The Israeli Air Force is going Digital! (?)

By Maj. Tzvika Kaminsky

Technological Headuarters

About Me

- **Electronics Engineer Bsc.**
  - **MBA**
  - **PMI-PMP, PMI-RMP**

- **17 years of IAF Systems Engineering experience:**
  - **Managing, designing and testing systems and system of systems**
  - **Leading the Air System Concepts, Design and integration for the unique Israel platforms including F15s, C130s, F35, CH53K, AH64E and more**
  - **Leading Agile processes for IAF Systems**
  - **Participating in Airworthiness processes for IAF platforms**
  - **Researching advanced solutions for “Design for Test Success”**

Technological Headuarters

Distribution statement

This presentation is unclassified and Approved for public release: distribution unlimited.

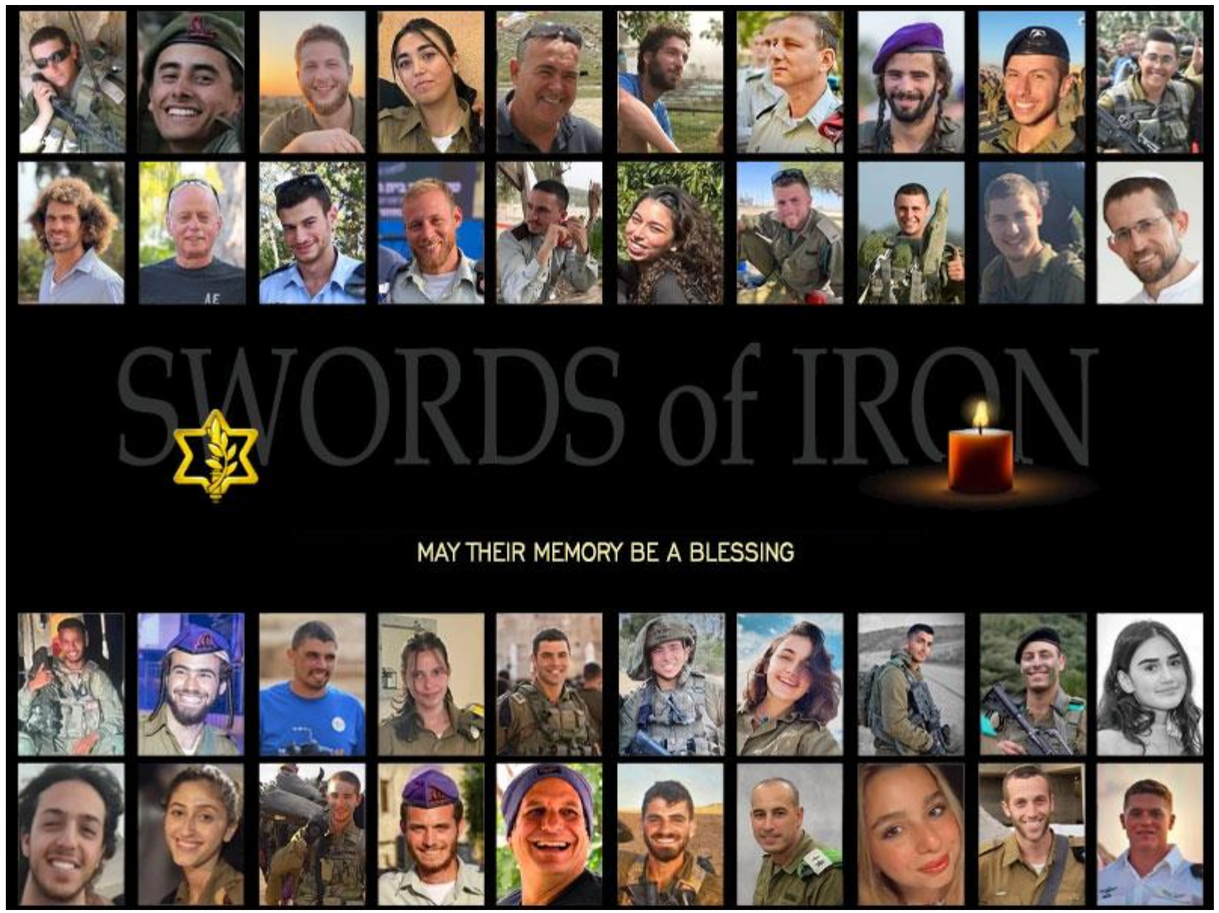
No official (FOUO/CUI) program materials were used in the preparation of this presentation

