ZK

Ajax but no JavaScript

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Founder, the ZK project

http://www.potix.com

> Ajax: Promise and Challenge

> ZK: Simply Rich

> Brand New World

Sun microsystems

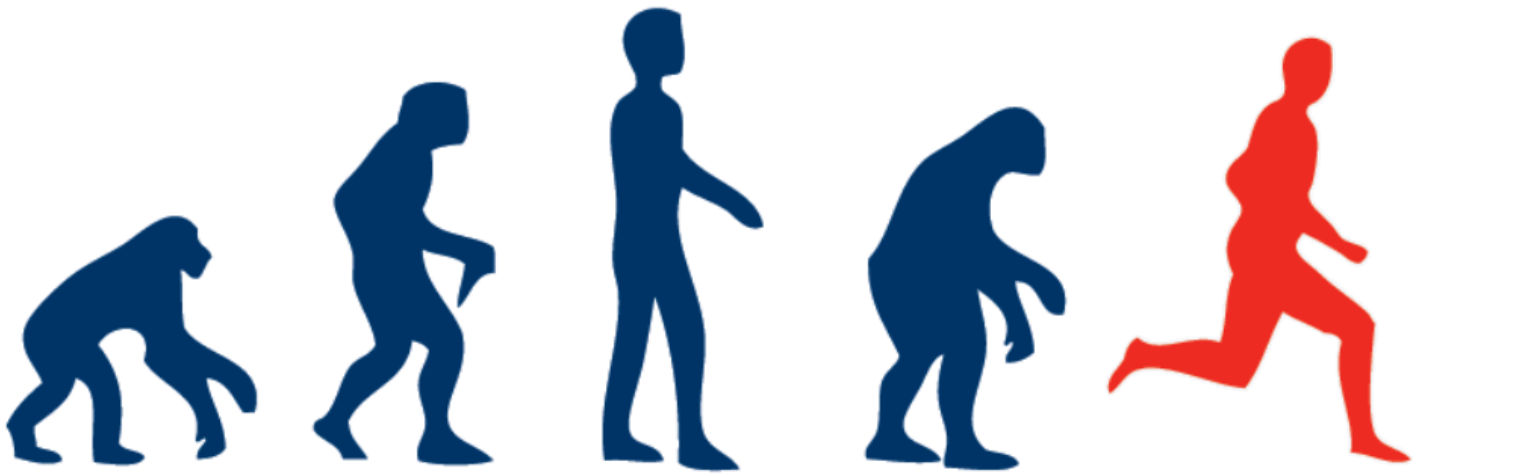
the POWER of JAVA

Hot Hot Ajax

- Google Search Results
  - Ajax: 13 million → 93 million in six months
  - Now over 176 millions results

- Ajax >>

User Interface Evolution



[Source: Forrester Resource]

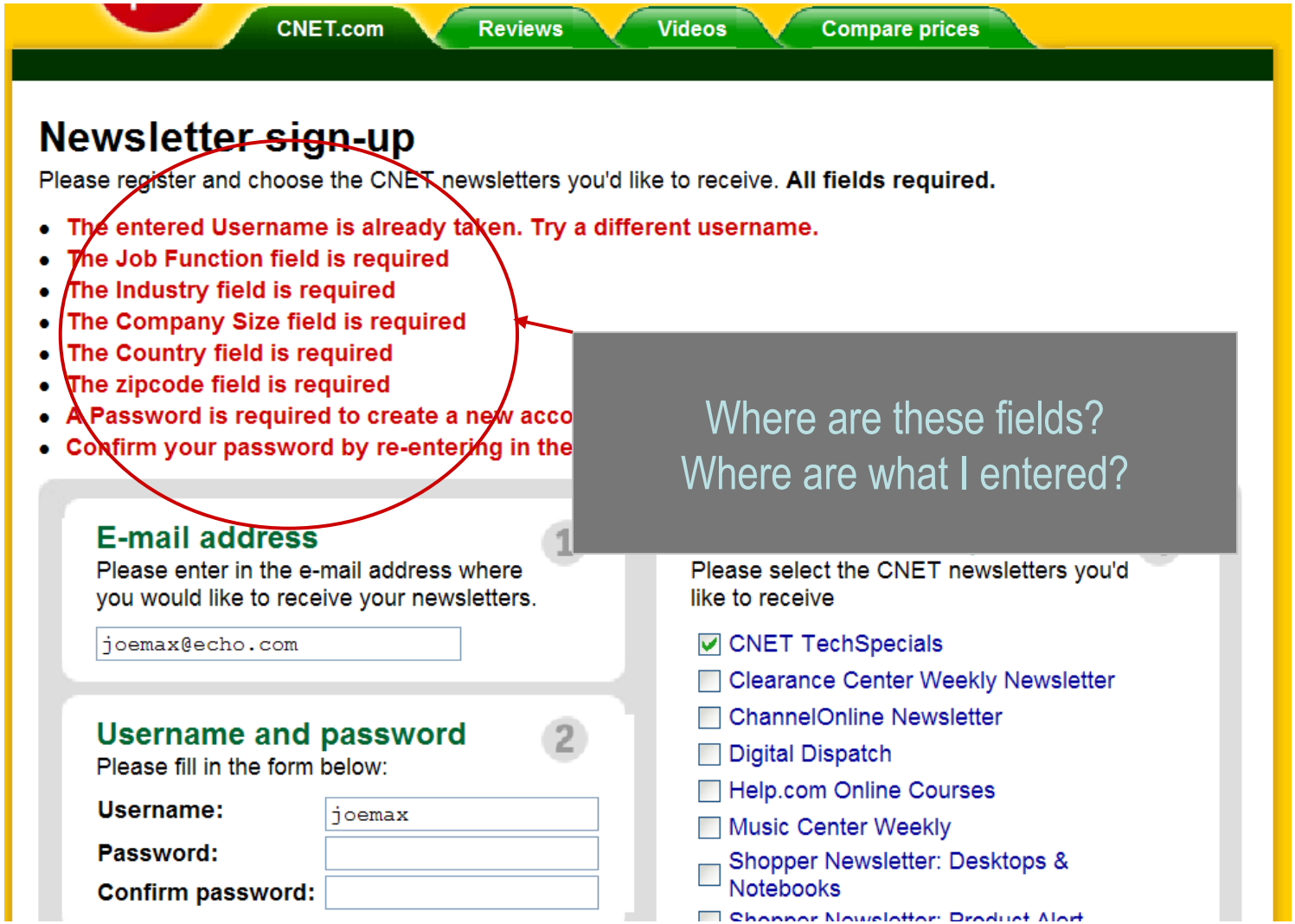
Web the Only Platform for Applications

- Ubiquitous Reach
  - Any device, any time and anywhere
  - Globalization and mobility
  - Involvement and collaboration
  - Value = N * Connectivity2
- Low Total Cost of Ownership
  - Centralized Management
  - No client installation and upgrade
  - Single version

Web applications are great in every measurement,

except no user wants to use it.

