

Meet the Lab

04. - 05. Juni 2014

IBM Labor Boeblingen



IBM UX Screen Flow Manager

Dr. Andreas Nauerz, Software Architect

Presented by [Matthias Diester](#)

Meet the Lab 2014



Introduction & Motivation

- **Customers often have to implement portal-/portlet based solutions allowing users to step through a sequence of screens**
- **The mapping of individual screens to portlets is often not trivial**
 - Impact on user experience and reusability
- **Two major options**
 - All screens being provided by one single portlet
 - All screens being provided by a separate portlet
 - Drawback of both options follow on next slide



Introduction & Motivation

- **Two major options**
 - All screens being provided by one single portlet
 - Drawbacks
 - Large monolithic code
 - Hard to maintain
 - Inflexible/non-modular and thus hard to re-use
 - All screens being provided by a separate portlet
 - Drawbacks
 - Navigation flow from screen to screen difficult to model
 - Either end-users have to find out about the intended flow
 - ...or developers have to “hard-wire” portlets which reduces flexibility
 - and thus options for re-use...



Introduction & Motivation

- **The unsolvable tradeoff decision**
 - What do you want: More user guidance or high reusability?
 - This means: Guiding users conflicts with the aim of having fine-granular portlets
 - What is the right level of granularity for portlets?
 - How do I “cut” between one and multiple portlets?
 - How can I increase flexibility, but still model the intended navigation flow?



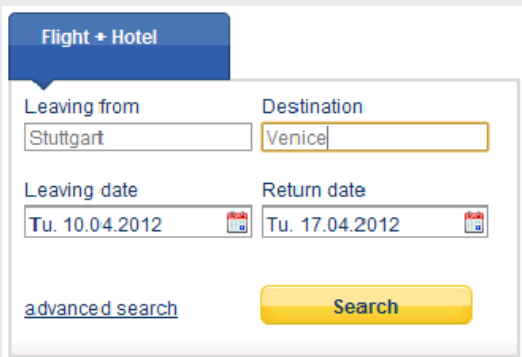
Introduction & Motivation

- **The best of both worlds: IBM UX Screen Flow Manager**
 - Fine-granular (“small split”) portlets declaratively interconnected by the IBM UX Screen Flow Manager
 - ... and the best ...
 - ... in many cases you do not even need to touch your existing code



Introduction & Motivation

Flight | Car | Hotel | Insurance | Details



The screenshot shows a search form for flights and hotels. At the top is a blue tab labeled 'Flight + Hotel'. Below it are four input fields: 'Leaving from' with 'Stuttgart', 'Destination' with 'Venice', 'Leaving date' with 'Tu. 10.04.2012', and 'Return date' with 'Tu. 17.04.2012'. Each date field has a small calendar icon. At the bottom left is a link for 'advanced search' and at the bottom right is a yellow 'Search' button.

- **Exemplary Portal page setup**
 - pages with individual portlets
 - some portlets might be reused from other business use cases
- **Screen Flow starts transparently by interaction with one of the participating portlets**



Introduction & Motivation

Flight | Car | Hotel | Insurance | Details

1 What type of holiday do you need?

☒ Flight + Hotel + Car ☐ Flight + Hotel ☐ Hotel + Car ☐ Flight + Car

Note: Hire cars require 1 day advance booking and pick-up in your destination city.

2 Where and when do you want to travel?

1 We found more than one airport that matched 'Stuttgart'. Please select an airport from the list below.

Leaving from: Going to: (airport, city, place)

Departing: Returning: ☐ I only need a hotel for part of my trip

3 Who is going on this trip?

Rooms: Adults: (age 19 to 64) Seniors: (age 65+) Children: (age 0 to 18)

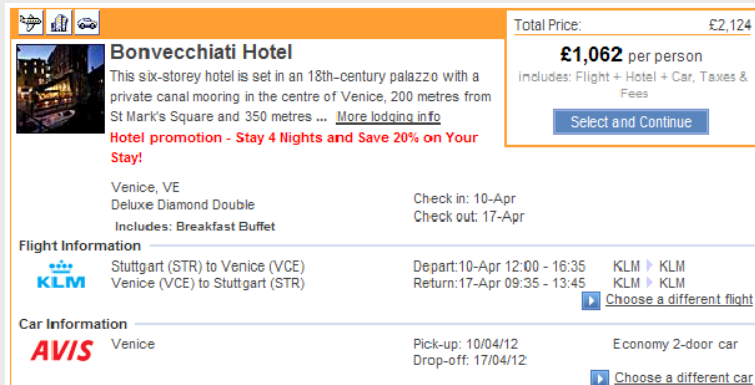
Holidays provided by WWTE

- **UX Screen Flow manager guides the user through the screen flow**
 - page redirects based on the provided dialog details
 - or by using a dynamic page setup if configured
- **Guidance through the screen flow is very similar to wizards**



