

## Summary

The SAIC Engineering Innovation Factory is providing this SysML profile (in .mdzip format) as a courtesy to the worldwide systems modeling and engineering community. It is our hope that it will improve model quality, demonstrate state-of-the-art validation techniques, and stimulate discussion about best practices.

Please see the model itself for licensing terms.

Digital Engineering: <http://www.saic.com/digital-engineering>

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MBSE Jobs at SAIC: <https://jobs.saic.com/pages/mbse>

**Note:** This version is provided for 2021x and 2023x (initial release) versions of the MagicDraw/Cameo modeling tools; v19.0 support was discontinued (v2.5 was the final version).

**WARNING:** The validation rules provided require that the Item Flow Creation Mode (Options/Project) be set to "Between Part Types" and not "Direct."

### V2.7:

- **SAIC DE Profile for MagicDraw/Cameo Modeling tools:** Contains customizations and validation rules; minor updates and bug fixes
- **SAIC DE Style Guide:** Model-based style guide with details about execution and rationale; includes 1-page process overview
- **SAIC DE System Model Example:** Example model built using the profile, rules, and style guide. The subject of the model is NASA's *Ranger* lunar probe from the 1960s. **Now includes Rhapsody version.**
- **SAIC DE Classification Profile:** Contains customizations to facilitate tracking of classification and data rights on a per-element basis.
- **SAIC DE Failure Analysis Profile:** Contains customizations to enable state-based failure analysis (see *Using SysML State Machines to Automatically Conduct Failure Modes and Effects Analysis*, 2020 NDIA Systems and Mission Engineering Conference)
- **SAIC DE Profile [UPDM] for MagicDraw/Cameo Modeling tools:** Beta release of rules to support UPDM modeling (deprecated)
- **SAIC DE System Model Template:** A blank model with folder structure and useful tables.
- **SAIC DE Model Federation Process:** A model illustrating the federation process supported by the v2.0 validation rules.
- **SAIC DE Federation Model Template:** A blank model with folder structure and useful tables intended to support federation of system models into a system-of-systems model.
- **SAIC DE Federation Model Example:** A set of models federated using the v2.0 federation process and rules.
- **SAIC DE Profile for Rhapsody:** A subset of our validation rules ported to IBM's Rhapsody modeling tool.
- **SAIC UAF Validation Rules:** A set of rules to support UAF modeling.

- **SAIC UAF Style Guide:** Model-based style guide with details about applying a subset of SAIC's SysML rules and native UAF rules to UAF models.
- **SAIC UAF Ranger Enterprise Model:** A UAF model of the *Ranger* lunar probe enterprise architecture; complements the SAIC DE System Model Example.
- **SAIC UAF Ranger UAF SysML Federation Model:** A UAF model that illustrates how to federation UAF/SysML models.
- **SAIC SW4SysML Profile:** A profile used to support software development and function point analysis
- **How-to Videos:**
  - Introduction
  - Linking Flows
  - Flow Sets
  - Installation and Introduction
  - How to Use the Style Guide
  - Style Guide Demonstration
  - Classification Guide
  - Failure Analysis Example
  - Process 1-pager Overview
  - Updating the SAIC Digital Engineering Profile
  - Cloning the SAIC DE Model Template
  - Model Federation Process
  - Model Federation Validation
  - Model Content Planning
  - UAF Style Guide
  - UAF *Ranger* Enterprise Model
  - Rhapsody: Installing and Using DE Toolkit Profile
  - Rhapsody: Toolkit Profile Overview
  - Rhapsody: Context Pattern Demo
  - Rhapsody: *Ranger* Demo

### Assumptions:

- General Disclaimer: We do NOT claim that someone not fully conformant to our rules is “doing SysML wrong.” They represent an attempt to guide model development where multiple choices are available to ensure that a team of modelers always makes the SAME choice. This creates model consistency that is essential for leveraging the power and efficiency of tools used to analyze the technical content in the model and validate its internal integrity.
- Cameo Enterprise Architecture (MagicDraw) and SysML are the focus of this initial effort. Do NOT use UPDM/UAF profiles with this model
- No validation rules are based on the model package's structure

**Goals:**

- Maximize the effectiveness of the modeling effort by enabling large teams to build models with consistent style and internal integrity
- Maximize the efficiency of the modeling effort by minimizing the number of elements and relationships needed to rigorously describe the system (get the most value out of the fewest “clicks”)
- Rely on data rather than diagrams (although building many diagrams may be part of creating the data)
- Allow redefinition and traceability between architectures (behavioral, logical, physical)
- Accommodate the use of non-textual requirements (i.e. making model elements contractual)
- Accommodate reasonable program variation
- Leverage automation whenever possible to ensure style guide compliance and increase model integrity

**Other:**

- This profile and associated validation rules have been tested against a number of models (both public and proprietary) to ensure that they function as intended. If you detect false positives or false negatives in your use of the model, please relay that information to us so that we may correct the validation logic.
- Any and all comments (including feedback on their usefulness or suggestions for additional rules) are welcome.