



SYSTEM ARCHITECTURE MODELING FOR HUMAN-AI INTENSIVE SYSTEMS

Insight Session

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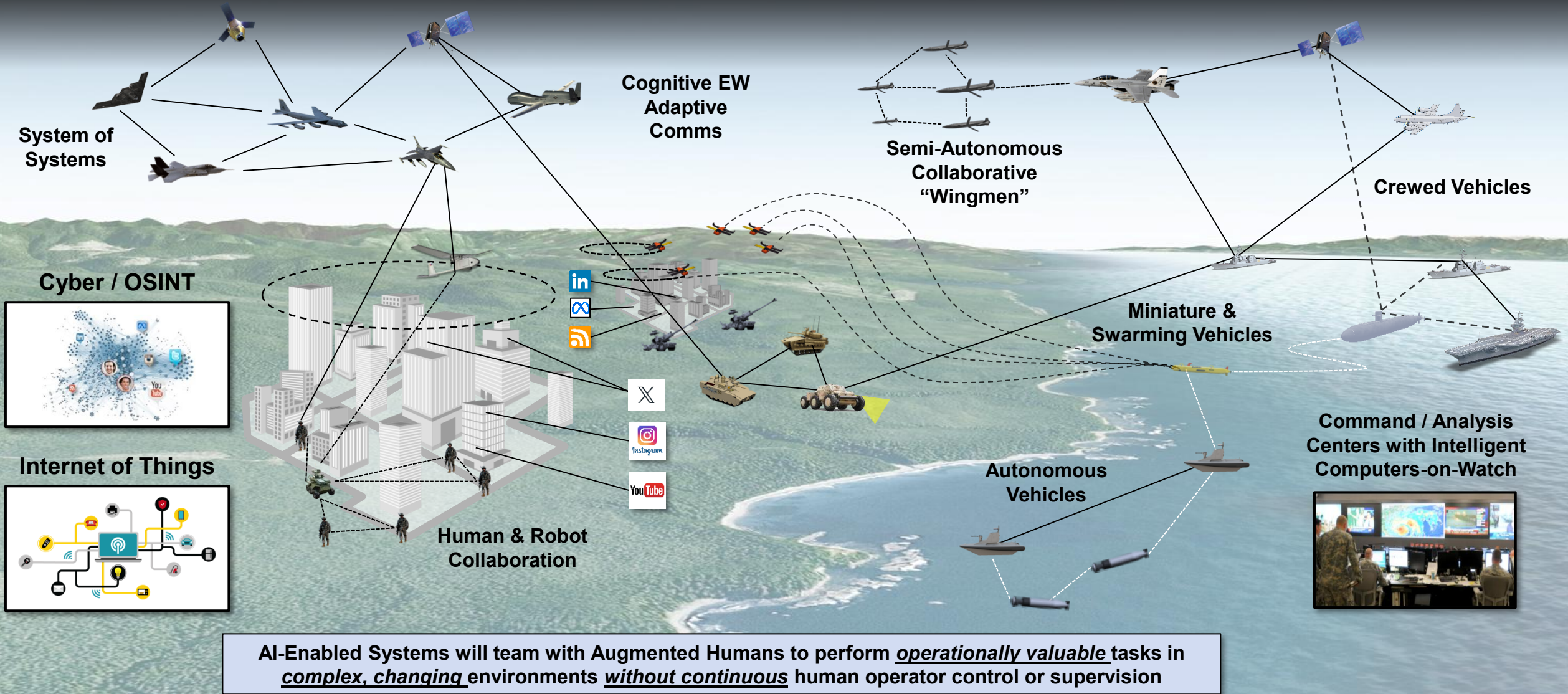
AI4SE & SE4AI Research and Application Workshop

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Future U.S. Defense Landscape will leverage Human-AI Systems at Scale

