

MoSSEC
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Airbus Operations Ltd

MoSSEC

A proposed standard for sharing
Modelling and Simulation information
in a collaborative
Systems Engineering Context

Agenda

- **Why do I need MoSSEC?**
- **What is MoSSEC?**
- **What is the status of MoSSEC?**
- **Summary**



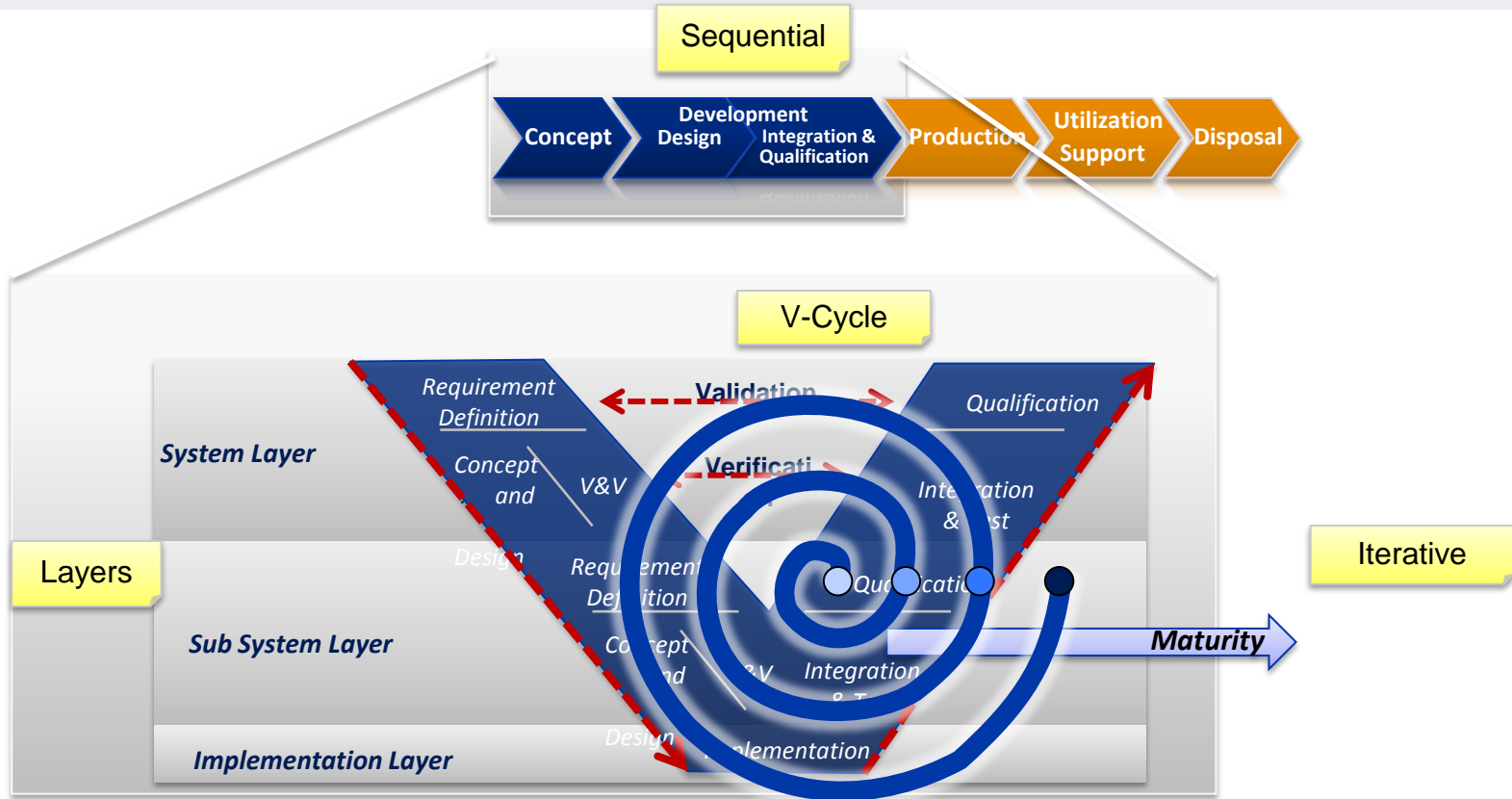
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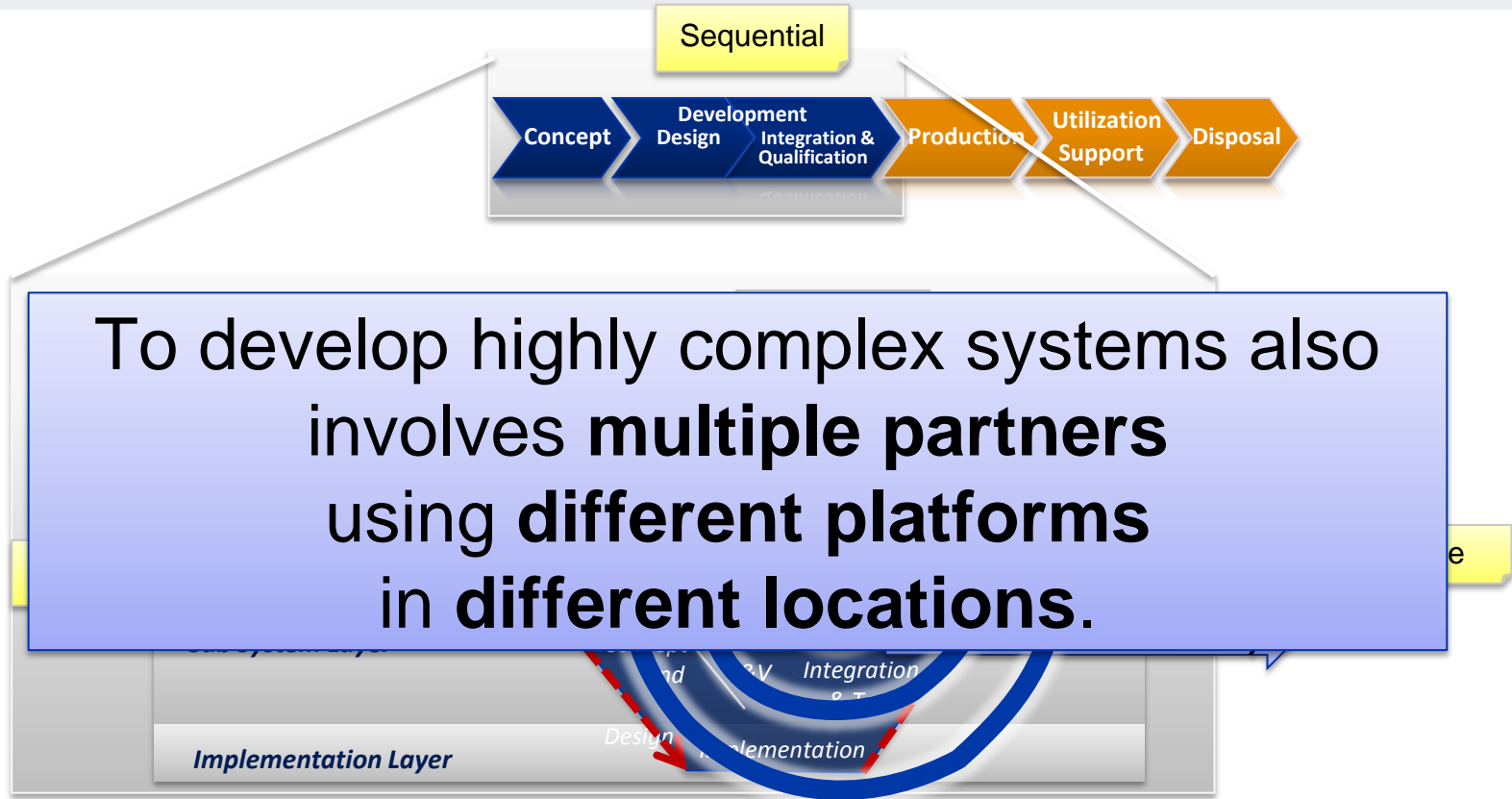
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Lifecycle of “System of Interest”



