

# ***Web Pontoon***

## **A Method for Reflective Web Applications**

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Ambient Activity Systems

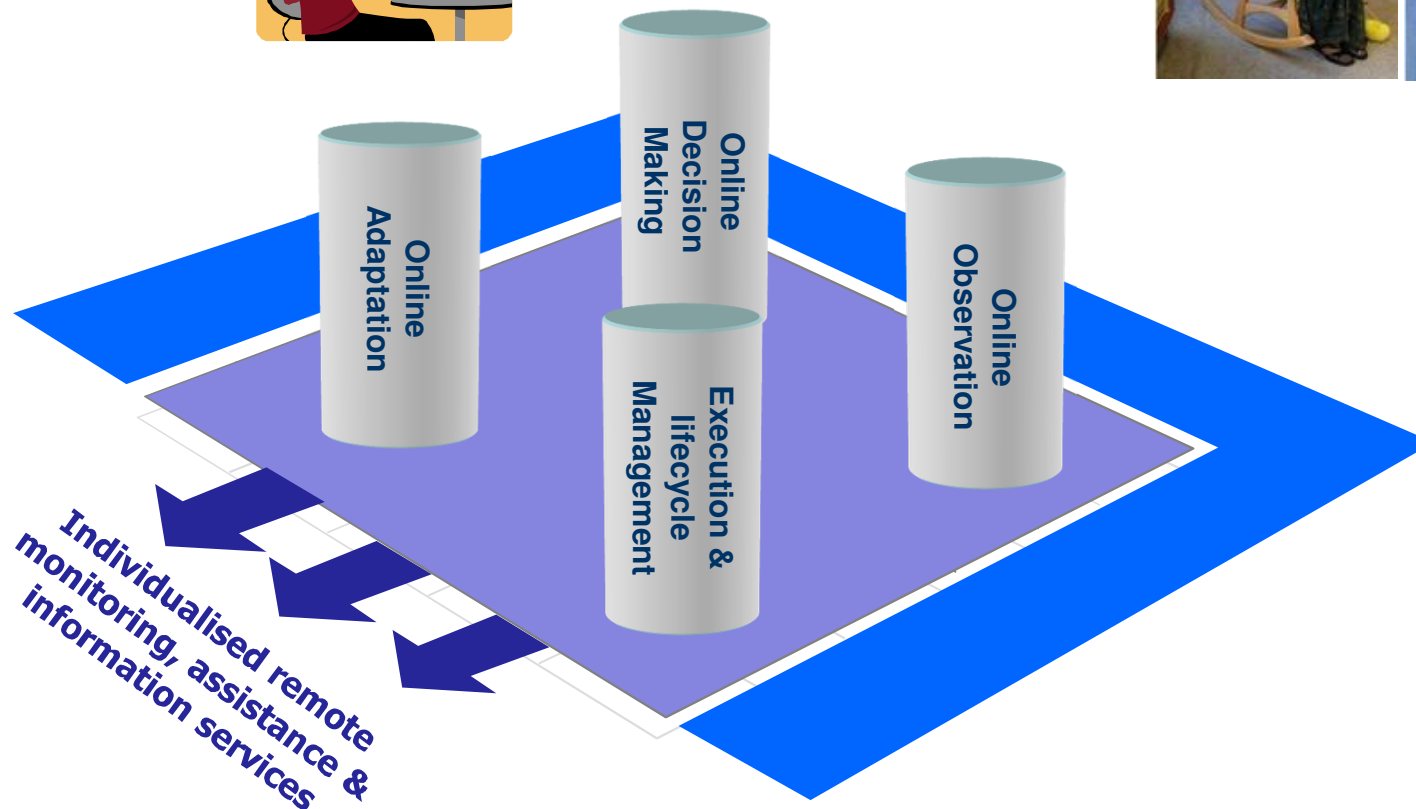
- **Not a webapp, but a method for developing webapps**
- **Online programming by non-professional programmers**
- **Managing the functionality of your webapp as *content***
- **When diverse & changing control flows**
- **Provision of individualised services to senior citizens**
- **Reengineering & architectural innovation of legacy apps**
- **Web, OO, AOM, SOA, EUP and DDD**
- **Pure Smalltalk + Seaside generated JavaScripts for GUI**
- **Seaside Pier Magritte + Dart**
- **Large scale deployments (100 000 servers for 2015)**
- **Commercial product**

