

Pharo: Live objects for complex projects



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

<http://www.pharo.org>

JPMORGAN
CHASE & CO.

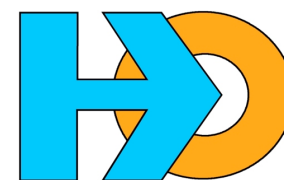


feenk

ZWEIIDENKER
THALES



projector
software



inspired!



SORABITO

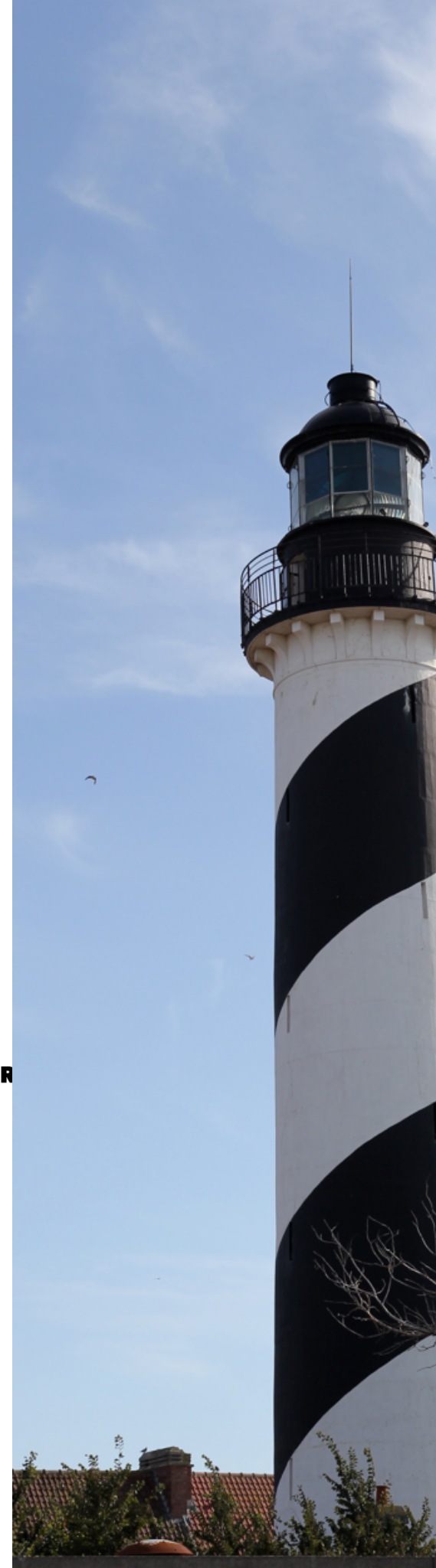
knowroaming

TA MÈRE^{SCR}
BADASS MOBILE DEVELOPMENT

Systems that make sense
Sensus



Yesplan
Let's make it happen



A word of presentation

Expert in language design

**Traits in Php7.0, Perl60
Influenced Traits in Scala**

Expert in maintenance

**Program analysis, Metamodels,
visualization, testing, refactorings,
metrics....**

synectique

Inventive Analysis

Building ***specific*** analysis tools for important running business software (Ada, Cobol, 4D, C, C++, Java...)

Dedicated tools to support decision making process

THALES



GENERALI
Solutions d'assurances

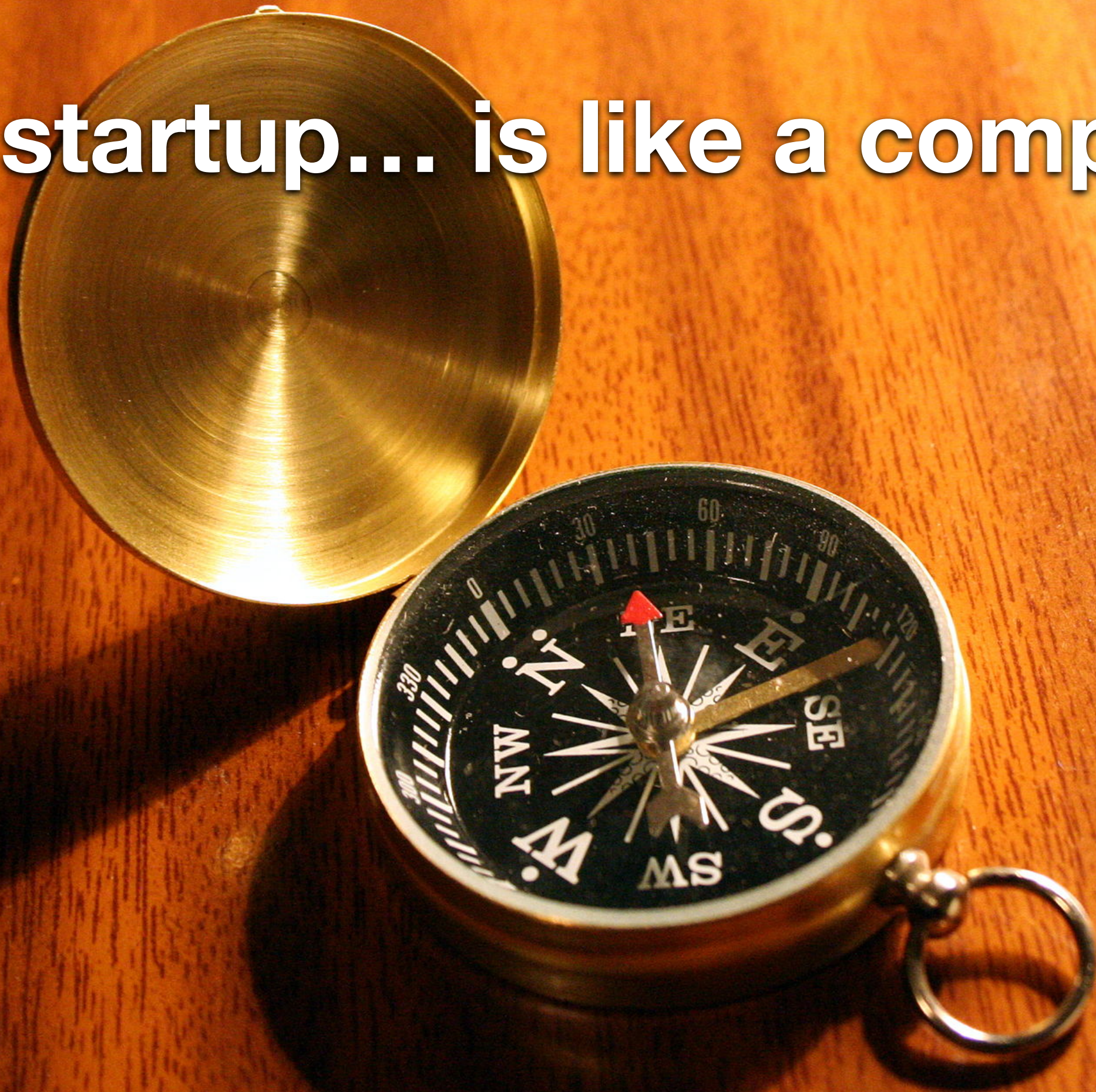
SIEMENS

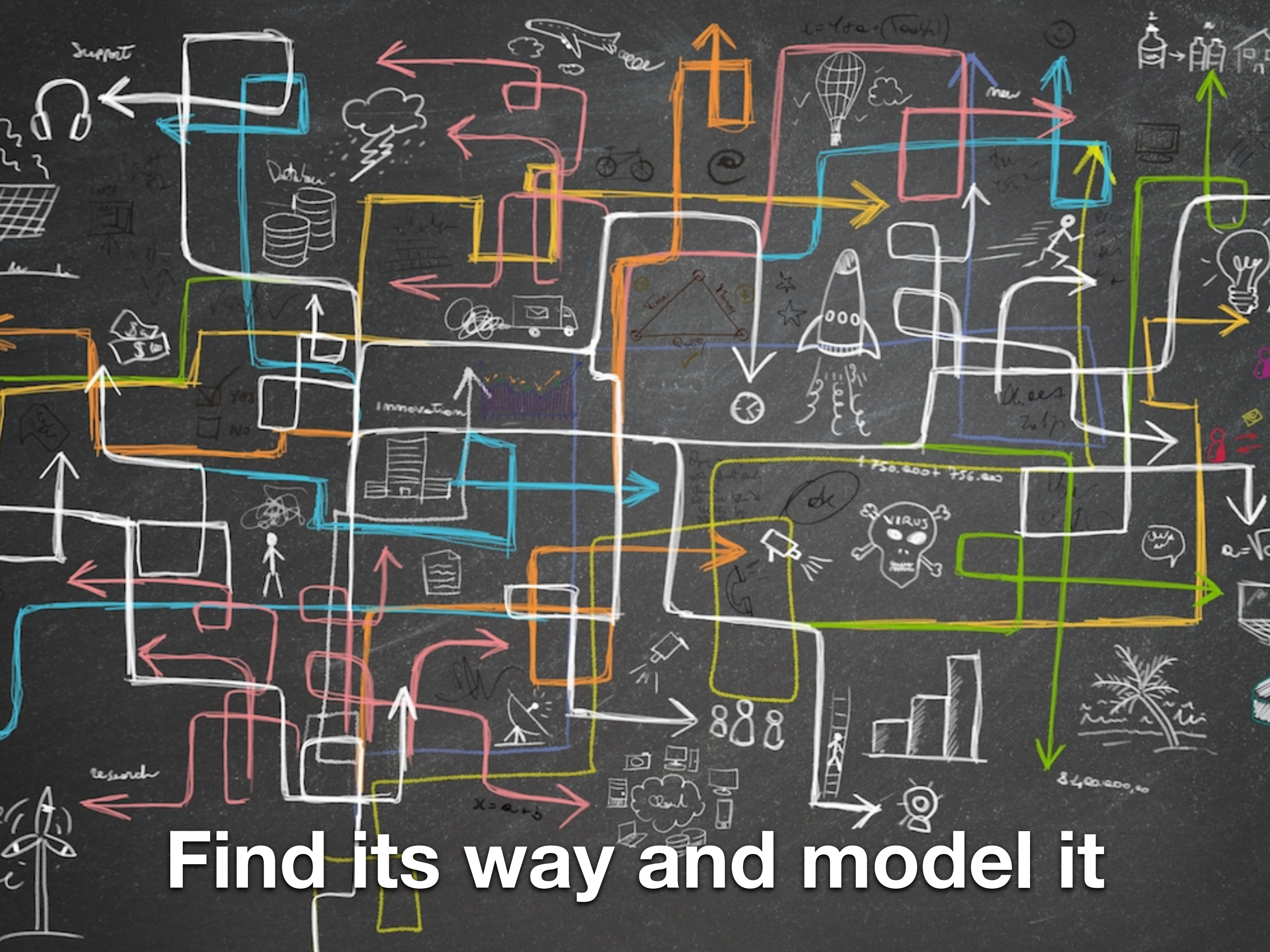


GENERALI BELGIUM

noose

A startup... is like a compass





Find its way and model it

Pharo?



Iceberg repositories

New repository Clone repository Add local repository Fetch all

Name	Current branch	Loaded version	Status
iceberg	dev-0.4	f9c63ee (15 May 2017)	Up to date
libgit2-pharo-bindings	master	1f582be (18 April 2017)	Up to date

General Packages Remote Branches

Name	Value
Origin	https://github.com/pharo-vcs
Remote User	github.com
Remote host	github.com
Repo Owner	pharo-vcs
Location	/tmp/src/te
Outgoing from	origin

Commits

Date & time	Id	Author	Parents
2017-05-13 18:16	ec0312a	Esteban Lorenzano	64dd53e
2017-05-13 16:22	64dd53e	Esteban Lorenzano	8837b1e
2017-05-12 22:47	ee52967	Esteban Lorenzano	9680f1e
2017-05-12 17:11	8837b1e	Esteban Lorenzano	fefadb2
2017-05-12 14:24	9880f1e	Esteban Lorenzano	3f3e063, 7969c6c
2017-05-12 09:40	fefadb2	Esteban Lorenzano	5382135, 535238f
2017-05-12 09:32	7969c6c	Github	5382135
2017-05-11 15:18	535238f	Max Leske	127aa13, 4326f64
2017-05-10 10:47	5382135	Esteban Lorenzano	4036888
2017-05-10 10:47	4326f64	Esteban Lorenzano	4036888

Left: working copy / Right: incoming updates

Commit info

Date & time	2017-05-13 16:22
Commit Id	64dd53ea288990466e2b94095d33fa25764c7100 [64dd53e]
Parent(s)	ee52967
Author	Esteban Lorenzano
Comment	remove not used method

Assertion failed. Assertion failed

Stack

- evaluateAndDo
- highlightedValueAndDo
- GLMorphicPharoScriptRenderer(GLMorphicPharoCt actOnHighlightedValue)
- RubEditingArea(RubAbstractTextArea)
- GLMorphicPharoScriptRenderer(GLMorphicPharoCt actOnHighlightedValue)
- WorldState
- WorldMorph
- WorldState

Source

```
doOneCycleNowFor: world
"Immediately do one cycle of the interaction loop.
This should not be called directly, but only via doOneCycleNowFor: world"

DisplayScreen checkForNewScreenSize.

"process user input"
secondClickValue.
```

Variables

Type	Variable	Value
Object	self	a WorldState
Object	world	a WorldMorph
Object	actOnHand	a HandMorph
Object	alarm	a HandMorph
Object	canvas	a HandMorph

Pharo

Pharo!

- System: Pure object language + full IDE
- Powerful, elegant and fun to program
- Great community / industrial consortium
- Living system under your fingers
- Works on Mac OSX, Linux, iOS, Android, Windows, Pi - 100% MIT

Elegant!

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

Full Syntax!

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

Leuchttürme

* H Ö R N U M



Yes the full Syntax!

Full Syntax!

exampleWithNumber: x

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

<menu>

| y |

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Leuchttürme

* H Ö R N U M



Full Model!

- * Dynamically typed
- * Everything is an object instance of a class
- * All methods are public virtual
- * All attributes are protected
- * Single inheritance + Traits
- * Closures everywhere



Focus on intrinsic complexity

Eliminate accidental complexity

The image features a grayscale background of a hand holding a red pencil, poised to write. Overlaid on this is a red-colored sketch of a hand holding a pencil. The text 'Fully Written in Itself' is written in white, bold, sans-serif font across the upper part of the image. Below this, a bulleted list is presented in the same white font, overlaid on the red sketch. The list contains two items: 'Everything is written in Pharo' and 'One simple syntax/model to access everything'.

Fully Written in Itself

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

**Learn
Adapt
Modify**

Pharo is highly immersive

**Most languages do not
expose much**

Looking inside

- ✱ Pharo is not a blackbox
- ✱ Pharo is fully inspectable and reflective
- ✱ You can get immersed in objects



Immersed and interacting

- * You can interact with objects



Workspace

```
| elements lay |
```

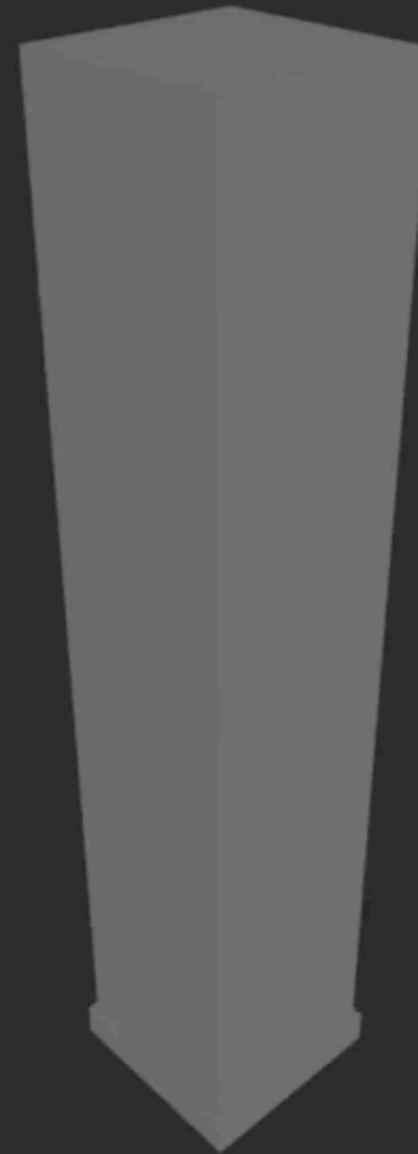
```
elements := (1 to: 5) collect: [ :ob |  
    (R3CubeShape new) elementOn: ob ].
```

