

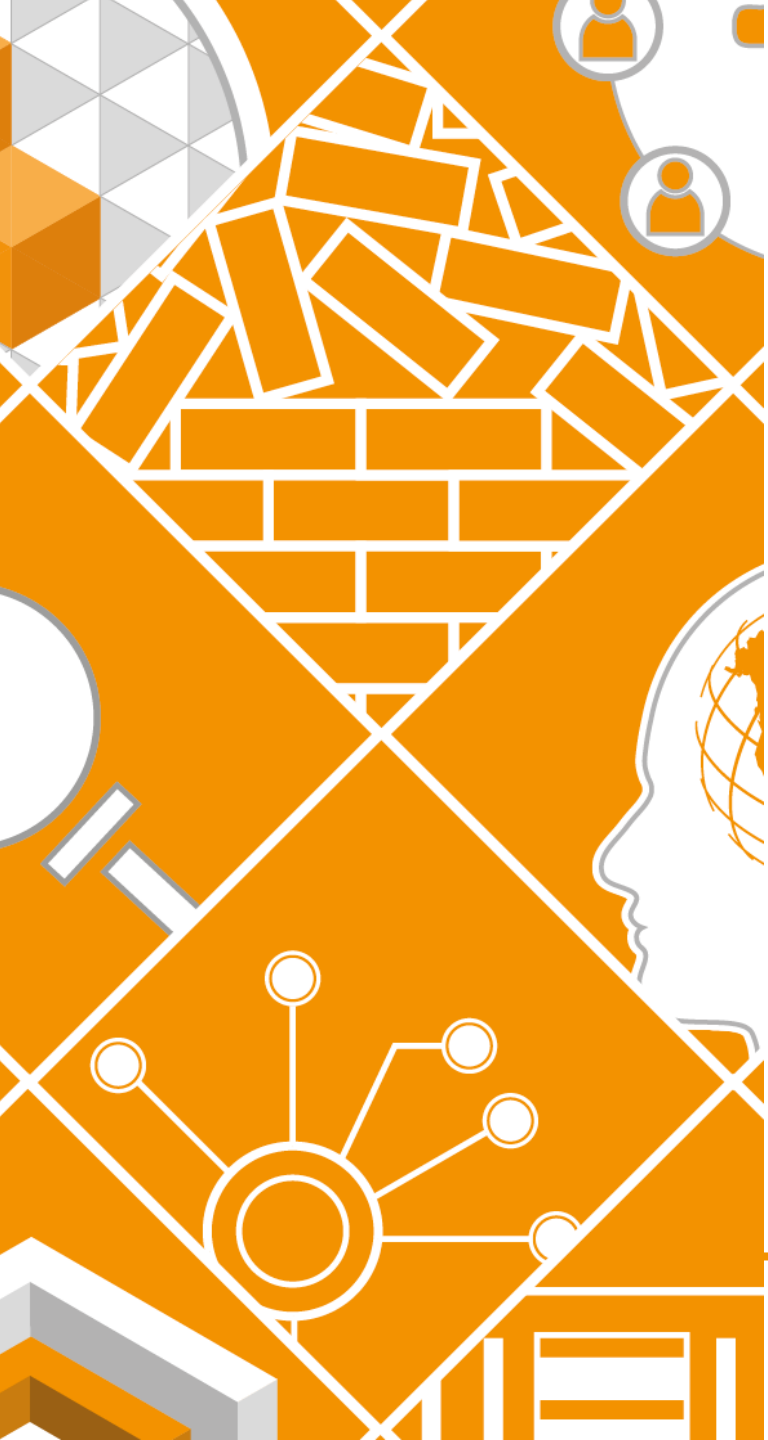
# Abstract

30 + 15 minutes

Each and every organization developing and maintaining technically complex systems, has a strong inherent need for applying Systems Engineering. Effective implementations are always unique, as there are challenging and often dynamic needs and constraints shaping the Systems Engineering solution.

Systems Engineering's origin from the Aerospace and Defense Industries can be effectively utilized to bridge effective implementation into many other industries, most notably within highly regulated industries.

The presentation addresses why we must firstly understand where Systems Engineering has come from, to enable the identification of the obstacles that must be overcome for effective implementations.



