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Sichere Kognitive Systeme

More Service Orientation to *Open* Ontology Repositories

– Hets and TNTBase like to enter

Immanuel Normann

Universität Bremen

Introduction

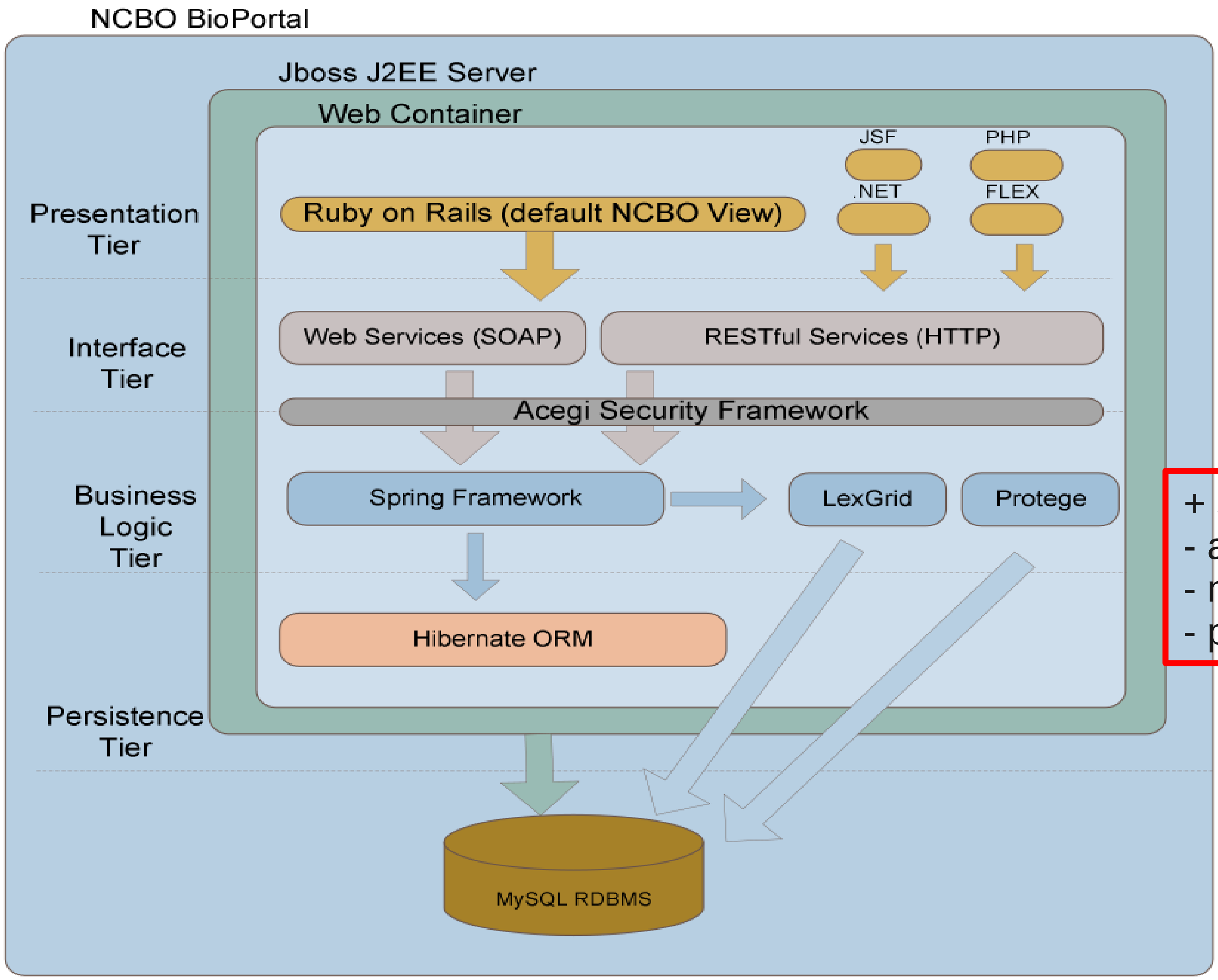
- Key issue: how to incorporate various ongoing OOR-related software development efforts.
- Is *incorporation* what we really want?
- OntologySummit2008 Communiqué „Towards an Open Ontology Repository“:

“The core approach for the Open Ontology Repository is a federated, **service oriented architecture**. This approach provides for distributed ontology storage, repository management and service support.”

