



International Council on Systems Engineering
A better world through a systems approach

Addressing sustainability through a new INCOSE working group

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Today's Agenda

- Why is it important?
- Let's hear from the co-chairs ...
- WG mission & purpose,
- Some WG outcomes,
- Next steps !

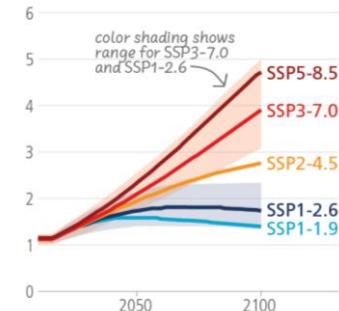
Why is it important?

1) Sustainability is important

2) A sustainability WG @INCOSE is important

Climate change ...

→ Accelerate toward carbon neutral



COP21 1,5° limit is
already « in balistics»

→ Adapt to growing disruptions

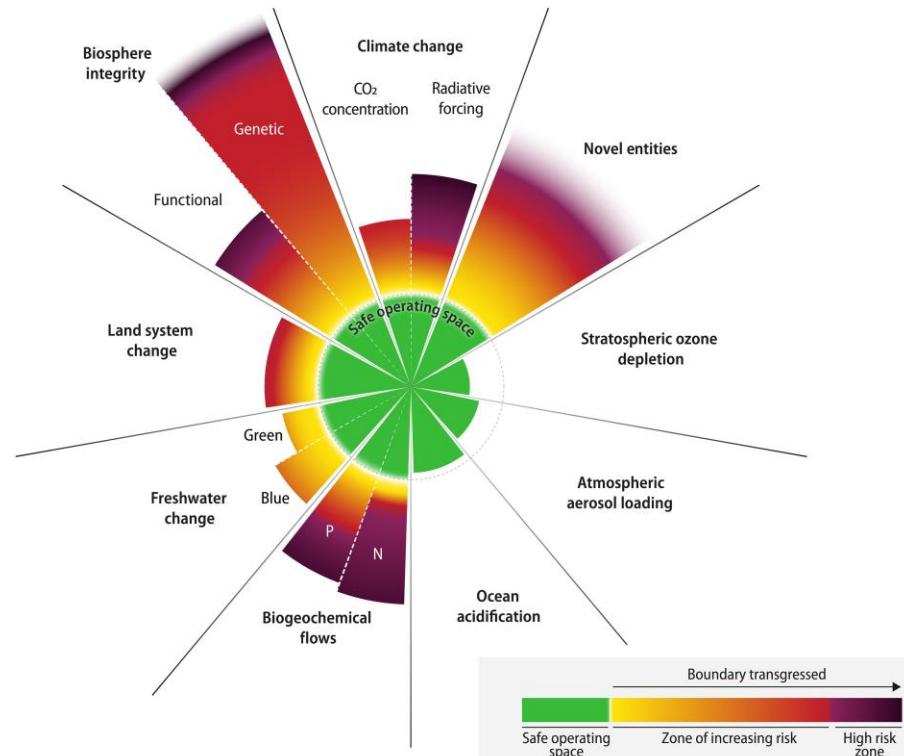


Why is it important?

1) Sustainability is important (2)

2) A sustainability WG @INCOSE is important

Many other planetary limits!



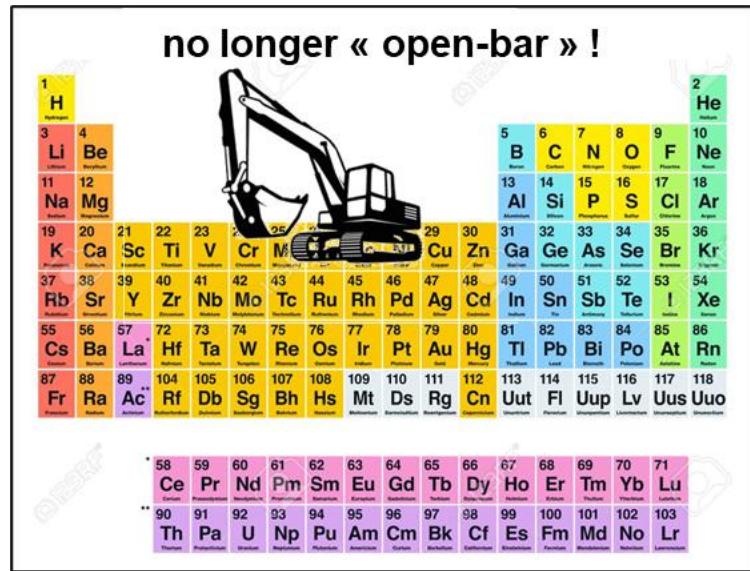
Source : *Earth beyond six of nine planetary boundaries* (Science Advances, Volume 9 | Issue 37 September 2023) : <https://www.science.org/doi/10.1126/sciadv.adh2458>

