Fuel

a fast and flexible object serializer

Martín Dias

DC-FCEN-UBA, Buenos Aires

Quilmes Smalltalks 2011 International Conference on Smalltalk Technologies

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2010

Tristan Bourgois
developer

Martín Dias
developer

Stéphane Ducasse
promotor & financer

SummerTalk 2011

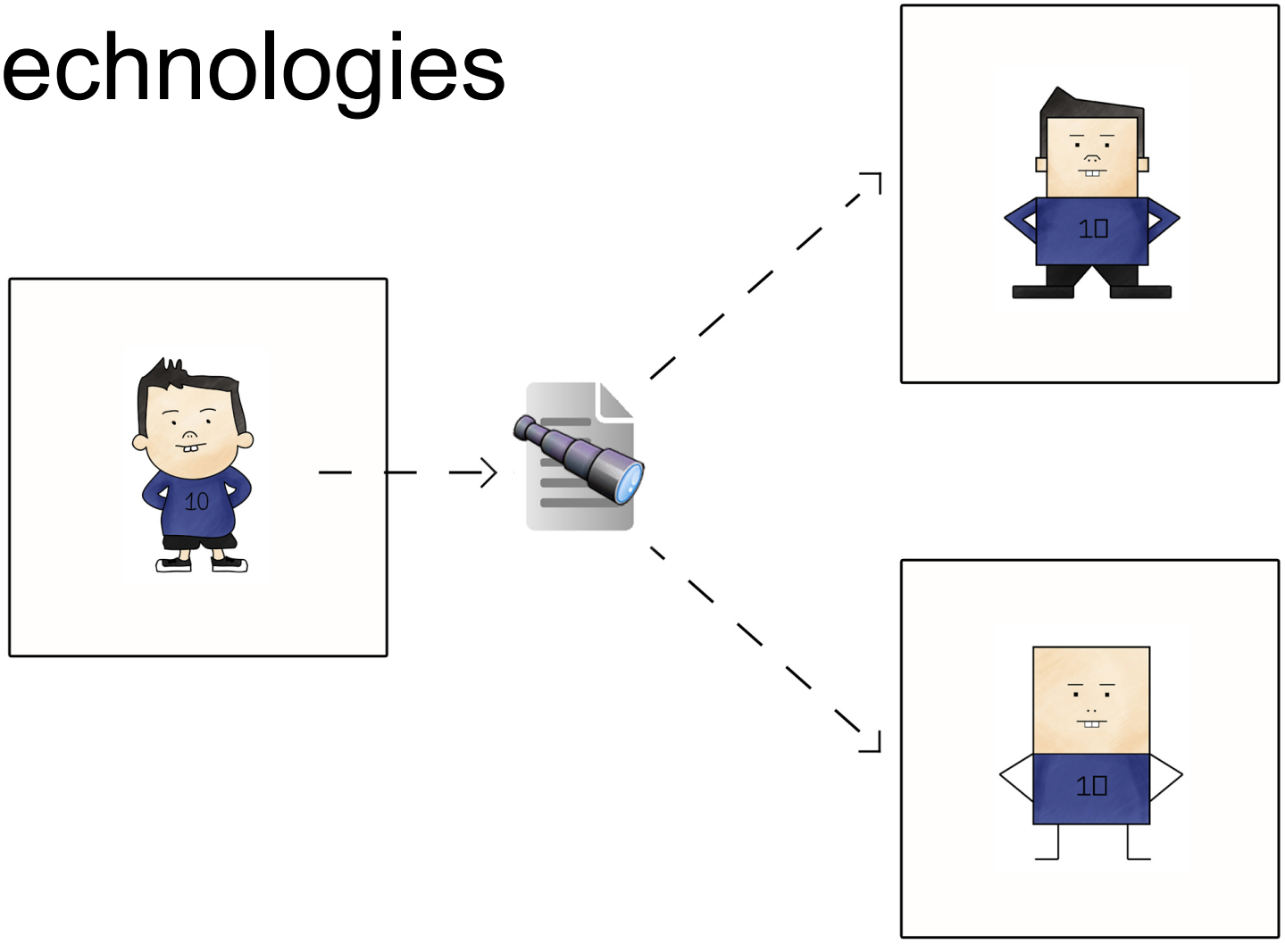
Martín Dias
developer

Mariano Martinez Peck
mentor & developer

what is serialization ?

