Google Web Toolkit

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About Me

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- Developer at USAA
- Worked with GWT at USAA and privately for ~1 year

Agenda

- What is GWT?
- Architecture
- Capabilities
- GWT Components
- Layout
- GWT RPC
- Development Mode
- Code Splitting

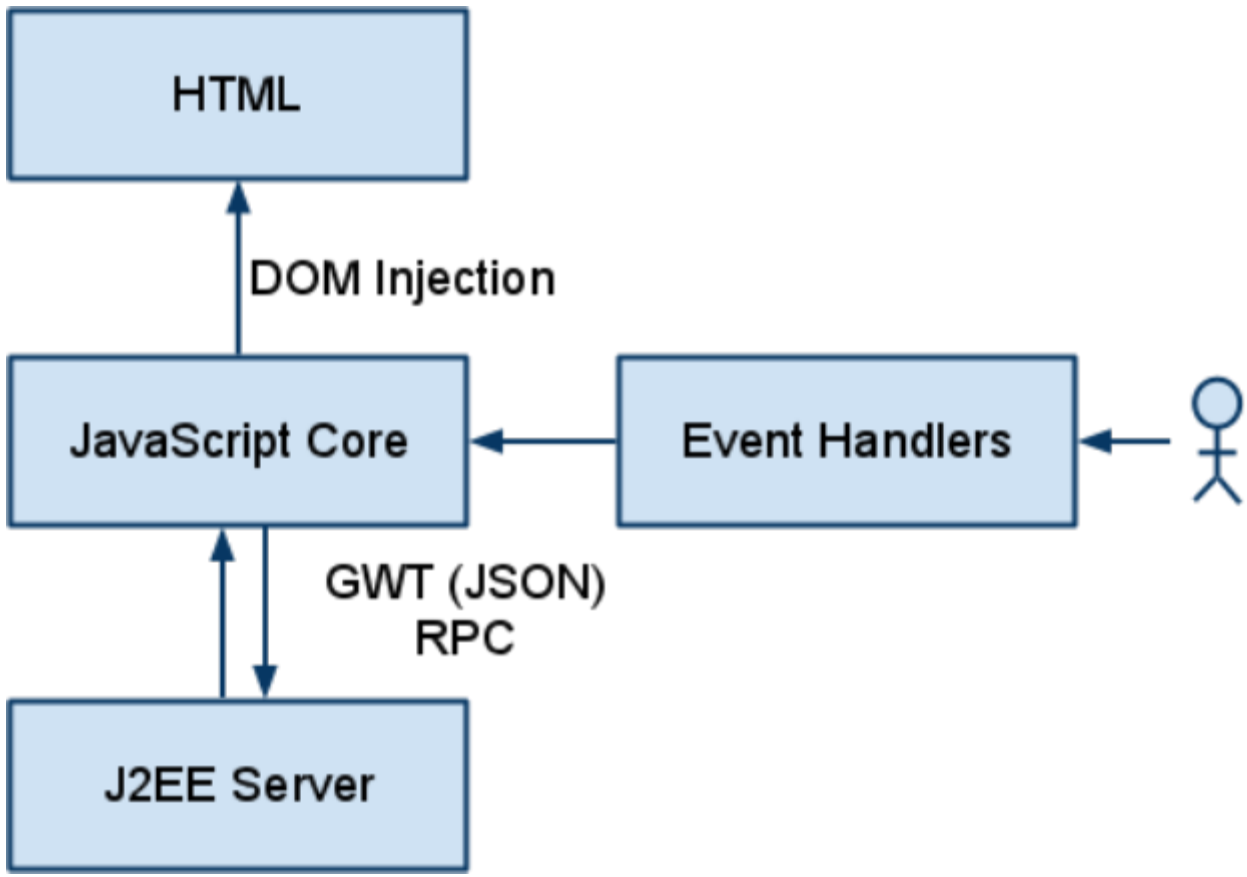
What is GWT?

- Java to JavaScript compiler
- Client side application framework
- RPC Protocol
- Widget Library

