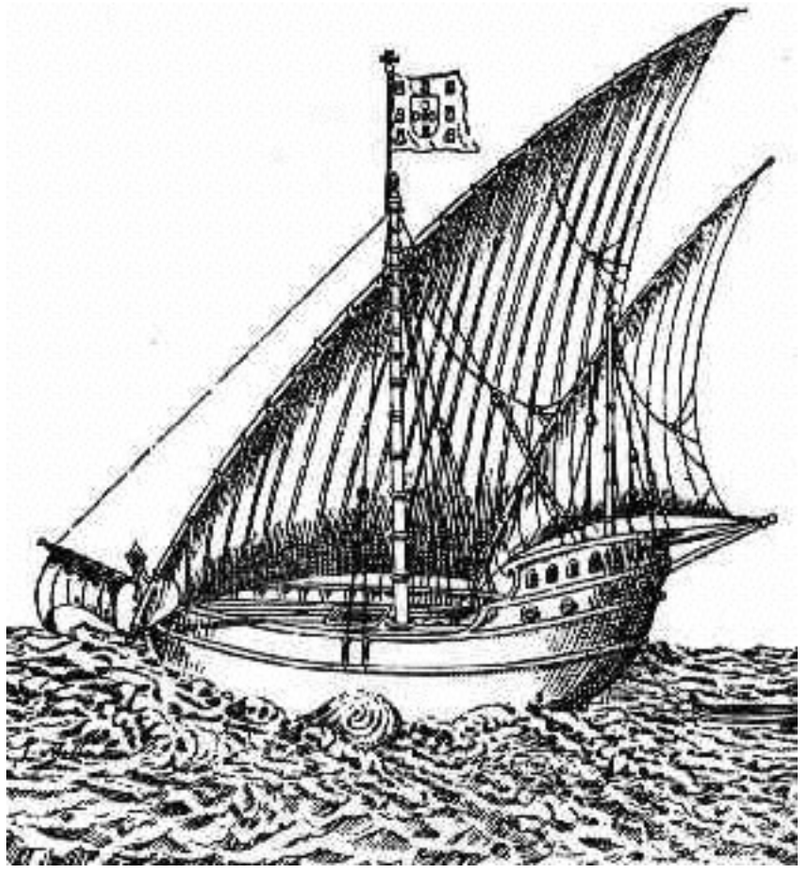


Voyage by example

tips and tricks on persisting object models

Esteban Lorenzano
Pharo core developer
INRIA - RMoD
http://smallworks.eu

Why?

- You already know about Voyage
- You already attended to a tutorial last year
- But there are some recurrent problems people find when trying to use it
- And I’m still seeing a lot of people that could be using it and they chose other solutions

What is Voyage? (1)

- *Simple* abstraction layer to map objects into a database

  - Very well suited for document databases, but **in theory**, the approach will work for other kind of repositories

    - There was (long time ago) a *Voyage-GLORP* backend

    - There was (even more time ago) a *Voyage-ImageSegment* backend

- Voyage-Memory, Voyage-Mongo

What is Voyage? (2)

- Did I said is *simple*?
- it ensures object identity
- it provides error handling
- it implements a connection pool

Voyage principles

- Behavioural complete (for common usage), but decoupled approach also possible.

- Same design for different backends, but not a *common abstraction*

  - There is no such thing as a “voyage query language”, etc.

