NDIA Tool Vendor Presentation

Digital Engineering Strategy

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History of No Magic

1995
No Magic founded

2009
Cameo Simulation Toolkit

Cameo Enterprise Architecture

2015
Cameo Collaborator

2017
Teamwork Cloud REST API

July 2018
19.0 Release

1998
MagicDraw 1.0

2012
Cameo Systems Modeler

2014
Cameo Concept Modeler

2016
Teamwork Cloud

May 2018
Acquired by

DASSAULT SYSTEMES

July 2018
TWC OSLC Provider
and MagicDraw OSLC Consumer

UAF

OSLC

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Systems Engineering Portfolio Alignment

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CATIA

System of Systems

UAF

System

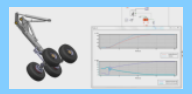
Component

End-to-End model continuity

Multi-systems contractual architecture and services

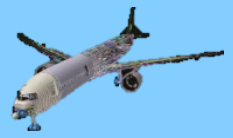
Model Based System Architecture

Multi-physics



Control

3D Digital Mock-up



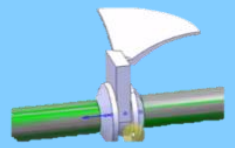
Electrical Electronics System Architecture

Hardware architecture

Software architecture

Mechanical components

Fluid components



Electrical components

Electronic components

Hardware

Software

Upstream studies

Downstream design

Contracting Authority

Integrator/ OEM

Integrator/ OEM

Supplier

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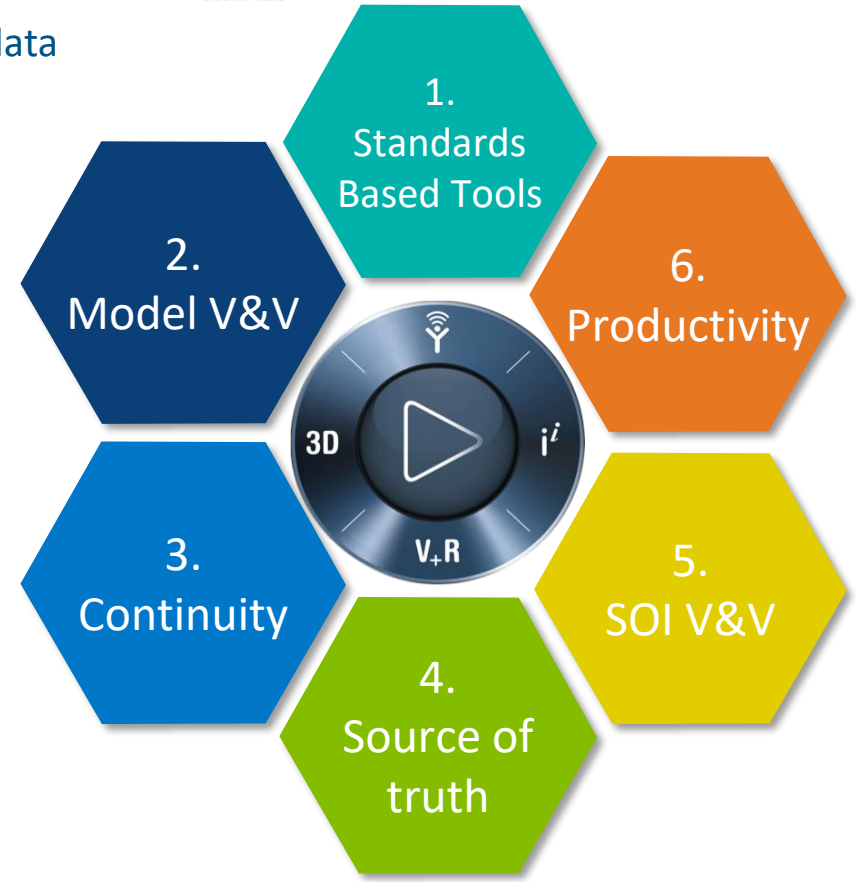
CATIA/No Magic Core Values

Implement modeling languages and tool data interfaces using open standards.

Provide features that ensure the model is syntactically and semantically correct and ensure the resulting digital data fulfills the requirements for contract deliverables and meets the needs of lateral and downstream engineering processes.

Provide digital continuity (traceability) from the stakeholder requirements through the architecture to the virtual product design for accurate decision making. Support connectivity and traceability across tools and repositories.



Improve engineering productivity and efficiency through features that enable re-use, variant management and reduction of modeling effort through automation.

Provide continuous system of interest (SOI) verification through analytical features and traceability to ensure the design will meet its requirements. Provide SOI validation through features that support traceability from CONOPS through implementation and enable simulation and visualization.

