

Supporting a Process-Oriented Requirements Method

Keith Phalp, Sherry Jeary, Lai Xu

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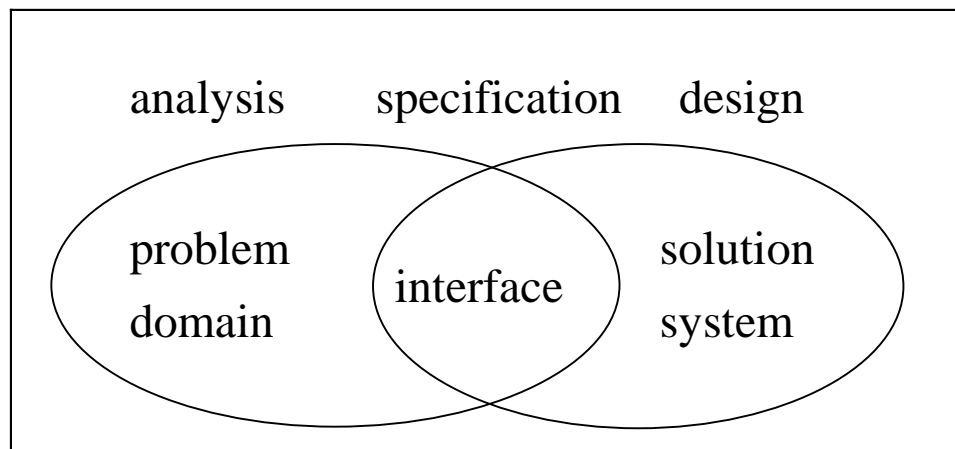
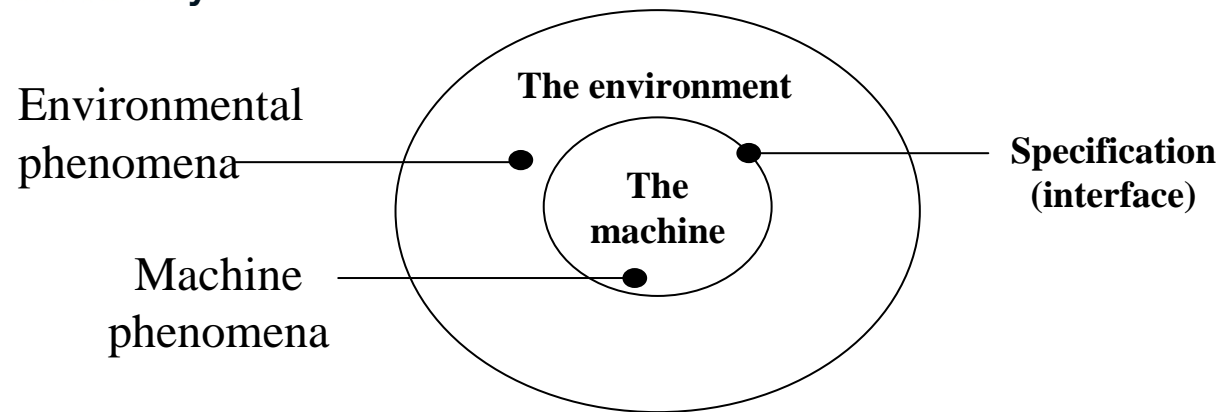
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- Process Models
- Moving from Process Model to Specification
- Some Simple Approaches to Help (in this case)
- A Model Driven Perspective
- Situational Enterprise Applications
- Mashups
- Existing Tools for Situational Mashups
- Round-up
- EU FP7 SOA4All
- Resources for Building Mashup Applications

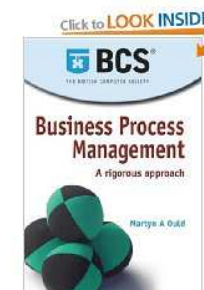
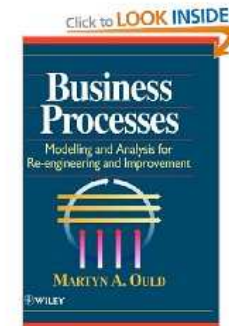
The problem in a nutshell

- Customers want systems to support their business processes. (We can argue about the b word).
- Developers build systems for clients.
- Often the following happens:
 - “Oh dear. The system doesn’t meet the client’s needs”.
- It must be someone’s fault
 - “The customer didn’t tell us what they wanted”
 - “The developers didn’t understand the problem”
- This is a *requirements* problem, and **very** common.
- Often a lack of alignment (business and IT)

Terminology: Descriptions and phases



- Original concepts in paper by Ould & Roberts (1986), book by Ould 1995 (a great read).
- Initially, promoted by Praxis & Coordination Systems (Roberts), and the DTI sponsored IOPTClub.
- Variants and extensions, e.g., PROCESS project (Southampton Uni, 94-97) produced families of models (mapping to CSP) and enactable models (RoIEnact 98).
 - Phalp, K.T., G.K. Abeyasinghe, P. Henderson, and R.J. Walters, (1998), RoIEnact: Enactable Models of Business Processes, Information and Software Technology, vol. 40, num 3.
- Recent resurgence of interest, with popular books by Keith Harrison Broninski and Martin Ould (both BCS).
- Still supported by many, e.g., see Venice Consulting (Martin Ould's site), for much of interest.
 - www.veniceconsulting.co.uk



What do process actors need to know?

‘For an individual (or group) in the organisation to carry out their activities, they need to know what activities they must take part in, in what order those activities must take place, what other individuals or groups they must interact with, and which actions are dependent upon those interactions’.

Handy, C. (1976), ‘Understanding Organisations’, Penguin.

- ‘Role based models satisfy these requirements by grouping activities into ‘roles’, which describe the desired behaviour of individual groups, or systems’.

Ould, M.A. (1992), An introduction to Process Modelling using RADs, in IOPTCLUB Practical Process Modelling, Mountbatten Hotel, Monmouth Street, Covent Garden, London.

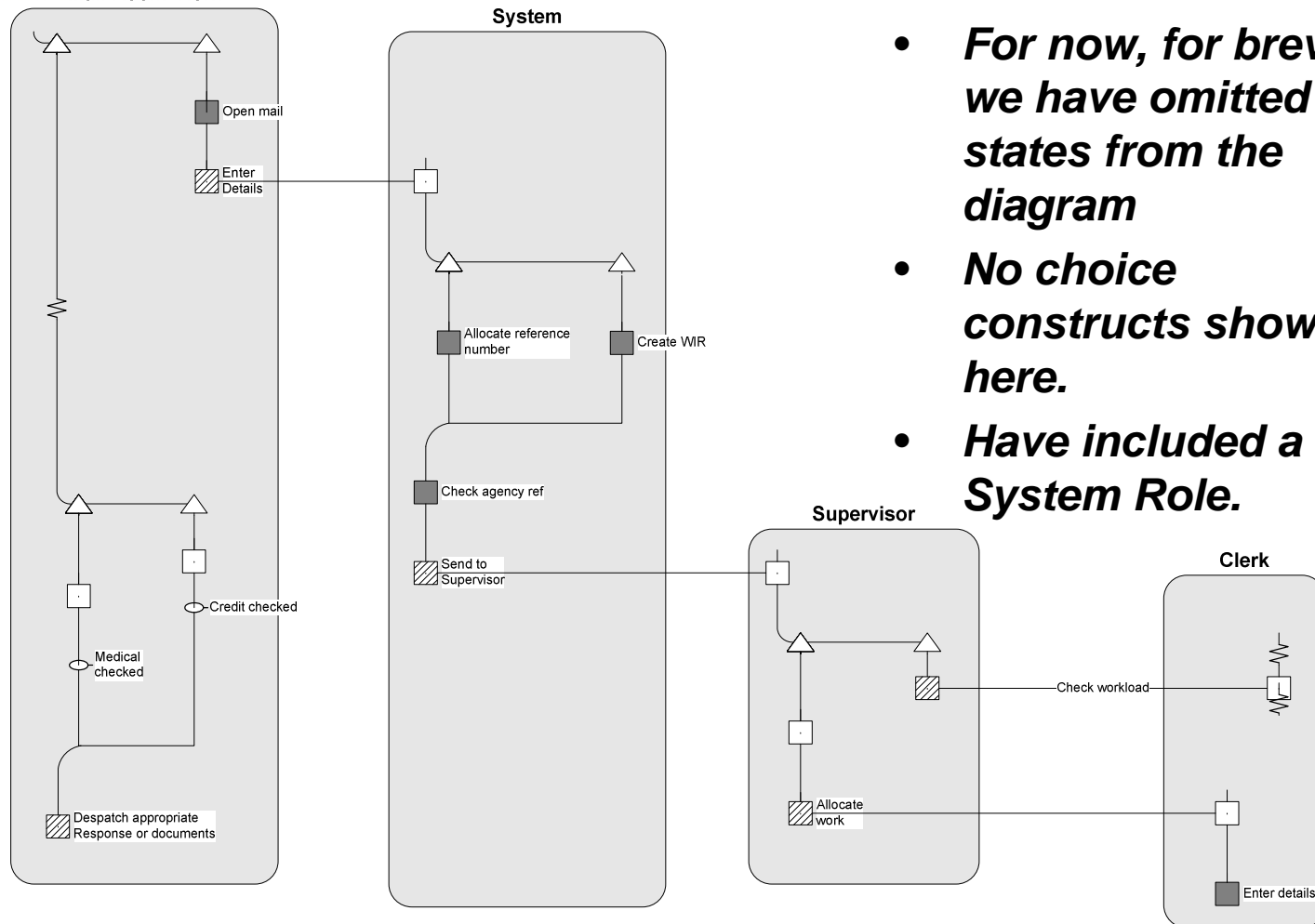
- ‘A role involves a set of activities which, taken together, carry out a particular responsibility or set of responsibilities’.

Ould, M.A. (1995), Business Processes modelling and Analysis for Re-engineering and Improvement, John Wiley & Sons.



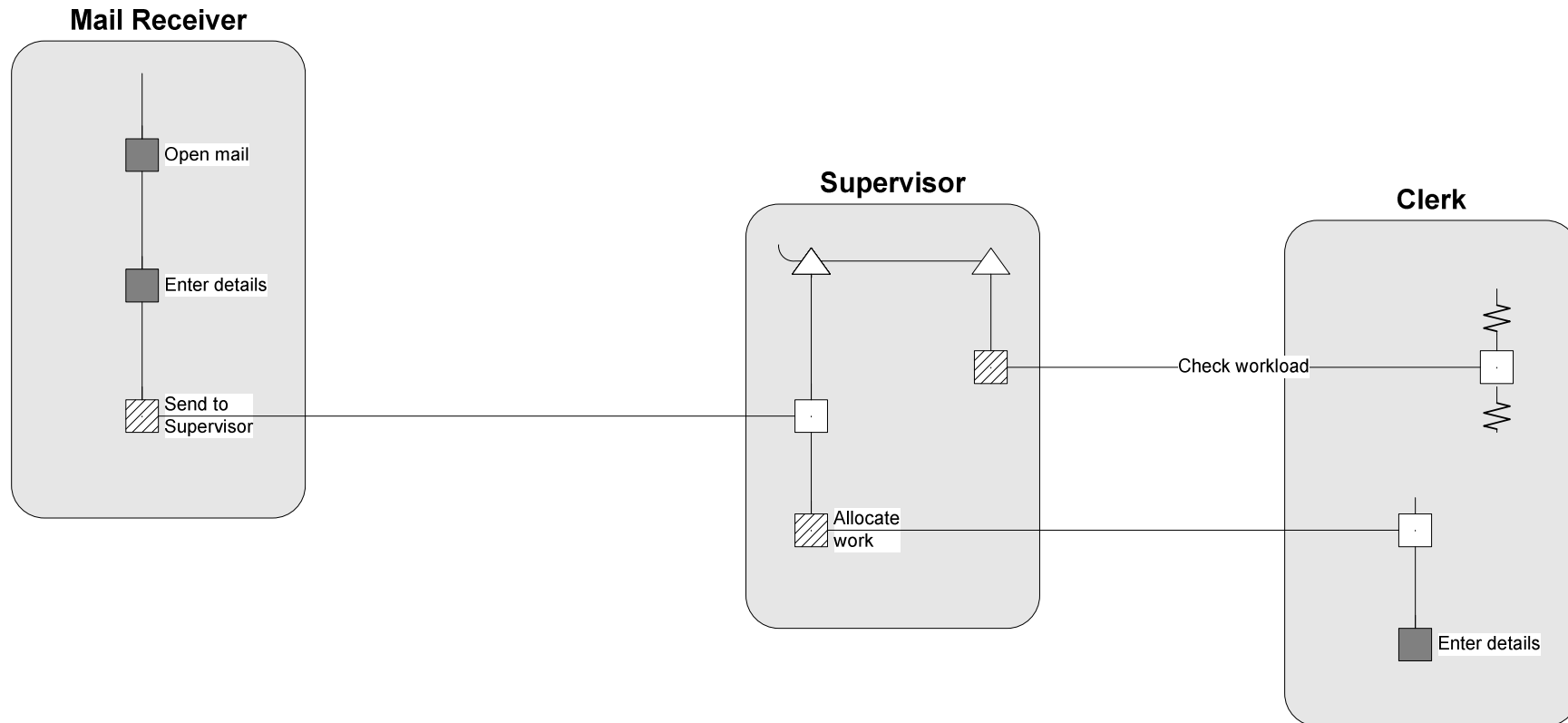
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Mail Room Clerk

Role Activity Diagrams

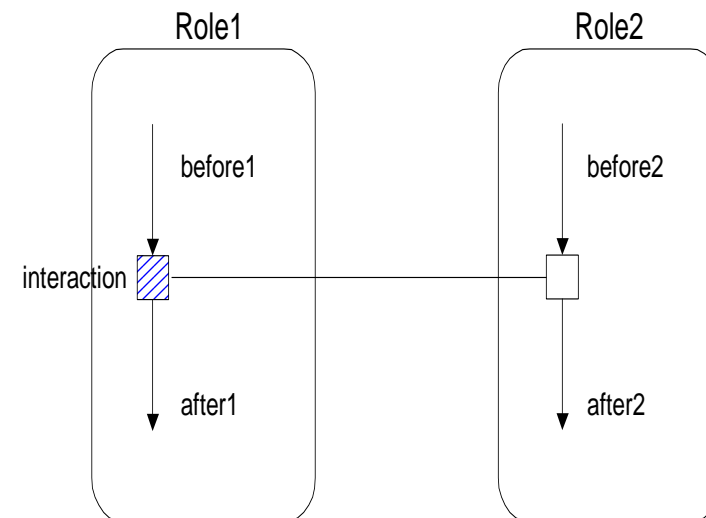


- ***For now, for brevity, we have omitted states from the diagram***
- ***No choice constructs shown here.***
- ***Have included a System Role.***

A 'Purist' RAD approach



- Activity (or activities) carried out at the same point as another activity in another role (or roles).
- A shared event.
- The consequence of an interaction is that all of the roles involved move from their current state to their next state.
- Act as points of synchronisation (or control) of the process.
- Interactions are synchronous.