Topics

- Background
- Challenges in SE
- Motivation to “Go Digital”
- Moving the ship?

Before we start – Swords of Iron

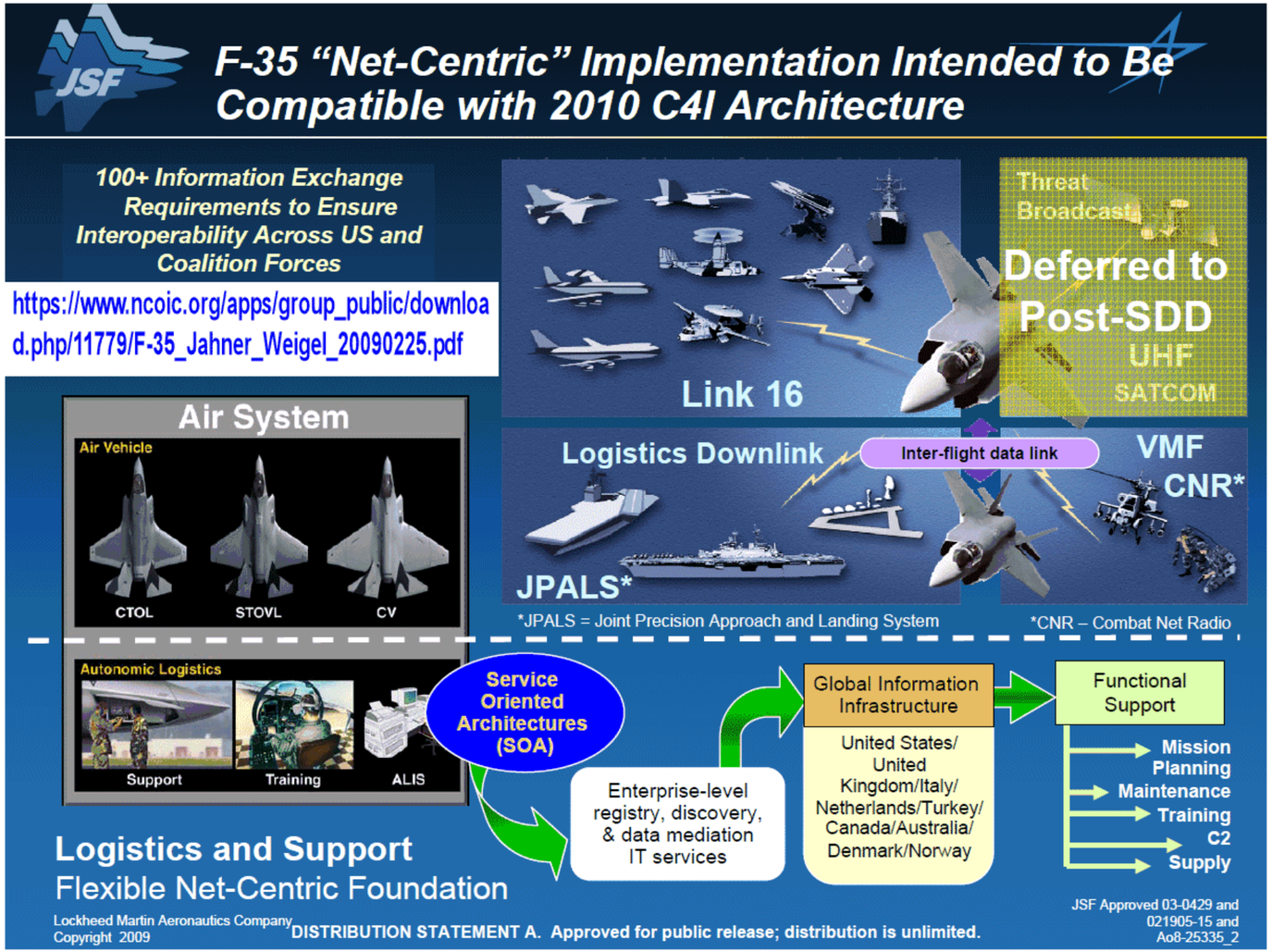
- In Memory of the fallen



Background – IAF Operational needs

- **Interoperability with existing platforms**

  Based on Israeli unique networks



Background – IAF Operational needs