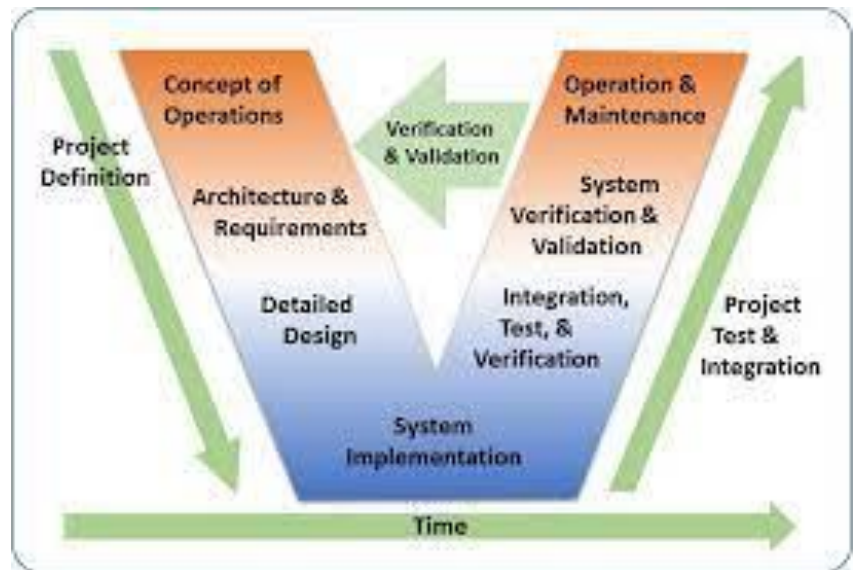




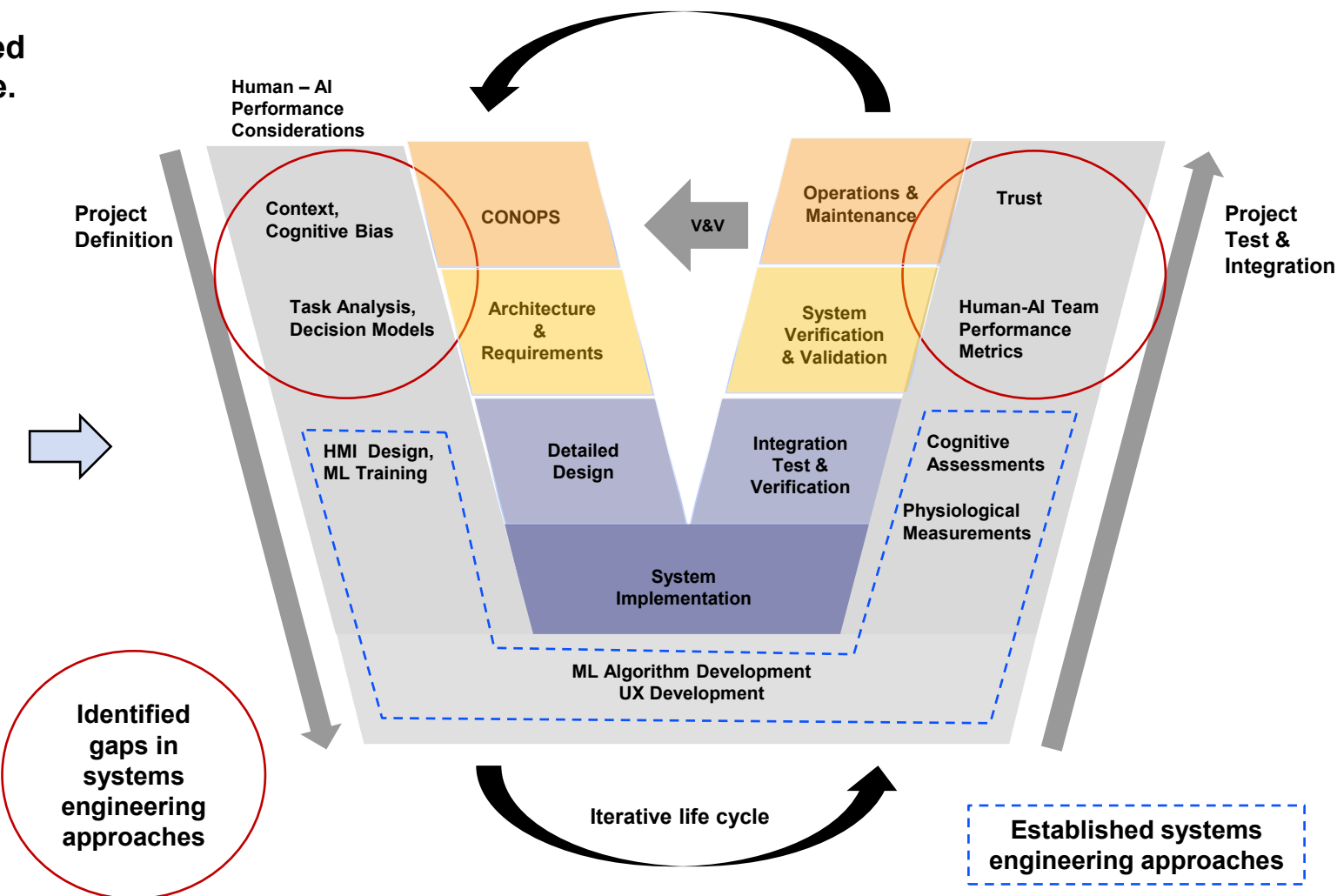
Human-AI Performance Considerations in Systems Engineering Process



Human-AI Performance is not adequately addressed throughout the full Systems Engineering Life Cycle.

