

How *Not* To Fail With SysML?

Pascal Roques

Event Sponsors:




Media Sponsors:



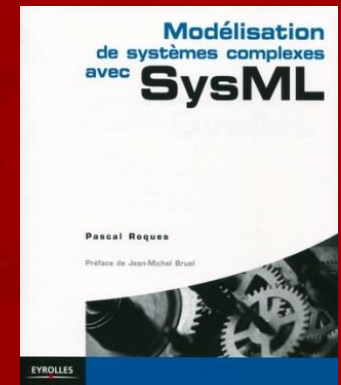
The Speaker: Pascal Roques



- Independent Consultant & Trainer, 25 years of experience in modeling
 - ✓ SADT, OMT, UML, SysML
- OMG Certified on UML2 and SysML
- Co-founder of  association



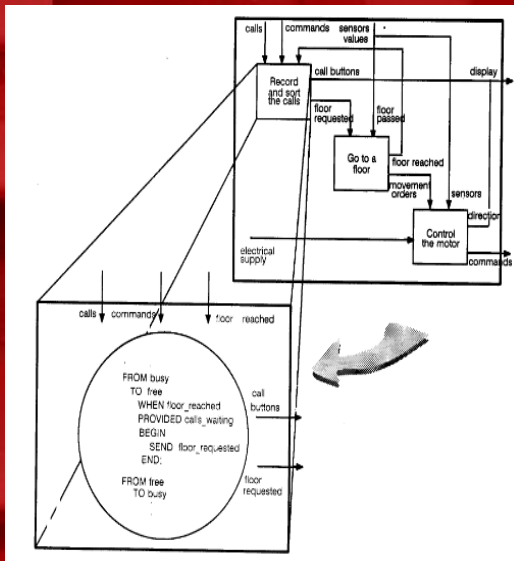
- Author of UML best-sellers in France (>50 000 copies)
- ... and of the first French SysML book (MagicDraw!)



pascal.roques@prfc.fr

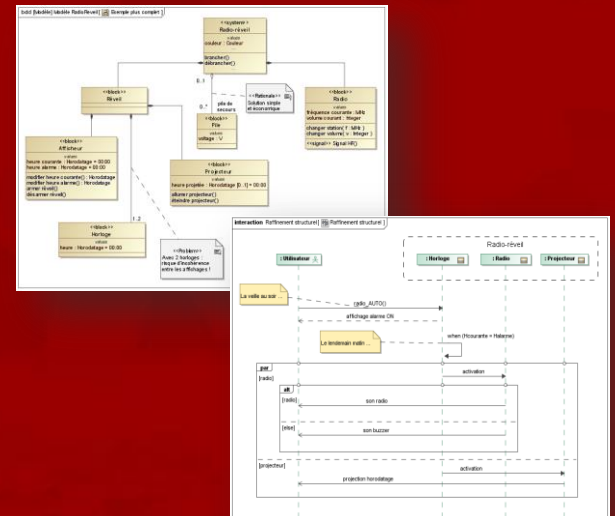
A long time ago...

- First time in Dallas: 1991!
- IDEF Users Conference (Fort Worth)
- ASA™: Automata and Structured Analysis
 - Enhanced SADT with dynamics description by means of Finite State Machines
 - Provided tools, not only for edition and documentation generation, but also simulation and even test generation
 - Applied intensively on industrial projects, mainly in: aeronautics, ground transportation and space from 1985...



