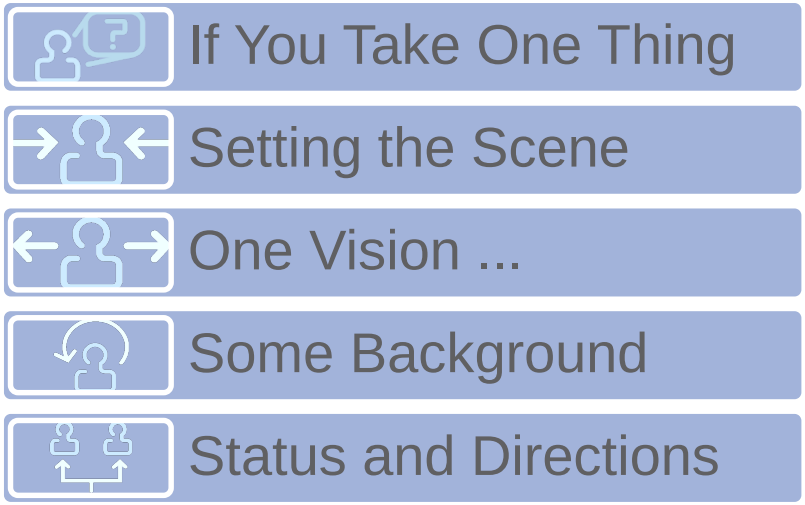
Modeling Support

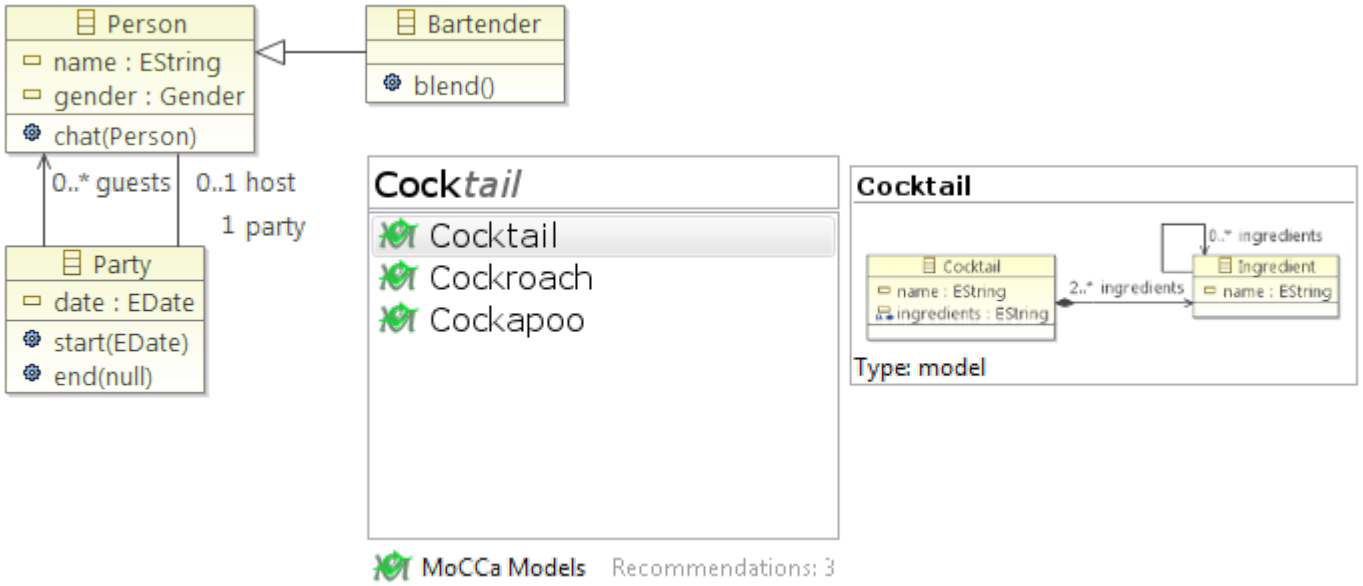
Recommenders Conquering Modeling

Andreas Ganser



If You Take One Thing ...