I

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

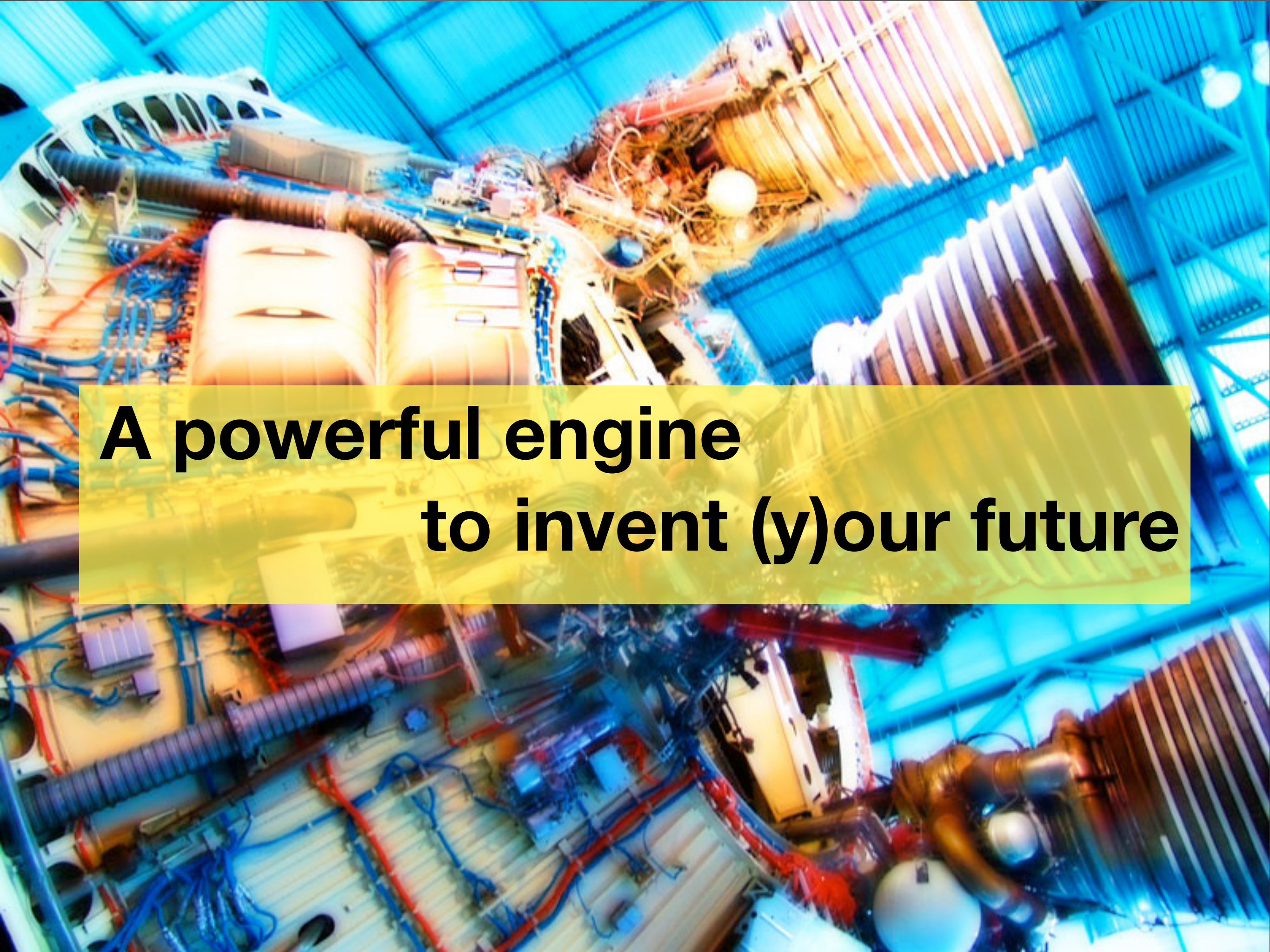
```
UberPresenter present: elements
```

Uber Presenter




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

Pharo's goal...



**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

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

Wind Energy

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

A product by Smallworks

SpesenFuchs

Funktionen, Aktuelles, Forum, FAQ, Preise

Pinesoft MBagger

Pinesoft MBagger is a software solution for managing and analyzing data. It features a user-friendly interface and powerful analytics tools.

Synectique

Dedicated and cost-effective tools for software evolution

- Dedicated Analyses
- Dedicated tools
- Decision making

Yesplan is veelzijdige software voor het efficiënt plannen van evenementen.

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

Some Success Stories

Need: disaster scenario recovery

NTree

Intervallnummer	Intervallname	Intervallnummer	Intervallname	Intervallnummer	Intervallname
1	Intervallnummer 1	2	Intervallnummer 2	3	Intervallnummer 3
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Moose is a platform for software and data analysis.

It is an open source project since 1996. It is supported by several research groups around the world, and it is increasingly adopted in industrial projects.

Download 4.7

The Moose Book

Dr. Geo Geo

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Continuous API Testing

Keep your services under control 24/7

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Back-End Wafer-Level Packaging



50% microprocessors
of your mobile/PC/tablet



The image shows a close-up of a microprocessor wafer being handled by a robotic arm. The wafer is green and circular, and the robotic arm is silver and metallic. The background is dark and out of focus.

Your mobile hardware as
a high-chance to have
been produced by a
robot controlled via a
smalltalk



LAMRC

Back-End Wafer-Level Packaging

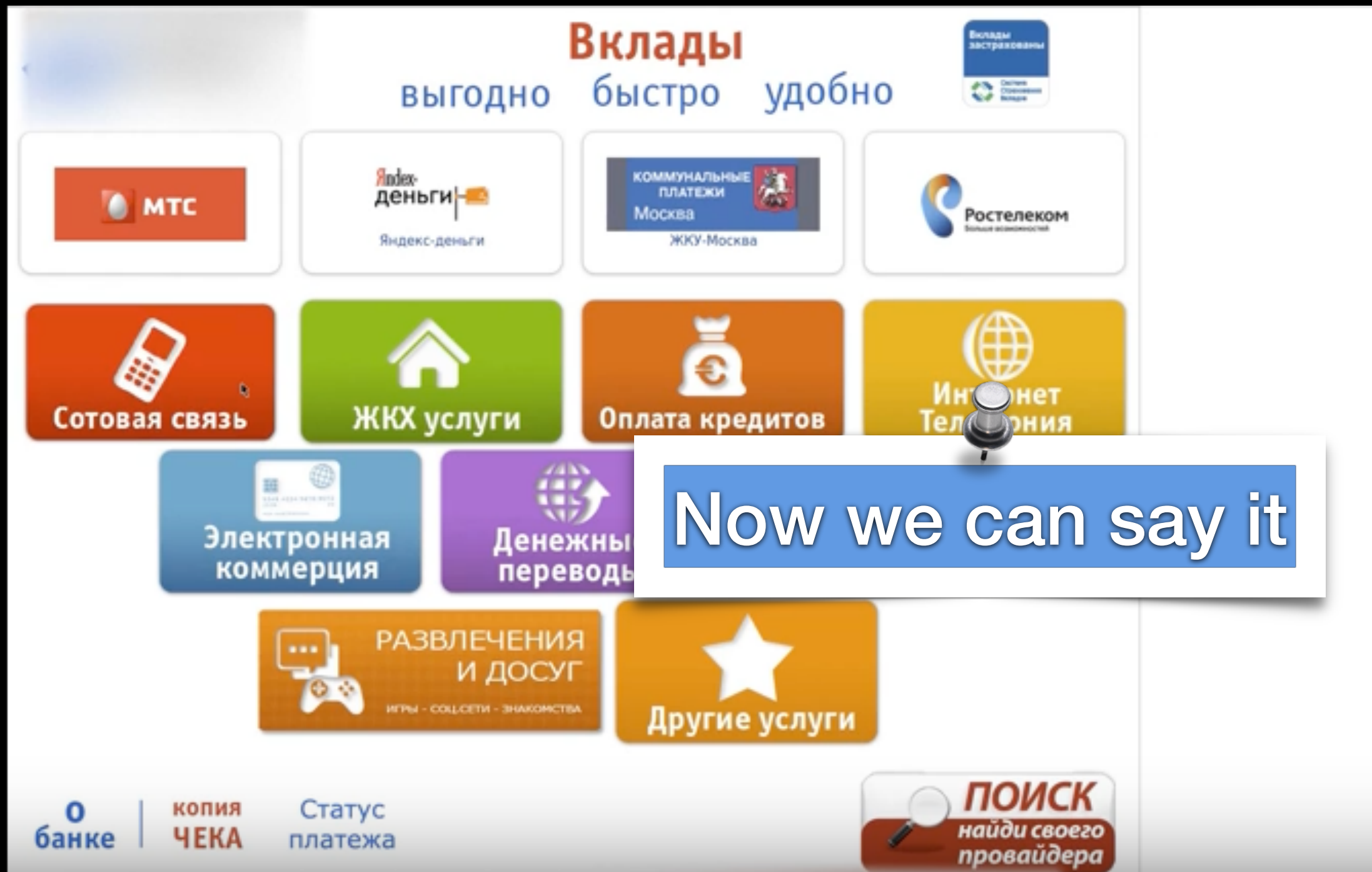


Your mobile hardware as
a high-chance to have
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robot controlled via a
smalltalk

**Starting to experiment
with Pharo**



Pharo in ATM like Device in Moscow

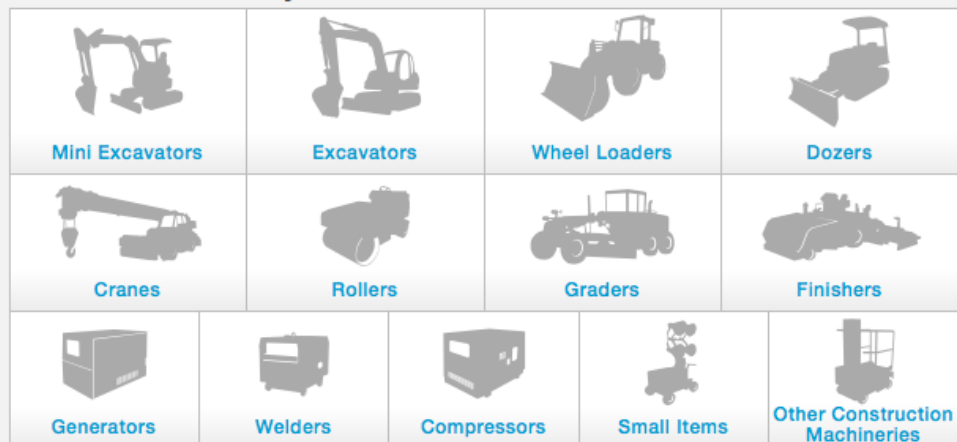
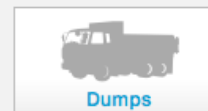
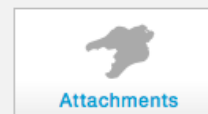


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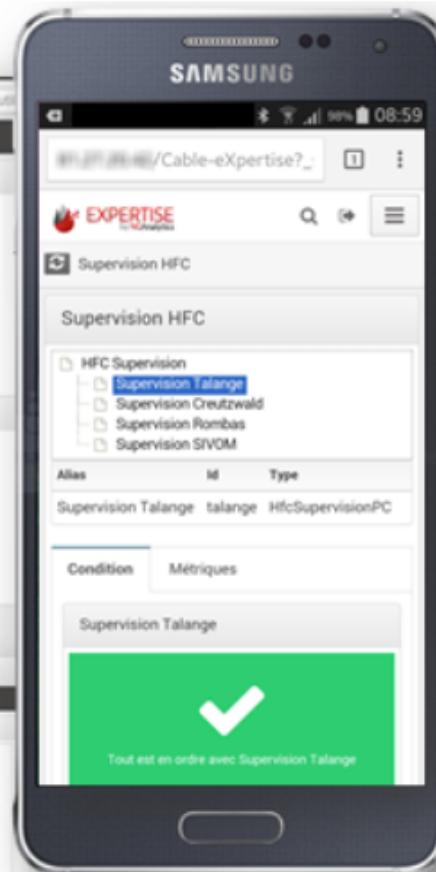
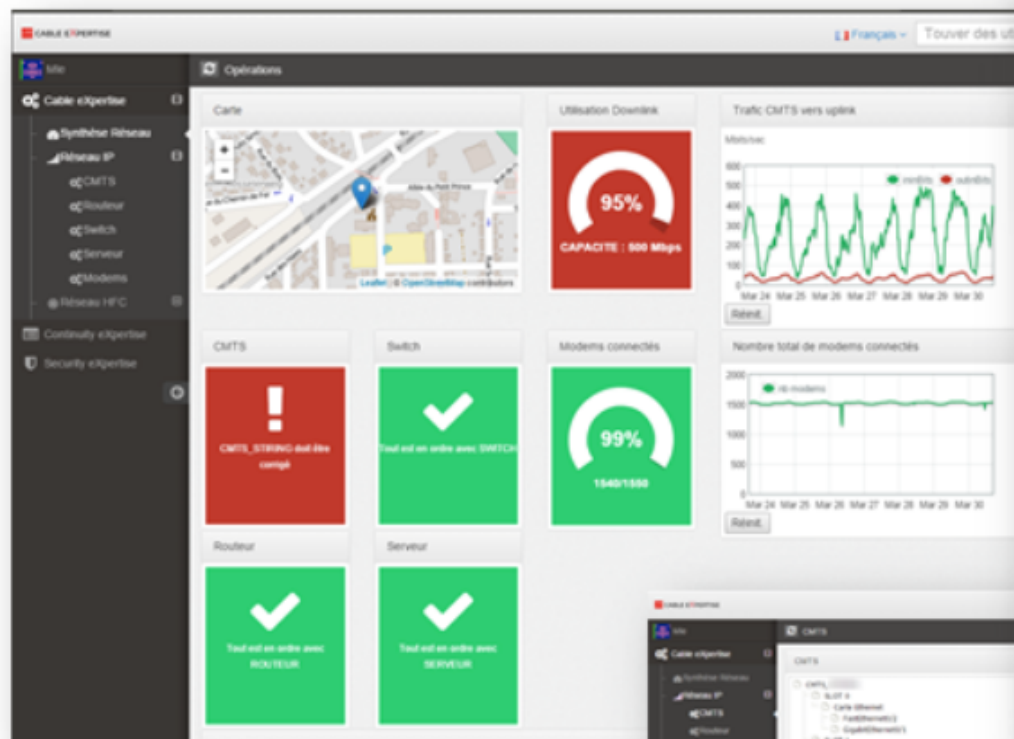
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raised 4.7 M\$****Find Machines****Q Search by Category****Construction Machinery****Material Handling****Farm Machinery****Vehicles****Others****Q Search by Keyword**

Enter a keyword (e.g. KOMATSU PC200)

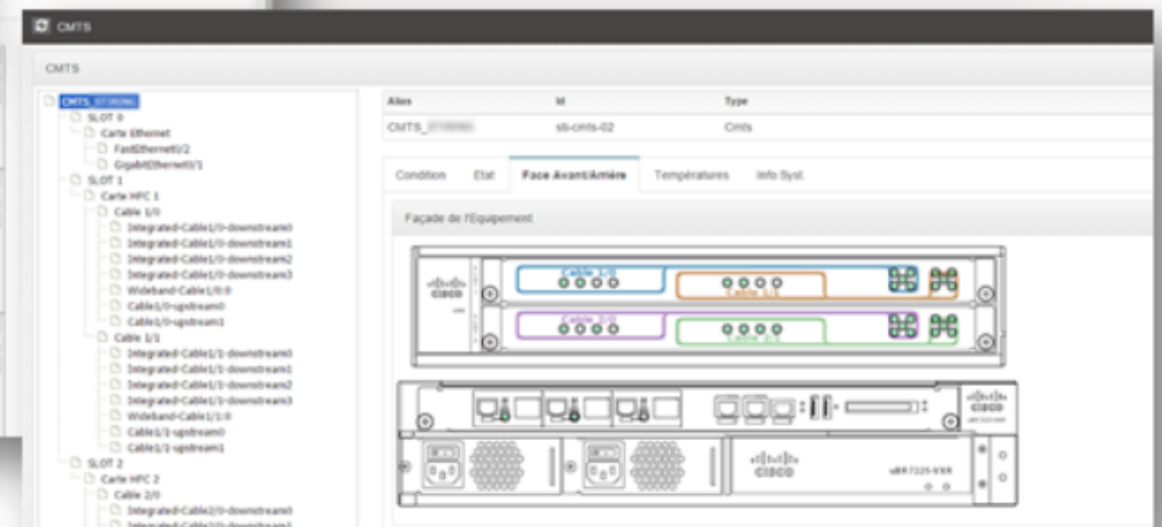
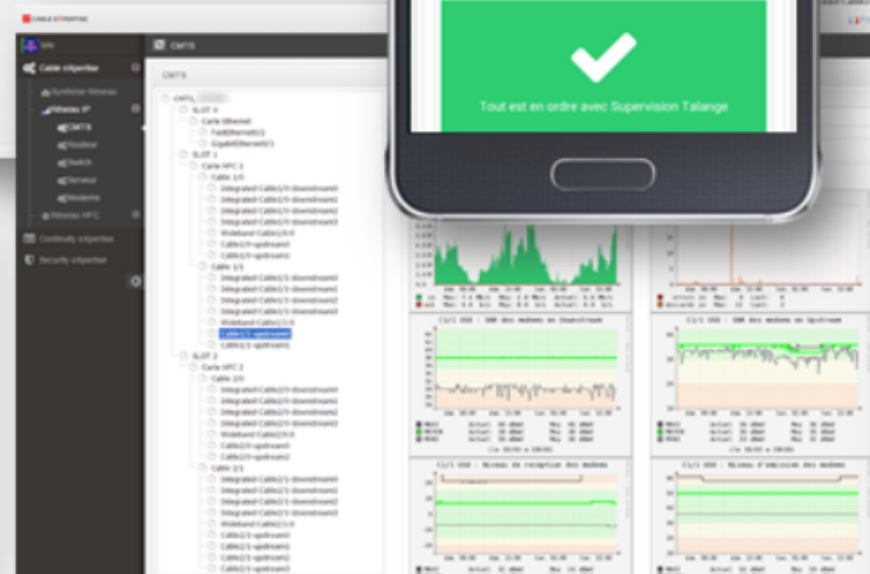
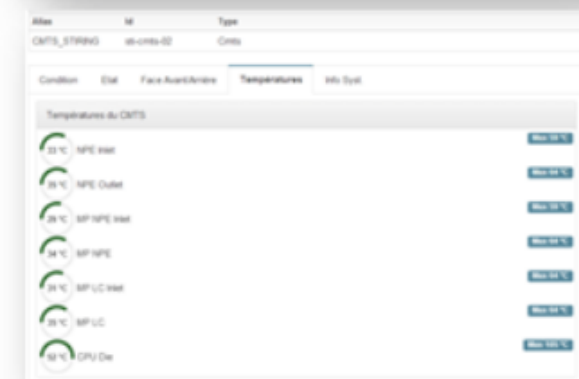
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PDS175S**
400,000 JPY**KUBOTA
U-55-6**
3,500,000 JPY**OTHER
MGR2500**
133,100 JPY**ISEKI
HL407G**
198,000 JPY**OTHER
MR6500**
143,000 JPY**OTHER
GH250-GML**
165,000 JPY

Network Monitoring for small ISPs



Modèle et Firmware	SN	SN	SN	SN	SN	SN	SN	SN	SN
TC7200-20	SN7C7010001	00000	8804	130	14.10	14.10	14.10	14.10	14.10
ST00-01-02	NO 5 6 30 89 28 147 36	122	13.00	13.00	13.00	13.00	13.00	13.00	13.00
ST00-01-02	NO 5 6 30 89 28 146 36	122	13.00	13.00	13.00	13.00	13.00	13.00	13.00
TC7200-20	SN7C7010002	00000	35	130	11.30	11.30	11.30	11.30	11.30
ST00-01-02	NO 5 6 30 89 28 146 36	122	13.00	13.00	13.00	13.00	13.00	13.00	13.00
TC7200-20	SN7C7010003	00000	110	130	5.30	5.30	5.30	5.30	5.30
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TC7200-20	SN7C7010004	00000	1096	130	7.30	7.30	7.30	7.30	7.30
ST00-01-02	NO 5 6 30 89 28 146 36	122	13.00	13.00	13.00	13.00	13.00	13.00	13.00
TC7200-20	SN7C7010005	00000	2707	130	1.30	1.30	1.30	1.30	1.30
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pharocloud

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

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**Deploy Pharo
on the cloud in 3 min**



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Handlich: Boxen und Elemente frei auf der Seite positionieren.
✉ mail@cmsbox.com

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Elemente ausschneiden oder kopieren und irgendwo auf der Webseite wieder einfügen.

