Spring Web Flow 1.0 A Next-Generation Web Application Controller Framework

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Topics in This Session

Web Flow Quick Start

Key Benefits

What's Next

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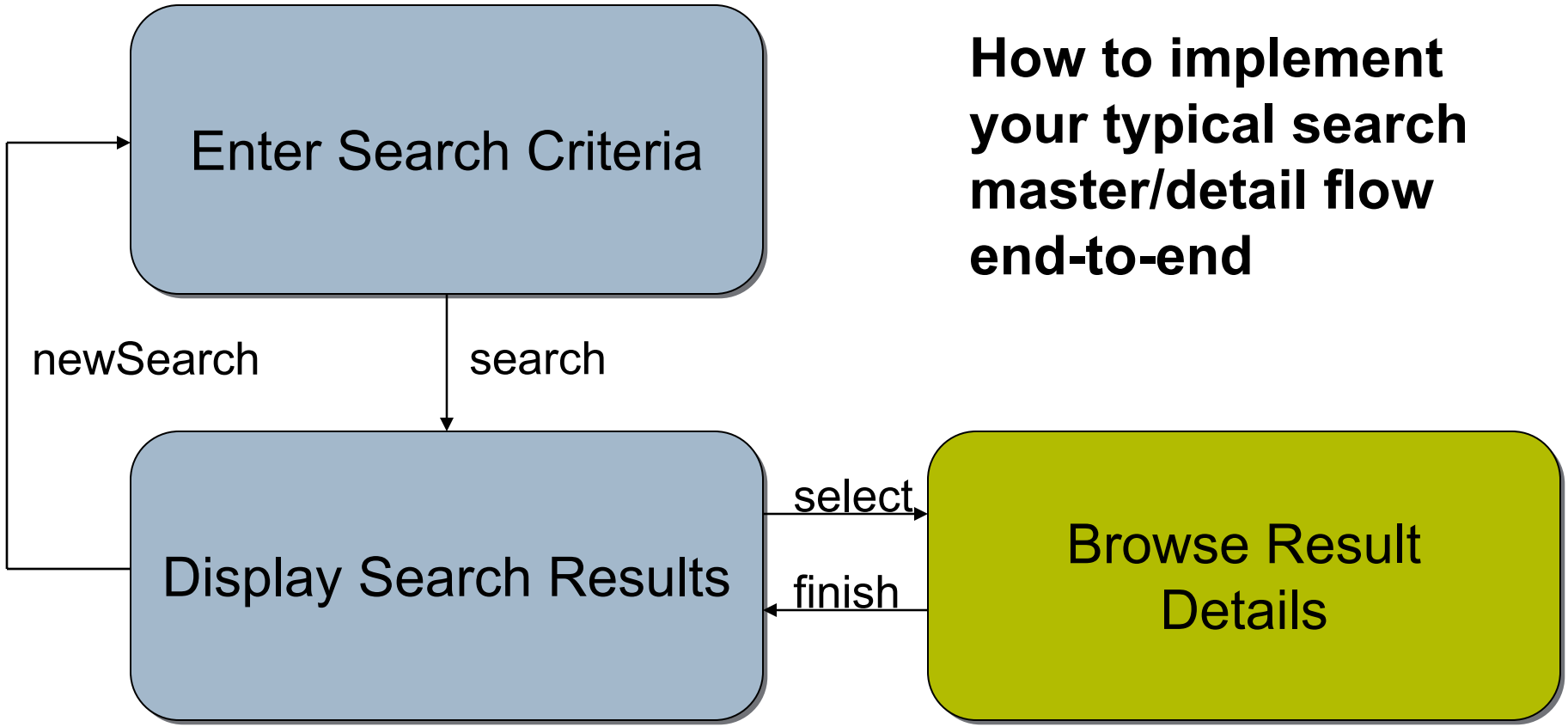
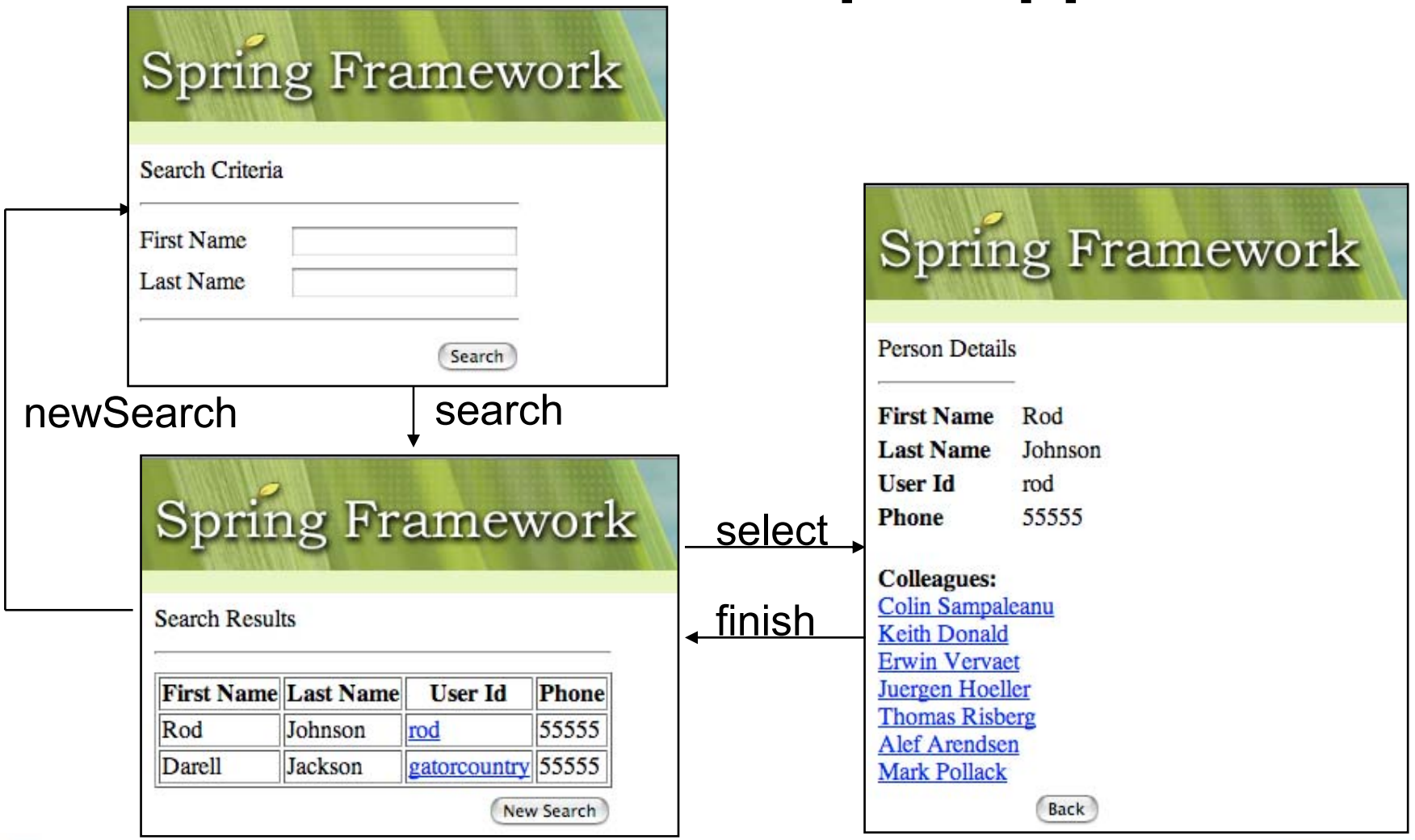
Web Flow Quick Start