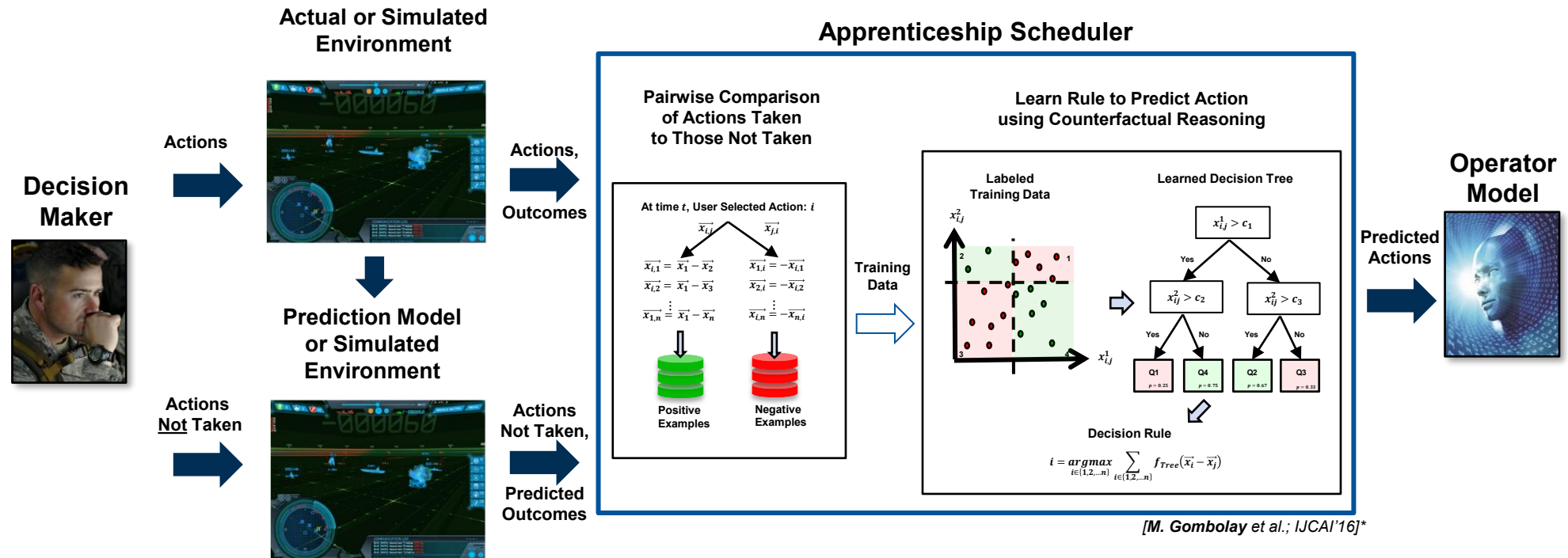


Systems Engineering Life Cycle





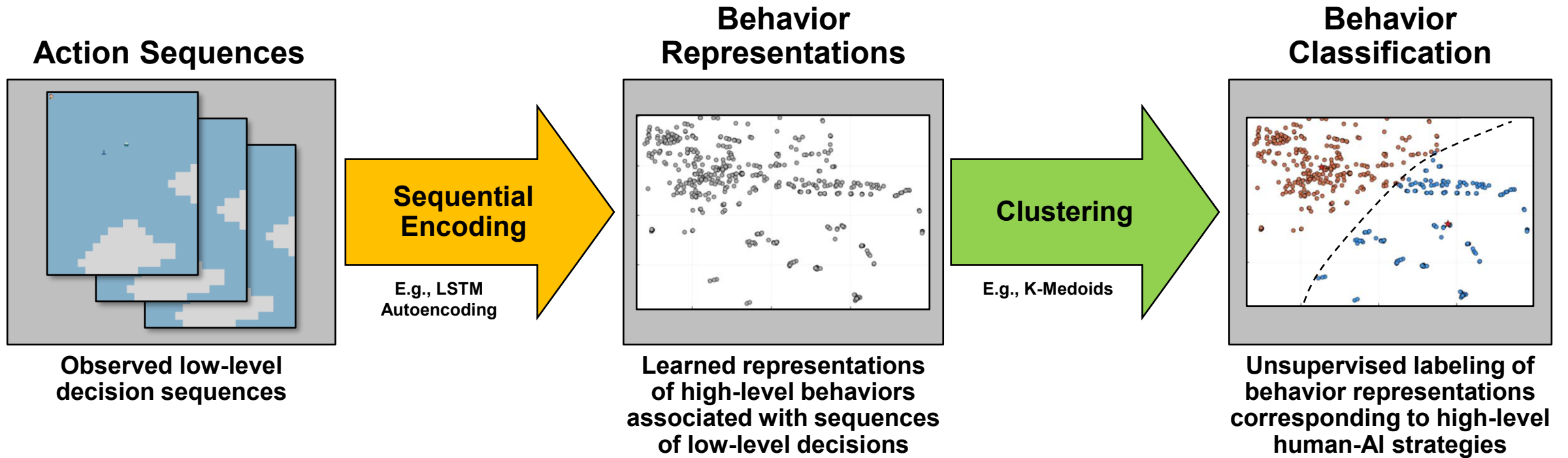
Lincoln Serious Games Environment



Instrumented physics-informed virtual environment modeling complex defensive missions with AI teammates
game-like user interfaces, and behavioral data collection to assess and capture human decision-making



