

Pharo: an immersive object-oriented system

<http://www.pharo.org>

D.Cassou - S. Ducasse - L. Fabresse
Inria / MinesTelecom / Univ. Lille



Pharo?



Pharo!

- <http://www.pharo.org>
- Pure object language + IDE
- Inspired by Smalltalk
- Great community
- Powerful, elegant and fun to program
- Living system under your fingers



Elegant!

- Full syntax on a postcard
- Simple but powerful object model

Complete Syntax on a Postcard

```
exampleWithNumber: x
```

“A method that illustrates every part of Smalltalk method syntax”

```
<menu>
```

```
| y |
```

```
true & false not & (nil isNil) ifFalse: [self halt].
```

```
y := self size + super size.
```

```
#($a #a 'a' 1 1.0)
```

```
do: [ :each | Transcript
```

```
    show: (each class name);
```

```
    show: (each printString);
```

```
    show: ' '].
```

```
^ x < y
```



Object Model

- Dynamically typed
- ****Everything**** is an instance of a class
- All methods are public and virtual
- Attributes are protected
- Single Inheritance

2007

Immersive?



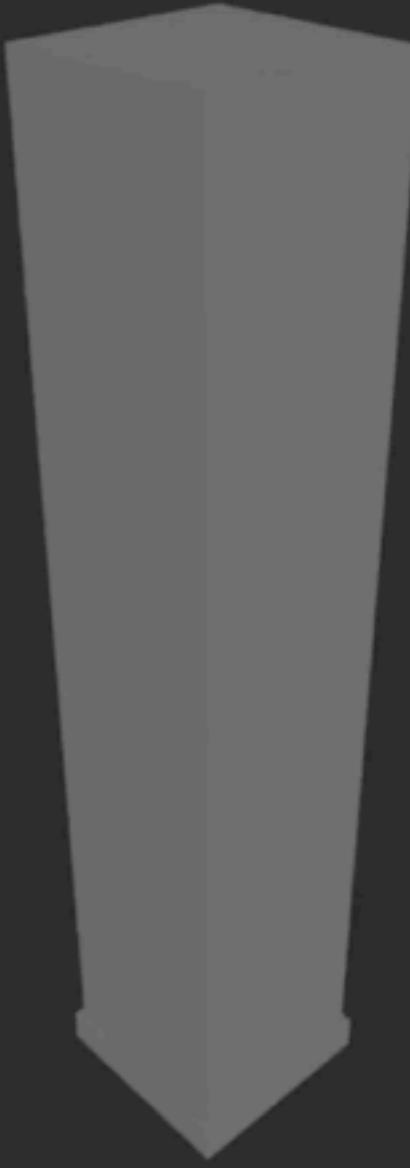
Immersive!

- Deep contact with objects
- Highly interactive programming sessions
- Reflective, inspectable

Workspace

```
| elements lay |  
  
elements := (1 to: 5) collect: [ :ob |  
  (R3CubeShape new) elementOn: ob ].  
    
lay := R3WallLayout new.  
lay on: elements.  
  
UberPresenter present: elements
```

Uber Presenter



Workspace

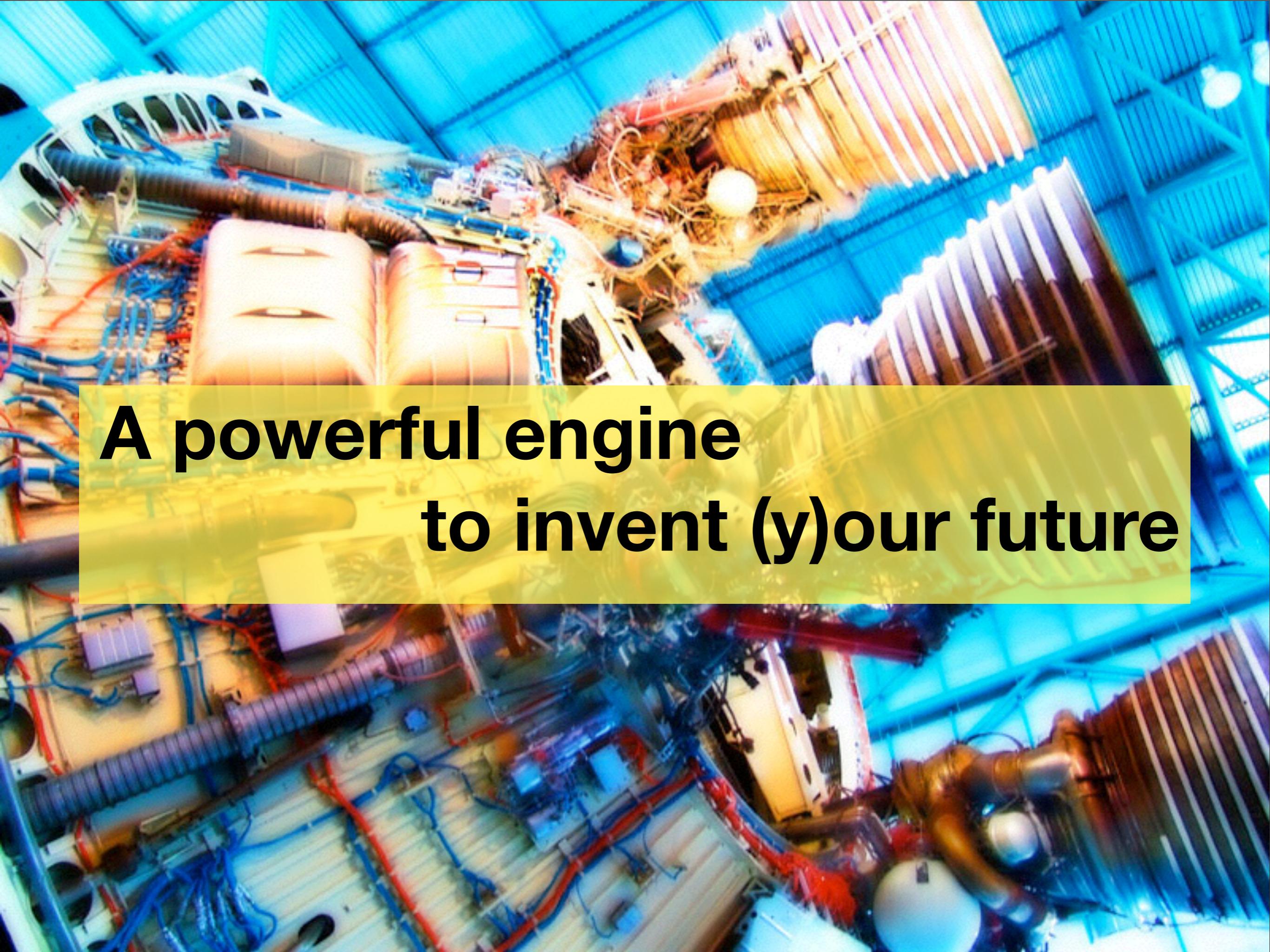
```
| elements lay |  
  
elements := (1 to: 5) collect: [ :ob |  
  (R3CubeShape new) elementOn: ob ].  
    
lay := R3WallLayout new.  
lay on: elements.  
  
UberPresenter present: elements
```

