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### **Next Generation Controller for JSF**

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# What is a Controller?

- Inherent in the Model-View-Controller architecture
- Eliminates hard-coded navigation logic
- Orchestrates interaction between view and model
- Connects pages to a logical flow that defines the application's business process
- A map of navigation targets and the paths between them

# JavaServer Faces

- Standard View/Controller layer in Java EE
- Advanced controller
  - Page flow navigation
  - Definition of managed beans
  - Memory scopes for beans

# We Needed More

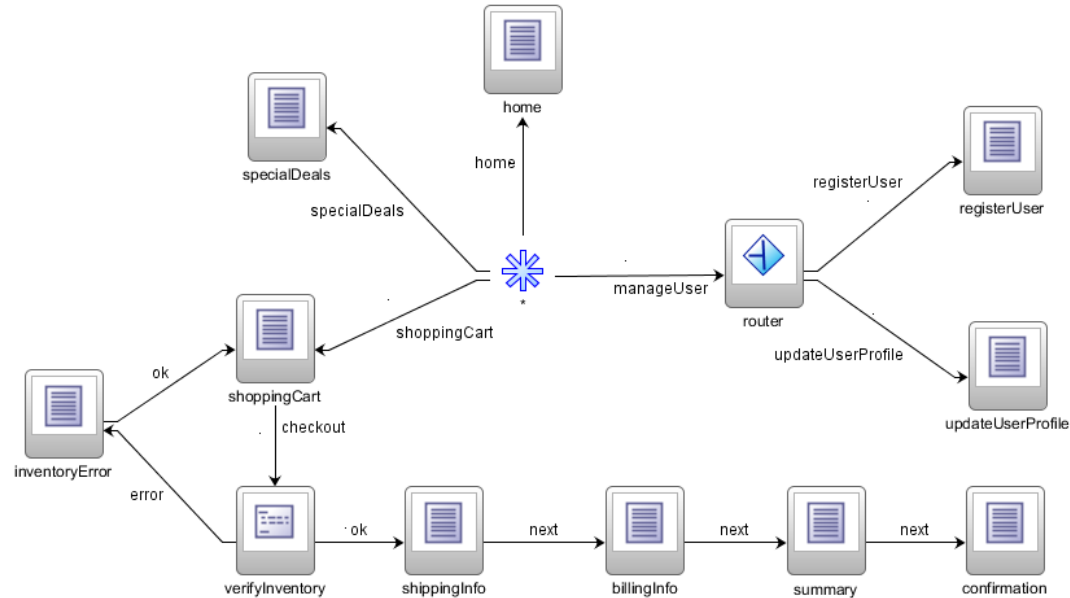
- Process flow
- Reusability
- Single Page Interface
- More
  - Bookmark support, parameters, redirect

# ADF Controller

- Model process for Web UI
  - Page and task flow
- Extended reusability
  - Use in other flows
  - Use inside page
  - Package for dynamic addition to pages



# From Page Flow to Process Flow





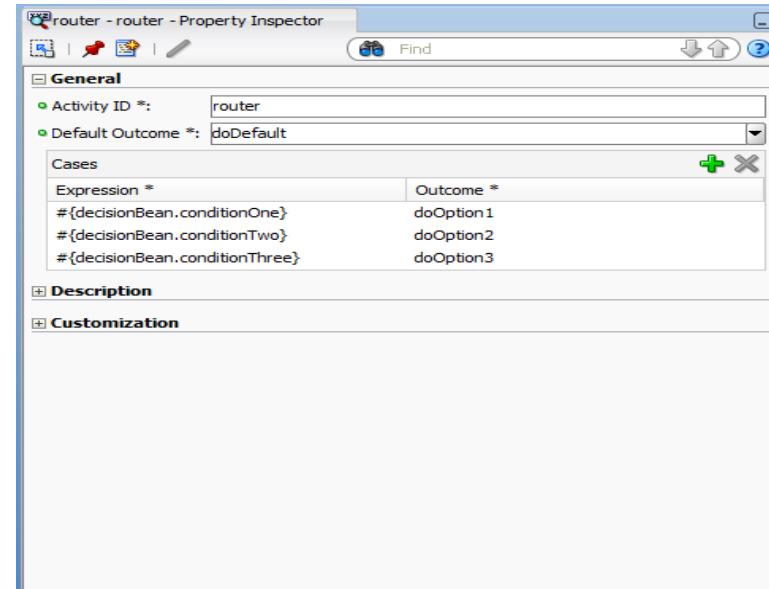
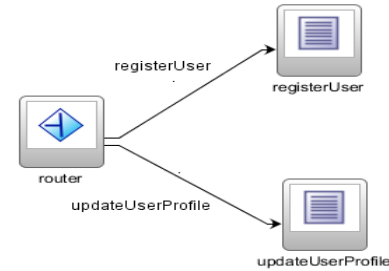
# View Activity

