NOSE TOUR 2021

Systems Engineering, Today and Tomorrow

Presentation

The REUSE Company

THE REUSE COMPANY

Agenda

1. Current context in Systems Engineering
2. The SMART Compass: a *Knowledge-Centric* approach
3. SMART User-Stories: as a *Systems Engineer*

Current context in Systems Engineering

THE REUSE COMPANY

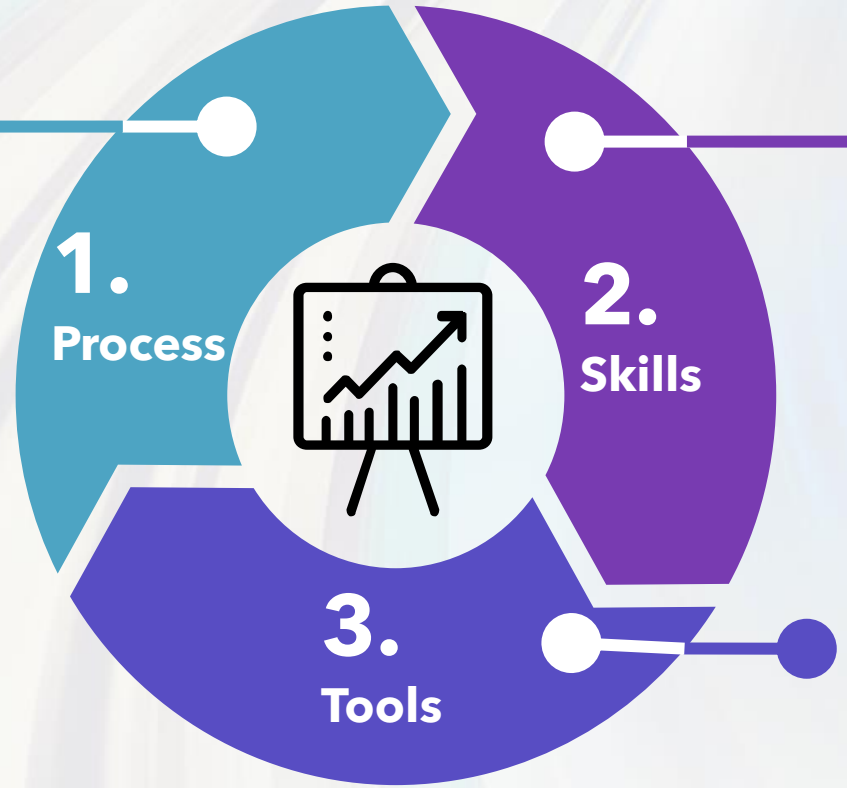
Current context in Systems Engineering

- **Sailing the V with an intelligent compass: Engineering digitalization through the automatization of traceability, reuse and early quality in the development cycle.**
  - **While we cannot say that all you need to do Systems Engineering is a good tool, but clearly process and skills need to be empowered by a set of suitable tools.**

Process

1

-Properly tailored
-Big vs Small companies
-Continuous improvement
-KPI's and scoreboards



