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hybrid event
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SE Capability Development using the "Green and Blue Track Approach"

Jonas Larsson, Kanika Garg, Tom Strandberg (CAG Syntell AB)

Agenda

- Existing work
- Approach
- Proven in use and value

Presentation of Tom and Jonas

Tom Strandberg (CSEP)

Over the last 25 years, Tom has successfully built the Systems Engineering business at Syntell and contributed to an active SE community in the Nordic countries. He is an active member of INCOSE since 1998 and has held different leading positions. He is the lead for the INCOSE Future of Systems Engineering (FuSE) stream on SE Application Extensions. As a CSEP and consultant, Tom has worked with many different international companies and authorities within aerospace and defense, automotive, healthcare/medtech, transportation, and the process industry. Tom is also a trainer in SE and the manager of Syntell Academy, which provides training courses including the yearly Scandinavian Summer School Week on SE.

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Jonas Larsson (CSEP)

25 years experience in the Defence-, Aerospace-, public transportation- and telecommunication sector at various operational and management positions. Have worked with product development in different product lifecycle stages from concept to support. Has tailored Systems Engineering methods as well as coached organizations in implementing Systems Engineering, Systems Architecture and Product Line Engineering.

Teacher at Syntell Academy in Systems Engineering, Systems Architecture and at Syntell's Summer School for the course Systems Architecting Fundamentals.

Presenter at INCOSE International Symposium and Best Paper Award 2016.

Jonas.Larsson@cag.se

About us – CAG Syntell

Vision
A society where our resources are used in the best possible way to establish a sustainable and safe future.

Mission
Together we create sustainable and competitive businesses and systems using a lifecycle approach.

Est. 1994

80 employees

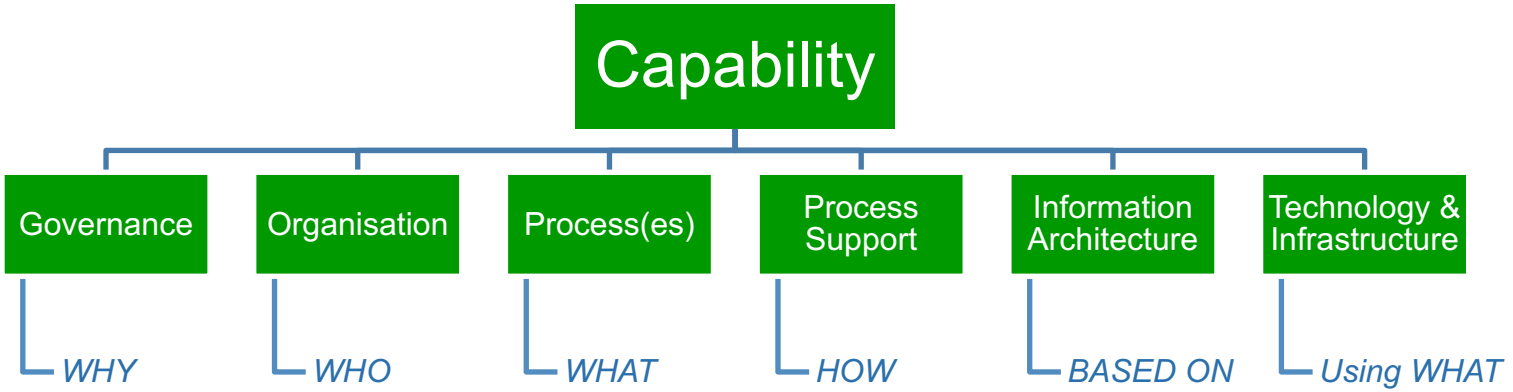
50 Partner

5 Business units

150 MSEK Turnover

Our offer

Proven concepts for enhancing our customers' capability to manage complex systems in complex environments over the lifetime of the systems



Capability Areas

Systems Lifecycle Mgmt

- Business Development
- Systems Engineering
- Requirements Engineering
- Configuration Management
- Integrated Logistic Support

