Building Reusable Widgets with ArcGIS API for JavaScript

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DRY

Don't Repeat Yourself
Repetition is the root of all software evil
How to stay DRY?

Classes.

Modules.
JavaScript has no class*

*Until we’re all using the next version of JavaScript
Let’s make a Class
But…

• Scope?
• Multiple inheritance?
• Dependency management?
AMD

- Manages globals
- Compatible with other AMD loaders
- Async dependency management
The Future:
http://jsmodules.io/
Dojo Widgets

• Classes to inherit
• Sample demo on Github
• Help you write a widget
dijit._WidgetBase

- Lifecycle methods
  - Constructor, postMixInProperties, buildRendering, postCreate, startup, destroy
- Properties/Attributes
  - Mix them in
- Setters & Getters (Stateful)
- Owning handles (events)
  - .own()
dijit._Templated

- Template String
- Dom Construction
- Access Nodes
- Attach Points
  - data-dojo-attach-point
- Event attachments
- Variable Substitution
  - ${property}

```html
<div class="${baseClass}" data-dojo-attach-point="focusNode" data-dojo-attach-event="ondijitclick:_onClick" role="menuitem" tabindex="-1">
  <span data-dojo-attach-point="containerNode"></span>
</div>
```
dojo/Stateful

- Included with Widgetbase
- Base class for getting, setting, and watching for property changes
- get() & set() methods
- Watch()
- Custom getters & setters
**dojo/Evented**

- Emit Events
- Users can listen with “dojo/on”

```javascript
this.emit("my-event", {});
myWidget.on("my-event",
    function(evt){});
```
Deferreds & Promises

- **dojo/promise**
  - promise()
  - all()
  - first()
- **dojo/deferred**
Dojo/promise/promise

• Communication between asynchronous threads
• Can be in one of three states: unfulfilled, resolved, rejected
  - May only change from unfulfilled to resolved or unfulfilled to rejected

• Methods
  - .then()
    - notification of state change
  - .cancel()
  - .always()
  - .otherwise()
Dojo/promise/first

- Takes an array or object of promises
- Returns results from first that is fulfilled

```javascript
first([promise1, promise2]).then(function(result){
    // result will be either promise1 or promise2 results,
    // whichever is fulfilled first
});
```
Dojo/promise/all

- Takes an array or object of promises
- Returns new promise with results when all promises are fulfilled or one is rejected
- Replaces dojo/DeferredList

```javascript
all([promise1, promise2]).then(function(results){
});
```
Dojo/deferred

- Manages async threads
- `deferred.promise;`
- `.resolve() / .reject()`
- `dojo/request` and `esri/request` use `deferreds`
- Can be chained
  - `.then()`
  - `.cancel()`
require(['dojo/Deferred', 'dojo/dom', 'dojo/on', 'dojo/domReady!'],
function(Deferred, dom, on){
    function asyncProcess()
        {
            var deferred = new Deferred();
            dom.byId("output").innerHTML = "I'm running...";
            setTimeout(function()
                {
                    deferred.resolve("success");
                }, 1000);
            return deferred.promise;
        }
    on(dom.byId("startButton"), "click", function(){
        var process = asyncProcess();
        process.then(function(results){
            dom.byId("output").innerHTML = "I'm finished, and the result was: " + results;
        });
    });
});
require(['dojo/Deferred'], function(Deferred){
    var def = new Deferred();
    def.then(function(value){
        // do something
        return something;
    }).then(function(something){
        // do something else
    });
});
Demo Time:
Get the code!

github.com/esri
arcgis-dijit-sample-js
Tips & Tricks
Tips

• Refer back to the latest Dojo API
• Some functions deprecated or replaced
  - Use newer Dojo functions if available
• Use new event handling with on()
• Get/Set widget properties with .get() and .set()
• watch() widget properties and call update functions
Thank you…

• Please fill out the session survey:

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