Skills

2

-Engineers properly trained
-Contribute to the evolution of the process

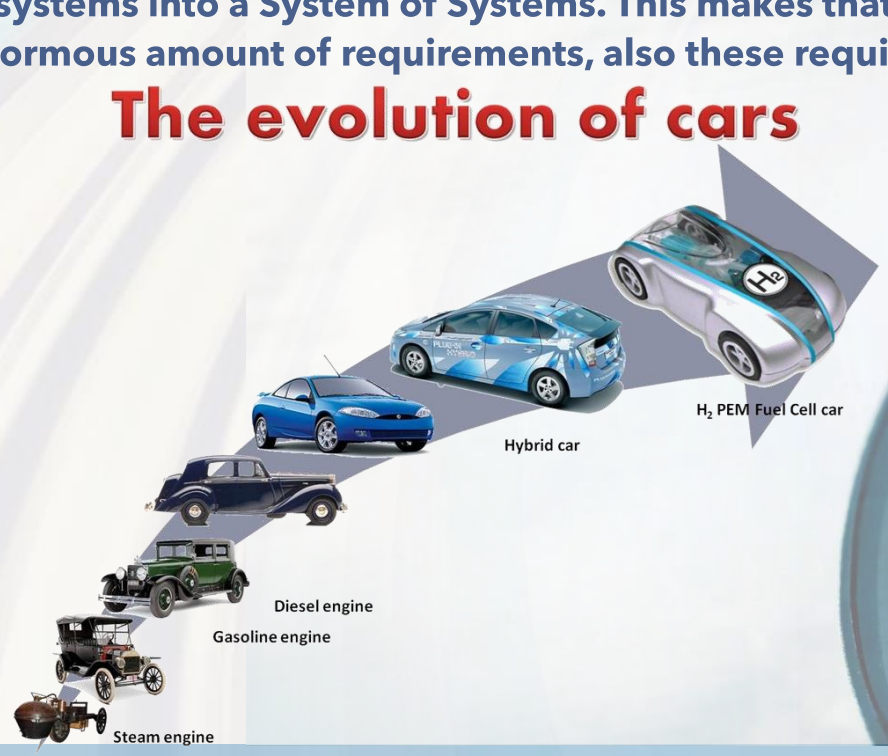
Tools

3

-Interoperable
-Flexible to be adapted to process and skills
- Intelligent!!

Current context in Systems Engineering

- **Sailing the V with an intelligent compass: Engineering digitalization through the automatization of traceability, reuse and early quality in the development cycle.**
  - While we cannot say that all you need to do Systems Engineering is a good tool, but clearly process and skills need to be empowered by a set of suitable tools. **Systems Engineering is aiming at addressing complex problems: the outcome of these projects is increasingly complicated, demanding the integration of multiple systems into a System of Systems. This makes that this kind of project is not only dealing with an enormous amount of requirements, also these requirements are prone to evolution and change.**



THE REUSE COMPANY

The SMART Compass

Knowledge-centric

The Knowledge Management process

Technical processes		Technical management processes	Agreement processes	Organizational project-enabling processes
Business or mission analysis process	Integration process	Project planning process	Acquisition process	Life cycle model management process
Stakeholder needs & requirements definition process	Verification process	Project assessment and control process	Supply process	Infrastructure management process
System requirements definition process	Transition process	Decision management process		Portfolio management process
Architecture definition process	Validation process	Risk management process		Human resource management process
Design definition process	Operation process	Configuration management process		Quality management process
System analysis process	Maintenance process	Information management process		Knowledge management process
Implementation process	Disposal process	Measurement process		
		Quality assurance process		

INCOSE
International Council on Systems Engineering

Definition of the ground truth: conclusions

- **"The truth is in the models"** ✗

- **"The truth is in the ontology…**

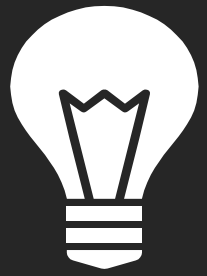
  … the ontology **gathers knowledge from the MBSE** Tools…

  … both sources of truth can be **blended in real-time**…

  … elicits knowledge also **from other textual sources**…

  … and keep **coherence** among all the work products:

  Ontologies to maintain the digital thread (allowing engineers to *sail the 'V' model*)". ✓



