SoSECIE Webinar

Welcome to the
2018 System of Systems Engineering Collaborators Information Exchange (SoSECIE)

We will start at 11 am Eastern Time

Skype Meeting +1 (703) 983-2020, 46013573#

You can download today's presentation from the OUSD(R&E) Website:

https://www.acq.osd.mil/se/outreach/sosecollab.html

To add/remove yourself from the email list or suggest a future topic or speaker, send an email to knharrington@mitre.org

NDIA System of Systems SE Committee

- **Mission**
  - To provide a forum where government, industry, and academia can share lessons learned, promote best practices, address issues, and advocate systems engineering for Systems of Systems (SoS)
  - To identify successful strategies for applying systems engineering principles to systems engineering of SoS
- **Operating Practices**
  - Face to face and virtual SoS Committee meetings are held in conjunction with NDIA SE Division meetings that occur in February, April, June, and August
  - SoS Track at NDIA 21th Annual Systems Engineering Conference, Grand Hyatt Tampa Bay, Tampa, FL, October 22-25, 2018
    - Conference Info: http://www.ndia.org/events/2018/10/22/9870---21st-systems-engineering-conference
    - Call For Papers Extended to July 3, 2018: http://www.ndia.org/events/2018/10/22/9870---21st-systems-engineering-conference/call-for-papers

NDIA SE Division SoS Committee Industry Chairs:

Mr. Rick Poel, Boeing

Ms. Jennie Horne, Raytheon

OSD Liaison:

Dr. Judith Dahmann, MITRE

Simple Rules of Engagement

- I have muted all participant lines for this introduction and the briefing.
- If you need to contact me during the briefing, send me an e-mail at knharrington@mitre.org.
- Download the presentation so you can follow along on your own
- We will hold all questions until the end:
  - I will start with questions submitted online via the CHAT window in Skype.
  - I will then take questions via telephone; State your name, organization, and question clearly.
- If a question requires more discussion, the speaker(s) contact info is in the brief.

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2018 System of Systems Engineering Collaborators Information Exchange Webinars

Sponsored by OUSD(R&E) and NDIA SE Division

November 6, 2018

Model-Based Systems of Systems Engineering

Mr. Zane Scott, Vitech Corporation

November 27, 2018

Emergence as a Subject of Research, Research Methods, and Engineering Knowledge and Practice

Dr. Timothy L.J. Ferris, Centre for Systems Engineering, Cranfield University, Defence Academy of the United Kingdom

Model-based SoS Engineering

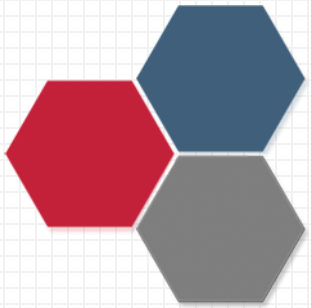
Zane Scott

Vice President for Professional Services

Vitech Corporation

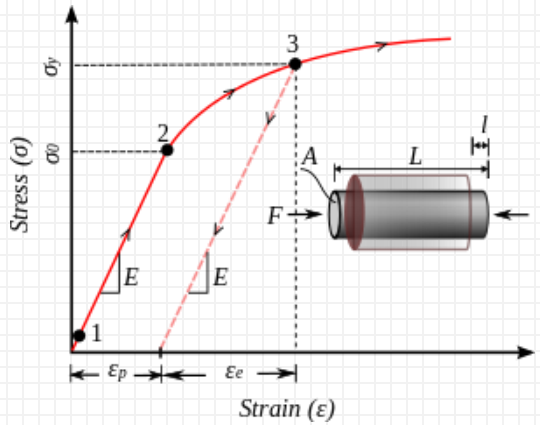
Model-Based SoS Engineering (MBSoSE)