Text einfügen

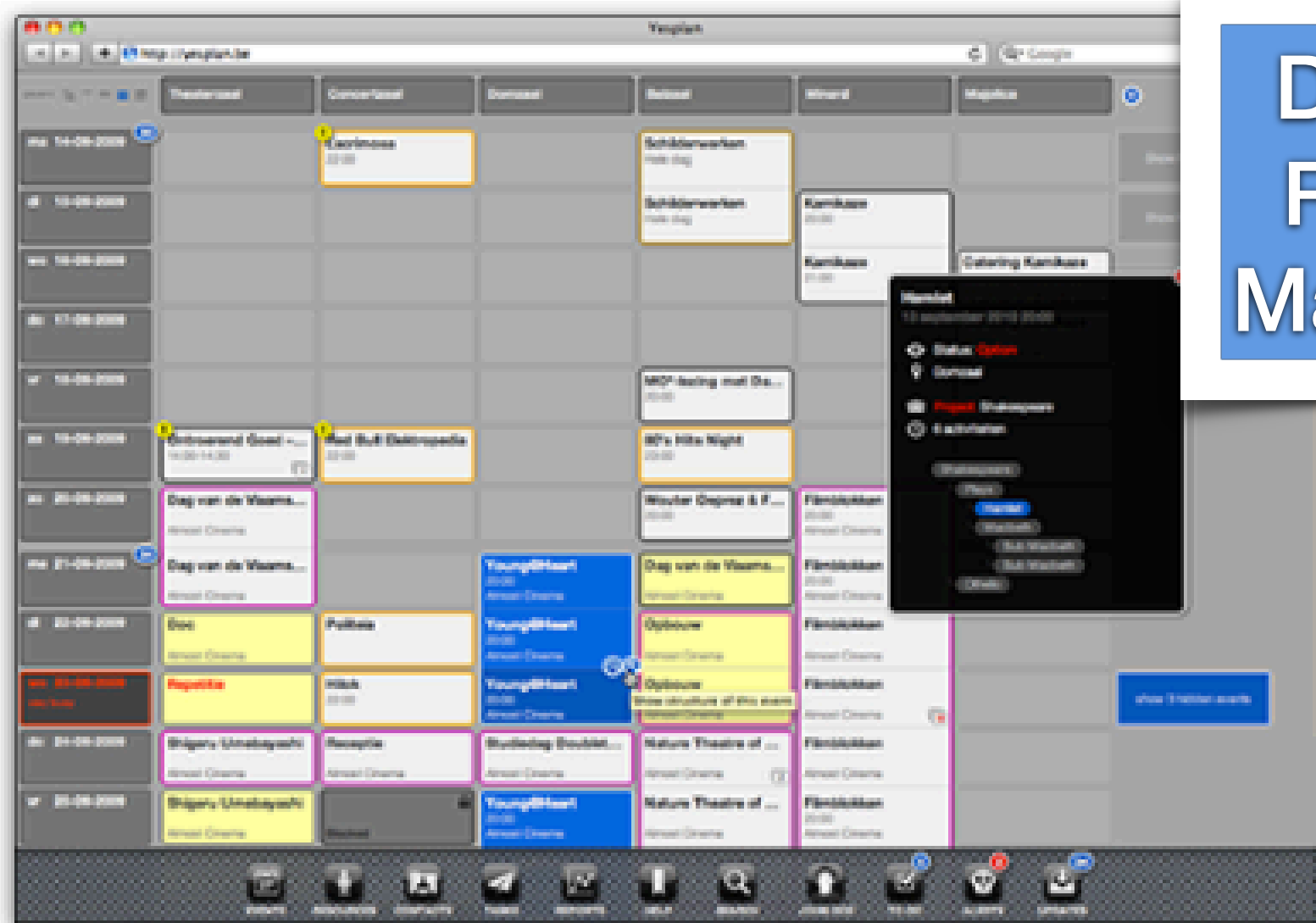

cmsbox rocks
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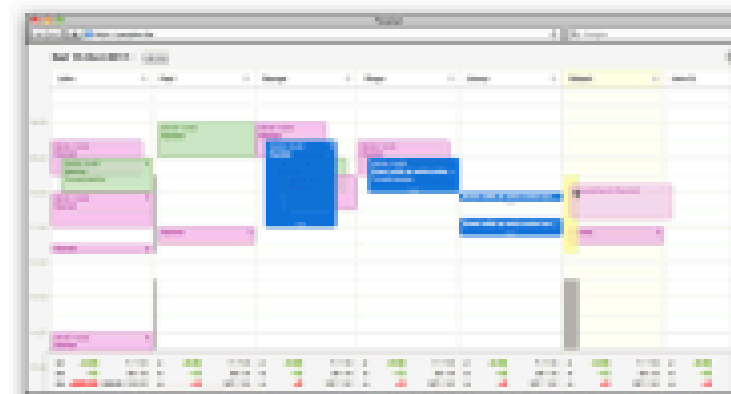
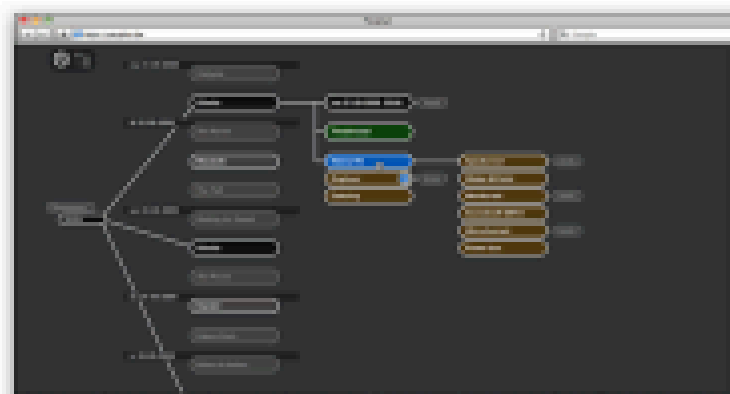
Suchen...

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**



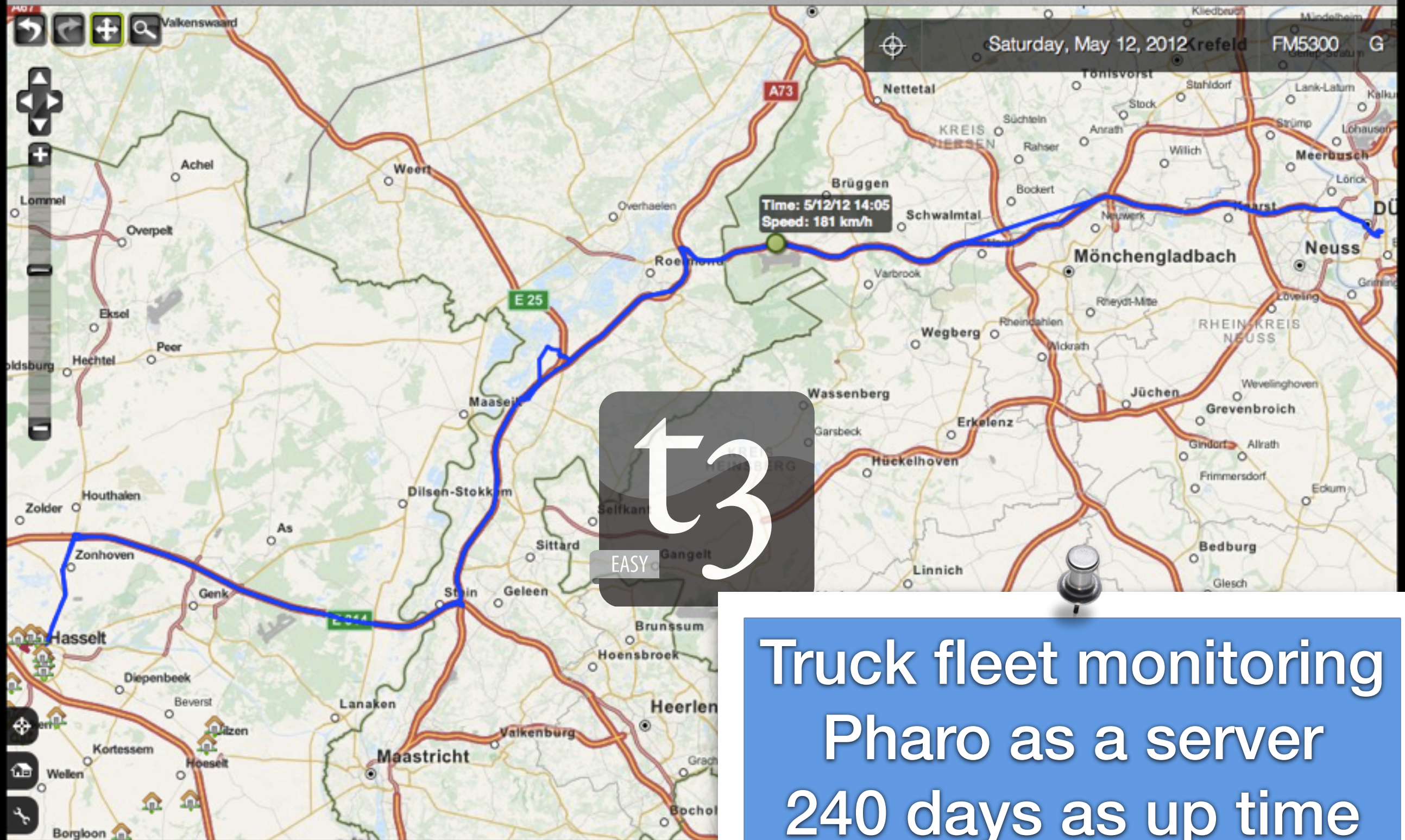


Server Testing

Continuous API Testing

keep your services under control 24/7





Truck fleet monitoring
Pharo as a server
240 days as up time

Saturday, May 12, 2012

14:05:29

181 km/h

13:00 13:30 14:00 14:30 15:00 15:30 16:00 16:30 17:00 17:30 18:00 18:30 19:00 19:30

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Quuve: Investment Portfolio
<http://debrispublishing.com>

MobileTerminated ForwardSM

Do it
Print it

Free Software Mobile Communication solutions

```

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: '240c9194814813654200005110712195534010c8329bfd0699e5ef3';
  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 .
  
```

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	0	2000	GSM S...	236	Invoke forwardSM

<p>Frame 1: 236 bytes on wire (1888 bits), 236 bytes captured (1888 bits)</p> <p>Linux cooked capture</p> <p>Internet Protocol Version 4, Src: 208.208.208.208, Dst: 208.208.208.208</p> <p>Stream Control Transmission Protocol, Src Port: 2005 (2005), Dst Port: 2005 (2005)</p> <p>MTP 3 User Adaptation Layer</p> <p>Signalling Connection Control Part</p> <p>Transaction Capabilities Application Part</p> <p>GSM Mobile Application</p> <p>GSM SMS TPDU (GSM 03.40) SMS-DELIVER</p> <p>0... .. = TP-RP: TP Reply Path parameter is not set in this SMS SUBMIT/DELIVER</p> <p>..0... .. = TP-UDHI: The TP UD field contains only the short message</p> <p>..1... .. = TP-SRI: A status report shall be returned to the SNE</p> <p>.... 0... = TP-LP: The message has not been forwarded and is not a spawned message</p> <p>.... ..1.. = TP-MM5: No more messages are waiting for the MS in this SC</p> <p>.... ..00 = TP-MTI: SMS-DELIVER (0)</p> <p>TP-Originating-Address - (401884315624)</p> <p>TP-PID: 0</p> <p>TP-DCS: 0</p> <p>TP-Service-Centre-Time-Stamp</p> <p>TP-User-Data-Length: (16) depends on Data-Coding-Scheme</p> <p>TP-User-Data</p> <p>SMS text: Hello from Pharo</p>	<pre> 0000 62 69 40 04 01 00 00 00 6b 1e 20 1c 06 07 00 11 bin.... k.(.... 0008 86 85 01 01 01 a8 11 60 0f 00 02 07 80 a1 00 06 0016 07 04 00 00 01 00 10 02 6c 41 a1 3f 02 01 01 02 1A.?.... 0024 01 2e 30 37 00 00 02 02 43 08 10 91 50 f9 04 08 ..07..b. Ch..P... 0032 91 94 51 97 10 00 00 00 04 21 24 0c 91 94 81 48 ..0.... !S...H 0040 13 05 42 00 00 51 10 71 21 95 53 40 10 c8 32 9b .eB..Q.q !.5@..2. 0048 fd 06 99 e5 ef 36 00 0a 0e cb df 00 f.... </pre>
--	--

Programming environment for Programmable Logic Controllers

Software PLC
CIAM

IDE4PLC
powered by
Pharos

Board

POU

Board

EDU-CIAA-NXP

Picture

Program Organization Units (POU) editor

MAIN_PROG

VAR

Network 1

TEC1

TEC2

TEC3

TON

TIME

IN

PT

Q

ET

var0

LEDB

MUL

INT

EN

IN1

IN2

ENO

OUT

var1

EQ

INT

EN

IN1

IN2

ENO

OUT

LED2

POU Variable Declarations Editor

MAIN_PROG

Interface Variables

Category	Name	Datatype	
VAR_INPUT	TEC1	BOOL	B
VAR_INPUT	TEC2	BOOL	B
VAR_INPUT	TEC3	BOOL	B

Internal and External Variables


Category	Name	Datatype	
VAR	var0	BOOL	B
VAR	var1	INT	
VAR	var2	TIME	




NTed: disaster scenario recovery

NTed


 Darsteller

 Interaktionsschema

































 Verbindungsstatus

 Events

 Nachrichten

 Darsteller

+Neuer Darsteller

Darsteller	Verletzungsmuster	Interaktionsschema	tags	PIN	
Patient 1	Inhalationstrauma	Inhalationstrauma	SK I	EEGB	   
Patient 2	Verbrennungen 3. Grad	Verbrennungen 3. Grad	SK I	0MTH	   
Patient 3	Verbrennungen 3. Grad	Verbrennungen 3. Grad	SK I	VYW6	   
Patient 4	Offener Oberschenkel#	Offener Oberschenkel#	SK I	Z19K	   
Patient 5	KoplaWu + SHT 1°	KoplaWu + SHT 1°	SK II	G7DE	   
Patient 6	Verbrennungen 2°	Verbrennungen 2°	SK II	WM4G	   
Patient 7	Schürfwunde	Schürfwunde	SK III	1S5T	   
Patient 8					
Patient 9					
Patient 10					
Patient 11	Betroffener	Betroffener	SK III	W5UR	   

To simulate disaster response

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



Full system developed
in 5 months one dev
(discontinued)

