



1100 - Break out of The Box

Integrate existing Domino data with modern websites

Karl-Henry Martinsson, Deep South Insurance

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Integrate existing Domino data with modern websites

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Image by MikeHolmesfour





I AM...



- Swede living in Dallas, TX
- Sr. Application Developer at Deep South Insurance
- Programming since 1982
- Web developer since 1994
- Notes/Domino developer since 1996
- Lotusphere/Connect attendee since 1997
- IBM Champion since 2014
- <http://blog.texaswede.com>



Make Every **Moment** Count



TEXASSWEDE



My Story



- Old infrastucture
 - Domino 8.5.2 server and Notes 8.5.2 Basic client
- Company unwilling to upgrade
 - Memory requirements for Standard client
 - Citrix environment – limited memory available
 - Upper management thinks Notes/Domino is legacy
- Management requests
 - New web applications with modern look-and-feel
 - Future mobile support (phone/tablet)





Why not XPages?



- Infrastructure not supporting XPages (Domino 8.5)
- No XPages development skills
- Tight deadline – no time to learn
- Better control of versions
- Access to frameworks not yet in Domino (e.g. jQuery)
- jQuery/Bootstrap plugin availability



Bootstrap and jQuery to the Rescue!



Make Every **Moment** Count

File Edit View History Bookmarks Tools Help

Deep South Loss Control x +

dctest.deep-south.com/websites/losscontrol.nsf/index.html#

Search

DEEP SOUTH[®] INSURANCE SERVICES SINCE 1967

Loss Control - Web

Steve LoCoco

My Inspections

- Assigned
- Scheduled
- by Date
- Calendar
- Map View
- Completed
- Recommendations
- Activity

Assigned Inspections

Search

Policy Number	Cat.	Insured Name	Assigned	Due Date	Effective	Team	Tier	Underwriter
PICLA0003012	REC	THREE RIVERS SERV.	05/23/2015	07/21/2015	05/11/2015		N	Sheila Thompson
QSLA0010040	REN	S & P ARMA INC	08/03/2015	09/17/2015	08/01/2015		P	Kay Wessels
QSLA0010040	REC	ELZE TRUCKING	06/22/2015	08/22/2015	05/18/2015		N	Kay Wessels
PICCO0004008	SV	C W C PARKS LLC	06/10/2015	08/09/2015	01/11/2015		C	Melinda Wilson
PICLA0003009	SV	TEAM WASTE GOLF C.	10/29/2015	12/28/2015	06/01/2015			Sheila Thompson
PICLA0003009	REC	TEAM WASTE GOLF C.	06/22/2015	08/22/2015	06/01/2015			Sheila Thompson
PICGA0001005	REN	L & V TRUCKING INC	07/21/2015	09/04/2015	06/26/2015		C	Gayle Collins
QSLA0010017	REC	S & V TRUCKING SER.	07/07/2015	09/01/2015	06/10/2015		C	Kay Wessels
PICCO0004008	SV	JERRY WILLIAMS TRG.	05/20/2015	11/14/2015	04/18/2015		P	Douglas Clements
PICLA0003002	SV	HORNBECK OFFSHORE	08/29/2015	10/28/2015	04/01/2015		C	Sheila Thompson

Showing 1 to 10 of 41 rows 10 records per page

<< < 1 2 3 4 5 > >>

QSLA0015 - Policy Summary

Insured ELZE TRUCKING

Policy Period 05/18/2015 to 05/18/2016

Underwriter Kay Wessels

Open Inspection Request





How does it work?
How do you do this?

