



OOSCM

Object Oriented SCM

SCM Next Generation



10 Pines

agile software development & services

We'd like to declare...



ESUG 2010

Barcelona

The SCM Conference

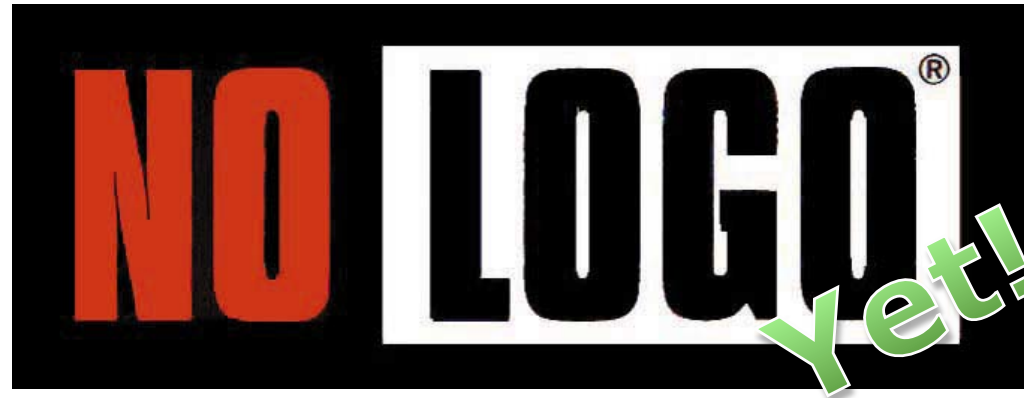
Why?

- ▶ Colin Putney's Monticello 2
 - “Merging is the most important feature of an SCM”
- ▶ Veronica Urquillaz-Gomez
 - Torch: Code review before integration
- ▶ Fernando Olivero
 - Reify the programmer and his “unit of work”
- ▶ Dale Henrichs and Mariano Martinez Peck
 - Metacello
- ▶ And at the same time as this talk Alan Knight
 - Talking about Store

We **NEED** a **BETTER** SCM tool



What are we going to talk about



OOSCM

- ▶ A new SCM concept
- ▶ WHY?
 - Current tools do not fulfill our goals
 - Current tools have conceptually different approaches to solve SCM than our idea
 - We want to promote Smalltalk

Motivation 1

► I want to know

- where a change was integrated
- By who and when
- On what versions
- What were the changes made to that code during integration
- Provide feedback to programmer at all levels (method, class)