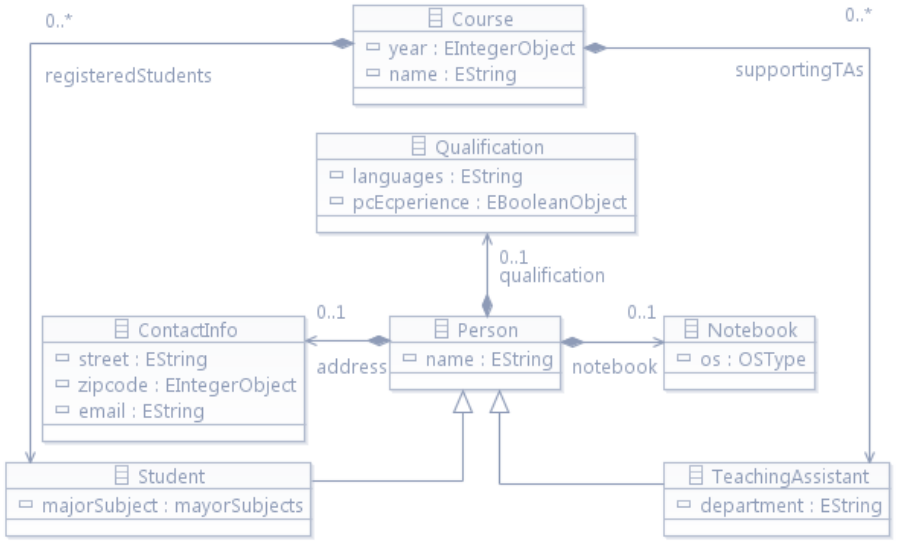
Model Recommender are Fancy ;-)



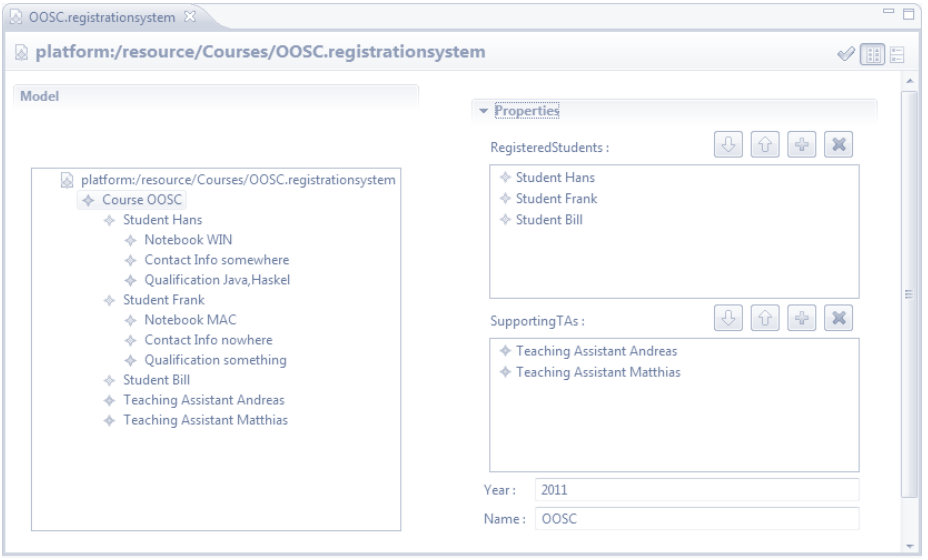
Why Should I Care …?

A Lecture Registration System (EMF/EEF)

Domain Model



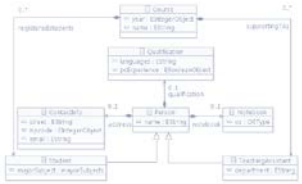
Generated Editor (EEF)



How Did This Work …?
Which Were the Hard Tasks …?

The Hard / Time Consuming Tasks

Domain Modeling and Programming



Domain Modeling

- Discussing Domain
- Understanding the Domain
  - Iterating Over Concepts
- Experimenting with Concepts
  - Generating Prototypes
- Always From Scratch???

Programming

- Which tasks are at hand?
  - Implementing Final Features
  - Integrating
  - Building
  - Testing
  - ...
- … Not Covered Here

Why Not Reuse Models? How To Reuse Models?