A product by smaiiworks



Apps

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Shop

Games

Editors' Choice

My wishlist

Redeem

Search

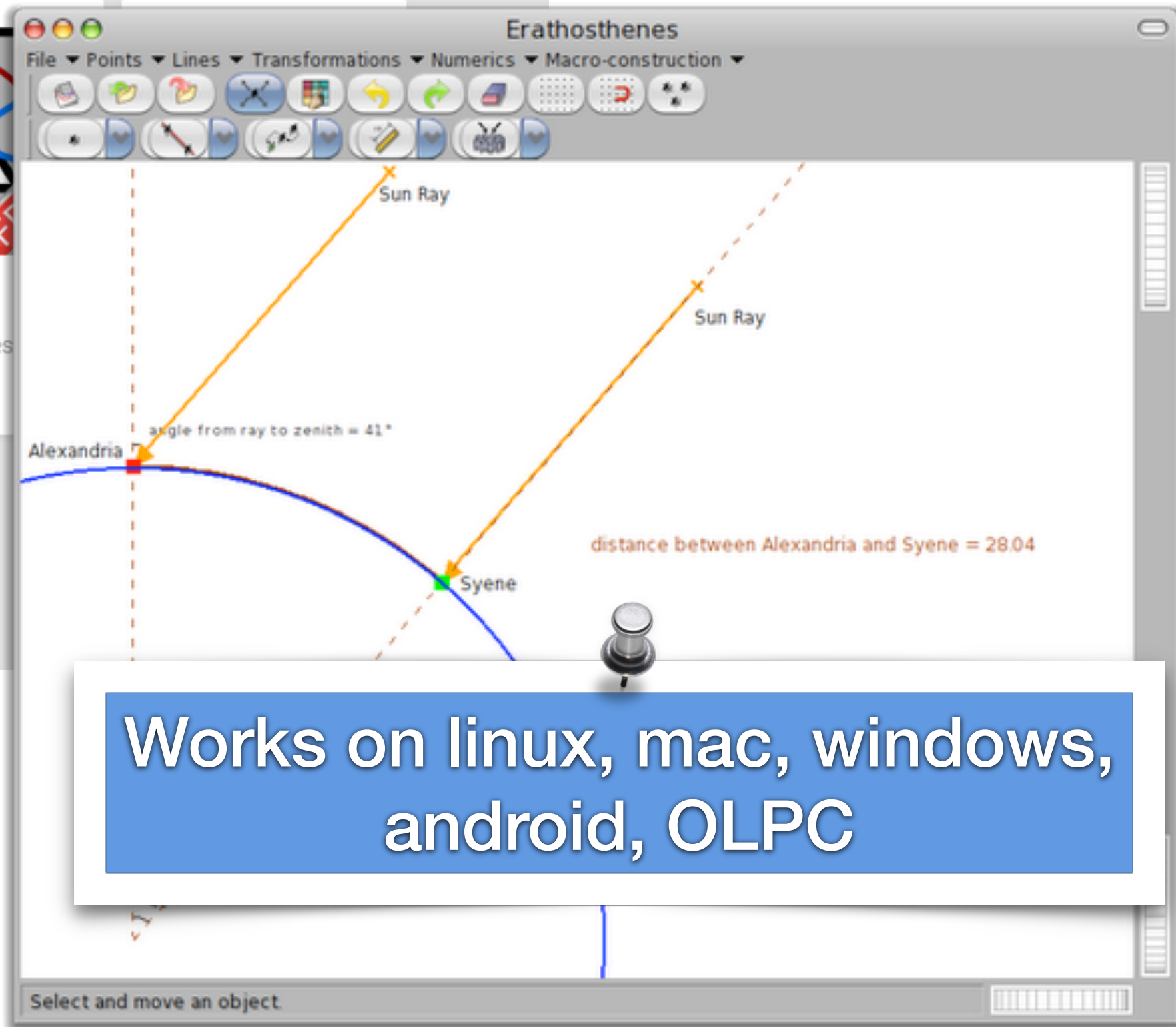
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Dr. Geo free
Hilaire Fernandes



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android, OLPC



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Moose is a platform for software and data analysis.

It is an open source project since 1996. It is supported by several research groups around the world, and it is increasingly adopted in industrial projects.

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enables

Humane
assessment

*the missing software
engineering method*

[Call for help: webpage redesign](#)

29 April 2013

We are starting a project to redesign the Moose webpage. The initial goals of the redesign are: * ...

[Moose 5.0 roadmap](#)

13 April 2013

A summary of the talk laying out the Moose 5.0 roadmap can be found at: <http://www.humane-assessment...>

[Moose 4.8 development: 4045 green tests](#)

20 March 2013

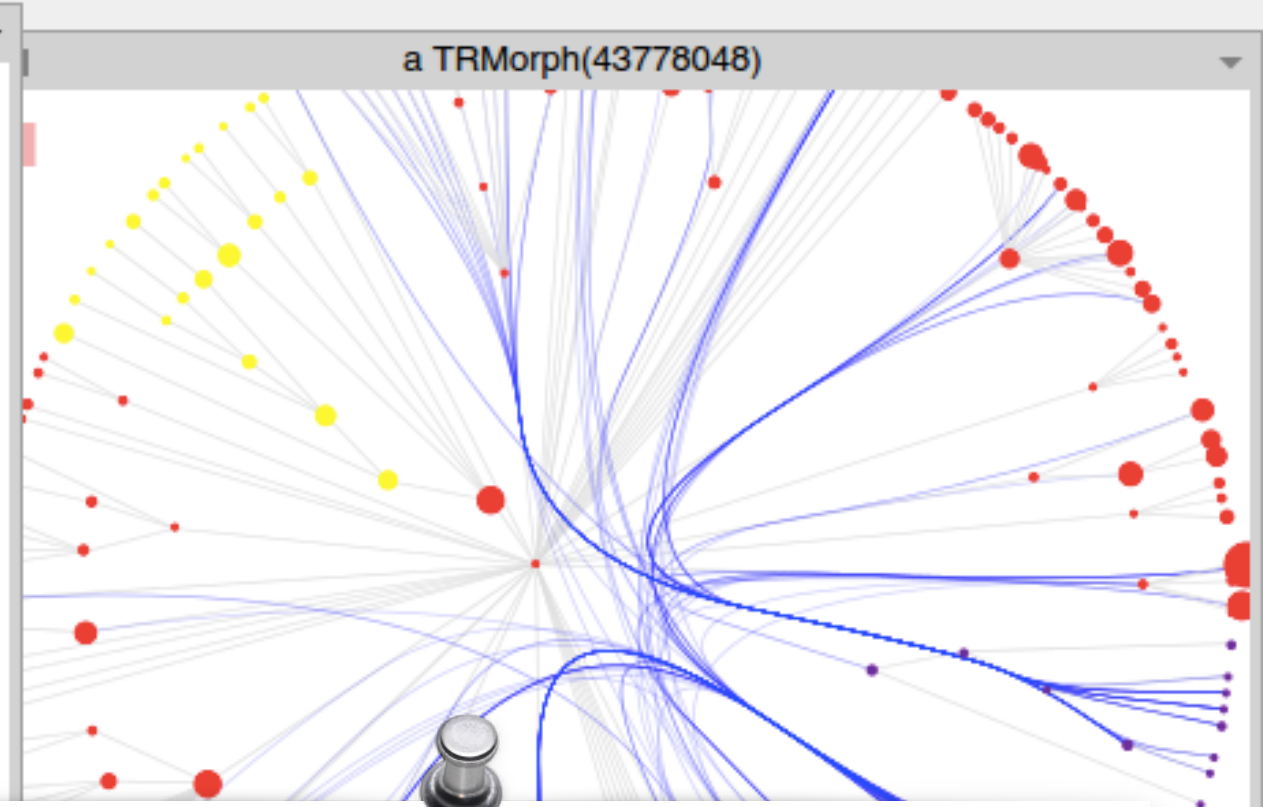
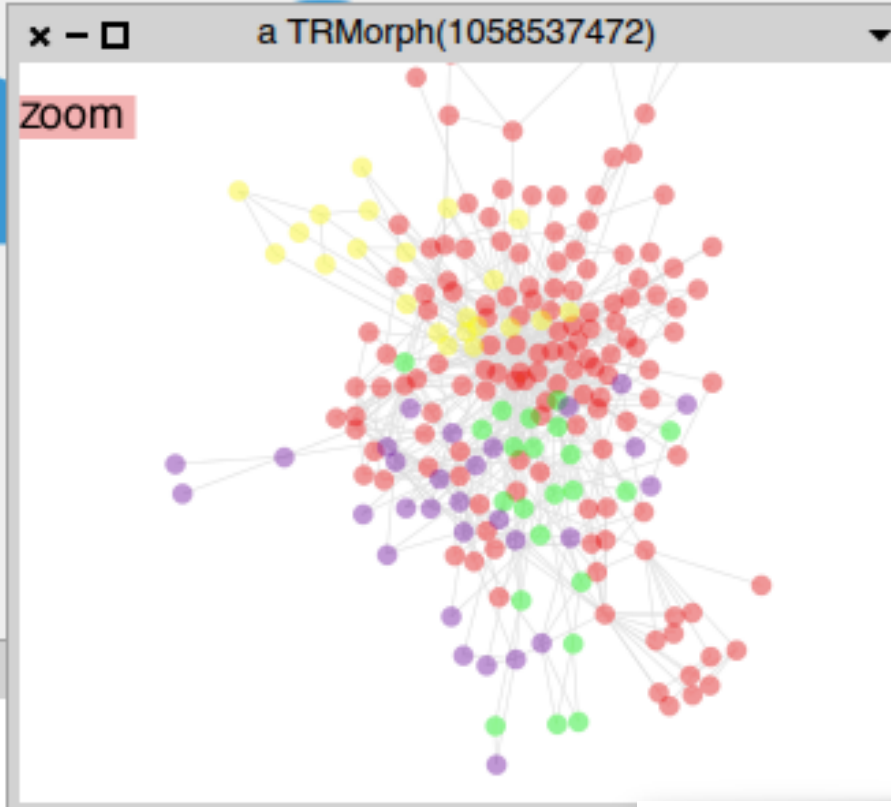
The move from Pharo 1.4 to Pharo 2.0 is finally complete: all 4045 tests are green. The continuous ...

Sophisticated analysis platform
more than 200 men/years

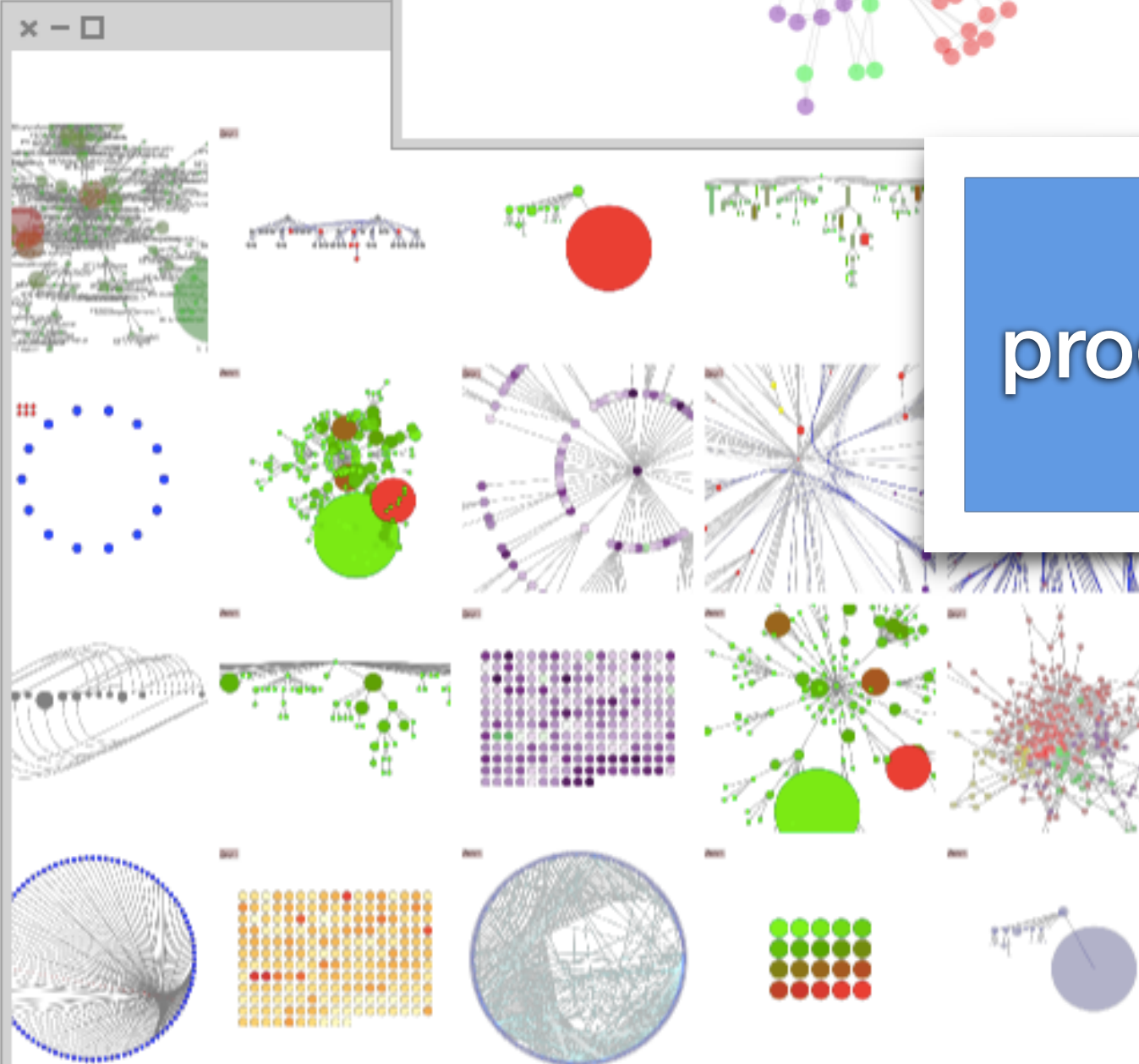
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Pha



ObjectProfile
produces visualizations &
analysis tools



Left to run / Right for code



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

- Your IT is critical to your company.
- Would you dare not to control your risks and neglect the possible impact for your company and customers?
- Start controlling your risks in a standardized and easy way !!!

▶ **FREE TRIAL**

1 BETTER

NORIZZK.COM guides you in composing the most effective and efficient end-to-end test strategy, starting from identified product risks. It helps you focus on the critical aspects of your projects and products.

NORIZZK.COM is the only platform for risk based test management showing you a comprehensive and visual overview on the risk status of your project.

▶ YOUR ADDED VALUE

2 FASTER

NORIZZK.COM is the fastest way to compose your master and detailed test plan. It comes with a predefined knowledge base containing best practices for building your test plan, thus giving you a head start.

NORIZZK.COM allows sharing and reusing knowledge and experiences from previous projects. Over time, **NORIZZK.COM** becomes smarter in guiding you since it is self-learning and continuously improves its best practices.

▶ YOUR ADDED VALUE

3 CHEAPER

As from now, wasting time and money by re-inventing the wheel is history. **NORIZZK.COM** gives you significant savings in creating your test plans.

It provides an intelligent and complete approach for all test managers. **NORIZZK.COM** contains sustainable testing intelligence that can easily be maintained.

▶ YOUR ADDED VALUE

COMPONENTS



Risk Assessment

Identify, categorize, prioritize and mitigate your risks with one single tool.



Test strategy

Write your master and detailed test plan in a faster way.



Test Estimations

Estimate all the required testing effort on one single page.



Test Results

Capture all the test results to monitor the progress.



Reporting

Monitor the progress using the Risk



Export

Export your test plan to a docx file.

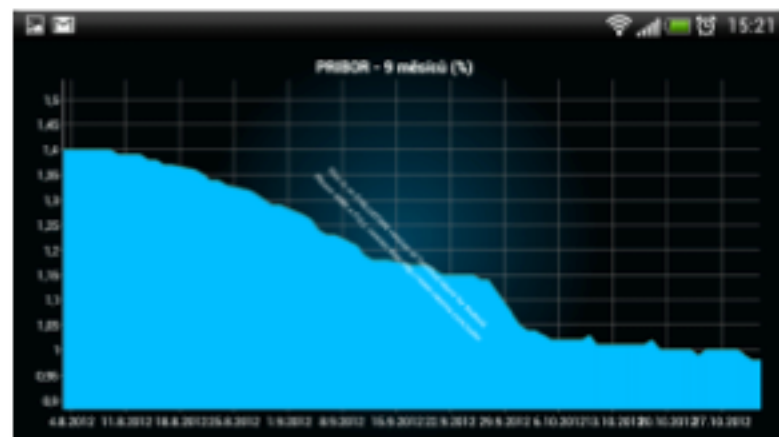
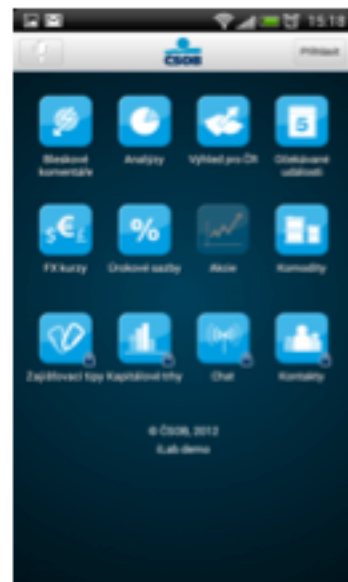


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Discover intelligence in your testing

▶ **LEARN MORE**

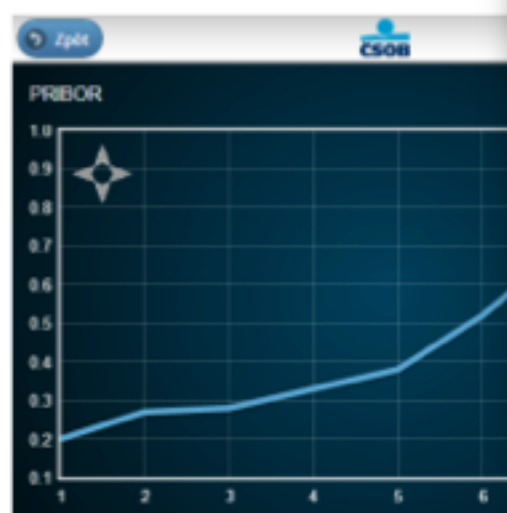
Digitalizing business



Měnoví pár	Nákup	Prodej	Devizová sazba
EURCZK	25.487	25.624	7%
EURCHF	1.200	1.200	7%
EURCZK	20.140	20.270	7%
EURDKK	7.440	7.470	7%
EURGBP	0.814	0.806	7%
EURHUF	20.000	20.000	7%
EURJPY	100.000	100.000	7%
EURKRW	7.000	7.000	7%
EURPLN	0.000	0.000	7%
EURRON	4.000	4.000	7%
EURUSD	0.800	0.800	7%
EURSEK	0.000	0.000	7%



