Lessons Learned from Engineering Emergence Research

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Lesson 1: Relax control over system interactions before restricting control.

Positive emergence is what remains after thoroughly exposing and removing negative emergence.

Next:
How to integrate this approach into requirements analysis process?

Which SoS behaviors should be rejected?

How?
1. Independent system models with alternative behaviors
2. Fewer initial constraints
3. Scope-complete Scenario generation (MP)
Lesson 1: Relax control over system interactions before restricting control.

Separate system behaviors and interactions

Model system behaviors and environment behaviors

Formalize models for automatic execution

MBSE

Lesson 2: Employ these modeling concepts.

Properly allocate tasks to a Human or Machine

Next: Automate more of these functions

Use abstraction and refinement to manage large models.
Lesson 3:
We can detect, classify, predict and control certain emergent behaviors early, with modeling & simulation.
Questions and Discussion

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