=> OOR as loose coupled system

=> OOR as system of web services?

How much SOA is in BioPortal?



+ several other modules:
- annotation management
- mapping
- project management ...

from *NCBO Architecture Roadmap Report 20080424_Final*

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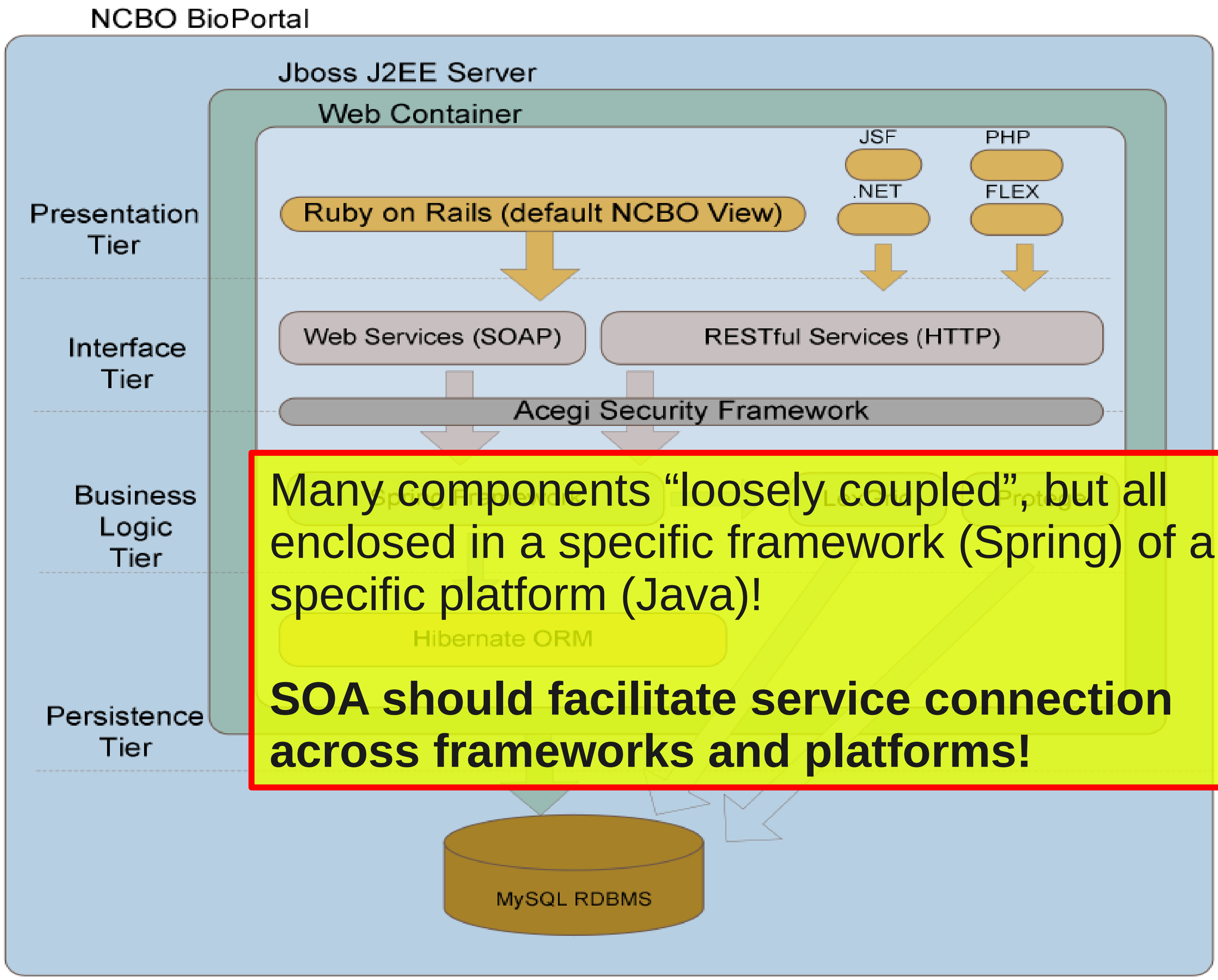
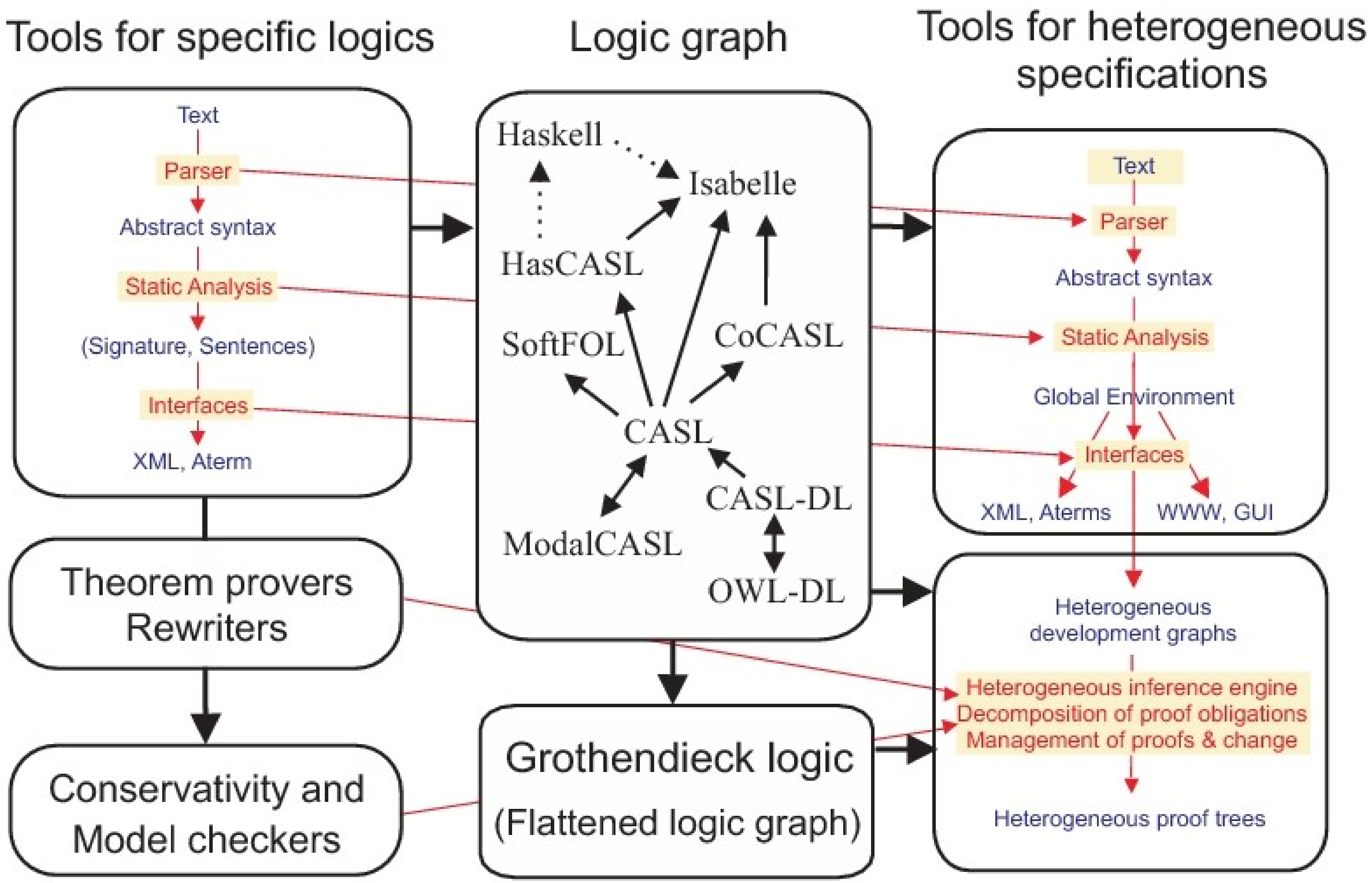


