INCOSE Spotlight on Heinz Stoewer
Interviewed by Sandy Young, info@incose.org

Name: Heinz Stoewer
Titles/Organizations: President at Space Associates GmbH, advisor at Airbus, chair emeritus for systems engineering at Delft University of Technology and “Distinguished Visiting Scientist” NASA Jet Propulsion Laboratory

Place of Birth: Giengen, Germany
Current Residence: Munich, Germany and Kaag-Dorp, Netherlands

Domain: Aerospace
Studied in college: Technical physics, business administration/operations and systems Management
Year joined INCOSE: 1996
Role(s) in INCOSE: Deputy chair tech board, Fellow, president (2004-05), life member
Years in systems engineering and program management: more than 50

Author’s Note: We’re breaking from tradition for this Spotlight and will be featuring statements that Heinz Stoewer developed based on one question we asked him that we thought readers would find interesting instead of the usual Q&A format.

Stoewer is a pioneer in aerospace systems engineering, most well-known for his work on Space Tug; Europe’s first human space laboratory, Spacelab; many Earth focused satellites; and for infusing and broadening systems engineering in Europe and beyond.

Most recently, Stoewer was recognized as the 2018 Simon Ramo Medal winner “for pioneering accomplishments in and technical leadership of space systems engineering, and for profound influence on teaching and practice of systems engineering.”

The award inspired the establishment of a new annual student prize (carrying Stoewer’s name) for the best master’s thesis of the year by the renowned aerospace faculty of the TU Delft.

Since the start of your aerospace career to now, what are the biggest changes you have seen in the use of systems engineering?

a. From simple engineering solutions to growing and sometimes not sufficiently well understood complex systems
b. From single purpose to systems with an abundance of functionalities
c. From systems with limited isolated software packages to systems with overwhelming software content where software has sometimes become the “system glue”
d. From a risk conscious decision culture to protracted risk averse decision making
e. From a product to an occasionally exaggerated process focus
f. From sometimes too strong a technical focus to a business orientation with an occasional lack of sufficient domain knowledge

g. From a limited set of technological choices to a diverse and rapidly changing technology inventory

h. From a cooperative acquisition environment to a lengthy legal and contracts dominated process

i. From empowered system and project teams to an overly “controlling and justification” culture

j. From pro-active change management to configuration management and bookkeeping

k. From a limited number of essential requirements to a plethora of detail requirements, which often constrain decision and design trade-off spaces during project execution

l. From documents-based information sets to digital environments with multi-dimensional product and process virtualization and visualization capabilities

m. From independent tools to an emerging interrelated digital environment

n. From extensive test articles and prototypes to digital twins and “virtual verification”

o. From “seat of the pants” decisions to more informed and substantiated analysis-based decisions

p. From sequential (waterfall) development approaches to more concurrent design, development, manufacturing and certification cycles

q. From partial system views to more holistic life-cycle “end-to-end” system implementation approaches

r. From product focused to more sustainable and services-oriented business models

s. From relatively well-defined projects to systems of systems whose boundaries, interfaces and evolutions are sometimes not well understood

t. From searching questions into cost and schedule overruns to a recognition that better up-front project attention can often prevent or mitigate later project failures

u. From a single company focus to extended enterprise and supply chain considerations

v. From single site hosted developments to a collaboration environment involving various sites and regions across the globe

w. From separate systems engineering and project management stovepipes to a recognition that the two are vitally interdependent

x. From an aerospace dominance in systems engineering to a recognition that systems engineering is a crucial discipline also in other industrial fields, e.g. automotive, shipbuilding, energy systems

y. From relying on past knowledge to continuous learning with an embrace of innovation and a more pronounced openness towards disruptive opportunities

z. From limited systems engineering recognition to a belief that systems engineering can solve most everything