Provide the capability to plan, communicate and collaborate among stakeholders on an enduring and authoritative single source of truth

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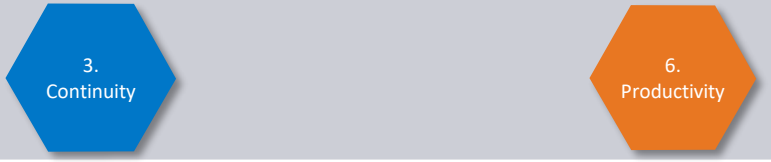
Alignment of Values with DES Goals

Goals	Enabling Core Design Principles
Formalize the Use of Models	
Provide enduring and authoritative source of truth	
Incorporate technological innovation	
Establish a supporting infrastructure and environment	
Transform the culture to adopt engineering across the lifecycle	• Actively involved in OMG, INCOSE, and other standards bodies • Provides training to enable the workforce of the future

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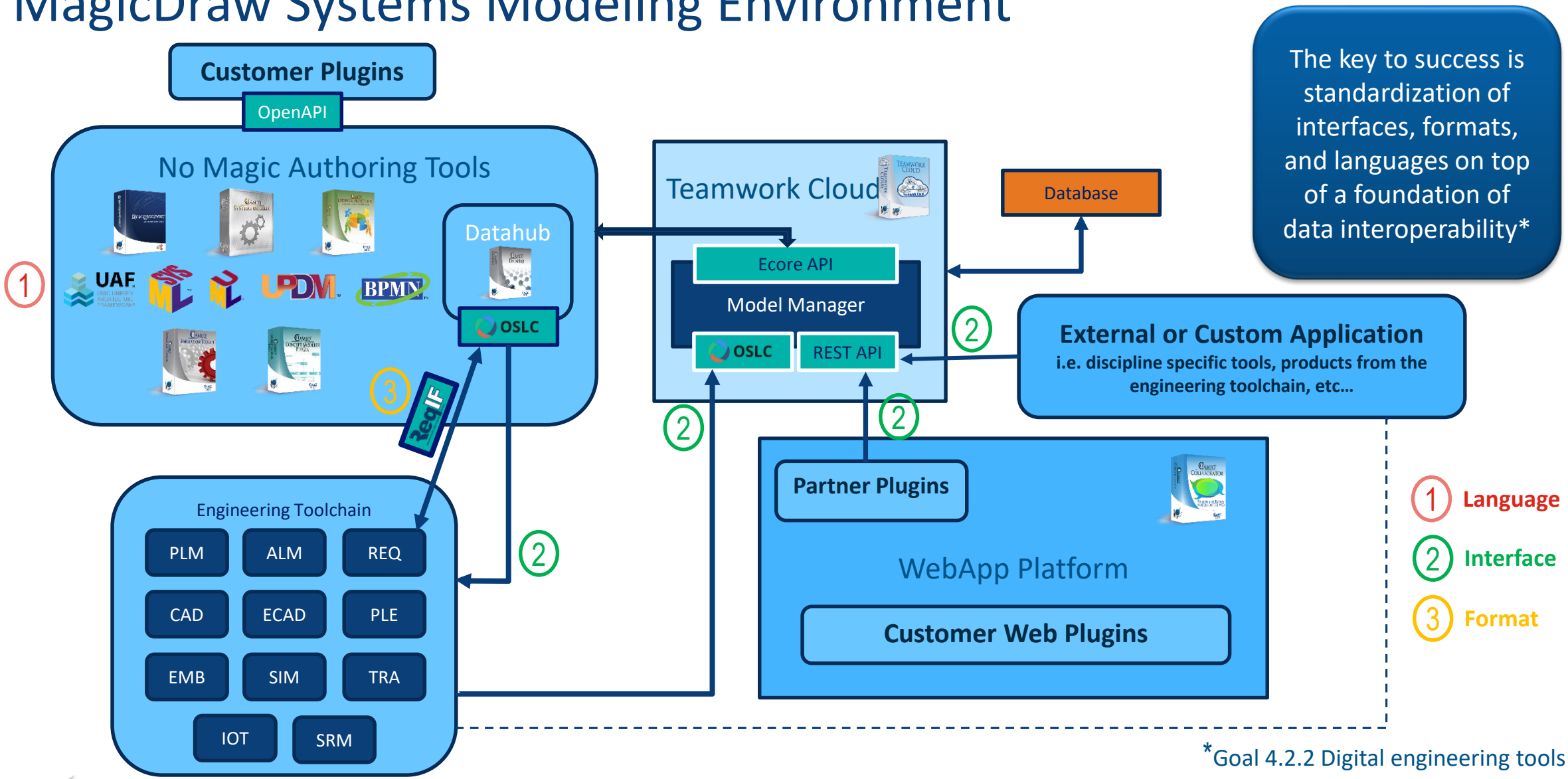
MagicDraw Systems Modeling Environment