Many components "loosely coupled", but all enclosed in a specific framework (Spring) of a specific platform (Java)!

SOA should facilitate service connection across frameworks and platforms!

from *NCBO Architecture Roadmap Report 20080424_Final*

Architecture of the heterogeneous tool set Hets



TNTBase

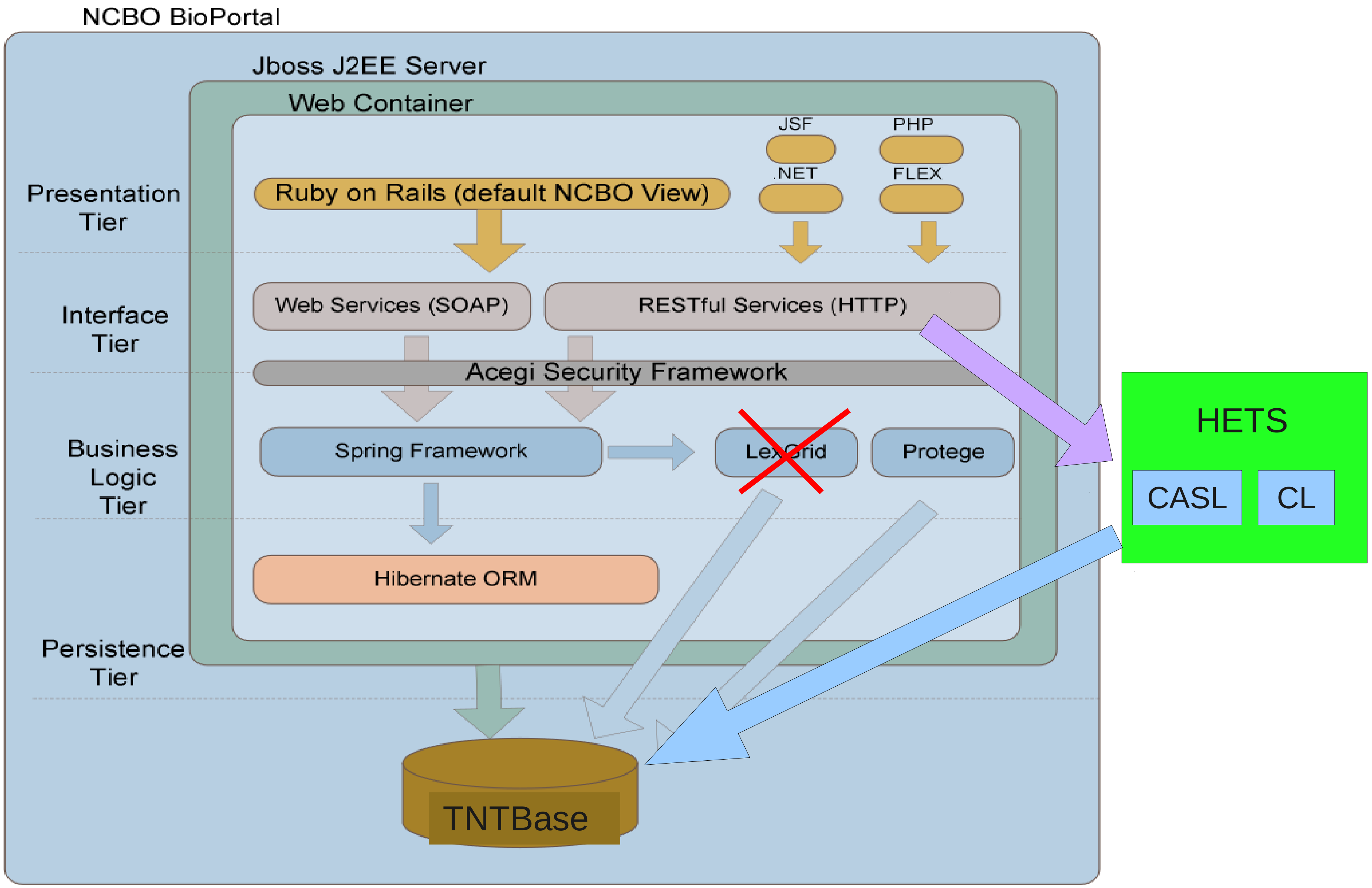
TNTBase = Subversion + Berkeley DB XML

