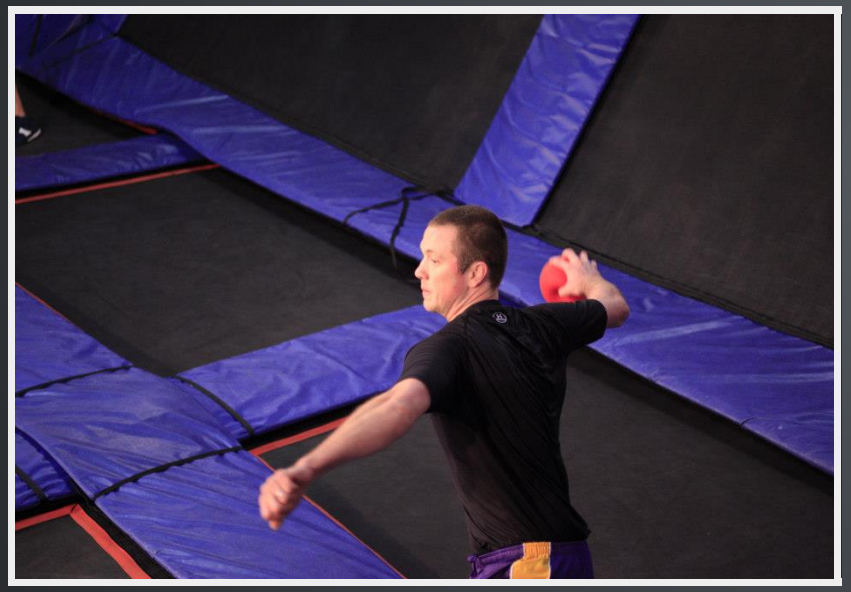
LARGE ANGULAR PROJECT POSTMORTEM



@wbucksoft

willbuck @ github

@zlegein

zlegein @ github

INTENDED AUDIENCE

- About to start / in thick of large Angular project
- Know the basics but looking for more guidance
- Follow along at http://bit.ly/VWNGRetro

Caveat: We're not experts, just experienced

Still don't have all the answers

We're assuming we know what you want to know, you know better, so...

ASK QUESTIONS!

A LITTLE VIRTUWELL HISTORY

- Built original 'prototype' with no knowledge of how it'd be used
- Closest Model (EMRs) didn't quite fit
- We learned something about the domain model
- Only need to support 1 browser (firefox)
- Minimal users of the application

ANGULAR AT VIRTUWELL

- Started in 2012 building a Backbone app
- Ended up with a lot of code & inconsistent 2-way binding
- Chose AngularJS for our next big project
- Team fell in love
- Re-wrote much of Backbone app in Angular in short matter of months

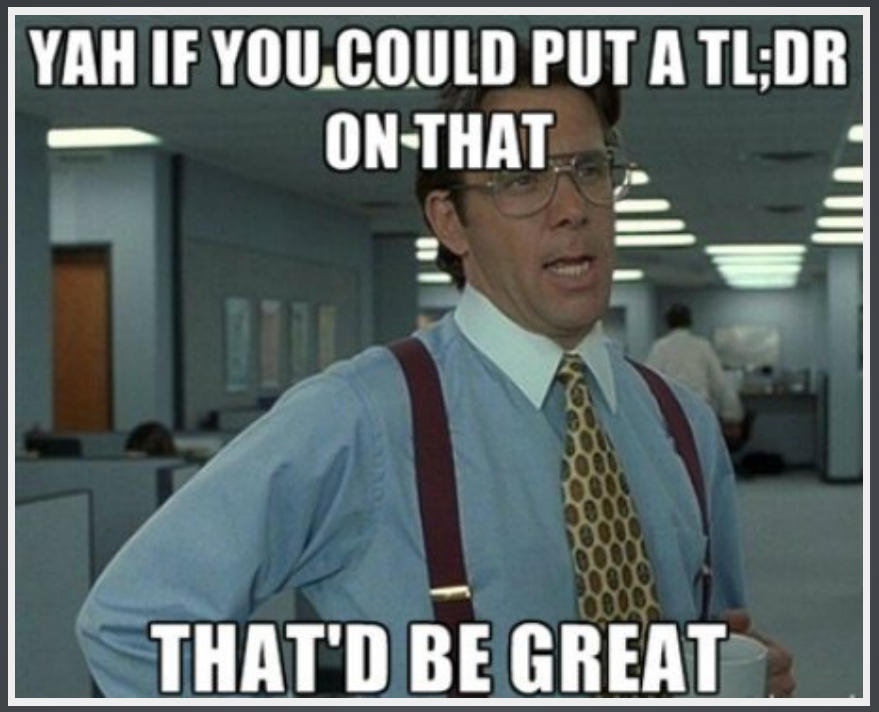
WHY ANGULAR?