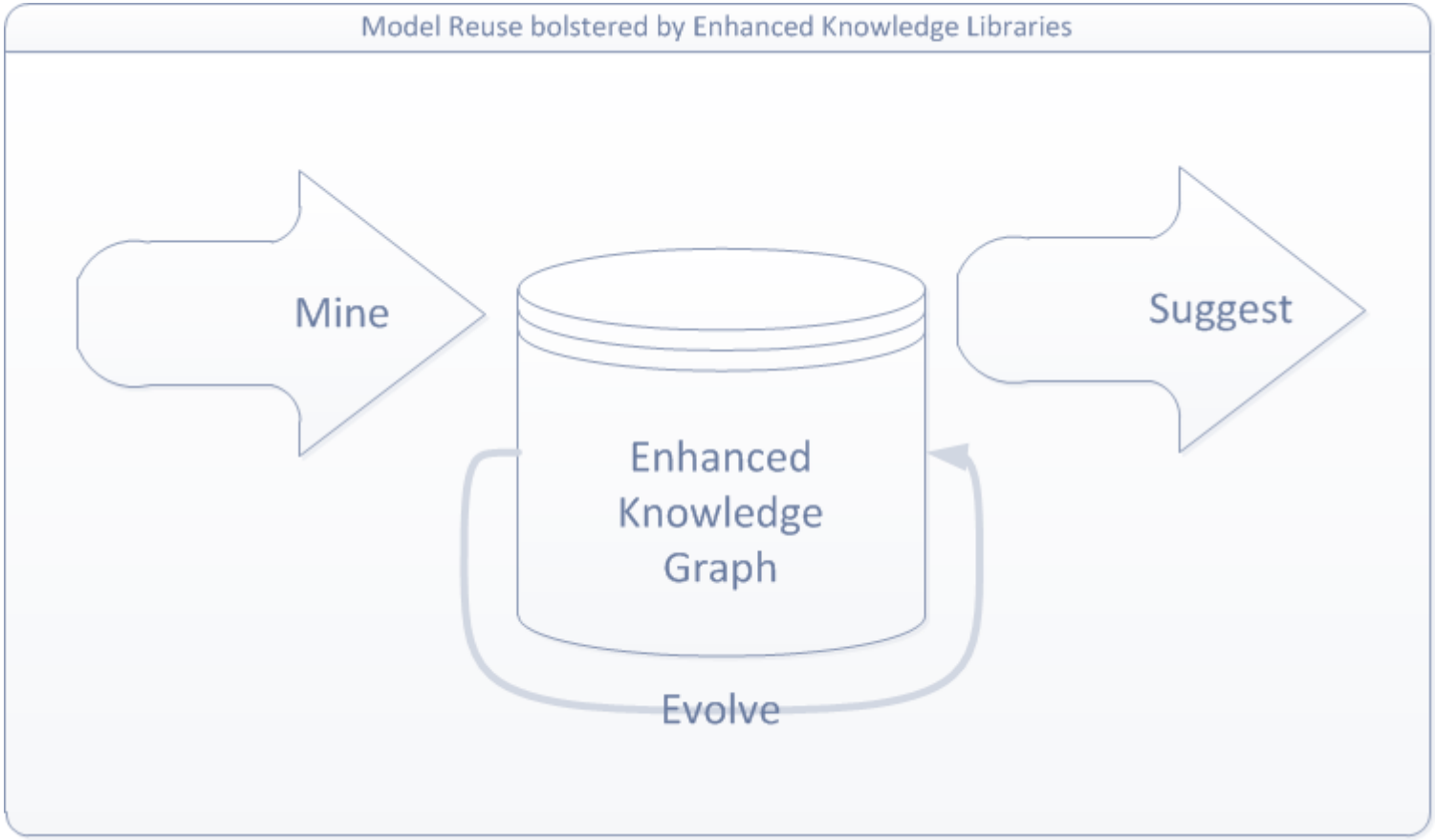
One Vision ...

