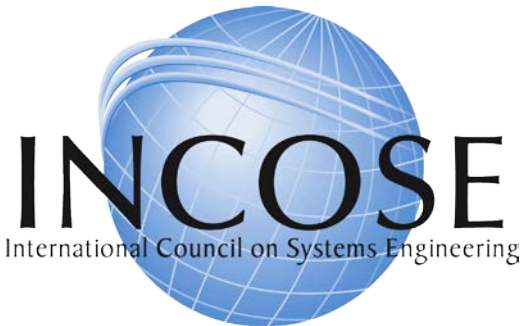
INCOSE Enchantment Chapter International Workshop 2013 Report

February 13, 2013



IW13 Working Groups

All Working Groups at: www.incose.org/about/organization/ti.aspx

Open WG & Workshops	Sat 26Jan	Sun 27Jan	Mon 28Jan	Tue 29Jan
Affordability		1300-1600	0900-1200	
Agile Systems & SE			0800-1700	0800-1200
Anti-terrorism Int			0800-1200	
Architecture			1000-1500	
Competency		0900-1200	0800-1200	
Complex Systems	1200-1600	1300-1700	0900-1200	
Infrastructure		1300-1700	1300-1700	0830-1130
Lean Systems Eng		0900-1700	0900-1700	
MBSE Workshop	1000-1700			
Motor Sports				0800-1200
Model Based Concept Eng			0900-1200	
Process Improvement			1630-1700	1330-1400
Product Lines			0800-1700	
Requirements	1030-1730	0900-1700	0800-1700	0800-1430
Space Systems			1300-1500	
Student Division				0800-1130
Systems Eng				
Systems of Systems		1300-1500	1300-1700	0900-1200
Systems Science	1000-1800	0900-1700	0800-1700	0800-1430
Systems Security Eng		1900-1700		
Training			1600-1630	1300-1330
Transportation		1530-1700	1300-1500	
Very Small & Med Ent	1300-1730	1300-1700	0800-1700	0800-1700

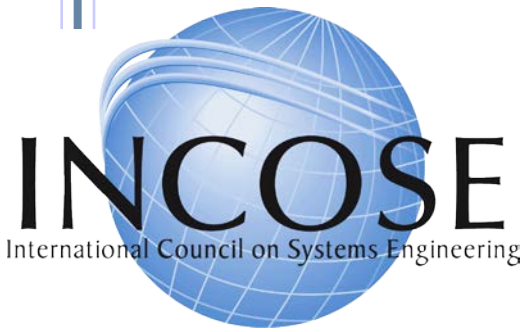
INCOSE
International Council on Systems Engineering

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
International Council on Systems Engineering

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	

INCOSE
International Council on Systems Engineering

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
- 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

INCOSE
International Council on Systems Engineering

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

INCOSE
International Council on Systems Engineering

COMPETENCY WORKING GROUP

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

INCOSE Connect address:
https://connect.incose.org/tb/knowledge/KMWG/default.aspx

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

Other Web page:
https://connect.incose.org/tb/knowledge/competency/default.aspx

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

- INCOSE SE UK Competency Framework 2010-0205 & Guide to Competency Evaluation - Framework Annex A 2010-0205
- 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

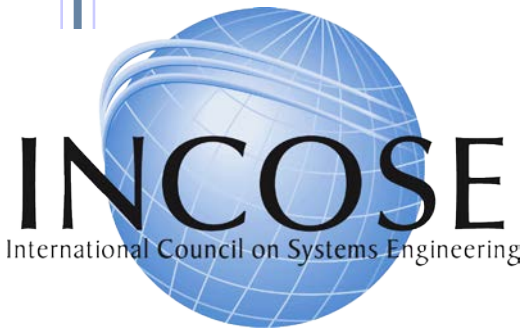
Planned Work

Today *Q2 2013*

- CWG Project Plan

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

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

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

2013 IW Outcomes

- **New Handbook section draft review:**
  10.14 System Security Engineering
  www.parshift.com/s/HandbookSectionsOnSecurityFirstDrafts121219.docx

- **New Handbook section draft review:**
  3.6 Case Study: Stuxnet Marks New Threat Era and Cyber-Physical System Targeting
  www.parshift.com/s/HandbookSectionsOnSecurityFirstDrafts121219.docx

- **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

Attendees

1.	Beth Wilson	Raytheon	beth_j_wilson@raytheon.com
2.	Bob Swarz	Mitre	rswarz@mitre.org
3.	David Bonewell	Accomac consulting	dbonewell@gmail.com
4.	Don Gelosh	Worcester Polytechnic Inst.	dsgelosh@wpi.edu
5.	Jim Armstrong	Stevens Institute of Tech.	jim.armstrong@stevens.edu
6.	John Snoderly	Defense Acquisition Univ.	john.snoderly@dau.mil
7.	John Thomas	INCOSE	john.thomas@incose.org
8.	Ken Kepchar	Eagle View Associates	eagleview2@cox.net
9.	Kent Williams	Booz Allen Hamilton	kenneth.williams@incose.org
10.	Lee Castellion	Harris Corp	lcastell@harris.com
11.	Michael Pennotti	Stevens Inst of Tech	michel.pennotti@stevens.edu
12.	Rick Dove	Stevens Inst of Tech & PSI	dove@parshift.com
13.	Ryan Biondo	WPL, Inc.	ryan.biondo@wpl.net
	----------Live Meeting Attendees ----------		
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

