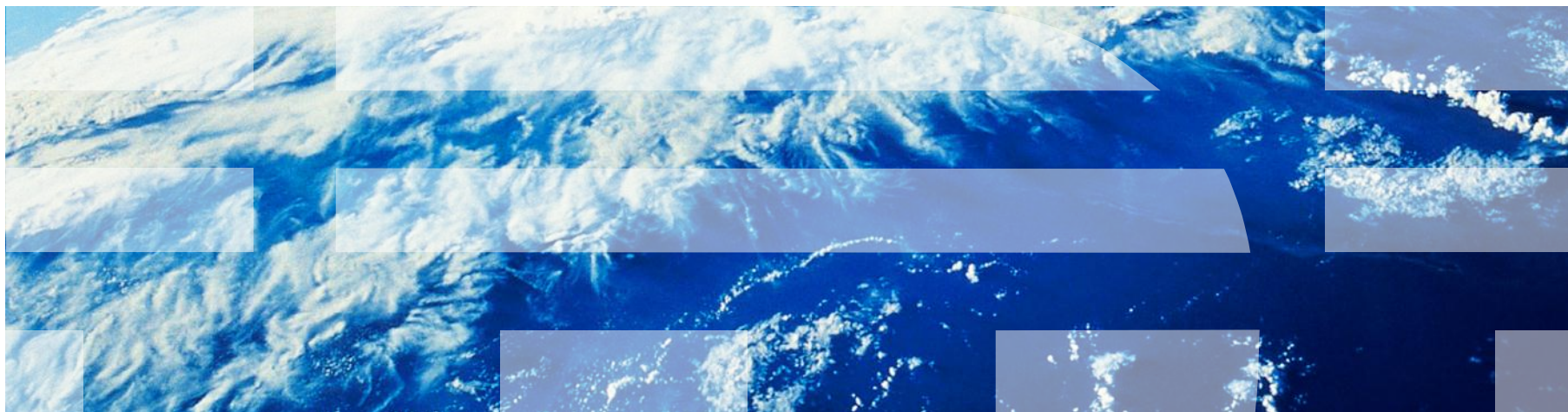


IBM Worklight Foundation V6.2.0 Getting Started

Invoking adapter procedures from hybrid client applications



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Agenda

- Invoking a procedure from the client application
 - The `invocationData` object - passing data to the server
 - The `options` object
- Invocation result
- Exercise

Invoking a procedure from the client application

- Worklight® applications can adapt procedures to communicate with any data source without being subjected to same-origin constraints.

The first step to invoke an adapter procedure is to create an `invocationData` object:

```
var invocationData = {  
    adapter : 'RSSReader',  
    procedure : 'getFeedsFiltered',  
    parameters : []  
};
```

Invoking a procedure from the client application – continued

WL.Client.invokeProcedure (`invocationData`, options)

- The `invocationData` object is used to provide invocation configuration and procedure parameters.
- It consists of a JSON block of properties.

```
var invocationData = {  
    adapter : 'RSSReader',  
    procedure : 'getFeedsFiltered',  
    parameters : []  
};
```

Invoking a procedure from the client application – continued

WL.Client.invokeProcedure (`invocationData`, `options`)

- The `invocationData` object is used to provide invocation configuration and procedure parameters.
- It consists of a JSON block of parameters.

```
var invocationData = {  
  adapter : 'RSSReader',  
  procedure : 'getFeedsFiltered',  
  parameters : []  
};
```

adapter (mandatory)
A string that contains the name of the adapter as specified in the `adapter <wl:adapter>` element

Invoking a procedure from the client application – continued

WL.Client.invokeProcedure (`invocationData`, `options`)

- The `invocationData` object is used to provide invocation configuration and procedure parameters.
- It consists of a JSON block of parameters.

```
var invocationData = {  
    adapter : 'RSSReader',  
    procedure : 'getFeedsFiltered',  
    parameters : []  
};
```

procedure (mandatory)
Procedure name as defined
in the XML file

Invoking a procedure from the client application – continued

WL.Client.invokeProcedure (`invocationData`, `options`)

- The `invocationData` object is used to provide invocation configuration and procedure parameters.
- It consists of a JSON block of parameters.

```
var invocationData = {  
  adapter : 'RSSReader',  
  procedure : 'getFeedsFiltered',  
  parameters : []  
};
```

parameters (mandatory)