Introduction & Motivation

Flight | Car | **Hotel** | Insurance | Details



The screenshot displays a travel booking interface with a white background and orange accents. At the top, a navigation bar contains icons for flight, car, hotel, and insurance, with 'Hotel' highlighted. Below this, the 'Bonvecchiati Hotel' is featured with a photo of a historic building. The hotel description mentions it's a 18th-century palazzo in Venice. A red promotional banner states 'Hotel promotion - Stay 4 Nights and Save 20% on Your Stay!'. The room type is 'Deluxe Diamond Double' for 'Venice, VE', with a 'Breakfast Buffet' included. Check-in is on 10-Apr and check-out is on 17-Apr. To the right, a box shows the 'Total Price' as '£2,124' and '£1,062 per person', including flight, hotel, car, taxes, and fees. A 'Select and Continue' button is present. Below the hotel section, 'Flight Information' is shown for a round trip between Stuttgart (STR) and Venice (VCE) on KLM, with departure on 10-Apr and return on 17-Apr. A 'Choose a different flight' link is available. The 'Car Information' section shows an 'AVIS' Economy 2-door car for pickup on 10/04/12 and drop-off on 17/04/12 in Venice, with a 'Choose a different car' link.

Bonvecchiati Hotel
This six-storey hotel is set in an 18th-century palazzo with a private canal mooring in the centre of Venice, 200 metres from St Mark's Square and 350 metres ... [More lodging info](#)
Hotel promotion - Stay 4 Nights and Save 20% on Your Stay!
Venice, VE
Deluxe Diamond Double
Includes: Breakfast Buffet
Check in: 10-Apr
Check out: 17-Apr

Flight Information
KLM
Stuttgart (STR) to Venice (VCE)
Venice (VCE) to Stuttgart (STR)
Depart: 10-Apr 12:00 - 16:35
Return: 17-Apr 09:35 - 13:45
KLM ▶ KLM
KLM ▶ KLM
[Choose a different flight](#)

Car Information
AVIS
Venice
Pick-up: 10/04/12
Drop-off: 17/04/12
Economy 2-door car
[Choose a different car](#)

Total Price: £2,124
£1,062 per person
includes: Flight + Hotel + Car, Taxes & Fees
[Select and Continue](#)

- The user navigates through the screen flow by clicking on the respective UI elements of the portlets



Introduction & Motivation

Flight | Car | Hotel | Insurance | **Details**

Trip details

Avg/person:

£1,061.80

Total: £2,123.59

+ A tax is imposed by the city: EUR 4 per person, per night for guests 16 and older and EUR 2 per person, per night for guests aged 10-15 years old. This tax does not apply to residents of Venice City. Further exemptions may apply, subject to submission of proper documents to the property, to patients, their companions and people staying in the city for specific purposes/duties. The tax only applies to the first 5 nights of a stay, and is collected at the property in cash. 50% reduction applies for 2012: from 9 January to 3 February, 23 February to 31 March, 1 November to 2 December, and 10 to 22 December. Collected by hotel [Details](#)

Included:

- Items selected, taxes, & service fees.
- Note: Fully inclusive car hire.

- At the end of a screen flow, a details or summary portlet can be displayed



Sample usage scenarios by industry

- **Insurance**
 - Policy quoting, Claim submission
- **Banking**
 - Order generation, Financial advisor workbench
- **Helpdesk scenarios**
 - Identify caller, create ticket, find solution, close ticket
- **Retail Industry**
 - Product configuration scenarios
- **Travel & Transportation**
 - Flight, Hotel, Car booking, Vacation package assembly
- **Portal Administration**
 - Create a page, assign access control, add rule
- **And many more**



Workflows versus Screen Flows

- **Dialogs usually have a short lifetime and are being executed by one single user**
- **Long-running processes are modelled and executed by an underlying workflow engine which is responsible for the management and assignment of tasks, transaction handling as well as persistence of process data**
 - (Human-centric) workflows are usually comprised of several human tasks
 - Require some UI allowing human beings to process such human tasks
 - Portals represent an optimal tool to provide such an UI where the logic of particular tasks is encapsulated by portlets
 - Since single human tasks cannot always be mapped to one single UI artifact (although the single task is short-running and normally being processed by a single user which implies that any further separation is not reasonable) but to a (well defined) sequence of UI artifacts, screen flows represent the perfect instrument for mapping human tasks to a sequence of UI artifacts
- **Rule: Human tasks will often be mapped to screen flows**



