Overview of ECMAScript Components

(TC-39 Study Group item)

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Software Components

- Component architecture has been a key software development trend of the 1990s
- Radically change the way software is developed, deployed, and utilized

Benefits of Components

- Simplifies
  - Component is a “black box”, hiding complexity from the component user.
- Adds Power
  - Code modules can “interact” with each other.
- Increases Efficiency
  - Facilitates code reuse.
  - Eases burden of code management.
  -

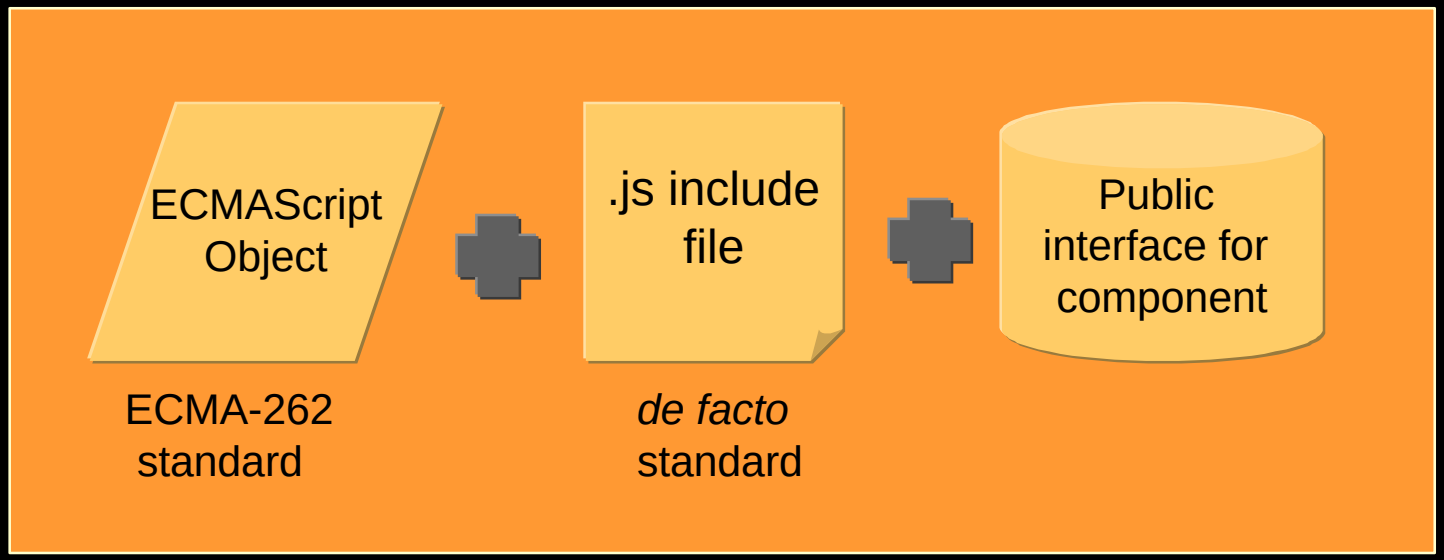
Components & Scripting

- However, script developers have largely been unable to take advantage these benefits.
- The Results:
  - Higher Learning Curve
  - “Spaghetti Code”
  - “Copy & Paste” Coding Practices

.JS Include Files

- In lieu of a component standard, scripters utilize JavaScript include (.js) files.
- Advantages
  - Facilitates reuse by providing code libraries
  - Widely supported in browsers and server environments (*de facto* standard)
- Disadvantage
  - No means of “packaging” code (encapsulation)

ECMAScript Components...

- Are designed to fill this void.
- Builds upon the ECMA-262 standard.
- 

Creating & Using Components

- Authors can “wrap” their ECMAScript code inside a component structure.
- Users can reuse the component inside of their Web pages or applications, working solely with its public interface.

Alternative Technologies

- Other scripting component technologies include Microsoft Scriptlets and Netscape JavaScript Beans.
- Key difference between ECMAScript Components and these others centers on their scope of the problem domain.

Alternative Technologies

- **Scriptlets** describe a scripting component that operates in a COM environment.
- **JavaScript Beans** describe a wider array of objects (e.g., HTML, Java), deal with integrating Java Beans and CORBA
- **ECMAScript Components** focus squarely on the componentization of ECMAScript.