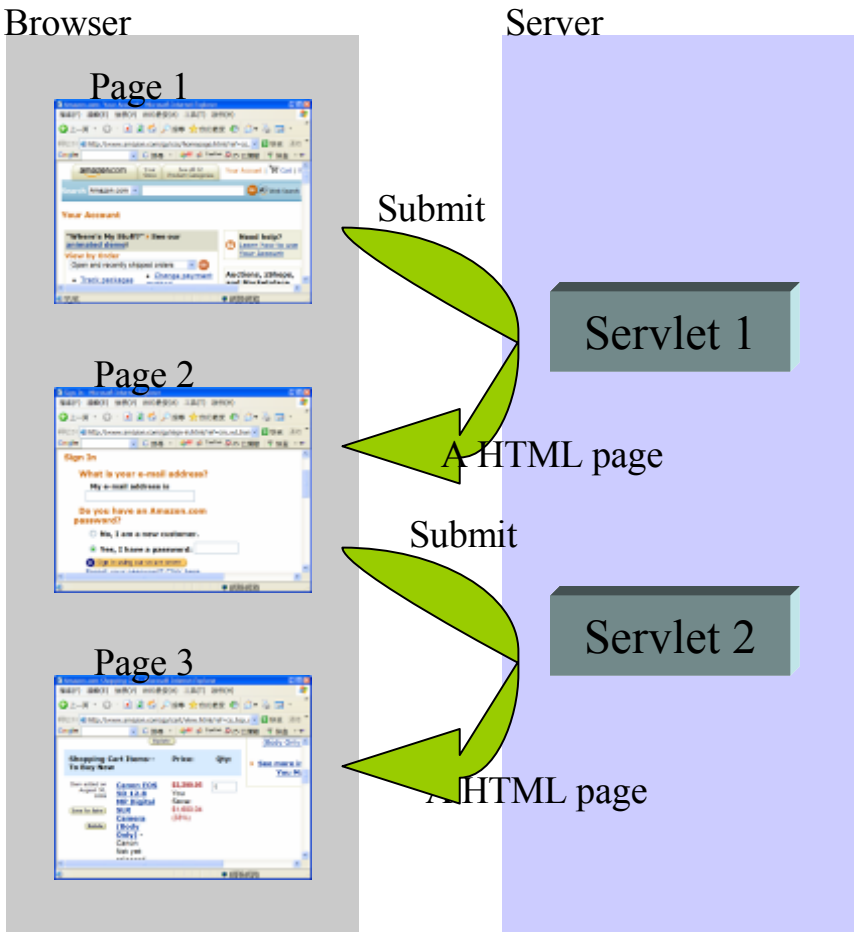
User Frustration



Challenges of Web Applications

- Inability to visually represent the complexities in today's applications.
  - Caused by page-based, submit-and-refresh model
  - Comparing to desktop apps, Web apps look like terminal apps in 1960s
- Consequence
  - User frustration
  - High development costs and risks

Page-based Model of Web Apps



- >Page-based
  - >Submit-and-refresh
  - >Stateless
- >Pros
  - >Ubiquitous reach
  - >Low TCO
- >Cons
  - >User frustration
  - >High development costs and risks
- >Frameworks mostly MVC
  - >Struts, WebWorks, JSF...

Ajax: A New Approach to Web Apps

Ajax = Asynchronous JavaScript + XML

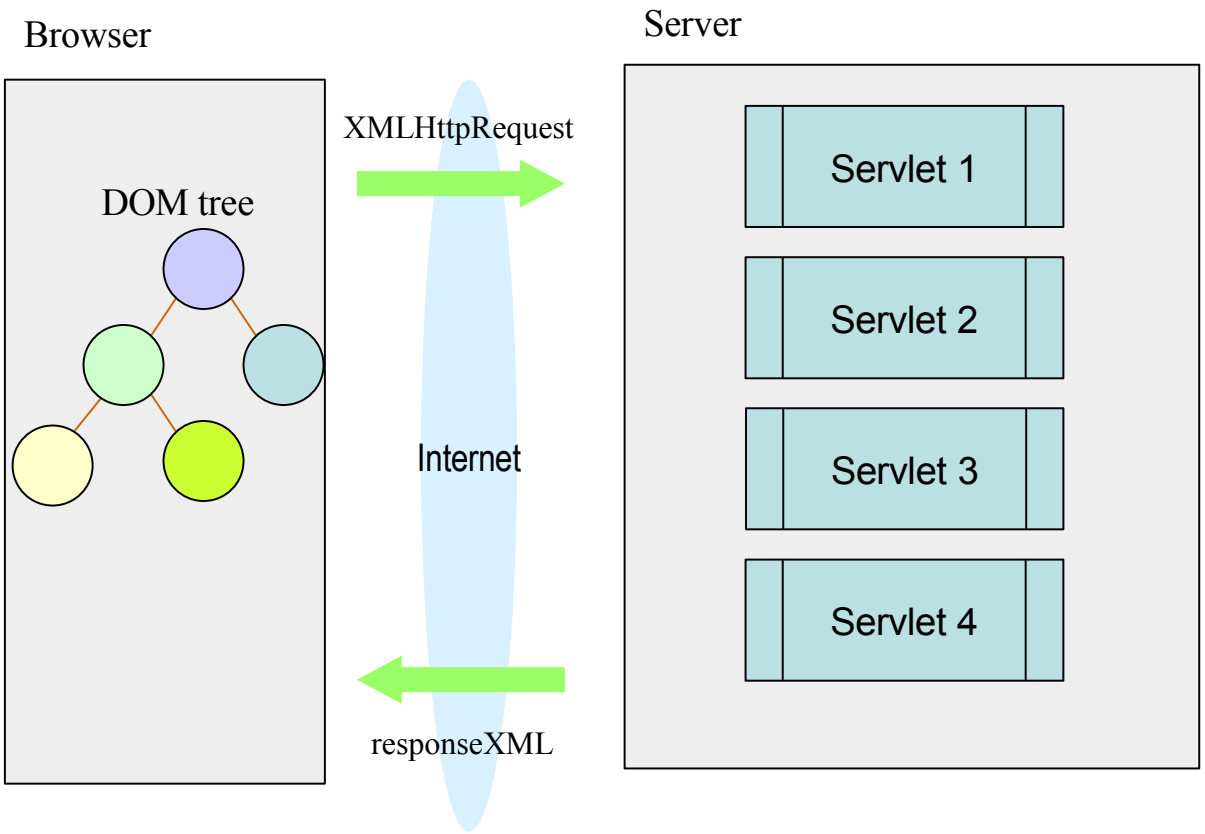
Ajax isn't a technology. It's really several technologies, each flourishing in its own right, coming together in powerful new ways. Ajax incorporates:

- Standards-based presentation using XHTML and CSS;
- Dynamic display and interaction using the Document Object Model.
- Data interchange and manipulation using XML and XSLT.
- JavaScript binding everything together.
- Asynchronous data retrieval using XMLHttpRequest.