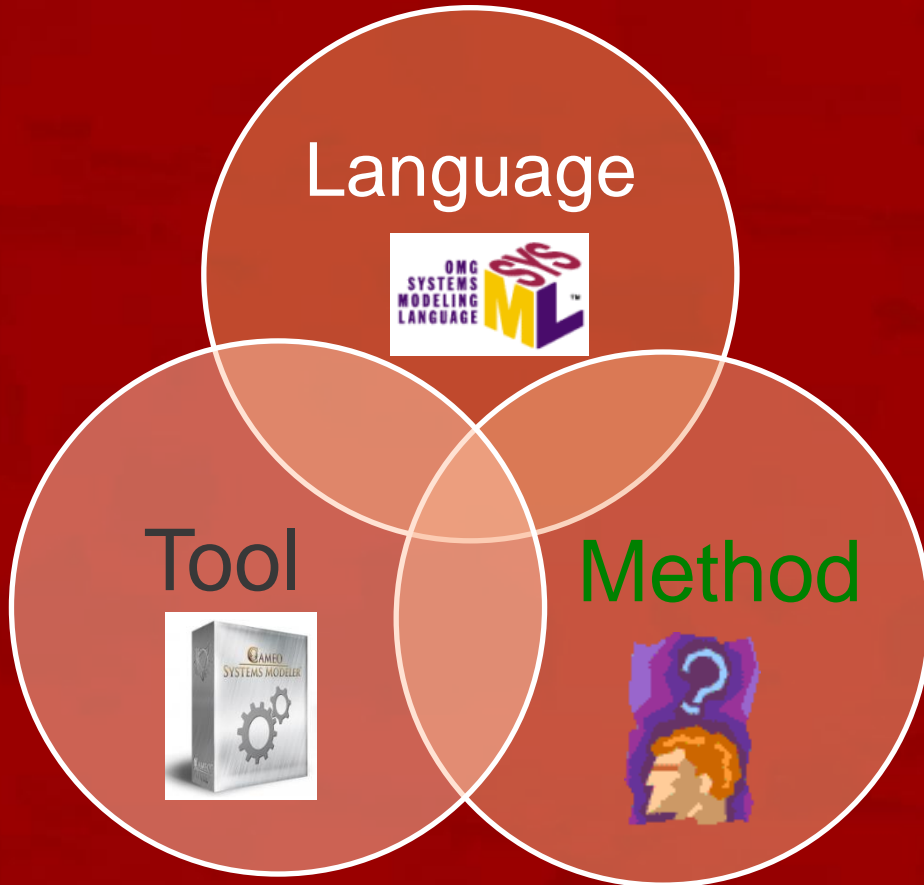
MBSE

- From Document-Centric to Model-Centric



MBSE

- MBSE = Language + Method + Tool



MBSE is not easy!

Choose the right language



- Adopt Standards
 - INCOSE
 - OMG
- SysML is the right choice at top level
- It can be extended by coupling with other more specific languages:
 - Modelica
 - AADL
 - Etc.

MBSE is not easy!

Define the right method

- Do not adopt blindly an external modeling process
- The method must be tailored to your context:
 - Type of system (size, complexity, etc.)
 - Nature of project (small, distributed, etc.)
 - Background of people
- Start with a pilot project (volunteers)
- Provide simple guidelines
- Correct and enrich the process from feedback
- MBSE must be integrated into existing SE processes!



MBSE is not easy!

Choose the right tool

- Check the following characteristics:
 - Ergonomics, Look & Feel
 - Conformance, Model checking
 - Document Generation, etc.
- If possible, one tool is better than several
 - Requirements?
 - Architecture Frameworks
 - Software, etc.
- Don't start MBSE just by buying a tool!

Consider Training and Mentoring



- Modeling is a skill, Modeling is difficult
 - A lot of concepts
 - How to choose the right diagram?
 - When to stop?
- Begin with Training
 - Ask to experts
 - Books are not sufficient
 - Best practices
- Continue with Mentoring
 - Keeps you on rails
 - Model Review



Collaborative Modeling



- Encourage Collaboration
 - One of the main goals of modeling is communication!
 - Spend time on valuable diagrams!
 - Try simulation!
- Good practices:
 - Modeling workshop
 - “Pair Modeling”
 - Expert Reviews

