

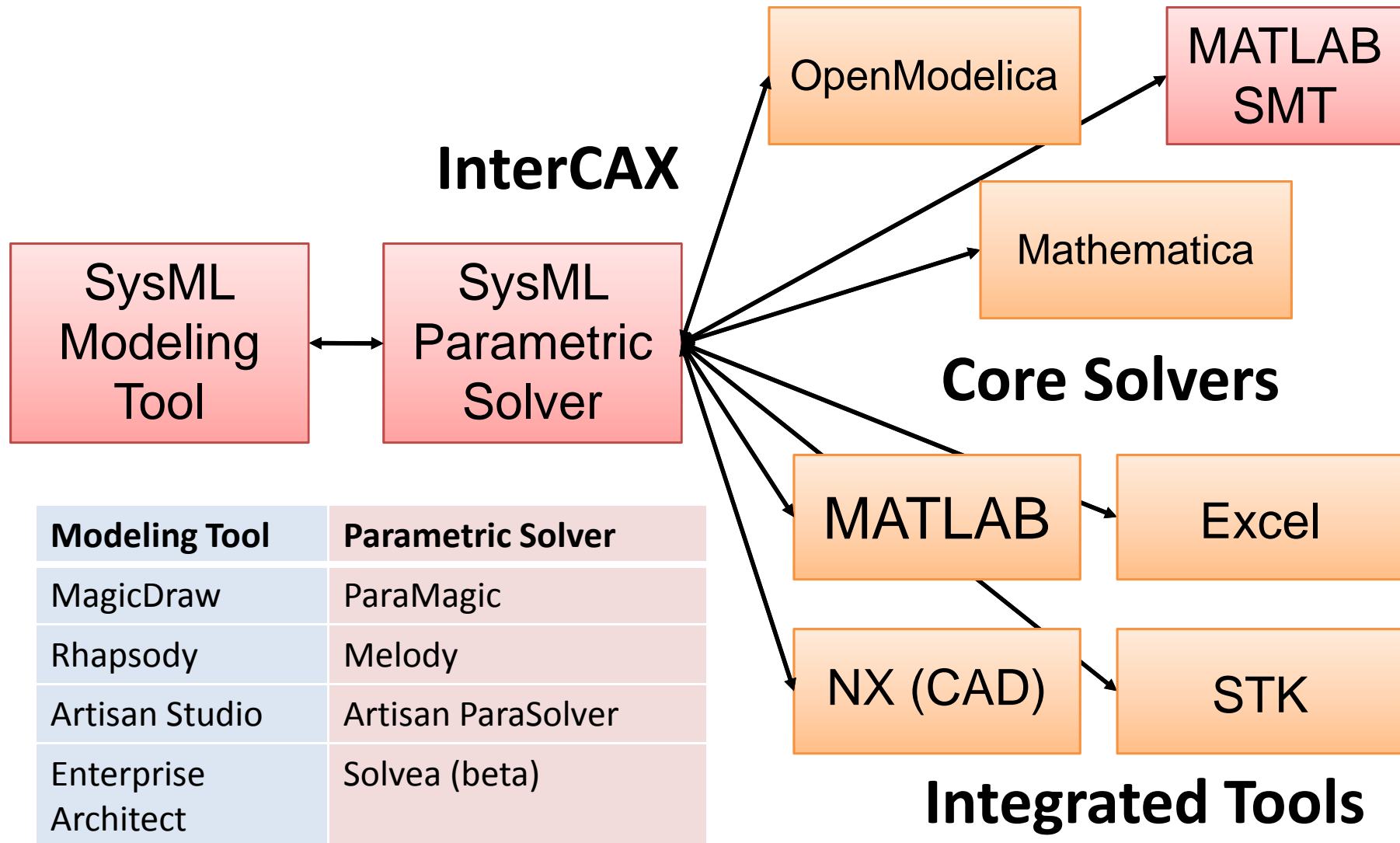
*Frontiers 2011
April 27, 2011*

Vendor Panel Discussion: Advances in Model-Based Systems Engineering

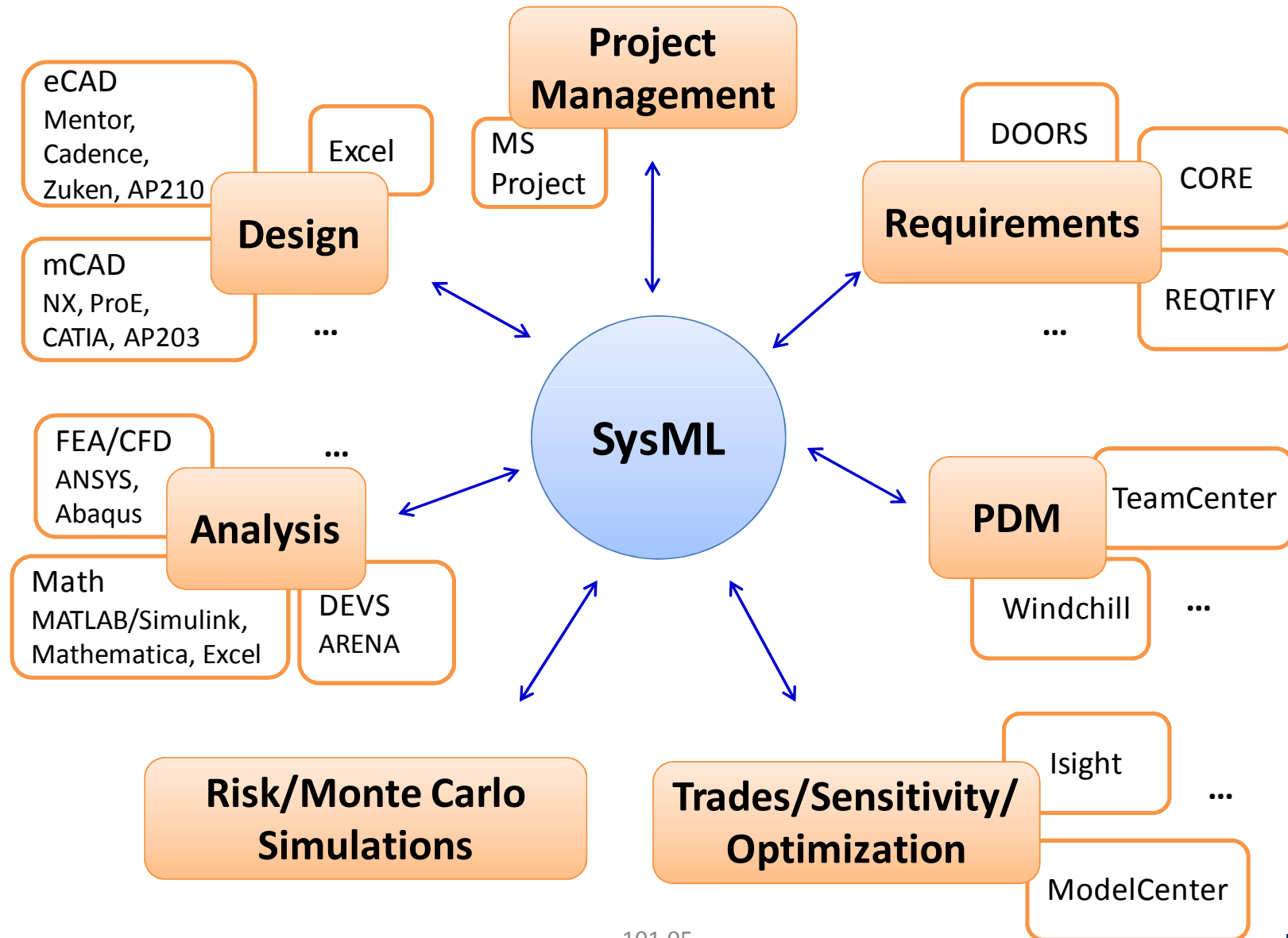
Dirk Zwemer, PhD
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- **Advances and Challenges**
- **Customer Benefits and Issues**
- **Opportunities**



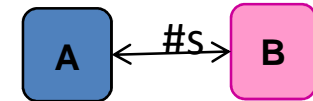
Collaborative System M&S Framework InterCAX LLC



