OOSCM
Object Oriented SCM

SCM Next Generation

10 Pines | agile software development & services

We'd like to declare...

ESUG 2010
**Barcelona**
The SCM Conference

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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 an his "unit of work"
- ▶ Dale Henrichs and Mariano Martinez Peck
  - – Metacello
- ▶ And at the same time as this talk Alan Knigth
  - – Taking about Store

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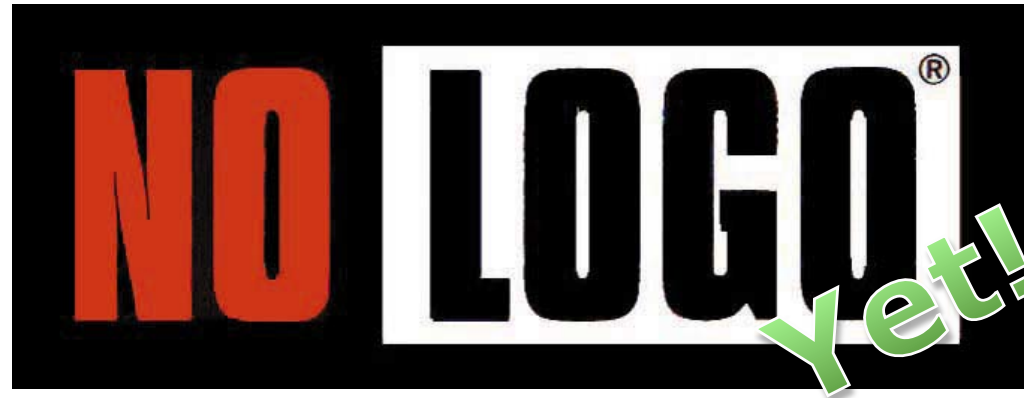
OOSCM

▶ A new SCM concept

▶ WHY?

   − Current tools do not fulfill our goals

   − Current tools have conceptually different approaches to solve SCM that our idea

   − We want to promote Smalltalk

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Motivation 1

▶ I want to know

— where a change was integrated

— By who and when

— On what versions

— What were the changes m̶a̶d̶e̶ that code during integration

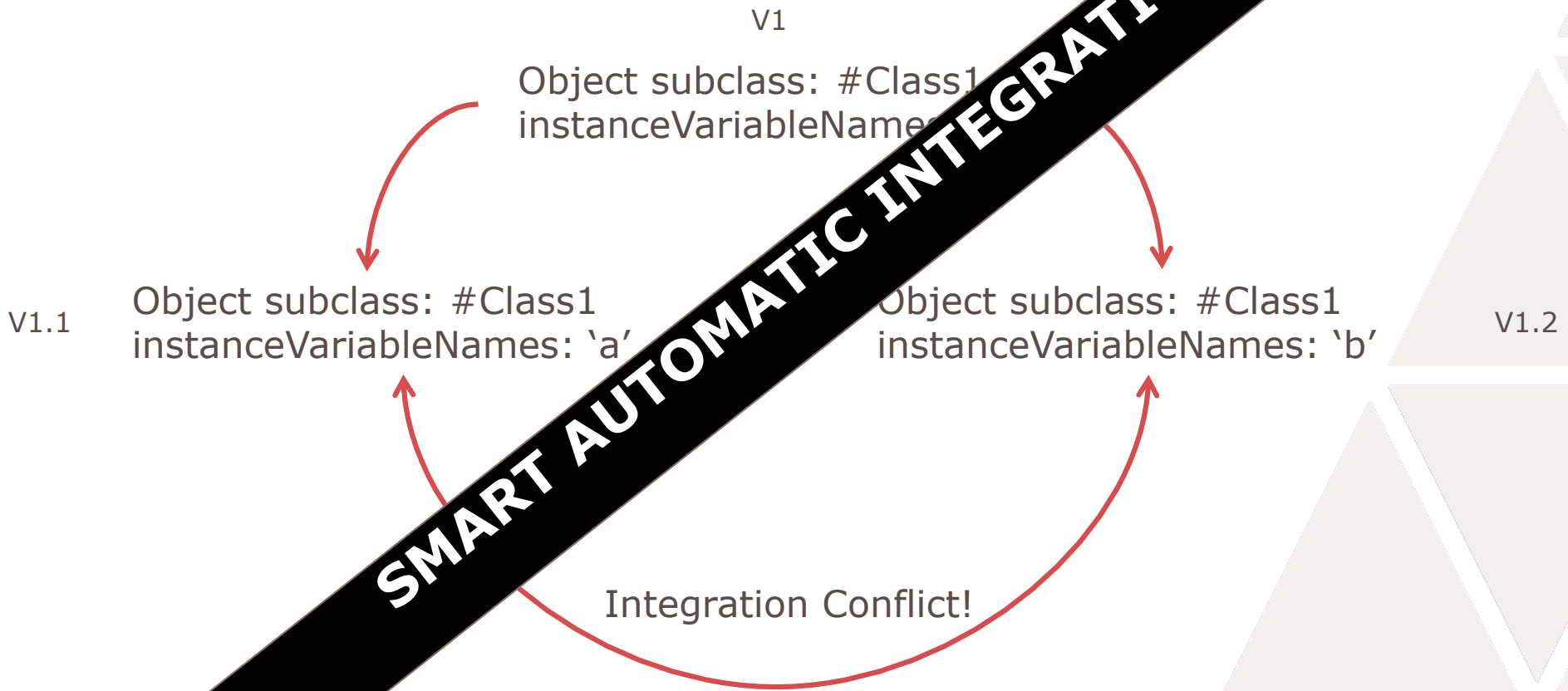— Provide feedback t̶o̶ p̶rogrammer at all levels (method, class̶...

