## IW13 Working Groups

All Working Groups at:  [www.incose.org/about/organization/ti.aspx](http://www.incose.org/about/organization/ti.aspx)

<table>
<thead>
<tr>
<th>Open WG &amp; Workshops Sat 26Jan</th>
<th>Sun 27Jan</th>
<th>Mon 28Jan</th>
<th>Tue 29Jan</th>
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Agenda

• CAB, AC & America’s Sector
  – R. Pineda (10 minutes)

• Competency WG
  – T. Humpton (15 minutes)

• SOS & MBSE WGs
  – A. Lopes (15 minutes)

• Security & Agile WGs
  – R. Dove (15 minutes)
INCOSE 2013
Workshop Summary
IW2013 Enchantment Webinar

AGENDA

- Introductions (5 minutes)
- CAB, AC & America’s Sector R. Pineda (10 minutes)
- Competency WG T. Humpton (15 minutes)
- MBSE, SOS & LSE WGS A. Lopes (15 minutes)
- Security & Agile WGs R. Dove (15 minutes)
- Wrap-up
Corporate Advisory Board (CAB)

- Enchantment Chapter: Heidi Hahn (LANL), Ron Lyles (Honeywell), Mark Rosenthal (Sandia), R. Pineda (UTEP)
  - Schedule Monthly Telecon
  - Improve meeting focus & effectiveness
  - Possibility of CAB sponsored projects
  - CAB resources needed for Professional Development
  - Review of CAB needs against WG & Products
  - INCOSE-PMI WG
  - Harmonization of Key SE WG
  - Play role as consultant to the Technical Committee
  - Model Based Conceptual Design - WG
  - Dove presented summary of Agile WG progress
  - Kenley: Transatlantic-SOS Research Needs
  - Pyster presented HELIX; Competency Model (DOD, SERC, NDIA) 5 yr study
  - Clark: SE Training Framework
  - AFIS Handbook on Product-line

- Tutorial on new IT (website) platform [http://incose.org/NewSiteInfo](http://incose.org/NewSiteInfo)

- Certification: what is the value proposition? How to improve it? How does it tie to traditional competencies
Academic Council (AC)

- 19 members: 11 US, 1 China, 1 Japan, 2 Australia, 1 UK, 3 Singapore

Goals:
- Elevate respect
- Increase Research Publications
- Attract more students
- Influence Academic Programs/ABET
- Inspire young people to consider STEM

Communications:
- new site, wikis, discussion forums
- Students Division
- Collect information on SE programs (WPI)
- Recruiting more academic members

IS2013:
- Saturday: SEBoK and GRCSE tutorials; Monday AC meeting; Tuesday: Students Division meeting
- Several Panel submissions: need reviewers!!

SE Journal:
- MIT- Oliver L. de Weck- Editor-in-chief
- 22 papers early view, 20 under review, 120 submissions per year (booked until summer 2014)
- Impact factor 0.42, ranked IE 33/43 or 66/77
- Future plans: Web based platform for submission, improve IF, start Special Issues, move to 6 issues per year instead of 4, welcome suggestions for topics, special editions, etc.

Student Division: 12 members, about 450 members
- Value proposition, what are the metrics
- IS2013: Engineering Challenge, Tuesday track for students to present,
- Online mentoring
- Increase awareness and participation in WG
- International Spring School in IS2013
America’s Sector Meetings

- 47 chapters in America out of 65
- Assistant Director (mentor) named: Eric Belle for West, Jack Stein North Central, South David Takacs, Northeast TBD
- Membership retention (see attached file)

Strategy:
- Communication, Collaboration, Creativity
- Focus on action
- Erase burden on chapter’s operation
- Unify (Harmonize) Chapter Programs:
  - Communications and Retention
  - Topics and speakers planning, event scheduling & promotion
  - Volunteer development
  - Briefing book for incoming officers
COMPETENCY WORKING GROUP

Chairs/co-chairs: Eileen Arnold/ Mimi Heisey/Don Gelosh

INCOSE Connect address:

INCOSE Web page:
http://www.incose.org/about/organization/ti.aspx

Other Web page:

Number of Members on distribution: 50+

Number of Members Participating in IW: 17, 10 contributors
Charter

Scope

1. Evolve to a globally accepted and marketed std competency framework, tailorable to needs of the customer orgs.

2. Create a globally accepted and marketed std assessment instrument, tailorable to needs of the customer orgs

Primary interest and goals:
Evolve INCOSE Competency Model to include Leadership, Management and other professional “soft skills”
Published Products