# Context: Architecture for Ambient Systems

**Activity intelligence services:  
What, Where, When, Who, Why**



**Multiple users**

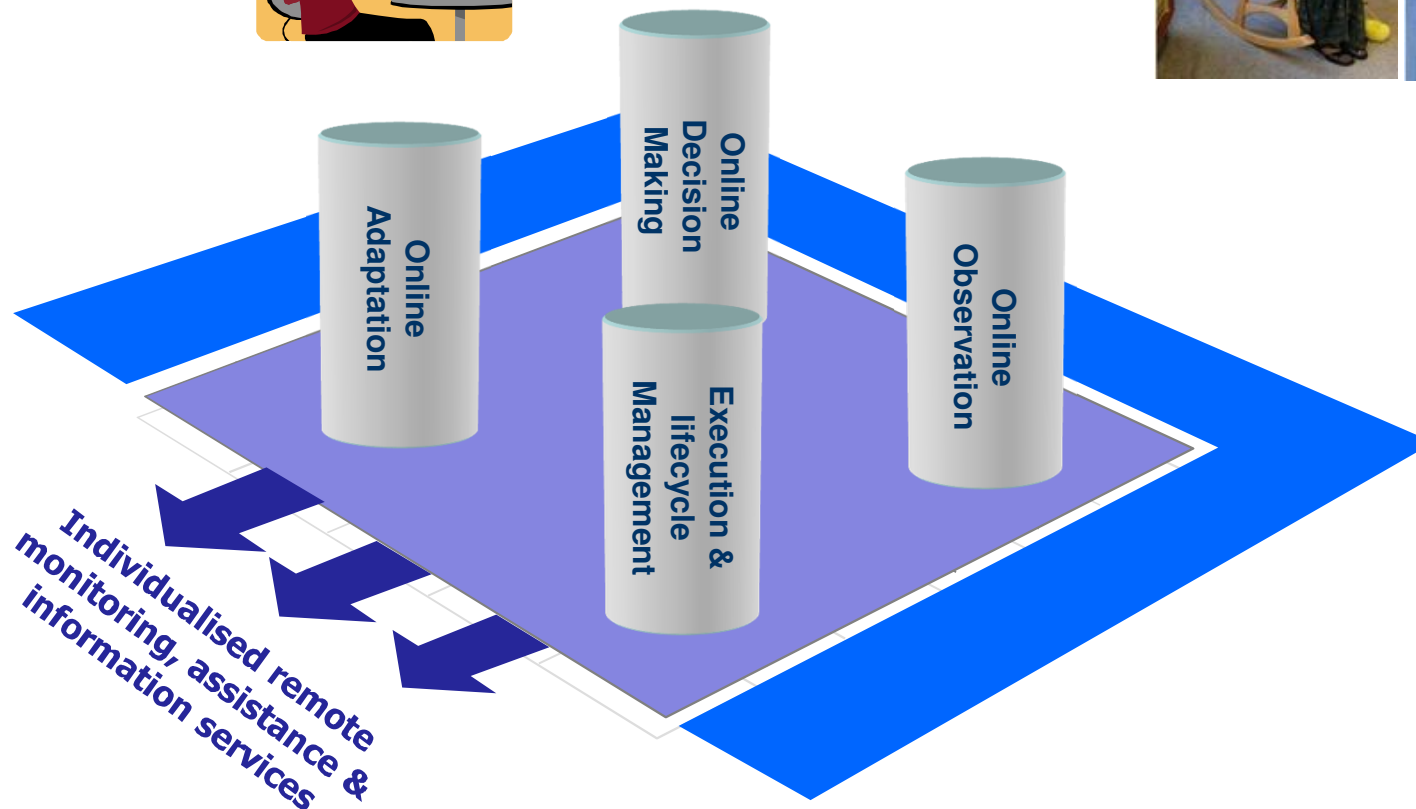


# Context: Architecture for Ambient Systems

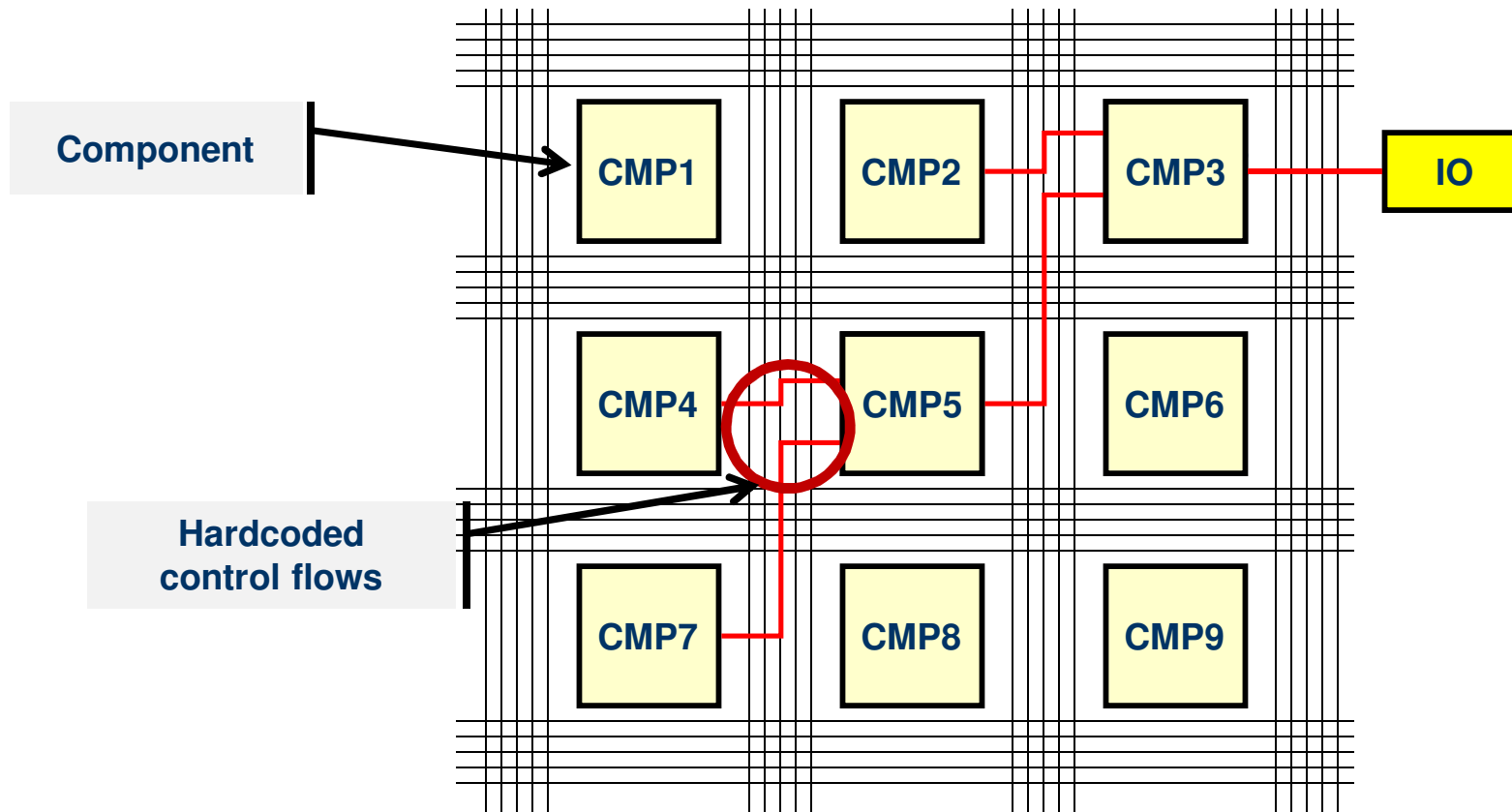
**Activity intelligence services:  
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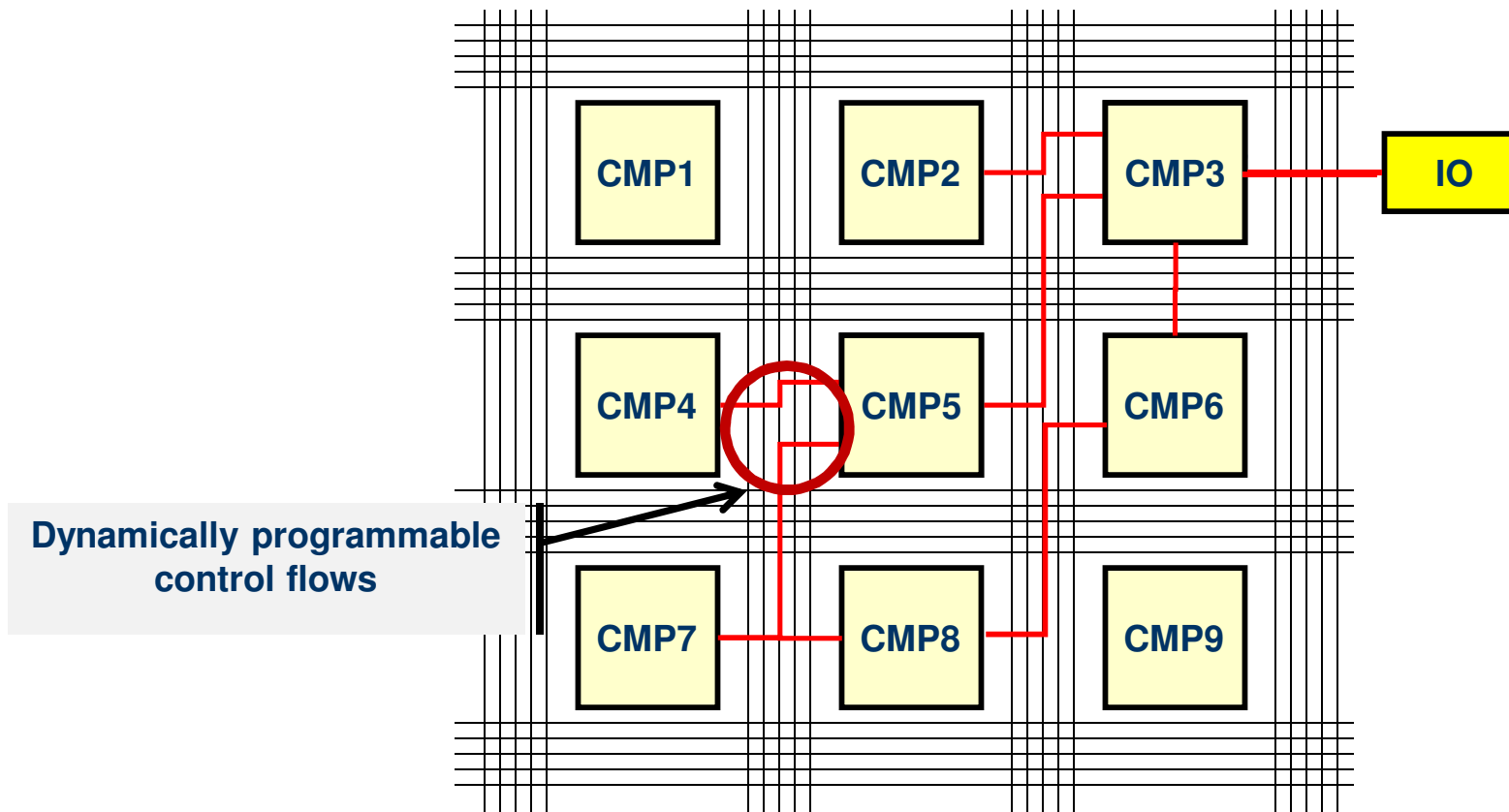