- Transfer Data between Independent Models

- SysML-Excel

- Function calls from SysML to MATLAB

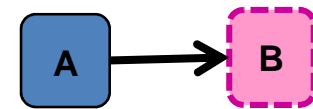


- Transform Model from Tool A to Tool B

- SysML parasolvers export constraint network

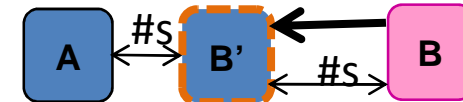
- SysML-Modelica, SysML-Simulink

- Multistep variations, e.g. CAD-FEA



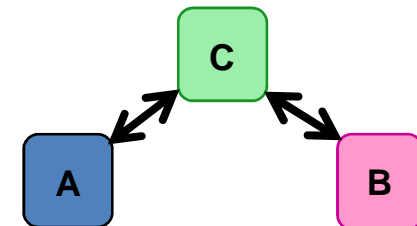
- Mirror Model from Tool B in Tool A

- SysML-CAD



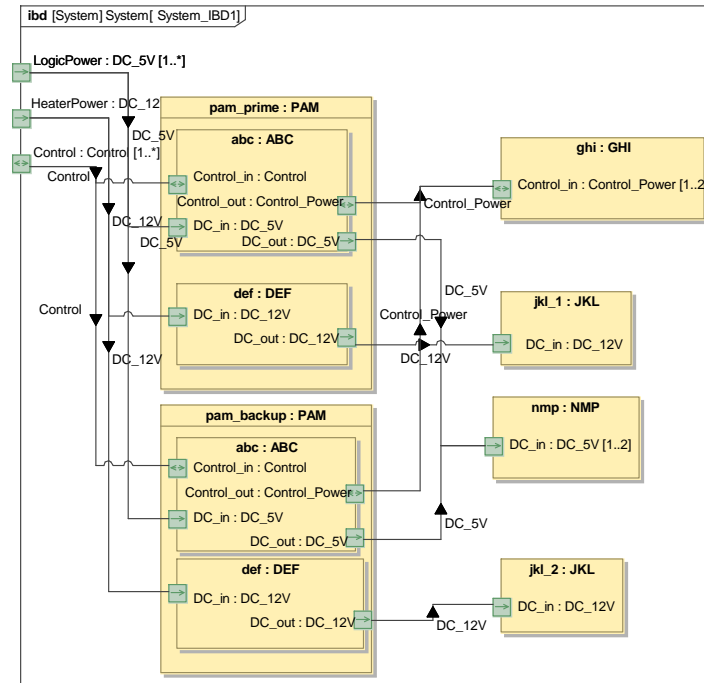
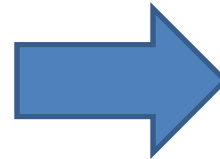
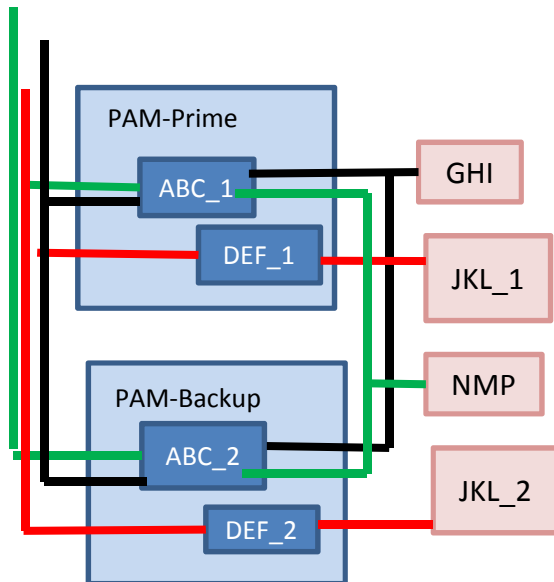
- More Complex Patterns

- Intermediate models and repositories



- General Systems Engineering
 - User Interface Efficiency
 - Effective Presentation to Decision Makers
 - Collaborative Access/Security
- Specific to Model Integration
 - Model/Data Management
 - Control
 - Distributed Processing
 - Scalability and Speed

