Objectives

The vision and role of the FuSE program to reach the INCOSE VISION 2035 is clearly set out
Key factors to make the FuSE program successful are defined
*The team is aware of possible risks for the FuSE program and has defined measures to mitigate these risks*
Agenda

1. Key PMO Topics
   - Vision Statement & Role
     - The vision of the FuSE Program is defined and the role of the team program is clarified
   - Success Factors
     - Success Factors of the FuSE Program and expectations towards FuSE are identified
   - Program Charter
     - The program charter is described
   - Risk Assessment
     - High level risks for program success are identified and mitigation measures described

2. Break (30')
Check-in (miro)
Panda-o-meter: how are you feeling today?
Agenda

120'

Key PMO Topics
- Organization - Stream Teams
- IW Concept
- Stream Description

60'

Vision Statement & Role
The vision of the FuSE Program is defined and the role of the team program is clarified

60'

Success Factors
Success Factors of the FuSE Program and expectations towards FuSE are identified

30'

Optional: Program Charter
The program charter is described

30'

Optional: Risk Assessment
High level risks for program success are identified and mitigation measures described

30' Break
The deliverables are mainly* created in dedicated workshops:

**Kick-off & Calibration**
- Shared target picture and success factors including awareness on program risks
- Dates: 11.10 / 20.10

**Baselining & Harvesting**
- Insight on status quo and adapted set of best PMO practices (within INCOSE and other industries)
- Dates: 26.10 / 9.11
- Proposed update: 9.11 / 23.11

**Communication & Outreach**
- Knowledge on affected / interested target groups and defined measures for communication & outreach
- 1x 0,5 d
- Proposal: xx.xx
- Alignment with Honor

**Masterplan**
- Defined FuSE roadmap and short-term detailed program plan
- 1x 5 d (f2f)
- Proposal: Week of 05.12

* Additional alignment and deep dive meetings as needed
** Shift of focus if required

Key: Black: fixed | Yellow: to be clarified with missing stream leads | Red: yet to be scheduled | Green: updated
Stream Teams
The FuSE program is organized in 4 streams with additional central teams.
The goal is to identify first team members for the FuSE streams

Possible way to approach:

- Think of candidates that are already in the INCOSE community
- Benefit from the connection INCOSE members have to other organizations e.g., IEEE
- Have a look at presenters from prior IS to identify thought leaders that can be involved in FuSE
- Get people to apply to be part of FuSE

Also consider:

- Story telling
- Application forms

First feedback by 26.10.22 @ martina.feichtner@incose.net
Update FuSE @ IW 2023
Agreed agenda for FuSE @ IW 2023

<table>
<thead>
<tr>
<th></th>
<th>SAT</th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:30</td>
<td></td>
<td>FuSE Working Sessions (in person only)</td>
<td>FuSE Working Sessions (in person only)</td>
<td>Wrap-up FuSE</td>
</tr>
<tr>
<td>09:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td>FuSE Kick-off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td></td>
<td></td>
<td></td>
<td>Lunch</td>
</tr>
<tr>
<td>12:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td></td>
<td>FuSE Interactive working session (4 rooms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:30</td>
<td></td>
<td></td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>15:00</td>
<td></td>
<td></td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>15:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:00</td>
<td></td>
<td>FuSE Interactive working session (4 rooms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is anticipated to have 4 rooms for each session (1 room for every stream) and be able to form groups within these sessions / rooms. 4 rooms with each space for ~4 groups.

Additional room for the FuSE team to pre and post process working sessions / Team internal meetings on SUN / MON afternoon.
IW Workshop Concept
Workshop documentation

Agreed agenda for EuSE @ IW 2023

Detailed concept for FUSE Workshop Sessions

Detailed concept for FUSE Workshops (for participants)

Break

Lunch

Break
**Detailed concept for FuSE Kick-off**

- **Objective / Outcome**: Generate awareness on FuSE Program, share status quo, motivate community to be part of FuSE Working Sessions
- **Method**: Presentation (with interactive parts)
  - Interactive icebreaker (e.g., wordcloud) (tbd – 10 min)
  - Introduction and Setup of FuSE (tbd – 15 min)
  - Status quo and current results + interactive response of Stream 1 (Stream Lead – 5 min)
  - Status quo and current results + interactive response of Stream 2 (Stream Lead – 5 min)
  - Status quo and current results + interactive response of Stream 3 (Stream Lead – 5 min)
  - Status quo and current results + interactive response of Stream 4 (Stream Lead – 5 min)
  - Goals and agenda for FuSE @ IW 2023 (tbd – 5 min)
  - Q&A (tbd – 10 min)
- **Facilitators**: FuSE Lead and Stream Leads
- **Material**: Presentation, MentiMeter
- **Participants**: Open; hybrid
- **Infrastructure**: Plenary + virtual meeting
- **Pro**: -
- **Promotion**: -