How to implement your typical search master/detail flow end-to-end

The Contacts Sample Application



Quick Start Assumptions

- The application logic to perform a contact search is already written
- The JavaServerFaces (JSF™) views are already written
- New web application project shell created

Quick Start Steps

- Bootstrap the Contacts Application
- Configure the Web Flow Engine
- Implement the Search Flow

Quick Start Steps

- **Bootstrap the Contacts Application**
- Configure the Web Flow Engine
- Implement the Search Flow

Bootstrap the Contacts Application

- Inside <webapp/> within web.xml

```
<context-param>
   <param-name>contextConfigLocation</param-name>
   <param-value>
      /WEB-INF/contacts-webapp-config.xml
   </param-value>
</context-param>

<listener>
   <listener-class>
      org.springframework.web.context.ContextLoaderListener
   </listener-class>
</listener>
```

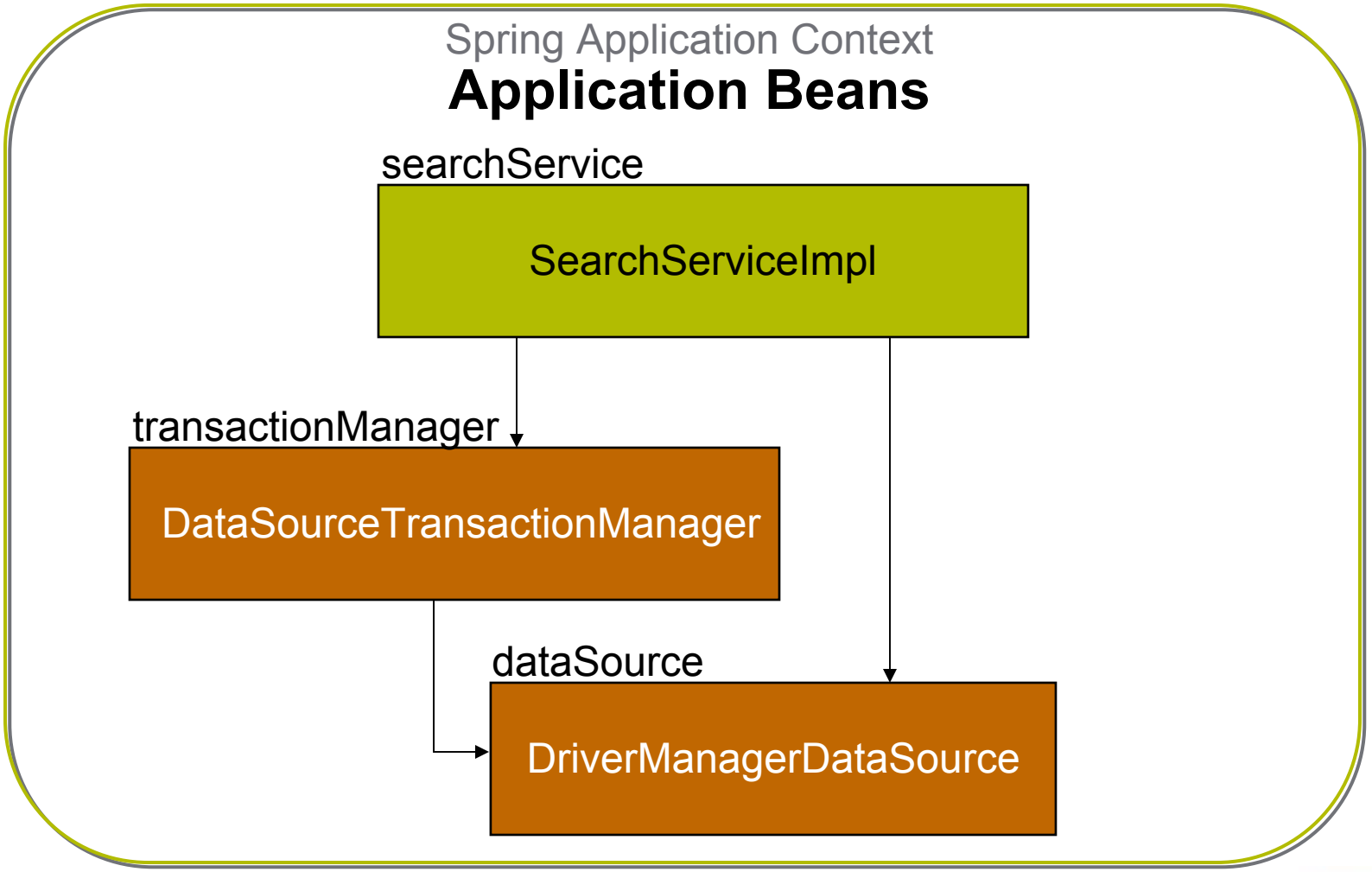
Where application configuration resides

Inside webapp-config.xml

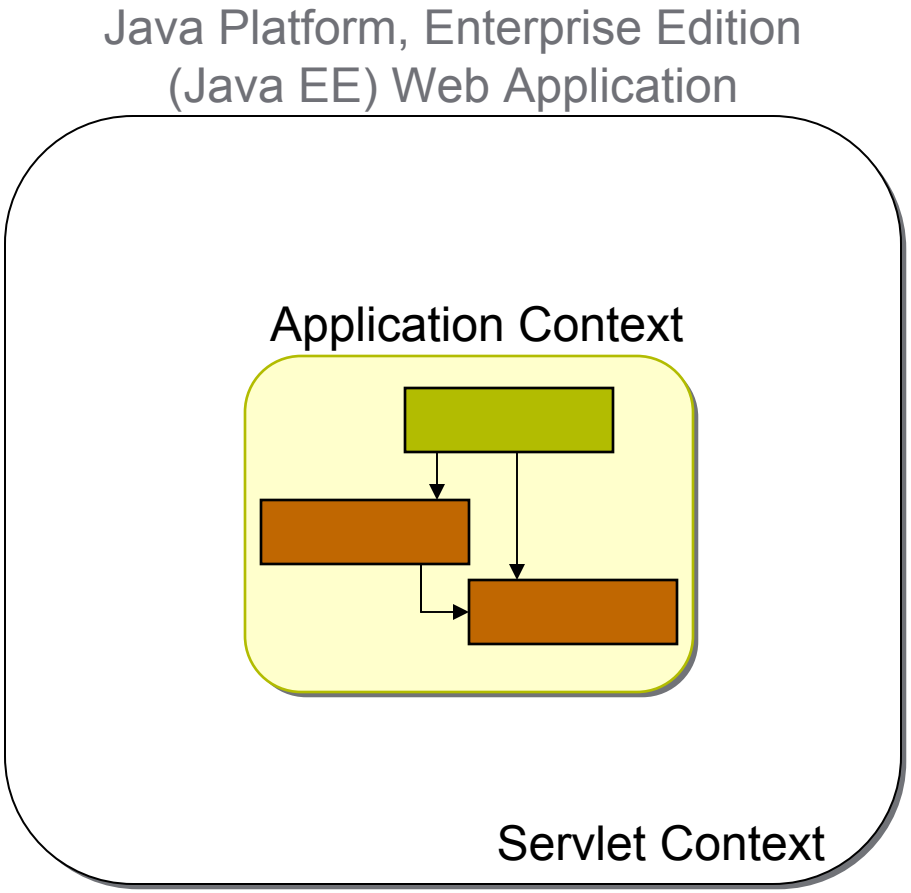
```
<bean id="searchService" class="phonebook.impl.JdbcSearchService">
    <constructor-arg ref="dataSource"/>
</bean>

<bean id="dataSource" class="phonebook.TestDataSourceFactory"/>

<bean id="transactionManager"
class="org.springframework.jdbc.datasource.DataSourceTransactionManager">
    <property name="dataSource" ref="dataSource"/>
</bean>

<tx:annotation-driven transactionManager="transactionManger/>
```

```
public class JdbcSearchService implements SearchService {
    …
    @Transactional
    public List<Contact> searchDirectory(SearchCriteria c) {
}
```