Ajax: Just One API

```
var req = new XMLHttpRequest();
req.open("POST",
  "http://killerapp.com/do", true);
req.send("great=true&rich=true");
```

Ajax: Behind-the-Scene Communication

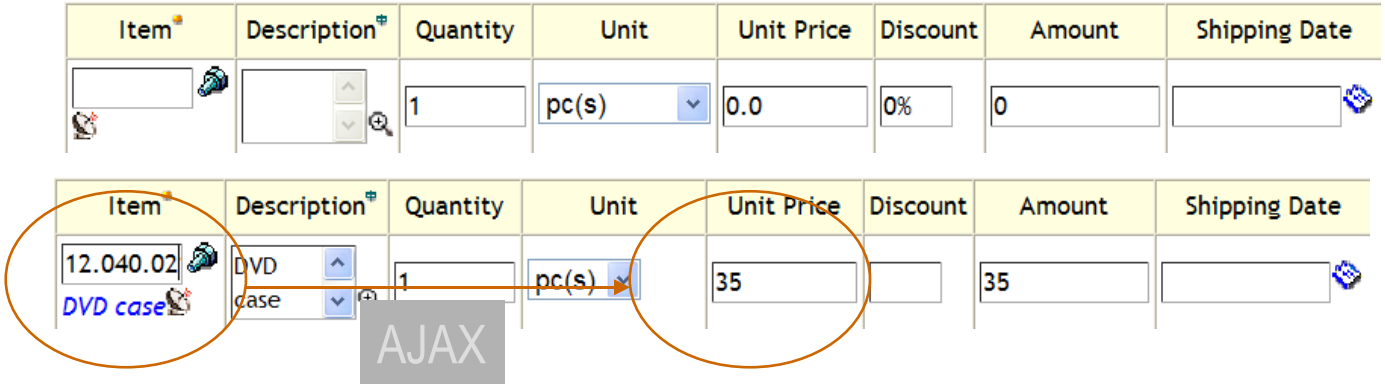


Challenges of Ajax Applications

- AJAX adds more complexities and skill prerequisites to the already costly development of Web applications.
  - Incompatible and sophisticated JavaScript API to manipulate DOM and to communicate
  - The need to replicate a subset of the application data model and business logic in the browser
  - Synchronization between the rich UI at the client and the MVC framework at the server

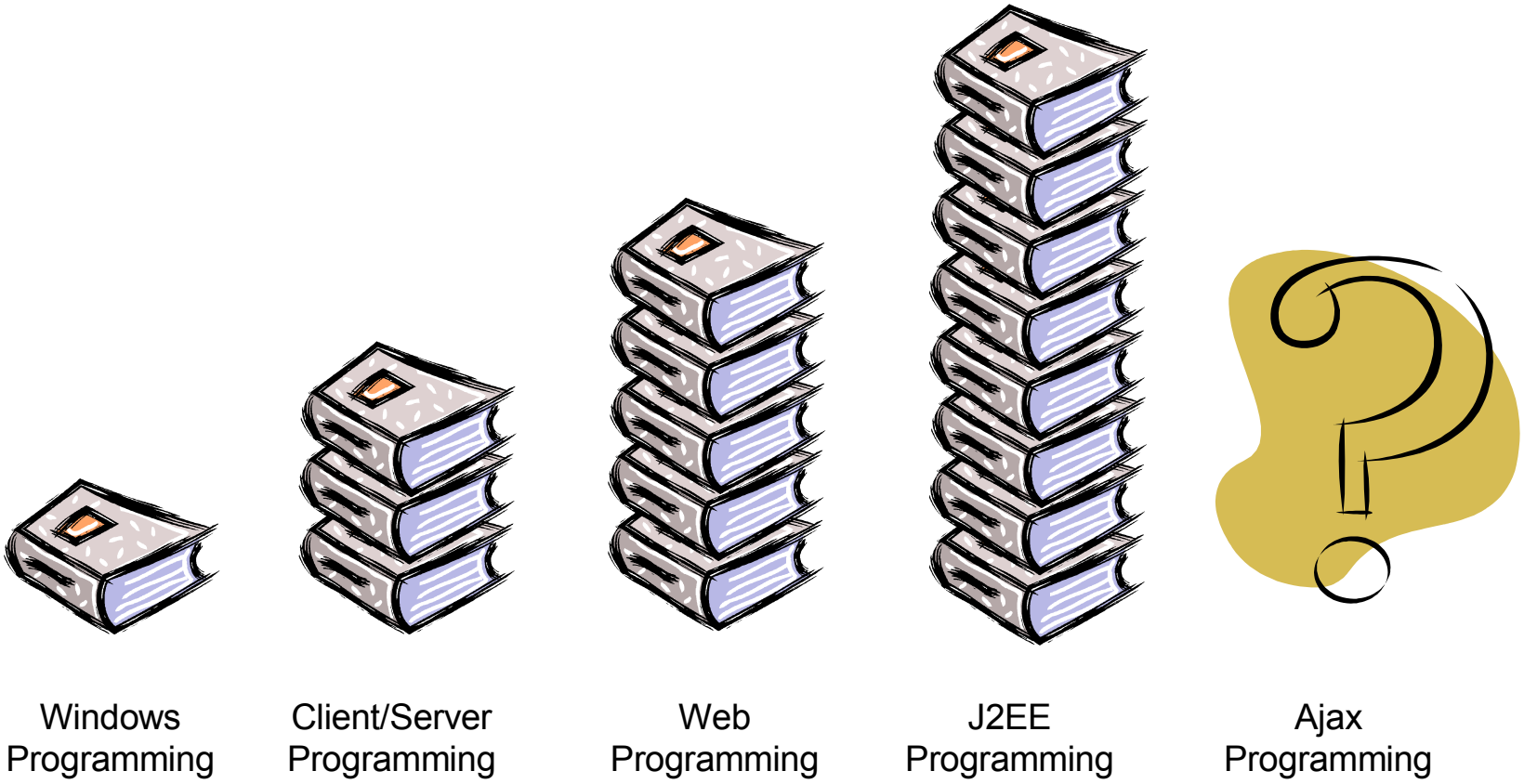
Synchronization Challenge

>When you type the item and click submit, what is the unit price that the server received?