---

**Feedback**

- invite people to be part of FuSE: survey before IW / small form --> bring in your ideas --> start in waves - WG members - people that left INCOSE
- Also set the stage of the se vision 35

---

Concept will be updated based on your feedback
Detailed concept for FuSE Interactive working session

Feedback
- We won’t be able to have this many facilitators
- Make sure that online participation is guaranteed
- For hybrid we will need a tech person online and in the physical room
- Applications extension would need to reach out beyond Torrance
- Will presentation of topics follow part 4 of the vision?
- How to select the participants (limited number of participation)
- Offline groups vs FF groups

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>World Cafe</th>
<th>Interactive Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective / Outcome</td>
<td>Shape and discuss key topics of FuSE stream</td>
<td>Provide your specific input to key questions of the Future of Systems Engineering</td>
</tr>
<tr>
<td>Method</td>
<td>World Café</td>
<td>Presentation of results with integrated live survey questions</td>
</tr>
<tr>
<td>Content / Agenda</td>
<td>Present topic (~5 min) Discuss topic (~10 min) Switch</td>
<td>Presentation (1 h)</td>
</tr>
<tr>
<td>Facilitators</td>
<td>12-16 facilitators (1 moderator for every café, 3-4 cafes for every streams)</td>
<td>4 facilitators (1 presenter for every stream)</td>
</tr>
<tr>
<td>Material</td>
<td>World café poster, pens</td>
<td>Presentation, Mentimeter</td>
</tr>
<tr>
<td>Participants</td>
<td>~80 (~20 for each stream), onsite only</td>
<td>Open, hybrid</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>4 rooms (that can be split in 4 individual rooms)</td>
<td>4 rooms + 4 virtual meetings</td>
</tr>
<tr>
<td>Promotion</td>
<td>There are some crossroads on the way towards the Vision 2035. Get involved and discuss key questions with us to take the right directions.</td>
<td>What is FuSE all about and are we on the right track? Come to our presentation, learn more about FuSE, and provide your valuable input in the integrated live survey.</td>
</tr>
</tbody>
</table>

Concept will be updated based on your feedback
Detailed concept for FuSE Working Sessions

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Open space</th>
<th>tbd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective / Outcome</td>
<td>Elaborate key content for the FuSE Streams</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>Open space</td>
<td></td>
</tr>
<tr>
<td>Content / Agenda</td>
<td>Presentation of predefined topics (~ 20min) Split up and work on topics (~ 30 min) Present key takeaways (~10 min)</td>
<td></td>
</tr>
<tr>
<td>Facilitators</td>
<td>12-16 facilitators (1 moderator for every space; 3-4 spaces for every streams)</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Brownpaper, pens, post-its</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>~60 (~20 for each stream), onsite only</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>4 rooms (that can be split in 4 individual rooms)</td>
<td></td>
</tr>
<tr>
<td>Pro</td>
<td>Intensively work on specific topics with a selected group of ppl.</td>
<td></td>
</tr>
<tr>
<td>Promotion</td>
<td>Help us reach the INCOSE SE Vision 2035. Roll-up your sleeves and work with us on key questions to shape the future of Systems Engineering</td>
<td></td>
</tr>
</tbody>
</table>

Feedback

- We won't be able to have this many facilitators
- have online only break out teams
- Add time slots for FuSE team daily wrap-up sessions

Concept will be updated based on your feedback
Detailed concept for Wrap-up FuSE (for participants) – Workshop documentation

