



Paperful to Paperless Office Forms Integration Framework

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Outline

- Introduction
- Requirement
- Implementation
- Usability Tests
- Conclusion
- Questions



Introduction

- Forms on the web --- surveys, online trading, purchasing
- HTML
- More reliable and independent technology called XForms
- Framework – create, edit, merge forms --- integrated into other applications



Limitations of HTML Forms

- The GUI is embedded in the data.
- Searching for information in the data is tough.
- The data is tied to the logic and language of HTML.



An Example

```
<ul>
<li>John Fisher</li>
<li>Company: Ebay</li>
<li>Email: john@ebay.com</li>
<li>State: Arizona</li>
</ul>
<ul>
<li>Mitchell Miller</li>
<li>Company: Intel</li>
<li>Email: miller@intel.org</li>
<li>State: Iowa</li>
</ul>
```

- How to change list-based to table based presentation?
- How to get a quick list of clients in IA?
- What if you want to use a Java Applet?



Overcome The Limitations

```
<ul>
<li>John Fisher</li>
<li>Company: Ebay</li>
<li>Email:
  john@ebay.com</li>
<li>State: Arizona</li>
<li>Mitchell Miller</li>
<li>Company: Intel</li>
<li>Email: miller@intel.org</li>
<li>State: Iowa</li>
</ul>
```

```
<client>
<name>John Fisher</name>
<company>Ebay</company>
<email>john@ebay.com </email>
<state>Arizona</state>
</client>
<client>
<name>Mitchell Miller</name>
<company>Intel</company>
<email>miller@intel.org </email>
<state>Iowa</state>
</client>
```



XForms

- Next generation of HTML Forms
- Richer data presentation
- Separate the data from presentation
- Device independent – PDA, mobile phone
- Form data is described using XML – routed to various workstations



contd...

- How does it separate the data from presentation?

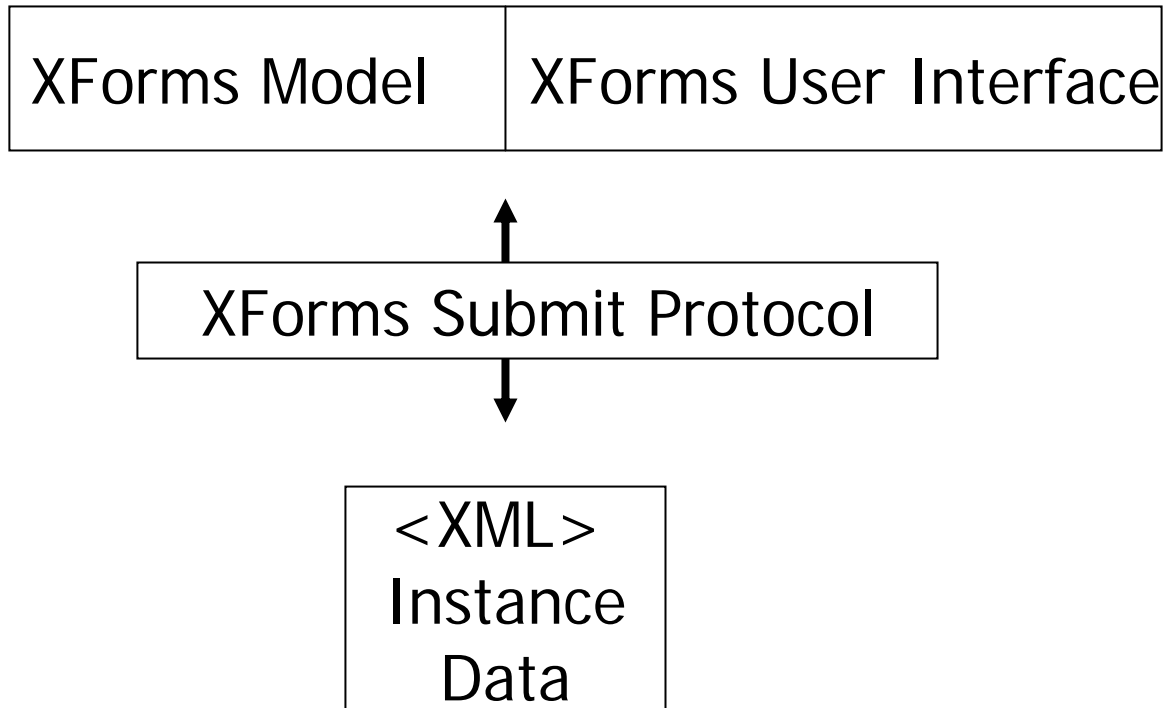
XML – describes the data, XSLT – displays it

- What is XSLT?