- What is it?
- Challenges
- Advantages

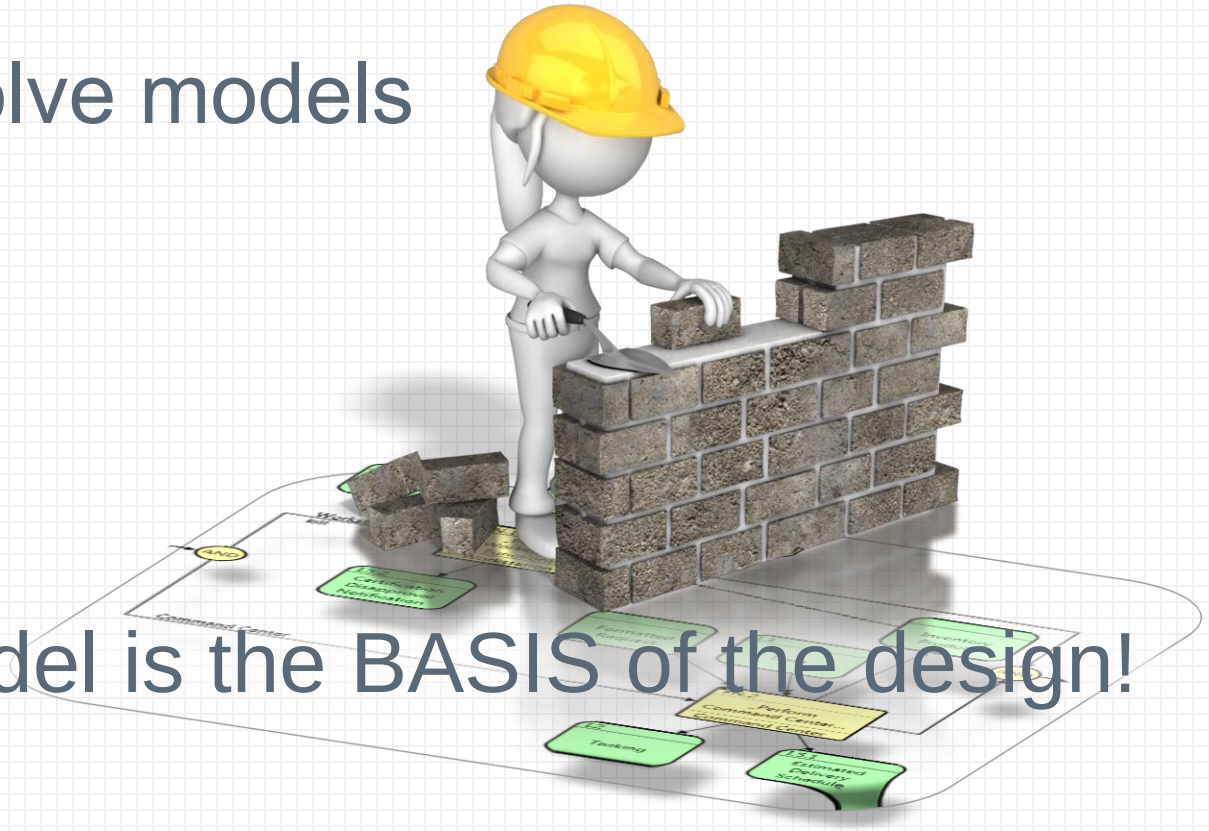


What is it?

Model-Based- What is that?



Doesn't just involve models

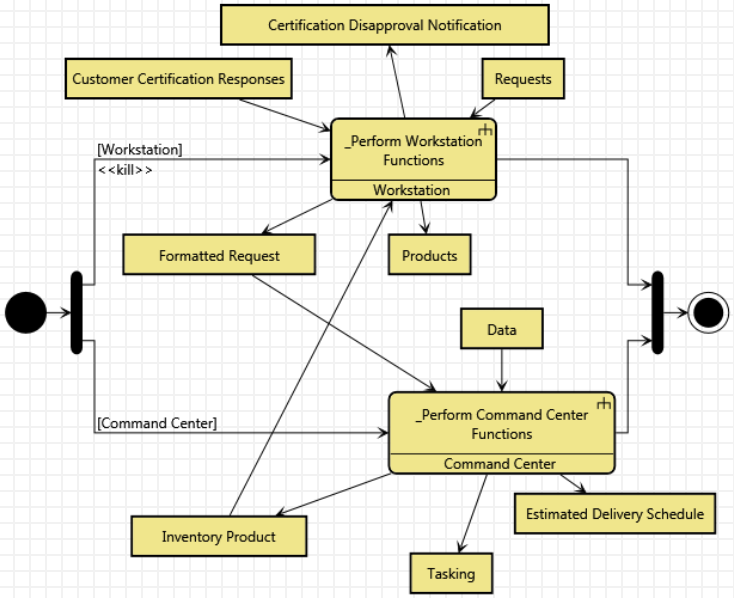


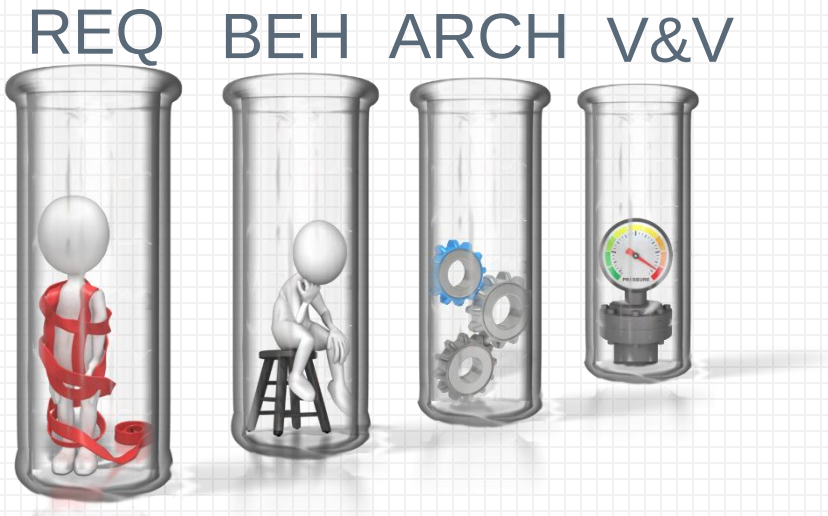
The model is the BASIS of the design!

