Introduction to SysML

Part 10.0: MBSE Deployment and Model Review

With tutorial exercises using MagicDraw

Learning Objectives

- Review of the Model
- Deploying SysML and MBSE
  - Human Resources
  - Document Generation
  - Methodology
  - Collaboration

Model Review

- Model Organization
- Use Cases & Requirements
- Behaviors – connecting ACT, STM and SD
- Structure and Connectivity
- Allocating Behavior to Structure
- Analysis – Verifying Requirements

Deploying MBSE

- Implementing Change
- People
- Tools
- Practice
- Infrastructure
- Benefits
- Next Steps

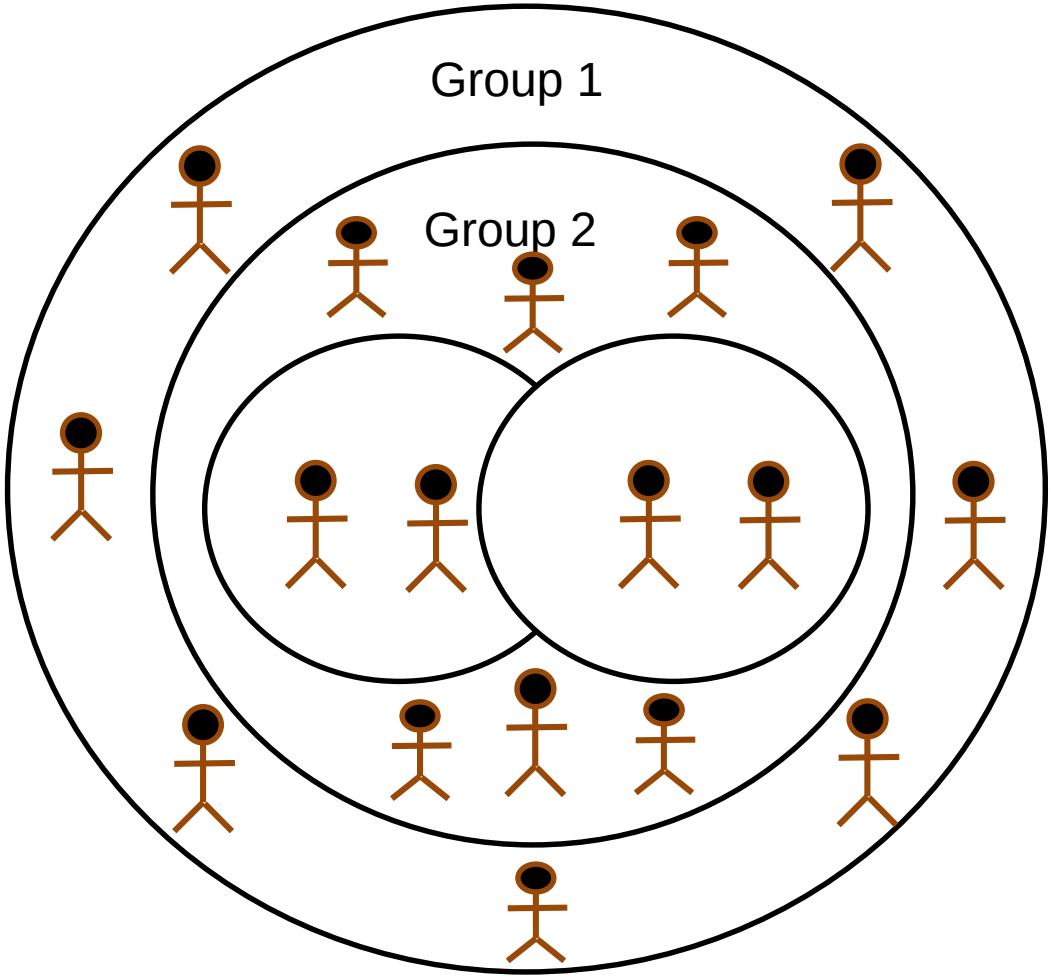
Implementing Change

- Three Approaches to Change Management
  - Ready, Aim, Fire!
  - Ready, Fire, Aim!
  - Ready, Aim, Aim, Aim …

"We would not allow MBSE to fail"

- Best Practices – combination of Grass Roots and Top Down

People



- Group 1 – SysML Consumers
  (managers, domain engineers, etc., who need to read SysML diagrams)
- Group 2 – SysML Providers
  (engineers who create SysML diagrams)
- Group 3 – SysML Gurus
  (experts who establish best practices, train, curate profiles and libraries)
- Group 4 –SysML Tool Providers
  (IT staff who maintain tools, write plug-ins, utilities and templates)

Tools

- Modeling
  - Creating and editing SysML models
- Execution
  - Parametric solvers, behavior simulation, orchestrating analyses
- Interoperability
  - SysML-to-SysML, SysML-to-PLM/CAD/CAE/other
  - Navigation and Traceability
- Document Generation [video]
- Repositories
  - Vendor products, PLM/ALM (configuration-managed), databases
- Web Interfaces
  - Viewing the model, entering data, running analyses

Practices

- Training
- Methodology (see http://www.omgwiki.org/MBSE/doku.php?id=mbse:methodology)
  - Is the methodology appropriate to the project?
  - Does the methodology support organization practices?
  - Does the methodology include non-value added activities?
  - Is the methodology clear and simple to understand?
  - Does the methodology support parallel development?
  - Does the methodology tell you when to stop modeling?
- Customization and Domain-Specifc Languages
- Style Guide
- Validation Rules
- Integration into the Engineering Process

Infrastructure

- Profiles
  - Collections of stereotypes specific to the organization or discipline
- Libraries
  - Collections of re-useable model elements: units, equations, interface blocks, requirements, components, subsystems
- Templates
  - Reference models, document generation
- Plug-ins and Utilities
- Collaboration – Model Repositories [video]

Benefits of MBSE

- Better Communication
  - Consistent understanding across organizational lines
  - Earlier recognition of problems
- Knowledge Capture and Re-use
  - Object-oriented language enables re-use
  - Deeper knowledge of system retained
- Data Federation
  - Search and navigate across the total system model

Next Steps

- Use it or lose it
  - Use for individual documents and figures
  - Use in group meetings
- Build a community
  - Join or create a user group
  - Build an internal website/wiki
- Get Management Buy-In
  - Lobby for tools and training
  - Look for pilot opportunities

Recap

- At the end of this course, you should be able to
  - Recognize the nine standard SysML diagrams and explain the general purpose and content of each
  - Create a requirements hierarchy with satisfy and verify relationships
  - Create an integrated behavior model
  - Create a SysML block structure in a BDD
  - Create an IBD showing connections and item flows between parts
  - Create a simple parametric analysis
  - Recognize opportunities for connecting SysML models with other tools

Questions?

www.intercax.com

email info@intercax.com

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