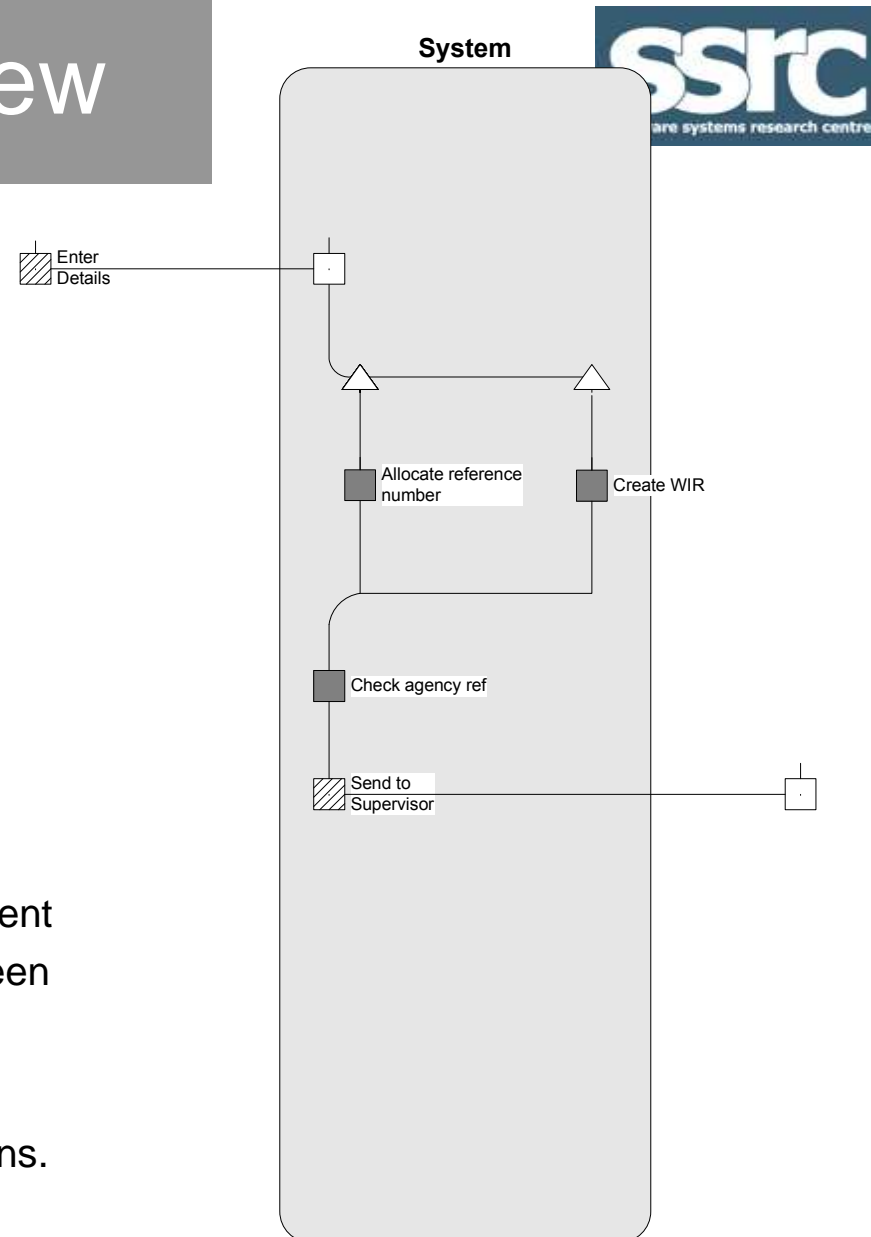
ISSUES

- Process models and software models have different perspectives and languages.
- For say RAD to use case, they can be considered almost orthogonal.
 - Activities assigned to roles versus actors (roles) assigned to processes.
- Hence difficult to preserve mapping in moving from process model to software.
 - In addition, there may be information loss if our software constructs are not sufficiently powerful (rich enough).

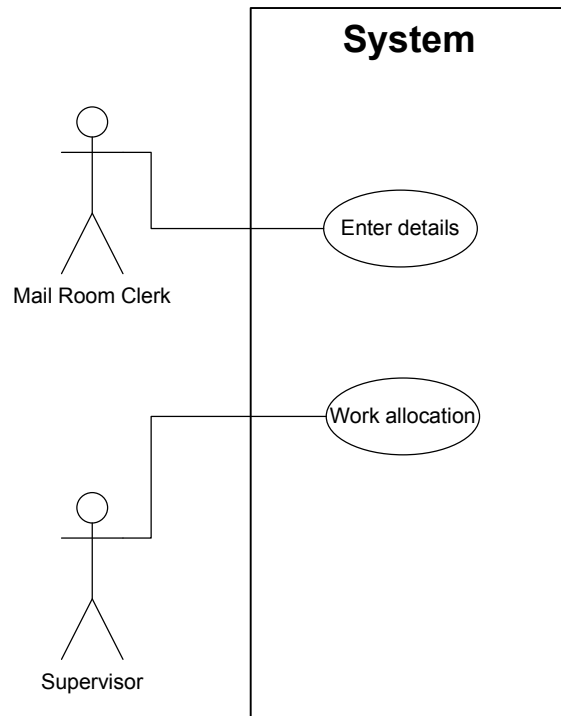
SOLUTIONS (lots of different ones of course)

- A very thorough approach, which can be found in BSCP (Business Strategy Context Process) paper, moves from strategic view, using goal models, problem frames, and process models (Role Activity Diagrams).
 - S. Bleistein, K. Cox, J. Verner and K. Phalp (2006), [B-SCP: a requirements analysis framework for validating strategic alignment of organisational IT based on strategy, context and process](#), Information and Software Technology, 48 (9), pp.846-868.
- Present here aspects of a lightweight view (often used in teaching), more pragmatic and accessible (simple notational devices).

- This is against the purist approach, and a rather simplified (teaching) example.
- We (as software engineers) move towards specification.
- Need to ensure that we capture the system boundary (as with say a Yourdon Context Diagram).
- Need to ensure that, in moving to spec, we show cross boundary (problem to machine interactions).
- With a system RAD (usually will have different sub-system names) the interaction is between the roles (which will be actors) and the system role.
- This will correspond to use case associations.



A simplified use case

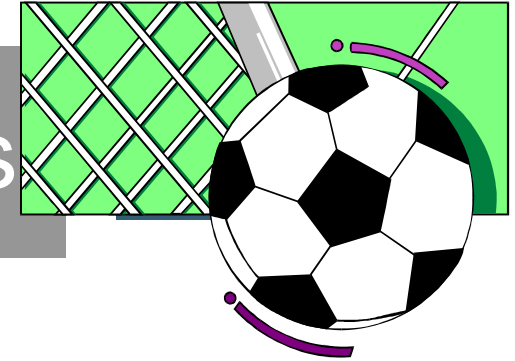


- Hence, RAD acts as a way to consider the problem domain (inform requirements).
- RAD (with system roles) allows one to 'discover' or discuss the system boundary.
- Acts as a link between business view (intentions for system) and IT.

Practical

- Acts as a checklist for the specification.
- Gives a first cut list for the use case diagram communications.
- Of course the meat (of the use case) is in the descriptions.

Two sporting use cases



1. The match reached full-time
2. The referee blew his/her whistle
3. The ball crossed the goal-line
4. The goal was not given

Alternatives

4. The goal was given

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Validation & Context. Someone who 'knows the the game'.

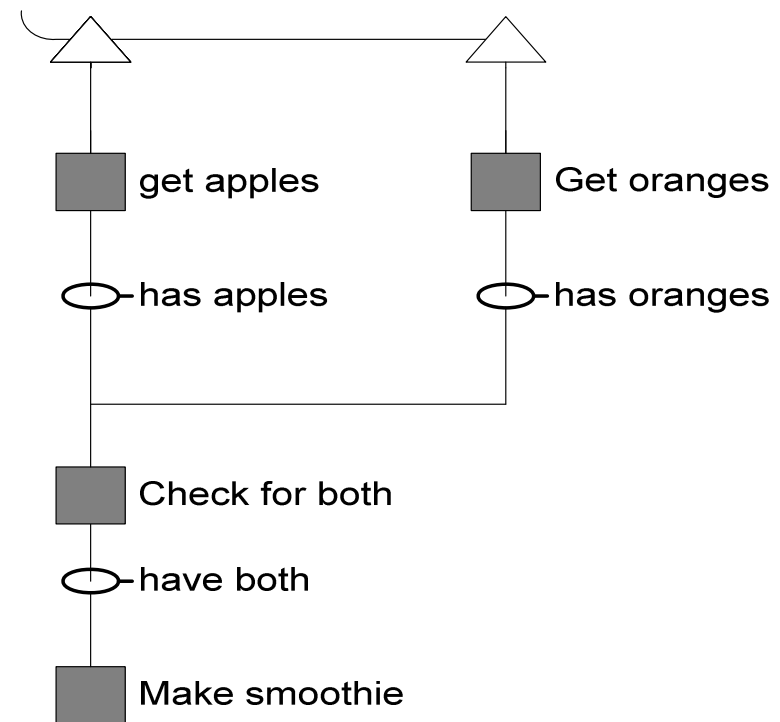
Suppose our event is now *Make smoothie*, which requires that when we have fruit. We actually have both apples and oranges.

For a use case we would be required to choose that the gaining of apples and oranges occurs in some arbitrary sequence. That is:

- 1 Fruit Finder get apples
- 2 Fruit Finder get oranges

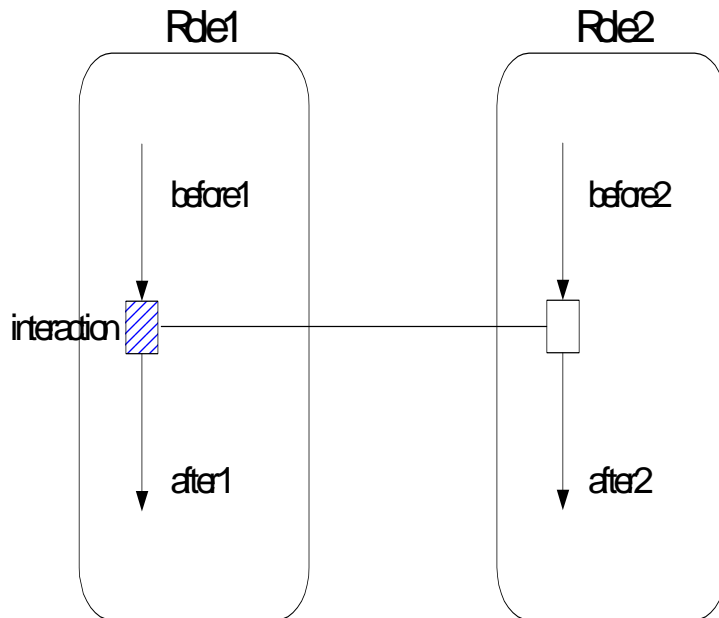
However, in reality one might gather these fruits independently and in any, often unknown order.

Also within the Use Case description the dependencies are unclear



Kanyaru, J.M. and Phalp, K. (2009), Validating software requirements with enactable use case descriptions, Requirements Engineering Journal, 14: 1, Feb 2009

Three Notations



```
Interaction Role1.Interaction
Me(before1 → after1)
Role2(before2 → after2)
End
```

```
Interaction Keith.gives_pen
    Me (has_pen -> no_pen)
    Sherry (no_pen -> has_pen)
End
```

Actor
Keith

Event
gives pen

<i>pre</i>	<i>post</i>	Actor 2	<i>pre</i>	<i>post</i>
has pen	no pen	Sherry	no pen	has pen

1. Client requests connection via Schedule
2. Scheduler acknowledges connection
3. Client sends network layout
4. Scheduler creates network handler
5. Scheduler registers network handler
6. Client starts executing its tasks

- *Produces an enactment.*
- *States controlling which events can be invoked.*
- *Allows stakeholders to experiment with behaviour.*

Educator : Use Case Enaction

File Use Case Actor Conditions Enact Tools CP Words Help

Description Client Connection

ID	Primary Actor	Event	Precondition	Postcondition	SecondaryActor	Precondition	Postcondition
1	Client	requests connection via Scheduler	initial	connectionRequested	Scheduler	waiting	connectionRequested
2	Scheduler	acknowledges connection	handlerRegistered	connectionAck	Client	handlerRegistered	connected
3	Client	sends network layout	connectionRequested	layoutSent	Scheduler	connectionRequested	layoutReceived
4	Scheduler	creates network handler	layoutReceived	handlerCreated			
5	Scheduler	registers network handler with client	handlerCreated	handlerRegistered	Client	layoutSent	handlerRegistered
6	Client	undertakes tasks	connected	readyToWork			