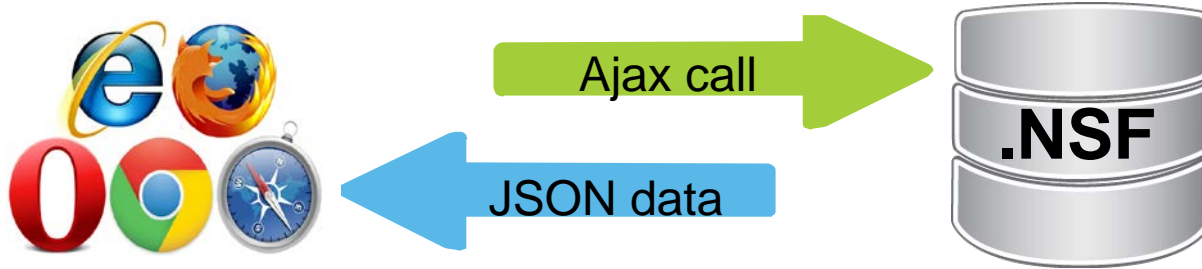
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How does it work?



- HTML and CSS
- jQuery (Javascript)
- Choice of framework
 - Bootstrap
 - jQuery UI / jQuery Mobile
 - and many more...

- Process Ajax from browser
- Generate and return JSON
 - Lotusscript agents
 - XPages agents
 - ?ReadViewEntries
 - ExtLib REST Service control



How to add jQuery to a web page

```
<meta name="viewport" content="width=device-width, initial-scale=1">
<title>Demo - IBM Connect 2016</title>
<script src="//ajax.googleapis.com/ajax/libs/jquery/1.11.1/jquery.min.js"></script>
<script src="//maxcdn.bootstrapcdn.com/bootstrap/3.3.5/js/bootstrap.min.js"></script>
<link href="//maxcdn.bootstrapcdn.com/bootstrap/3.3.5/css/bootstrap.min.css" rel="stylesheet">
<link href="myapplication.css" rel="stylesheet">
```

- Load jQuery from Content Delivery Network (CDN)
 - Start with // (no protocol)
 - Works with and without SSL – no code modification needed
 - Will **not** work on local pages, must be on a web server
- CDN available from Google, Microsoft and others
- Download and use local files if desired



How to add Bootstrap to a web page



```
<meta name="viewport" content="width=device-width, initial-scale=1">
<title>Demo - IBM Connect 2016</title>
<script src="//ajax.googleapis.com/ajax/libs/jquery/1.11.1/jquery.min.js"></script>
<script src="//maxcdn.bootstrapcdn.com/bootstrap/3.3.5/js/bootstrap.min.js"></script>
<link href="//maxcdn.bootstrapcdn.com/bootstrap/3.3.5/css/bootstrap.min.css" rel="stylesheet">
<link href="myapplication.css" rel="stylesheet">
```

- Bootstrap loaded from BootstrapCDN.com
 - Minified version of the files is smaller and loads faster
 - Other CDN sources also available
 - Can download and use local files just as with jQuery
- Add any plugins *after* jQuery and Bootstrap is loaded
- Local CSS located after Bootstrap CSS and any plugin





Use Lotusscript to generate JSON/JSONP from Domino

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Lotusscript Class to Generate JSON



- Simplify JSON creating in Lotusscript
 - Text values (strings) – fix quotes to avoid bad JSON
 - Boolean values (true/false)
 - Status value (success or error)
 - Returns MIME type and JSON string
 - Also supports JSONP data
 - Script library in downloadable sample database
- Also available on <http://blog.texasswede.com>





Sample Lotusscript Code to generate JSON



```
Option Public
Option Declare
Use "Class.JSON"
```

```
Sub Initialize
    *** Custom class
    Dim json As JSONData

    *** Create new JSONData object
    Set json = New JSONData()

    *** Generate JSON to return
    Call json.SetValue("PhoneNumber", "817-555-1212")
    Call json.SetValue("Email", "texasswede@gmail.com")
    Call json.SetValue("Name", "Karl-Henry Martinsson")
    json.success = True
    *** Return JSON to calling browser
    Call json.SendToBrowser()
End Sub
```





What is JSONP?



