



TECHNISCHE
UNIVERSITÄT
DRESDEN



Department of Computer Science Institute for Software and Multimedia Technology, Software Technology Group

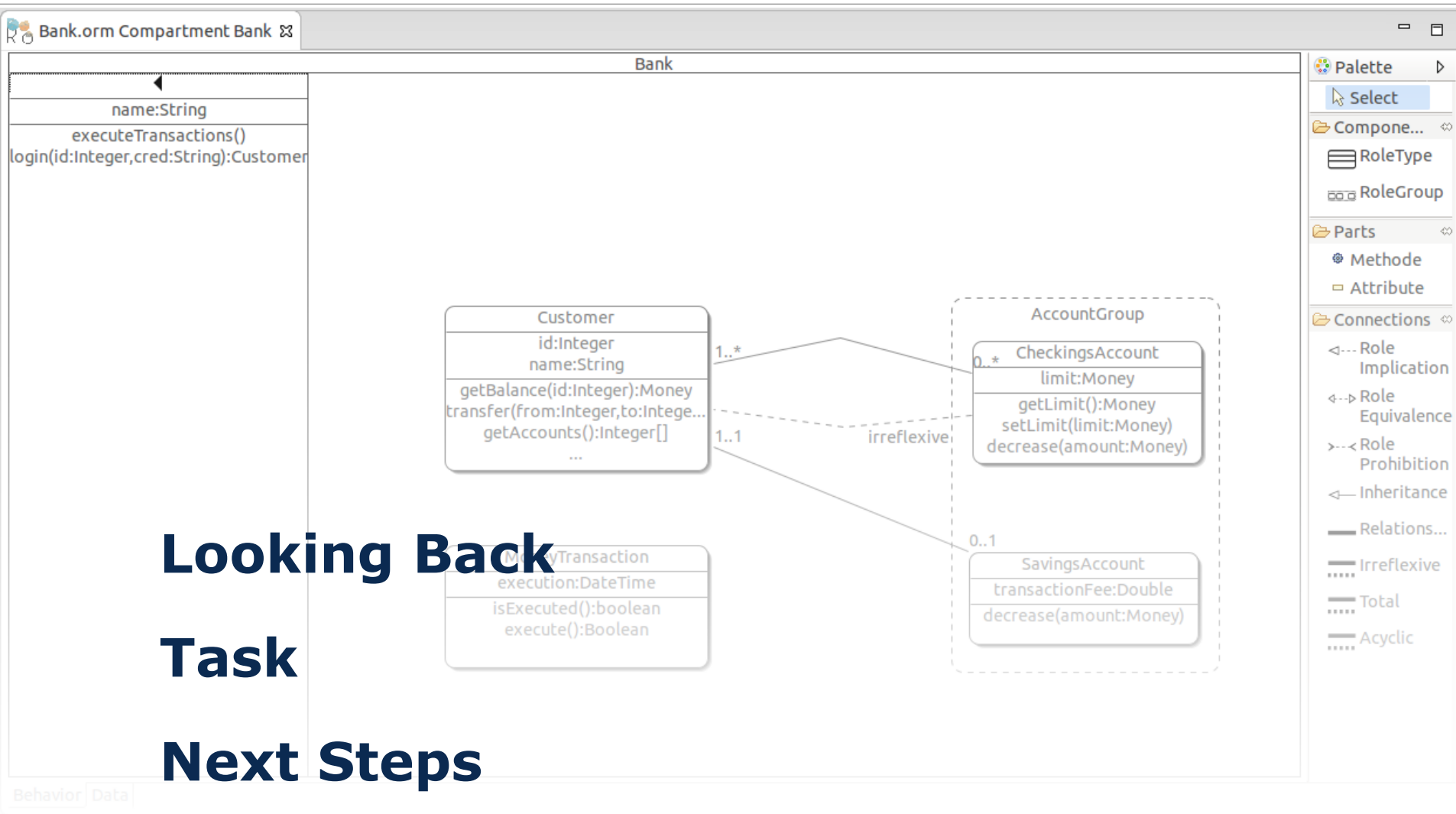
Evolving FRaMED Kickoff

Thomas Kühn
Complex Practical Course

WS2014/2015



DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur



Looking Back

Task

Next Steps

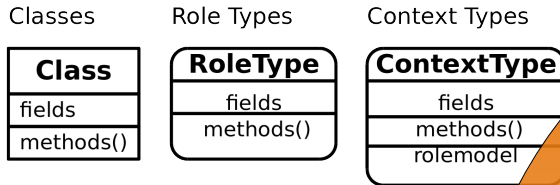
First Role Modelling Editor (FRaMED)

- Development of an Eclipse-based diagram editor
 - Graphical specification of role models
aka. Compartment Role Object Models (CROM)
 - Generate coherent Models
 - Enable the usage of common concepts and notations

Prerequisites

- Knowledge about Eclipse plugin development, meta modelling with Ecore, and GEF diagram framework
- Basic understanding of the concept of roles and compartments
- Insight into the established Ecore Metamodel

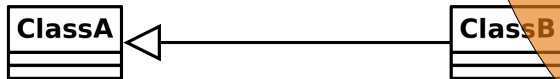
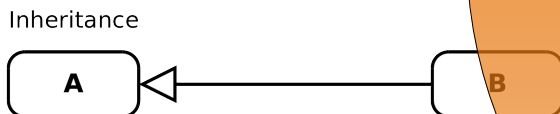
Entities