XSLT transforms XML documents



XForms Model





An Example XForm

```
<head>
<xforms:model>
<xforms:instance><name>John</name></xforms:instance>
</xforms:model>
</head>
<body>
<xforms:input ref="name">
<xforms:label>First Name</xforms:label>
</xforms:input>
</body>
```



Goal Of This Project

- Implement a framework --- create, edit, design, merge Forms --- XForms
That can be integrated into other web applications
That can also maintain the revision history of the forms



Prerequisites To Run This Project

- Application Server – Tomcat
- Oracle 9i
- Browser



Requirement

- Create new XForms
- Edit, Merge, Design Forms
- Implement Revision Control System
- Store forms in Oracle database
- Extensions to XForms – style information



Design

- Usability Patterns
 - History Logging, System Feedback, User Modes, Workflow model
- Application Security
 - Single Access Point, Check Point, Sessions



Usability Patterns

- History Logging – log all the actions of the user --- Version Control System
- User Modes – each user has their own preferences -- user can design their own form
- Workflow Model – follow specific steps



Application Security

- Single Access Point – single gateway for the entire application
- Checkpoint – prevent hackers
- Sessions – session object

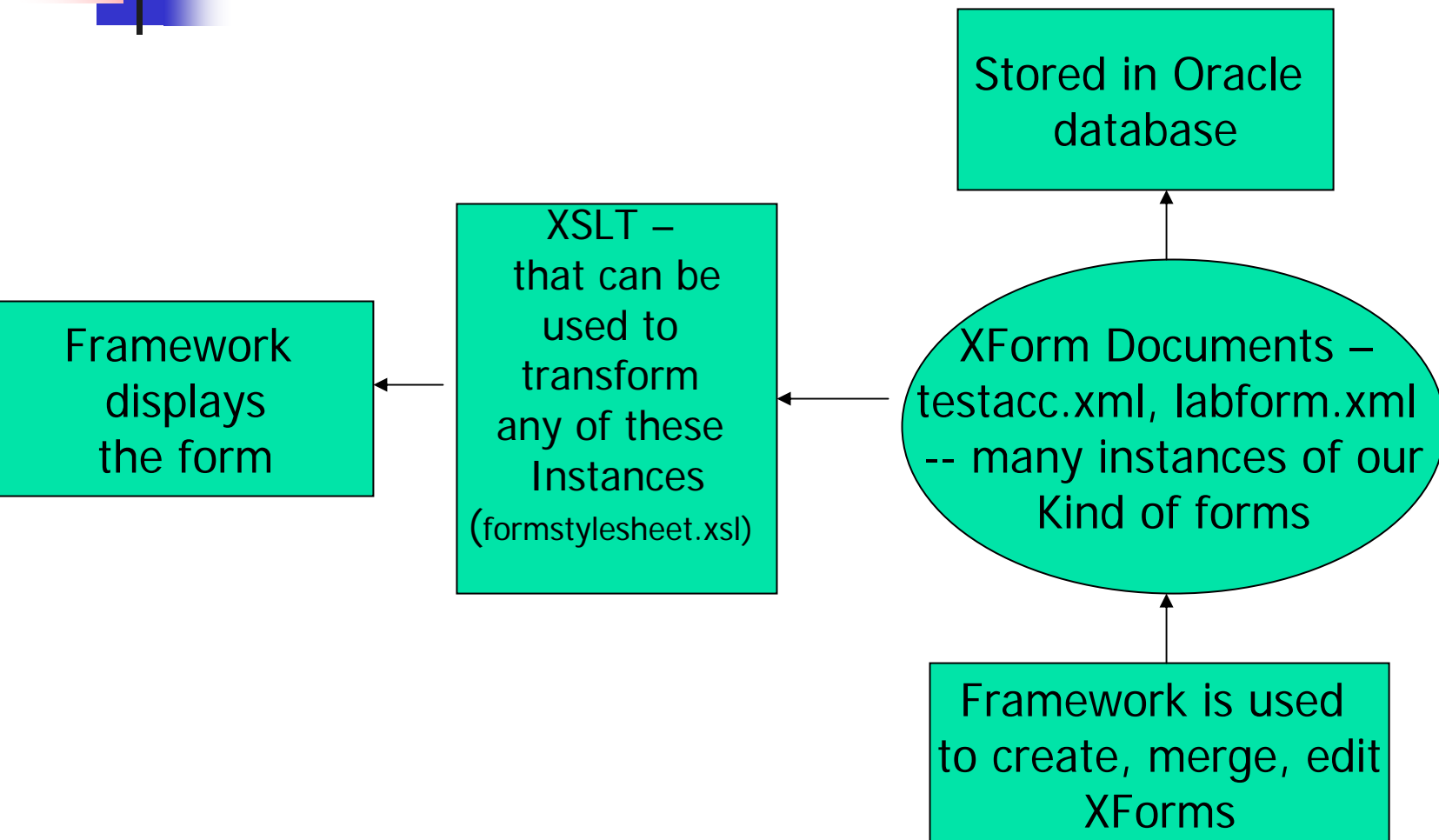


Implementation

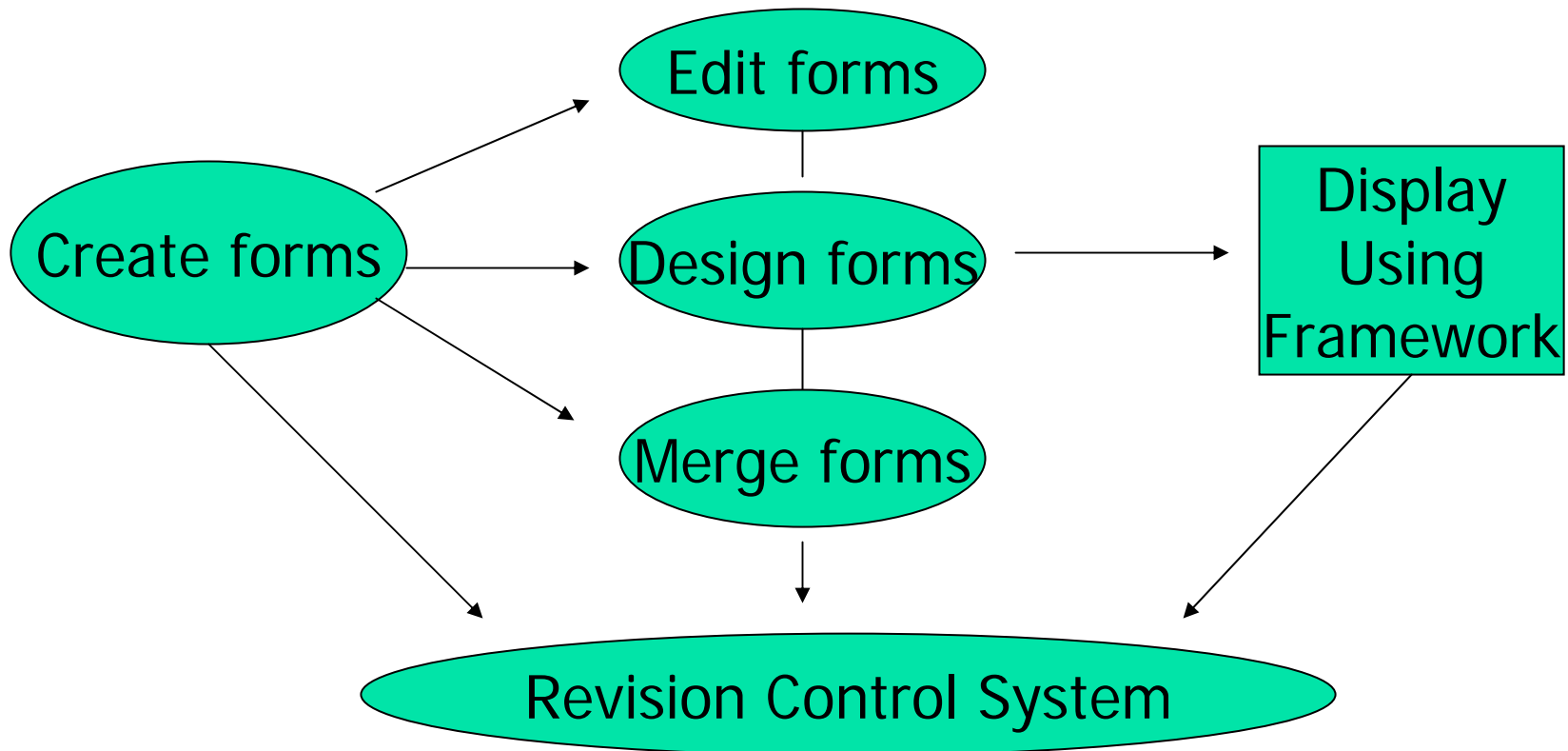
- Forms were created using – XForms, JSP, JavaScript, XSLT
- DOM and SAX Parser
- Stored in Oracle database



