Overcoming the Limitations of model repositories

Sharing knowledge without constraints

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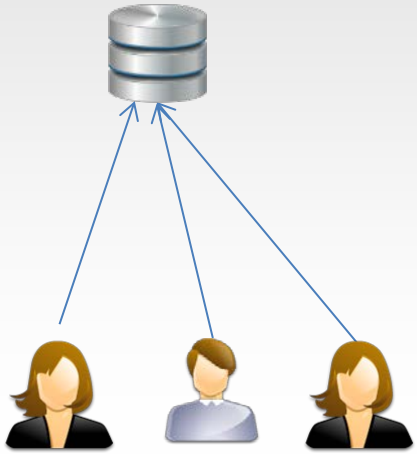
Have you ever seen an Enterprise Wide model repository?

- A model that is shared beyond a few persons group (project)
- A model that is shared between several business units
- A model that can be accessed by every stakeholder
  - From the Managers to the Business Analysts, the Architects, the Developers, testers, …
- A model separated into logical parts that you can refer to from any place
  - Requirements, Goals, Business models, Architectures, Software models, Tests, …
- A model that can be shared with external partners (co/sub contractors, partners, …)
- A model that is considered and used as a major knowledge asset of a company

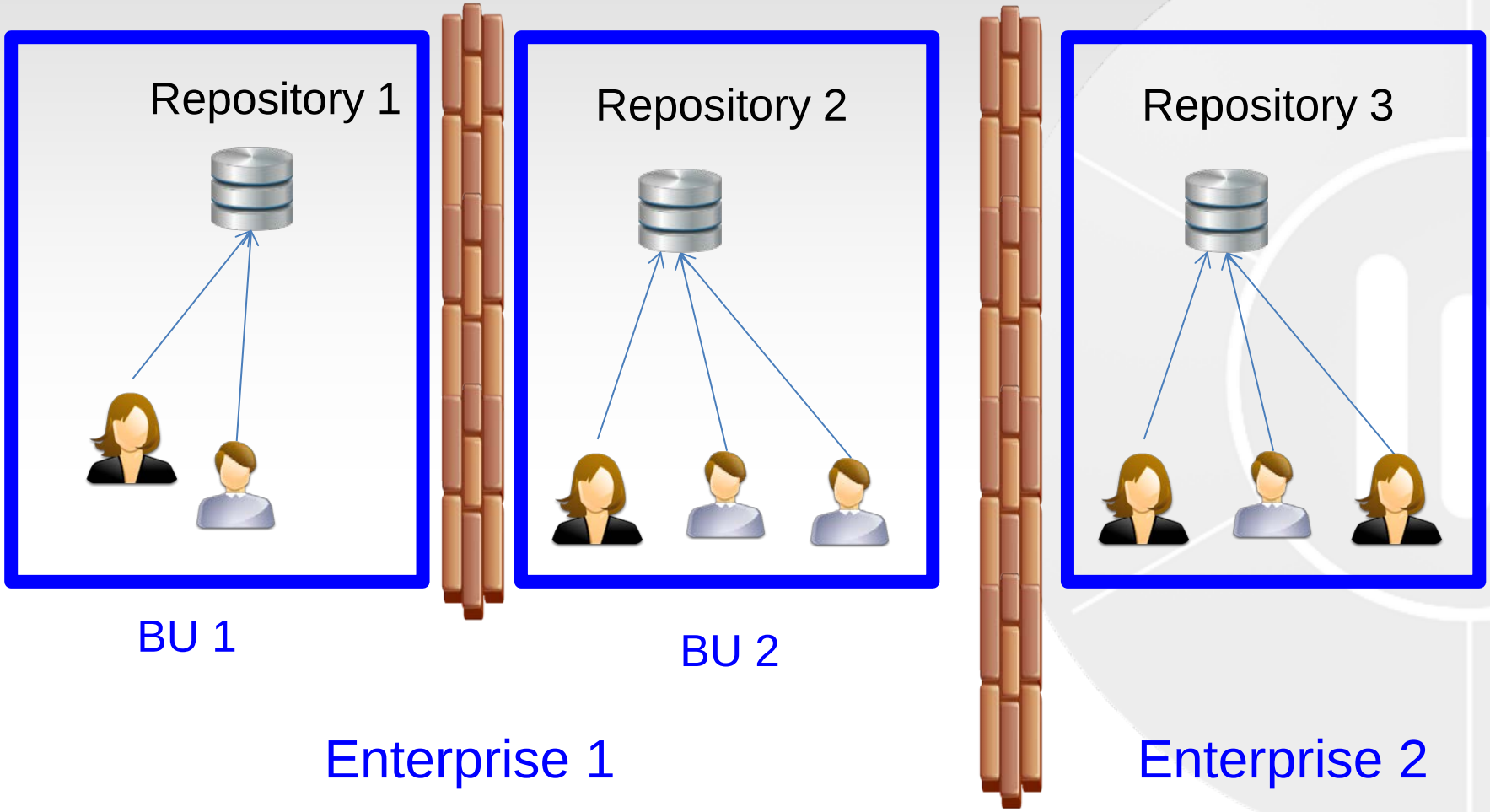
If not, why? … Limitations of the model repositories



At best, a modeling tool is based on a Client/Server architecture

- Users shall be declared to the system (closed world)
- Multiple Client/Server repositories are not or poorly managed : Duplication/Import is the main exchange mechanism

Repositories lock models within isolated spaces



Models are separated within Silos!

