



SYSTEMS
ENGINEERING
RESEARCH CENTER



ACQUISITION INNOVATION
RESEARCH CENTER

AI4SE & SE4AI WORKSHOP

2026

📅 Sep 22-23, 2026 📍 Washington, DC

Tom McDermott
SERC CTO



AI4SE & SE4AI Workshop

7th Annual Workshop:

Sept 21-22, 2026

*Speed & Innovation through
AI4SE & SE4AI*



2020–2025

6 annual workshops to date



Average 216 attendees

from 2020-2025



60 technical presentations

Across the 2025 workshop tracks



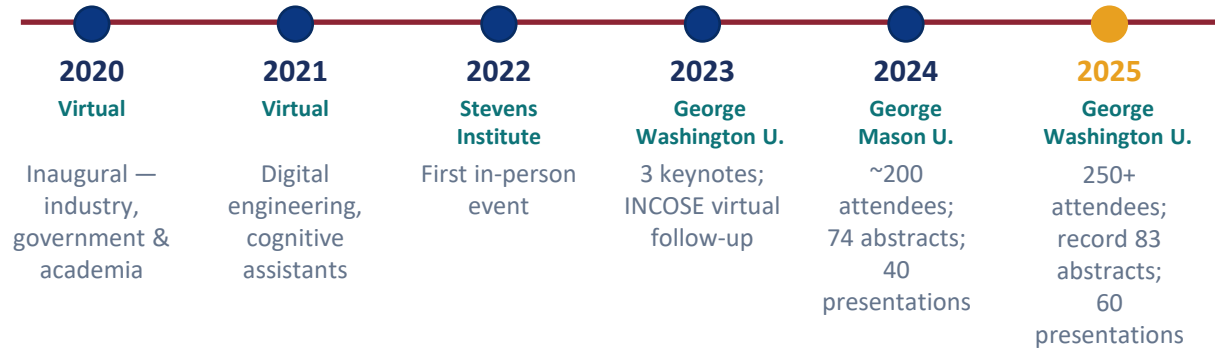
83 submissions

Abstracts in 2025

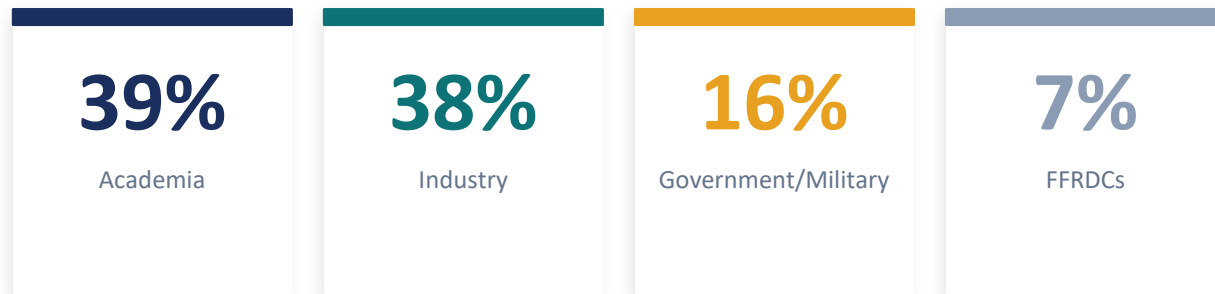
A strategic partnership between SERC and DEVCOM AC delivers a thriving annual AI4SE & SE4AI Research & Application Workshop for government, academia, and industry to share ideas and drive innovation at the convergence of Systems Engineering and Artificial Intelligence.



WORKSHOP HISTORY



AUDIENCE MIX (2025)



Source: SERC AI4SE & SE4AI Research and Application Workshop Reports (2020–2025) | sercuarc.org