• Framework for Benchmarking Competency Assessment Models, INCOSE SE Journal Vol 16 #1 2013
• 5 papers presented at IS2012
• 1 panel at IS2012
2013 IW Outcomes

• CAB Needs evaluated against products – roles needed, NDIA collaboration established
• Helix briefing – SE DNA - Art Pyster (SE Research Center)
• Collaborations: PMI-INCOSE Alliance WG, SE Effectiveness WG, NDIA, CAB, Training WG, Certification Advisory Group (CAG)
• Evolving INCOSE Competency Framework to include Professional Dimension (Leadership, Behavioral, Cognitive and other non-technical soft skills)
• Honeywell INCOSE Competency Model Pilot Deployment lessons learned shared
• Proposed evolution of the INCOSE Competency Framework to 7 Competency Dimensions
  – Professional
  – Management
  – Technical Processes
  – Enterprise
  - Domains / context
  - Analytical
  - Life cycle
Planned Work

Today

• CWG Project Plan

Q2 2013

Circulate first draft April 2013
Receive comments May 2013
Revision 1.0 June 2013
INCOSE 2013 Workshop Summary
MBSE WG

• Extending Use of System Models in Enterprise - LMC
  ➢ Integrating function across systems development and design functions
  ➢ Model Based Program Execution
  ➢ Modeling for Product Families and Reuse
  ➢ Model Based Test - Leverage UML Testing Profile standard

• Managing Automotive Systems Complexity - Ford
  ➢ Mapping
  ➢ Validation
  ➢ Model Re-utilization
  ➢ Model Based Testing
  ➢ Traceability

• CubeSat Challenge Team – NASA JPL
  ➢ Multi-disciplinary team of universities and corporations
  ➢ Demonstrated the applicability of MBSE to Space Systems
  ➢ Utilized various MBSE tools (SysML, Magicdraw, Matlab Simulink, Mathematica, etc.) to enable user-friendly GUI to Simulated Models
  ➢ Models included CubeSat Framework, Power and Spacecraft Behavior Prediction Analysis, Communication Design, and Requirements Analysis
  ➢ Demonstrated multiple simulated models
## SOS – Pain Points - Opportunities

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<th>Pain Points</th>
<th>Question</th>
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<tr>
<td>Lack of SoS Authorities &amp; Funding</td>
<td>What are effective collaboration patterns in systems of systems?</td>
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<td>Leadership</td>
<td>What are the roles and characteristics of effective SoS leadership?</td>
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<td>Constituent Systems</td>
<td>What are effective approaches to integrating constituent systems into a SoS?</td>
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<tr>
<td>Capabilities &amp; Requirements</td>
<td>How can SE address SoS capabilities and requirements?</td>
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<tr>
<td>Autonomy, Interdependencies &amp; Emergence</td>
<td>How can SE provide methods and tools for addressing the complexities of SoS interdependencies and emergent behaviors?</td>
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<tr>
<td>Testing, Validation &amp; Learning</td>
<td>How can SE approach the challenges of SoS testing, including incremental validation and continuous learning in SoS?</td>
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<tr>
<td>SoS Principles</td>
<td>What are the key SoS thinking principles, skills and supporting examples?</td>
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Design for Adaptability and Evolution
Lean SE Working Group

- Engaging students through capstone project
- Strategies to mobilize students outside USA
- ‘Guide to Lean Enablers for Managing Engineering Programs’
- Exploring potential synergy between traditional SE, Lean Thinking, and Program and Project Management (PPM)
- Participants voted for key Lean evaluation metrics:
  - Value Principle
  - Value Stream Principle
  - Flow Principle
  - Pull Principle
  - Perfection Principle
  - Respect for people Principle
Power and Energy Systems WG

- Collaborate with MBSE WG to develop synergies for PES modeling
- Future Energy Initiatives
- Breeder Reactors
- Liquid Fluoride Thorium Reactor Technology
Review of Two WG Workshops at IW13

Enchantment Chapter Presentation
13 Feb 2013
Rick Dove

1. Systems Security Engineering
2. Agile Systems and Systems Engineering (working group kick-off workshop)
System Security Engineering

Chairs/co-chairs:
- Rick Dove, Stevens and PSI
- Paul Popick, OSD/ATL and Aerospace
- Beth Wilson, Raytheon

INCOSE Connect address:
https://connect.incose.org/tb/specialty/systemsecurity/

Number of Members: 102

Number of People Participating in IW13: 24
Charter

Purpose – to identify effective system security principles consistent with new reality, and to integrate responsibility for system security into the system engineering community

• Goal: Establish the responsibility for security within Systems Engineering, with effective system security accepted and practiced as a fundamental goal of system engineering.