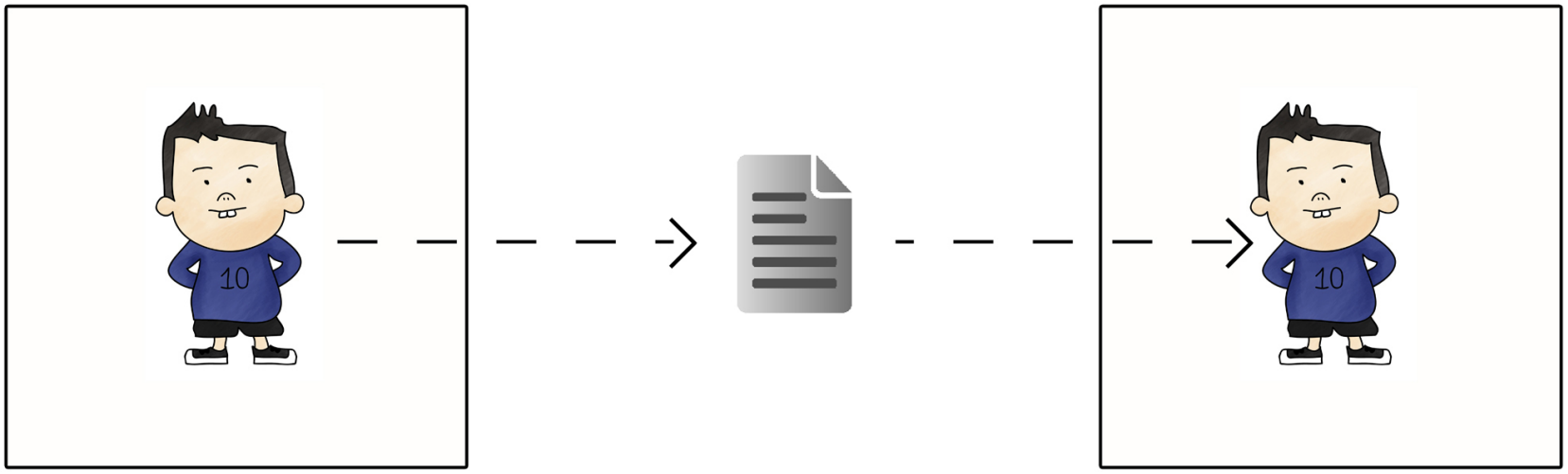
serialization

to other technologies



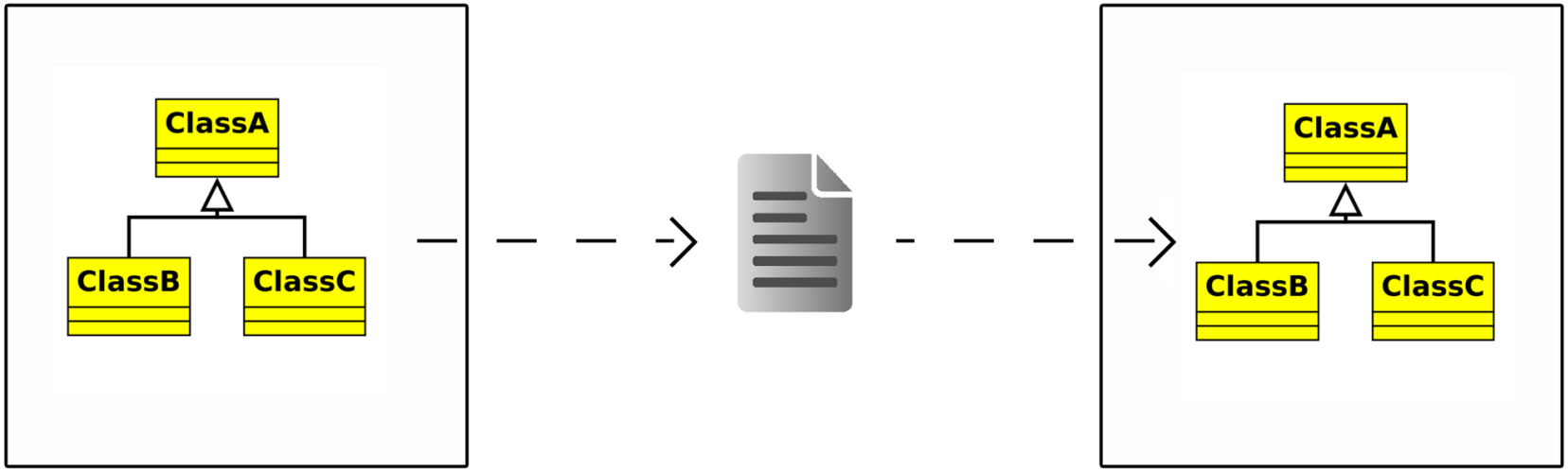
serialization

to similar environments