35 or 0.0
You never know!!
Depending on AJAX was responded or not

Programming Skill *Reload*



Windows Programming

Client/Server Programming

Web Programming

J2EE Programming

Ajax Programming

- Ajax: Promise and Challenge
- **ZK: Simply Rich**
- Brand New World

Over 130 Ajax Frameworks

	ZK	DOJO	Backbase	GWT	Echo2
Applications running at the client		V	V	V	
Applications running at the server	V				V
Programming in Java	V standard-based			V proprietary	V standard-based
Programming in JavaScript		V proprietary			
Design in Markup Language	V standard-based		V proprietary		
Open Source	V	V			V
Proprietary			V	V	
Server-side Modal Dialog	V				V
Script in Java	V				

What Is ZK?

>ZK is an open-source Ajax Web framework that enables rich UI for Web applications with no JavaScript and little programming.

The #1 active project among SourceForge 125,971 projects.

- 1,506 referring sources
- 176 countries
- 18,401 cities
- 119 languages
- 9,838 domains

Why ZK?

- 1993: Beyond Accounting
  - Windows-based
  - Client/Server
  - C++
  - 36 man-months (including a zApp-like framework)
- 2000: RunEC Business Suite
  - Web-based (with some Ajax)
  - N-tier
  - Java
  - 180 man-months (including a Strut+Spring+Hibernate-like framework)

Why a Web App Costs 3~5 Times?

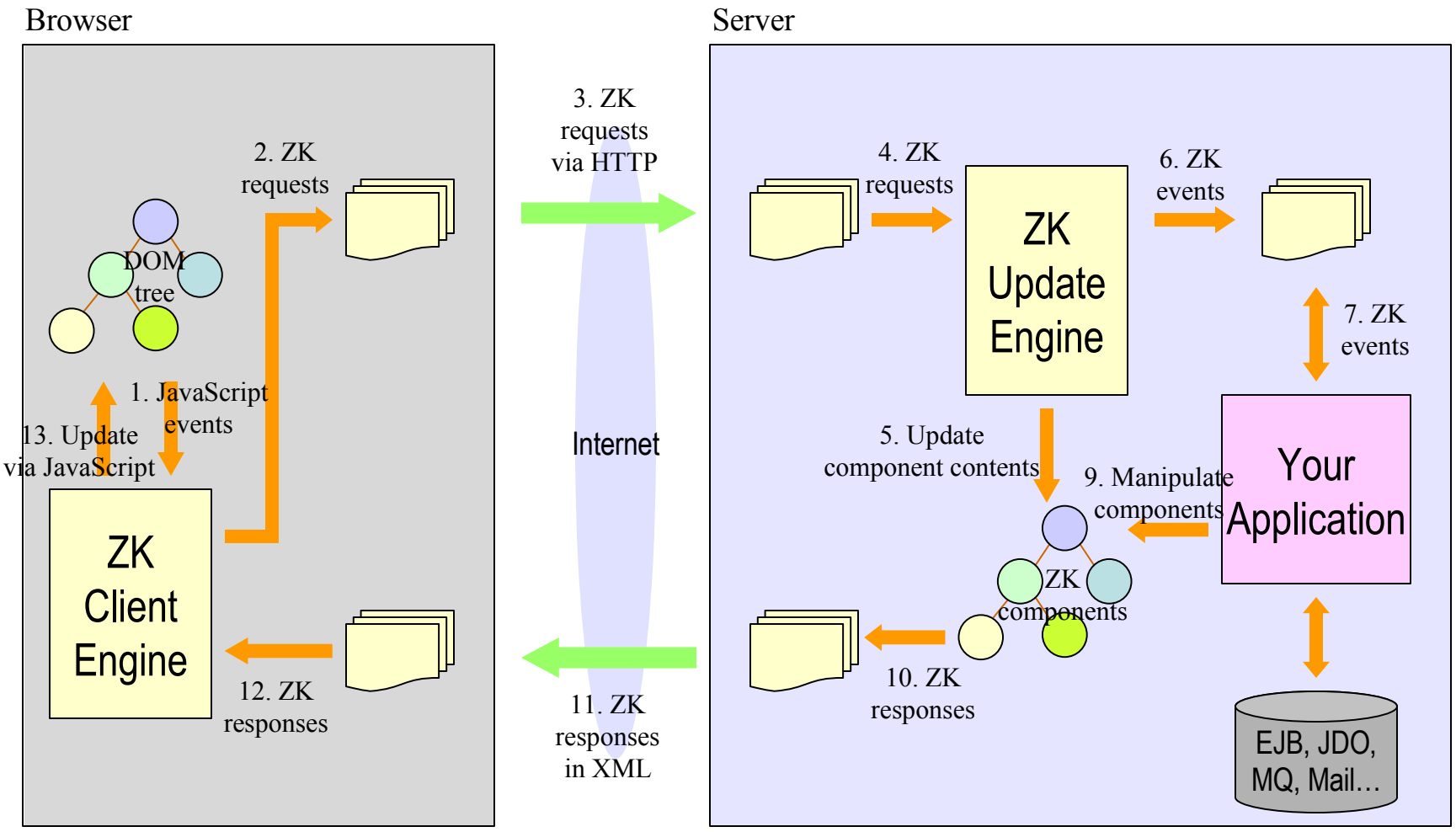
>Intrinsic or the programming model simply wrong?

>Worse of all, no user wants to use it!

>In early 2005, after applying some inventions to a multi-million-dollar project, we believe we got the anwser:

ZK - Simple and Rich

ZK Architecture



What Make ZK Simple and Rich?

>With event-driven and server-centric model, ZK brings back the intuitive programming model to Web developers.

>With feature-rich standard-compliant components, ZK enriches Web applications with off-the-shelf building blocks.

>With a markup language, ZK makes designing UI as simple as authoring HTML.