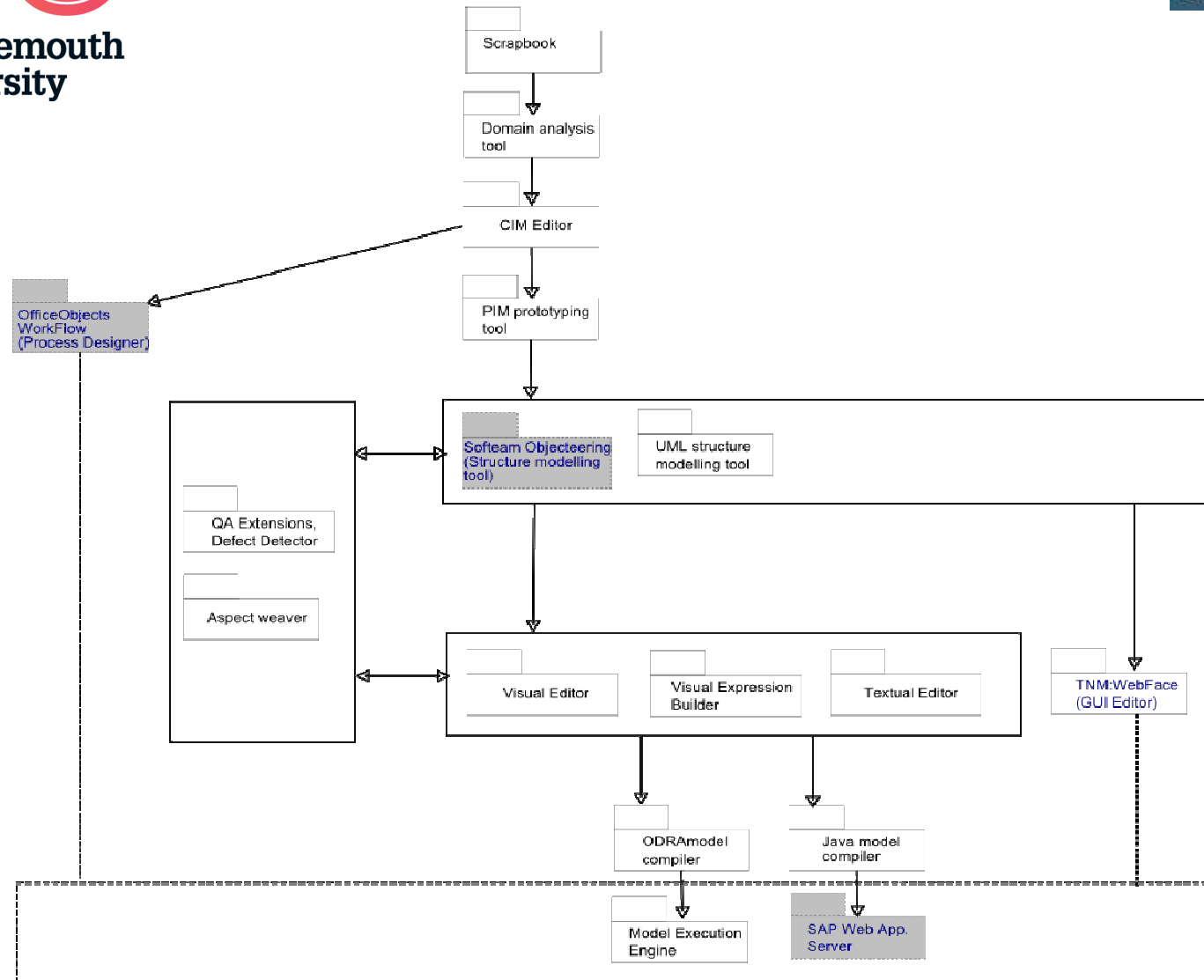
Add Description Add Alternative path Insert Event Print
 Change Precondition Change Postcondition Add Loop Quit

- **Style 3 (contd.)**
 - *The patient stands next to the doctor.*
 - *He puts the prescription in his pocket.*
- Who is “he”? Whose pocket is “his”? Write proper nouns / names instead:
 - *The doctor puts the prescription in the patient’s pocket.*
 - *The GP puts the prescription in the customer’s pocket.*
- This sentence is at fault because it uses synonyms (GP for doctor and customer for patient). Only use the agreed language of the domain since a synonym does not convey the same meaning.

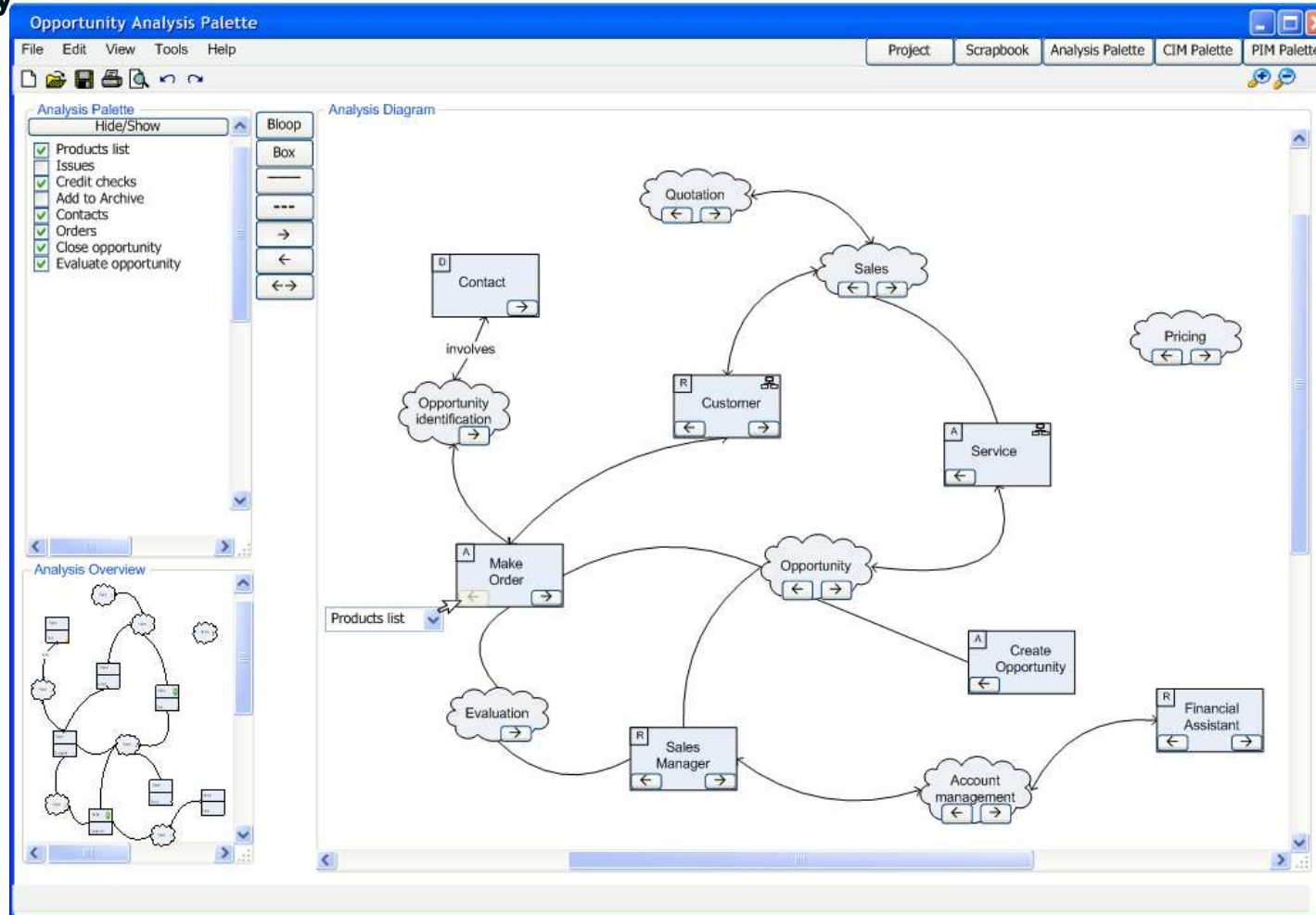
- One in-house approach has versions of RADs (environment, shared and machine RAD), which are then transformed (via rules) to UML models (class diagram), activity diagrams and use cases.
- Similar idea to the system roles.
- More rigorous (but requires sets of models)
- Allows for direct transformation (stronger alignment).
- Well received by our final years (but then they are Computing and BIT students – so amenable to software models and MDA).
- Rules can be applied as guidelines too (written), or codified.
- However, not clear that this is sufficiently accessible, *which leads to our work on accessible models (part of VIDE).*

- **VIDE – Visual Model Driven Development**
- European Commission funded €2,298,436 (\$2.95 million).
- To make model driven development fulfil business needs.
- To create novel tools to support model driven development, and to provide an end-to-end development process supported by visual notations.
- 10 partners including: SAP, 2 divisions of Fraunhofer, Softeam and Rodan (tool developers).
- BU focus specifically on accessibility of notation, particularly at the CIM level.
- Simple mechanisms (scrapbook, bloopers) and wizards to support transformations (e.g., BPMN to Class diagram).

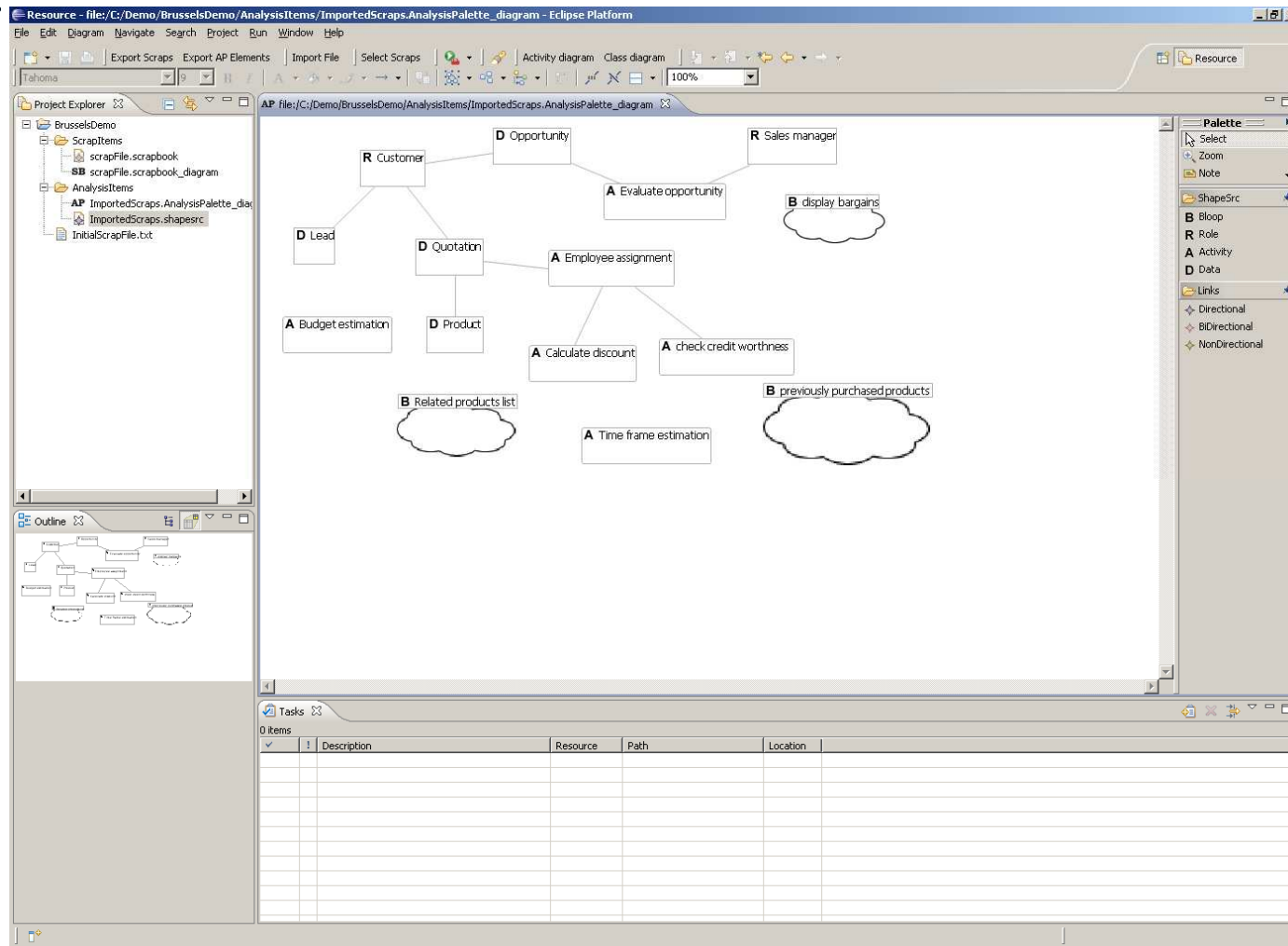
Research within VIDE



Design stage - initial opportunity scenario



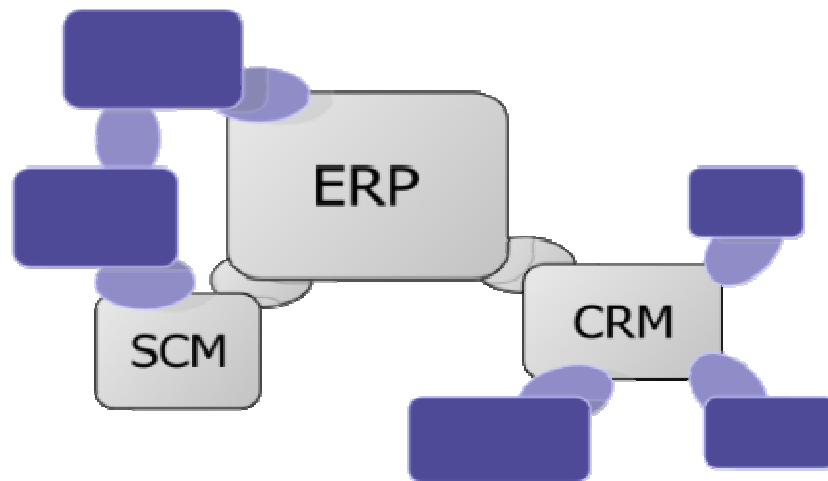
Prototype implementation using Eclipse



Recap: The Story so far

- Role models (RADs) help to inform requirements.
- Issues in moving to specification (from RADs to use cases) can be mitigated by simple notational additions.
- For model driven approaches guidance becomes transformation rules (from RADs to UML models).
- Require an accessible (alignment focussed) MDA approach
- The VIDE (MDA tool) is helpful and accessible, but large investment is required in tooling etc, *and very much an application based approach (even though framework based)*.
- Need to consider how other technologies and approaches can help in this space, particularly for the SME.
- *Process oriented mashups may provide the equivalent to VIDE but from a different, web services, perspective.*