From Content Assist to Recommender Systems

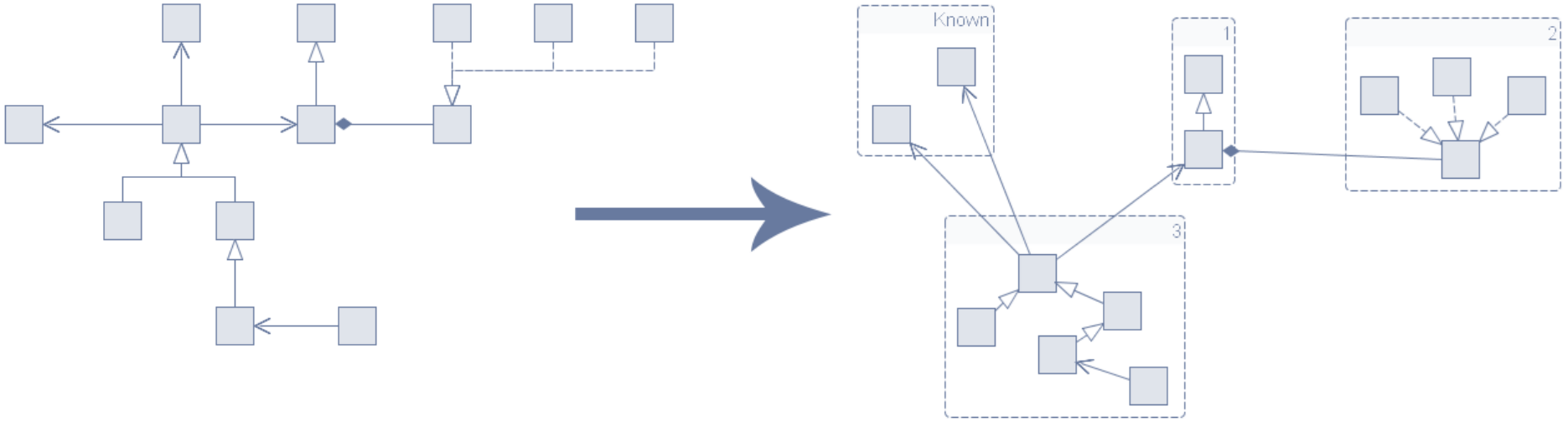
Content Assist

Recommendation

Conceptual Overview



Conceptual: Mining Model Data

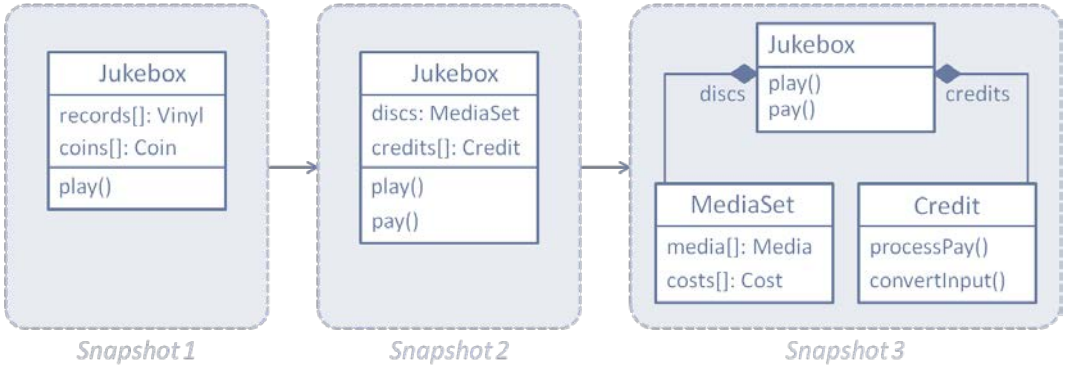


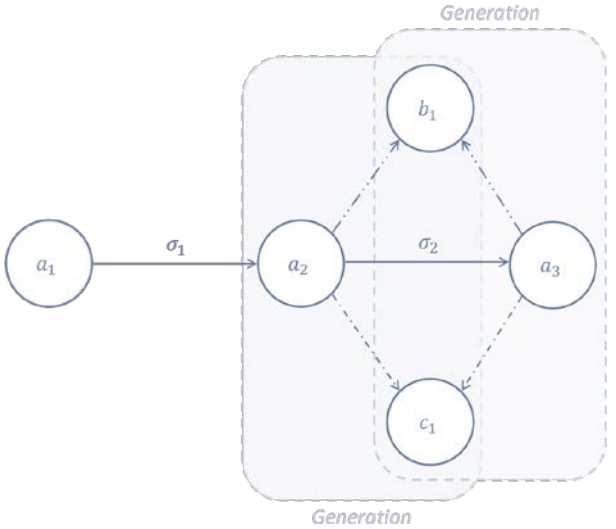
Steps of Minig Model Data

- Find Cliques
- Mark Known Parts
- Extract, Slice, and Split
- Store, Save, and Interlink

