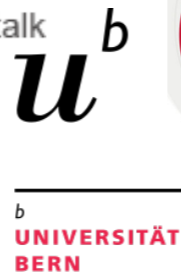


Pharo: Live objects for complex projects

<http://stephane.ducasse.free.fr>

<http://www.pharo.org>





Pharo!

- System: Pure object language + full IDE
- Powerful, elegant and fun to program
- Great community
- Living system under your fingers
- Works on Mac OSX, Linux(es), iOS, Windows, Pi, and “android”
- 100% MIT

Elegant!

- Full syntax on a postcard
- Simple and powerful objet model

Leuchttürme



```

exampleWithNumber: x

<syntaxOn: #postcard>
"A "complete" Pharo syntax"
| y |
true & false not & (nil isNil)
  iffFalse: [ self perform: #add: with: x ].
y := thisContext stack size + super size.
byteArray := #[2 2r100 8r20 16rFF].
{ -42 . #($a #a #'I''m' 'a' 1.0 1.23e2 3.14s2 1) }
do: [ :each |
  | var |
  var := Transcript
  show: each class name;
  show: each printString ].
^ x < y

```

method name, parameter, pragma, comment, local variable, binary message, unary message, boolean literals, nil literal, block, keyword message, assignment, pseudo variables, instance variable, integer literals, byte array, array generated at runtime, literal array, symbols, character, string, floating point, scaled decimal, local block variable, block parameter, global variable, cascade, keyword message, return instruction, other method definition examples: unary, + binaryMessageArgument, keyword: arg, keyword: arg1 withTwo: arg2

PLACE
STAMP
HERE

<https://www.pharo.org>

N U M

Yes the full Syntax!

Yes there is nothing else...

Leuchttürme



```

exampleWithNumber: x

<syntaxOn: #postcard>
"A "complete" Pharo syntax"
| y |
true & false not & (nil isNil)
  iffFalse: [ self perform: #add: with: x ].
y := thisContext stack size + super size.
byteArray := #[2 2r100 8r20 16rFF].
{ -42 . #($a #a #'I''m' 'a' 1.0 1.23e2 3.14s2 1) }
do: [ :each |
  | var |
  var := Transcript
  show: each class name;
  show: each printString ].
^ x < y

```

Annotations for the code block:

- method name: exampleWithNumber
- parameter: x
- pragma: <syntaxOn: #postcard>
- comment: "A "complete" Pharo syntax"
- local variable: y
- boolean literals: true, false
- nil literal: nil
- block: (nil isNil)
- keyword message: perform: #add: with: x
- assignment: y :=
- pseudo variables: thisContext, super
- integer literals: 2, 2r100, 8r20, 16rFF
- byte array: byteArray
- array generated at runtime: { -42 . #(\$a #a #'I''m' 'a' 1.0 1.23e2 3.14s2 1) }
- literal array: #(\$a #a #'I''m' 'a' 1.0 1.23e2 3.14s2 1)
- symbols: \$a, #a, #'I''m'
- character: 'a'
- string: 'a'
- floating point: 1.0, 1.23e2
- scaled decimal: 3.14s2
- local block variable: | var |
- block parameter: each
- global variable: Transcript
- keyword message: show: each class name; show: each printString
- keyword message: ^
- return instruction: x < y
- other method definition examples: unary, + binaryMessageArgument, keyword: arg, keyword: arg1 withTwo: arg2
- cascade: show: each class name;

PLACE
STAMP
HERE

<https://www.pharo.org>

N U M

exampleWithNumber: x

```
<syntaxOn: #postcard>
```

```
"A ""complete"" Pharo syntax"
```

```
| y |
```

```
true & false not & (nil isNil)
```

```
  ifFalse: [ self perform: #add: with: x ].
```

```
y := thisContext stack size + super size.
```

```
byteArray := #[2 2r100 8r20 16rFF].
```

```
{ -42 . #($a #a #'I' 'm' 'a' 1.0 1.23e2 3.14s2 1) }
```

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

```
  | var |
```

```
  var := Transcript
```

```
    show: each class name;
```

```
    show: each printString ].
```

```
^ x < y
```

method annotation

exampleWithNumber: **x** parameter

```
<syntaxOn: #postcard>  
"A ""complete"" Pharo syntax" comment
```

```
| y |  
true & false not & (nil isNil)  
ifFalse: [ self perform: #add: with: x ].
```

```
y := thisContext stack size + super size.
```

```
byteArray := #[2 2r100 8r20 16rFF].
```

```
{ -42 . #($a #a #'I' 'm' 'a' 1.0 1.23e2 3.14s2 1) }
```

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

```
| var |
```

```
var := Transcript
```

```
show: each class name;
```

```
show: each printString ].
```

return

```
^ x < y
```

exampleWithNumber: x **parameter**

<syntaxOn: #postcard>

"A ""complete"" Pharo syntax"

| y |

true & false not & (nil isNil)

ifFalse: [self perform: #add: with: x].

y := thisContext stack size + super size.

byteArray := #[2 2r100 8r20 16rFF].

{ -42 . #(\$a #a #'I' 'm' 'a' 1.0 1.23e2 3.14s2 1) }

do: [:each |

| var |

var := Transcript

show: each class name;

show: each printString].

^ x < y

local var

affectation

instance var

local var

exampleWithNumber: x

```
<syntaxOn: #postcard>
```

```
"A ""complete"" Pharo syntax"
```

```
| y |
```

```
true & false not & (nil isNil)
```

```
  ifFalse: [ self perform: #add: with: x ].
```

closure

```
y := thisContext stack size + super size.
```

```
byteArray := #[2 2r100 8r20 16rFF].
```

```
{ -42 . #($a #a #'I' 'm' 'a' 1.0 1.23e2 3.14s2 1) }
```

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

arg closure

```
| var |
```

```
var := Transcript
```

```
  show: each class name;
```

```
  show: each printString ].
```

```
^ x < y
```

exampleWithNumber: x

```
<syntaxOn: #postcard>
```

```
"A ""complete"" Pharo syntax"
```

```
| y |
```

binary msg

```
true & false not & (nil isNil)
```

```
ifFalse: [ self perform: #add: with: x ].
```

keyword msg

```
y := thisContext stack size + super size.
```

unary msg

```
byteArray := #[2 2r100 8r20 16rFF].
```

```
{ -42 . #($a #a #'I' 'm' 'a' 1.0 1.23e2 3.14s2 1) }
```

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

```
| var |
```

```
var := Transcript
```

```
show: each class name;
```

```
show: each printString ].
```

cascade

separator

binary msg

```
^ x < y
```

exampleWithNumber: x

```
<syntaxOn: #postcard>
"A ""complete"" Pharo syntax"
| y |
true & false not & (nil isNil)
  ifFalse: [ self perform: #add: with: x ].
y := thisContext stack size + super size.
byteArray := #[2 2r100 8r20 16rFF].
{ -42 . #($a #a #'I' 'm' 'a' 1.0 1.23e2 3.14s2 1) }
do: [ :each |
  | var |
  var := Transcript
  show: each class name;
  show: each printString ].
```

array character

symbol
string

number

^ x < y

A Pure World of Objects

Only objects +
messages + closures!

mouse, booleans, arrays, numbers, strings, windows, scrollbars, canvas, files, trees, compilers, sound, url, socket, fonts, text, collections, stack, shortcut, streams, ...

A Full Uniform Model

- Dynamically typed
- Everything is an object instance of a class
- All methods are public virtual
- All attributes are protected
- Single inheritance with traits

Less is more!

No constructors, no static methods, no operators

No type declaration, no primitive types,

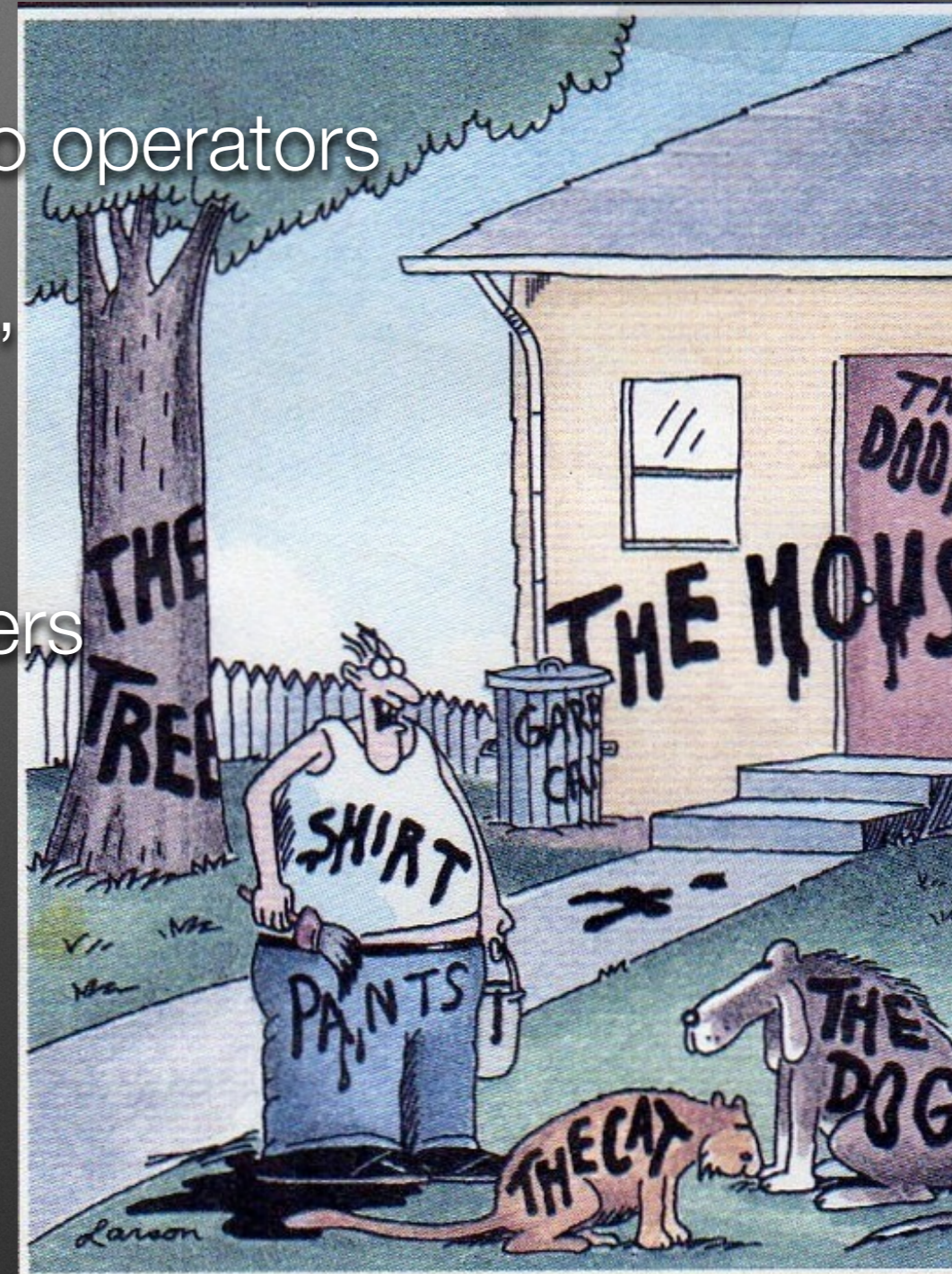
No interfaces, no need for factory

No packages/private/protected modifiers

No parametrized types

No boxing/unboxing

Still powerful



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

A conceptual image showing a real hand holding a red pencil pointing to a red-drawn hand holding a black pencil. The background is split into white and light gray.

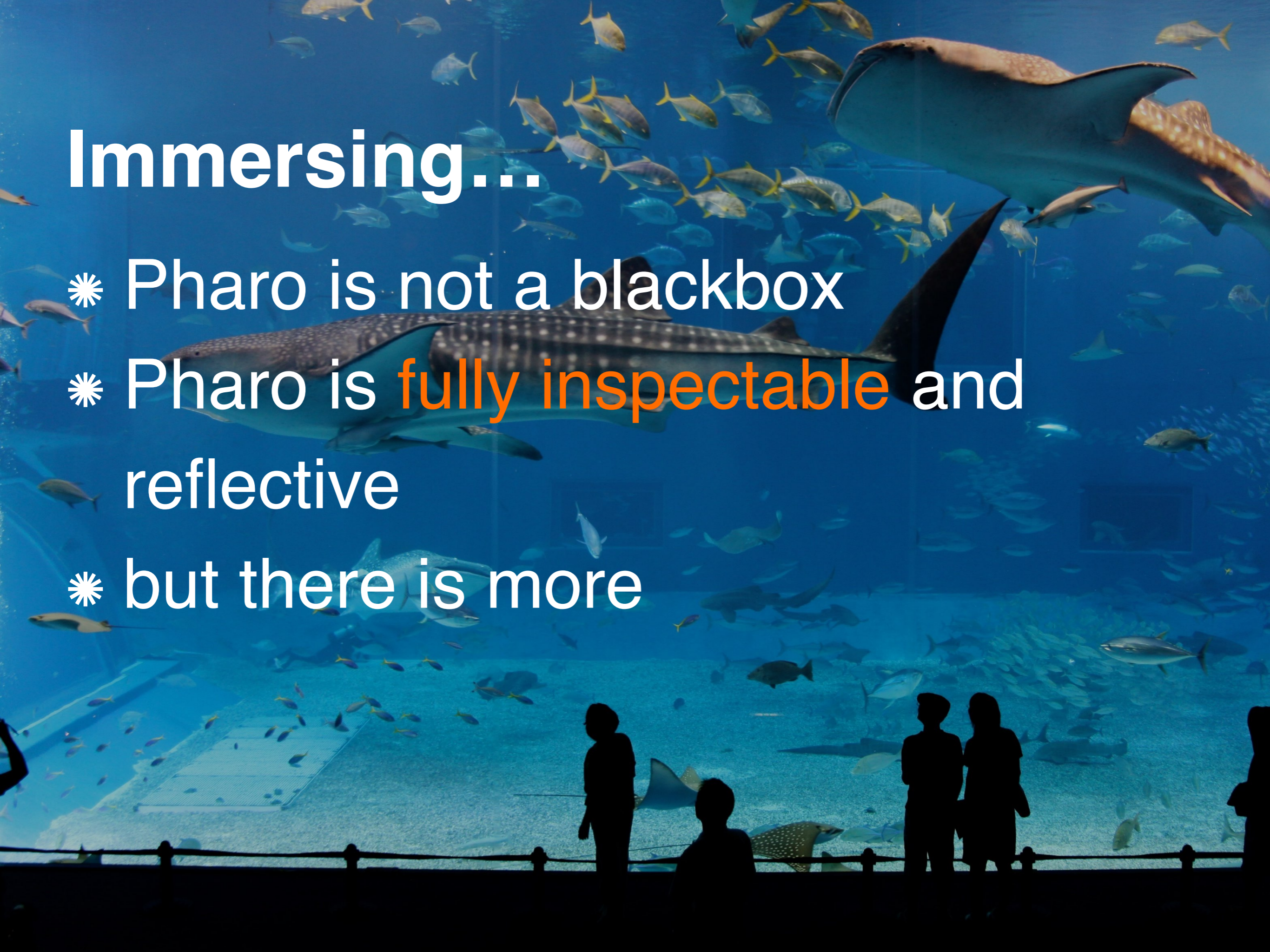
Fully Written in Itself

- Everything is written in Pharo
- One simple syntax/model to access everything

Pharo is highly immersive

Immersing...

- * Pharo is not a blackbox
- * Pharo is **fully inspectable** and reflective
- * but there is more



A diver in a black wetsuit and scuba gear is swimming in a large, clear blue aquarium tank. The tank is filled with numerous rays of various sizes and colors, including brown, grey, and white. The diver is positioned in the center-right of the frame, looking towards the left. The background shows a rocky structure and a sandy bottom. The lighting is bright and clear, highlighting the details of the marine life and the diver's equipment.