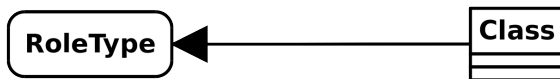
Relations



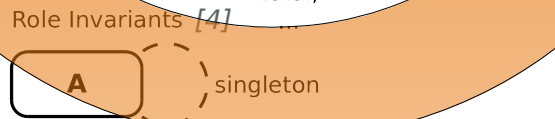
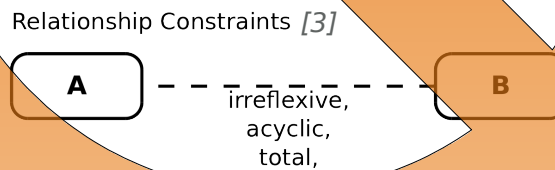
Formal relations



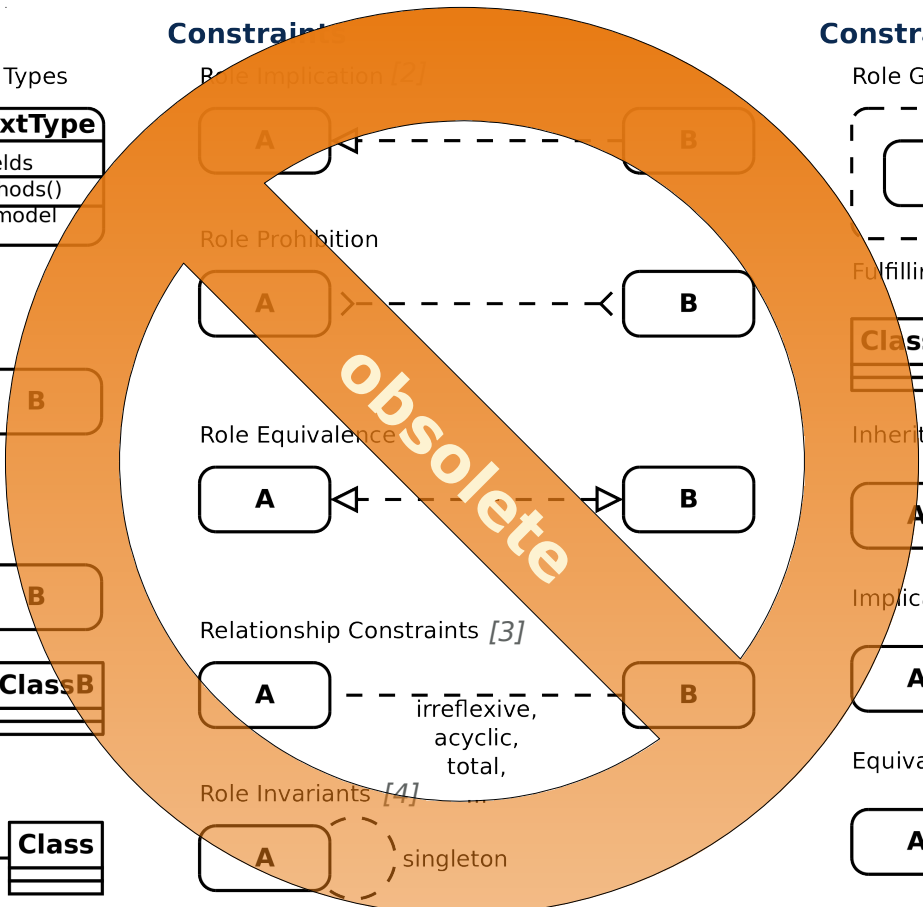
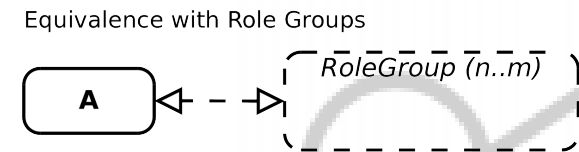
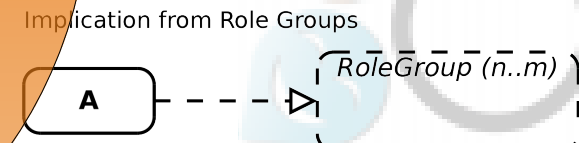
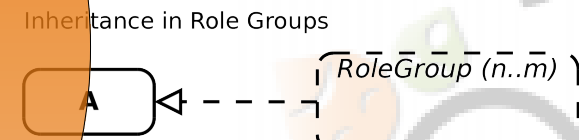
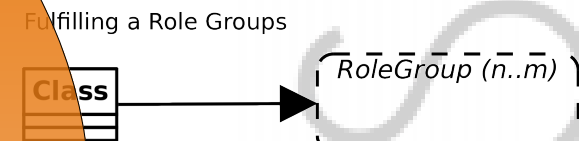
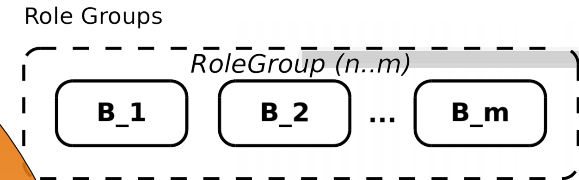
Fulfilment (fills-Relation)