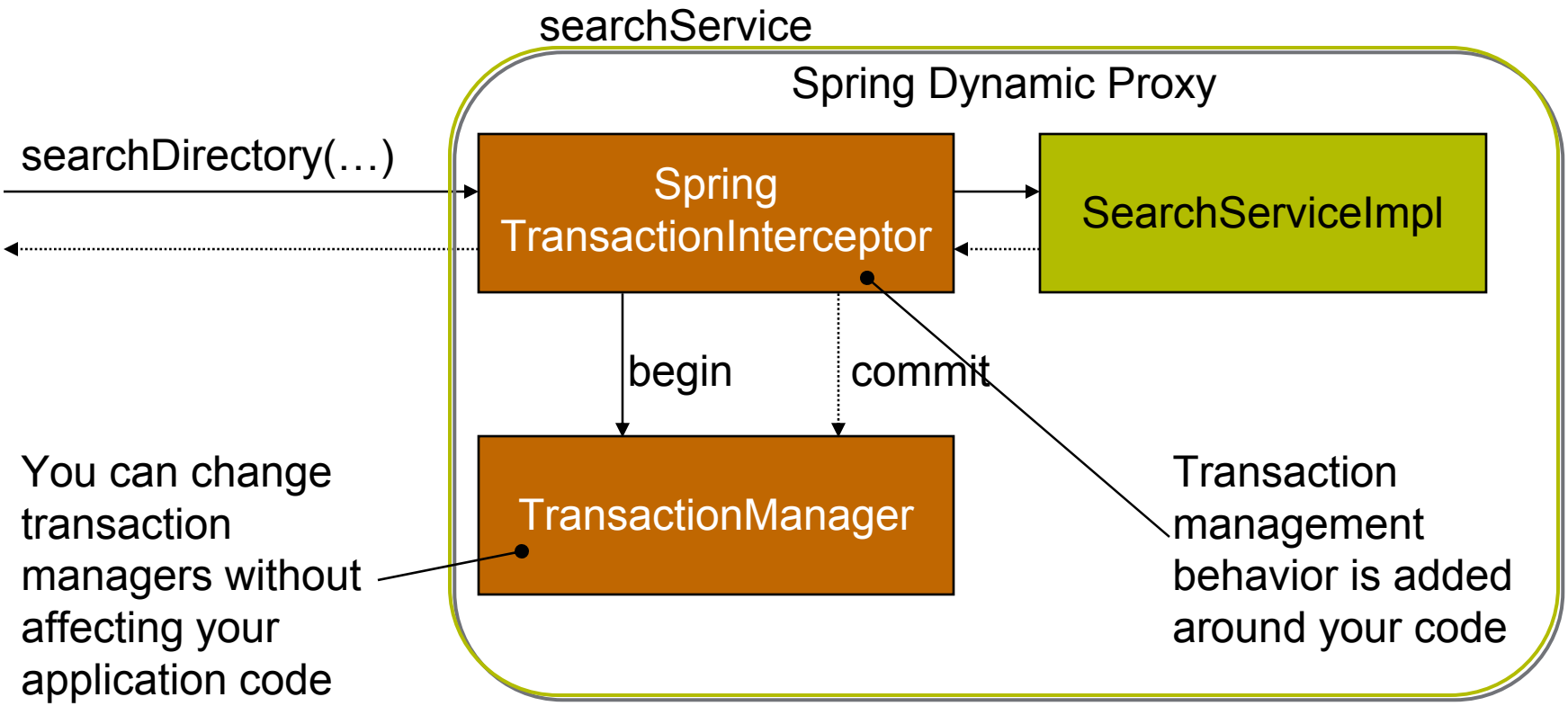
Web Application Context Initialization



After Web Application Initialization



If You Invoked a Search…



Quick Start Steps

- Bootstrap the Contacts Application
- **Configure the Web Flow Engine**
- Implement the Search Flow

Inside contacts-webflow-config.xml

```
<flow:executor id="flowExecutor" registry-ref="flowDefinitionRegistry"/>

<flow:registry id="flowDefinitionRegistry">
    <flow:location path="/WEB-INF/flows/*-flow.xml"/>
</flow:registry>
```

Executes flows in registry on behalf of clients

Contains flow definitions eligible for execution

Inside faces-config.xml

```
<faces-config>
   <application>
      <navigation-handler>
         org.springframework.webflow.executor.jsf.FlowNavigationHandler
      </navigation-handler>
      <variable-resolver>
         org.springframework.webflow.executor.jsf.DelegatingFlowVariableResolver
      </variable-resolver>
   </application>
   <lifecycle>
      <phase-listener>
         org.springframework.webflow.executor.jsf.FlowPhaseListener
      </phase-listener>
   </lifecycle>
</faces-config>
```