You are immersed and interacting

*** You can interact with live objects**

Workspace

```
| elements lay |
```

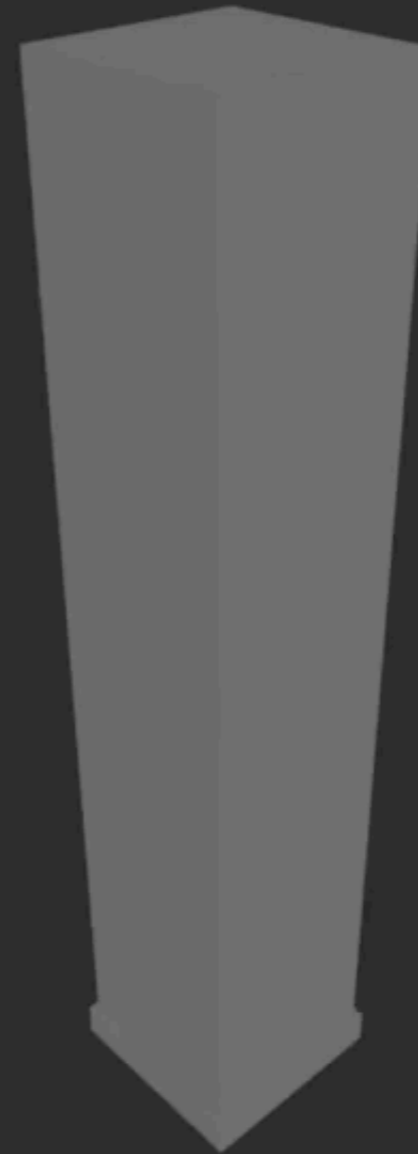
```
elements := (1 to: 5) collect: [ :ob |  
  (R3CubeShape new) elementOn: ob ].
```

```
I
```

```
lay := R3WallLayout new.  
lay on: elements.
```

```
UberPresenter present: elements
```

Uber Presenter



**We can do the same with
web app, sockets, networks,
sensors, living programming....**

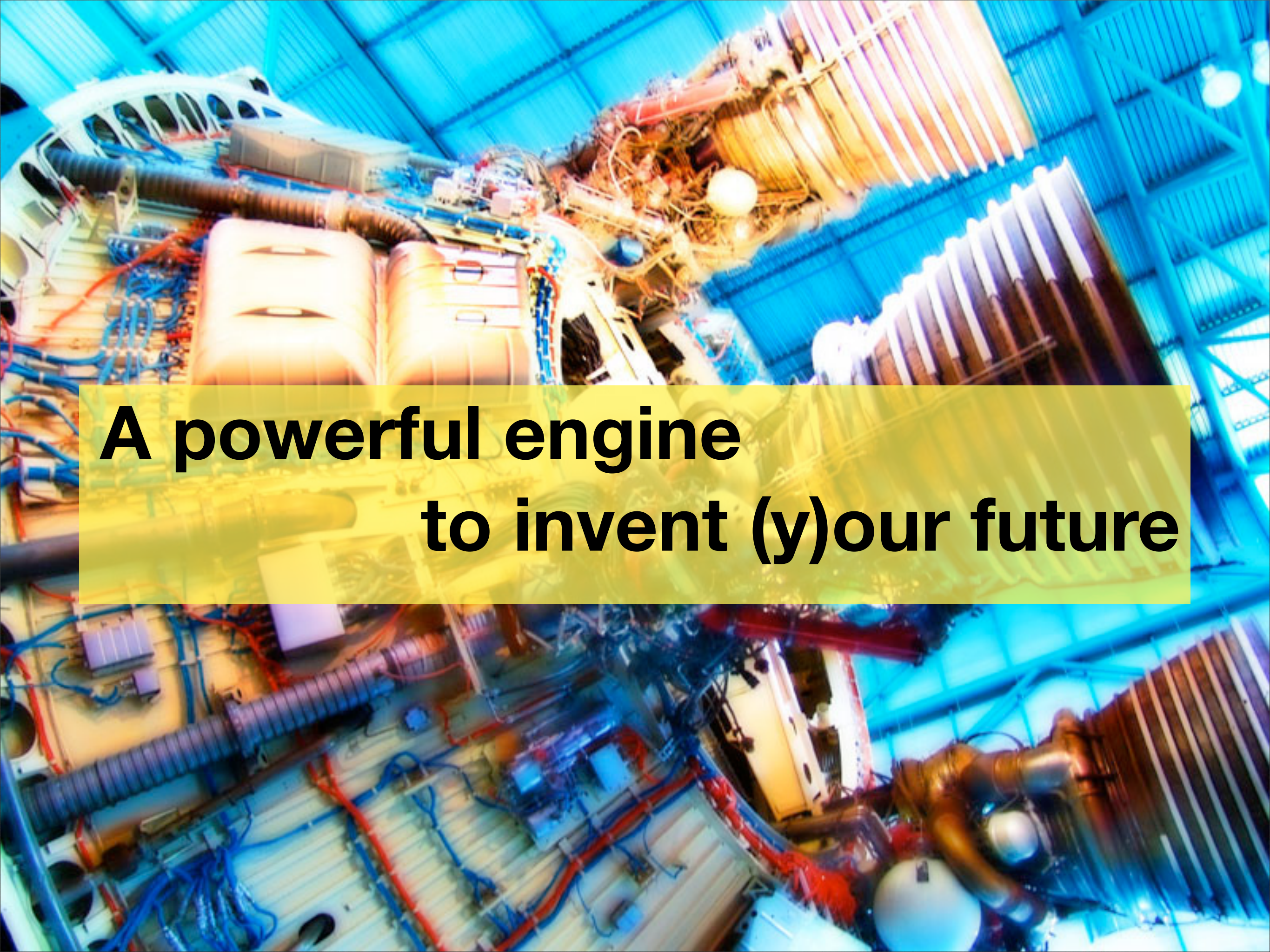


**Hackers
scripting live
the coffee
machine**


Hackers @ work



Our goal...

The image shows a large, intricate industrial facility, likely a particle accelerator or fusion reactor. The scene is filled with complex machinery, including large cylindrical components, a dense network of blue and red cables, and various pipes and structural elements. The lighting is a mix of bright blue and yellow, creating a high-tech, futuristic atmosphere. A central yellow semi-transparent box contains the text "A powerful engine to invent (y)our future".

**A powerful engine
to invent (y)our future**



**An ecosystem where
innovation/business bloom**

... that ****you**** can make money with Pharo.

... to be able to invent solutions to existing problems.

... a powerful **innovative dynamic** language where we can build (y)**our** future.

trentosur

Soluciones móviles para retail y trade marketing

Nos enfocamos en lo que importa del negocio sin perder de vista los detalles de su implementación.

Primer móvil, Plataforma Android, En la nube

PharoCloud

Overview Pricing Blog Login Sign Up

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

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Watch how it works

Romax TECHNOLOGY

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Related links

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Quuve

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

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Dedicated Analyses, Dedicated tools, Decision making

Some Success Stories

Yesplan is veelzijdige software voor het efficiënt plannen van evenementen.

Yesplan is uiterst gebruiksvriendelijk, flexibel en makkelijk te koppelen met andere software.

Need: disaster scenario recovery

Nr	Quadrant	Verkeersnummer	Interaktieschets	Typ	PK
1	Verkeersnummer	Interaktieschets	SK 1	ES08	
2	Verkeersnummer	Verkeersnummer 3. Oud	SK 1	OM7H	
3	Verkeersnummer	Verkeersnummer 3. Oud	SK 1	VY96	
4	Verkeersnummer	Verkeersnummer 3. Oud	SK 1	Z196	
5	Verkeersnummer	Verkeersnummer 3. Oud	SK 9	OT0E	
6	Verkeersnummer	Verkeersnummer 2'	SK 9	VM42	
7	Verkeersnummer	Verkeersnummer 1807	SK 10	1807	
8	Verkeersnummer	Verkeersnummer	SK 10	EY15	
9	Verkeersnummer	Verkeersnummer	SK 10	MU15	
10	Verkeersnummer	Verkeersnummer	SK 10	SW93	
11	Verkeersnummer	Verkeersnummer	SK 10	W014	

Moose is a platform for software and data analysis.

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The Moose Book

Apps

NORRIZIK.COM

The world's first online platform fully supporting risk-based test management.

BETTER, FASTER, CHEAPER

COMPONENTS

CSOB

airflowing

Organize your creative work

Sales, tasks and finances: your team and all that's essential in one place

Plans and Pricing

Manage your simple way

OBJECT PROFILE

Das Content Management mit System

100% Inline-Editor

Das cmsbox ist ein Content Management System der nächsten Generation. Die Benutzeroberfläche ist nahtlos in die Webseite integriert. Alle Texte werden direkt auf die Seite geschrieben!

2denker

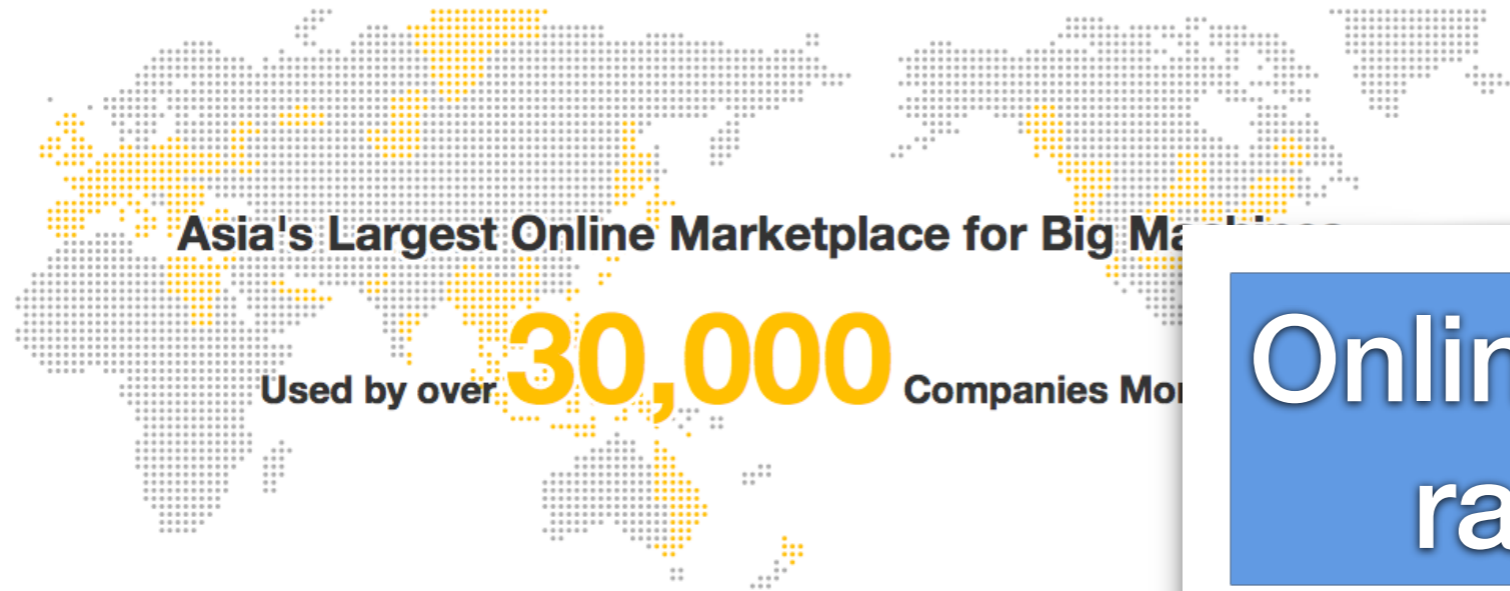
Continuous API Testing

keep your services under control 24/7

t3

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Find Machines

Search by Category

Construction Machinery

 Mini Excavators	 Excavators	 Wheel Loaders	 Dozers
 Cranes	 Rollers	 Graders	 Finishers
 Generators	 Welders	 Compressors	 Small Items
 Other Construction Machineryes			

Material Handling

Forklifts

Farm Machinery

Tractors

Other Farm Machinery

Vehicles

Dumps

Trucks

Other Vehicles

Others

Attachments

Parts

Others

Search by Keyword

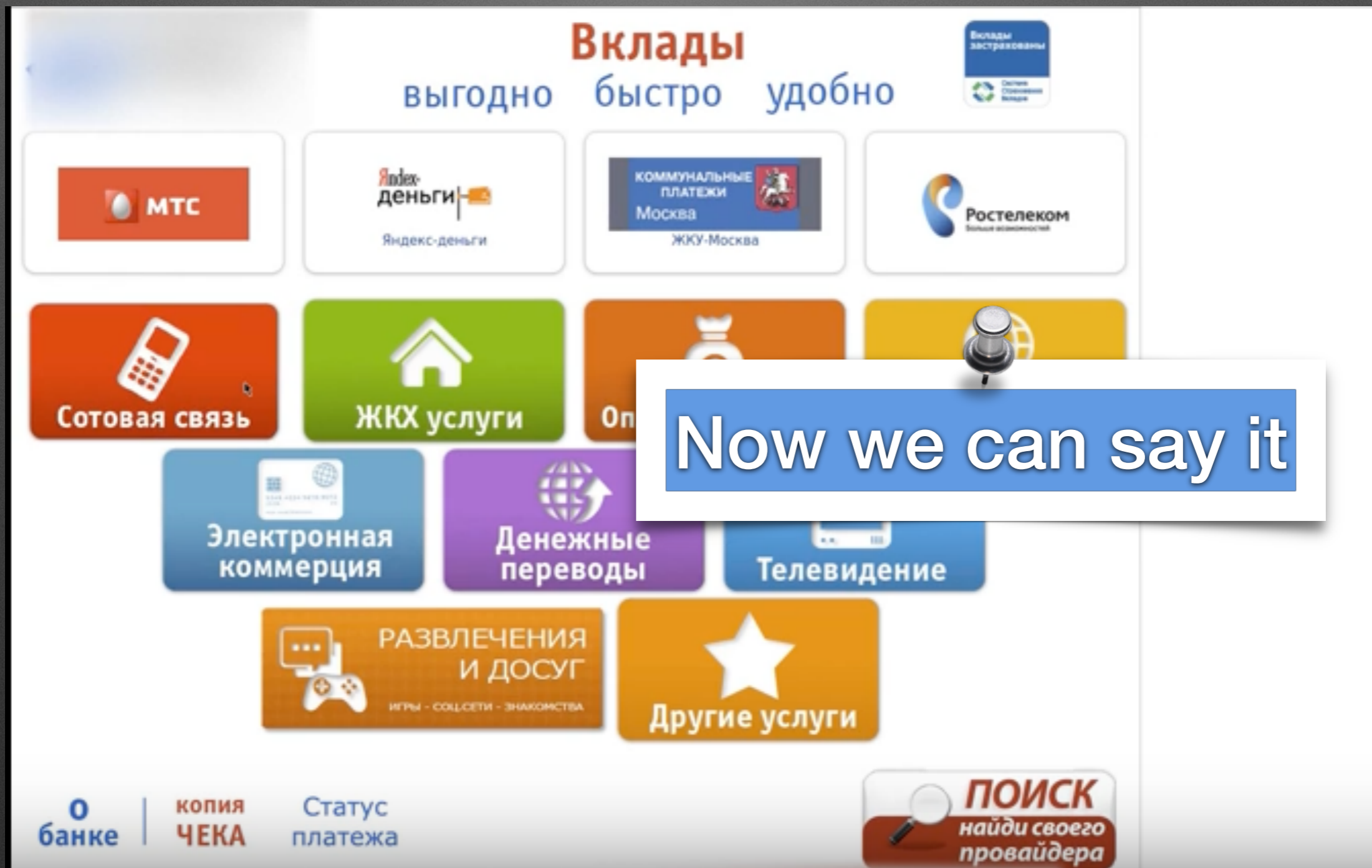
Enter a keyword (e.g. KOMATSU PC200)

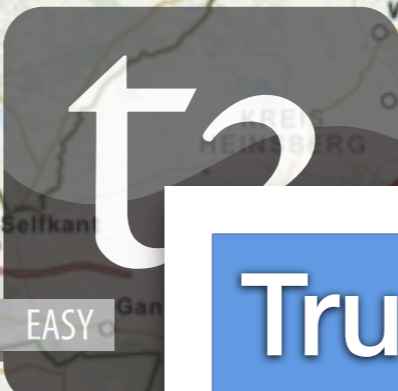
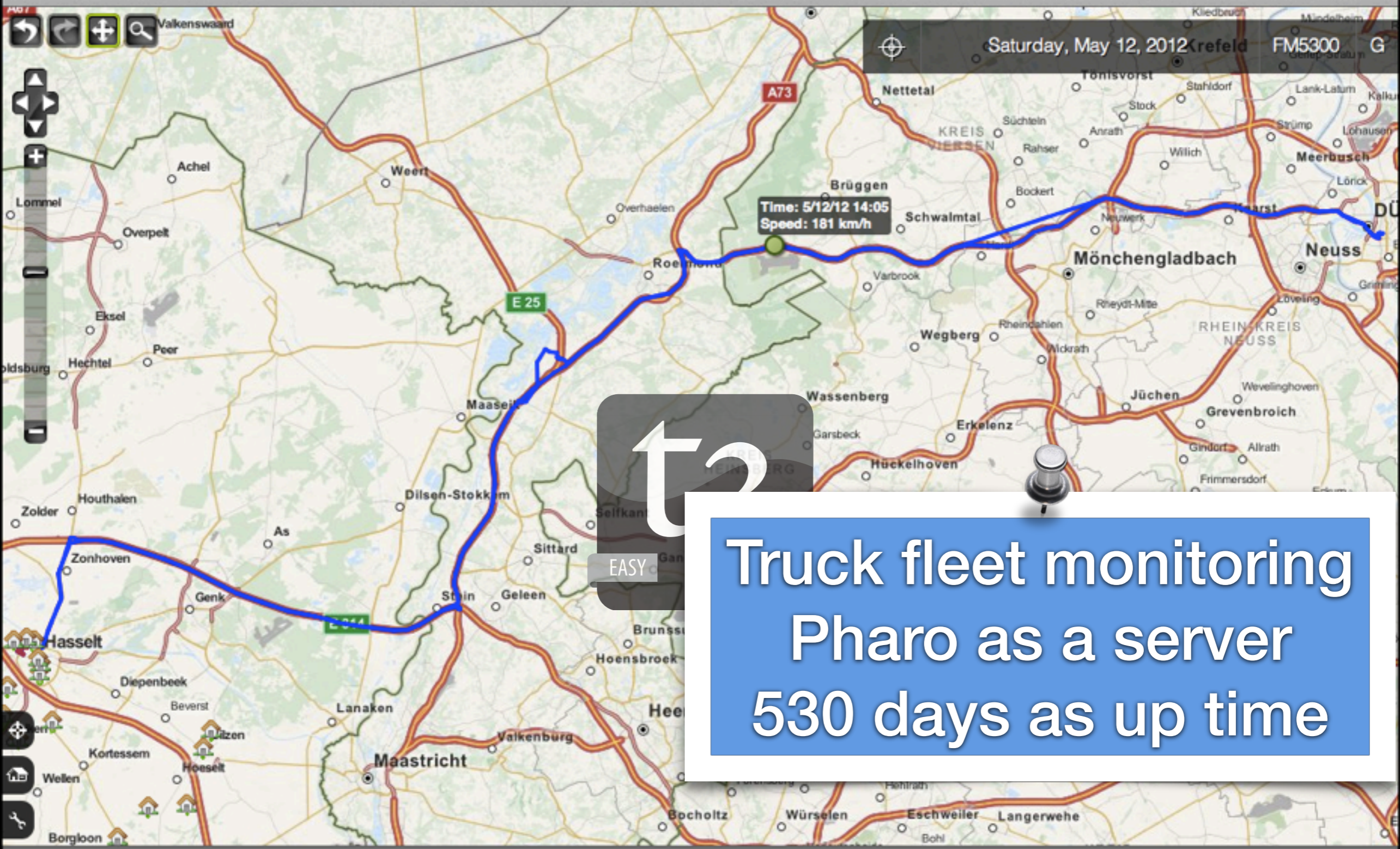
New Machines Updated on: 2016/09/13 17:46:18 (JST)

[See More >](#)