Uber Presenter

Any object can be lively updated
3D
Network connection
Dynamic web applications
GPU
Code

Pharo vision





A powerful engine
to invent (y)our future



An ecosystem where
innovation/business bloom

Pharo's Teachers

- Uni. of Buenos Aires • Uni. of Bern • Uni. of Maroua • Uni. of Brussels • Ecole des Mines de Douai • Uni. de Savoie • Ivan Franko Nat. Uni. of Lviv • Czech Technical Uni. • CULS Prague
- Uni. of Quilmes • Uni. of La Plata • Northern Michigan Uni. • Uni. Technologica Nacional (UTN)
- Uni. Catholic of Argentina • Uni. of Santiago • Uni. Policnica de Catalunya • Uni. de Bretagne Occidentale • Uni. of Tomsk • Uni. of Fernhagen • IT University of Copenhagen • Uni. Cat del Sacro Cuore of Brescia • Uni. Lyon • Uni. Yaounde

Research Groups

Lafhis (AR)

Software Composition Group (CH)

CAR (FR)

RMOD (FR)

Ummisco (IRD)

Reveal (CH)

Lysic (FR)

Pleiad (CL)

CEA-List (FR)

Uqbar (AR)

Companies

www.2denker.de

www.agilitic.com

www.airflowing.com

www.anymorphic.com

www.ardishealth.com

www.beta9.be

www.bombardier.com

www.cmsbox.com

www.finworks.biz

seaside.gemstone.com

www.ibizlog.com

www.inceptive.be

www.jooshr.com

www.majcon.de

www.mindclue.ch

www.miriamtech.com

www.myneat.org

www.netstyle.ch

www.panasoft.com

www.pinesoft.co.uk

www.promedmedical.net

www.sharedlogic.ca

www.smallworks.com.ar

www.10pines.com

www.trantaria.com

www.yesplan.be

www.synectique.eu

www.sorabito.com

objectprofile.com



PharoCloud

pharocloud

Overview Pricing Blog Login Sign Up

Pharo platform as a Service: put your Smalltalk web-application online at Pharocloud in just 3 clicks

Try it for FREE Watch how it works

Ramex

Wind Energy

Pioneering new ways of maximizing sustainable wind energy yields. Our products and services optimize asset availability, wind turbine performance and drivetrain reliability. We work with owners, operators, manufacturers, insurers and service providers worldwide.

Get in touch:

Related links:

Wind Energy

Wind industry solutions

Web-To-Print Solution

- Design and create individual printed matter
- eShop with credit card payment
- High quality PDF output with Printing Process integration
- Thousands of orders for seven Swiss printing companies



Some Success Stories

iBizLog - <http://www.ibizlog.com>

SpesenFuchs

Pinesoft MBagger

Yesplan

Yesplan is veelzijdige software voor het efficiënt plannen van evenementen. Yesplan is uitstekend gebruiksvriendelijk, flexibel en makkelijk te koppelen met andere software.