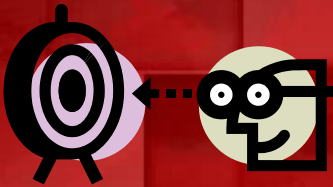
Stay Driven by ROI



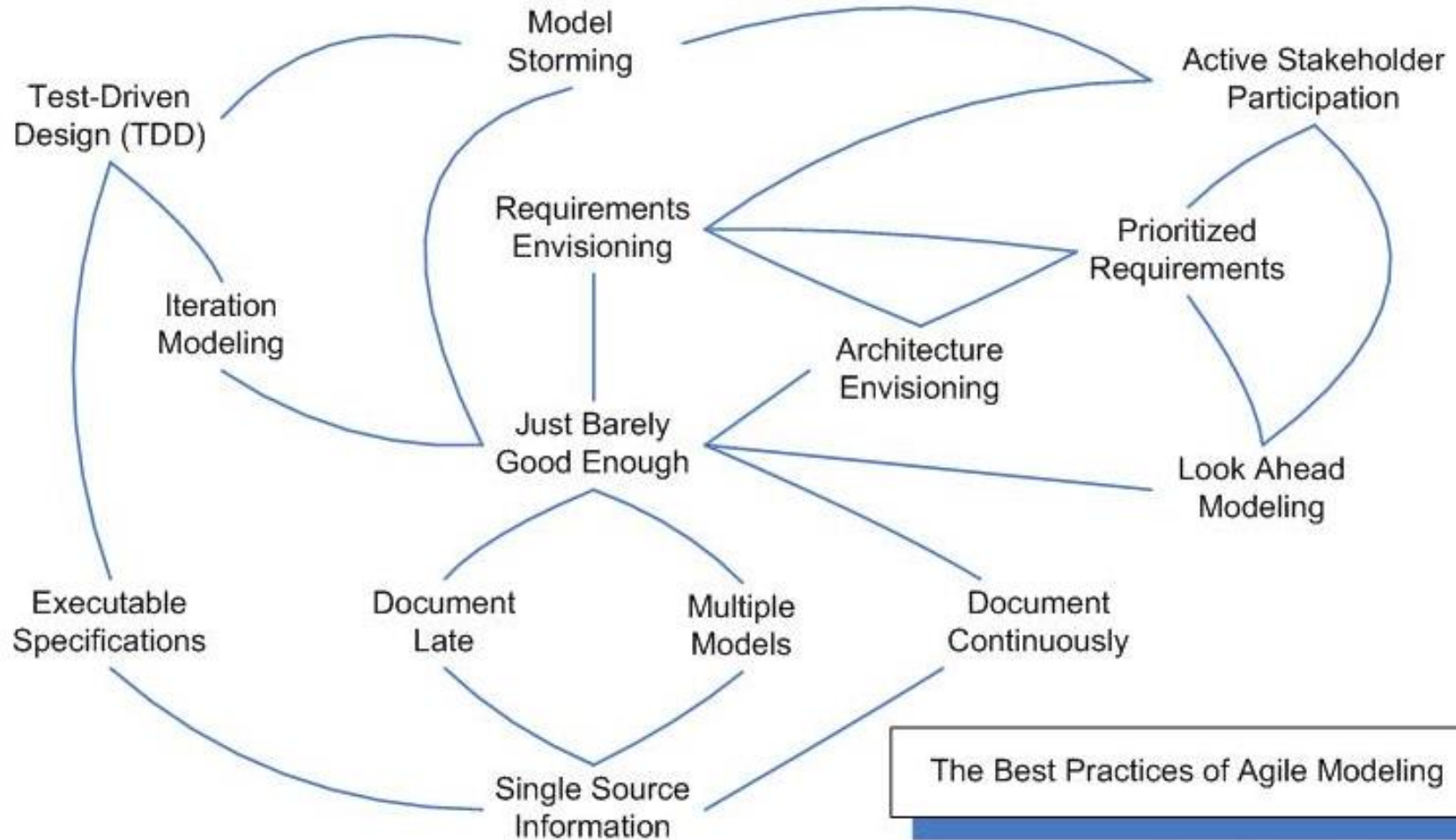
- Model with a purpose!
 - Don't model too much
 - Don't model too early (upfront)
 - Integrate Metrics into Your Process
- Don't duplicate models with documents
 - Documentation should be inside the model
 - Navigate through the model
- Don't forget Configuration and Version Mgt

Capitalize Best Practices

- Elaborate a Model Template
- Publish easy to read Modeling Guidelines
- Build Libraries of reusable model elements:
 - Units, Value Types
 - Blocks
 - ...
- Provide additional tooling:
 - Naming conventions
 - Documentation generation templates
- *Each Model (and each diagram) must have a clear objective and a defined audience*



Modeling can be agile!



General Lessons Learnt

- MBSE must be part of the global SE process
- MBSE should be introduced incrementally
- MBSE requires investment in tools, training and mentoring
- Communication is the ultimate goal!
 - Ugly diagrams are useless

Food for Thought

- A is a good model of B is A can provide satisfactory answers to predefined questions about B (Douglas.T. Ross)
- All models are wrong, but some are useful! (George Box)





Thanks for your Attention!