# Component-based web application development in Seaside



Matrix of components adopted from Damien Picard and Loic Lagadec ESUG 2009

# Objective: On-line end-user programmable control flows

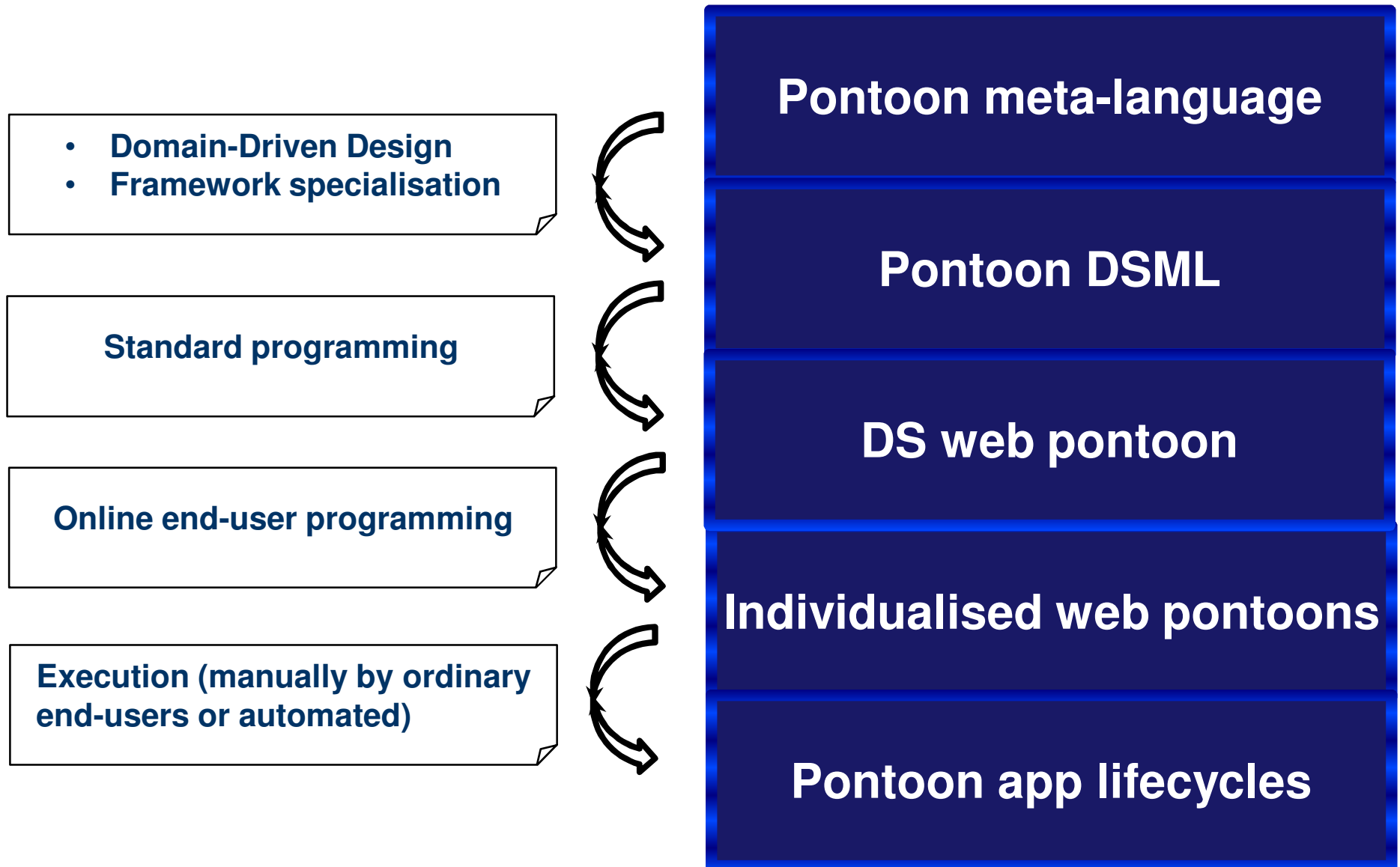


- Change online the output with predictable results
- + Situated lifecycle management

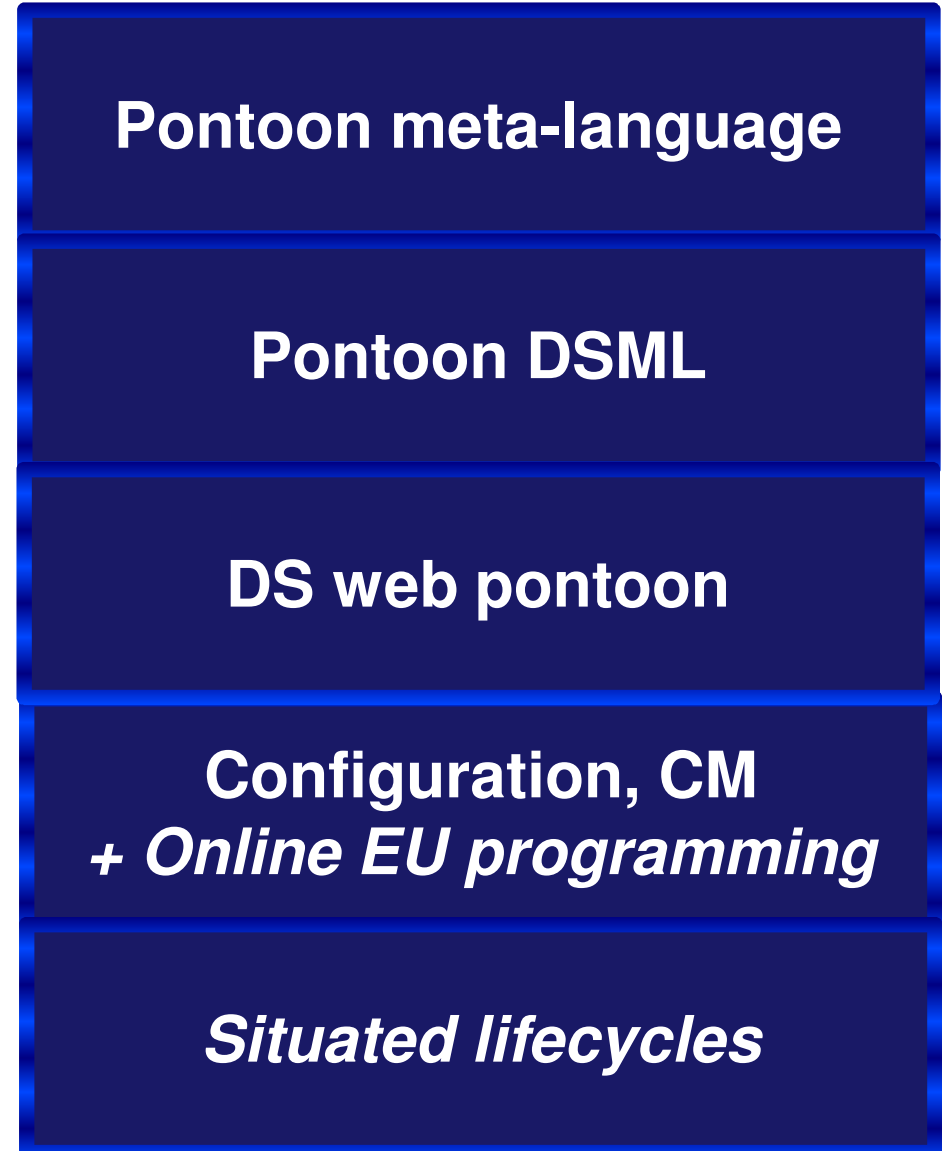
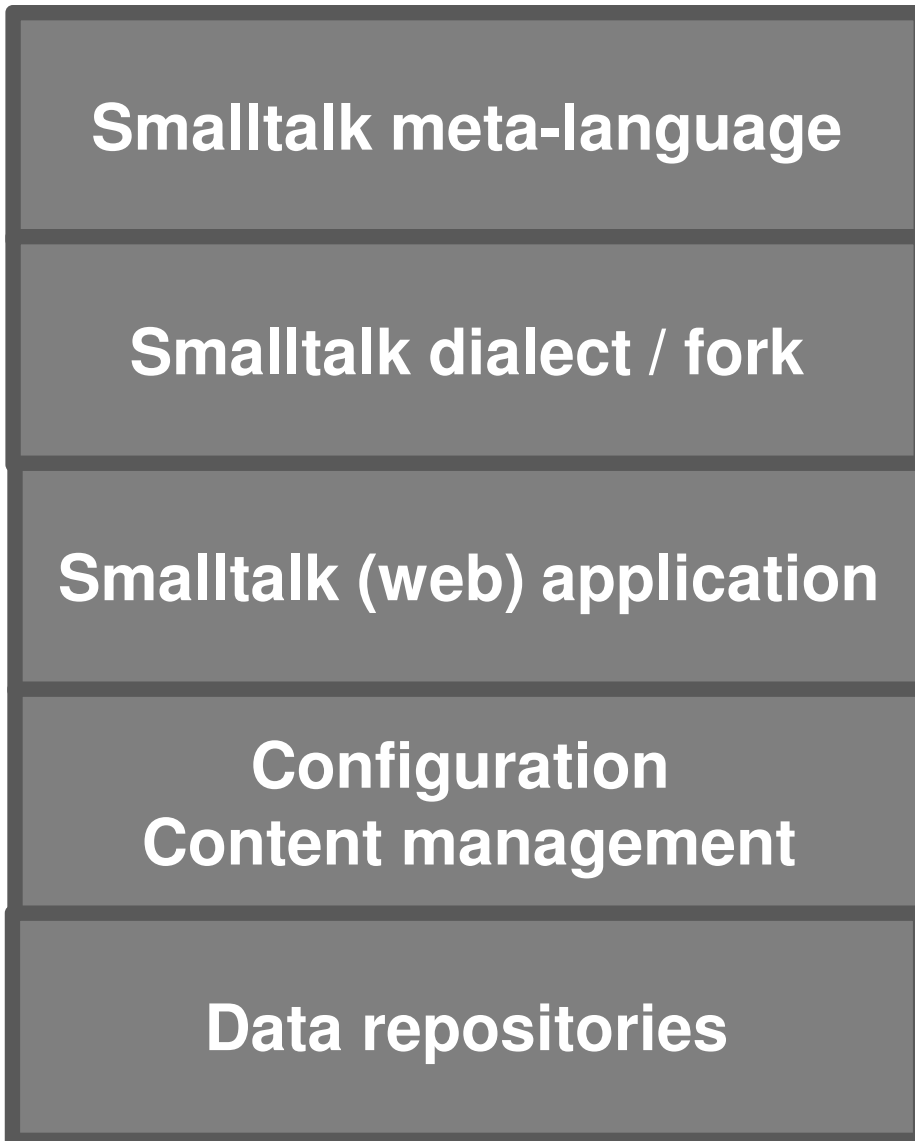
## Solution approach