Say Hello in ZK

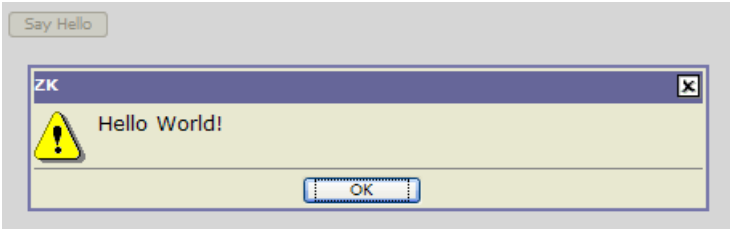
>Creates a file, say, hello.zul under your Web application, e.g., /usr/tomcat/webapps/myapp.

```
<window border="normal" width="150px">
Hello World!
</window>
```

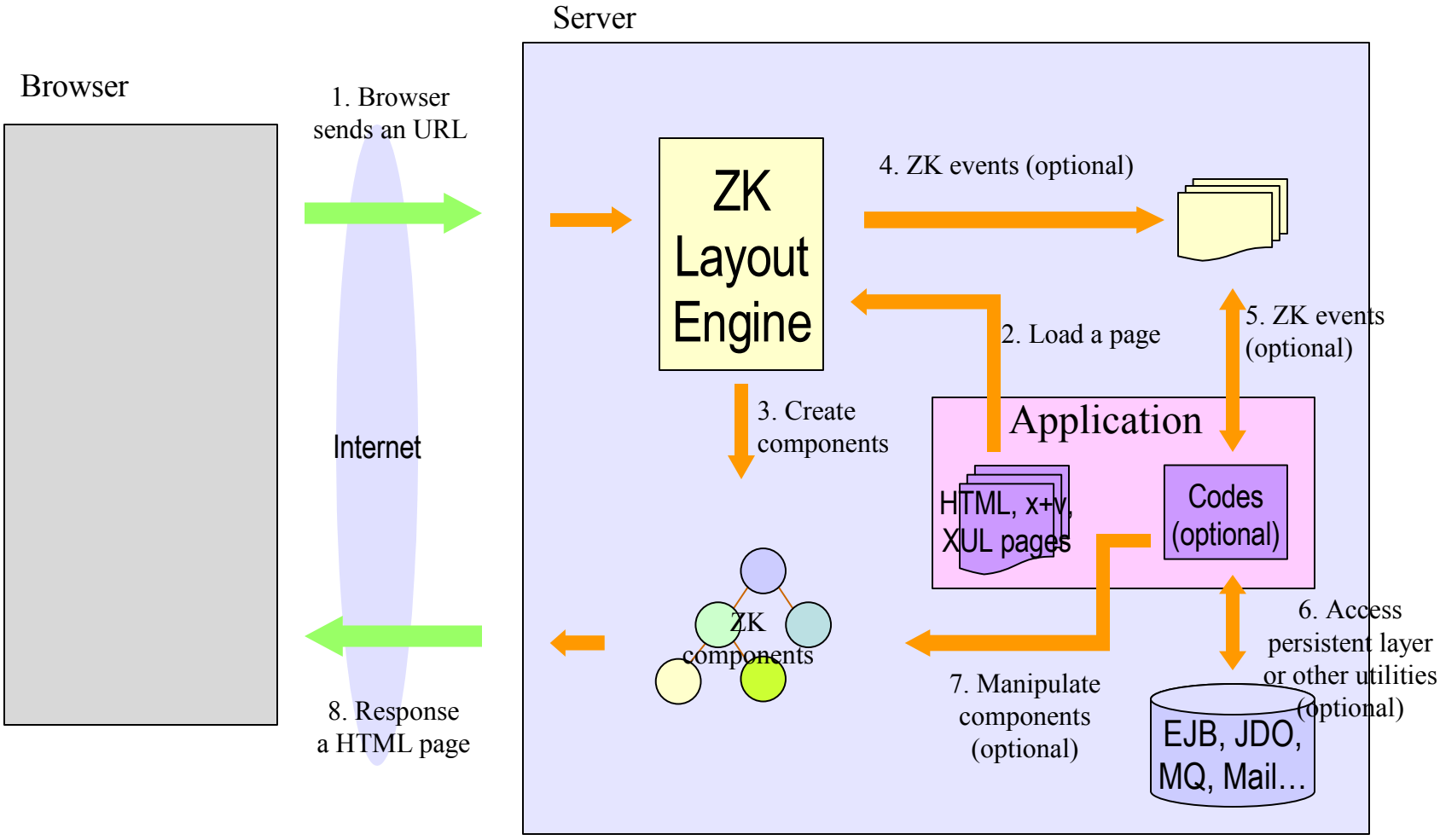
>Then, browse to http://localhost/myapp/hello.zul