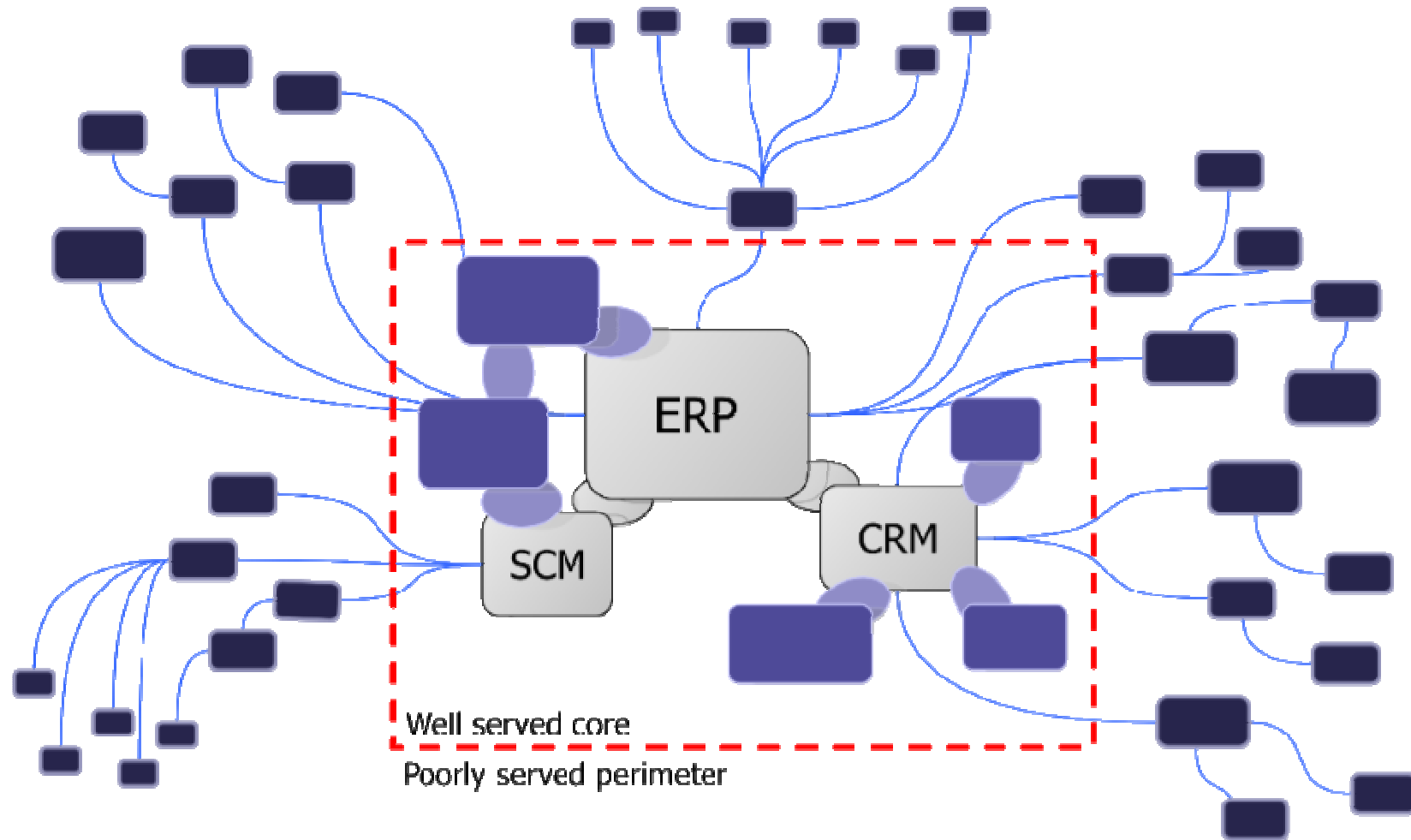
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Characteristics of traditional enterprise systems

- **Closed**
- **Centralized control**
- **Mission critical**

Enterprise information system landscape



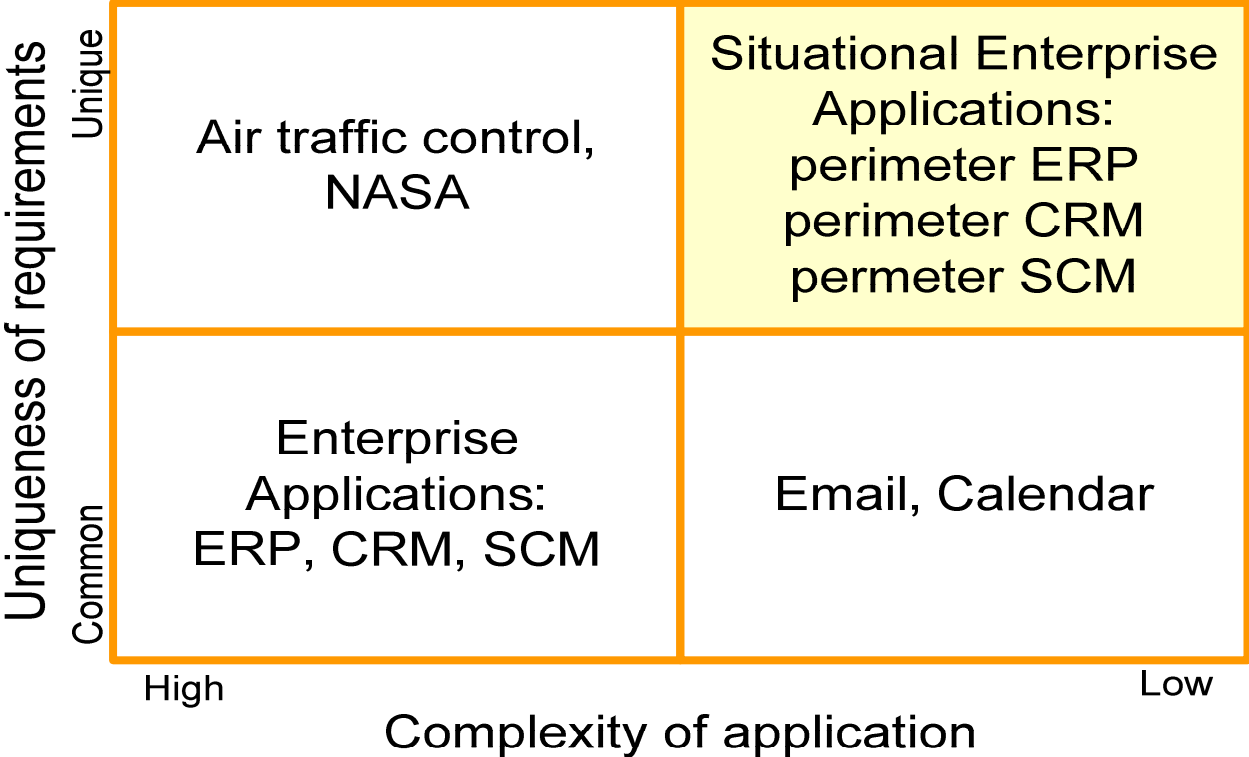
An enterprise needs to be able to *quickly and cost-effectively change* how it does business and who it does business with (suppliers, business partners, customers), etc.

“Yes, we can!”
Empowering the Non-Technical
Business Users



Source: Kevin Quinn. Not Everyone Who Drives a Car Fixes It Themselves -Strategic Information Infrastructure.
<http://www.dmreview.com/news/1041222-1.html>, November 2005.

Situational Enterprise Applications in the Application Universe



Examples of Situational Applications

- Excel → spreadsheets
- Access → simple databases
- Visual basic for applications → small office-based applications
-

The Most Famous Situational Application

data.xls - OpenOffice.org Calc

File Edit View Insert Format Tools Data Window Help

Arial 10

P11 Sum=5.16

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	DS	DH	DP	DF	WEIGHT	LENGTH	AGE	EDU	WAGE	HOURS	NKIDS	FS	FINC	FOODEXP	HOUSEXP	CLOTEEXP	RECREXP	FINDEX	DLEV1	DLEV2	DLEV3	DLEV4
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20	0	1	0	0	82.2	180.4	48.02	5	16.13	45	0	3	59.35	16.98	21.02	5.17	4.69	5604	0	0	0	0
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45	1	0	0	0	78.8	179.3	62.5	4	1.76	46	0	1	15	4.29	5.72	1.26	1.26	26	0	0	0	0
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Sheet1

PageStyle_Sheet1

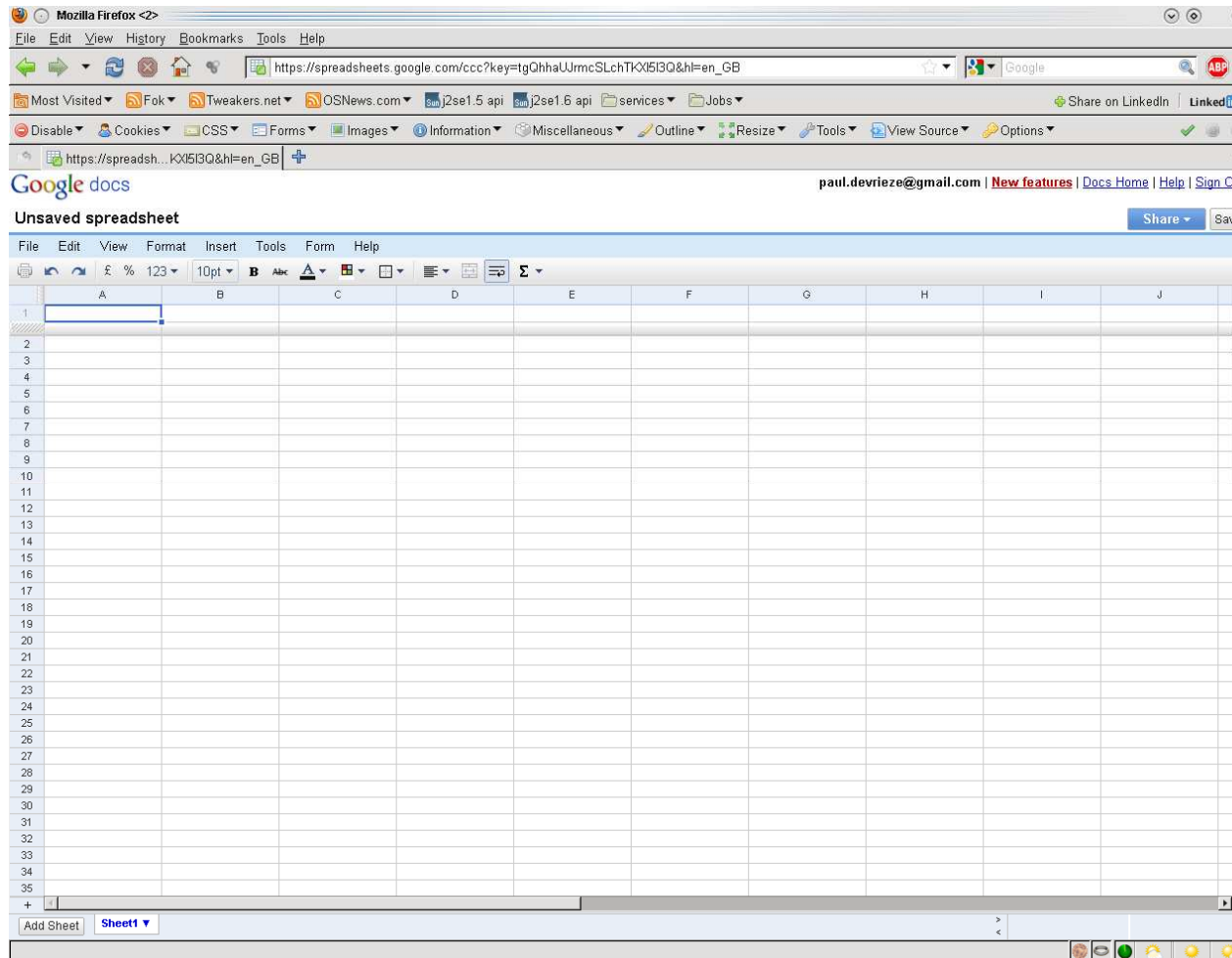
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100%

Key Spreadsheet Properties

- End users control programs
- Accessible “programming”
- Easy to modify

Spreadsheet on the Web



Situational Web Application Characteristics

- Easy to create
- Solves local problem for creator
- Focus on fast deployment
- Power to the local people

- Feeds
- Web services
- Composition environment
- Execution environment
- Social software aspects

Examples of Situational Applications

- Excel → spreadsheets
- Access → simple databases
- Visual basic for applications → small office-based applications
-
- Mashups → data aggregation applications

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Example: Google maps

HousingMaps - Mozilla Firefox
 http://www.housingmaps.com/

For Rent For Sale Rooms Sublets

City: Philadelphia Price: \$1500 - \$2000 Show Filters Refresh Link

Powered by [craigslist](#) and [Google Maps](#)
(this site is in no way affiliated with craigslist or Google)
[About / Feedback](#)

price	bd	description	city	date
\$1560	3bd	Art Area, Nice Apartment With A Private Back Yard!	Philadelphia	8/17
\$1700	2bd	Old City 2 bedroom 2 bath	Philadelphia	8/17
\$1600	3bd	Condo	Harleysville	8/17
\$1750	4bd	Spacious 4 Bedroom House Available in Manayunk!	Philadelphia	8/17
\$1800	4bd	4 bedroom house - Inclu. Water, Internet, Alarm	Philadelphia	8/17
\$1750		Home for Rent	Delmont Ave	8/16
\$1580	3bd	Great location to rent	West Chest	8/16
\$1700	4bd	Beautiful 4-bedroom house in Suburban Philadelphia	Elkins Park	8/16
\$1995	4bd	1.5 bathrooms 1 block off Main Street	Philadelphia	8/16
\$1650	2bd	Just Reduced! Garden/ Exposed Brick, Open Layout, Townhouse-Pets ok.	Philadelphia	8/16
\$1800	4bd	Wonderful Lafayette Hill Townhome for Rent, 2.5 Bath, Finished Bsmt	Lafayette Hill	8/16
\$1575		Newly Renovated Studio/1 Bedroom/\$900, 3 Bedroom/\$1575	Philadelphia	8/16
\$1800		Commercial Space Available for Work Studio, Office, Hair Salon, Gallery	Philadelphia	8/16
\$1500	3bd	This Is The One... W/D HW A/C Brand New Never Occupied Owner Says Rent!	Philadelphia	8/16
\$2000	4bd	City Convenience	Philadelphia	8/16
\$1850	2bd	2 BR/2BA Beautiful Center City Apartment in Washington Square West	Philadelphia	8/16
\$1500	3bd	West Chester Area	West Chest	8/16
\$1600	3bd	House for Rent- Phila Suburb	Lansdowne	8/16