Net: Disaster Recovery

Lumina

CSOB

Dedicated and cost-effective tools for software evolution

Dedicated Analyse

Dedicated tools

Decision making

Horizon

BETTER FASTER CHEAPER

COMPONENTS

CSOB

airflowing

Organize your creative work

Plans and Pricing

Manage your simple way

OBJECT PROFILE

Das Content Management mit System

z2denker

Continuous API Testing

Keep your services under control 24/7

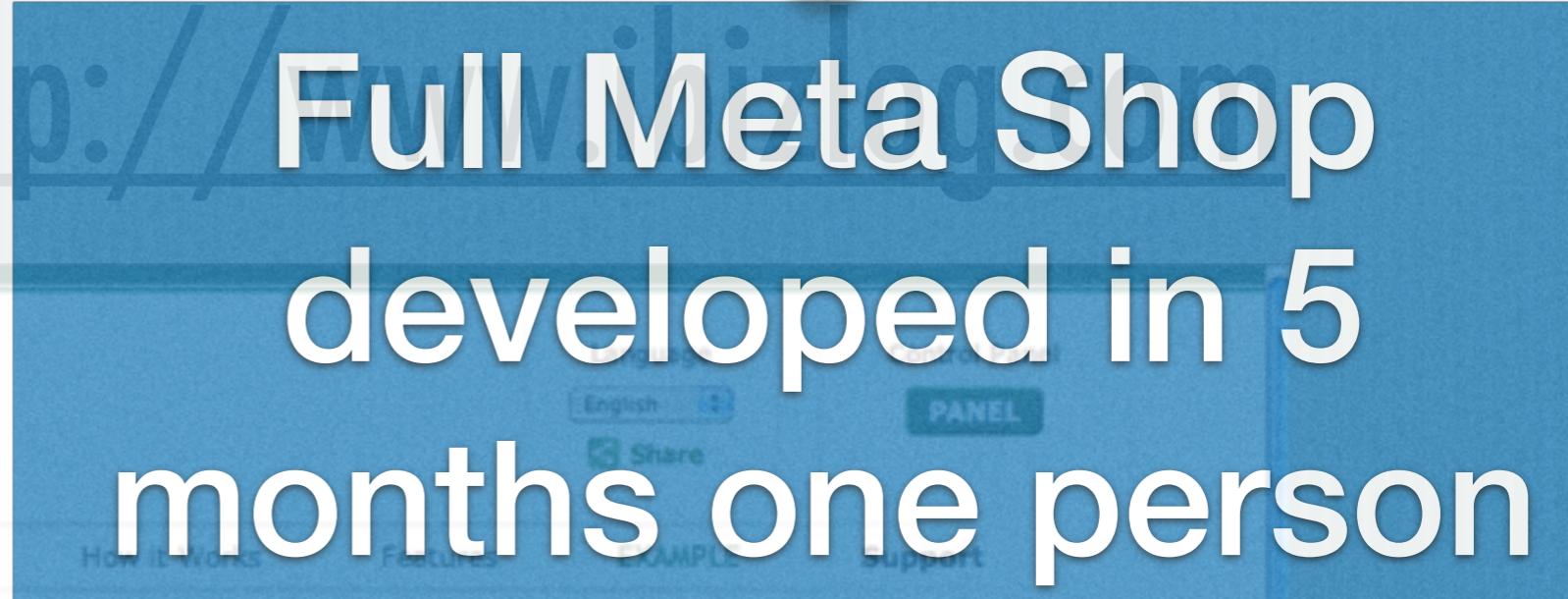
t3

Map

iBizLog - <http://FullMetaShop>



The screenshot shows the iBizLog homepage. At the top left is the logo "iBizLog" with "BETA" above it and "internet business log" below it. Navigation links "Home" and "Sign Up" are at the top right. Below the header, there's a section titled "What is iBizLog ?" with four numbered steps: 1. A hand writing on a notepad, 2. A smartphone displaying a website, 3. A person typing on a keyboard, and 4. A person cheering at a computer. Below this, a text block says: "It is a simple and easy online system you can use to create your own website online in order to promote and sell your products or services. Create your website now!" followed by a "START NOW !" button. To the right is a green box with the title "Have your WebSite" and a "FREE" badge, containing a thumbnail of a website and a "Create WebSite" button. At the bottom, there are three columns: "Personal Identity and URL" with a globe icon, "Communication Tools" with a globe and envelope icon, and "Multilingual Menu" with flags of France, Spain, Italy, and Germany. A footer bar at the bottom contains links for "Blog | Facebook | Twitter", "About Us | News | Partners | Contact Us | Terms of Service", and "www.iBizLog.com - All rights reserved - Copyright ©".



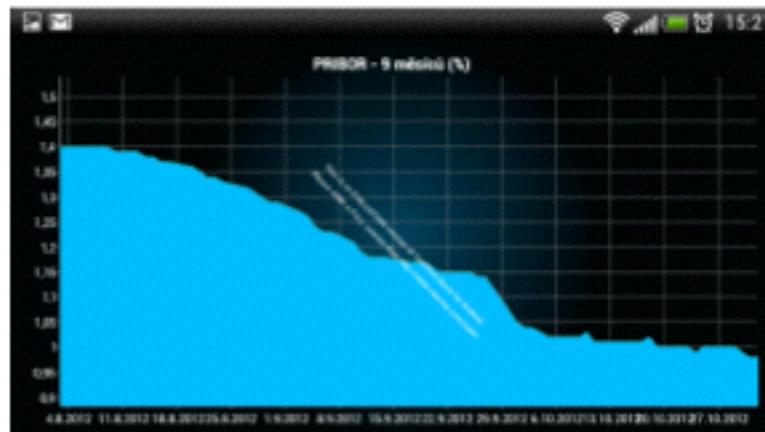
The screenshot shows the FullMetaShop homepage. The main title "FullMetaShop" is displayed prominently in large white letters. Below it, the text "developed in 5 months one person" is written in a large, bold, white font. The background is blue. At the top right, there are language selection ("English"), sharing ("Share"), and support ("EXAMPLE", "PANEL", "Support") buttons. A "feedback" link is located on the right side of the page.

A product by Smallworks

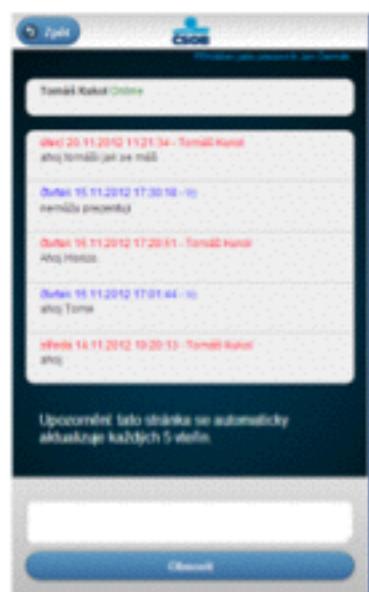
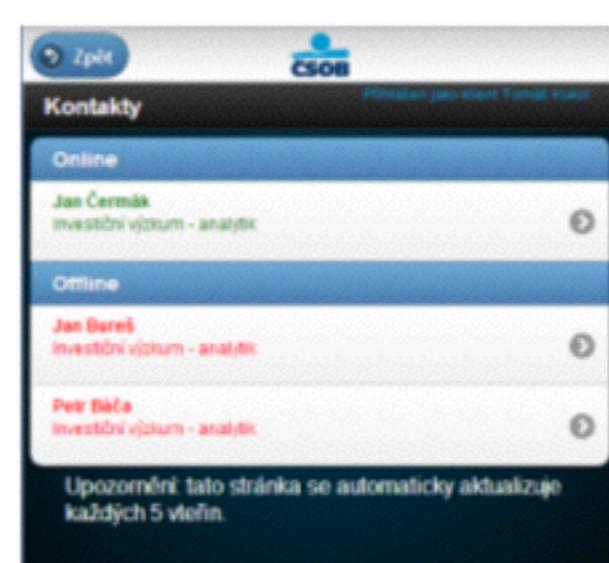
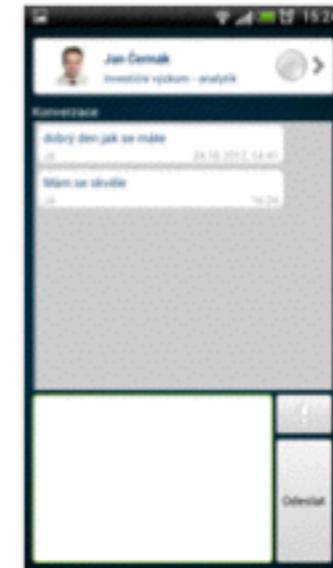




