	Medium (10)
	1	Low (1)	Low (2)	Low (3)	Low (4)	Low (5)
Value		1	2	3	4	5
		Probability				



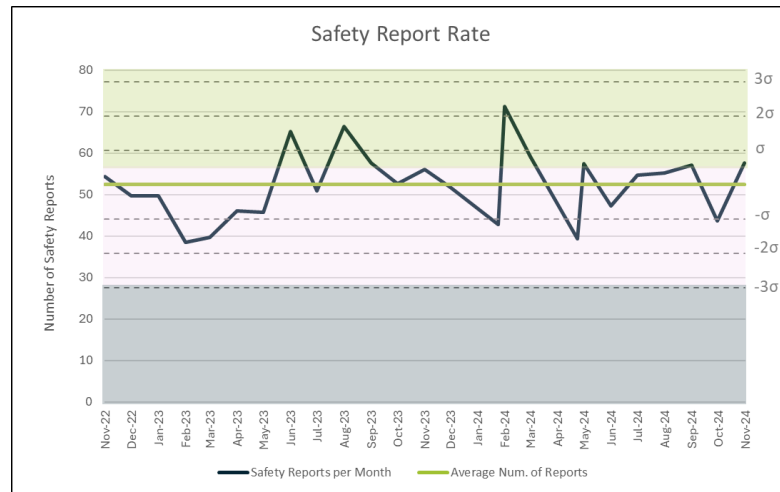
25-month median
risk score



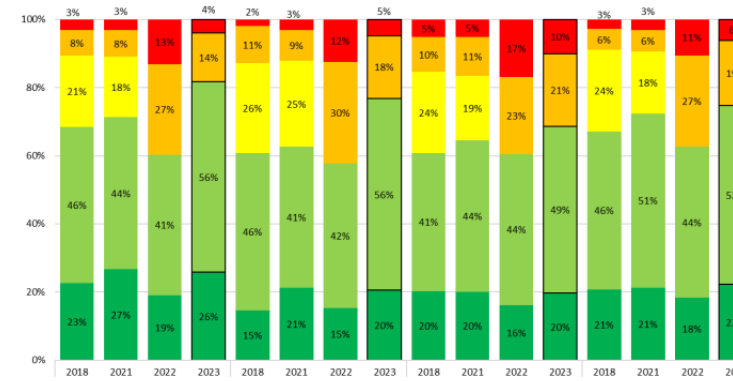
SAFETY REPORTING ENGAGEMENT

Assumption: Line employees are willing and able to submit safety concerns and/or hazards.

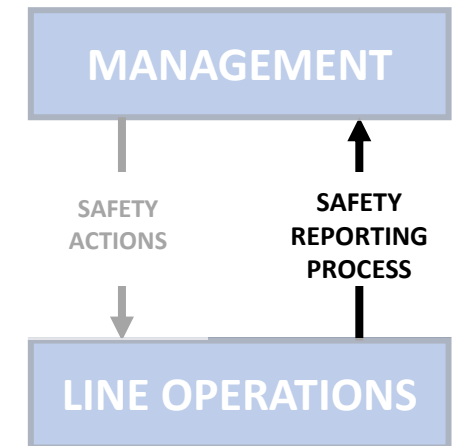
Safety Reporting Rate



Employee Engagement



Employee Safety Survey



EXECUTIVE EXPERTISE

Assumption: The executives have sufficient expertise to issue appropriate control actions.

Experience

- Years of industry experience
- Average number of years per role.

Education

- Level of education



SAFETY ACTION EXECUTION

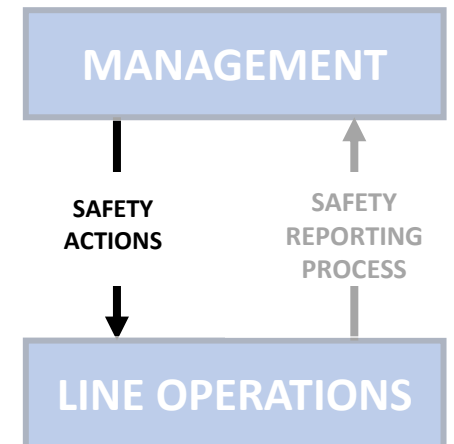
Assumption: Safety actions are adequately executed within designated timelines.