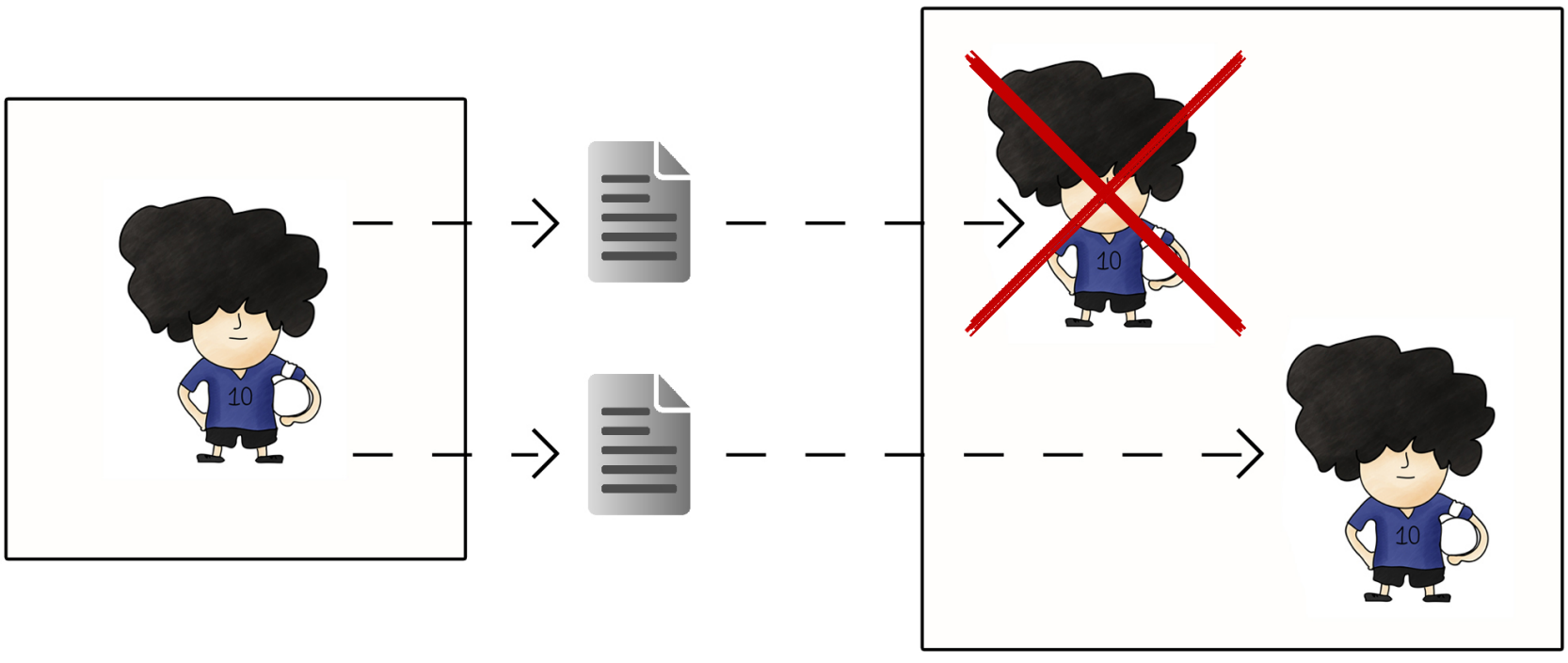


serialization

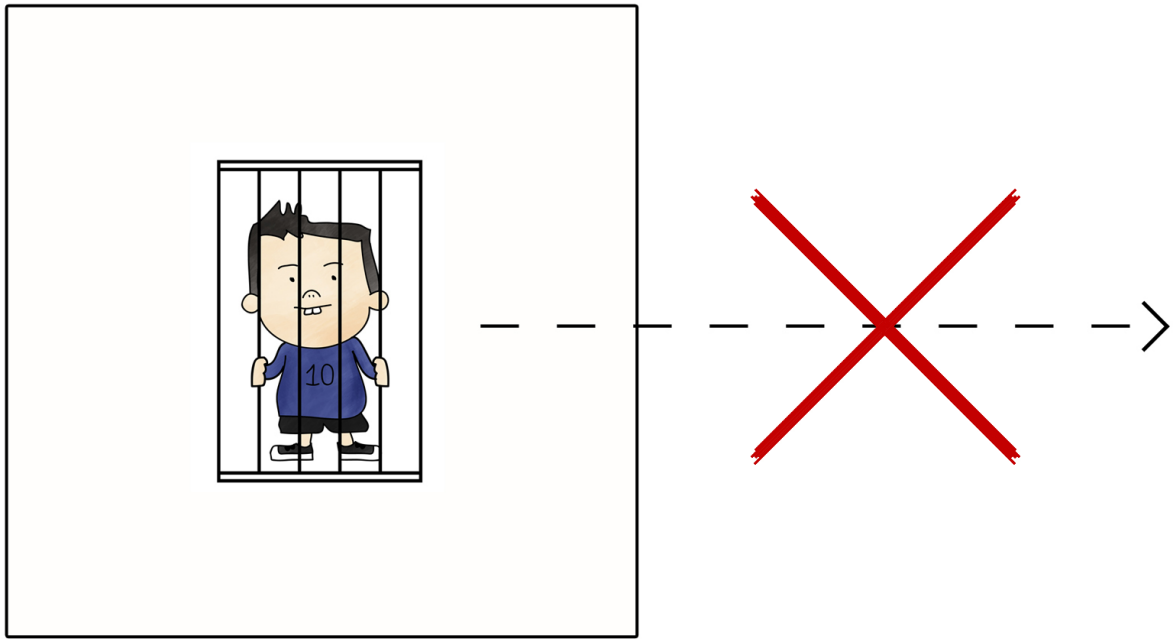
classes & traits



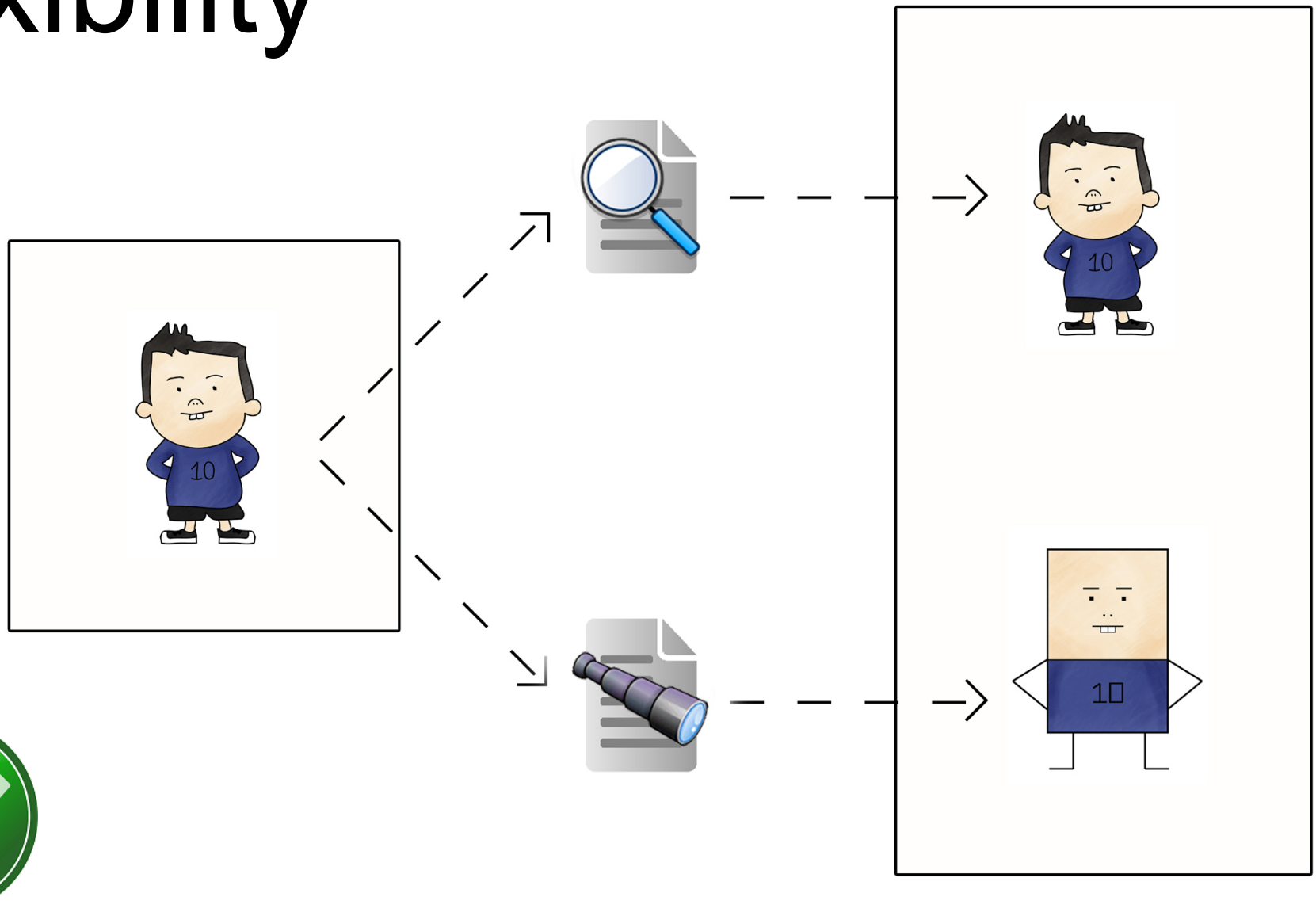
creation vs. reference