Vitech

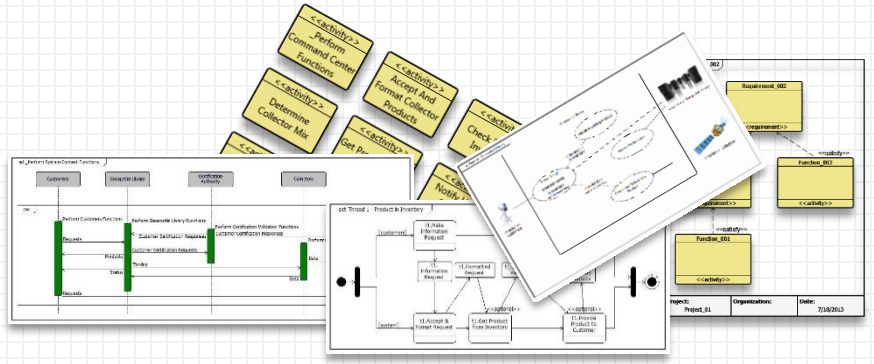
Model-Based- What is that?

A single system model





Not just domain models



Not disjoint drawings

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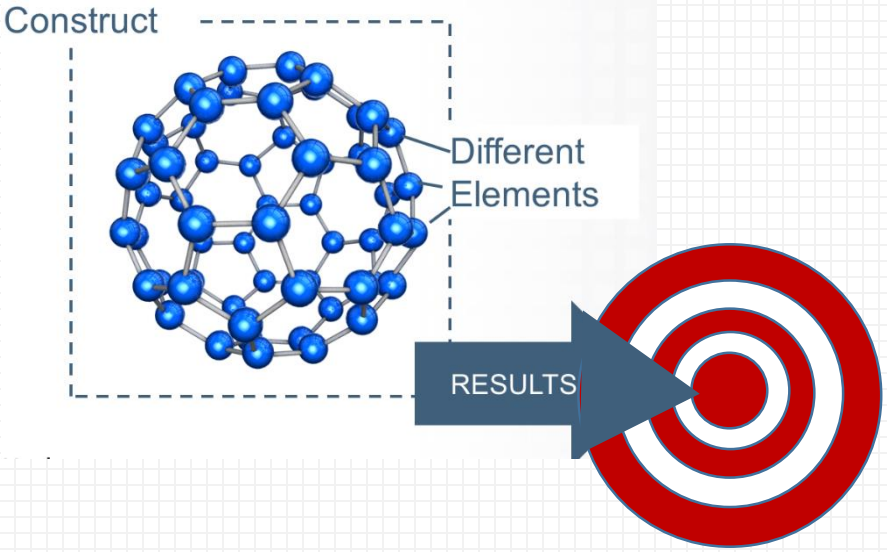
Model-Based- Why just one?

Results come from relationships

Predicting results is key

To predict we must have system view



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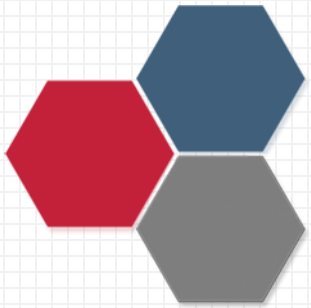
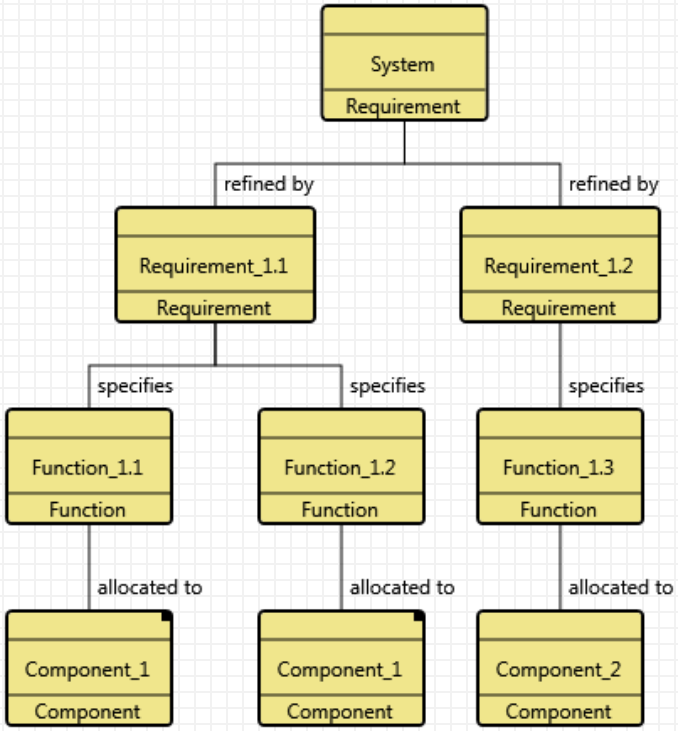
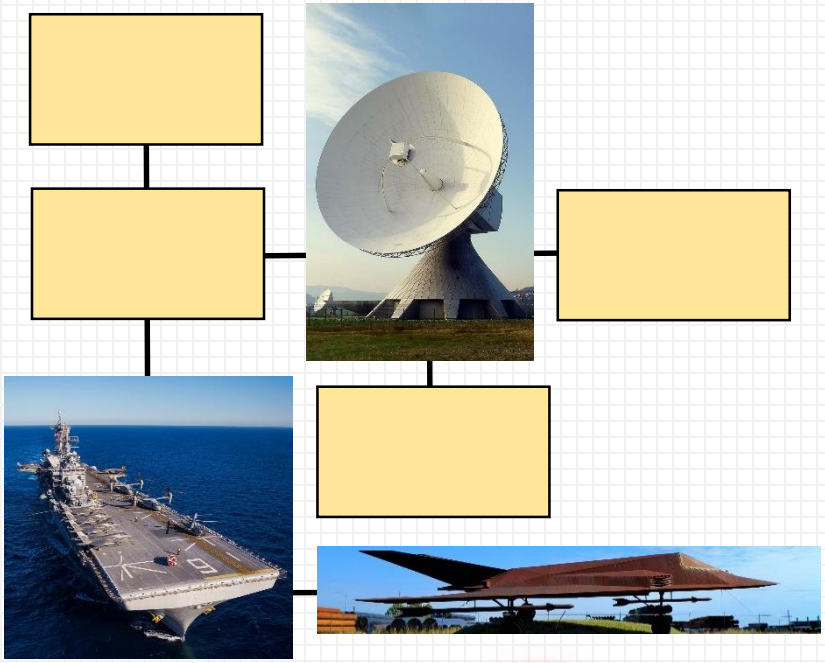


