

# XPages Extension Library

*Exceptional Work Experience  
@  
Exceptional Speed*

# Executive Summary

- Make the development of Domino Web applications easier and faster
- Lower the entry cost of Domino Web development
  - Provide an extended set of out-of-the-box artifacts that encapsulate many common patterns.
- Ease modernization of existing applications
- Make prototyping faster than ever
  - Create a brand new, good looking, custom application in minutes!
  - Simplify moving from prototype to an actual production ready application

## What is the XPages Extension Library?

- A set of advanced, optimized, controls and other XPages assets
  - Provide a rich UI to web applications through a set of new Web 2.0 controls/behaviors
  - Does not require new knowledge beyond core XPages
- Integrates within Domino Designer
- Works on both the client and the server, and provides Mobile support
- Designed for performance from the ground-up
- Fully implemented using the XPages extensibility API
  - Code source is available
  - Installs on top of Notes/Domino 8.5.3

## Issues addressed in 8.5.3 core

- Contains Designer extension for a better developer experience
- UI is targeting latest OneUI v 2.1
  - Designed to support alternative themes

## Where is the code on openNTF?

- One project is available
  - It contains:
    - The binary plug-ins, ready to install
    - A sample database showing the features in action
    - A PDF documentation

<http://extlib.openntf.org/>

## What You Can Do With The Library

- Start to understand and experiment with this new capability
  - You can already use the capability within your applications, just be aware that this is under development and can change over time
- Report early feedback in order to influence the design of the component
- Inspect the source code to better understand the XPages Extensibility API
  - Contribute ideas, components, fixes, documentation

**Spread out the message!**

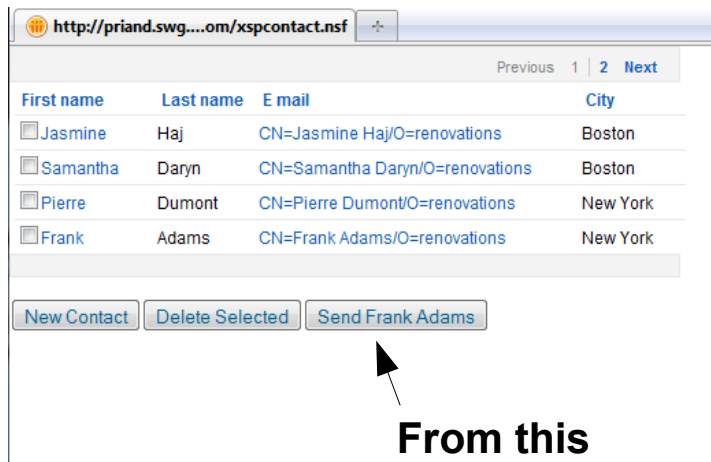


# Starting an XPages Application

- *Define the first shot of the application in minutes*
- *Make this application looks good from the beginning*