Core Concepts: Terminology

- **In the following we refer to the flows to be modeled as screen flows**
 - Screen flows can be processed via dialogs
 - A screen is a particular view at a dedicated point in time
- **A dialog can be comprised of 1 or more steps**
- **In the context of portal a step is usually “represented” by a subdialog**
 - The entire dialog being comprised of multiple subdialogs is usually comprised of a set of pages and/or portlets
- **The (active) state defines in which step we currently are**
- **A transition triggers a move from one step to another and thus changes the dialog's (active) state**



Core Concepts:

Major Building Blocks

- We refer to the (set of) component(s) used to model and execute such dialogs (and the transitions they are comprised of) as the **IBM UX Screen Flow Manager**
 - The **DM (Dialog Model)** acts like a finite state machine defining the transitions to be performed depending on the dialog's current state (current “source”) as well as incoming and outgoing events and potential “targets”
 - The **DM** can be accessed by the **DM API (Dialog Model API)**
 - The **DC (Dialog Controller)** is a generic component able to receive (intercept) and propagate events during a certain “step”
 - The **DC** requests information (from the **DM**) about the next step to be performed, and propagates events to the next “step”
 - The **DCX (Dialog Context)** maintains contextual information passed from one step to succeeding steps
 - The **DCX** can be accessed by the **DCX API (Dialog Context API)**



Core Concepts:

Major Building Blocks

- We refer to the (set of) component(s) used to model and execute such dialogs (and the transitions they are comprised of) as the **IBM UX Screen Flow Manager**
 - The **EM API (Event Mapper API)** is used to map incoming to outgoing events or vice versa
 - Enables “incompatible” portlets to talk with each other



Core Concepts:

Major Building Blocks

- We refer to the (set of) component(s) used to model and execute such dialogs (and the transitions they are comprised of) as the IBM UX Screen Flow Manager
 - UI components
 - The **DS (Dialog Stack)** acts as a storage of not yet completed in-flight dialogs and provides means to resume those
 - The **DD (Dialog Definition)** models all possible transitions that can occur with one dedicated flow
 - Defined via XML, processed via XML-Access
 - The **DSD (Dialog State Display)** displays the current state and allows end-users to move forward and backward (through the dialog)
 - Can be added to any page (“generic navigator”)



Core Concepts: Notation

- Step p1 (where p1 might be represented by a portlet)

p1

- Transition from p1 to p2 triggered by an event e1 (QName)

$p1 \xrightarrow{e1} p2$

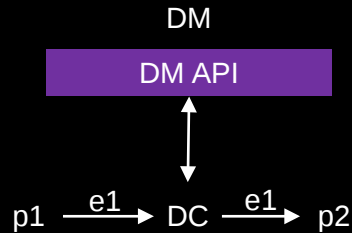


Core Concepts: Notation

- In fact a dialog with a transition

$p1 \xrightarrow{e1} p2$

- is executed as the following sequence



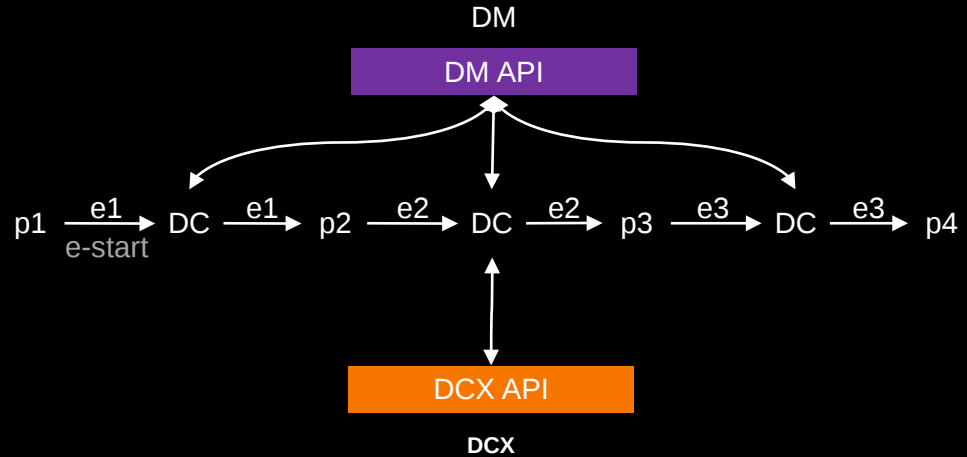
- The incoming event is sent to the **DC**
- The **DC** asks the **DM** about the next transition to be performed
- The **DC** then calls the next subdialog and initializes it by propagating the outgoing event
- The **DC** acts as a generic source and target for input and output events