Constraints

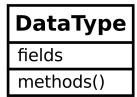


Constraint Groups

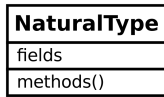


Entities

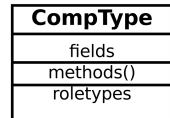
Data Types



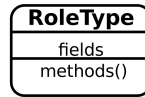
Natural Types



Compartment Types

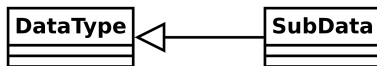


Role Types

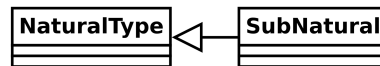


Static Relations

Data Type Inheritance

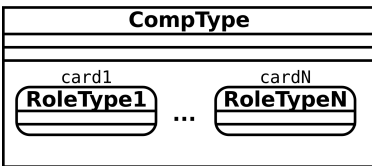


Natural Type Inheritance

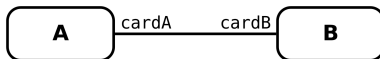


Dynamic Relations

Participation (participates-Relation)



Binary Relationship

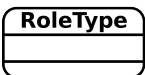


Fulfillment (fills-Relation)

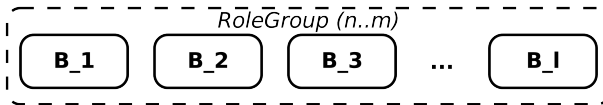


Constraint Atomes

Role Types



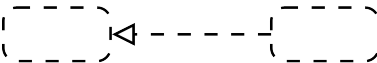
Role Groups



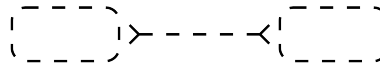
Note: Role Groups may contain other Role Groups with Role Types. However, all the relationships between them have to be retained!

Constraints

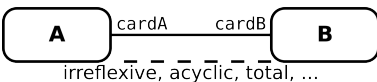
Role Implication [3]



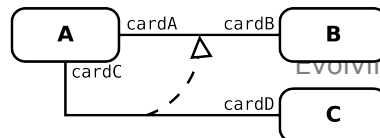
Role Prohibition [3]



Relationship Constraints [4]

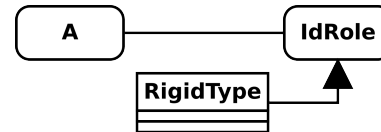


Relationship Implication [5]

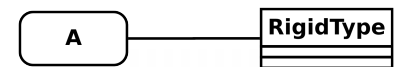


Dynamic Relations

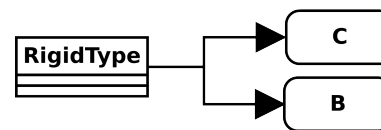
Classes with Relationships



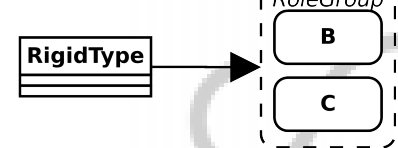
Short Hand (with Identity Role)



Fulfillment (fills-Relation)

