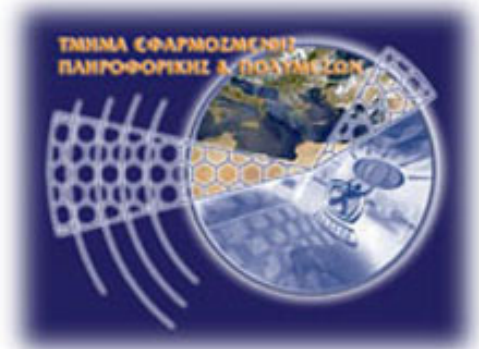


Interaction platform administration strategies: Practice and experience



**ΤΜΗΜΑ
ΕΦΑΡΜΟΣΜΕΝΗΣ
ΠΛΗΡΟΦΟΡΙΚΗΣ
& ΠΟΛΥΜΕΣΩΝ**

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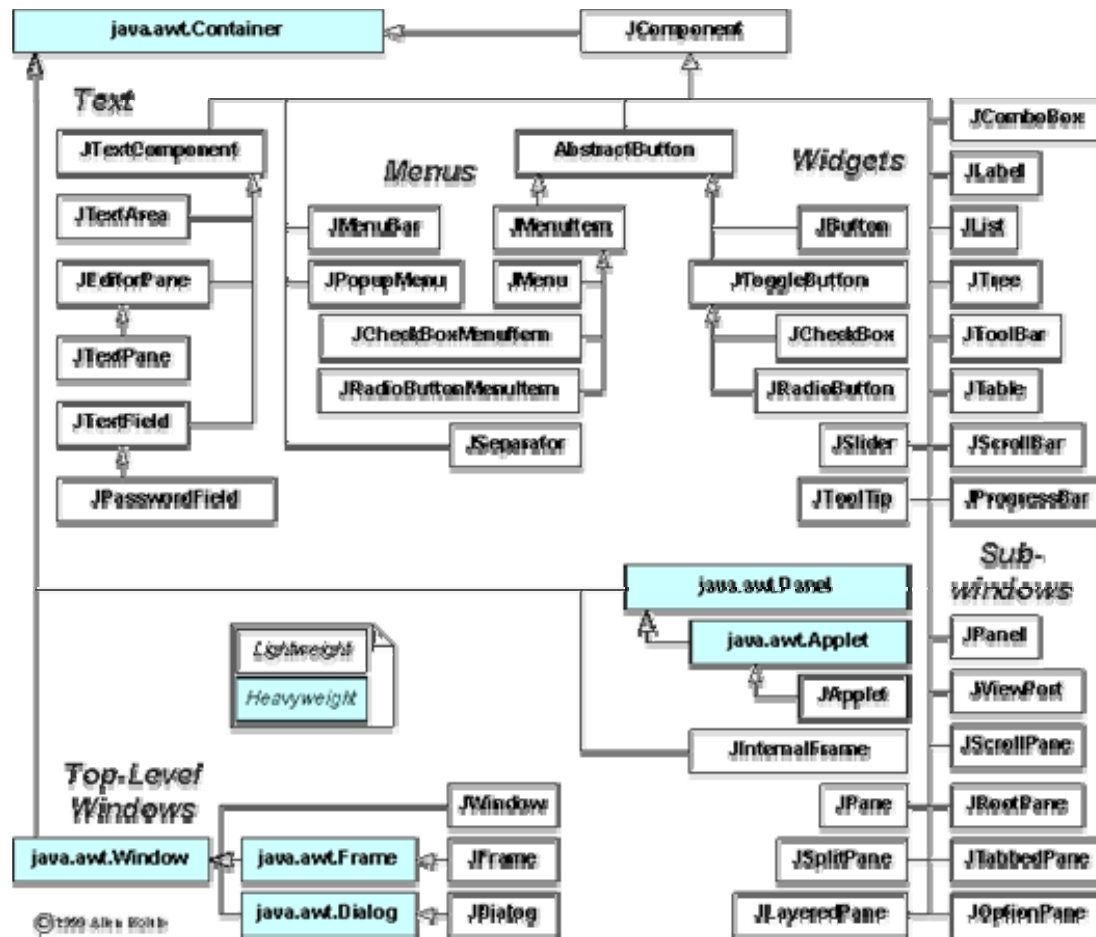
Overview

- The issue under investigation
 - ▣ Managing diverse collections of interaction elements
 - Toolkits
 - Custom-widgets
 - ▣ Interoperation models / APIs
 - Fusing diverse collections
- Proposed solution
 - ▣ Platform administration strategies
 - Augmentation
 - Expansion
 - Integration
 - Abstraction
- Context – eKoNEΣ
 - ▣ R&D project co-funded by GSRT (1.2 – R&D consortia in strategic areas of national priority)
 - ▣ An 'electronic village' of local interest
 - Thematic focus on tourism



Standard GUI toolkits

- Standardized set of implemented widgets
 - ❑ Widgets = presentation + behavior + dialogue control
 - ❑ Basic widgets can be used to build composite objects

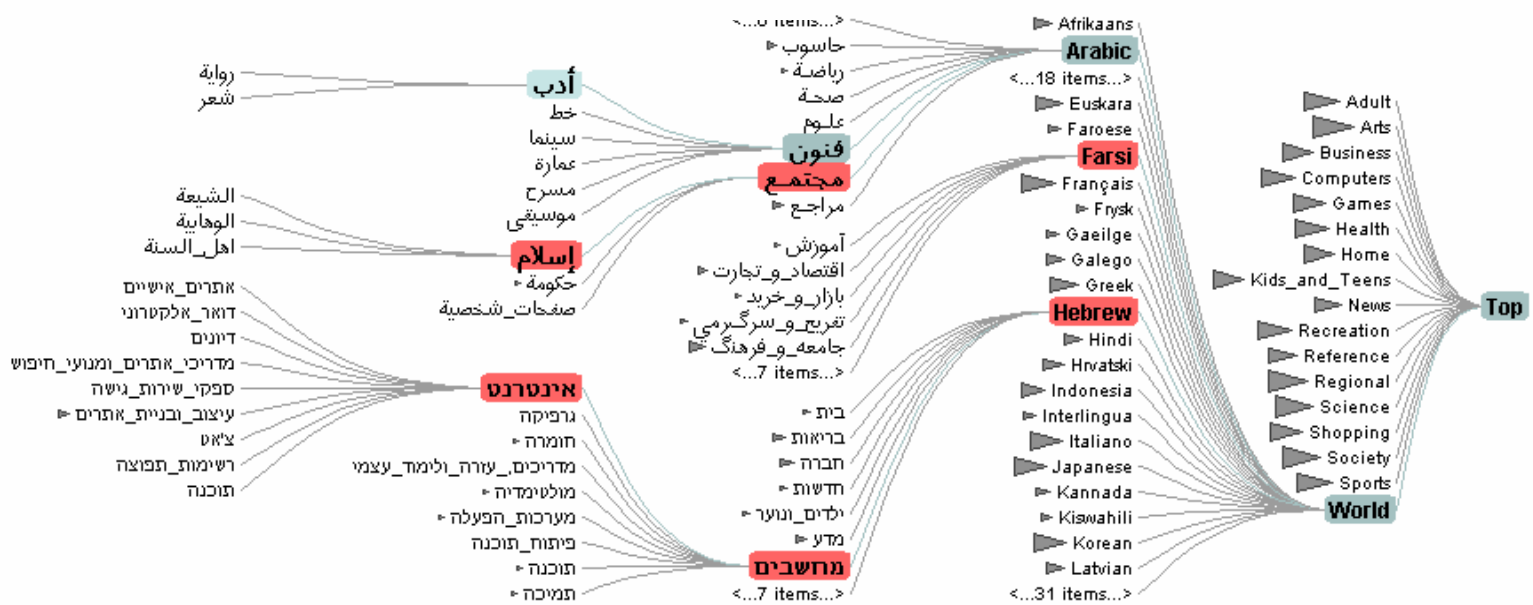
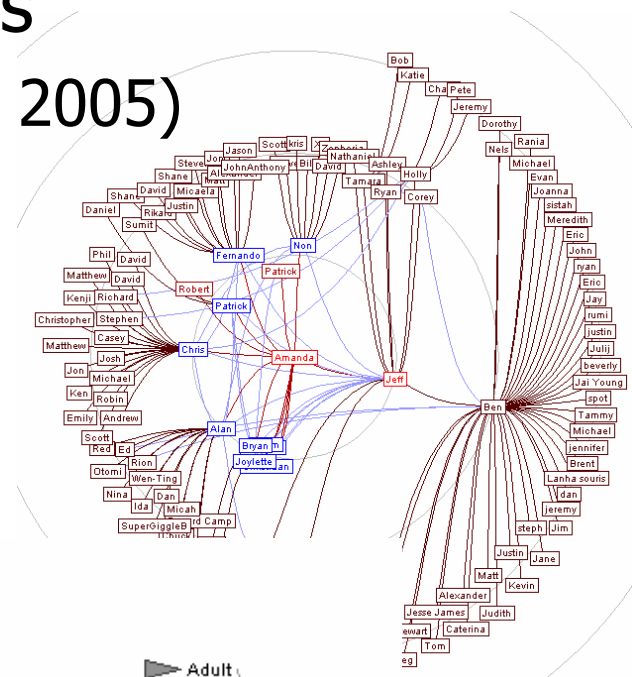
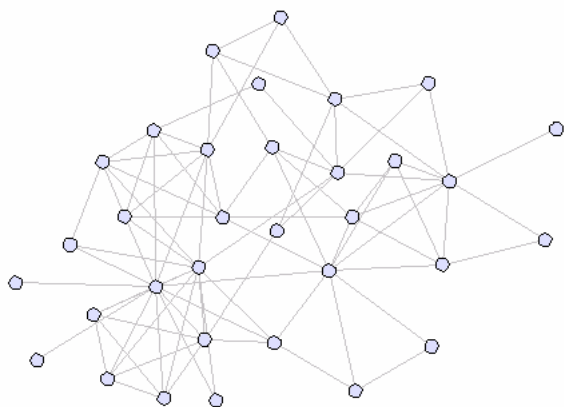