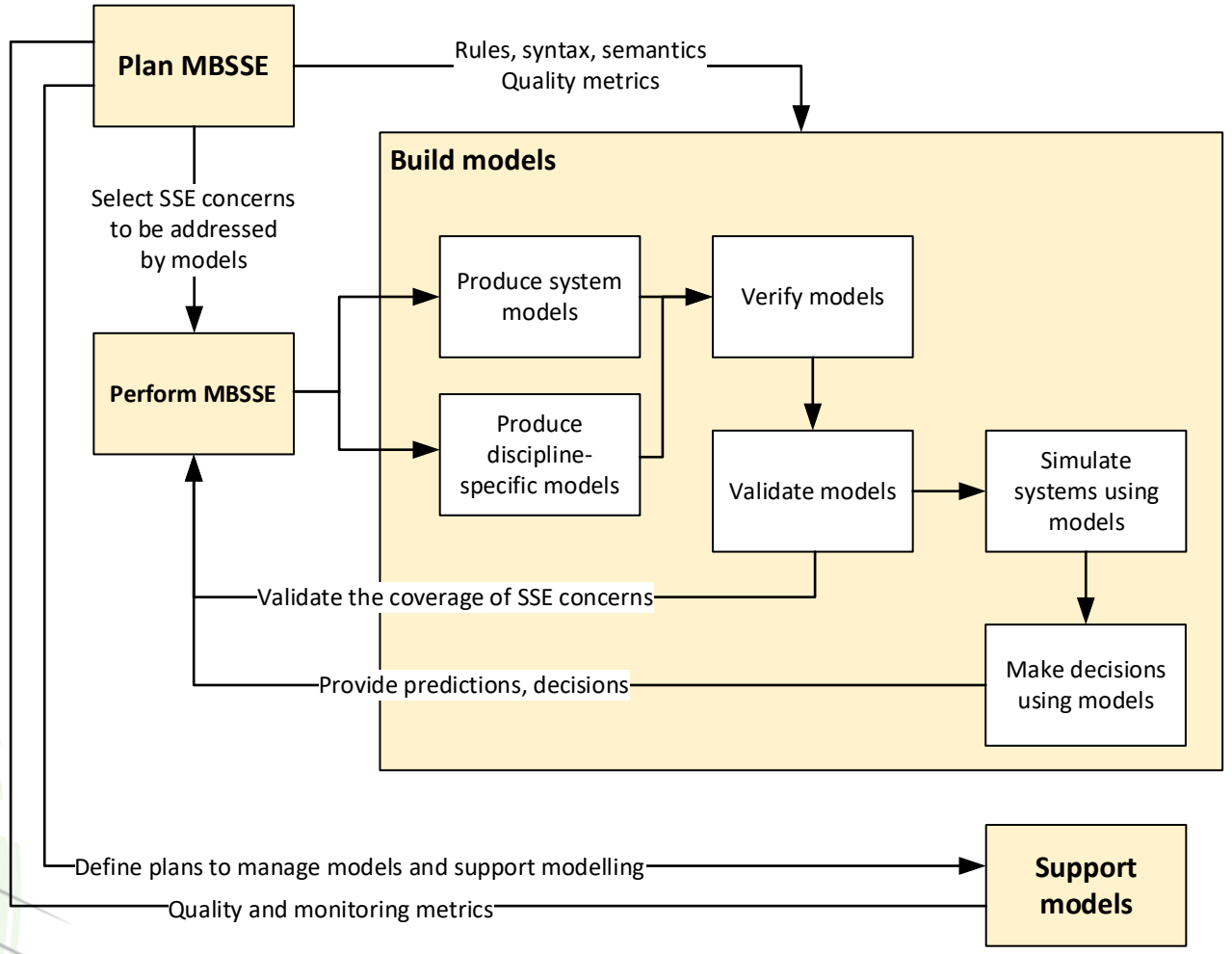
Offerings

- Consulting
- Turn-key assignments
- Networking activities
- Standards development
- Innovation & research
- Training, Syntell academy

Implementing MBSE – An Enterprise Approach to an Enterprise Problem
Controlling Rapid Change through Systems Engineering the Organization
Implementing the MBSE Cultural Change: Organization, Coaching and Leassons Learned
Introducing MBSE by applying Systems Engineering principles when changing process
ISO 24641 – Methods and tools for MBSE

Existing work

ISO 24641 – Methods and tools for MBSE



INCOSE IS2016 paper Hallqvist-Larsson

Introducing MBSE by applying Systems Engineering principles when changing process

- Vision
- Business case
- Method development
- Tool and language

- Stakeholder analysis
  - CM
  - System integration
  - QA
  - System Design
  - Management
  - Test & verification