Moving Away from Excel/PowerPoint Systems Engineering



Traceability, Consistency, Transparency

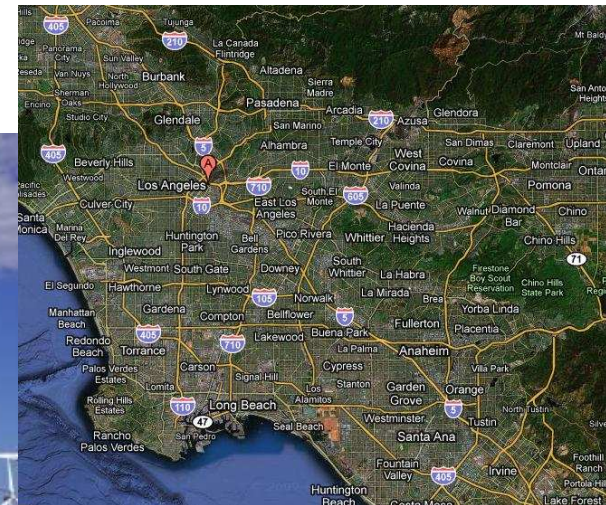
Users won't give up

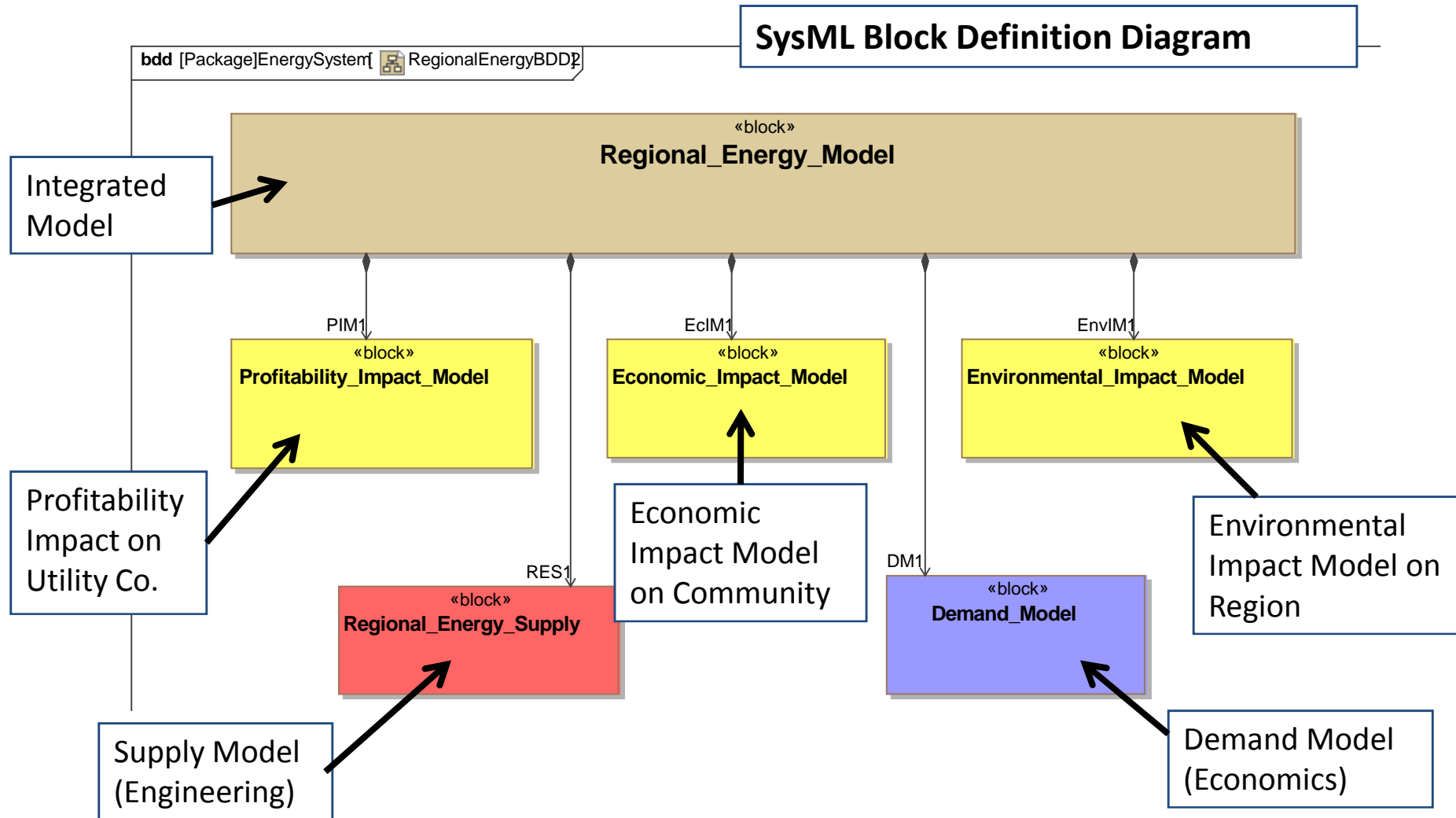
- Qualified Methodologies and Processes
- Standard Documents
- Legacy Software Tools
- Familiar Nomenclature and Symbols
- Validated Simulation Models

So any MBSE approach must supply methodologies, libraries, repositories, ... that are familiar to the organization

Energy and Infrastructure

- Smart Grid and Alternative Energy Sources
- Urban Sustainability and Resilience





- **Integration of Structure and Behavior Simulation**
- **Integration of Programmatics**
 - Budget
 - Scheduling
 - Compliance

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