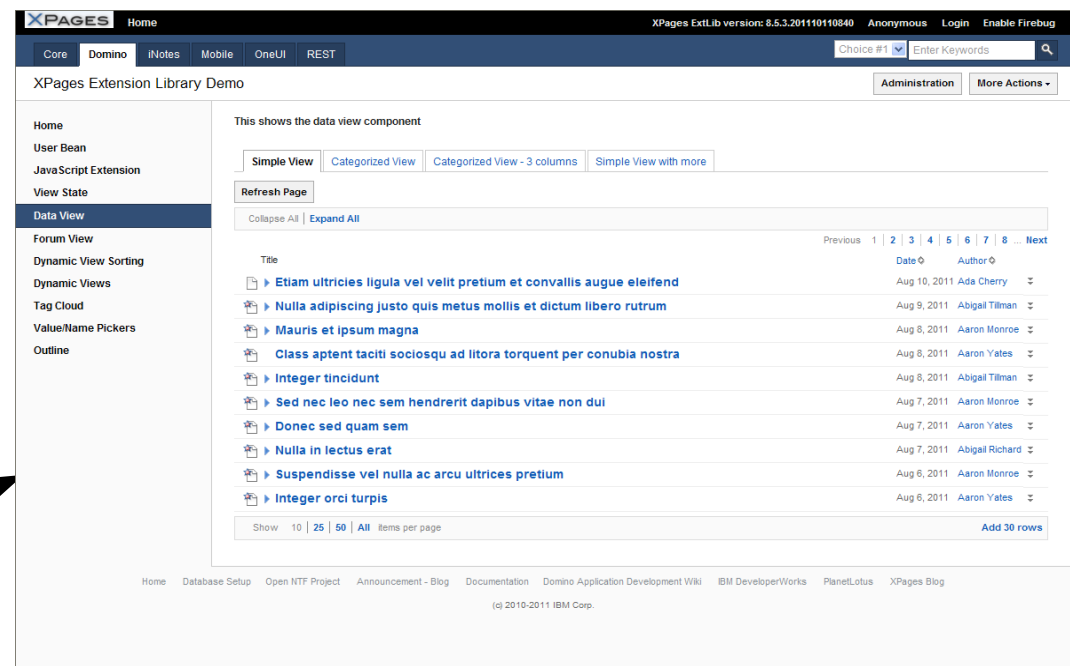
## Solution for the Writer's Block

- XPages makes it easy to create a new application but there is a gap between the first shot and a full featured, well looking application
- At times, developers don't know where to start
  - Requires a fair amount of work to put the main application layout (code, CSS...), the navigation mechanism, selection handling ...



From this

To that





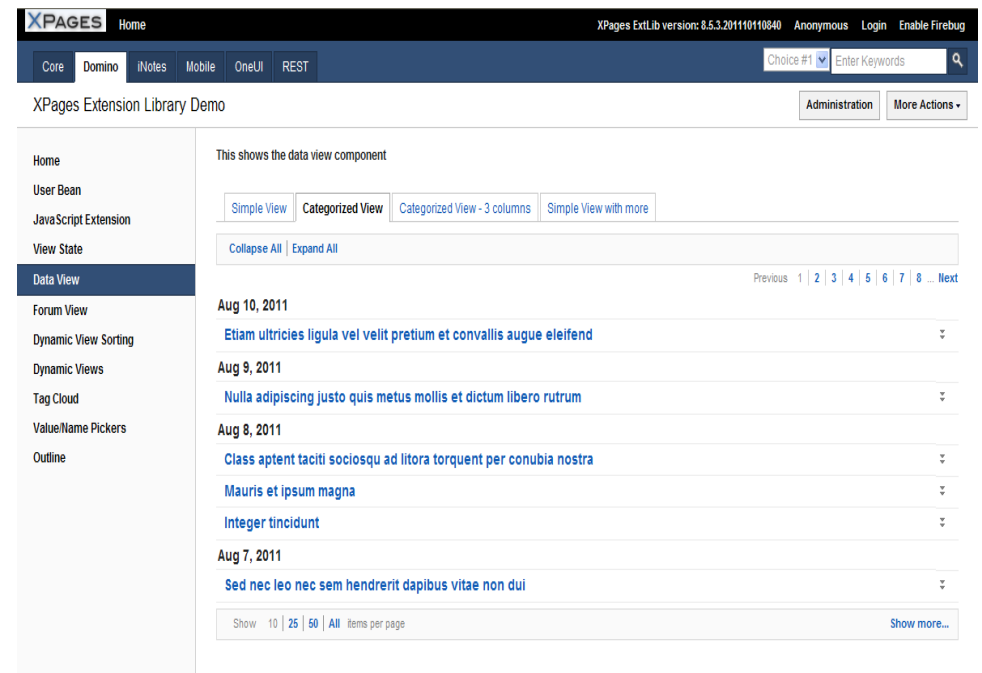
# Application Layout

- Abstract the main characteristics of an application into a set of parameters
  - Easy to configure using Domino Designer
- The XPages runtime renders the final application based on the layout definition:
  - The abstraction does not preclude how the app will be finally rendered – Different renderers could be used
  - Handles all the low level details (ex: displaying a pop-up menu, maintaining some current page context...)