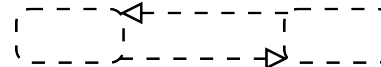


Short Hand

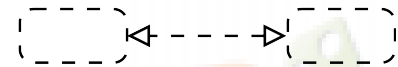


Constraints

Role Equivalence

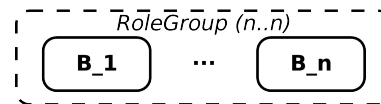


Short Hand

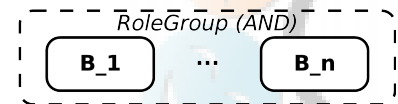


Constraint Groups

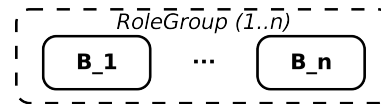
Grouping Roles with AND



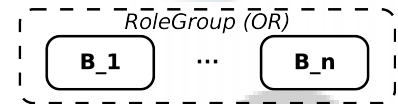
Short Hand



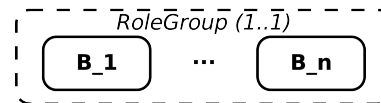
Grouping Roles with OR



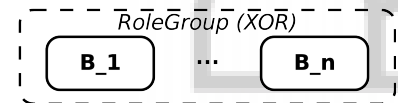
Short Hand

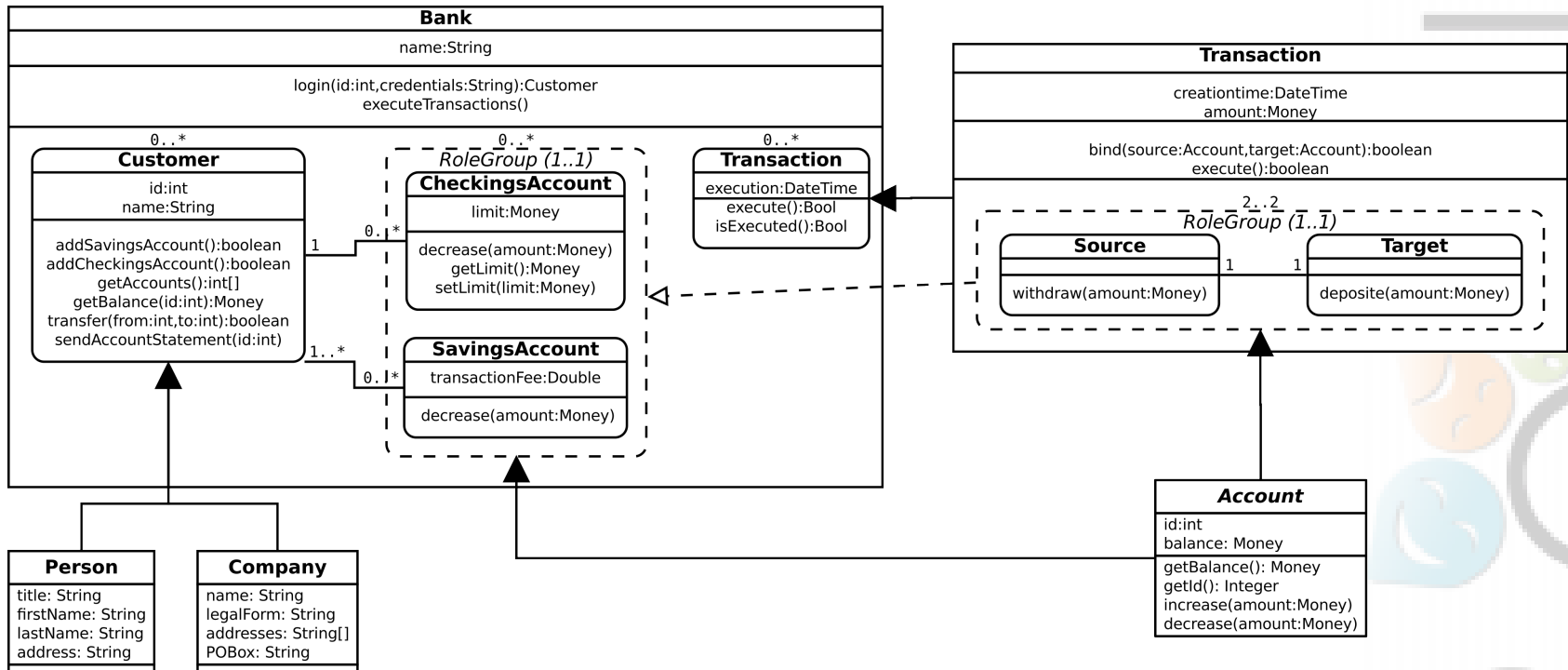


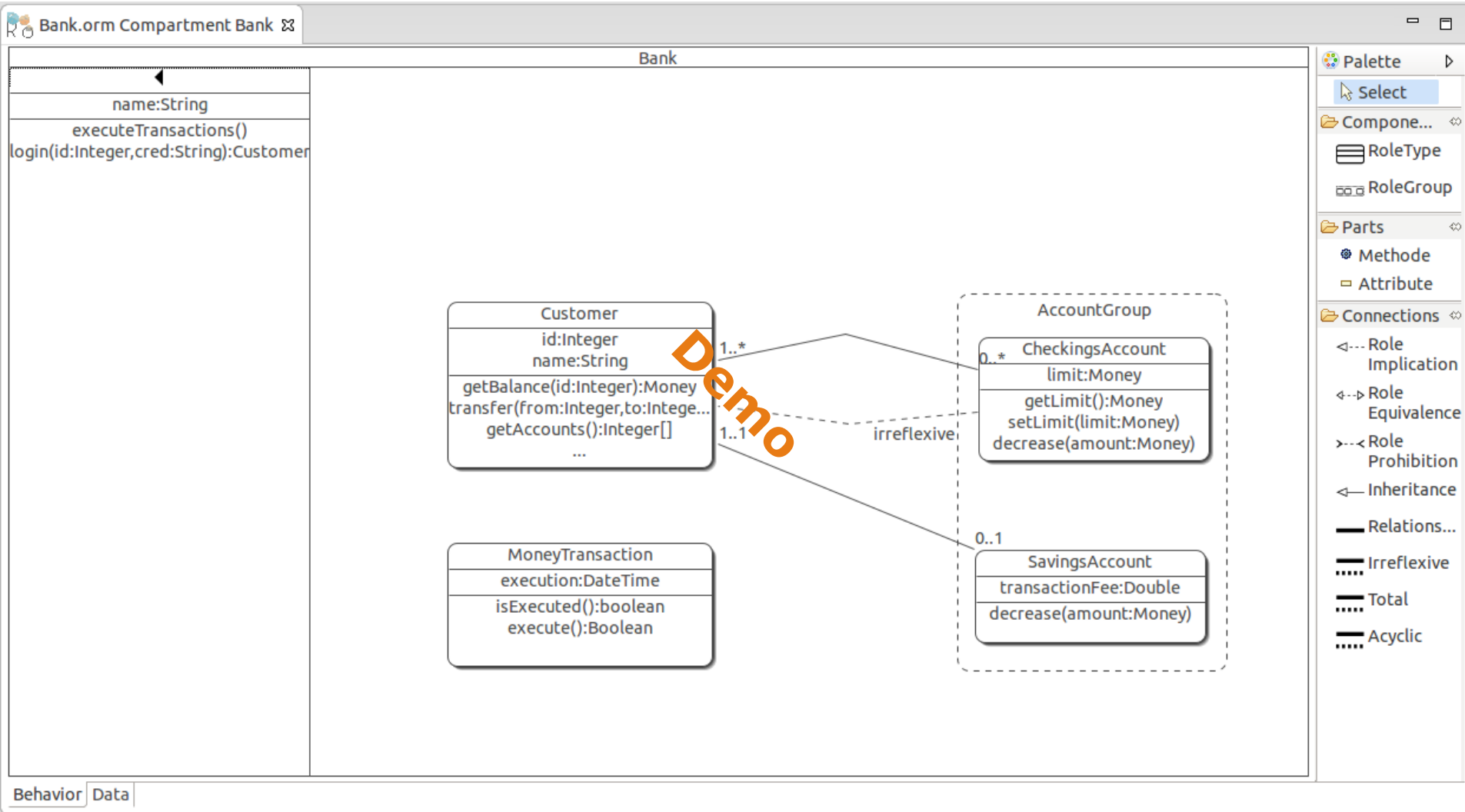
Grouping Roles with XOR