Toolkits (Cont.)

Advanced 'cutting edge' toolkits

☒ Prefuse (Heer, Card and Landay, 2005)

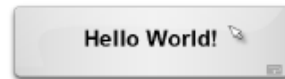




Custom widgets

- Defined to facilitate specific interactive 'look & feel' or behaviors

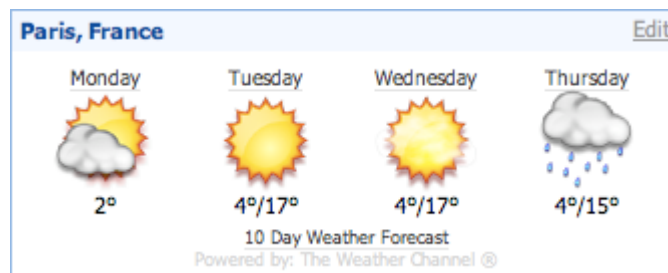
- Buttons



- To-do lists



- The weather forecast widget





Custom widgets (Cont.)

■ Some novel widgets

Digg modifier [] [X]

473
diggs

Microsoft Soda

A new brand of refreshment [picture]

147
diggs

Dear Mr. Shuttleworth, Get into the hardware business

Jeremiah Foster urges Mark Shuttleworth of Canonical (company behind Ubuntu) to get involved in the business of pre-installing GNU/Linux on computers hence getting rid of the "need to install" as one of the biggest remaining obstacles to increased adoption.

89
diggs

Bernanke: Fannie, Freddie threaten economy

Fed chief says investments held by Fannie Mae and Freddie Mac should be 'anchored' to their affordable housing mission.

← prev

next →



cool.news

Beat the heat with these cool summer ...
Calls flood railway, ST, Cool Cab inquir...
OMG my dad has a cool job
Stripers cool off as weather warms up
Pawlenty announces Operation Stay Cool
Ice bumper cars get cool reception

Irish Internet Association Blog

Recent Posts

Networking & #038; Innovation

A number of new innovations have developed from events ran by the Innovate project.

I host 'innovation evenings' on various topics from e-commerce and internet marketing to blogging and 'what makes a good website'.

From these events, a number of...

Excuse the Ad-hoc

I will continue to post about my experiences with the

About



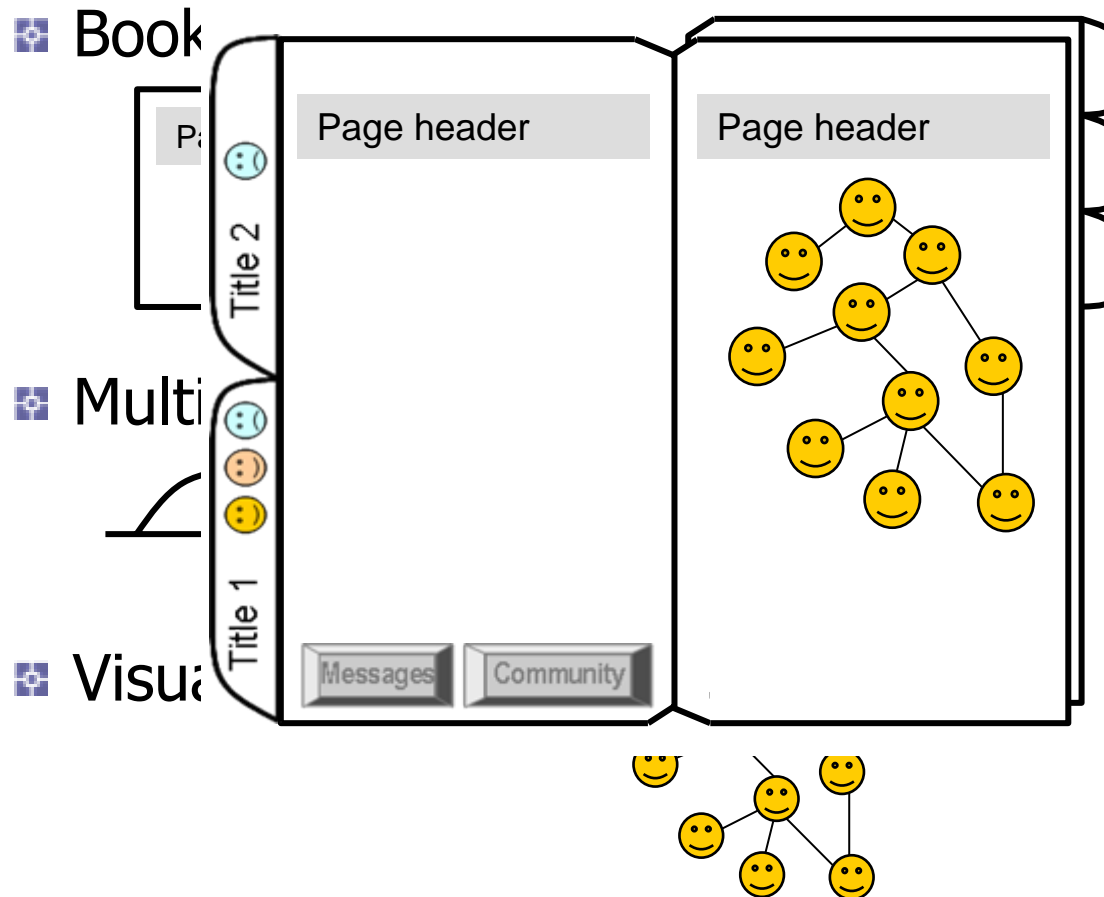
Domain-specific components

- Frequently, a design will require the implementation of a domain-specific interaction component (e.g. to implement a domain-specific metaphor)
- Implications
 - ✚ Not easy (in case of serious efforts)
 - Typically, it requires
 - Manipulation of abstract and top-level container objects
 - Definition of suitable layout manager (containment strategy)
 - Use of non-native components
 - ✚ Not portable across platforms
- What happens if the primitive objects are not supported by one single library?