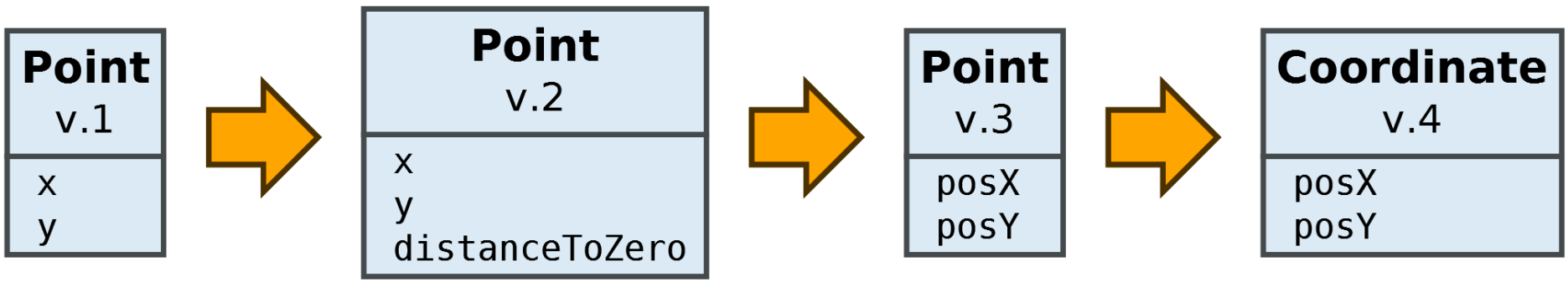
environment dependency



flexibility

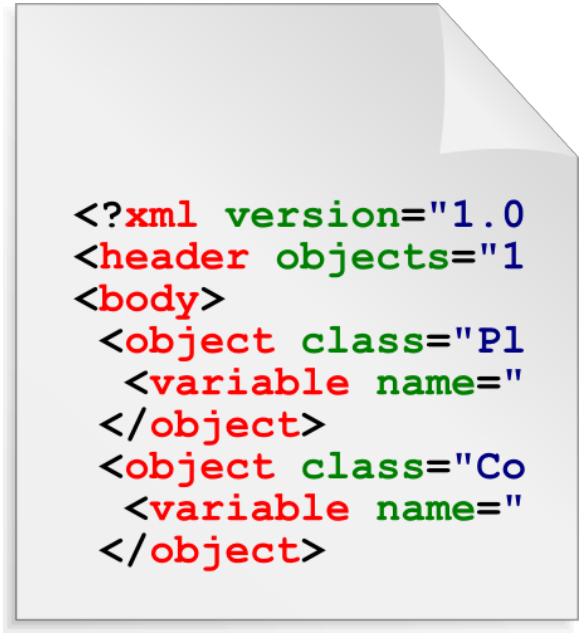


class changes



how to serialize?