- QME

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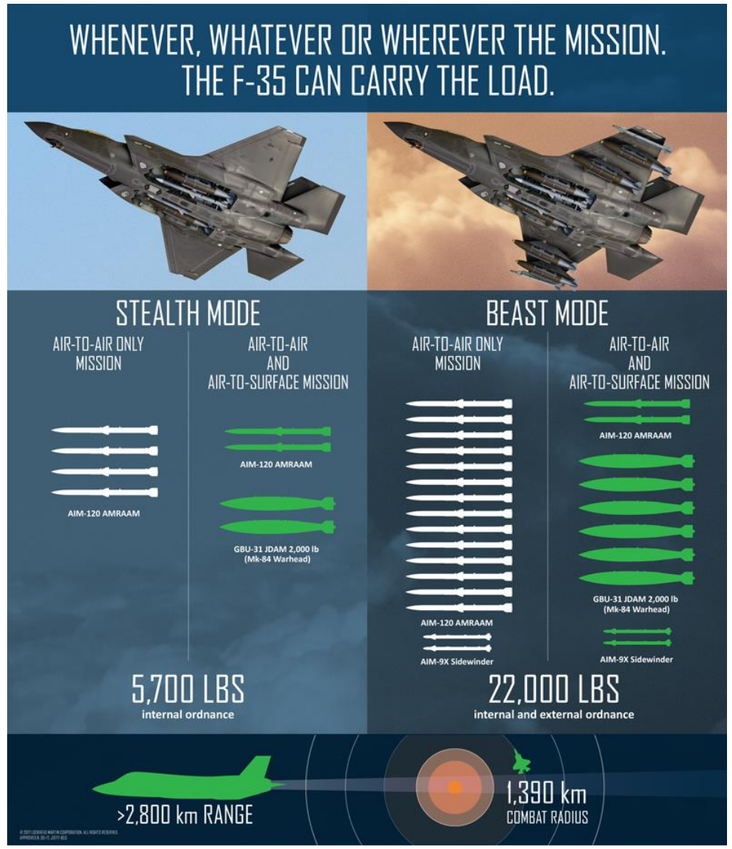
- Independent & Future growth

in a dynamic environment

How to build an infrastructure for

Decades, without gold-plating or PF?



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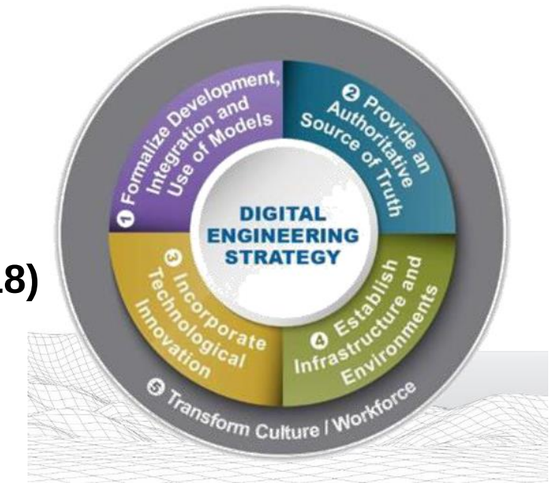
(Some) Challenges in SE

