knowledge15

Everything as a Service



Scripting 301:
Advanced JavaScript for ServiceNow

Oliver Schmitt
Principal Consultant
ServiceNow

Matthias Martini
Principal Consultant
ServiceNow

© 2015 ServiceNow All Rights Reserved

servicenow

Introductions
Your Presenters

© 2015 ServiceNow All Rights Reserved

Your Presenters

- Oliver Schmitt
  - Principal Consultant, EMEA Central
  - 4 years with ServiceNow
  - Custom Apps, Integrations, Architecture



- Matthias Martini
  - Principal Consultant, EMEA Central
  - 3.5 years with ServiceNow
  - Service Catalog, Commercial, Architecture



© 2015 ServiceNow All Rights Reserved

Lab Environment & Guidelines

- Instance URL will be: https://scripting301-<###>.lab.service-now.com
- Please raise your hand if you have difficulties logging into your instance
- Submit feedback via the application in your instance

- Feel free to ask questions to us or the guru's around you!

© 2015 ServiceNow All Rights Reserved

Agenda

Server Side vs. Client Side

GlideAjax & JSON

Client Script Inheritance

Display Business Rules and the Scratchpad

G_List2 & Additional Resources

© 2015 ServiceNow All Rights Reserved

Server Side vs. Client Side

What's the right choice or does a dark side exists?

© 2015 ServiceNow All Rights Reserved

Some Logical Facts…

- Server side (Rhino):
  - Known environment
    - Runs in ServiceNow DCs on standardized boxes
  - Code always runs in a defined context
    - Business Rules, ACLs, Script Includes etc.
  - Can't be manipulated from the outside
    - It cant be seen from anyone else than an admin or privileged users
  - Scalable with lots of computing power
    - Multiple nodes / load balancing / page load affected
- Client side (Browser):
  - Usually unknown environment
    - Could be any browser
  - JavaScript engine behavior could differ
    - Based on the browsers engine some JS commands are available or not or behave different
  - Bigger customizations have to be checked in detail
    - Extensive regression testing after process or product upgrades
  - Code is executed in the browser
    - Easier to break and find leaks because you could simply dig through the code
  - Huge code snippets or massive calculations could slow down or stop the browser
    - Depends on the computing power of the user

© 2015 ServiceNow All Rights Reserved

What Does This Mean?

- It is best practice to implement as much as possible on the server side because the environment won't change and is therefore predictable. It is possible to influence.
- Try to avoid extensive customizations and the use of unsupported functions or libraries
- Locate as much logic as possible on the server side
- Big transactions or calculations should be done on the server and the client should just process or display results
- Security will be increased because the possibility of leaks decreases