- Used to display a page
- Attributes:
  - Page file (e.g. specialDeals.jsf)
  - Redirect behavior
  - Input parameters
  - Bookmark behavior

A screenshot of a web application development tool's 'Property Inspector' for a 'view' activity named 'specialDeals'. The dialog has a blue title bar and a toolbar with icons for undo, redo, delete, and help. The main area is divided into several sections: 'General' with fields for 'Activity ID' (specialDeals), 'Page' (/specialDeals.jsx), and 'Redirect' (<default> (false)); 'Description'; 'Page Parameters' with a table for 'Input Page Parameters'; 'Bookmark' with fields for 'Bookmark' (<default> (false)) and 'Method'; 'Bookmark URL Parameters' with a table for parameters; and 'Customization'. The 'Input Page Parameters' and 'Bookmark URL Parameters' tables have columns for 'From Value', 'To Value', 'Name', 'Value', and 'Converter'. The 'Bookmark URL Parameters' table has a '+' icon to add new parameters.

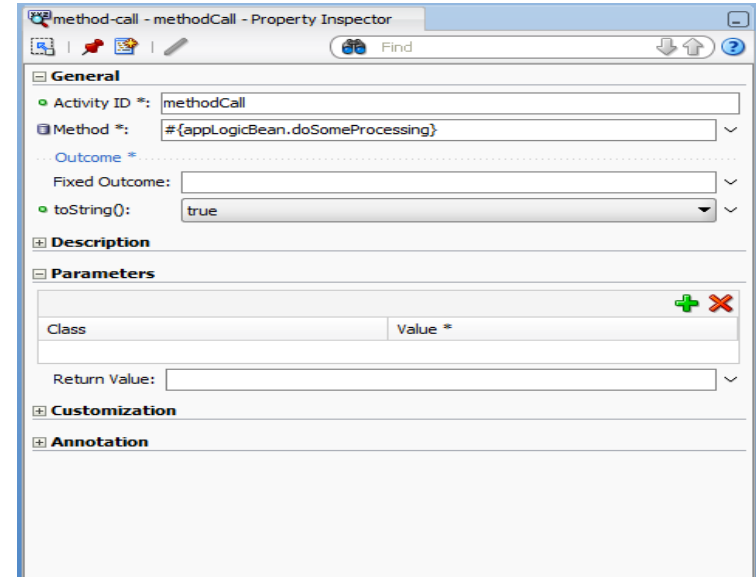
# Router Activity

- Conditional Control Flow
- Similar to `switch` statement
- Series of EL expressions
  - First to evaluate to `true` wins
- Default outcome



# Method-Call Activity

- Invokes application logic via an EL expression
- May generate a fixed outcome or use method return value



# ADF Memory Scopes

- PageFlowScope
  - Spans multiple pages
  - Can have lifespan shorter than session
- ViewScope
  - Lifespan equal to the current viewId
- BackingBeanScope (advanced topic)
  - Essentially a portioned request scope
    - one instance per view source document
  - Useful for avoiding conflicts in composite pages