# Overcoming challenges to effectively implement Systems Engineering

SE-Training GmbH

Michael Johnson, CSEP

[Mike@se-training.net](mailto:Mike@se-training.net)

# Agenda

- Mike's Introduction
- Origins of Systems Engineering
- Practical Perspectives
- Aligning SE
- Maintaining effectiveness
- Measuring SE value
- Tips & Tricks overcoming common obstacles
- Wrap up / Summary Q&A

# SE-Training Co-Founder

Mr. Mike Johnson (CSEP, CEng)



Mike is a Systems Engineering Manager, Consultant, Trainer and Coach with extensive experience in delivering complex systems and establishing Systems Engineering in the Defence, Space and Medical sectors.

---

## Experience:

- Established Systems Engineering in the Molecular Division of Roche Diagnostics and led many Organisational Systems Engineering initiatives
- Head of Systems Engineering, RUAG Space
- Systems Engineer for the CaSSIS Telescope, orbiting Mars since 2017
- Systems Engineer for Thales Optronics, UK
- MSc in Optics and Optoelectronics, The University of St Andrews



# Origins of Systems Engineering

*"Systems Engineering is not applicable to our industry."*

=

Systems  
Engineering!

≠

Not applicable to  
Systems  
Engineering?!!

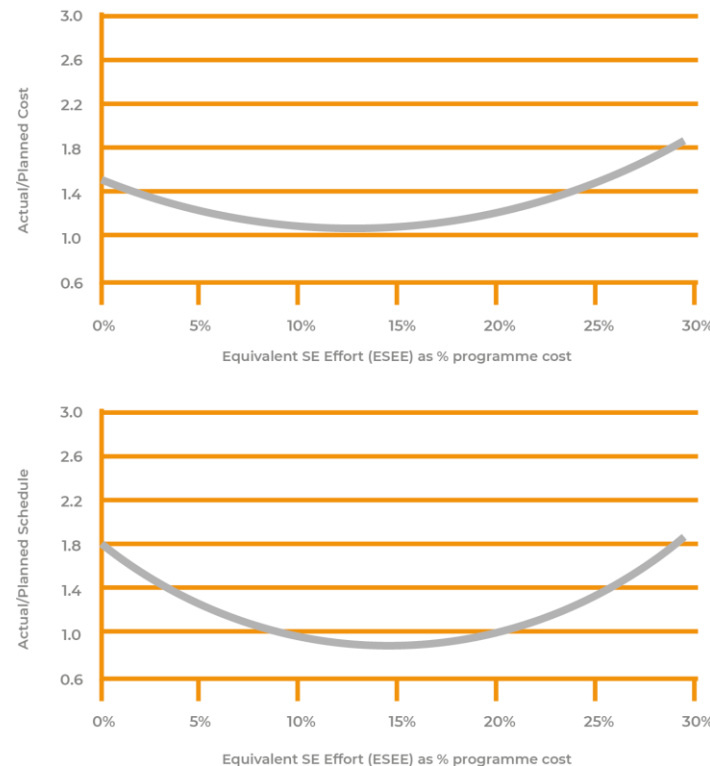
Technical Complexity

# Practical Perspectives

Continually focus on the value of Systems Engineering for ALL Stakeholders

## Consider the following Stakeholders

- CEO
- CFO
- Customer Service / Support
- Operations / Manufacturing
- Etc...



## Demonstrate SE value

- Ensure Eric Honor's work is known
- Search for evidence to support the value of SE locally
- Focus on the SE value chain
- Be bold to reduce SE effort, when it clearly doesn't bring value
- We can do too much SE!

# Align with the 5-Star Model™

Align SE implementation initiatives within the organisational constraints

## Apply Systems Thinking to the Organization

- Organisation Design is more than just a structure.
- Different strategies lead to different organisations
- For an organisation to be effective, all the policies must be aligned with one another.
- For a SE initiative to be effective, it must be aligned within the organisation.



## Provocative questions?

- What's your organisation's strategy?
- Are there official and actual strategies?
- Are there conflicts of interest introduced by the organisational structure?
- Are organisational processes aligned with strategy?
- How high is the adherence to the company processes?
- What's an effective rewards system?

# Maintain

Maintaining the status of already effectively implemented SE initiatives

## Organisational Constraints

- Observe and learn the behaviour of your organisation
- There are times for change and there are times for continuity
- Don't work against the organisational behaviour or culture
- Be prepared to take forward the initiatives during the next times for change.
- Ensure you at least maintain the status quo during the bad times.