## OneUI Application Layout

- Get a running OneUI application in less than 5 minutes!
- Fully customizable OneUI rendering
  - Abstracts all the OneUI application parts
  - Can even be customized by providing a inherited renderer
- Get ready for OneUI v2.1 look and feel

Properties	Events	Problems (0 items)
Application Layout		
All Properties		
	configuration	xe:oneuiApplication
	banner	
	bannerApplicationLinks	xe:basicTree
	bannerUtilityLinks	xe:basicTree
	defaultNavigationPath	\$ compositeData.defaultNavigationPath
	footer	
	footerLinks	xe:basicTree
	legal	
	legalLogo	
	legalLogoAlt	IBM Corp
	legalText	(c) IBM 2010
	loaded	
	navigationPath	\$ compositeData.navigationPath
	placeBar	
	placeBarActions	xe:basicTree
	placeBarName	XPages Extension Library Demo
	productLogo	XPagesLogo.gif
	productLogoAlt	
	searchBar	xe:appSearchBar
	titleBar	
	titleBarTabs	xe:basicTree





# Extended End User Experience

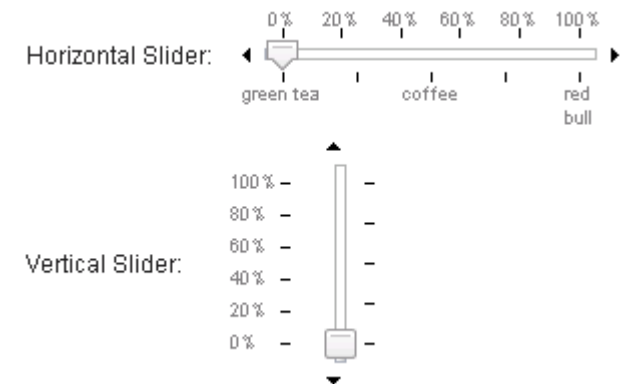
- *Extends the end user experience by providing new controls and behaviors*
  - *Match the new UI trends – Vulcan*
- *Make it easy to use for the XPages developer*
  - *Well integrated in the XPages page lifecycle*
  - *Easy Designer experience*

## New Set of Dojo Controls

- Leveraging the Dojo form controls
  - Extended set of input controls
    - Spinner, sliders,...
  - Dojo client side validation enabled
- New Dojo containers for high user interactivity
  - Tabbed panels, layout...

Zipcode Validation (d{5})	<input type="text" value="01886"/>	Value:
Basic Number	<input type="text" value="79A"/>	Value:
10-50	<input type="text" value="67"/>	Value:
Spinner	<input type="text" value="64"/>	Value:
Currency	<input type="text"/>	Value:

This value is out of range.

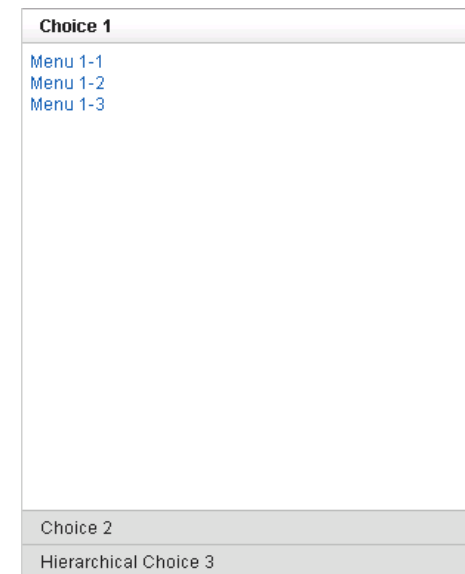
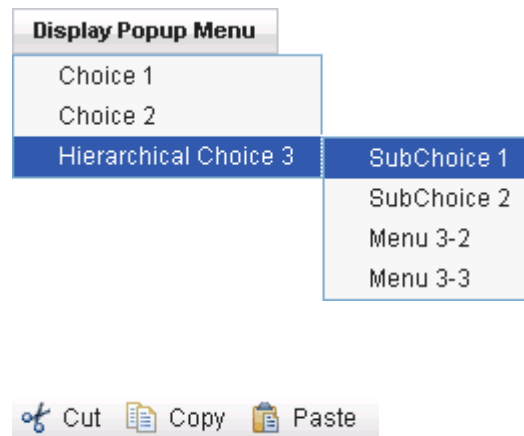
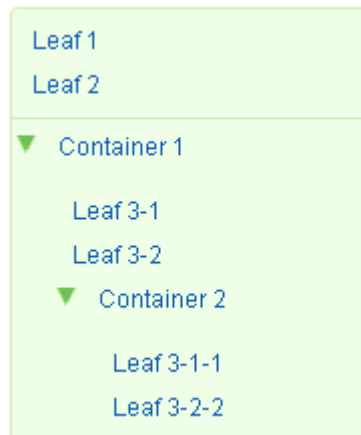