# Bounded Task Flow – Reusable Units

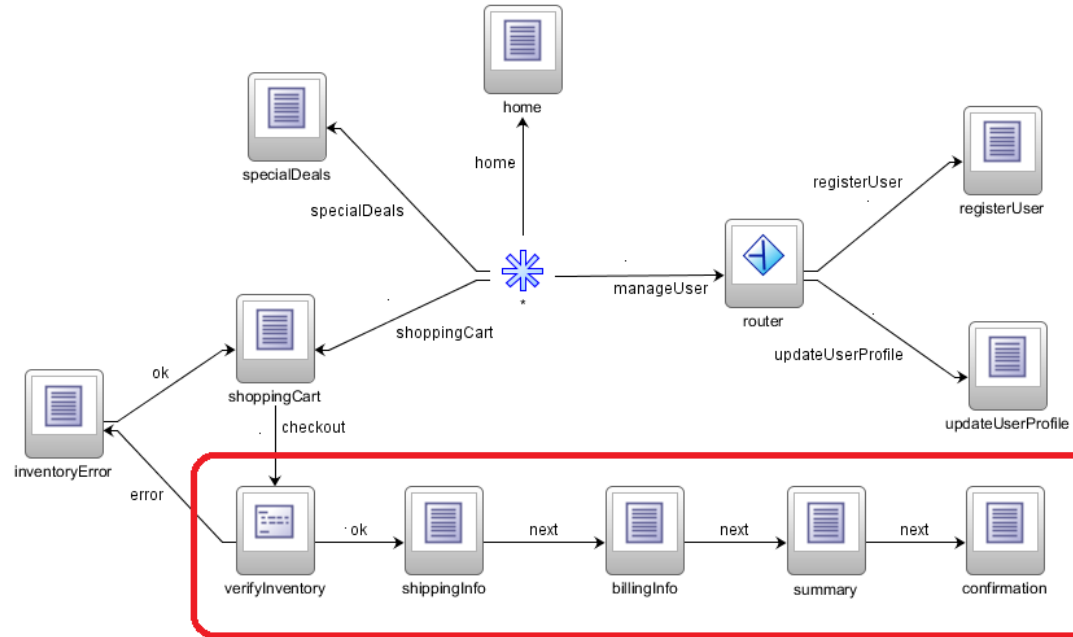
*A web application's equivalent of a method*

- A logical grouping of activities and control flow rules
- Invoke from other flows
- Invoke inside a region of a page

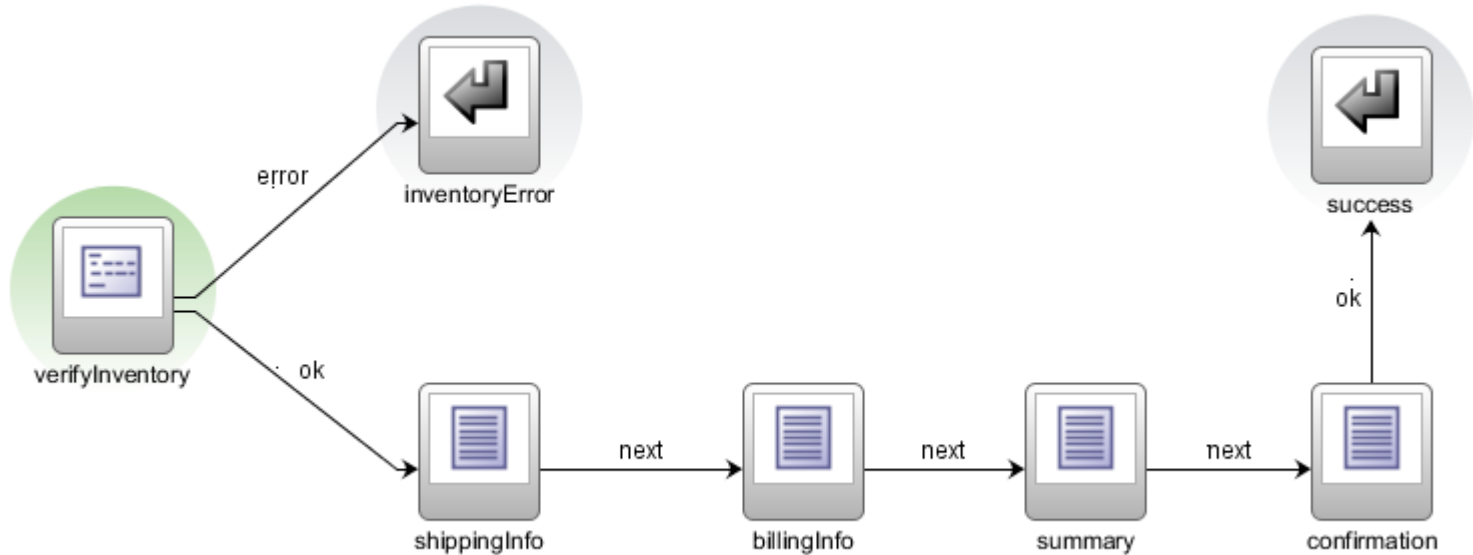
# Bounded Task Flow Characteristics

- Single entry point – the default activity
- Multiple end points – return activities
- Input parameters and return values
- Optional initializer and finalizer methods
- Has its own pageFlowScope instance
  - “local” variables
- Localized managed bean definitions