- Enable online & controlled programmability of webapps by embedding a DSML
- Address diversity of domains and requirements by a meta-language framework approach
- Address the identification of changing aspects and DSML requirements by Domain-Driven Design
- Address smart behaviour requirements by situated lifecycle management

## Creating DSML by extending of a meta-language framework



## Standard Smalltalk (web) application development practices







# Background: Ambiance project (2005-2006), UL

The screenshot shows a web browser window titled "Seaside - script.aculo.us - Mozilla Firefox" with the URL `http://localhost:8080/seaside/ambiance?_k=vYbrWfwe&_s=qFEnLSkPnKLIKoOD`. The page content includes a "query editor" section with a "main Identify Vehicle" task. Below the task name, there is a text input field and a "Submit" button. The instructions read: "Please type here the name of the new task to add, then click on Submit: drag & drop primitives below to edit the <identify vehicle> task." The page is divided into sections: "sensing & aggregation" (listing operations like Average Pulse Pairs, Classify Vehicle, etc.), "control" (listing Call, For a Period of Do), and a list of primitives. A yellow box highlights a sequence of operations: "Detect Beam Event () -> Pulse\_1", "Detect Beam Event () -> Pulse\_2", "Detect Beam Event () -> Pulse\_3", "Sort Edges (Pulse\_1, Pulse\_2) -> PulsePair\_1", "Sort Edges (Pulse\_2, Pulse\_3) -> PulsePair\_2", "Average Pulse Pairs (PulsePair\_1, PulsePair\_2) -> PulsePair\_3", "Estimate Motion (PulsePair\_3) -> Mobileobject\_1", and "Classify Vehicle (Mobileobject\_1) -> Vehicle\_1". Below this list are two dashed boxes for "Drop instructions here to edit them." and "Drop instructions here to remove them from the task." At the bottom, there are links for "New Session Configure Toggle Halos Spot Profile Memory Use Terminate XHTML" and a status bar showing "265/23 ms".

Annotations on the left side of the screenshot:

- Tasks**: Points to the "main Identify Vehicle" task name.
- Service Repository**: Points to the "sensing & aggregation" section.
- Activity**: Points to the "control" section.
- Domain Concepts**: Points to the list of primitives.
- Steps**: Points to the highlighted sequence of operations in the primitives list.

<http://osl.cs.uiuc.edu/people?user=razavi>

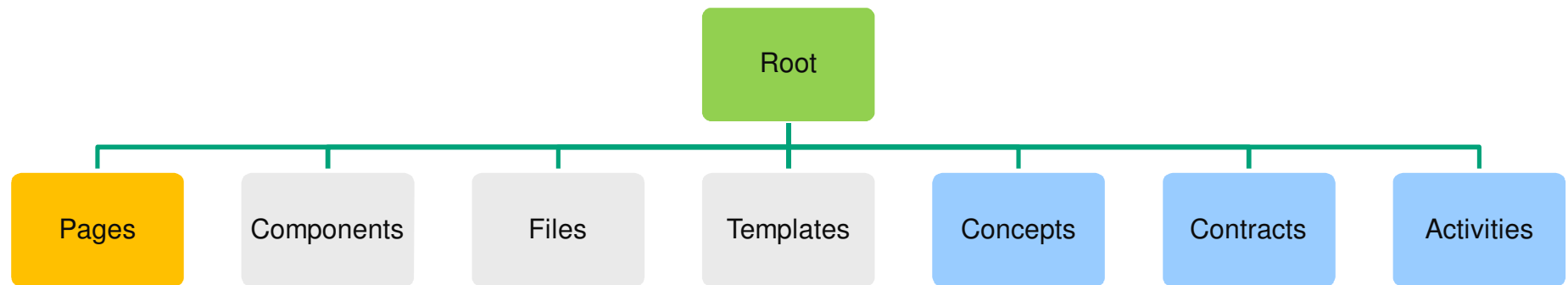
# Assumptions

- Changing content & functionality
- Changes are unpredictable, by their patterns aren't
- Patterns of change may be "wrapped" into a DSML
- End-user are motivated to program using that DSML

## Managing flows & lifecycles as content

- Systematic tree structure of pontoon web apps, both at the operational & knowledge level
- Seaside JQuery-based viewers