An array of parameters that are passed to the back-end JavaScript™ procedure. Leave empty if no parameters are required

Agenda

- Invoking a procedure from the client application
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The Options object

- The second step is to define failure and success behaviors in the `options` object.

```
var options = {  
    onSuccess : loadFeedsSuccess,  
    onFailure : loadFeedsFailure  
};
```

The Options object – continued

WL.Client.invokeProcedure (invocationData, **options**)

- The `Options` object must be passed for all asynchronous calls to Worklight Server

```
var options = {  
    onSuccess : loadFeedsSuccess,  
    onFailure : loadFeedsFailure,  
    invocationContext: {}  
};
```

The function to be invoked on successful completion of the asynchronous call

The `response` typically contains the following properties:

- `invocationContext`: The `invocationContext` object that was originally passed in the `options` object, or undefined if no `invocationContext` object was passed
- `status`: The HTTP response status
- `invocationResult`: An object that contains the data that is returned by the invoked procedure, and additional information about the procedure invocation.

The Options object – continued

WL.Client.invokeProcedure (invocationData, **options**)

- The `Options` object must be passed for all asynchronous calls to Worklight Server

```
var options = {  
    onSuccess : loadFeedsSuccess,  
    onFailure : loadFeedsFailure,  
    invocationContext: {}  
};
```

The function to be invoked on failure

Includes both server-side and client-side errors (such as server connection failure or timed out calls)

The response typically contains the following properties:

- `invocationContext`: The `invocationContext` object that was originally passed in the options object, or undefined if no `invocationContext` object was passed
- `status`: The HTTP response status
- `invocationResult`: An object that contains the data that is returned by the invoked procedure, and additional information about the procedure invocation

The Options object – continued

WL.Client.invokeProcedure (invocationData, **options**)

- The `Options` object must be passed for all asynchronous calls to Worklight Server.

```
var options = {  
    onSuccess : loadFeedsSuccess,  
    onFailure : loadFeedsFailure,  
    invocationContext: {}  
};
```

Optional parameter. An object that is returned to the success and failure handlers

The `invocationContext` object is used to preserve the context of the calling asynchronous service upon return from the service.

Invoking a procedure from the client application

- Bringing everything together

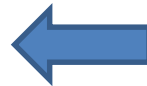
```
function loadFeeds () {
```

```
  var invocationData = {
    adapter : 'RSSReader',
    procedure : 'getFeedsFiltered',
    parameters : []
  };
```

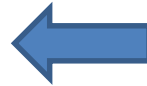


1. Invocation data

```
  WL.Client.invokeProcedure(invocationData, {
    onSuccess : loadFeedsSuccess,
    onFailure : loadFeedsFailure
  });
```



2. Invoking the procedure



3. Setting the success / failure handlers

```
function loadFeedsSuccess(result) {
  WL.Logger.debug("Feed retrieve success");
}
```



4. Success handler

```
function loadFeedsFailure(result) {
  WL.Logger.error("Feed retrieve failure");
}
```



5. Failure handler

Agenda

- Invoking a procedure from the client application
 - The `invocationData` object - passing data to the server
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- Invocation result
- Exercise

Invocation result

- A **JSON object** that is returned. Contains the data and more information about the procedure invocation
- The object is returned to a corresponding success/failure handler.

```

"errors": [
],
"info": [
],
"isSuccessful": true,
"responseHeaders": {
  "Cache-Control": "no-cache, must-revalidate, post-check=0, pre-check=0",
  "Connection": "Keep-Alive",
  "Content-Type": "text/xml; charset=utf-8",
  "Date": "Tue, 01 Apr 2014 12:02:01 GMT",
  "Keep-Alive": "timeout=5, max=19999975",
  "Server": "Apache",
  "Transfer-Encoding": "chunked",
  "Vary": "Accept-Encoding",
  "X-AOL-SNH": "3bac45d399602710d108b947f609b016",
  "X-UA-Compatible": "IE=edge"
},
"responseTime": 439,
"rss": {
  "channel": {
    "copyright": "Copyright 2014 AOL Inc. The contents of this feed are available for non-commercial use only.",
    "description": "Engadget",
    "generator": "Blogsmith http://www.blogsmith.com/",
    "image": {
      "link": "http://www.engadget.com",
      "title": "Engadget",
      "url": "http://www.blogsmithmedia.com/www.engadget.com/media/feedlogo.gif"
    },
    "item": [
      {
        "creator": "Mat Smith",
        "description": "<img src='\"http://o.aolcdn.com/hss/storage/adam/51f9922833d29e0266ae8a8436988b72\"'\">",
        "guid": {
          "CDATA": "http://www.engadget.com/2014/04/01/april-fools-2014-roundup/",
          "isPermaLink": "false"
        },
        "link": "http://www.engadget.com/2014/04/01/april-fools-2014-roundup/?ncid=rss_truncated",
        "pubDate": "Tue, 01 Apr 2014 07:00:00 -0400",
        "title": "April Fools' 2014 roundup: selfie-taking drones, smartgloves and more"
      }
    ]
  },
}