Tab Container

Tab 1	Tab 2
Tab panel #1	

# User Actions Through Outlines/Menus

- Provide a generic way for building action bars
  - Hierarchical navigators, accordions, pop-up menus, trees...
  - Content can be static (defined in the page), dynamic (retrieved from a data source) or a mix of both.
  - Easy mapping to actions (client and/or server side)



# Extended Editing Context

- Beyond the traditional web form/submit/navigate pattern
  - Editing the data “In Context”
  - Provide various flavors of dialogs

## Modal Dialog

User: Loretta, Cooper [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Shelia, Contreras [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Claire, Lowery [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Ricky, Harding [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Gabriel, Wagner [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Samuel, Scott [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Karen, Jordan [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Pauline, Hendricks [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Peggy, McCarthy [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Cornelia, Glover [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Katheryn, Phillips [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Karla, Townsend [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Lula, Gamble [Edit - Modal](#) -- [Edit - Tooltip](#)

User: ... [Edit - Modal](#) -- [Edit - Tooltip](#)

**Edit User**

First name:

Last name:

E mail:

City:

## Tooltip Dialog

User: Loretta, Cooper [Edit - Modal](#) -- [Edit - Tooltip](#)

User: Shelia, Contreras [Edit - Modal](#) -- [Edit - Tooltip](#)

User: ...

**First name:**

**Last name:**

**E mail:**

**City:**

User: ...

User: Karla, Townsend [Edit - Modal](#) -- [Edit - Tooltip](#)

## In Context Editing

User: Rosanna, McCoy [Edit](#)

User: Phoebe, Livingston [Close](#)

**First name:**

**Last name:**

**E mail:**

**City:**

User: Jonathan, Jacobson [Edit](#)

User: James, Mullins [Edit](#)

## Dynamic Tabbed Interface

**New Contact - Client Side** **New Contact - Server Side**

Home Tab [New Document](#) [Daisy Kline](#) [Allan Holt](#)

**First name:**  Required field, client side validation

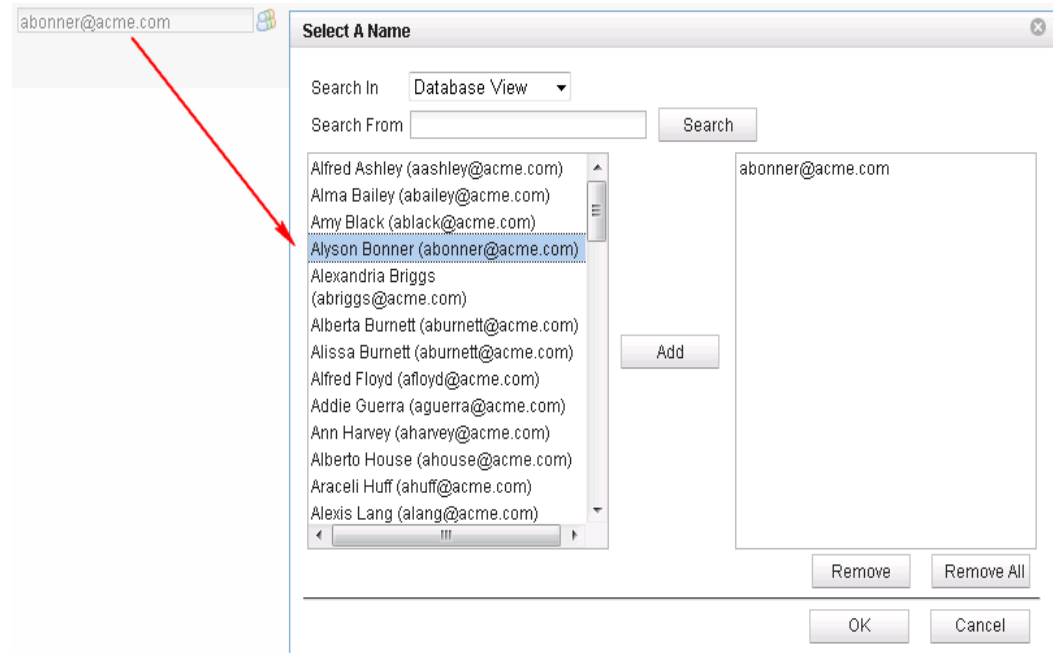
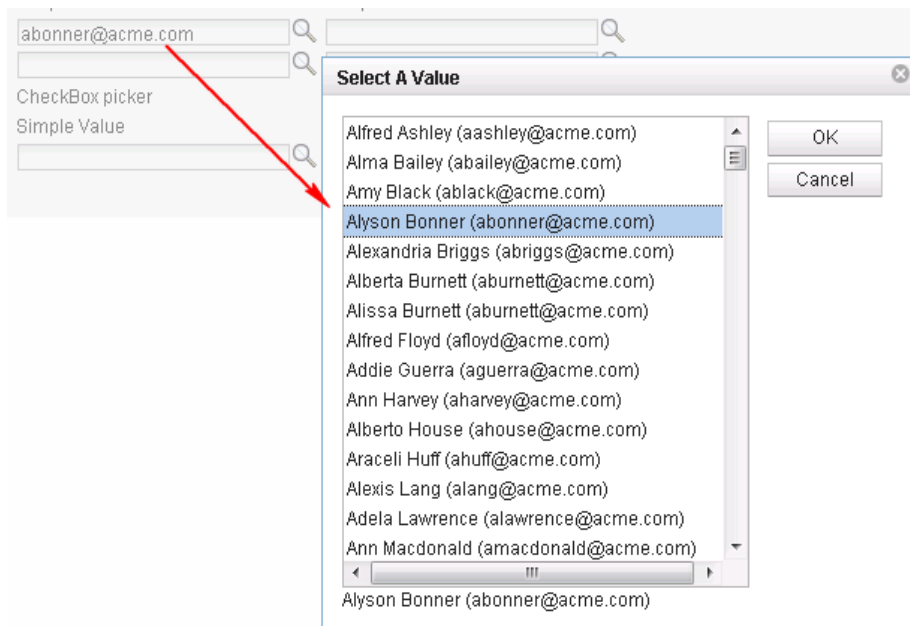
**Last name:**  Required field, server side validation