- Security limitation in JSON – only works within same server
- JSONP (JSON with Padding) addresses this:
 - Create call-back function on client to receive return data
 - Return data is a Javascript function call containing JSON

JSON return data:

```
{"firstName":"Karl-Henry", "lastName":"Martinsson","email":"texasswede@gmail.com"}
```

JSONP return data:

```
personCallBack({"firstName":"Karl-Henry", "lastName":"Martinsson","email":"texasswede@gmail.com"})
```

Javascript/jquery call-back function:

```
function personCallBack(data) {  
    $("#firstName").html(data["firstName"]);  
    $("#lastName").html(data["lastName"]);  
    $("#emailAddress").html(data["email"]);  
}
```





Sample Lotusscript Code to generate JSONP




```
Option Public
Option Declare
Use "Class.JSON"
```

```
Sub Initialize
    *** Custom class
    Dim json As JSONData

    *** Create new JSONData object
    Set json = New JSONData()

    *** Generate JSON to return
    Call json.SetValue("PhoneNumber", "817-555-1212")
    Call json.SetValue("Email", "texasswede@gmail.com")
    Call json.SetValue("Name", "Karl-Henry Martinsson")
    json.success = True
    *** Return JSON to calling browser
    Call json.SendJSONPToBrowser("personCallBack")
End Sub
```





Use a plugin to create a Notes view on steroids

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Bootstrap Table Plugin



- Plugin by @wenzhixin
- Get it at <http://bootstrap-table.wenzhixin.net.cn/>
- CDN hosted version at CloudFlare.com
- Minimal HTML markup
- Javascript used to define columns and setting
- MIT License – no restrictions on usage





Overview



- Lotusscript agent on server
- Web page using Bootstrap and bootstrap-table plugin
- Use JSONP to return data from server to plugin
- Why JSONP?
 - Most likely page will be on a different server
 - Still works if page is on the same server





HTML code



```
<script src="//cdnjs.cloudflare.com/ajax/libs/bootstrap-table/1.9.1/bootstrap-table.min.js"></script>

<link rel="stylesheet" href="//cdnjs.cloudflare.com/ajax/libs/bootstrap-table/1.9.1/bootstrap-table.min.css">

<div id="tableToolbar">
  <div class="toolbarText">My Contacts</div>
</div>
<table id="contactTable"></table>
```





jQuery code



```
$("#contactTable").bootstrapTable({
    url: 'ajax_GetAllContacts.jsonp?OpenAgent',
    dataType: 'jsonp',
    search: true,
    showRefresh: true,
    pagination: true,
    pageSize: 25,
    classes: "table-condensed table-hover table-striped tableContent",
    toolbar: "#tableToolbar",
    columns: [{
        field: 'FirstName',
        title: 'First Name',
        width: 80,
        sortable: true
    }, {
        field: 'LastName',
        title: 'Last Name',
        width: 90,
        sortable: true
    },
    ...
    ...
});

function callbackGetAllContacts(data) {
    $("#contactTable").bootstrapTable('load', data);
}
```





Lotusscript agent



```
*** Agent Name: ajax_GetAllContacts.jsonp
*** -----
*** Get all documents in view to process
Set db = session.CurrentDatabase
Set view = db.GetView("(LookupContactsByLastName)")
Set col = view.AllEntries

*** Loop through all entries and build JSON to return
Set entry = col.GetFirstEntry
Do Until entry Is Nothing
    *** Build JSON for each entry and add to string
    Set json = New JSONData()
    Call json.SetValue("LastName", CStr(entry.ColumnValues(0)))
    Call json.SetValue("FirstName", CStr(entry.ColumnValues(1)))
    Call json.SetValue("Company", CStr(entry.ColumnValues(2)))
    Call json.SetValue("Address", CStr(entry.ColumnValues(3)))
    Call json.SetValue("City", CStr(entry.ColumnValues(4)))
    Call json.SetValue("State", CStr(entry.ColumnValues(5)))
    Call json.SetValue("ZIP", CStr(entry.ColumnValues(6)))
    Call json.SetValue("DocUNID", CStr(entry.ColumnValues(9)))
    *** Add new JSON to existing JSON string
    jsonString = jsonString + json.GetJSON() + "," + Chr$(13)
    Set entry = col.GetNextEntry(entry)
Loop
```

Performance Tip

Create a view containing all the values you need, one column for each value you want to access.

