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Scripting 301: Advanced JavaScript for ServiceNow

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Agenda

Server side vs. Client side

GlideAjax & JSON

Client Script Inheritance

Display Business Rules and the scratchpad

G_List2 & Additional Resources

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Server side vs. Client side

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

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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

- Client side (Browser):
  - Usually unknown environment
    - Could be any browser
  - JavaScript engine behavior could differ
    - Based on the browsers version some JS commands are available or not or work 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 laptop of the user

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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 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 increase because the possibility of leaks decreases

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GlideAjax & JSON

Combining the power of both sides

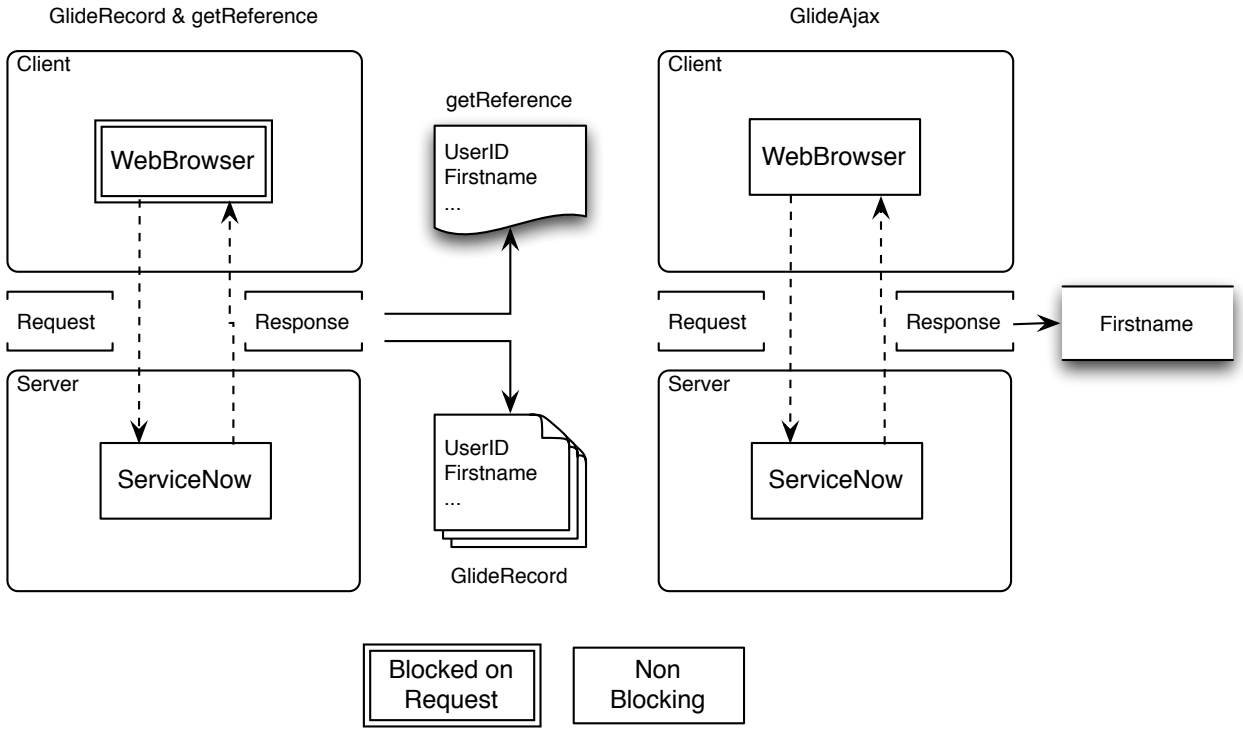
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GlideAjax

- 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:



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JSON(Java Script Object Notation)

- JSON (Java Script Object Notation) 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
   }
}
```

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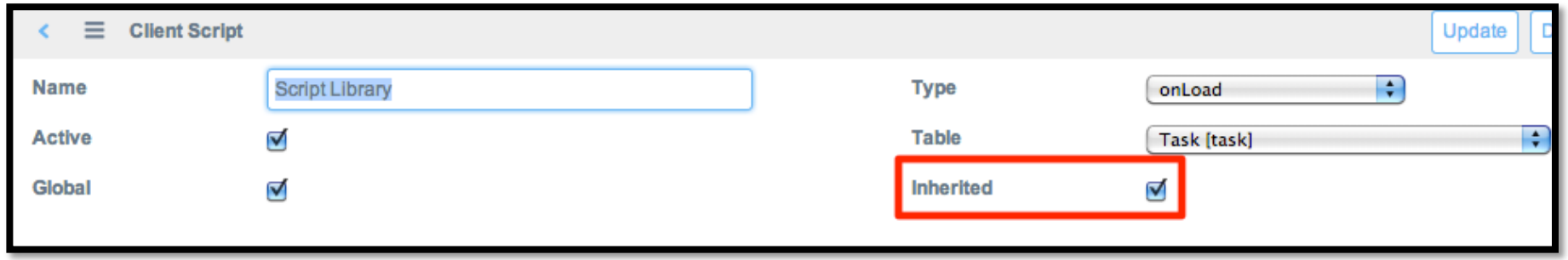
Client Script Inheritance

The client side way of building libraries

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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
  - Own 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 everywhere



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Display Business Rules and the scratchpad

Or how to preload information?

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Display Business Rules

- onDisplay Business Rule will be processed when a user requests a form to load
  - Execution:
    - Data is read from the database
    - onDisplay rules are executed
    - Form will be presented to the user
  - Field changes are temporary and not yet submitted to the DB
  - To the client values appear to be the values from the DB
    - 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



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Scratchpad

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

- Benefits:
  - Complex data structures can be sent to the client
  - Can be leverage as sort of a cache

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G_List2 & Additional Resources

Additional client side objects

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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)

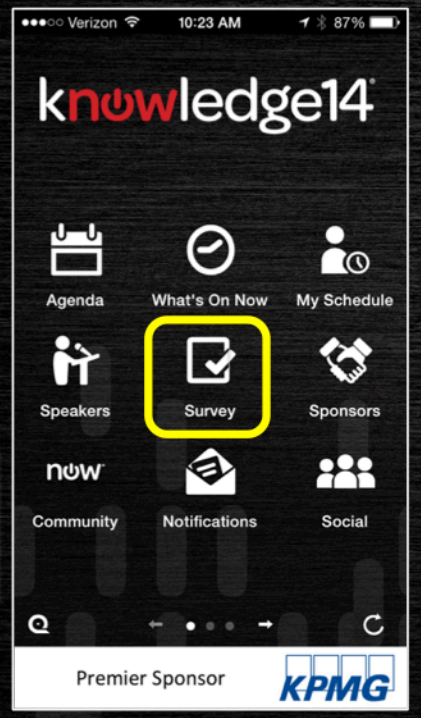
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Additional Resources

- 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

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