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Challenges for distributed systems engineering

• Distributed Infrastructure

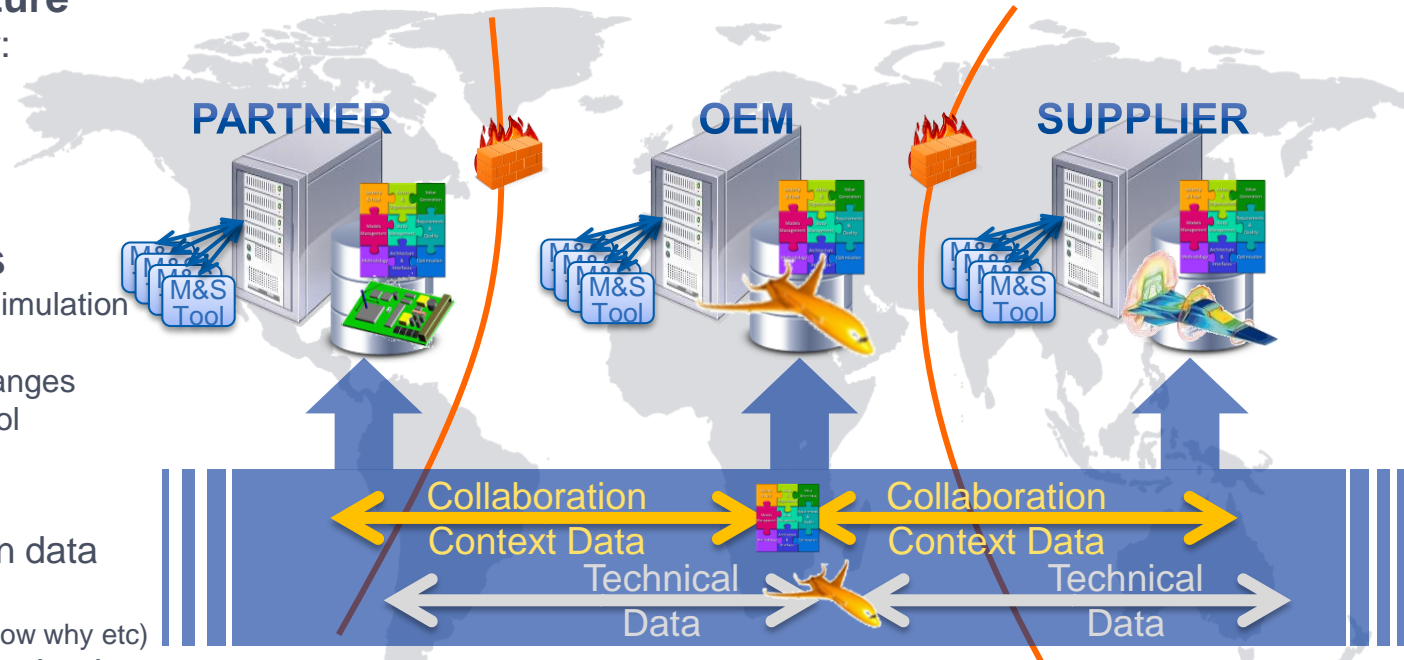
- Secure Collaboration for:
 - Locations
 - Organisations
 - Software Platforms

