HAL
open science

Neo4EMF : when big models are no longer an issue

Amine Benelallam, Hugo Bruneliere

To cite this version:

Amine Benelallam, Hugo Bruneliere. Neo4EMF : when big models are no longer an issue. EclipseCon France 2014, Jun 2014, Toulouse, France. hal-01026219

HAL Id: hal-01026219

https://inria.hal.science/hal-01026219v1

Submitted on 11 Apr 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Neo4EMF: When big models are no longer an issue!

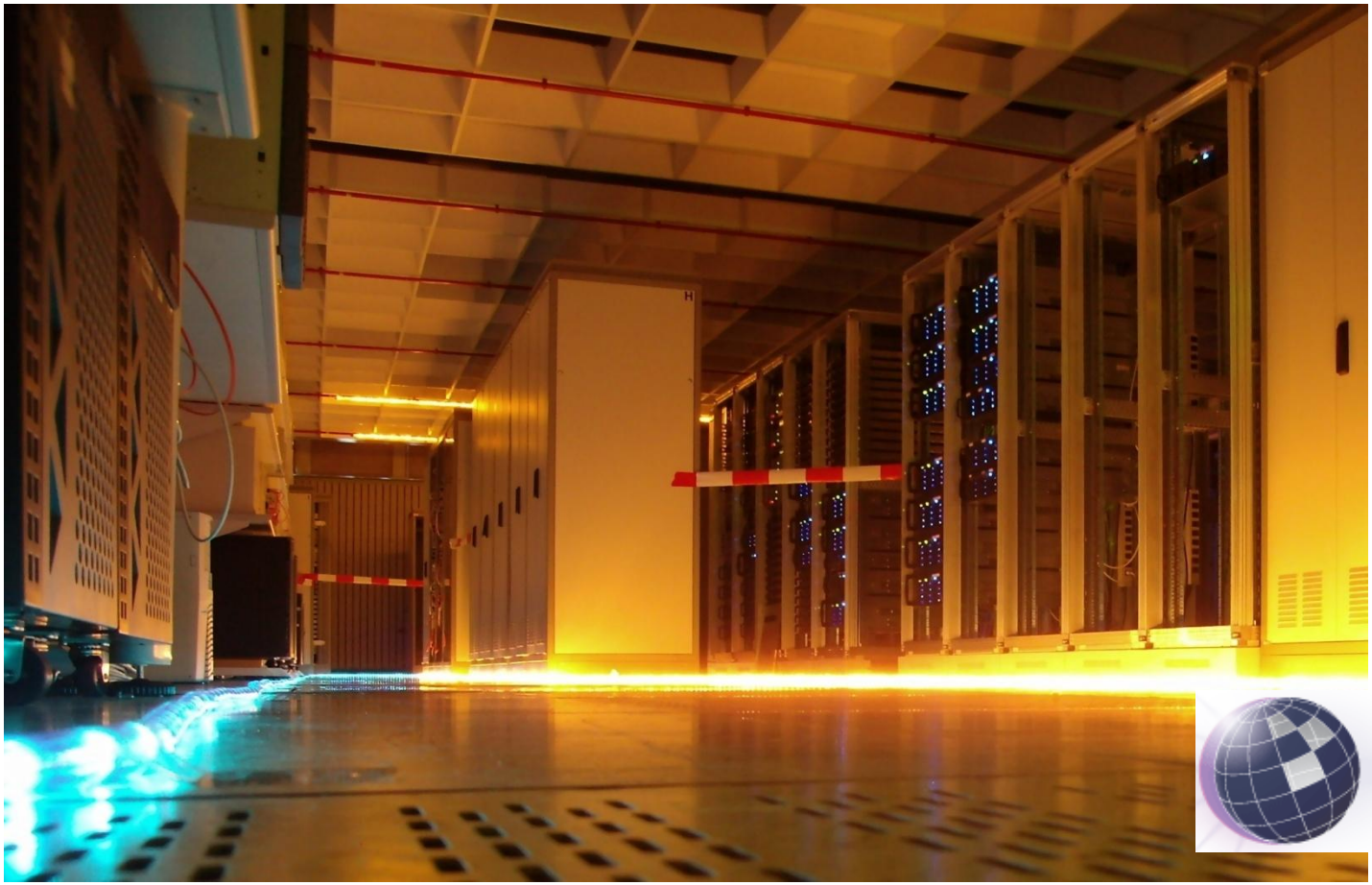
Amine Benelallam, Hugo Brunelière

AtlanMod Team (Inria, Mines Nantes, LINA)