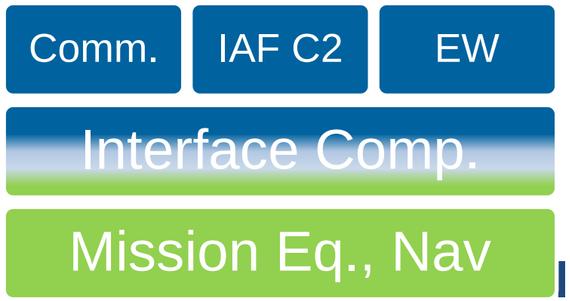
- **Keeping the information current and in stable CM**
- **Tracking requirement to capability**
- **Building a “future proof system”**

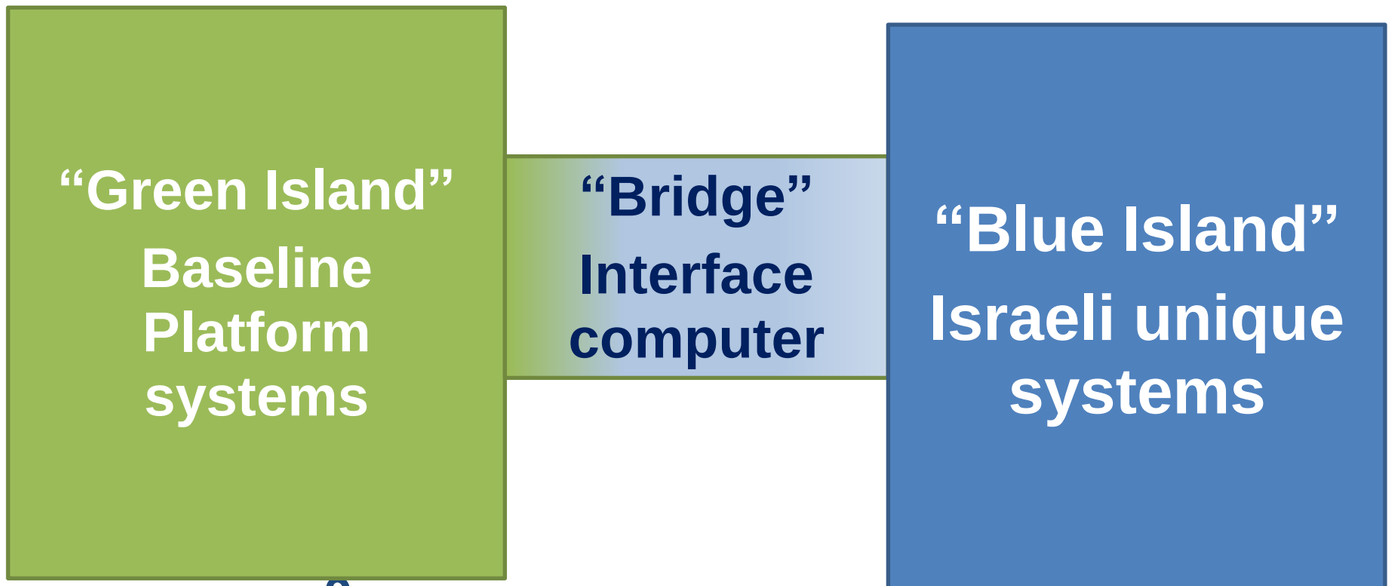
DoD (2018)



Building a “future proof system”

- **The Air System Island approach**
  - **allowing a parallel dev. Process - how to share the interface?**
  - **Modifications to each side will not impact the other**
  - **Bridge can be expanded**





One overarching solution?