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>“Hot seat for 7 min”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective / Outcome</td>
<td>Share stream results with FuSE Team and derive next steps + synchronization points</td>
</tr>
<tr>
<td>Method</td>
<td>-</td>
</tr>
<tr>
<td>Content / Agenda</td>
<td>Presentation of results within each stream (40 min)</td>
</tr>
<tr>
<td></td>
<td>Identify synchronization points and next steps (20 min)</td>
</tr>
<tr>
<td>Facilitators</td>
<td>4 (1 per stream)</td>
</tr>
<tr>
<td>Material</td>
<td>Documentation of working sessions</td>
</tr>
<tr>
<td>Participants</td>
<td>FuSE Team</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Room with projector</td>
</tr>
<tr>
<td>Pro</td>
<td>-</td>
</tr>
<tr>
<td>Promotion</td>
<td>-</td>
</tr>
</tbody>
</table>

**Feedback**

- Important that onsite participants feel that they bring something home that they would not be able to get online

Concept will be updated based on your feedback
Detailed concept for Wrap-up FuSE – Workshop documentation

**Feedback**
- To be presented in line with the IW Quad charts

---

### Detailed concept for Wrap-up FuSE

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective / Outcome</td>
<td>Share key takeaways from workshop and next steps, invite to get involved.</td>
</tr>
<tr>
<td>Method</td>
<td>Presentation</td>
</tr>
</tbody>
</table>
| Content / Agenda | • Optional Recap (e.g., Stats / Fact Sheet on FuSE & IW) (tbd – 5 min)  
• Key takeaways and next steps (Bill – 15 min)  
• Involve yourself (Mentimeter) and how to get involved (tbd – 10 min) |
| Facilitators | FuSE Lead and Stem Leads |
| Material | Presentation, Mentimeter |
| Participants | Open: hybrid |
| Infrastructure | Plenary + virtual meeting |
| Pro | - |
| Promotion | - |
The goal is to agree on a common working session concept for FuSE @ IW 23

Possible way to approach:

- Having a look at the workshop concepts, does those sound good for you?
- What question might be interesting to ask at the IW for your stream? Ether in the plenary session or in the interactive working session?
- What 3-4 topics (e.g., AI, digital transformation, smart cities, MBSE, …) might be interesting to discuss at the IW for your stream?
- What 3-4 topics (e.g., AI, digital transformation, smart cities, MBSE, …) might be interesting to work on at the IW for your stream?

Also consider:

- How many facilitators + supporters can FuSE provide?
- How to efficiently interact in a hybrid way?
- How might the community respond a hybrid approach?
- How can collaborative sponsors be attracted to the working sessions?

First feedback by 26.10.22 @ martina.feichtner@incose.net
Description of FuSE Streams
The FuSE Program is organized in 4 streams

Recap (Kick-off Workshop)

<table>
<thead>
<tr>
<th></th>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundations</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Refine SE Vision 2035 and detail the roadmap as defined in the vision</td>
<td>Build up on current INCOSE Foundations Stream projects</td>
<td>Build on current Methodology Stream projects and evaluate current tools / environments / procedures / methods</td>
<td>Build on current Application Extension Stream projects and expand the application of systems engineering</td>
</tr>
<tr>
<td>What &amp; Why?</td>
<td>• Pave the way to reach the vision</td>
<td>• Leverage existing working groups and projects</td>
<td>• To what degree are current SE methods fit for purpose</td>
<td>• Extend reach into more organizations</td>
</tr>
<tr>
<td></td>
<td>• Have a measurable foundation to assess if we are on track with the vision</td>
<td>• Identify gaps in the INCOSE project landscape that we need to reach the vision</td>
<td>• What do we need to make SE methods fit for purpose</td>
<td>• Engage in a more inherent manner</td>
</tr>
<tr>
<td></td>
<td>• Align and commit to the vision within the INCOSE community</td>
<td></td>
<td>• Make / adapt methods fit for purpose</td>
<td>• Branch out to sociotechnical systems --&gt; SE needs to be on the policy table</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• “Create a better world through systems engineering”</td>
</tr>
</tbody>
</table>
### FuSE Stream Description for IW2023

Social Media (Proposal Bill)

<table>
<thead>
<tr>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundations</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>The SE Vision and Roadmap stream drives implementation, integration, assessment, and corrective actions of the FuSE project streams. The IW 2023 goal is to frame the structural relationships, workflows, cadence, and value models to realize the Systems Engineering Vision 2035.</td>
<td>The SE Foundations stream underpins SE with mathematics, uncertainty quantification, and (physical, social, systems) sciences. The IW 2023 goal is to assess the adequacy of current foundations and ongoing FuSE projects and identify gaps to realize the vision.</td>
<td>The SE Methodology stream advances practices, methods, and tools for engineering systems to be fit for purpose. The IW 2023 goal is to assess the adequacy of the baseline of current INCOSE technical products, ongoing FuSE projects, and identify gaps to realize the vision.</td>
<td>The SE Application Extension stream integrates social sciences and soft systems into systems engineering practice to address grand challenges. The IW 2023 goal is to frame the value model to justify systems engineering having a role at the policy table for these grand challenges.</td>
</tr>
</tbody>
</table>

