



WRT Widgets Technical Review

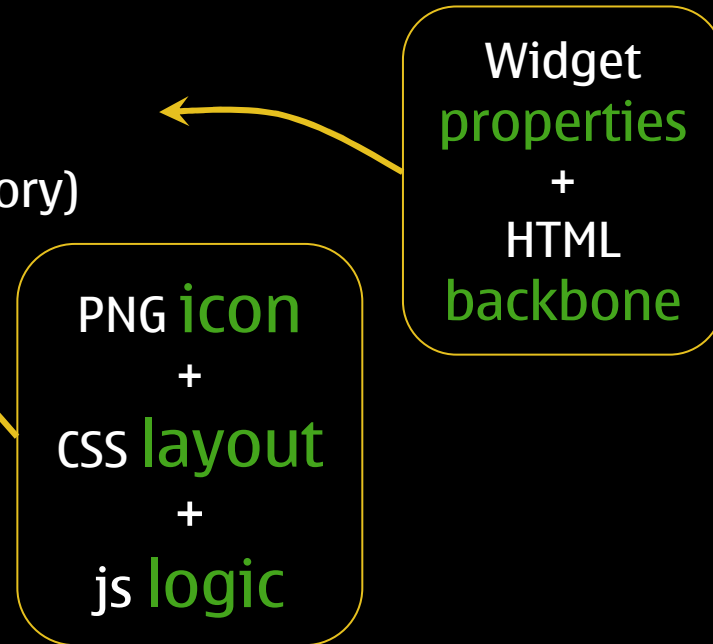
Daniel Arroyo

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Forum **NOKIA**

WRT Widget component structure

- Simple bundle of files
 - **info.plist** (mandatory)
 - **[name].html** (mandatory)
 - icon.png
 - [name].css
 - [name].js



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Widget Installation Package


- Widget installation file format
 - Compressed with any ZIP application
 - ZIP file contains html, CSS, js, icons, graphics and the widget info file
- Widget installation file extension
 - **WidgetName.wgz**
- Widget installation MIME type
 - **x-nokia-widgets**



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Info.plist – widget properties

- A manifest file in XML format, containing the property and configuration information for a widget.



```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Nokia//DTD PLIST 1.0//EN"
  "http://www.nokia.com/NOKIA_COM_1/DTDs/plist-1.0.dtd">
<plist version="1.0">
  <dict>
    <key>DisplayName</key>
    <string>My Widget</string>
    <key>Identifier</key>
    <string>com.mycompany.widget.project</string>
    <key>MainHTML</key>
    <string>Main.html</string>
  </dict>
</plist>
```

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HTML – The Backbone

Defines the **structure** of the widget.



Use the **<div>** (block-level) element to construct the widget's **views**.

Views can be constructed with static **HTML** elements or can be dynamically created by **JavaScript** at runtime.

```
<html>
<head>
  ..
</head>
<body id="body">
  <div id='mainView'>
    <span class='title'>Front
    view</span>
  </div>
  <div id='subView1' class='subView'>
    <p class='title'>Back view</p>
  </div>
  <div id='subView2' class='subView'>
    <p class='title'>Config view</p>
  </div>
</body>
</html>
```

CSS – Makeup for a Widget

- **Style and layout** information
 - Defines **how to display** HTML element: position, color, background color etc.
- CSS information can be **embedded in the HTML** file or imported from an **external styleheet**



```
// Class selector to define
common style for similar
components
.title {
  font-size: 26px;
  color: blue;
}
.subView {
  display: none
}

// Id selector to define a
unique style for a unique
component
#mainView {
  font-size: 16px;
  color: red;
  text-align: center;
}

// Pseudo-class selector to
design a pattern style
div.subview div {
  margin: 10px 0 0 0;
  padding: 20px 20px 20px 20px;
  . . .
}
```

JavaScript – The logic

- The brain power

- Without JavaScript code, a widget is just a passive Web page

- Don't reinvent the wheel

- Loads of JavaScript goodies available on the web



DOM APIs

XMLHttpRequest

Platform services via Nokia-specific extended JavaScript API

```
// define some global variable
var globalVariable = 0;
//
function multiply(xValue, yValue){
    return xValue * yValue;
}

// create a new element with DOM function
var newElement =
    document.createElement('div');
newElement.setAttribute('id', 'extraView');

// show/hide views
function changeView(activeViewId,
                    hiddenViewId){
    var activeView =
        document.getElementById(
            activeViewId);

    activeView.style.display = 'block';

    . . .
}
```

No,
it's **not just a web page...**

Nokia widget-specific
JavaScript APIs for:

Widget properties
Utility functions

Menu handling

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System info and services

Widget Object

`widget` or
`window.widget`

utility functions to manipulate
widget's properties



```
var h = window.screen.height;  
var w = window.screen.width;  
  
if (h < w)  
    widget.setDisplayLandscape();
```

- Widget methods
 - `openURL`
 - `setPreferenceForKey`
 - `preferenceForKey`
 - `prepareForTransition`
 - `performTransition`
 - `setNavigationEnabled`
 - `openApplication`
 - `setDisplayLandscape`
 - `setDisplayPortrait`
- Widget properties
 - `identifier`
 - `onshow`
 - `onhide`
 - `isRotationSupported`

Menus

menu or `window.menu`
& **MenuItem**

- Manipulate the options menu and softkeys

```
function createMenu
{
    var settings = new MenuItem(
        'Settings', 10);
    settings.onSelect = showSettings;

    window.menu.append(settings);

    opMenu.setRightSoftKeyLabel(
        'Back', toMainView);
}

function showSettings(id)
{
    document.getElementById(
        'setting').style.display = 'block';
}
```