2020: AI as model/function
inside a system

- Model behavior
- Data dependence
- Probabilistic failure
- Operating envelope



2025: AI-enabled system as
socio-technical system

- Human-AI teaming
- Digital twins
- Trust
- Lifecycle adaptation
- Resilience



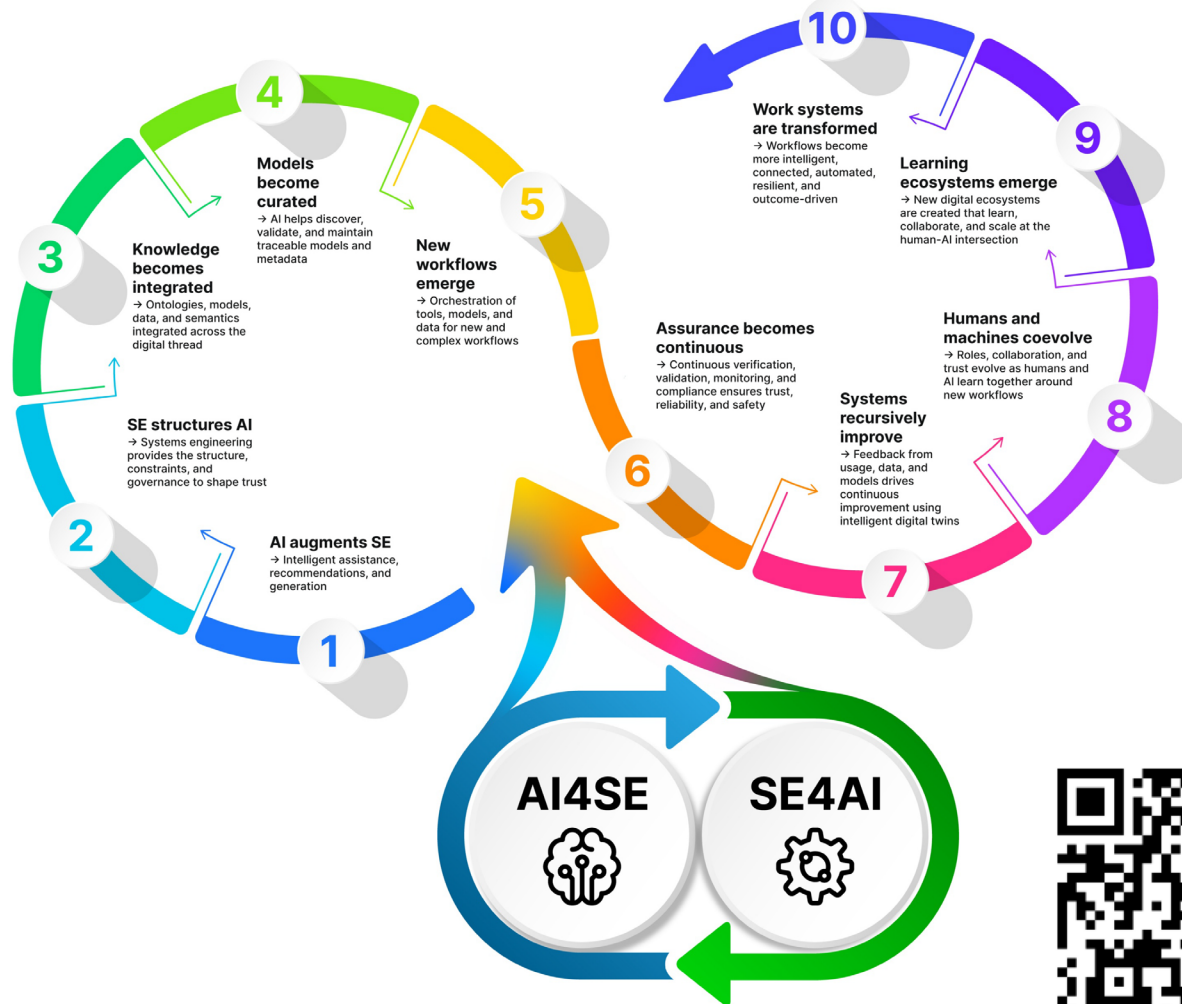
2030: AI-generated system

- Generated requirements
- Generated code
- Generated tests
- Digital thread
- Governance of
generation pipeline



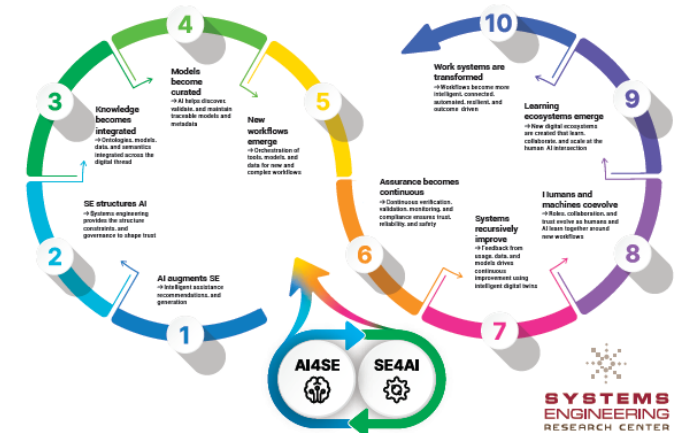
**Digital transformation → engineered trust → integrated workflows →
human-AI collaboration**

The key change is not simply “more AI.” It is the growing interdependence of engineering methods, AI capabilities, assurance evidence, and human judgment.



INSIGHT

This Issue's Feature:
**A Decade of AI and
Systems Engineering:
Looking Back and Forward**



<https://www.incose.org/resources-publications/technical-publications/insight-magazine/>

1. From possibility to disciplined implementation.

Early workshops asked what AI might do for systems engineering and what systems engineering might do for AI.
Later workshops ask what capabilities are required to make AI-enabled systems operationally credible.