FX pár	Buy	Ask
EURCZK	25.407	25.539
USDCZK	19.746	19.856
EURUSD	1.2836	1.2893
PLNCZK	1.168	1.212
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



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



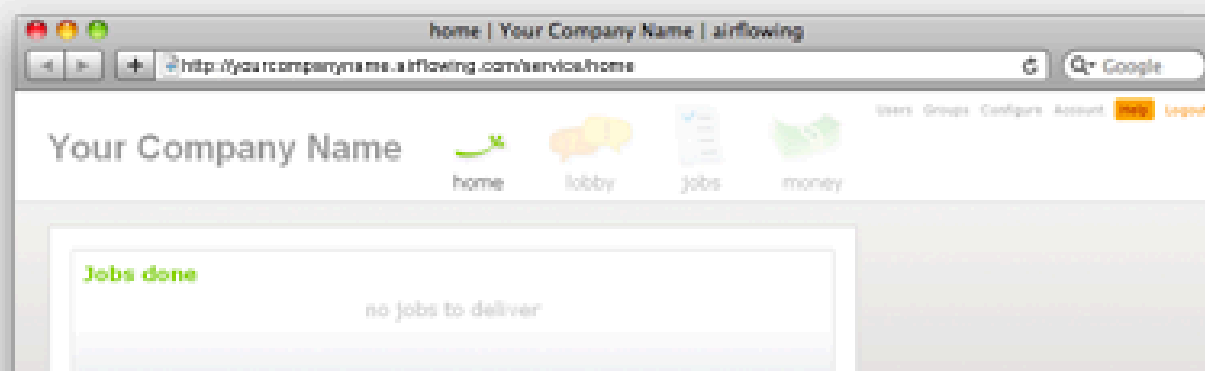
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Deployed business model
did not work



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analysis in 3 months

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tools for software evolution



Dedicated Analyses

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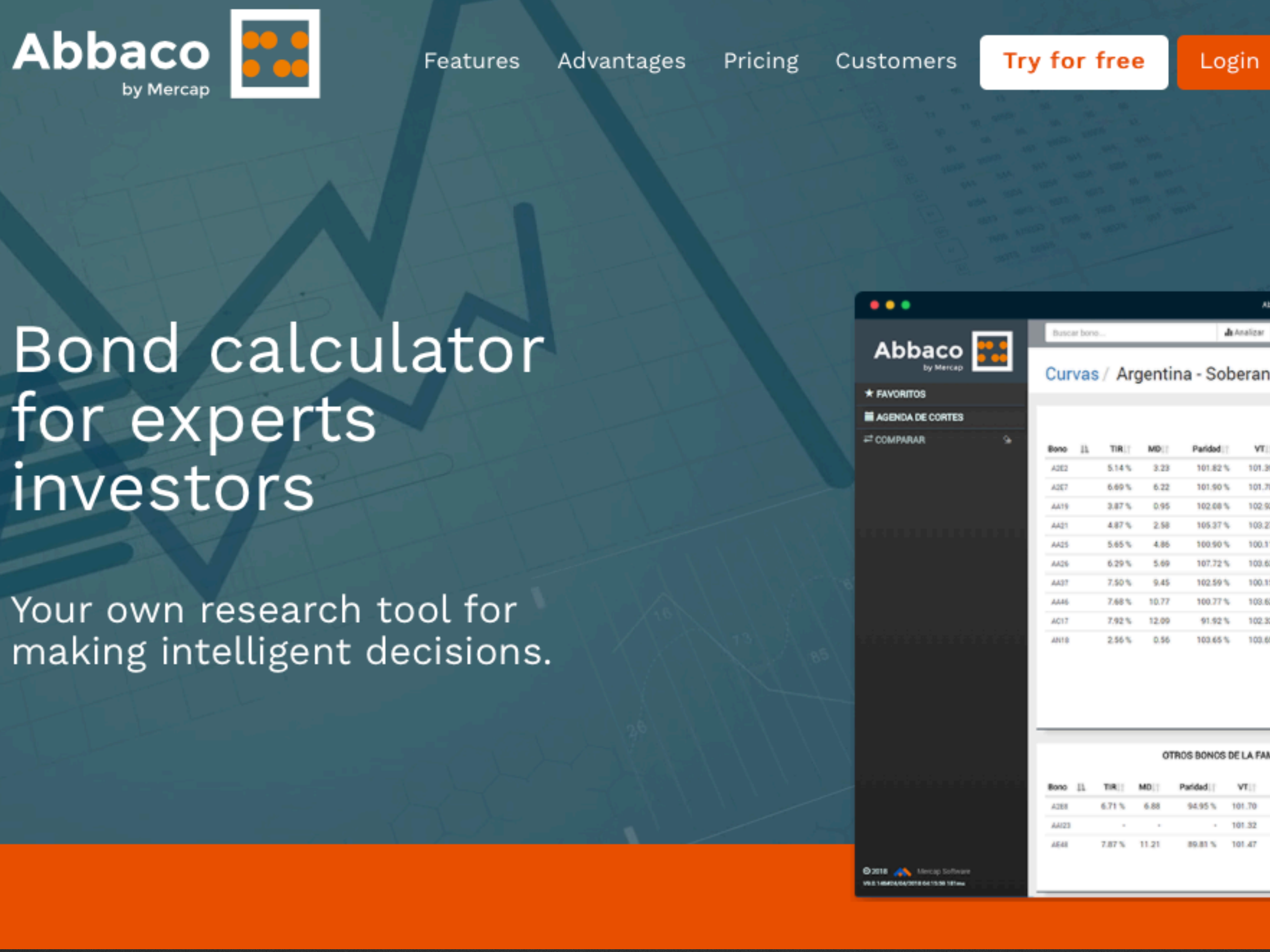
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Abbaco

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★ FAVORITOS

📅 AGENDA DE CORTES

🔍 COMPARAR

Buscar bono...

Analizar

Curvas / Argentina - Soberano

Bono	IL	TIR	MD	Paridad	VT
A2E2		5.14 %	3.23	101.82 %	101.3
A2E7		6.69 %	6.22	101.90 %	101.7
AA19		3.87 %	0.95	102.68 %	102.9
AA21		4.87 %	2.58	105.37 %	103.2
AA25		5.65 %	4.86	100.90 %	100.1
AA26		6.29 %	5.69	107.72 %	103.6
AA37		7.50 %	9.45	102.59 %	100.1
AA46		7.68 %	10.77	100.77 %	103.6
AC17		7.92 %	12.09	91.92 %	102.3
AN18		2.56 %	0.56	103.65 %	103.6

OTROS BONOS DE LA FAM

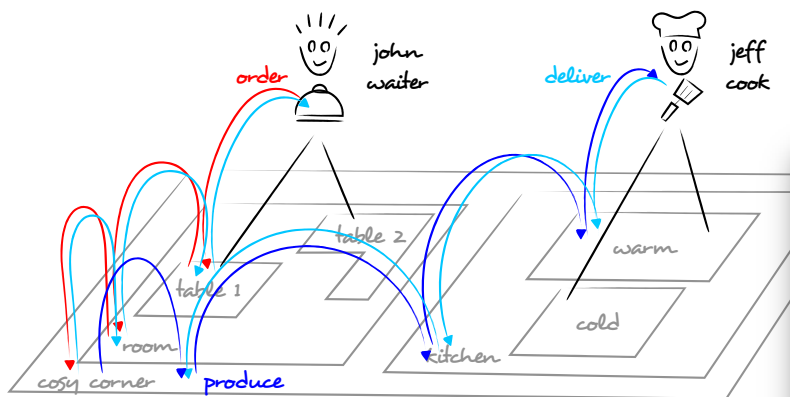
Bono	IL	TIR	MD	Paridad	VT
A2E8		6.71 %	6.88	94.95 %	101.70
AA123		-	-	-	101.32
AE48		7.87 %	11.21	89.81 %	101.47

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Mercap Software

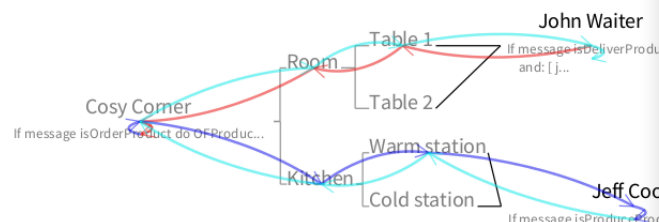
V0.0.1.00000000/2018-04-15 08:18:18

feenk



Help growing startups Get back control on software

```
ofdemo2
"CONTRIBUTORS"
jeffCook := OFCookActor new name: 'Jeff Cook'.
johnWaiter := OFWaiterActor new name: 'John Waiter'.
"AREAS"
cosyCorner := OFVenueActor new name: 'Cosy Corner'.
kitchen := OFRoomActor new name: 'Kitchen'; parentArea: cosyCorner.
warmStation := OFKitchenActor new name: 'Warm station'; parentArea: kitchen; addContributor:
jeffCook.
coldStation := OFKitchenActor new name: 'Cold station'; parentArea: kitchen; addContributor:
jeffCook.
room := OFRoomActor new name: 'Room'; parentArea: cosyCorner.
table1 := OFTableActor new name: 'Table 1'; parentArea: room; addContributor: johnWaiter.
table2 := OFTableActor new name: 'Table 2'; parentArea: room; addContributor: johnWaiter.
"PRODUCTS"
steak := OFProduct new name: 'Steak'; characteristics: {OFWarm}.
sandwich := OFProduct new name: 'Sandwich'; characteristics: {OFCold}.
cosyCorner products: { steak . sandwich }.
"MESSAGE HANDLERS"
cosyCorner addScriptedMessageHandler
when: [ :message | message isOrderProduct ];
execute: [:message :handler | OFProduceProductMessage new ].
jeffCook addScriptedMessageHandler
when: [ :message | message isProduceProduct ];
execute: [:message :handler |
handler
queue: message
to: [OFDeliverProductMessage new to: handler actor areas anyOne] ].
johnWaiter addScriptedMessageHandler
when: [ :message |
message isDeliverProduct and: [
johnWaiter areas includes: message initialReason receiver ] ];
execute: [:message :handler |
handler
queue: message
to: [ self inform: message product gtDisplayString, ' delivered!' ] ].
cosyCorner.
"ORDERS"
orderSteak := OFOrderProductMessage new product: steak; sendBy: johnWaiter to: table1.
orderSandwich := OFOrderProductMessage new product: sandwich; sendBy: johnWaiter to: table1.
cosyCorner
```



A screenshot of an IDE showing code, a debugger, and variables. The code is for a test case 'testPlaceOrderFromWaiterToCookWithProduct'. The debugger shows the execution of the test, with a stack trace and a list of variables. The variables include 'placeOrderMessage', 'relationProxyRegistry', 'sender', 'receiver', 'reason', 'consequences', 'objectID', 'object', 'state', 'currentRevision', 'database', and 'id'.

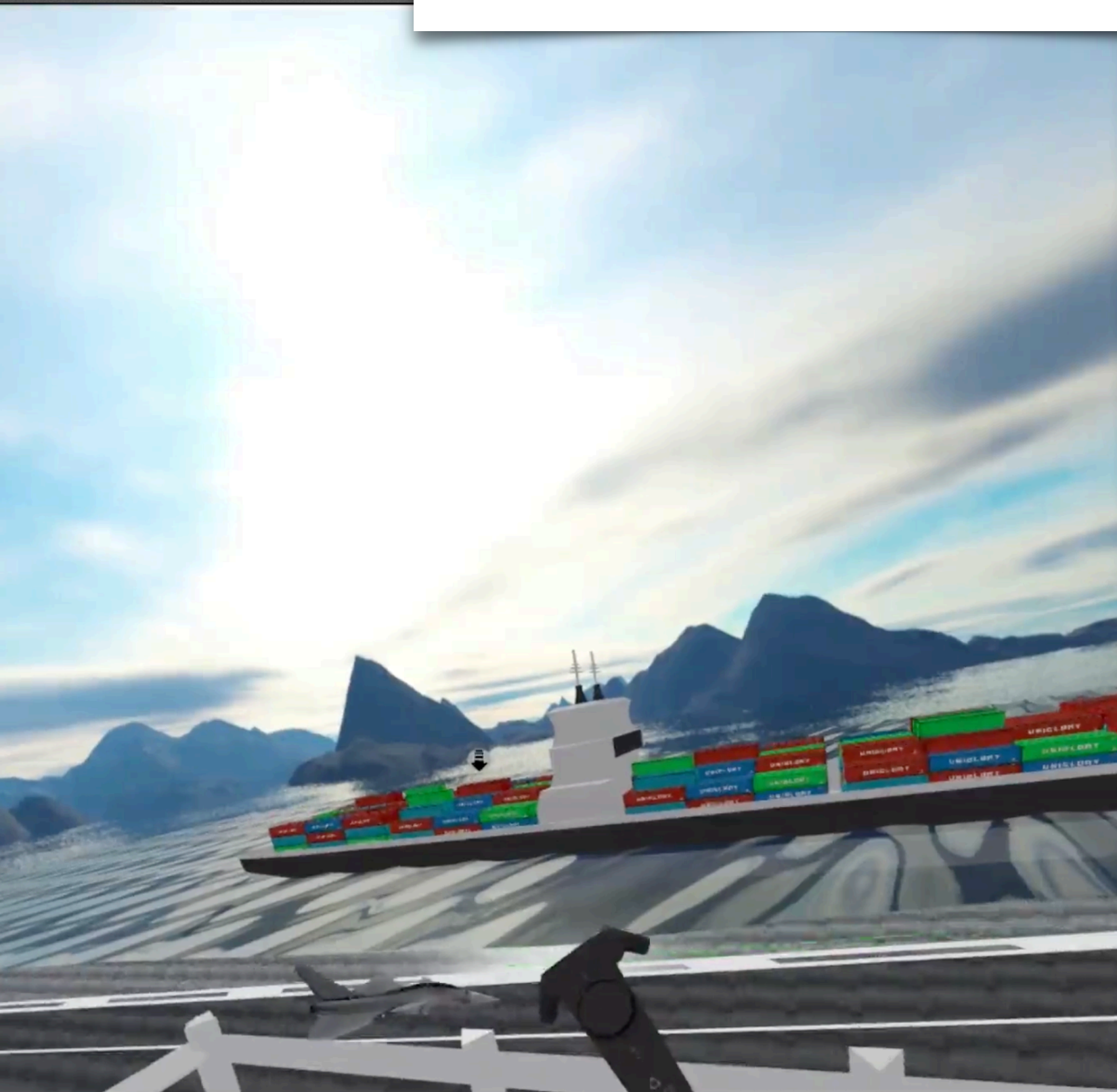
feenk

glamorous**toolkit**

feenk.co
m/gt

Build advanced tools for business experts
and CEO of large companies

Thales prototyping VR



```
Page
tmp := OVRWDemoAircraftCarrier open.
tmp
```

OVRWDemoAircraftCarrier

Scoped Variables

Type: Pkg1/*Pkg2/Pk...

- OpenVR
- OpenVR-Woden
- OpenVR-Woden-Pharo-Help
- Polymorph-Task
- Polymorph-Widg
- PragmaCollector
- ProfStef-Core
- ProfStef-Help
- ProfStef-Tests

ProtoObject

- Object
- WDAApplication
- WDFPSEExample
- OVRWEmptyExample
- OVRWExample
- OVRWDemoAircra
- OVRWDemoPickir
- OVRWExampleCoiv

Hier. Class Com.