1. Lori Masso and Beth Wilson – Management Process for Systems and Security Engineering Integration
2. Don Gelosh – A Proposed Approach to Integrating Security into a Systems Engineering Curriculum
3. Paul Popick and Melinda Reed – Systems Engineering Requirements Specification and Analysis Challenges for Malicious Supply Chain Threats
4. Kevin Stoffell – Security Engineering—The Integration Process
5. Ken Kepchar – Information Security – Shaping or Impeding Systems in the Future?
6. John Miller – System Security Engineering Challenges in Addressing Attack Vectors Within the Supply Chain and System Development Lifecycle
7. Janet Oren – Finally Achieving the Integration of Systems Security Engineering with Systems Engineering
8. Carol Woody – Evaluation of Security Risks Using Mission Threads
9. Mark Snell and Ruth Duggan, Systems Engineering – Is Security a Feature or a System Requirement?
10. Robert Marchant – System Engineering Models Used in Security Engineering
11. Bruce Hunter – Security as part of systems engineering V&V scope
12. Rick Dove – Enabling Sustainable Agile Security Through Systems Engineering
13. Dove/Popick/Wilson – Theme Overview – The Buck Stops Here: Systems Engineering is Responsible for System Security

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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

- ***Handbook draft for updated section on agile systems-engineering.***
  www.parshift.com/s/HandbookSectionsOnAgilityFirstDrafts130102.docx

- ***Handbook draft for new section on agile-systems engineering***
  www.parshift.com/s/HandbookSectionsOnAgilityFirstDrafts130102.docx

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).
7. Reference Paper on Necessary & Sufficient Fundamentals for Systems Agility
   (Rick Dove).
8. Theme issue for Q2 2014 INSIGHT, theme TBD at IS13 (Rick Dove).

IW13 Attendance

1.	Chris Davey	Ford Motor Co.	cdavey2@gmail.com
2.	Chul Whan Kim	KNDU (KOR)	cwkim3478@hanmail.net
3.	Curt Hibbs	Boeing	curtis.a.hibbs@boeing.com
4.	Dave Fadeley	Henggeler Consulting	dbfadeley@verizon.net
5.	David Bonewell	Accomac Consulting	dbonewell@gmail.com
6.	David Lempia	Rockwell Collins	dllempia@rockwellcollins.com
7.	Dieter Scheithauer	EADS Deutschland (DEU)	dieter.scheithauer@gfse.de
8.	Ed Moshinsky	Lockheed Martin	Edward.a.moshinsky@lmco.com
9.	Erik Herzog	SAAB (SWE)	erik.herzog@saabgroup.com
10.	Francis Thompson	Northrop Grumman	francis.thompson@ngc.com
11.	Gundars Osvalds	Praxis Engineering	gosvalds@praxiseng.com
12.	Hans-Peter de Koning	European Space Agency (NLD)	hans-peter.de.koning@esa.int
13.	Haroon Rashid	Phoenix Contact	hrashid@phoenixcon.com
14.	Herman Migliore	Portland State Univ.	herm@cecs.pdx.edu
15.	Hillary Sillitto	Thales (GBR)	hillary.sillitto@blueyonder.co.uk
16.	Jim Armstrong	Stevens Inst. of Tech.	jim.armstrong@stevens.edu
17.	Jimmie McEver	Johns Hopkins U/APL	jimmie.mcever@jhuapl.edu
18.	John Clark	Northrop Grumman	john.clark@ngc.com
19.	Jon Chard	IBM (GBR)	jon.chard@uk.ibm.com
20.	Karl Koenig	Yoh	karl.konig@incose.org
21.	Ken Crowder	Crowder & Associates	kvcrowder@aol.com
22.	Ken Ptack	(self)	ken.ptack@incose.org
23.	Larri Rosser	Raytheon	larri_rosser@raytheon.com
24.	Lee Blanchard	Deep Blue Tech (AUS)	lee.blanchard@deepbluetech.com.au
25.	Loren Mark Walker	Booze Allen	walker_loren@bah.com
26.	Mike Coughenour	Lockheed Martin	mike.coughenour@lmco.com
27.	Patrick Pleczon	EADS Astrium (FRA)	patrick.pleczon@astrium.eads.net
28.	Paul Frenz	General Dynamics	paul.frenz@GD-AIS.com
29.	Paul Pearce	Deep Blue Tech (AUS)	paul.pearce@deepbluetech.com.au
30.	Ralph LaBarge	Johns Hopkins U/APL	ralph.labarge@jhuapl.edu
31.	Richard Turner	Stevens Inst of Tech	rturner@stevens.edu
32.	Rick Dove	Stevens Inst. of Tech & PSI	dove@parshift.com
33.	Roger Burkhart	John Deere	burkhartrogerm@johndeere.com
34.	Ron Lyells	Honeywell	ron.lyells@honeywell.com
35.	Ron Williamson	Raytheon	ron_c_williamson@raytheon.com
36.	Sarah Sheard	SEI	sarah.sheard@gmail.com
37.	Scott Workinger	Workinger Consulting	scottworkinger@gmail.com
38.	Steve Van Horn	Honeywell	stephan.vanhorn@honeywell.com
39.	Warren Smith	Vitech	wsmith@vitechcorp.com
40.	Werner Altmann	EADS (EUR)	werner.altmann@cassidian.com
41.	Wesley Hewett	Lockheed Martin	wesley.hewett@lmco.com
42.	Willie Wilson	PWR	willie.wilson@pwr.utc.com
43.	Bo Oppenheim	LMU	boppenheim@lmu.edu
	---------- Live Meeting Attendees ----------		
44.	Bob Epps	Lockheed	bob.epps@lmco.com
45.	Drew Saur	DxID	dsaur@dx-id.com
46.	Mike Kennedy	PNNL	mkennedy01@charter.net
47.	Neil Shirk	Lockheed	neil.k.shirk@lmco.com
48.	Paul Popick	DASD/SE	Paul.Popick.CTR@osd.mil
49.	Phyllis Marbach	Boeing	phyllis.r.marbach@boeing.com

