

Kutoa: Programming the Web in Smalltalk

Ewan Dawson

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Why do we create software?

solve problems

explore

answer questions

have fun

build cool stuff

What's wrong with software development?

write

test

build

deploy

run

manage

update

—

What's wrong with software development?

language

ide

libraries

version control

package manager

build system

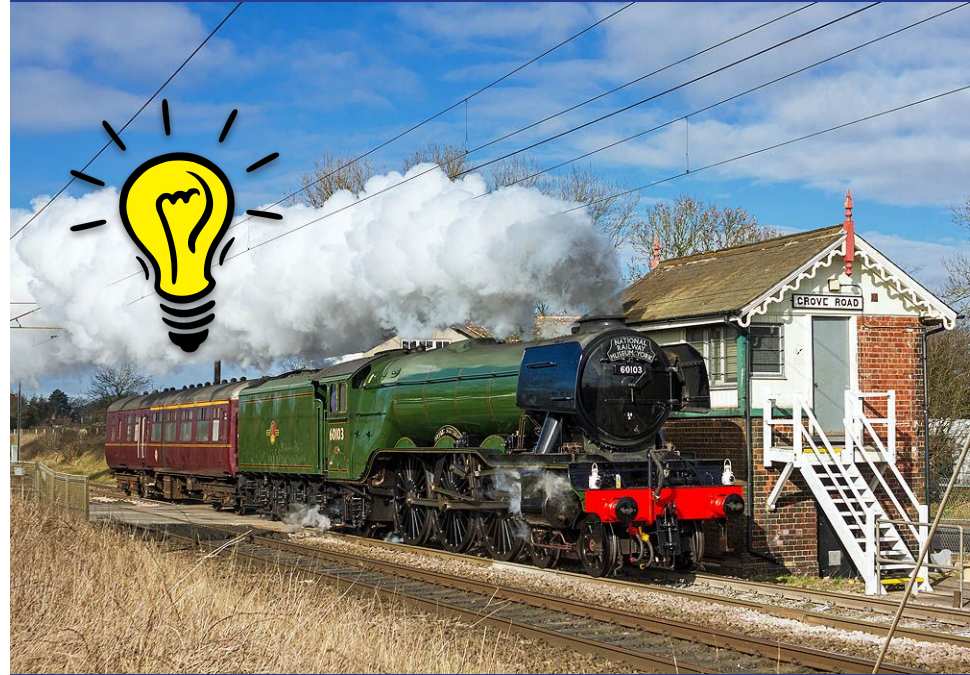
ci pipeline

What's wrong with software development?


lots of incidental work
many technologies to
learn

re-use is difficult
takes too long

What's **my**
vision for
software
development?



What's **my** **vision** for software development?

A photograph of a steam train at a station. The train is green and red, with the number 60103 on the front. It is stopped at a platform next to a brick building with a sign that says "GROVE ROAD". A large white thought bubble is superimposed over the top half of the image, containing text. The background is a blue sky with some clouds.

When my friend **Isabella** emails me in Spanish, I want her email **translated** and **sent** to my phone as a notification.

What's **my** **vision** for software development?

Email inbox

when: MailReceived

filter: [mail sender is: Isabella]

do: [Phone notify:

(mail body translate)]



What's **my**
vision for
software
development?



What does the
solution look
like?

internet of objects

sharing and reuse

always live

polyglot

simple

productive

Kutoa.

internet of objects

sharing and reuse

always live

polyglot

simple

productive

Kutoa.

A **language** for
gluing software
together

references

objects

literals

messages

scripts

Kutoa.

A **language** for
gluing software
together

no variables

no classes

lazily evaluated

Kutoa.

A **language** for
gluing software
together

evaluation

exception

context

Kutoa.

A **VM** for gluing software together

parser

operational semantics

core methods

platform

Kutoa.

Greeting repeat: 5

'Hello world!' repeat: 5

(Runtime method: RepeatString)
invokeOn: 'Hello world!'
withArgs: { 3 }

(Runtime@1234 method: RepeatString)
invokeOn: 'Hello world!'
withArgs: { 3 }

(Runtime@1234 method: RepeatString:v1)
invokeOn: 'Hello world!'
withArgs: { 3 }

Greeting -> 'Hello world!'

Context

RepeatString -> RepeatString:v1

RepeatString:v1 ->

'^(receiver value) repeat: (arguments first value)'

String/repeat: ->

(Runtime method: RepeatString)
invokeOn: receiver
withArgs: arguments

Runtime

VM

Method/invokeOn:withArgs:

Kutoa.

```
(Runtime@1234 method: RepeatString:v1)
  invokeOn: "Hello world!"
  withArgs: { 3 }
```

```
(Runtime@1234 method: "(^(receiver value)..")
  invokeOn: "Hello world!"
  withArgs: { 3 }
```

```
Method@4567
  invokeOn: "Hello world!"
  withArgs: { 3 }
```

```
"Hello world!Hello world!Hello world!"
```

Greeting -> 'Hello world!'

Context

RepeatString -> RepeatString:v1

RepeatString:v1 ->

'^(receiver value) repeat: (arguments first value)'

String/repeat: ->

(Runtime method: RepeatString)

invokeOn: receiver

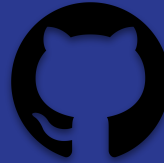
withArgs: arguments

Runtime

VM

Method/invokeOn:withArgs:

Let's
collaborate



EwanDawson/kutoa



ewan@lazygun.net