History Navigator

- all --
- event handling
- initialize
- menu
- scene content
- updating

- addAbeilleBourbon
- addBarrel
- addBoxes
- addCargo
- addCharlesDeGaulle
- addHawkeye
- addHelicopter
- addObjectAt:orientation:s
- addPlayableAreaToScene
- addRadar

Controls:

- Big front button for teleportation
- Menu button to change the color of the sea

OVRWExample subclass:

```
#OVRWDemoAircraftCarrier
instanceVariableNames:
'flyingRafaleNode teleportLocations
scrollGestureListener menu
operationQueue waterMaterial
dynamicsWorld'
classVariableNames: ''
package:
```

1/11 [2] -- 1/11 [25] Format as you read W +L 1/3 [1]

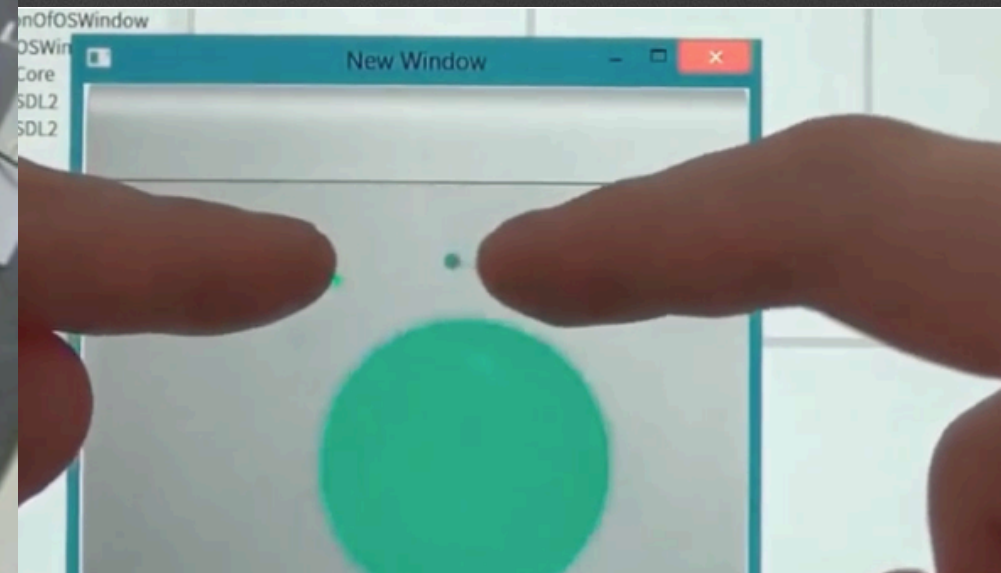
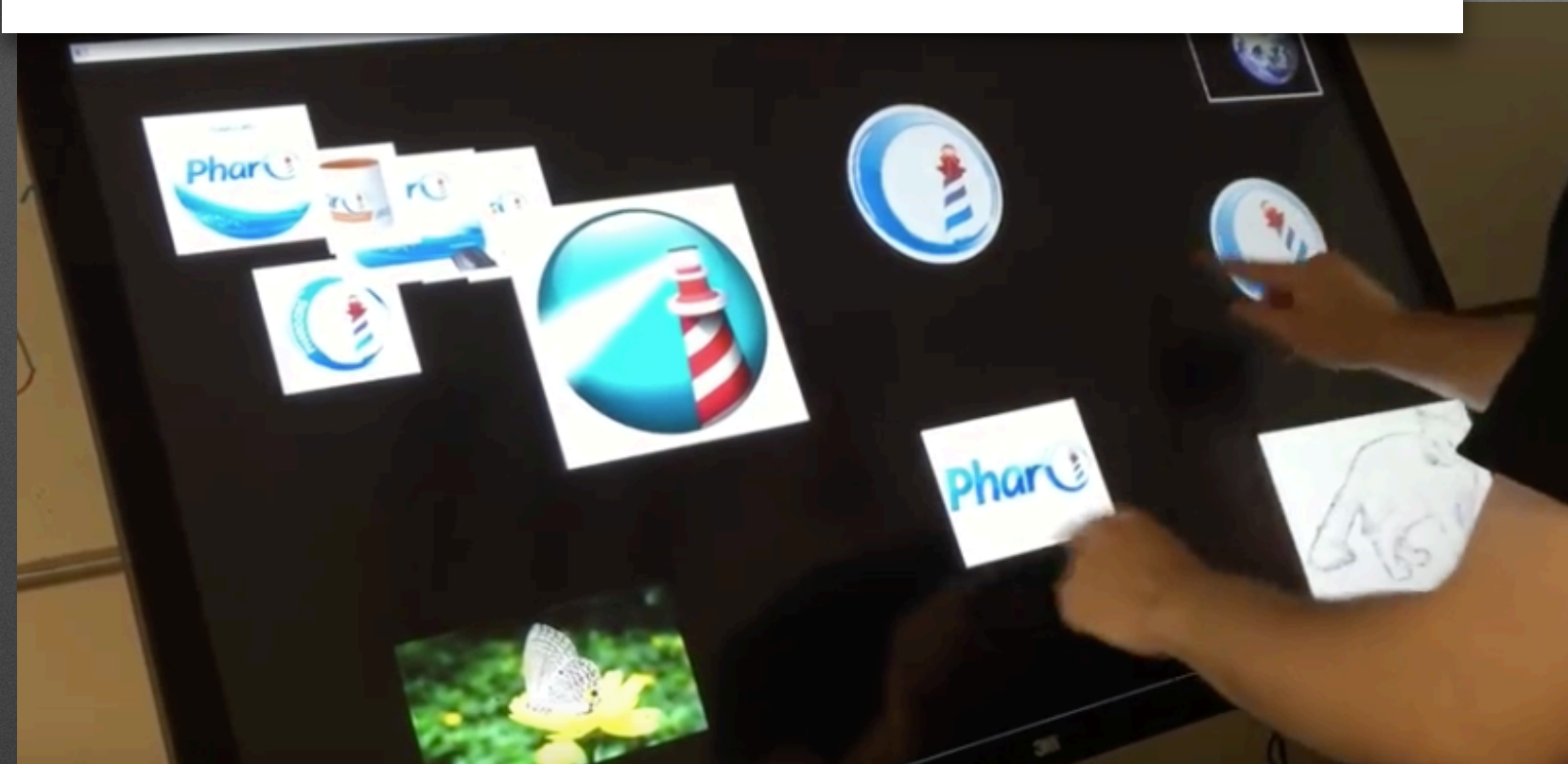
Class not referenced ? X

[dynamicsWorld] Instance variables not read AND written ? X

[dynamicsWorld] Variables not referenced ? X

OVRWDemoAircraftCarrier Playground

Thales prototypes advanced interaction design



Mobility Map: a broker for mobility services

multi-modal routing search

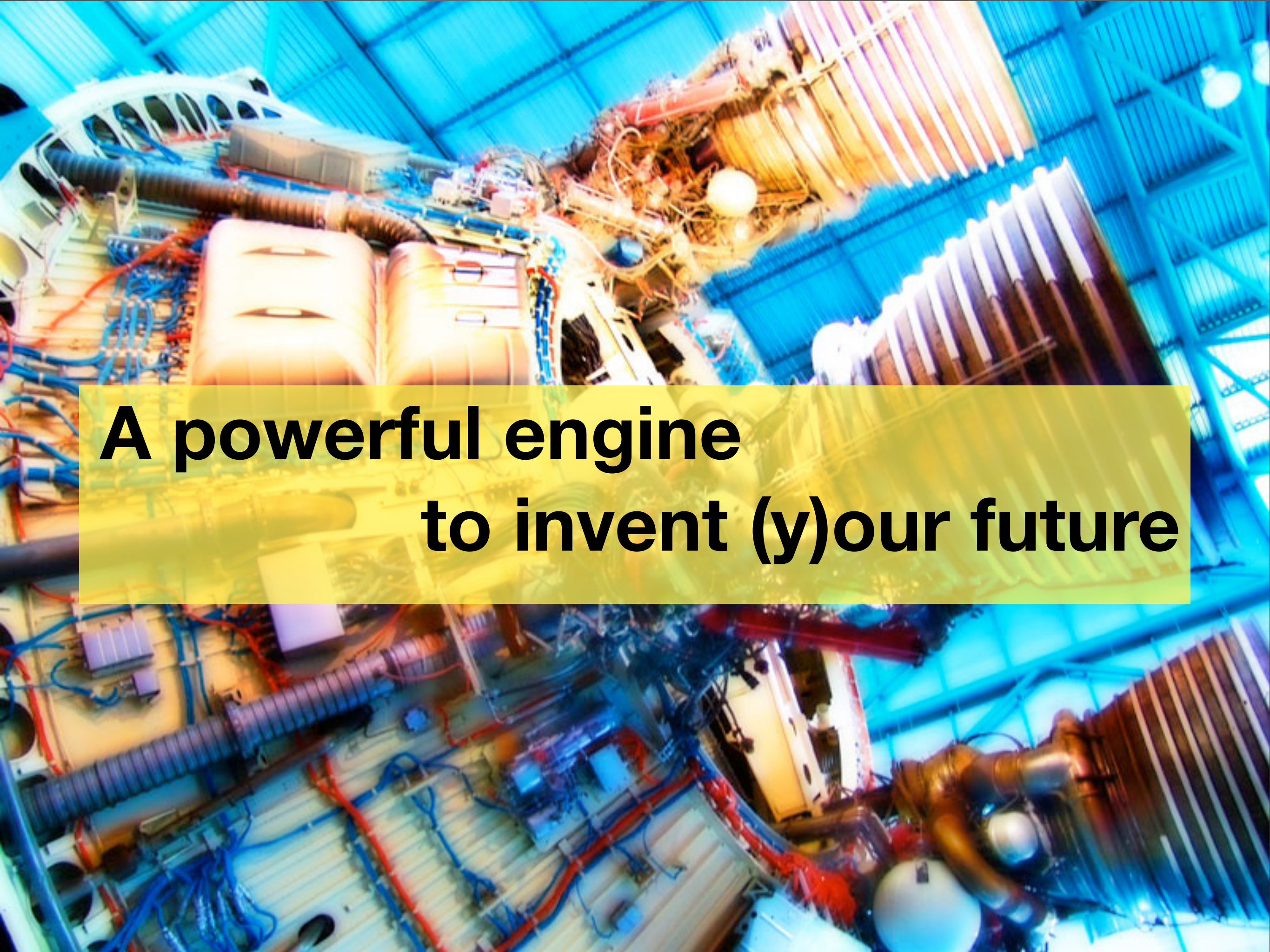
docker running dozens of pharo

The screenshot displays the Mobility Map application interface. On the left is a sidebar with navigation options: 'My Bookings' (with a list of three bookings: two 'smart forfour' cars and one 'Opel Astra Kombi'), 'Search Plan Trip', 'My Bookings Add and send tickets', 'My Account Manage linked accounts', and 'Help and Information FAQ, Service and Contact'. Below the sidebar is a language selector with 'en' and 'de' buttons. The main area shows an 'Outbound' trip from 'Kreetslag 10 21129 Hamburg' to 'Bremen' with a departure time of '29. Sep until 17:10'. The map displays several routing options as vertical bars with icons and times:


- Shuttle bus 1004** (blue bar): 13:30 to 15:15, Bus Finkenwe...
- Ridesharing** (green bar): 15:10 to 16:28, H. 9
- Shuttle bus 1006** (blue bar): 16:45, Bus Finkenwe...
- CarPool A (Kleinwagen)** (dark blue bars): 17:06 to 16:23, H. 50/51, H. 62, H. 9, H. 14 W [OW-N], H. 214

The interface also includes a map background and a 'My Bookings' section on the left sidebar.

Remember? Our goal...



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



**An ecosystem where
innovation/business bloom**

You are not alone...

Industrial consortium

<http://consortium.pharo.org>

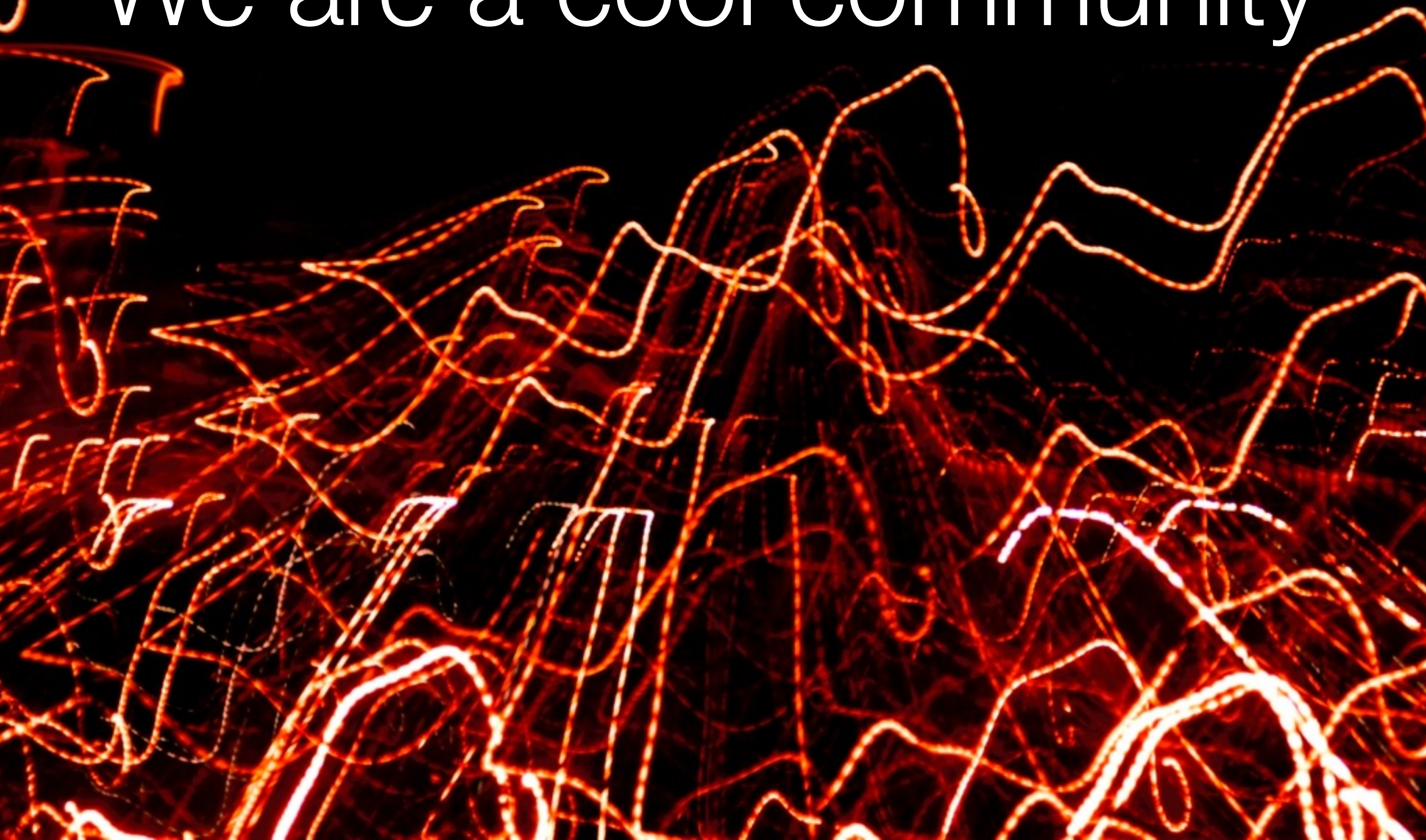
No marketing

No hype

Adults deciding to use

**Understanding strengths and
weaknesses**

0 We are a cool community



More Pharo's Teachers

- Univ. of NoviSad • 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. • 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. of Yaounde • Uni. of Saint-Louis • INFTI • Uni. of Lyon • Univ. Montpellier • Uni. of Cordoba

Research Groups

Lafhis (AR)

SCG (CH)

CAR (FR)

RMOD (FR)

Ummisco (IRD)

Reveal (CH)

Lysic (FR)

CEA-List (FR)

Uqbar (AR)

OC (FR)

CCMI-FIT (CZ)

ASERG (BR)

Pleiad (CL)

SoftQual(Serb)

A Pure OO World

Only objects +
messages + closures!

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

**Domain Modeling =
Focus on your domain**

**Amazing moldable
tools**

**Customize object
interaction/presentation
to focus on YOUR
domain**

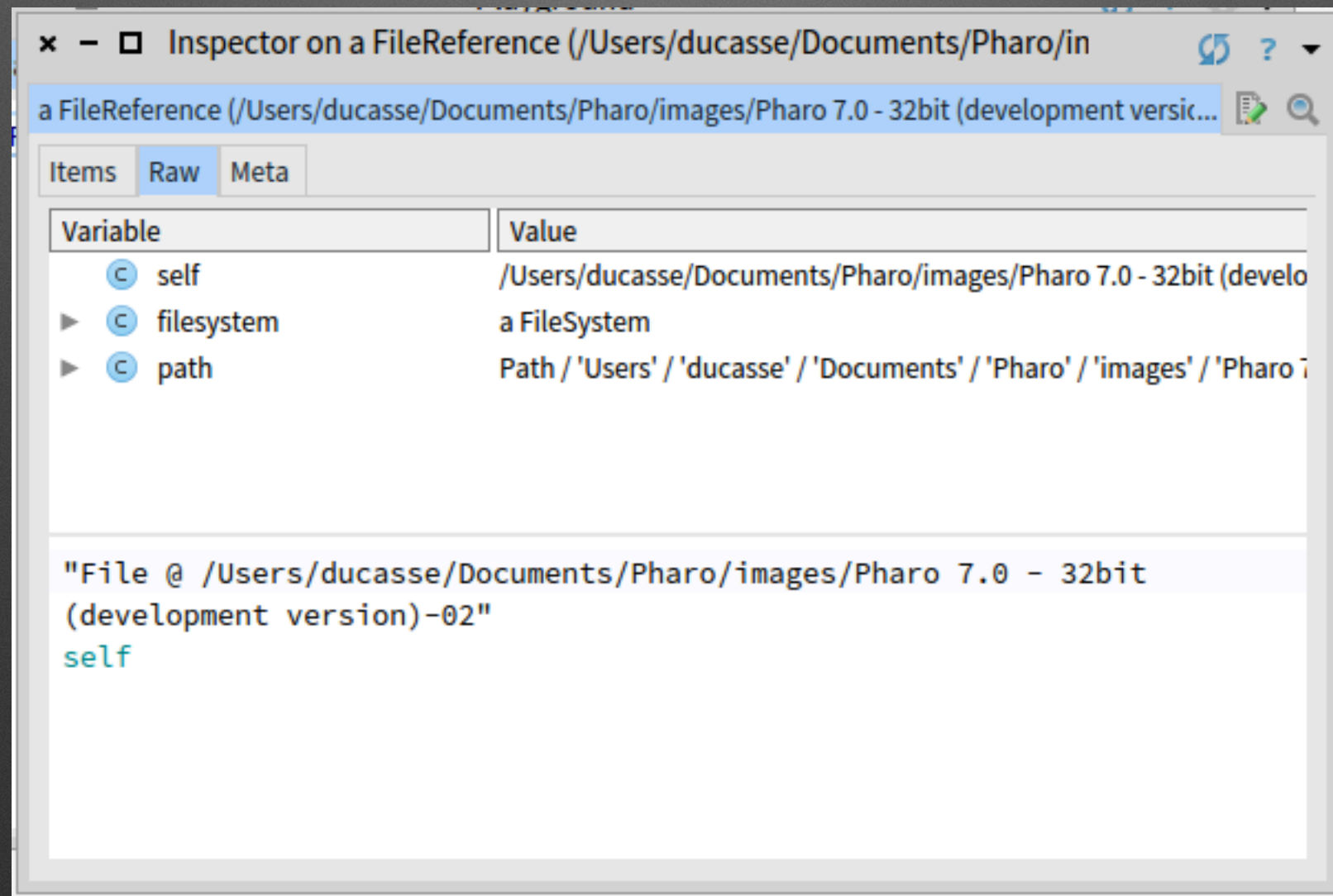


Raw	Live	Meta
-----	------	------

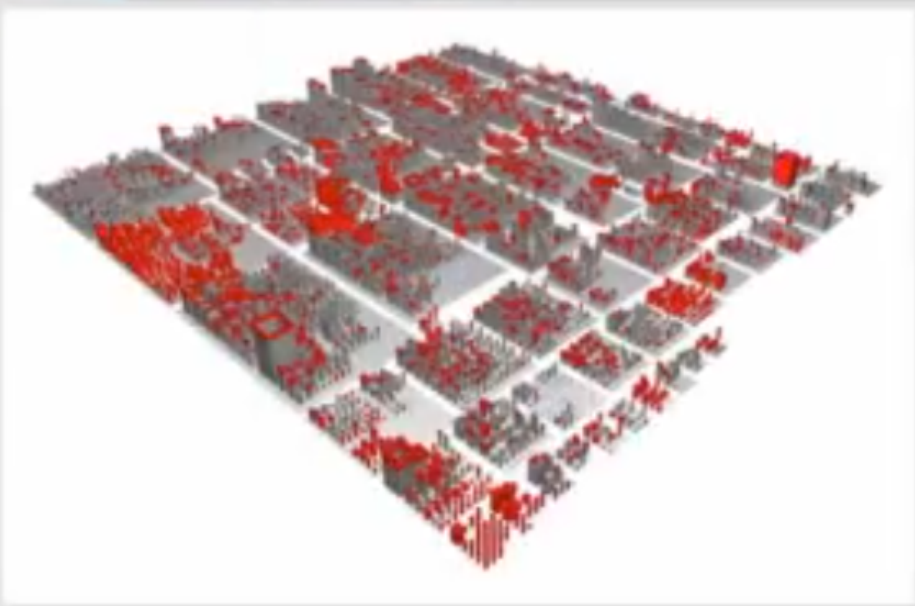
Items	Raw	Meta
-------	-----	------

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

Traditionally a file reference...