- Easy 2-way binding
- Familiar MVC(S) setup
- Light, fast, productive
- Lots of activity & adoption
- TESTABILITY

THE STACK

- Grails + Angular
- Grunt
- Coffeescript
- Jasmine & Karma
- Bower
- SASS (& Compass)

TAKEAWAYS (TL;DR)



READ A STYLE GUIDE

- John Papa (My Personal Favorite)
- Todd Motto (Similar, Encourage both)
- Google Best Practices for Structure (LIFT)

GOOD RESOURCES

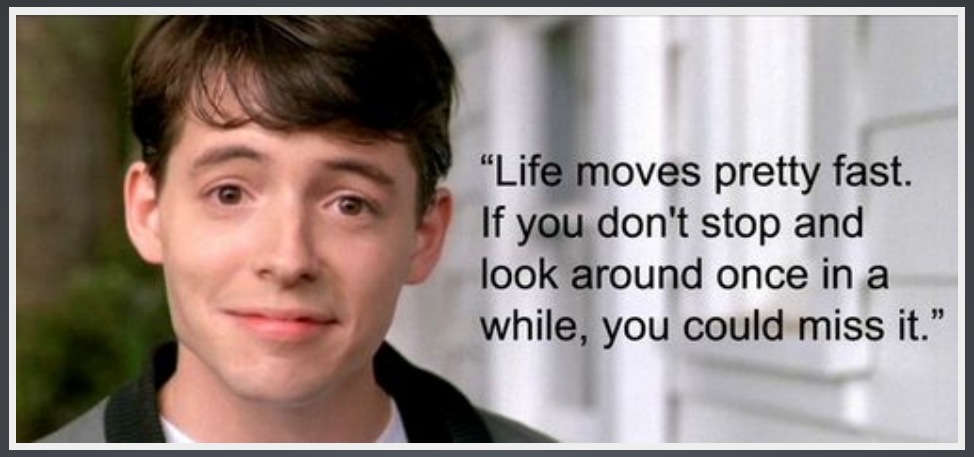
- Egghead bite-sized video chunks
- Plunker small examples
- Thinkster Cool tutorial app, not all best practices
- NG-Book Comprehensive & constantly up to date
- NG-Conf Videos, esp DoubleClick Team
- Year of Moo (Matias' Blog)

USE TOOLS / LIBRARIES / STRATEGIES YOU FIND USEFUL

For us, this was

- Angular-UI (Router & Bootstrap)
- Restangular
- Yeoman to get started
- A bit of moment.js and underscore.js
- TDD Unit Tests w/ jasmine
- Git & gitflow branching model
- "Use what works" & "just ship it"

JS LIFE MOVES FAST



Stay in touch w/ current happenings

Will help a lot with finding documentation / avoiding odd bugs

ANGULARJS? THERE'S A MEETUP FOR THAT!