- **Central, controlled and updatable center of knowledge**

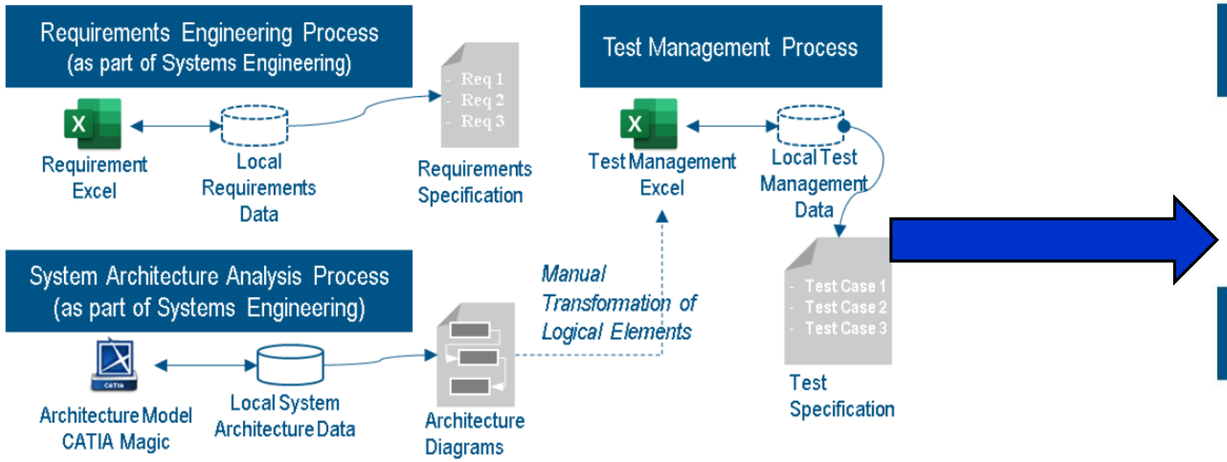


Figure 3: Traditional Approach for a test management process. Established processes run in parallel with dedicated tools. Data has to be duplicated as it is locally managed.

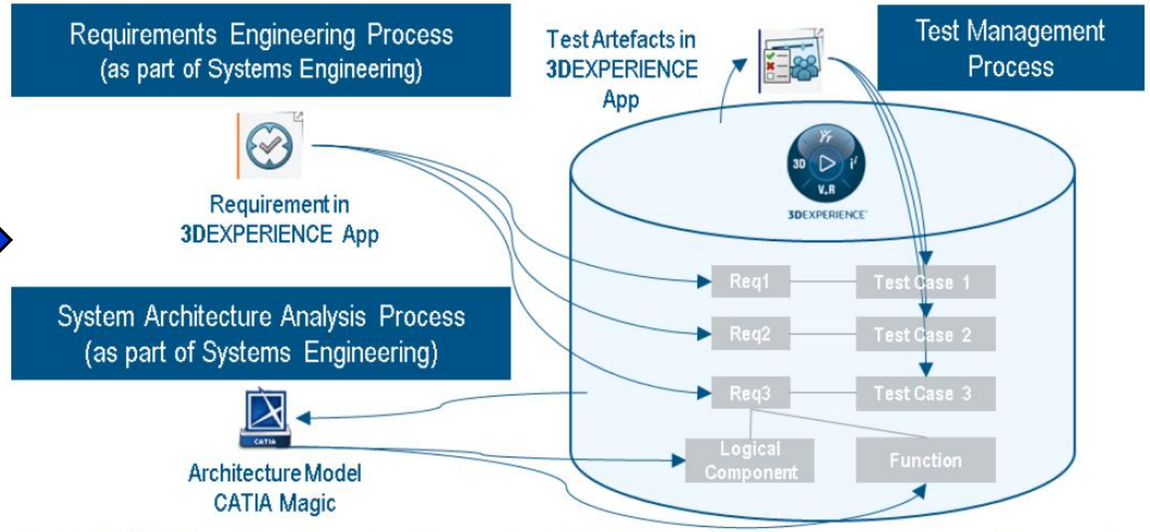


Figure 4: MBSE based Test Management approach, where data is centrally managed and accessed by process specific tools, which are strongly interwoven through the granular data. .