Example

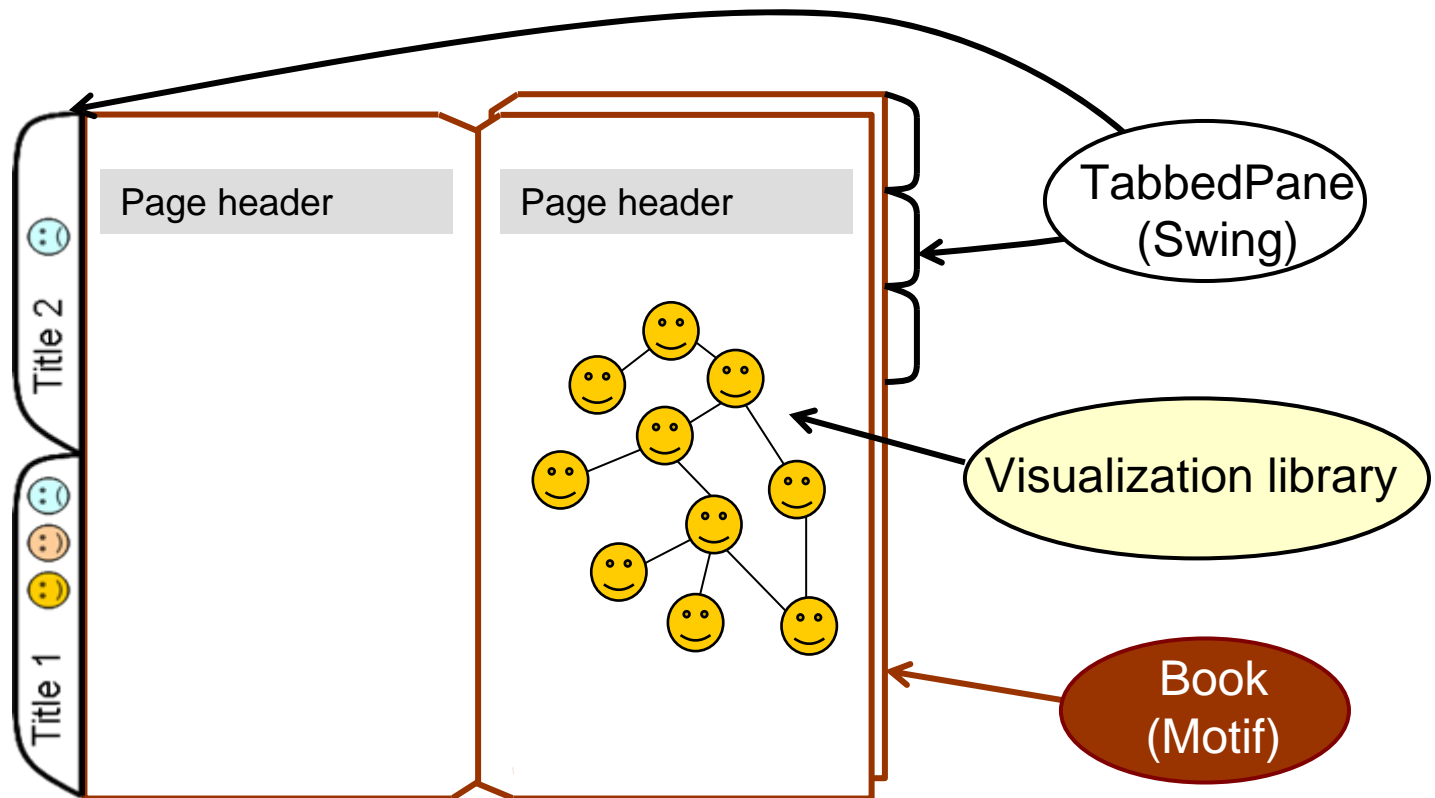
- Composing a 'book' metaphor using existing interaction components available through different toolkits





Some issues

- Given the diverse collections of interaction components, how can developers systematize the way they make use of them
 - ▣ In other words – can we build mixed-toolkit hierarchies





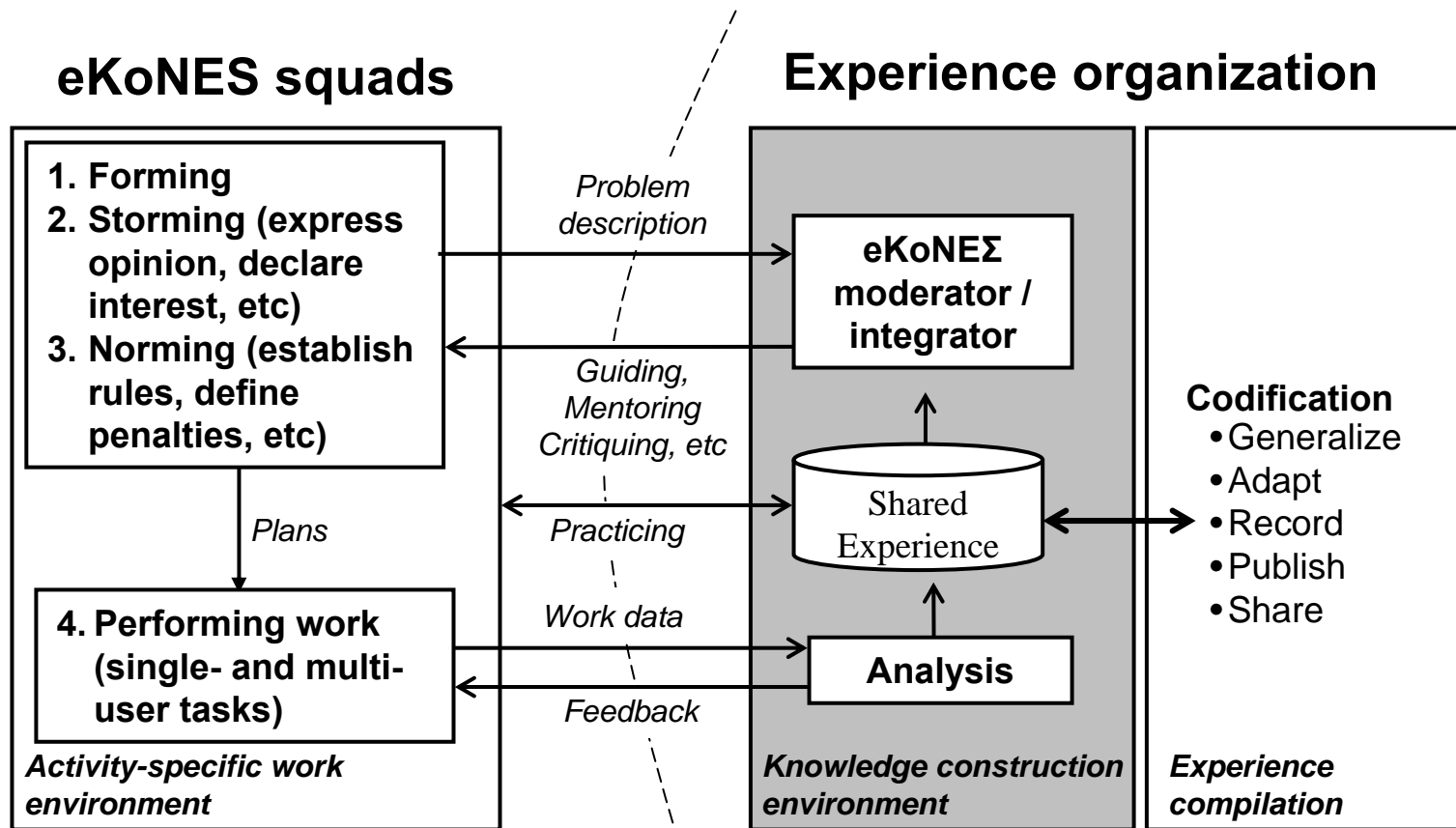
Context of our work

- eKoNEΣ – an electronic village of local interest on tourism
 - ❖ A work-oriented 'experience factory' supporting social interaction
 - New product / package composition by negotiating, coordinating and finally integrating shared resources
 - Visualizing collaborative performance of virtual squads by evolution phase
 - Synchronous collaborative sessions to address conflicts
- Scenario
 - ❖ End users populate requests, articulate demand and 'villagers' join forces as virtual squads to fulfill the demand
 - Incremental compilation of new 'added value' packages owned by the squad