2. Movement from presentation to participation.

Researchers,
Practitioners,
Case Studies,
Insights,
Interactives,
Demos



4. Alignment with mission.

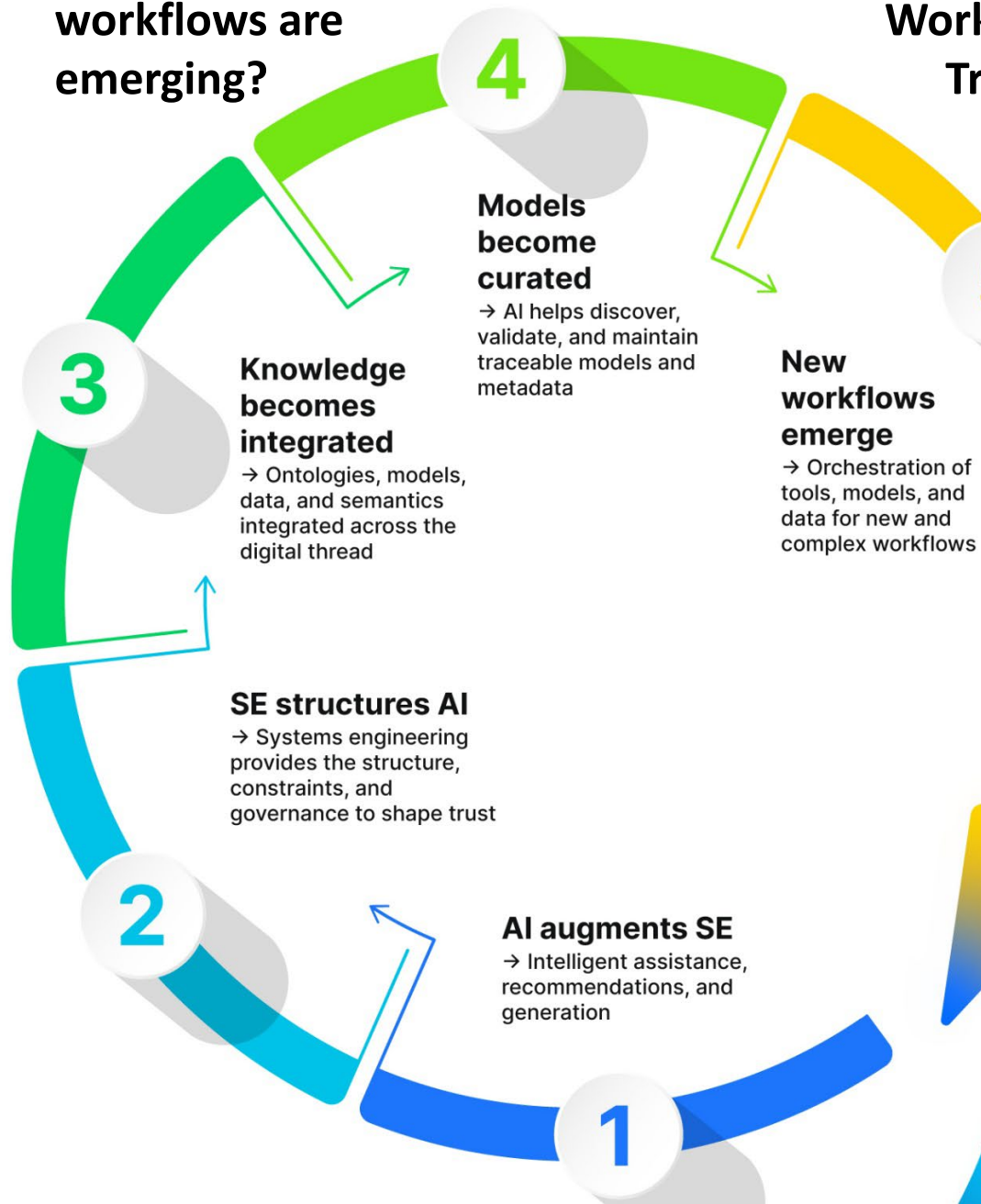
The workshop series repeatedly connects AI and systems engineering to the delivery of reliable capability at speed.

Enterprises, Governance,
Digital threads, Tools
Testbeds & Training,
Cognitive Assistants,
Agentic Systems,
Assurance, T&E,
Applications

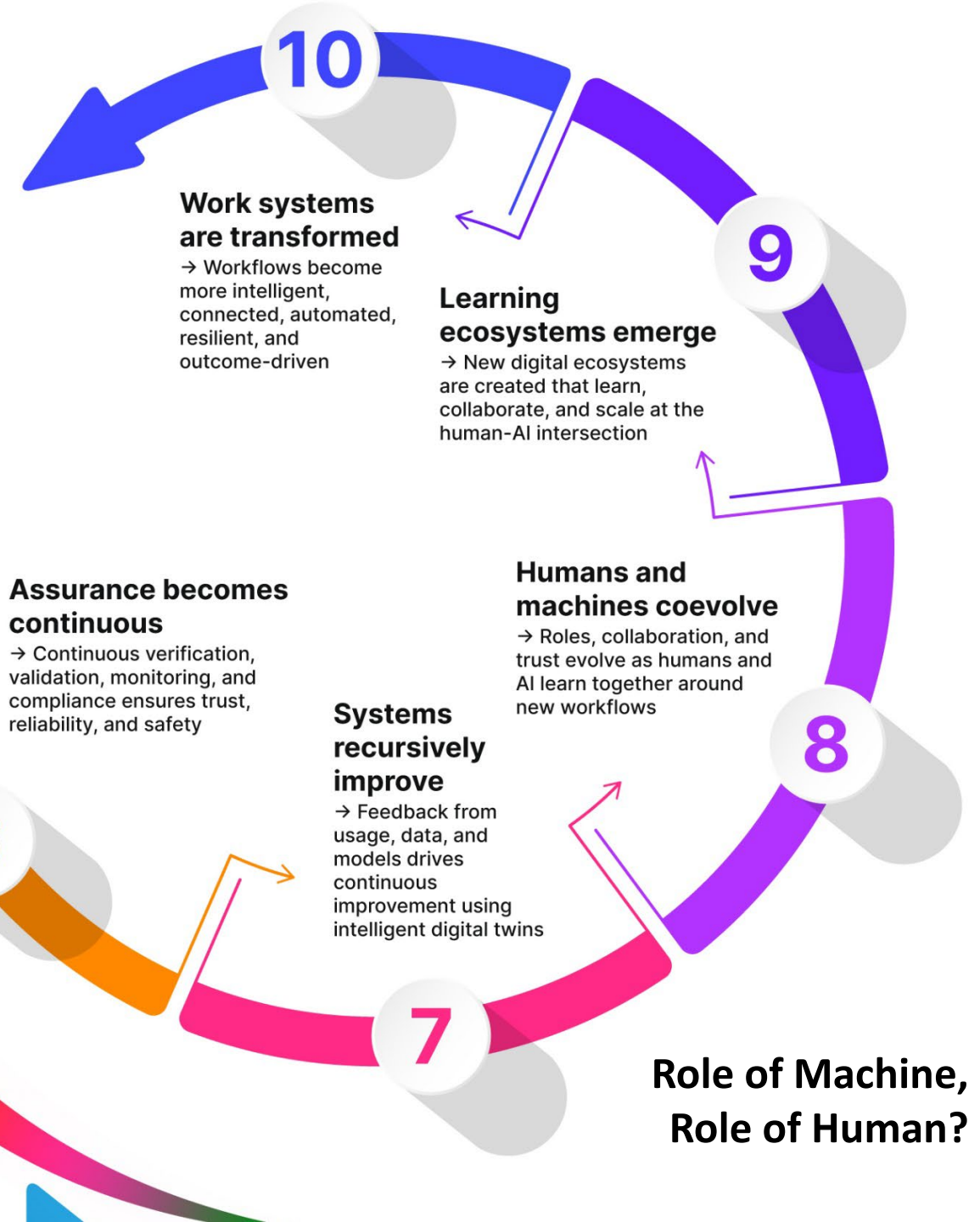
3. increasing bidirectionality of AI4SE and SE4AI.