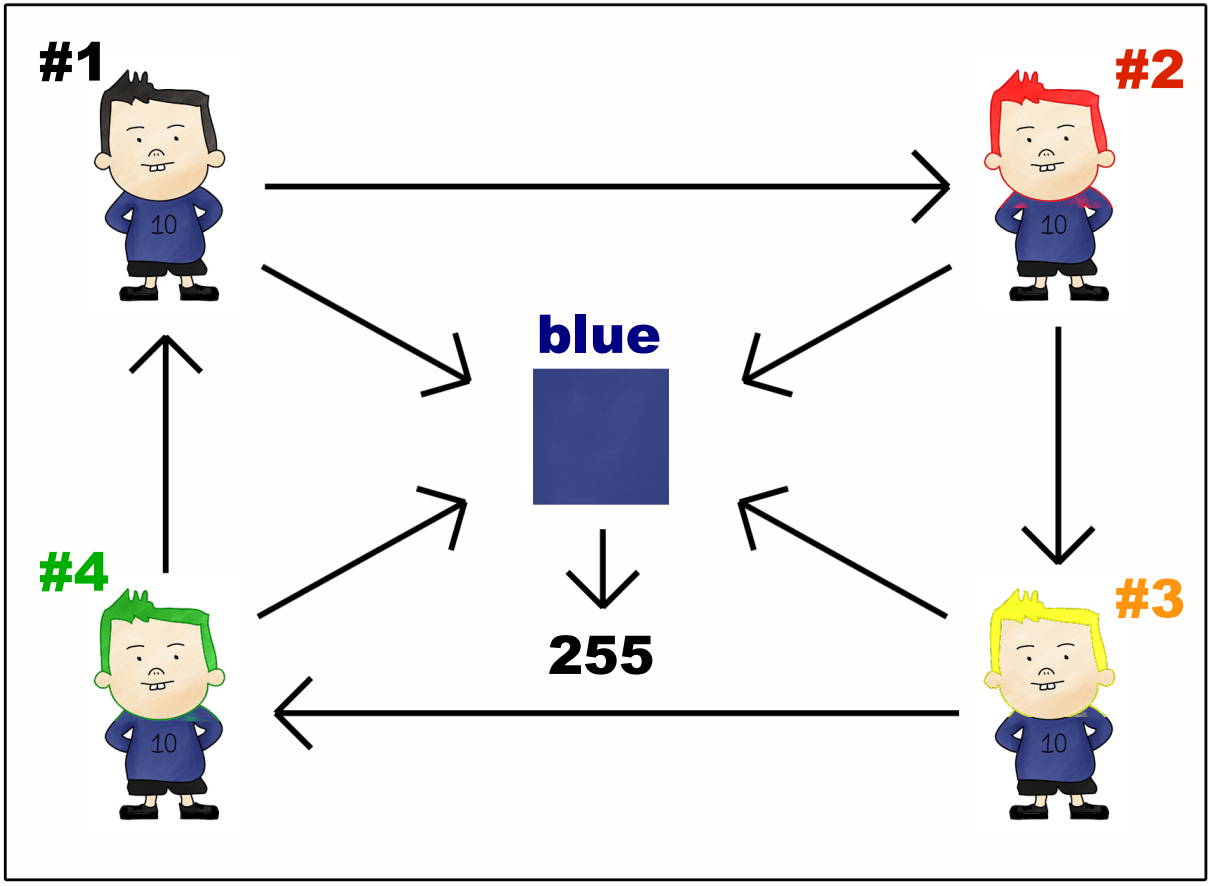
format


<?xml version="1.0
<header objects="1
<body>
<object class="Pl
<variable name="
</object>
<object class="Co
<variable name="
</object>

vs.

01011101010010
10001010110101
01010010101111
01010010010100
011 0101

algorithms
example

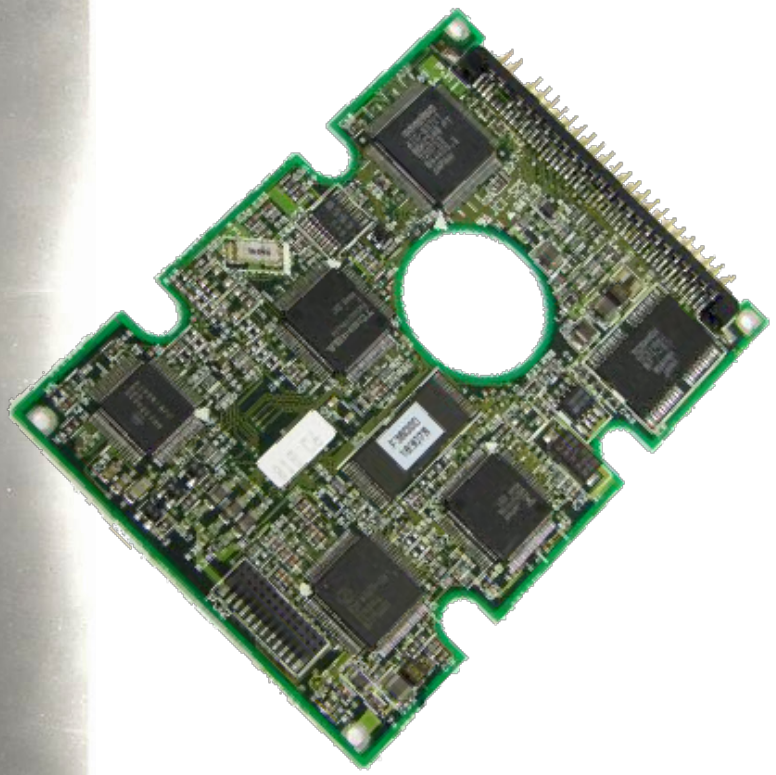


algorithms
recursive

algorithms
pickling

hr	instances									references						tr
	cluster #1			cluster #2			cluster #3			cluster #1					c #2	
	player#1...4			blue			255			player#1		player#2		...	blue	
# clusters	type	class	# instances	type	class	# instances	type	# instances	int#1	index of player#2	index of blue	index of player#3	index of blue	::	index of 16rFF	root
3	Obj	Player	4	Obj	Color	1	Int	1	255	2	5	3	5	...	6	1

algorithms
special VM-level implementation

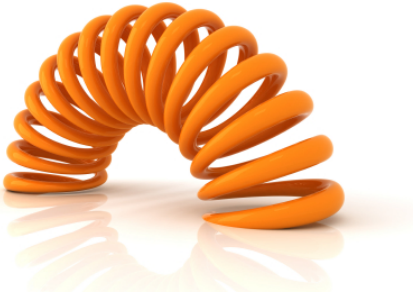


what about

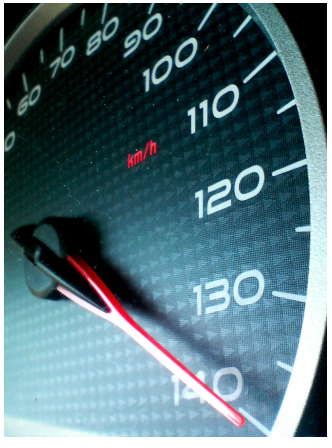
fuel?