- Focus: Framework

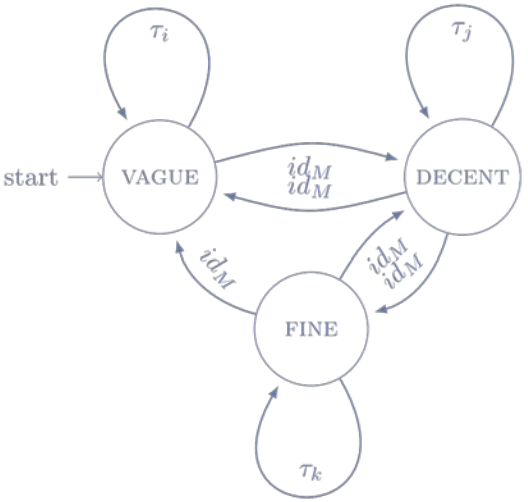
Conceptual: Evolving Models





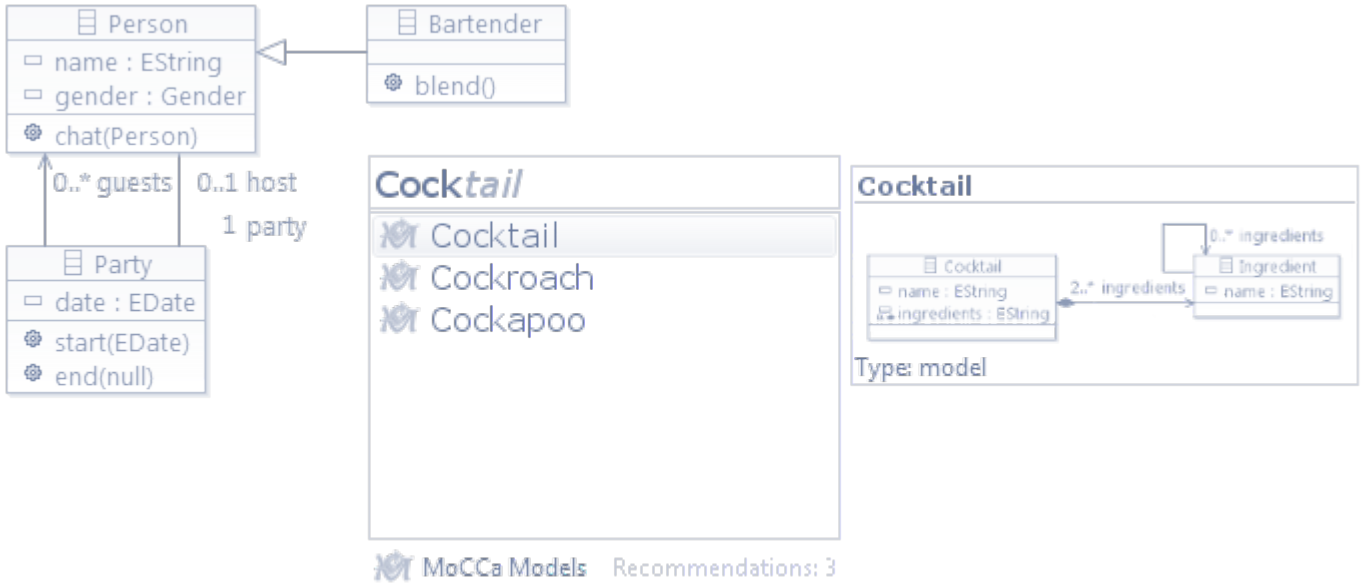
Stages of Evolving Models

- Put Under Monitoring
- Review and Set Quality Gates
- Resolve Issues and Enhance