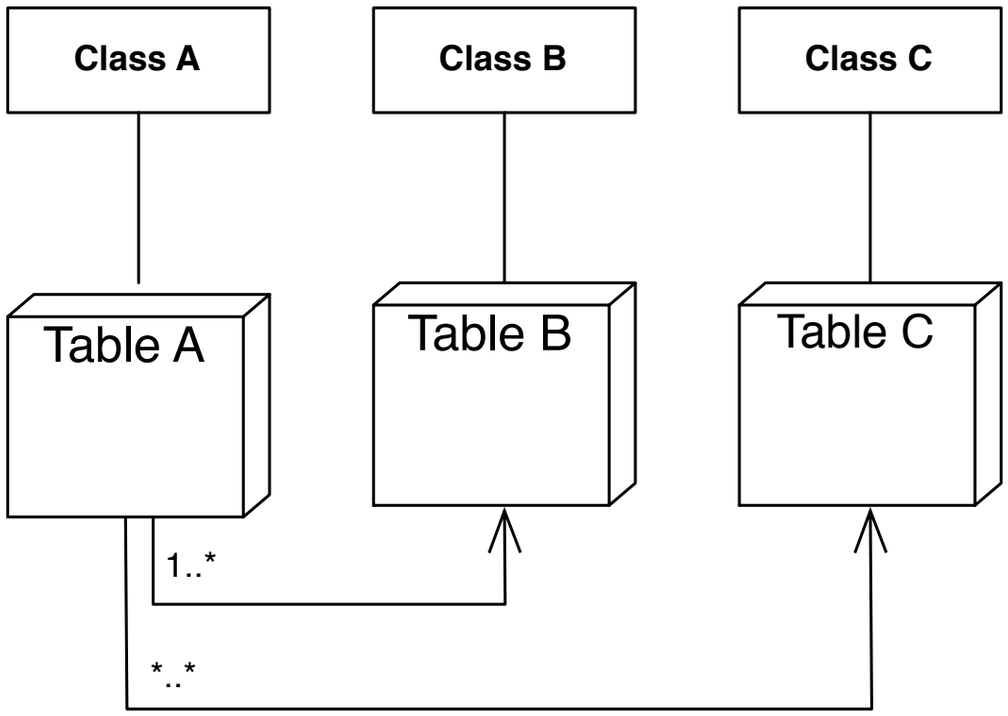
  - is a bit more work for users who want to switch, but a lot more happiness for the program itself