Challenges of Implementing MBSE in Industry
Blott, Bucholtz (2023)

What the IAF did?

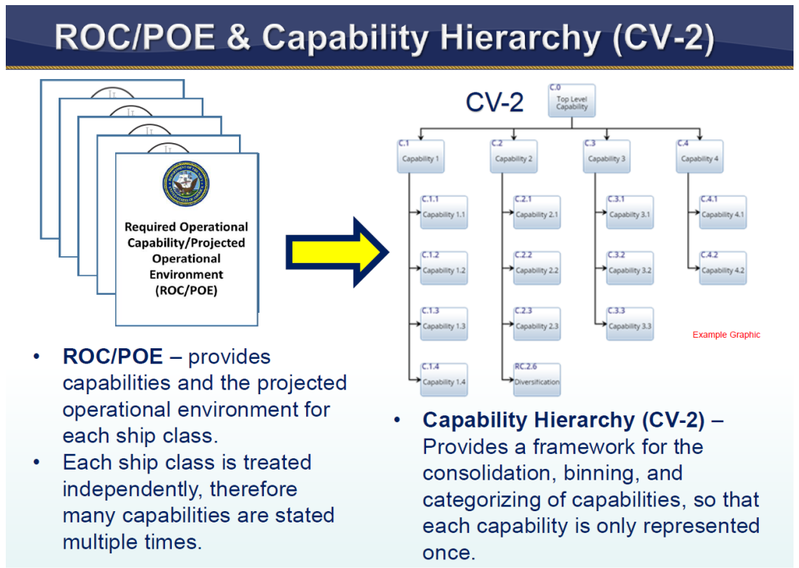
- Recognize the value of MBSE
- Connect top level brass to the cause
- Explore Path Forward

So How to stir the ship?

- **Bottom-up and Top-down**
  - **Create confidence at the SE level with a specialized course (with NPS)**
  - **Showcase to management the possible improvement**
- **Choose the tool(s)**
- **Select a pilot program to demonstrate**

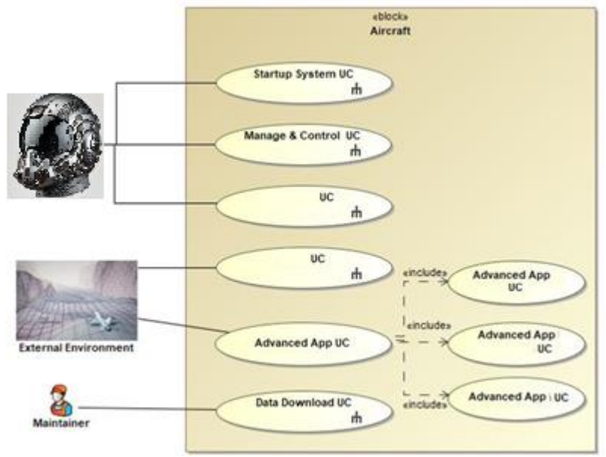
MBSE Course with NPS

- Create a common knowledge base of the IAF SE community
- Learn tools and methods of MBSE
- Drive the change bottom-up