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)

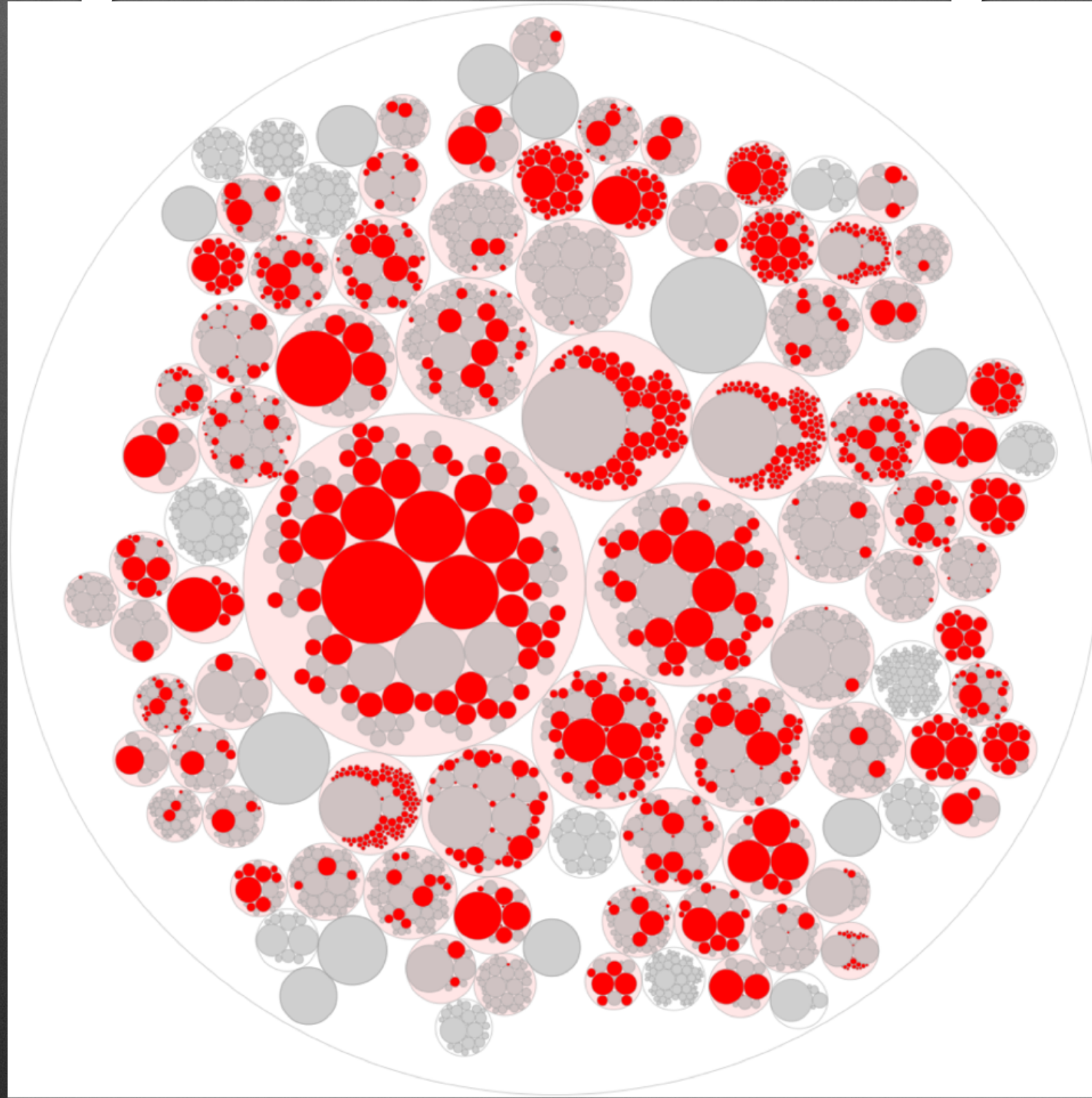
a RBAssignmentNode (RBAs...

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;

debug it

Bytecode GT

Parser Stack

Through ActionInto ReduceNext TokenPossible Actions

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,#(5382))}
Identifieropt	nil
"{"	{{(238687,238687,#(28))}
FormalParameterListopt	an Array(an OrderedCollection() an OrderedCollection())
"{"	{{(238688,238688,#(23))}
"{"	{{(238689,238689,#(25))}
SourceElements	an OrderedCollection(a JSVariableStatementNode a JSVar
MemberExpression	a JSNameExpressionNode
"."	.(274447,274447,#(38))

Symbol	Action
<identifier>	Shift
IdentifierName	Shift

GLR1

Input

Step to CursorScannerStep Next Character

```
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

ProceedRestartIntoOverThroughSourceWhere is?Browse

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	DoIt
CompiledMethod	valueWithReceiver:arguments:
RubSmalltalkEditor	debug:receiver:in: [aCompiledMetho
BlockClosure	newProcess [self value.Process