Time to Execute

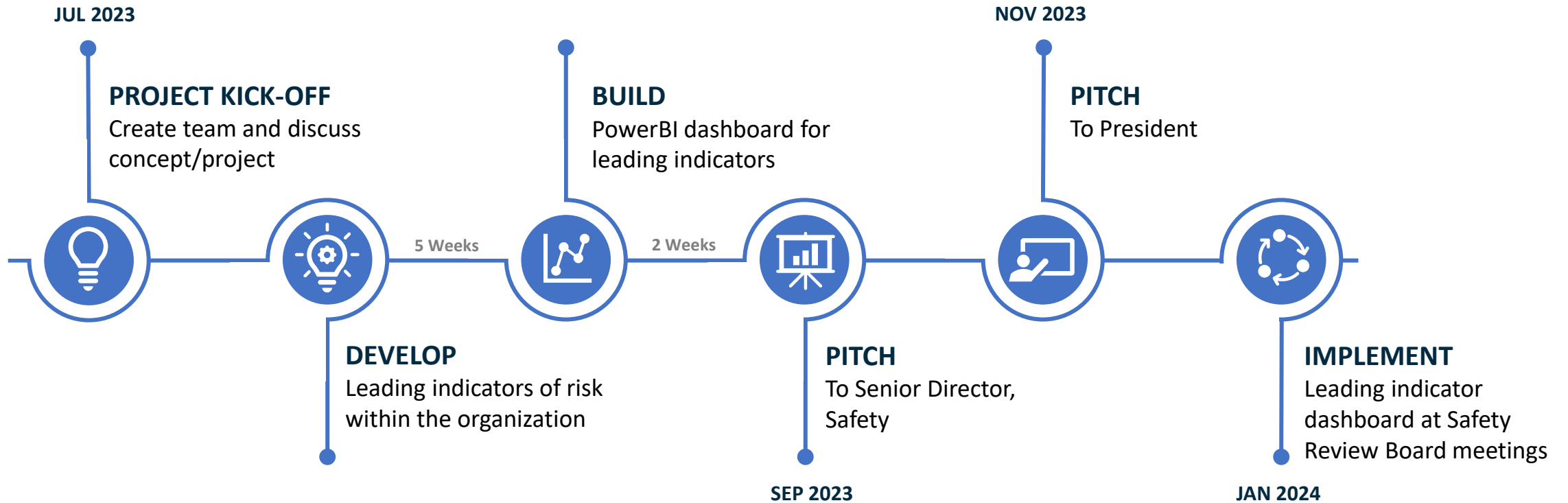
- Time taken to complete vs. defined target.

Safety Actions Executed

- Safety actions completed as specified.



TIMELINE



PROJECT OUTCOMES

- Leading indicators dashboard is a standing item at Safety Review Board meetings.
- Has influenced the organization's strategic safety objectives.
- Better visibility on organization's state of risk and effectiveness of SMS.
- Ongoing exploration of how STAMP might enhance existing safety processes.

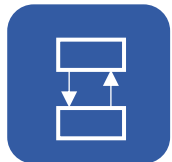
WHAT WORKED FOR US



Just start using STAMP (STPA, CAST) to demonstrate value.



Find a way to translate "systems" jargon into simpler terms.



Keep control structure and indicators simple.



Have a basic prototype that the organization can build off - it can evolve and be refined over time.



THANK YOU

QUESTIONS?

The content of this presentation is intended solely for the 2025 MIT STAMP Workshop and is for informational purposes only.

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