# Webapp as a tree of operational- & knowledge-level nodes



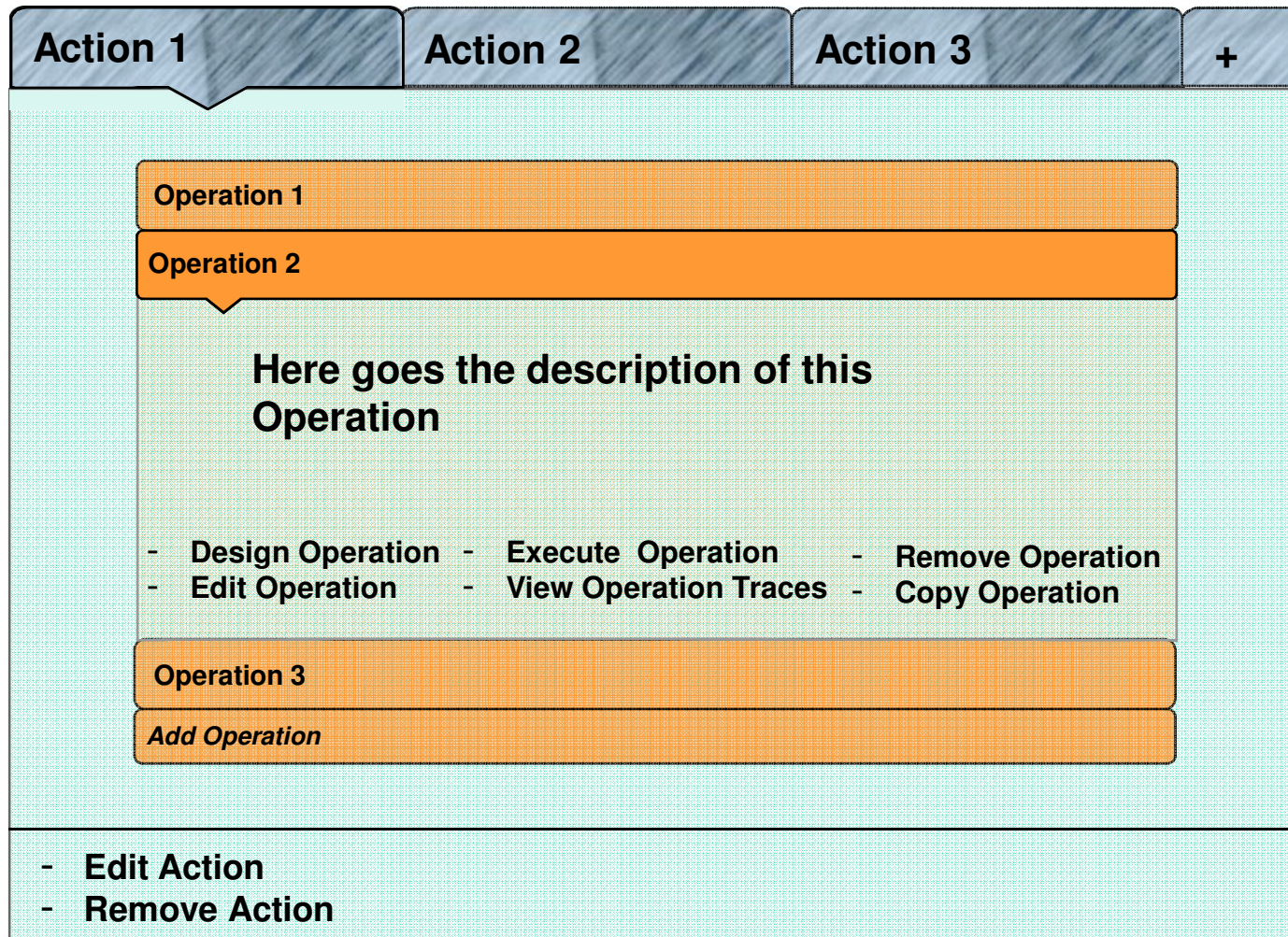
# Implementation



## Seaside JQuery-based viewers / editors

- Based on a framework for hierarchical viewers / editors
  - Implemented in a couple of weeks
  - Via extensive refactoring
- Seaside JQuery examples as starting point
  - Without any previous knowledge of JQuery
  - Without any line of JavaScript ever written

# Illustration: Activity editor



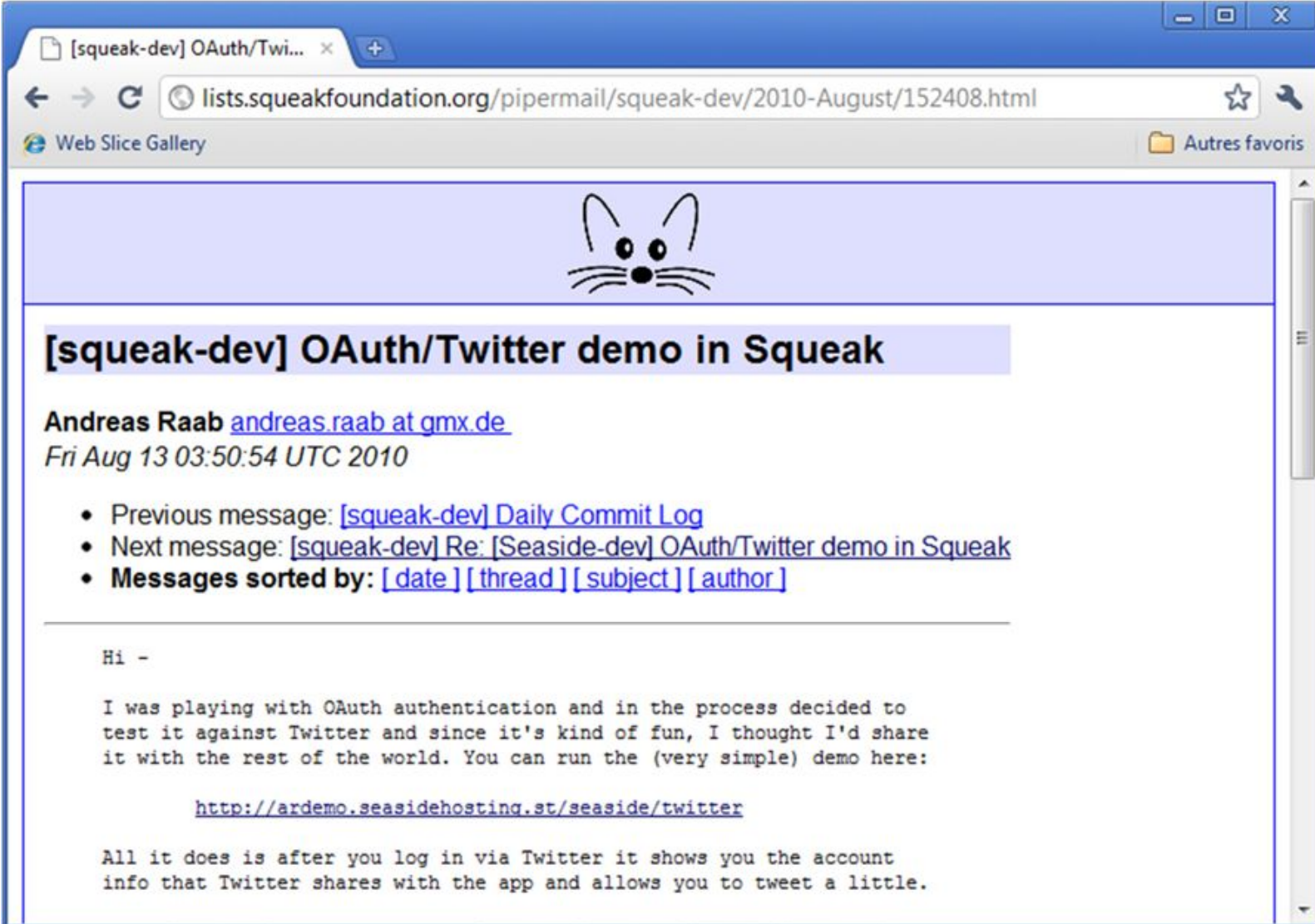
- Execute Activity
- Edit Activity
- View Activity Traces
- Remove Activity



# Illustration

## Twitter – traffic info example

- Two levels of programming in pontoon webapps
  - Reusability of existing components
    - Atomic services / Contracts
  - Accessibility of on-line data streams (& web services)
  - Accessibility of on-line communication media
    - Social networking
  - Relative ease of use
  - Expressivity
- 
- Case designed for a short but yet representative demo
    - Real-life usefulness not necessarily a goal




The screenshot shows a web browser window with a single tab titled "[squeak-dev] OAuth/Twi...". The address bar contains the URL "lists.squeakfoundation.org/pipermail/squeak-dev/2010-August/152408.html". The browser interface includes a "Web Slice Gallery" button and a "Autres favoris" folder. The main content area features a light blue header with a simple line-art drawing of a cat's face. Below the header, the email subject is "[squeak-dev] OAuth/Twitter demo in Squeak". The sender is identified as "Andreas Raab" with the email address "andreas.raab at gmx.de" and the date "Fri Aug 13 03:50:54 UTC 2010". A list of navigation links follows: "Previous message: [squeak-dev] Daily Commit Log", "Next message: [squeak-dev] Re: [Seaside-dev] OAuth/Twitter demo in Squeak", and "Messages sorted by: [date] [thread] [subject] [author]". The body of the message begins with "Hi -" and describes the author's experiment with OAuth authentication against Twitter, providing a link to a demo application: "http://ardemo.seasidehosting.st/seaside/twitter". The message concludes by stating that the demo shows account information shared by Twitter and allows for tweeting.

