



SysML v2 *THE NEXT GENERATION*

AGENDA

*SysML v2
OVERVIEW +
MOTIVATION*

*SysML v2
FEATURES*

*SysML v2
DEMO*

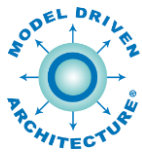
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**NEXT GENERATION MODELING LANGUAGE
FOR THE NEXT 15-20 YEARS!**

WHO IS RESPONSIBLE FOR SYSML?

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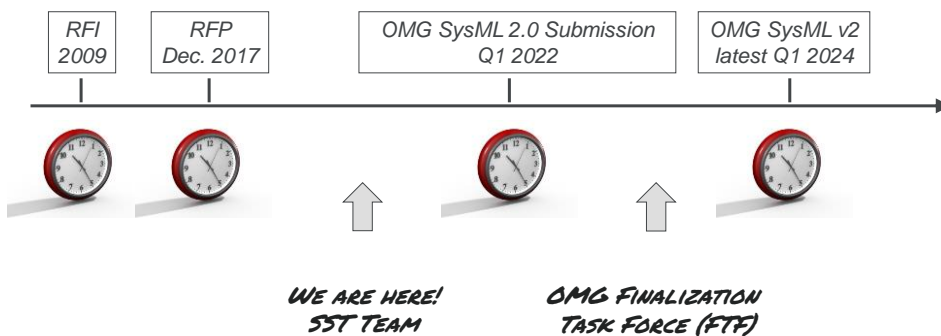
30 Years
IGNITING INNOVATION *Since 1989*
Object Management Group®

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ROADMAP SYSML V2


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SST Participating Organizations



Academia/Research End User	Tool Vendors Government Rep	INCOSE rep *
<ul style="list-style-type: none"> • Aerospace Corp • Airbus • ANSYS medini • Aras • Army Aviation & Missile Center • Army CBRND • BAE • BigLever Software • Boeing • Army CCDC Armaments Center • CEA • Contact Software • Defence Science and Technology Group • DEKonsult • Delligatti Associates • Draper Lab • ESTACA • Ford • Fraunhofer FOKUS • General Motors • George Mason University • GfSE • Georgia Tech/GTRI • IBM • Idaho National Laboratory 	<ul style="list-style-type: none"> • IncQuery Labs • Intercax • Itemis • Jet Propulsion Lab • John Deere • Kennntnis • KTH Royal Institute of Technology • LieberLieber • Lightsstreet Consulting • Lincoln Lab • Lockheed Martin • MathWorks • Maplesoft • Mercury Systems • Mgnite Inc • MID • MITRE • ModelAlchemy Consulting • Model Driven Solutions • Model Foundry • NIST • No Magic/Dassault Systemes • OAR • Obeco • OOSE • Ostfold University College 	<ul style="list-style-type: none"> • PTC • Qualtech Systems, Inc (QSI) • Raytheon • Rolls Royce • Saab Aeronautics • SAF Consulting * • SAIG • Siemens • Sierra Nevada Corporation • Simula • Space Cooperative • Sodus Willert • System Strategy * • Tata Consultancy Services • Thales • Thematix • Tom Sawyer • UFRPE • University of Western Switzerland (Rosas Center) • University of Cantabria • University of Alabama in Huntsville • University of Detroit Mercy • University of Kaiserslautern / VPE • Vera C. Rubin Observatory • Vitech • 88solutions

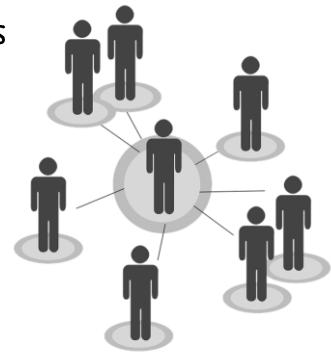
Source: SST

TEAM STRUCTURE



Team is divided in 6 tracks with track leads:

1. Project Management – Ed Seidewitz, Sandy Friedenthal
 - Infrastructure – John Watson, Chris Delp
2. Requirements V&V – Sandy Friedenthal
3. Profile & Transformation – Yves Bernard, Tim Weilkiens
4. Metamodel Development – Karen Ryan, Chas Galey
5. API/Services Development – Manas Bajaj
6. Pilot Implementation – Ed Seidewitz