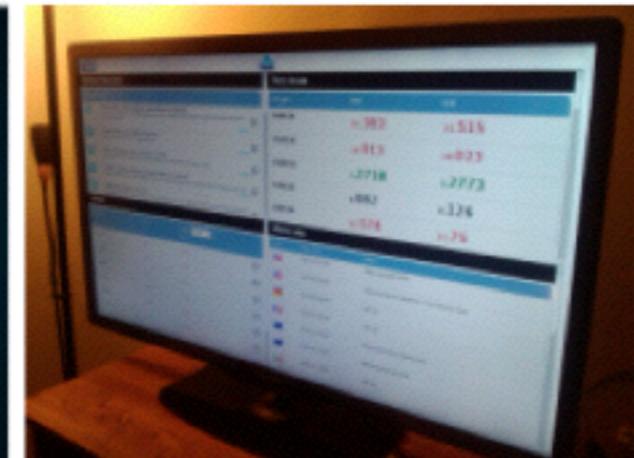
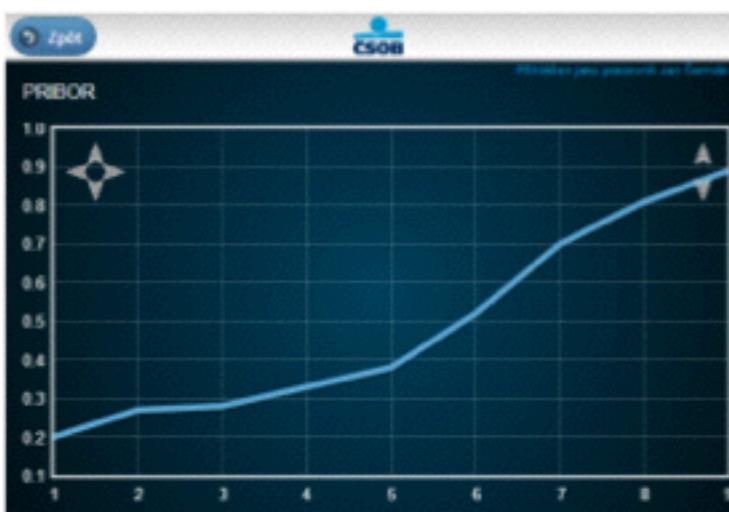
Developed in three months one dev Sold to another bank Java team estimated 2 years



Měnový páru	Nákup	Prodej	Denní změna
EUR/AUD	110,00	110,00	-0,00
EUR/CAD	110,00	110,00	-0,00
EUR/CHF	1,2099	1,2097	-0,00
EUR/CZK	20,1400	20,1700	+0,03
EUR/DKK	7,4495	7,4550	+0,00
EUR/GBP	0,8814	0,8806	-0,00
EUR/HUF	300,0000	300,0000	-0,00
EUR/JPY	101,7000	101,2000	-0,50
EUR/NOK	7,3481	7,3480	-0,01
EUR/PLN	4,0300	4,0300	-0,00
EUR/RON	4,3377	4,3367	-0,00
EUR/RUB	60,0000	60,0000	-0,00
EUR/SEK	6,6071	6,6067	-0,00



	Bid	Ack
EUR/CZK	25,407	25,539
USDCZK	19,746	19,856
EUR/USD	1,2836	1,2893
PLN/CZK	6,168	6,212
GBPCZK	31,494	31,67
HUF/CZK	0,09075	0,09141
CHF/CZK	21,082	21,206
AUD/CZK	20,471	20,593
AUD/USD	1,0323	1,0415
CAD/CZK	19,816	19,926
DKK/CZK	3,407	3,424
EUR/AUD	1,2325	1,249