```


Invocation result – continued

```
"errors": [
],
"info": [
],
"isSuccessful": true,
"responseheaders": {
  "Cache-Control": "no-cache, must-revalidate, post-check=0, pre-check=0",
  "Connection": "Keep-Alive",
  "Content-Type": "text/xml; charset=utf-8",
  "Date": "Tue, 01 Apr 2014 12:02:01 GMT",
  "Keep-Alive": "timeout=5, max=19999975",
  "Server": "Apache",
  "Transfer-Encoding": "chunked",
  "Vary": "Accept-Encoding",
  "X-AOL-SNH": "3bac45d399602710d108b947f609b016",
  "X-UA-Compatible": "IE=edge"
},
"responseTime": 439,
"rss": {
  "channel": {
    "copyright": "Copyright 2014 AOL Inc. The contents of this feed are available for non-commercial use only.",
    "description": "Engadget",
    "generator": "Blogsmith http://www.blogsmith.com/",
    "image": {
      "link": "http://www.engadget.com",
      "title": "Engadget",
      "url": "http://www.blogsmithmedia.com/www.engadget.com/media/feedlogo.gif"
    },
    "item": [

```

The `isSuccessful` property is set to:

- **true** if the procedure invocation succeeded (even if no data was retrieved)
- **false** otherwise

Invocation result – continued

```

"errors": [
],
"info": [
],
"issuccessful": true,
"responseHeaders": {
  "Cache-Control": "no-cache, must-revalidate, post-check=0, pre-check=0",
  "Connection": "Keep-Alive",
  "Content-Type": "text/xml; charset=utf-8",
  "Date": "Tue, 01 Apr 2014 12:02:01 GMT",
  "Keep-Alive": "timeout=5, max=19999975",
  "Server": "Apache",
  "Transfer-Encoding": "chunked",
  "Vary": "Accept-Encoding",
  "X-AOL-SNH": "3bac45d399602710d108b947f609b016",
  "X-UA-Compatible": "IE=edge"
},
"responseTime": 439,
"rss": {
  "channel": {
    "copyright": "Copyright 2014 AOL Inc. The contents of this feed are available for non-commercial use only.",
    "description": "Engadget",
    "generator": "Blogsmith http://www.blogsmith.com/",
    "image": {
      "link": "http://www.engadget.com",
      "title": "Engadget",
      "url": "http://www.blogsmithmedia.com/www.engadget.com/media/feedlogo.gif"
    },
  },
  "item": [
    {
      "title": "Engadget",
      "description": "Engadget",
      "link": "http://www.engadget.com",
      "pubDate": "Tue, 01 Apr 2014 12:02:01 GMT",
      "guid": "http://www.engadget.com/2014/04/01/engadget-2014-04-01-12-02-01-gmt",
      "enclosure": "http://www.engadget.com/media/feedlogo.gif"
    }
  ]
}

```

Error/Warn/Info Messages

Optional arrays of strings that contain messages. If no messages are provided, these objects are NULL

Invocation result – continued

```

    "item": [
      {
        "creator": "Mat Smith",
        "description": "<img src=\"http://o.aolcdn.com/hss/storage/adam/51f9922833d29e0266ae8a8436988b72/emoji_thumbn",
        "guid": {
          "CDATA": "http://www.engadget.com/2014/04/01/april-fools-2014-roundup/",
          "isPermalink": "false"
        },
        "link": "http://www.engadget.com/2014/04/01/april-fools-2014-roundup/?ncid=rss_truncated",
        "pubDate": "Tue, 01 Apr 2014 07:00:00 -0400",
        "title": "April Fools' 2014 roundup: selfie-taking drones, smartgloves and more"
      },
      {
        "creator": "Timothy J. Seppala",
        "description": "<img src=\"http://o.aolcdn.com/hss/storage/adam/ed06e9ab902cb80ec955726cc466cd00/tesla-model-",
        "guid": {
          "CDATA": "http://www.engadget.com/2014/04/01/tesla-hacking/",
          "isPermalink": "false"
        },
        "link": "http://www.engadget.com/2014/04/01/tesla-hacking/?ncid=rss_truncated",
        "pubDate": "Tue, 01 Apr 2014 03:41:00 -0400",
        "title": "Tesla Model S is 'low hanging fruit' for hackers to remotely track or unlock cars"
      },
      {
        "creator": "Richard Lawler",

