2019
Annual INCOSE
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Systems and Software Interface

www.incose.org/iw2019

Systems and Software Interface

CHAIR

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MEMBERS

52 (25 core members)

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INCOSE CONNECT ADDRESS

https://connect.incose.org/WorkingGroups/systems%20and%20software/SitePages/Home.aspx

INCOSE WEB PAGE

https://www.incose.org/docs/default-source /wgcharters/sysswif_wgcharter.pdf?sfvrsn=4

Charter Summary

WG PURPOSE/MISSION

To understand, clarify, and work to resolve issues with the systems-software interface that challenge our ability to engineer today's and tomorrow's systems. These interfaces include physical, logical, data, and human aspects.

WG GOAL(S)

Develop a set of principles and/or guidance for identifying and reducing system-software interface risk

WG SCOPE

Address, at a high level, the process and technical interfaces between systems and software

IW Outcomes

IW Outcomes

· Discussed Systems and Software Interface issues and approaches in industry and government

Both of the SaSIWG sessions opened with a roundtable discussion from the ~20 participants on their experiences and concerns with Systems and Software Interfaces.

Discussions concerned different SE and SW development approaches including waterfall, Agile, DevOps, MBSE development approaches.

From these discussions, the team extracted assets to add to our Work in Process, and discussion topics for future telecons.

· Reviewed SaSIWG (System and Software Interfaces Working Group) Survey

The purpose of this survey is to understand, clarify, and work to resolve issues with the systems-software interface that challenge our ability to engineer today's and tomorrow's systems. These interfaces include physical, logical, data, and human aspects. (This effort is focused on software-intensive systems, which defines many 21st century systems.)

Goal: (Capture the current state of practice; methodology and approach that defines system and software interfaces. Identify pain points based on current state of practice.) Develop (and recommend) a set of principles and/or guidance for identifying and reducing system-software interface risk

This effort has been led by Sally Muscarella at Stevens Institute and Macaulay Osaisai from Harris Corp. They have conducted 19 interviews to date.

At the IW2019, Macaulay Osaisai reviewed the survey and discussed preliminary findings. The IW2019 attendees were asked to identify additional interview subjects.

· Reviewed and updated table of Systems and Software "Unifying" asset materials and links.

This table of 18 assets has been compiled by the SaSIWG and identifies assets that address the Systems Software Interface, a short description, strengths and weaknesses of the asset as it pertains to Systems and Software, and a link to the asset where possible. At the IW2019, the table was reviewed and updated with additional assets.

· Drafted a table of interactions from Systems to Software perspectives and Software to Systems.

This was initiated and presented by George Sawyer, BAE Systems to provide a perspective from both directions of process flow:

IW Outcomes

from Systems Engineering to Software Engineering and from Software Engineering to Systems Engineering.

· Provided review copies and briefly discussed the SaSIWG 2019 International Symposium paper: "Systems Engineering–Software Engineering Interface for Cyber-Physical Systems"

· Participated in the INCOSE Automotive Working Group for the Systems and Software discussions. Gary Ruston, Chair, invited our participation.
· Autosar and Systems Engineering/AWG à Rick Flores
o This appears to be a good case study for a Software process interface to SE.
· Continuous Integration for Automotive à Yann Chazal, Yann Argot
This presentation offered synergy with the SaSIWG.
We had discussions also with the NDIA Iterative development working group, and Joe Elm, NDIA Chair
· MBSE for Systems and Software Layers à David Hetherington

Planned Work past IW

PLANNED ACTIVITIES

INCOSE IS2019 – Orlando – paper presentation, WG meeting
Monthly telecons of SaSIWG members.
Webinars: What SE's need to know about SWE (One webinar held and one scheduled)

Cross-WG collaborations

- Agile SE Working Group – continuing to discuss Agile SW and Agile SE methods – and interfaces between the two.
- Automotive Working Group – Continuous Integration discussions
- Architecture Working Group – Systems Architecture to Software Architecture discussions.

Industry collaborations

- NDIA Iterative Development WG – continuous integration approach.

PLANNED WORK PRODUCTS

- INCOSE IS 2019 paper ""Systems Engineering–Software Engineering Interface for Cyber-Physical Systems"
- SaSIWG (System and Software Interfaces Working Group) Survey
- Table of Systems and Software "Unifying" asset materials and links.
- Table of interactions from Systems to Software perspectives and Software to Systems.