FuSE: Methodologies Introduction & Feedback

Saturday 28 Jan 2023, 14:00-15:00 PST & 15:30-17:00 PST

Chris Hoffman
FuSE Methodologies Lead

Agenda.

- Introduction (10 min)
- Upcoming activities (10 min)
- Initial feedback (30 min)
- Opt-in participation (10 min)

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FuSE Program Mission Statement

FuSE refines and evolves the SE Vision 2035 across competencies, research, tools & environment, practices, and applications.

FuSE identifies critical gaps towards the vision realization and initiates & supports relevant actions

FuSE fosters involvement and collaboration within and outside of INCOSE.

FuSE educates, shares success, and expands.

FuSE Program Charter

Vision Statement

Inspire the global community to realize the Vision of SE

Mission

Engage and inspire the systems community for sustaining the future of systems engineering in realizing the SE Vision 2035

FuSE **refines and evolves the SE Vision 2035** across competencies, research, tools & environment, practices, and applications.

FuSE **identifies critical gaps** towards the vision realizations and **initiates & supports relevant actions**

FuSE **fosters involvement and collaboration** within and outside of INCOSE.

FuSE **educates, shares success, and expands**.

Success Factors

Inclusive: From an exclusive club to inclusive initiative

Attractive: Engage members and non-members

Implementation: The degree to which the road map is realized

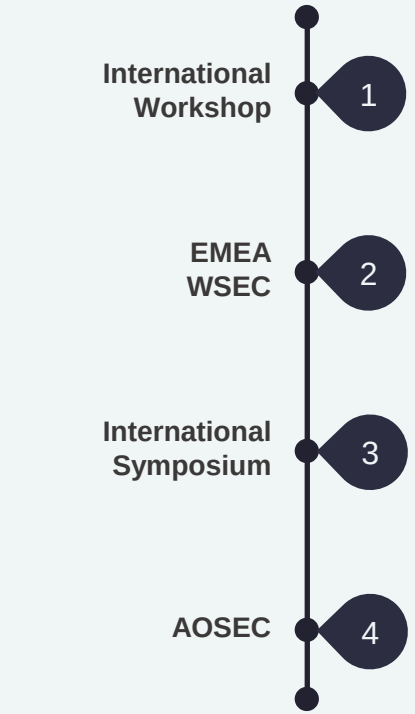
Fresh: Relevant and updated road map and context