Fuel

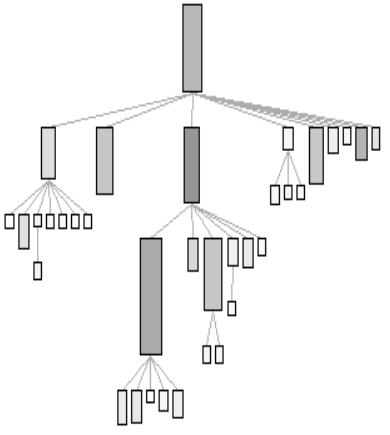
concrete



flexible

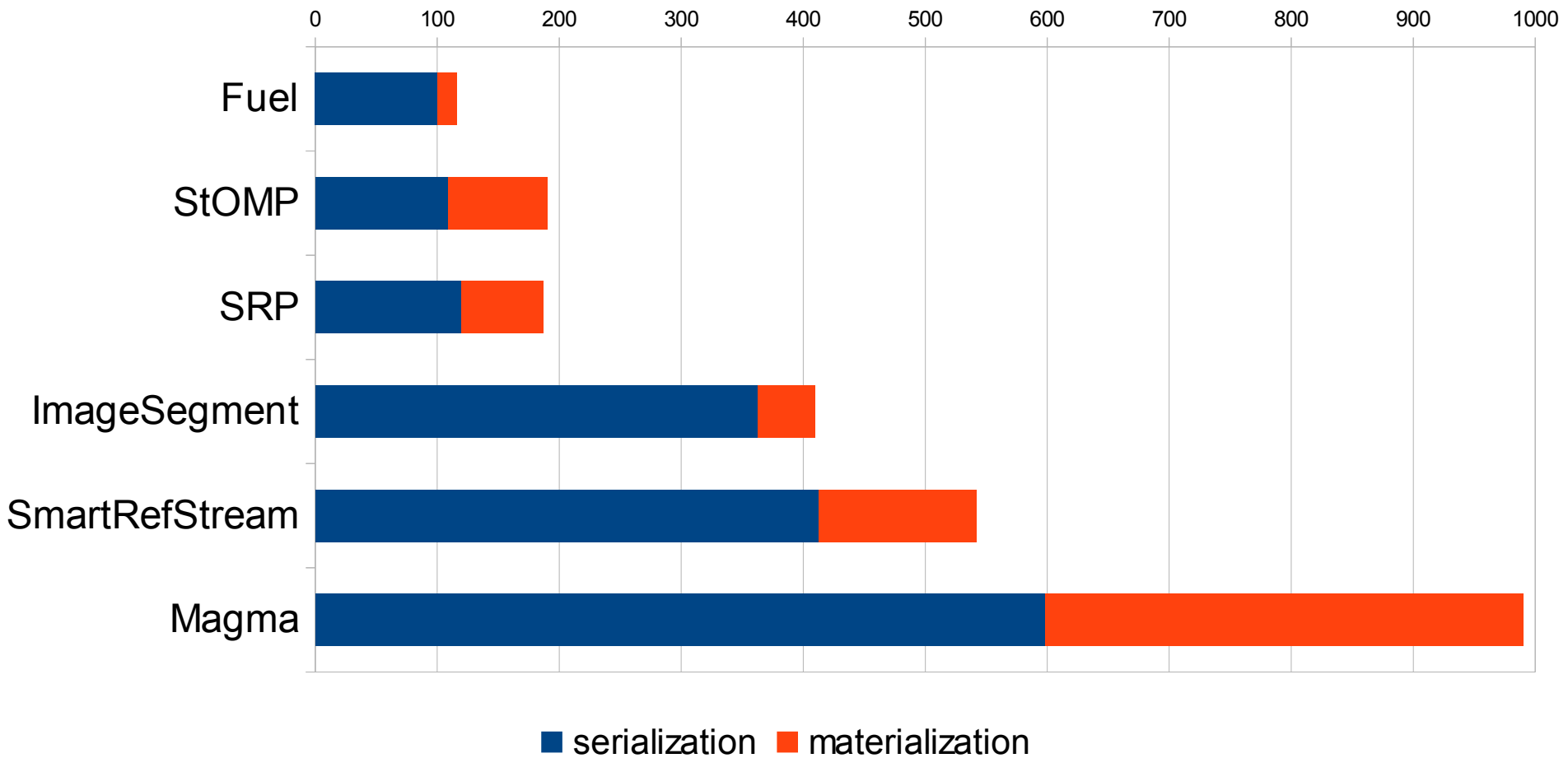


fast

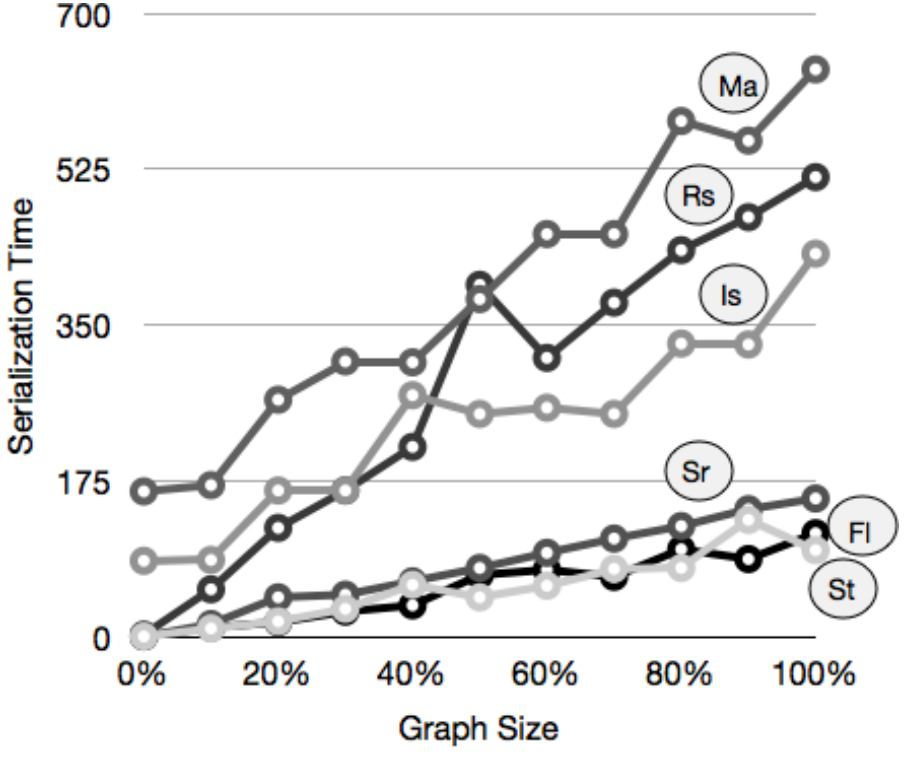


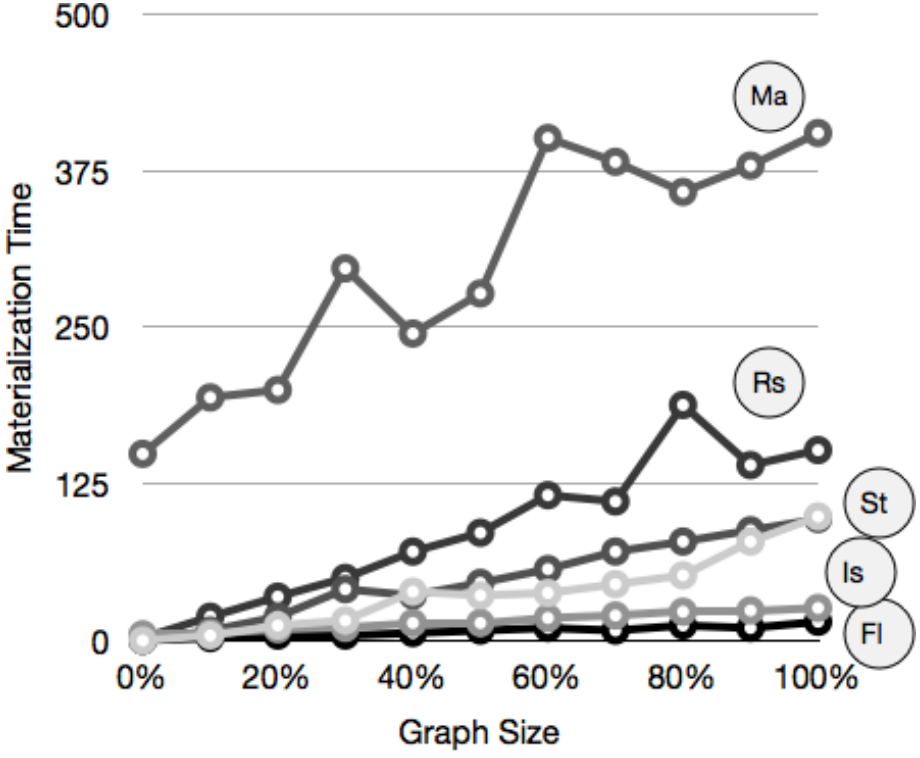
design

speed
large graphs

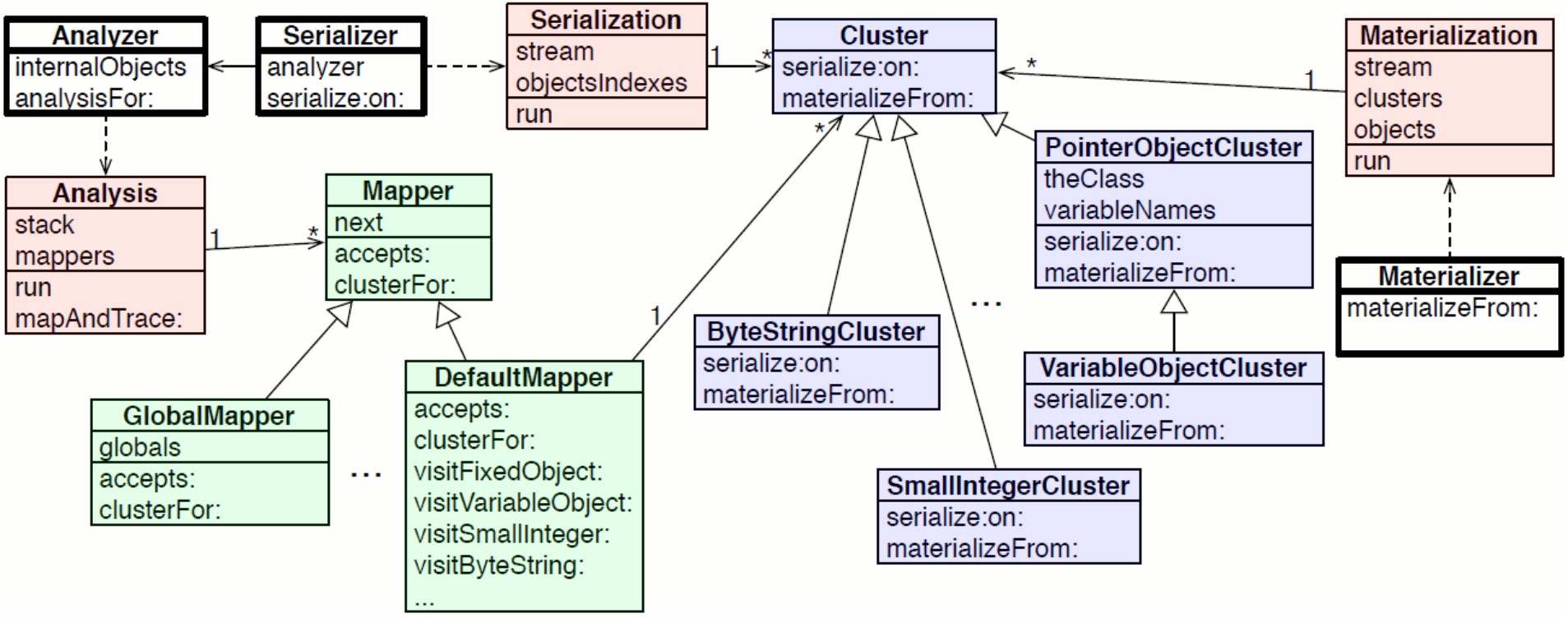


speed
different graph sizes





design


Analyzer
internalObjects
analysisFor:
Serializer
analyzer
serialize:on:
Serialization
stream
objectsIndexes
run
Cluster
serialize:on:
materializeFrom:
Materialization
stream
clusters
objects
run
Analysis
stack
mappers