Drives flow navigation

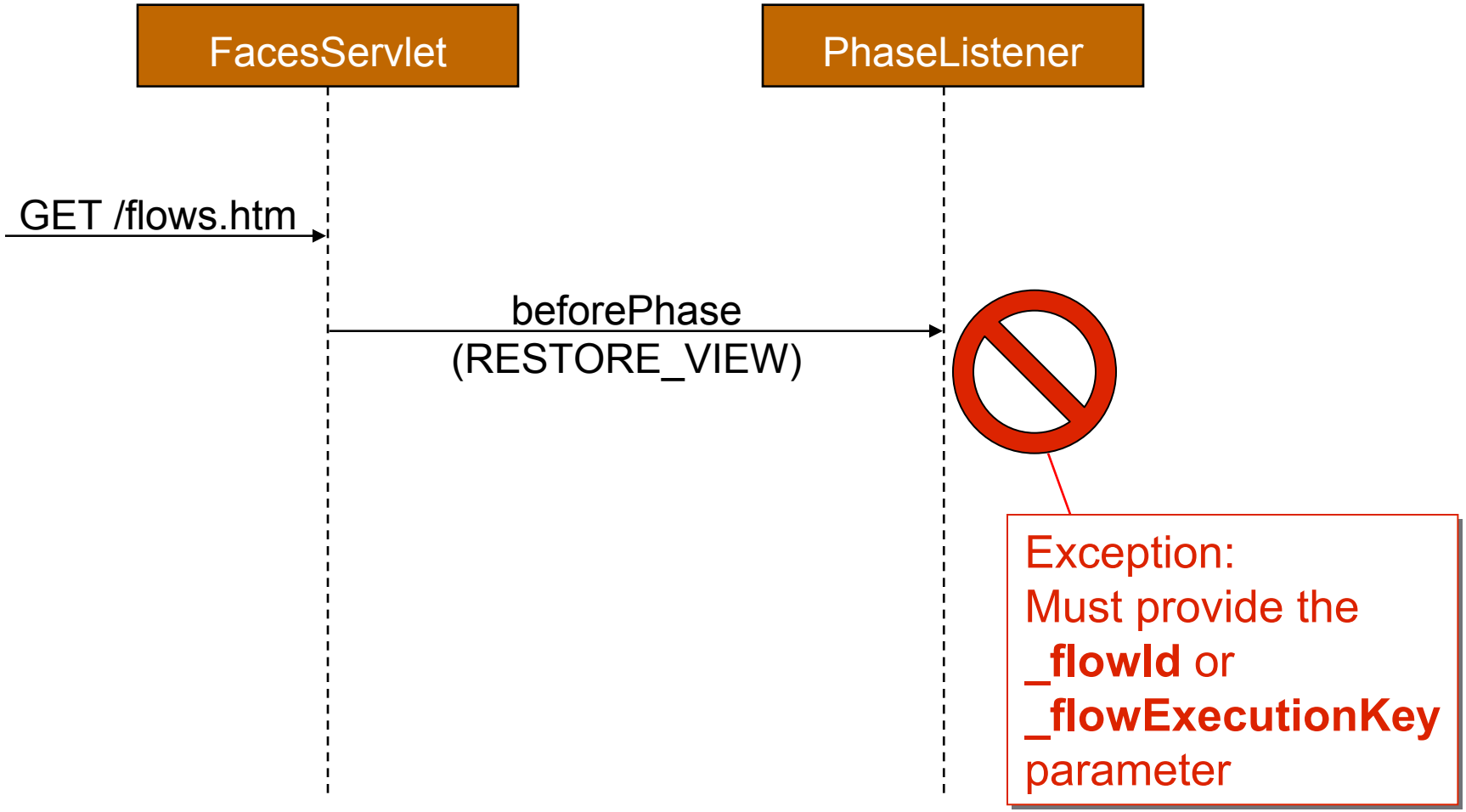
Resolves flow variables

Manages flow lifecycle

Check Point

- Bootstrap the Contacts Application ➨
- Configure the Web Flow Engine ➨
- Implement the Search Flow