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Cameo DES Capabilities Map

Visualization

- Visualizing requirements in graphical, tabular, matrix or tree structure format
- All diagrams defined in UML, SysML and UPDM/UAF standards are supported

Interoperability

- OMG XMI support for standards-based model exchange
- Import/Export to/From IBM Rhapsody
- Import/Export to/From Systems Architect
- Exchange with Sparx Enterprise Architect

Workflow

- Models can be easily extended to add status for elements

Analysis

- Rigorous requirements traceability to the system model for:
  - coverage analysis
  - impact analysis
  - calculation of metrics
- Automated requirements verification
- Automated tests
- Co-simulation
- Metrics
- Interface compatibility checks
- Trade studies
- Time duration analysis
- Mass and power rollups
- Monte Carlo Simulation
- Impact Analysis
- UI prototyping/HI simulation
- Model completeness and correctness

Model Management

- Highly scalable model repository built for large models and distributed teams
- Configuration management including committing, updating, branching and merging
- Track model changes at element level
- Multiple, secure authentication methods
- Role Based Access Control for efficient management of user permissions across the enterprise

Collaboration

- Multiple people can simultaneously work on the same model in parallel
- REST and OSLC services expose model data
- REST allows access perform administrative tasks, manipulate models, and manage the repository
- Integrate with other OSLC enabled tools
- Include non-modellers and other stakeholders via simplified, web-based views for model sharing and review

Customizability

- Define profiles to add new modeling concepts with custom properties, rules, and graphical appearance
- Customize standard diagram palettes or define new diagram types
- Define model checking rules using various scripting languages
- OpenAPI and WebApp Platform to enable custom plugins to the core modelling platform
- Tailor the user interface of the authoring tools to meet the needs and skill-level of the user

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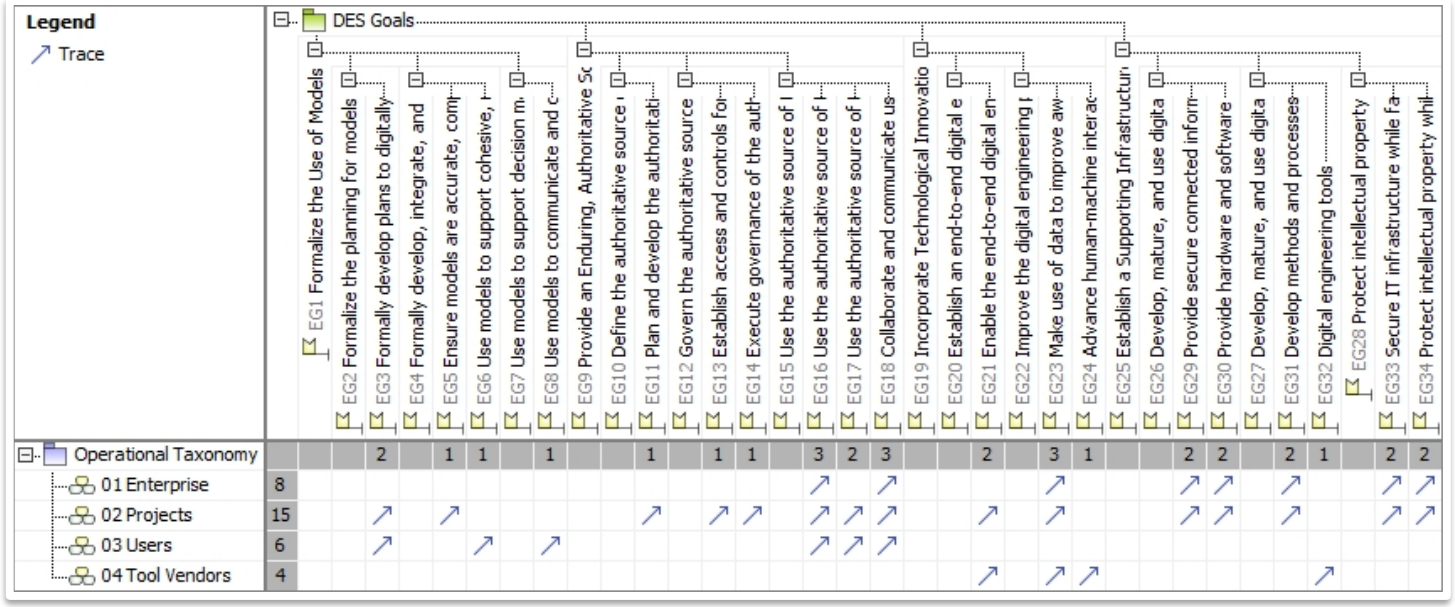
Enabling Success