**E mail:**

**City:**

# Value and Name Pickers

- Select data from any data source
  - Domino view, Address Book, Managed bean..
- Integrated with the standard TypeAhead component
- Pluggable UI for high degree of customization



# New View Control with Custom Layout

- Easy data binding to view data
- Custom layout of the expandable detail section
- A new managed bean keeps the view context (current page, expanded rows...)

<a href="#">Collapse All</a>   <a href="#">Expand All</a>	<a href="#">Previous</a>   <a href="#">1</a>   <a href="#">2</a>   <a href="#">3</a>   <a href="#">4</a>   <a href="#">5</a>   <a href="#">Next</a>
<b>Jul 28, 2010</b>	
<b><a href="#">Morbi a nulla lorem</a></b>	
Morbi a nulla lorem. Morbi vel ligula et arcu facilisis posuere. Curabitur luctus interdum mauris, in auctor quam sagittis quis. Suspendisse potenti. Duis interdum purus eu risus pellentesque sodales. Aenean pretium consequat nulla sit amet convallis. Curabitur pharetra nibh a neque eleifend ...	
<a href="#">Reply</a>   Tags: <a href="#">See them</a>	
<b>Jul 29, 2010</b>	
<b><a href="#">Aliquam imperdiet rutrum lorem nec pulvinar</a></b>	
<b>Jul 30, 2010</b>	
<b><a href="#">Etiam a aliquam libero</a></b>	
Etiam a aliquam libero. Nulla et lacus lorem, sit amet vehicula enim. Nam mi arcu, sollicitudin nec vehicula ac, feugiat nec lectus. Nullam aliquam interdum laoreet. Mauris laoreet fringilla tellus, rutrum malesuada orci elementum vel. Donec varius, quam eu sollicitudin lacinia, tellus elit ...	
<a href="#">Reply</a>   Tags: <a href="#">See them</a>	
<b>Jul 31, 2010</b>	
<b><a href="#">Nulla sed augue lectus</a></b>	
<b><a href="#">Proin mi sapien</a></b>	