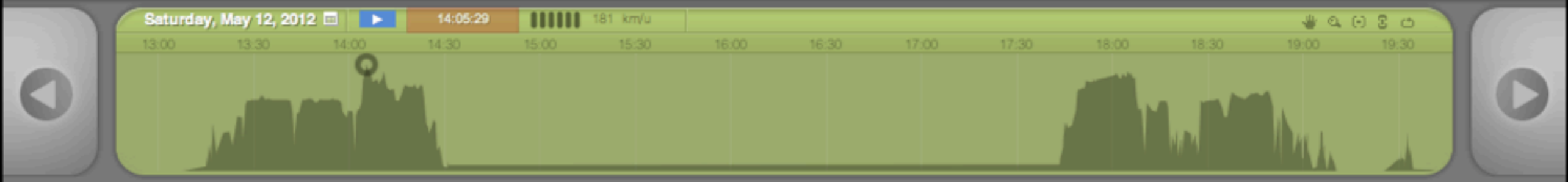
HOKUETSU PDS175S 400,000 JPY	KUBOTA U-55-6 3,500,000 JPY	OTHER MGR2500 133,100 JPY	ISEKI HL407G 198,000 JPY	OTHER MR6500 143,000 JPY	OTHER GH250-GML 165,000 JPY

Pharo in ATM like Device in Moscow





**Truck fleet monitoring
Pharo as a server
530 days as up time**



Network Monitoring for small ISPs

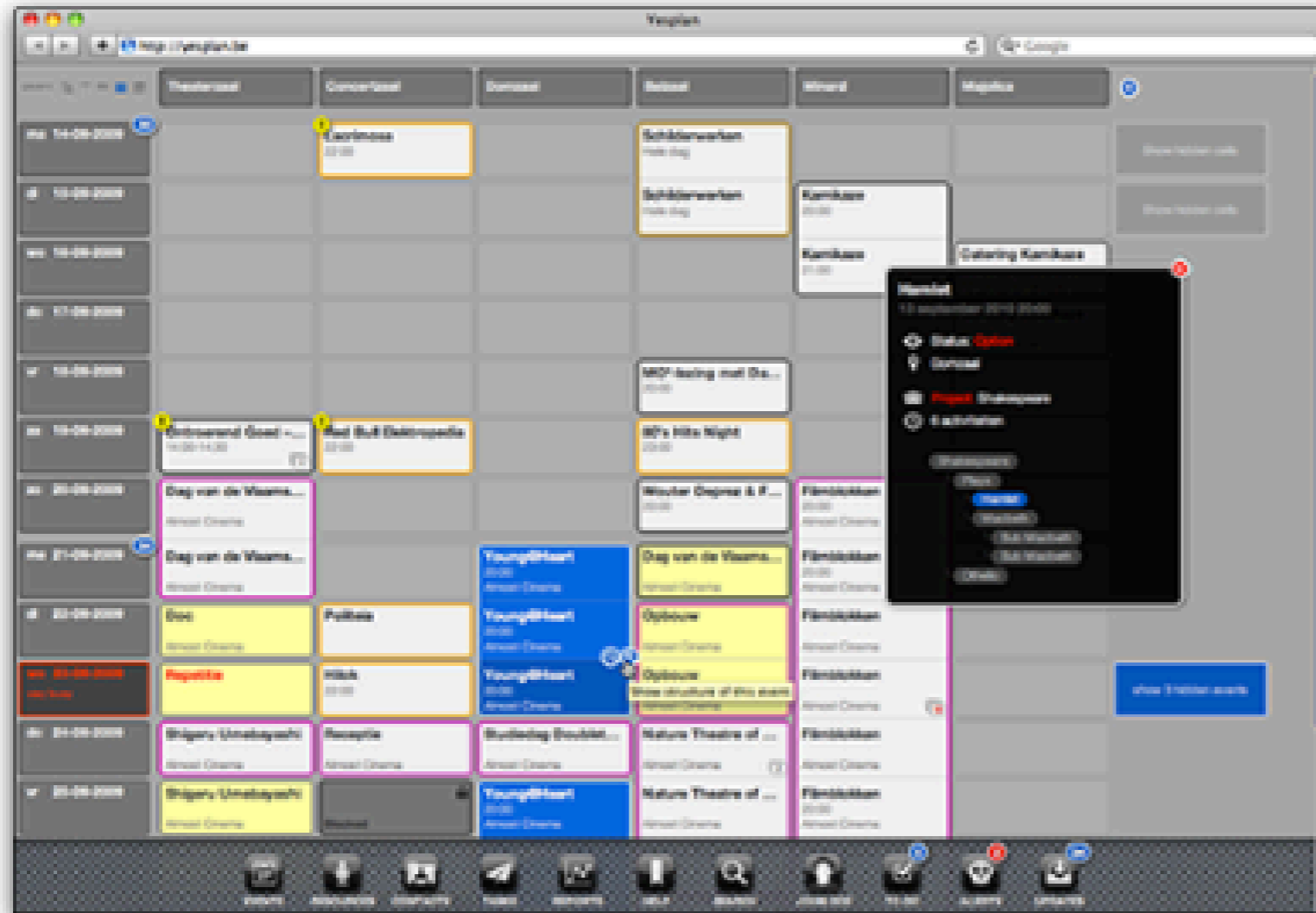
The image displays a comprehensive network monitoring solution for small ISPs, centered around the EXPERTISE mobile application. The background features several overlapping dashboard screens:

- Dashboard 1 (Top Left):** Shows 'Utilisation Downlink' at 95% capacity (900 Mbps) and 'Modems connectés' at 99% (1540/1550). It includes a map and a line graph for 'Trafic CMTS vers uplink'.
- Dashboard 2 (Top Right):** A detailed table of network metrics with columns for 'Alias', 'M', 'Type', 'Condition', 'Etat', 'Métriques', and 'Graphes'. It lists various network elements like 'Cable L1/0-downstream' and 'Cable L1/0-upstream'.
- Dashboard 3 (Bottom Left):** A tree view of the network topology under 'CMTS', showing hierarchical structures for 'Cable HFC 1' and 'Cable HFC 2' across different slots.
- Dashboard 4 (Bottom Right):** A 'Façade de l'équipement' (Equipment Front Panel) diagram showing physical ports and connections for a Cisco device.

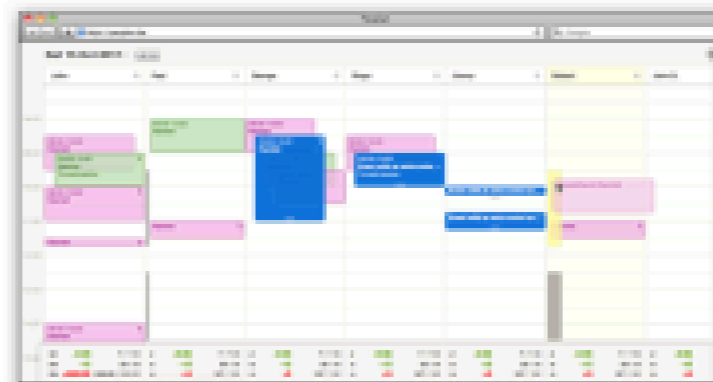
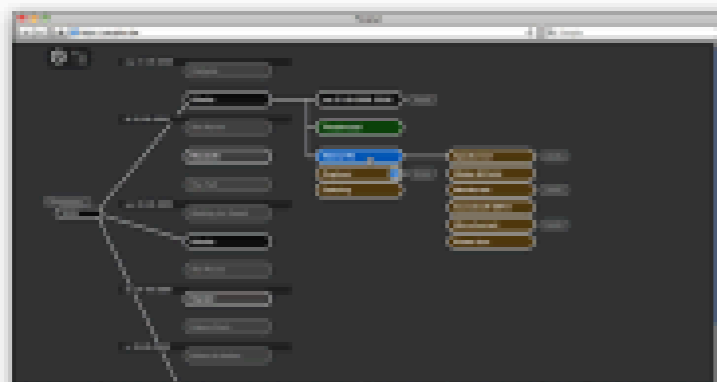
In the foreground, a Samsung smartphone displays the EXPERTISE mobile app interface. The app shows a 'Supervision HFC' overview with a green checkmark and the message 'Tout est en ordre avec Supervision Talange'. Below this, it lists 'Supervision Talange' as the active supervision point. The app also features a 'Condition' and 'Métriques' section, and a 'Supervision Talange' status indicator.

Yesplan is veelzijdige software voor het efficiënt plannen van evenementen.

Yesplan is uiterst gebruiksvriendelijk, flexibel en makkelijk te koppelen met andere software.



Distributed
Resources
Management



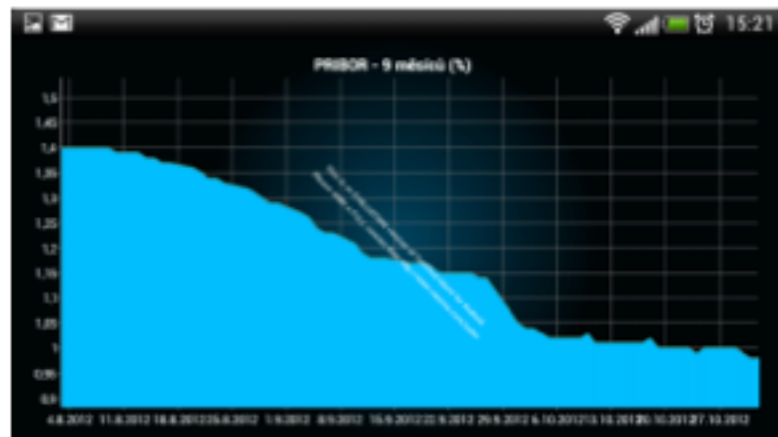


Table of FX rates for various currencies including EUR/USD, EUR/CHF, EUR/CZK, etc.

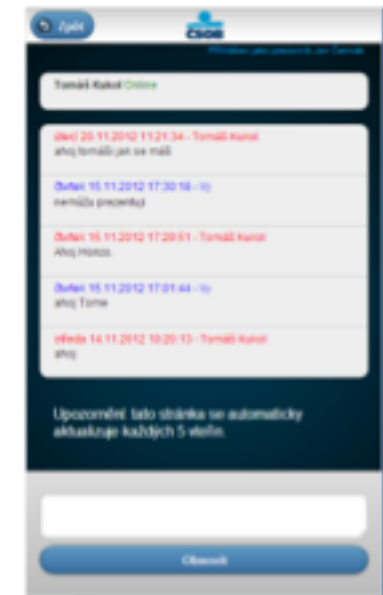
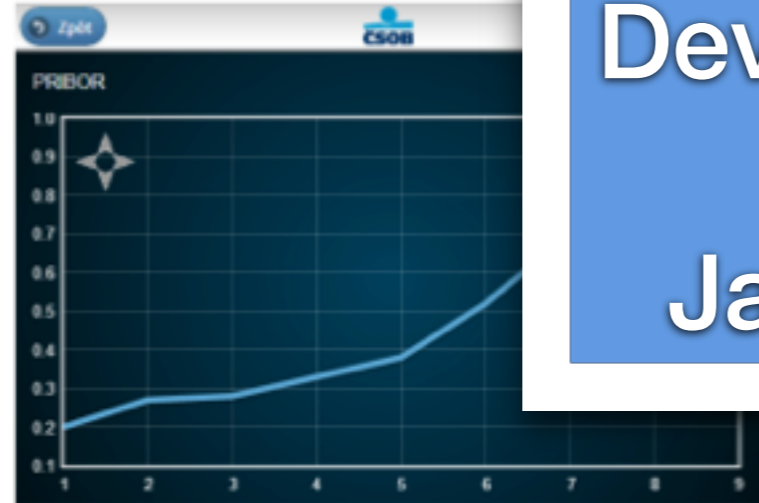


Table of FX pairs with bid and ask prices for EURCZK, USDCZK, EURUSD, etc.



Developed in 3 months one dev
Sold to another bank
Java team estimated 2 years



MobileTerminated ForwardSM

```
plan: SCCPGlobalTitle npISDN;  
addr: destGT;  
translation: 0;  
yourself);
```

yourself.

```
forwardSM := ASN1Dictionary new  
  at: 'sm-RP-DA' put: (ASN1Dictionary new  
    at: 'imsi' put: destIMSI toTBCD;  
    yourself);  
  at: 'sm-RP-OA' put: (ASN1Dictionary new  
    at: 'serviceCentreAddressOA' put: sourceSMSC toE164;  
    yourself);  
  at: 'sm-RP-UI' put: (ByteArray readHexFrom: '240c9194814813654700005110712195534010c8329bfd0699e5ef3'  
    yourself);
```

operationName := 'forwardSM'.

dialogue := ZHLR endPoint newDialogue.

```
invoke := dialogue  
  requestTcInvokeNamed: operationName parameters: for  
  class: 1 timeout: 500.
```

```
invoke  
  onReturn: [ ];  
  onError: [ ];  
  onReject: [ ];  
  onReturnLast: [:result | ].
```

```
dialogue  
  requestTcBeginDestinationAddress: imsiAddr  
  originatingAddress: mscAddr  
  applicationContextName: '0.4.0.0.1.0.25.2' asAsn1Oid .
```

Free Software Mobile Communication solutions

Apply a display filter ... <OK/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	0	2080	GSM S...	236	invoke forwardSM

▶ Frame 1: 236 bytes on wire (1888 bits), 236 bytes captured (1888 bits)
▶ Linux cooked capture
▶ Internet Protocol Version 4, Src: 208.208.208.208, Dst: 208.208.208.208
▶ Stream Control Transmission Protocol, Src Port: 2005 (2005), Dst Port: 2005 (2005)
▶ MTP 3 User Adaptation Layer
▶ Signalling Connection Control Part
▶ Transaction Capabilities Application Part
▶ GSM Mobile Application
▶ GSM SMS TPOU (GSM 03.40) SMS-DELIVER
 0... .. = TP-RP: TP Reply Path parameter is not set in this SMS SUBMIT/DELIVER
 .0.. = TP-UDHI: The TP UD field contains only the short message
 ..1. = TP-SRI: A status report shall be returned to the SNE
 0... = TP-LP: The message has not been forwarded and is not a spawned message
1.. = TP-MMS: No more messages are waiting for the MS in this SC
00 = TP-MTI: SMS-DELIVER (0)
 ▶ TP-Originating-Address - (491884315624)
 ▶ TP-PID: 0
 ▶ TP-DC5: 0
 ▶ TP-Service-Centre-Time-Stamp
 TP-User-Data-Length: [16] depends on Data-Coding-Scheme
 ▼ TP-User-Data
 SMS text: Hello from Pharo

0000 52 69 40 04 01 00 00 09 6b 1e 20 1c 06 07 00 11 bin.... k.(....
0008 86 85 01 01 01 a8 11 60 0f 88 02 07 80 a1 80 06
000e 07 84 80 00 01 00 19 02 6c 41 a1 3f 02 01 01 02 1A.?....
0014 01 2e 30 37 80 08 02 02 43 58 10 91 50 f9 84 08 ..07..b. Ch..P...
001c 91 94 51 97 10 00 00 00 04 21 24 0c 91 94 81 48 ..0..... !S...H
0024 13 65 42 00 00 51 18 71 21 95 53 48 10 c8 32 9b .eB..Q.q |.5@..Z.
002c fd 86 99 e5 ef 36 80 8a 0e cb df 006.....