MOTIVATION: NEW CHALLENGES – OLD PROBLEMS

DIGITAL THREAD

DIGITAL TWIN

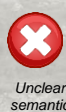
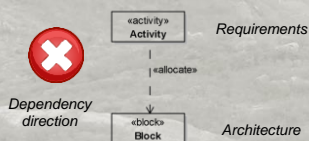
AIYSE

VARIANT MODELING

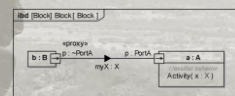
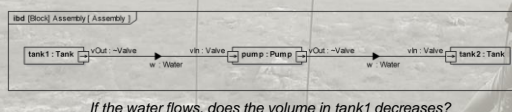
PRECISION

SIMULATION + ANALYSIS

MODEL INTEROPERABILITY



Unclear semantic

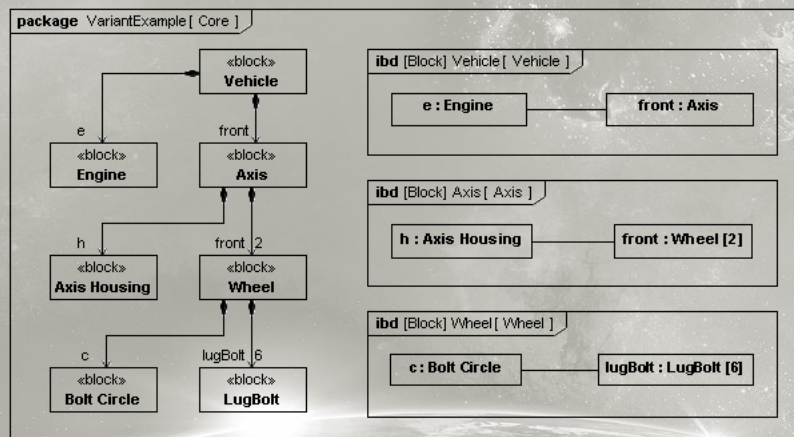


Mapping of flow properties to behavior parameters

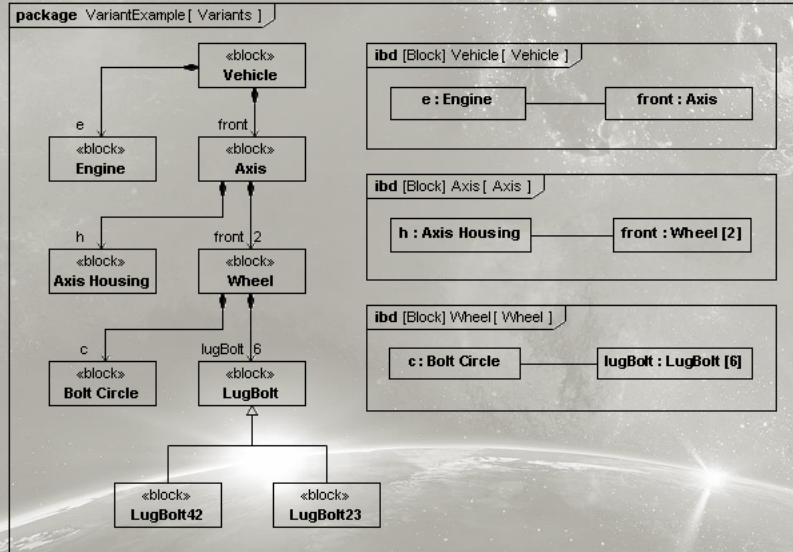
LET'S FOCUS ON ONE BURNING PROBLEM