Why is it important?

1) Sustainability is important (3)

2) A sustainability WG @INCOSE is important

a FINITE WORLD



Circular Economy

Cradle to Cradle

« 9 R »

...

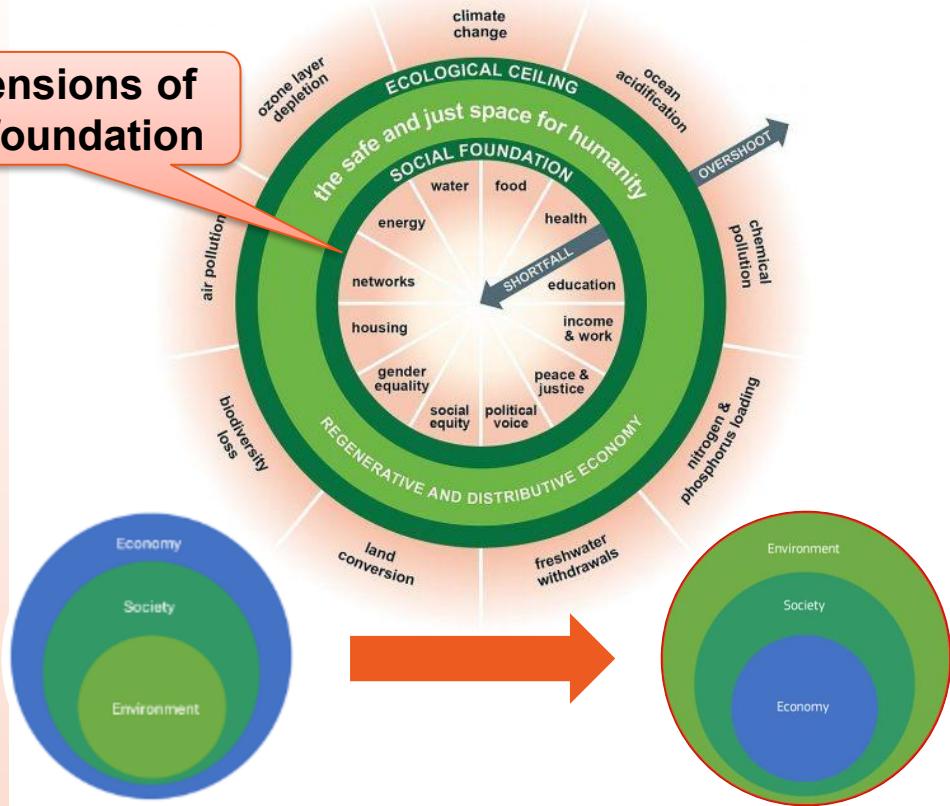
Why is it important?

1) Sustainability is important (4)

2) A sustainability WG @INCOSE is important

12 dimensions of Social foundation

HUMANS in a finite world



Source : the famous Kate Raworth doughnut, <https://eeb.org/doughnuteconomicsforall/>

Why is it important?

1) Sustainability is important

2) A sustainability WG @INCOSE is important

INCOSE SE Vision 2035 the first MEGATREND!

MEGATRENDS expected to influence systems engineering through 2035.



Obviously, for **technical systems** :

- Stringent regulations, constraints,
- Evolving environmental context,
- New stakeholders,
- ...

Why is it important?

