

# Agile SE in Mixed Discipline Projects

## Day 1 Intro Workshop

**Facilitator: Rick Dove, Paradigm Shift International**

**Assistant: Michael Robinson, NMT Student**

### **Participants:**

- **Randy Anway**                      **New Tapestry, LLC**
- **Jim Larkin**                        **MEI Technologies, AFRL Contractor**
- **Kerry Lunney**                    **Thales Australia**
- **Paul McGoey**                    **Retired Boeing**
- **Mark Timms**                      **Sandia National Labs**
- **Tim Wisely**                        **Sandia National Labs**

# **Agile SE in Mixed Discipline Projects Intro Day 1**

**What impedes and would enable  
agile systems engineering  
in mixed discipline projects?**

# Agile Systems Engineering

## Need:

**Effective system engineering in the face of uncontrolled change.**

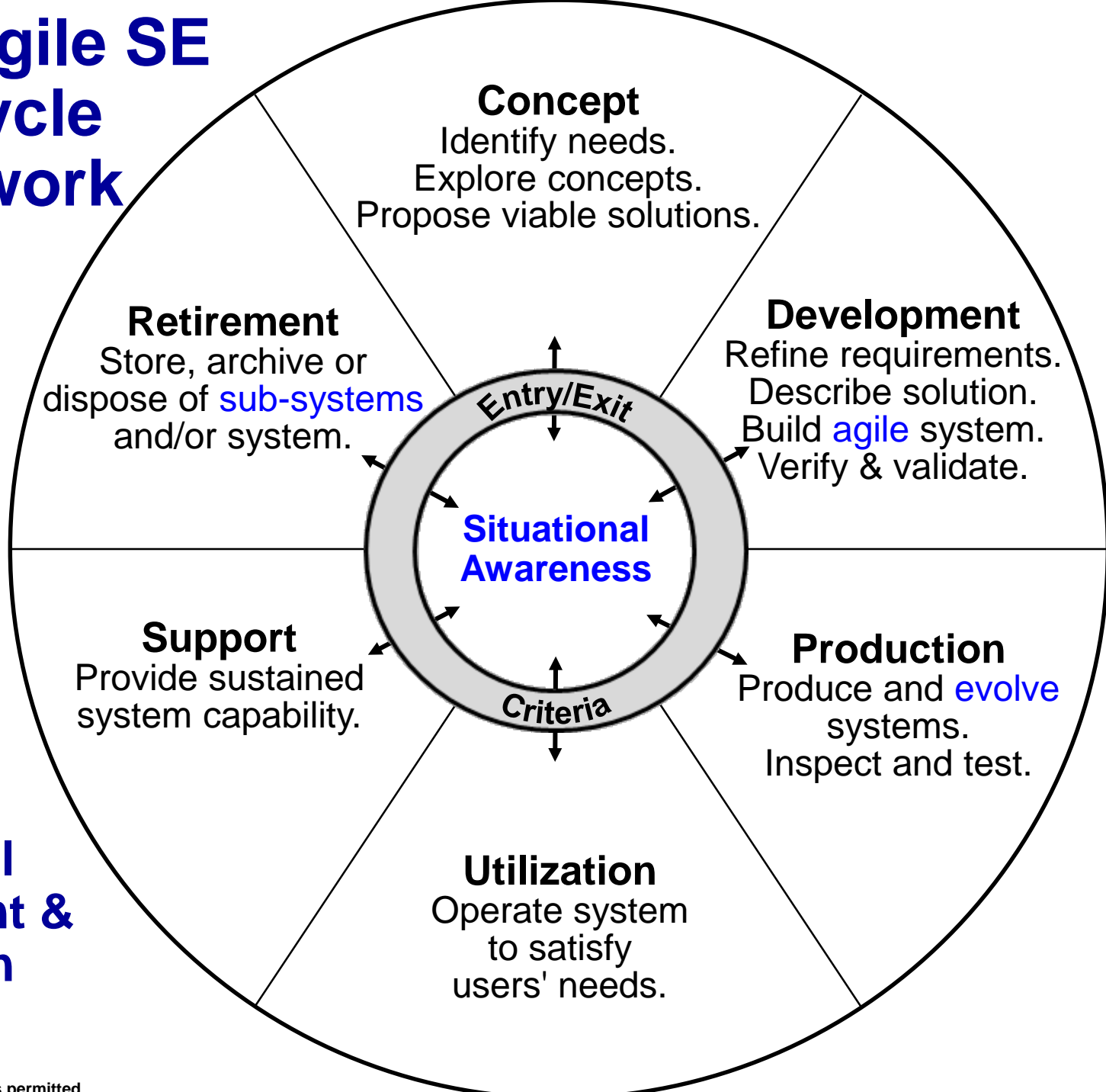
## Intent:

**Effective response in a systems engineering operational environment that is capricious, uncertain, risky, variable, and evolving. This intent defines agile systems engineering.**

**The definition of agile systems engineering  
is rooted in what it does,  
not how it does it.**

**There are many ways to accomplish the how  
at the project and engineering discipline level.**

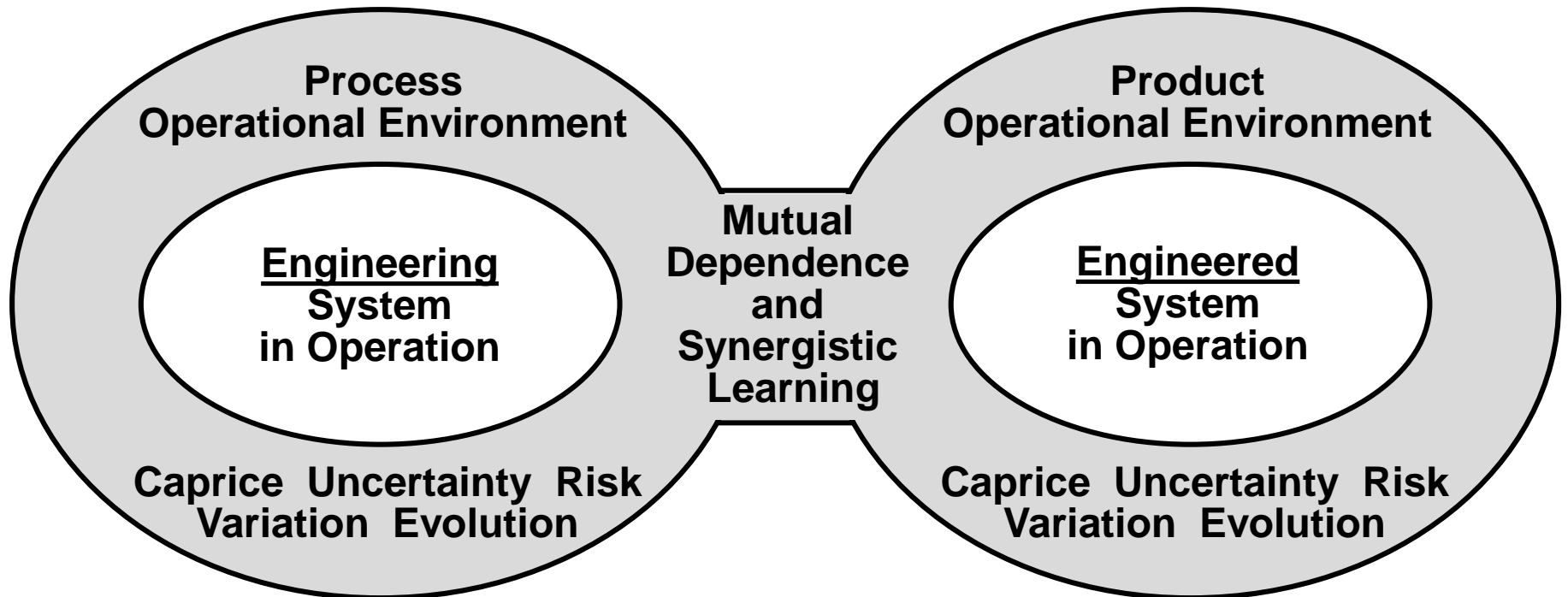
# General Agile SE Life Cycle Framework



**Perpetual  
Sustainment &  
Evolution**

# You can't have an agile engineering process if it doesn't engineer an agile product, and vice versa

(a first principle)