Description will be adapted based on your feedback.
# FuSE Stream Description for IW2023 eNote (Proposal Bill)

<table>
<thead>
<tr>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundations</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Systems Engineering Vision and Roadmap stream drives implementation, integration, assessment, and corrective actions of the Foundations, Methodology, and Application Extensions streams. The streams are interrelated and concurrently guide and influence each other. The IW 2023 goal is to frame the structural relationships, workflows, cadence, and value models to realize the vision.</td>
<td>The SE Foundations stream rigorously underpins the engineering of systems at the scale, interrelatedness, complexity, non-determinism, and emerging technology innovations based on mathematics, uncertainty quantification, and (physical, social, systems) sciences. The IW 2023 goal is to assess the adequacy of current foundations and ongoing FuSE projects and identify gaps to realize the vision.</td>
<td>The SE Methodology stream advances practices, methods, and tools for engineering systems to be fit for purpose at the scale, interrelatedness, complexity, non-determinism, and emerging technology innovations. The IW 2023 goal is to assess the adequacy of the baseline of current INCOSE technical products, ongoing FuSE projects in this stream and identify gaps to realize the vision.</td>
<td>The SE Application Extension stream integrates social sciences and soft systems into systems engineering practice to address grand challenges to meet human and societal needs such as the United Nations Sustainable Development Goals and the Smart Cities initiative. The IW 2023 goal is to frame the value model to justify systems engineering’s role at the policy table for these grand challenges.</td>
</tr>
</tbody>
</table>
**FuSE Stream Description for IW2023**

**Workshop documentation**

---

### FuSE Stream Description for IW2023

#### Social Media

<table>
<thead>
<tr>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundations</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>The SE Vision and Roadmap stream drives implementation, integration, assessment, and corrective actions of the FuSE project streams. The IW 2023 goal is to frame the structural relationships, workflows, cadence, and value models to realize the Systems Engineering Vision 2035.</td>
<td>The SE Foundations stream underpins SE with mathematics, uncertainty quantification, and (physical, social, systems) sciences. The IW 2032 goal is to assess the adequacy of current foundations and ongoing FuSE projects and identify gaps to realize the vision.</td>
<td>The SE Methodology stream advances practices, methods, and tools for engineering systems to be fit for purpose. The IW 2032 goal is to assess the adequacy of the baseline of current INCOSE technical products, ongoing FuSE projects, and identify gaps to realize the vision.</td>
<td>The SE Application Extension stream integrates social sciences and soft systems into systems engineering practice to address grand challenges. The IW 2032 goal is to frame the value model to justify systems engineering having a role at the policy table for these grand challenges.</td>
</tr>
</tbody>
</table>

---

### FuSE Stream Description for IW2023

#### eNote

<table>
<thead>
<tr>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundations</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Systems Engineering Vision and Roadmap stream drives implementation, integration, assessment, and corrective actions of the Foundations, Methodology, and Application Extensions streams. The streams are interconnected and concurrently guide and influence each other. The IW 2032 goal is to frame the structural relationships, workflows, cadence, and value models to realize the vision.</td>
<td>The SE Foundations stream rigorously underpins the engineering of systems at the scale, interrelatedness, complexity, non-determinism, and emerging technology innovations based on mathematics, uncertainty quantification, and (physical, social, systems) sciences. The IW 2032 goal is to assess the adequacy of current foundations and ongoing FuSE projects and identify gaps to realize the vision.</td>
<td>The SE Methodology stream advances practices, methods, and tools for engineering systems to be fit for purpose at the scale, interrelatedness, complexity, non-determinism, and emerging technology innovations. The IW 2032 goal is to frame the value model to justify systems engineering's role at the policy table for these grand challenges.</td>
<td>The SE Application Extension stream integrates social sciences and soft systems into systems engineering practice to address grand challenges to meet human and societal needs such as the United Nations Sustainable Development Goals and the Smart Cities initiative. The IW 2032 goal is to frame the value model to justify systems engineering having a role at the policy table for these grand challenges.</td>
</tr>
</tbody>
</table>