The 'social' experience factory

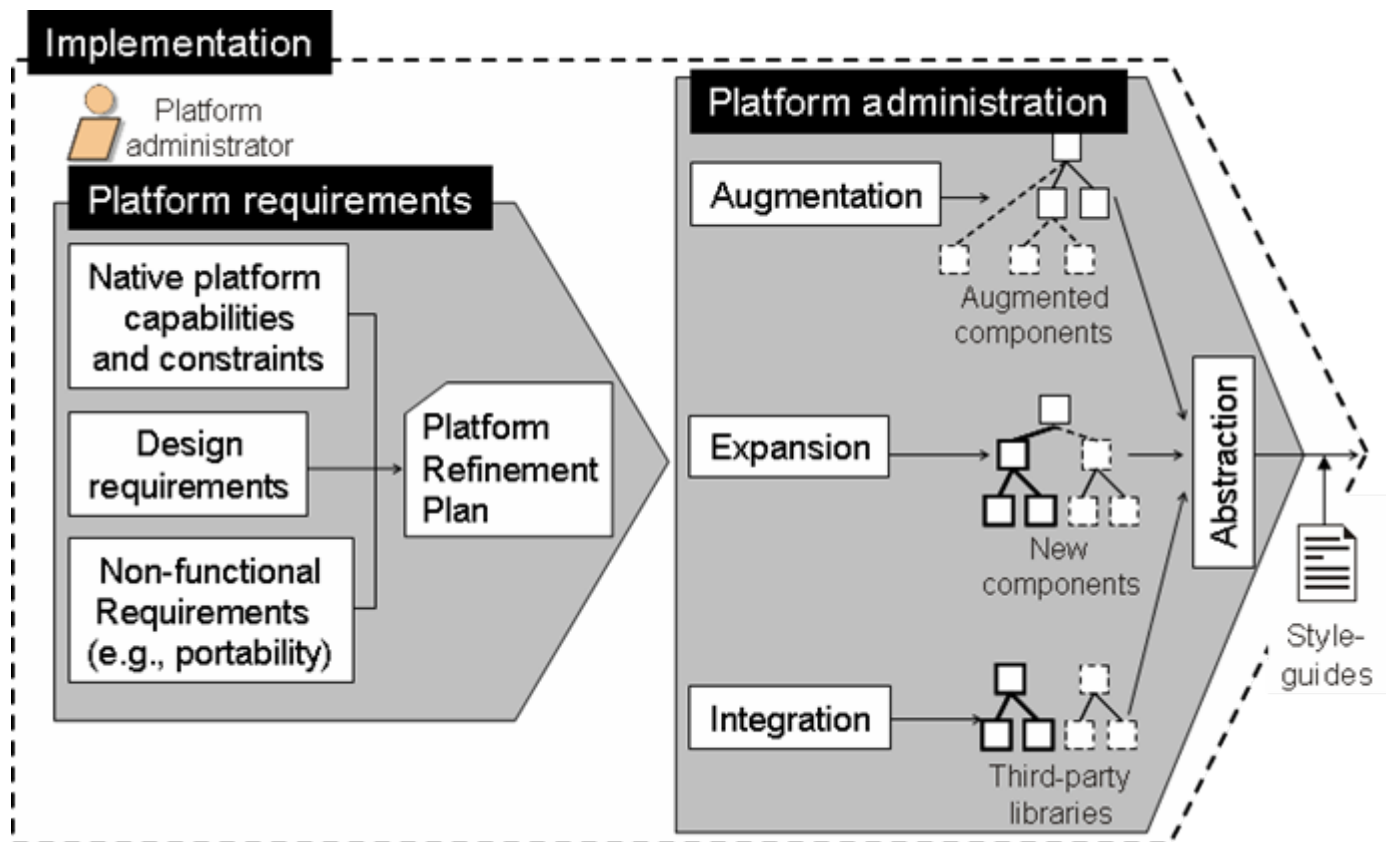
■ Architectural underpinnings





Platform administration

- Platform administration process
 - ❏ A specific workflow = what is to be done
 - ❏ 'Platform administrator' role = who is doing it
 - ❏ Artifacts = what is produced





Overview of the strategies

■ Augmentation

- 'injection' of new interaction techniques in an established library
 - Same programming model, API, etc

■ Expansion

- Build domain-specific interaction components to convey metaphoric representation
 - New top-level container with layout management functions

■ Integration

- Interoperability with a third-party library
 - Synchronization of augmented and expanded components with components implemented using the third-party library

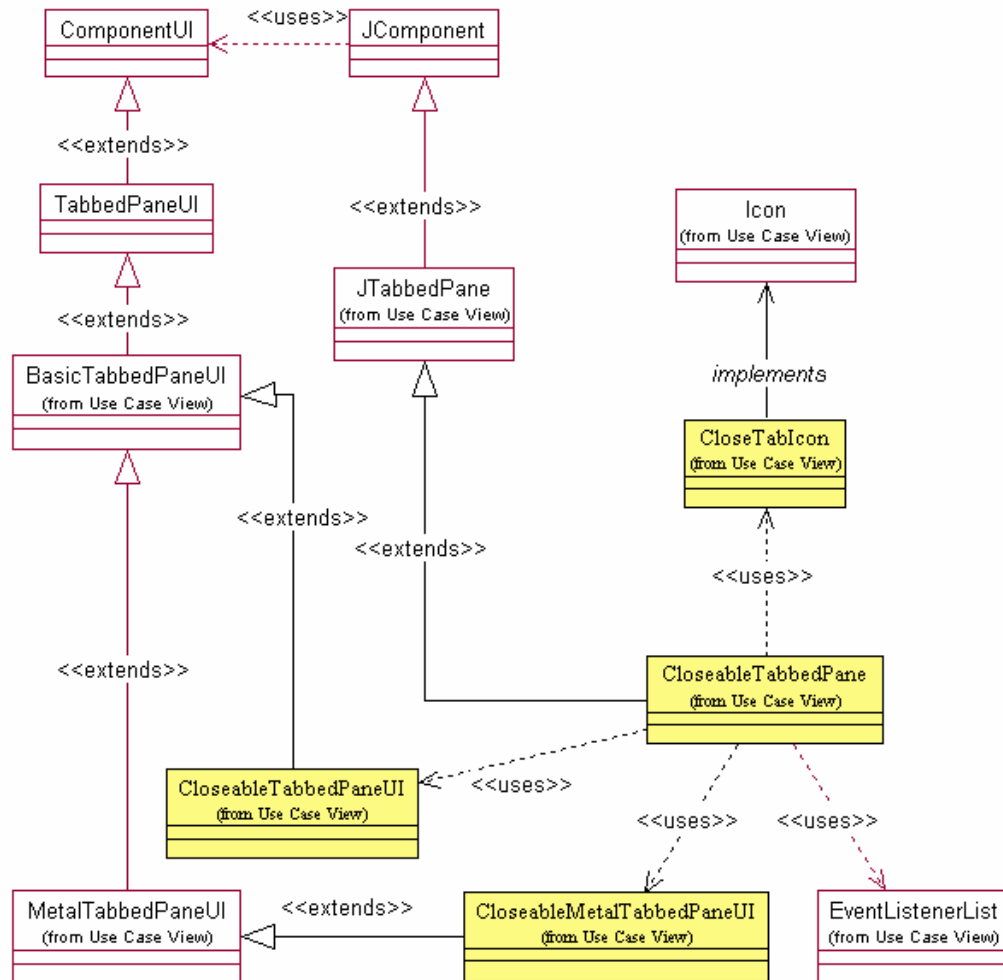
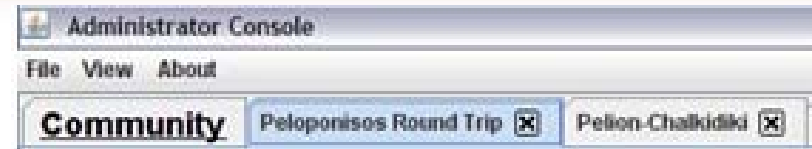
■ Abstraction

- Separate specification from physical implementation
 - Work currently in progress



Augmentation

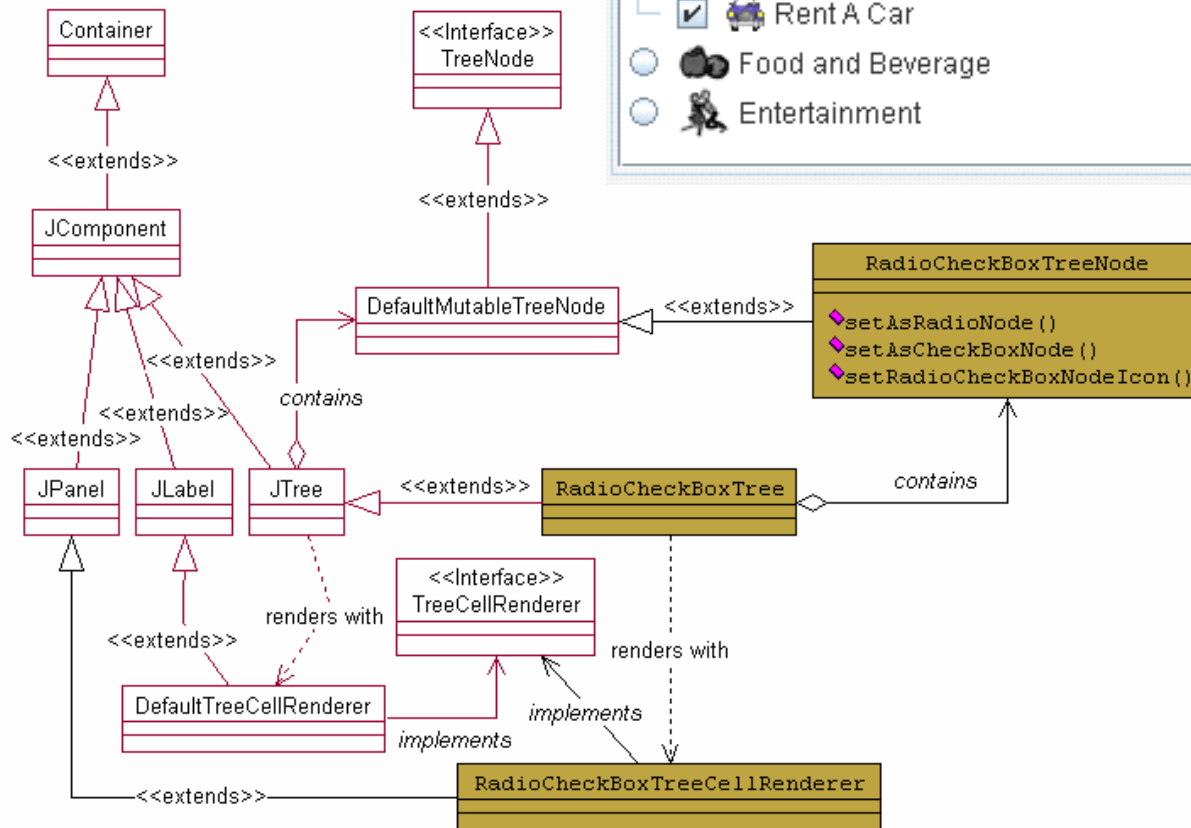
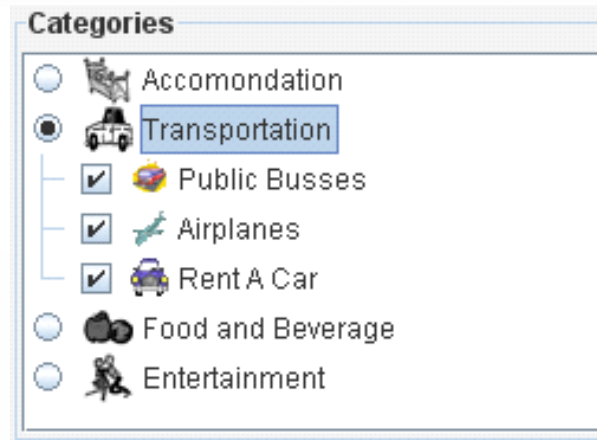
■ Augmented TabbedPane