Toulouse

June 18-19, 2014

Big data, big models…

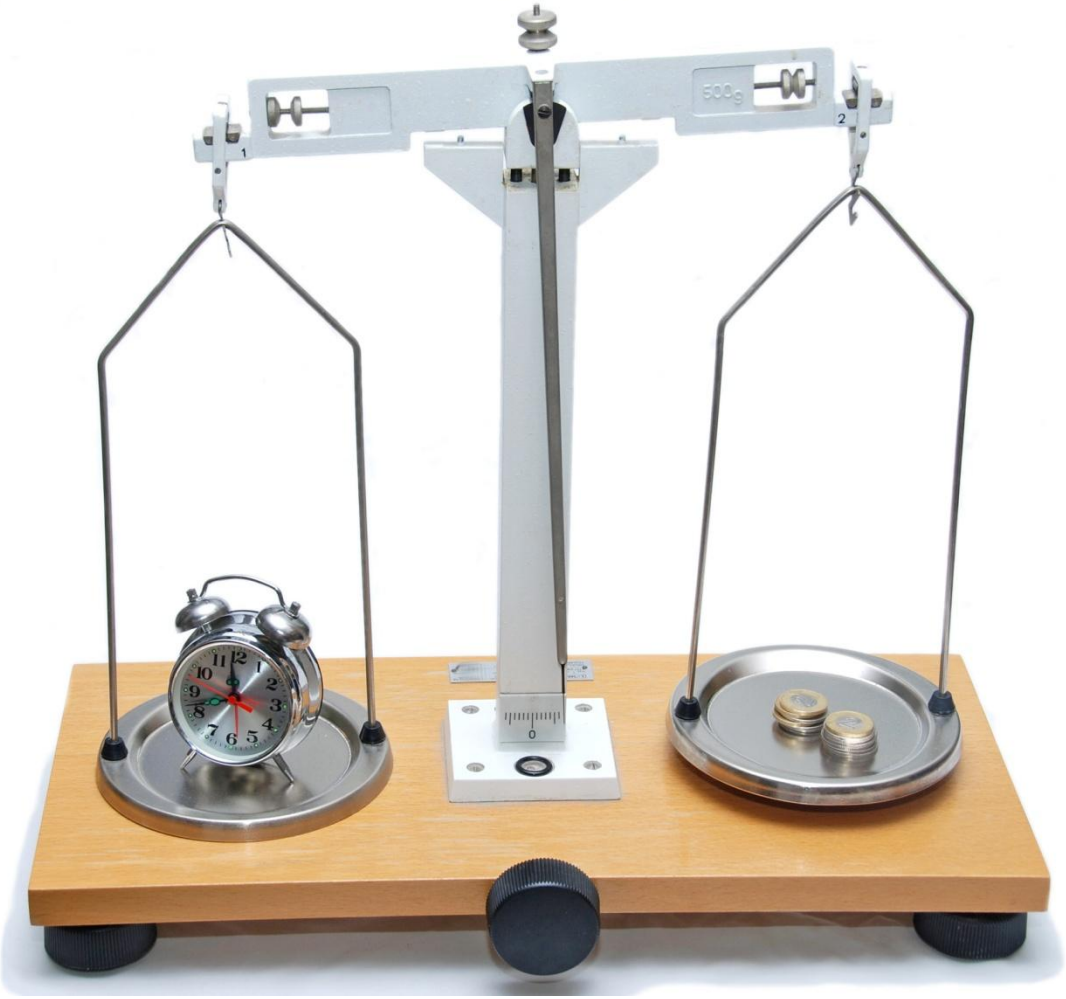


CDO
The Model Repository

EMFStore

emf

Time Vs. Memory



Finding the right balance?

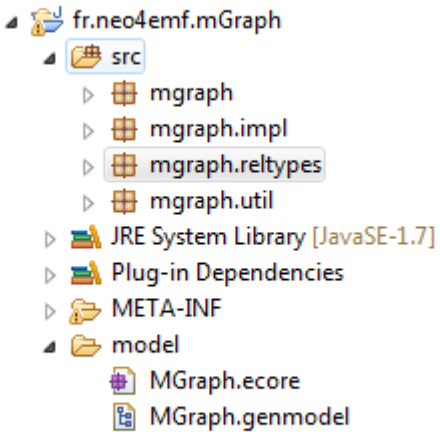
Image by Krzysztof Szkurlatowski
12frames.eu

…Neo4EMF!