Let's imagine a world that massively shares models : model libraries, open source models, …

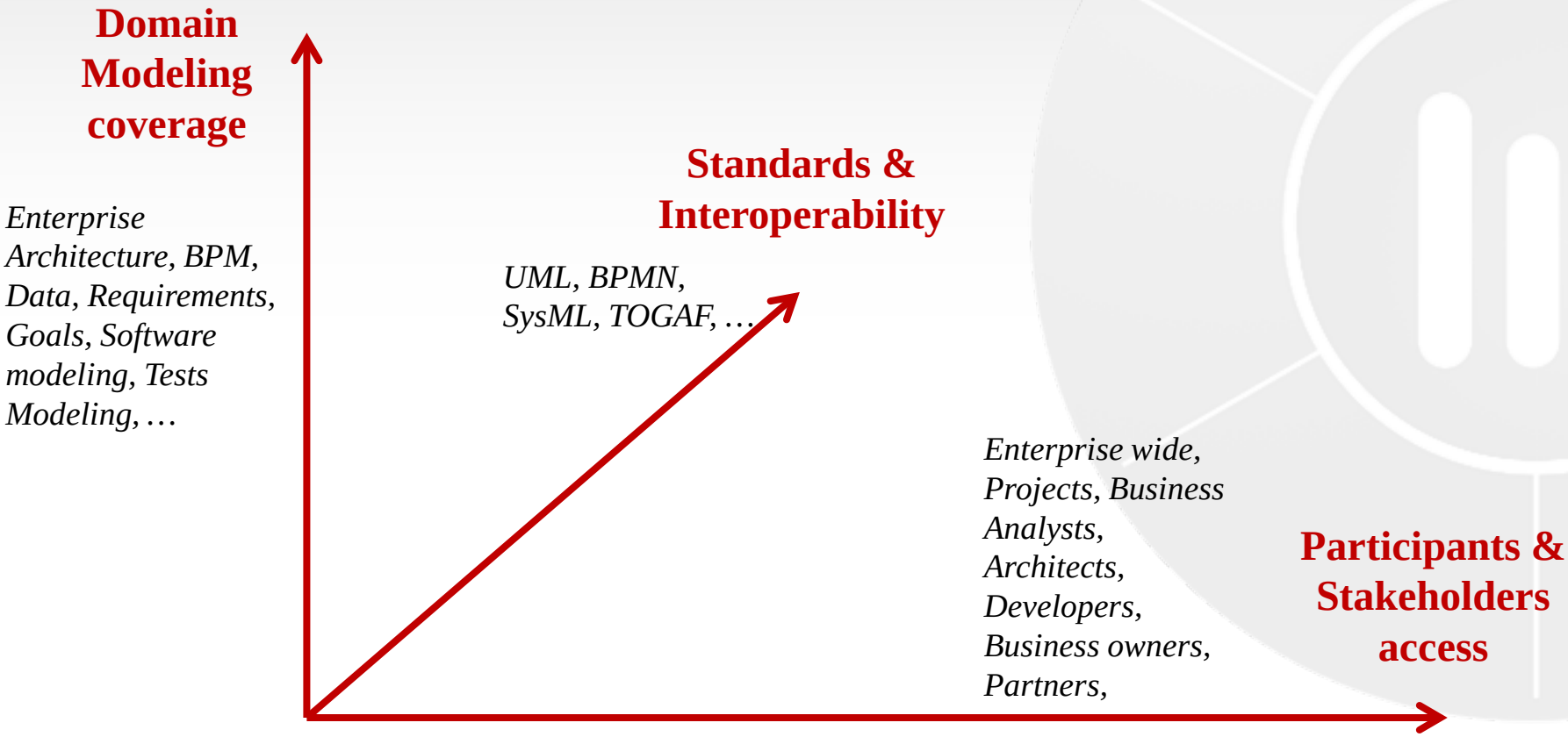
- Surprisingly, we reinvent the wheel more frequently at the model level, than at the code level.
- Why can't we reproduce the code sharing capacities with models?
  - Open Source modeling projects
  - Shared model libraries
- We could quickly reuse domain specific (e.g. Insurance, Banking, …) models, combine them with architecture models, and design software applications

Overcome the limitations on traceability and impact analysis

- The value of traceability and impact analysis increases with the scope of a repository.
- We should never assume who will (re)use a model, and where.
- Asking who/what may be impacted by the change of a model element is a broad request on large systems.