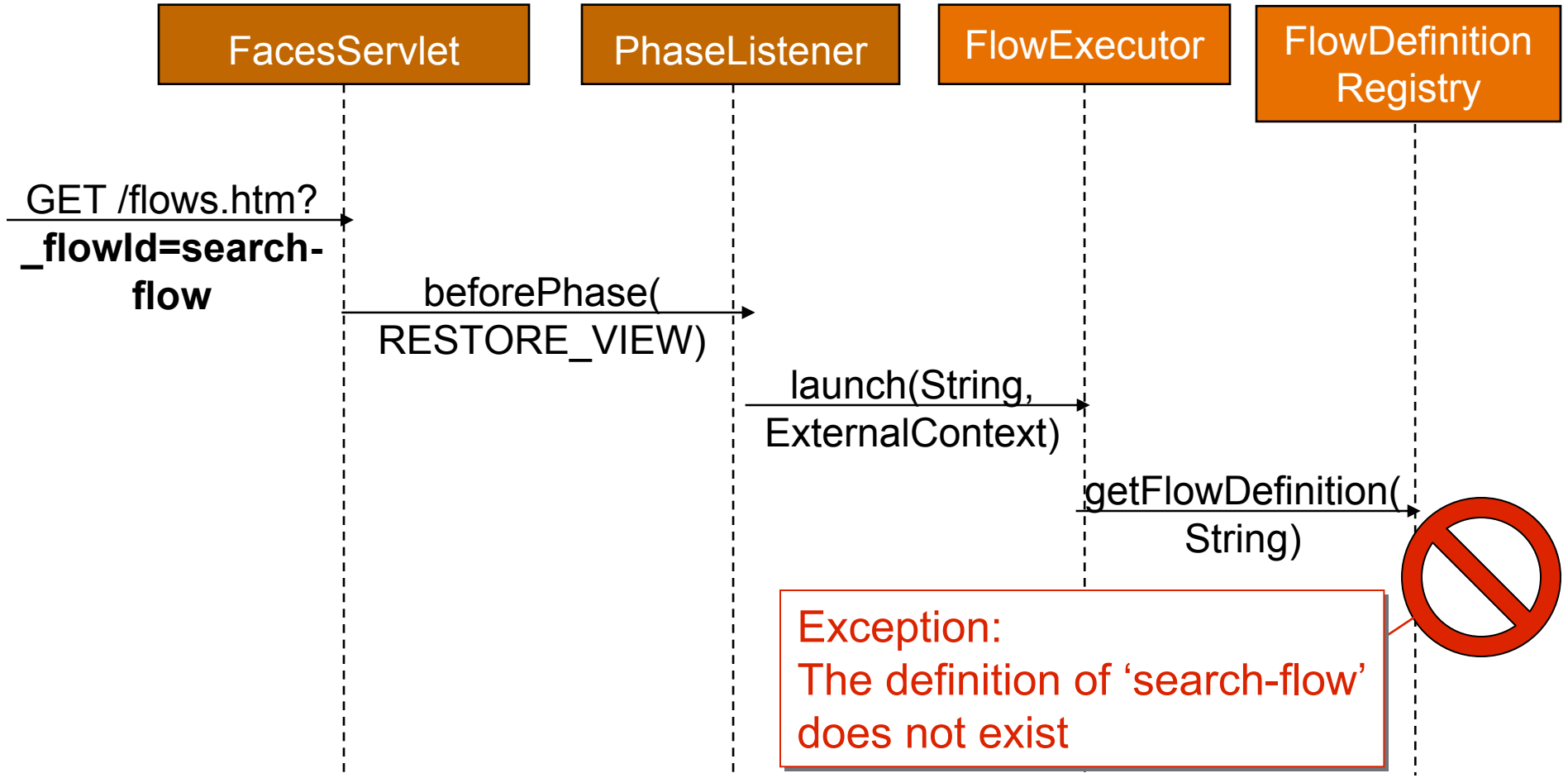
Testing Invoking flows.htm Directly



Important Flow Executor Arguments

- **flowId**
  - Needed to launch a new flow execution
- **flowExecutionKey**
  - Needed to resume an existing flow execution
    - Tracked for you by JSF™

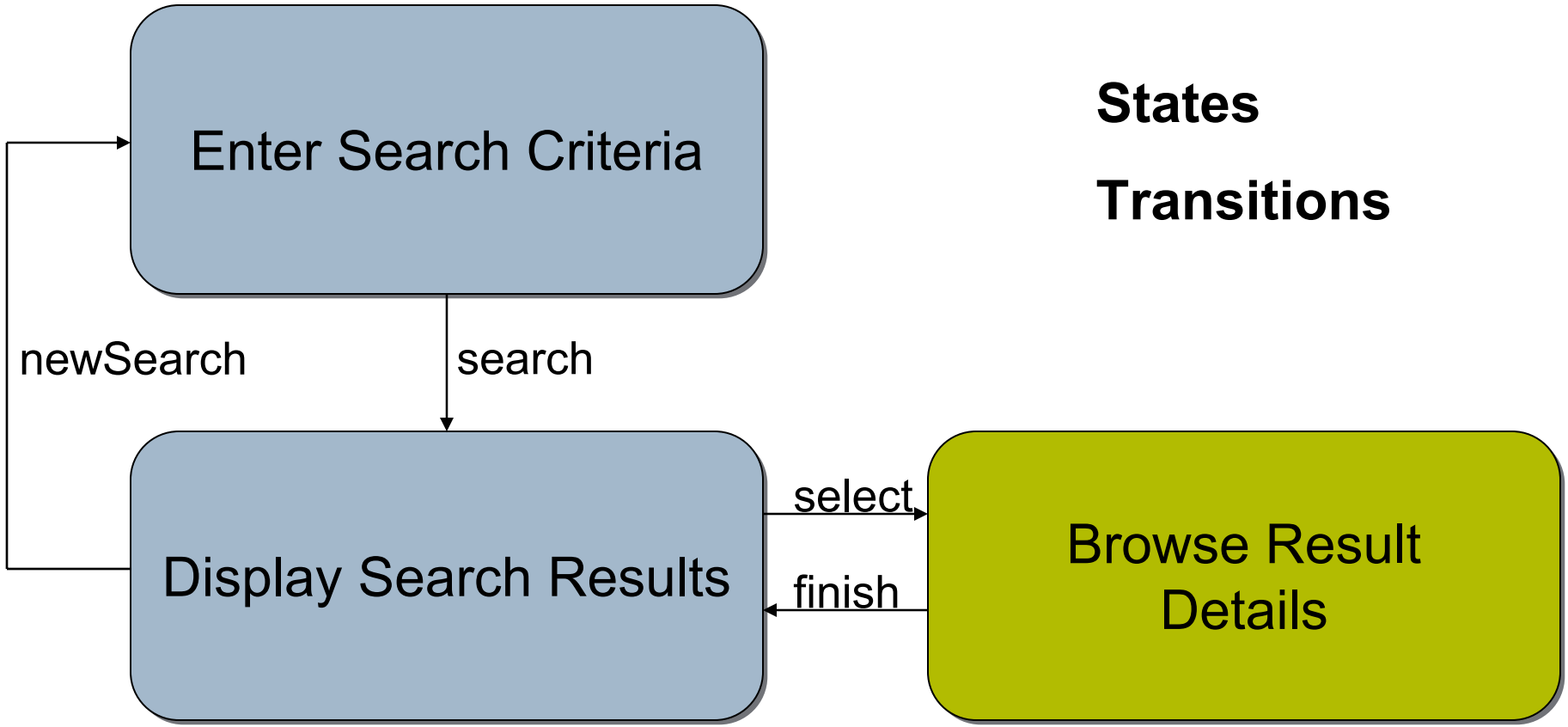
flows.htm?_flowId=search-flow



Quick Start Steps

- Bootstrap the Contacts Application
- Configure the Web Flow Engine
- **Implement the Search Flow**