Close to application: Involvement of companies and domains

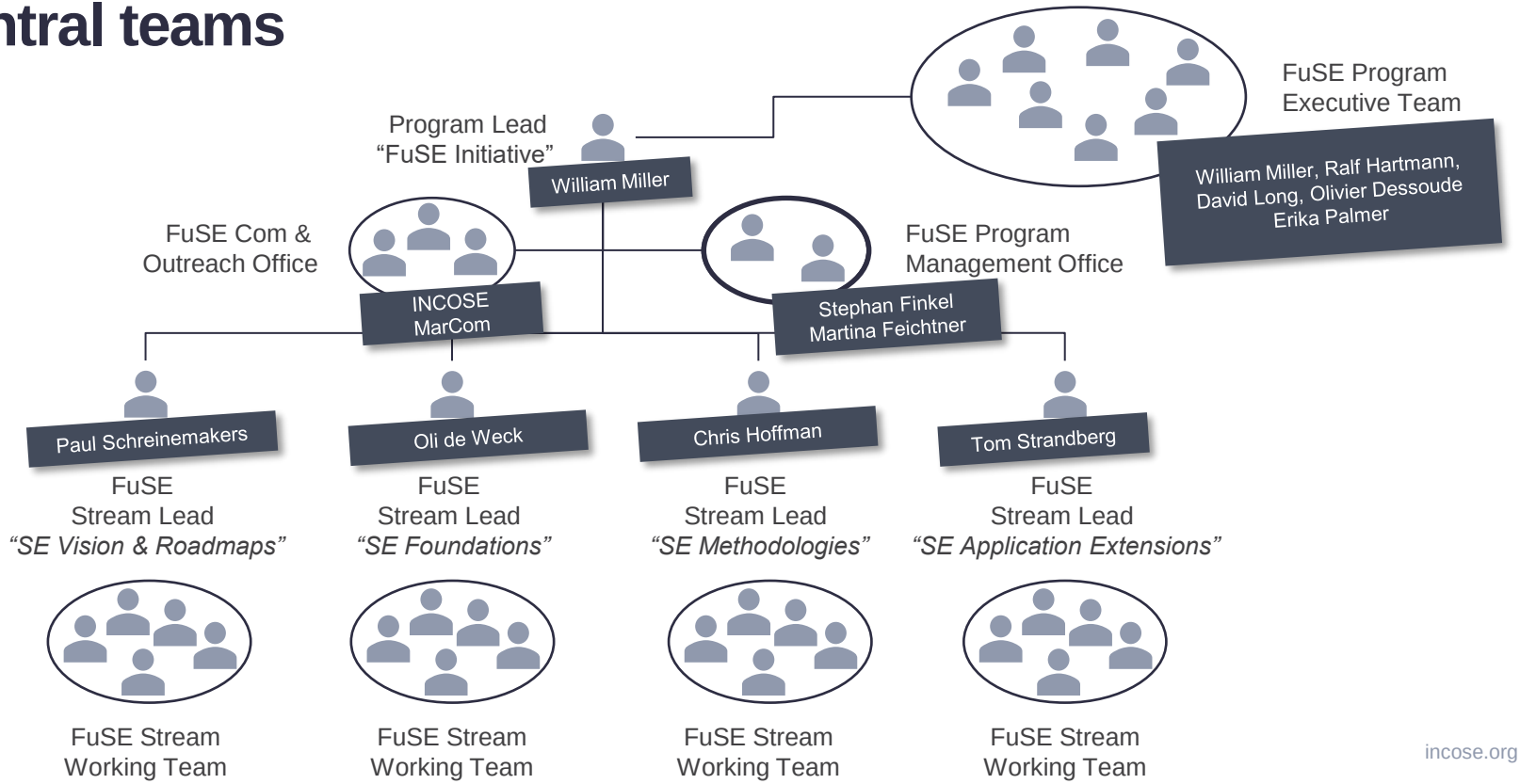
Global promotion: Attractive global digital marketing