Increase the scope of models in three directions

The broader the model coverage is, the more benefits we can get from modeling techniques (MDE, …)

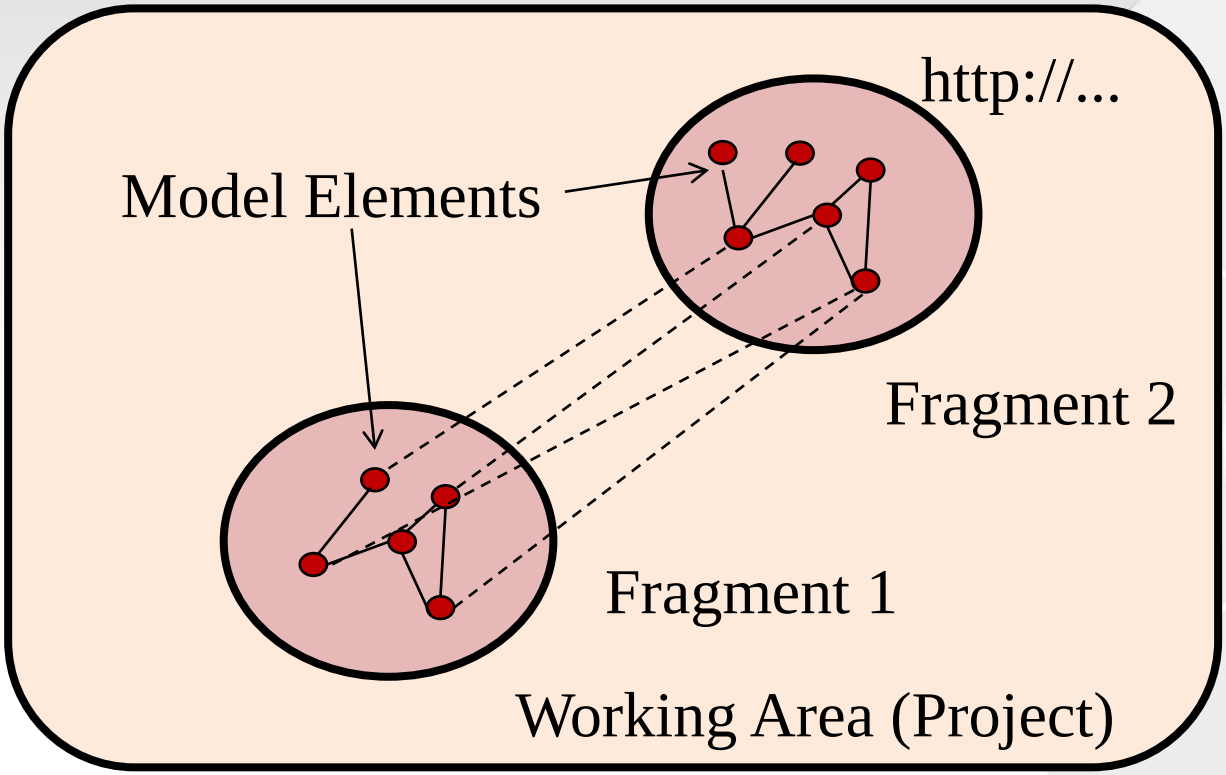


The WEB is a reference technology for sharing knowledge

- Can we have a model repository architecture similar to the WEB?