Augmentation (Cont.)

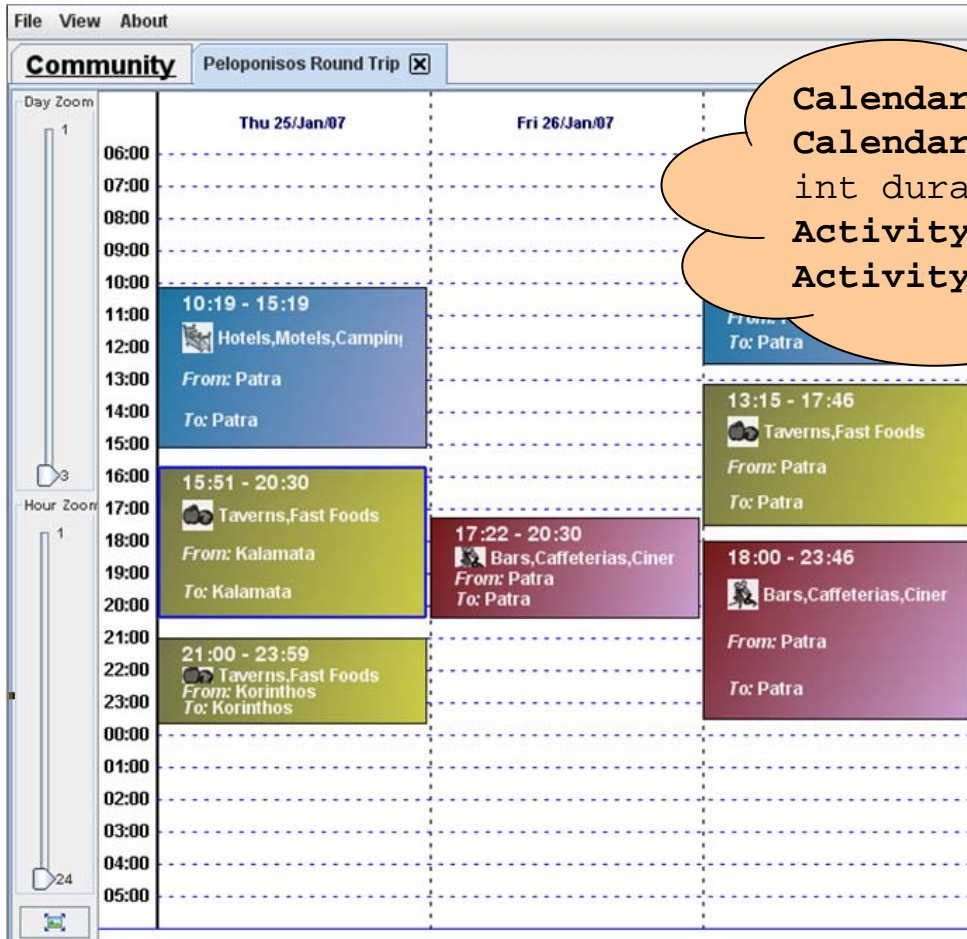
■ RadioCheckBoxTree



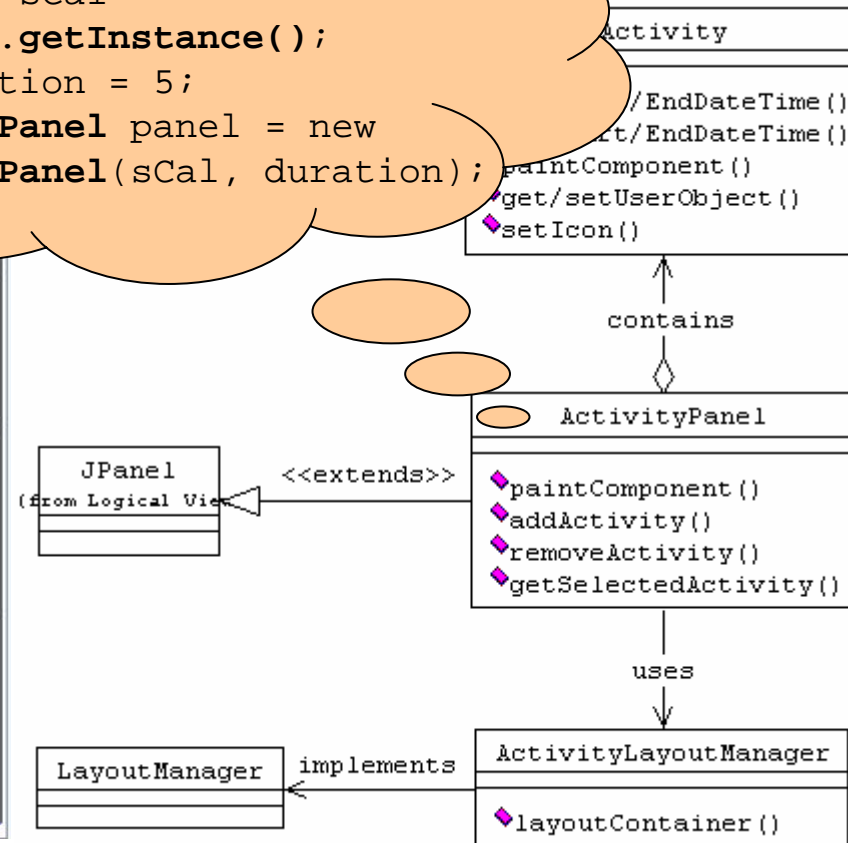


Expansion

- Activity panel = TV program -like



```
Calendar sCal =
Calendar.getInstance();
int duration = 5;
ActivityPanel panel = new
ActivityPanel(sCal, duration);
```





Expansion (Cont.)

The screenshot shows the 'Package Creator Dialog' window for a 'Peloponissos Round Trip' on Friday, 24 November, 2006. The main area displays a timeline from 06:00 to 23:00. Two activities are currently scheduled:

- 06:00 - 10:00:** Hotels, Motels, Campings (From: Patra, To: Patra)
- 10:20 - 14:55:** Public Busses (From: Patra, To: Olimpia)

An 'Activity Chooser' dialog box is open, showing a list of categories with checkboxes:

- Accommodation
- Transportation
- Food and Beverage
- Entertainment
 - Bars
 - Cafeterias
 - Cinemas

The dialog also includes fields for Start Time (15:15), End Time (17:52), From (Olimpia), and To (Olimpia), along with a Description field containing 'This is an Activity Description'. Buttons for '+ Add' and 'X Cancel' are at the bottom.