Capability
Gap
Green and Blue track

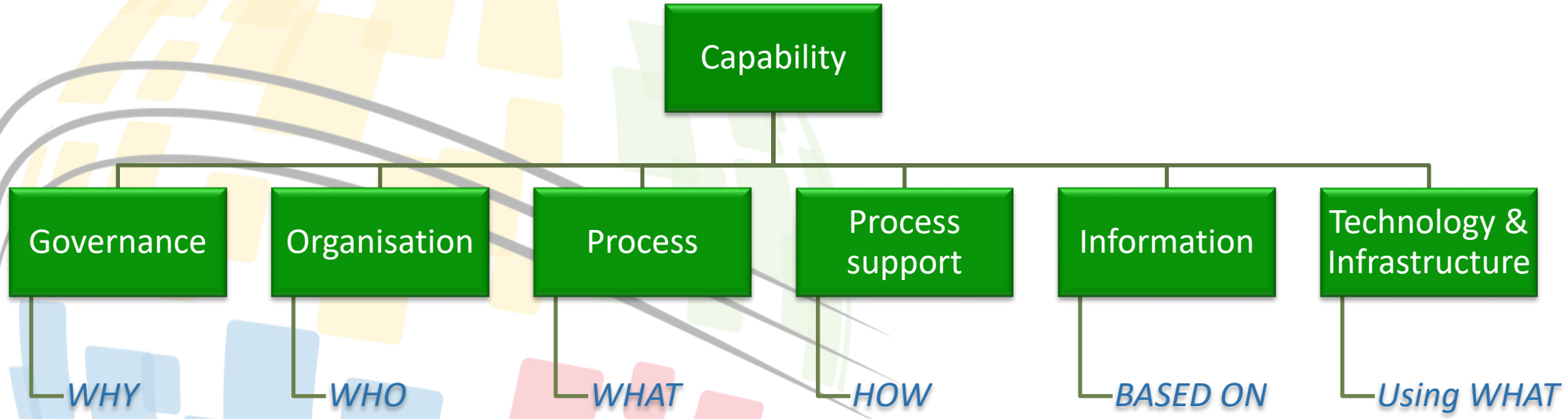
The approach

A fool with a tool – is still a fool…

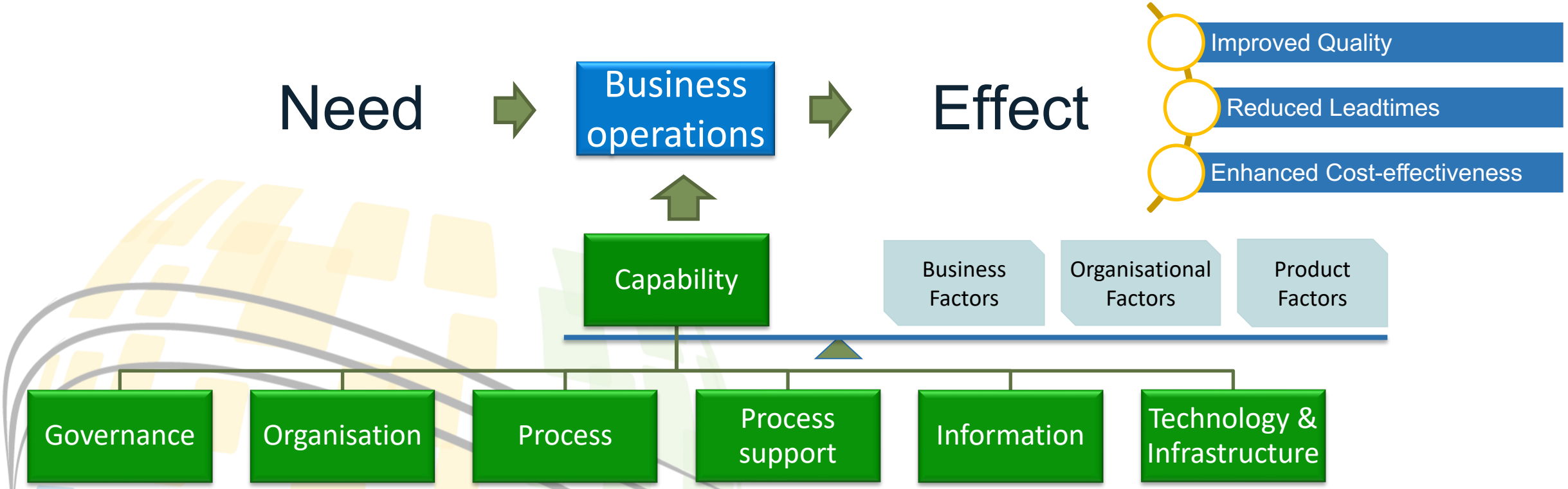
Buying a tool isn’t enough. A capability in a wider context is needed.

Capability

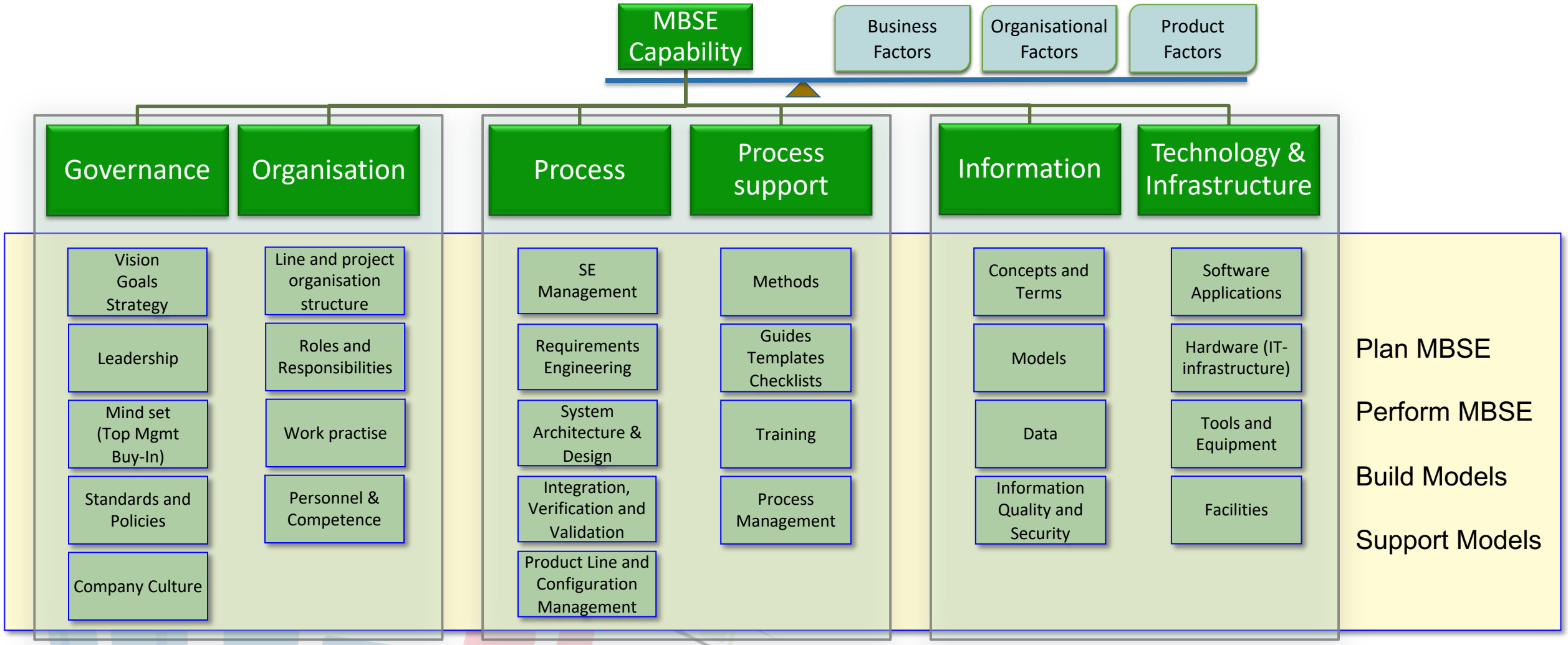
- Definition “Capability” (http://www.businessdictionary.com)
  - Measure of the ability of an entity (department, organization, person, system) to achieve its objectives, specially in relation to its overall mission.
- The Capability Model recognizes that we need to implement a combination of actions and assets to build a lasting capability