AngularMN meets first Wednesday of every month

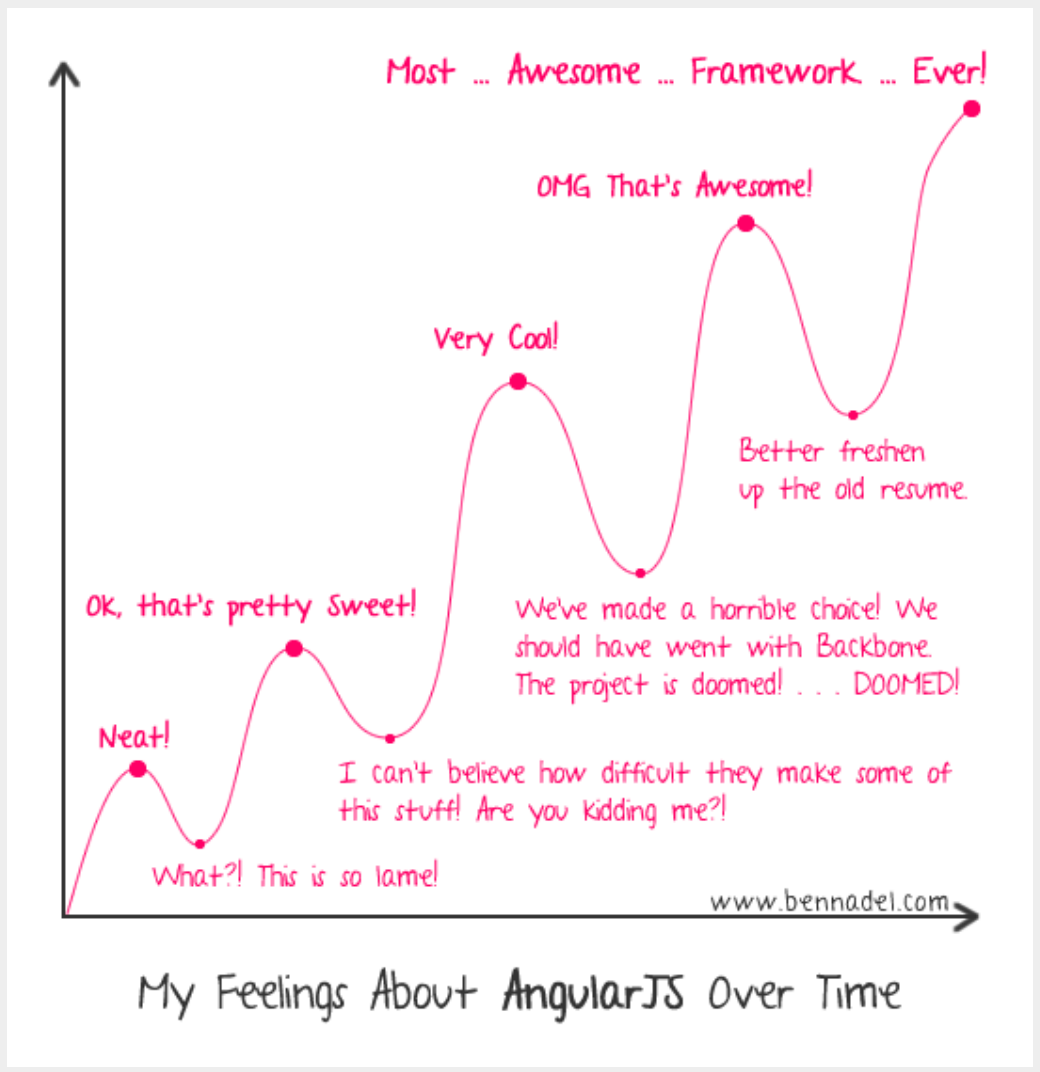
At Virtuwell Headquarters

Follow us @AngularMN

LEARNING PROCESS

A.K.A. Toughest Hurdles Getting Started

THE LEARNING CURVE



Courtesy @bennadel

UNLEARNING JQUERY MINDSETS

- Angular is more framework than library
- Angular is more declarative than imperative
- Two-way data binding vs manual DOM management
- Dependency Injection & modularity vs. $.ready()
- Design your models first, not your page
- Having Backbone knowledge was helpful here

FIRST PASS: CONTROLLER ALL THE THINGS

- Intros make a controller, so everything is a controller, amirite?
- Need to coordinate between controllers though...
- ... So use rootScope.$emit / $on, listen for model changes?

FIRST PASS: QUICKLY BECOMES UNWIELDY

- Avoid "scope soup"
- controllerAs syntax helps
- Share data in a .factory (or .value perhaps)
- Magic controller inheritance makes very odd-looking code
- If you're going to do it, at least give it some structure

SCOPES

Beware of bind by value vs bind by reference

```
$scope.myBoolean = SomeService.thatBoolean
// Asking for trouble
SomeService.thatBoolean = false
// Will save you headaches
SomeService.thatBoolean = {value: false}
```

And for arrays...

```
_.mixin({
  bindArray: (origArray, newArray) ->
    if newArray and origArray
      origArray.length = 0
      origArray.push(val) for val in newArray
})
```