```
self restoreState: currentState.
(trialAllStates 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 ]
```


Since may 2008

Pharo 7.0 - Nov 2018 ... 63 contributors - 111 Forks.

Pharo 6.0 - Apr 2017 100 committers (1700 issues closed)

Pharo 5.0 - Apr 2016 90 committers (1600 issues closed)

Pharo 4.0 - Apr 2015 70 committers (1271 issues closed...)

Pharo 3.0 - Apr 2013 (2364 issues closed)

Pharo 2.0 - Apr 2013 (1727 issues closed)

Pharo 1.4 - Apr 2012 (860 updates)

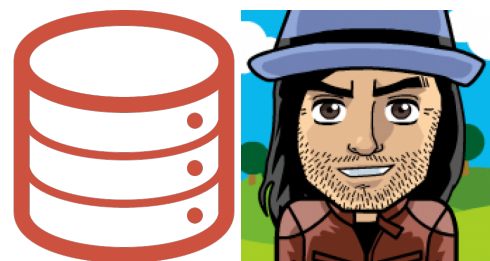
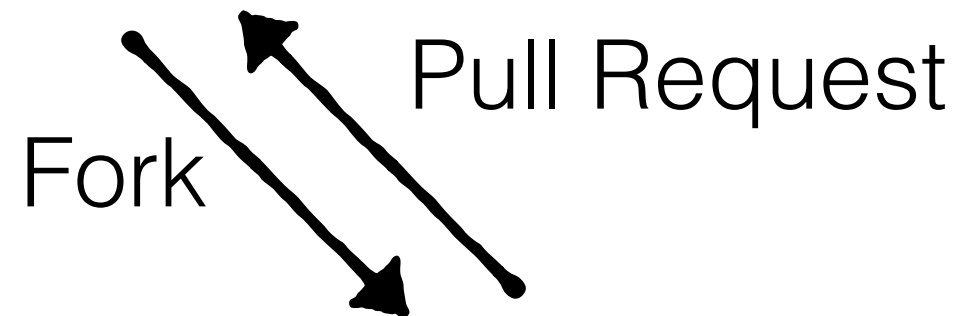
Pharo 1.3 (700 updates)

Pharo 1.2 - mar 2011 (500 updates)

Pharo 1.1 - jul 2010 (410 updates)

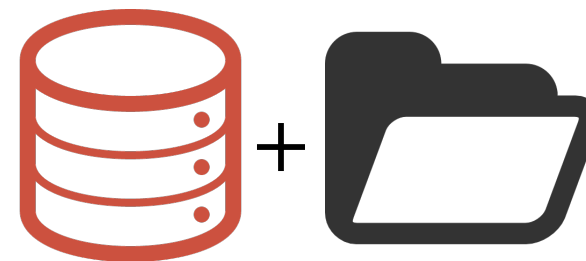


Starting to get GitHub exposure

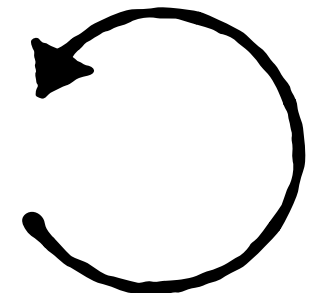


Push

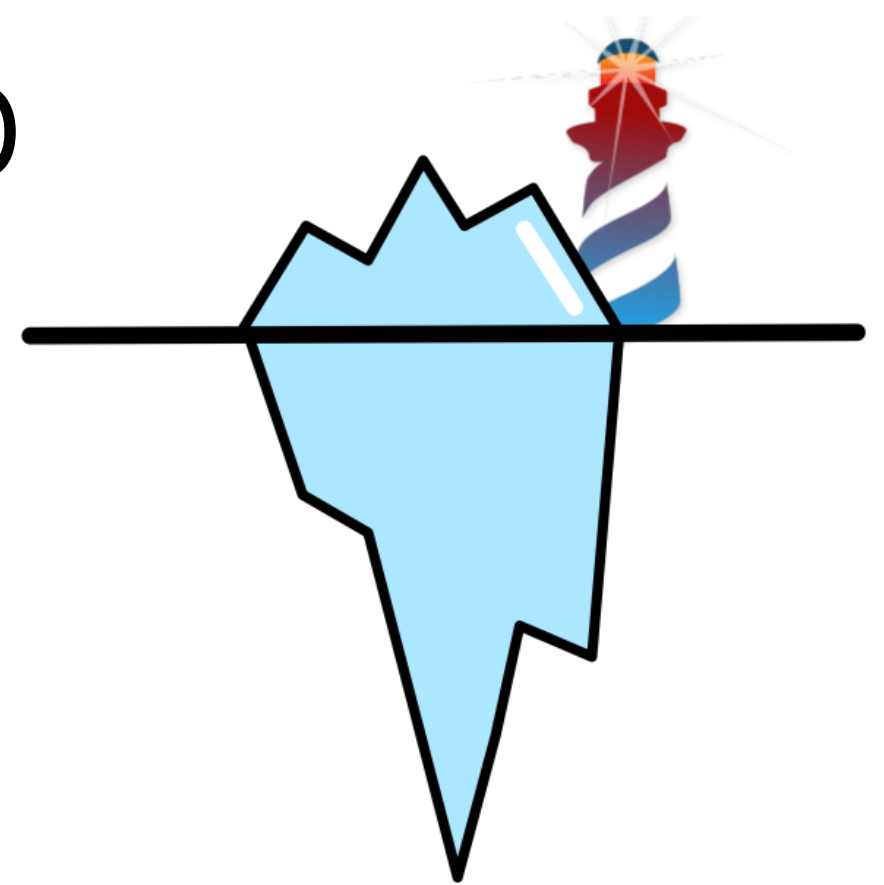
Clone

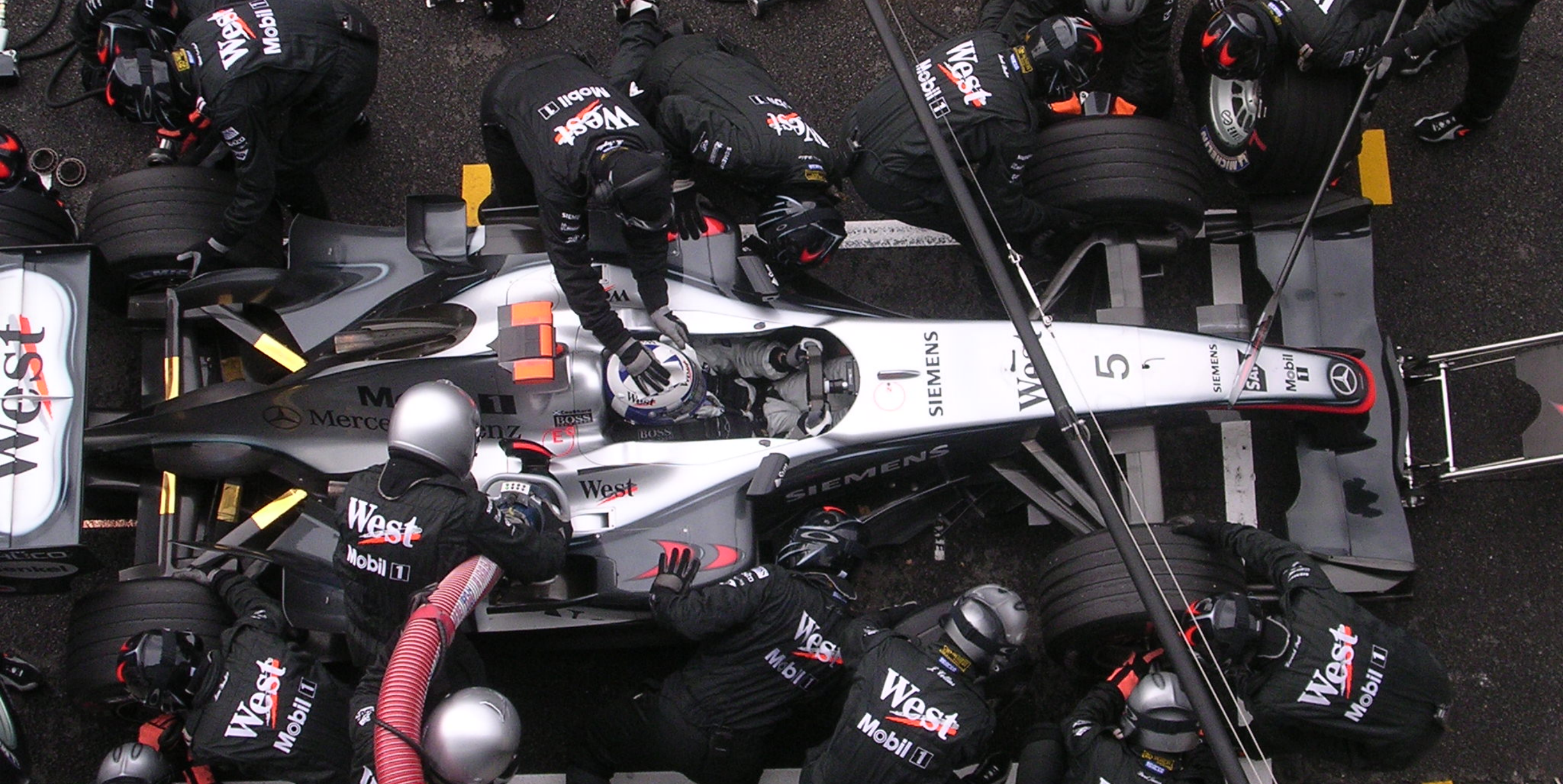


Commit



's Machine





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

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



Pharo

is **yours**

- 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, Reef, ...)
- REST integration

Concentrate on
your application ...

... no manual
request parsing

... no XML
configuration files

Natural Flow

We don't think in
pages ...

..., but in stateful
components



Valid

**Secure by default
no injection**



<http://books.pharo.org>

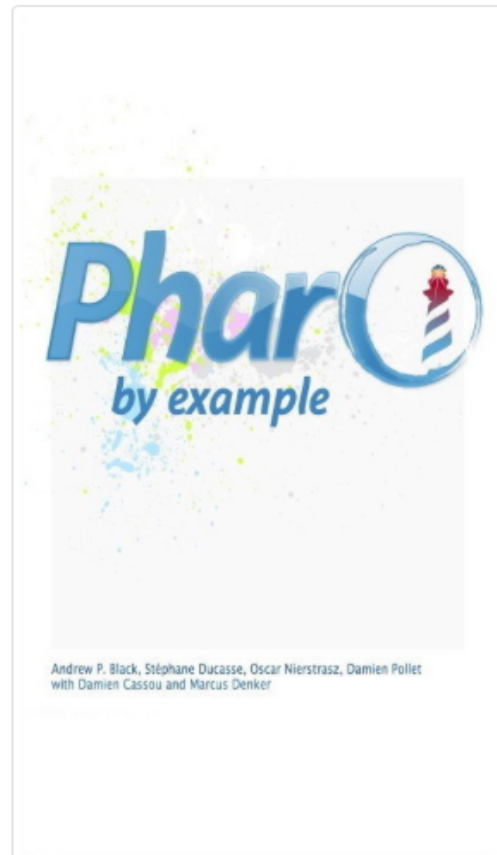
Pharo Books

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

Contribute to the SquareBracketsAssociates community free books

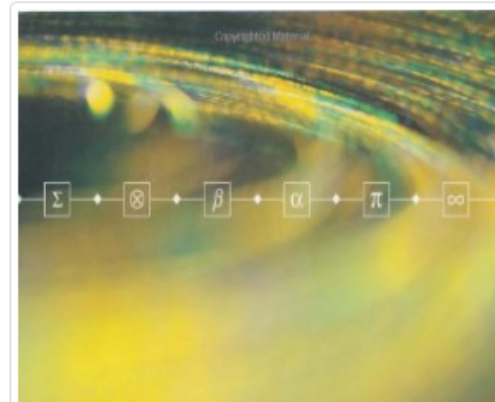
<https://github.com/SquareBracketAssociates/>

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 »](#)



TinyBlog: Un Tutorial Web en
Pharo



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 »](#)

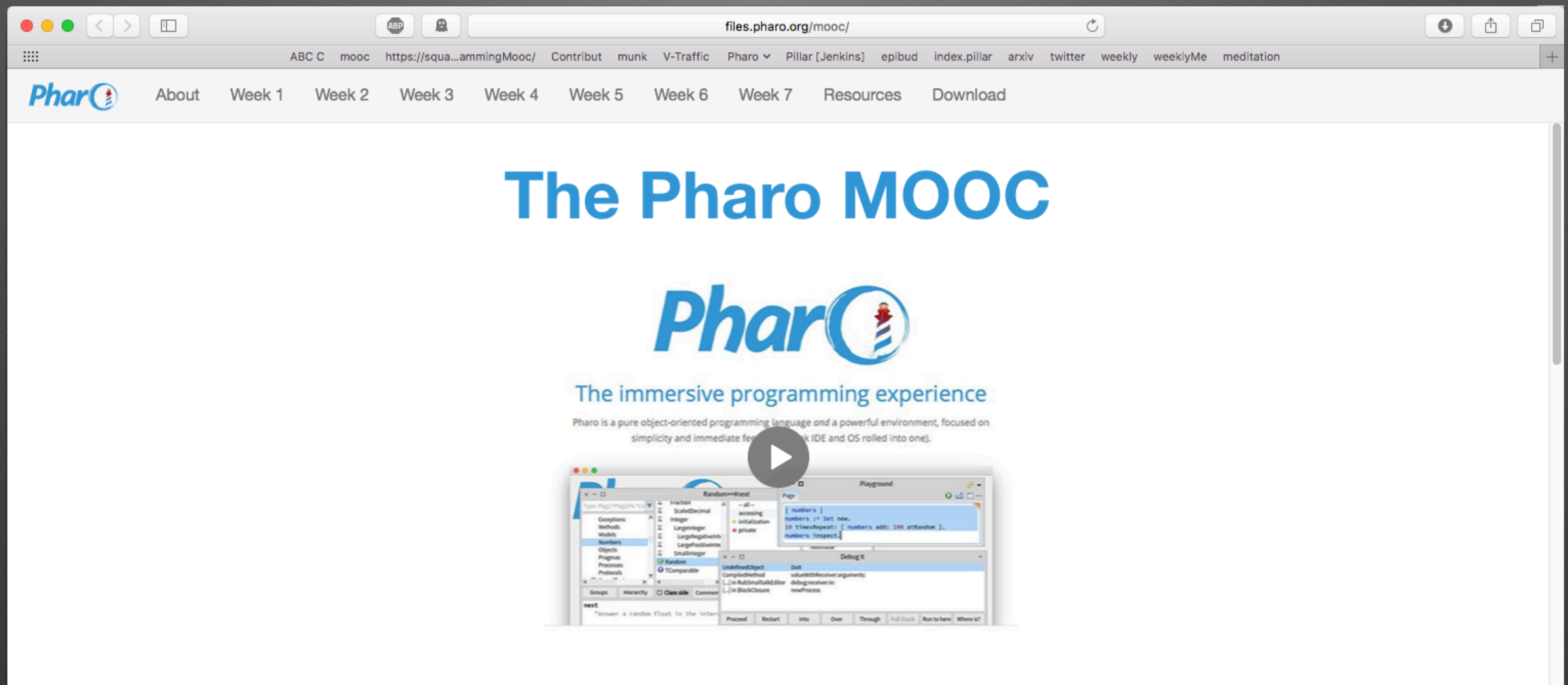


Enterprise Pharo is the third volume of the series. This book covers libraries and frameworks for enterprises, and in particular those doing web development.

[View details »](#)



<http://mooc.pharo.org>



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:

http://discord.gg/Sj2rhxn

The screenshot shows a Discord interface with a dark theme. On the left is a sidebar with a user list (3 online) and a channel list. The selected channel is #mooc. The main area displays a message history with 23 new messages since 9:59 AM on November 23, 2017. The messages are from akgrant0710, Peter Uhnak, and Marek Erben, discussing a testing protocol and a Bag collection. The right sidebar shows a list of users in the channel, including ADMIN-3, CHANNEL-ADMIN-7, and ONLINE-42.

Channel: #mooc

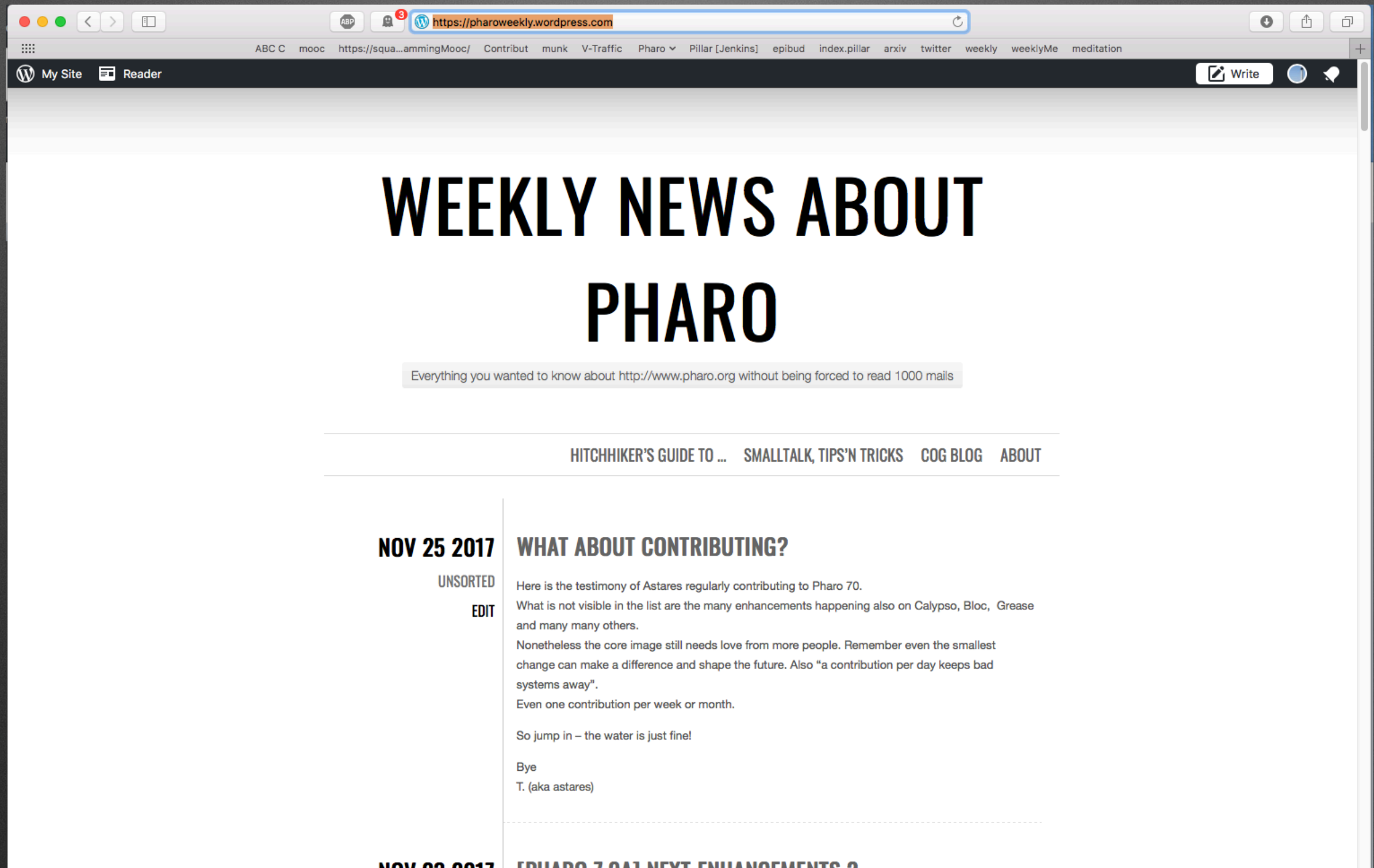
Message History:

- 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)

User List (Right Sidebar):

- ADMIN—3
 - Esteban Lorenzano
 - Juraj Kubelka
 - kilon
Playing Elite: Dangerous
- CHANNEL-ADMIN—7
 - Alexandre Bergel
 - Clement Bera
 - PhilBack
 - Stepharo
 - Torsten Bergmann ...
 - Tudor Girba
 - Yuriy Tymchuk
- ONLINE—42
 - akgrant0710
 - AlejandroInfante
 - awarenhem
 - Benoit Verhaeghe

https:// pharowebkly.wordpress.com



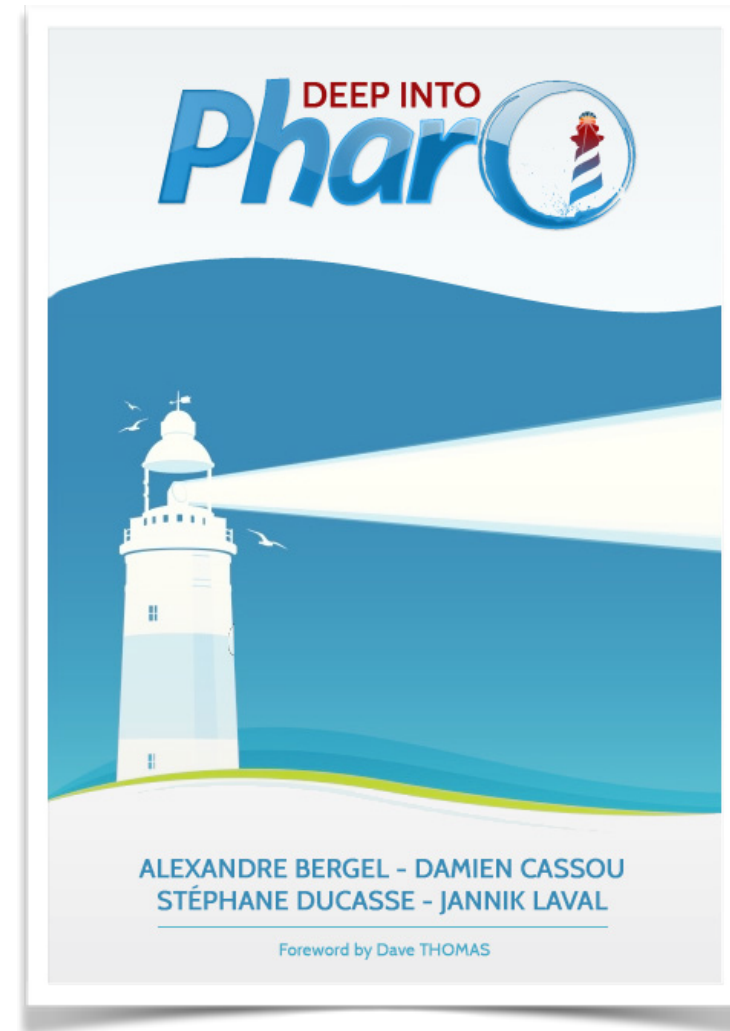
Pharo by Example

- * <http://books.pharo.org>
 - * translated to french, merci!
 - * translated to spanish, gracias!
 - * translated to japanese, ありがとう!
- * Currently updated to Pharo 50



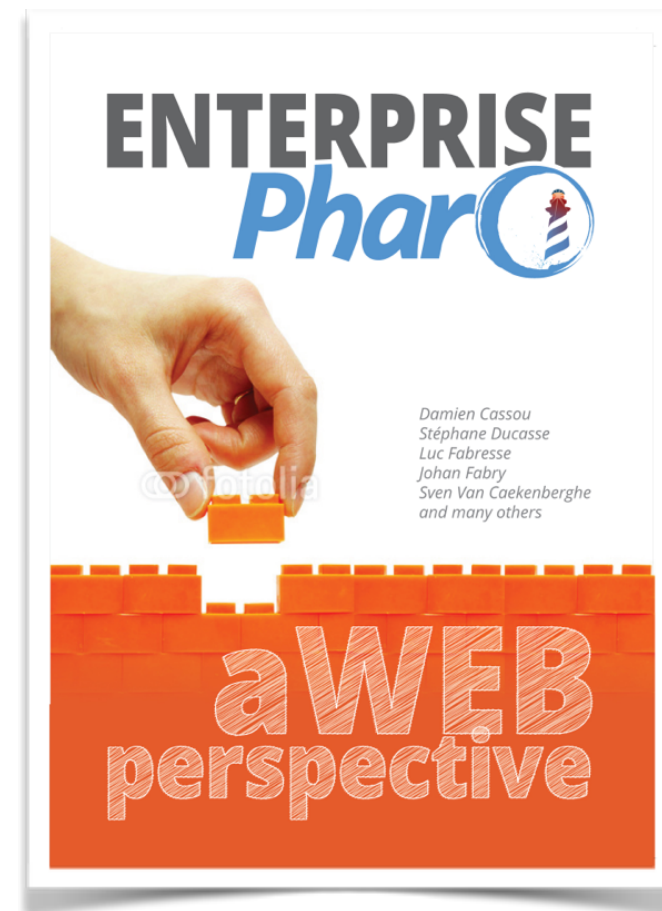
Deep into Pharo

- * <http://books.pharo.org>
- * Some advanced topics
 - * Libraries
 - * Core language
 - * Tools



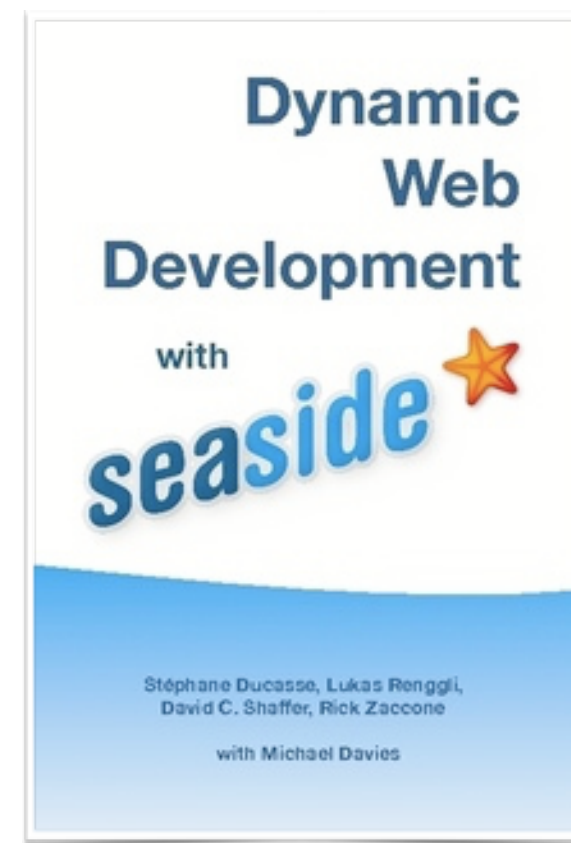
Entreprise Pharo

- * <http://books.pharo.org>
- * Web related
 - * Encodings,
 - * Mustache
 - * JSON
 - * WebSockets
 - * HTTP/HTTPS



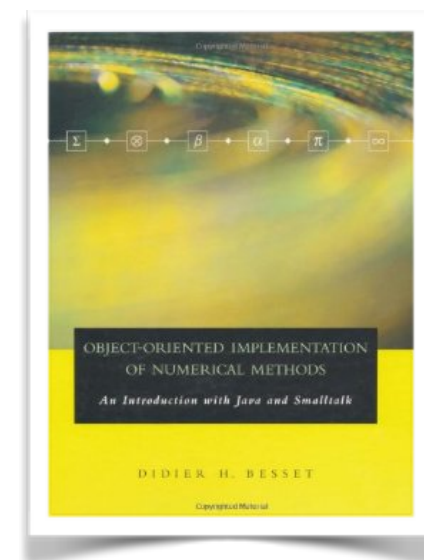
Dynamic Web with Seaside

- * <http://book.seaside.st>
- * Full framework explained
- * DSL + Call:/answer:
- * Automatic form generation
- * Deployment



Numerical Methods

- * <https://github.com/SquareBracketAssociates/NumericalMethods>
- * Data mining
- * Clustering
- * Iterative algorithms
- * Series
- * Statistical analysis



A scenic view of a white lighthouse with a black top, situated on a rocky cliff covered in green vegetation. The ocean is visible in the foreground with white foam from the waves, and a small boat is seen in the distance. The sky is clear and blue.

Fun, simple
Pure & elegant
Productive
Empowering
Addictive
Full access

Try Pharo now!

<http://pharo.org/download>



[News](#) [Download](#) [Documentation](#) [Community](#) [Contribute](#) [Stories](#) [About](#)



The immersive programming experience

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