[squeak-dev] OAuth/Twi... x

lists.squeakfoundation.org/pipermail/squeak-dev/2010-August/152408.html

Web Slice Gallery

Autres favoris



## [squeak-dev] OAuth/Twitter demo in Squeak

Andreas Raab [andreas.raab at gmx.de](mailto:andreas.raab at gmx.de)  
Fri Aug 13 03:50:54 UTC 2010

- Previous message: [\[squeak-dev\] Daily Commit Log](#)
- Next message: [\[squeak-dev\] Re: \[Seaside-dev\] OAuth/Twitter demo in Squeak](#)
- **Messages sorted by:** [\[date\]](#) [\[thread\]](#) [\[subject\]](#) [\[author\]](#)

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Hi -

I was playing with OAuth authentication and in the process decided to test it against Twitter and since it's kind of fun, I thought I'd share it with the rest of the world. You can run the (very simple) demo here:

<http://ardemo.seasidehosting.st/seaside/twitter>

All it does is after you log in via Twitter it shows you the account info that Twitter shares with the app and allows you to tweet a little.

Seaside - a Squeak Web ...

comments.gmane.org/gmane.comp.lang.smalltalk.squeak.seaside/21952

Web Slice Gallery

Autres favoris

# seaside@lists.squeakfoundation.org

Seaside - a Squeak Web Development Environment

Nick Ager | 2 Aug 01:01 headers

RETURN

Return to  
gmane.comp.lang.smalltalk.squeak.seaside.

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**Gmail** **CampSmalltalk London tutorial**

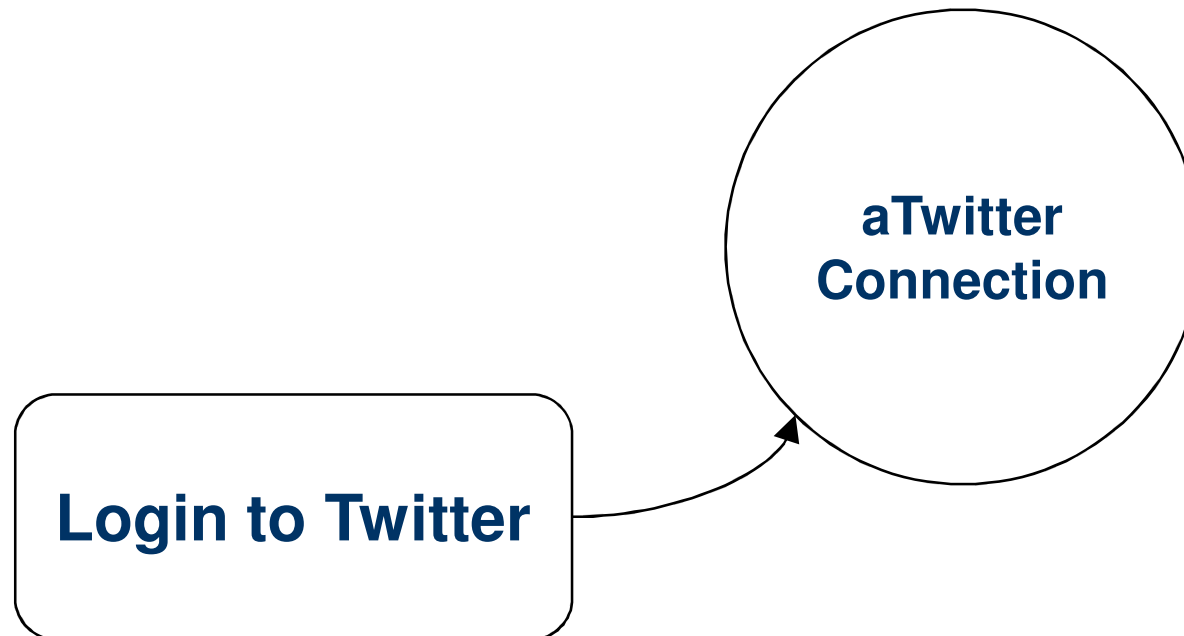
Hi

Though it's been a couple of weeks since CampSmalltalk London, I've only just got round to creating a ConfigurationOfCampSmalltalkLondon which can be used to download the beginners tutorial Tim Mackinnon and I created.

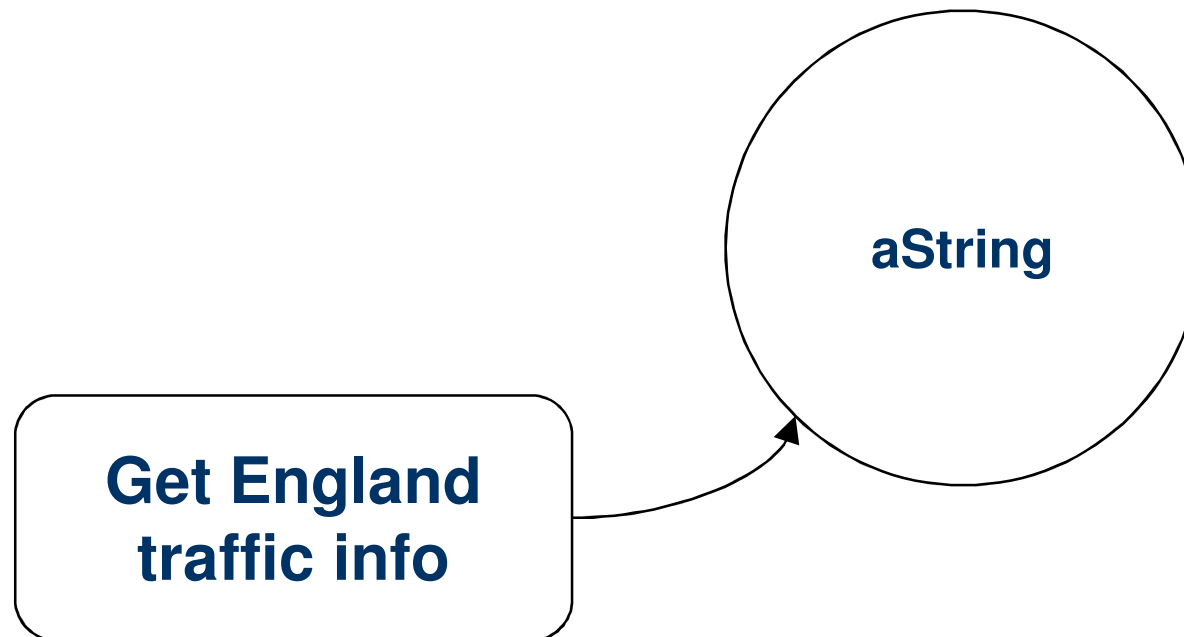
First some context. The beginners tutorial ran on the first day. We had 9 developers with a mixed background in Ruby/Java/C#/PHP etc. We started by going through the excellent ProfStef tutorial which we used as jump off point for frequent asides into the tools and code in Pharo.