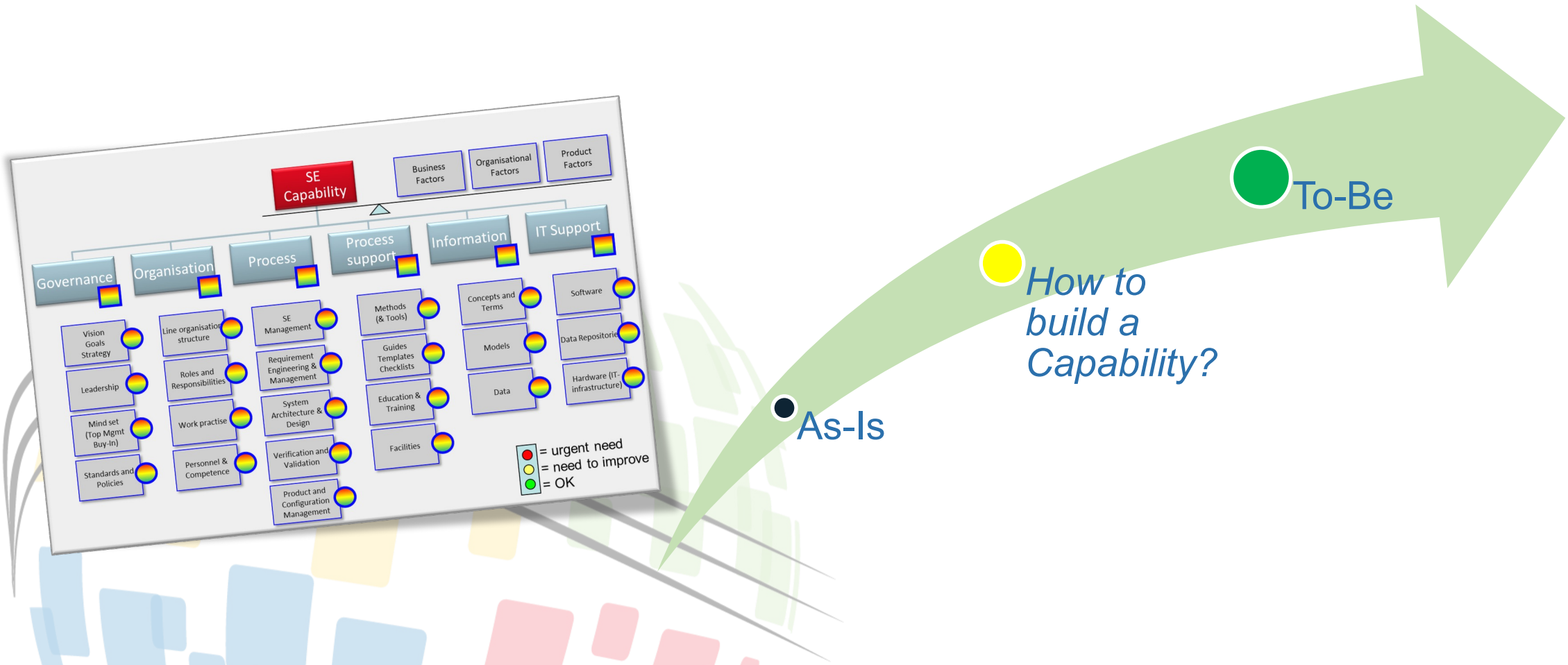
Capability and Effect



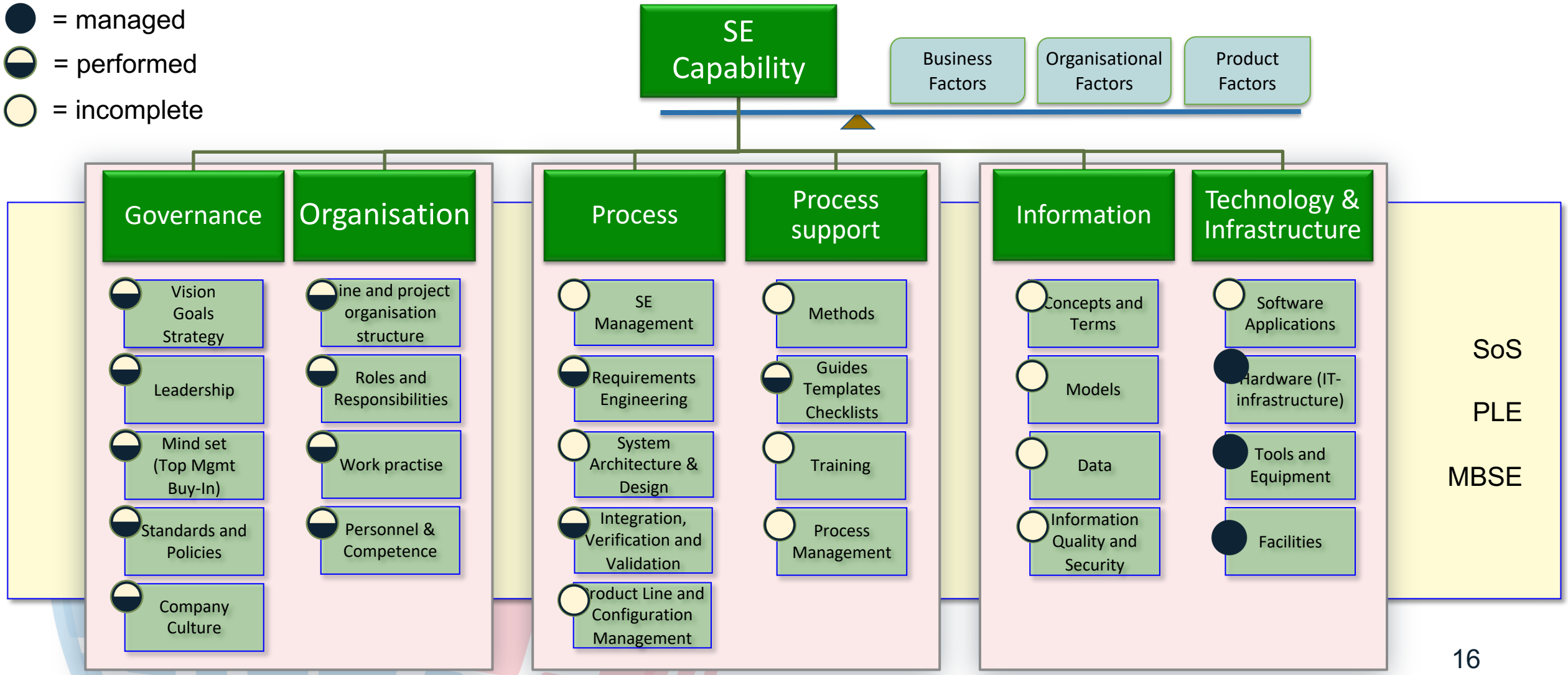
MBSE Capability Model (sample)