Say Hello in ZK on Demand

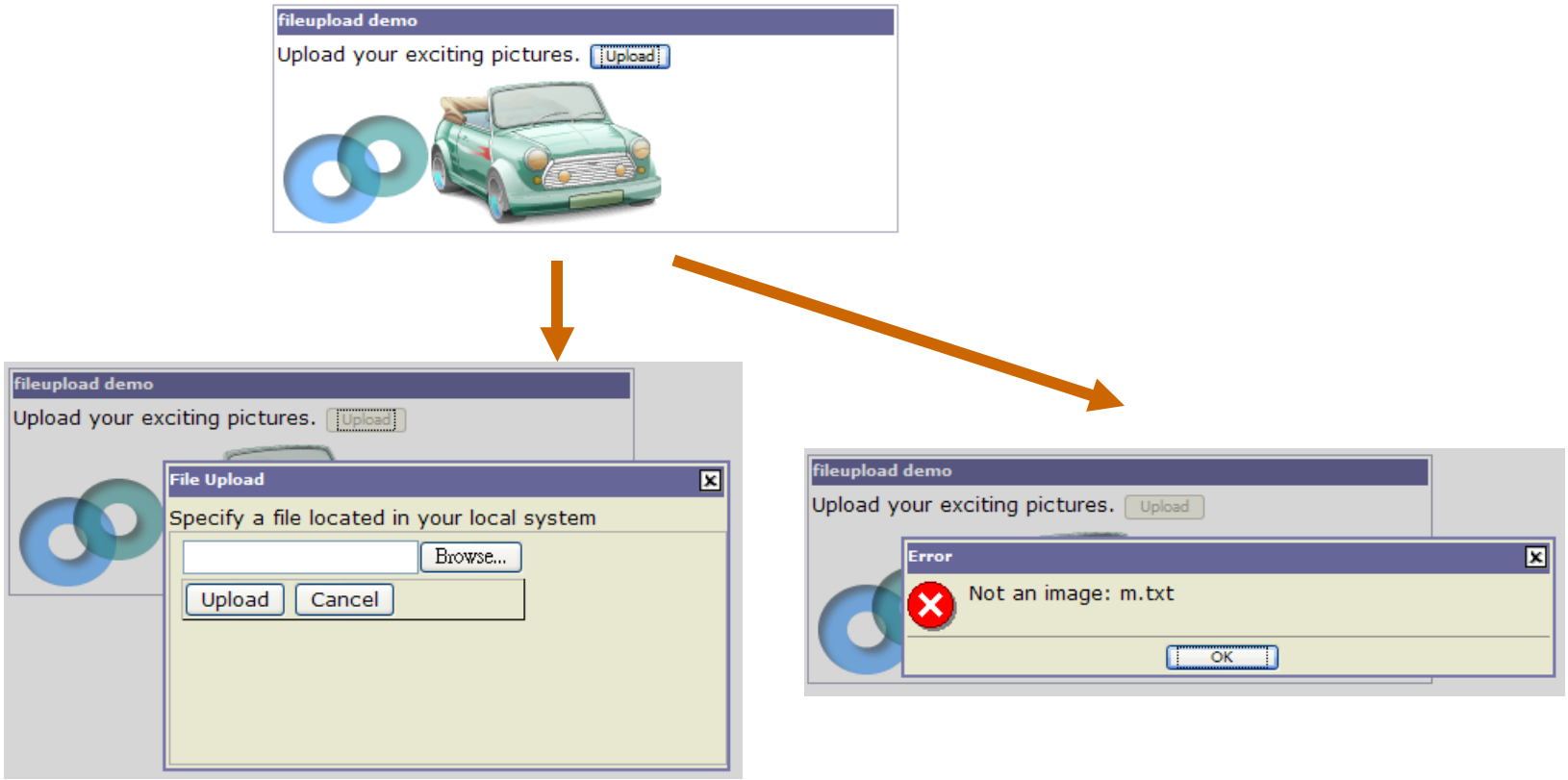
```
<button label="Say Hello"
  onClick="alert(&quot;Hello World!&quot;)"/>
```



ZK Layout Engine



A Rich Example: Fileupload



Fileupload: UI Design

```
<window id="imgwnd" title="fileupload demo" border="normal">
   Upload your exciting pictures. <button label="Upload“/>
   <separator/>
</window>
```

Fileupload: Java Codes

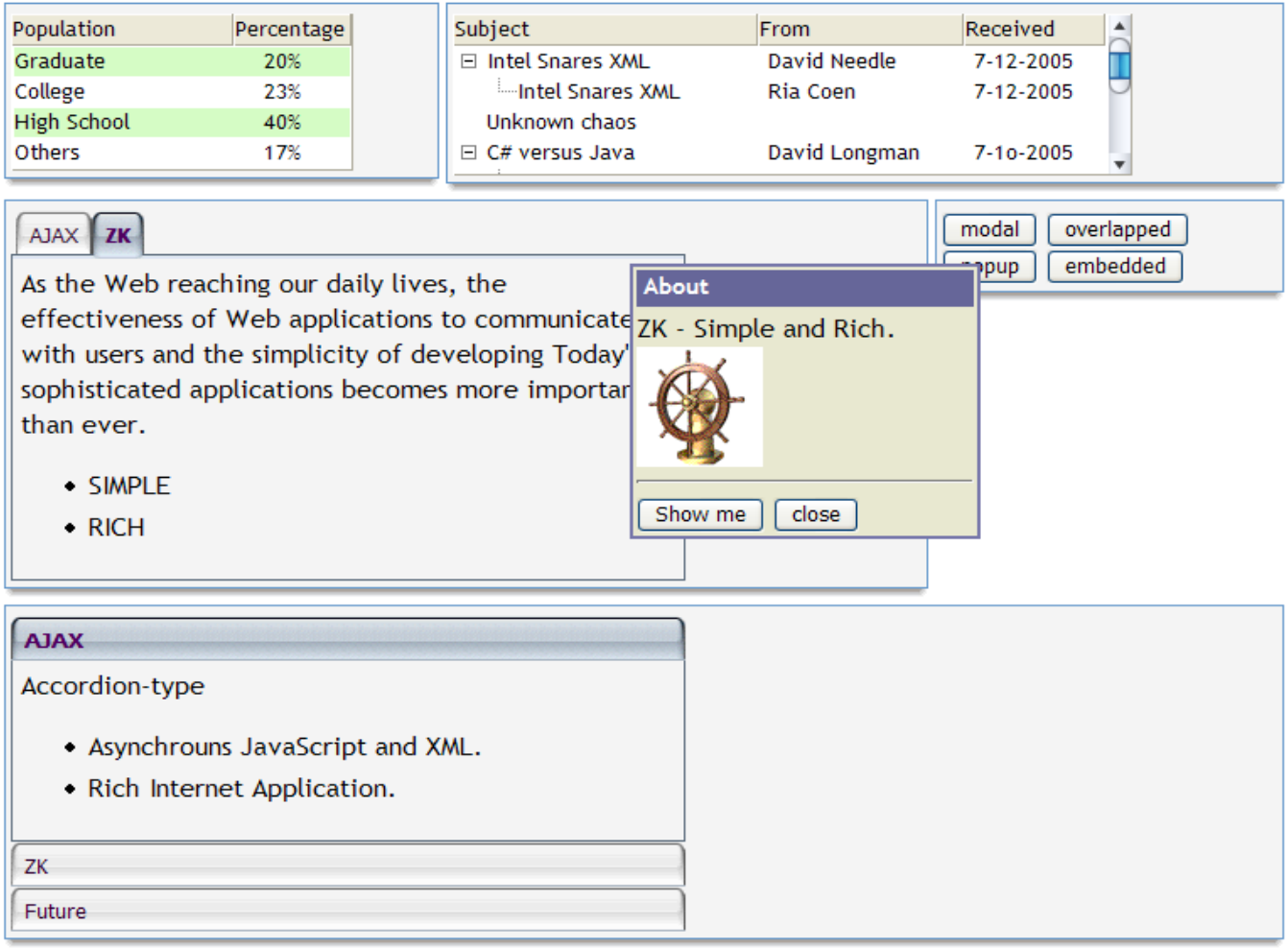
```
<window id="imgwnd" title="fileupload demo" border="normal">
    Upload your exciting pictures. <button label="Upload" onClick="upload()"/>
    <separator/>
    <zscript>
    void upload() {
        Object media = Fileupload.get();
        if (media instanceof com.potix.image.Image) {
            Image image = new Image();
            image.setContent(media);
            image.setParent(imgwnd);
        } else if (media != null) {
            Messagebox.show("Not an image: "+media, "Error",
                Messagebox.OK, Messagebox.ERROR);
        }
    }
    <zscript>
</window>
```