Core Concepts:

Processing a dialog and maintaining its context

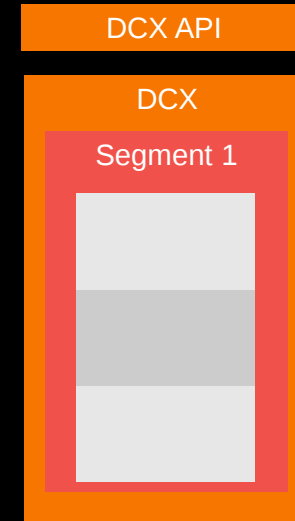
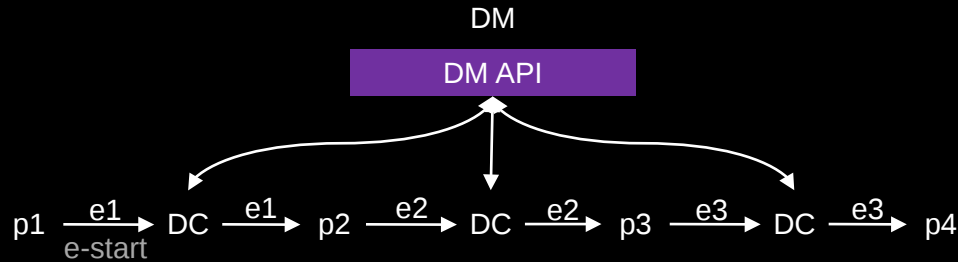
- **UXFM creates and maintains contextual information**
 - Contextual information is stored in the DCX
 - Contextual information of a particular dialog is stored in a dedicated DCX segment
 - Available until a particular dialog instance ends or the user's session expires
 - Two options to feed the DCX
 - Events (preferred)
 - DCX API



Core Concepts:

Processing a dialog and maintaining its context

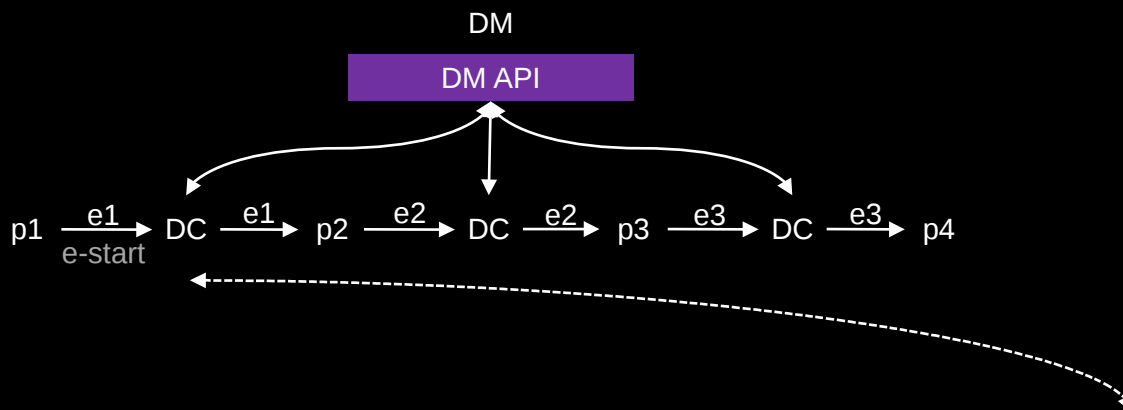
- UXFM creates and maintains contextual information



Core Concepts:

Processing a dialog and maintaining its context

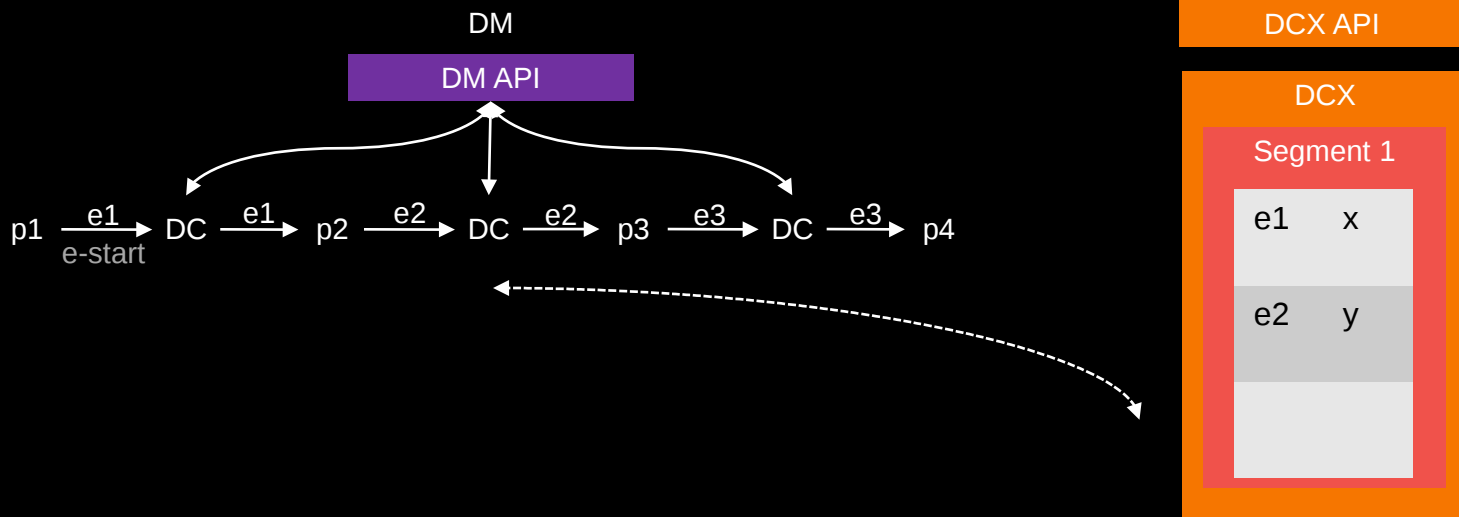
- UXFM creates and maintains contextual information



Core Concepts:

Processing a dialog and maintaining its context

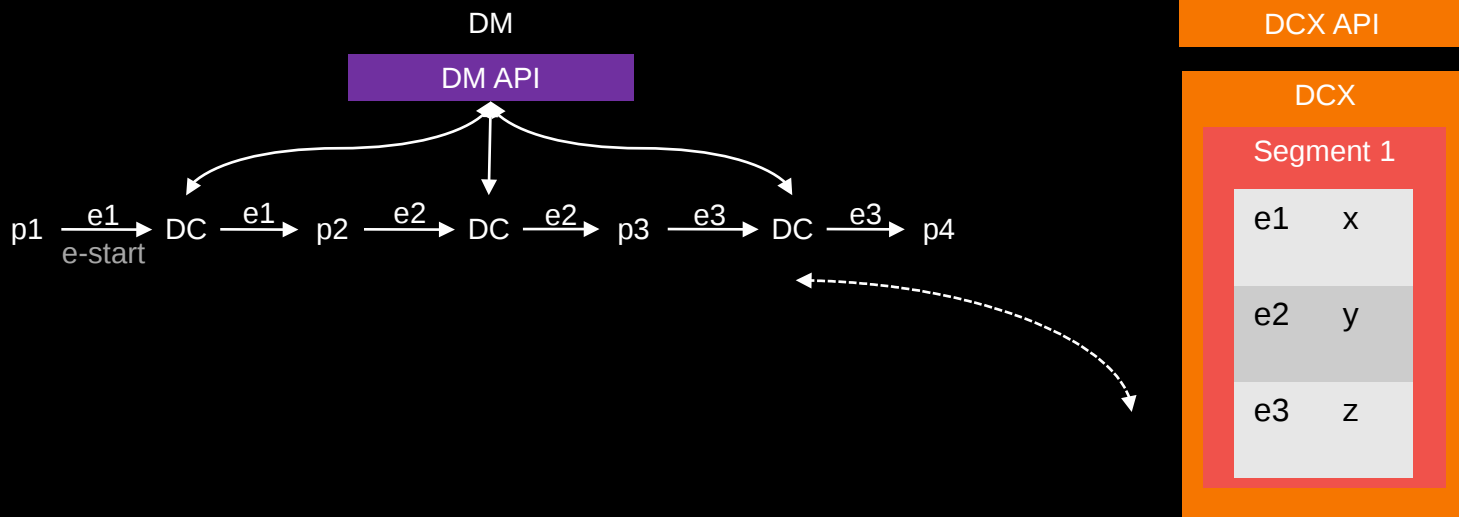
- UXFM creates and maintains contextual information