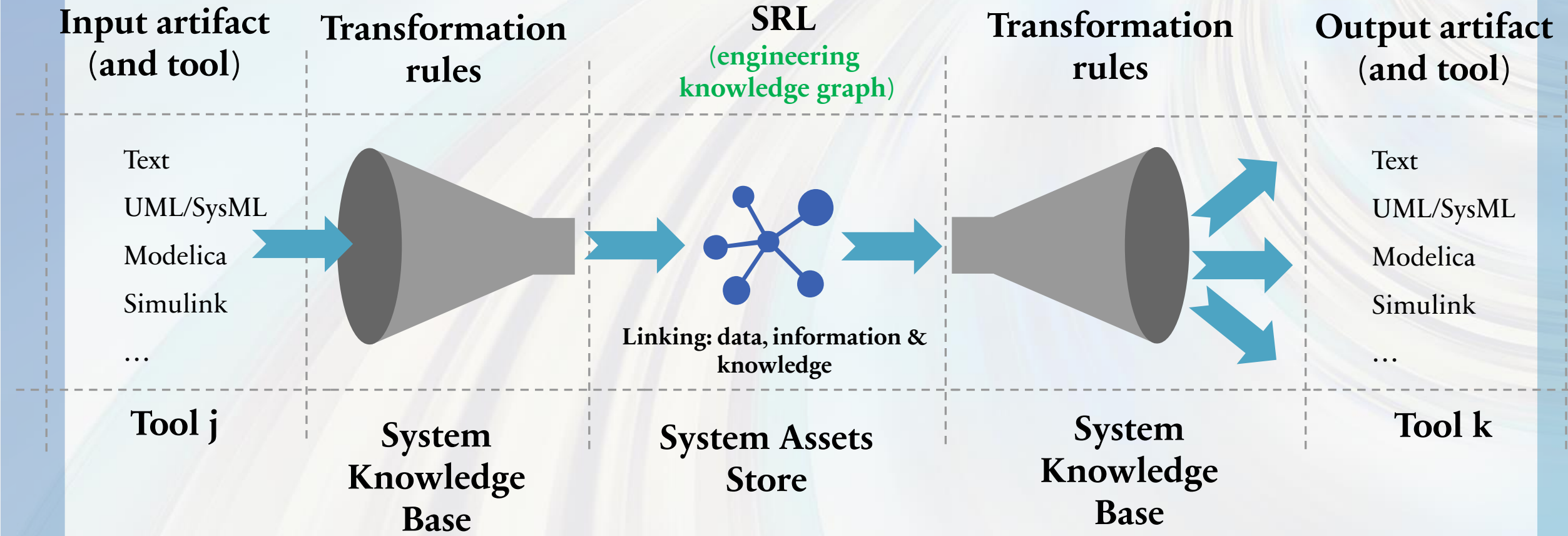
Systems engineering

User Stories

THE REUSE COMPANY

User-stories: sailing the V

- **Semantic transformations:**



Other user-stories (2/2)

- **Sailing the "V" with a SMART Compass: traceability and more**

Requirements Engineering

As requirements engineer

I want to trace requirements at different levels of abstraction.

So that I can **maintain** the **digital thread**.

Project Management

As project manager

I want to **automatically** detect missing traces.

So that I can **save time** and **not forget** any **important requirement** and **trace.**

Requirements Engineering

As requirements engineer

I want to automatically create derived or allocated requirements from higher level requirements.

So that I can **save time** and **not forget** any **important requirement** and **trace.**

MBSE & Requirements

As domain engineer

I want to populate models from requirements.

So that I can keep **consistency over time** and make my **system artifacts executable**.

Keep data links alive and consistent.

Simulation

As systems engineer

I want to have a human friendly environment for the engineering process.

So that I can share all information and data with my colleagues in **different disciplines**.

Digitalization

As systems engineer

I want to maintain a complete digital thread repository.

So that I can **successfully manage my projects** with **complete dashboards**.

This MINI presentation has shown how Artificial Intelligence, ontologies, and a semantic approach can be applied to leverage activities all along the "V" model, thus making it feasible to meet the demanding success criteria that these projects normally face.

Sailing the V with an intelligent compass: Engineering digitalization through the automatization of traceability, reuse and early quality in the development cycle.

If you want to see the full presentation, please request it here:

https://share.hsforms.com/1Q7CyaIWXSwKFGJxbqikvuQ2lpn5

If you want to book a SE Suite tools demo, please request it here:

https://www.reusecompany.com/demonstration

Contact information

Christer Fröling – Reuse Company Scandinavia

christer.froling@reusecompany.com

+46 (0)72 232 24 63

@ReuseCompany

www.linkedin.com/in/christerfroling

THE REUSE COMPANY