Agile Systems and Systems Engineering

www.incose.org/IW2021

CHAIR

Rick Dove (PSI)

CO-CHAIRS

Ron Lyells (Retired Honeywell)
Larri Rosser (Raytheon)
Keith Willett

INCOSE WEB PAGE

https://connect.incose.org/WorkingGroups/ASASE/Pages/Home.aspx

INCOSE CONNECT ADDRESS

www.incose.org/incose-member-resources/working-groups/transformational/agile-systems-se

About 15 members active with 218 in the WG community

Charter Summary

WG PURPOSE/MISSION

The purpose of this working group is to identify and develop a body of knowledge that will inform systems engineering and related processes which require agile system capability. Agile systems of interest to this working group include both systems engineering processes and systems-engineered systems. This working group views agility as a sustainable system capability, enabled and constrained fundamentally by system architecture. This architecture delivers agile capability as reconfiguration, augmentation, and evolution of system functionality, after deployment; enabling the system to respond to new and immediate situational requirements effectively. Effectiveness of response is measured in response time, response cost, response predictability, and response scope sufficient to sustain the system?s functional intent.

WG GOAL(S)

- Goal: Fundamental System Engineering concepts and principles supported with application examples that enable and facilitate Agile Systems-Engineering development processes.
- Goal: Fundamental System Engineering concepts and principles supported with application examples that can inform agile acquisition processes and acquisition of agile systems.
- Goal: Fundamental System Engineering concepts and principles supported with application examples that can inform supplier design of Quick Reaction Capability (QRC).
- Goal: Fundamental System Engineering concepts and principles that can inform the design of Agile systems that can respond effectively to the pace of technology, system-environment evolution, and evolving user expectations.
- Goal: Attract an international cadre of engaged participants to broaden the understandings and effectively deal with multi national interests and differences.
- Customer(s)/Stakeholder(s): Systems engineering educators, systems engineering process developers and managers, defense acquisition procedure developers, system suppliers, systems engineers, CAB members, the SEBoK and the SE Handbook.

Charter Summary

WG SCOPE

The primary focus of this WG is on fundamentally necessary and sufficient architectural concepts and concept-employment principles that enable any system or process to be agile, and to show how these architectural concepts and principles are or might be applied advantageously to a variety of INCOSE-relevant systems and processes of interest. These examples will be directed at the application of necessary and sufficient agility-enabling concepts and principles, avoiding prescriptive interpretation and disclosure of organization-specific competitive-advantage differentiation. Application examples will include, for instance, systems engineering and management processes, Quick Reaction Capability, and acquisition processes, to name only a few.

OUTCOMES (PRODUCTS/SERVICES)

- Identification and justification of necessary and sufficient fundamental concept for any system/process to be agile.
- Development of appropriate INCOSE SE Handbook contributions that provide fundamental enabling concepts and considerations for engineering agile systems/processes and for employing agile systems engineering processes.
- Development of an understanding of how Lean concepts and Agile concepts can be complimentary, and how tradeoffs between the two concepts can be reconciled.
- Identification and development of informative examples of fundamental agile architectural concepts employed in a variety of relevant system/process applications.
- Discovery of generic Agile Systems Engineering Life-Cycle Model fundamentals and patterns that are necessary for life-cycle agility, based on analysis of agile hardware oand software SE processes in agility-effective practice.
- Socialization of work efforts with papers for the Systems Journal, the International Symposium, and Insight theme issues; with International Symposium tutorials, and with educational and tutorial Webinars.

IW Outcomes

IW OUTCOMES

Held two workshops;

Friday: 2-hour workshop. Brief WG overview followed by workshop on nine foundation concept identified in FuSE Agility project.
Sunday: 1 hour review of a test case that employed the Agile Systems Engineering Decision Guidance Framework during 2020.

PLANNED ACTIVITIES AFTER IW

- Move the nine FuSE Agility foundation concepts into socialization, development, and deployment activities.
- Seek additional employment opportunities for Decision Guidance Framework.
- Complete final drafts for four agility-related sections in the version 5 handbook.
- Complete a Grand Challenge roadmap for vision 2035 addressing dynamic and complex system engineering environments.
- Complete an Agile System Engineering primer.

PLANNED WORK PRODUCTS AFTER IW

- Agile Systems Engineering Primer.
- Four sections in the version 5 handbook.
- Dynamic and Complex Environment Grand Challenge roadmap for Vision 2035.
- Various final papers for IS21.