Fileupload: MVC

```
<window id="imgwnd" title="fileupload demo" border="normal" use="upload.Uploader">
      Upload your exciting pictures. <button label="Upload" onClick="imgwnd.upload()"/>
     <separator/>
</window>
```

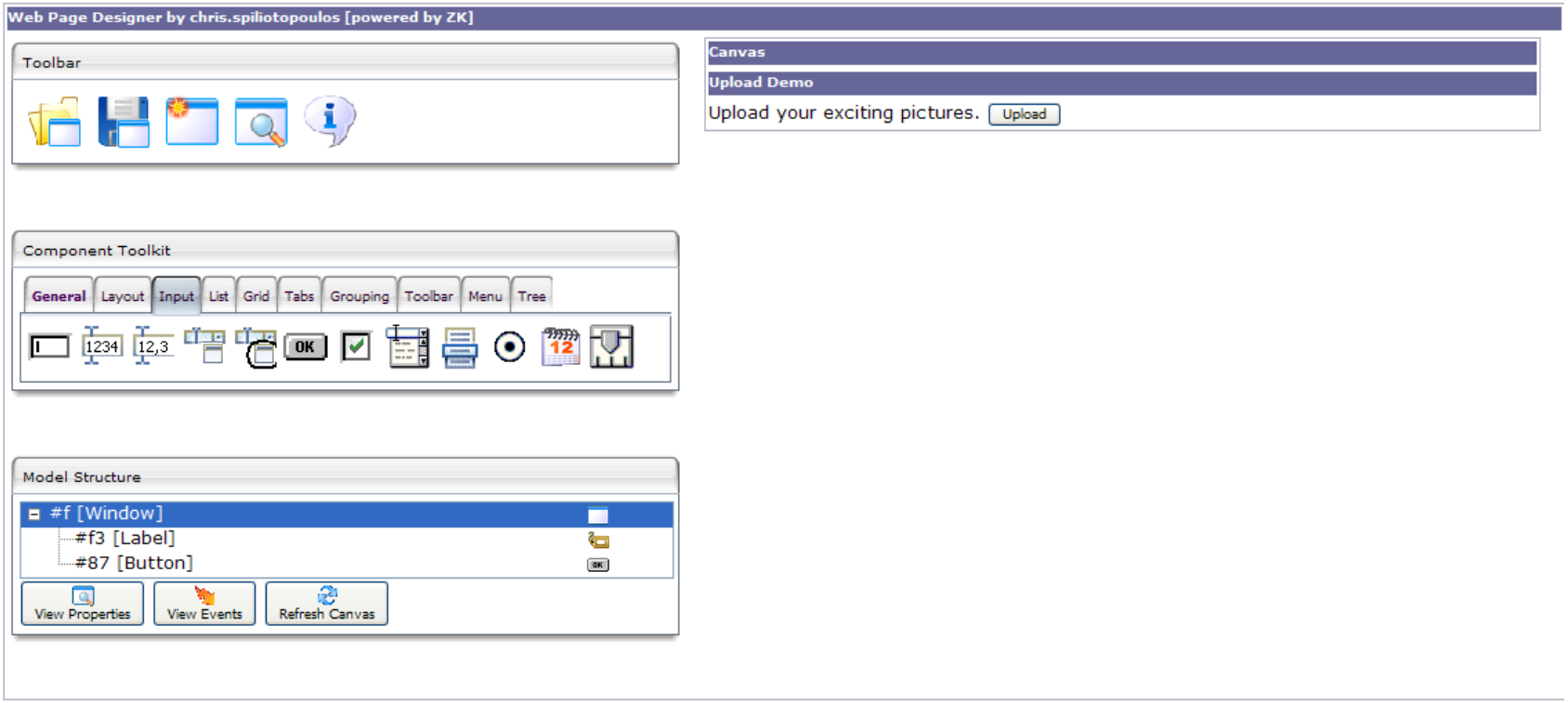
```
package upload;
public class Uploader extends com.potix.zul.html.Window {
     public void upload() {
          Object media = Fileupload.get();
          if (media instanceof com.potix.image.Image) {
               Image image = new Image();
               image.setContent(media);
               image.setParent(this);
          } else if (media != null) {
               com.potix.zul.html.Messagebox.show("Not an image: "+media,
                    "Error", Messagebox.OK, Messagebox.ERROR);
          }
     }
}
```

Sample Components



An UI Designer

contrib by Chris Spiliotopoulos, Athens, Greece



Event Driven Model

- The same event driven model as desktops.
  - "Don't call us. We'll call you."
- Like Windows
  - Event listeners are invoked sequentially.
- Unlike Windows
  - You can suspend and resume event listener anytime.
  - You can add and remove event listeners dynamically.