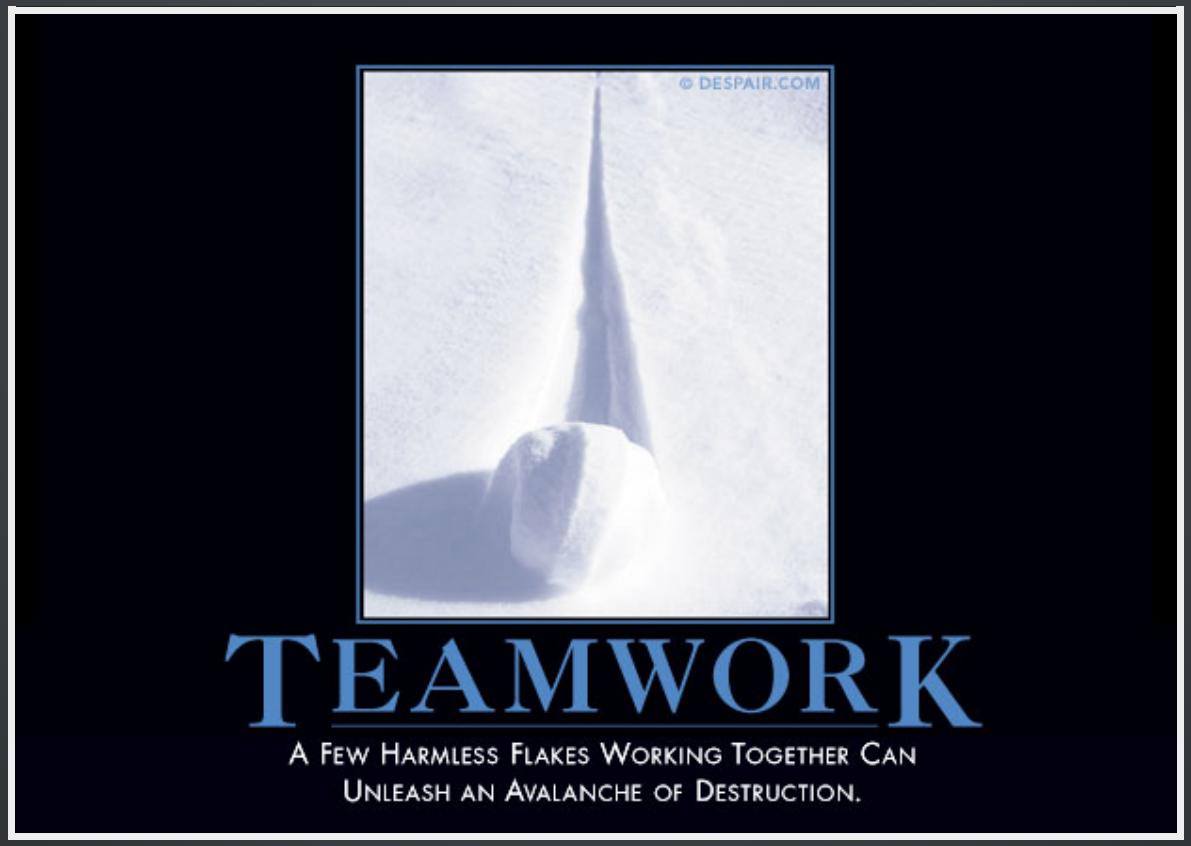
ANGULAR SERVICES

- Make these fat (little / no logic in Controllers)
- Just use .factory, clearer than .service and not much difference
- Give these their own module for sharing