MANAGE CHANGE LIFECYCLE

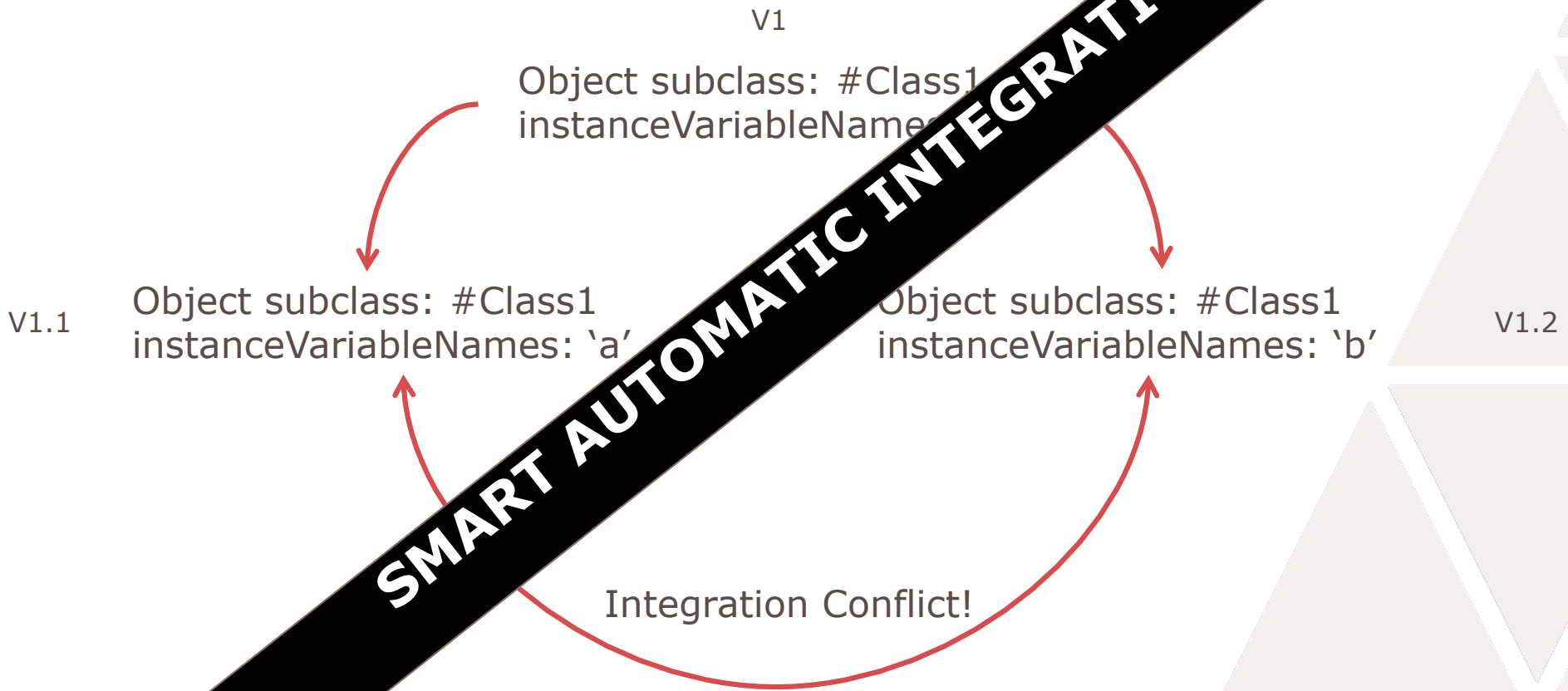
Motivation 2

- ▶ Did all the test run after implementation of that change?
 - The programmer should run all tests before submitting the change to integration
- ▶ Does the change provide new tests?