Next we gave them a simple exercise. You can download the code by grabbing ConfigurationOfCampSmalltalkLondon from <http://www.squeaksource.com/MetacelloRepository.html> and executing:

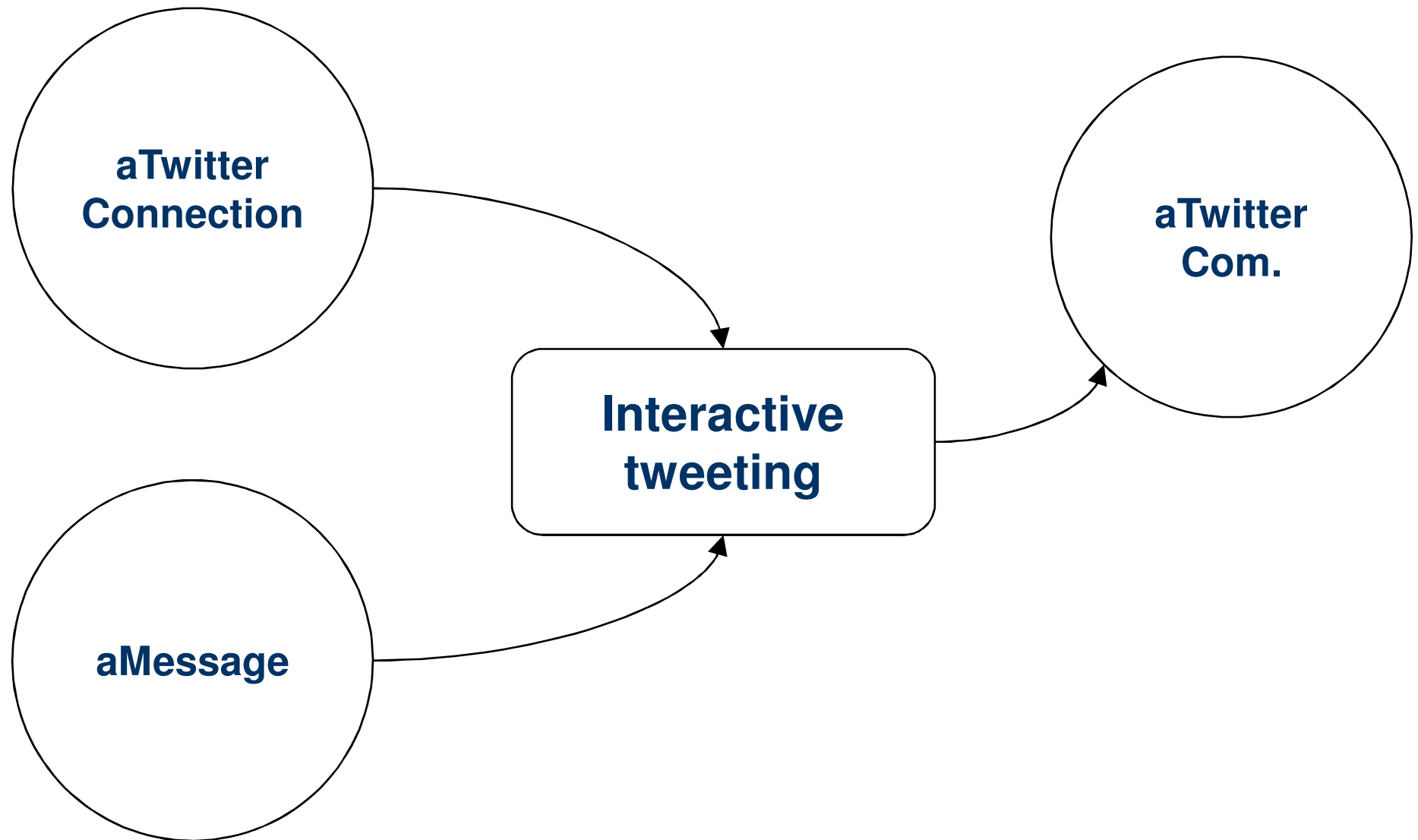
## ***Login to Twitter*** atomic service



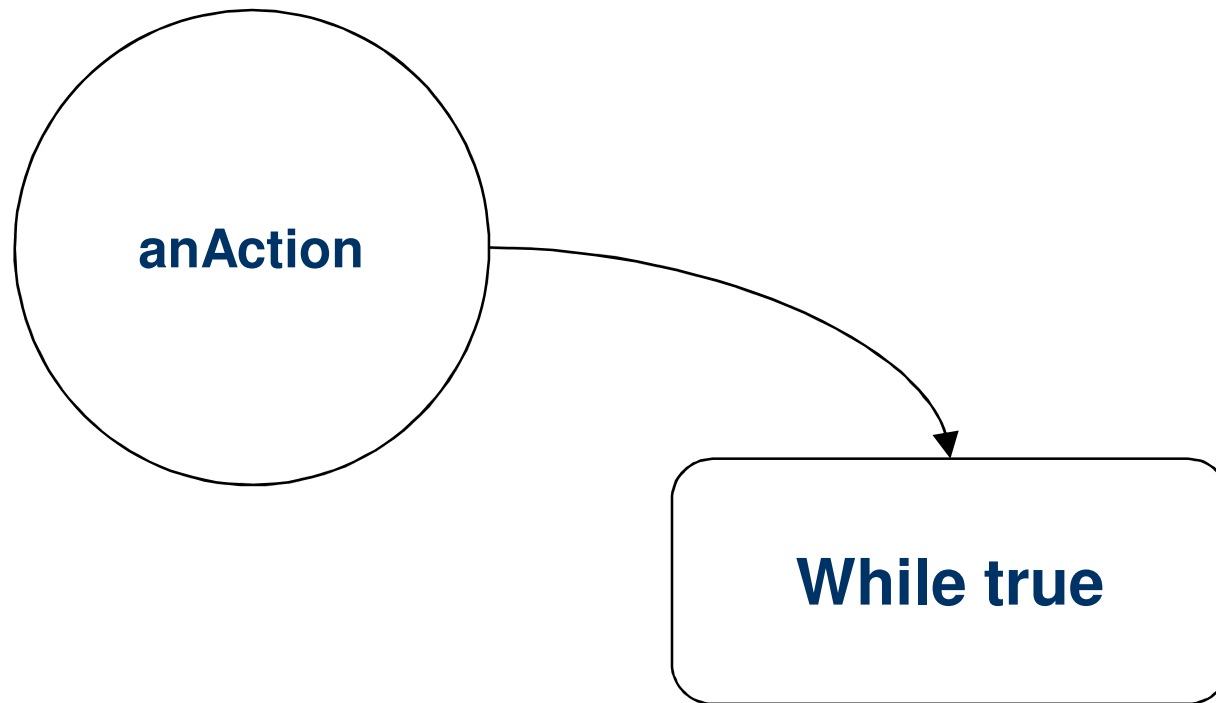
## ***Get England traffic info*** atomic service