SoS Challenges

MBSoSE Challenges- SoS Nature

Traditional top-down





SoS design

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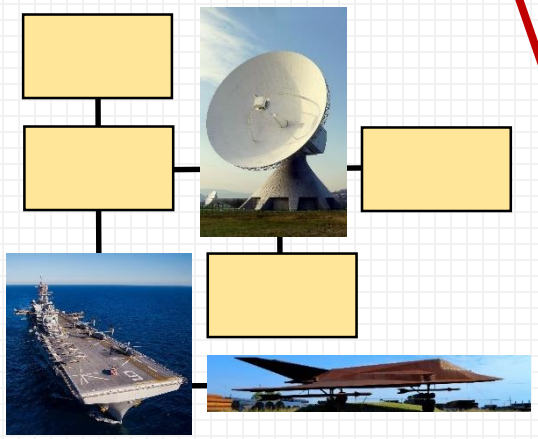
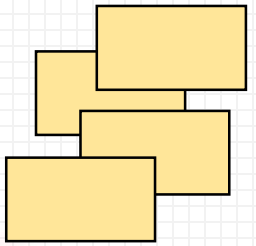
MBSoSE Challenges- Emergence

Sys WXYZ > Sys W + Sys X + Sys Y + Sys Z





Is it enough?
Is it too much?
Is it undesirable?

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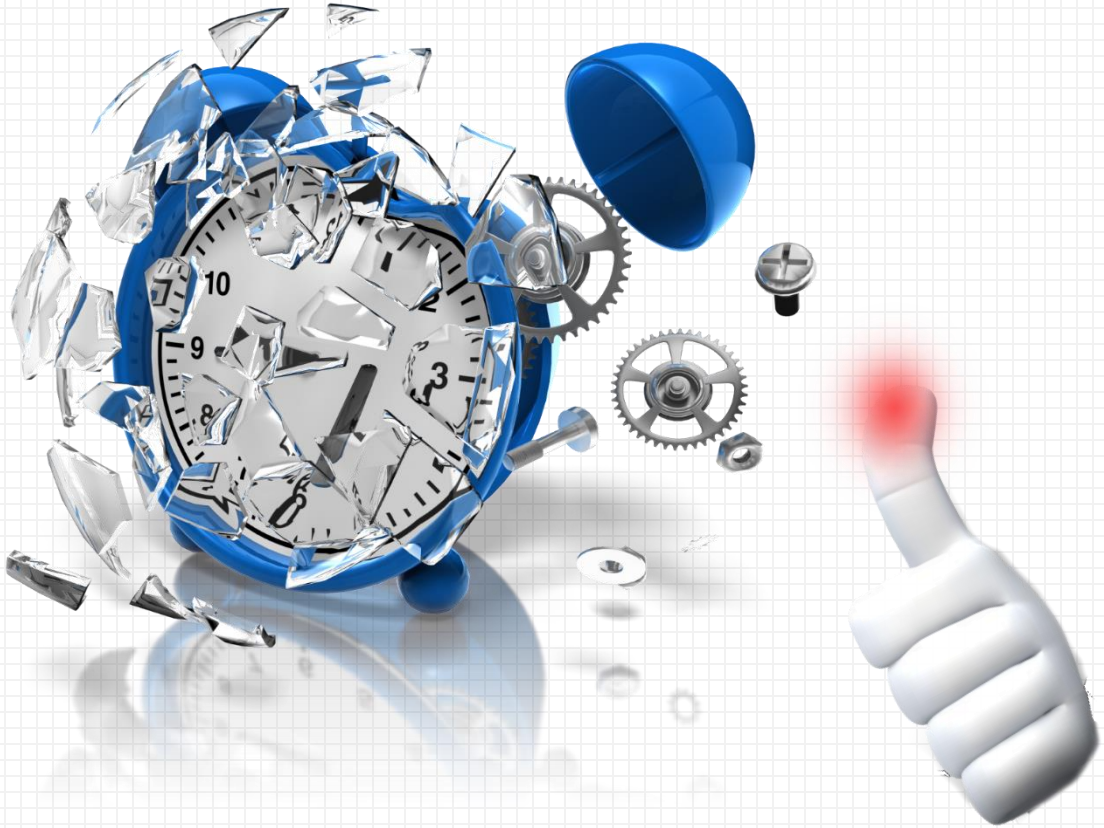
MBSoSE Challenges- Insight