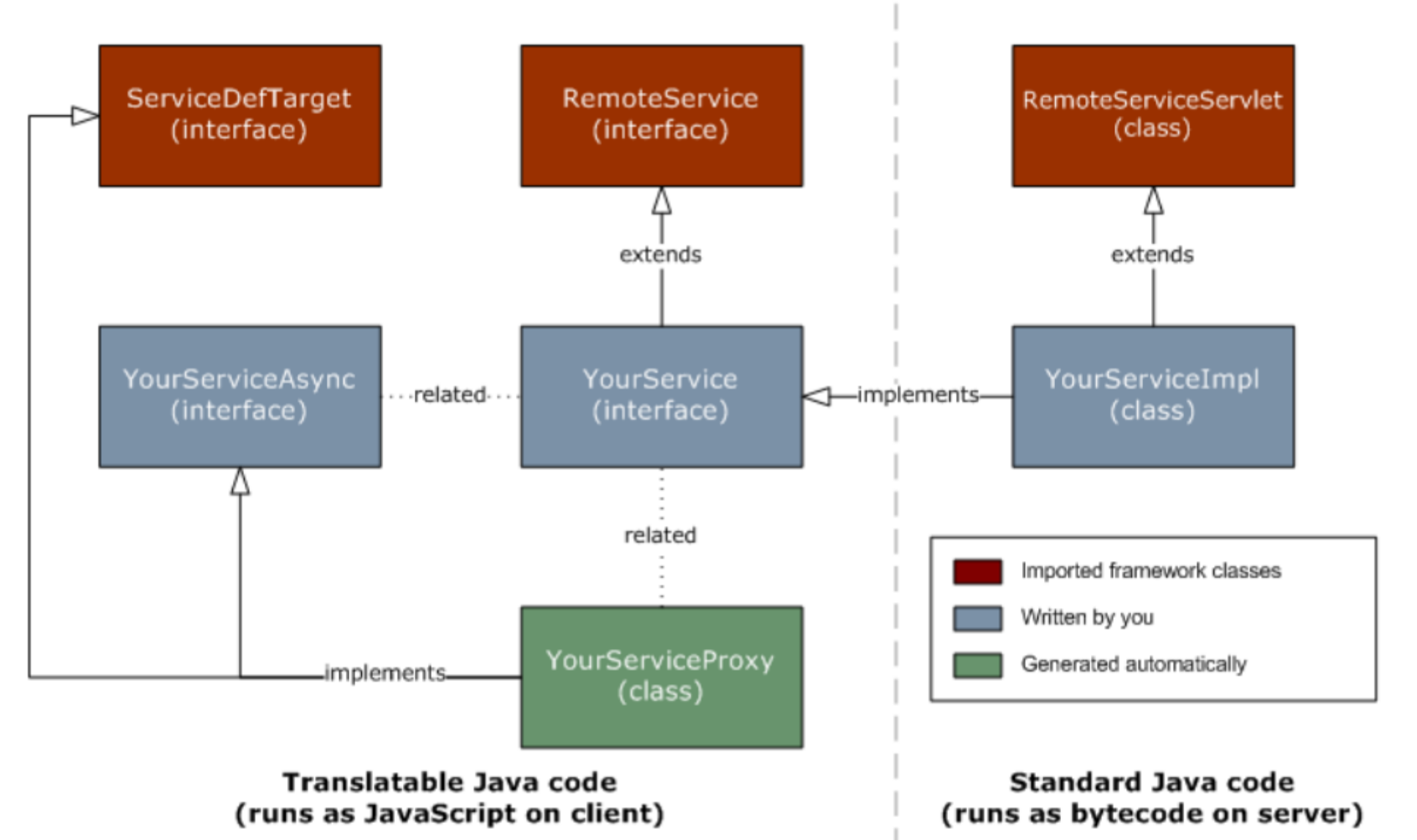
Architecture

- One page application, fundamentally designed for applications not sites
- Page HTML dynamically generated through DOM injection
- Use of Event Handlers to process user action
- Communication with server via AJAX RPC calls
- Reuse of data objects between client and server

Architecture



Architecture - RPC



Capabilities

- Support for all major browsers
  - GWT Compilation creates JavaScript files specifically design for all browser types
- Deferred binding
  - Only load Browser/Locale specific JavaScript to lighten page weight
- History/Back button support
  - URL tokens added programmatically when history needs to be stored
  - Event handling of state change
- Accessibility
  - Hooks available for ARIA compliant roles and states
- Internationalization
  - Date/Time/Number formatter with locale support
  - String Internationalization with Properties files

Capabilities

- ResourceBundle
  - Automatically generates sprites out of static images to lower round trip calls
  - Allows for programmatic references to image files
- JSNI - JavaScript Native Interface
  - Allows writing native code that will run as is post compilation
- JUnit Integration
  - GWTTestCase base class
  - HtmlUnit browser emulates client side environment
  - delayTestFinish provides ability to wait for asynchronous test cases
- Development Mode
  - Allows for testing of GWT code without compilation
- Code Splitting
  - Programmatically separate Code
  - Segmented code will be automatically pulled asynchronously

GWT Components

- Input
  - Basic Text
  - Rich Text
  - Checkbox
  - Radio Button
  - Date Picker
  - etc.
- Lists/Menus
  - List Box
  - Suggest Box (AutoComplete)
  - Tree
  - Menu Bar (File, Edit, etc.)
  - Popup (Modal Window)

Layout

- Simple Layouts
  - Absolute Panel
  - Flow Panel
  - Vertical Panel
  - Horizontal Panel
  - Dock Panel
  - Tab Panel
  - Grid
  - Flex Table
  - etc.
- Specialized Layouts
  - Stack Panel (Accordion)
  - Disclosure Panel

GWT RPC

- Asynchronous calls to server through GWT protocol
- Reuse of data objects
- OnSuccess/OnFailure event methods to handle results
- Exceptions can be thrown from server and caught on client making for easily configurable failure scenarios

```
myEmailService.sendEmail(message, new AsyncCallback<String>() {
public void onSuccess(String result) {
// do some UI stuff to show success
}

public void onFailure(Throwable caught) {
// do some UI stuff to show failure
}
});
```

Development Mode

Development mode runs a built in Jetty server to test the Java code before compilation to JavaScript

- Quicker testing by skipping compilation
- Dynamically picks up dependencies from classpath
- Allows step through debugging
- GWT 2.0+, can open in any browser

Code Splitting

Code splitting reduces initial page weight and load times

Simply surround code with GWT.runAsync and any resources that are included will not be initially loaded unless used elsewhere.

```
GWT.runAsync(new RunAsyncCallback() {
public void onFailure(Throwable caught) {
Window.alert("Code download failed");
}

public void onSuccess() {
Window.alert("Hello, AJAX");
}
});
```

Examples

- GWT Showcase
- Smart GWT Showcase
- Google Wave

GWT

Questions?

GWT

Thank you