Neo4EMF =

EMF + Neo4j

Neo4EMF features



Java code generation

On-demand loading

Improved querying

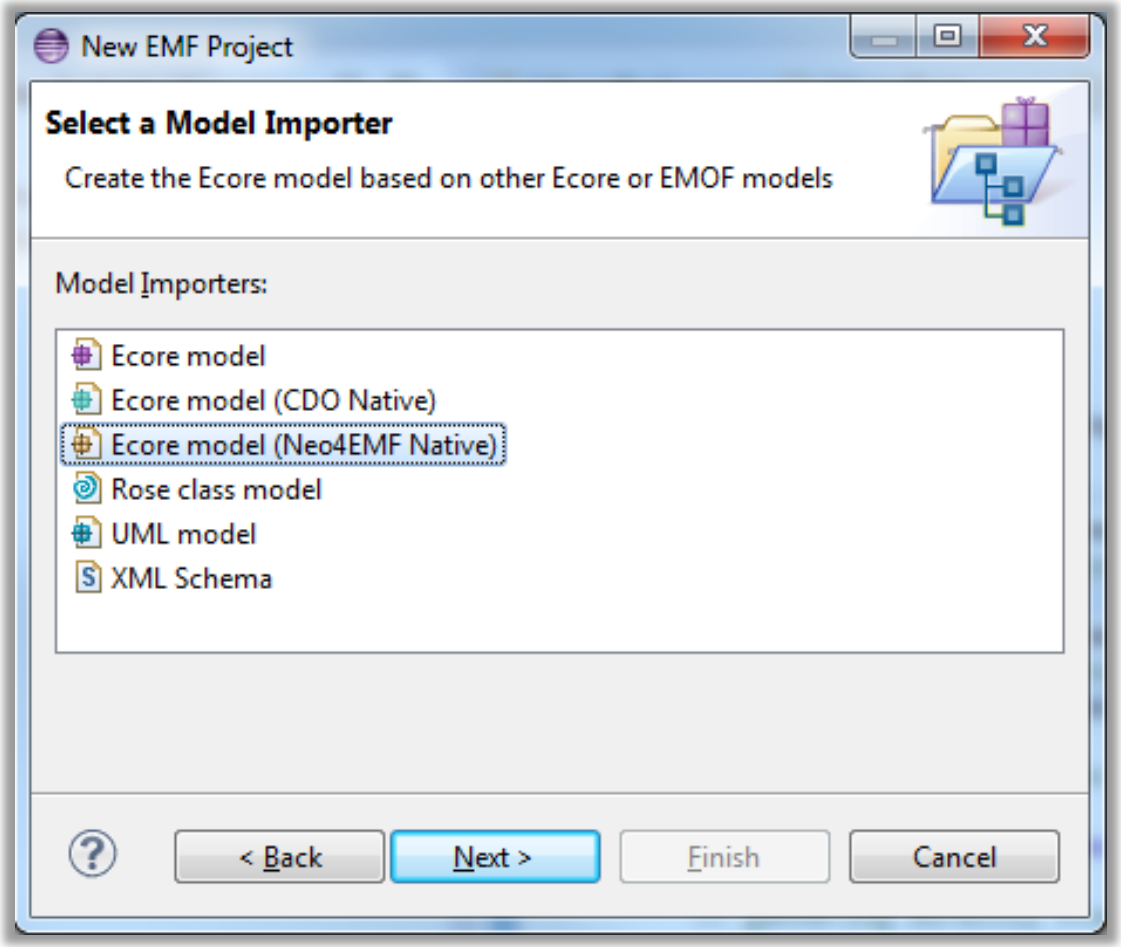
Neo4EMF overview

Create / save data

Load on-demand data

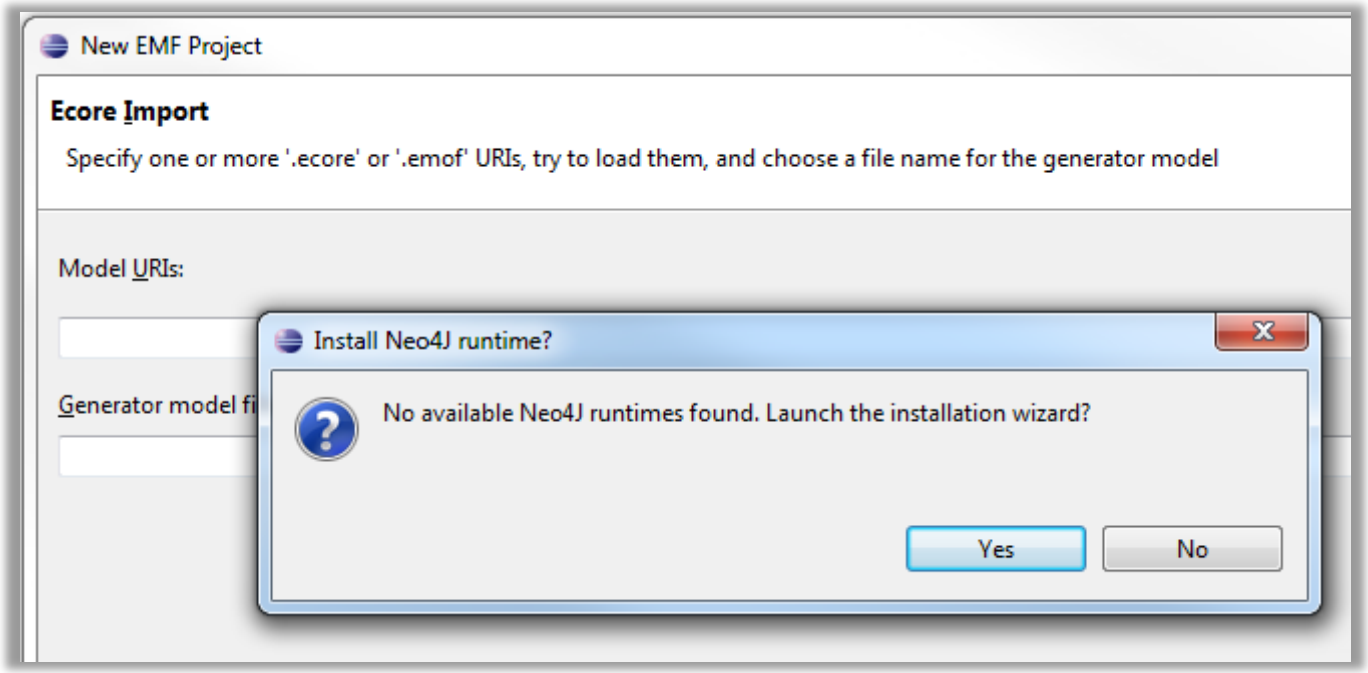
Neo4EMF Resource

Using Neo4EMF…



Dedicated Ecore model importer

Using Neo4EMF…



Install Neo4J runtime if not there

Using Neo4EMF…

Properties

Property	Value
Minimal Reflective Methods	true
Model Directory	/fr.inria.atlanmod.neo4emf.sample/src
Model Plug-in Class	
Model Plug-in ID	fr.inria.atlanmod.neo4emf.sample
Model Plug-in Variables	NEO4J=fr.inria.atlanmod.neo4emf.neo4j-1.9.4, NEO4EMF=fr.inria.atlanmod.neo4emf
Operation Reflection	true
Model Class Defaults	
Public Constructors	false
Root Extends Class	fr.inria.atlanmod.neo4emf.impl.Neo4emfObject
Root Extends Interface	fr.inria.atlanmod.neo4emf.INeo4emfObject
Root Implements Interface	
Redirection Pattern	
Template Directory	platform:/plugin/fr.inria.atlanmod.neo4emf.codegen/templates
Template Plug-in Variables	NEO4EMF_GENERATOR=fr.inria.atlanmod.neo4emf.codegen
Update Classpath	true

Dedicated Genmodel metadata

Using Neo4EMF…

```
 * <!-- end-user-doc -->
 * @generated
 */
public EList<Book> getBooks() {
    try {
        setLoadingOnDemand();
            if (getData().books == null || getData().books.isEnqueued()){
                EList<Book> newList = new NeoListDecorator<Book>(new
                    EObjectContainmentEList<Book>(Book.class, this,
                        LibraryPackage.LIBRARY__BOOKS));
                getData().books = new WeakReference<EList<Book>>(newList, garbagedData);
                if (isLoaded()) {
                    ((INeo4emfResource) this.eResource()).getOnDemand(this,
                        LibraryPackage.LIBRARY__BOOKS);
                }
                else {
                    getData().strongBooks = newList;
                }
            }
            return getData().books.get();

    } finally {
        unsetLoadingOnDemand();
    }
}
```