CHANGE QUALITY

Motivation 3

- ▶ We don't want this to be an integration conflict

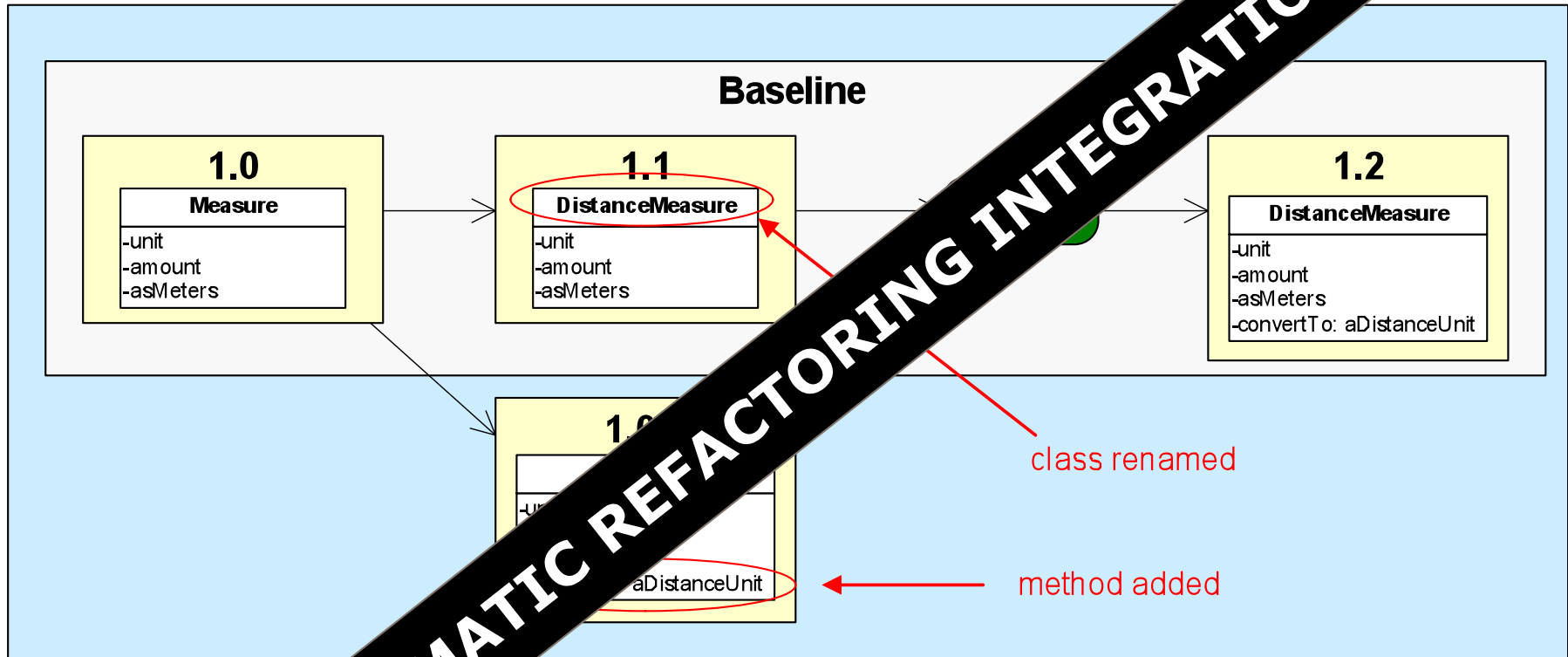


Motivation 4

- ▶ I want the decisions I made during pre-integration code review to be applied during integration
 - Reformat the code
 - Do not integrate this new code

PRE-INTEGRATION TOOLS

Motivation 5



AUTOMATIC REFACTORING INTEGRATION

Motivation 6

- ▶ Seaside releases version 3.1 that introduces lots of method renames
 - I want the system to tell me that when a new version
 - I decided Patagonia should upgrade with seaside 3.1!!
 - I can't because I have to do the rename myself in Patagonia!
 - Why not let the system do those renames to Patagonia automatically?

AUTOMATIC UPGRADE

Motivation 7

- ▶ How do I know if programmers are using TDD or just testing?
 - Writing the test first really
- ▶ How do I know the system architecture and its evolution?
 - Maven in Java, but you can't see its evolution or internal architecture, or dependencies.

QUERY THE REPOSITORY



What can we do
with the current tools?

Traditional SCM

Requirements	Traditional SCM (SVN, Git, etc)
MANAGE CHANGE LIFECYCLE	NO
CHANGE QUALITY	NO
SMART AUTOMATIC INTEGRATION	NO
PRE-INTEGRATION TOOLS	NO
AUTOMATIC REFACTORING INTEGRATION	NO
AUTOMATIC UPGRADE	NO
QUERY THE REPOSITORY	NO (there is no model)

Traditional SCM

- ▶ Archive oriented: Archive is the minimum trackable item
 - Between commit changes are lost! (lost of information)
 - Not easy to track group of changes
- ▶ No reification of what a module is, what a system is, etc. Just files and directories
- ▶ Not easy to model the development process
 - It has to be defined from outside the tool
- ▶ Good for versioning files, not so for OO development
- ▶ Advantages:
 - Simple interface
 - Can work offline

Monticello/Metacello

Requirements	Monticello/Metacello
MANAGE CHANGE LIFECYCLE	NO
CHANGE QUALITY	NO
SMART AUTOMATIC INTEGRATION	Medium
PRE-INTEGRATION TOOLS	Torch
AUTOMATIC REFACTORING INTEGRATION	NO
AUTOMATIC UPGRADE	NO
QUERY THE REPOSITORY	Yes (But limited to the info it stores)

Monticello / Metacello

- ▶ As traditional SCM, only “commits” are saved
 - Between commit changes are lost
- ▶ Metacello helps to model the system architecture
- ▶ But it does not help to
 - model the development group
 - Integrate different development lines
 - See the integration history (evolution)
- ▶ Advantages:
 - Simple
 - Can be use offline
 - Metacello provides tools that allow to use it easily

Store *

Requirements	Store
MANAGE CHANGE LIFECYCLE	NO
CHANGE QUALITY	NO (could be added)
SMART AUTOMATIC INTEGRATION	Not sure
PRE-INTEGRATION TOOLS	Medium
AUTOMATIC REFACTORING INTEGRATION	NO
AUTOMATIC UPGRADE	NO
QUERY THE REPOSITORY	Yes (But limited to the info it stores)