Apps Categories ▾ Home Top Charts

My apps

Shop

Games

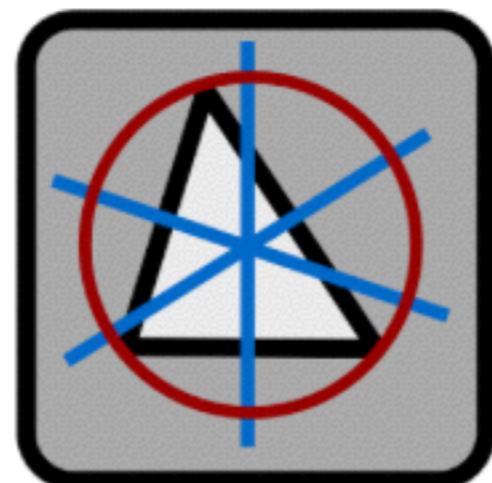
Family

Parent Guide

Editors' Choice



DR. GEO



Dr. Geo

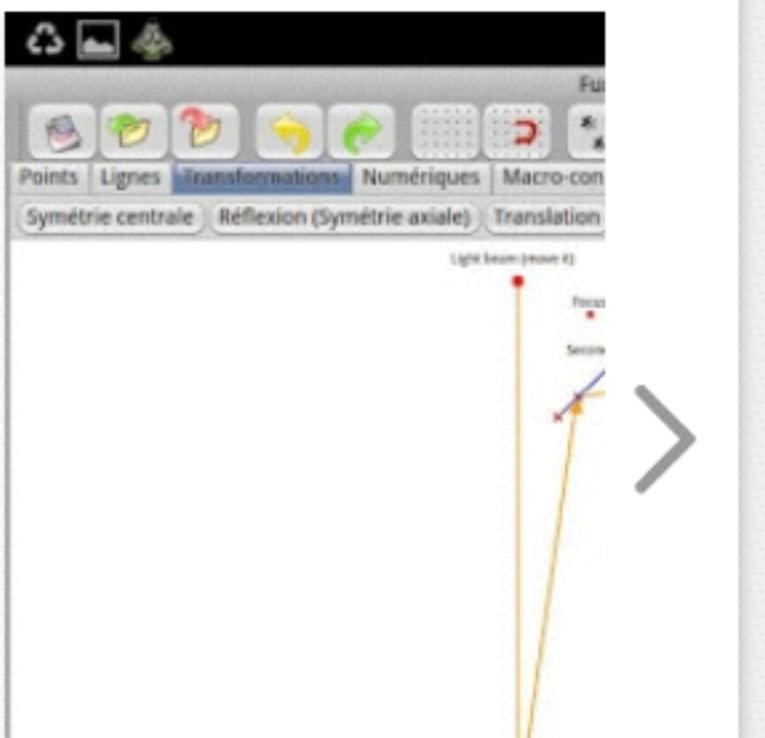
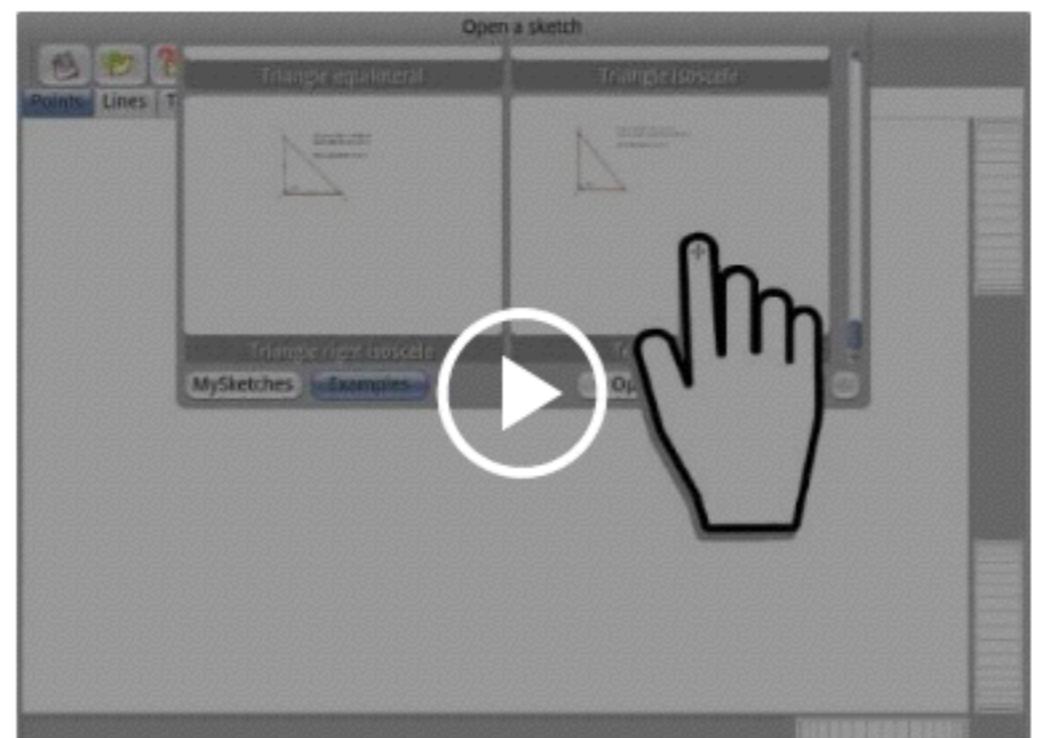
iStoa Education

Unrated

You don't have any devices

Add to Wishlist

€3.59 Buy



Pharo Web Stack is Gorgeous

- Seaside (component, Javascript, REST)
- Zinc (HTTP, HTTPS, REST)
- Magritte Metamodelling (no form)
- Protocols/Encoding: Oauth, JSON, STON,...
- Database: noSql, mongoDB, riak, relational databases