(s. http://tntbase.org/)

TNTBase services:

- Real Versioning
- Enhanced search and indexing
- Fragment extraction
- Structural difference
- Pre- and post process scripting
  - (e.g. translation, validation, quality check, etc)

Connecting TNTBase, Hets, and BioPortal



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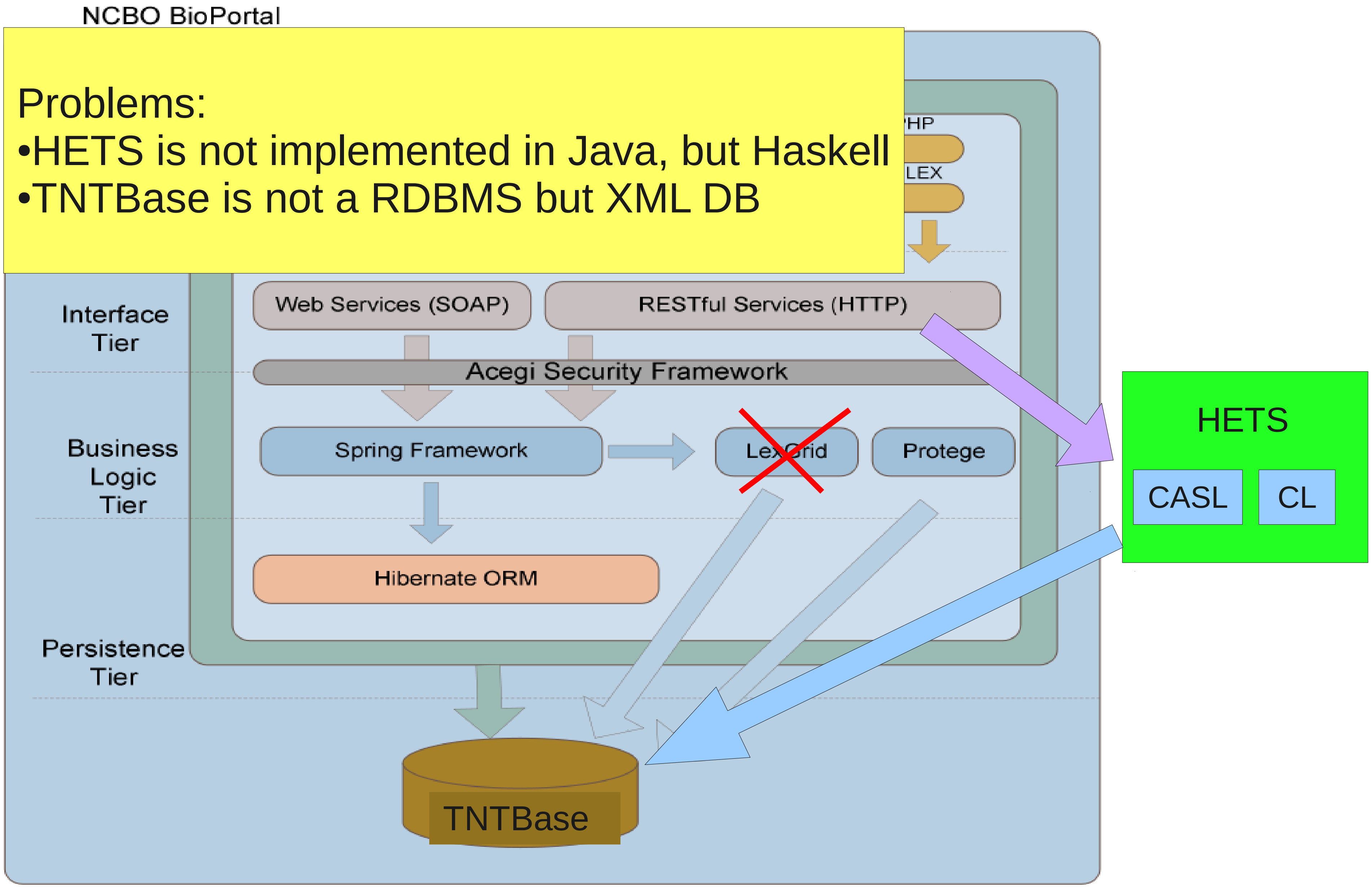
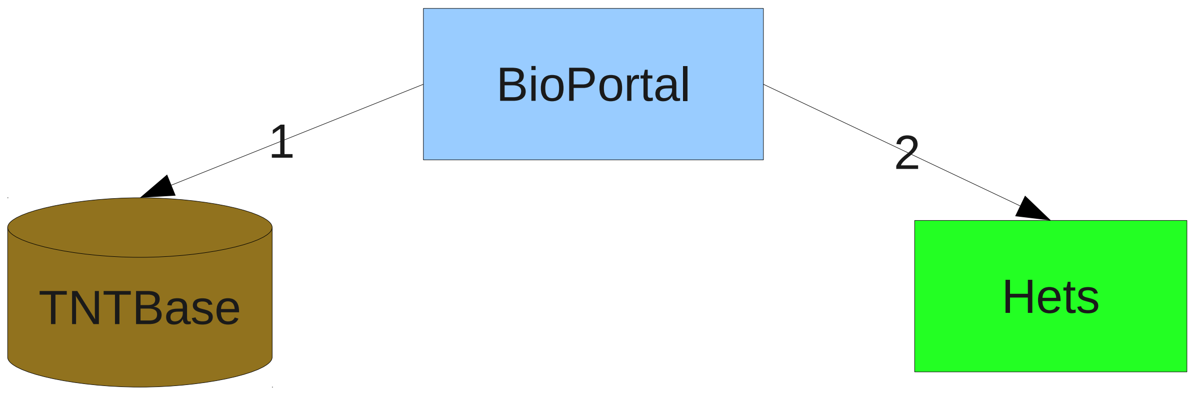