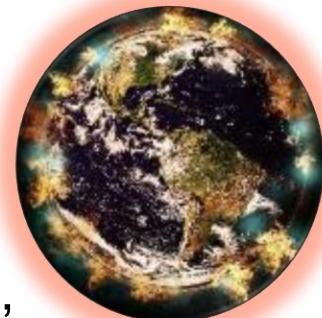
1) Sustainability is important

2) A sustainability WG @INCOSE
is important (2)

Technical Systems, but also **varied SOI and Environments...**

Socio-technical systems,
Services systems, PSS,

Enterprises,
Systems of Systems,
Eco-Systems,



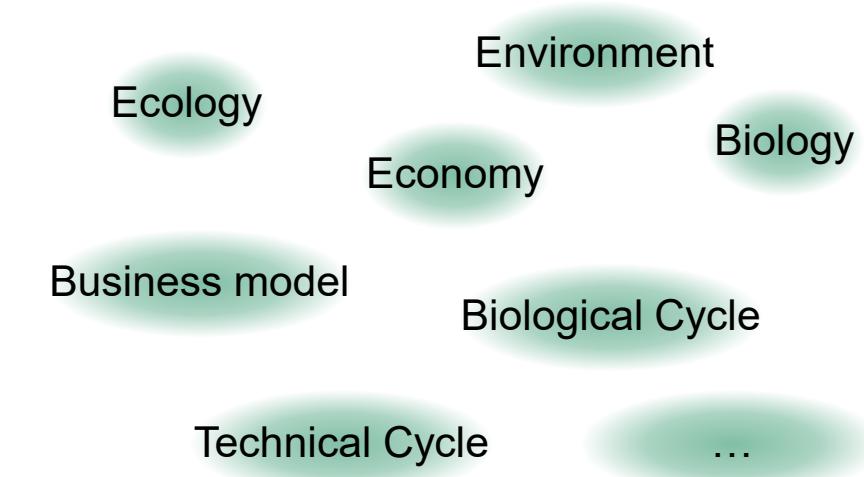
Earth System!

Why is it important?

1) Sustainability is important

2) A sustainability WG @INCOSE
is important (3)

Technical Systems, but also varied
SOI and Environments,
And **new specialties, viewpoints,**
“models”, methodologies, ...



Let's hear from the co-chairs ...

Hamza Bassam (Germany)