* We do not have experience with Store, so this could be wrong

ENVY

Requirements	ENVY
MANAGE CHANGE LIFECYCLE	NO
CHANGE QUALITY	NO (could be added, in fact we did it)
SMART AUTOMATIC INTEGRATION	NO (we did it)
PRE-INTEGRATION TOOLS	Three way Differences
AUTOMATIC REFACTORING INTEGRATION	NO
AUTOMATIC UPGRADE	NO
QUERY THE REPOSITORY	Yes *

- ▶ New objects can be added to the repository

ENVY

- ▶ Trackable items are methods, classes, modules (application) and systems (configuration maps)
- ▶ Between commit (versioning) changes are saved
- ▶ Easy to see method, class and module history
- ▶ Not so easy to see the system history
- ▶ Kind of difficult for agile development (unless you remove security, etc)
- ▶ No reification of programmers changes
- ▶ No automatic integration (unless you develop it)

ENVY

- ▶ Disadvantages:

- Proprietary
- Old server technology
- Complex implementation
- Only for Smalltalk

- ▶ The best one we have used so far



OOSCM

Proof of concept

Managechangelifecycle

The screenshot displays the Configuration Maps Browser application. The main window title is "Configuration Maps Browser: MCP - Prog". The interface includes a menu bar (File, Edit, Names, Editions, Applications, Expressions, Required Maps, Options) and a toolbar with various icons. The left pane, titled "Names Matching Prefixes", lists several MCPs, with "MCP - Prog - Gabriel Cotelli" selected. The middle pane, titled "Editions and Versions", shows a list of versions for the selected MCP, with "BF 2010-08-10950 - 1.0" highlighted. The right pane, titled "Package", shows details for the selected package, including "950 - 1.0" and "rcadorDeConfigurationsMaps BF 2009-07-9581 - 1.2". A context menu is open over the "BF 2010-08-10950 - 1.0" entry, listing actions such as "Browse Changes", "Load", "New Edition", "Rename...", "Version...", "Release Latest", "Purge", "Salvage...", "Time Stamp...", "Copy Description To", "VA Assist Pro Tools", "Change User...", "Change User To Manager", "Change Manager...", "Groups", "Privileges", "Super User", "Create New Library...", "Check Prerequisites", "Check Extra Prerequisites", "Marks", "MCP Options", "Change Log", "Browse Required Maps", "Deploy", "Dependencies", "Integration", and "GemKit". The "Marks" submenu is also visible, showing options like "Marcar", "Desmarcar", "Desmarcar Todas", "Desmarcar igual a", "Cambiar última por", and "Referencias". The bottom status bar indicates "Manager: Gabriel Cotelli".

Managechangelifecycle

The screenshot displays the Configuration Maps Browser interface for the project "MCP - Prog - Gabriel Cotelli BF 2010-09-1108 - 1.0". The interface is divided into several panels:

- Names Matching Prefixes:** A list of names including "MCP - Prog - Gabriel Cotelli" (highlighted), "MCP - Prog - Hernán Mariño", "MCP - Prog - Hernan Wilkinson", "MCP - Prog - Jonas Mikalonis", "MCP - Prog - Jorge Ressia", "MCP - Prog - Juan Pablo Tirelli", "MCP - Prog - Kent Beck", "MCP - Prog - Leandro Malsam", "MCP - Prog - Luciano Romeo", "MCP - Prog - M.Alejandra De Bonis", "MCP - Prog - Maria Frances Gaska", "MCP - Prog - Mariano Coca", "MCP - Prog - Mariano Saura", "MCP - Prog - Matias Caputi", "MCP - Prog - Matias Ditamo", and "MCP - Prog - Maximiliano Contieri".
- Editions and Versions:** A list of editions and versions including "BF 2010-09-1108 - 1.0" (highlighted), "(07/09/2010 12:23:20)", "(06/09/2010 16:50:16)", "DESA-FUN 2010-09-1 - 0.3", "DESA-FUN 2010-09-1 - 0.1", "BF 2010-08-11007 - 1.0", "BF 2010-08-10972 - 1.0", "DESA-FUN 2010-06-5 - 2.0", "BF 2010-08-10950 - 1.0", "BF 2010-08-10933 - 1.0", "BF 2010-08-10953 - 1.0", and "BF 2010-08-10922 - 1.0".
- Applications:** A list of applications including "MCPCodeStandardsTests BF 2010-09-1108 - 1.0", "MCPDevelopmentEnvironmentCodeStandardsTests BF 2010-09-1108 - 1.0", "MCPMercapTestSupport BF 2010-09-1108 - 1.0", "MCPPlatformCodeStandardsTests BF 2010-09-1108 - 1.0", and "MCPXTradeTestSupport BF 2010-09-1108 - 1.0".
- Config. Expressions:** A list of expressions including "true".
- Required Maps:** A list of required maps including "MCP - 5.x - All Products 2010-09-14 - 5.0.042".