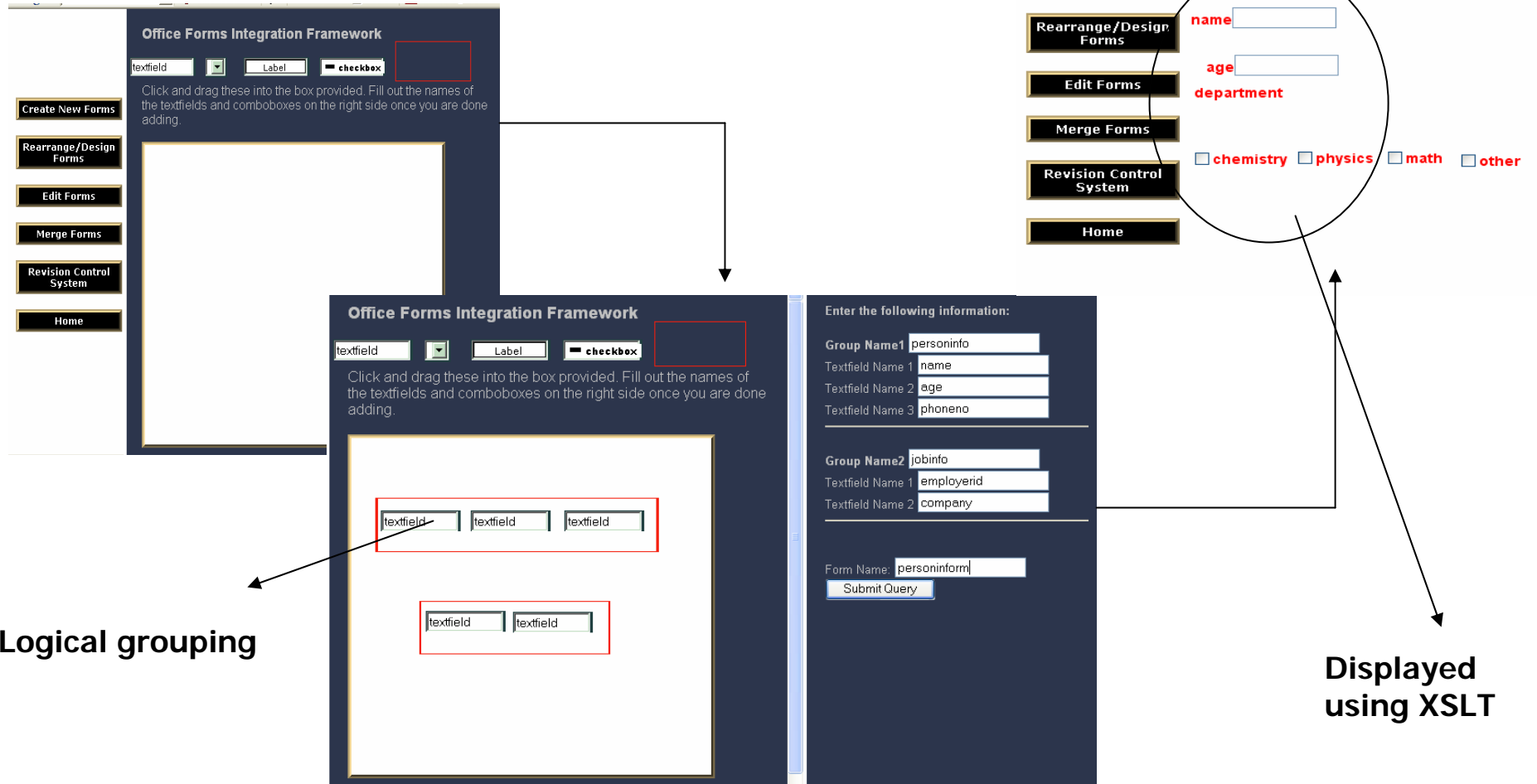
Process Of Creating Forms



Overview Of The Framework

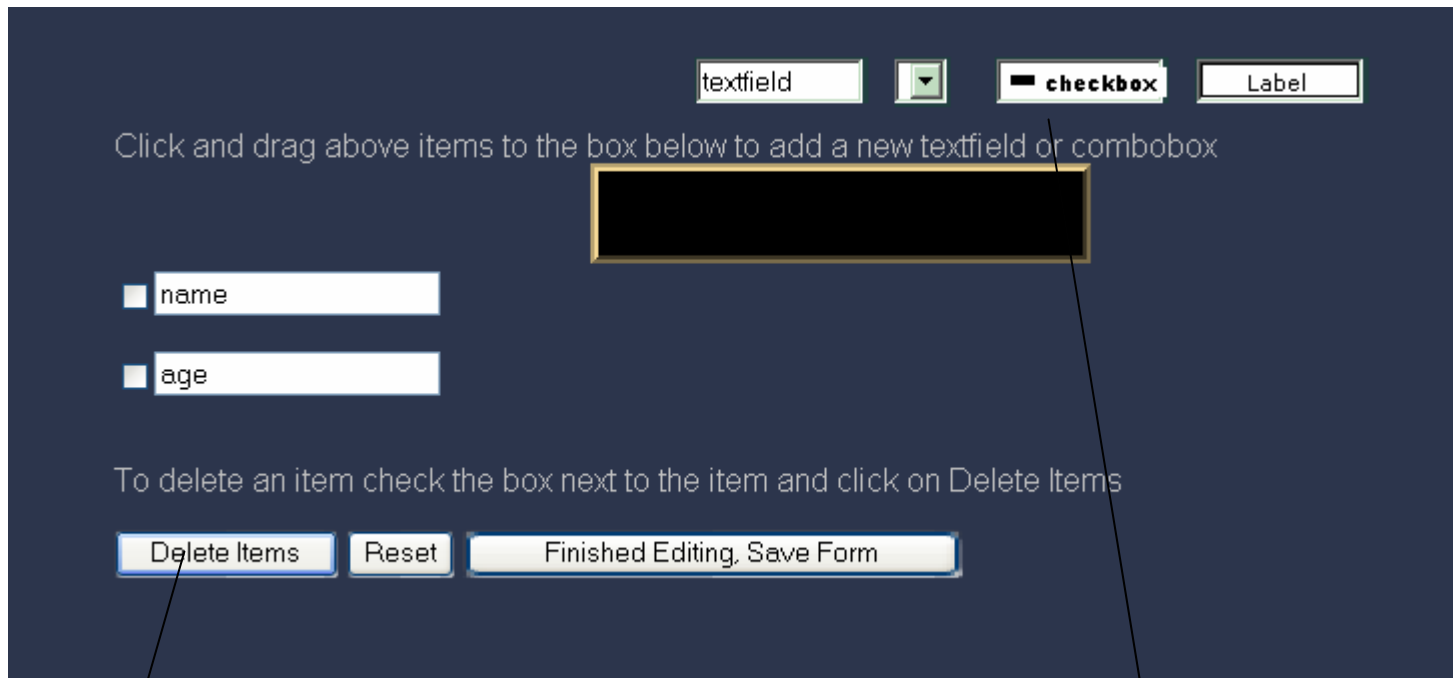


Create New Forms





Edit Forms



textfield ▾ checkbox Label

Click and drag above items to the box below to add a new textfield or combobox