"(System) properties are destroyed when the system is dissected, either physically or theoretically, into isolated elements." Fritjof Capra



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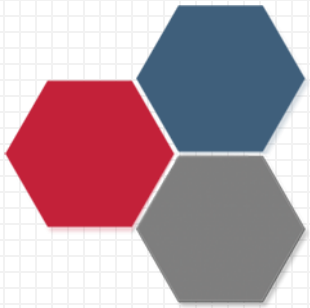
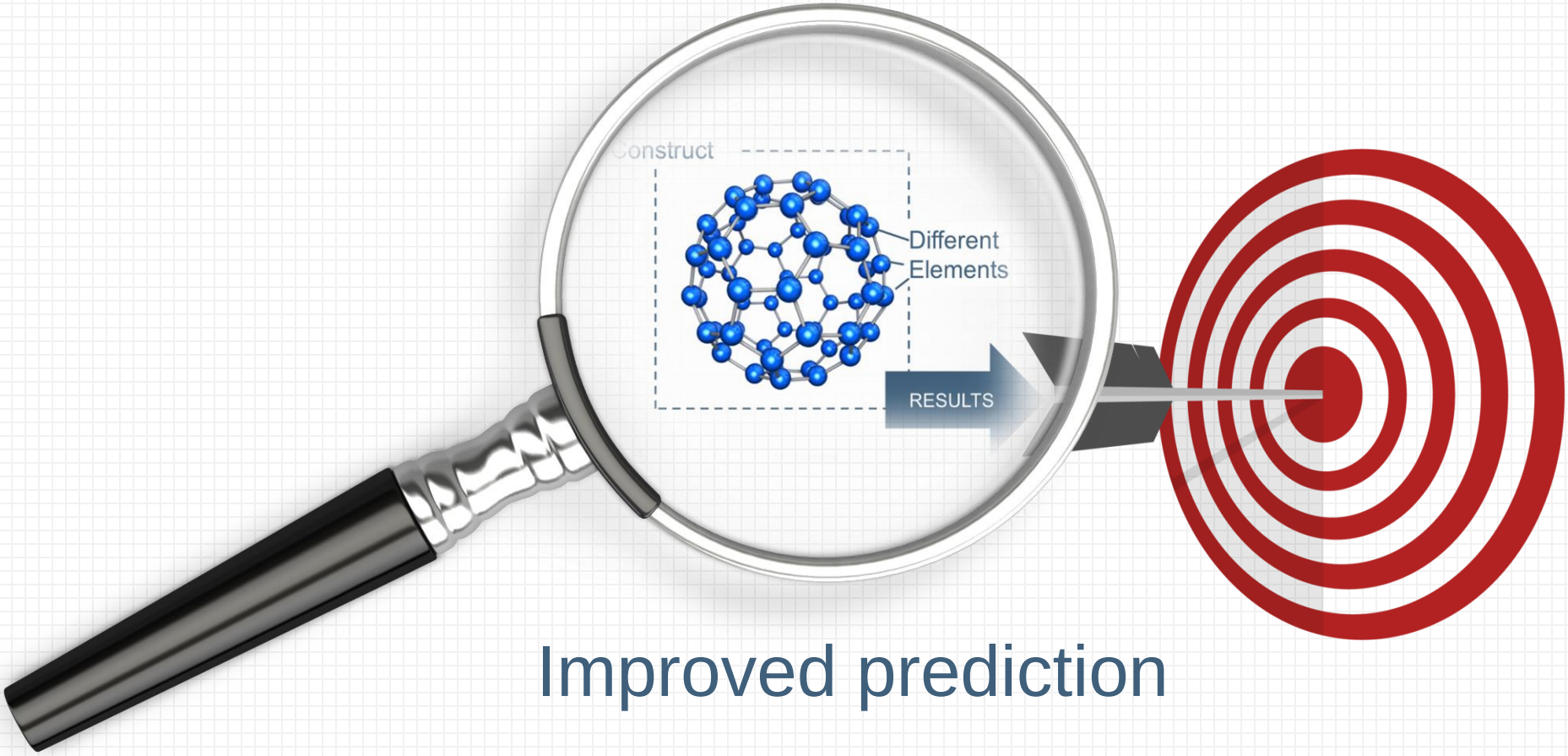