# Example: Checkout Flow

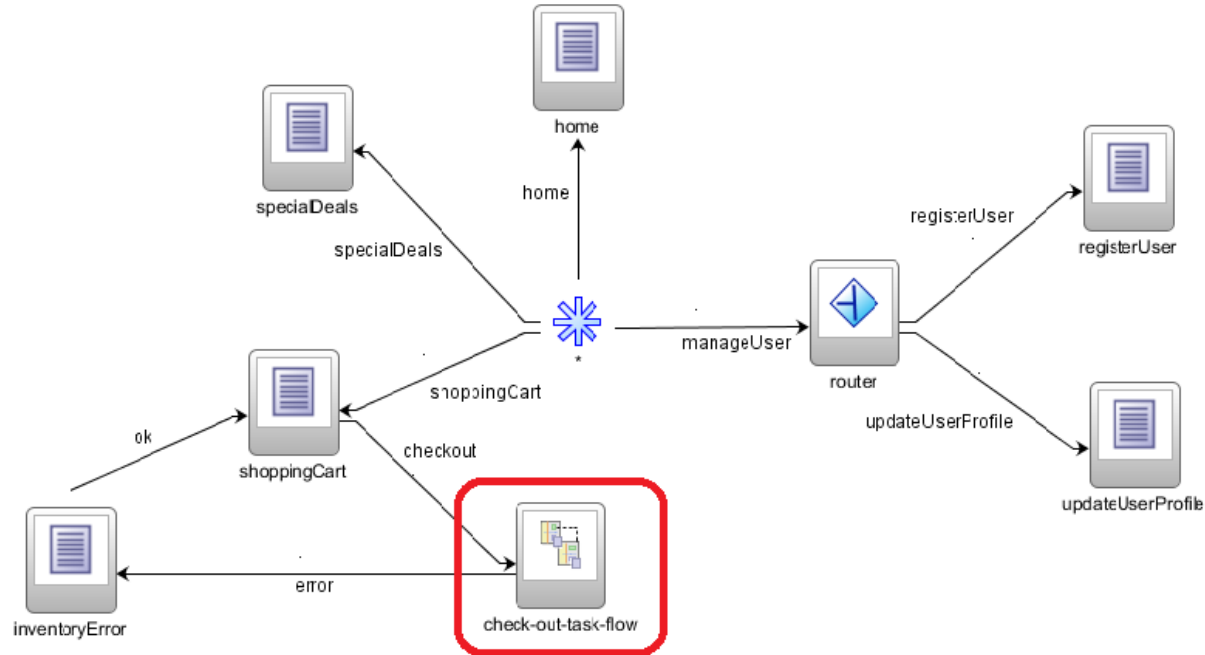


# Example: Checkout Bounded Task Flow



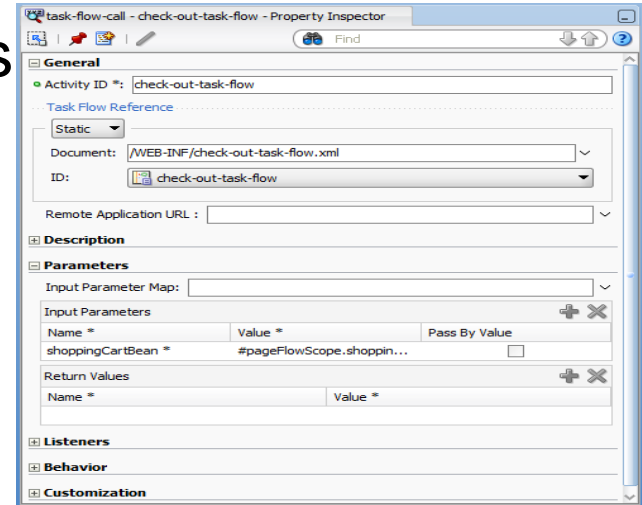


# Example: Call to Checkout Task Flow



# Task Flow Call Activity

- Which bounded task flow to invoke
- Where to get input parameter values
- Where to store returned values
- Advanced Options:
  - Invoke in a remote web app via URL
  - Launch in a separate dialog window



# Increased Reusability

- TaskFlow Template
- Parameters
  - Input parameters can influence behavior
- Return value

# Bounded Task Flow – Advanced Features

- Transaction semantics
  - Begin / commit / rollback on task flow entry / exit
- Re-entry behavior
  - e.g. browser back-button
- Exception handling
- Authorization
  - Which users & groups can invoke a task flow?
- ADF Model DataControl sharing