name

age

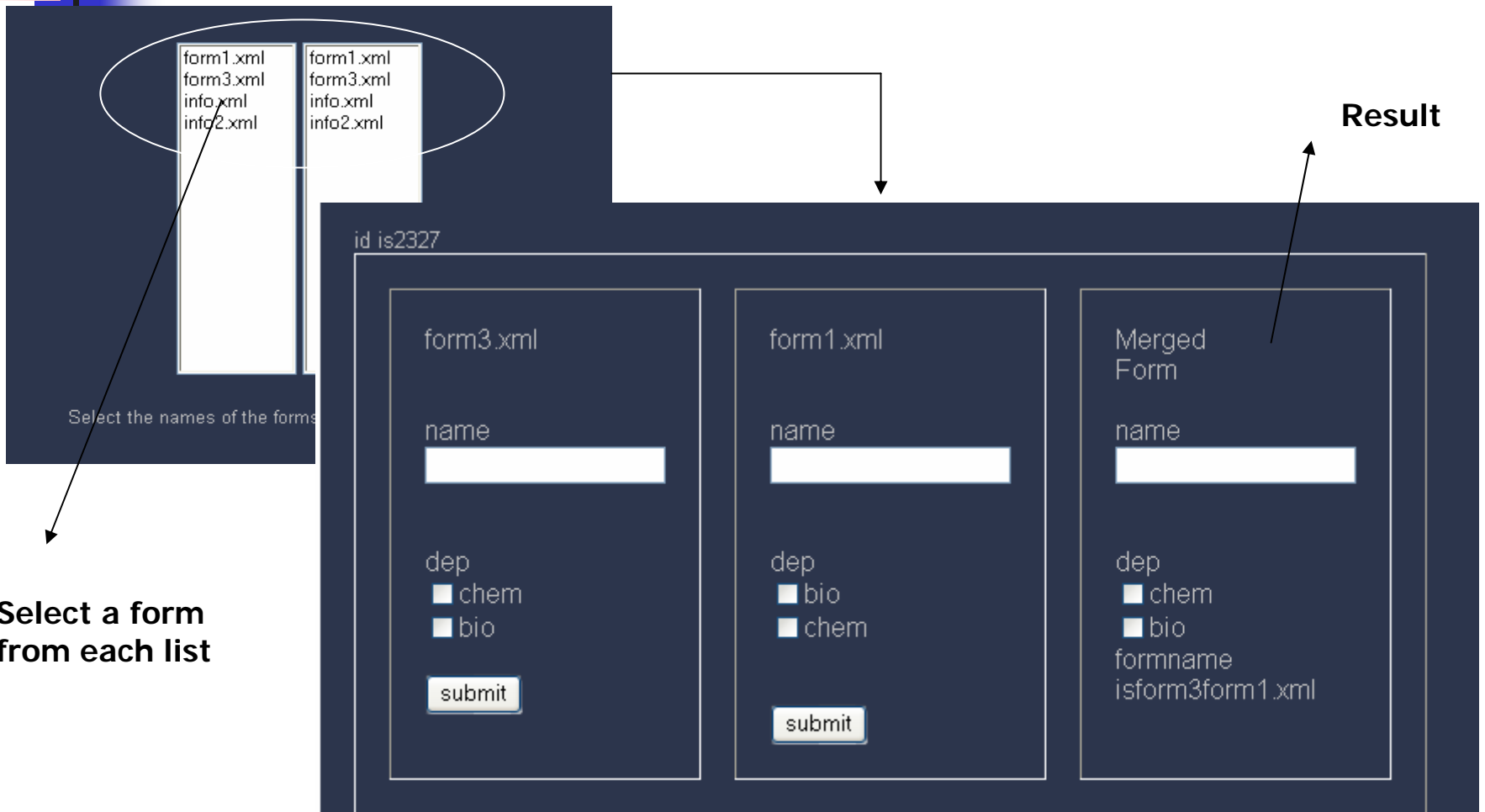
To delete an item check the box next to the item and click on Delete Items

Delete Items Reset Finished Editing. Save Form

Delete

Add new textfields,
labels, checkbox,
comboboxes

Merge Forms



Select a form from each list



Version Control System

- Ability to create new branches of existing forms as well as to create new forms.
- Ability to merge existing branches and to unify form data from two branches.
- Ability to examine change histories along a given form branch.