Recommendations for future stakeholder/tool vendor interaction

- Understand stakeholder processes that need to be supported, including a definition of the data behind the process
- Expand stakeholder participation in existing processes and engagements
  - Defining standards
  - Input from user, PMO, and enterprise levels
- Prioritize integration of existing and/or additional disciplines into the digital engineering environment
- **Much of the technology is already there to support the goals of the DES initiative - the challenge is one of transformation and implementation**



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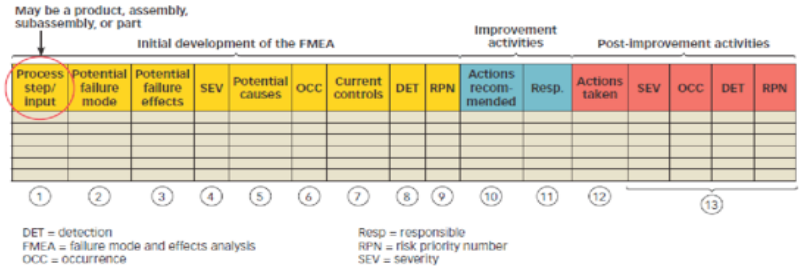
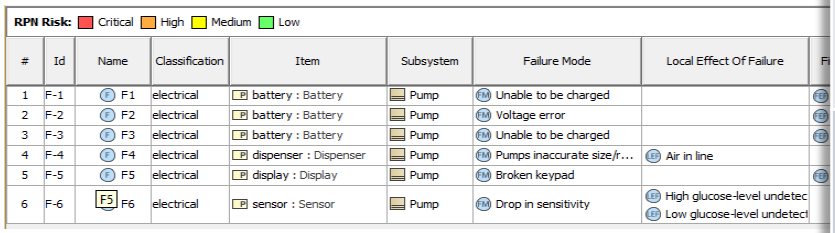
DES in Action – A Case Study: Safety and Reliability

Spreadsheet Based



Vendor Specific Implementation

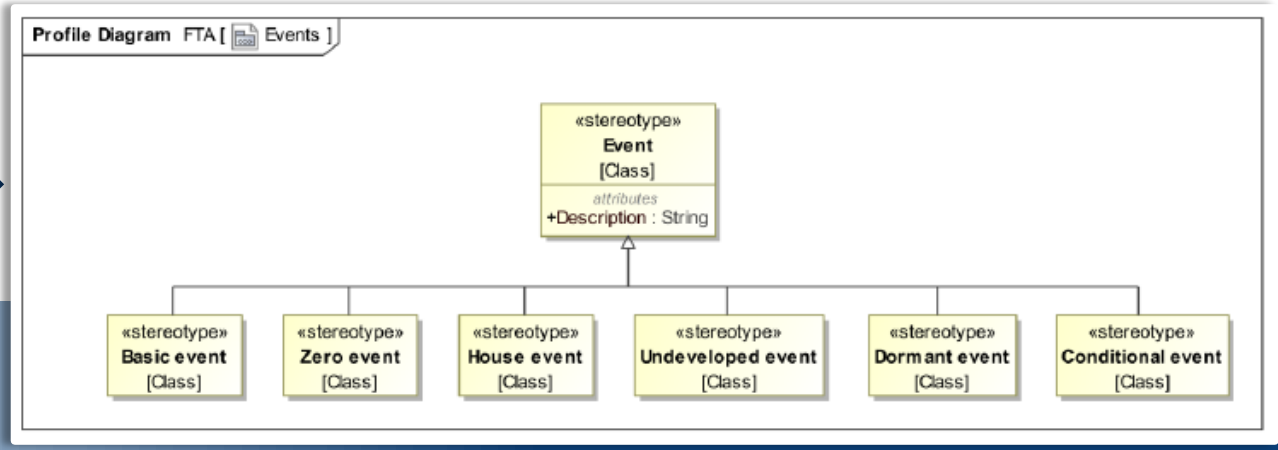


Goals	Approach
Formalize the Use of Models	• FMEA data was previously documented in spreadsheets or other ad-hoc methods • Safety & Risk community came together and developed an OMG specification for a model based implementation
Provide enduring and authoritative source of truth	Incorporating FMEA into the system architecture modeling tool ensures the data is part of the technical baseline along the system architecture it references
Incorporate technological innovation	Leverages existing tool capabilities and features of the modeling language
Establish a supporting infrastructure and environment	• Compliant with ISO, IEC and other standards enabling consistent use throughout industry • Uses existing analytical, exchange, and reporting capabilities of the modeling platform
Transform the culture to adopt engineering across the lifecycle	• Multiple industries collaborated with the tool vendor and the standards body to produce an integrated, digital implementation for broad adoption • New profile is supported by an ISO standard

Safety and Reliability for UML Request For Proposal

OMG Document: ad/2017-03-05

Letters of Intent due: *15 June 2017*
Submissions due: *28 August 2017*



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Learn More

No Magic Web Site

http://www.nomagic.com

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