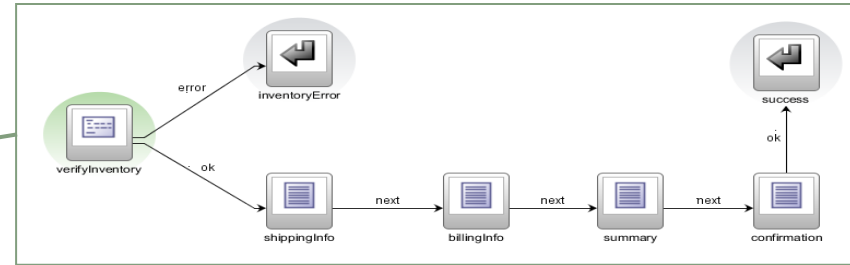
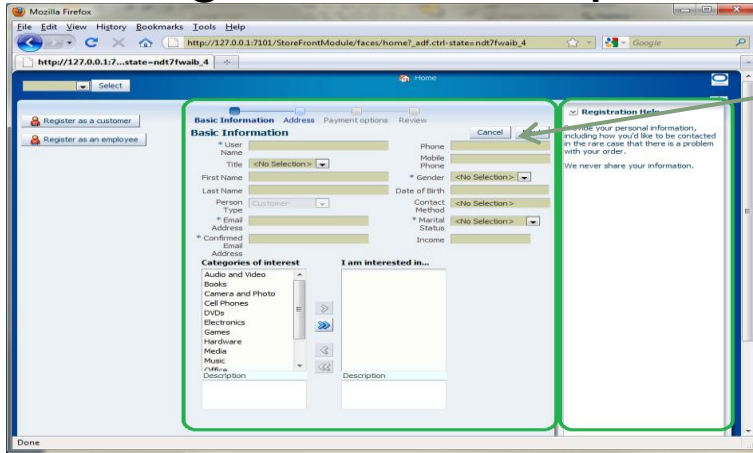
# Train Flow

- Multi-step flows (wizards)
- Built in train model
- Built in train navigation components
- Can dynamically enable/skip stations

The screenshot displays an Oracle web application interface for a multi-step registration process. The top navigation bar includes links for 'Home', 'My Orders', and 'Checkout'. Below this, a progress bar shows four steps: 'Basic Information' (active), 'Address', 'Payment options', and 'Review'. The 'Basic Information' section contains various input fields for user details, including 'PersonId' (pre-filled with -14), 'PrincipalName', 'Title', 'FirstName', 'LastName', 'Email', 'ConfirmedEmail', 'PhoneNumber', 'MobilePhoneNumber', 'Gender', 'DateOfBirth', 'ContactMethodCode', 'MaritalStatusCode', and 'ApproximateIncome'. At the bottom, there is a 'Categories of interest' section with a checkbox for 'Audio and Video' and a text input field labeled 'I am interested in...'. 'Cancel' and 'Next' buttons are located at the top right of the form area.

# Reuse TaskFlows In Pages - Regions

- Build portions of a page from task flows
- Page constructed from regions
- Regions are independent



# Dynamic Regions

- Enables single page interface design
- Switch content shown in region at runtime
- Drop bounded taskflow on a page as dynamic region
- Creates a managed bean holding information on which task to display
- Create links to switch content

# Contextual Events

- Communicate events between regions on page
- Enables one region to influence another
- Publish/Subscribe events
- Managed at the containing page level



# Demo

- House Buying Application
- Demands:
  - Bookmarkable house info page with parameter
  - Reusable in other parts of the application
  - Guided flow for price change activity
  - Switch between seeing pictures of the house and adjusting price

# Demo Recap

- HouseInfoFlow Task Flow
  - Method call
  - TaskFlow input parameter
  - Bookmarkable
- Reusing the HouseInfoFlow
  - JSF page calls the taskflow using taskFlowActivity

# Demo Recap

- Reusable Bounded Train TaskFlow change price
  - Bounded, page fragments, train, transaction management
- Dynamic Region
  - Add two taskflows to a page
- ADF Library
  - Package taskflows for reusability across applications
- ADF Declarative Debugger

# Summary

- ADF Controller extends the JSF controller functionality
- Transition from page flows to task flows
- Increases your application's modularity and reusability
- Enables advanced dynamic user interface

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