Recall—Contact Search Flow



States

Transitions

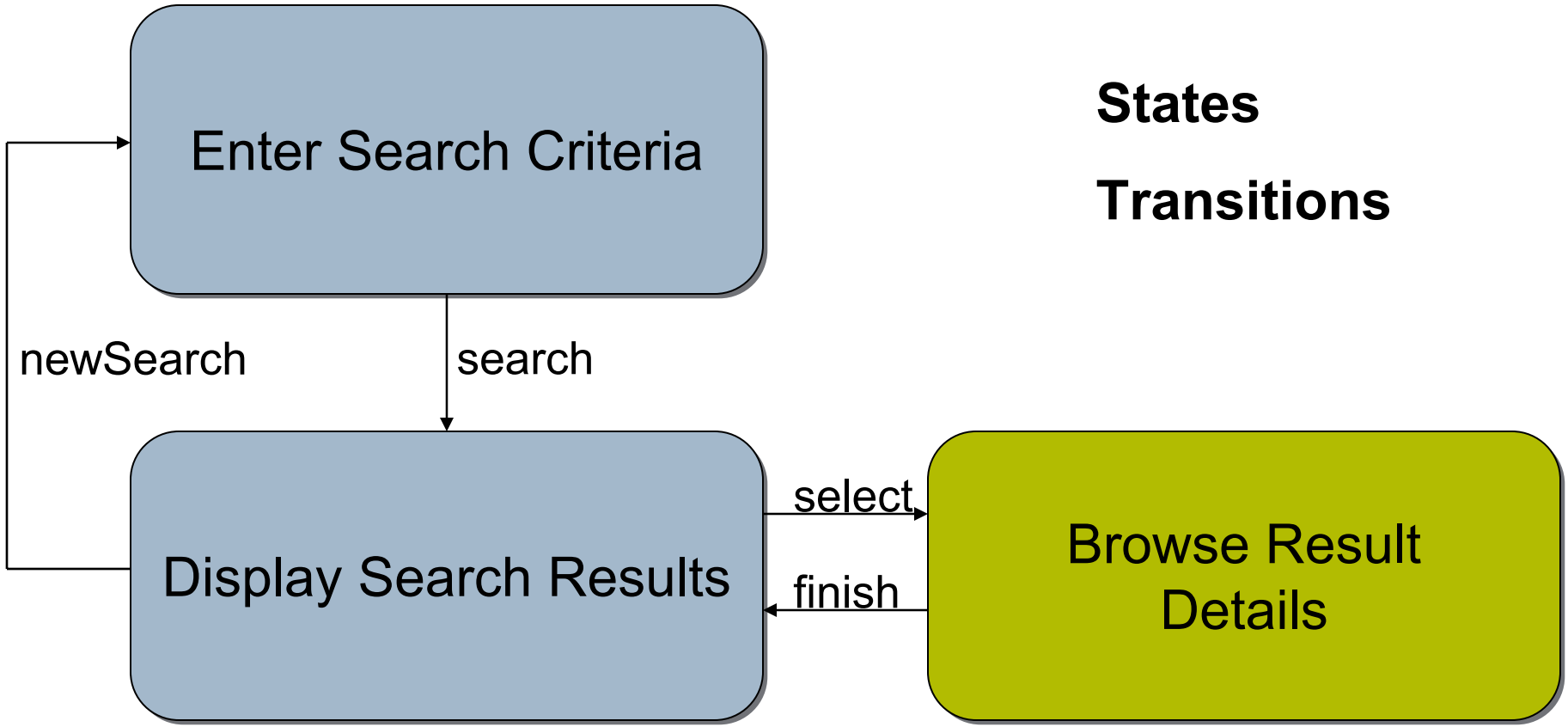
XML Flow Definition Template

```
<?xml version="1.0" encoding="UTF-8"?>
<flow xmlns=http://www.springframework.org/webflow
        xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="
                http://www.springframework.org/schema/webflow
                http://www.springframework.org/schema/webflow/spring-webflow-
1.0.xsd">

        <!-- Implement your flow here -->

</flow>
```