• Distributed Processes

- Multitude of Modelling and Simulation tools
- Simulation driven design changes traced and under PLM control

• Distributed Data

- Modelling and Simulation data
- V-cycle meta-data
 - (who what when where how why etc)
- Efficient sharing, synchronisation and integration



Remain Compliant with existing Standards (e.g. AP233, AP239, AP242)



Challenges for distributed systems engineering

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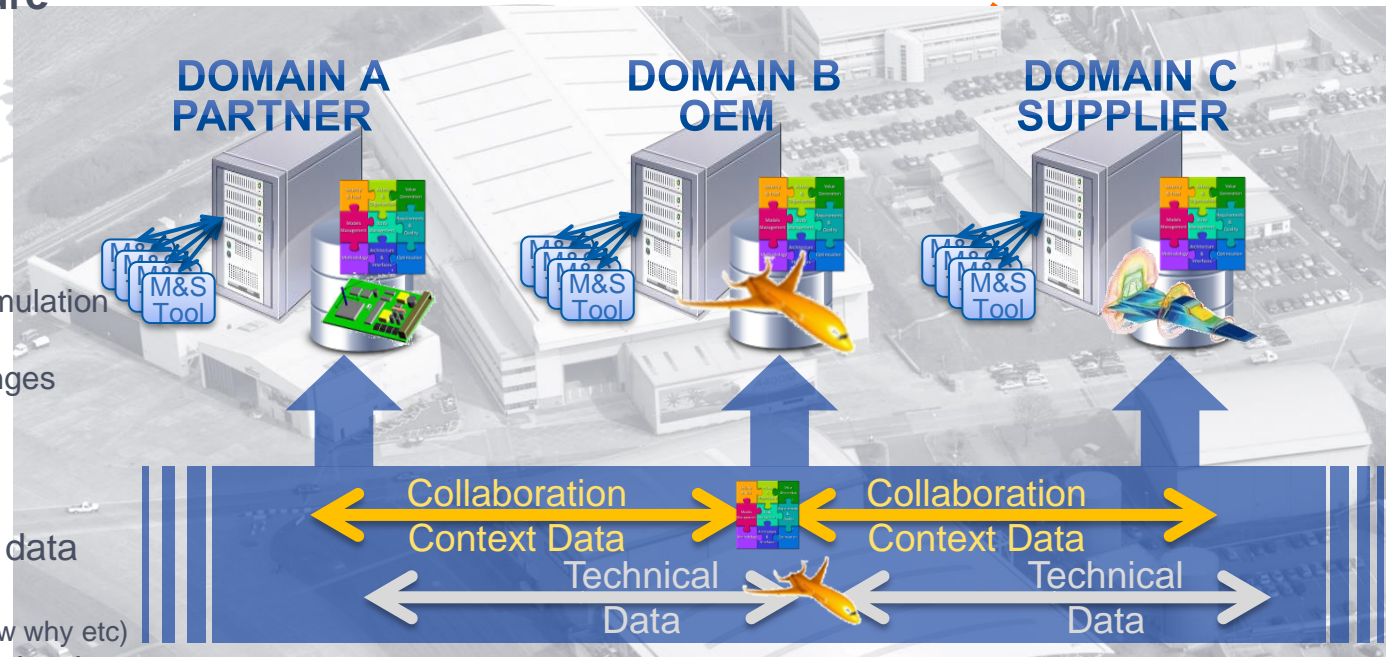
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Distributed SE challenges are applicable to in-house organisations



Challenges for distributed systems engineering

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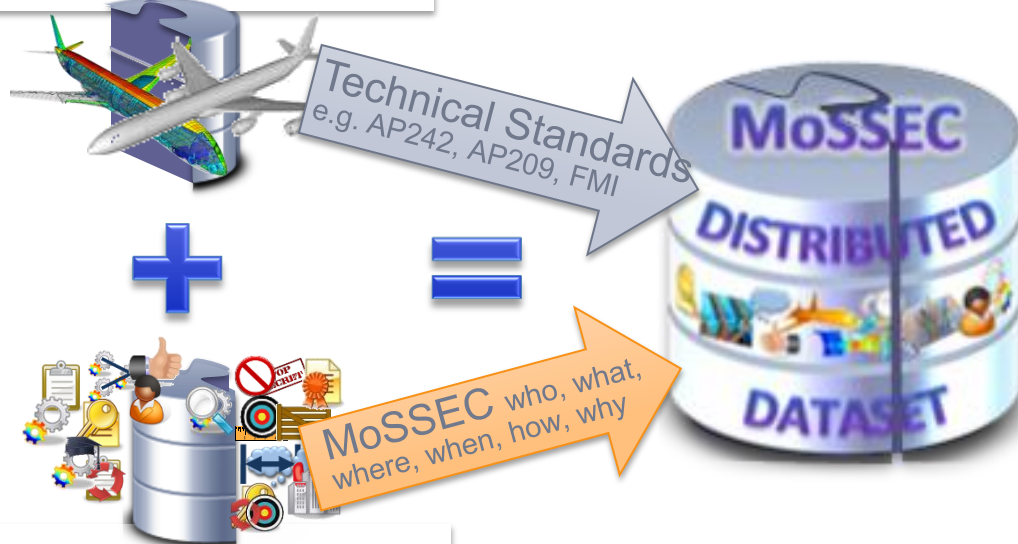
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Collaboration vs Modelling & Simulation Data