Complete Synopsis at www.parshift.com/s/130128IW13-AgileWorkshopSynopsis.pdf

Agile Systems & Systems Engineering Work Shop
IW13, Jacksonville, FL
28-29 Jan 2013

Contents

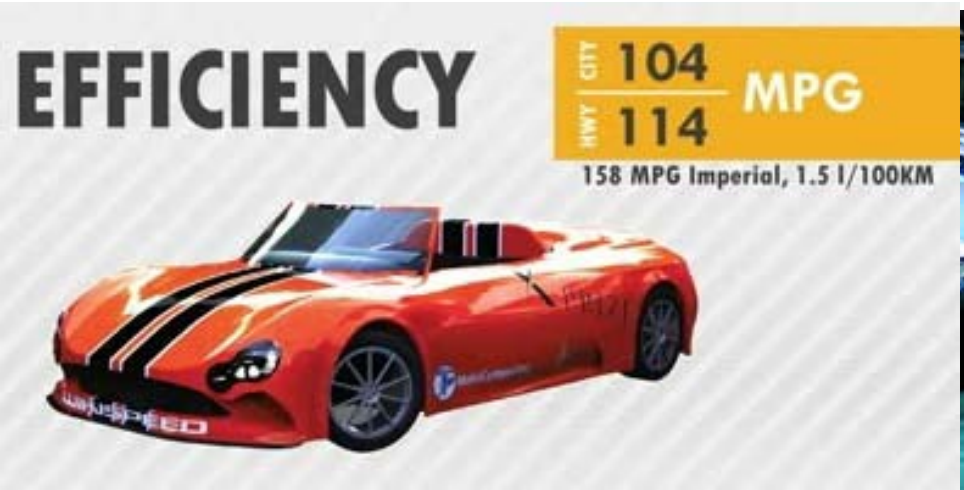
Team WikiSpeed - Agile Collaborative Development Inspiration

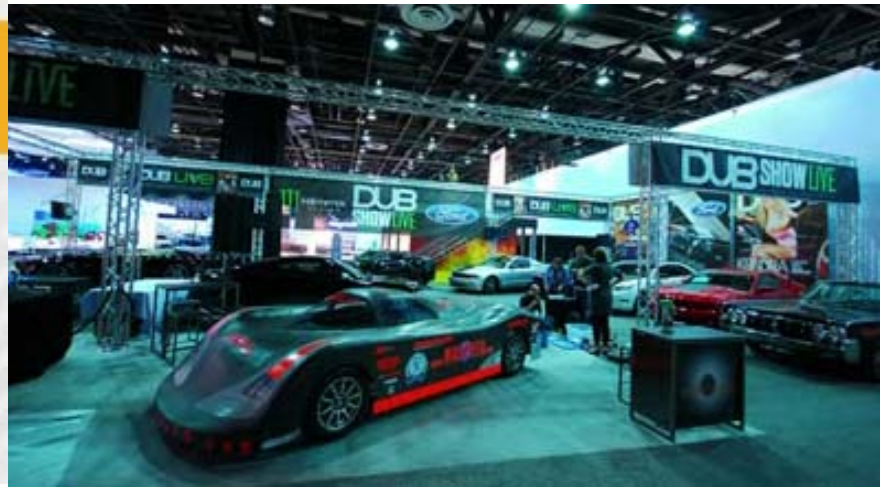
November 2011• TEDx Rainier Seattle, Washington

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.





Video and audio at: www.youtube.com/watch?v=x8jdx-lf2Dw

Project Title: Agile Collaborative Development

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