Example: Caspio

Online Golf Course Directory | Fictitious Caspio Bridge Sample Site - Mozilla Firefox

http://apps.caspio.com/demo/ycgolf/?appSession=651880424051089

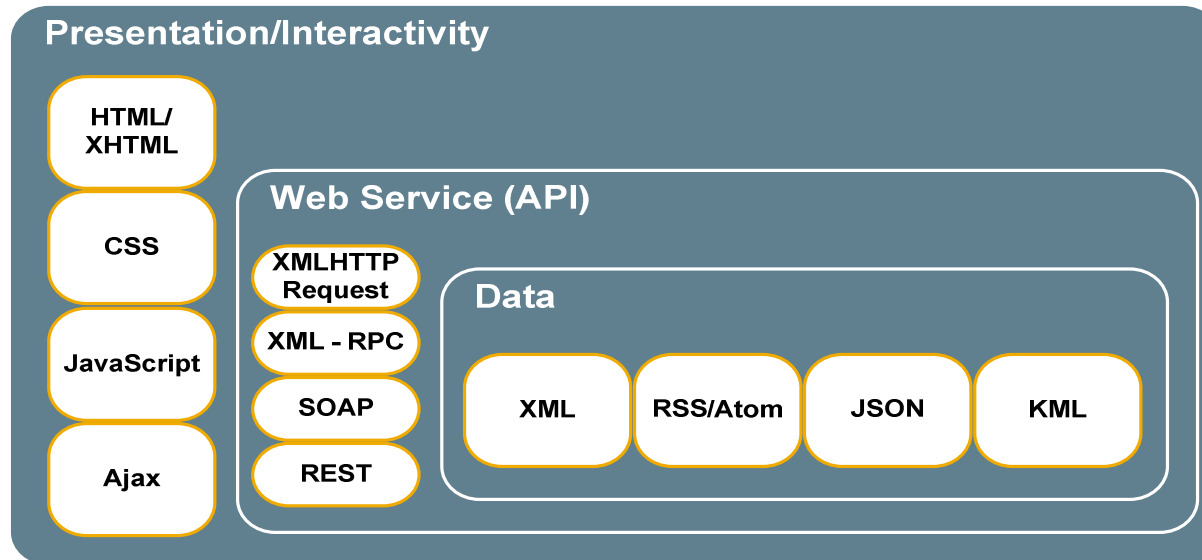
Results of your search: [New search](#)

Course Name	Type	Holes	Fee	City	ST	Zip	
Anchorage Golf Course	Public	18	\$40.00	Anchorage	AK	99516	Show
Kenai Golf Course	Public	18	\$22.00	Kenai	AK	99611	Show
Palmer Golf Course	Public	18	\$28.00	Palmer	AK	99645	Show
Settlers Bay	Public	18	\$30.00	Wasilla	AK	99687	Show

Mashup Definitions

- A “mashup” is a lightweight tactical integration of multi-sourced applications or content into a single offering (Gartner)
- Web application hybrid that combines data from more than one source into a single integrated tool (Wikipedia)
- Mashups are loosely coupled distributed systems... to the extreme. The developers of the individual components do not know each other and possibly do not even know that their application is being used as a component by another application (Wilde)

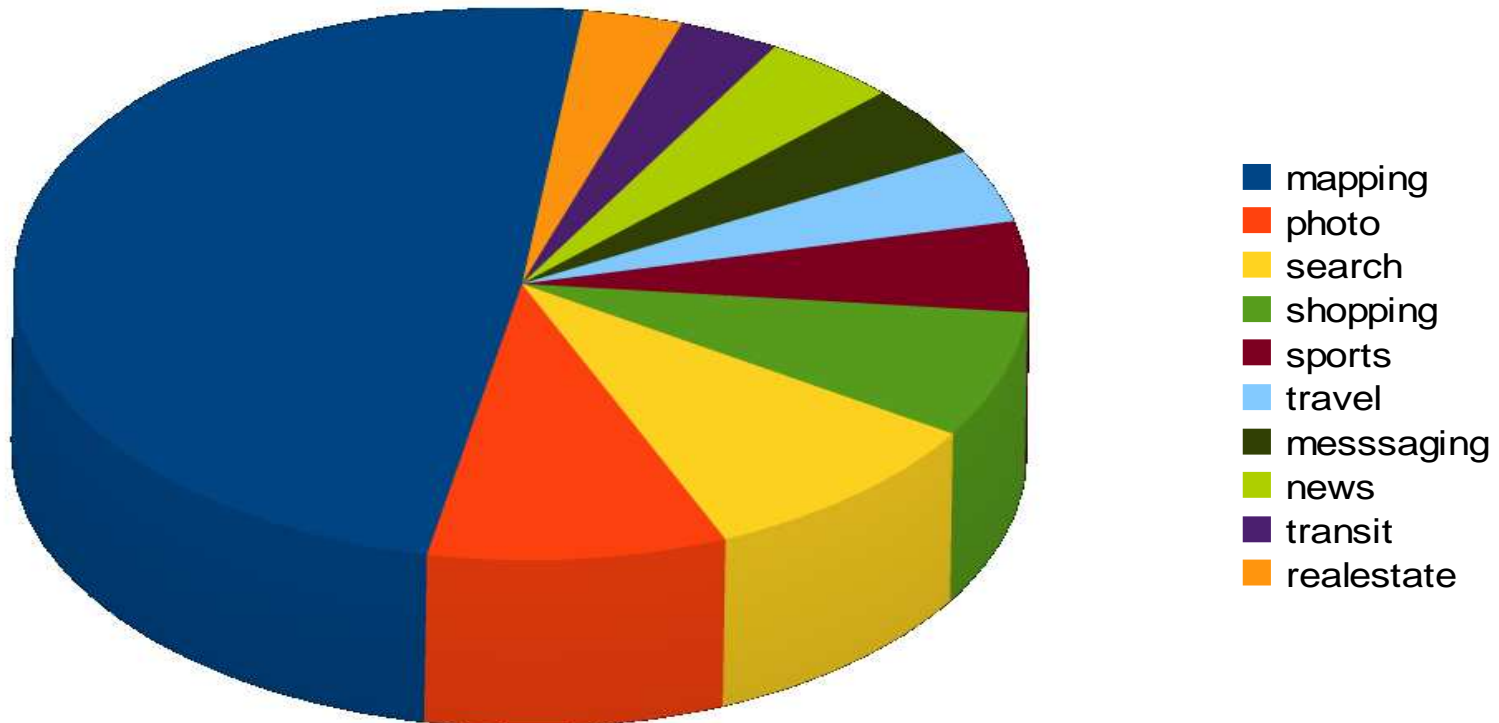
Minimal Mashup Architecture



Top 5 Mashup API's

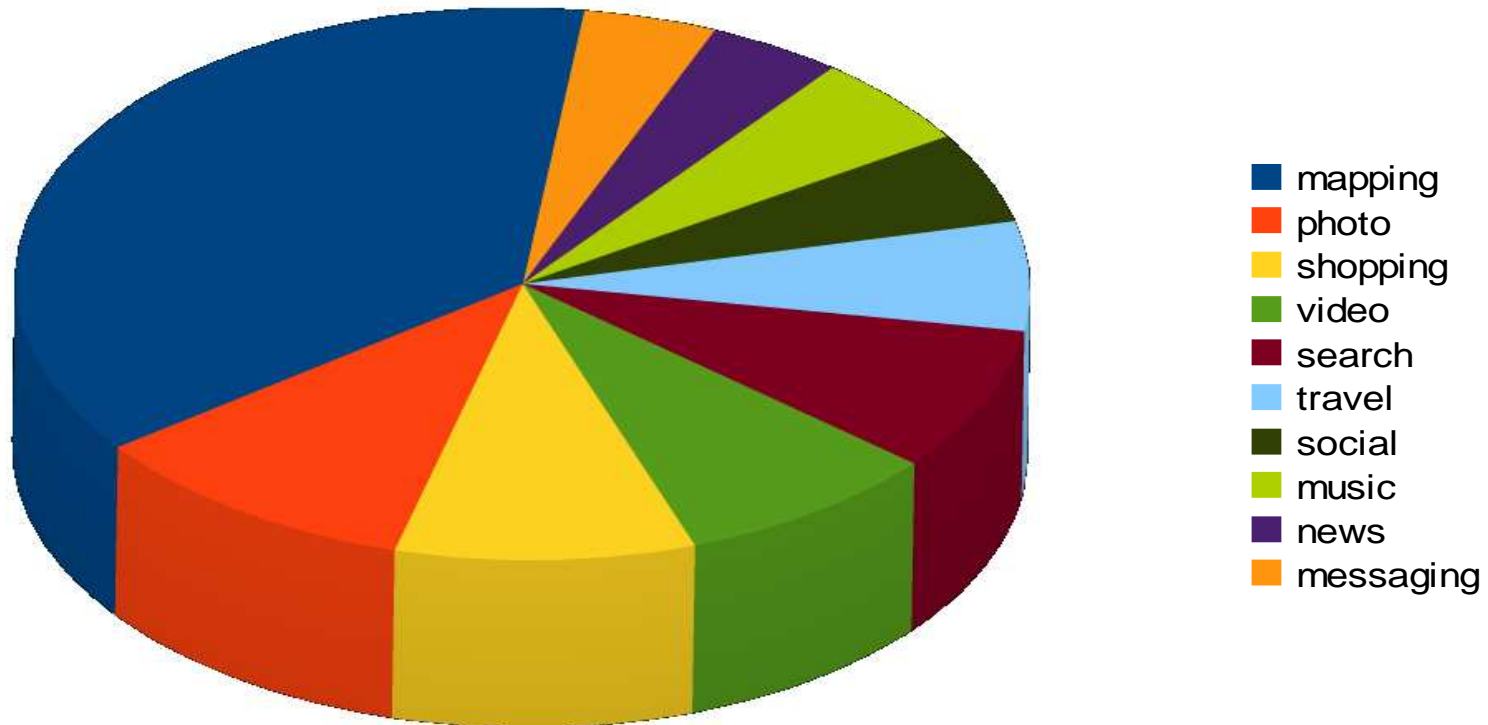
Mapping	Photo	Search	Video	e-Commerce
Google •Google Maps	Yahoo •Flickr	Google •Google Search	Google •Youtube	Ebay •Ebay API
Microsoft •Virtual Earth	Microsoft •Windows Live Spaces Photos	Microsoft •Bing	Yahoo •Yahoo video search	Amazon •e-Commerce service
Yahoo •Yahoo Maps	Google •Picasa Web Albums	Yahoo •Yahoo Search	Microsoft •Bing video search	Microsoft •Windows Live expo
				Yahoo •Yahoo Shopping

Mashup Categories (2006)



Source: programmable web <http://www.programmableweb.com/>

Mashup Categories (2009)



Source: programmable web <http://www.programmableweb.com/>

Positives

- Lots of API's
- Lots of data sources
- Many easily accessible compositions

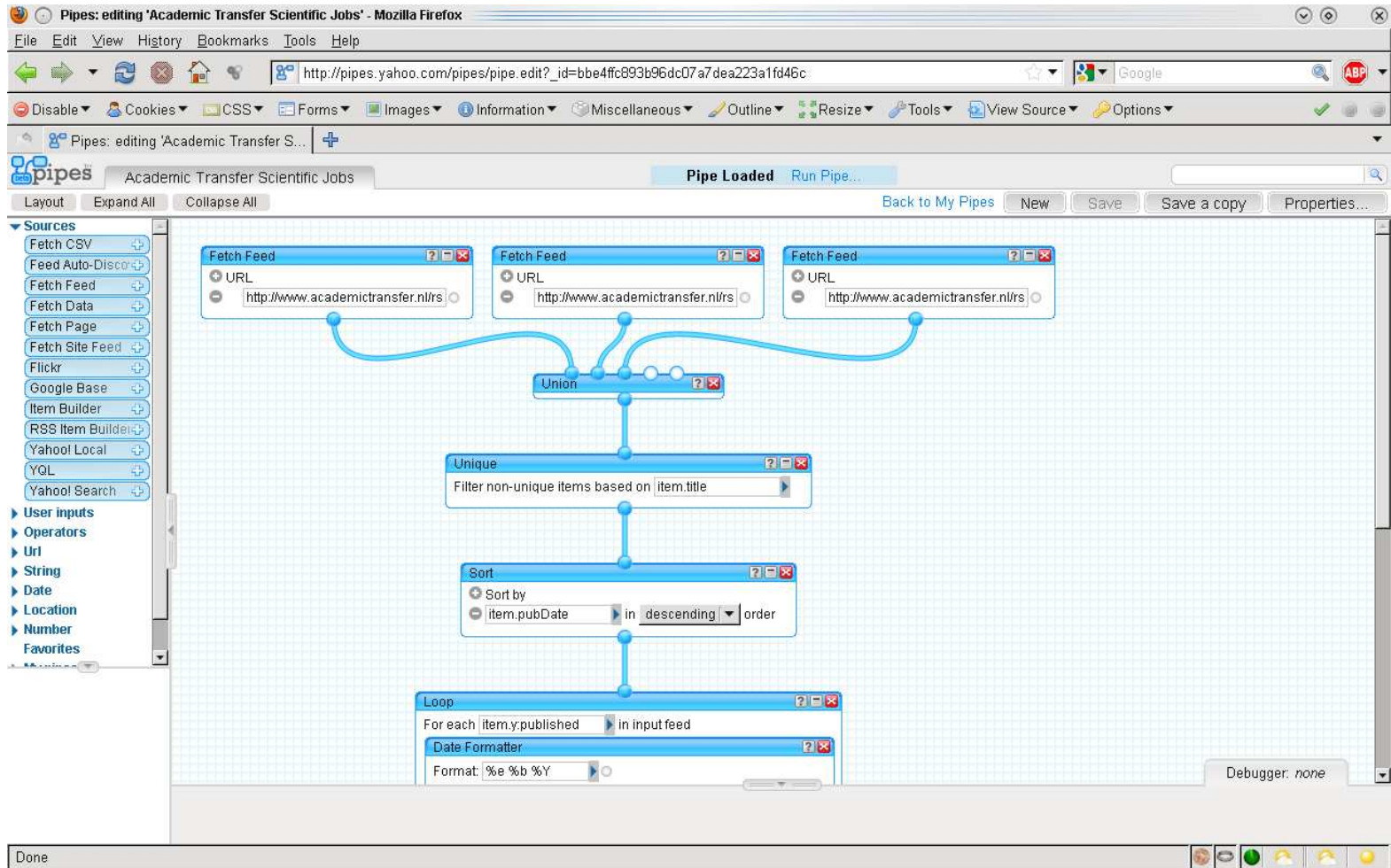
Negatives

- Data centered
- More advanced compositions need manual coding
- Alphabet soup of standards