Modelling and Simulation data

- Managed in the PLM/M&S systems
- Exchanged with technical standards



Together they
enable the
distributed dataset

Collaborative SE context data

- Managed by MoSSEC Compliant Tools
- Exchanged with MoSSEC standard



How is it used in practise - distributed

• Distributed Infrastructure

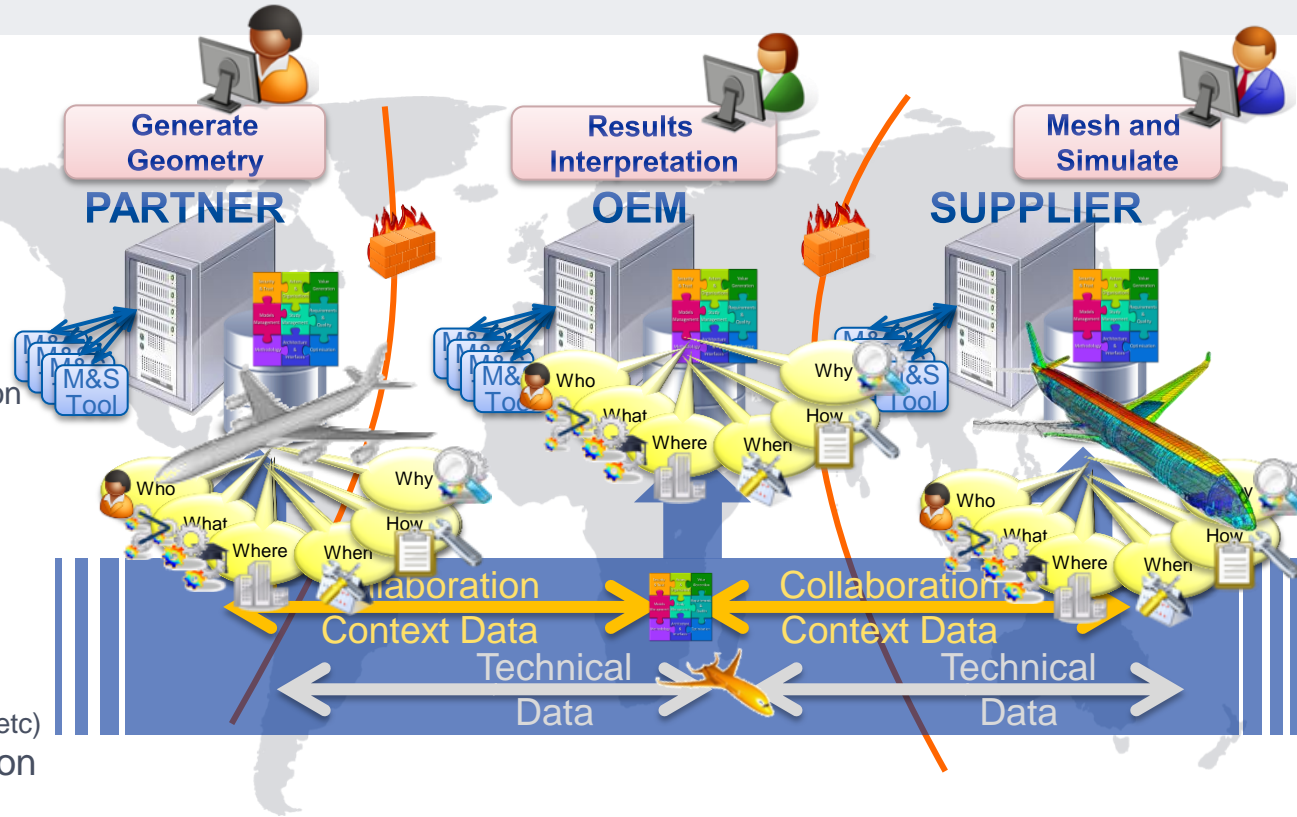
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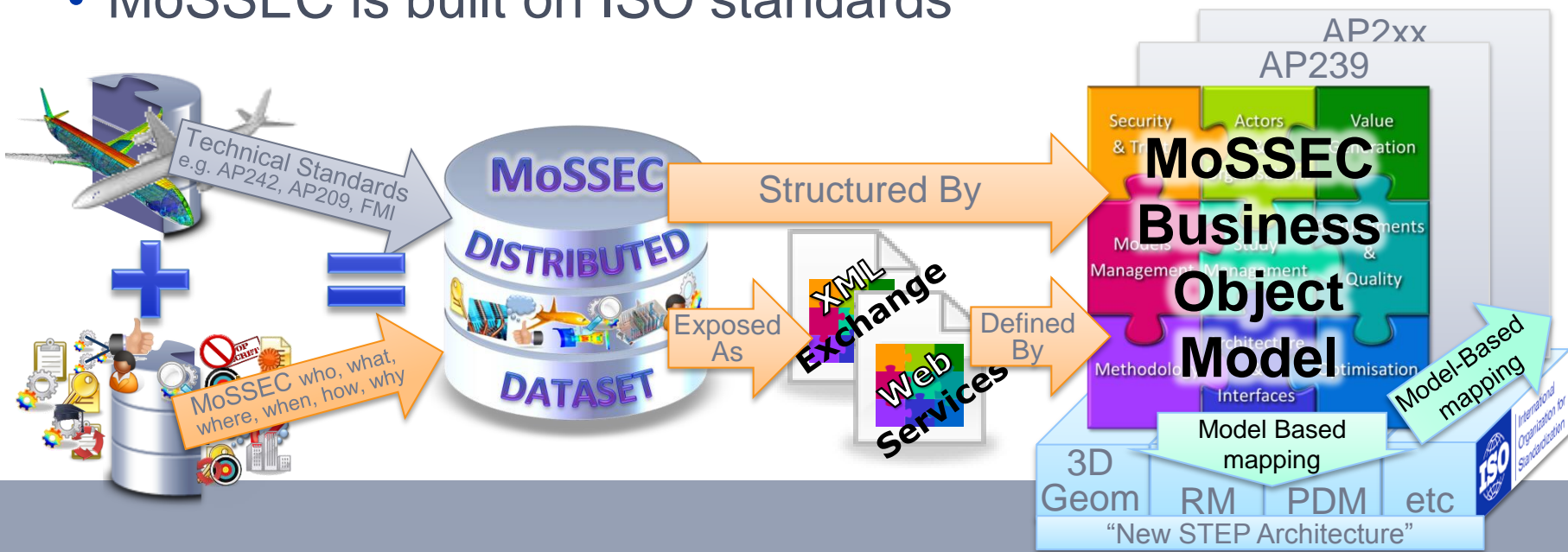
What is MoSSEC?