System Info Service API

- System info service API is a **scriptable Netscape plug-in module**
 - **Subset of system properties** accessible
 - Memory, network, battery status, etc.
- System info service plug-in module is loaded via an **HTML <embed>** element

```
<embed type="application/x-systeminfo-widget" hidden="yes"></embed>
```

- System info service plug-in module is **not loaded in Browser context**



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System Info Service API

Properties and callback requests

Charger Memory
Power File System
Vibra Network
Lights Beep tones
Charger
Language



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Localization

- Create language project directories for each supported language
 - **xx.lproj** (e.g. en.lproj or da.lproj)
 - WRT checks the current language of the device
- Display name, strings, layout and media resources can be localized



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WRT widget development

- For **implementing** widget code:
 - Text editor or a web IDE
 - Your favorite development tool ☺
- For **testing** a widget:
 - **S60 3rd Edition Feature Pack 2 Beta SDK emulator**
 - Compatible S60 device (N95 8GB)
 - Bluetooth deployment
 - Firefox
 - Greasemonkey
 - WRT Desktop development test-bed
- For **debugging** a running widget
 - JavaScript loggers / 'debugger'
 - firebug



Tools and documentation

- First set of **tools** and documentation **fresh out of the oven**
 - Documentation
 - Packaging and deployment tool
 - Dashboard widget porting assistance
 - <http://xdawrt001.ext.nokia.com/>
 - wrt / alpha.2008
 - Feedback to Google group
 - <http://groups.google.com/group/nokia-wrt-tools-beta>
- More tools under development...
- Documentation
 - [Forum.nokia.com/widgets](http://forum.nokia.com/widgets)
 - [Wiki.forum.nokia.com](http://wiki.forum.nokia.com)
 - [Web-developer's library](#)

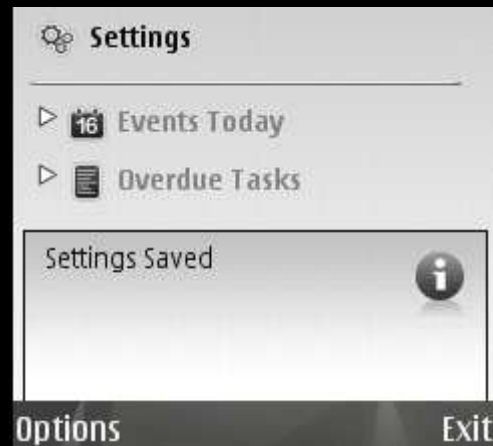
WRTKit

- UI toolkit for developing a web UI suitable for mobile devices
 - Javascript, CSS and graphical elements
 - Event triggering and state monitoring
 - Easy to create a consistent UI experience
- Object oriented
 - UIManager
 - Views
 - State-aware controls
- Observer pattern used to notify of UI events



UI Manager

- Container for views
- Used to switch between views
- Can show and hide notification pop-ups



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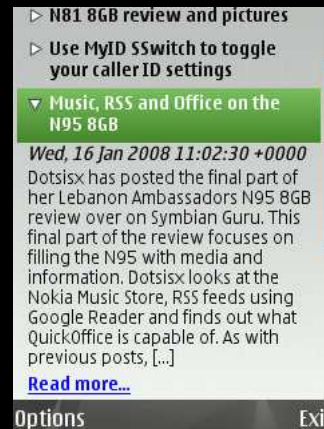
List View

- Contains controls in a list

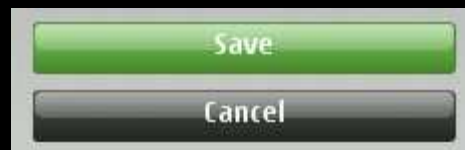


Controls

- Control Panel
 - Contains arbitrary XHTML code
 - Can be foldable



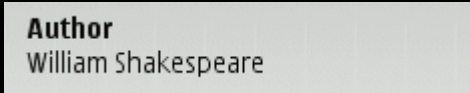

- Form Button
 - Can be selected to perform an action



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More Controls...

- Label
 - It's a caption-value par control



Author
William Shakespeare

- Navigation Button
 - Can have an image and caption




 Information
 Currency Converter
 Weather Forecast

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More Controls...

- Selection List

- Allows user to select from different options
- Can be single or multiple choice



Favorite drink

Coffee

Tea

Water

Favorite drinks

Coffee

Tea

Water

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- Selection Menu

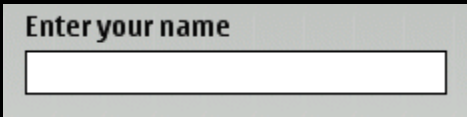
- Shows the selected option
- Allows the user to change from a list of available options

Favorite drink

Coffee ▾

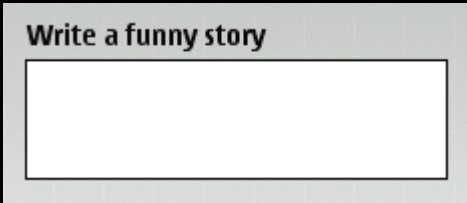
More Controls...

- Text Field
 - Allows users to enter text in a single line



Enter your name

- 
- Text Area
 - Allows users enter multiple lines of code



Write a funny story

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Ok, this should be **enough** for now

Practical session to follow

Innovate, explore

... or learn from our **tutorials**

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