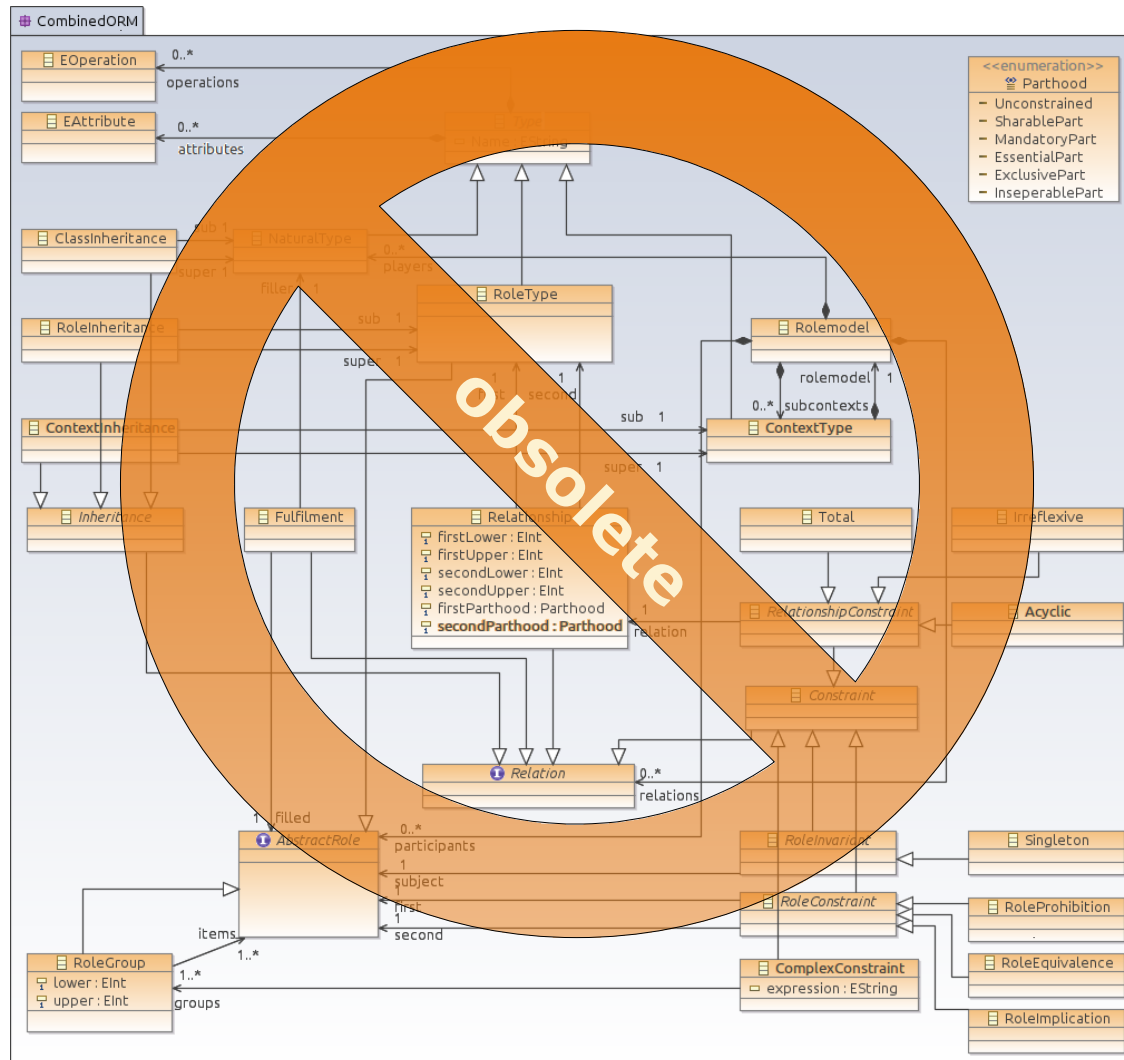


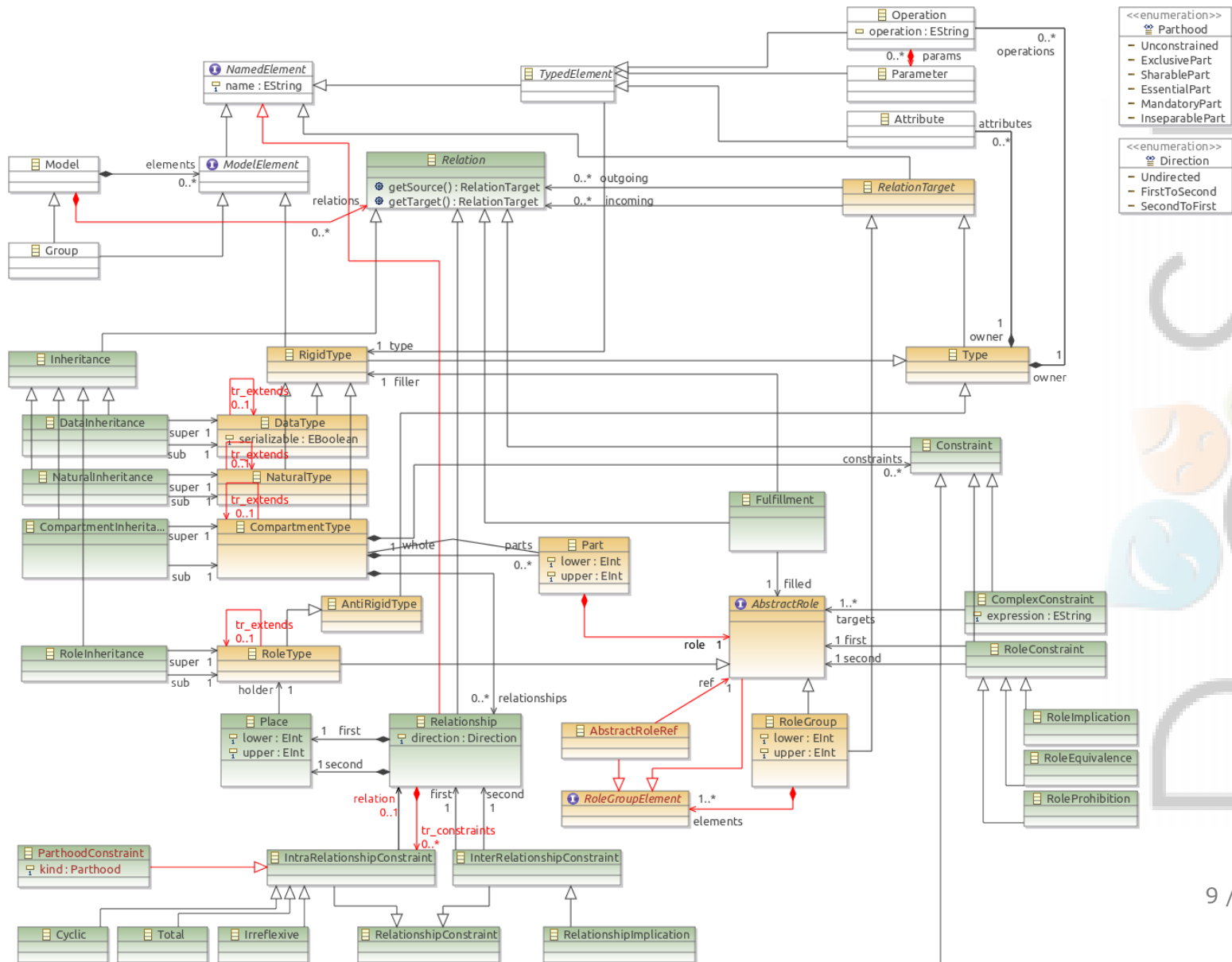
Short Hand

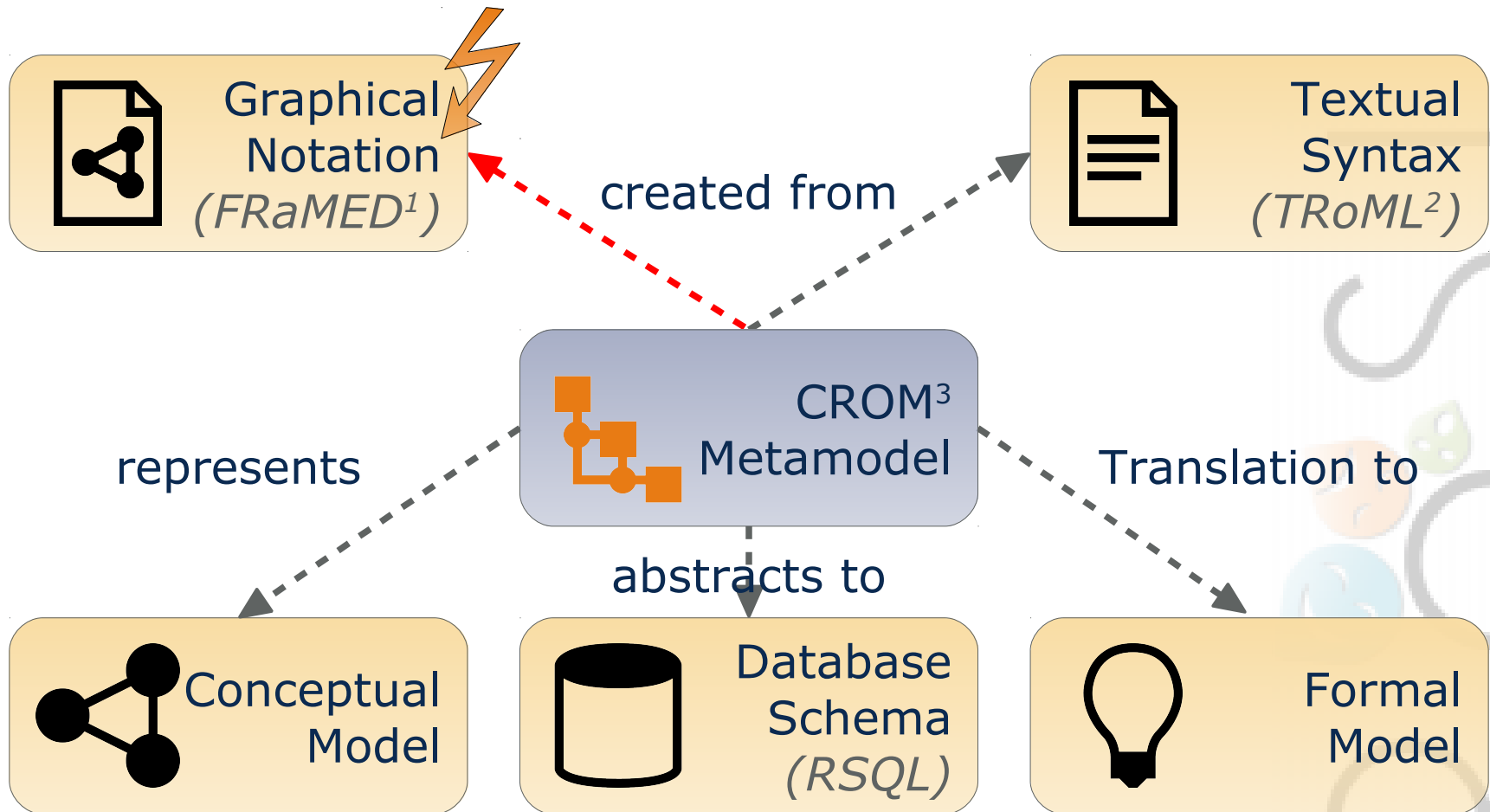






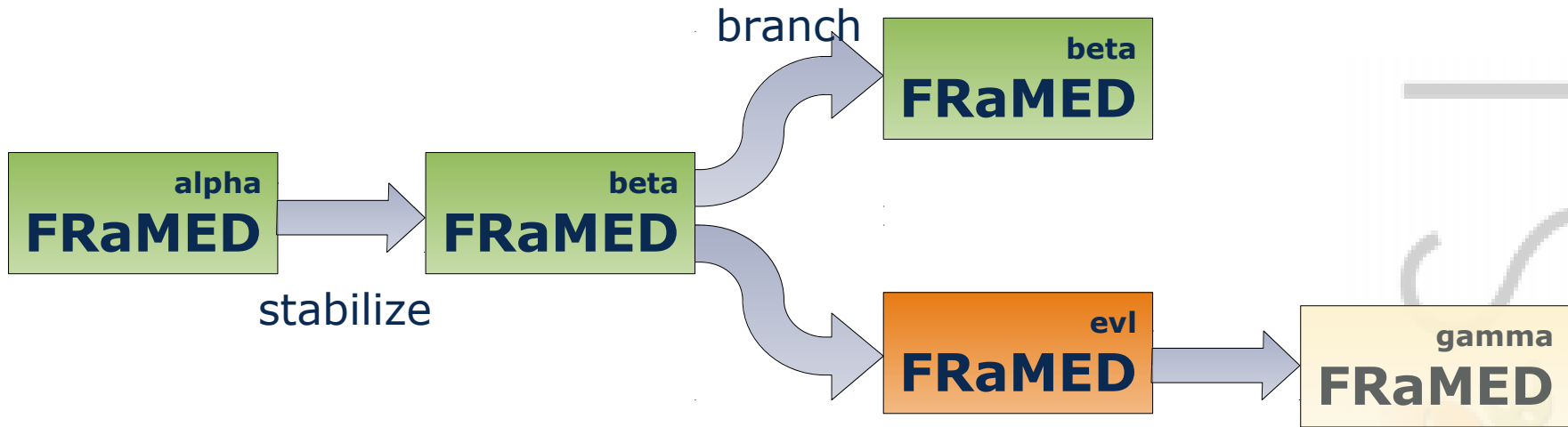






Models based on a common Metamodel

1) <https://github.com/Eden-06/TRoML>
2) <https://github.com/leondart/FRaMED>
3) <https://github.com/Eden-06/CROM>



Resolve the Software Evolution Problem

- Keep stable FRaMED^{beta} version intact (branch out)
- Develop FRaMED^{evl} on the current branch
- Refactor and Include the new metamodel

Evolving First Role Modelling Editor (FRaMED)