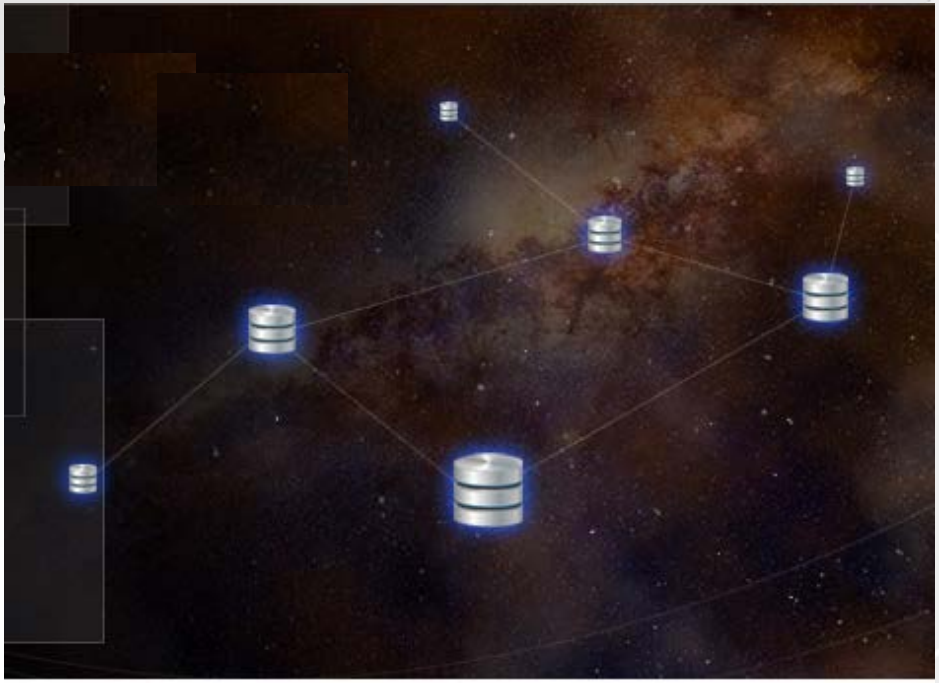
- We need the following mechanisms :
  - Unique identifiers (URIs/URLs) for model elements
  - A kind of logical/physical grouping mechanism for model elements (site, portal, …)
    - Model fragments
  - Management of links between distant model elements, broken links/absent elements
  - A model explorer becomes somewhat similar to a web browser, allowing to navigate transparently within and between model fragments

Model Fragments



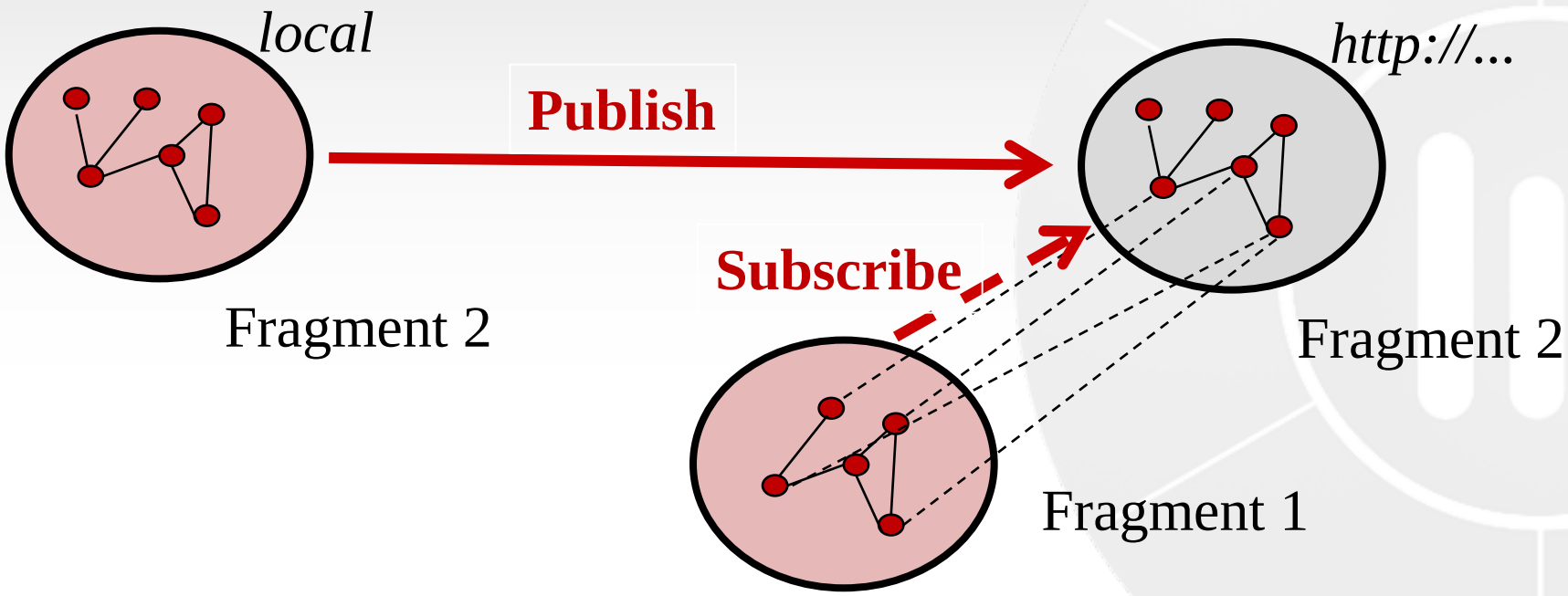
- A fragment is a set of model elements grouped together and stored in the same repository.
- A project can combine local fragments and distant fragments.