The bottom of the interface shows the "Manager: Gabriel Cotelli" and a "notes" button. The notes panel contains the following text:

```
$BF 2010-09-1108
$Se separa la suite que verifica la adhrencia al ambiente de desarrollo
$$XTrade$Gabriel Cotelli
```


Managechangelifecycle

Configuration Maps Browser: MCP - 5.x - All Products 2010-09-14 - 5.0.042

File Edit Names Editions Applications Expressions Required Maps Options

Names Matching Prefixes

- MCP - 5.x - Aconcagua
- MCP - 5.x - Aconcagua GemStone
- MCP - 5.x - Alejandría
- MCP - 5.x - All Products**
- MCP - 5.x - Basic Infrastructure
- MCP - 5.x - Chalten
- MCP - 5.x - Code Integration
- MCP - 5.x - Continuous Integration
- MCP - 5.x - Continuous Integration Base
- MCP - 5.x - Cronos
- MCP - 5.x - Development Environment
- MCP - 5.x - Development Tools
- MCP - 5.x - Development Tools GemStone
- MCP - 5.x - Development Tools Preload
- MCP - 5.x - Functional Testing
- MCP - 5.x - GemStone Migration
- MCP - 5.x - GemStone Runtime
- MCP - 5.x - Iberá
- MCP - 5.x - Iberá UI Controllers

Editions and Versions

2010-09-14 - 5.0.042	★
2010-09-03 - 5.0.041	
2010-08-27 - 5.0.040	
2010-08-27 - 5.0.039	
2010-08-25 - 5.0.038	
2010-08-20 - 5.0.037	
2010-08-18 - 5.0.036	
2010-08-11 - 5.0.035	
2010-08-10 - 5.0.034	
2010-08-10 - 5.0.033	
2010-08-06 - 5.0.032	
2010-08-02 - 5.0.031	

Applications

Config. Expressions

true

Required Maps

- MCP - 5.x - XTrade - Development 2010-09-14 - 5.0.041
- MCP - 5.x - WebTrade 2010-09-14 - 5.0.041
- MCP - 5.x - Cronos 2010-09-14 - 5.0.040
- MCP - 5.x - XTrade - Linux Deployment 2010-09-14 - 5.0.042

Notes

\$SBF 2010-08-10997\$Se incluye el encoding del changelog\$\$XTrade\$Gabriel Cotelli

\$DESA-FUN 2010-06-16\$0.18 - Compra y Venta de Acciones [sin terminar].
Se mejora el DynamicWebModelController para que sea mas facil hacer dinamica la pa
-MCPAssetManagementCertificateOfDepositRegistrationDesktopViews
Integración Automática de [Se corrigen los prerequisites por movimiento de clases entr

Manager: Xtrade Integrator

notes

ChangeQuality

100.0 % Run - 800 run, 800 passed, 0 failed, 0 errors (0 to run, 0.0 %)

File Browse Test Configuration Help

Run All Run Run Filtered Debug Step Save Res. Reset Kill Remove Exit

- Pass -

Method	0	1	2	3	4	5	6	Details
FloatTest								N/A
FractionTest								N/A
IntegerTest								N/A
LargeIntegerTest								N/A
MCPBaseUnitTest								N/A
MCPCannotConvertMeasurementExceptionTest								N/A
MCPConversionTableTest								N/A
MCPDividedUnitTest								N/A
MCPInvalidProportionalUnitConversionFunctionExceptionTest								N/A
MCPMeasurementBagFormatterTest						5	0	N/A
MCPMeasurementBagFractionTest						6	0	N/A

Guardar Resultados de los Tests

¿Dónde desea guardar el resultado de correr los tests?