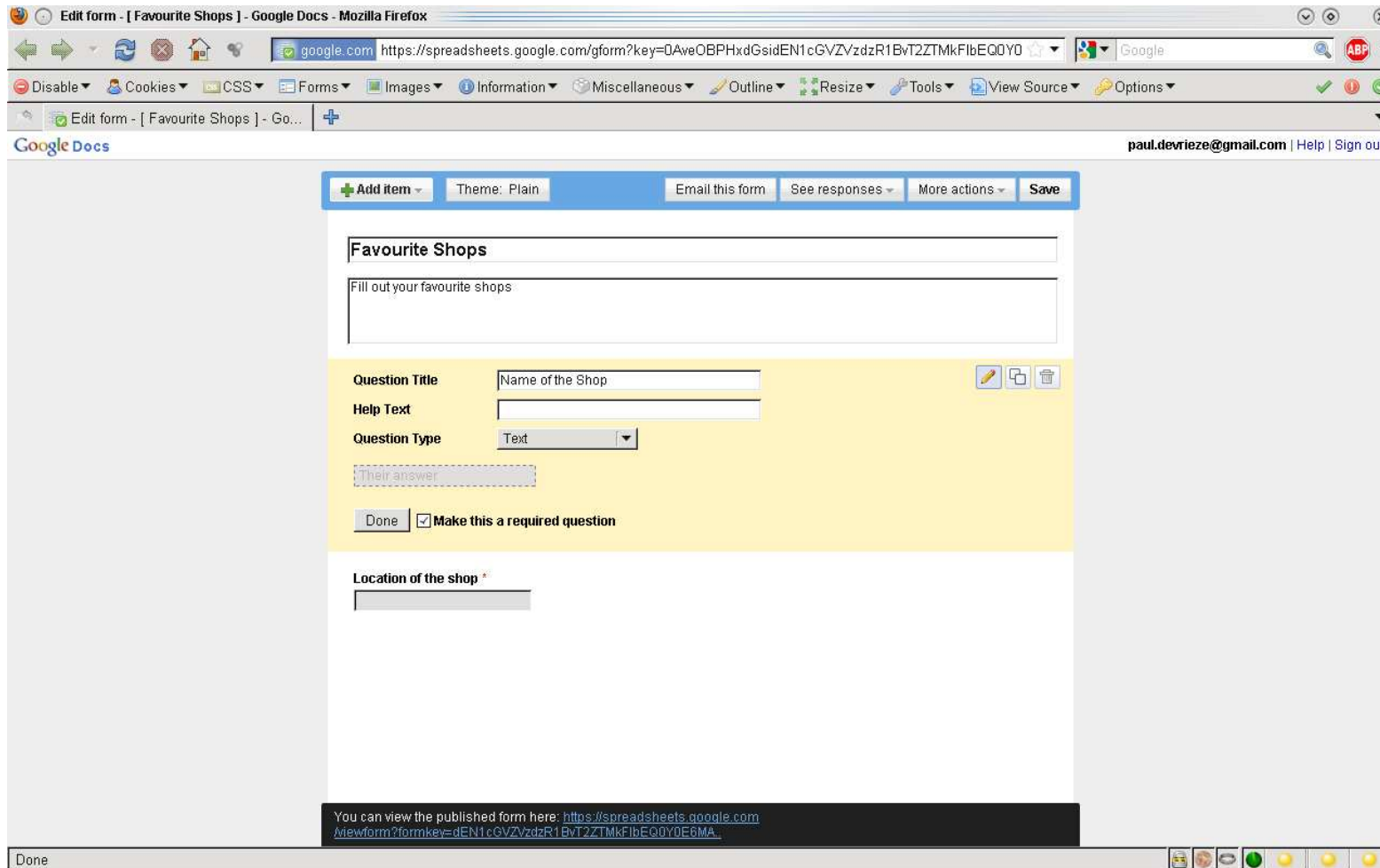
- Mashups can be situational applications
 - Main functionality is external
 - Advanced mashups require detailed and extensive programming
- Situational applications are broader
- Much business functionality has a dynamic component

- Process Models
- Moving from Process Model to Specification
- Some Simple Approaches to Help (in this case)
- A Model Driven Perspective
- Situational Enterprise Applications
- Mashups
- **Existing Tools for Situational Mashups**
- Round-up
- EU FP7 SOA4All
- Resources for Building Mashup Applications

Yahoo! Pipes



Google docs: Create a Form



The screenshot shows a Mozilla Firefox browser window displaying the Google Docs form editor. The browser's address bar shows the URL: <https://spreadsheets.google.com/gform?key=0AveOBPHxdGsidEN1cGVZVzdR1BvT2ZTMkFibEQ0YD>. The page title is "Edit form - [Favourite Shops] - Google Docs".

The form editor interface includes a top toolbar with buttons for "Add item", "Theme: Plain", "Email this form", "See responses", "More actions", and "Save". The main form content is titled "Favourite Shops" and contains a text input field with the placeholder text "Fill out your favourite shops".

Below the main form is a configuration panel for a question. The "Question Title" is "Name of the Shop". The "Help Text" field is empty. The "Question Type" is set to "Text". A preview of the question shows a dashed box with the text "Their answer". At the bottom of the configuration panel, there is a "Done" button and a checked checkbox labeled "Make this a required question".

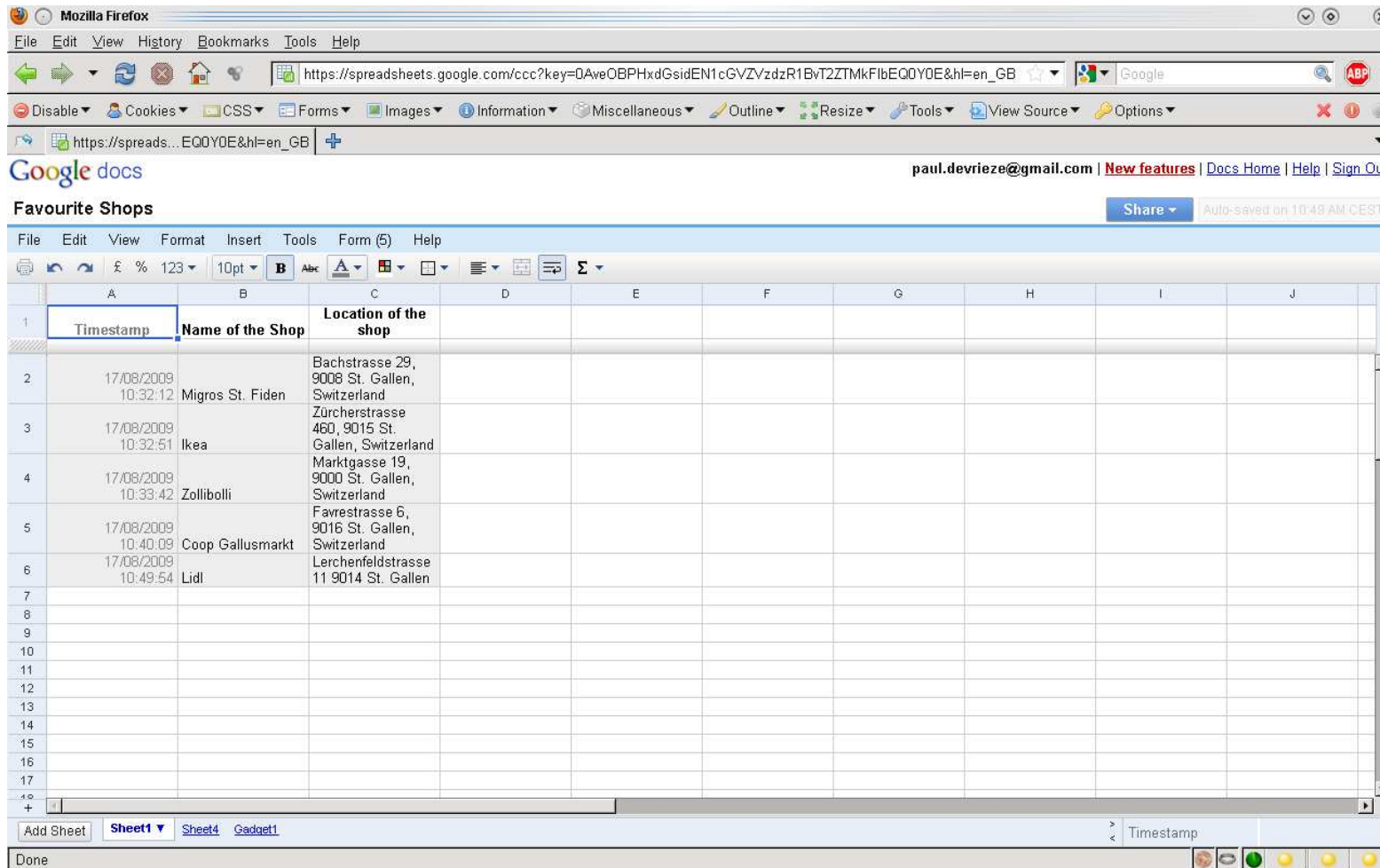
Below the configuration panel is another question titled "Location of the shop *", which has an empty text input field.

At the bottom of the editor, a message states: "You can view the published form here: https://spreadsheets.google.com/viewform?formkey=dEN1cGVZVzdR1BvT2ZTMkFibEQ0YD&MA_".

Google docs: The Resulting Form

The screenshot shows a Mozilla Firefox browser window with the title 'Favourite Shops - Mozilla Firefox'. The address bar contains the URL 'https://spreadsheets.google.com/viewform?formkey=dEN1cGVZVzdR1BvT2ZTMkFlbEQ0Y0E6MA...'. The page content is a form titled 'Favourite Shops' with the instruction 'Fill out your favourite shops'. It includes two required text input fields: 'Name of the Shop *' and 'Location of the shop *'. A 'Submit' button is located below the second field. At the bottom of the form, it says 'Powered by Google Docs' and provides links for 'Report Abuse', 'Terms of Service', and 'Additional Terms'. The browser's status bar at the bottom shows 'Done'.

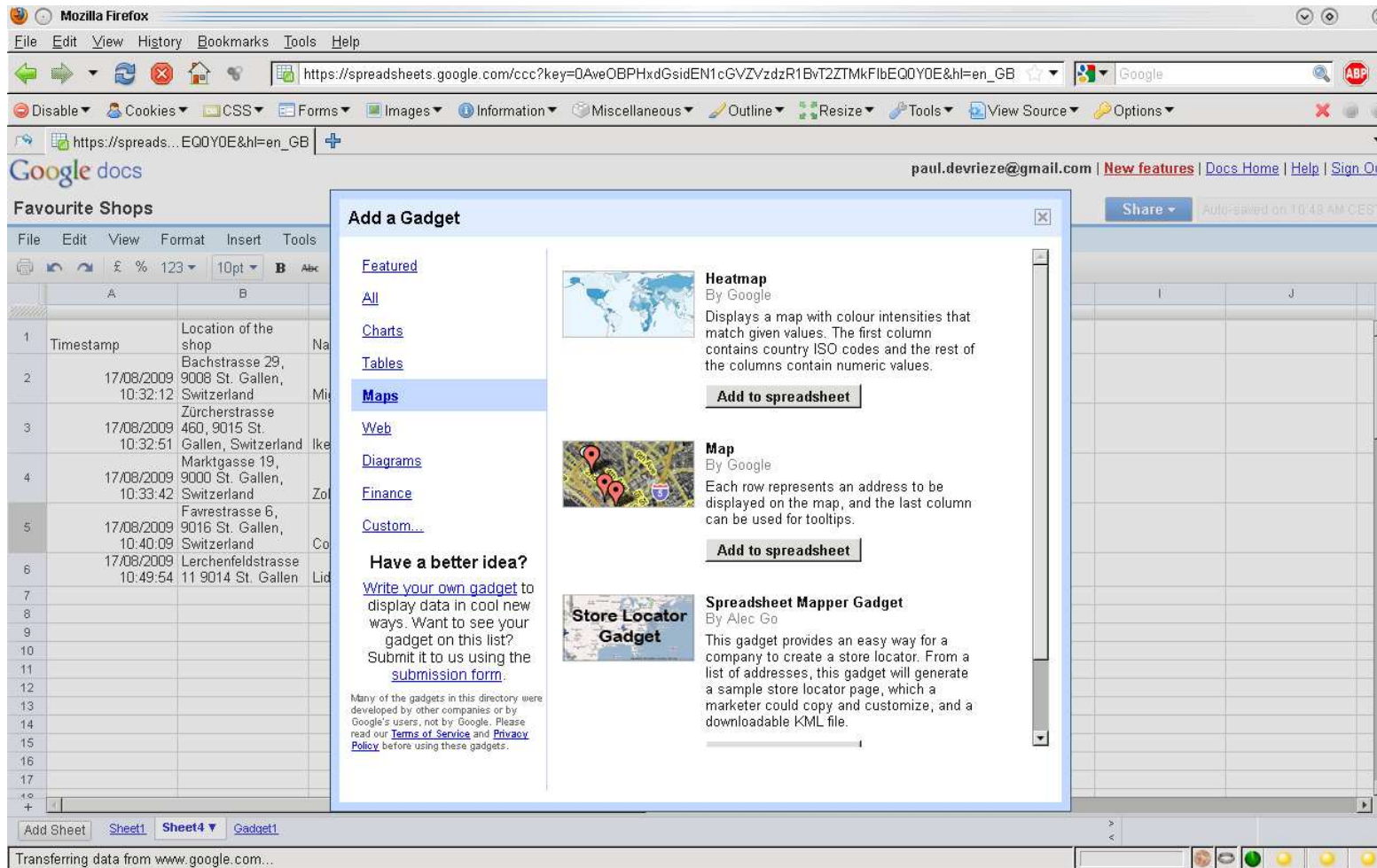
Google docs: The Data in the Spreadsheet



The screenshot shows a Mozilla Firefox browser window with the address bar displaying a Google Docs spreadsheet URL. The spreadsheet is titled "Favourite Shops" and contains a table with the following data:

Timestamp	Name of the Shop	Location of the shop
17/08/2009 10:32:12	Migros St. Fiden	Bachstrasse 29, 9008 St. Gallen, Switzerland
17/08/2009 10:32:51	Ikea	Zürcherstrasse 460, 9015 St. Gallen, Switzerland
17/08/2009 10:33:42	Zollibolli	Marktgasse 19, 9000 St. Gallen, Switzerland
17/08/2009 10:40:09	Coop Gallusmarkt	Favrestasse 6, 9016 St. Gallen, Switzerland
17/08/2009 10:49:54	Lidl	Lerchenfeldstrasse 11 9014 St. Gallen

Google docs: Let's Add A Gadget



The screenshot shows a Mozilla Firefox browser window displaying a Google Docs spreadsheet. An 'Add a Gadget' dialog box is open, showing various categories of gadgets. The 'Maps' category is selected, and the 'Heatmap' gadget is highlighted. The spreadsheet in the background contains data for 'Favourite Shops'.

Timestamp	Location of the shop	Name
17/08/2009 10:32:12	Bachstrasse 29, 9008 St. Gallen, Switzerland	Mil...
17/08/2009 10:32:51	Zürcherstrasse 460, 9015 St. Gallen, Switzerland	Ike...
17/08/2009 10:33:42	Marktgasse 19, 9000 St. Gallen, Switzerland	Zol...
17/08/2009 10:40:09	Favrestrasse 6, 9016 St. Gallen, Switzerland	Co...
17/08/2009 10:49:54	Lerchenfeldstrasse 11 9014 St. Gallen	Lid...