How to close the Capability Gap



Systems Engineering Capability Model

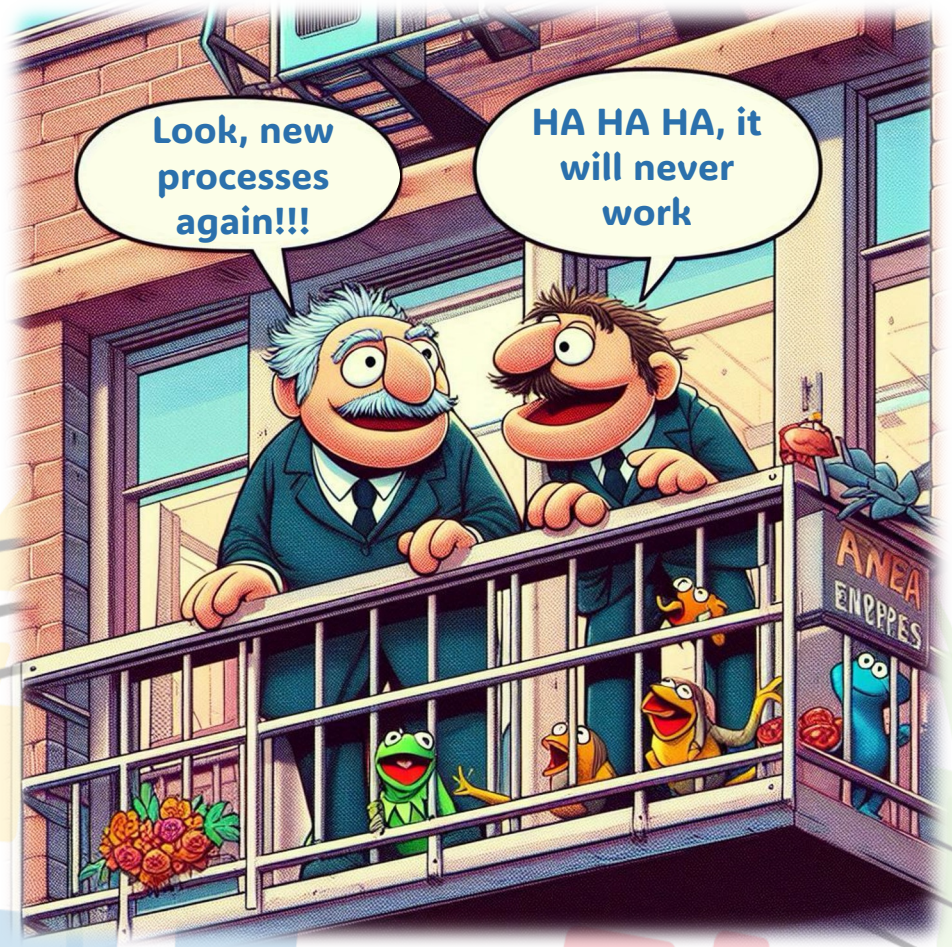


Building a Capability

A journey that requires:

- A Vision and Goal(s)
- Long-term committment
  - A Plan for organizational capability development
- Short-term ”Proof of Value”
  - Real Projects that apply concepts and provide lessons learned

Un-practical process introductions



- Introducing processes needs attachment in reality
- Process-muppets are usually unsuccessful

The ”Green and Blue Tracks” Approach

<Systems Engineering> Application projects

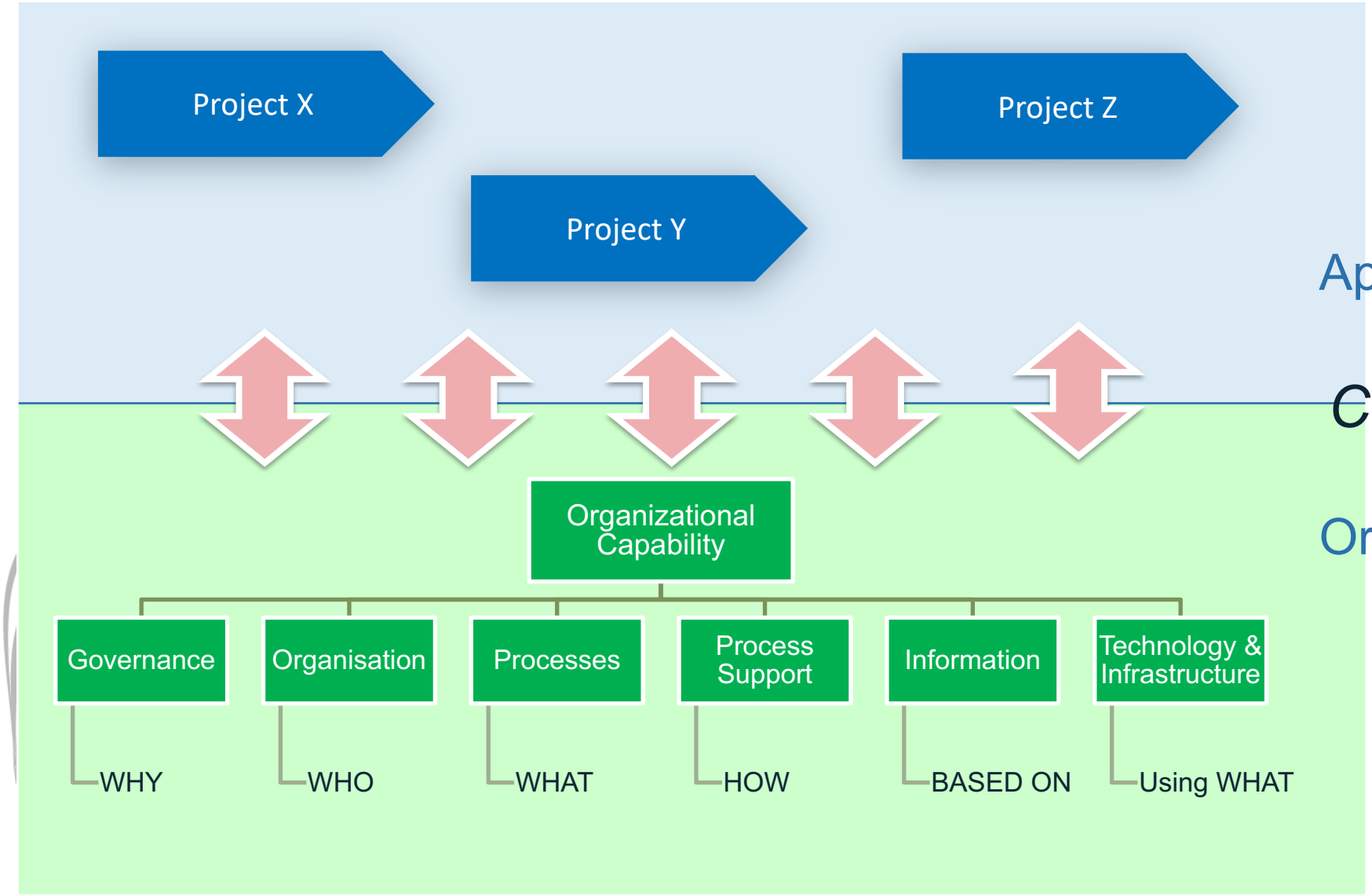
- Identifies the need for <SE>-related development actions
- Tailors the existing <SE> assets to the project needs
- When needed, develop new <SE> assets from scratch
- Apply <SE> assets and feedback experience to CapDev