THE JOURNEY TO DELIVERY

Things we encountered as a team that helped us towards

SHIPPING



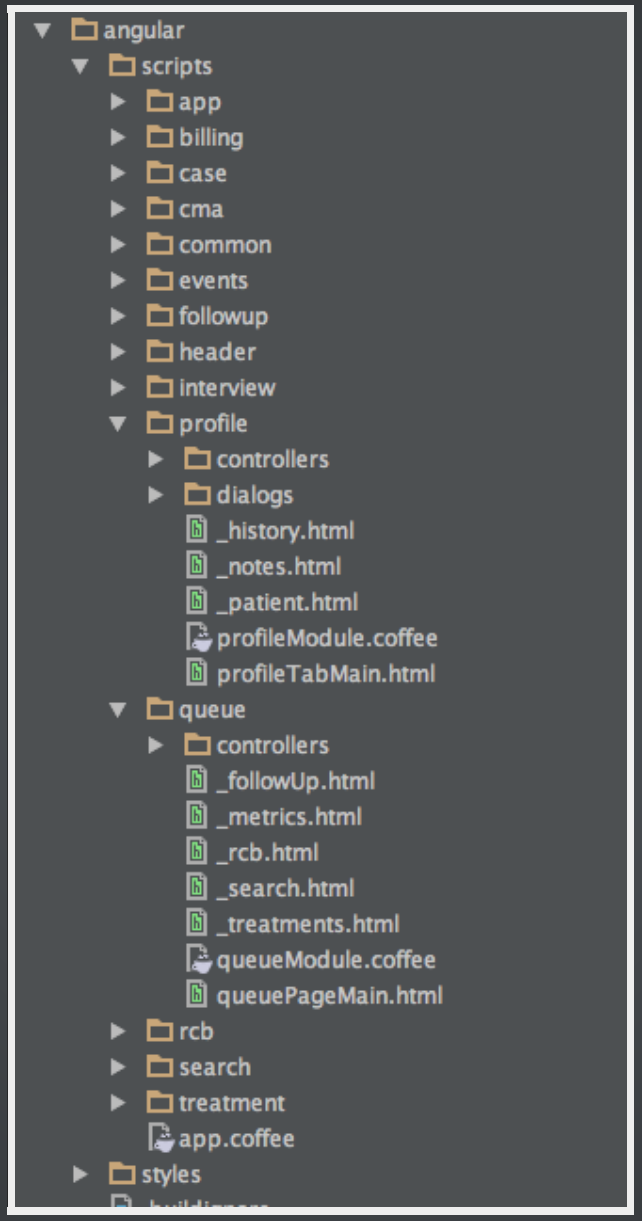
SOME QUICK TIPS

- Controller vs Ctrl
- use your own prefix for directives (NOT ng-, we use vw-)
- wrap scope values in object
- use $scope.$digest vs $scope.apply()

MODULES

- how to organize
- directives, filters (and services?) are common
- naming, be consistent

```
angular.module('profile.notes', ['ui.router', 'ui.bootstrap', 'profile.pati
    .controller('ProfileNotesController',
      function($scope, $stateParams, $location, $modal, ProfileNotesService
```


angular
scripts
app
billing
case
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common
events
followup
header
interview
profile
controllers
dialogs
_history.html
_notes.html
_patient.html
profileModule.coffee
profileTabMain.html
queue
controllers
_followUp.html
_metrics.html
_rcb.html
_search.html
_treatments.html
queueModule.coffee
queuePageMain.html
rcb
search
treatment
app.coffee
styles

PACKAGE DEPENDENCY

- npm used to install grunt and bower and yeoman
- version equivalent settings in bower and node

```
"dependencies": {
    "angular-mocks": "~1.2.16",
    "angular-scenario": "~1.2.16",
    "es5-shim": "~2.0.8",
    "angular-resource": "~1.2.16",
    "angular-cookies": "~1.2.16",
    "angular-sanitize": "~1.2.16",
    "angular-bootstrap": "~0.10.0",
    "jquery": "2.0.3",
    ...
}
```

DEM TILDES

introduce grunt clean task

- delete node modules
- delete bower components
- npm cache clean
- npm install
- bower cache clean
- bower install

TESTING

- breaking code base into modules was the biggest challenge to testing
- unit test needs module under test to have comprehensive dependency definitions, no cheating!
- wrote custom matcher for deep comparison testing
- introducing restangular added new challenge for comparison
- wrote unit test for filters, directives, controllers, factories
- $httpBackend.flush() to ensure all async request are done
- rootScope.$apply() triggers $digest cycle to ensure all changes take effect

```
angular.equals(obj1, obj2)
```

karma.conf.js

```
files: [
        'web-app/vendors/**/*.js',
        'web-app/js/**/app.js',
        'web-app/js/**/*Module.js',// need to load all the modules first
        'web-app/js/**/*.js',
        'test/**/*.coffee'
],

// enable / disable watching file and executing tests whenever any file c
autoWatch: true,

// Continuous Integration mode
// if true, it capture browsers, run tests and exit
singleRun: false
```