Add a Gadget

- Featured**
- [All](#)
- [Charts](#)
- [Tables](#)
- Maps**
- [Web](#)
- [Diagrams](#)
- [Finance](#)
- [Custom...](#)

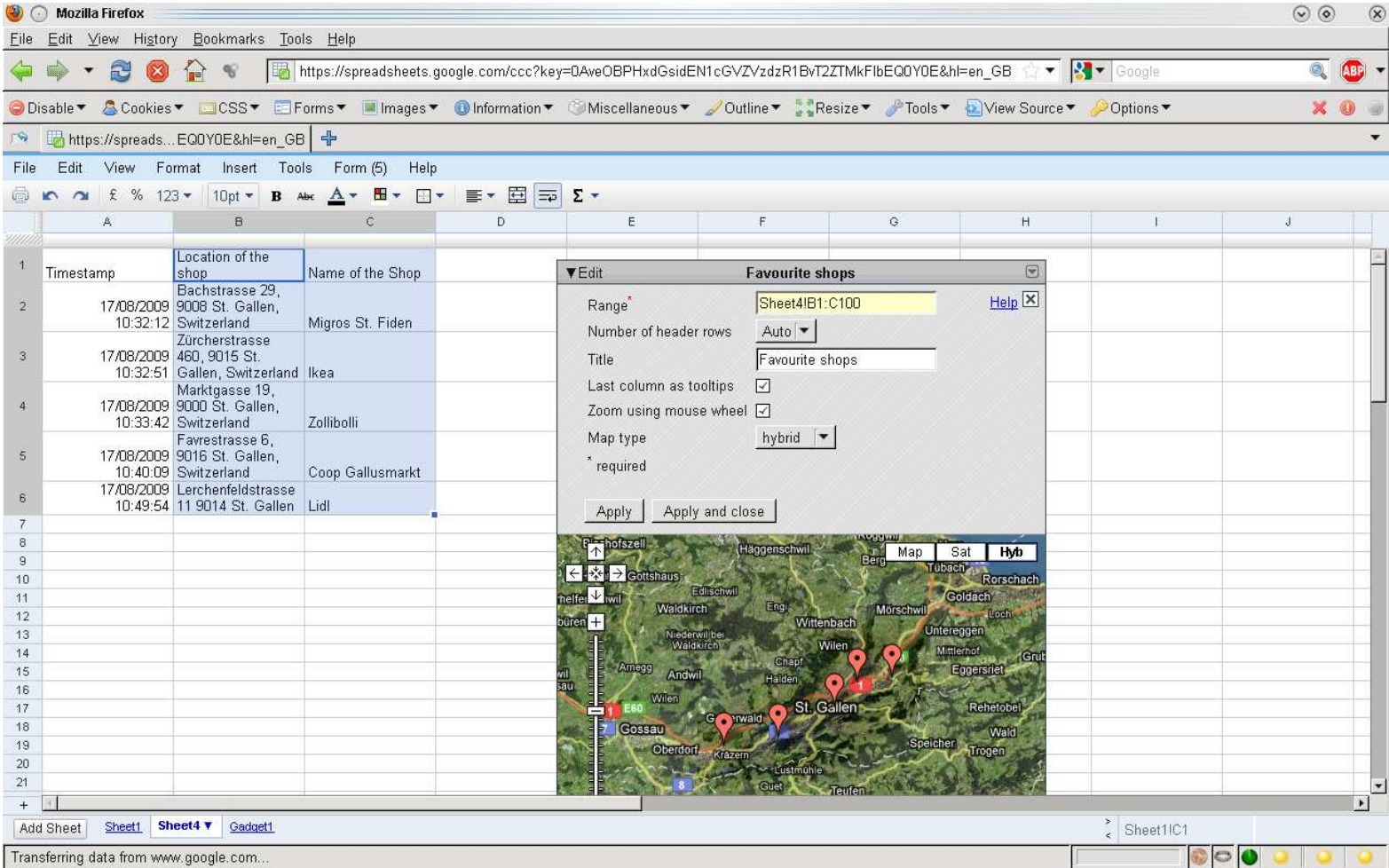
Have a better idea?
Write your own gadget to display data in cool new ways. Want to see your gadget on this list? Submit it to us using the [submission form](#).
Many of the gadgets in this directory were developed by other companies or by Google's users, not by Google. Please read our [Terms of Service](#) and [Privacy Policy](#) before using these gadgets.

Heatmap
By Google
Displays a map with colour intensities that match given values. The first column contains country ISO codes and the rest of the columns contain numeric values.
[Add to spreadsheet](#)

Map
By Google
Each row represents an address to be displayed on the map, and the last column can be used for tooltips.
[Add to spreadsheet](#)

Store Locator Gadget
By Alec Go
This gadget provides an easy way for a company to create a store locator. From a list of addresses, this gadget will generate a sample store locator page, which a marketer could copy and customize, and a downloadable KML file.
[Add to spreadsheet](#)

Google docs: Configure the Gadget



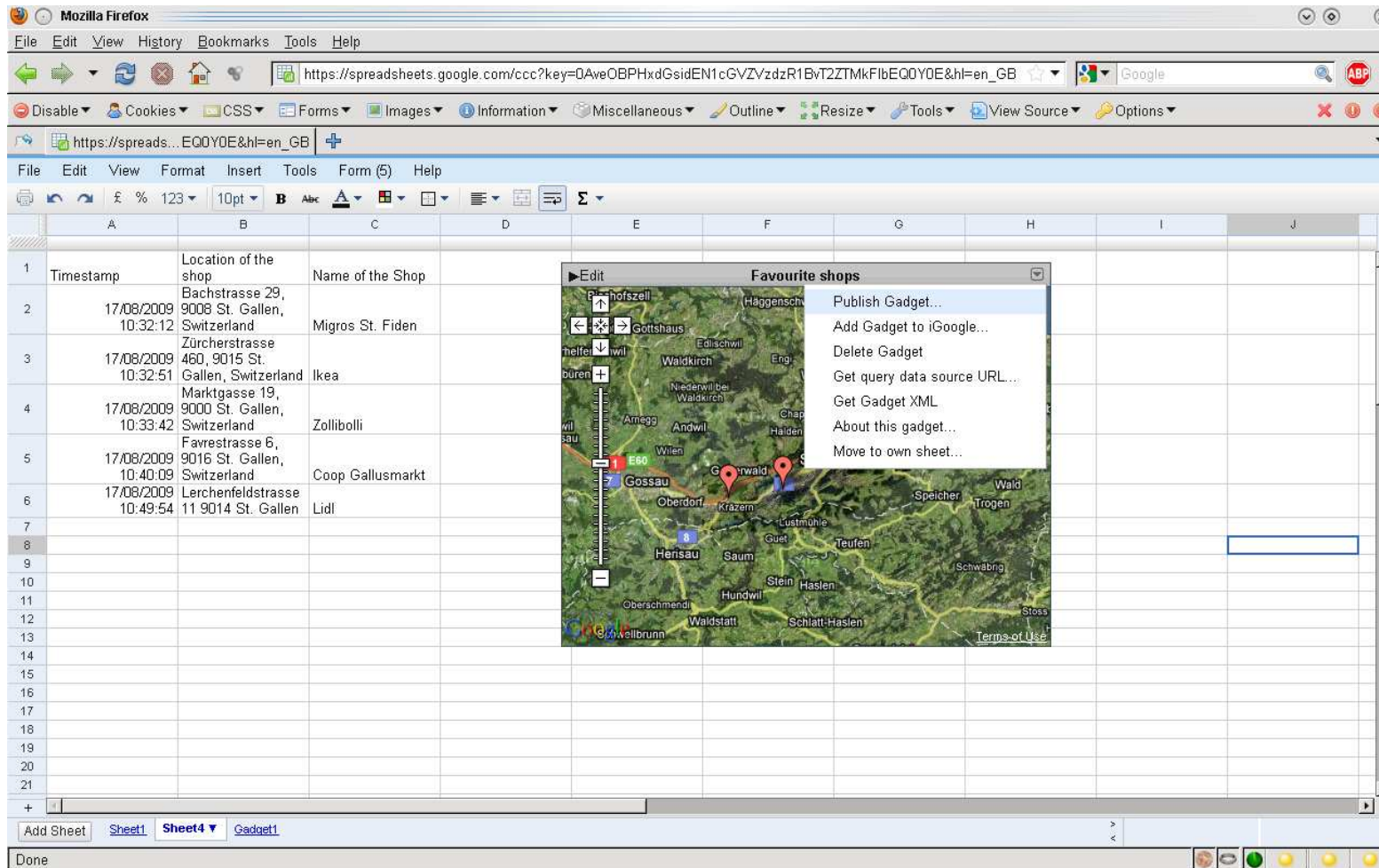
Timestamp	Location of the shop	Name of the Shop
17/08/2009 10:32:12	Bachstrasse 29, 9008 St. Gallen, Switzerland	Migros St. Fiden
17/08/2009 10:32:51	Zürcherstrasse 460, 9015 St. Gallen, Switzerland	Ikea
17/08/2009 10:33:42	Marktgasse 19, 9000 St. Gallen, Switzerland	Zollibolli
17/08/2009 10:40:09	Favrestrasse 6, 9016 St. Gallen, Switzerland	Coop Gallusmarkt
17/08/2009 10:49:54	Lerchenfeldstrasse 11 9014 St. Gallen	Lidl

▼ Edit Favourite shops

- Range: Sheet4!B1:C100
- Number of header rows: Auto
- Title: Favourite shops
- Last column as tooltips:
- Zoom using mouse wheel:
- Map type: hybrid

Apply Apply and close

Google docs: Our Gadget Ready to Export



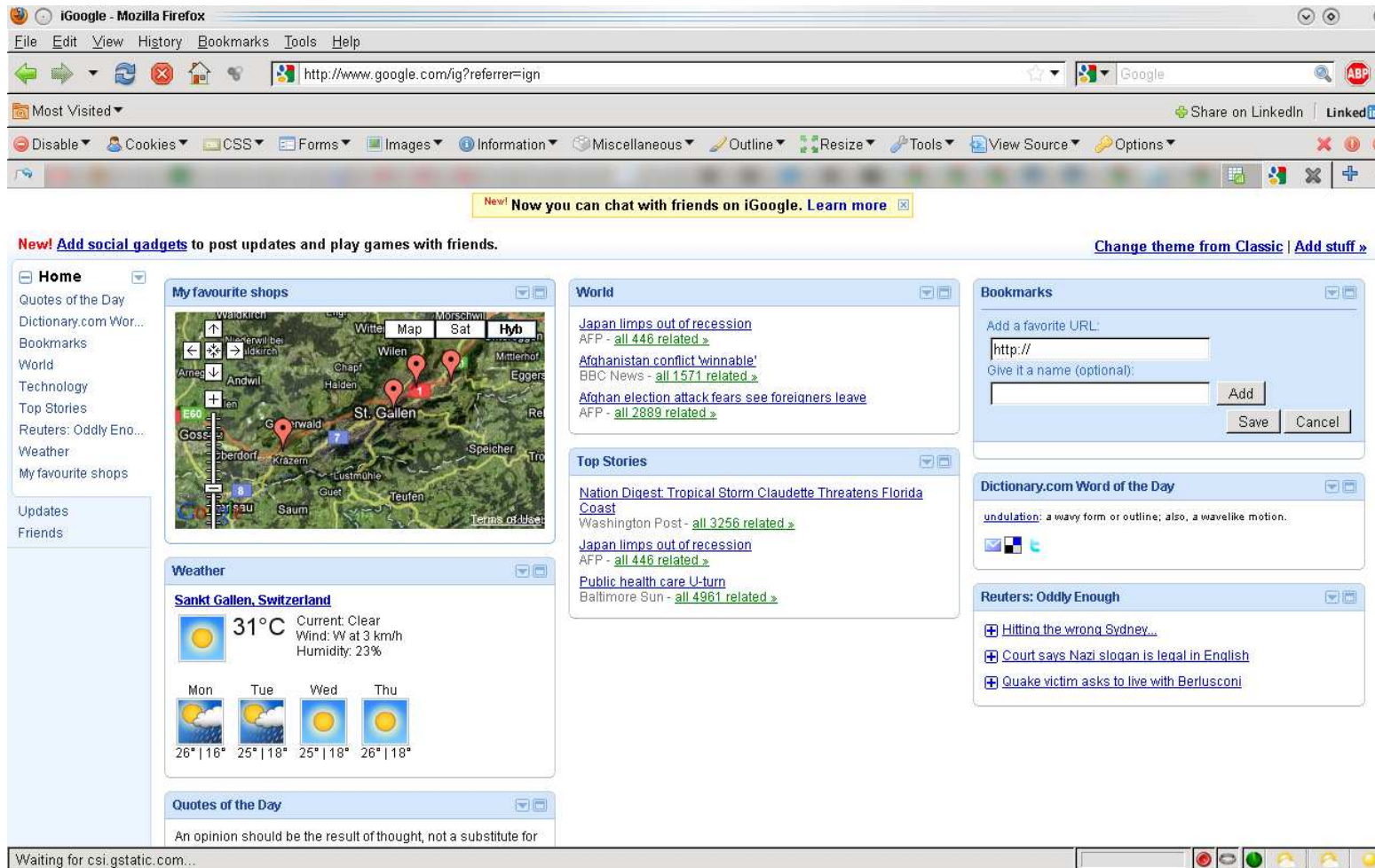
The screenshot shows a Mozilla Firefox browser window displaying a Google Spreadsheet. The spreadsheet has the following data:

Timestamp	Location of the shop	Name of the Shop
17/08/2009 10:32:12	Bachstrasse 29, 9008 St. Gallen, Switzerland	Migros St. Fiden
17/08/2009 10:32:51	Zürcherstrasse 460, 9015 St. Gallen, Switzerland	Ikea
17/08/2009 10:33:42	Marktgasse 19, 9000 St. Gallen, Switzerland	Zollibolli
17/08/2009 10:40:09	Favrestrasse 6, 9016 St. Gallen, Switzerland	Coop Gallusmarkt
17/08/2009 10:49:54	Lerchenfeldstrasse 11 9014 St. Gallen	Lidl

A map gadget titled "Favourite shops" is overlaid on the spreadsheet, showing a map of the St. Gallen region with red location pins. A context menu is open over the map with the following options:

- Publish Gadget...
- Add Gadget to iGoogle...
- Delete Gadget
- Get query data source URL...
- Get Gadget XML
- About this gadget...
- Move to own sheet...