A WEB of model fragments



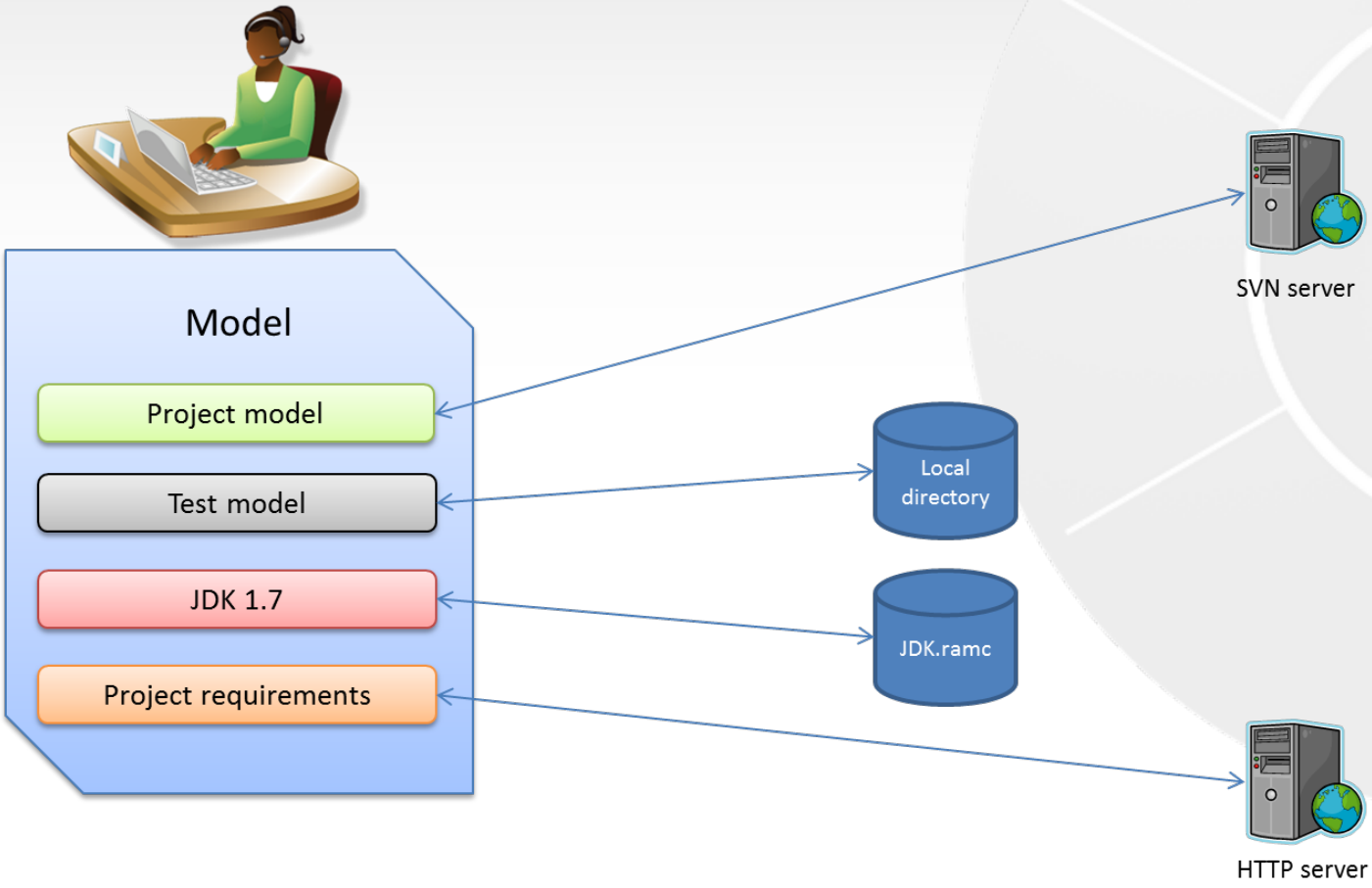
- Fragments are distributed and interconnected repositories
- Each model element participates in a world wide model repository
  - Universal Identification
- A Model Fragment is not « a priori » accessible. You just need to publish it as a web accessible entity.