In the code create a NotesViewEntryCollection and loop through it using GetFirstEntry/GetNextEntry.

Use the ColumnValues property of the NotesViewEntry to read the values from view columns.

This will be faster than opening each NotesDocument to read values. Values are already indexed in the view.



Lotusscript agent cont.

```
*** Remove the trailing comma and line break if we have data
If Len(jsonString) > 4 then
    jsonString = Left$(jsonString, Len(jsonString)-2)
End If

*** Add brackets around array
jsonString = "[" + Chr$(13) + jsonString + Chr$(13) + "]"

*** MIME Header to tell browser what kind of data we will send
Print "content-type: application/javascript"

*** Send JSONP back to browser
Print "callbackGetAllContacts(" + jsonString + ")"
```

MIME content-type

JSON should be returned to the browser as application/json, encoded as UTF-8

JSONP should be returned to the browser as application/javascript.

The result



Demo 1 - Connect 2016

www.texasswede.com/Demo/Connect_2016.nsf/Demo1

My Contacts

Search

First Name	Last Name	Company Name	Mailing Address	City	State	ZIP Code
Christoph	Adler	panagenda	Donnersbergstrasse 1	Heppenheim		64646
Klaus	Bild	WebGate	Riedstrasse	Dietikon		
Montana	Billy	Montana Trucking, LLC	444 Big Bend Drive	Denver	CO	54321
Matteo	Bisi	Factor-y Srl		Mariano Comense	Italy	
Keith	Brooks	The Rockteam	33/1 Carmel Street	Rehovot	Israel	76305
John	Doe	Acme Inc.	221b Baker Street	Londor	UK	30304
Jane	Doe	MWLUG 2015	5000 Johnson Road #100	Atlanta	GA	30303
John	Doe, Sr	MWLUG 2014	1234 Martin Road #199	Atlanta	GA	30303
Westley	FarmBoy	Dread Pirates Roberts Ship	7 High Seas	Florin	Gilder	18A ROUS
Theo	Heselmans	Engage	Heiblokken 1	Olen	Belgium	2250

Showing 1 to 10 of 17 rows

10 records per page

< 1 2 >



Improved version – CRUD functionality



Make Every **Moment** Count

Create
Read
Update
Delete

Demo 2 - Connect 2016

www.texasswede.com/Demo/Connect_2016.nsf/Demo2

My Contacts

Search

First Name	Last Name	Company Name	Mailing Address	City	State	ZIP Code
Westley	FarmBoy	Dread Pirates Roberts Ship	7 High Seas	Florin	Gilder	I8A ROUS
Theo	Heselmans	Engage	Heiblokken 1	Olen	Belgium	2250
Stefan	Löfven	Sossarna	Sagerska palatset	Stockholm	Uppland	11010
Montana	Billy	Montana Trucking, LLC	444 Big Bend Drive	Denver	CO	54321
Matteo	Bisi	Factor-y Srl		Mariano Comense	Italy	
Klaus	Bild	WebGate	Riedstrasse	Dietikon		
Keith	Brooks	The Rockteam	33/1 Carmel Street	Rehovot	Israel	76305
Karl-Henry	Martinsson	Deep South Insurance	7701 Las Colinas Ridge	Iring	TX	75063
John	Doe	Acme Inc.	221b Baker Street	London	UK	30304
John	Doe, Sr	MWLUG 2014	1234 Martin Road #199	Atlanta	GA	30303

Showing 1 to 10 of 17 rows 10 records per page

« < 1 2 > »

Contact Details

Last Name:
Martinsson

First Name:
Karl-Henry

Company Name:
Deep South Insurance

Address:
7701 Las Colinas Ridge

City:
Iring

State:
TX

ZIP:
75063

Phone number:
817-899-7129

Email Address:
texasswede@gmail.com

New Edit Delete





Display Domino data as a web calendar

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Web calendar using FullCalendar