ROUTES

- Started with ngRoute, quickly moved to ui.router
- ngRoute is based on routes in your application
- ui.router is based on what state your application is in
- ui.router allows for nested states and views
- ui.sref directive that binds anchor tags to states

```
.state 'case',
    abstract: true
    url: '/case'
    templateUrl: 'case.html'
.state 'case.tabs',
    views: {
        "tabs@case" : {templateUrl: 'tabs.html'}
        "customHeader@case" : { templateUrl: 'custom_header1.html'}
    }
.state 'case.tabs.profile',
    url: '/profile/:profileId'
    templateUrl: 'profile/main.html'
    resolve:
        patientProfile: ($stateParams, ProfileService) ->
            ProfileService.fetch $stateParams.profileId
```

```
<a ui-sref="case.tabs.profile({profileId:profile.id})">Profile</a>
```

```
$state.go("case.tabs.#{tab}", routeParams)
```

```
# TODO this kinda sucks how can we do better
if useRelative then  relativePathPrepend = '^'
if TreatmentActivityService.isActivityTreatmentPlan(treatmentActivity)
    $state.go(relativePathPrepend + '.plan', {
      encounterId: $stateParams.encounterId,
      workUnitId: $stateParams.workUnitId
    })
else if TreatmentActivityService.isActivityCaseNote(treatmentActivity)
    $state.go(relativePathPrepend + '.note', {
      encounterId: $stateParams.encounterId,
      workUnitId: $stateParams.workUnitId
    })
```

UI BOOTSTRAP

- Lets get rid of JQuery, Yeah! (HAHAHA As if you can...)
- bootstrap upgrade from 2.x to 3.x, lag on ui-bootstrap to upgrade
- angularStrap updated right away. ui.bootstrap team took forever.
- blocked us from upgrading to use the bootstrap 3.0 css

VERSIONS

- Started project at angular 1.0.5 release
- Made conscience effort to keep up with the latest releases
- Docs were behind the curve. Comments were very helpful

- response interceptors
- animations support in 1.1.4
- broke up angular core into modules
- $http introduced support for request/response promise chaining
- ngIf was added
- controllers can now be aliased
- promises have .catch() and .finally() more like traditional try/catch
- ngSelect added 'track by' to allow more robust binding capabilities
- ngBindHtmlUnsafe to ngBindHtml need to have ng-sanitize module as a dependency
- Isolate scope only exposed to directives with scope property