Voyage ultimate goal

To be the GLORP for NoSQL databases

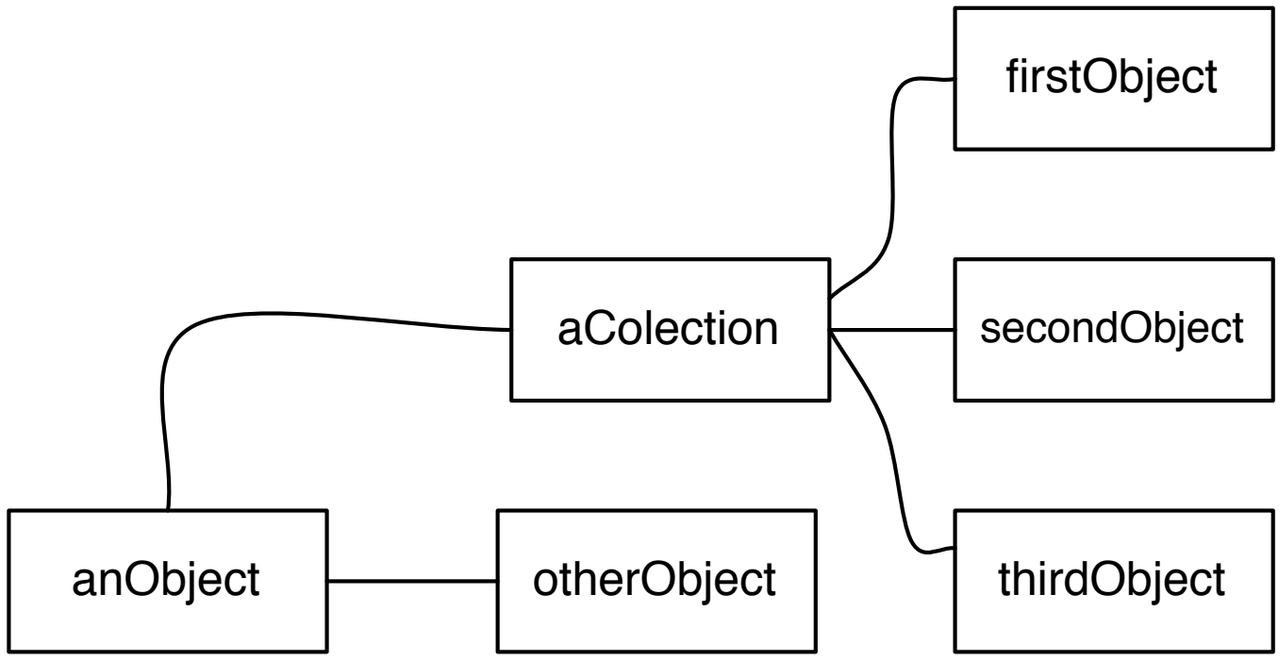
The problem to solve

Impedance mistmatch



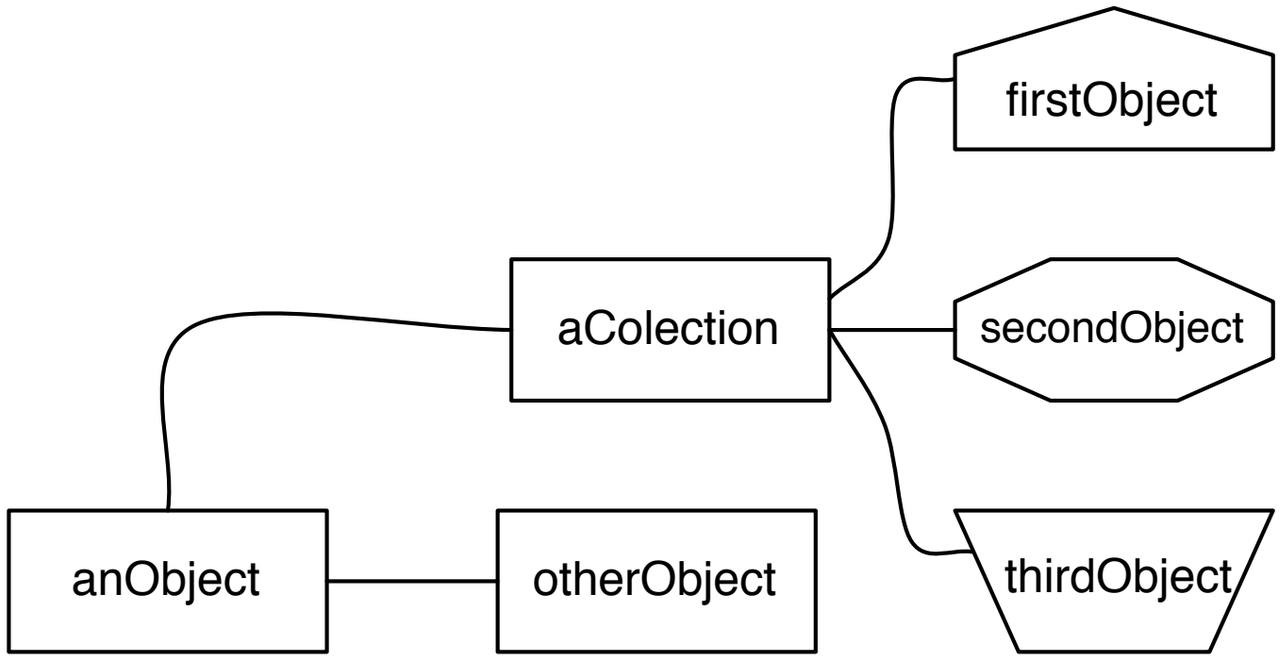
Ideal relational model

Impedance mistmatch