© 2015 ServiceNow All Rights Reserved

GlideAjax & JSON

Combining the Power of Both Sides

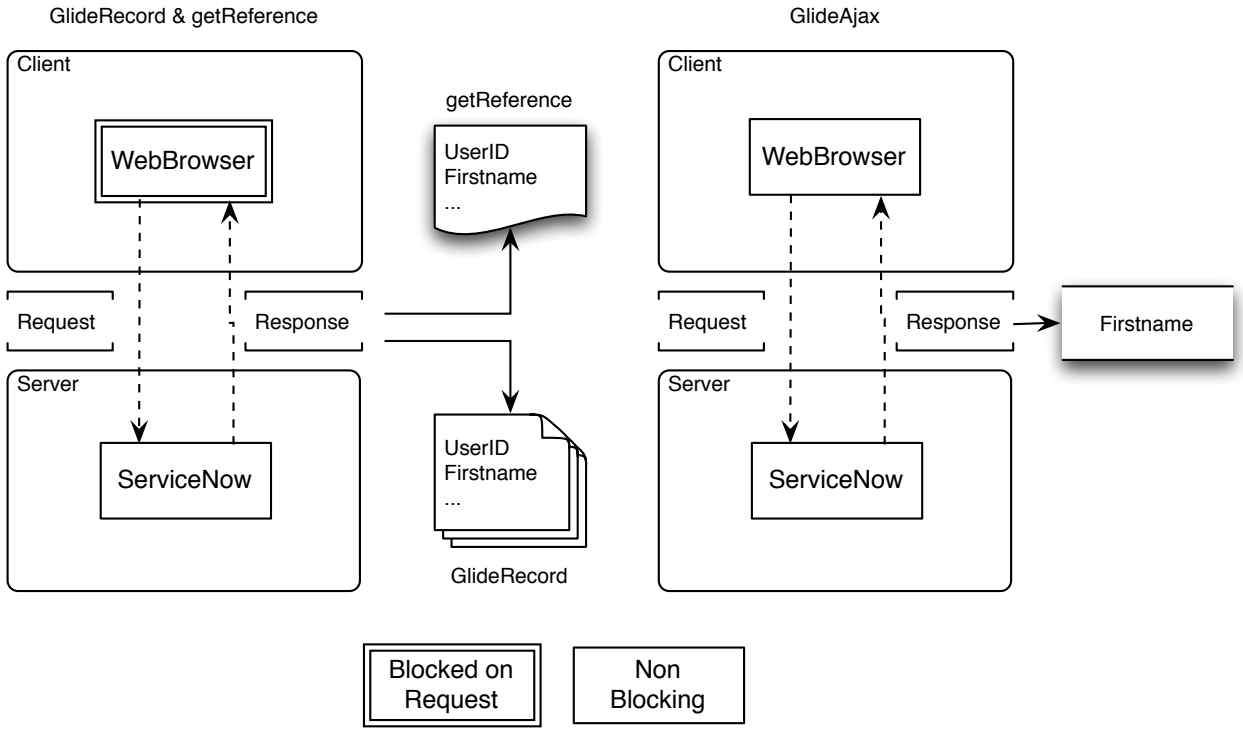
© 2015 ServiceNow All Rights Reserved

GlideAjax

- There are 3 different types:
  - 2 are blocking Ajax calls
  - 1 is non blocking

- Blocking Ajax calls
  - getReference() – allows callback, but always retrieves whole object, more network traffic
  - GlideRecord.query() – no callback option, can retrieve up to 500 records, should not be used
- Non-blocking Ajax calls
  - GlideAjax – allows both, execution of server side code and return of multiple structured values, best option

- Example:



© 2015 ServiceNow All Rights Reserved

JSON(Java Script Object Notation)

- JSON (Java Script Object Notation) is a natural extension to the JS language to describe sets of data
  - Script include available out of the box
  - Is an industry standard
  - Allows multiple return values and complex data structures
  - (Complex) Processing can be done on the server and only relevant information is sent back
- Examples:
  - {“name1”:”value1”, “name2”:”value2”}
  - {“name1”:”value1”, “locations”:{“ger”:”munich”}, “usa”: “san francisco”}}

- Encode & decode a JSON String:

```
// Encode an array on the server side
var json = new JSON(); //init json script include
var result = {“Here”; ”you go”}; //associative array
return json.encode(result);


//decode on the client side
function processResponse(response)
{
   var answer =
response.responseXML.documentElement.getAttribute(“answer”);
   var jsonObject = answer.evalJSON(true); //decode in object

   for (obj in jsonObject)
   {
      … //process response
   }
}
```


© 2015 ServiceNow All Rights Reserved

Lab 1.1 & Lab 1.2 – GlideAjax & JSON

- **Lab 1.1**: Handling simple return values using AJAX, *without* JSON
- **Lab 1.2**: Handling complex return values using AJAX, *with* JSON

© 2015 ServiceNow All Rights Reserved

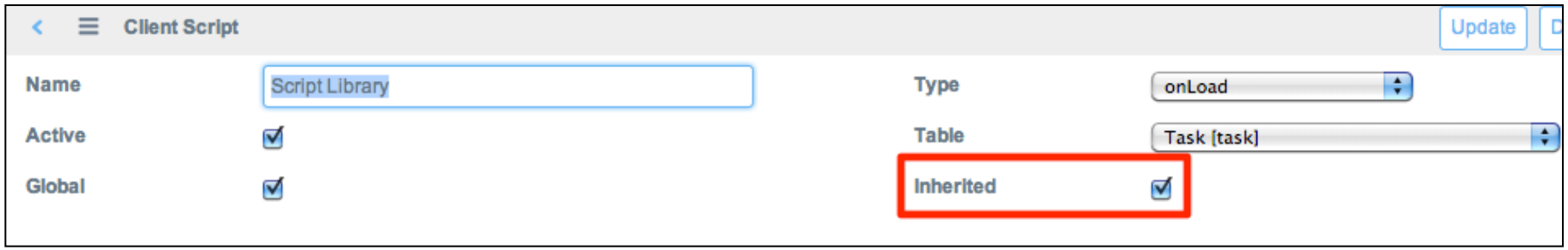
Client Script Inheritance

The Client Side Way of Building Libraries

© 2015 ServiceNow All Rights Reserved

Client Script Inheritance

- Server Side
  - Script includes will be used for inheritance
  - Encapsulation available
  - Overrides possible
- Client Side
  - onLoad Client Script is the way to go
  - Classes or objects can be stored and inherited across multiple task tables
  - UI Script should be avoided because they could conflict with existing functionality and will be loaded globally



© 2015 ServiceNow All Rights Reserved

Lab 2.1 – Client Script Inheritance

- **Lab 2.1**: Building a client side script library

© 2015 ServiceNow All Rights Reserved

Display Business Rules and the Scratchpad

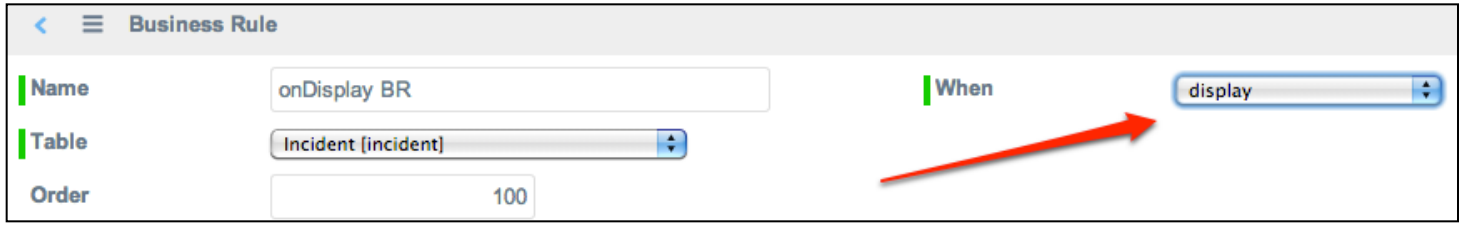
Or how to preload information?