Use Case 1 - Publish/Subscribe

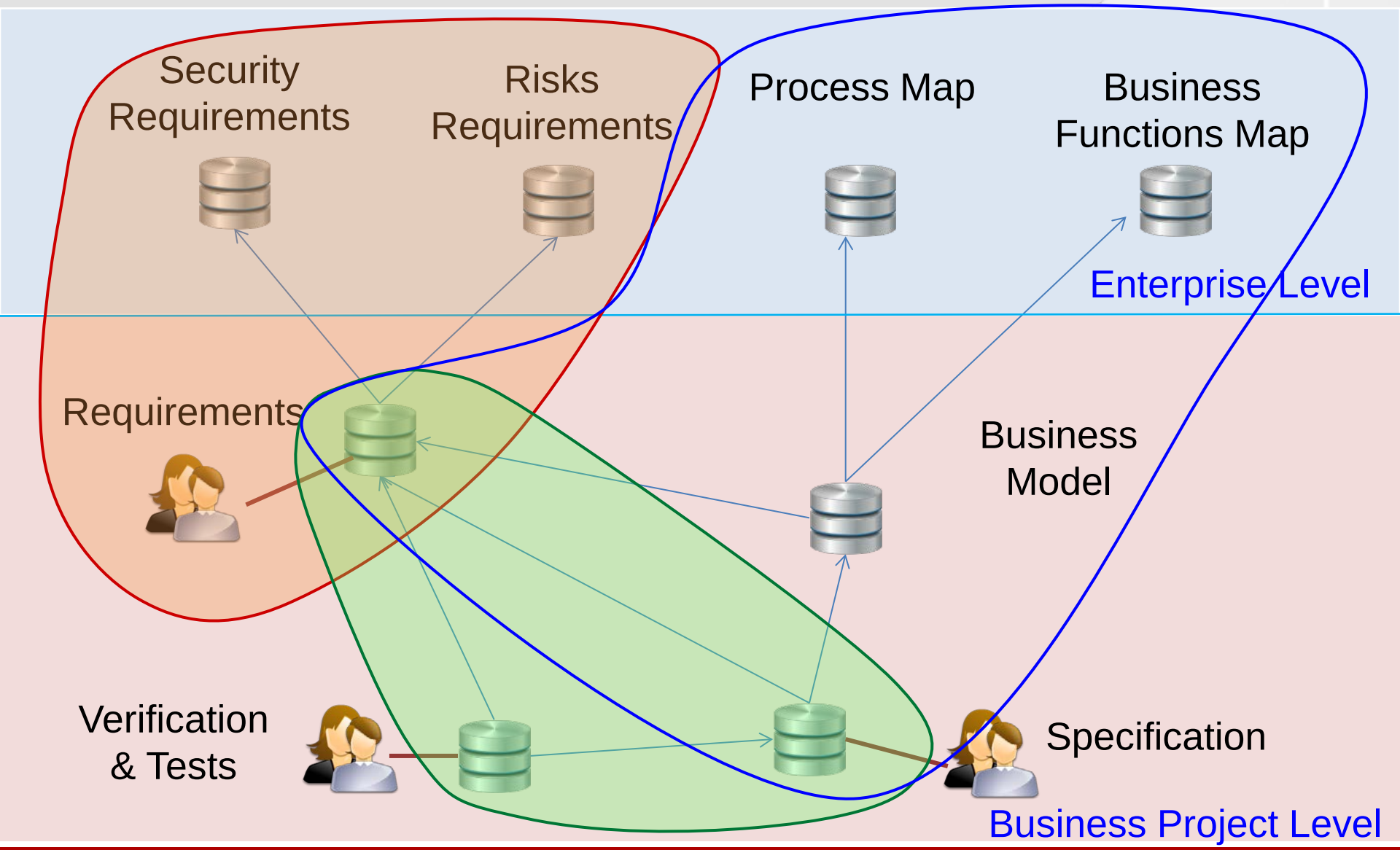


Use Case 2 – Typical configuration of a project

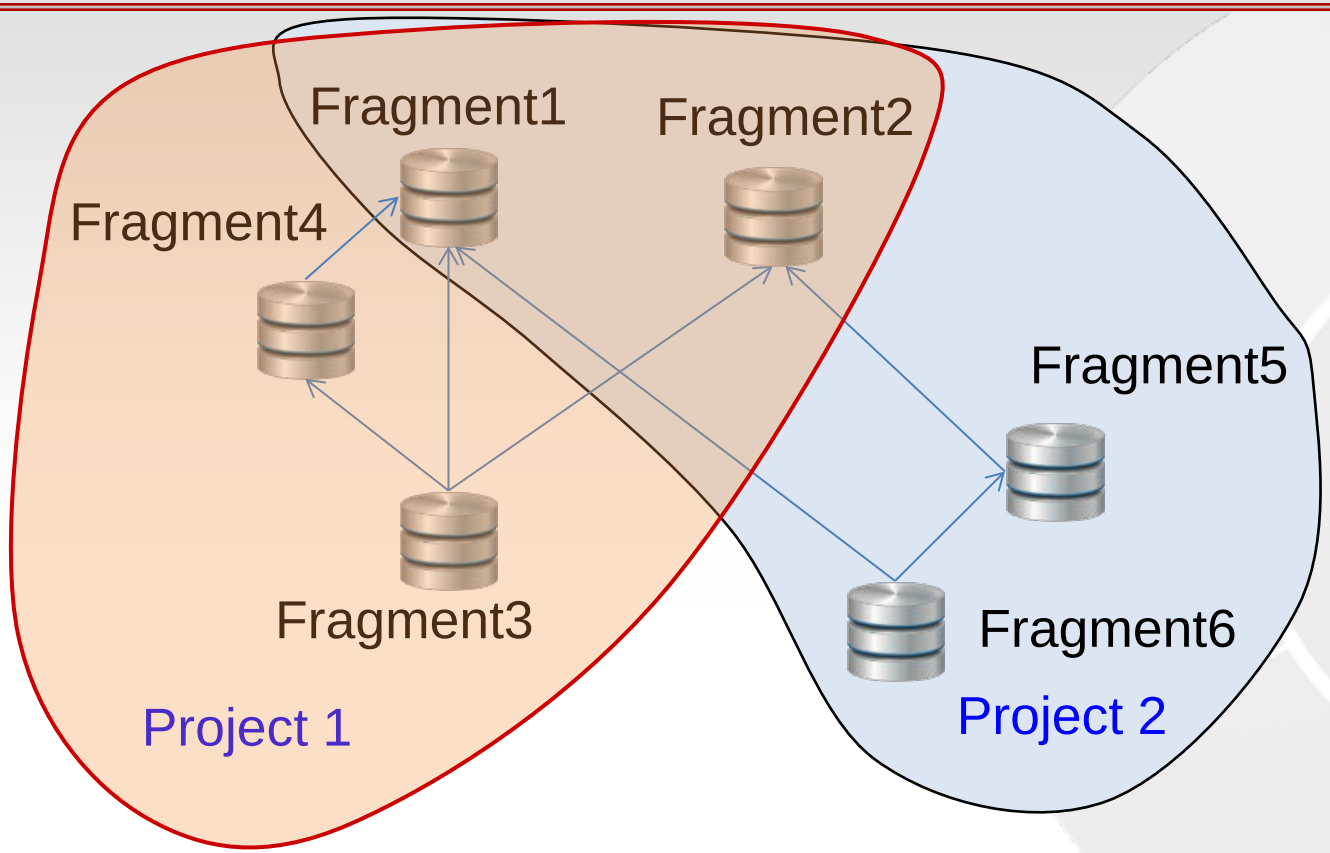
- Mixing local fragments, cooperative work fragments, referred fragments
- Each fragment can have a specific protocol (http, local, SVN, https, …)