Programming environment for Programmable Logic Controllers

Software PLC
IDE4PLC
powered by
Pharos



Board



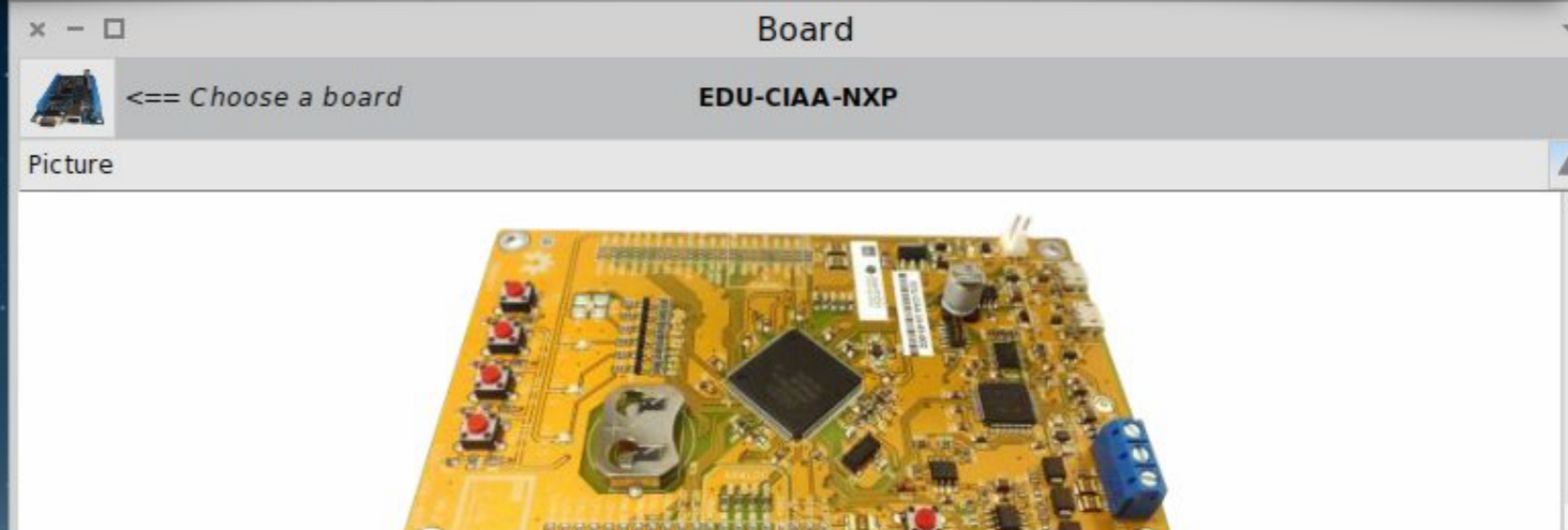
POU



Board

EDU-CIAA-NXP

Choose a board



POU Variable Declarations Editor

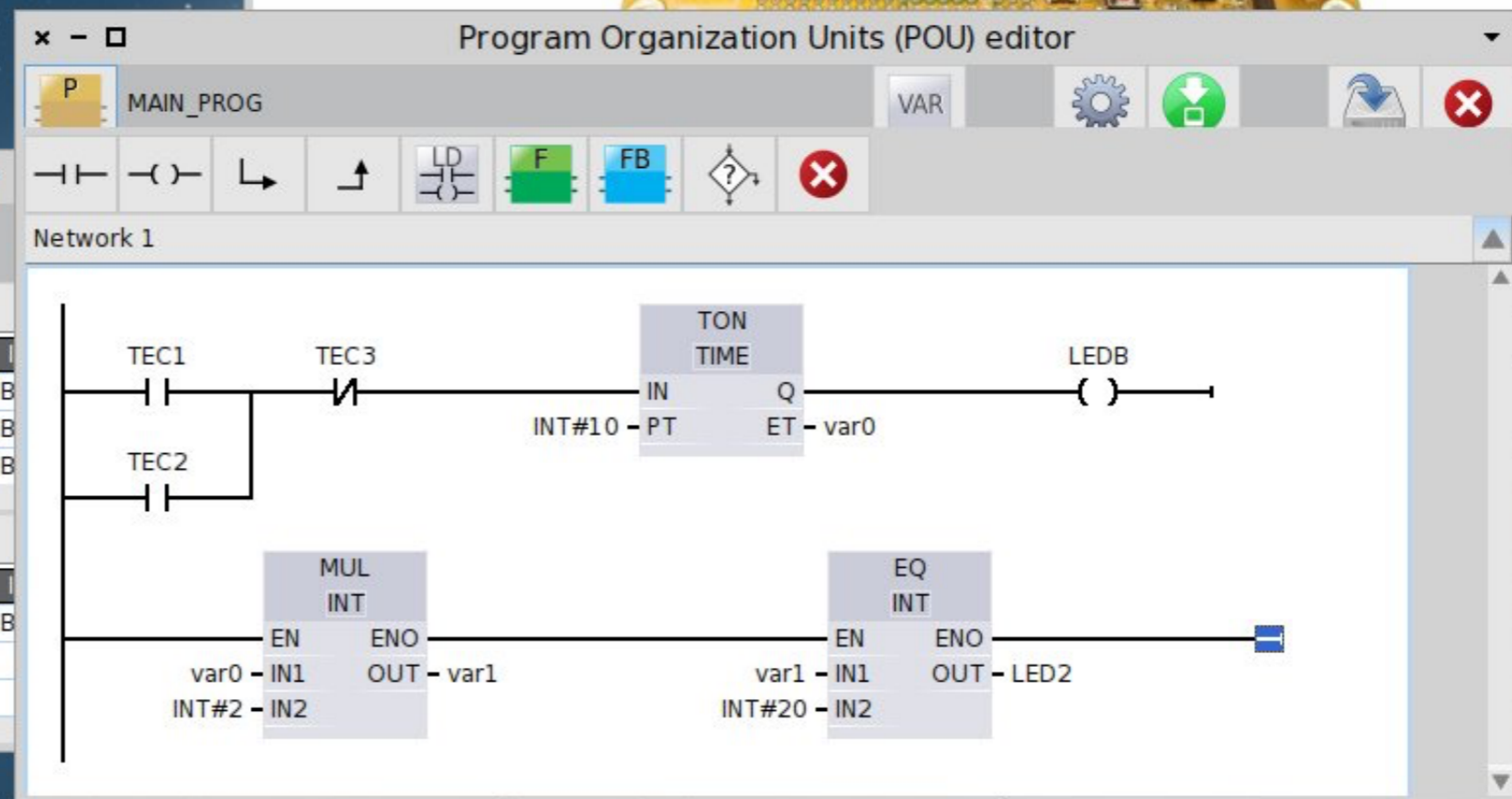
MAIN_PROG

Interface Variables

Category	Name	Datatype	I/O
VAR_INPUT	TEC1	BOOL	B
VAR_INPUT	TEC2	BOOL	B
VAR_INPUT	TEC3	BOOL	B

Internal and External Variables

Category	Name	Datatype	I/O
VAR	var0	BOOL	B
VAR	var1	INT	I
VAR	var2	TIME	T



Apps



Dr. Geo free
Hilaire Fernandes



Erathosthenes

File Points Lines Transformations Numerics Macro-construction

Alexandria

Syene

Sun Ray

Sun Ray

angle from ray to zenith = 41°

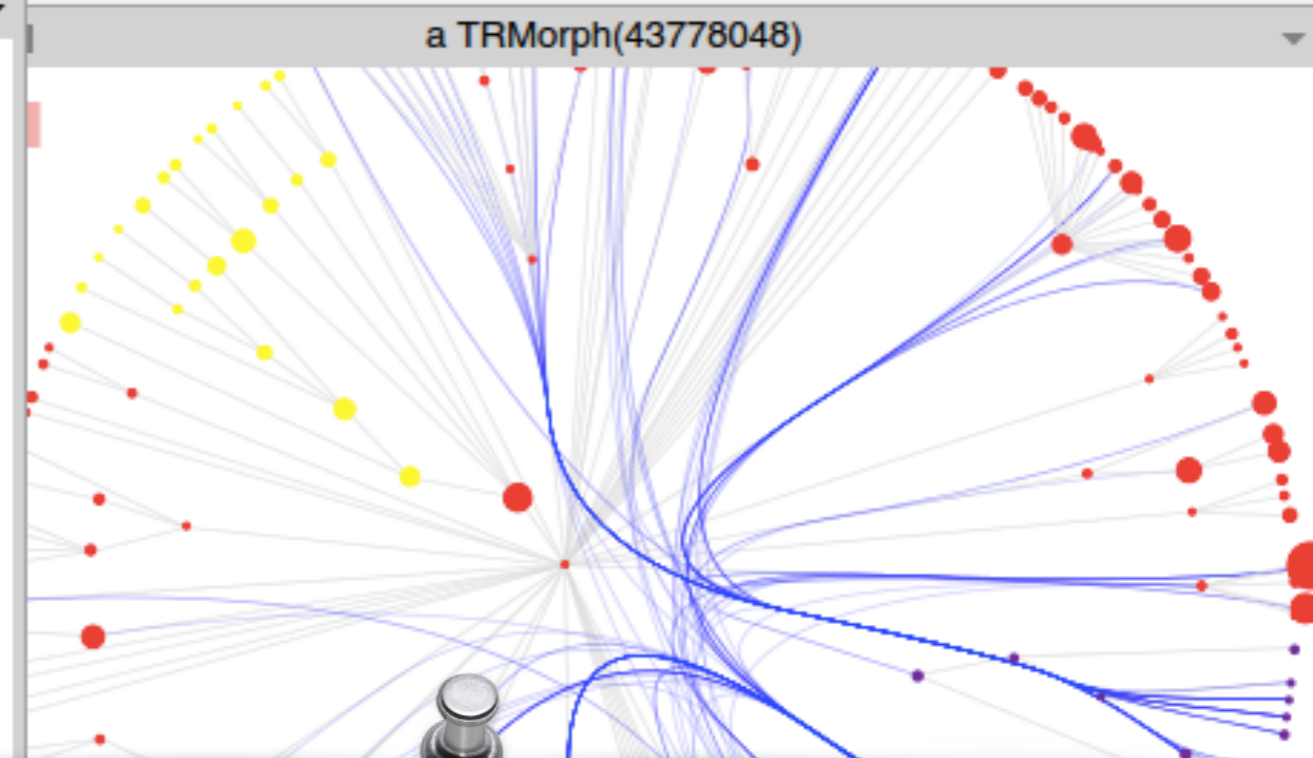
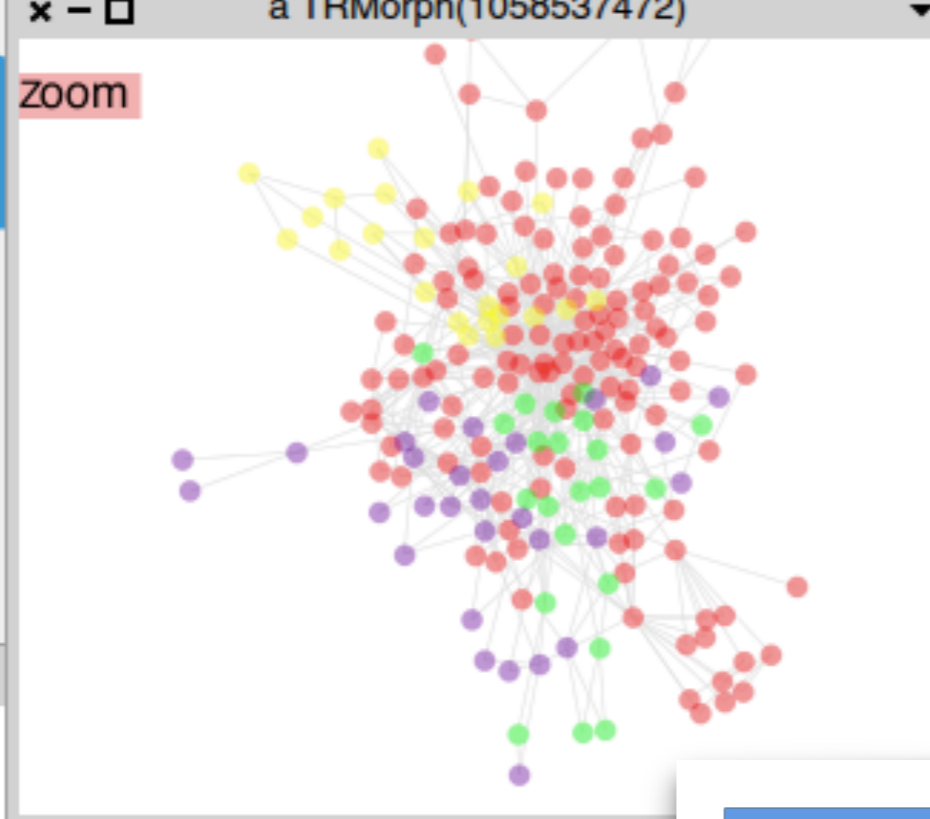
distance between Alexandria and Syene = 28.04

Select and move an object.

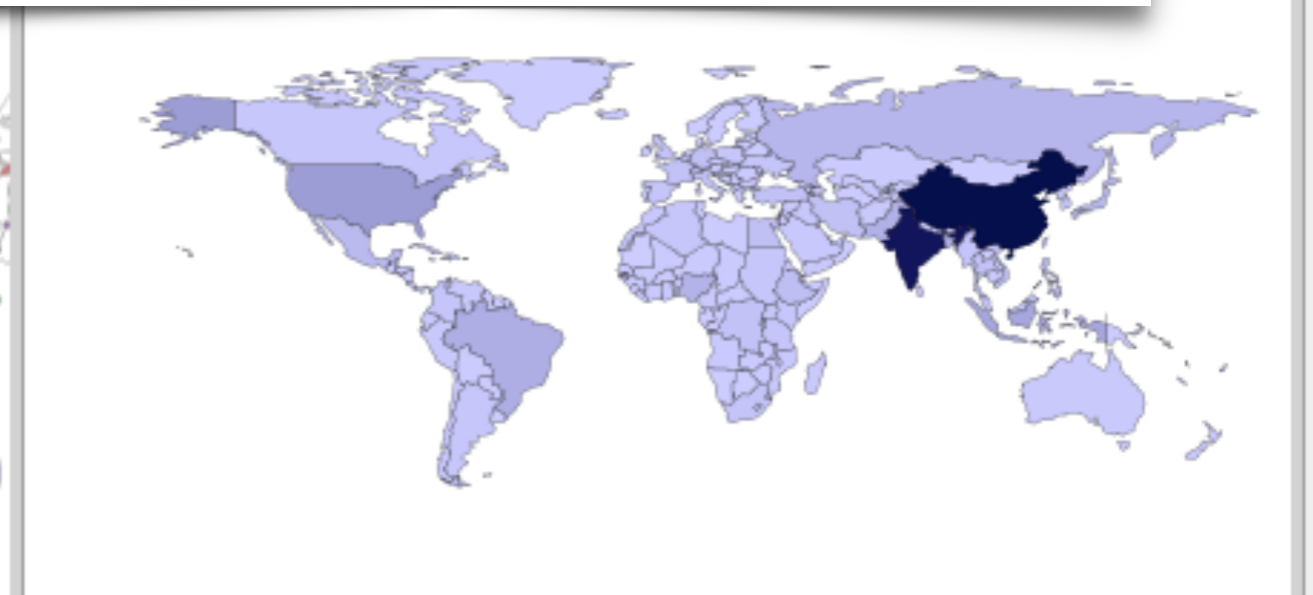
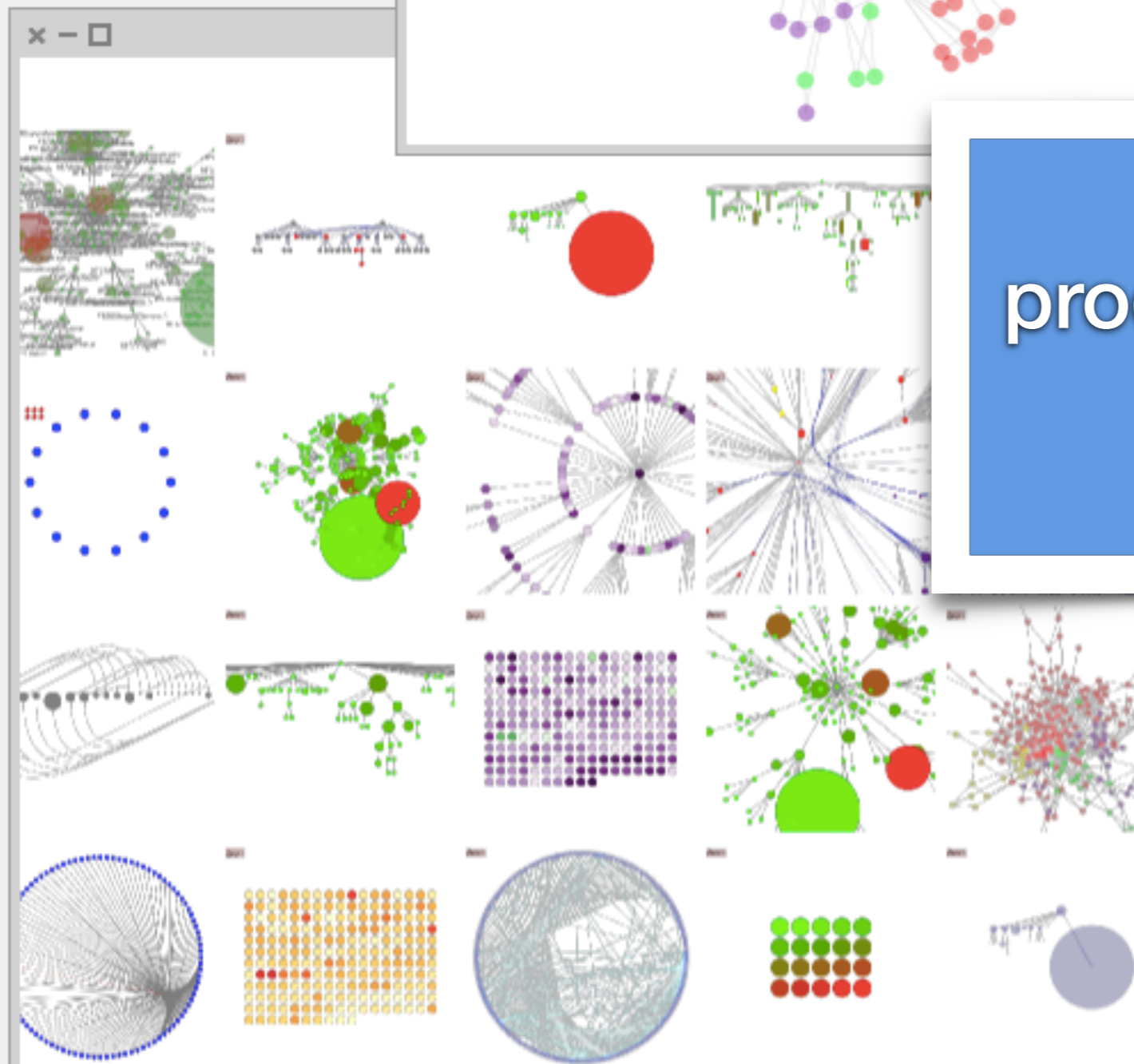
Works on linux, mac, windows,
android, OLPC