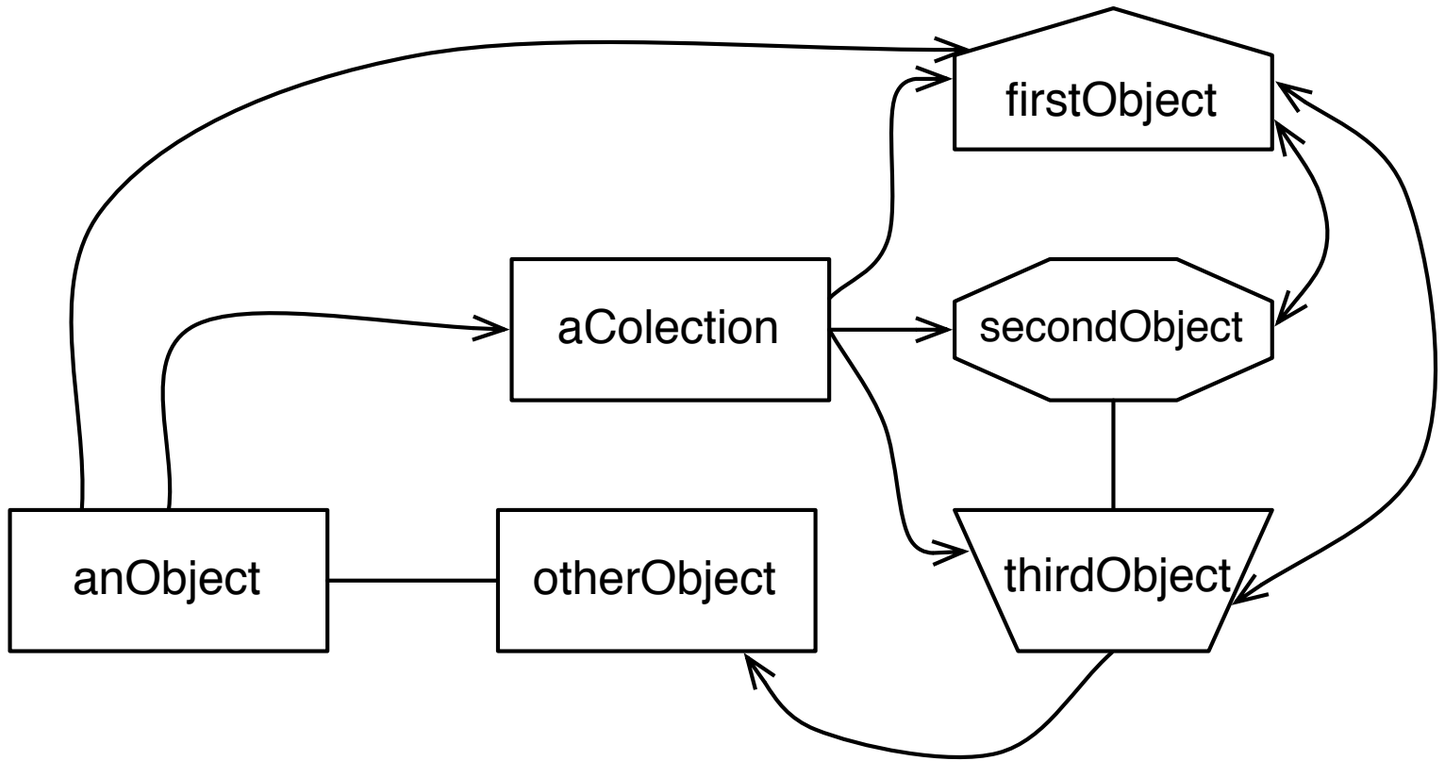
Real object model

Impedance mistmatch



Real object model

Impedance mistmatch

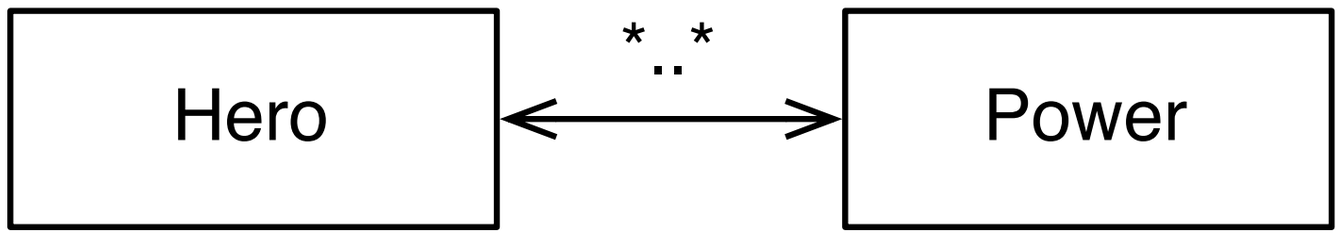


Real object model

So, what about those tips?