# Interactive Views

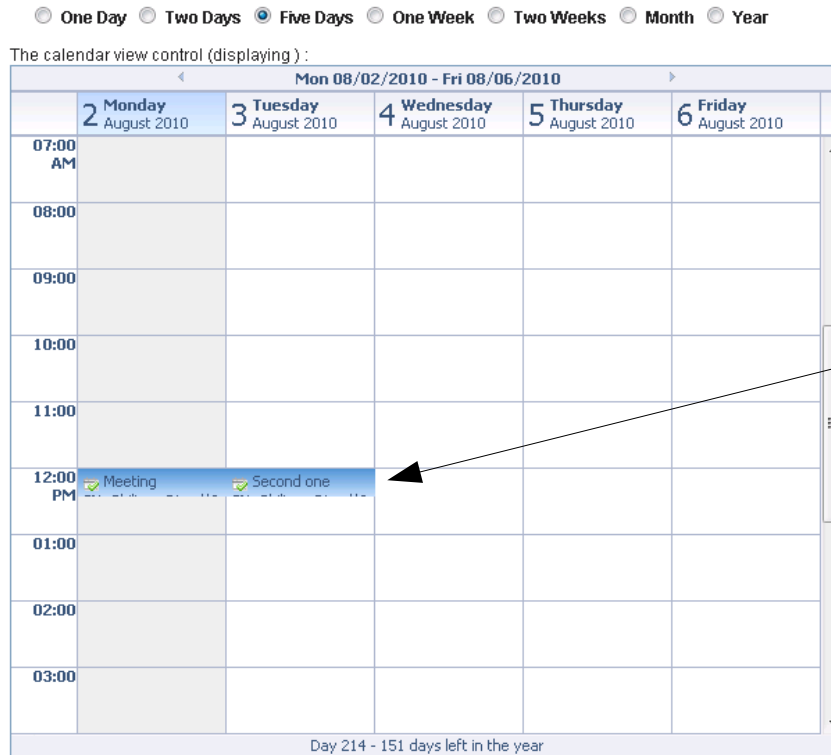
- View content rendered in a scrollable grid
  - Either the Dojo grid or the iNotes virtual list, depending on the need
    - iNotes virtual list supports categorization, document hierarchy...
    - Dojo grid supports editing and is not tied to Views
- Data is accessed using REST services provided by the XPages
  - Custom columns can be computed, and events handled
  - Documents can also be updated for the column pointing to fields

FirstName	LastName	City	EMail	ShortName
Petra	Hayden	Coral Springs	phayden@acme.com	PHAYDEN
Lorraine	Blevins	Nowalk	lblevins@acme.com	LBLEVINS
Rosanna	Mccoy	Chesapeake	rmccoy@acme.com	RMCCOY
Phoebe	Livingston	Salinas	plivingston@acme.com	PLIVINGSTON
Jonathan	Jacobson	Oklahoma	jjacobson@acme.com	JJACOBSON
James	Mullins	Salt Lake	jmullins@acme.com	JMULLINS
Lorraine	Ryan	Tallahassee	lryan@acme.com	LYRAN
Joanna	Bentley	Columbia	jbentley@acme.com	JBENTLEY
Cassandra	Webster	Norfolk	cwebster@acme.com	CWEBSTER
Olive	Boyer	San Jose	oboyer@acme.com	OBOYER
Vera	Ashley	Santa Clarita	vashley@acme.com	VASHLEY

First Name	Last Name	city
Jessica	Hatfield	Savannah
Alyssa	Cruz	Springfield
Allan	Holt	Jacksonville
Daisy	Kline	Newark
Marlene	Tucker	Elgin
Elaine	Hayden	Durham
Cecelia	Chase	Fort Lauderdale
Lois	Valenzuela	Fayetteville
Jill	Parker	Naperville
Elva	Allen	Hampton
Evelyn	Duncan	Pasadena
Ines	Sheppard	Victorville

# Access to Calendar Views

- Visualize calendar Notes/Domino views
- Add CRUD operations through custom forms



## Meeting crud

Date:

Subject:

# Dynamic Pages

- Make the content of a page dynamic
  - Parts of the page are discarded/reconstructed on demand
- The user never leaves the current page
  - Very efficient runtime behavior
- The context is kept using the URL hash technique
  - Makes it “bookmarkable”, and enables the back button

XPagesExt.nsf/Core\_DynamicPage.xsp#content=contact&action=editDocument&documentId=C4CE

[All Contacts View](#)

[New Contact](#)

[Edit First Contact](#)