The two domains now operate as a coupled feedback loop: better systems engineering enables better AI systems, while AI-enabled methods transform the practice of systems engineering.

What new SE workflows are emerging?

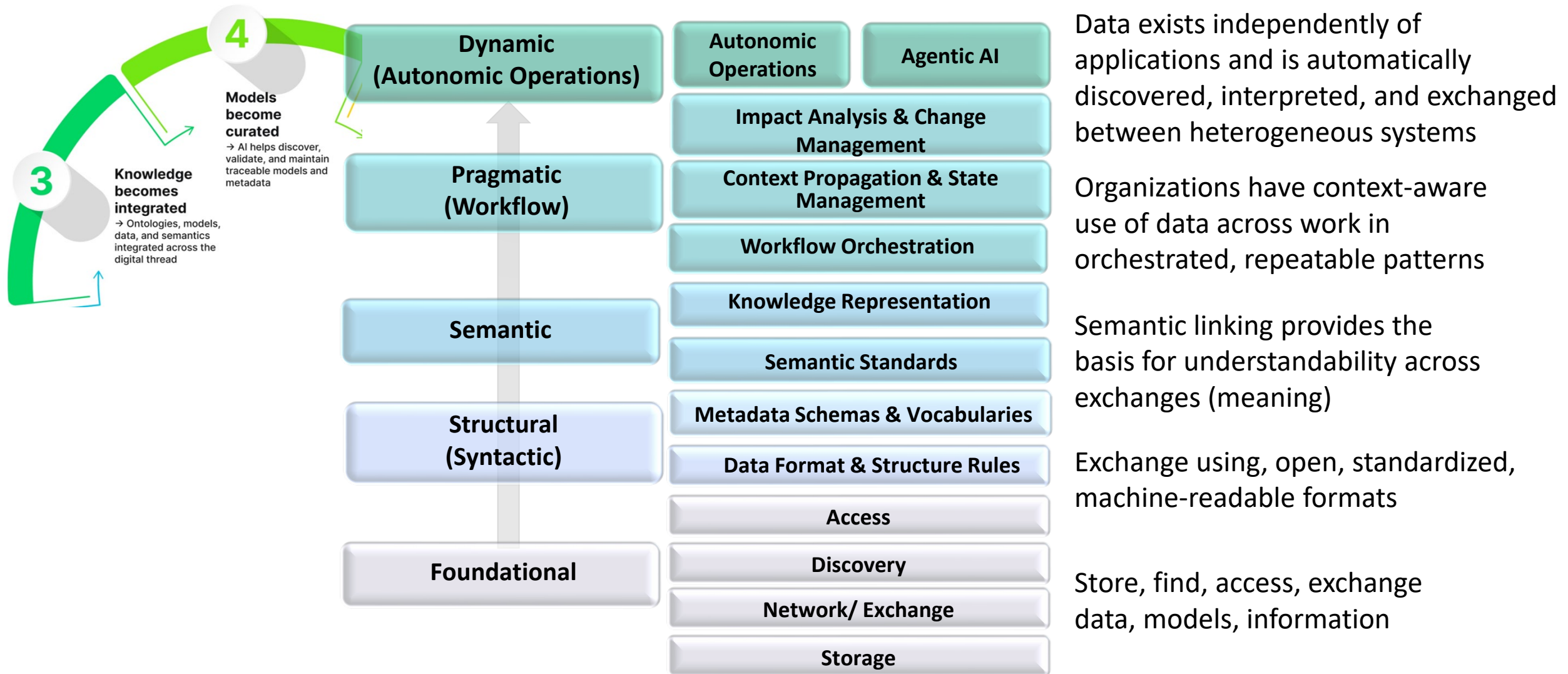


How will SE, as a Work System, be Transformed?