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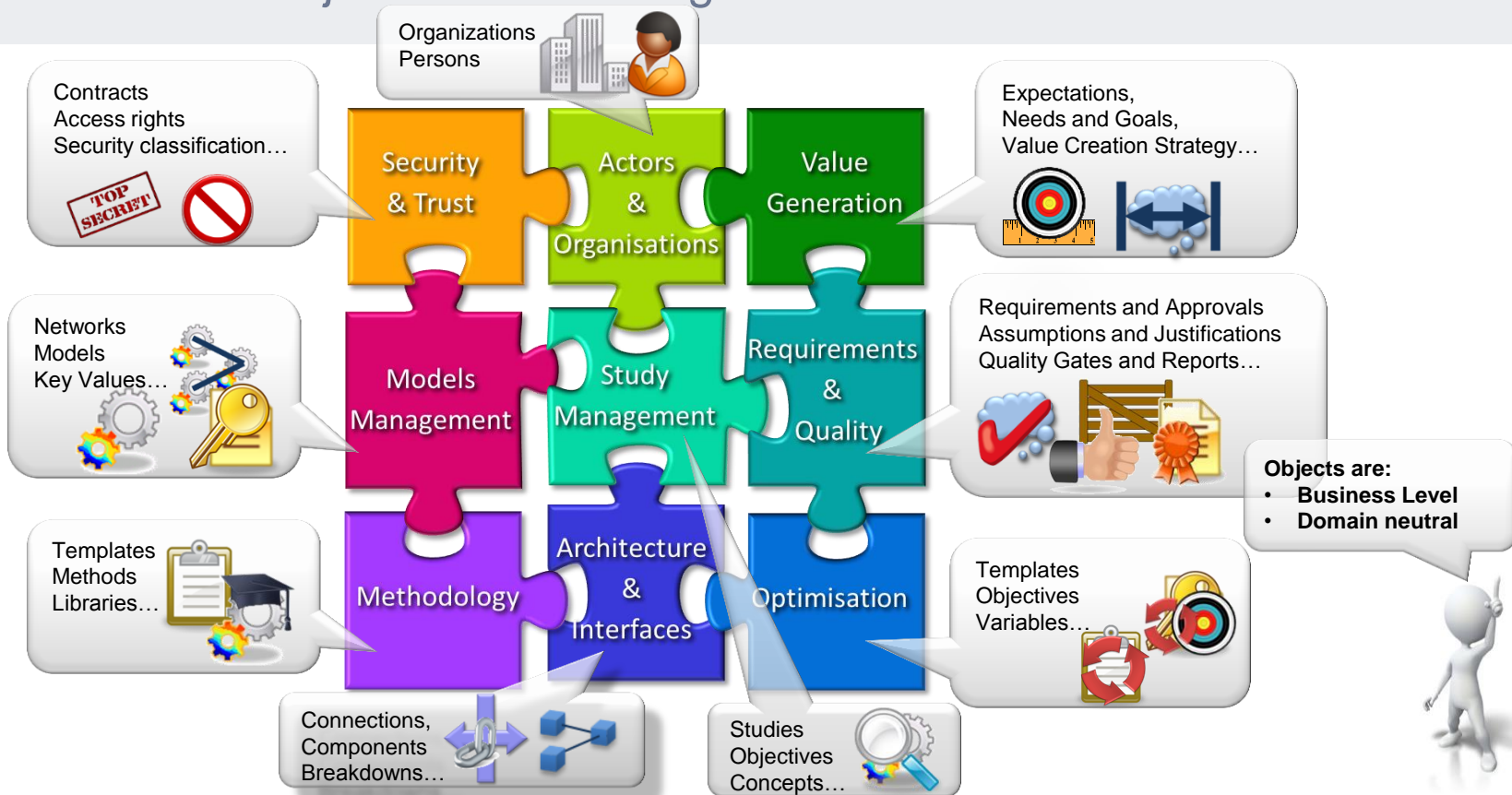