seaside 



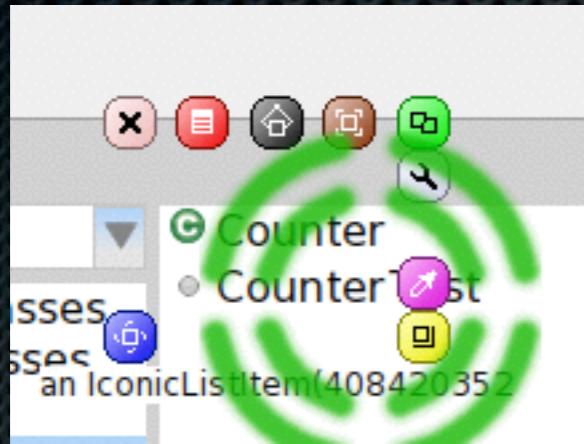
Pharo is a vehicle

Pharo is just starting, ****every**** single day we improve it

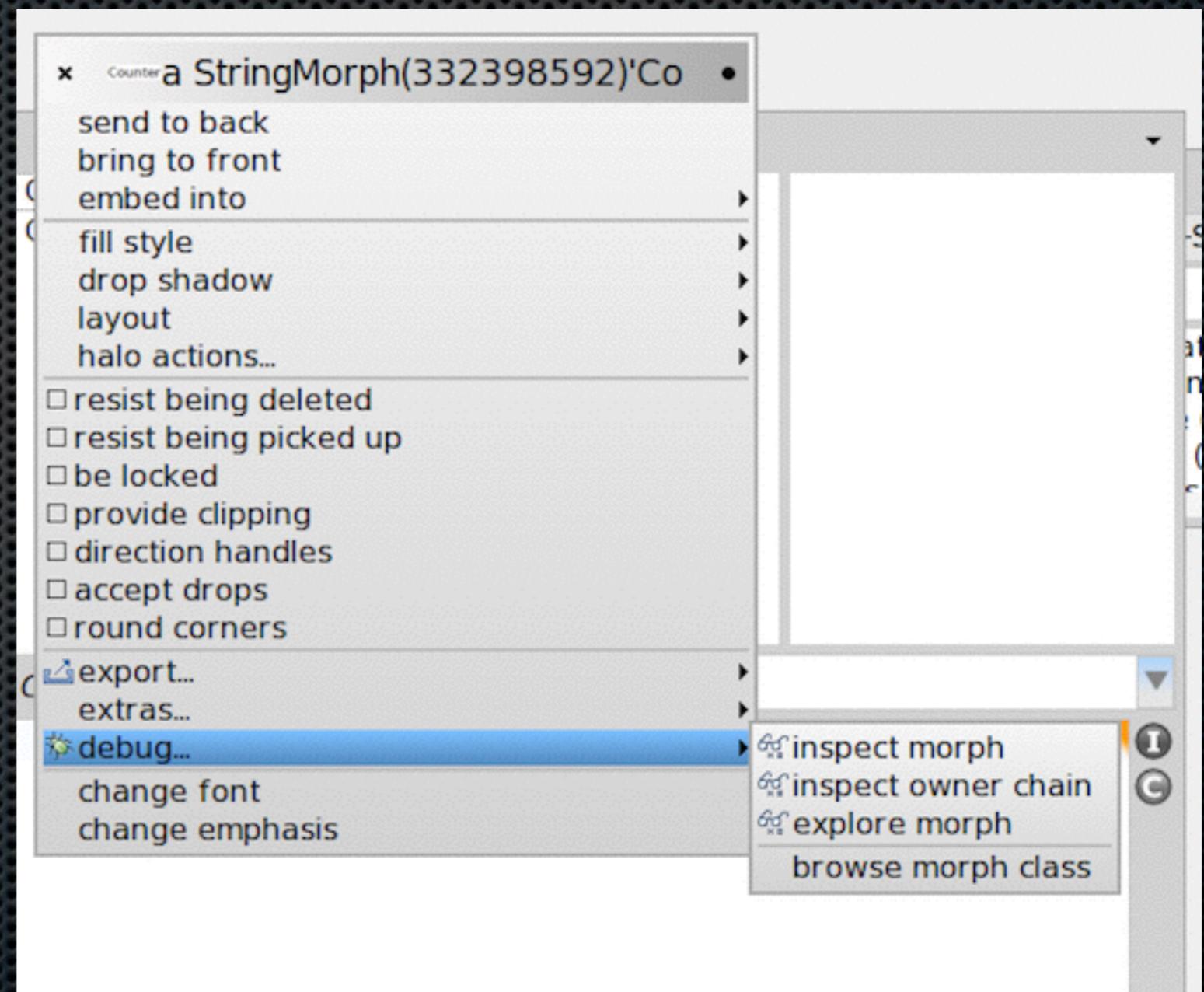
**Learning from the
system...**

Click on it :)

Cmd+shift+option



- Cmd-Shift+option



Finder :)

Finder

match ▾ Search Regexp Selectors ▾ Packages... All Packages

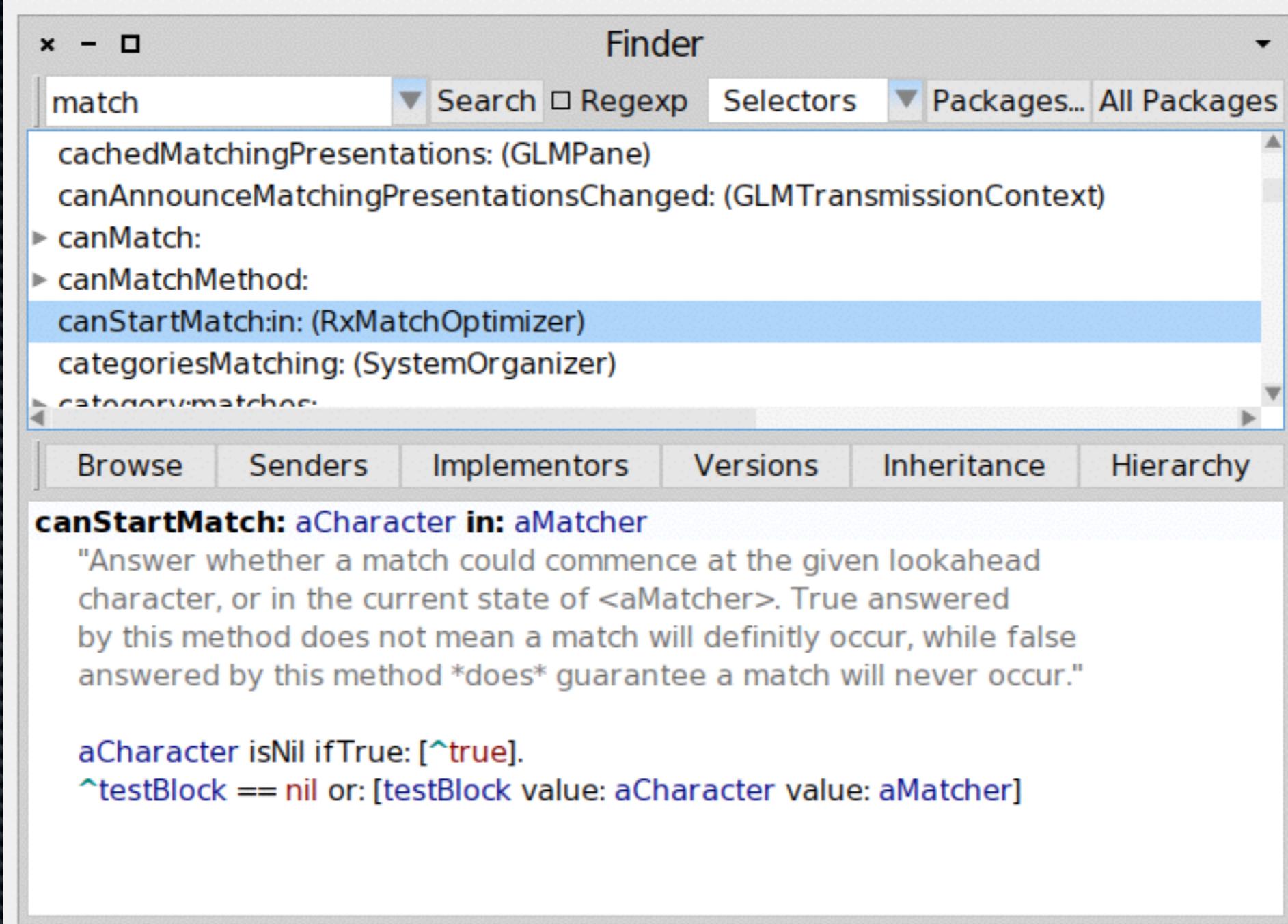
cachedMatchingPresentations: (GLMPane)
canAnnounceMatchingPresentationsChanged: (GLMTransmissionContext)
▶ canMatch:
▶ canMatchMethod:
canStartMatch:in: (RxMatchOptimizer)
categoriesMatching: (SystemOrganizer)
◀ categoriesMatching:

Browse Senders Implementors Versions Inheritance Hierarchy

canStartMatch: aCharacter in: aMatcher

"Answer whether a match could commence at the given lookahead character, or in the current state of <aMatcher>. True answered by this method does not mean a match will definitely occur, while false answered by this method *does* guarantee a match will never occur."