---

**Feedback**

- [ ] Improve the clarity of the descriptions
- [ ] Add more examples and case studies
The FuSE Program is organized in 4 streams:

**Feedback**

<table>
<thead>
<tr>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundations</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
</table>
| • The vision is a “living” document  
  • Strong focus on integrative nature of the streams | • - | • The future of SE is digital and model based  
  • In the description there are currently no digital topics included | • Especially the application extension stream is supposed to be more inviting  
  • Stronger link to SE Vision 2023 – Chapter 4: more organizations use SE and SE is more applicable to societal challenges |
The goal is to formulate the FuSE stream description for communication

Possible way to approach:
- Integrate feedback into the stream descriptions (Bill)
- Create a description for the brochure (Bill, Olivier)
- Share update with team (Bill)
- Additional iterations with stream leads (Team)

Also consider:
- Brochure example (provided by Olivier)
Agenda

120’
Key PMO Topics
- Organization - Stream Teams
- IW Concept
- Stream Description

60’
Vision Statement & Role
The vision of the FuSE Program is defined and the role of the tea program is clarified

60’
Success Factors
Success Factors of the FuSE Program and expectations towards FuSE are identified

30’
Optional: Program Charter
The program charter is described

30’
Optional: Risk Assessment
High level risks for program success are identified and mitigation measures described

30’ Break
FuSE Program Vision - Recap
What is the vision for the FuSE program?

Documentation of working session
Brainstorming on SE cornerstones: Key takeaways from Kick-off workshop

- Multi-disciplinarity
- Trans-disciplinarity
- Focus on the business value enabled by the process (as opposed to a process-centric mindset)
- really good SE’s are also good leaders
- lead with an Integration mindset
- Respect the inputs of SMEs (don’t feel like we are the SMEs for everything)
- Systems thinking AND acting
- Embracing diverse stakeholder needs and perspectives
- Explore the solution space - solving the problem right
- Understanding the real needs - solving the right problem
- Traceability
- SoS - dealing with interfaces will be crucial
- focus on the architectural concerns: security, resilience, etc.
- life cycle consideration
- Systems Engineering addresses changing stakeholder needs over the system life cycle.
- Focus on outcomes in the engineering of systems
- Fit for purpose approaches (moving beyond the complicated to the complex)
- SE rigor will remain important forever
- Conscious trade-offs, Optimizing the subsystems most likely suboptimizes the system
- Embrace the holism of systems (vs product-only mindset)
- we recognize systems are both real and conceptual, and encourage holistic conceptual models
- what does the digital transformation mean to us?
- 15288 - is this the only view of SE that we want to promote and certify?
- Systems engineering integrates engineering and scientific disciplines in an effective manner.
- Extending the application to other domains, like social systems
- Where have we constraint ourselves?
- What are the SE corner stones that provide value
- Add Missing Corner Stones
- Engineering overly constraints us
### Brainstorming on INCOSE principles: Key takeaways from Kick-off workshop

#### INCOSE principles

- Emphasis on fundamentals
- Systems approach = thinking + engineering (acting)
- Systems of systems (are also systems, but different ...)
- aid in the complicated and complex
- Collaboration across domains
- Collaborative development
- Embracing diverse target audience (domains, global, levels of experience)
- Engage stakeholders early including those outside of INCOSE
- Inclusive approach to development and review
- Integrate with and respect existing efforts
- Expand Collaborative partners
- partner with corporate to broadly certify the workforce
- integration of technology in a wider context

#### Lead the way - in vision and execution

- Enable learning and development in pursuit of the vision
- Educate
- Life-long learning & sharing
- Professional development and resource center for systems engineers
- maybe these are not as clear as we would like

#### Key Takeaways

- Collaborate inside and outside INCOSE
- Facilitate the learning education and sharing part
- Engage stakeholders early incl. outside INCOSE
- Overcome self defined constraints
- Challenge if the offerings are still the right one's
Brainstorming on Trends & Environment:
Key takeaways from Kick-off workshop