<Systems Engineering> Organizational Capability Development

- Develop the organizational <SE>-elements and the necessary <SE> assets – and make them available through guides and portals
- Utilize the results from the internal <SE> application projects as well as external Best Practice to update the <SE> assets
- When needed, provide active support to the <SE> application projects

Note: <Systems Engineering> <SE> can be replaced with other capabilities

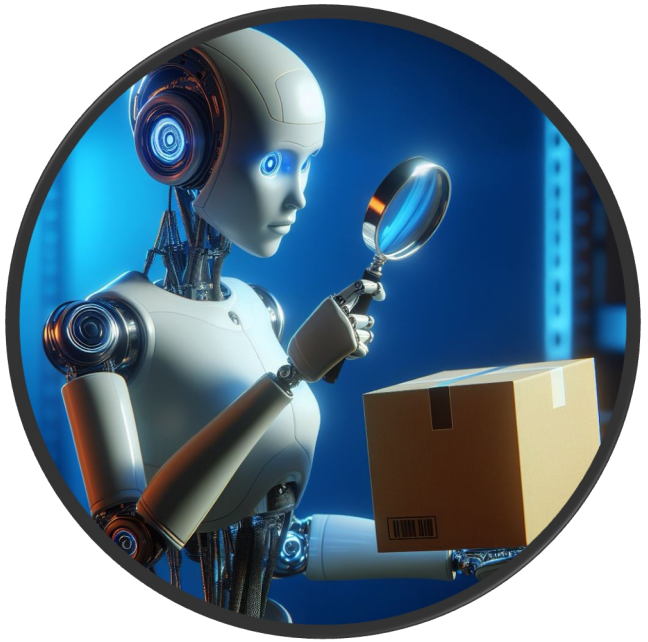
Generic description of Blue and Green Tracks



Application projects

COOPERATION!