aCharacter isNil ifTrue: [^true].
^testBlock == nil or: [testBlock value: aCharacter value: aMatcher]



Finder: *give* examples

The screenshot shows the Pharo Smalltalk Finder interface. The search bar at the top contains the query `'ab' . 'c' . 'abc'`. The "Examples" tab is selected. The results list includes:

- KMNoShortcut
- KMStorage
- Matrix
- Path
- RunArray
- *SequenceableCollection** (highlighted in blue)
- SortAlphabeticallyClassList

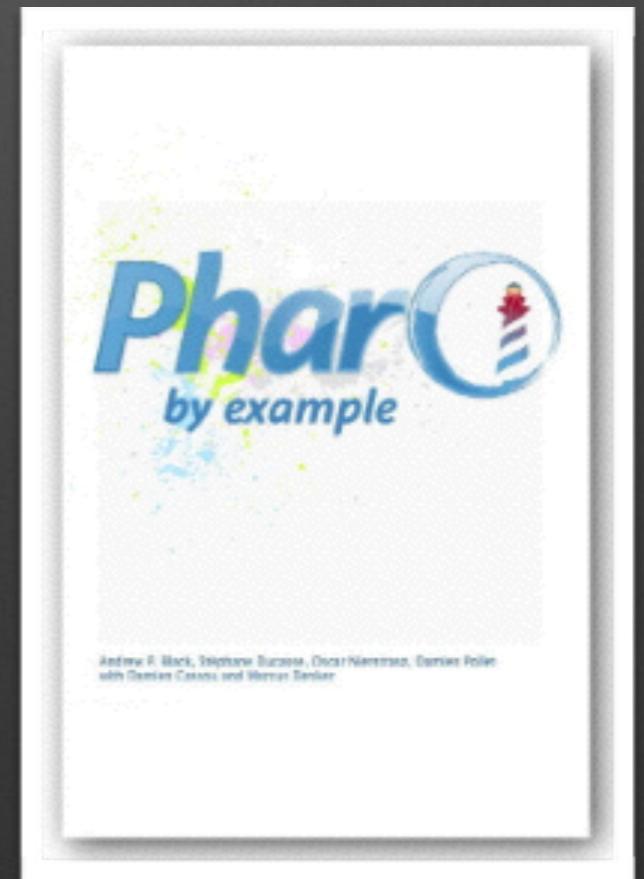
Below the results, there are tabs for `Browse`, `Senders`, `Implementors`, `Versions`, `Inheritance`, and `Hierarchy`. The `Senders` tab is selected. The detailed view for `*SequenceableCollection` shows:

`, otherCollection`
"Concatenate two Strings or Collections."

`^ self copyReplaceFrom: self size + 1
to: self size
with: otherCollection`
"
`#(2 4 6 8) , #(who do we appreciate)
((2989 storeStringBase: 16) copyFrom: 4 to: 6) , ' boy!'`
"

Pharo by Example

- ❖ Pharo by example <http://www.pharobyexample.org>
 - ❖ translated to french, merci!
 - ❖ translated to spanish, gracias!
 - ❖ translated to japanese, ありがとう!
- ❖ Currently updated to Pharo 40



Deep into Pharo



ALEXANDRE BERGEL - DAMIEN CASSOU
STÉPHANE DUCASSE - JANNIK LAVAL

Foreword by Dave THOMAS

Enterprise Pharo: a Web perspective

Other books

- Numerical Methods in Pharo
- Dynamic Web Development with Seaside
 - <http://book.seaside.st>

seaside 

Learning OO advanced
design
from the system...

How to implement not?

- false not -> true
- true not -> false

Let the receiver decide!

Not implementation

Boolean>>not

self subclassResponsibility

False>>not

^true

True>>not

^false

Check in the system

x - □ Implementors of **not** [9]

Boolean (logical operations)	not [Kernel]
False (logical operations)	not [Kernel]
True (logical operations)	not [Kernel]

Browse Senders Implementors Version Source

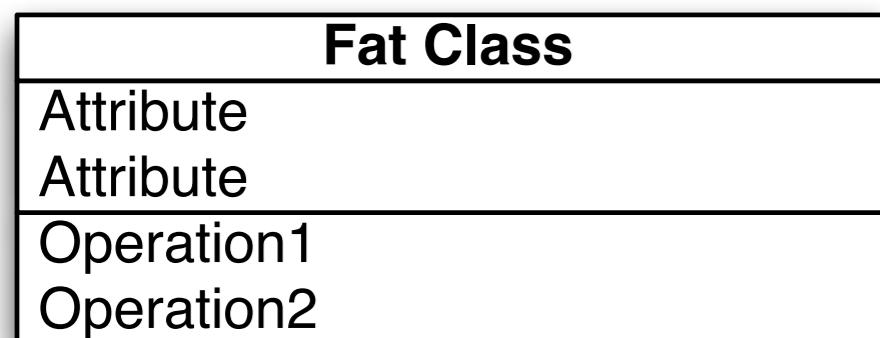
not
"Negation -- answer true since the receiver is false."