Model-based advantages

Advantages of Model-Based-



Improved prediction

Systems view

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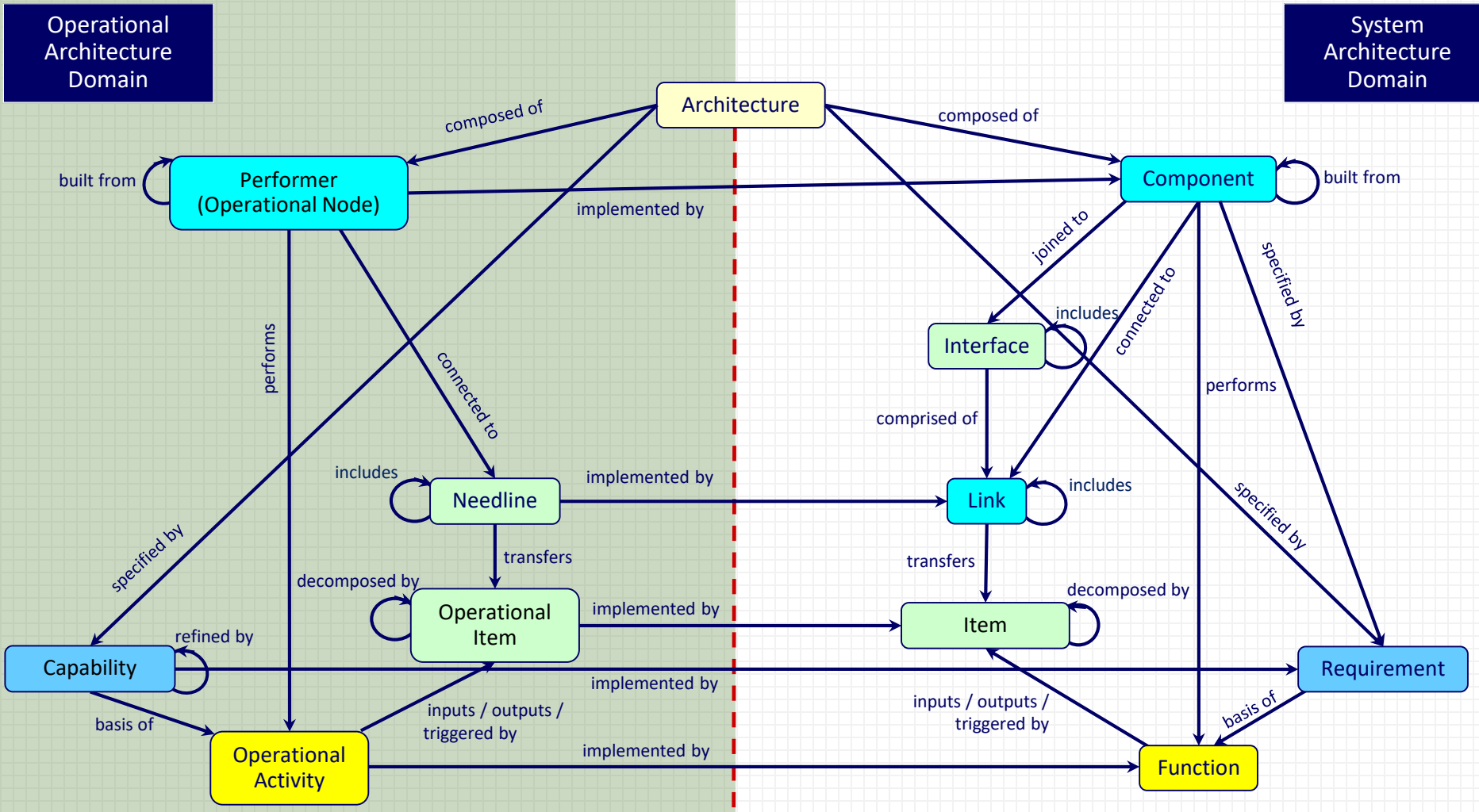
Advantages of Model-Based