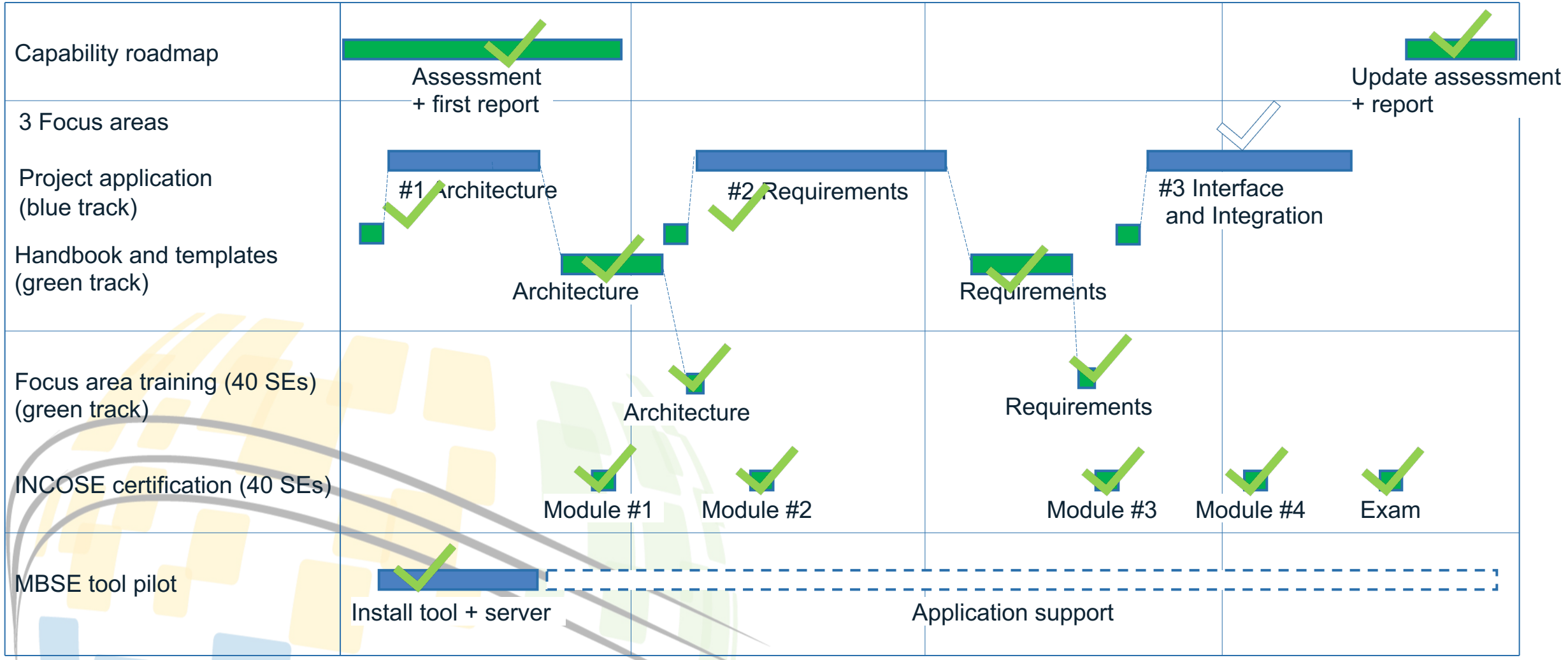
Organizational Capability



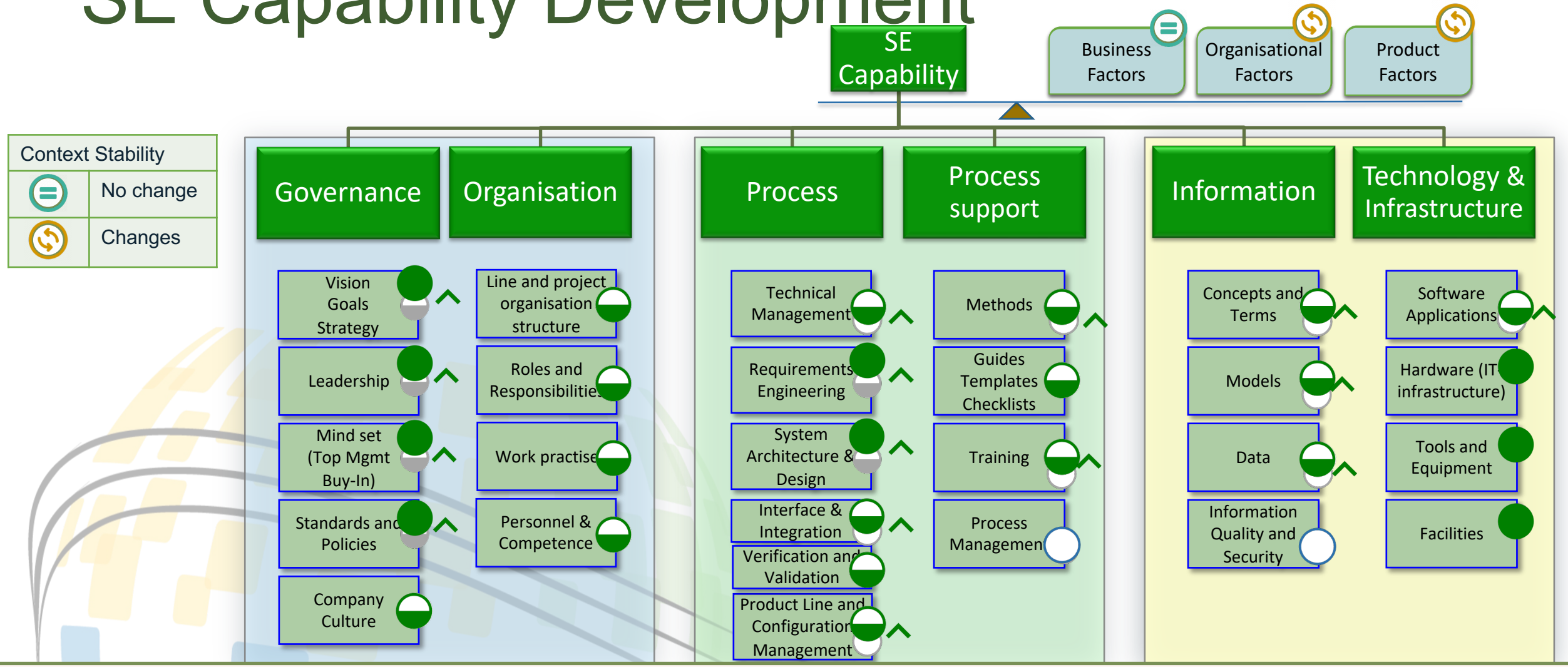
Based on collaboration work with Novo Nordisk