Think in objects

A simple model



Persist

```
(Hero named: ‘Groot’)
  addPower: ((Power named: ‘Plant Control’)
  level: #epic;
  yourself);
save.
```

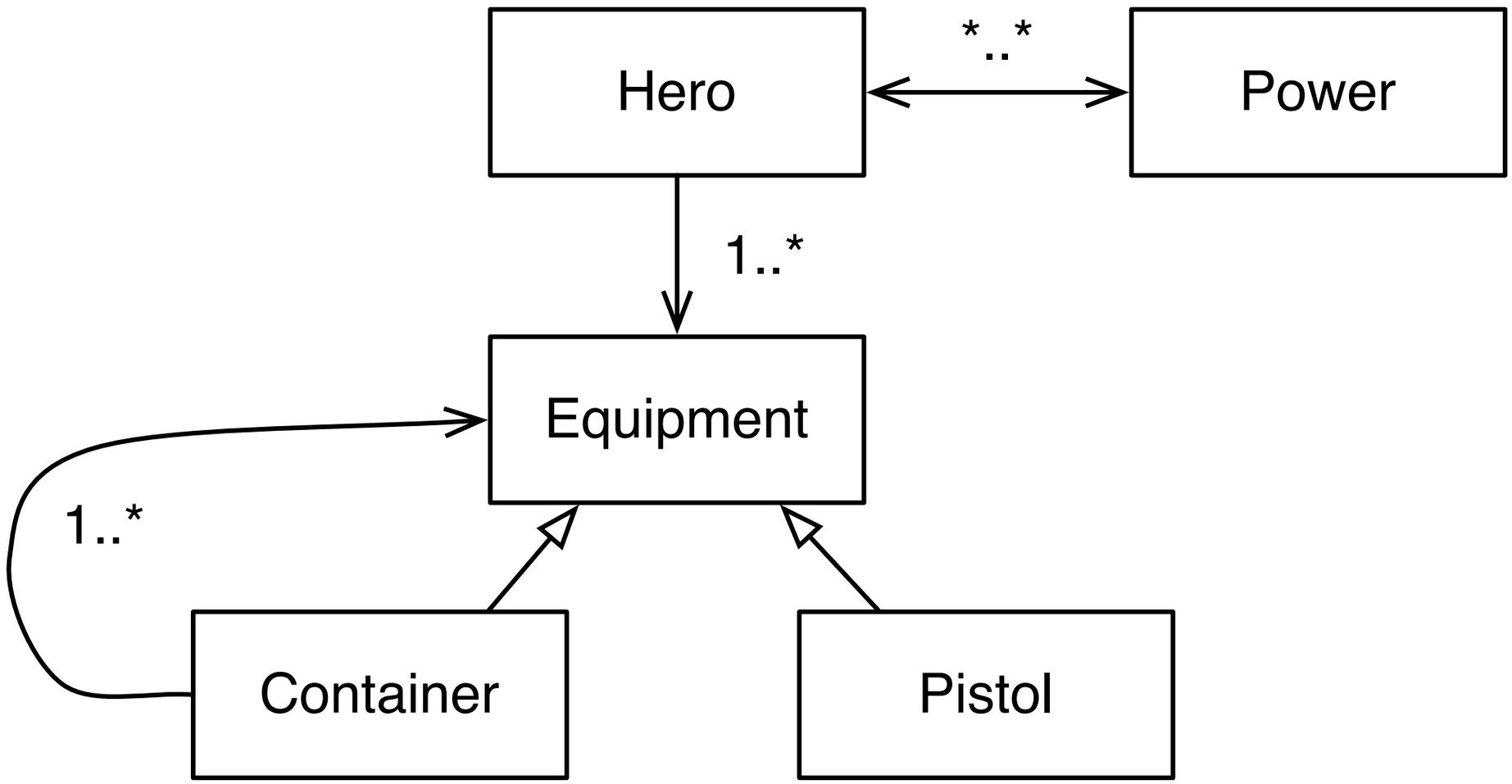
Persist

```
{
  _id: OID(…),
  #version: …,
  #instanceOf: ‘Hero’,
  name: ‘Groot’,
  powers: [ { #collection: ‘Power’, __id: OID(…) } ]
}

{
  _id: OID(…),
  #version: …,
  #instanceOf: ‘Power’,
  name: ‘Plant Control’,
  level: #epic,
  heroes: [ #collection: ‘Hero’, __id: OID(…) ]
}
```