MoSSEC: a common approach based on standards

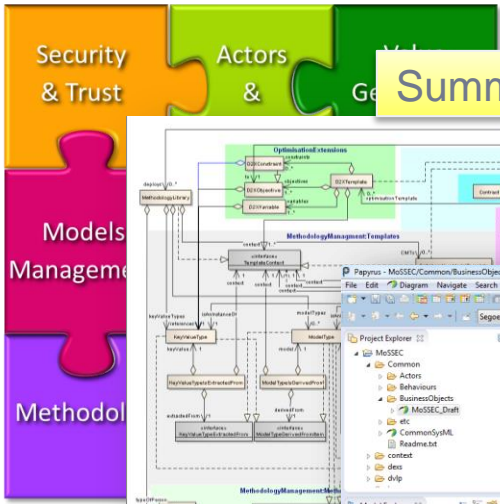
- MoSSEC provides a common approach for:
 - Structuring the Distributed Dataset
 - Structuring the Information Services for Dataset Management
- MoSSEC is built on ISO standards



MoSSEC Business Object Model coverage



MoSSEC Business Object Model defined with SysML

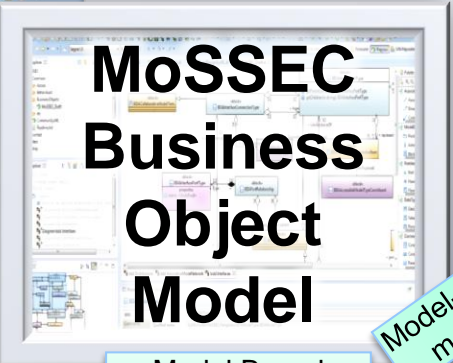


Summary View

Detailed Block Diagrams



AP242 etc
AP239



Model-Based mapping

Model Based mapping

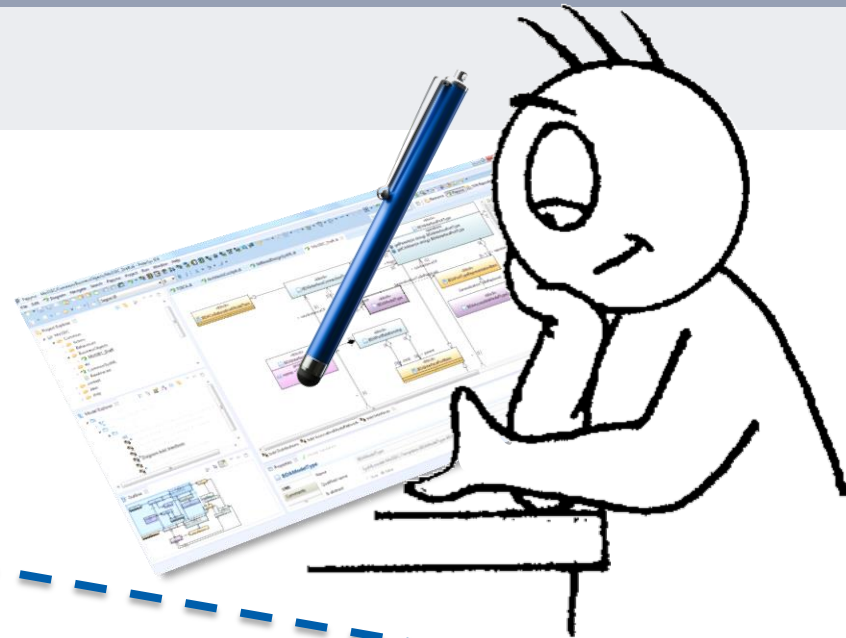
3D
Geom RM PDM etc

The screenshot shows the SysML software interface with several panes. The top pane displays a detailed block diagram with various block types and their relationships. The middle pane shows the Project Explorer with a tree view of the project structure, including folders for Common, Actors, Behaviours, BusinessObjects, MoSSEC_Draft, etc. The bottom pane shows the Model Explorer with a tree view of the model structure, including folders for Diagrams, Diagrams with Assumptions, Diagrams with Interfaces, Diagrams with Inference Specifications, and Diagrams with Distributions. The right pane shows the Properties view for the selected block, BDAModelType, with fields for Name, Qualified name, Is abstract, and Is active.



SysML use in MoSSEC

- MoSSEC standardisation team
 - ➔ Use SysML to define the MoSSEC standard
- Capability Developers
 - ➔ Read SysML definition to develop the MoSSEC enabled client/server capabilities
- Capability End Users
 - ➔ Use the capabilities
 - ➔ No SysML knowledge required



Linked Data, OSLC and MoSSEC – How and What

- **Linked Data**

- Resources in different repositories
- Link stored as <http> with role



- **OSLC**

- Defines standard services (RESTful)
 - E.g. Create, Query, Select, Display Preview/Dialog
- Defines **OSLC-specific** domain language

How 1

What 2

What

How



- **MoSSEC**

- Defines domain language **based on ISO standard AP239**
- Services defined as per ISO-10303 architecture
 - So far for shared data, could also use Linked data