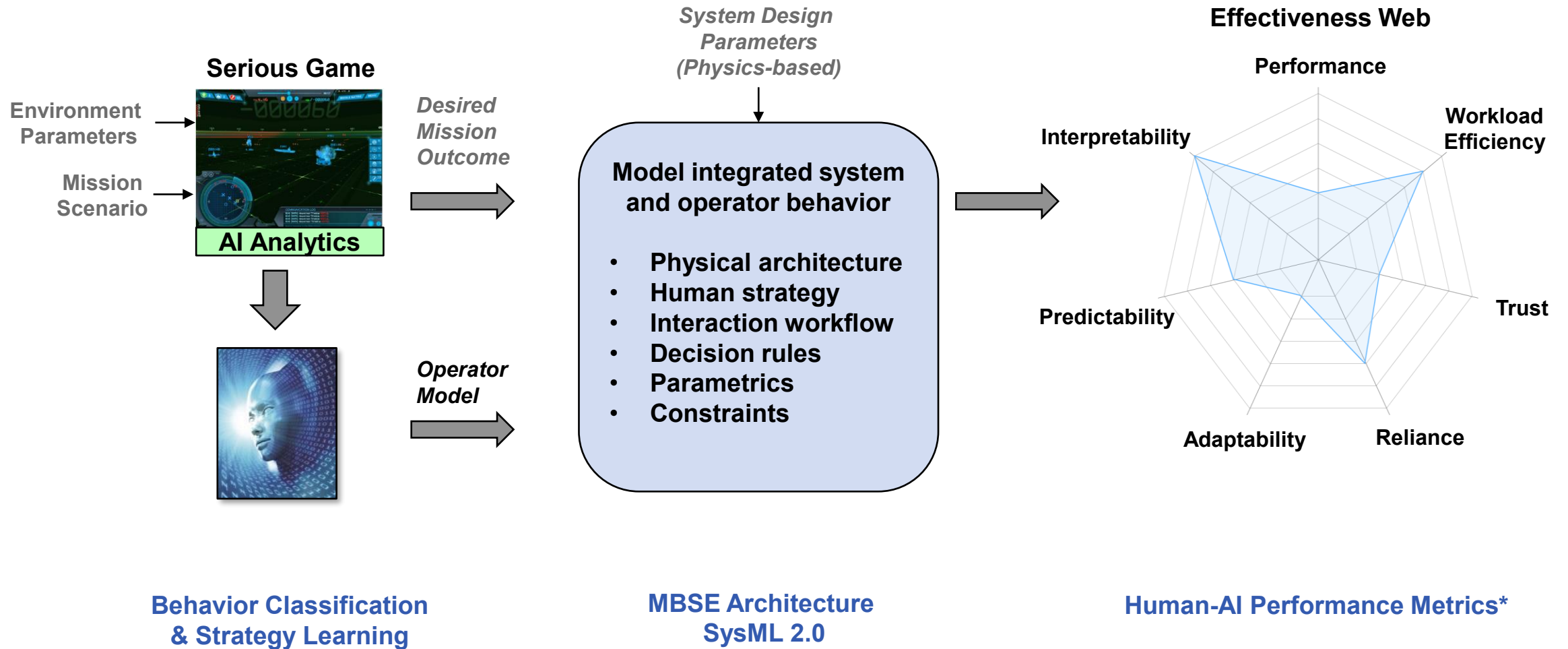
Serious Game Enhancements to Infer Human Strategy



Unsupervised, sequential encoding can be used to infer high-level behaviors and strategies from sequences of actions



Connecting Virtual Environment Game Discoveries to System Architecture





- Representation of human behavior within a system architecture is an area for new development.
- Research in Human-AI teaming suggests that human behavior may be derived from:
 - Early systems analysis conducted through Serious Games by inferring and classifying user strategy
 - Measuring human – AI performance effectiveness within the context of the game(s)
- Human-AI performance may be included in the systems engineering life cycle through:
 - Decision models established in the project definition phase
 - New capabilities in model-based systems engineering available through SysML 2.0
 - Evaluating human performance metrics in later validation, verification and operations phases

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