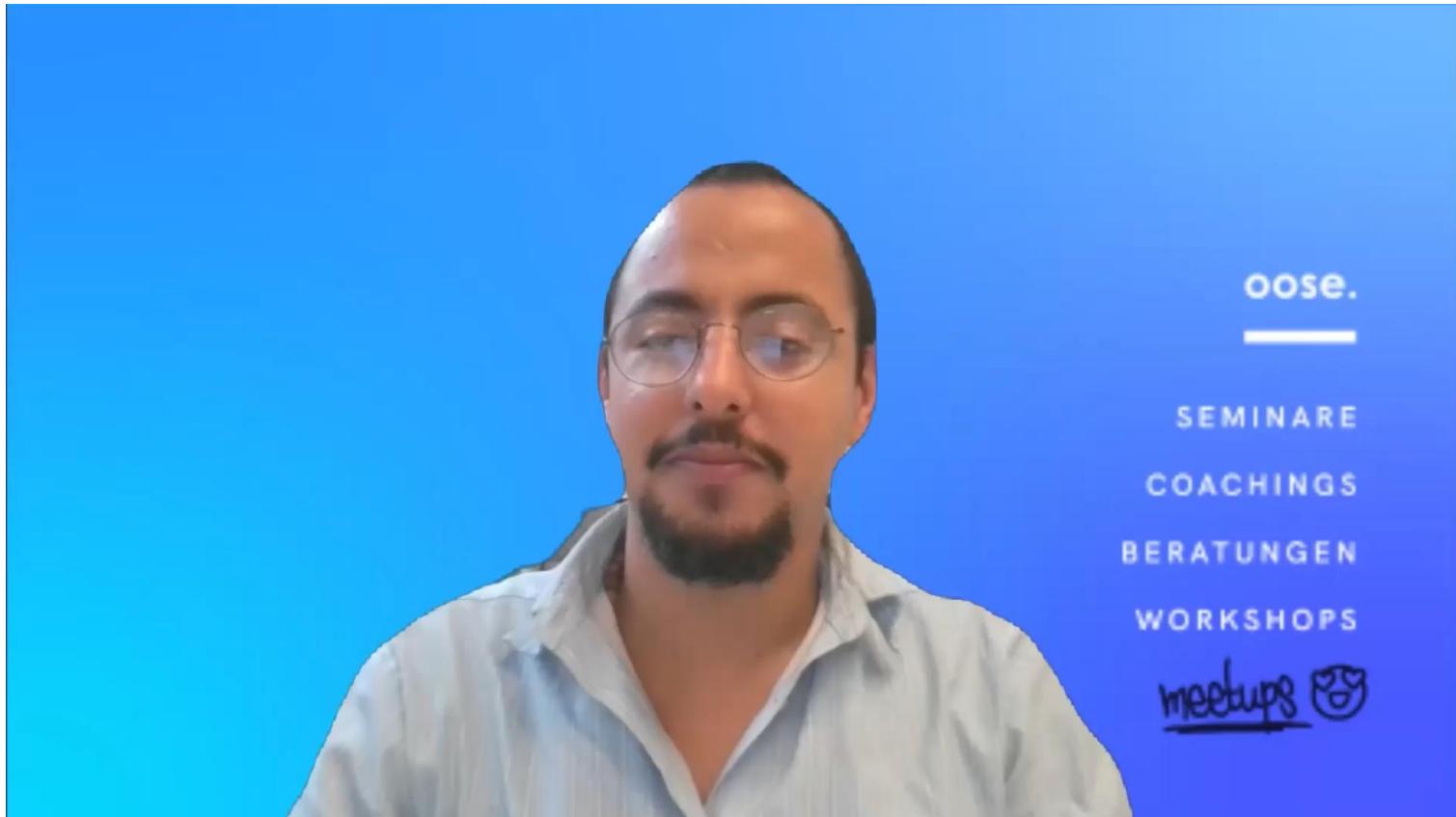


Alan Harding (UK)