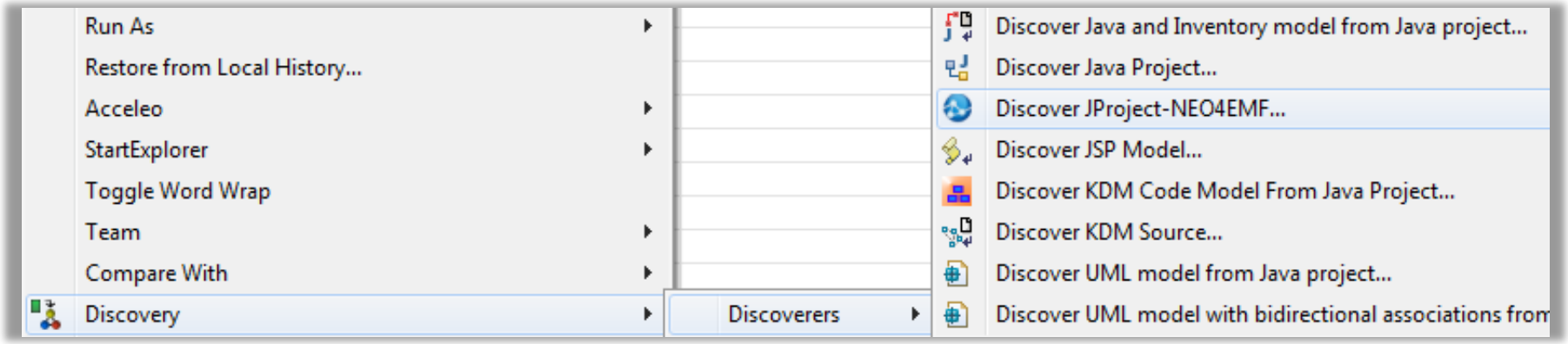
Neo4EMF generated code

Using Neo4EMF…

```
// URI creation with the neo4emf protocol
URI resourceURI = URI.createURI("neo4emf:/"+args[0]);
//create a NESession responsible of managing and creating resources of a single package
NESession neoSessionLibrary = new NESession(library.LibraryPackage.eINSTANCE);
// create the neo4emf resource
INeo4emfResource neoResource = neoSessionLibrary.createResource(resourceURI, 100000);

// GetAllthe books of the author "James Patterson"

String authorName = "James Patterson";

// gathering directly from the back-end (on-demand) all the instances of type  *
// PS : the results of this query are of type INeo4EMF
EList<INeo4emfObject> booksList = neoResource.getAllInstances(library.LibraryPackage.eINSTANCE.getBook());
EList<Book> resultList = new BasicEList<Book>();

for (INeo4emfObject book : booksList) {
    if (((Book)book).getAuthor().equalsIgnoreCase(authorName)) {
        resultList.add((Book) book);
    }
}
```