Pha



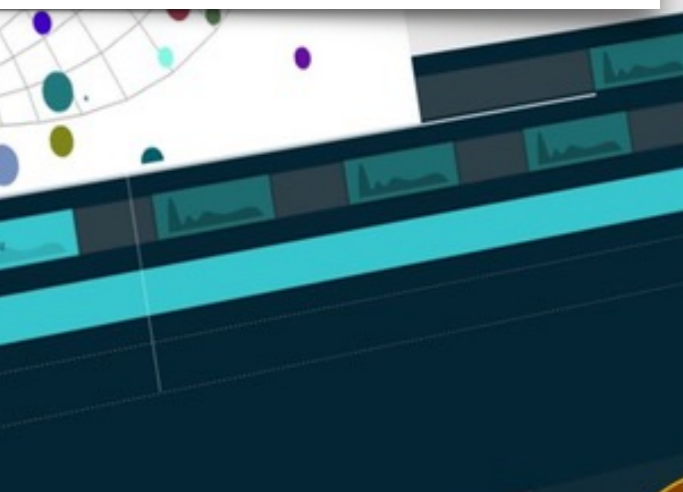
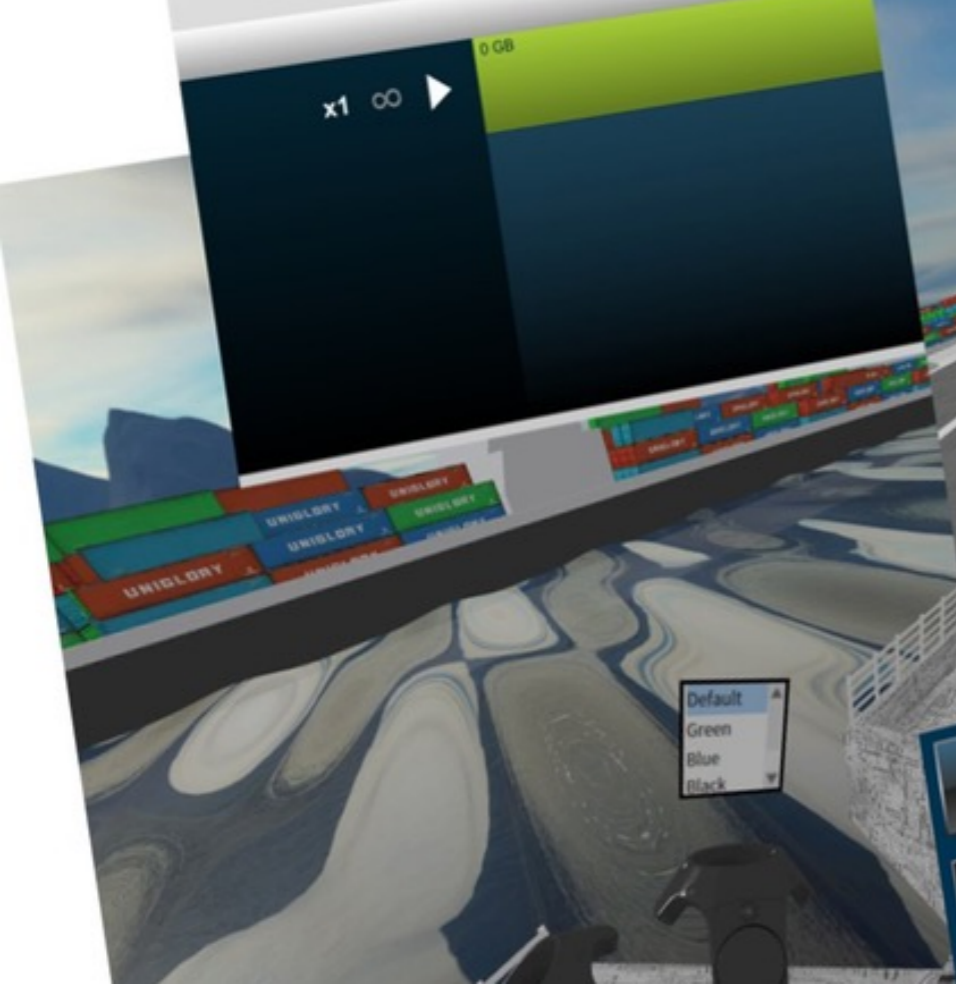
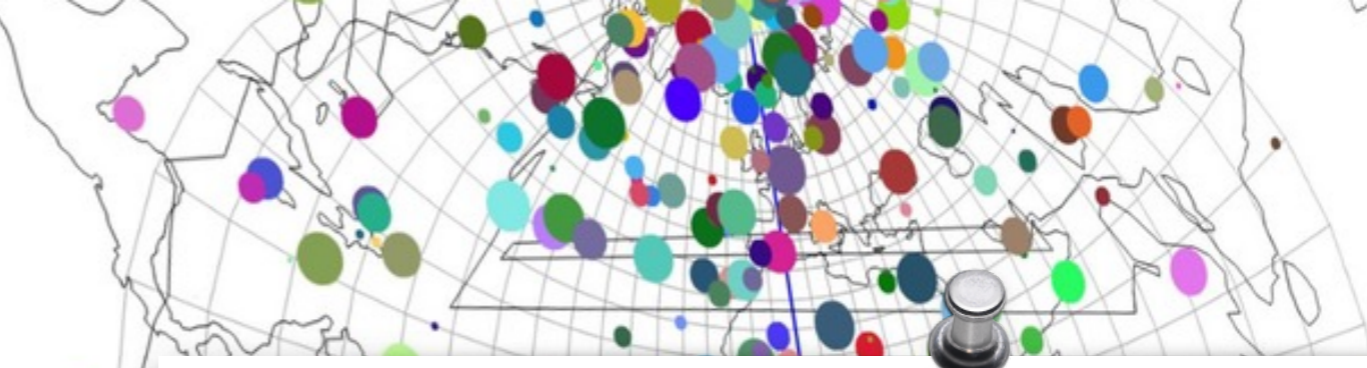
ObjectProfile
produces visualizations &
analysis tools
DSL



Left to run / Right for code



Advanced UIs at Thales (flights, submarines,...) 2D, 3D, Tactile, VR,...





Manage travel costs

Spesenfuchs

Spesenfuchs ist eine Reisekostensoftware für jedermann. Einfach, schnell und kostenlos. Alle Pauschalen und gesetzlichen Regelungen sind hinterlegt. Es ist keine Registrierung notwendig!

[Reisekosten clever abrechnen >](#)

Ohne Login benutzen

Login mit Facebook

Registrieren

E-Mail

Passwort

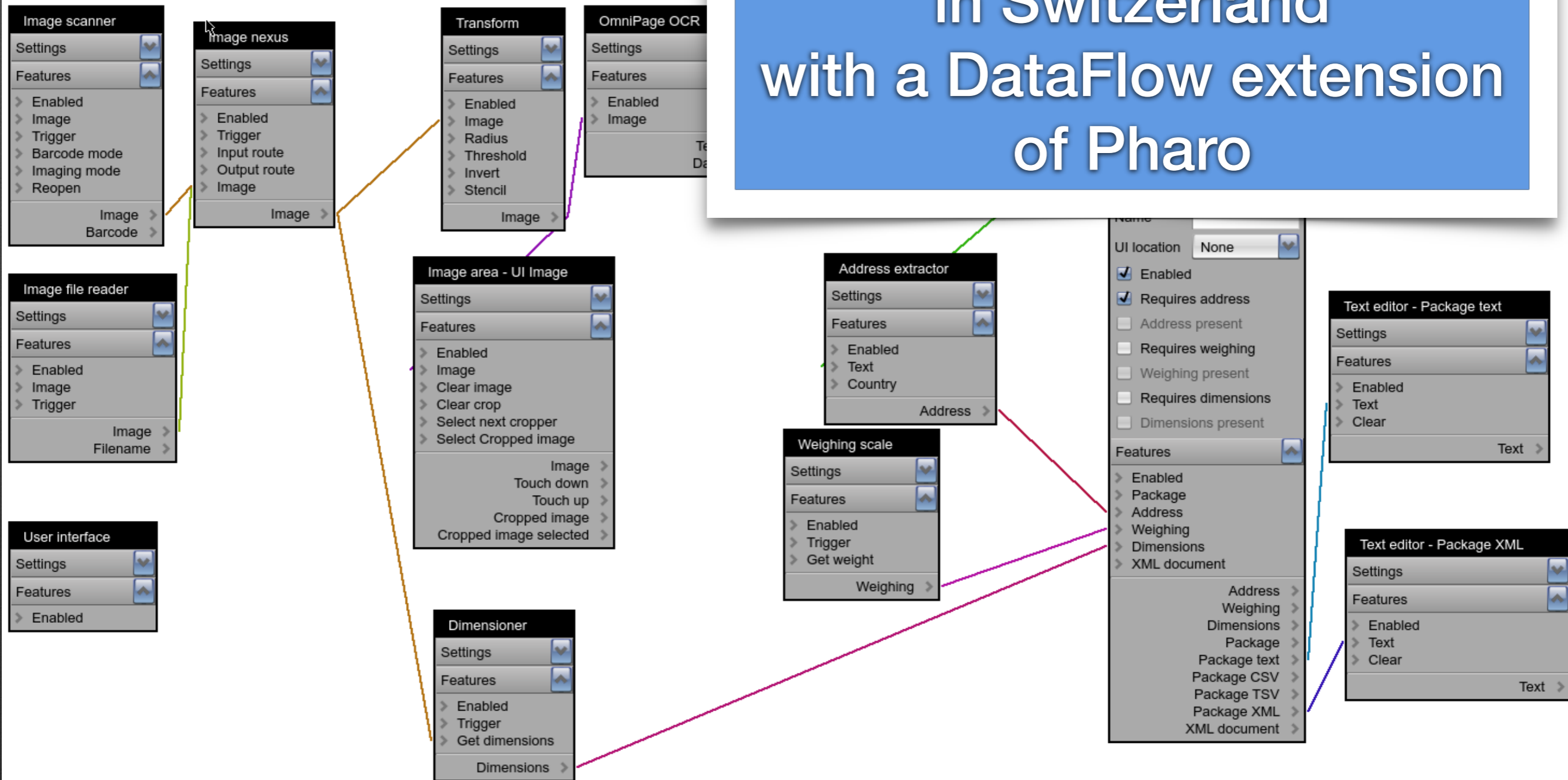
Login

postid

scan share send



To handle return mails
in Switzerland
with a DataFlow extension
of Pharo



A cool community



More Pharo's Teachers

- Uni. of Buenos Aires • Uni. of Bern • Uni. of Maroua • Uni. of Brussels • Ecole des Mines de Douai • Uni. de Savoie • 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. of Yaounde • Uni. Maroua • Uni. of Lomé • INFI • Uni. of Lyon • Uni. of Cagliari • Uni. of Cordoba • Uni. Ryerson • Uni. Comchabamba • Uni. Monterrey • USTH • ENIT

International Research Groups

Lafhis (AR)

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Soft-Qual (Serbia)

Uni. Quilmes (AR)

ENIT (FR)

Cochabamba (Bo)

Maroua (CAM)

ETS (CAN)

Since May 2008

Version	Release date	Major features
	March 16, 2008 ^[2]	Fork of Squeak environment
Pharo 1.0	April 15, 2010	real closures, EToys and MVC removed
Pharo 1.1	July 26, 2010	Cog JIT VM, Settings framework
Pharo 1.2	March 29, 2011	new Finder, Recent changes tool, improved Help, better themes
Pharo 1.3	August 2011	Zinc, headless images
Pharo 1.4	April 2012 ^[3]	Ring metamodel, better code simulator
Pharo 2.0	March 18, 2013. ^[4]	browser improvements, QA tools, Fuel serializer, better files API
Pharo 3.0	April 2014. ^[5]	new modular compiler (Opal) and debugger, continuations
Pharo 4.0	April 2015. ^[6]	GTools, slots
Pharo 5.0	May 2016. ^[7]	Spur VM, UFFI, improved reflectivity
Pharo 6.0	6 June, 2017. ^[8]	64-bit and Git support
Pharo 6.1	24 July, 2017. ^[9]	improved Git support
Pharo 7.0	22 January, 2019. ^[10]	bootstrapping, new code browser (Calypso), stateful traits
Pharo 8.0	20 January, 2020. ^[11]	improved support of Git, testing, refactoring and Windows

Pharo in Numbers

Since 2008

Language Core + IDE +

Tools + Frameworks

710 packages (tests included)

~ **25000 tests**

5 platforms

9 400 classes

130 000 methods

61 Mb (64 bits)

<http://github.com/pharo-project/Pharo>
(~220 forks, 15/123 contributors)

Growing ecosystem

polymath

pharo-graphics

pharo-gis

pharo-container

pharo-ai



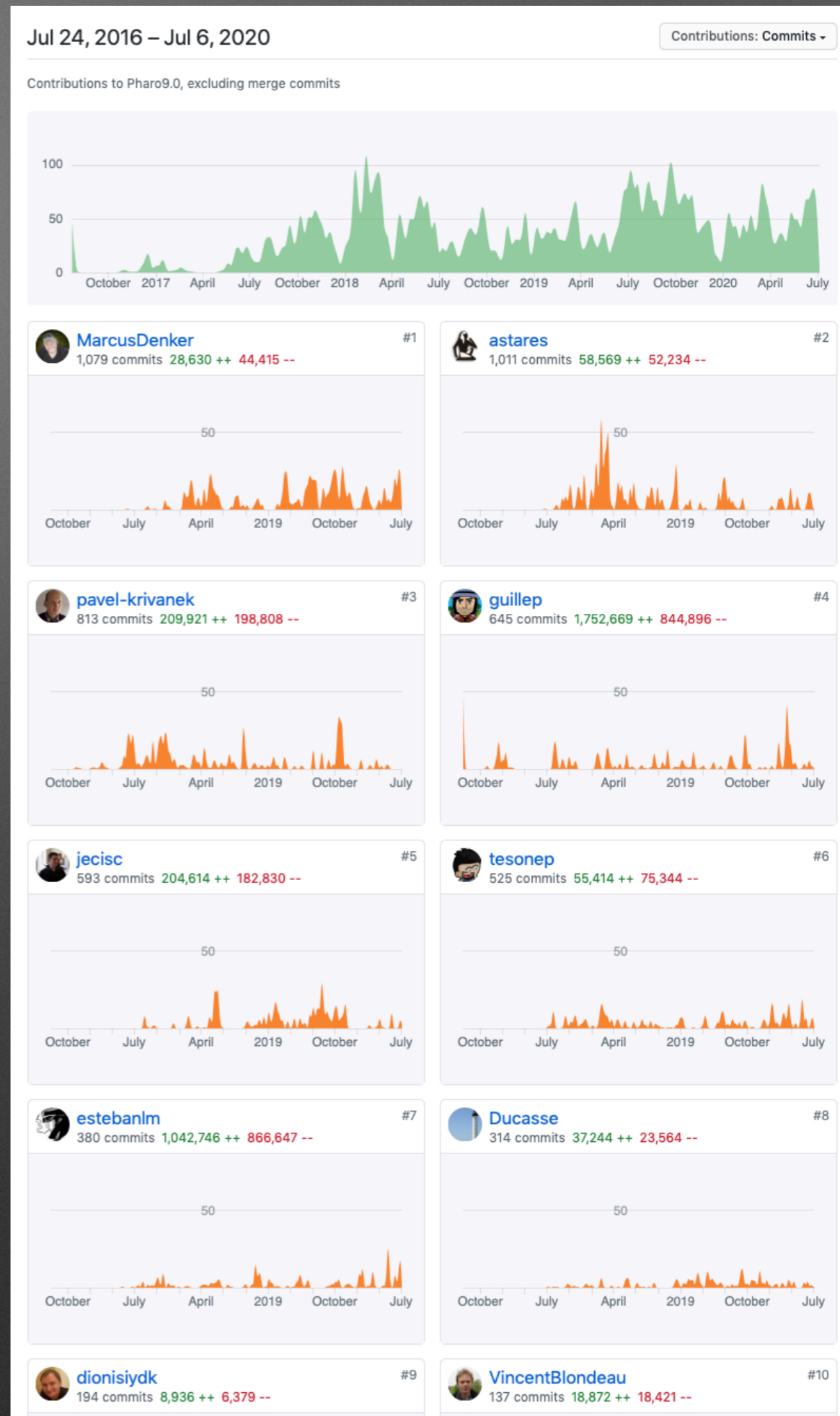
**Pharo is our vehicle
We improve it everyday**

Of course not
everything
is perfect :)
But it feels like



Not a single head project

- No truck factor
- With multiple subprojects
 - Tools
 - UI, graphics
 - VCS



Pharo

is yours

Amazing moldable tools

Example-based finder

The screenshot shows a window titled "Finder" with a search bar containing "\$0.isDigit". The search results are listed in a scrollable area, showing various methods and their return values. A blue highlight is under the "Character" category. Below the list is a navigation bar with tabs: "Browse", "Senders", "Implementors", "Versions", "Inheritance", and "Hierarchy". The "Implementors" tab is selected, showing the implementation of the `isDigit` method.

```
$0.isAlphaNumeric --> true
$0.isCharacter --> true
$0.isCompletionCharacter --> true
$0.isDecimalDigit --> true
$0.isDigit --> true
Character
$0.isLiteral --> true
$0.isOctetCharacter --> true
$0.isSafeForHTTP --> true
$0.shouldBePrintedAsLiteral --> true
$0.tokenish --> true
```

isDigit

```
"Return whether the receiver is a digit."
"$1 isDigit >>> true"
"$0 isDigit >>> true"

^ self characterSet isDigit: self
```

**Customized object
interaction/presentation**

Playground

Page



a RWView



an Array [4 items] ('2000-01-01' 'Malawi' 'France'...

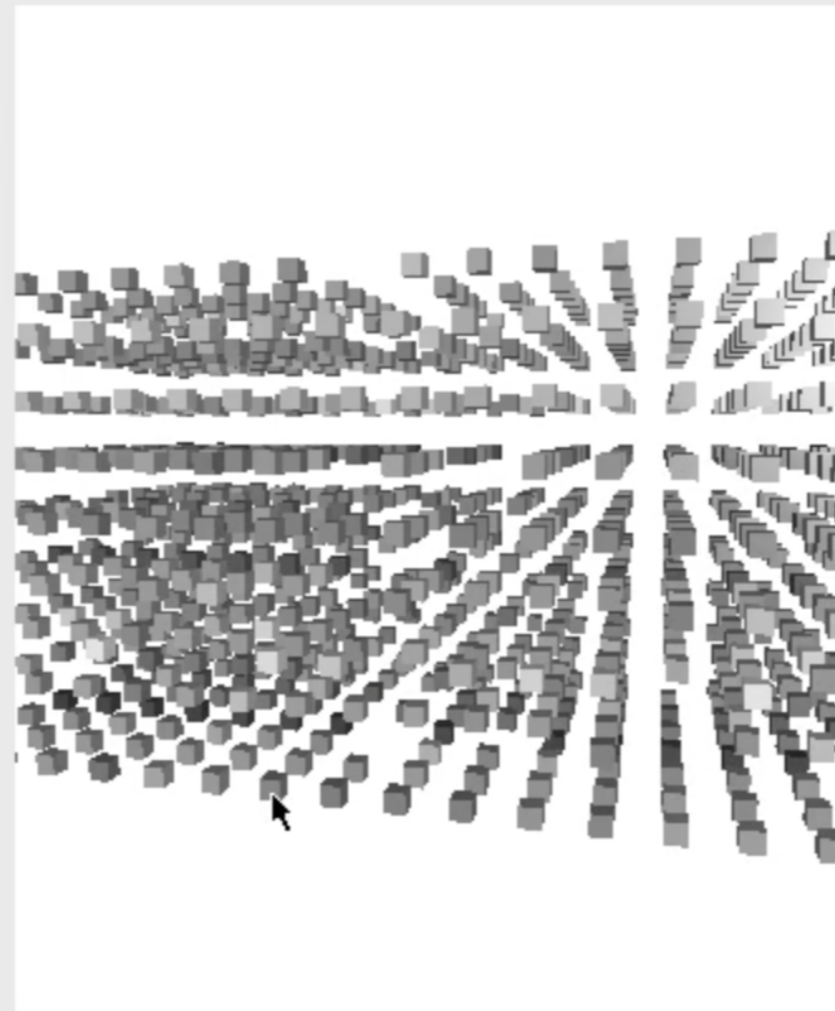


```
data := TestData new data.
```

```
cube := MatrixCube new initWithData: data.
```

```
cube view
```

Raw Live Meta



Items Raw Meta

Index	Item
1	'2000-01-01'
2	'Malawi'
3	'France'
4	'400.0'

enter search query (example: "each = 5")

Inspector on a FileReference (/Users/ducasse/Library/Application Support/Pharo/images/SpurForShooting6)

a FileReference (/Users/ducasse/Library/Application Support/Pharo/images/SpurForSh...