How 2

What 1

	1 Primary	2 Secondary
OSLC	How	What
MoSSEC	What	How



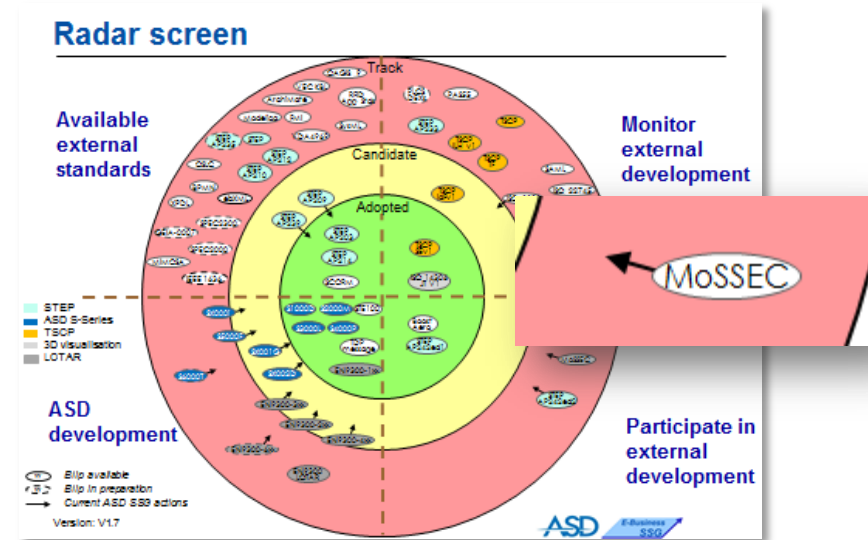
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MoSSEC: Status

- Created and utilised on EU, UK and International research projects
- Gained Support for MoSSEC from:
 - AeroSpace and Defence Industries Association of Europe Strategic Standardization Group [ASD SSG]*
- Launched International Project
 - Industrial and Vendor participation
 - Agreed standardisation under ISO
 - Website created (www.mossec.org)
 - Preliminary Work Item submitted
 - New Work Item and White Paper to be submitted 4th October



International
Organization for
Standardization



MoSSEC project - participants

- **Project Co-chairs:**

- Adrian Murton (Airbus Operations Ltd)
- Greg Pollari (Rockwell Collins)



- **Industrial:**

- Airbus Group, Boeing, Rockwell Collins, Honeywell, GKN Aerospace, BAE Systems...

- **Vendors:**

- Dassault Systèmes, Eurostep, MSC Software, Siemens PLM Software...

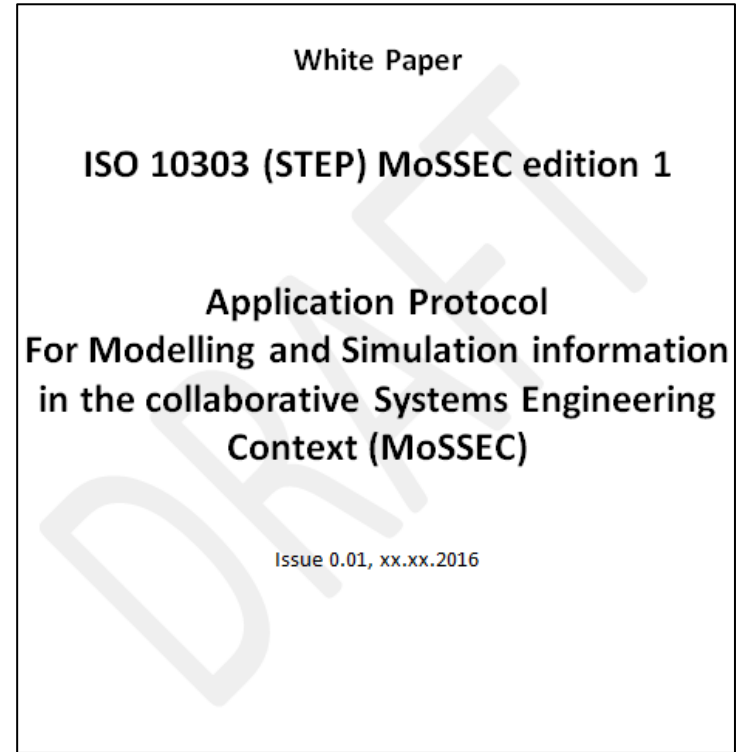
- **Organisations:**

- ASD SSG, AFNET, UKCeB, AVSI/SAVI, PDES Inc. (to be confirmed), AIA (to be confirmed),



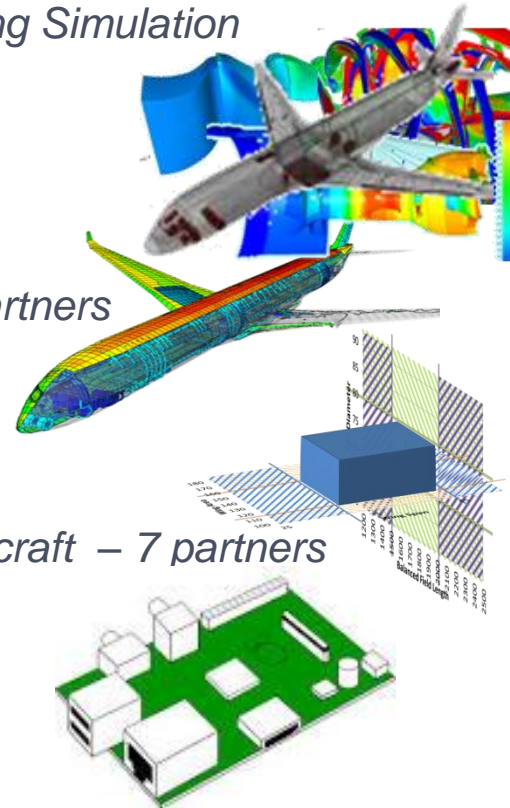
MoSSEC White Paper (associated with New Work Item)