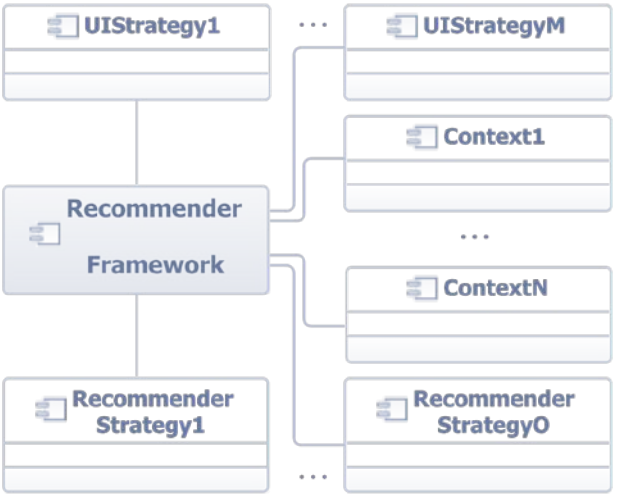
- Focus: Workflow

Conceptual: Recommending Models



Producing Recommendations

- Take Query
- Analyze Context
- Evaluate Data Sources
- Rank Query Results
- Produce Recommendations



- Focus: Framework

Recommender Add-Ons

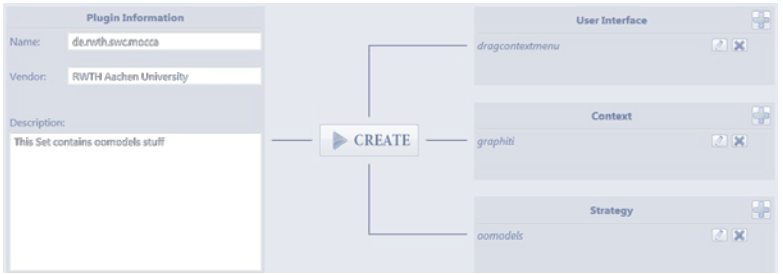
Support for Producing Recommendations

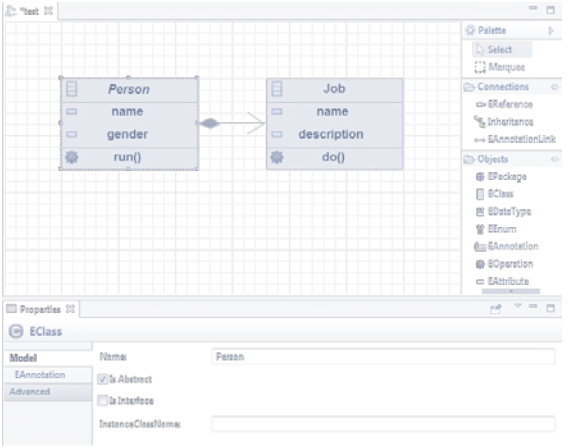
Data Support

- Graph / Relational Database
  - Self-Made and Mining Enhanced
- WordWeb
  - Dictionary Style and Simple Structure
- ReMoDD
  - Complete and Discussed Elements
- oomodels
  - Wiki-Style Documented Models

Tool Support

- Cockpit
  - See! How Easily To Create / Control
- Simulation
  - Check! If Your Strategy Works Right
- Editor
  - Experience! How Everything Integrates