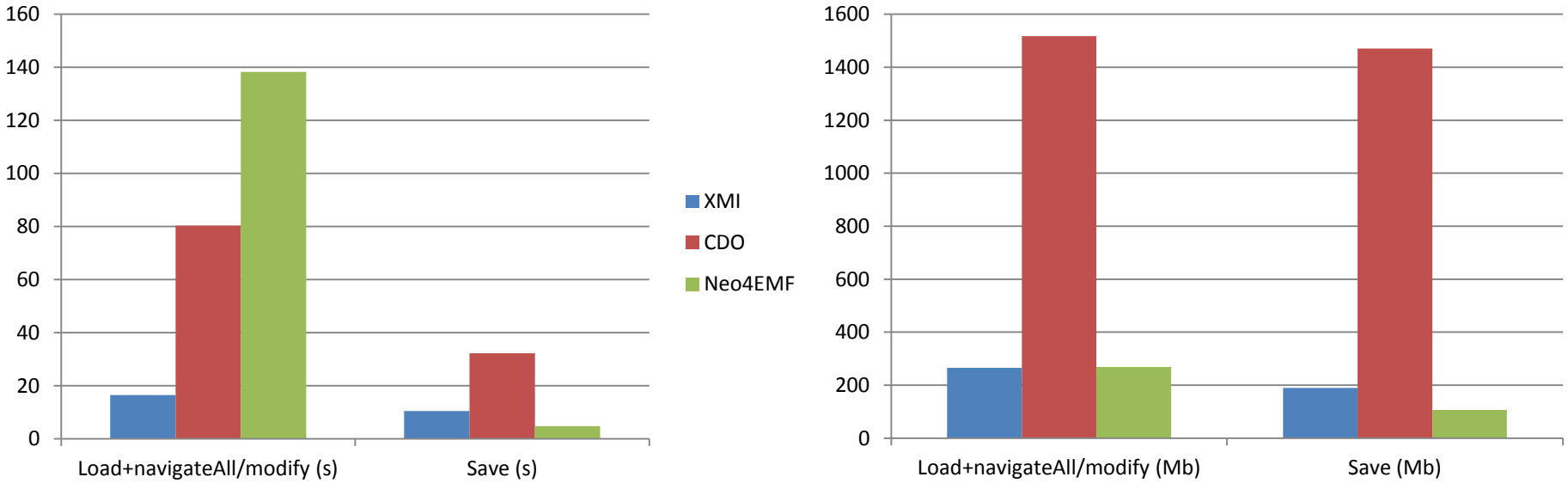
Handling the Neo4EMF resource

Using Neo4EMF…



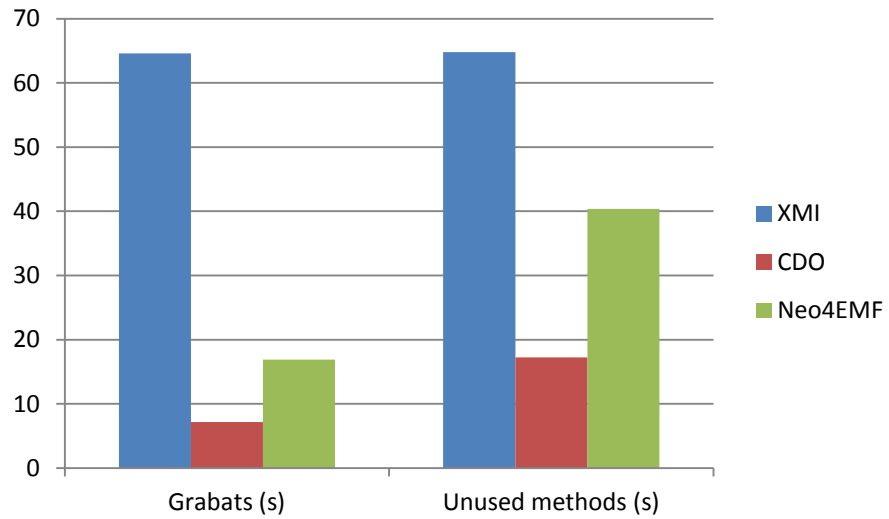
Using Neo4EMF within another tool: Example of Java model discovery with Eclipse MoDisco

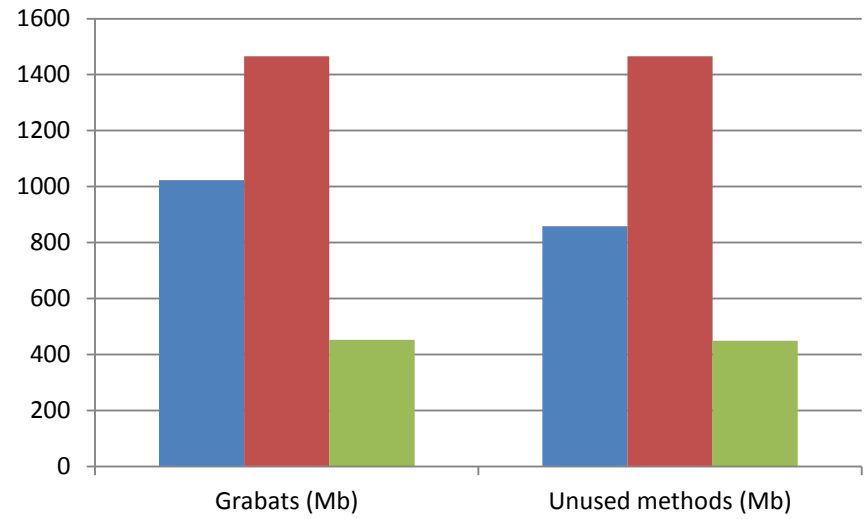
Time Vs. Memory (2)



Load + full navigation & Save
(performance for a 400Mb model)

Time Vs. Memory (3)





Advanced navigation/querying (performance for a 1Gb model)

Don’t forget to…

- Check us out :

www.neo4emf.com

- Contact us :

neo4emf@gmail.com

- Fork us at :

https://github.com/neo4emf/Neo4EMF