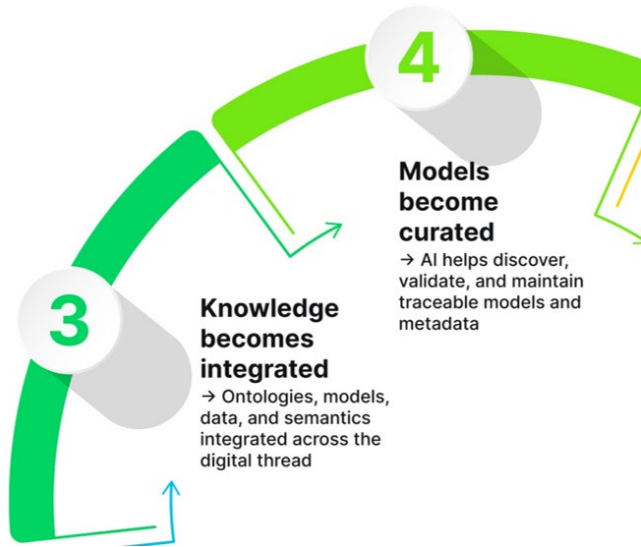
Role of Machine,
Role of Human?

IS YOUR INFORMATION READY?

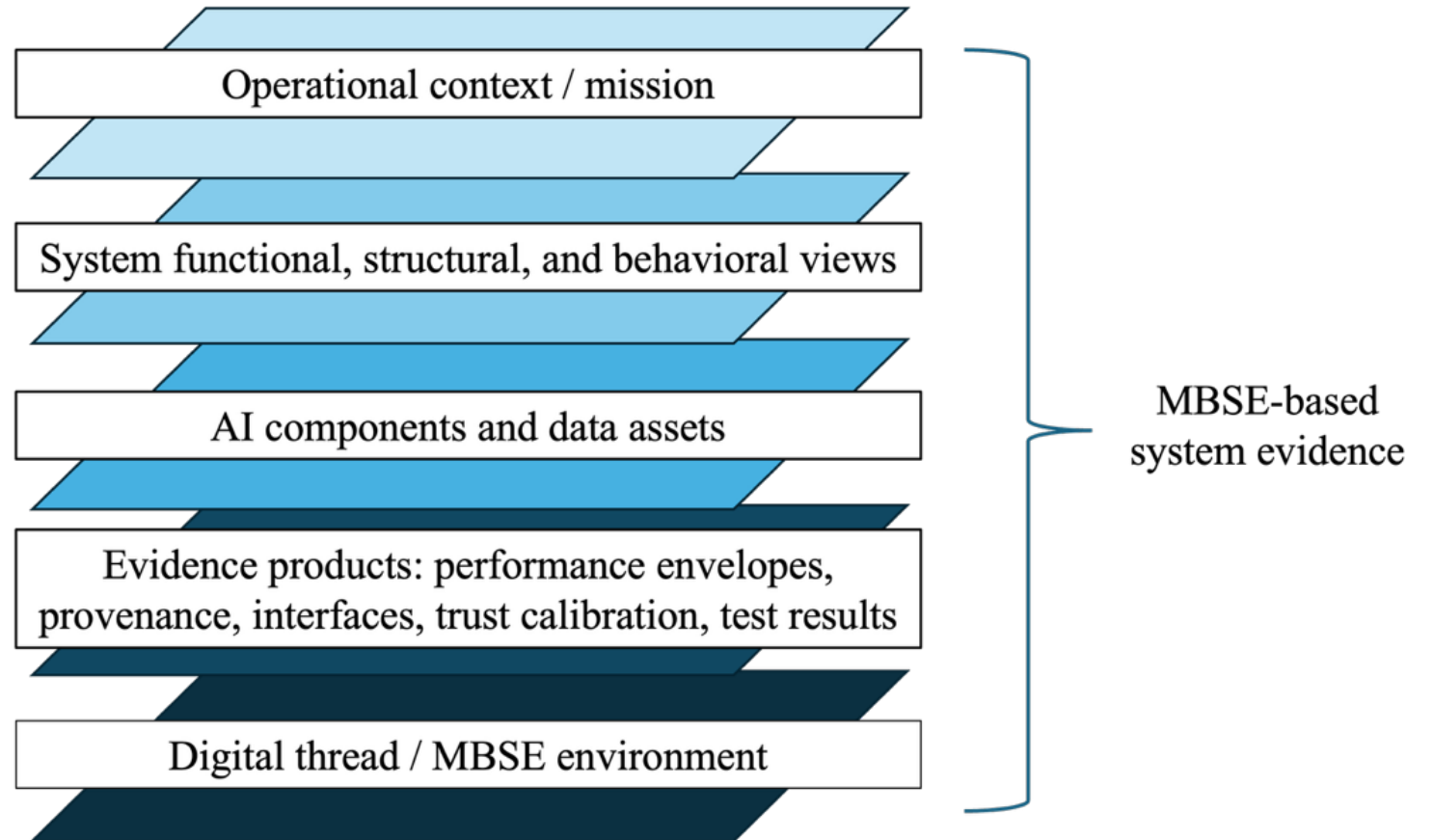


Derived from: Wang, Wenguang & Tol, Andreas & Wang, Weiping. (2009). The Levels of Conceptual Interoperability Model: Applying Systems Engineering Principles to M&S.

TRANSITION TO AI-GENERATED SYSTEMS



Model Card →



What model cards were trying to do for standalone models, MBSE-style evidence frameworks will need to do for AI-generated systems. AI evidence should increasingly be organized under a model-based engineering paradigm.