Google docs: Add the result to iGoogle



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- Situational Enterprise Applications
- Mashups
- Existing Tools for Situational Mashups
- **Round-up**
- EU FP7 SOA4All
- Resources for Building Mashup Applications

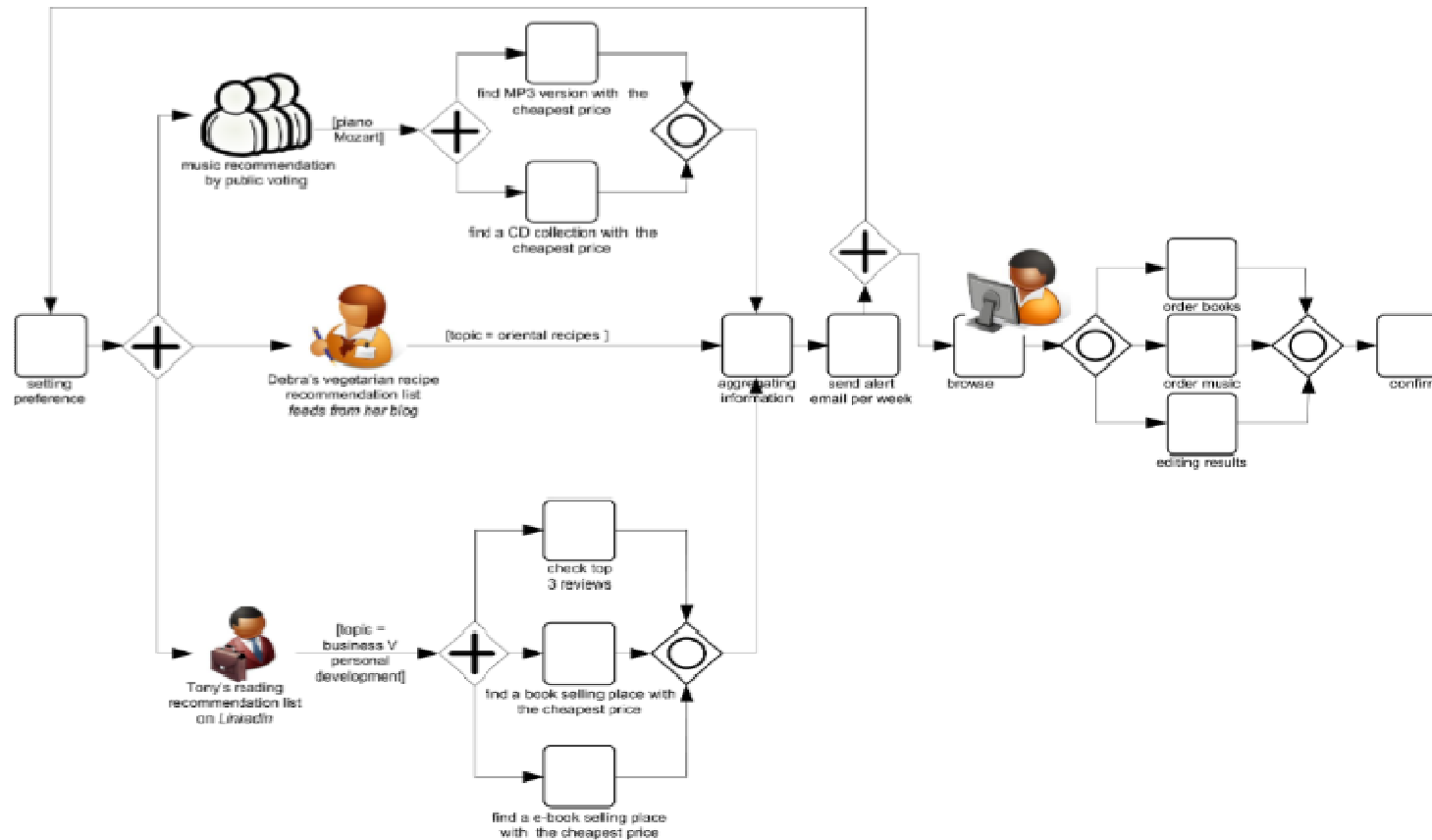
- More XML content
- More services
- More feeds
- Cloud provides computing in the network
(The Network is the computer - SUN)
- Cheap, network accessible computing gives
ability to users:
 - [salesforce.com](https://www.salesforce.com)

Types of Situational Enterprise Applications

- Data-oriented applications
widgets, gadgets, pipes and mashups
- Process-oriented applications
SOA4All

- Support processes, not only data
- Allow non-programmer composition of advanced apps with interesting components
- Perform technical compatibility adjustments automatically

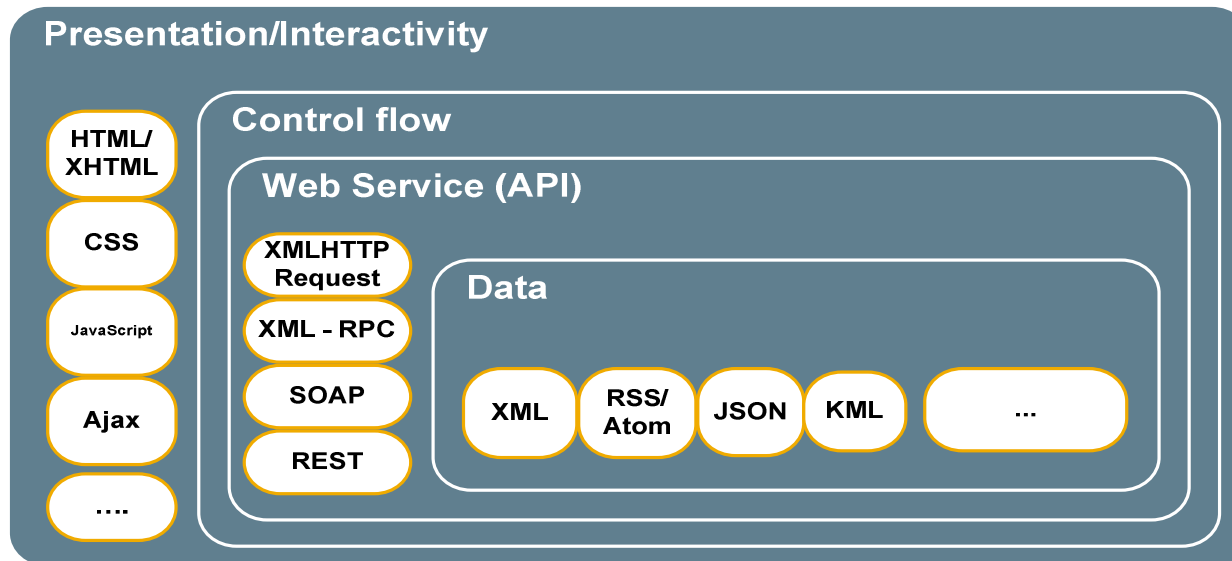
Motivated Examples



- Positioned next to enterprise workflow engine
- Allow for support of “unsupportable processes” that are:
 - Dynamic in nature
 - Not common enough
 - Hard to explain to non-domain experts
 - Too small for centralised implementation, benefits too small

- Central platform responsible for execution
- Easy composition language
- Easy access to services
 - Semantic matching / retrieval
 - Automatic wrappers

Minimal Business Process Mashup Architecture



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Goal

- building a distributed infrastructure that brings WS and SOA to a Web scale
- providing a platform where everyone can participate.

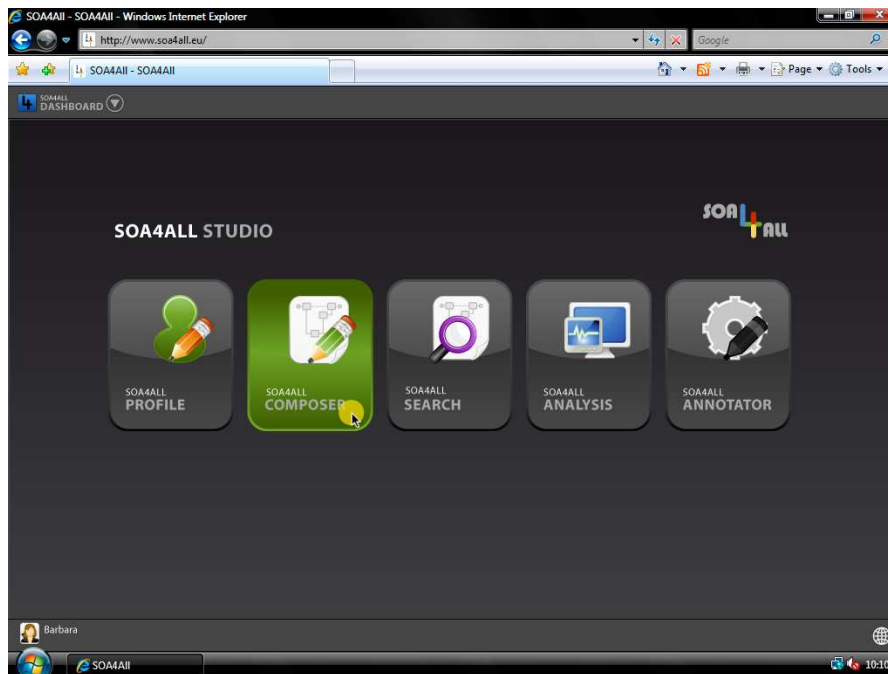
EU Funded Project (FP7)

- March 2008 – February 2011
- Project Budget: 13,7 m €
- 16 Partners from academia and industry

Partners

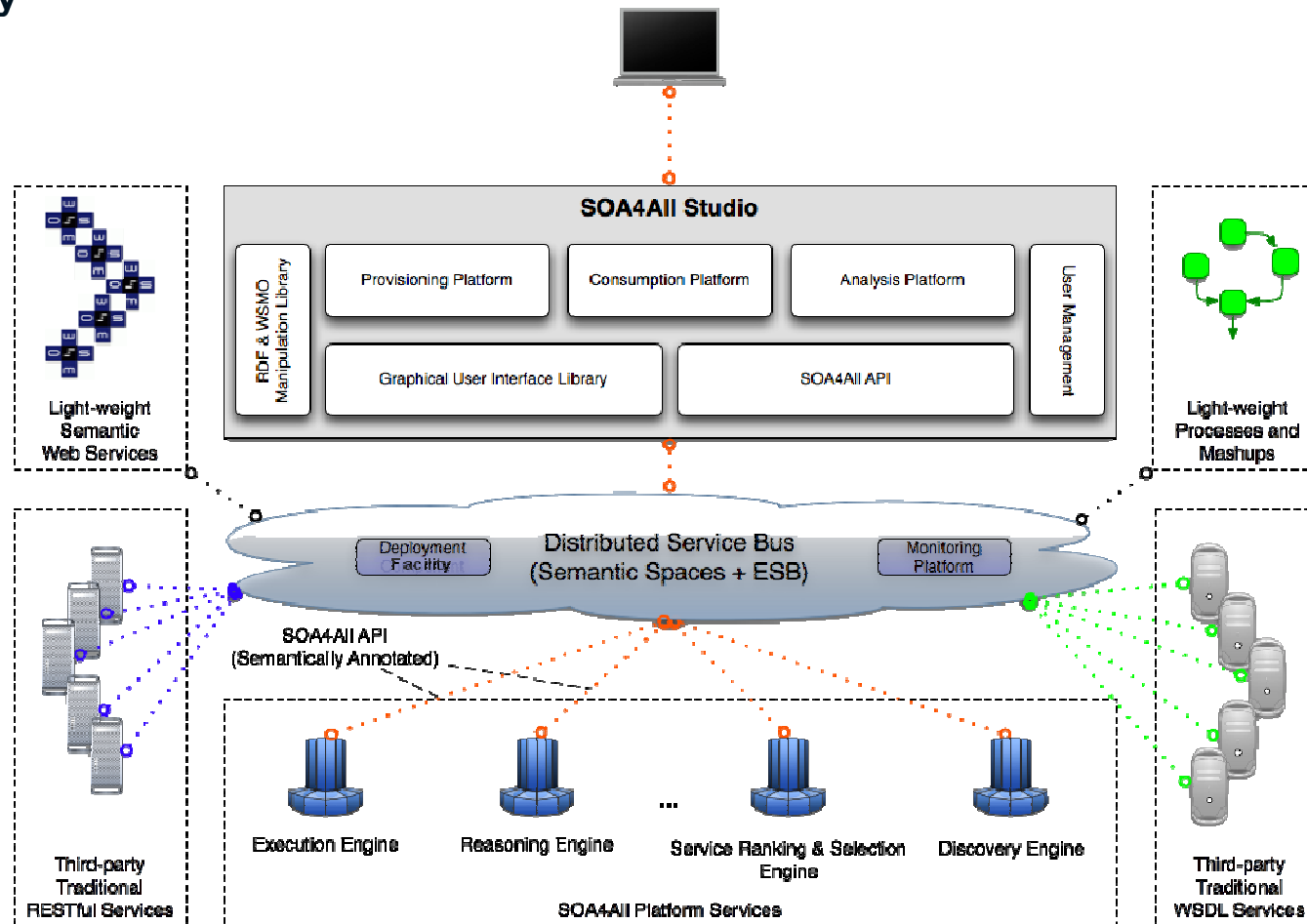


Main Features of SOA4All From the User's Perspective



- **empowerment** of business users
 - web-based tools
 - guidance by wizards
- **wisdom of the business crowds**
 - share processes and knowledge (comments, tags, ratings) through a community
- **lightweight** business processes
 - SAP ES, public web services, and human tasks
 - modeling and execution
- **semantics** as base technology
 - smart discovery and composition of services

SOA4All Overall Architecture

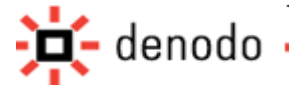


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Mashups



IBM Mashup Center



- Seekda (webservices.seekda.com)
Web service search engine
- Programmable Web
(www.programmableweb.com) mashup
directories
- Social bookmarking web site for searching feeds
(www.syndic8.com)

- Outlined a variety of process oriented approaches to development, which all aim (by different means) to improve stakeholder involvement and increase alignment of IT with business needs.
 - Simple role based process models to inform requirements.
 - Methods for moving from role models to use cases, to identify system boundary, maintain mapping and enhance alignment.
 - Improvement in specification to utilise richness of process and enhance use case comprehension and power.
 - Model driven approaches (transform process model to software models)
 - Application toolset (VIDE) to provide accessible CIM models (process models) as a first step in model driven development.
 - Introduced mashups for situational enterprises.
 - Process oriented mashups to provide accessible and efficient development and resources for mashup development.