Recommender Add-Ons

Support for Producing Recommendations

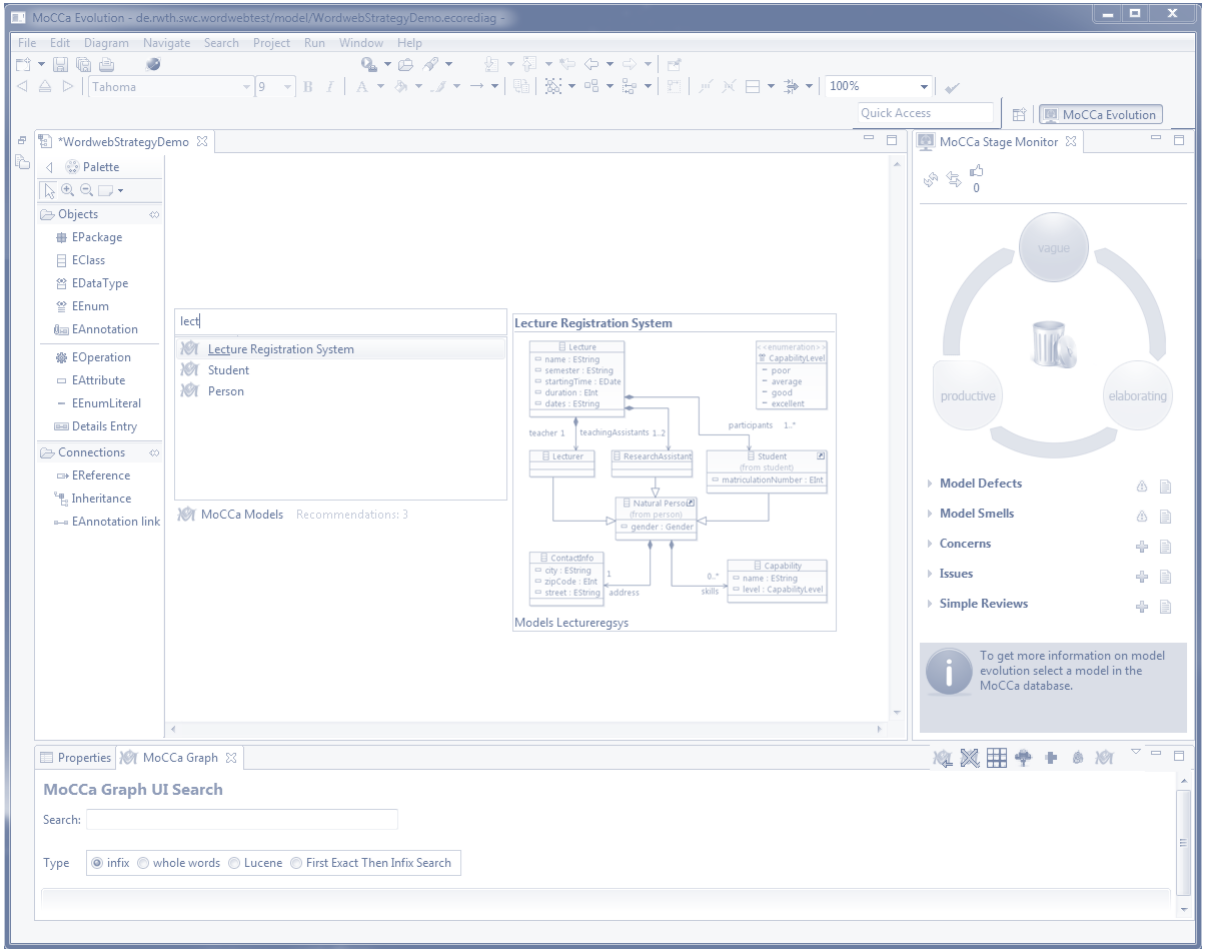
Conceptual Support

- Types of Model Recommenders
  - Content-Based
  - Collaborative
  - Hybrid
- Candidate Generation
  - To Match Categories & Queries
- Scoring Candidates
  - To Order Adhering Constraints
- Filtering Candidates
  - To fit (e.g.) Editing Position

Algorithmic Support

- Mining Model Data
  - Marking Known Parts
  - Graph and Data Mining
- Assessing Models (CD!)
  - Model Metrics
- Producing Recommendations
  - Evaluating Similarity Vector
  - Leverage Enhanced K-Grpah

… a Software Prototype



Technologies and Frameworks

Technologies and Frameworks

The Past, the Present, and the Future ...

The Final Steps

- Glue It Together (Coding / Concept)
  - 2nd Quarter
- Evaluate (?)
  - 3rd Quarter
- Write, And Write, And Write ...
  - 2nd & 3rd & 4rth Quarter

Publications

- Model Recommenders: A Research Infrastructure (Framework, Cockpit, and Simulation)
- Distributed Model Indexing supporting Model Recommenders
- Quality Staged Model Evolution for Model Recommenders
- Mining Recommendable/Recommenders-Appropriate Models for Libraries
- Model Recommender Building Blocks and Foundations
- Design and Evaluation of a Scalable Preliminary CS Block Course for Programming Novices at University

I had great support, but I'm on my own now …

Thanks for your attention

… any questions?