Static Event Listener

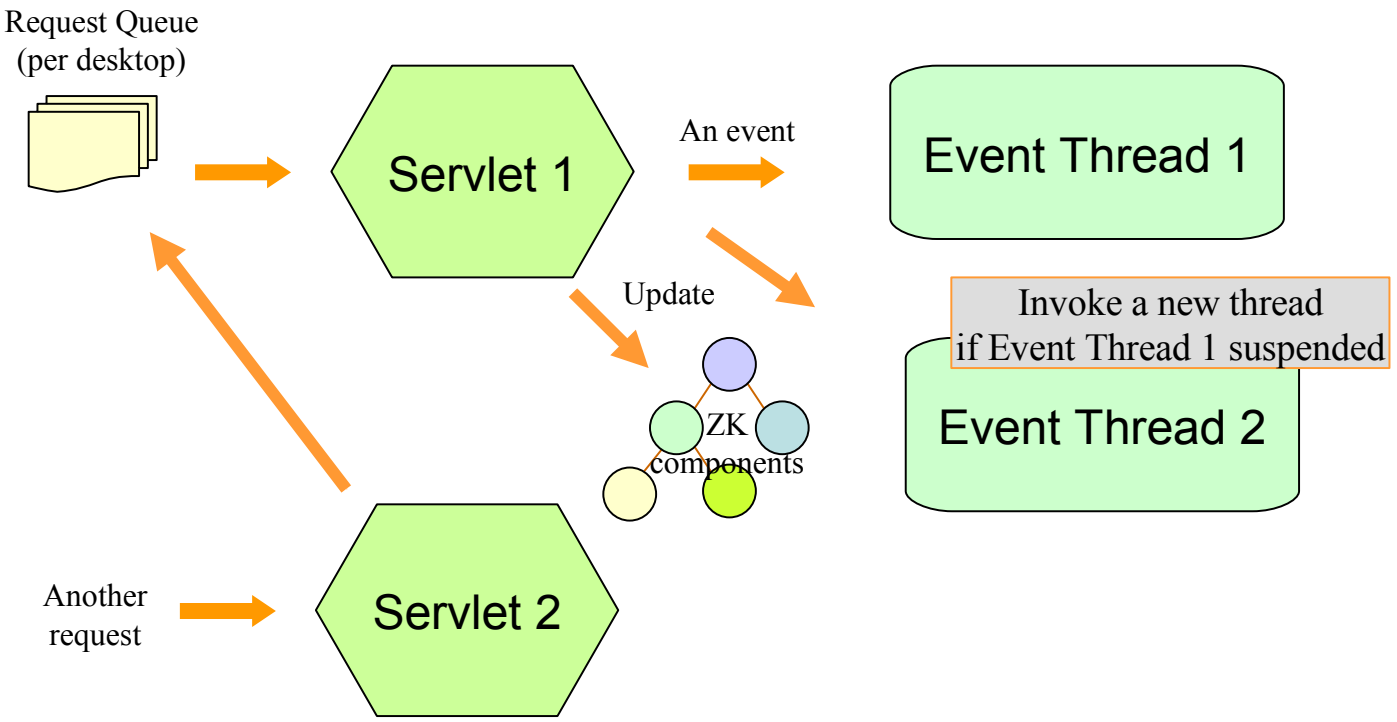
```
public class MyWindow extends com.potix.zul.html.Window {
	public void onOK() {
		//called when user press ENTER
	}
	public void onCancel() {
		//called when user press ESC
	}
}
```

Dynamic Event Listener

```
class MyListener implements com.potix.zk.ui.event.EventListener {
  public void onEvent(Event event) throws UiException {
    ...//processing the event
  }
  public boolean isAsap() {
    return true; //whether to send back event As Soon As Possible
  }
}
```

```
public void init(Window wnd) {
  wnd.addEventListener(new MyListener()); //register an event listener
 …
}
```

Event Threading



Use ZK with JDBC

```
public class MyWindow extends com.potix.zul.html.Window {
  public void onOK() {
    DataSource ds = (DataSource)new InitialContext()
    .lookup("java:comp/env/jdbc/MyDB"); //depend on your configuraion
    Connection conn = null;
    Statement stmt = null;
    try {
      conn = ds.getConnection();
      stmt = conn.prepareStatement("INSERT INTO user values(?, ?)");
      stmt.set(1, name.value);
      stmt.set(2, email.value);
      stmt.executeUpdate();
      stmt.close(); stmt = null;
    } finally { //cleanup
      if (stmt != null) stmt.close();
      if (conn != null) conn.close();
    }
  }
}
```

As a server-centric solution, ZK allows you to use whatever middleware/biz logic you prefer, such as, Hibernate, SAP R/3…

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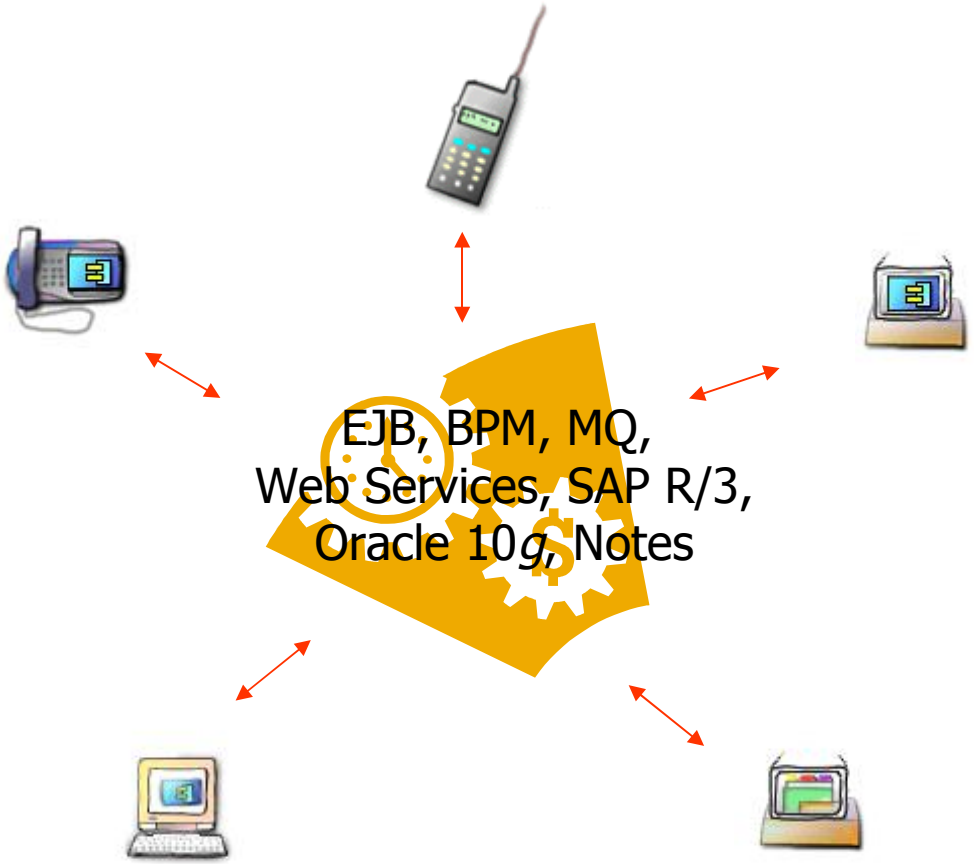
The Internet Is the Application



- Any time
- Any where
- Any device

- Rich
- Responsive
- Low cost

OSS: Let the World Hear You

- Integrate FCKeditor into ZK: 1 day
- Integrate DOJO into ZK: 1 day
- Integrate jFreeChart into ZK: 2 day
- Visual Designer for ZK: 3 weeks

Leverage Existent Open Source Project, and Put Your Name on It!

Sun microsystems

Java 2006

Thank you!

ZK

- Ajax but no JavaScript
- The #1 active project in SourceForge.net