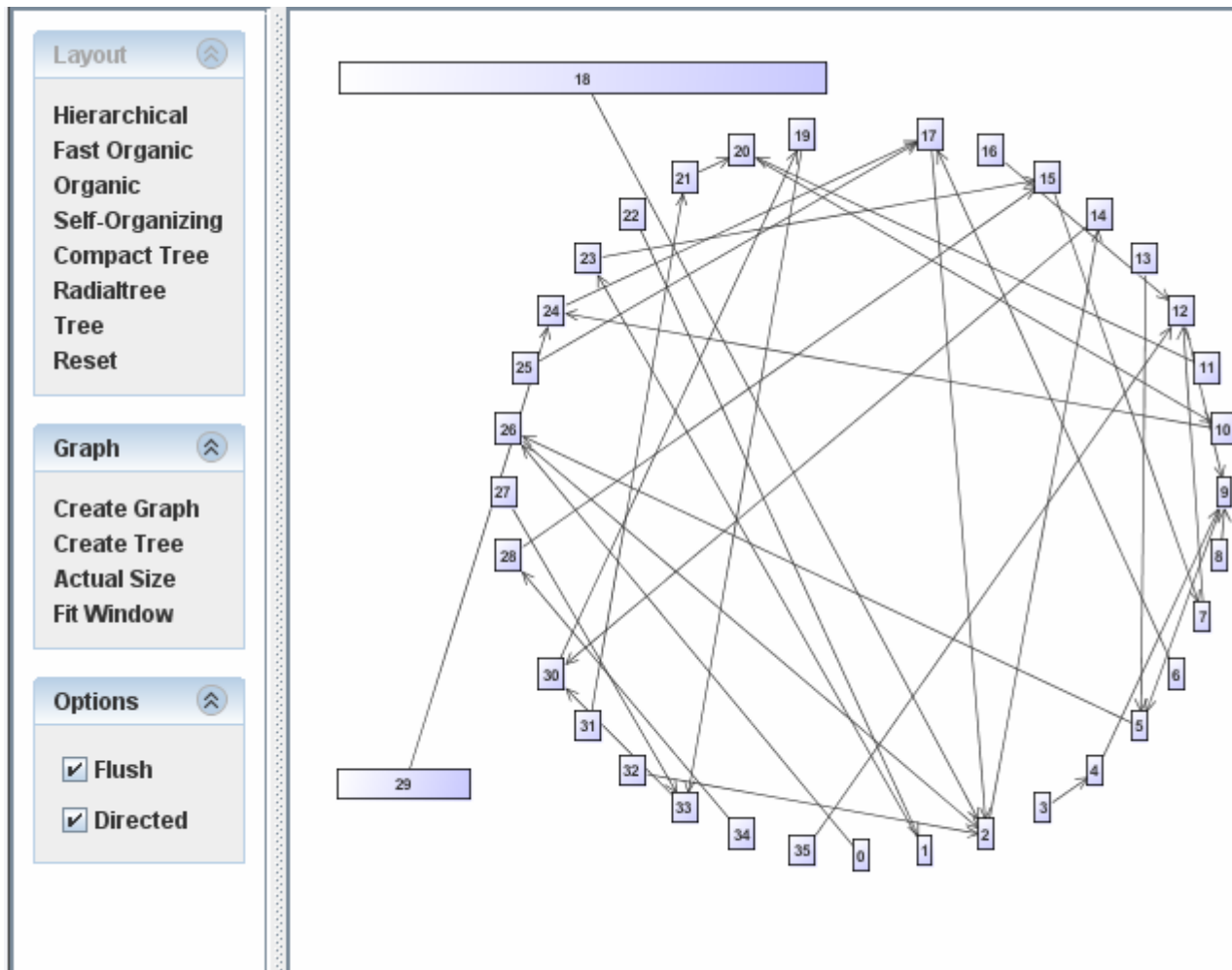
At the bottom of the main dialog, there are buttons for '+ Add Activity', 'Edit Activity', and '- Remove Activity'. A callout box points to these buttons and contains the following code:

```
Activity anActivity = new Activity();  
panel.addActivity(anActivity);  
panel.removeActivity(anActivity);
```



Integration

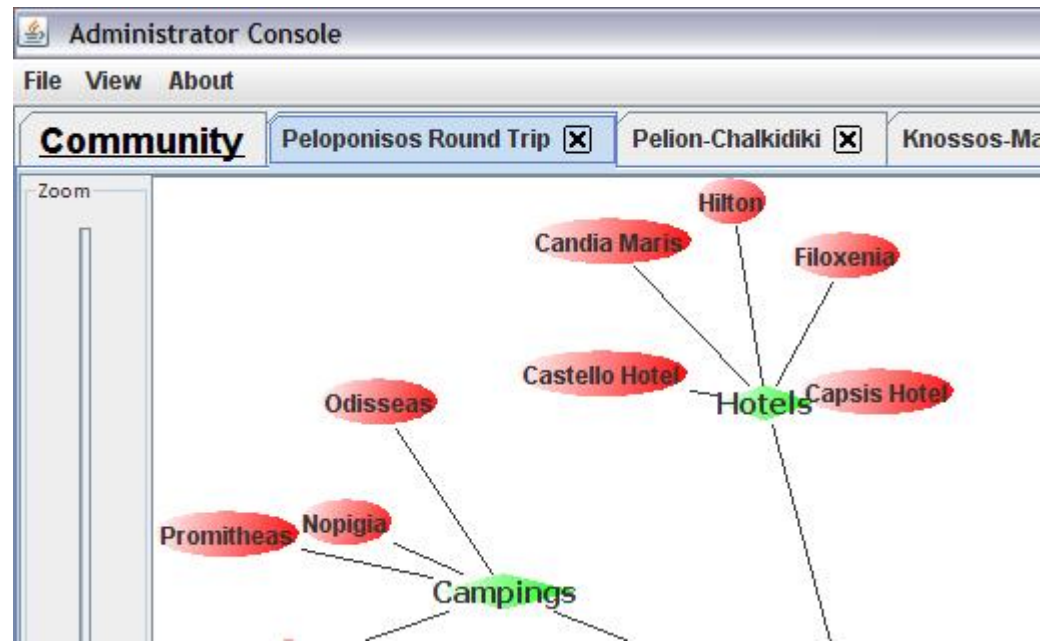
- JGraph (visualization library)
 - ❏ Open source <http://www.jgraph.com/>





Integration (cont.)

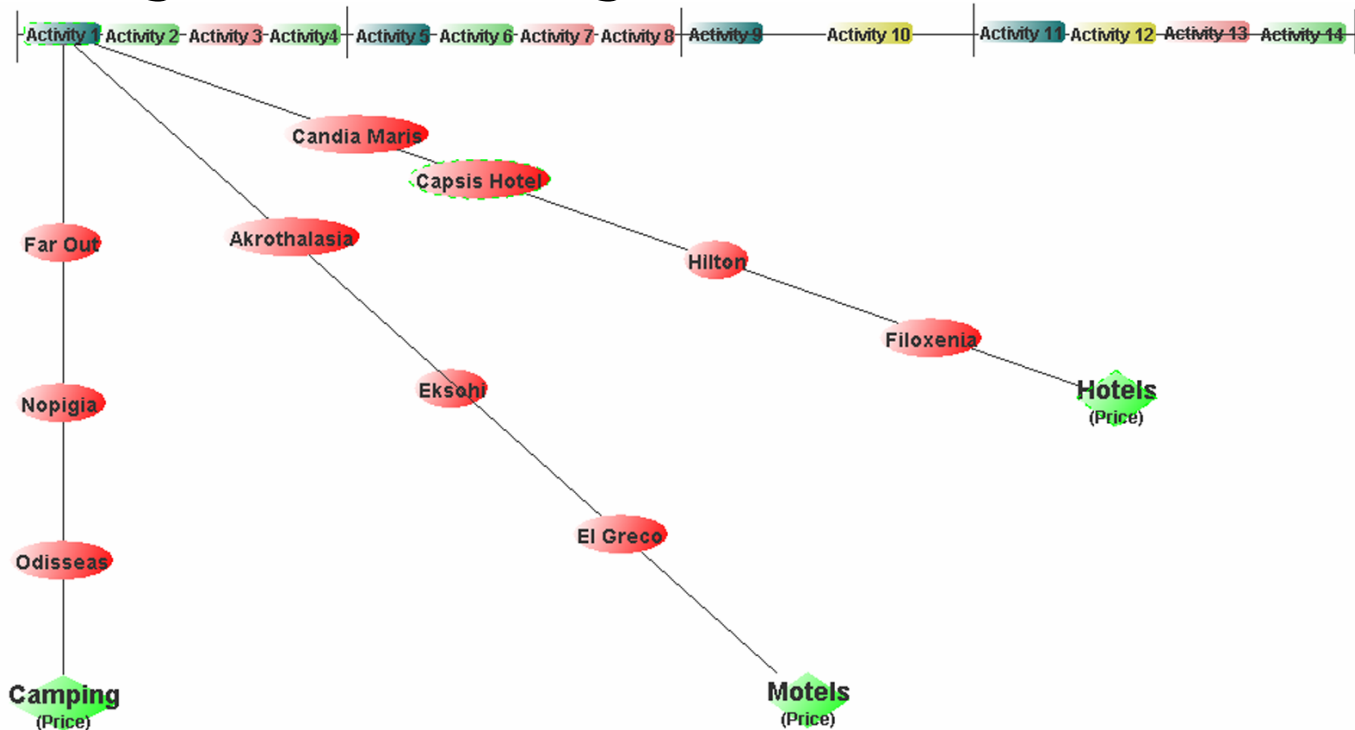
- Refinement of the basic JGraph libraries (visual attributes and layout management) to present generalized containment hierarchies
 - ▣ Virtual squad visualization





Integration (cont.)