# Terms for Workshop Use

## **System Iteration**

**A point of demonstrable, evolving, system capability work-in-process.**

## **System Increment**

**A series of system iterations that culminate in a deliverable capability.**

# Potential Problems/Issues of Interest

**continuous iterative development**

**continuous/incremental integration and test**

**frequent demos with customers**

**customer intimate involvement with development**

**alignment of different discipline iterative development**

**communication among multi-discipline teams**

**inertia of traditional methods**

**HW translations of DevOps and DevSecOps concepts?**

**rapid prototyping**

**HW has separate design and fabrication personnel (sans 3D printing) that interface through detailed comprehensive design/build handoff documents**

**What is our hardware development workshop focus?**

- Objects made from materials?**
- PCBs?**
- Cyber-Physical systems?**
- Anything not software?**

# Strawman: Agile SE in Mixed Discipline Projects

## 1. Unresolved problem-need:

**Mixed-discipline continuous iterative development.**

## 2. Customers – who can/should/want this solved:

**Top authority, and all stakeholders that demand functionality.**

## 3. Issues within the problem area for Day-2 intended focus.

- 1. Compelling value proposition for mixed discipline engineers.**
- 2. Integration of system iterations (different timing).**
- 3. Customer feedback.**
- 4. Demonstrations of total-system development progress.**



# **Topic: Agile SE in Mixed Discipline Projects – Day 1**

## **Reception Poster**

**Unresolved problem-need:**

**Mixed-discipline continuous iterative development.**

**2. Customers – who can/should/want this solved:**

**Top authority (acquirer and supplier), and all stakeholders that demand functionality.**

**3. Issues within the problem area for Day-2 intended focus (priority ordered):**

**1. Traditional documentation.**

**2. Traditional milestones.**

**3. Integration of system iterations (different timing, including long lead considerations).**

**4. Demonstrations of total-system development progress.**

**5. Communicating the compelling value proposition for mixed discipline engineers.**

# Agile SE in Mixed Discipline Projects

## Day 2 Workshop Results

### Day 2 Participants:

- **John Brtis** MITRE Corp
- **Rick Dove** Paradigm Shift International
- **Mark Timms** Sandia National Labs
- **Kerry Lunney** Thales Australia

# Agile SE in Mixed Discipline Projects

## 1. Unresolved problem-need:

**Mixed-discipline continuous iterative development.**

## 2. Customers – who can/should/want this solved:

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**3. Integration of system iterations (different timing, including long lead considerations).**

**4. Demonstrations of total-system development progress.**

**5. Communicating the compelling value proposition for mixed discipline engineers.**

**Day 1 Planning...  
proclaimed the first 2 as priority**

# Impediment – traditional documentation and milestones

Requirements for any solution that would be broadly acceptable

1. Acquisition reform, includes policy and people
  - Work to be done at the supplier perspective (both sides accountable, but more on acquisition reform)
  - End users want capability faster than what we can provide under traditional approaches.
  - Acquisition reform must result in agile acquisition process
2. We need a spearhead – (Industry, acquisition, other, INCOSE)
3. Sensitivity to the baggage that the term Agile can carry
4. Leverage automated documentation toolsets
  - We want the reformed acquisition process to accept tooled documentation output

# Impediment - Integration of system iterations

**Requirements for any solution that would be broadly acceptable**

- 1) We need an integration platform that is re-useable**
  - **It can include virtual, augmented, digital twin, or any combination thereof**
  - **Platform Management team is required**
- 2) Platform infrastructure rules need to be established**
  - **Rules include interfaces, data exchange, and general architecture**
- 3) Activities need to be well scheduled, allowing asynchronous integration**
- 4) Guidance and pitfall description would be beneficial to be developed(Gotchas)**

**Note:**

**Truth - Any agile SE process must produce an agile product**