Capability understanding

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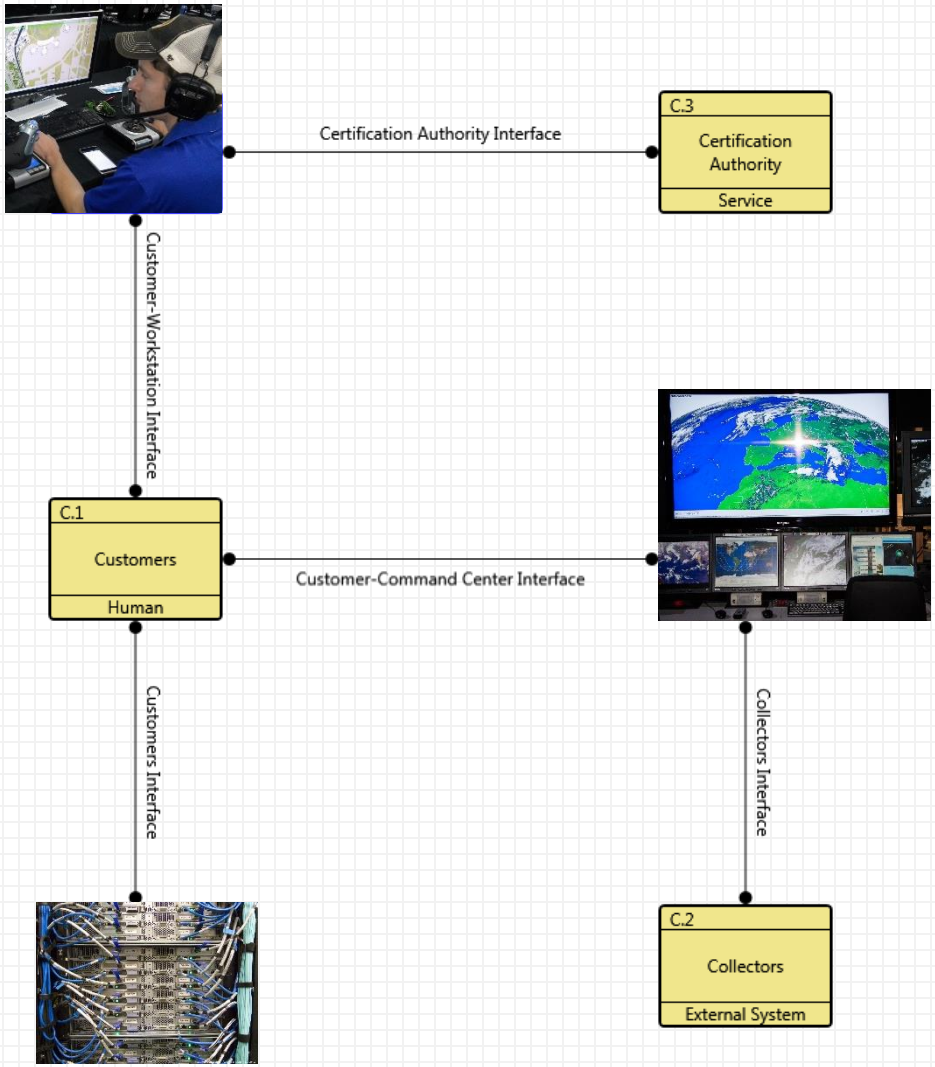
Advantages of Model-Based



Interface design

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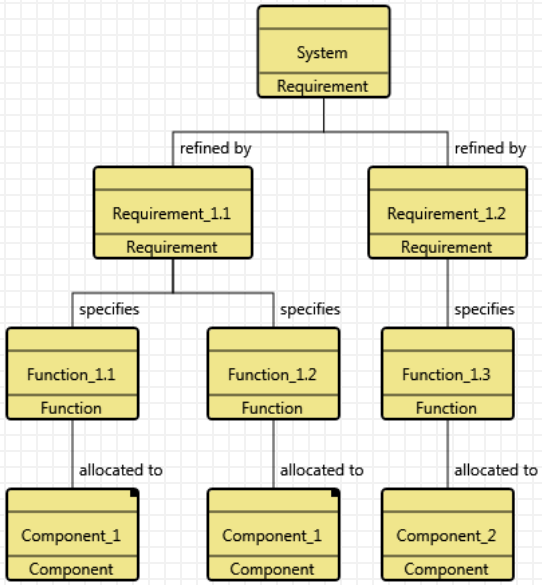
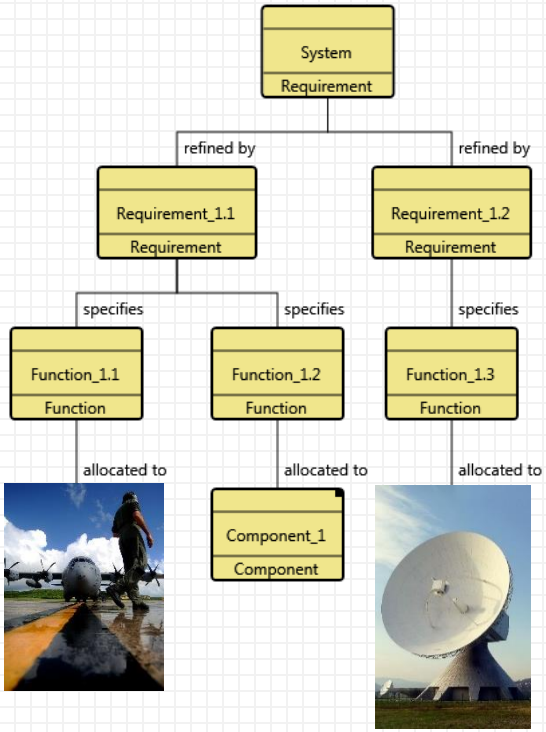
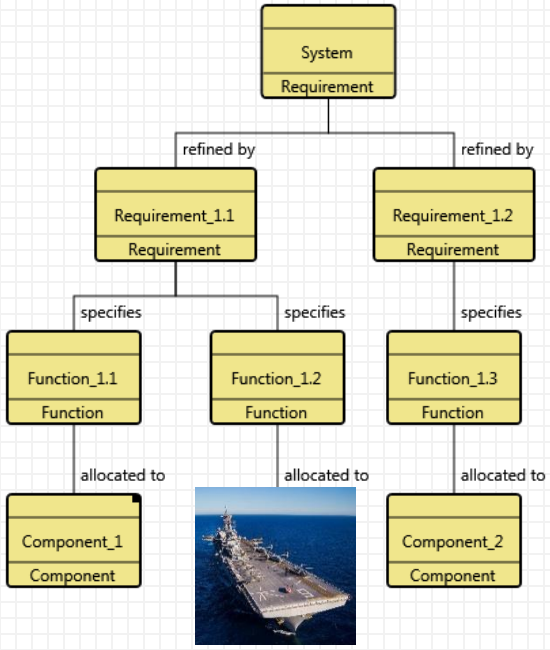
Advantages of Model-Based