Problems:
- HETS is not implemented in Java, but Haskell
- TNTBase is not a RDBMS but XML DB

Simple Use Case Scenario

User wants to explore a fragment of a certain OWL ontology version in Common Logic



Coordinated Web Services:

1) getOntology(Id,version).extractFragment(signature)

2) translate(from:OWL,to:CommonLogic)

Complex Use Case Scenario

1) Match pairwise a set of ontologies that are in different logics

- Logic translation: Hets
- Matching: Falcon

2) given a set of concepts: extract those modules from these ontologies that contain synonym concepts to the input concepts.

- Module extraction: Pellet

3) merge modules and check for consistency.

- Module merge: Hets
- Consistency check: SPASS

4) Present merged module as Graph

- Ontology to Graph structure: Hets
- Graph layout: graphviz
- Rendering: Firefox

Many distributed services involved on different platforms and implemented in different programming languages.

SOA:
Interoperable as web services

Conclusion

Observations:

- OOR-related software is usually developed for different platforms,frameworks, and programming languages.
- An OOR can take advantage of these tools in a SOA.
- Most OOR-related tools can easily extended to Web Services.
- ➔ would *push OOR development and get more contributors*

Coordination issues in collaborative OOR development:

- Definition web service APIs
- ➔ Analysis of use cases.