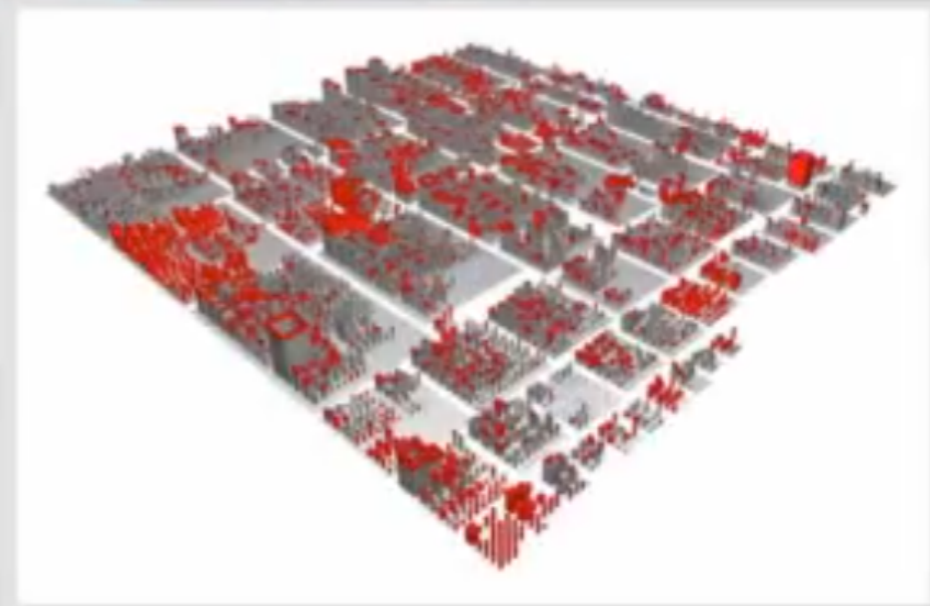
a FileReference (/Users/ducasse/Library/Application Support/Phar...

Items Raw Meta



Picture Contents Raw Meta

Name	Size	Creation
..	408 B	2016-03-04 20:23:03
current	238 B	2016-02-25 10:34:24
DS_Store	6.15 kB	2016-02-25 10:34:44
pharo-city.png	136.55 kB	2015-06-25 17:31:20
pharo.log	155.14 kB	2015-06-30 14:51:30
photos.zip	157.78 kB	2015-06-30 16:59:24
script.st	291 B	2015-09-17 15:21:14
scripts.zip	1.53 kB	2015-07-15 01:48:50



Inspector on a DiceHandle class (DiceHandle)

a MethodDictionary [5 items...]

It... Ke... Raw Meta

Key	Value
#add:	DiceHandle>
#initialize	DiceHandle>
#dices	DiceHandle>
#+	DiceHandle>
#roll	DiceHandle>

Quick selection field. Given your

a CompiledMethod (DiceHan...]

... E... S... Ir A... Hε... Me...

- ▼ RBMethodNode(+ anHandle | | RBArgumentNode(anHandle)
- ▼ RBSequenceNode(| hn | hn := RBTemporaryNode(hn)
- ▼ RBAssignmentNode(hn := D
 - ▶ RBMessageNode(DiceHar RBTemporaryNode(hn)
 - ▶ RBMessageNode(self dices
 - ▶ RBMessageNode(anHandle
 - ▶ RBReturnNode(^ hn)

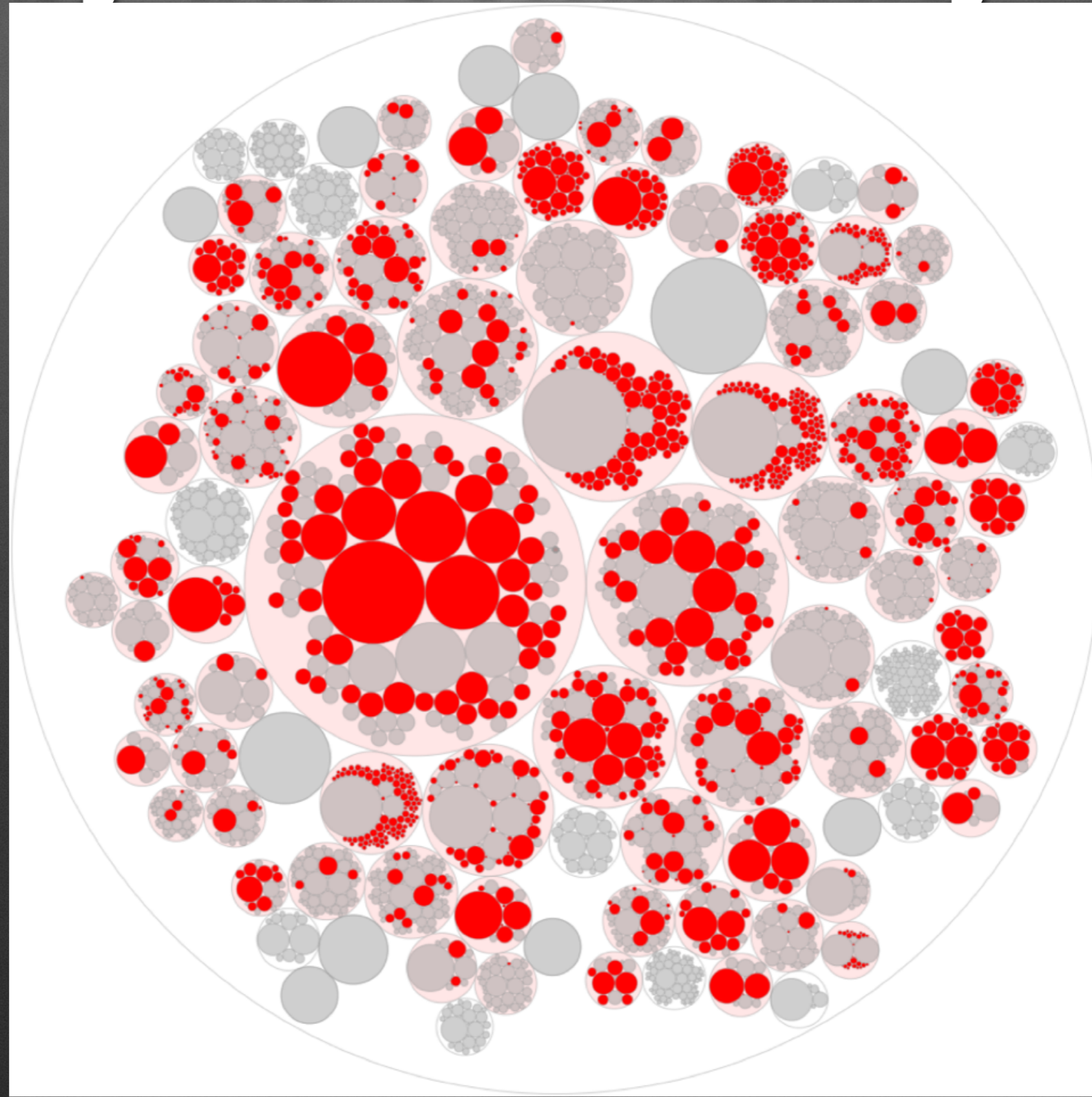
a RBAssignmentNode (RBAs...]

F... S... Tr... Scc... Meta

```
+ anHandle

| hn |
hn := DiceHandle new.
self dices do: [ :aDice | hn
add: aDice ].
anHandle dices do: [ :aDice |
hn add: aDice ].
^ hn
```

of specific views developed by the community



Hot update on the spot
customizable debugger

Halt

Bytecode

Stack

Proceed Restart Into Over Through

PDFCellElement	getSubElementsWith:styleSheet:
PDFCellElement(PDFComposite)	generateCodeSegmentsCollectionWi
PDFCellElement(PDFComposite)	generateCodeSegmentWith:styleShe
PDFDataTableElement(PDFComposite)	generateCodeSegmentsCollectionWi [:aSubElement aSubElement generateCodeSe
Array(SequenceableCollection)	collect:

Source

Where is? Browse

```
generateCodeSegmentsCollectionWith: aPDFGenerator styleSheet: compositeStyleSheet format: aFormat
^ (self getSubElementsWith: aPDFGenerator styleSheet: compositeStyleSheet)
  collect: [ :aSubElement |
    aSubElement
      generateCodeSegmentWith: aPDFGenerator
      styleSheet: (aSubElement buildCompositeStyleSheetFrom: compositeStyleSheet)
      format: aFormat ]
```

Variables

Type	Variable	Value
implicit	self	a PDFCellElement
parameter	aFormat	a PDFA4Format
parameter	aPDFGenerator	a PDFGenerator
parameter	compositeStyleSheet	a StyleSheet

dimension: 80 mm @ 20 mm;

Halt in OCDBox>>name:

Class	Method	Context
OCDBox	name:	UndefinedObject>>Dolt
UndefinedObject	Dolt	CompiledMethod>>valueWithReceiver
CompiledMethod	valueWithReceiver:arguments:	[aCompiledMethod
SmalltalkEditor	debug:receiver:in:	[self value.

Bytecode Breakpoints Sindarin

Type	Target	Method
<input type="checkbox"/> Breakpoint	self	ReflectiveExamples>>example
<input checked="" type="checkbox"/> Breakpoint	self	OCDBox>>initialize
<input checked="" type="checkbox"/> Breakpoint	self	OCDBox>>name:
<input checked="" type="checkbox"/> Breakpoint	self	OCDBox>>removeElement:
<input checked="" type="checkbox"/> Halt	OCDBox	OCDBox>>name:
<input type="checkbox"/> Breakpoint	OCDBox	OCDBox>>name:
<input type="checkbox"/> Breakpoint	self	OCDBox>>removeElement:
<input type="checkbox"/> Breakpoint	self	OrderedCollection>>removeElement
<input type="checkbox"/> Halt	StHaltCacheTest	StHaltCacheTest>>testInitial
<input checked="" type="checkbox"/> Halt	StHaltCacheTest	StHaltCacheTest>>testInitial

```

1 name: anObject
2   self halt.
3   name := anObject
  
```

Specific view

Bytecode Breakpoints Sindarin

```

33 <4C> self
34 <80> send: halt
35 <D8> pop
36 <40> pushTemp: 0
37 <C9> popIntoRcvr: 1
38 <58> returnSelf
  
```

Variable	Value
stackTop	an OCDBox
0 [anObject]	'i'
rcvr: 0 [elements]	an OrderedCollection [0 items]
rcvr: 1 [name]	''

Receiver in: a StDebuggerContext (OCDBox>>name:)

an OCDBox

Variable	Value
[arg] anObject	'i'
self	an OCDBox
elements	an OrderedCollection [0 items] ()
name	''
Temps	a Dictionary [1 item] (#anObject->'i')
anObject	'i'
stackTop	an OCDBox

Raw	Breakpoints	Meta
	<input checked="" type="checkbox"/> Halt	OCDBox
		OCDBox>>name:
1		
1		"an OCDBox"
2		self

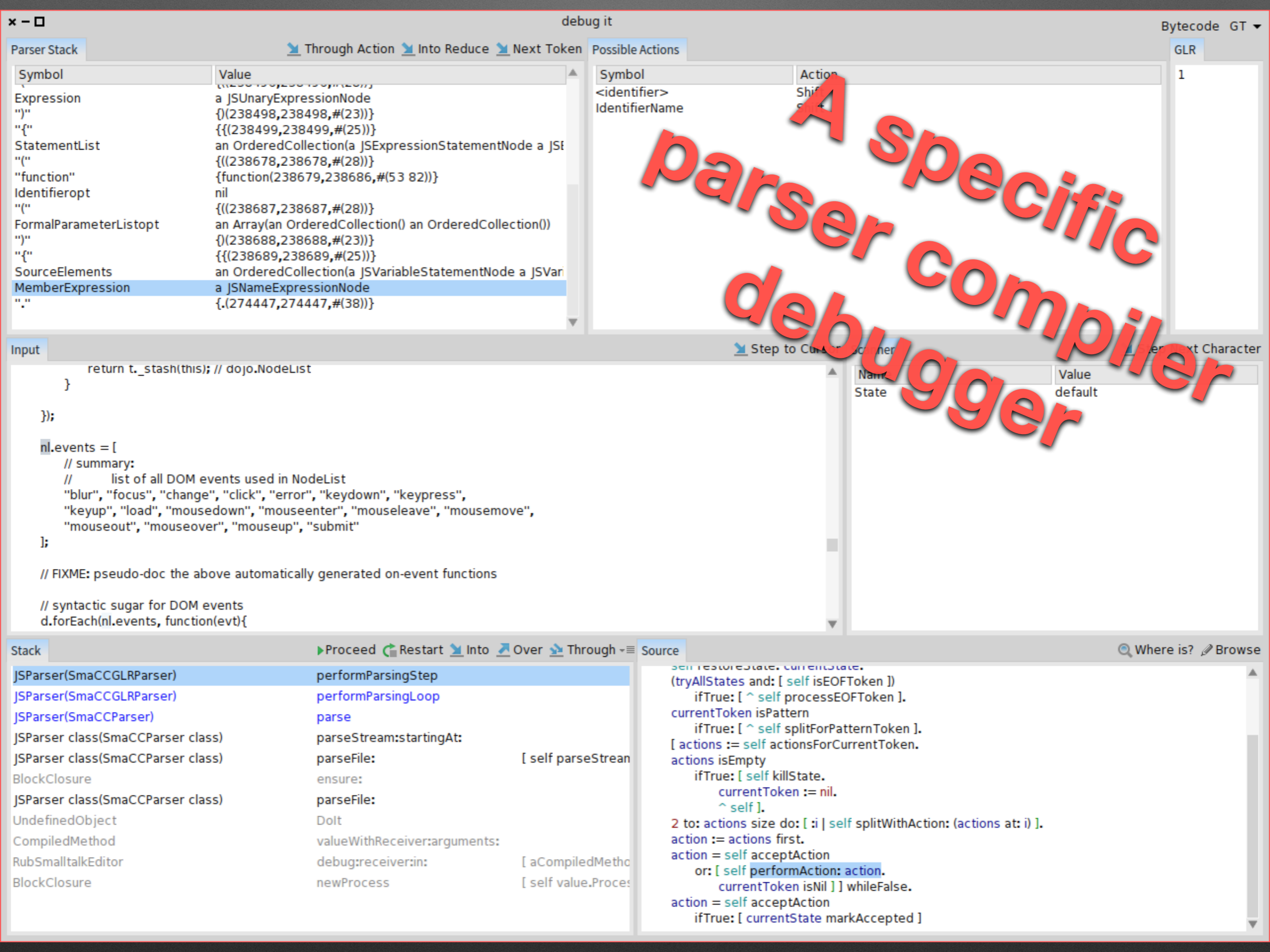
Receiver in: a StDebuggerContext (OCDBox>>name:)

an OCDBox

Variable	Value
[arg] anObject	'i'
self	an OCDBox

Raw	Breakpoints	Meta
	<input checked="" type="checkbox"/> Halt	OCDBox
		OCDBox>>name:

Variable	Value
stackTop	an OCDBox
0 [anObject]	'i'
rcvr: 0 [elements]	an OrderedCollection [0 items]
rcvr: 1 [name]	''



A specific
parser compiler
debugger

Symbol	Value
Expression	a JSUnaryExpressionNode
"{"	{(238498,238498,#(23))}
"{"	{{(238499,238499,#(25))}
StatementList	an OrderedCollection(a JSExpressionStatementNode a JS
"{"	{{(238678,238678,#(28))}
"function"	{function(238679,238686,#(53 82))}
Identifieropt	nil
"{"	{{(238687,238687,#(28))}
FormalParameterListopt	an Array(an OrderedCollection() an OrderedCollection())
"{"	{(238688,238688,#(23))}
"{"	{{(238689,238689,#(25))}
SourceElements	an OrderedCollection(a JSVariableStatementNode a JSVari
MemberExpression	a JSNameExpressionNode
"."	.(274447,274447,#(38))

Symbol	Action
<identifier>	Shift
IdentifierName	Shift

```
return t._stash(this); // dojo.NodeList
}
});
nl.events = [
  // summary:
  // list of all DOM events used in NodeList
  "blur", "focus", "change", "click", "error", "keydown", "keypress",
  "keyup", "load", "mousedown", "mouseenter", "mouseleave", "mousemove",
  "mouseout", "mouseover", "mouseup", "submit"
];
// FIXME: pseudo-doc the above automatically generated on-event functions
// syntactic sugar for DOM events
d.forEach(nl.events, function(evt){
```

Name	Value
State	default

Stack	Source
JSParser(SmaCCGLRParser)	performParsingStep
JSParser(SmaCCGLRParser)	performParsingLoop
JSParser(SmaCCParser)	parse
JSParser class(SmaCCParser class)	parseStream:startingAt:
JSParser class(SmaCCParser class)	parseFile: [self parseStream
BlockClosure	ensure:
JSParser class(SmaCCParser class)	parseFile:
UndefinedObject	Dolt
CompiledMethod	valueWithReceiver:arguments:
RubSmalltalkEditor	debug:receiver:in: [aCompiledMetho
BlockClosure	newProcess [self value.Proces

```
self restoreState: currentState.
(tryAllStates and: [ self isEOFToken ])
  ifTrue: [ ^ self processEOFToken ].
currentToken isPattern
  ifTrue: [ ^ self splitForPatternToken ].
[ actions := self actionsForCurrentToken.
actions isEmpty
  ifTrue: [ self killState.
            currentToken := nil.
            ^ self ].
2 to: actions size do: [ :i | self splitWithAction: (actions at: i) ].
action := actions first.
action = self acceptAction
  or: [ self performAction: action.
        currentToken isNil ] ] whileFalse.
action = self acceptAction
  ifTrue: [ currentState markAccepted ]
```

Pharo Pro users

- Get **productivity boost**
- Xtreme TDD
 - write test,
 - test fails
 - **code in debugger**

The Pharo Stack is Gorgeous

- Seaside, Rest, Zinc Rest, WebSockets
- Magritte (meta application generator)
- STON, JSON, LDAP...
- Zinc, Zodiac(HTTPS), OAuth, ...
- mySql/postgres... / NoSQL/ Mongo / Gemstone :)

seaside 

**Dynamic Web Applications with
Seaside**

<http://book.seaside.st>

- A powerful, innovative and flexible framework
- Dedicated to build complex Web applications
- Live coding and debugging
- Support reusable Web components
- Secure by default
- Web 2.0 support (Ajax, ...)
- REST integration

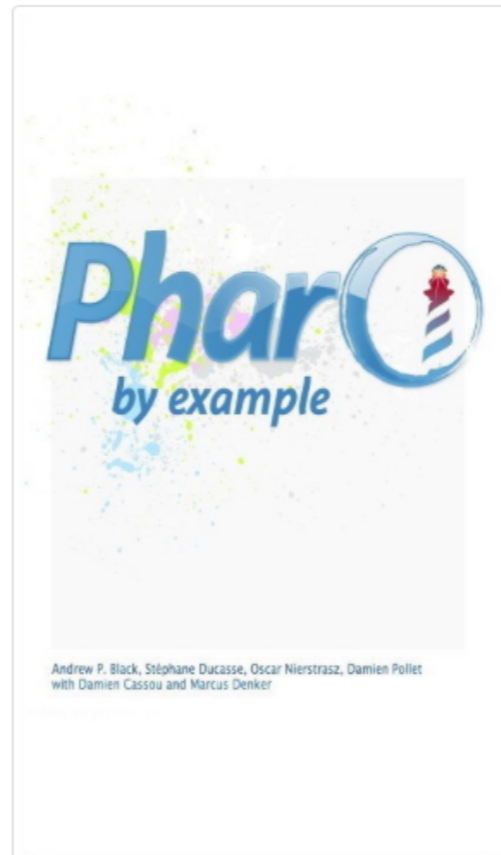
<http://books.pharo.org>

Pharo Books

Pharo is a clean, innovative, open-source, live-programming environment.