Value – Real case assessment

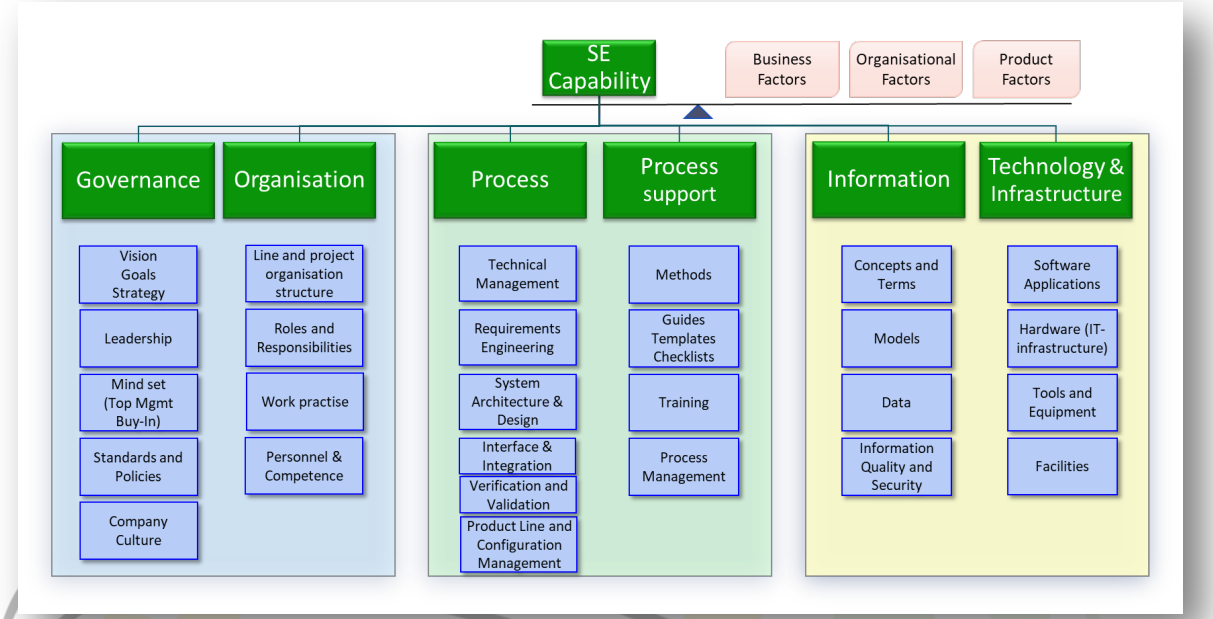
Activity


Capability roadmap
Assessment
+ first report
Update assessment
+ report
3 Focus areas
Project application
(blue track)
Handbook and templates
(green track)
#1 Architecture
#2 Requirements
#3 Interface
and Integration
Architecture
Requirements
Focus area training (40 SEs)
(green track)
INCOSE certification (40 SEs)
Architecture
Requirements
Module #1
Module #2
Module #3
Module #4
Exam
MBSE tool pilot
Install tool + server
Application support

SE Capability Development



Lessons learned



- Ensure management and organisation support
- Focus on all 6 pillars
- Be patient - cultural changes do not happen over night
- Your stakeholders are engineers – work with them and support them
- Show the progress and results
- ...and other parts of the org wants to join

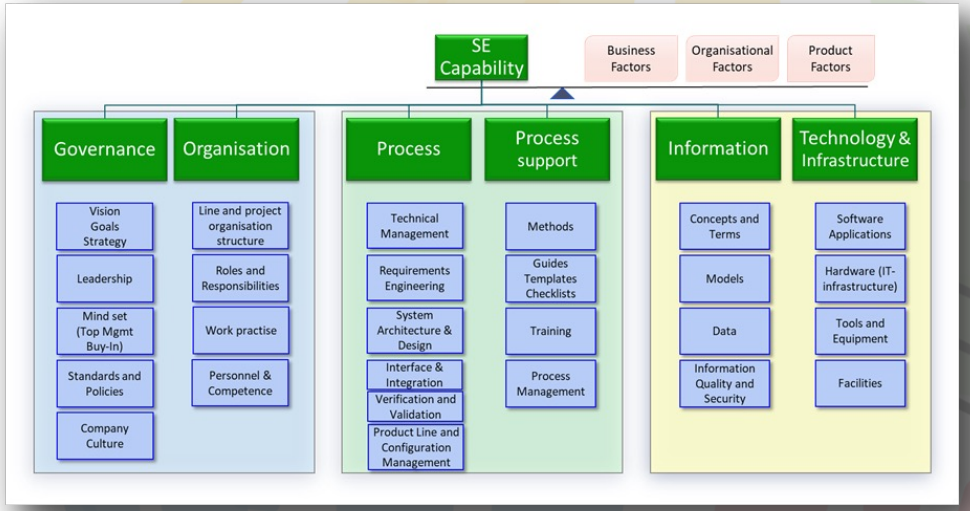
Future

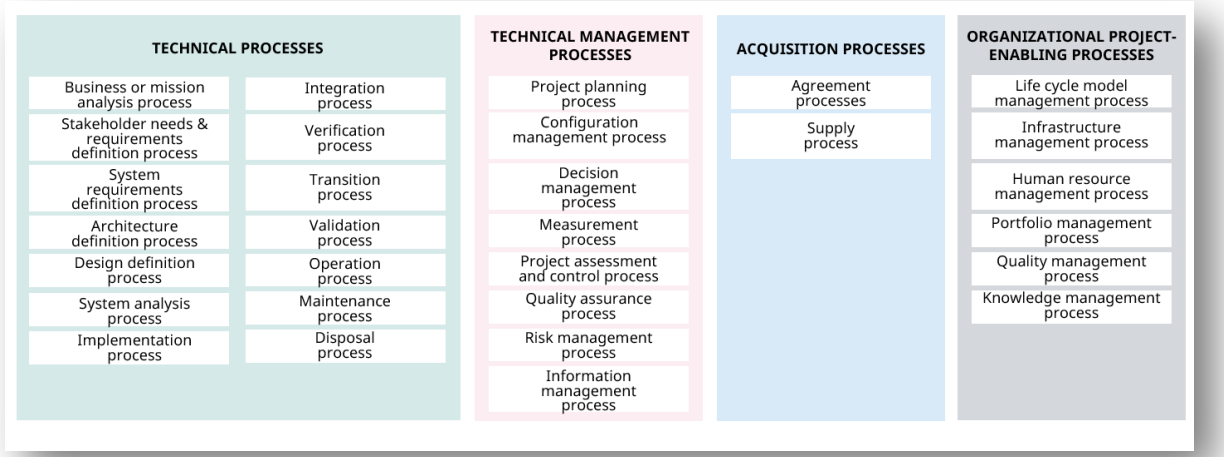
- Keep momentum
- Keep existing capability
- Increase capability
  - Roadmap
  - Use ISO15288 + capability model as input

Think BIG

Start small

And EVOLVE





Recommendations

- Use the Green and Blue Track approach
- Balance the capability over the pillars
- Take ownership!
- Use ”external” resources to:
  - Assist in assessment of where you are where you should be going
  - Provide external diverse knowledge and experience
  - Support capacity where and when needed
  - Independently moderate and catalyze the discussions

Questions / Comments

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