Kick-off Workshop

FuSE Program
The objective is to generate a shared FuSE vision & commit to work towards this goal.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>30'</td>
<td>Intro</td>
<td>Get to know each other and get started</td>
</tr>
<tr>
<td>45'</td>
<td>Working Model</td>
<td>The way we work together until IW 2022 is set out</td>
</tr>
<tr>
<td>90'</td>
<td>Vision &amp; Role</td>
<td>The vision of the FuSE Program is defined and the role of the team is clarified</td>
</tr>
<tr>
<td>45'</td>
<td>BoD Presentation</td>
<td>IW Workshop update</td>
</tr>
<tr>
<td>30'</td>
<td>Next Steps</td>
<td>Next steps</td>
</tr>
</tbody>
</table>

**Break:**
- 2x15' or 1x30'

**Next steps**
Stephan
Principal

Expertise:
• Systems Engineering Methods & Trainings
• Project and Risk Management, Project
Harmonization & Synchronization, Recovery, PM Trainings
• Target Costing, TCO, Design-to-Cost and Cost Down
• Training and Coaching
• Lean-Thinking, Principles of Lean Product Development, Design Review Prozess
• CMMI, DRBFM, Project@Risk

Background:
Dipl.-Ing. Aerospace – Systems Engineering (Technical University Munich, TUM)

Martina
Consultant

Expertise:
• Requirements engineering
• Architecture management
• Model-based development (MBSE)
• Project management, change management
• Agile & scaled agile product development
• Reorganization & process design

Background:
• M.Sc. Systems Engineering (Munich University of Applied Sciences) / Supply Chain Systems Engineering (SIIT, Thailand)
• B.Eng. Electrical Engineering and Information Technology (Munich University of Applied Sciences)

Armin
Managing Partner

On demand.

Stephan.Finkel@incose.net
Martina.Feichtner@incose.net
Armin.Schulz@incose.net
3DSE in a Nutshell

Our Mission
- 3DSE is the leading management consulting boutique in innovation and R&D with outstanding technical expertise and empathetic consulting culture
- Our mission is to transform the disruptive changes through highly networked products and systems, climate neutrality, globalization and automation into sustainable business success

Our Clients
- Our clients strive for market, innovation and technology leadership. Together with them, we increase the performance and system capability of R&D.

Our USPs
- Merging outstanding expertise in innovation and R&D with superior transformation skills
- Leveraging cross-industry best practices and benchmarks as well as internal “organizational wisdom” for true tailor-made and effective solutions
- Sustainable change by ready-to-use concepts and strong buy-in from the very beginning
- We act as a highly specialized consultancy with a systems-driven & agile consulting approach

Our Facts
- 45+ consultants with strong engineering and technical backgrounds
- Offices in Munich and Vienna, offices in US and Asia in preparation, global projects
- More than 20 years of success in market, 800+ projects and 60+ clients
- Long term and ongoing client relationships
Check-in & get to know miro
Dog-o-meter: how are you feeling today
If you could be reincarnated as any animal, what would you be?

- Dolphin
- Tardigrade
- My wife's cat
- Borg
- Racoon
- Albatross
- Dog for sure
- CAT

[Tardigrade - Wikipedia](https://en.wikipedia.org/wiki/Tardigrade)
The objective is to generate a shared FuSE vision & commit to work towards this goal.

Intro
Get to know each other and get started

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

BoD Presentation
The presentation for the BoD is agreed

Workshop update
The concept for FuSE @ IW is aligned

Next Steps
Next steps

Working Model
The way we work together until IW 2023 is set out
Setting the Stage - Bill
The FuSE program is organized in 4 streams with additional central teams.
The approach foresees 2 phases for program setup until IW followed by execution increments.
For the successful setup of the FuSE program, we focus on seven areas:
The deliverables are mainly* created in dedicated workshops:

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

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

- **Communication & Outreach**
  - Knowledge on affected / interested target groups and defined measures for communication & outreach
  - Proposed: xx.xx

- **Masterplan**
  - Defined FuSE roadmap and short-term detailed program plan
  - Proposal: Week of 05.12

* Additional alignment and deep dive meetings as needed
** Shift of focus if required
### High-level overview on key tasks until IW 23

<table>
<thead>
<tr>
<th>Task</th>
<th>Stage 1</th>
<th>Stage 2</th>
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<tbody>
<tr>
<td>Calibration &amp; Baseling</td>
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<tr>
<td>Setup &amp; Launch</td>
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<td>INCOSE Events</td>
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<td>FuSE Workshops</td>
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<tr>
<td>Initialization</td>
<td></td>
<td>Setup finalized</td>
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<tr>
<td>Program Management</td>
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<tr>
<td>Target Picture &amp; Program Handbook</td>
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<tr>
<td>Baselining &amp; Harvesting</td>
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<td>Program Planning</td>
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<tr>
<td>Working Model &amp; Collaboration</td>
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<tr>
<td>Communication &amp; Outreach</td>
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</tbody>
</table>