run
mapAndTrace:
Mapper
next
accepts:
clusterFor:
PointerObjectCluster
theClass
variableNames
serialize:on:
materializeFrom:
Materializer
materializeFrom:
ByteStringCluster
serialize:on:
materializeFrom:
VariableObjectCluster
serialize:on:
materializeFrom:
GlobalMapper
globals
accepts:
clusterFor:
DefaultMapper
accepts:
clusterFor:
visitFixedObject:
visitVariableObject:
visitSmallInteger:
visitByteString:
...
SmallIntegerCluster
serialize:on:
materializeFrom:
1
*

design

1892	lines of code
7.2	methods per class
3.7	lines per method
188	unit tests
90%	test coverage
1837	lines of test code

demo

load

without compilation!

demo

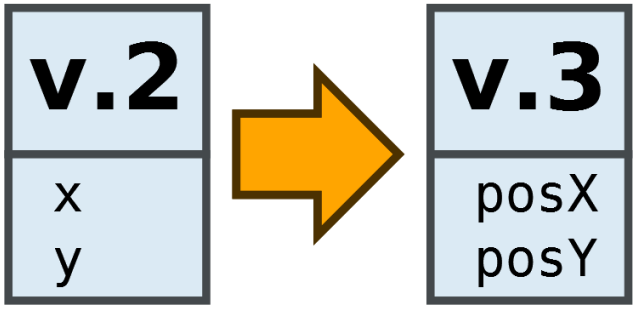
revive

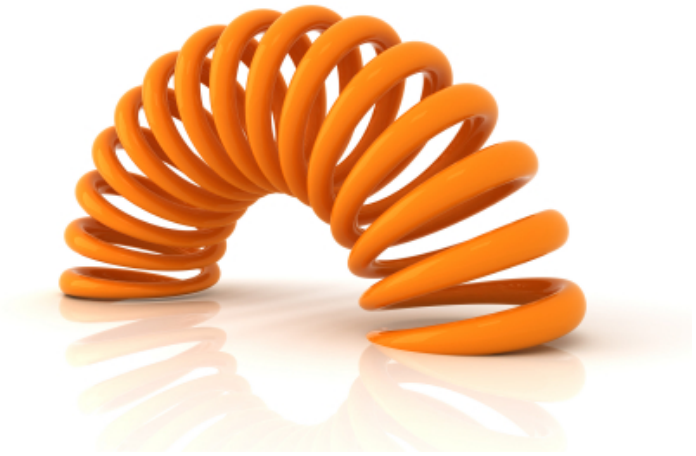
your

exceptions!

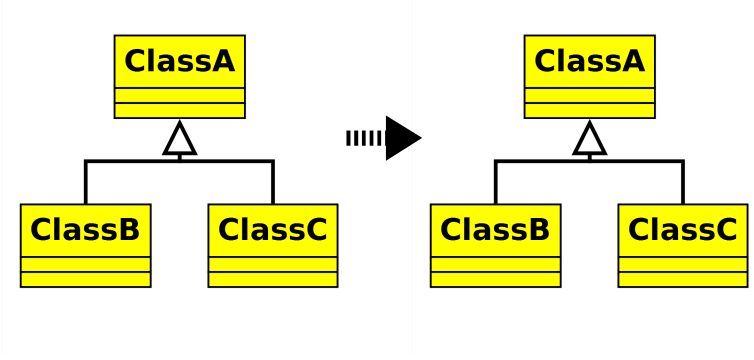
future

future





~~ImageSegment~~
~~SmartRefStream~~
~~ReferenceStream~~
~~DataStream~~
?



ESUG Innovation
Technology
Awards 2011

Martín Dias
tinchodias@gmail.com

Fuel
http://rmod.lille.inria.fr/web/pier/software/Fuel

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