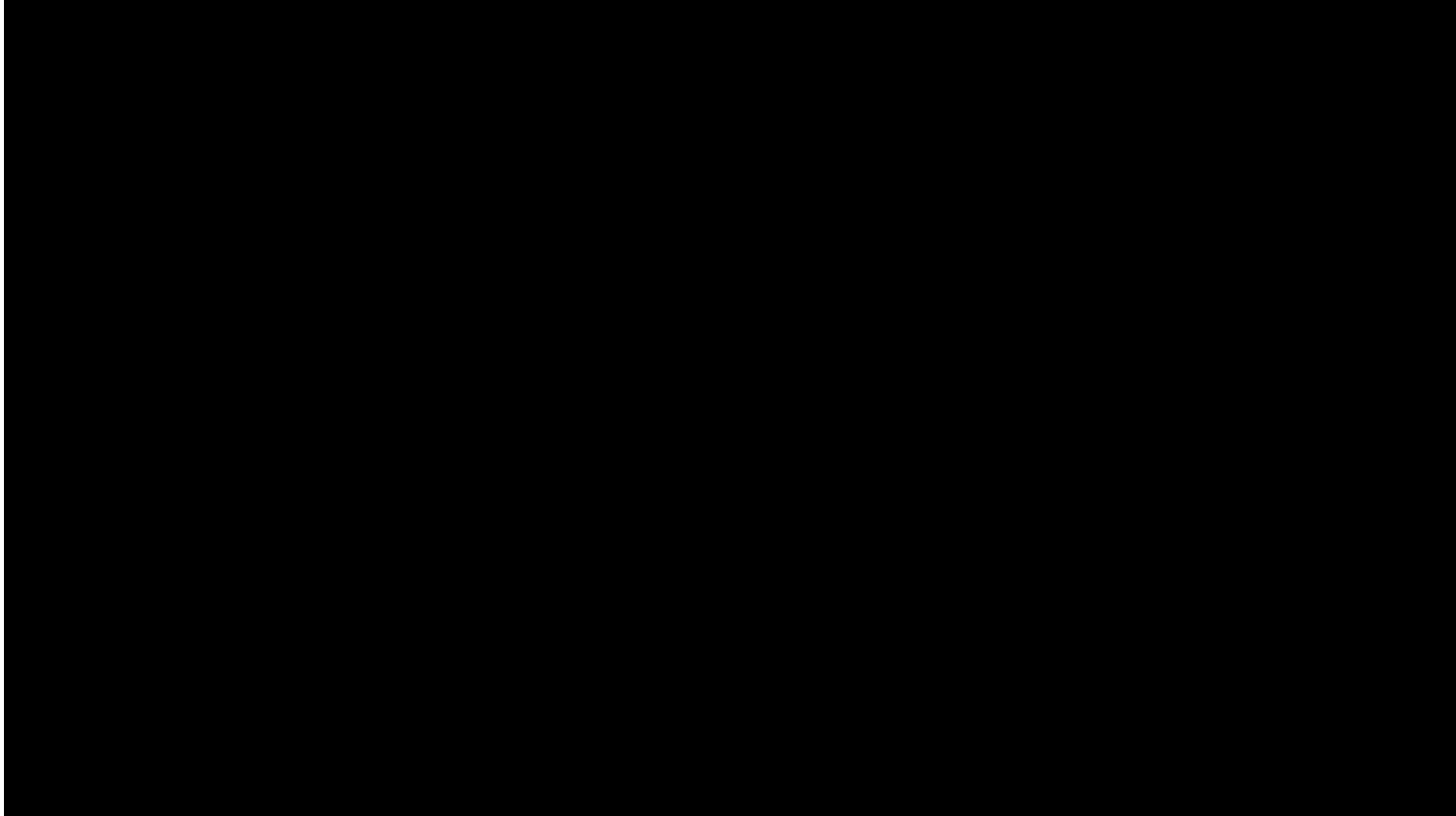


Amaury Soubeyran (France)









Let's hear from the co-chairs ...

Hamza Bassam (Germany)



Alan Harding (UK)



Amaury Soubeyran (France)



The Sustainability WG Mission & Vision

Mission

The mission is to establish sustainability at the core of systems engineering enabled by systems thinking, considering all beings and elements globally. This will empower organizations to achieve sustainability in a finite world.

Vision

In line with the INCOSE SE Vision 2035 goals, we want to address the systems approach to sustainability:

- based on the vision of a finite world,
- where economic, social, and environmental aspects work in a synergistic and balanced manner,
- ...in order to meet the needs of the present without compromising those of future generations.

An the WG is working!

Inside INCOSE (many countries, many WGs)

With the wider community (Sustainability, Economy,....)