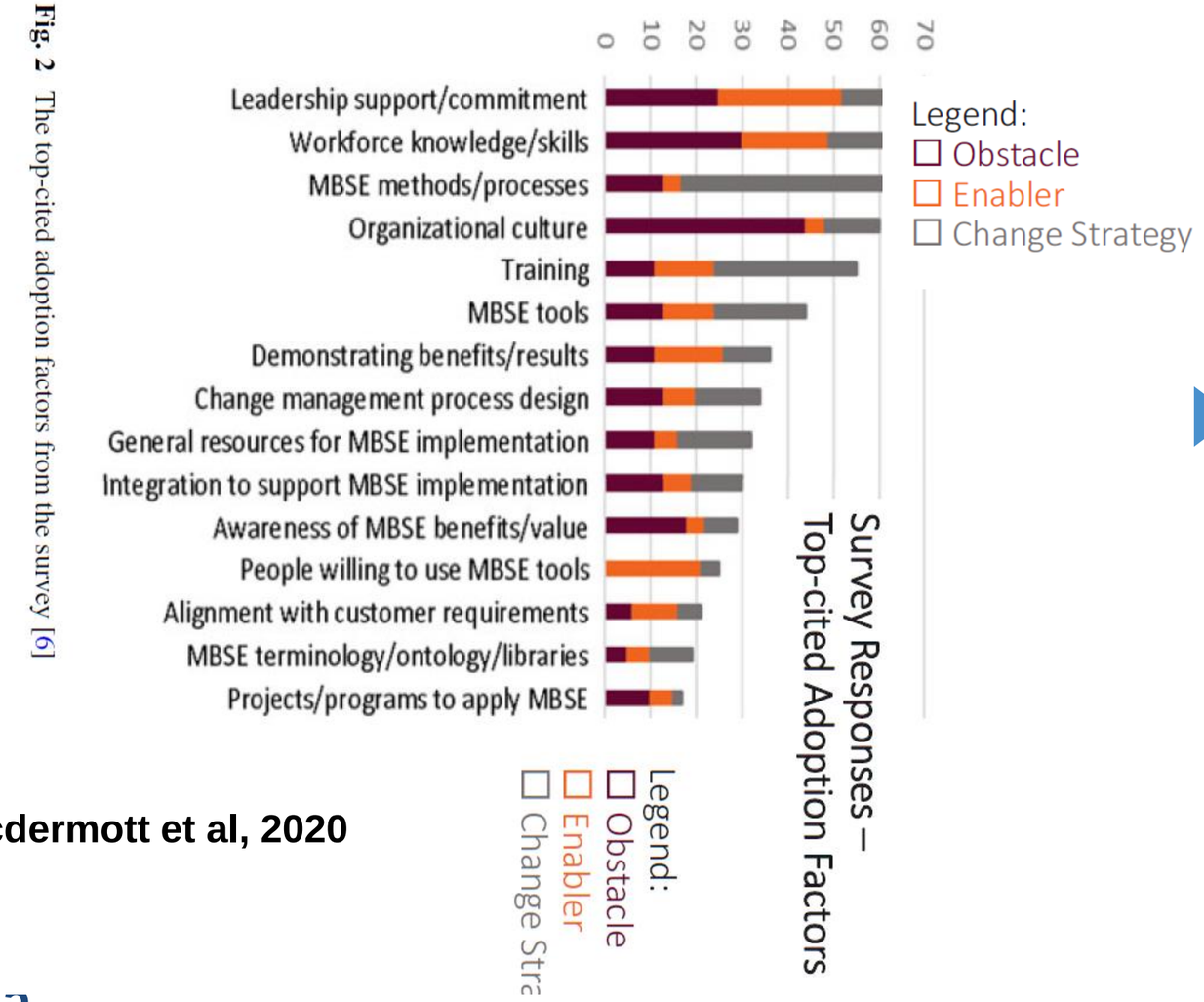
Where we're at

- Process delayed due to ongoing war
- Tool demo programs initiated
- Cooperating with suppliers on a volunteer basis



Challenges

- Change in org. culture and personal use
- No one-click solution
- No AI support?



Mcdermott et al, 2020

Summary

- The IAF is evolving in MBSE
- The value is clear, but the challenges are as well
- Need continued industry cooperation to make progress
- Keep pushing forward for improvement in the SE domain!