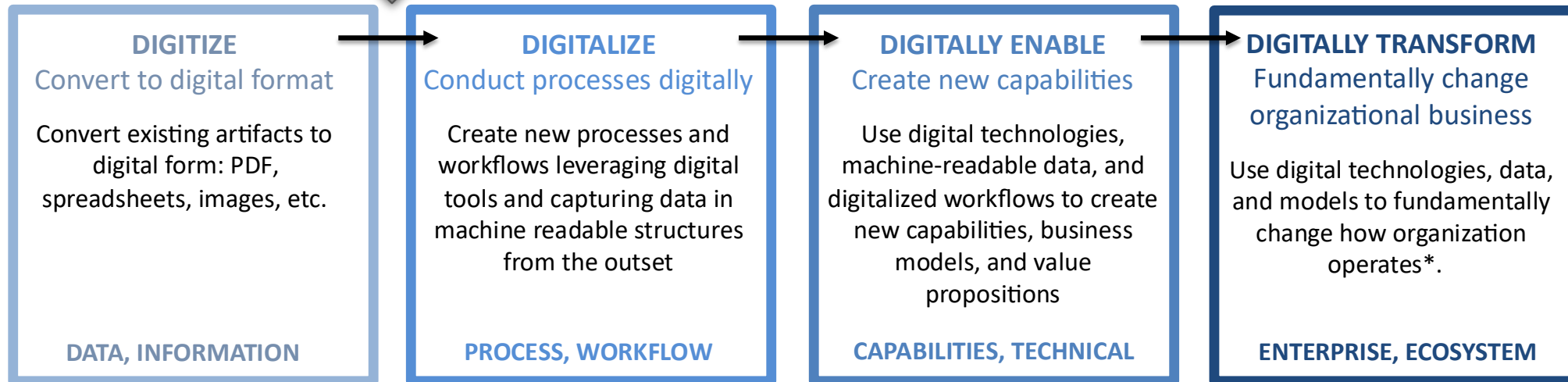
(Cody & Beling: From Models to Systems: The Evolution of T&E for Artificial Intelligence from 2020 to 2030, INSIGHT)



What is the current state?

- Stove-piped data/information systems, domain-specific data definitions and semantics, and unaligned (often orthogonal) views of the decision space.
- Organizations frequently digitize existing communication structures, documents, and processes rather than advance digitalization into machine-readable and understandable structures to create new capabilities and value.

We are here.



We need to be here.

Digitally Enabled means being able to do entirely new things across a heterogeneous ecosystem of data and models, technologies, functional groups, and workflows where data and its context are linked to support effective, data-driven decision making.

DIGITALLY ENABLE

Create new capabilities

Use digital technologies, machine-readable data, and digitalized workflows to create new capabilities, business models, and value propositions