# Measure

## Challenges to measuring SE effectiveness

### KPI's

- Don't over-sell measurement of the effectiveness of SE.
- Anecdotes are very effective, but typically only have a lifetime of about 5 years.
- Keep People Interested?!!
- Keep People Informed?!!
- Keep People Involved?!!
- Keep People Inspired?!!
- ....Read the SE Measurement Primer by INCOSE

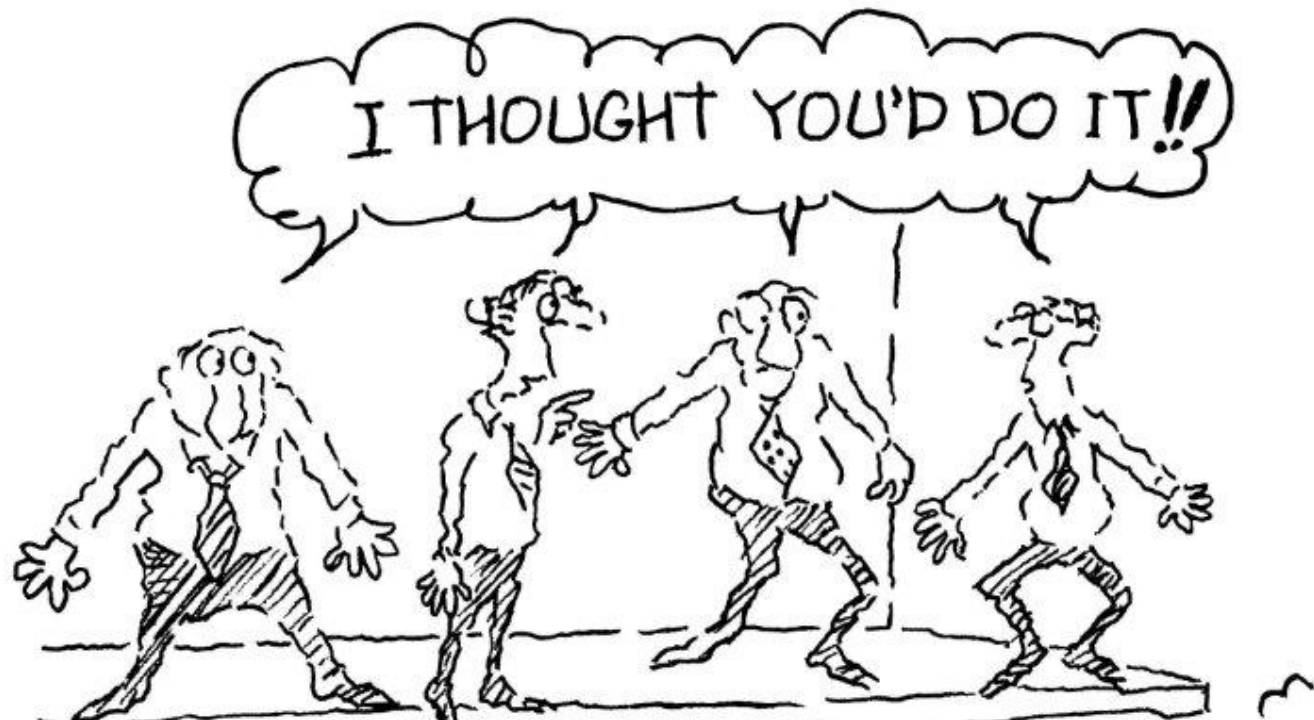


# Tips & Tricks

## Tips and tricks for overcoming common obstacles in highly regulated industries

### Highly regulated industries

- Manage expectations!
- Differentiate SE for compliance from SE for value.
- Be open, transparent and invite the people from the entire Organisation to question SE effectiveness.
- Focus on SE Professional development across the entire organisation, it has many short and long-term strategic advantages.



# Summary

## Practical | Align | Maintain | Measure | Tips

- Focus on a value oriented approach of Systems Engineering to ALL Stakeholders.
- Apply Systems Thinking to your organisation, then implement SE initiatives more effectively.
- Remember that the tide goes out, but also comes back in. Choose your timings based on the behaviour of the organisation.
- Many things can be measured, very few are useful.
- Usefulness of a measurement is dependent on the stage of the lifecycle.
- Differentiate between SE for Compliance from SE for Value.
- Actively manage all Stakeholders expectations.



A person is standing in the center of a long, brightly lit hallway with high ceilings and large windows. The person is facing away from the camera, looking towards the end of the hallway. The hallway has a polished floor that reflects the light. The overall atmosphere is professional and modern.

To view the full schedule of upcoming  
courses, visit our website:

[www.se-training.net](http://www.se-training.net)

Follow us on LinkedIn for regular  
updates on free webinars!





**Thank you for listening!**

**Q&A**