• Goal: Instigate self-sustaining cross-community involvement between systems engineers, security engineers, and system security standards.

• Goal: Establish exemplar profiles of system security concepts for next generation security.
Published Products

- **2008 April INSIGHT**
  Declaration of Responsibility

- **2009 Q2 INSIGHT 11 Theme Essays:**
  *The Interplay of Architecture, Security and Systems Engineering*

- **2011 Q2 INSIGHT 11 Theme Essays:**
  *Systems of Systems and Self-Organizing Security*

- **2012 Complex Systems WG Webinar:**
  Towards a Systemic Will to Live: Patterns of Self-Organizing Agile Security
  [www.parshift.com/s/Webinar-TowardsSystemicWillToLive-IncoseCxWG110427-60min.wmv](http://www.parshift.com/s/Webinar-TowardsSystemicWillToLive-IncoseCxWG110427-60min.wmv)
2013 IW Outcomes

• New Handbook section draft review:
  10.14 System Security Engineering

• New Handbook section draft review:
  3.6 Case Study: Stuxnet Marks New Threat Era
  and Cyber-Physical System Targeting

• Reviewed 13 essays for 2013-Q2 INSIGHT Theme:
  The Buck Stops Here:
  SE’s Responsibility for System Security
Planned and WIP

- Perpetual SEBoK Review and Update
- Perpetual Handbook Security Material Maintenance
- Security Responsibility in CSEP
- Next Generation Agile System-Security Patterns
- Security Standards Involvement
<table>
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<tr>
<th>Attendees</th>
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<tbody>
<tr>
<td>1. Beth Wilson</td>
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<td>2. Bob Swarz</td>
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<td>3. David Bonewell</td>
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<td>4. Don Gelosh</td>
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<td>5. Jim Armstrong</td>
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<td>6. John Snoderly</td>
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<td>7. John Thomas</td>
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<td>8. Ken Kepchar</td>
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<td>9. Kent Williams</td>
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<td>10. Lee Castellion</td>
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<td>11. Michael Pennotti</td>
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<td>12. Rick Dove</td>
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<td>13. Ryan Biondo</td>
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| 14. Bob Marchant | Sotera Defense Solutions | robert.marchant@soteradefense.com |
| 15. Bruce Hunter | Thales (AUS) | bruce.hunter@thalesgroup.com.au |
| 16. Carol Woody | SEI | cwoody@cert.org |
| 17. Craig Astrich | Deloitte & Touche | c00strich@gmail.com |
| 18. John Miller | Mitre | jfmiller@mitre.org |
| 19. Janet Geldermann | Aerospace Corp | jgeldermann@verizon.net |
| 20. Janet Orin | NSA | joren@towson.edu |
| 21. Joseph Merkling | Exelis | joseph.merkling@gmail.com |
| 22. Lori Masso | Raytheon | Lori_A_Masso@raytheon.com |
| 23. Mark Snell | Sandia | mksnell@sandia.gov |
| 24. Max Miller | Raytheon | macs.miller@gmail.com |
| 25. Paul Popick | DASD/SE | Paul.Popick.CTR@osd.mil |
| 26. Shirley Tseng | Independent | shirleytseng@earthlink.net |
Sunday: Systems Security Engineering WG

13 Essay Review Presentations for INCOSE INSIGHT July 2013
Theme:
The Buck Stops Here - Systems Engineering is Responsible for System Security

27Jan Sunday
09:00 – RD: Intros
09:30 – PP: Review HB draft submissions
09:45 – BW: Open CSEP question-development project, ideas/process info
10:00 – RS: SEBoK prelim references review and new needed document subjects
10:15 – Break
10:30 – RD: Standards and SE27 – when, why, and how should we get involved.
10:40 – RD: Essay review process intro
10:45 – Begin review of all Essays with author presentations
12:00 – Lunch
13:00 – Continue Essay reviews
15:00 – Break
15:15 – Finish Essay reviews
17:00 - Adjourn
IW13 Essays Reviewed

2. Don Gelosh – A Proposed Approach to Integrating Security into a Systems Engineering Curriculum
4. Kevin Stoffell – Security Engineering—The Integration Process
7. Janet Oren – Finally Achieving the Integration of Systems Security Engineering with Systems Engineering
9. Mark Snell and Ruth Duggan, Systems Engineering – Is Security a Feature or a System Requirement?
11. Bruce Hunter – Security as part of systems engineering V&V scope

All of the above were presented by the authors and verbally reviewed by all present, with comments made to the authors.
The order above is not the order of essay appearance in the Theme Issue.
Some do not have final release approval from employers so are not posted until final drafts with approvals are received.
Agile Systems & Systems Engineering