Demo 3 - Connect 2016

www.texaswede.com/Demo/Connect_2016.nsf/Demo3

January 31 — February 6, 2016

month week day

	Sun 1/31	Mon 2/1	Tue 2/2	Wed 2/3	Thu 2/4	Fri 2/5	Sat 2/6
all-day							
6am							
7am							
8am		8:00 - 9:30 Opening General Session Part I: Turn Moments into	8:00 Labs Open	8:00 - 1:30 Labs Open			
9am							
10am		10:00 - 11:00 Op Ge					
11am		11:00 - 11:30 Arc Con and e-C en	11:00 - 11:30 Cris dat Val un				
12pm							
1pm	1:00 - 2:00 Applicatio Integratio Learned				12:45 - 1:45 GURUpak un		
2pm	2:15 - 3:15 IBM The Connectic Clouds	2:00 - 3:00 Once You Go Graph...		2:00 - 3:00 ASK the Developers and			
3pm		3:00 - 4:30 Sol mu	3:30 - 4:30 Understand and un				
4pm	3:45 - 4:45 The XPages of Things: Integrate						
5pm		4:45 - 5:00 A Be	5:00 - Break Out of the				
6pm			6:30 - 10:00				

Event Details

Event Title:

Break Out of the Box - Integrate Existing Domino Data with Modern Websites

Description:

Your company has decided to move some of your applications from the Notes client to the browser and, in the process, make them look more modern. But you don't have the luxury of spending time learning XPages, this needs to be done right away. In this session you will find out how to keep your data in a Domino environment and create an attractive and modern web front-end with industry standards to read, write, and update the Domino data using Ajax, JSON/JSONP and other technologies. You will also walk away with a sample database full of code that you can use back home.

Start Date/Time:

February 2nd 11:00 pm

End Date/Time:

February 2nd 11:30 pm

Location:

Solution EXPO Theater





JSON event data from Domino



```
[ {
  "id": "A4B85AA10AD64D7C86257F31000EFDAD",
  "title": "Lessons Learned: Administering our Internal IBM Development Hybrid Environment - SCN Iris",
  "start": "01/31/2016 01:00 PM",
  "end": "01/31/2016 02:00 PM",
  "className": "eventData eventDataJS",
  "editable": true
},
{
  "id": "0F89CB2569777F3586257F31001602E4",
  "title": "The XPages of Things: Integrate Bluemix with Your XPages Applications for a World of Possibilities",
  "start": "01/31/2016 03:45 PM",
  "end": "01/31/2016 04:45 PM",
  "className": "eventData eventDataJS",
  "editable": true
},
{
  "id": "97BF6CCAB1734AE986257F3100165A81",
  "title": "Opening General Session Part I: Turn Moments into Momentum",
  "start": "02/01/2016 08:00 AM",
  "end": "02/01/2016 09:30 AM",
  "className": "eventData eventDataCGS",
  "editable": true
},
{
  "id": "2ED3701BA208B86886257F31001674E0",
  "title": "Opening General Session Part II: The Future of Work Comes to Life",
  "start": "02/01/2016 10:15 AM",
  "end": "02/01/2016 11:15 AM",
  "className": "eventData eventDataCGS",
  "editable": true
},
}
```





FullCalendar plugin



- Download available at fullcalendar.io
- Hosted at cdn.cloudflare.com
- Extensive functionality and options
- Comprehensive documentation
- MIT License





Web calendar functions



- Move or resize calendar event
 - Calendar generates and sends data to server:
 - New start date/time and end date/time
 - Calendar entry ID – Notes DocUNID is very useful!
 - Lotusscript agent read values and update document
- Click on calendar event
 - Read ID of entry
 - Make Ajax call to get all document fields as JSON
 - Display returned values in event detail panel



Web calendar functions cont.



- Switch view between month, week and day
- Only requesting data for visible dates
 - Sends start date and end date to server
 - Make sure server agent reads the date range
 - Server should only return calendar entries within range
- Dialog box to confirm changes
- Popup alert to notify about success or failure of action





Potential improvements to your calendar



- Full CRUD functionality
 - Edit selected entry
 - Delete selected entry
 - Create new event
- All-day events
- Your imagination is (pretty much) the limit!





Thank you

Please fill out the session evaluation!

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