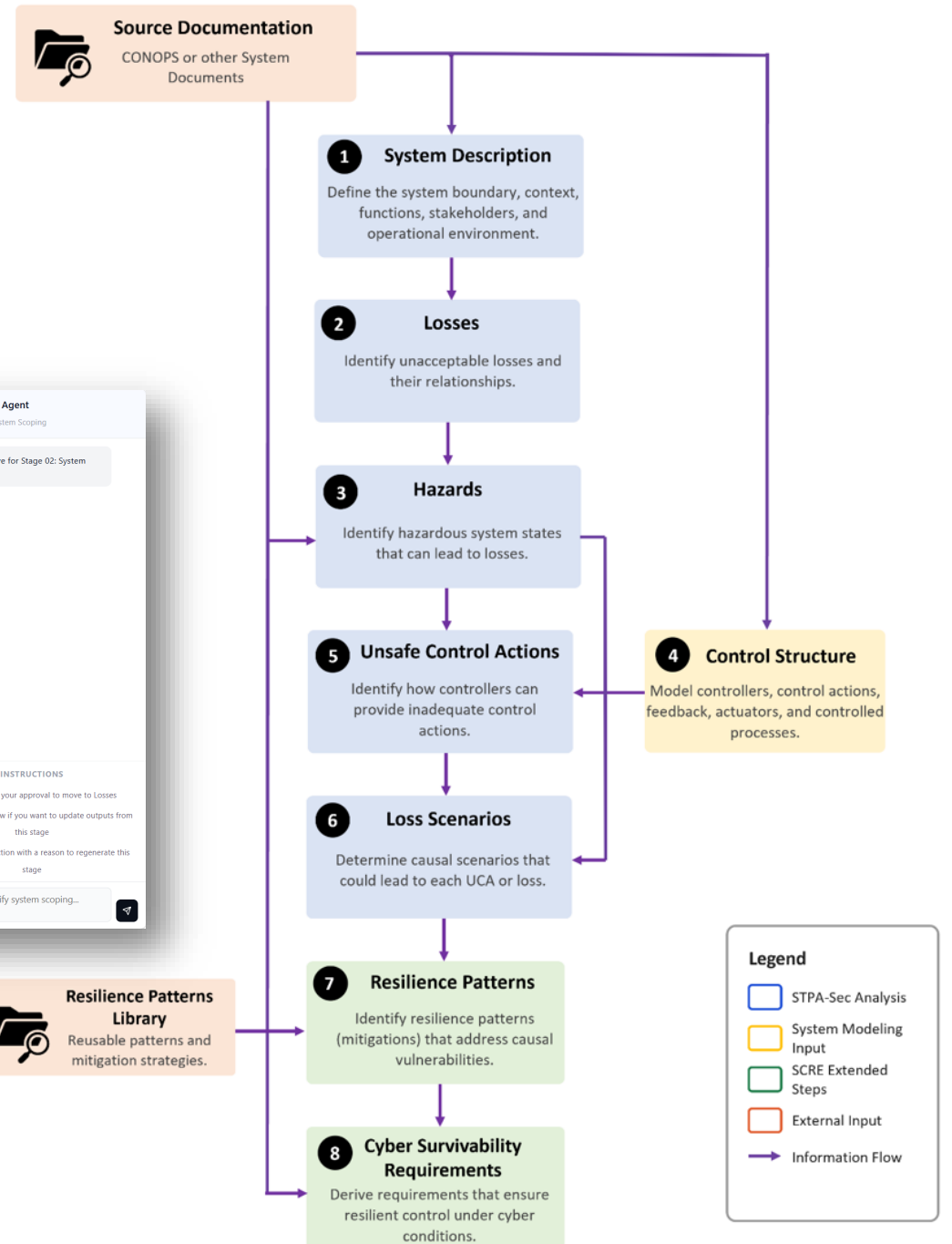
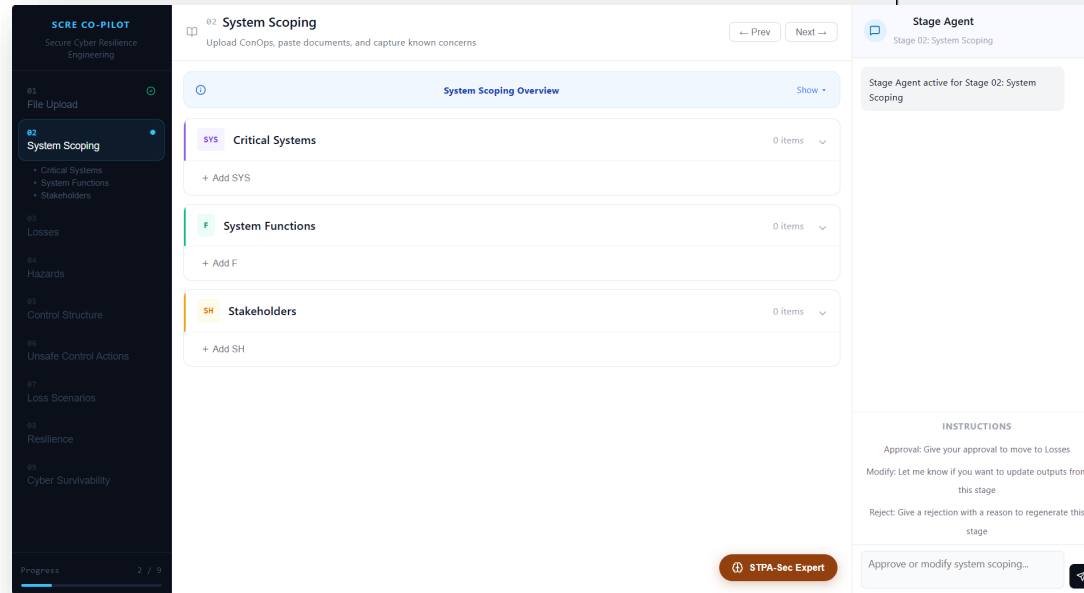
CAPABILITIES, TECHNICAL

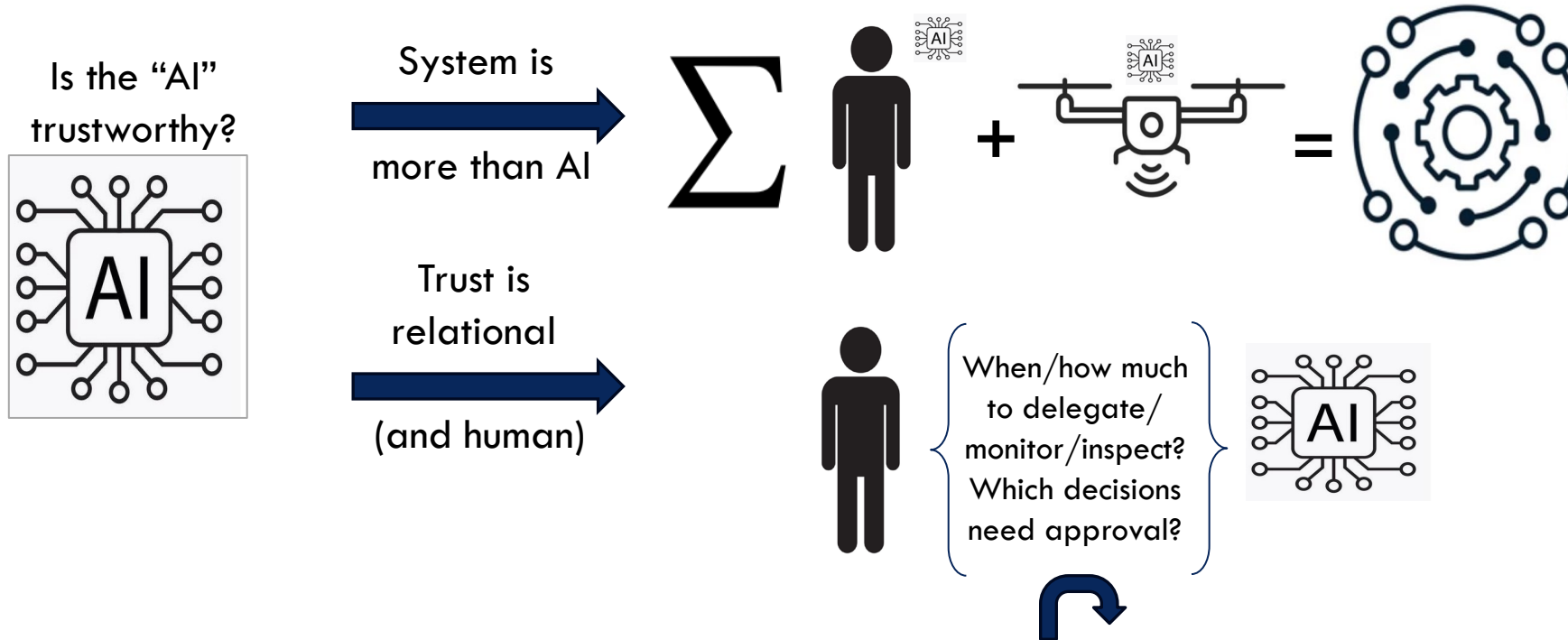
Modernize each layer
of the data architecture
for agents.