MANAGE CHANGE LIFECYCLE

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Motivation 2

▶ Did all the test run after implemen~~t~~ ~~t~~hat change?

   – The programmer should run al~~l~~ ~~test~~ before submitting the change to integration

▶ Does the change prov~~ide new~~ tests?

CHANGE QUALITY

Motivation 3

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

V1

Object subclass: #Class1
instanceVariableNames:

V1.1

Object subclass: #Class1
instanceVariableNames: 'a'

V1.2

Object subclass: #Class1
instanceVariableNames: 'b'

Integration Conflict!

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Motivation 4

▶ I want the decisions I made during a pre-integration code review to be applied during integration

- Reformat the code
- Do not integrate this ~~

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Motivation 5

Baseline

1.0	1.1	1.2
Measure	**DistanceMeasure**	**DistanceMeasure**
-unit	-unit	-unit
-amount	-amount	-amount
-asMeters	-asMeters	-asMeters
		-convertTo: aDistanceUnit

class renamed

method added

AUTOMATIC REFACTORING INTEGRATION

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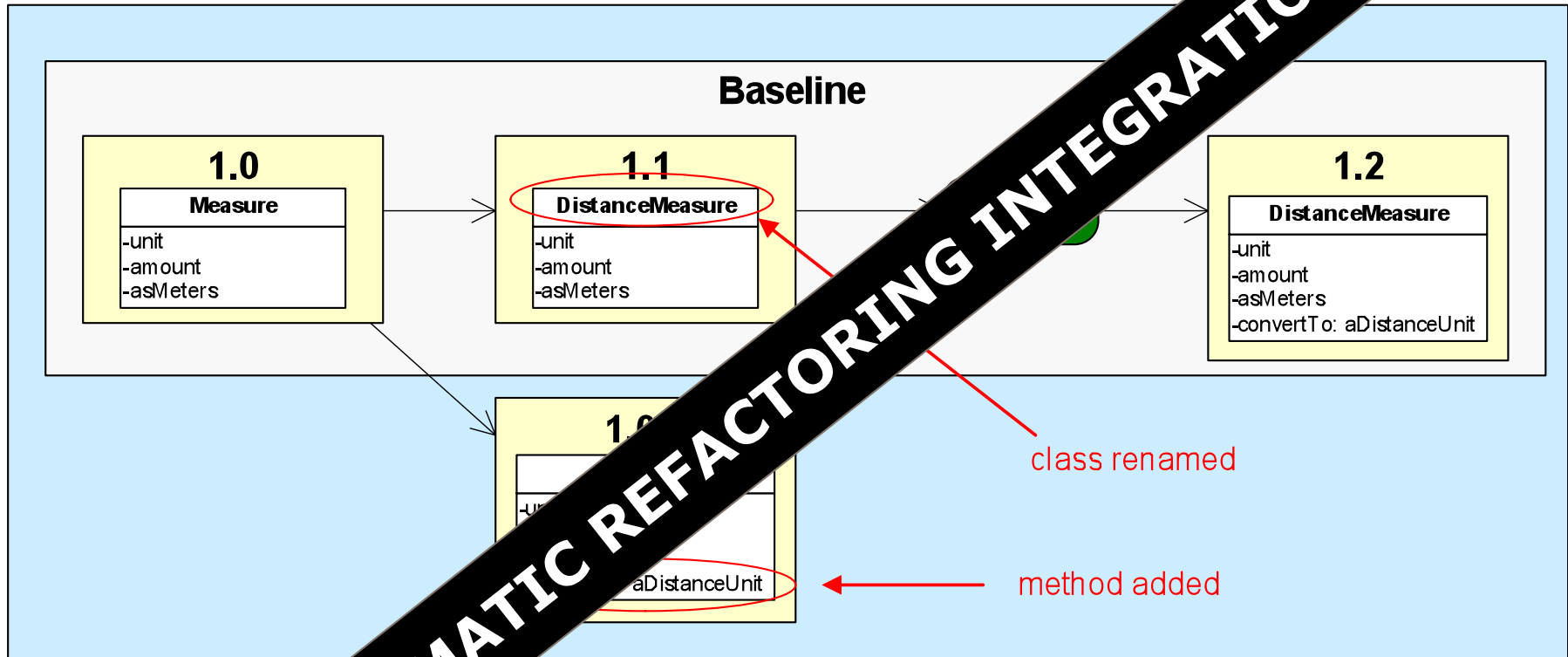
Motivation 6

▶ Seaside releases version 3.1 that includes lots of method renames

— I want the system to tell me that is a new version

— I decided Patagonia should with seaside 3.1!!

• I can't because have to do the rename myself in Patagonia!

• Why not those renames to Patagonia automatically?

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Motivation 7

▶ How do I know if programmers ar‌‌‌‌‌‌‌‌ TDD or just testing?

   – Writing the test first really

▶ How do I know the syst‌‌‌‌‌ chitecture and its evolution?

   – Maven in Java, bu‌‌‌‌ot see its evolution or internal architecture, o‌‌‌endencies.

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What can we do withthecurrenttools?

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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)

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Traditional SCM

▶ Archive oriented: Archive is the minimun trackeable 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

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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)

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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

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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

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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)

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ENVY

▶ Disadvantages:
- – Proprietary
- – Old server technology
- – Complex implementation
- – Only for Smalltalk

▶ The best one we have used so far

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Proof of concept

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Managechangelifecycle

Managechangelifecycle

Managechangelifecycle

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 Filtere | Debug | Step | Save Res. | Reset | Kill | Remove | Exit |

- Pass -

Method						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	0	0	5	0	N/A
▷ ● MCPMeasurementBagFractionTest	6	0	0	0	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) |

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ChangeQuality

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	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) |

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SmartAutomaticIntegration

SmartAutomaticIntegration

SmartAutomaticIntegration

OOSCM

The solution…

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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

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Architecture

▶ Client-Server

▶ REST

▶ Multi-repository

▶ Offline support

▶ IDE Client: Plug-In Architecture

▶ WebBrowser support

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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?

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

Thank you!

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