^true

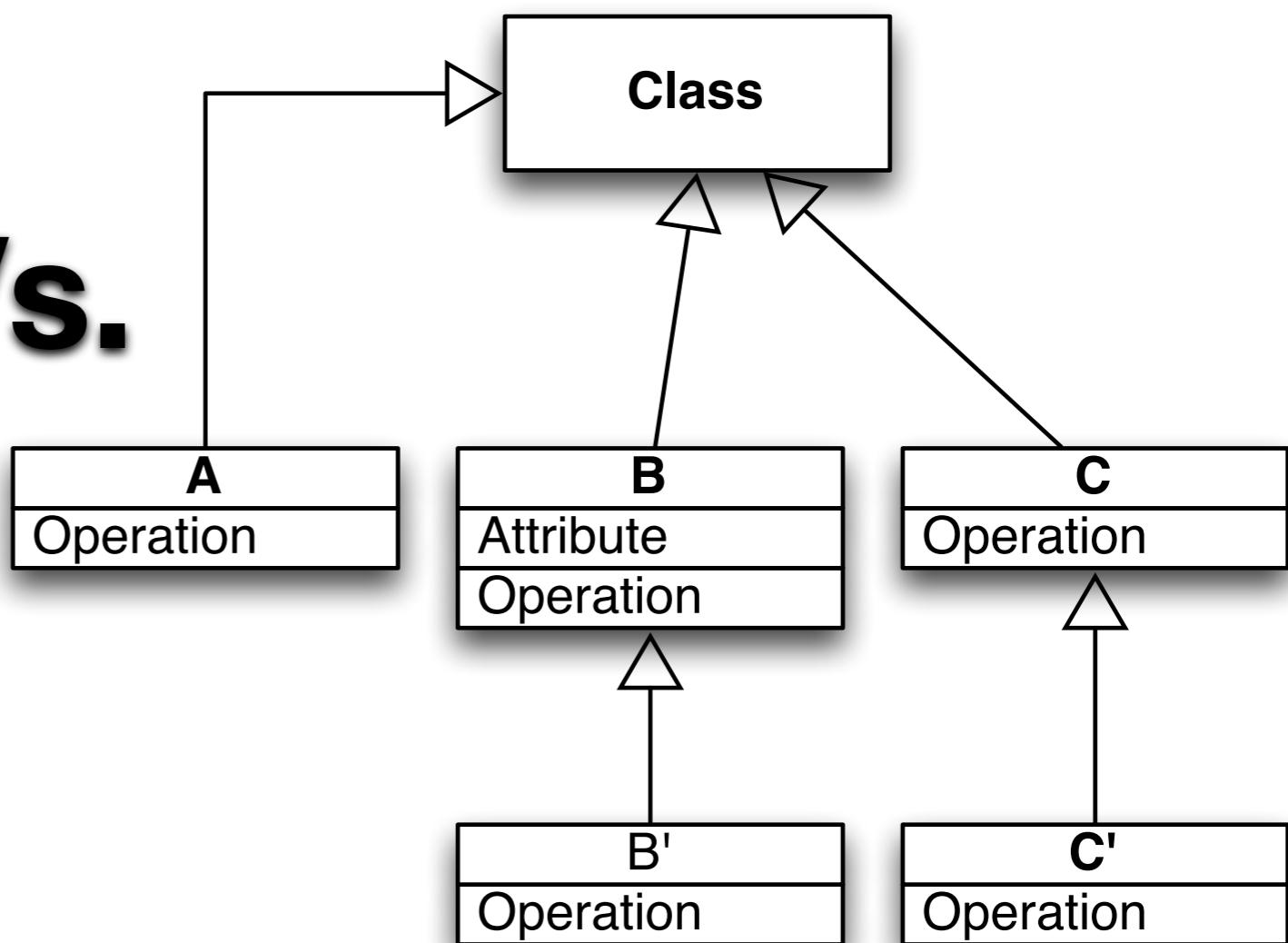
Message sends act as case statements

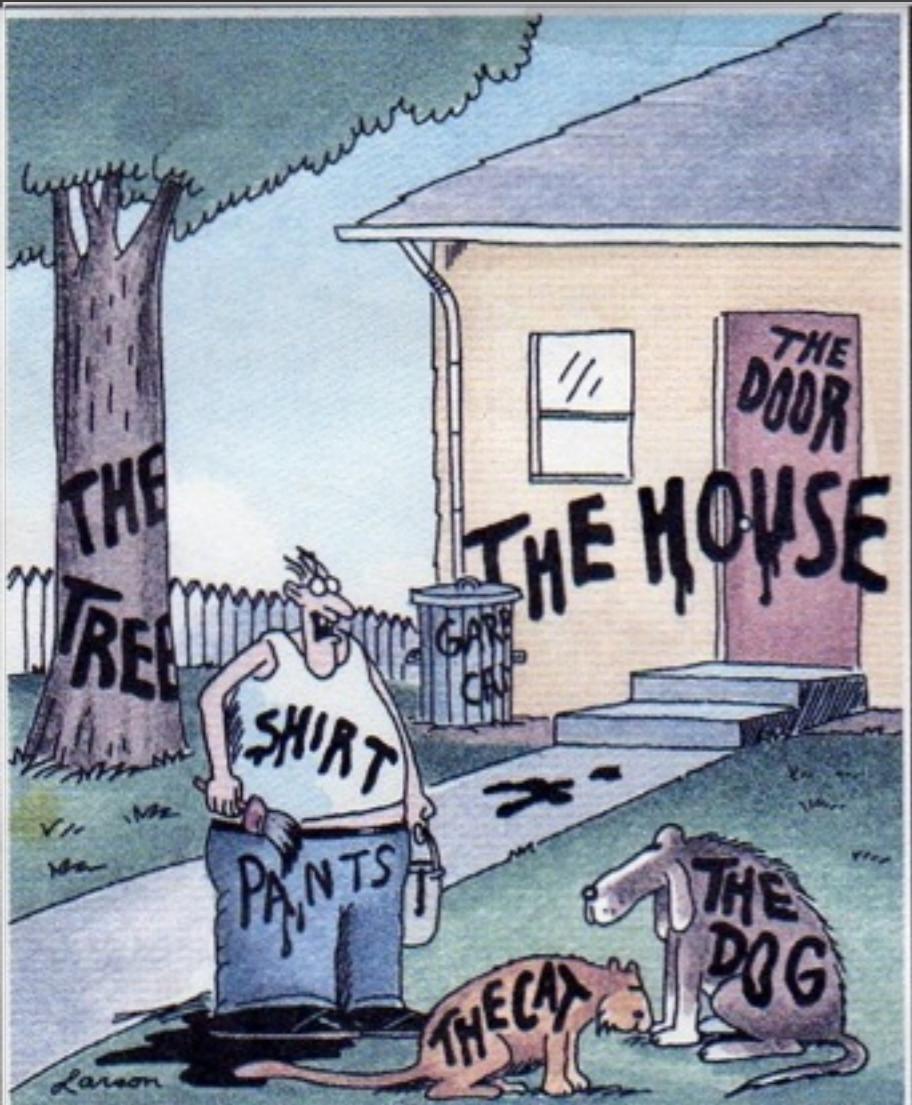
- But dynamic and open
- Can add a branch (define a subclass)
- Branches can be defined in different packages

OOP: the Art of Dispatching



Vs.





"Now! ... That should clear up
a few things around here!"

Pharo Humour

<http://pharo.org>

Fun, simple
Excellent for teaching
Pure & elegant
Highly productive
Empowering Tools
Full access