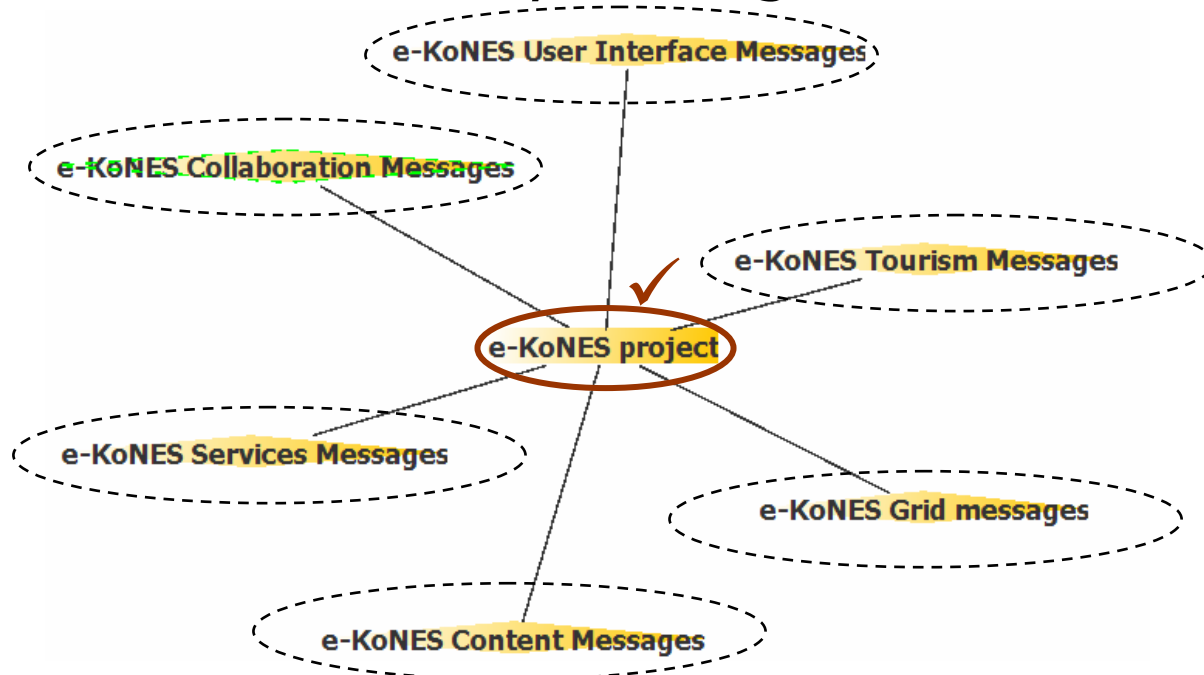
- Refinement of the basic JGraph libraries (visual attributes and layout management) to present generalized containment hierarchies
 - ✓ Virtual squad visualization
 - ▣ Package evolution stages





Integration (cont.)

- Refinement of the basic JGraph libraries (visual attributes and layout management) to present generalized containment hierarchies
 - ✓ Virtual squad visualization
 - ✓ Package evolution stages
 - ▣ Shared community message board






Example

■ eKoNES project forum data



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Analog Clock



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Topics

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Category

- e-KoNES Collaboration Messages**
e-KoNES Collaboration Messages
- e-KoNES Content Messages**
e-KoNES Content Messages
- e-KoNES Grid messages**
e-KoNES Grid messages
- e-KoNES Services Messages**
e-KoNES Services Messages
- e-KoNES Tourism Messages**
e-KoNES Tourism Messages
- e-KoNES User Interface Messages**
e-KoNES User Interface Messages

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RE: Object replication - Ερώτηση


Object replication	Akoumianakis Demos	5/15/07 8:14 PM
... RE: Object replication - Πως γίνεται	Akoumianakis Demos	5/15/07 8:17 PM
... RE: Object replication - Ερώτηση	Giannis Milolidakis	5/15/07 8:17 PM
... RE: Object replication - Multi-platform issues	Akoumianakis Demos	5/15/07 8:19 PM
... RE: Object replication - Multi-platform issues	Maria Markopoulou	5/16/07 9:54 AM
... RE: Object replication - Ερώτηση	Akoumianakis Demos	5/15/07 8:18 PM
... RE: Object replication - Ερώτηση	Giannis Milolidakis	5/16/07 9:52 AM

Akoumianakis Demos | **Object replication** | 5/15/07 8:14 PM [Reply](#) [Reply with Quote](#) [Top](#)


Rank: Youngling
Posts: 22
Joined: 4/30/07

Εδώ απαιτείται ένα μοντέλο διαχείρισης αντιγράφων

Akoumianakis Demos | **RE: Object replication - Πως γίνεται** | 5/15/07 8:17 PM as a reply to Akoumianakis Demos. [Reply](#) [Reply with Quote](#) [Top](#)