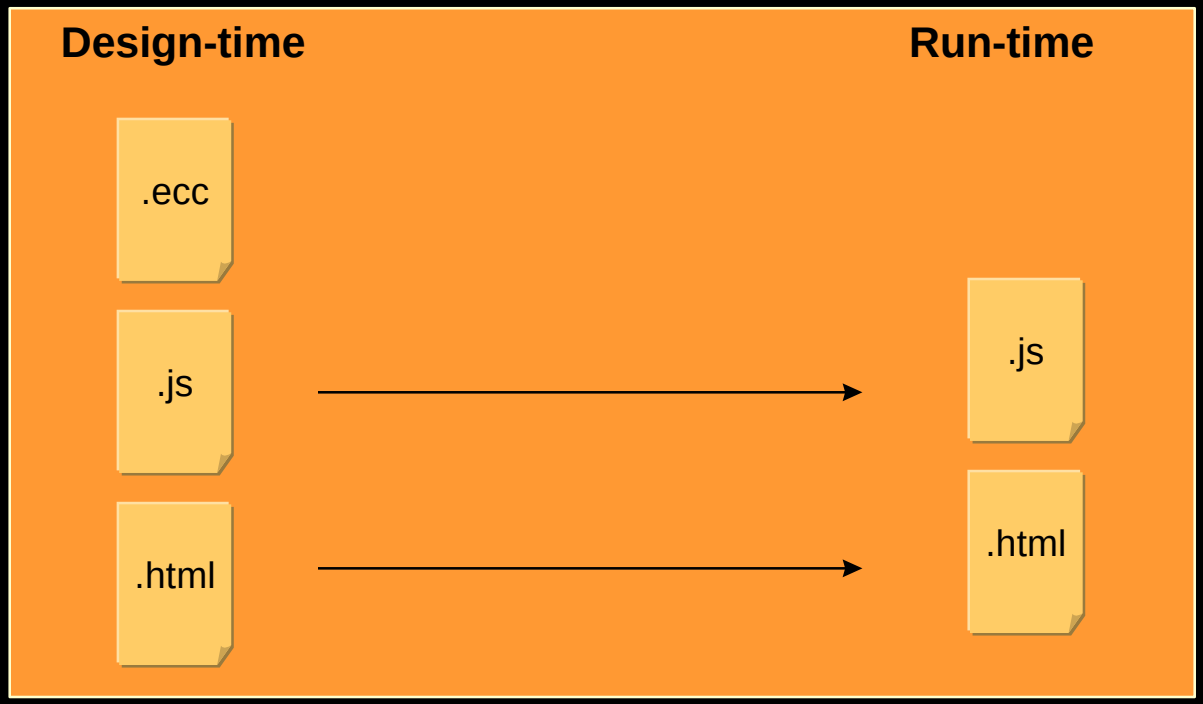
ECMAScript Component Interface

- Uses an XML vocabulary to describe the component to the outside world.
- Meta-information enclosed by a `<COMPONENT> </COMPONENT>` tag pair.

```
<COMPONENT NAME="MyComponent” SRC=“SourceFile.js”>
    <HELP URL="URL.HTML"/>
    <PROPERTY NAME="id"></PROPERTY>
    <METHOD NAME="execute"></METHOD>
    <EVENT NAME="onExecute”/>
</COMPONENT>
```

Design-Time Focus

- Normally for design-time usage, so it can be "detached" at runtime to simplify deployment



How a Tool Deals with Scripts

```
<SCRIPT>
function ExcelControl(fN) {
  this.fileName=fN;
  this.graphIt=
     iCreateGraph;
  function iCreateGraph(){
    alert("")
  }
}
 Excel = new ExcelControl();
</SCRIPT>

<FORM>
<INPUT TYPE="button" NAME="OK
 onClick="Excel.graphIt();">
</FORM>
```

Without Componentization

Excel Control

Action:
Graph It!

When:
Click of OK Button

With Componentization

Technical Specification

- ECMAScript Component architecture
- XML vocabulary to define components
- Hosting ECMAScript Components
  - Generic
  - HTML document
  -

For More Technical Info

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