Core Concepts:

Processing a dialog and maintaining its context

- UXFM creates and maintains contextual information



Core Concepts: Event mapping

- Portlets might have been developed by different teams or even 3rd party vendors
 - Mappers ensure that they can still communicate
 - “Translate” the event's names (QName)
 - “Transform” the event's payload

$p1 \xrightarrow{\text{userID}} DC \xrightarrow{\text{customerID}} p2$

$p1 \xrightarrow[\text{Integer}]{\text{userID}} DC \xrightarrow[\text{String}]{\text{userID}} p2$



Core Concepts:

Event mapping

- **Event mappers can be specified as part of the DD**
 - In case no Event2Context mapper is specified the payload of the “incoming” event is stored in the DCX as is
 - In case no Context2Event mapper is specified the payload of the “outgoing” event simply contains the data exactly as stored in the DCX
- **Event mappers have full access to the DCX segment of a particular dialog instance**
 - Allows for powerful “transformations”
- **Event mappers are not intended to be packaged together with the business portlets**
 - Instead to be packaged as part of a shared library
 - If there are good reasons for packaging the mappers with (multiple) business portlets we perform JAXB based marshalling and unmarshalling to prevent errors caused by the “usage” of (multiple) isolated classloaders



Core Concepts: Defining dialogs

- **Dialogs are defined via XML**
 - The XML can be processed via XML-Access to *import*, *export*, *update*, and *delete* dialog definitions
- **A graphical editor allowing for defining dialogs via drag & drop is being planned for**
 - This is not a commitment



Core Concepts: Defining dialogs

- **Advanced concepts**

- For instance, using wildcards instead of concrete transition endpoints
- Using special, well-defined, transition endpoints
 - DEFAULT_RETURN
 - PAGE_ORIGIN
 - PORTLET_ORIGIN
 - CALLER
- DynamicUI

- ...



Core Concepts:

Parallel processing, suspending and resuming

- **We do not support parallel processing of multiple dialog instances in one single browser tab**
 - The parallel processing of multiple dialog instances is supported when using multiple distinct browser tabs (one dialog instance per tab)
- **We also support semi-parallel processing of multiple dialog instances by providing functions for suspending and resuming instances**
 - Suspended instances can be accessed via the dialog stack which also allows to resume a previously suspended dialog



Core Concepts: Additional UI components

- Dialog Stack Portlet (DS)

IBM UX Screen Flow Manager - Dialog Stack Portlet

IBM UX Screen Flow Manager - Dialog Stack Portlet

Active Dialog

Person Sample Dialog (Static Portlets) (Thu Apr 25 11:56:49 CEST 2013)

Suspended Dialogs

Person Sample Dialog (Dynamic Pages)	Thu Apr 25 11:52:36 CEST 2013	<input type="button" value="Resume"/>	<input type="button" value="Cancel"/>
Person Sample Dialog (Static Portlets)	Thu Apr 25 11:52:51 CEST 2013	<input type="button" value="Resume"/>	<input type="button" value="Cancel"/>
Person Sample Dialog (Static Portlets)	Thu Apr 25 11:56:42 CEST 2013	<input type="button" value="Resume"/>	<input type="button" value="Cancel"/>



Core Concepts: Additional UI components

- Dialog State Display (DSD)

IBM UX Screen Flow Manager - Dialog State Display Portlet

Dialog in process: Person Sample Dialog (Static Portlets)

Processed Dialog steps:
title:com.ibm.wps.pcm.dialog.state.DialogStepImpl event:{http://portal.ibm.com/dialogmanager/sample}Init

Current Dialog step: **title:com.ibm.wps.pcm.dialog.state.DialogStepImpl event:{http://portal.ibm.com/dialogmanager/sample}Init** Potential next Dialog steps: [...](#)

Dialog state changes:

Dialog suspend or cancel:



UX Screen Flow Manager Availability

- **Available with 8.0.0.1 CF 06 (or later)**
 - Sample available as catalog deliverable
 - Comprehensive documentation is available online:
http://www-10.lotus.com/ldd/portalwiki.nsf/dx/IBM_UX_Screen_Flow_Manager
- **UX Screen Flow Manager is part of the new WebSphere Portal 8.5 release**



Vielen Dank!

Ihr Feedback ist uns wichtig.

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