Chairs/co-chairs:

- Rick Dove, Stevens & PSI
- Mike Coughenour, Lockheed
- Ron Lyells, Honeywell

INCOSE Connect address: https://connect.incose.org/tb/ASSE

Number of Members: 43 (12Feb2013)

Number of People Participating in IW13: 50
Charter

• Purpose – to integrate agile concepts with SE concepts relative to designing systems that are agile and employing development processes that are agile.
• Goal – to identify and develop a body of knowledge that will inform systems engineering and related processes that require agile system capability.
• Scope – The focus of this working group 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. Application examples will include, for instance, systems engineering and management processes, quick-reaction capability, and acquisition processes, to name only a few.
Published Products

- **WG Charter**
  In Shared Documents at [https://connect.incose.org/tb/ASSE](https://connect.incose.org/tb/ASSE)

- **Handbook draft for updated section on agile systems-engineering.**

- **Handbook draft for new section on agile-systems engineering**
2013 IW Outcomes

- Coherent, consistent, committed WG established.
- Six immediate projects with committed participants.
- Two Grand fathered projects.
- Agreement that the WG should develop and employ an agile engineering process for the collaborative development of knowledge products.
Work Committed and in Process

1. Webinars – One completed so far: Agile 101 (Rick Dove).
   www.parshift.com/s/Webinar-FundamentalsOfAgileSystemsAndProcesses-Incose120919-60min.wmv

2. Handbook – First draft of two sections submitted (Rick Dove):
   9.6 (Agile Systems-Engineering) and 10.x (Agile Systems Engineering).
   www.parshift.com/s/HandbookSectionsOnAgilityFirstDrafts130102.docx

3. Agile Collaborative Development – a WG process for developing INCOSE Products and Technical Resources, with IS13 flight-test review (Rick Dove).

4. SE in Support/Part of Agile SW Development Project
   (Larri Rosser, Raytheon).

5. Survey of Theory and Science Research Underpinning Agile Concepts
   (Rich Turner, Stevens Institute of Technology).

6. Decision Guidance for Applying Agile SE to Projects in any Domain
   (Mike Coughenour, Lockheed).

   (Rick Dove).

8. Theme issue for Q2 2014 INSIGHT, theme TBD at IS13 (Rick Dove).
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<td>1</td>
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<td>4</td>
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<td>9</td>
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<td>13</td>
<td>Haroon Rashid</td>
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<td>John Clark</td>
<td>Northrop Grumman</td>
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<td>Lee Blanchard</td>
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<td>Loren Mark Walker</td>
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Agile Systems & Systems Engineering Work Shop
IW13, Jacksonville, FL
28-29 Jan 2013

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139 Establish Initial Projects (with some project setup comments)
Joe Justice and Team Wikispeed hand build a new deliverable street-legal, 100+ MPG car every 3 months, with new subsystem iterations every 7 days: 0-60 mph in 5 seconds, 149 mph top speed, with a sexy you-want-it carbon fiber sports car body. All done by a remote collaboration agile development process with volunteers working nights and weekends from many countries around the world.

They satisfy critical safety regulations, and develop innovative technologies to solve automotive issues that exceed what is available from the major manufacturers.

You don’t want the sports car body? They’ll make you one with a truck body, or a family-car body, whatever, under $20k. You want a different engine? They can swap out whatever is there for another one in the time it takes to change a tire.
Descriptive Statement:
Collaborative development is a creative process that iteratively and incrementally discovers high-value requirements and effective INCOSE-deliverable solutions. Distributed and volunteer collaborative work often has unpredictable and uncertain outcomes. This process recognizes that success occurs principally in a complicated and complex social environment, and must encourage passionate application of limited time, justifying an agile approach to collaborative knowledge development. This system’s purpose is to make the work environment and activities personally rewarding and effectively productive, by addressing the social issues of volunteered time, and ensuring that the results will be meaningful and useful. This INCOSE deliverable is an effective process that can be used and adapted for any WG collaborative development need.
ConOps: Agile Collaborative Development

- Responsive to Change
- High Quality INCOSE Deliverable
- Test-Driven Customer V&V
- Refactor Goals, Tests, WIP, Process
- Select/Describe Meaningful Projects
- Fluid PO/SM Roles
- Self-Motivated Participation
- Transparency of Progress and Activity
- Support with Collaboration Tools
- Pairing and Swarming
- Manage with Disciplined Process
- Rapid Deliverable Convergence
- Effective Distributed Collaboration
- Recognize and Celebrate Progress
- Iterate Short Interim Deliverables

Goals/Objectives
- Goals/Objectives
- Enabling Activities