**MODELING OF VARIANTS AND
THE EXPLOSION OF THE CONFIGURATION SPACE**

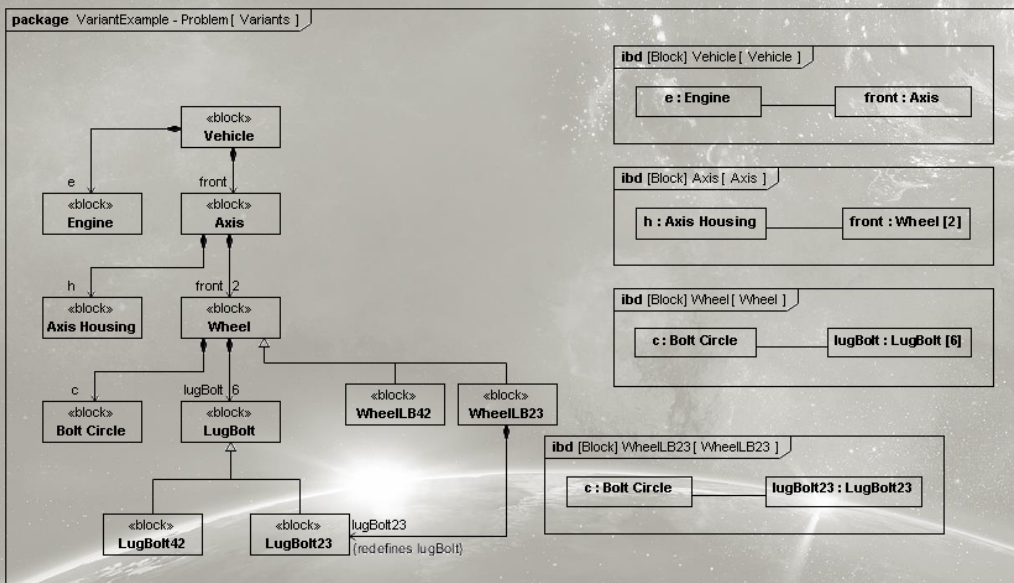
**VARIANT MODELING ISSUE
EXPLOSION OF THE CONFIGURATION SPACE**



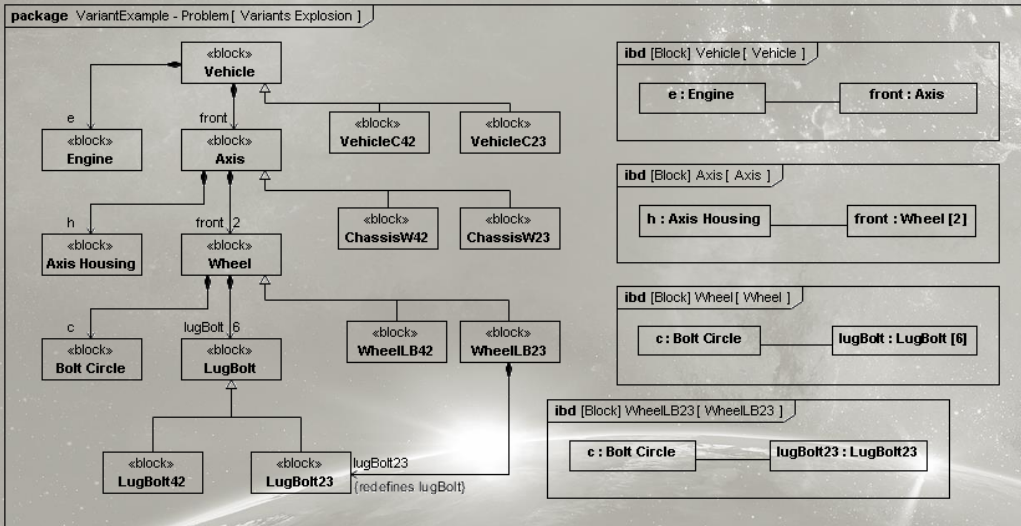
VARIANT MODELING ISSUE EXPLOSION OF THE CONFIGURATION SPACE



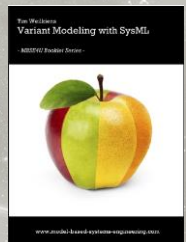
VARIANT MODELING ISSUE EXPLOSION OF THE CONFIGURATION SPACE



VARIANT MODELING ISSUE EXPLOSION OF THE CONFIGURATION SPACE



VAMOS



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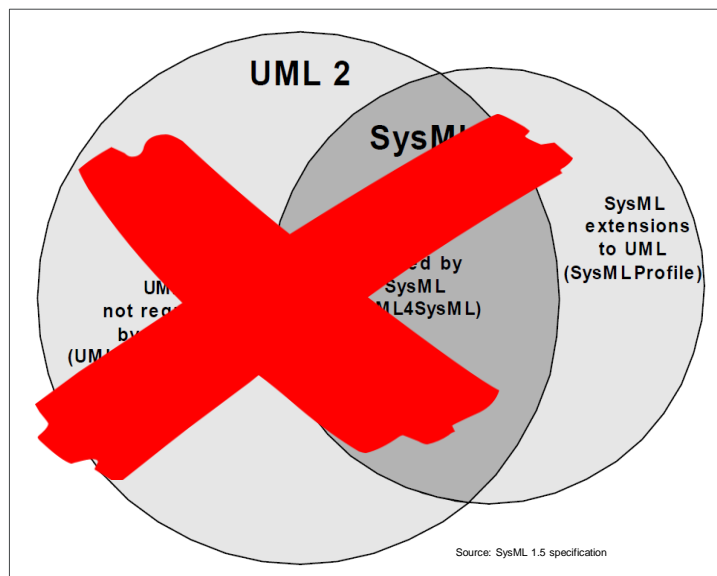
VARIANT MODELING