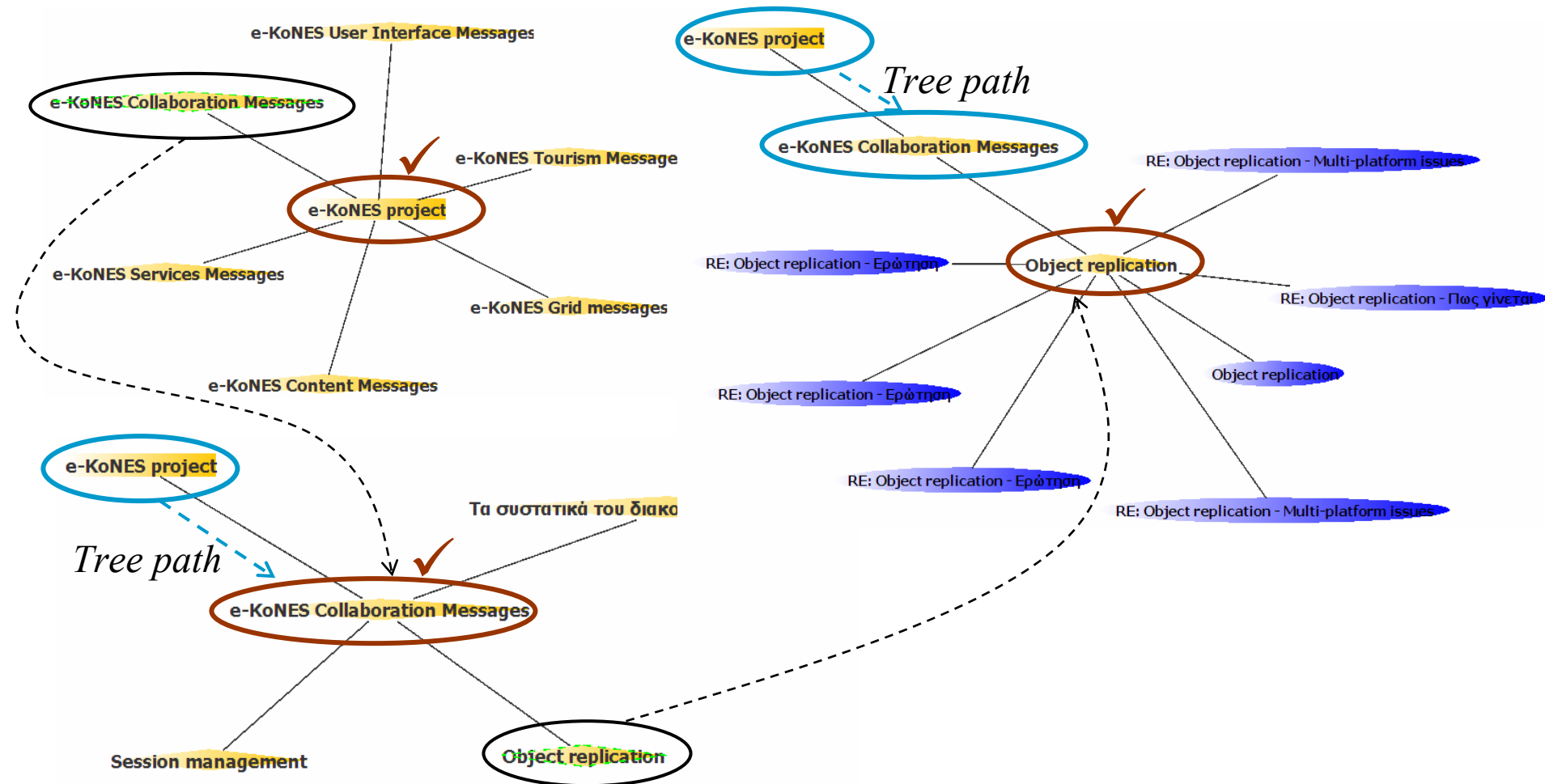

Rank: Youngling
Posts: 22
Joined: 4/30/07

Η διαδικασία είναι η εξής:
- ο client δηλώνει το ενδιαφέρον του για μια συγχρονισμένη συνεδρία
- ο session manager αποφασίζει και τον εντάσσει
- για κάθε αντικείμενο παράγεται μια replica
- όταν η κατάσταση στο replica αλλάξει ενημερώνονται όλοι



Example – eKoNES squad forum

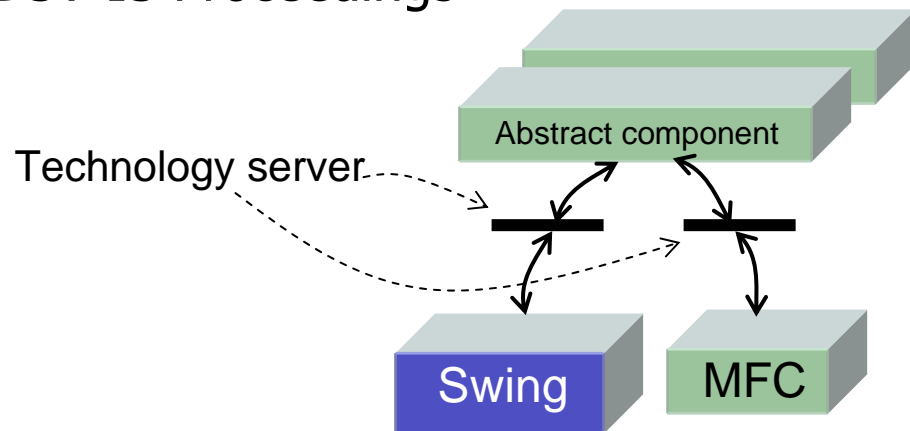
- Assuming that the squad is the consortium (for demo purposes)





Abstraction

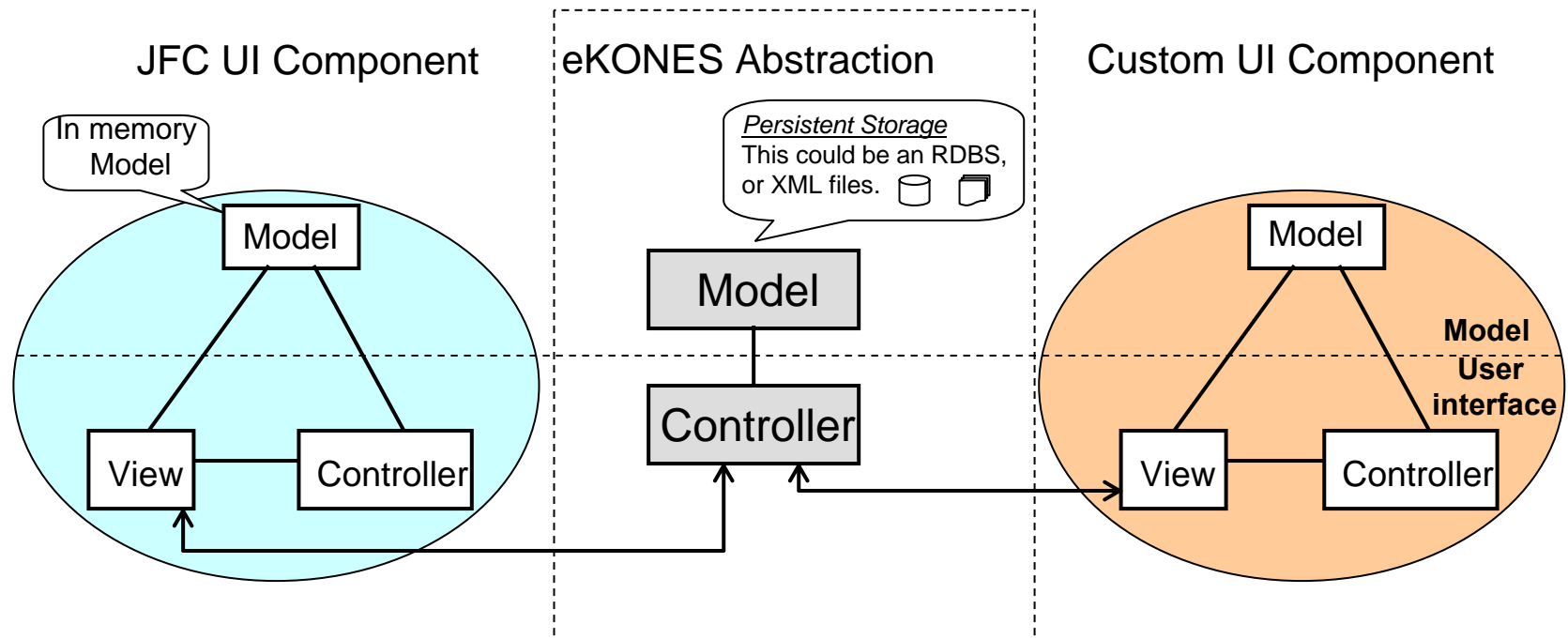
- In general, two perspectives
 - ❏ Abstract components transformed to 'concrete' (platform-specific) interaction objects
 - By transformation rules (e.g., Teresa by Mori, Paterno and Santoro, 2004)
 - By 'hard coded' vocabulary specific mapping rules (e.g. UIML)
 - ❏ By 'linking' rather than directly 'calling' the libraries of a toolkit
 - PIM tool by Savidis, Stephanidis, Akoumiankis, 1997 in EuroGraphics, DSV-IS Proceedings





Abstraction (Cont.)

- In eKoNEΣ we have studied a solution exploiting the MVC architecture



- So, what does this allow us to do ?



Abstraction (Cont.)

■ Synchronization across views

The screenshot displays a web-based Message Board interface. At the top, a tree view shows the following hierarchy: **Message Board** (highlighted in yellow) → **Packages** (highlighted in yellow) → **Peloponisos Round Trip** (highlighted in yellow) → **Storming** (highlighted in yellow) → **Announcements** (highlighted in green). From the **Announcements** node, several sub-items are listed: **Cancel Invitation** (highlighted in red), **New Activity Added - Accomodation - Day 1** (highlighted in red), **Do and Don't** (highlighted in yellow), **Change Activity Alert - Transortation - Day 2** (highlighted in red), and **New Activity Added - Transportation - Day 3** (highlighted in red).

Below the tree view is a table of messages. The table has columns for 'Messages exchanged', 'Created by', 'Creation date', 'Last reply', 'Reply date', and 'Replies'. The messages listed are:

Messages exchanged	Created by	Creation date	Last reply	Reply date	Replies
New Activity Added - Transportation - Day 3	eKoNES Admin	12/1/2007			
New Activity Added - Accomodation - Day 1	eKoNES Admin	12/1/2007			
Cancel Invitation	eKoNES Admin	12/1/2007			
Do and Don't	eKoNES Admin	12/1/2007	Candia Maris	12/1/2007	4
Change Activity Alert - Transortation - Day 2	eKoNES Admin	12/1/2007			

At the bottom of the interface, there are three buttons: **New**, **Search**, and **Reply**.



Summary & conclusion

- So far we have established and pseudo-verified the concept of platform administration in selected scenarios
- On-going work focuses on (relevant issues)
 - ❖ Refinement of some of these techniques
 - e.g. abstraction)
 - ❖ Extension of the techniques to facilitate
 - Synchronous cross-platform collaboration
 - Multi-user widgets
 - Context-ware widgets
 - ❖ Building, visualizing and extrapolating from scalable community memories
 - Virtual squad memory
 - Package memory
 - ❖ e-Moderation during collaborative sessions