Use Case 3 – distributing Fragments within an organization



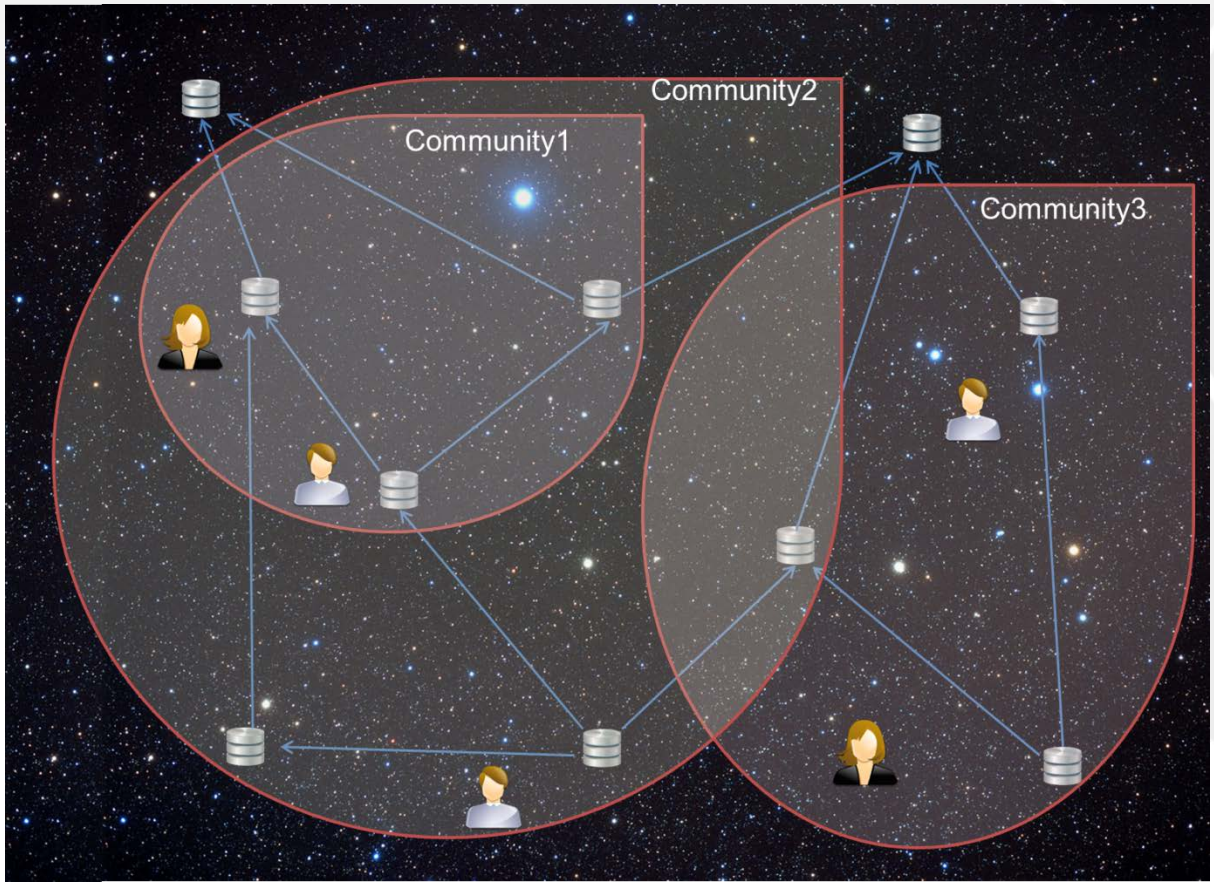
Model Fragments can help in …



- Managing dependencies between projects
- Security and access rights
- Large models load balancing

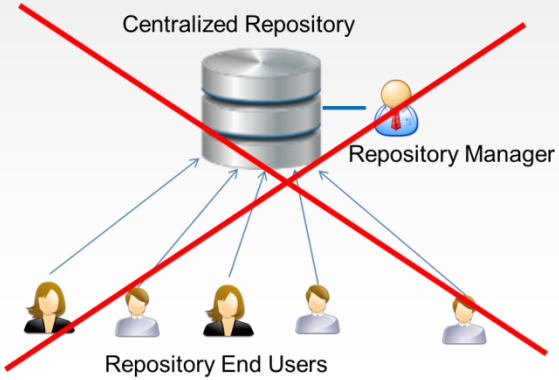
What about servers?

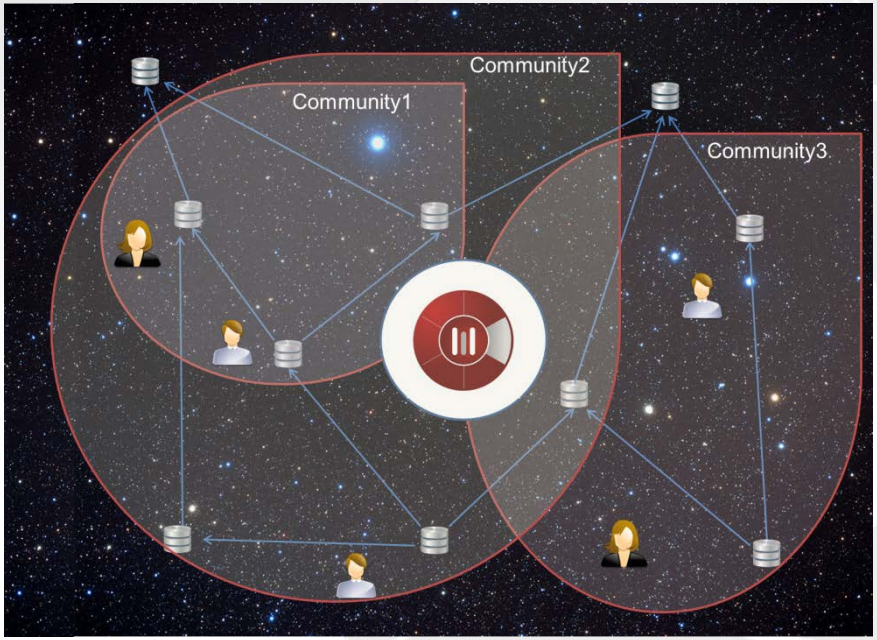
- The world wide modeling approach does not need “servers” explicitly. WEB servers (as usual) transparently manage access and storage of fragments.
- Model Servers can still be useful to manage communities (access rights, rules, portfolios, shared access, CVMS …)



World Wide Modeling :

The WEB agility applied to model repositories





Let's share models within and between Enterprises and participants without constraints

Origin of this presentation

- Internal SOFTEAM research project (OSEO/BPI) : Megamodelling
- Implemented in the Modelio 3 modeling tool since September 2013. First customers applications in progress
  - www.modelio.org (open source edition)
  - www.modeliosoft.com

More information

- http://www.modeliosoft.com/en/resources/white-papers.html: World Wide Modeling: The agility of the web applied to model repositories
- www.modelio.org : an open source edition of Modelio
- http://rd.softeam.com/ : SOFTEAM R&D activities (FP7, H2020, …)