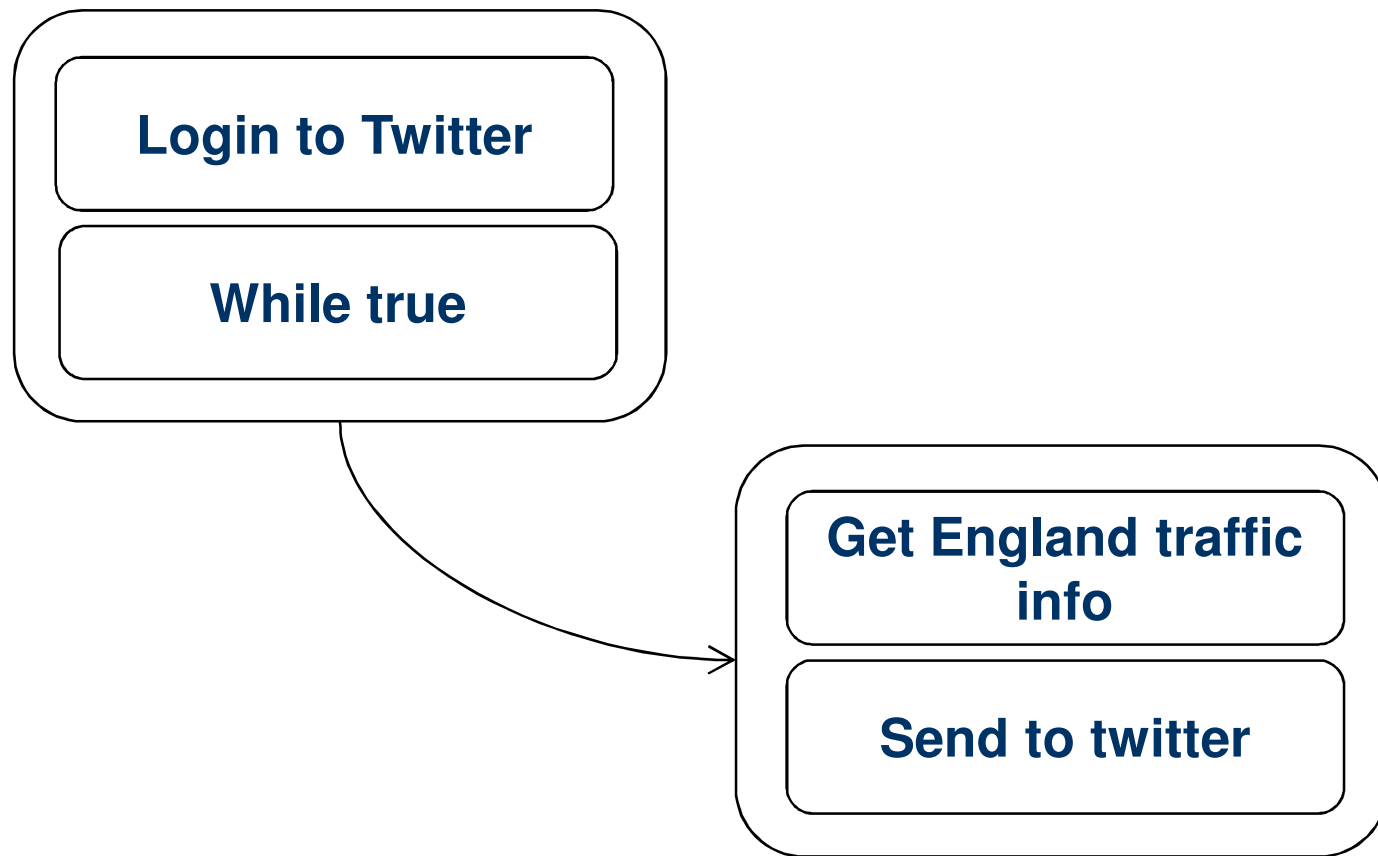
## ***Interactive tweeting service***



## ***While true* atomic service**







```

WATwitterTask >> go
  aTwitter := self call: TwitterLoginService new.
  [itemColl := CSLTransportInfo new results atRandom.
   InteractiveTweetingService
     on: aTwitter
     tweet: anItem description]
    whileTrue
  
```

## Live demo

- Programming on-line the above example
  - As an end-user programmers
  - Via <http://www.afacms.com>
- Executing the above end-user program
  - As a final end-user
- Inspecting execution lifecycles
  - As a manager

## **Application perspectives – ICT-based support to the elderly**



**Delegate to care providers the  
management of diversity &  
unpredictable changeability**

## Application perspectives – Business applications



**Delegate to domain experts the description & validation of application-level business logic via executable models**

## Other application perspectives

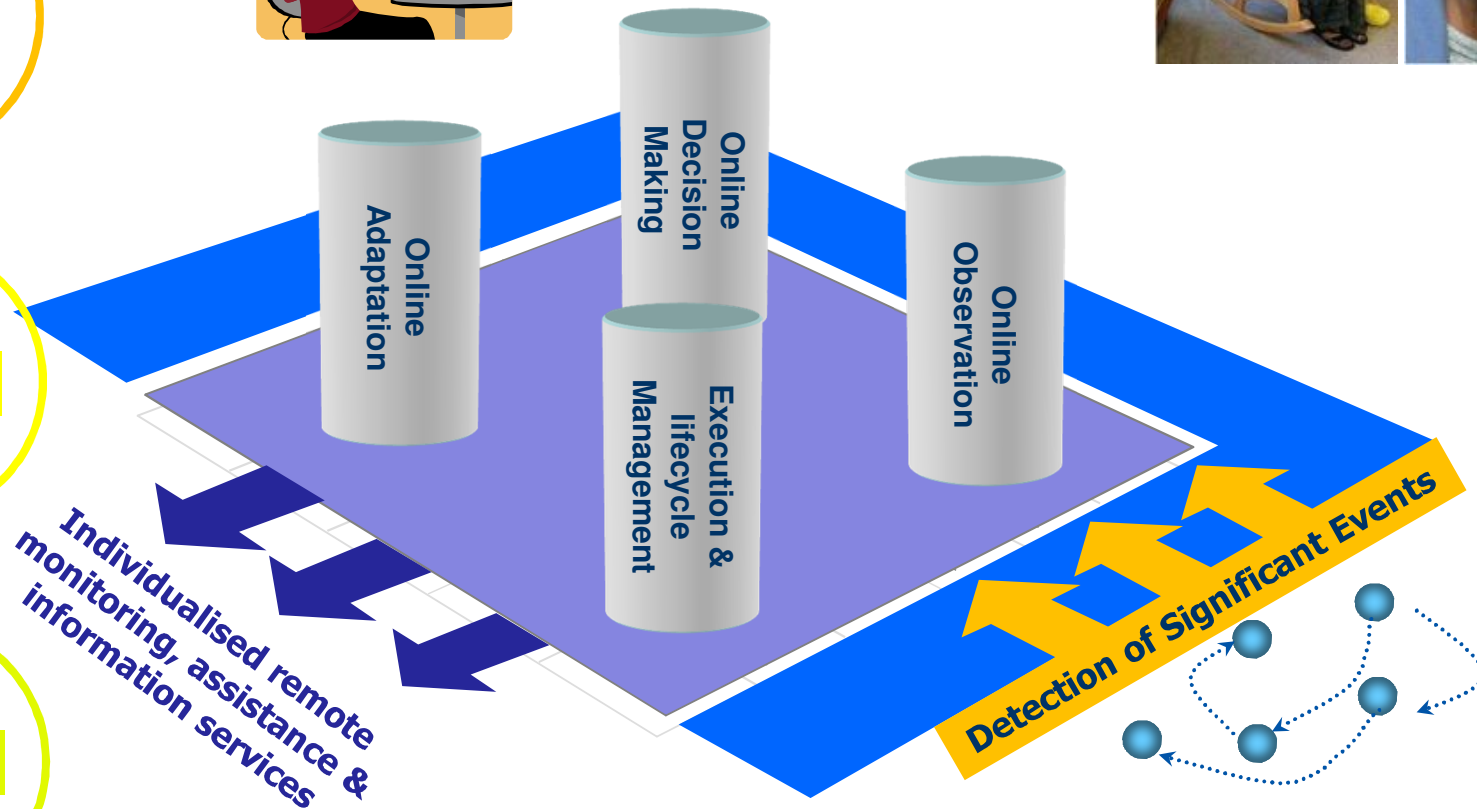
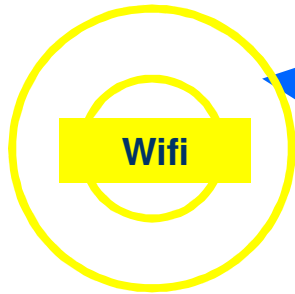
- Web-based model authoring and execution systems
- Architectural innovation of legacy applications
- Self-documenting web applications
- Extending *Service-Serve* possibilities
- On-line store for situational services
  - Community project <http://pontoonity.com>

# Research perspectives

**Activity intelligence services:  
What, Where, When, Who, Why**



## Multiple users



## Call for collaboration

- Independent start-up company
- Hosted by the Ministry of Economy and Foreign Commerce in Luxembourg
- Background in industrial software development (Prelude Inspection) & academic research (Paris 6 & Univ. Luxembourg)
- Welcomes industrial and academic Partners, Sponsors and Early Adopters

# Contact

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**Web technology meets dynamics of changing economy**

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