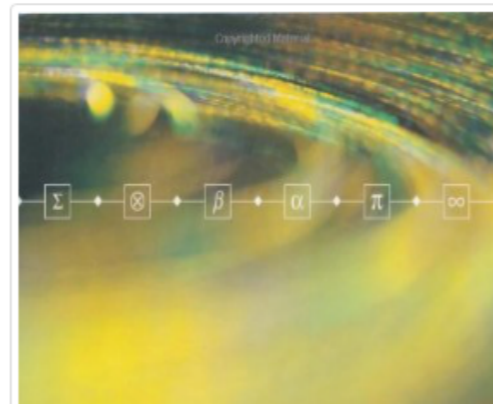
Contribute to the SquareBracketsAssociates community free books
<https://github.com/SquareBracketAssociates/>

Access the book compilation farm!



Pharo by Example, intended for both students and developers, will guide you gently through the Pharo language and environment by means of a series of examples and exercises.

[View details »](#)



Deep into Pharo is the second volume of a series of books covering Pharo. Whereas the first volume is intended for newcomers, this second volume covers deeper topics.

[View details »](#)

TinyBlog: Un Tutorial Web en Pharo

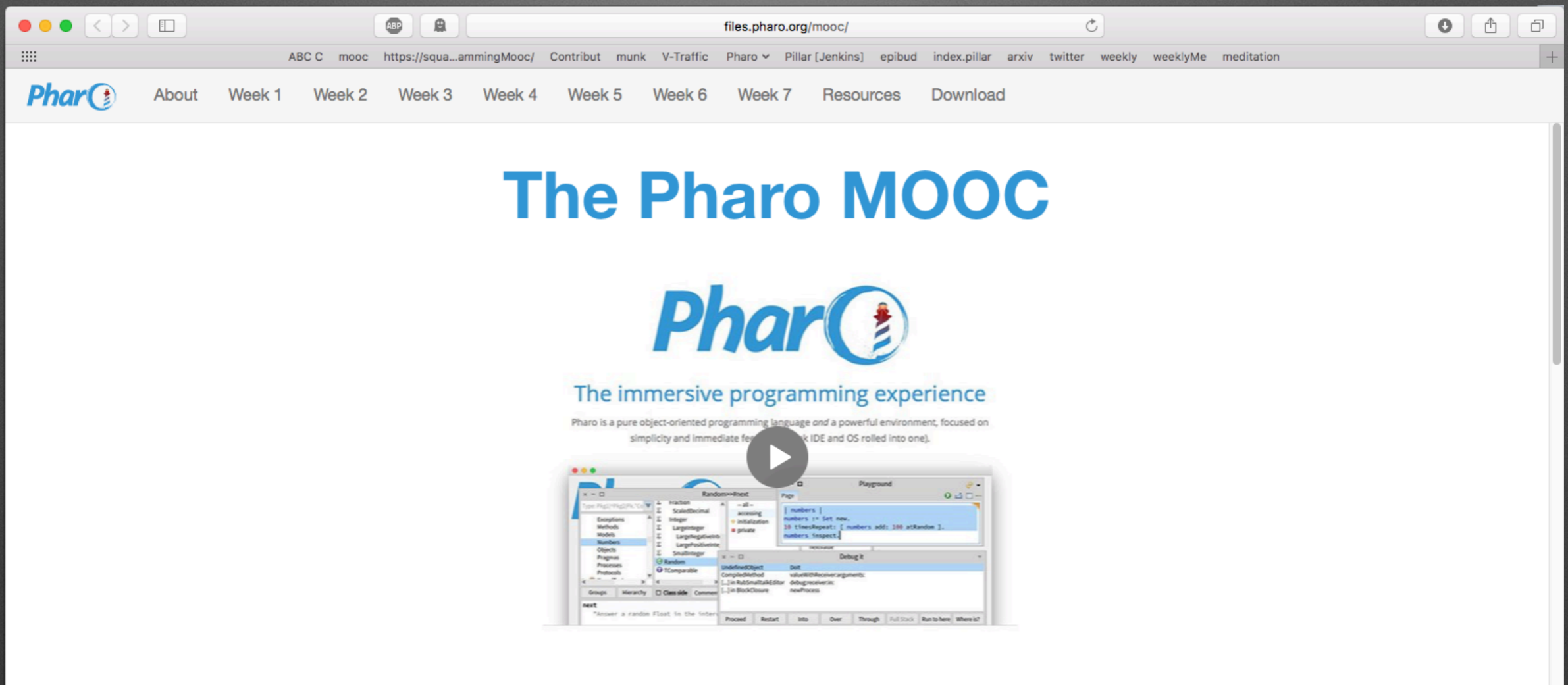


Enterprise Pharo is the third volume of the series. This book covers libraries and frameworks for enterprises, and in particular those doing web development.

[View details »](#)



<http://mooc.pharo.org>



files.pharo.org/mooc/

ABC C mooc https://squa...ammingMooC/ Contribut munk V-Traffic Pharo Pillar [Jenkins] epibud index.pillar arxiv twitter weekly weeklyMe meditation

Phar About Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 Week 7 Resources Download

The Pharo MOOC

Pharo

The immersive programming experience

Pharo is a pure object-oriented programming language and a powerful environment, focused on simplicity and immediate feedback (the IDE and OS rolled into one).

Playground

```
numbers := Set new.  
10 TimesRepeat: [ numbers add: 100 atRandom. ].  
numbers inspect
```

About this course

If you are either a beginner or an expert in object-oriented programming, this MOOC will change the way you program with objects: come and learn or rediscover object-oriented programming with Pharo!

Pharo is a pure object-oriented programming language in the tradition of Smalltalk. It offers a unique developing experience in constant interaction with live objects. Pharo is elegant, fun to use and very powerful. It is very easy to learn and enables to understand advanced concept in a natural way. When programming in Pharo, you are immersed in a world of live objects. You have immediate feedback at any moment of your development on objects representing web applications, code itself, graphics, network. [More...](#)

Obtaining the MOOC

We strongly suggest to follow the MOOC during the next session on [France Université Numérique](#) that will start **October 16th, 2017** because you will have support from the teaching team.

Join the discord channel mooc on the Pharo community (Invitation at <http://discord.gg/Sj2rhxn>)

But, you can also access all ressources of this MOOC offline on:

https://discord.gg/QewZMZa

The image shows a Discord server interface for a server named "Pharo". The main chat window displays a conversation in the "#mooc" channel. A blue notification bar at the top of the chat area indicates "23 new messages since 9:59 AM on November 23, 2017" and includes a "MARK AS READ" button. The chat history shows several messages:

- akgrant0710** (Last Saturday at 11:21 AM): dict includesKey: 'a key'
Take a look through the testing protocol of Dictionary (and superclasses)
- Peter Uhnak** (Last Saturday at 11:26 AM): @Marek Erben especially at::ifPresent:, at::ifAbsentPut: & co.
- Marek Erben** (Last Saturday at 1:14 PM): Yeah, thank you @Peter Uhnak
One more question - is there some simple way to remove one occurrence of item in Bag collection?
- Peter Uhnak** (Last Saturday at 1:34 PM): remove: should do it
- Marek Erben** (Last Saturday at 1:35 PM): But it removes all the occurrences of item, doesn't it?
- Yani** (Last Saturday at 2:20 PM): as in script of the day >url>
- Peter Uhnak** (Last Saturday at 2:36 PM): @Marek Erben did you try? 😊
trying is for free 😊 (edited)

The left sidebar shows the server's channel list, including "FOR NEW USERS" (with a sub-channel #learning-help), "PHARO" (with sub-channels #general, #development, #offtopic, #iceberg, #bootstrap), and "LIBRARIES" (with sub-channels #databases, #polymath, #roassal, #roassal-scriptoftheday, #seaside, #moose, #bloc, #ai, #ai-scriptoftheday). The right sidebar shows a list of users, including ADMIN-3 (Esteban Lorenzano, Juraj Kubelka, kilon), CHANNEL-ADMIN-7 (Alexandre Bergel, Clement Bera, PhilBack, Stepharo, Torsten Bergmann ...), and ONLINE-42 (akgrant0710, AlejandroInfante, awarenhem, Benoit Verhaeghe).

About documentation

- Full access to the system internal documentation
- <http://books.pharo.org>
- <https://github.com/pharo-open-documentation/pharo-wiki>
- <https://github.com/pharo-open-documentation/awesome-pharo>

https:// pharoweekly.wordpress.com

ABC C mooc https://squa...amingMooc/ Contribut munk V-Traffic Pharo Pillar [Jenkins] epibud index.pillar arxiv twitter weekly weeklyMe meditation

My Site Reader Write

WEEKLY NEWS ABOUT PHARO

Everything you wanted to know about <http://www.pharo.org> without being forced to read 1000 mails

[HITCHHIKER'S GUIDE TO ...](#) [SMALLTALK, TIPS'N TRICKS](#) [COG BLOG](#) [ABOUT](#)

NOV 25 2017 **WHAT ABOUT CONTRIBUTING?**

UNSORTED

[EDIT](#)

Here is the testimony of Astares regularly contributing to Pharo 70.

What is not visible in the list are the many enhancements happening also on Calypso, Bloc, Grease and many many others.

Nonetheless the core image still needs love from more people. Remember even the smallest change can make a difference and shape the future. Also "a contribution per day keeps bad systems away".

Even one contribution per week or month.

So jump in – the water is just fine!

Bye
T. (aka astares)

NOV 22 2017 **EDUARDO 7.0.1 NEXT ENHANCEMENTS 2**

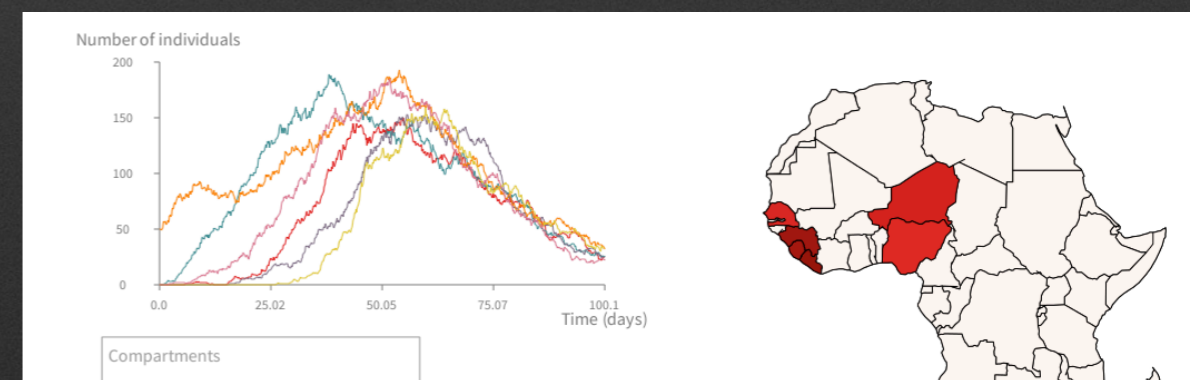
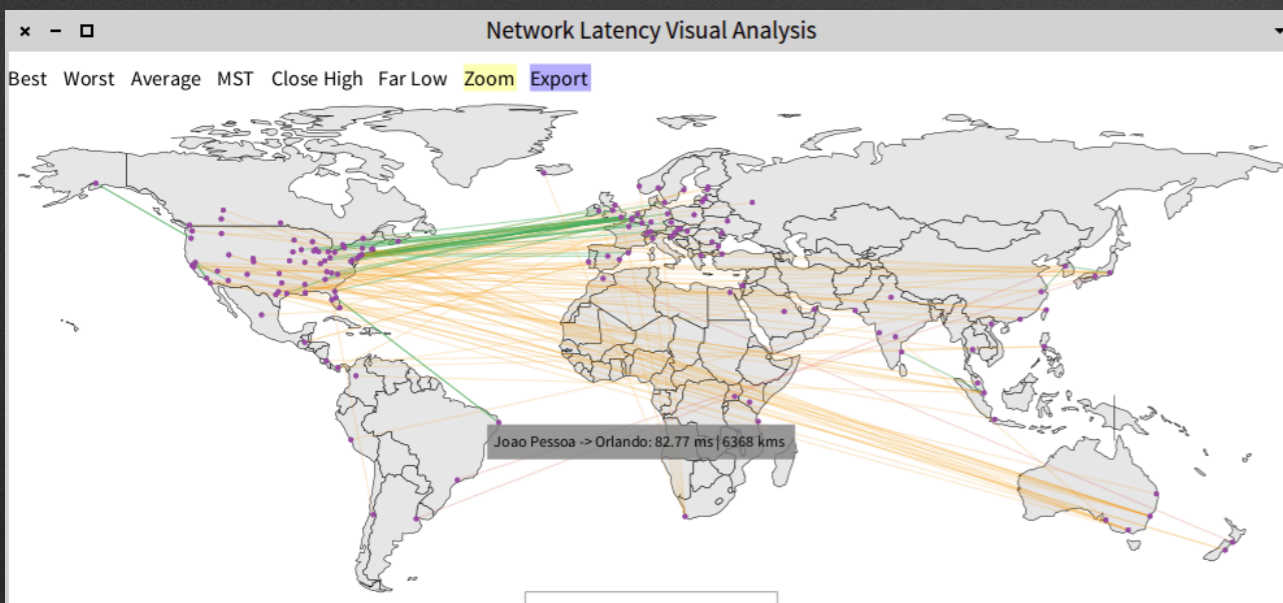
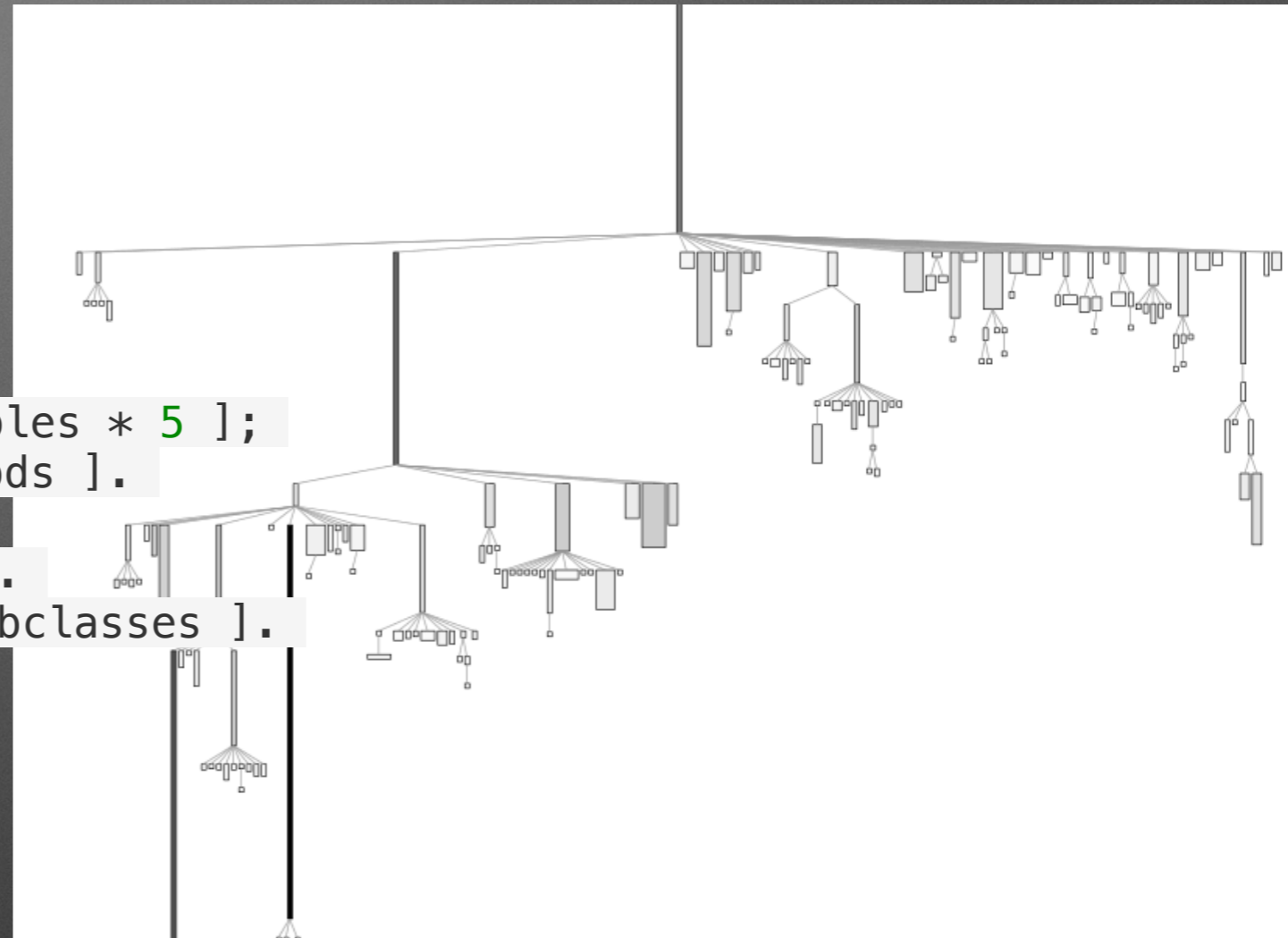
For research