- **MoSSEC Business Aspects**
 - Overview of business context
 - Synthesis of business requirements
 - Business use case example
- **MoSSEC Technical Aspects**
 - Definition of technical content
 - Development principles
 - Interdependencies with related standards
- **MoSSEC Project and Risk Management**
 - Deliverables
 - Financial aspects
 - Scheduling



MoSSEC: Current and previous case studies

- 
CRESCENDO *Collaborative and Robust Engineering using Simulation Capability Enabling Next Design Optimisation – 59 partners*
 - Thermal Aircraft
 - Power-plant integration
- 
TOICA *Thermal Overall Integrated Concept Aircraft – 30 partners*
 - Dynamic Aircraft Thermal Architectures
 - functional, physical, zonal, logical...
- 
CONGA *Configuration Optimisation of Next Generation Aircraft – 7 partners*
 - Set Based Design
- 
SAVI *System Architecture Virtual Integration – 11 partners*
 - Consistency Checking between domains



Vendor involvement

- Vendors are active in evolving and implementing the standard as part of ongoing research projects
- Vendors involved include:
 - Dassault Systèmes
 - Eurostep
 - MSC Software
 - Siemens PLM

A MoSSEC distributed dataset is being enabled as vendors implement clients and servers



Further MoSSEC information

- **MoSSEC website**

- <http://www.mossec.org/>
- **Overview**
- **Resources**
- **News**
- **Links**

- **Members website**

- <http://private.mossec.org>

The screenshot displays the MoSSEC Project website. The top navigation bar includes 'Home', 'Overview', 'Resources', 'News', and 'Links'. Below this, there are tabs for 'HTML Resources', 'Presentations', and 'Videos'. The main content area features several resource links, including 'ASD SSG project status MoSSEC V1 2016-07-05_06' and 'MoSSEC Webinar 2: Extensions'. A secondary browser window shows the 'MoSSEC Project' page with a navigation bar and a main heading: **Modelling and Simulation information in a collaborative Systems Engineering Context**. Below the heading is the text: *A standard to improve decision making for complex products.* The main content area includes a section for 'MoSSEC Business Scenarios' with a diagram showing interactions between 'OEM ARCHITECT TEAM', 'SIMULATION SPECIALIST TEAM', and 'SUPPLIER'. The diagram uses arrows to represent 'Collaboration Context Data', 'Technical Data', and 'Geogrpht Data'. A 'Latest News' sidebar on the right contains two entries about website updates from August 2016. At the bottom, there is a 'Latest Documents' section and a footer with 'Settings' and 'Online Friends (0)'.

Participate in the International MoSSEC Project

- **To be added to the members list contact:**
 - Gregory.Pollari@rockwellcollins.com
 - Adrian.Murton@airbus.com
- **Participate in bi-weekly Teleconference**



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MoSSEC: *Modelling and Simulation information in a collaborative Systems Engineering Context*

A proposed ISO standard:

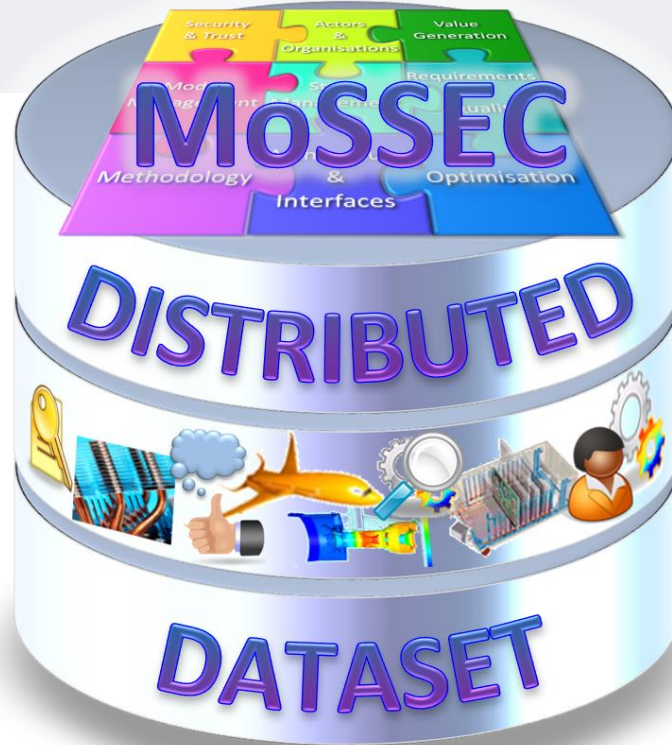
- To improve decision making for complex products.
- For sharing the systems engineering context (*Who, What, Where, When, How, Why*) of modelling and simulation data between Internal teams/domains and Extended Enterprise
- Supported by industrial partners (e.g. Airbus, Rockwell Collins, Boeing, BAE Systems) and vendors (e.g. Eurostep, Dassault Systèmes, MSC Software, Siemens)



Status:

- A first definition used extensively on EU research projects
- “New Work Item” and associated white paper to be submitted to ISO October 2016
- www.mossec.org





Any Questions?