```

Records

An array of records that are retrieved from the backend system. Each array entry is an object that contains the fields of the single record. If the procedure call returns no records, an empty array is returned. If not specified otherwise in the XSL file, the default property name is *recordSet*.

Invocation result – continued

```
function loadFeedsSuccess(result) {
    WL.Logger.debug("Feed retrieve success");
    if (result.invocationResult.Items.length>0)
        displayFeeds(result.invocationResult.Items);
}
```



```
{
  "item": [
    {
      "creator": "Mat Smith",
      "description": "<img src='\"http://o.aolcdn.com/hss/storage/adam/51f9922833d29e0266ae8a8436988b72/emoji_thumbn...\"' />",
      "guid": {
        "CDATA": "http://www.engadget.com/2014/04/01/april-fools-2014-roundup/",
        "isPermalink": "false"
      },
      "link": "http://www.engadget.com/2014/04/01/april-fools-2014-roundup/?ncid=rss_truncated",
      "pubDate": "Tue, 01 Apr 2014 07:00:00 -0400",
      "title": "April Fools' 2014 roundup: selfie-taking drones, smartgloves and more"
    },
    {
      "creator": "Timothy J. Seppala",
      "description": "<img src='\"http://o.aolcdn.com/hss/storage/adam/ed06e9ab902cb80ec955726cc466cd00/tesla-model-...\"' />",
      "guid": {
        "CDATA": "http://www.engadget.com/2014/04/01/tesla-hacking/",
        "isPermalink": "false"
      },
      "link": "http://www.engadget.com/2014/04/01/tesla-hacking/?ncid=rss_truncated",
      "pubDate": "Tue, 01 Apr 2014 03:41:00 -0400",
      "title": "Tesla Model S is 'low hanging fruit' for hackers to remotely track or unlock cars"
    },
    {
      "creator": "Richard Lawler",
      "description": "<img src='\"http://o.aolcdn.com/hss/storage/adam/b03c3652c4acc1b51159f4950b288b1b/fios-quantum...\"' />",
      "guid": {
        "CDATA": "http://www.engadget.com/2014/04/01/verizon-fios-media-server-quantum-tv/",
        "isPermalink": "false"
      },
      "link": "http://www.engadget.com/2014/04/01/verizon-fios-media-server-quantum-tv/?ncid=rss_truncated",
      "pubDate": "Tue, 01 Apr 2014 00:40:00 -0400",
      "title": "Verizon FiOS Media Server arrives as Quantum TV DVR that records up to 12 channels at once"
    }
  ]
}
```

Agenda

- Invoking a procedure from the client application
 - The `invocationData` object - passing data to the server
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Exercise

Displaying the Engadget Feed

- The application uses the HTTP Adapter created in the Getting Started module *HTTP Adapter – Communication with HTTP Backend systems*.
- The adapter can be found in the module's sample project, **Adapters**.