Passion: To get the working group proud to be part of it

2023 Milestones



The FuSE program is organized in 4 streams with additional central teams



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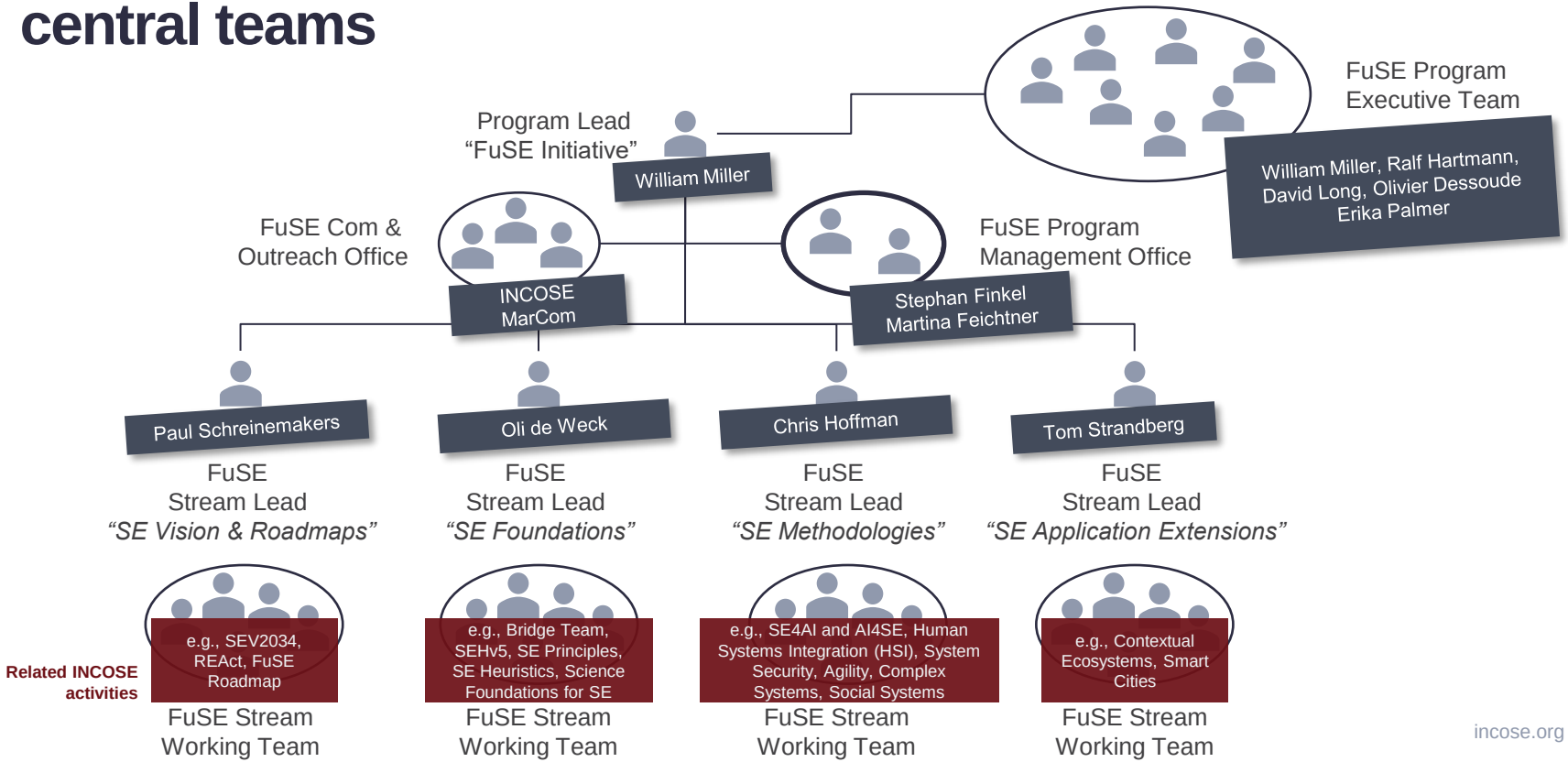

The FuSE program is organized in 4 streams

Vision & Roadmaps

The Systems Engineering Vision and Roadmaps stream continuously refines, evolves, and complements the SE Vision 2035. Furthermore, we create an integrated set of roadmaps across the four interrelated FuSE streams. The concurrently executed streams will guide and influence each other.
The IW 2023 goal is to frame the structural relationships and value models for the roadmaps' creation.

Foun-dations

In order to yield predictable results Systems Engineering methods and tools need to be built on foundational principles that are provably true and based on laws and axioms that can be tested for falsifiability similar to those in other well-established disciplines of science and engineering like Chemical Engineering, Electrical Engineering or Biological Engineering. This stream will formulate a set of candidates underlying Laws of Systemics, the science at the foundation of Systems Engineering.
The IW 2023 goal is to assess the foundational value of the "Conservation of System Complexity," which parallels the Conservation of Energy in the First Law of Thermodynamics and the Conservation of Mass in continuum mechanics.

Metho-dologies

The SE Methodologies stream guides the advancement of practices, methods, and tools for the effective engineering of systems to be fit for purpose in the presence of varying scale, interrelatedness, complexity, non-determinism, and emerging technology innovations such as AI and agility.
The IW 2023 goal is to assess the adequacy of current INCOSE technical products and ongoing FuSE projects in this stream and identify gaps.

Application Extensions

The SE Application Extensions stream integrates social sciences, soft systems, as well as initiatives such as Smart Cities to address grand challenges to meet human and societal needs as stated in the United Nations Sustainable Development Goals.
The IW 2023 goal is to frame the value model to justify systems engineering's role at the policy table for these grand challenges.