**SYSML V2 SHALL PROVIDE A CAPABILITY
TO REPRESENT VARIANTS ALIGNED WITH
ISO/IEC 26550.**



- * VARIATION POINT**
- * VARIANTS**
- * VARIABILITY EXPRESSIONS**
- * VARIANT BINDING**

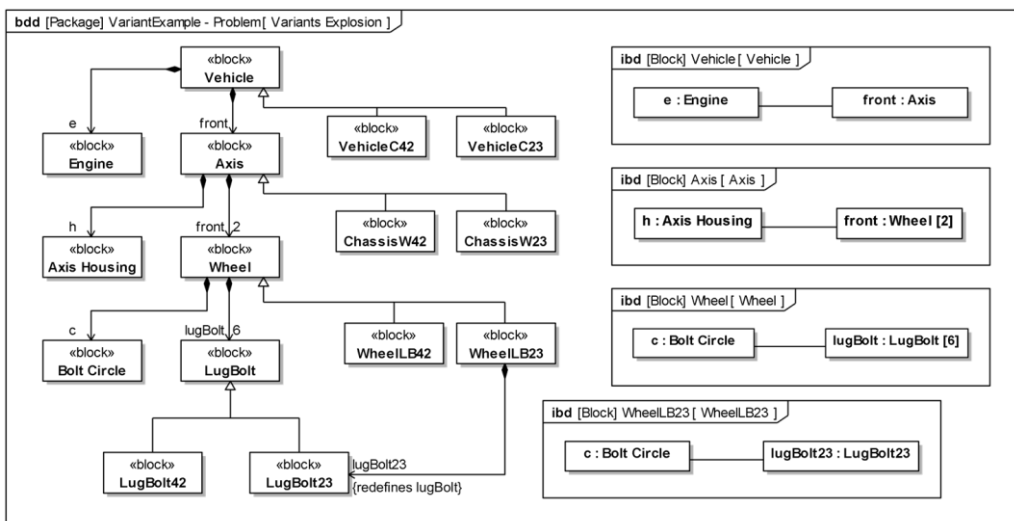
SYSML V2 WILL NOT BE BASED ON UML



SYSML V2 LANGUAGE ARCHITECTURE - KERML



VARIANT MODELING EXPLOSION OF THE CONFIGURATION SPACE



VARIANT MODELING WITH SYSML V2

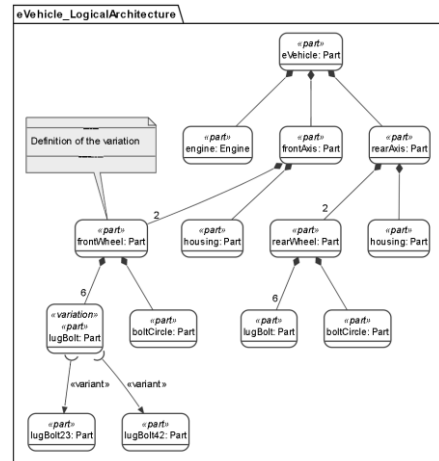
Shared assets supersets („150% model“)

```

  /*
   * Definition of the lug bolt variants
   */
  part lugBolt42;
  part lugBolt23;

  part eVehicle {
    part engine : Engine;
    part frontAxis {
      part frontWheel[2] {
        /*
         * Definition of the variation
         */
        variation part lugBolt[6] {
          variant part lugBolt23;
          variant part lugBolt42;
        }
        part boltCircle;
        connect boltCircle to lugBolt;
      }
      part housing;
      connect housing to frontWheel;
    }
  }
  
```

Restricts variability
 to two possibilities.



One configured product:

```

  part eVehicle42 :> eVehicle {
    part redefines lugBolt42 :> frontAxis::frontWheel::lugBolt;
  }
  
```

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EXPLORE SYSML V2 AND THE SYSML V2 API

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<https://www.sysmlv2lab.com>

<http://sysml2.intercax.com:9000/docs/>