- Global collaboration / supply chain
- Importance of security, health, and resilience
- Sustainability and equity as critical concerns
- Ethics is much more of a product driver
- Massive loss of critical thinking in the internet age
- Sustainability! (social, financial, environmental)
- Social aspects key to success
- Lots of people are forced to be systems engineers without knowing it
- Develop guides and tool kits for social skills-art of presentations and program evaluation or needs assessments (tools, guides, resources)
- Need systems education at all ages
- Velocity
  - Exponential pace of change
  - Exponential increase in automation
  - Exponential scale of complexity, interactions, uncertainty
- On-line learning, shifts in how we educate
- Need systems education at all ages
- Digital access to resources through AI
- Increasing role of AI/ML
- Digital transformation / model-based everything
- Remote engagement to tools, resources, and collaboration for Global interaction
- Growing stakeholder expectations (capability, safety, scalability, affordability,...)
- Increasing systems awareness (enterprise and social)
- Recognition of non-determinism
- Disruptions and fragile systems
- Trustworthiness of systems
- Creativity and entrepreneurship
- Continuous SW (i.e. functionality) updates (over the air)
- Software is the front-end of everything
- Systems are computer and software centric
- Continuous system evolution vs fixed, long life solutions

➢ How fit for purpose are our INCOSE products to that kind of challenges
➢ Staying on the forefront of topics with our WGs
➢ Pain points impacting INCOSE, but seeing as opportunity for SE
➢ Foster transdisciplinary exchange between WGs but also between chapters
Brainstorming on User Stories & Needs: Key takeaways from Kick-off workshop

User Stories & Needs

• Educate the systems engineer of 2035
• Educate the engineer of 2035 (what level of awareness and how do we achieve it)

• What makes a city smart?

• A systems approach to energy supply

• Effectively using systems principles in pursuit of a UN SDG

• The Nobel prize in bringing the disciplines together

• How does my working group influence FuSE? (a different kind of story)

• designing for resilience

• how can systems be more fundamentally secure?

• physical systems and virtual twins operate together for long-term value

• SE return on investment is measurable and recognized

• headline: adoption of SE practice doubled our sales, need outcome stories not process stories

SE Success Stories / Case Studies - "even small things"

Storytelling - how to tell the success stories, how SE contributes to it

Communication to the global chapters
Charter is to Realize the SE Vision

Purpose: Evolve the practice, instruction and perception of SE to:

1) Position SE to leverage new technologies in collaboration with allied fields
2) Enhance SE’s ability to solve the emerging challenges
3) Promote SE as essential for achieving success and delivering value

Goal: Create a road map that drives the evolution of SE to:

1) Be increasingly adaptable, evolvable and fit for purpose
2) Account for human abilities, needs as an integral system element and their interactions with a system
3) Be more responsive in resolving increasingly challenging societal needs
4) Realize and enhance Systems Engineering Vision 2025 & 2035 and other visionary inputs

Scope: Identify the needs, priorities and means for transforming SE including:

1) Underlying foundations, systems theory, and principles
2) People, methods, tools, processes, education and training
3) The future social and ethical duties, contributions, and responsibilities of future systems engineers
FuSE Program Vision - Proposal
FuSE Program Vision

Workshop documentation

FuSE Program Vision

Break up boundaries and unleash new potential

Widen the network and branch out to new partners, promoters, and recipients

Foster the INCOSE community and leverage its capabilities across the globe

Share success and drive education
FuSE Program Vision Feedback

Feedback
- This is not a vision but Goals
- Focus on SE Vision 2035
- How to get there (vision 2035)
- How can we achieve that start from chapter 4 go backwards
- Evolution of the vision, what is missing, what needs to be adapted
- Ecosystem is not static but very dynamic, we have to understand the dynamic and derive the impact on SE
- Current state is a snapshot
- Current state is a moving target
- Have to be the influencer of Engineering
- Involve the community, make use of the competencies
- Significant obstacles that we have to overcome
- Holistic aspects on the right side
- SE recognized
- What would be the future state when the program is accomplished
- Program Vision has to deal with the SE vision
- Facilitating the enablement of the vision
- Making the vision real
- program vision
- more like goals not vision
- SE Vision is accomplished
- Connected to a network of people that
  Expand the reach of INCOSE
- Enable the SE Community to participate / realize the vision
- Influencers of engineering
- Enable “whomever” (the systems community) to participate in reaching the Vision
- Is FuSE only focusing on the Vision 2035?
- no static vision but dynamic
- test against vision --> “moving” target
- Continuous validation that we are going in the right direction
- Facilitating the enablement of the Vision 2035
- "Making the vision real"
- What are the roadblocks
- Holistic targets
- recognized as a whole
- Is it about the INCOSE ppl getting involved?
What is the vision and objectives of the FuSE Program?

