

# GWT with MVP: A Case Study

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OR...

How I learned to love (C**S**S

&& anonymous() {

inner() {}

classes() {}

});

# Who is this guy?



Wrote first book on running a Web site (1995)

Written Web apps in perl, ksh, C with lex/yacc, ColdFusion, JSF, GWT

Most recently, Web architect with Intuit on Internet banking products

Patent on non-recursive SQL trees

Working in a startup last 6 mos

# Anatomy of a GWT app

What's GWT+MVP?

“Good” practices & patterns


gwt-presenter

gwt-dispatch

Caching, batching, queuing

GWT Tools

Resources



# GWT+MVP

## Model View Presenter

Way of organizing code analogous to MVC

Services ↔ Presenter ↔ View

### View

- implements interface defined in presenter

- fires no events of its own

### Presenter

- listens for DOM events (ClickHandlers, etc.)

- listens on event bus

- calls services

# GWT+MVP

Where to put the model?

Singleton accessible everywhere? (user info)

Hide it behind services?

Bits & pieces in each presenter?

None at all?



# Good practice #1

## Define the Display interface

Return interfaces, not Widgets

Supports testing, decoupling from view

~~Button~~ getSaveButton();

HasClickHandlers getSaveButton();

Caveat: sometimes you have to write your own



# How to untangle

How can presenters communicate with services and each other?

Example: new friend added

Does main presenter hold ref to all others?

Use an *event bus*

Define your own application events  
extending GwtEvent

Presenters add handlers to listen for events

# Good practice #2

Let presenter handle all events (even DOM)

Sometimes hard

If put click handler in the view, then view would have to call service layer

Instead, handle in presenter

`display.getSaveButton().addClickHandler...`



# How to handle Widget collections?

Say, every row in a table has clickable widgets

Ans #1: catch event in parent Widget only

a) each table cell is a DIV. Handle event in containing Widget

Note: parent must be a Widget to receive events (and all of its ancestors)

b) along with this, expose handler reg mechanism through interface

# How to handle Widget collections?

What if every row has multiple TextBoxes?

Ans #2: write Display interface with arrays

```
interface Display {  
    HasValue<String> getFirstName(int i);  
    HasValue<String> getLastName(int i);  
    int getNumRows();  
    void addRows(int n);  
}
```



# Guice

Google's dependency injection framework

Small, light, almost plain English

ServerModule

DispatchServletModule

DispatchTestModule

ROAUserServiceImpl

Used by gwt-dispatch, useful for unit tests



# Google GIN

Dependency injection for GWT

Quite useful for MVP implementations

Provides access to EventBus, Dispatch,  
anything “global” your app may need

Auto-creates Images and Constants

Instead of `GWT.create(Roalmages.class);`

Can use

```
bind(Roalmages.class).in(Singleton.class);  
@Inject Roalmages images;
```

# gwt-presenter

Open source framework by David Peterson

<http://code.google.com/p/gwt-presenter/>

Very clean MVP implementation

Uses GIN to bind presenters as singletons

“Place” management

Automatically syncs GWT History object when  
fire PlaceRequestEvent in code

When browser URL changes, fires PRE



# gwt-presenter

Look at wiring (RoamModule, RoaGinjector, RoaMvp, AppPresenter)

WidgetDisplay  
asWidget()

WidgetPresenter  
onPlaceRequest()

Don't forget to call bind() in constructor!

WidgetContainerPresenter, DeckPresenter  
Create new presenter & view

# gwt-presenter gotchas

Don't forget to call `bind()` in constructor!

Loads all presenters at startup

... and all views

... with many Widgets in the views

## Alternatives

Temp solution: `LazyPresenter` replaces `onBind()` with `onFirstRequest()`

Real solution: `GWT.runAsync()`, working on it...



# Command pattern

GWT-RPC basics: every service = 3 classes

Service interface (LoginService)

Async version (LoginServiceAsync)

Server impl (LoginServiceImpl)

```
@RemoteServiceRelativePath("gwtlogin")
```

```
public interface LoginService extends RemoteService
```

```
{
```

```
    public LoginInfo login(String requestUri) throws  
        UserNotRegisteredException;
```

```
}
```

# Command pattern

Eclipse tooling auto-creates the asyncs

What if you wanted to add a standard arg to every service call?

Like a security token to prevent CSRF

Would have to add to every interface, async, and impl UGH

Or what if you wanted to cache data from service calls?

# Command pattern

Turn verbs (methods) into nouns (classes)

```
loginService.login(p1,p2...,callback);  
dispatchService.execute(new LoginAction(),  
    new AsyncCallback<LoginResult>()  
    {  
        handleSuccess(LoginResult result)...  
        handleFailure(Throwable caught)...  
    }  
}
```



# Command pattern

## Command pattern benefits

Send security token in DispatchService and  
Actions don't even have to know about it

Actions and ActionHandlers can extend base  
classes

Constructor params are saved with the cmd

Caching! Batching! Queuing!

Rollback!



# gwt-dispatch

Companion framework by David Peterson

<http://code.google.com/p/gwt-dispatch/>

Base classes for Action, Result

DisplayCallback automatically calls  
start/stop view on service call init/return

HiveMind MVP tutorial highly recommended!



# gwt-dispatch

Wiring it up (GuiceConfig, ServerModule,  
DispatchServletModule)

Create new Result, Action, ActionHandler

Call it from presenter

# Good practice #3

Stop thinking synchronously!

Pass Callbacks everywhere a trip to the server may be needed

```
ArrayList<User> service.getUsers()  
service.getUsers(new AsyncCallback() {...});
```

Extend AsyncCallback with your own

Provide standard handleFailure();

Other standard handling on call or return

# Tools

In case I forgot...

Web Developer Toolbar (Ctrl+Shift+E)

Firebug (F12)

YSlow

Chrome Developer Tools!

Speed Tracer (runs in Chrome)



# Other GWT goodies

DeferredCommand

Often necessary for setFocus()

Timer

Good for animation

<http://code.google.com/p/gwt-fx/>

Fade, blinds, etc.

# Resources

## Book

The CSS Anthology (Rachel Andrew, 3<sup>rd</sup> Ed.)

## Blogs

HiveMind MVP tutorial

<http://blog.turbomanage.com> (lots of gwt-dispatch, gwt-presenter example code)

Google I/O videos

AppEngine + GWT Training Apr 12-13