- Modelling complex systems
 - Moose ~ 150 packages to model Java, Ada, C++, Power
- Creating DSLs
- Gorgeous tools: advanced debuggers, git...
- Writing your own tools
- Access to full stack (UX Interaction) and community
- Web stack
- Scripting visualisation with Roassal

Scripting visualisations

```
b := RTMondrian new.  
  b shape rectangle  
  withBorder;  
  width: [ :cls | cls numberOfVariables * 5 ];  
  height: [ :cls | cls numberOfMethods ].
```

```
b nodes: Collection withAllSubclasses.  
b edges connectToAll: [ :cls | cls subclasses ].  
b layout tree.  
b normalizer  
  normalizeColorAsGray: [ :cls |  
cls numberOfLinesOfCode ].  
b
```



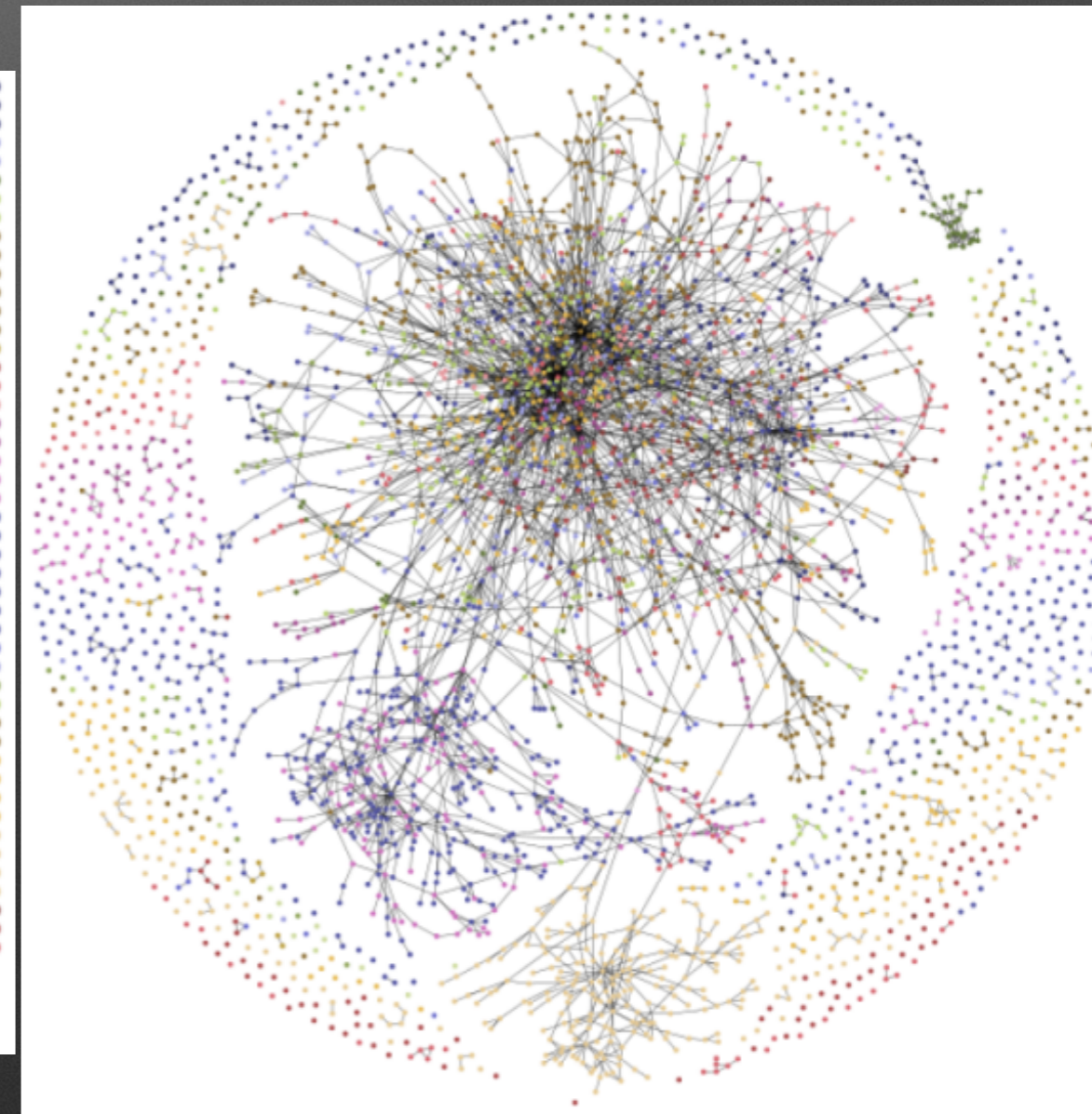
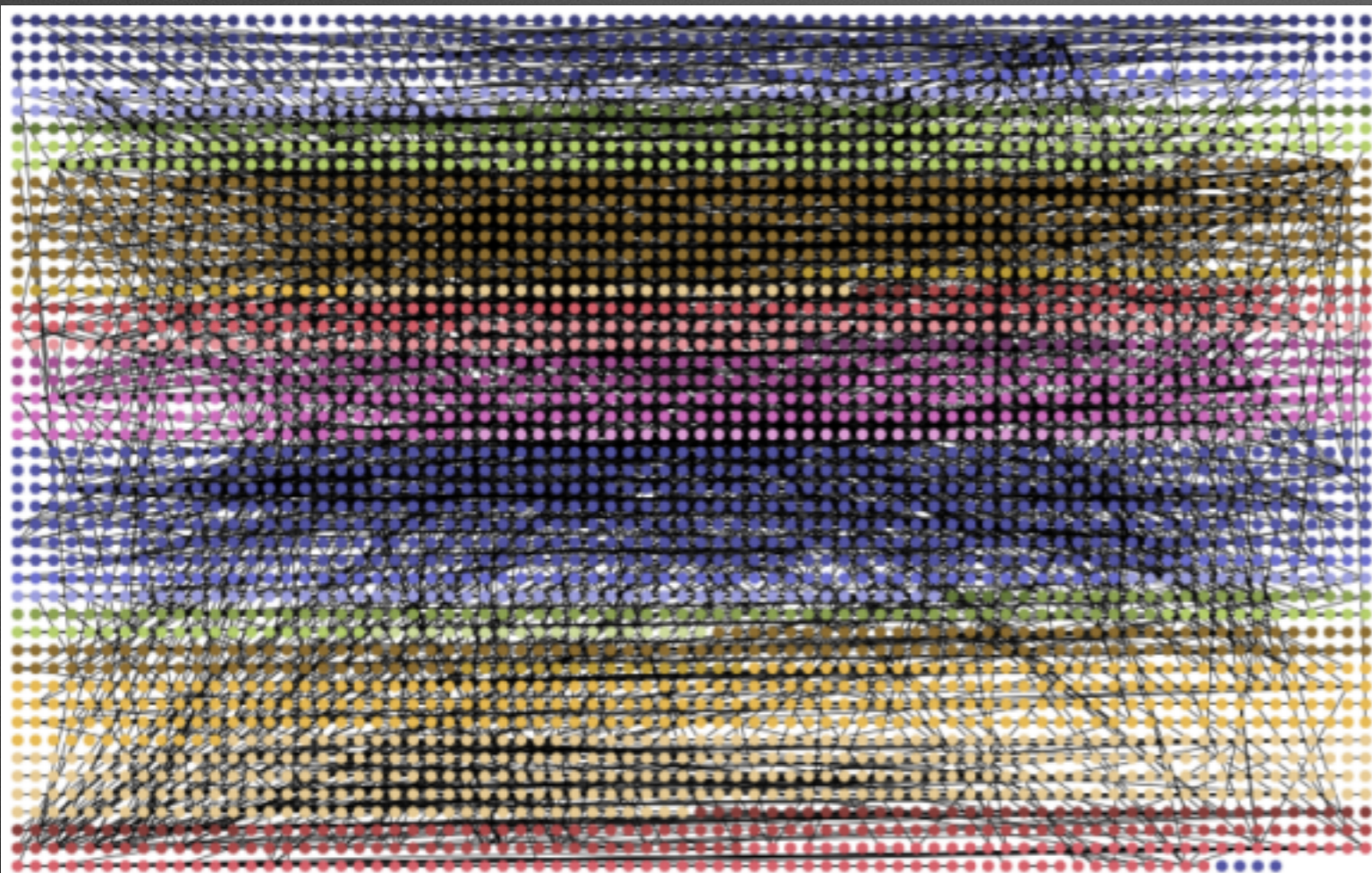
One hour about Basic


COPYRIGHT 1975 BY BILL GATES AND PAUL ALLEN

ORIGINALLY WRITTEN ON THE PDP-10 FROM
FEBRUARY 9 TO APRIL 9 1975

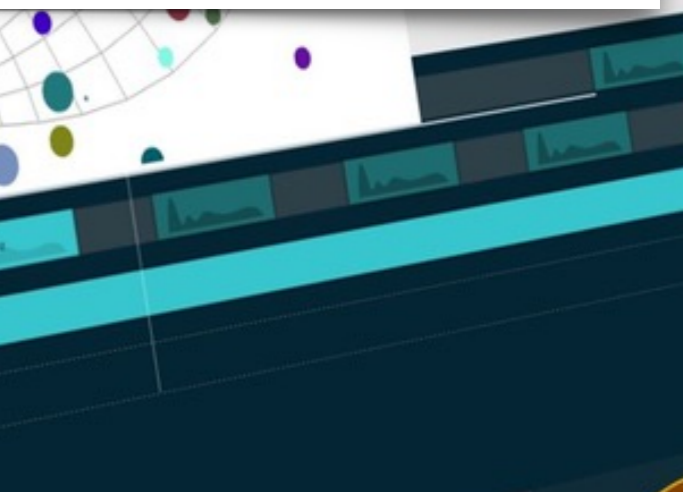
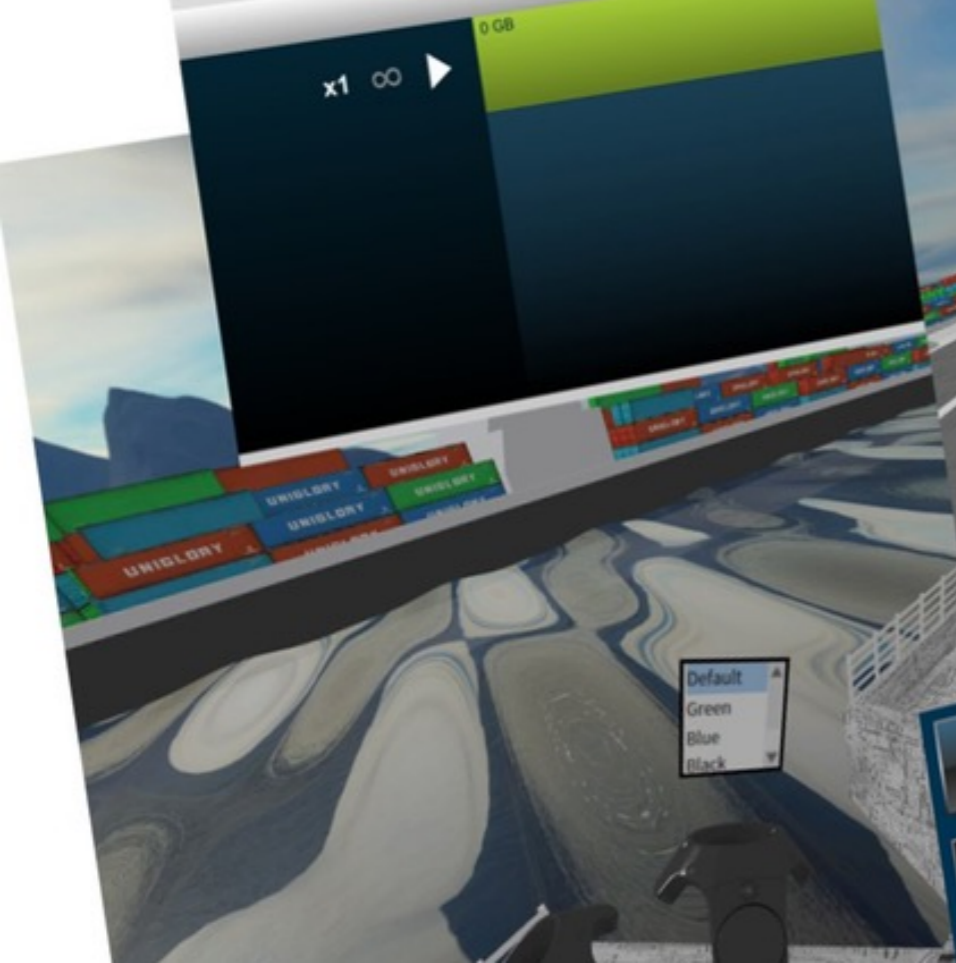
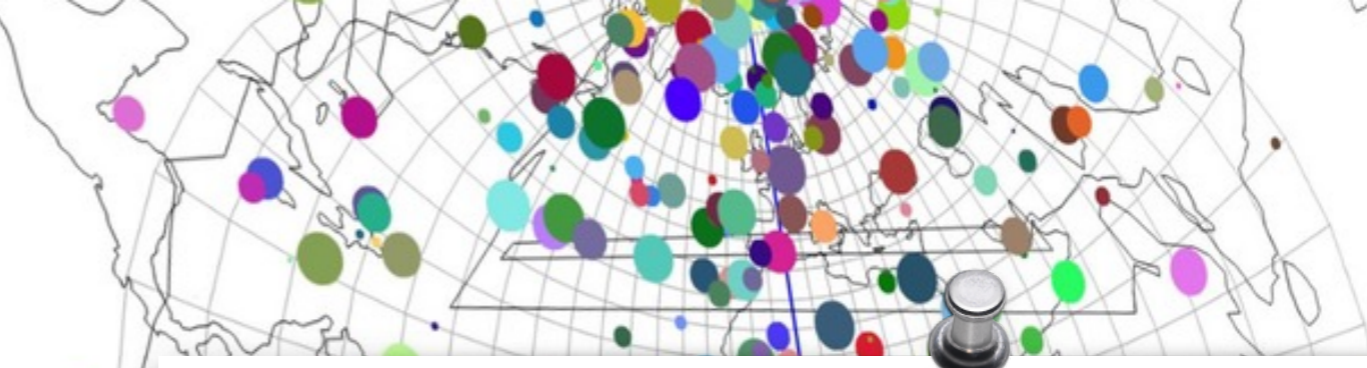
BILL GATES WROTE A LOT OF STUFF.
PAUL ALLEN WROTE A LOT OF OTHER STUFF AND FAST CODE.
MONTE DAVIDOFF WROTE THE MATH PACKAGE (F4I.MAC).

<https://pharoweekly.wordpress.com/2020/05/24/roassal-1-hour-xp-assembly-code-of-gwbasic/>





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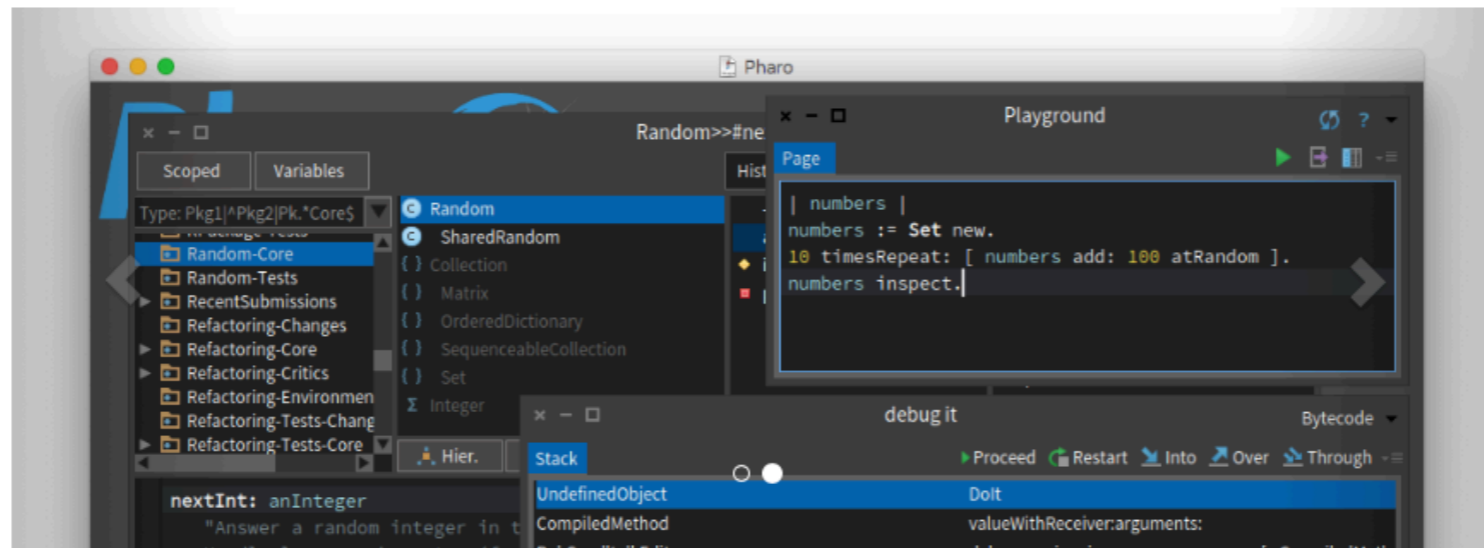


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