DEMO

Implementing the Search Flow

Putting It All Together—Graphical



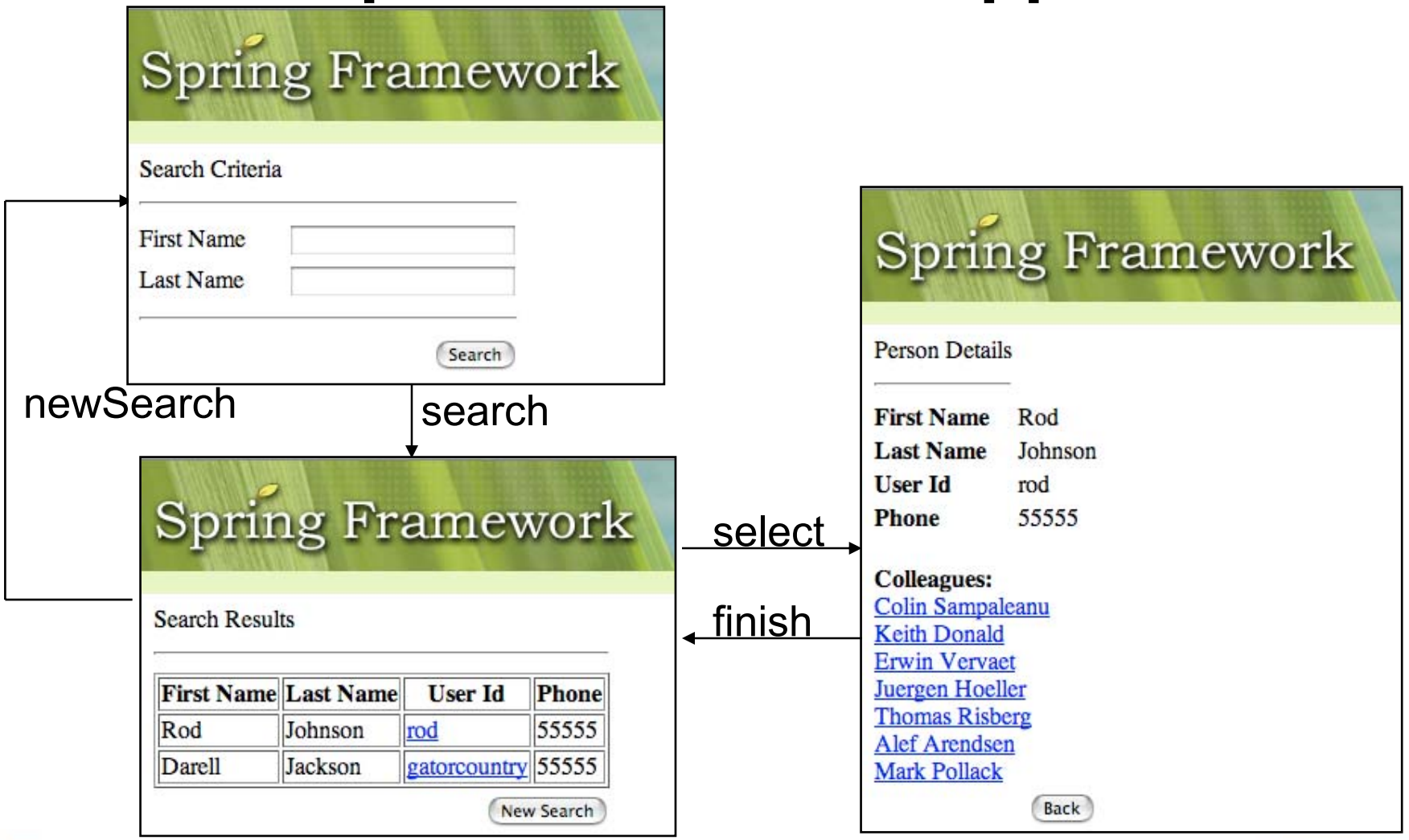
Putting It All Together—Search Flow

```
<flow …>
   <start-state idref="enterSearchCriteria"/>

   <view-state id="enterSearchCriteria" view="searchCriteriaForm">
     <transition on="search" to="displaySearchResults"/>
   </view-state>

   <view-state id="displaySearchResults" view="searchResults">
      <render-actions>
         <bean-action bean="searchService" method="search">
            <method-arguments>
               <argument expression="flowScope.searchCriteria"/>
            </method-arguments>
            <method-result name="results"/>
         </bean-action>
      </render-actions>
      <transition on="select" to="browseDetails"/>
   </view-state>
   …
```

Putting It All Together—Search Flow (2)

```
…
<subflow-state id="browseDetails" flow="details-flow">
    <attribute-mapper>
        <input-mapper>
            <mapping source="requestParameters.id" target="id" from="string" to="long"/>
        </input-mapper>
    </attribute-mapper>
    <transition on="finish" to="displayResults"/>
</subflow-state>

</flow>
```

Completed Contacts Application



Topics in This Session

Web Flow Quick Start

Key Benefits

What's Next

Key Benefits

- Enforcement of navigation rules
- Automatic state management
- Modularity
- Abstraction
- Dynamicity
- Web best practices
- +1 with strong integration
- Tooling

Enforcement of Navigation Rules

- With Web Flow, it is simply not possible to short-circuit navigation rules
  - Go ahead and try it :-)
- You get enforcement of navigation rules for free
- And you never have to worry about the flow resuming back in the right state

Automatic State Management

- You simply allocate local “flow scope” variables and the flow manages them for you
- When a flow ends or expires, everything in flow scope is cleaned up automatically

Modularity

- Flows are modules that encapsulate and centralize the rules to carry out a dialog with the user
- The sub-flow concept allows flows to be partitioned into manageable chunks describing high-level application functionality
  - You can change one flow without effecting another

Abstraction

- Web Flow definitions are high-level, self-contained application modules
  - They are not coupled with a particular environment like HTTP
- The same flow can be run inside a Spring MVC app, a Struts App, a JavaServer™ Faces application, a Portlet, or a JUnit test **without change**

Dynamicity

- Flows are externalized modules that can be recompiled on-the-fly
- Recompilation allows you to implement and test your navigation rules without container restart

Web Best Practices

- Back button just works
- Post + Redirect + Get pattern implemented out-of-the-box

+1 With Strong Integration

- Very easy to introduce into a project
  - Self-contained library with few extra dependencies (only need ognl.jar and spring-binding.jar extra)
  - Strong documentation
  - Wide-array of samples and other resources
  - Minimal setup to get going
- Compliments existing controller technologies
  - Fills a gap by solving the problem of linear wizards very well
  - Struts, Spring MVC, JavaServer Faces platform, and JUnit are all supported environments

Tooling

- Spring IDE 2.0 provides
  - A web flow graphical editor/visualizer
  - A web flow XML editor
- Visualizing flows improves developer and end-user communication
- Makes the tool accessible to new audiences

What's Next

- Web Flow 1.0 set a strong foundation
- Spring Web Flow will keep evolving with 1.1

On the Road to Web Flow 1.1…

- Flow Inheritance and Composition
  - The ability to compose flows together to form a graph/hierarchy
- Conversation-scoped persistence contexts
  - Automatic management of persistence state
- Enhanced Java-based flows
  - Engineering flows from @Annotation metadata
- More third-party integration
  - Securing flows (Spring Security/Acegi)
  - Ajax integration with ICEFaces and Ajax4JSF

Q&A

Thank You

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