7 success factors for the FuSE program

FuSE Methodologies Stream
Partial Baseline

Products (various stages):
- DE Measurement Framework,
- SE Principles,
- Model Portfolio Management Guide,
- Digital Systems Engineering Process Model,
- Human Systems Integration Reference,
- Agile SE Decision Guidance Method,
- SE-AI Primer,
- SE Handbook 5th Edition

Related working groups & initiatives (partial list):
- Agile Systems and Systems Engineering
- Artificial Intelligence Systems
- Competency
- Complex Systems
- Configuration management
- Digital Engineering Information Exchange
- Enterprise Systems
- Integration, Verification & Validation
- Knowledge Management
- Lean Systems Engineering
- MBSE Initiative
- MBSE Patterns
- NAFEMS-INCOSE Systems Modelling & Simulation
- Product Line Engineering
- Professional Competencies & Soft Skills
- SE Tools Database
- Small Business Systems Engineering
- Social Systems
- System of Systems
- Systems and Software Interface
- Systems Security Engineering
- Tools Integration & Model Lifecycle Management
- Value Proposition Initiative
- SE Handbook Team

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FuSE Targeted Events in 2023

Where to engage

FuSE at IW 2023 overview

	SAT	SUN	MON	TUE
08:00		FuSE Stream Working Sessions 4 rooms (in person only)	FuSE Stream Working Sessions 4 rooms (in person only)	
08:30				Wrap-up FuSE (for participants)
09:00				
09:30	Break			
10:00	FuSE Kick-off	Break		
10:30				
11:00				Wrap-up FuSE
11:30				
12:00	Lunch			
12:30				
13:00				
13:30				
14:00	FuSE Stream Working Session 4 rooms (in person only)			
14:30		B		
15:00	Break			
15:30	FuSE Steam Working Session 4 rooms (in person only)			
16:00				
16:30				

Rooms for FuSE Stream Sessions:

Vision & Roadmaps Stream: Ballroom

Foundations Stream: Salon A

Methodologies Stream: Salon D

Application Extensions Stream: Salon C

Systems Engineering Methodologies Stream

Chris Hoffman
Stream Lead “SE Methodologies”

e christopher.hoffman@incose.net

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The IW 2023 goal is to assess the adequacy of current INCOSE technical products and ongoing FuSE projects in this stream and identify gaps.

	SAT	SUN	MON	TUE
08:00		Elaborate disruptors: 1. Scale & Interrelatedness 2. Complexity, Chaotic, Complicated, Clear 3. A.I. for SE, other technologies 4. TBD by participants	Clarify problems / opportunities: 1. Digital ecosystem 2. Software as the capability driver 3. Continuous iterative model development 4. Evolution in learning systems	
08:30				Wrap-up FuSE (for participants)
09:00				
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11:00				Wrap-up FuSE
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12:00	Lunch			
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14:00	Introduction, Activities for 2023, Initial feedback, Opt-in participation			
14:30		Break		
15:00	Break			
15:30	Introduction, Activities for 2023, Initial feedback, Opt-in participation			
16:00				
16:30				