© 2015 ServiceNow All Rights Reserved

Display Business Rules

- onDisplay Business Rule will be processed on form load
  - Execution:
    - Data will be retrieved from the database
    - onDisplay rules are executed
    - Form will be presented to the user
  - Field changes are temporary and not yet submitted to the database
  - To the client values appear to be the values from the database
    - No indication that the values were modified
    - Similar concept to calculated fields

- Benefits
  - Values can be preloaded
  - Round trips to the server can be saved
  - User experience & performance can be increased



© 2015 ServiceNow All Rights Reserved

Scratchpad

- g_scratchpad is sent to the client as part of the form
  - Available in DisplayBR to pass additional data
  - Will be passed in String values to the client as an object
  - Can be used in combination with JSON to return complex structures
  - Available in workflows

- Benefits
  - Complex data structures can be sent to the client
  - Can be leverage as sort of a cache
  - Performance / Client optimization

© 2015 ServiceNow All Rights Reserved

Lab 3.1 – onDisplay BR & Scratchpad

- **Lab 3.1**: Using server side calculations and transporting them to the client to drive behavior

© 2015 ServiceNow All Rights Reserved

G_List2 & Additional Resources

Additional Client Side Objects

© 2015 ServiceNow All Rights Reserved

G_List2 Object

- Client side object to manipulate lists and related lists
- Can be used in Client Scripts, UI Actions and Context Menus
- Grants the ability to reload or add filters to lists based on additional logic

- UseCase: Reload related list without reloading whole form
- https://wiki.servicenow.com/index.php?title=GlideList2_(g_list)

© 2015 ServiceNow All Rights Reserved

Lab 4.1 – Glide List

- **Lab 4.1**: Refreshing a related list without reloading the whole form

© 2015 ServiceNow All Rights Reserved

Additional Resources

- Client Script Best Practice
  - https://wiki.servicenow.com/index.php?title=Client_Script_Best_Practices
- Coding Best Practice
  - https://wiki.servicenow.com/index.php?title=Coding_Best_Practices
- Browser DevTools
  - http://devtoolsecrets.com/
- Business Rules Best Practice
  - https://wiki.servicenow.com/index.php?title=Business_Rules_Best_Practices
- Commenting Your Work Best Practice
  - https://wiki.servicenow.com/index.php?title=Commenting_Your_Work

© 2015 ServiceNow All Rights Reserved

Top Takeaways

1. Always try to put as many logic as possible on the server side (controlled environment)

2. Reuse code / functionality by building libraries

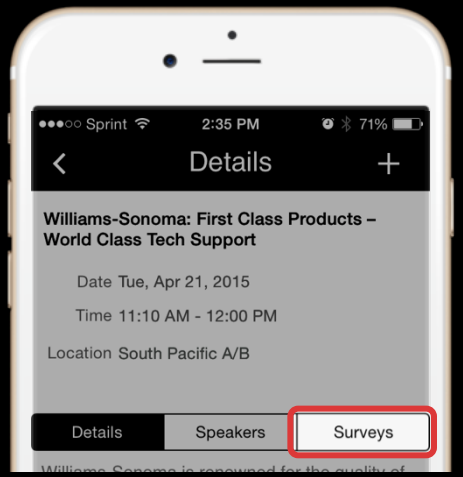
3. Always use GlideAjax for server roundtrips

© 2015 ServiceNow All Rights Reserved

How Did We Do?

Your feedback on this session helps us deliver great content.

Please take a moment to complete a session survey in the Knowledge15 app or use the survey forms at the back of the room.



Everything as a Service

Thank You

Oliver Schmitt

Principal Consultant

ServiceNow

oliver.schmitt@servicenow.com

Matthias Martini

Principal Consultant

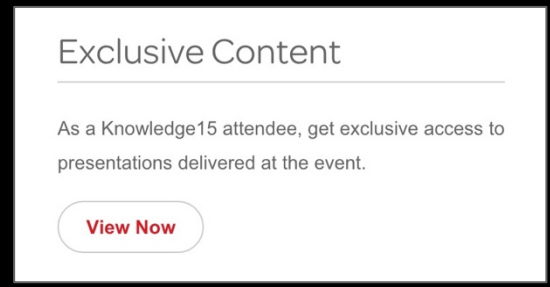
ServiceNow

matthias.martini@servicenow.com

Get Presentations

As a Knowledge15 attendee, you have exclusive access to breakout and lab session content from the event.

1. Go to knowledge.servicenow.com
2. Log into the community
3. Click on **View Now** button



knowledge.servicenow.com

© 2015 ServiceNow All Rights Reserved