- MCP - Prog - Gabriel Cotelli(07/09/2010 12:23:20)
- MCP - Prog - Gabriel Cotelli(06/09/2010 16:50:16)

OK Cancel

All 800 passed, 0 failure(s), 0 error(s) out of 800 test(s)

ChangeQuality

The screenshot displays the 'Configuration Maps Browser: MCP - Prog' application. The interface includes a menu bar (File, Edit, Names, Editions, Applications, Expressions, Required Maps, Options) and a toolbar with various icons. The main area is divided into several panes:

- Names Matching Prefixes:** A list of users, with 'MCP - Prog - Gabriel Cotelli' selected.
- Editions and Versions:** A list of editions, with 'BF 2010-08-11007 - 1.0' selected.
- Config. Expressions:** A list of expressions, with 'true' selected.
- Package:** A list of packages, with '11007 - 1.0' selected.

A context menu is open over the 'MCP Options' entry in the Package list, showing the following options:

- Collect Attached Scripts
- Ver Resultado de los Tests
- Abrir Resultado de los Tests**
- Ver Ediciones de Aplicaciones
- Arreglar marcas dinámicas (JP Fix)

The status bar at the bottom indicates 'Manager: Gabriel Cotelli'.

ChangeQuality

100.0 % Run - 800 run, 800 passed, 0 failed, 0 errors (0 to run, 0.0 %)

File Browse Test Configuration Help

Run All Run Run Filter: Debug Step **Save Res.** Reset Kill Remove Exit

- Pass -

Method	Correct	Failures	Errors	Not Run	Total	Time (ms)	Details
FloatTest	16	0	0	0	16	0	N/A
FractionTest	27	0	0	0	27	31	N/A
IntegerTest	17	0	0	0	17	0	N/A
LargeIntegerTest	4	0	0	0	4	0	N/A
MCPBaseUnitTest	47	0	0	0	47	0	N/A
MCPCanNotConvertMeasurementExceptionTest	11	0	0	0	11	0	N/A
MCPConversionTableTest	13	0	0	0	13	0	N/A
MCPDividedUnitTest	37	0	0	0	37	0	N/A
MCPInvalidProportionalUnitConversionFunctionExceptionTest	2	0	0	0	2	0	N/A
MCPMeasurementBagFormatterTest	5	0	0	0	5	0	N/A
MCPMeasurementBagFractionTest	6	0	0	0	6	0	N/A

All 800 passed, 0 failure(s), 0 error(s) out of 800 test(s)

SmartAutomaticIntegration

0.0 % - Automatic Integrator - Integración en imagen propia

0%

No se puede proseguir con la integración automática porque: La aplicación GlorpdbTests DESA-FUN 2010-09-1 - 0.1 no esta cargada

- Comando de integración del Configuration Map de Programador: MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3
 - Comando de Descripción de estado inicial del Integrador
 - Comando de chequeo de la existencia de ediciones abiertas de aplicación que esten incluidas en MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3
 - Comando de Integración de Configuration Map (MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3)
 - Comando de Integración de Aplicación GlorpdbTests DESA-FUN 2010-09-1 - 0.1
 - Control de Aplicación GlorpdbTests tenga alguna edición cargada en la imagen

Imagen propia Imagen propia Pausa en Cada Paso

MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3 Null User

```
9:24:51(Success) Comando de Descripción de estado inicial del Integrador
9:24:59(Success) Comando de chequeo de la existencia de ediciones abiertas de aplicación que esten incluidas en MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3
9:25:03(Error) Control de Aplicación GlorpdbTests tenga alguna edición cargada en la imagen [La aplicación GlorpdbTests DESA-FUN 2010-09-1 - 0.1 no esta cargada]
```

9:25:03 La aplicación GlorpdbTests DESA-FUN 2010-09-1 - 0.1 no esControl de Aplicación GlorpdbTests te