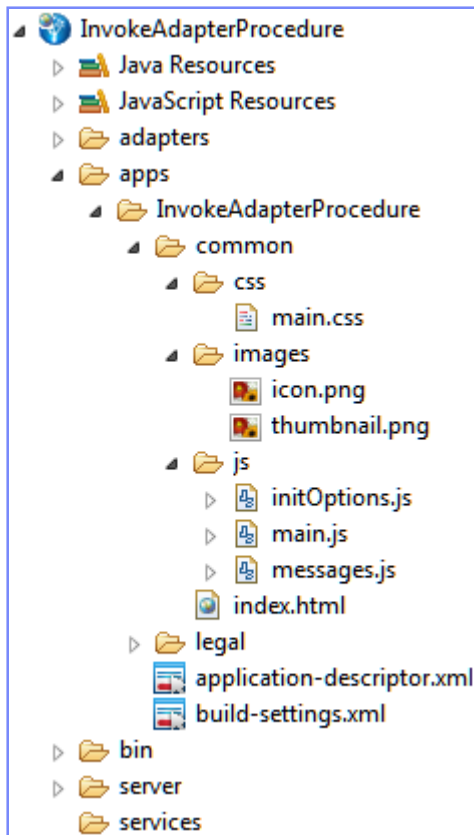
Exercise – continued

Displaying the Engadget Feed

- By using the `WL.Client.invokeProcedure` API, invoke the `getFeedsFiltered` procedure.
- Use **Chrome Dev Tools** or a similar tool to inspect the request and the JSON response structure.
- Parse the returned **Items** records and display them in your application.
- Each item requires a title and a publication date.

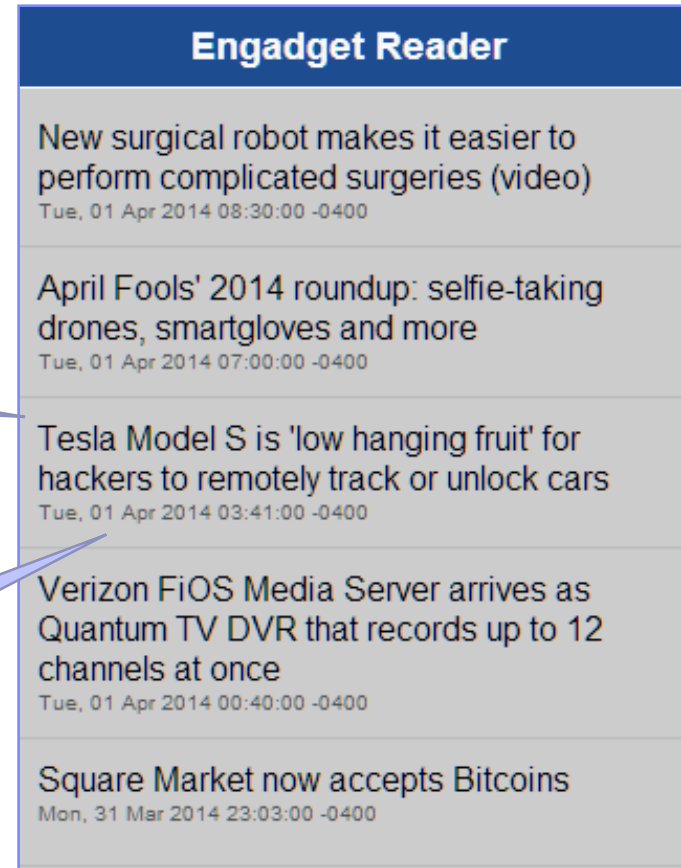
Exercise – continued

- The sample for this training module can be found on the Getting Started page of the Worklight documentation website at <http://www.ibm.com/mobile-docs>.



title

pubDate



Check yourself questions

- The invocationData object must contain following properties:
 - "adapter" – mandatory, "procedure" – mandatory, "parameters" – mandatory
 - "adapter" – mandatory, "procedure" – mandatory, "parameters" – optional
 - "adapter" – mandatory, "procedure" – optional, "parameters" – optional
 - "adapter" – optional, "procedure" – optional, "parameters" – optional
- Assuming that it is not overridden manually, the isSuccessfull property of the procedure invocation results in true if:
 - The Worklight server is not accessible.
 - The back-end system that the adapter tries to connect to is not accessible.
 - Internet is not available on a mobile device.
 - The specified procedure does not exist in the adapter.
- How can the developer declare what to do when a response from Worklight adapter is received?
 - The developer is not required to declare it. The client-side framework code does everything automatically.
 - By specifying the callback function names in adapter XML file.
 - By specifying the callback function names in onSuccess and onFailure properties of an options object.
 - By adding the callback function names as invocation parameters.

Check yourself questions

- The invocationData object must contain following properties
 - "adapter" – mandatory, "procedure" – mandatory, "parameters" – mandatory
 - "adapter" – mandatory, "procedure" – mandatory, "parameters" – optional
 - "adapter" – mandatory, "procedure" – optional, "parameters" – optional
 - "adapter" – optional, "procedure" – optional, "parameters" – optional
- Assuming that it is not overridden manually, the isSuccessfull property of the procedure invocation results in true if:
 - The Worklight server is not accessible.
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 - Internet is not available on a mobile device.
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- How can the developer declare what to do when a response from Worklight adapter is received?
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