Previous 1 2 3 4 5 6 7 8 ... Next				
First Name	Last Name	E Mail	City	Created
<a href="#">Jessica</a>	Hatfield	jhatfield@renovations.com	Savannah	Sep 10, 2010
<a href="#">Alyssa</a>	Cruz	acruz@renovations.com	Springfield	Sep 10, 2010
<a href="#">Allan</a>	Holt	aholt@renovations.com	Jacksonville	Sep 10, 2010

[All Contacts View](#)

[New Contact](#)

[Edit First Contact](#)

First name:	<input type="text" value="Jessica"/>
Last name:	<input type="text" value="Hatfield"/>
E mail:	<input type="text" value="jhatfield@renovations.com"/>
City:	<input type="text" value="Savannah"/>
Numfield:	<input type="text"/>
	<input type="button" value="Submit"/>



# Increase the developers productivity

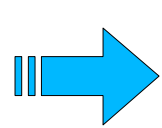
- *Provide ready to use, well tested code, that handles common situations*
- *Wrap the Dojo complexity into components and simple actions*

## Predefined Managed Beans

- Get easy access to common data
  - Current user name, email...

## Dojo Client Side Simple Actions

- Make Dojo easier to use through simple actions
  - The Dojo code is generated based on the action properties



# Provide and Consume REST services

- *Define an architecture for hosting REST services within an XPage*
- *Make these REST services connected with Dojo store for easy consumption*

# Creating REST Services

- Defining a REST service architecture
    - Definition of parameterizable REST service engines
      - Created as a hierarchy of reusable, customizable services
      - Independent from XPages: can be triggered from a servlet
    - Multiple possible renderings: XML, JSON, binary...
  - An XPages component can have 2 faces:
    - It renders HTML during the render phase
    - It can render other kind of data on postback request
      - Identified by a path info in the URL, or a component client id
- `http://priand/XPagesExt.nsf/Core_RestServices.xsp/contactsfile?start=0&count=4`
- High level of security: View columns/field can be hidden, postback can be restricted to the pages running the service...



# XPages REST Service Component

- A new XPages component instantiates a REST service engine
  - Delegates to the engine on postback calls
  - Renders a Dojo store that connects to the service
- Many services are available
  - Domino View, Document, Value picker...
  - Can be consumed by client controls, like Dojo grid

## Calling Server Code using JSON RPC

- JSON RPC allows a client to call methods running on the server
  - A client JavaScript object exposes methods that call a service
  - The server provides the implementation of the method
    - The Extension Library provides an engine that can be triggered from a servlet or an XPages component
- An XPage component makes it easier
  - Generates the client side JavaScript object that connects back to the server
  - Uses JavaScript on the server for the method implementation
    - Allows complex JavaScript objects to be passed as parameters



# Integration in the broader Lotus Portfolio

- *Provide the necessary components to integrate with:*
  - *Lotus Sametime*
  - *Lotus Connections*

# Content Type Rendering

- Computed fields, as well as view columns, supports a content type property
  - Generally support Text or HTML
  - But can be extended to support custom rendering
- New renderers can be contributed through extension points

# Lotus Sametime Integration

- Sametime awareness rendering

The screenshot displays the OpenNTF XPages Extension Library interface. On the left, the 'Properties' pane shows the 'format' section with the 'contentType' property set to 'xs:sametime.livename'. A red arrow points from this value to a 'Meeting Summary' item in the main content area. The 'Meeting Summary' item is a document icon with the title 'Meeting Summary', created by 'John Doe/renovations' on 'Jul 6, 2009 1:31 PM' with 'Responses: 1'.

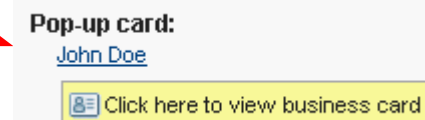
Category	Property	Value
format	contentType	xs:sametime.livename
	disableTheme	
styling	outerStyleClass	
	style	
	styleClass	
	themeId	