Proceed Undo Retry Skip Correct Enable All Flush Log Exit

SmartAutomaticIntegration

The screenshot shows the 'Automatic Integrator' application window. The title bar reads '100.0 % - Automatic Integrator - Integración en imagen propia'. A progress bar at the top indicates 100% completion. A yellow banner at the top of the main area says 'Ejecutando: Comando de Ejecución de Tests:'. Below this is a tree view of test commands, including 'Comando de Integración de Aplicación Glorpdatabase DESA-FUN 2010-09-1 - 0.2' and 'Comando de Carga de aplicación'. A 'Question' dialog box is open in the center, asking 'Desea correr la suite completa de test?' with 'Sí' and 'No' buttons. The bottom of the window features a log window with the following text: '9:24:51(Success) Comando de Descripción de estado inicial del Integrador', '9:24:59(Success) Comando de chequeo de la existencia de ediciones abiertas de aplicación que esten incluid', and '9:25:03(Error) Control de Aplicación GlorpdBTests tenga alguna edición cargada en la imagen [La aplicación'. At the very bottom, there is a row of control buttons: 'Proceed', 'Undo', 'Retry', 'Skip', 'Correct', 'Enable All', 'Flush Log', and 'Exit'.

SmartAutomaticIntegration

100.0 % - Automatic Integrator - Integración en imagen propia

100%

Fin de la Integración

- Comando de integración del Configuration Map de Programador: MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3
 - Comando de Descripción de estado inicial del Integrador
 - Comando de chequeo de la existencia de ediciones abiertas de aplicación que estén incluidas en MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3
 - Comando de Integración de Configuration Map (MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3)
 - Control de Configuration Map MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3 tenga las aplicaciones cargadas o abiertas
 - Comando de Ejecución de Tests:

Imagen propia Imagen propia Pausa en Cada Paso

MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3 Null User

```
9:27:04(Success) Comando de Integración de Configuration Map (MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3)
9:27:04(Success) Control de Configuration Map MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3 tenga las aplicaciones cargadas o abiertas
9:28:07(Error) Comando de Ejecución de Tests: [No se corrieron los tests]
9:28:09(Skipped) Comando de Ejecución de Tests:
9:28:09(Success) Comando de Versionamiento de Clases, Aplicaciones y Configuration Maps
9:28:09(Success) Comando de Descripción de estado final del Integrador
9:28:09(Success) Comando de integración del Configuration Map de Programador: MCP - Prog - Gabriel Cotelli DESA-FUN 2010-09-1 - 0.3
9:28:09Finalizó la integración
```

```
9:26:23 GlorpdBTests couldnt Be Loaded Comando de Carga de aplicación para GlorpdBTests
9:26:30 La aplicación Glorpdatabase DESA-FUN 2010-09-1 - 0.2 no está cargada. Control de Aplicación Glorpdatabase
9:26:35 Glorpdatabase couldnt Be Loaded Comando de Carga de aplicación para Glorpdatabase
9:26:36 La aplicación Glorpdatabase DESA-FUN 2010-09-1 - 0.2 no está cargada. Control de Aplicación Glorpdatabase
9:26:46 La aplicación GlorpdBTypeTests DESA-FUN 2010-09-1 - 0.1 no está cargada. Control de Aplicación GlorpdBTypeTests
9:26:53 GlorpdBTypeTests couldnt Be Loaded Comando de Carga de aplicación para GlorpdBTypeTests
```

Proceed Undo Retry Skip Correct Enable All Flush Log Exit



OOSCM

The solution...

OOSCM Goals

- ▶ SCM oriented to development with Objects
 - Paradigm shift from traditional SCM
- ▶ Easy to track programmers work
- ▶ Easy to track system evolution
 - Be able to model system architecture
- ▶ Automatic Integration
 - Smart
 - Easy to integrate complex changes (i.e. refactorings)
- ▶ Upgrades
 - Automatic upgrading
- ▶ Not only for Smalltalk:
 - Planned: Java with Eclipse
 - Open to other languages

Architecture

- ▶ Client-Server
- ▶ REST
- ▶ Multi-repository
- ▶ Offline support
- ▶ IDE Client: Plug-In Architecture
- ▶ WebBrowser support

Details

- ▶ Technology:
 - Developed with Pharo
 - Production: GLASS
- ▶ Project:
 - Subsidy of the Argentine Ministry of Technology (USD 38 K)
 - Total time: 13 months (with out refactoring integration)
 - We just started
- ▶ License:
 - Not sure, open client, close server?
 - Open for Smalltalk, paid for other languages?
 - Based on projects, customers, SaaS?



Suggestions – **Help** – **Support** - **Ideas**

A photograph of moss-covered stone steps in a forest, with a white text box overlaid on the left side.

Thank you!

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agile software development & services