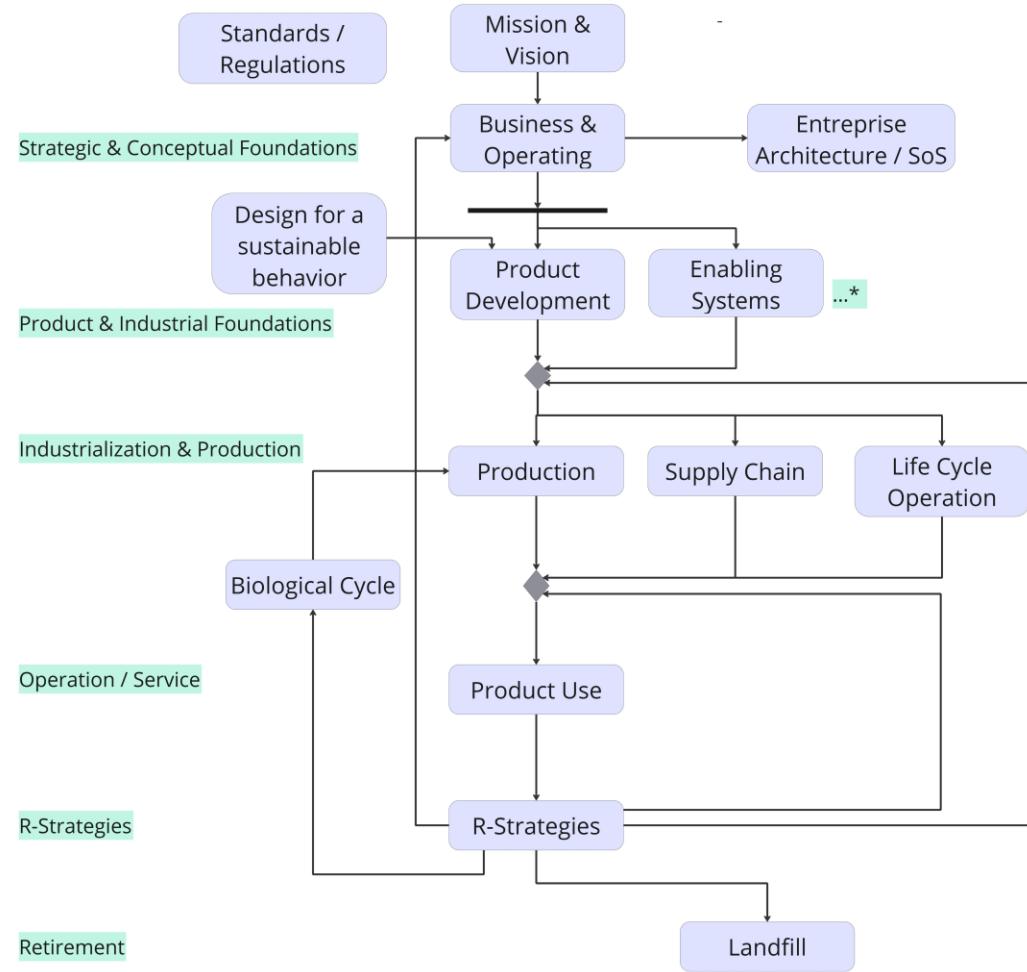
- 2 national sustainability WG (AFIS & GfSE), then IW25, then ...
=> Charter approved by Techops 16th Feb 2025,
- Website; iNet pages and Viva Engage community created,
- Bimonthly plenary meetings,
- “Core-team” with bimonthly meeting,
- SustainableTogether activity started,
- INCOSE panel “SOS and Sustainability” at SOSE conference in Albania 2025,
- Webinar series started,
- Abstract submitted for WFEO Conference Shanghai October 2025,
- Tech Ops track presentation at IS 2025 [**this presentation!!**], ...

The Sustainable-Together activity

Transforming a conventional business model, enterprise and product into sustainable one. We show HOW to transform and demonstrate it using digital models.

- Initiated at GfSE, 4 intensive sessions at IW 2025
- Dedicated bimonthly meeting,
- Case-study: Photovoltaic panel enterprise
- Many themes/sub-groups, involving both inside and outside INCOSE

Initial Generic Approach of Sustainable-Together



- Systems Thinking and System Dynamics (Rebound-Effect) [Dano, Deepa]
- Digital Engineering [Fernando, Lambert, Gauthier, Deepa]
- Life Cycle assessment [Jean Francois, Lambert, Deepa]
- Risk Analysis [Hamza, Deepa]

Who is involved in SustainableTogether?

Sustainability



Education



Flourishing
Business Model
Community



Circular
Economy



Cooperative
Business
Models

Systems Engineering



Sustainability WGs



INCOSE Panel on Sustainable Development and Systems of Systems Engineering, Tirana 11th June 2025 (20th international conference on SoSE)

Panellists from UK, Germany, France, Italy and Albania discussed:

- Influences of sustainable development on SoS engineering
- Examples of where SoS are being used to address sustainability challenges
- New and emerging approaches to SoS engineering?
- How to develop the next generation of engineers to address Sustainability and SoS?



Monthly sustainability Webinars, already 2 episodes!

Episode 01 - Systemic Tools to Tackle Rebound Effects in Design & Business

Ankita Das (Maastricht University)

Laetitia Bornes (ISAE-Supaero)

Episode 02 - Systematically Designing Businesses Fit-for-the-Future

Antony Upward
(Flourishing Enterprise Co-lab)

... and a rich program to come, thanks Kai Costantini who is directing it!

And many more things to come!

- Prepare some sustainability SEBoK pages
- Connection with CASCaDE project about DPP (Digital Product Passport) and layered ontologies
- Other projects, new or existing & internationalized from Chapters (AFIS, UK, ...)
- Prepare 2026 International Workshop,
- ...

⇒ if you're interested, join us, you're welcome!

**Thanks for your attention,
Any remark, question?**