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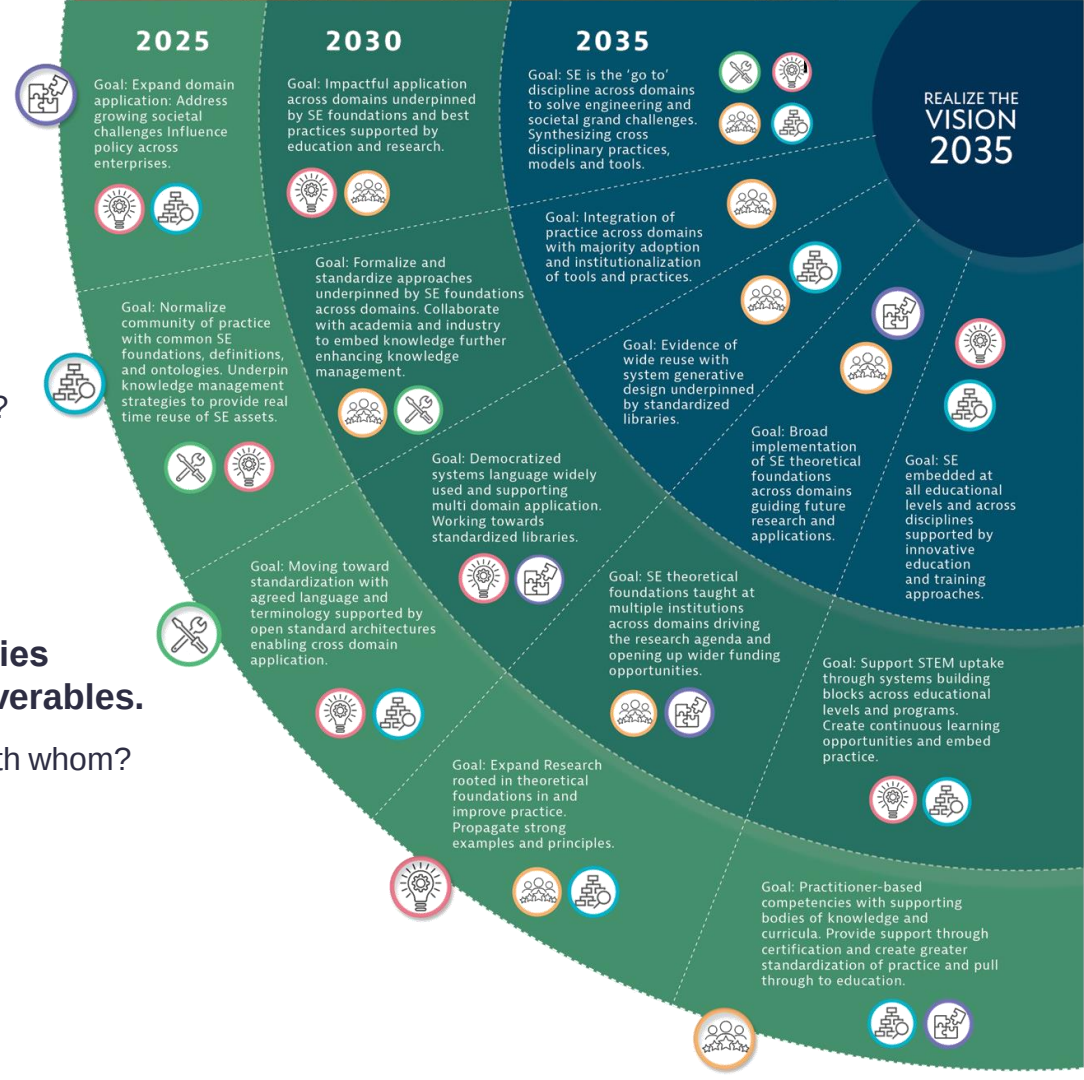
SE Vision 2035 roadmap

As focused on the Methodologies Stream

- **Feedback on the stream's scope.**
  - What questions do you have?
  - What measures of success would you propose?
  - What risks do you see?
  - What mitigations do you propose?

- **Feedback on the stream's planned activities in order to accomplish our targets & deliverables.**
  - What other activities should be considered? With whom?
  - What if any priority is there to the activities?



Break-out logistics

Use sticky notes, pens, markers, flip-chart paper…reference SE Vision 2035, your WG's plans, company input, …

4 min for each question

Feedback on the stream's scope.

What questions do you have?

What measures of success would you propose?

What risks do you see?

What mitigations do you propose?

Feedback on the stream's planned activities

What other activities should be considered? (and with whom?)

What if any priority is there to the activities?

Parking Lot

Off-topic content / Save for later.

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Going forward

How to participate?

- Join our SE Methodologies Meetings
- Visit the targeted events 2023
- Join FuSE Yammer Community
- Visit our Website www.incose.org/fuse
- Propose new or updated products, activities, services, initiatives… - Share with Chris Hoffman (christopher.hoffman@incose.net)
- Engage with WGs & Initiatives that are related to FuSE Methodologies goals with their activities & products

SE Methodologies Meetings

Frequency: tbd – e.g., monthly, likely Friday late morning EST

Content:

- Monitoring & Control **(progress)**
- Health check of contributors **(progress)**
- Topics that streams are currently working on **(information)**
- Peer reviews of in-process work (e.g., TPP driven content) **(working)**
- program working meeting on programmatic aspects, like planning updates, replanning, etc. **(working)**

Let's connect.

Or find us on
www.incose.org/fuse

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Return to INCOSE Home

FUTURE OF SYSTEMS ENGINEERING (FUSE)

Vision: Inspire the global community to realize the SE Vision

Home / About Systems Engineering / Future of Systems Engineering - FuSE

The FuSE Program is organized in 4 streams.

Vision & Roadmaps

Foundations

Methodologies

Application Extensions