- Evolution of FRaMED towards a new release
 - Incorporate the new *CROM Metamodel*²
 - Respect the consistency of *CROM Models*
- Establish a new version of FRaMED¹
 - Including UnitTests, Documentation, Examples

Prerequisites

- Knowledge about Eclipse plugin development, meta modelling with Ecore, and GEF diagram framework
- Understanding of the *CROM Metamodel*¹



1) <https://github.com/leondart/FRaMED>

2) <https://github.com/Eden-06/CROM>

1. Neue Meta-Modell-Version einpflegen

- a) Abhängigkeiten zwischen FRaMED und CROM identifizieren
 - i) Um welche Infos muss CROM erweitert werden?
 - ii) Welcher Teil der grafischen Oberfläche sollte modellunabhängig sein?
- b) Abhängigkeiten reduzieren

2. Bugfixing (*Siehe Github Issue Tracker*)

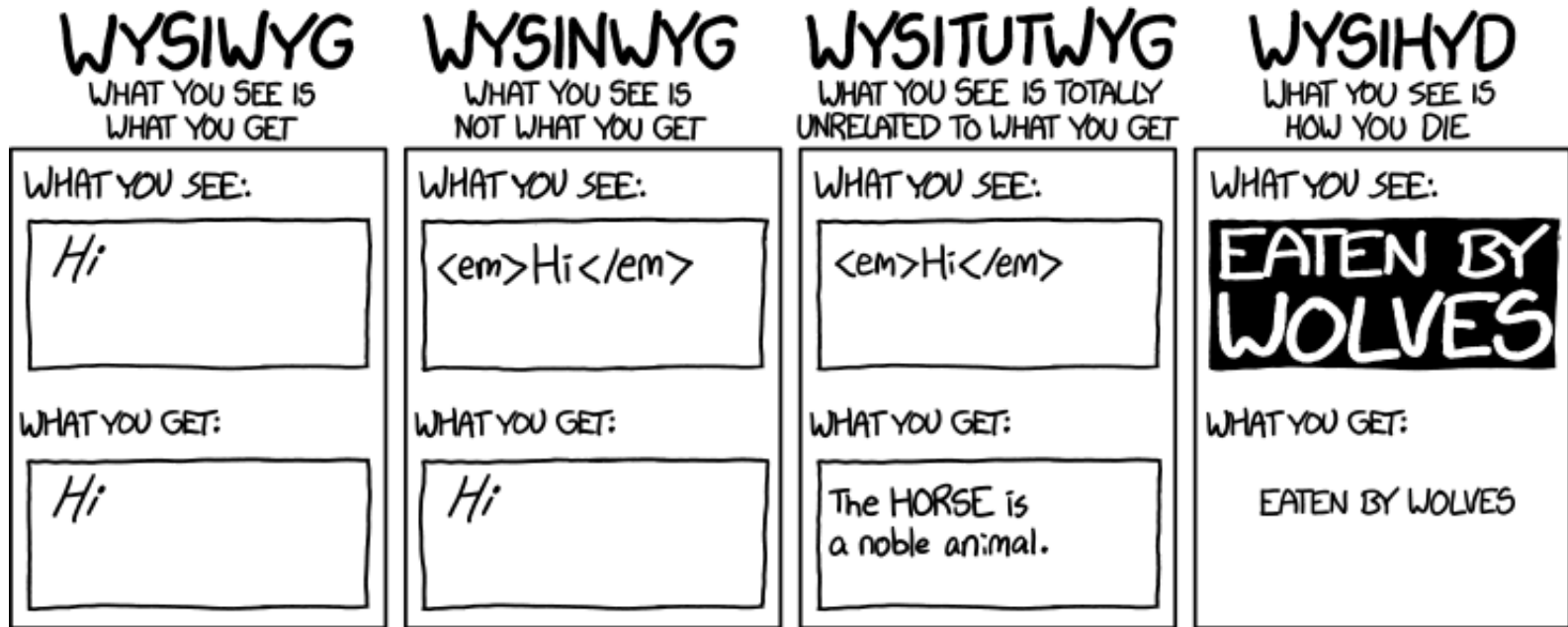
3. Refactorings

- a) MVC - Pattern konsequent umsetzen
- b) Weitergabe von Modellelemente statt Strings

4. Dokumentation

- a) Architekturdokumentation
- b) Dokumentation der Abhängigkeiten

5. Tests (*UnitTests*)



- Get a GitHub Account
- Download CROM¹ from GitHub
- Download FRaMED² from github.com
- Get used to work with GEF / Ecore Development Tools
- Investigate the structure and behavior of FRaMED
- Define necessary extensions to the metamodel

- [1] Explizite Rollenbindung mit Story-Boards**
T. Kühn
Großer Beleg, TU-Dresden (2011)
- [2] Role model based framework design and integration**
D. Riehle and T. Gross
In Proceedings OOPSLA '98, ACM SIGPLAN Notices (1998)
- [3] A relational model of object collaborations and its use in reasoning about relationships**
S. Balzer, T. Gross, and P. Eugster
ECOOP, vol. 4609 of Lecture Notes in Computer Science (2007)
- [4] ORM 2**
T. A. Halpin
OTM Workshops, vol. 3762 of Lecture Notes in Computer Science (2005)

