



The challenge is not just technical or environmental but deeply socio-technical, involving cultural, behavioral, economic, and ecological factors.

Garima Bhatia,
Chair of WGSE,

International Council on Systems Engineering (INCOSE), USA

The objective of the Working Group on Systems Engineering (WGSE), established through the collaboration of INCOSE (International Council Of Systems Engineering) and WFEO, is to be an enabler for the greater engineering community by promoting and developing the adoption of systems engineering and systems thinking to the community's most intractable problems.

WGSE focuses on advancing systems engineering as a transdisciplinary and integrative discipline, enabling the conceptualization, realization, use, and retirement of engineered systems, whether technical or social, through scientific, technological, and management methods.

Systems Engineering is distinguished from traditional engineering branches by its holistic approach. Rather than focusing on isolated technical components – or issues - systems engineering considers the entire system, its environment, stakeholders, and the interactions among its elements.

This perspective is crucial for addressing complex, multifaceted challenges such as sustainability, energy transition, and climate change, where technical, social, and economic factors must be balanced. Systems Engineering integrates knowledge from various fields, ensuring robust solutions that are well-rounded and comprehensive.



Garima Bhatia, WGSE Chair and Ralf Hartmann, INCOSE President, at the Global Engineering Congress, Shanghai, 14 October 2025



The WGSE's initiatives, such as cross-sector collaboration, surveying, and webinars, directly support SDG 17 by fostering partnerships, knowledge exchange, and collective action among engineering institutes and committees to address complex global challenges.

Systems Engineering is distinguished from traditional engineering branches by its holistic approach. Rather than focusing on isolated technical components – or issues - systems engineering considers the entire system, its environment, stakeholders, and the interactions among its elements. This perspective is crucial for addressing complex, multifaceted challenges such as sustainability, energy transition, and climate change, where technical, social, and economic factors must be balanced.

Systems Engineering integrates knowledge from various fields, ensuring robust solutions that are well-rounded and comprehensive.

The main themes covered since the WGSE's inception early 2025 include:

- **Holistic Thinking:** WGSE encourage engineers to broaden their perspectives, ensuring that all relevant elements and their interactions between one another are considered. This helps the engineer to see the totality of the problem, therefore providing the pre-conditions to its comprehensive solution.
- **Interdisciplinary Collaboration:** WGSE aims to foster collaboration across engineering disciplines, regions and problem domains, integrating diverse expertise to tackle global challenges.
- **Lifecycle Considerations:** WGSE places an emphasis on considering the full life cycle of engineered systems, including design, manufacturing, maintenance, scalability, and end-of-life factors.
- **Promoting Global Standards:** WGSE supports the development and dissemination of guidelines, standards, and best practices to ensure consistency and quality in engineered projects worldwide.
- **Bridging Knowledge and Practice:** WGSE provides resources for knowledge exchange and professional development, helping engineers across disciplines benefit from systems-based approaches.

Key achievements

- Establish WGSE governance. [DONE]
- Curate, develop and produce Systems Engineering 101 webinar series for distribution on WFEO Academy. [WORK IN PROGRESS]
- Explore collaboration opportunities with WFEO Members, Committees and Working Groups. [WORK IN PROGRESS]
- Launch internal survey to gauge the awareness of systems engineering within WFEO community. [TODO]
- Produce white paper or primer on the role of Systems Engineering in various problem domains. [TODO]

Systems engineering principles are applied to a range of domains, including energy distribution, water treatment, transportation, sustainability, and healthcare.

WGSE also supports initiatives in smart cities and artificial intelligence, aiming to develop reference architectures, methodologies, and management plans that illustrate the value of systems thinking in addressing complex societal challenges.



WFEO Delegates at the All Committees' Chairs Committee Meeting, Shanghai, 15 October 2025



Ralf Hartmann, INCOSE President; Seng Chuan Tan (newly WFEO Elected President for the period 2025-2027) and Garima Bhatia, WGSE Chair, at the WFEO General Assembly, Shanghai, 17 October 2025



Terry Fitzgerald, WGSE Secretary; Steve Records, INCOSE Executive Director; Garima Bhatia, WGSE Chair and Ralf Hartmann, INCOSE President, at the Global Engineering Congress, Shanghai, 14 October 2025