Flexibility- Tailoring and reuse

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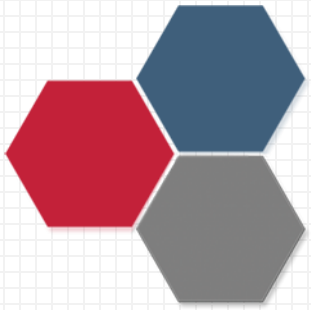

What will it take?

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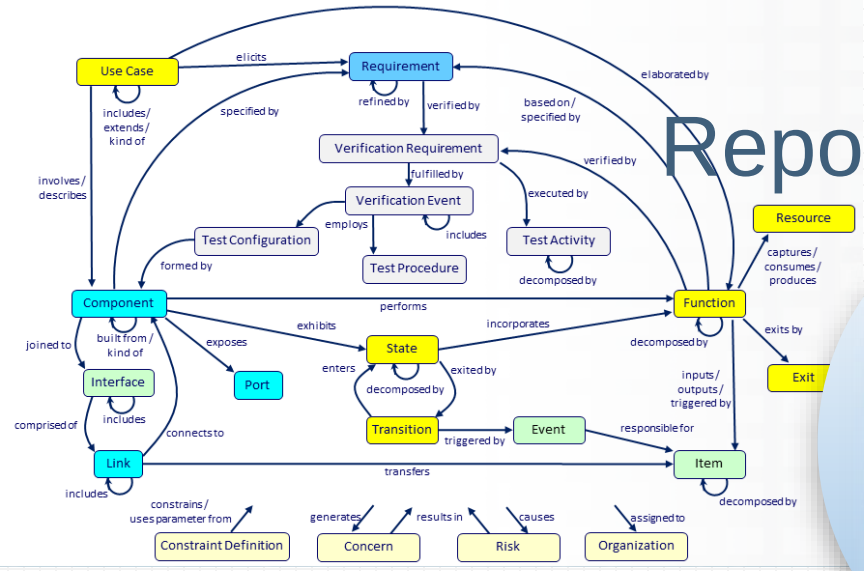
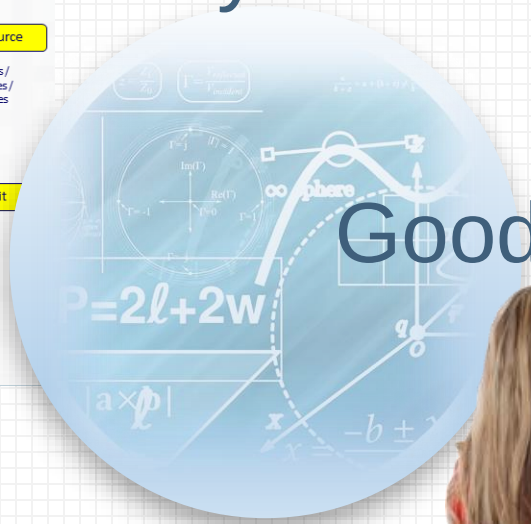
What do we need?

Metamodel/Schema



Repository/Database



Good Engineers!

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MBSoSE- Recap

- What is it?
  - NOT- the new buzz word
  - BASED on single, integrated model
- Challenges
  - Nature of SoS
  - Emergence
  - Insight
- Advantages
  - System view
  - Capability capable
  - Interface design

Thank you!

Zane Scott

VP for Professional Services

Vitech Corporation

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