**Execution Increments**

- **Calibration & Baseling**
- **Setup & Launch**

**Workshop-based approach**

**INCOSE Events**

- **FuSE Workshops**

**Initialization**

- Setup finalized

**Program Management**

- Vision & Success Factors

**Target Picture & Program Handbook**

- Harvesting INCOSE Best Practices

**Baselining & Harvesting**

- Risk Management
- Reporting & Control

**Program Planning**

- Project Handbook

**Working Model & Collaboration**

- Program Roadmap & Short-term Plan

**Communication & Outreach**

- Stakeholder & Target Group Assessment
- Communication & Outreach

*Plans with further detail level available*
The working model of the FuSE team:

1. **Workshops**: Dedicated workshops for overall FuSE form the foundation for delivering results until IW. Workshop overview on next slide.
2. **Infrastructure**: The FuSE team will work on a MS Teams Team & SharePoint provided by INCOSE. How to organize FuSE in Teams?
3. **Stream Deep Dives**: Additional stream related meetings will focus on deep dive topics e.g., preparation for IW (Specification on deep dive meetings along the way).
4. **Regular Alignment**: Currently, regular alignment with the program lead and PMO are scheduled.
5. **IW Prep**: Thorough preparation of the IW23.
Meeting overview of the FuSE team:

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Stream</th>
<th>Title</th>
<th>Date / Frequency</th>
<th>Duration</th>
<th>Topic</th>
<th>Mode</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Workshops</td>
<td>Overall</td>
<td>Kick-off Workshop</td>
<td>11.10.2022</td>
<td>4.5 h</td>
<td>Shared target picture and aligned workmode</td>
<td>virtual</td>
<td>Program Team</td>
</tr>
<tr>
<td>2. Workshops</td>
<td>Overall</td>
<td>Calibration Workshop</td>
<td>20.10.2022</td>
<td>4.5 h</td>
<td>Target picture and success factors</td>
<td>virtual</td>
<td>Program Team</td>
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<td>2. Workshops</td>
<td>Overall</td>
<td>Baselining Workshop</td>
<td>26.10.2022</td>
<td>4.5 h</td>
<td>Insights and status quo at INCOSE</td>
<td>virtual</td>
<td>Program Team</td>
</tr>
<tr>
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<td>Overall</td>
<td>Harvesting Workshop</td>
<td>09.11.2022</td>
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<td>2. Workshops</td>
<td>Overall</td>
<td>Communication &amp; Outreach Workshop</td>
<td>09.11.2022</td>
<td>4.5 h</td>
<td>Target group / stakeholder assessment and communication &amp; outreach measures</td>
<td>virtual</td>
<td>Program Team</td>
</tr>
<tr>
<td>2. Workshops</td>
<td>Overall</td>
<td>Masterplan Workshop</td>
<td>05.12.2022</td>
<td>5 d</td>
<td>Defined FuSE roadmap and short-term detailed program plan</td>
<td>f2f</td>
<td>Program Team</td>
</tr>
</tbody>
</table>

Key: Black: fixed | Yellow: to be clarified with missing stream leads | Red: yet to be scheduled
The objective is to generate a shared FuSE vision & commit to work towards this goal.

**Vision & Role**

The vision of the FuSE Program is defined and the role of the team is clarified

**BoD Presentation**

IW Workshop update
The presentation for the BoD is agreed

**Next Steps**

Get to know each other and get started
The way we work together until IW 2022 is set out

---

1. Intro
2. Working Model
3. Vision & Role
4. BoD Presentation
5. Next Steps
Vision & Strategy Impulse
What is the vision for the FuSE program?

Documentation of working session
Brainstorming on SE cornerstones:

**Brainstorming**
- 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.

**Key Takeaways**
- Extending the application to other domains, like social systems
- Where have we constraint ourselves?
- What are the SE cornerstones that provide value
- Add Missing Corner Stones
- Engineering overly constraints us

Bill & 3DSE will derive a proposal for the FuSE Program Vision
Brainstorming on INCOSE principles:

<table>
<thead>
<tr>
<th>INCOSE principles</th>
<th>Brainstorming</th>
<th>Key Takeaways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on fundamentals</td>
<td>• Lead the way - in vision and execution</td>
<td>➢ Collaborate inside and outside INCOSE</td>
</tr>
<tr>
<td>Systems approach = thinking + engineering (acting)</td>
<td>• Enable learning and development in pursuit of the vision</td>
<td>➢ Facilitate the learning education and sharing part</td>
</tr>
<tr>
<td>Systems of systems (are also systems, but different ...)</td>
<td>• Educate</td>
<td>➢ Engage stakeholders early incl. outside INCOSE</td>
</tr>
<tr>
<td>aid in the complicated and complex</td>
<td>• life-long learning &amp; sharing</td>
<td>➢ Overcome self defined constraints</td>
</tr>
<tr>
<td>Collaboration across domains</td>
<td>• Professional development and resource center for systems engineers</td>
<td>➢ Challenge if the offerings are still the right one's</td>
</tr>
<tr>
<td>Collaborative development</td>
<td>• maybe these are not as clear as we would like</td>
<td></td>
</tr>
<tr>
<td>Embracing diverse target audience (domains, global, levels of experience)</td>
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<td>Engage stakeholders early including those outside of INCOSE</td>
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<td>Inclusive approach to development and review</td>
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<tr>
<td>Integrate with and respect existing efforts</td>
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<tr>
<td>Expand Collaborative partners</td>
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<td>partner with corporate to broadly certify the workforce</td>
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<td>integration of technology in a wider context</td>
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</tbody>
</table>
### Brainstorming on Trends & Environment:

#### Trends & Environment

- 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

#### Key Takeaways

- 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:

**Brainstorming**

- 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

**Key Takeaways**

- 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
The objective is to generate a shared FuSE vision & commit to work towards this goal.

- **Intro**
  - Get to know each other and get started

- **Working Model**
  - The way we work together until IW 2022 is set out

- **Vision & Role**
  - The vision of the FuSE Program is defined and the role of the team is clarified

- **BoD Presentation**
  - IW Workshop update
    - The presentation for the BoD is agreed
    - The concept for FuSE @ IW is aligned

- **Next Steps**
  - Next steps
## Comparison of proposed and updated agenda for FuSE @ IW 2023

<table>
<thead>
<tr>
<th>TIME</th>
<th>SAT</th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
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<tbody>
<tr>
<td></td>
<td>proposed</td>
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<td>08:00</td>
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<tr>
<td>08:30</td>
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<tr>
<td>09:00</td>
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<td></td>
<td>FuSE Working Sessions (in person only) - 4 rooms</td>
<td>FuSE Working Session (4x in parallel)</td>
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<tr>
<td>09:30</td>
<td>Break</td>
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<tr>
<td>10:00</td>
<td>Break</td>
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<td>FuSE Kick-off</td>
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<td>10:30</td>
<td>FuSE opening plenary session</td>
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<td>11:00</td>
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<td>FuSE Working Session (4x in parallel)</td>
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<td>FuSE Interactive working session (4 rooms)</td>
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<td>14:30</td>
<td>Break</td>
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<td>FuSE Interactive working session (4 rooms)</td>
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**Conclusion:**

The FuSE team agrees on the updated schedule. An additional wrap-up session for FuSE participants is requested on Tuesday morning from 8:30 to 9:30 am.

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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.
**Agreed agenda for FuSE @ IW 2023**

<table>
<thead>
<tr>
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<th>SAT</th>
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<tr>
<td>09:00</td>
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<td>Wrap-up FuSE (for participants)</td>
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<td>09:30</td>
<td>Break</td>
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<td></td>
<td>Break</td>
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<td>11:00</td>
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<td></td>
<td>Wrap-up FuSE</td>
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</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.
Goals of FuSE Streams for IW 2023

Documentation of working session

**SE Vision & Roadmap**
- **Definition**: Refine SE Vision 2035 and detail the roadmap as defined in the vision
- **Why?**: Pave the way to reach the vision
- **What?**: Make Assumptions: - how many people - what is possible with those ppl - What can you expect
- **Obstacles**:

**SE Foundations**
- **Current INCOSE projects**
- **Why?**: Leverage existing working groups and projects
- **What?**

**SE Methodology**
- **Why?**: Identify gaps in the INCOSE project technical skill we need to reach the vision
- **What?**: What do we need to make SE methods fit for purpose
- **Obstacles**:

**SE Application Extension**
- **Why?**: “better world through systems engineering”
- **What?**: Extend reach into more organizations
- **Obstacles**:
The FuSE Program is organized in 4 streams:

<table>
<thead>
<tr>
<th>Objective</th>
<th>SE Vision &amp; Roadmap</th>
<th>SE Foundation</th>
<th>SE Methodology</th>
<th>SE Application Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>What &amp; Why?</td>
<td>Refine SE Vision 2035 and detail the roadmap as defined in the vision</td>
<td>Build up on current INCOSE projects</td>
<td>Evaluate current tools / environments / procedures / methods</td>
<td>Expand the application of systems engineering</td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<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>
<td></td>
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<td>• “Create a better world through systems engineering”</td>
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The objective is to generate a shared FuSE vision & commit to work towards this goal.

Intro
Get to know each other and get started

Working Model
The way we work together until IW 2022 is set out

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

BoD Presentation
IW Workshop update
The presentation for the BoD is agreed
The concept for FuSE @ IW is aligned

Next Steps
Next steps
Next Steps

- Send blocker for agreed FuSE Workshop (Martina)
- Setup FuSE Team in Teams and provide access to the FuSE Team (Bill & Barkley)
- Formulate vision based on brainstorming (Bill & 3DSE)
- Prepare “what to expect”-statement for FuSE @ IW23 (Bill & 3DSE)
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