**Meeting Summary**  
Created by John Doe/renovations  
 John Doe/renovations  
| Jul 6, 2009 1:31 PM | Responses: 1

## Lotus Connections Integration

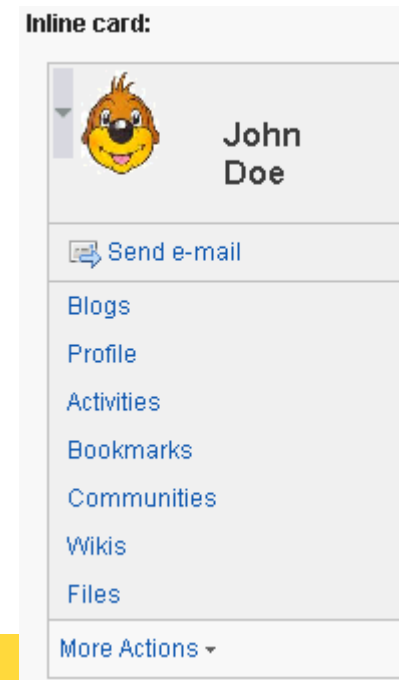
- Popup card

Value	<b>format</b>	
Style	contentType	xs:connections_card
Font	<b>styling</b>	
Background	disableTheme	
Margins	outerStyleClass	
<b>All Properties</b>	style	
	styleClass	
	themeId	



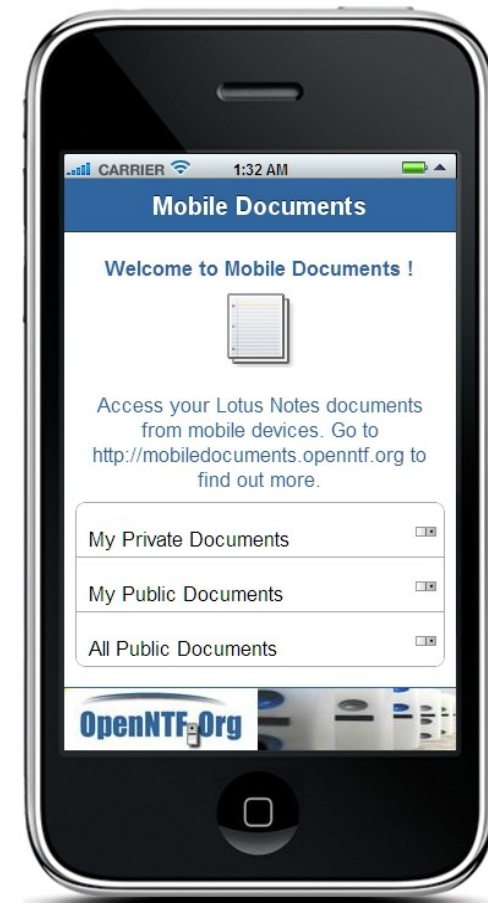
- Inline Business card

Value	<b>format</b>	
Style	contentType	xs:connections_card_inline
Font	<b>styling</b>	
Background	disableTheme	
Margins	outerStyleClass	
<b>All Properties</b>	style	
	styleClass	
	themeId	



# ➡ Targeting Mobile Platforms

- *Enable developers to develop mobile apps via XPages' rapid application development mechanism*
- *Enable developers to build mobile apps that look & feel like native apps to achieve the best user experience*
- *Enable developers to build sophisticated mobile apps accessing native services and supporting offline*
- *Allow building mobile apps for Android™, iPhone® and Blackberry® using XPages*



## Use of HTML/JavaScript/CSS

- Based on the initial set of XPages controls provided on openNTF
  - But using native controls
- Web technologies are used, with eventually native extensions
  - Dojo Mobile – Since Dojo 1.5
  - PhoneGap or other libraries to get access to native platform services (wink toolkit?, cubiq.org?)
  - Integration of new libraries (wink toolkit?, cubiq.org?)



## What the Library is Providing

- Automatic detection of the device based on the user agent
  - Current device is available to JavaScript
- New themes targeting the mobile platforms
  - Adapts to the look and feel of the platform
  - 3 themes currently proposed: iPhone, BlackBerry and Android
- Set of new, mobile dedicated controls
  - Application configuration/layout
  - New renderers for existing controls (ex: view)
  - Mobile specific controls (ex: on/off)

## Application Configuration/Layout

- Define one XPages that contain the entire application
  - Uses a dynamic JSF tree on the server
  - Allows smooth transition between the pages
- Application Configuration
  - Defines the main options the mobile application
    - Option menus, ...

# Possible Dedicated Mobile Controls/Renderers

User name

Password

☒ Remember me