Seven data architecture principles that enable scale

1. **Treat data ingestion like a product.** Make it easy and consistent for all data—batch, real-time, structured, or unstructured—to enter the company once and be usable by everyone.
2. **Share meaning, not just data.** Ensure data comes with clear, common definitions so analytics, AI models, and agents all understand it the same way.
3. **Use one data foundation for analytics and AI.** Build data once and use it everywhere—reports, machine learning, and gen AI—rather than running separate pipelines and platforms.
4. **Build trust into the platform by default.** Security, access controls, privacy, and AI governance should be automatic, not added later or managed manually.
5. **Expose capabilities through stable interfaces.** Provide clear APIs and model access points so teams can reliably build applications and AI solutions without rework.
6. **Make behavior visible and measurable.** Continuously track data quality, model performance, speed, and cost so issues are caught early and systems improve over time.
7. **Provide a controlled way to run AI agents and applications.** Coordinate AI agents and applications through a shared execution layer that enforces enterprise rules and guardrails.

Agentic AI as an Engineered Workflow: Multi-agent architecture and information flow of a cyber resilience design assistant





Learning ecosystems emerge

→ New digital ecosystems are created that learn, collaborate, and scale at the human-AI intersection

Humans and machines coevolve

→ Roles, collaboration, and trust evolve as humans and AI learn together around new workflows

The collection points toward orchestration rather than replacement.

FROM

TOWARD

Model constructor

Human-AI orchestrator

Process executor

Workflow architect

Artifact reviewer

Evidence integrator

Tool specialist

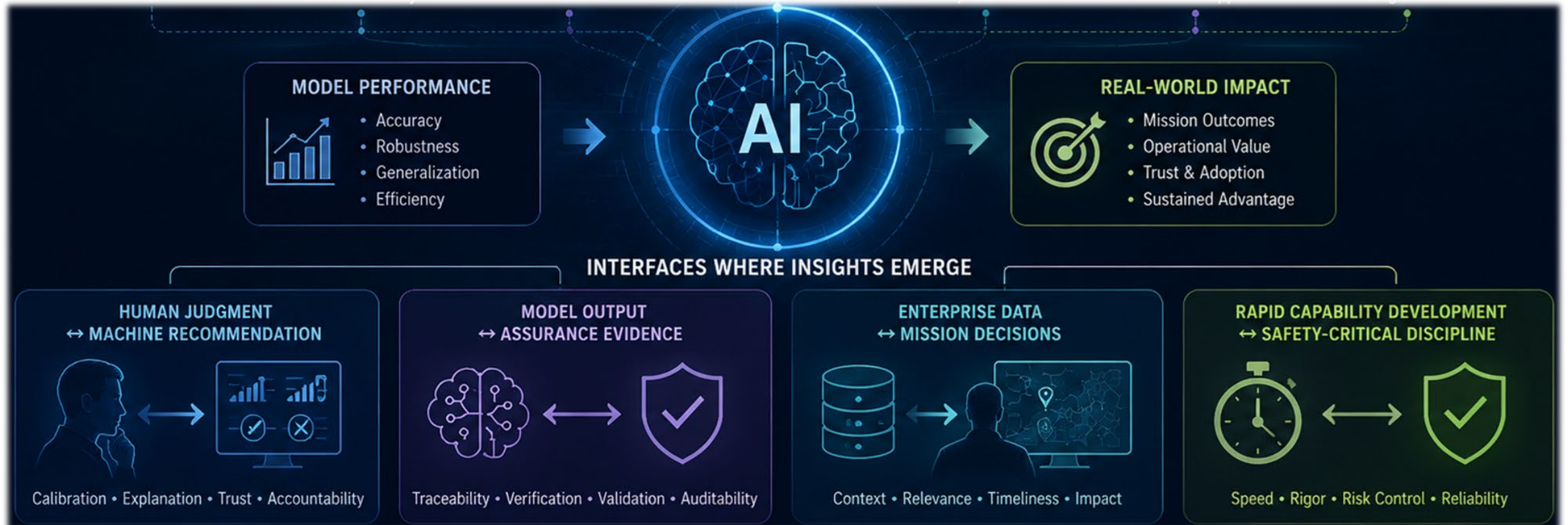
Knowledge curator

Periodic verifier

Continuous assurer

Core competency shifts: frame intent • design interfaces • calibrate authority • validate evidence • preserve human understanding

Work systems
are transformed



ENGINEER THE PARTNERSHIP, NOT JUST THE AI.



Barclay R. Brown
Foundation

<https://www.barclayrbrownfoundation.org/>