Possible way to approach:

- Update the vision (and underlying targets) based on the feedback (Bill, 3DSE)
- Share update with team for another iteration.

Also consider:

- Focus
- Dynamic “moving target”
- Validation
- Enablement
- Holistic
- Roadblocks
- Influencers of Engineering
- Recognize SE
- Realizing
- Involvement
Role of FuSE
What is the role of the FuSE program?
Workshop documentation
What is the role of the FuSE program?

Responsibility

• FuSE orchestrates working groups within INCOSE and enables systems engineers (within INCOSE and outside of INCOSE) to contribute to the realization of the Vision 2035.
• FuSE thereby proactively supports the extension and engagement of SE in different industries (e.g., sociotechnical)
• FuSE ensures that activities are aligned with the Vision while the vision stays consistent and relevant in changing contexts.

Tasks

• Update the SE Vision 2035 and ensure its consistency
• Synchronize communities within (e.g., working groups) and outside INCOSE
• Inspire and motivate people to participate and learn new topics
• Prioritize topics and put them on a roadmap
• Provide fundamental principles
• Proactively promotes the FuSE program
• Shares and communicates results and successes
• Monitors and tracks progress and accomplishments

Competencies

• Networking (within and outside of INCOSE) and facilitation skills
• Communication & story telling
• Listening
• Analytic capabilities
• Digital skills
• Project management capabilities
• Insightful into extended SE applications
• Impatience and creative resistance to manual and redundant processes and information
• Imagination
Agenda

1. **Key PMO Topics**
   - Organization - Stream Teams
   - IW Concept
   - Stream Description
   - **120’**

2. **Vision Statement & Role**
   - The vision of the FuSE Program is defined and the role of the tea program is clarified
   - **60’**

3. **Success Factors**
   - Success Factors of the FuSE Program and expectations towards FuSE are identified
   - **60’**

4. **Optional: Program Charter**
   - The program charter is described
   - **30’**

5. **Optional: Risk Assessment**
   - High level risks for program success are identified and mitigation measures described
   - **30’**

**30’ Break**
Success factors and the program strategy

**FuSE Vision**
- ...describes the long-term oriented and ideal state in the future that the program would like to achieve.

**Mission & Strategic Objectives**
- ...define the reason why the program exists and what strategic objectives the program plans to achieve.

**Strategic Success Factors**
- ...give the program a guideline to ensure sustainable success by resources, abilities and properties.

**Strategic Action Areas and Roadmap**
- ...planned actions to achieve the objectives under the most likely scenario.

**Strategic Assumptions**
- ...justify why and how the topics were determined and decided.

**Strategic Guardrails**
- ...help for decision making and defining the path to success.
What are success factors and why do we identify them?

− Success Factors describe what is needed to make the FuSE program successful.
− The awareness of possible success factors for target fulfillment helps focusing the activities on what needs to be done.
− Later in the process we can assess the solutions concepts based on the defined success factors.

− **Internal Success Factors:** When is the FuSE program successful?
− **External Success Factors:** What is expected from FuSE?
Success Factors
Workshop documentation

Success Factors
When is the FuSE program successful? What is expected from FuSE?

- 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

See attached html file for details – FuSE Success Factors
7 success factors for the FuSE program

- **Inclusive**: From an exclusive club to inclusive initiative
- **Attractive**: Engage members and non-members
- **Close to application**: Involvement of companies and domains
- **Fresh**: Relevant and updated road map and context
- **Implementation**: The degree to which the road map is realized
- **Global promotion**: Attractive global digital marketing
- **Passion**: To get the working group proud to be part of it
What are the FuSE Success Factors

Possible way to approach:

➢ Are the success factors understandable for you and capture the essence of FuSE?
➢ Are the success factors covering the entirety of FuSE
➢ Do some success factors need to be split up?

Also consider:

• Internal and external success factors
• How to make the success factors measurable?
• Success Factor “Check-list”

Next discussion in baselining workshop
Contact

William Miller
William.Miller@incose.net
FuSe Program Lead

Stephan Finkel
Stephan.Finkel@incose.net
3DSE

Martina Feichtner
Martina.Feichtner@incose.net
3DSE