Existing Systems

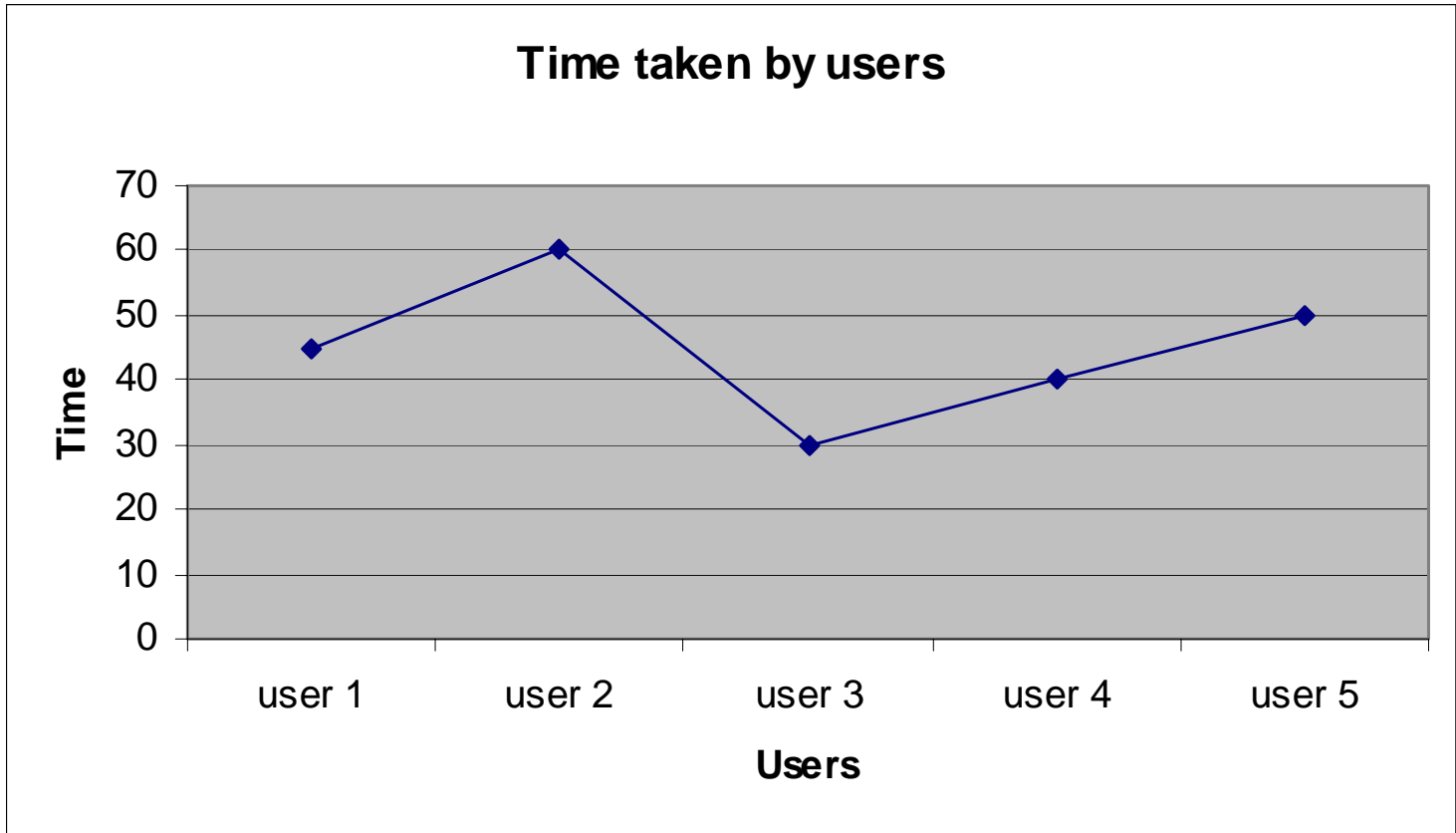
- Revision Control System (RCS)
 - different versions of the text, does not let two users open the same file at the same time.
- Concurrent Versions System (CVS)
 - maintain a history of all the changes made to a set of files and lets two users open the same file at the same time.



Usability Testing

- Were the users able to figure out how to use the framework on their own?
- What were the common mistakes made?
- How long does each user take to learn about the framework?
- Is the user satisfied with the product?
- What were the recommendations made to improve it?

Results





Challenges

- XForms and extensions
- Implementing Version Control System
- Integration of XForms, Oracle and XML



Conclusion

- XForms -- richer and more flexible than HTML forms -- separate data and logic from presentation
- As everything is being stored in the Oracle database it reduces disk space making it more efficient.
- Platform independent – XML describes data and XSLT displays data



contd...

- Version Control System
- Integrated into other web applications



Questions

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