Take control

A simple model
(a bit more complete)



Persist

```
(Hero named: ‘Star-lord’)
  addEquipment: (Container
    addItem: Pistol new;
    yourself);
  save.
```

Persist (1)

```
{
  _id: OID(…),
  #version: …,
  #instanceOf: ‘Hero’,
  name: ‘Star-lord’,
  powers: [],
  equipment: [ {
    #instanceOf: ‘Container’,
    ‘items’, [
      { #instanceOf: ‘Pistol’ } ] } ]
}
```

Persist (2)

```
{
  _id: OID(1),
  #version: …,
  #instanceOf: ‘Hero’,
  name: ‘Star-lord’,
  powers: [],
  equipment: [ { #collection: ‘Equipment’, __id: OID(2) } ]
}

{
  _id: OID(2),
  #version: …,
  #instanceOf: ‘Container’,
  items: [ { #collection: ‘Equipment’, __id: OID(3) } ]
}

{
  _id: OID(3),
  #version: …,
  #instanceOf: ‘Pistol’,
}
```

Integrity is a consequence

Allowing missing content

- We do not have foreign keys
  - So we cannot do things like “ON DELETE CASCADE”
  - Even delete validations are difficult
    - Imagine “hero” has a “power”,and I remove the “power”. How can the hero notice it?

Persist

```
mongoContainer
   <mongoContainer>

   ^ VOMongoContainer new
      collectionName: ‘powers’;
      enableMissingContent;
      yourself
```

Querying smart

Query (1)

```
Hero
selectMany: [ :each | … ]
sortBy: { #name -> VOOrder ascending } asDictionary
limit: 100
offset: 100
```

Query (2)

```
Hero
selectMany: {
  ‘name’ -> {
    ‘$regexp’ -> ‘^G.*’.
    ‘$options’ -> ‘i’
  } asDictionary
} asDictionary
```

Adapt schemes

The “scheme is not mine” problem

- You can move meta-information to your program
- Magritte-Voyage gives you a lot of power
- You can extend/modify parts of the updating system too (like versioning)

Meta-information

```
{
  _id: OID(…),
  #version: …,
  #instanceOf: ‘Hero’,
  name: ‘Star-lord’,
  powers: [],
  equipment: [ {
    #instanceOf: ‘Container’,
    ‘items’, [
      { #instanceOf: ‘Pistol’ } ] } ]
}
```

Meta-information

```
{
  _id: OID(…),
  #version: …,
  #instanceOf: ‘Hero’,
  name: ‘Star-lord’,
  powers: [],
  equipment: [ {
    #instanceOf: ‘Container’,
    ‘items’, [
      { #instanceOf: ‘Pistol’ } ] } ]
}
```

Meta-information

```
{
  _id: OID(…),
  name: ‘Star-lord’,
  powers: [],
  equipment: [ {
   ‘items’, [ {} ] } ]
}
```

Voyage 2.0

- Root detection (enhance save & update)
- Cyclic detection
  - Add strategy to persist cycles even without roots (It has some consequences (in querying, etc.), so it will be optional)
- integrity validations
  - #removeWithDependencies
- Materialisation customisations
  - #readRaw
- Add backend: Riak

Use it today!

```
Gofer it
  smalltalkhubUser: ‘Pharo’ project: ’MetaRepoForPharo30’;
  configurationOf: ‘VoyageMongo’;
  loadStable.
```

Thanks!

Esteban Lorenzano - 2014