WHAT TO LOOK OUT FOR

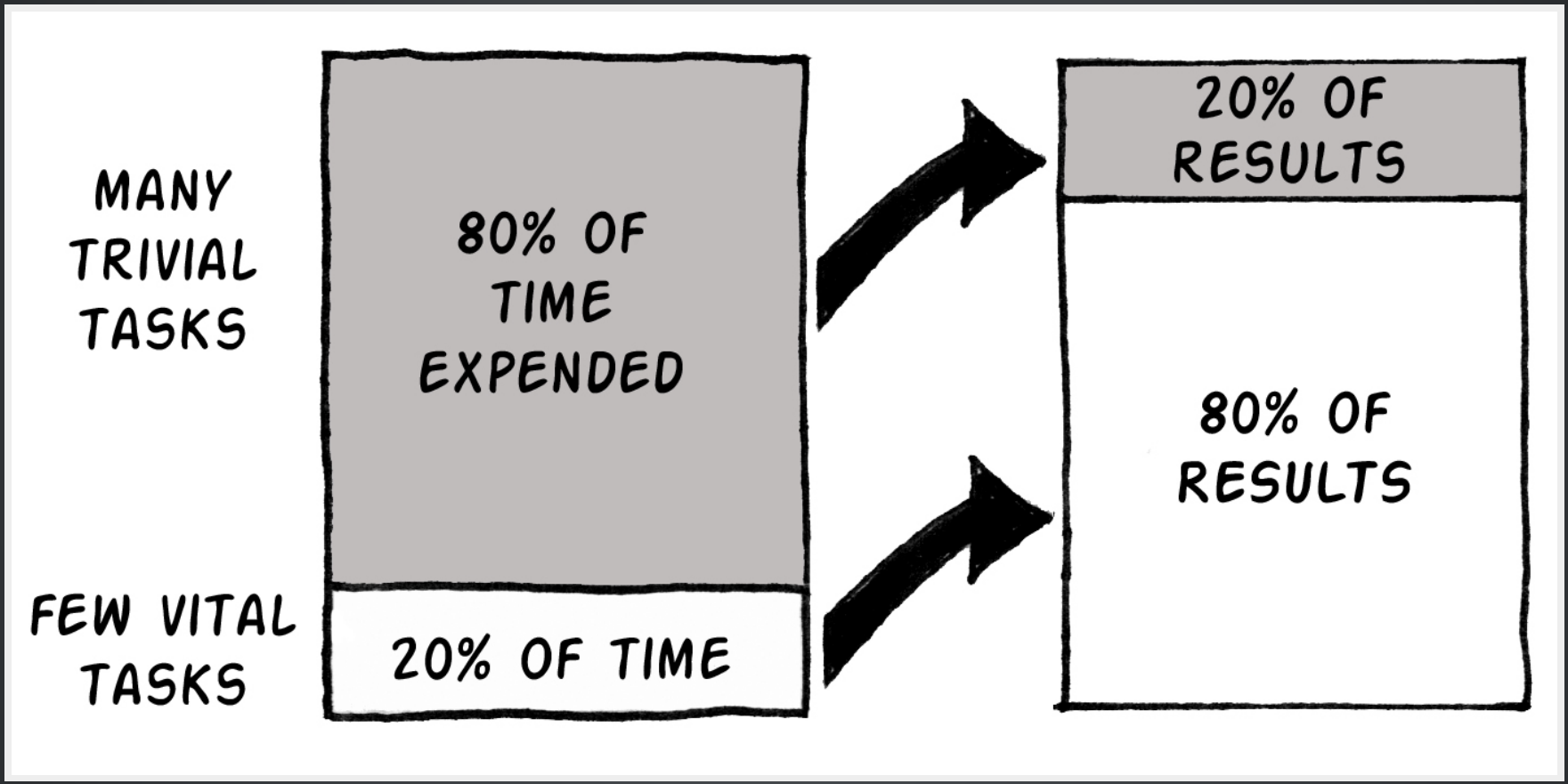
- Good stuff in 1.3
- one-time binding `<h1>{{ ::vm.title }}</h1>`
- Dropping IE8
- ngMessages for forms (/i18n?)

and soon...

ANGULAR 2.0

(ZOMG)

POLISHING UP: GOTCHAS



GOTCHAS: CONTROLLER / SERVICE LIFECYCLE

- Started with putting state on our services
- Moved to having stateful services and stateless service
- Ran into data bleed issues. When to reset the data?

WHERE WE WOULD LIKE TO GO

- could use an angular value to store data
- create domain models for our data
- inherit a resettable model that resets models on certain events

GOTCHAS: UI-ROUTER NESTED STATES

```
.state 'followUpNote.tabs.treatment',
  url: '/treatment/:encounterId/:workUnitId'
  templateUrl: '/angular/scripts/treatment/readable.html'
  controller: 'ReadableTreatmentTabController'
  resolve:
      patientProfile: ($stateParams, PatientProfileService) ->
          PatientProfileService.fetch $stateParams.encounterId
.state 'followUpNote.tabs.treatment.plan',
  views: {
      "content@followUpNote.tabs.treatment": {templateUrl: '/angular/scripts/
  }
.state 'followUpNote.tabs.treatment.note',
  views: {
      "content@followUpNote.tabs.treatment": {templateUrl: '/angular/scripts/
  }
```

```
$scope.goToProperActivityRoute = (treatmentActivity, useRelative) ->
    relativePathPrepend = ''
    if useRelative then  relativePathPrepend = '^' # TODO this kinda sucks ho
    if TreatmentActivityService.isActivityTreatmentPlan(treatmentActivity)
        $state.go(relativePathPrepend + '.plan', {encounterId: $stateParams.e
    else if TreatmentActivityService.isActivityCaseNote(treatmentActivity)
        $state.go(relativePathPrepend + '.note', {encounterId: $stateParams.e
```

GOTCHAS: SECURITY ROLES & PERMISSIONS

-

```
core.config ($provide) ->
    profile = angular.copy(window.myActiveProfile)
    $provide.constant('activeProfile', profile)
```

MAYBE STILL NEED E2E TESTING?

- Best when you have a good handle on how things will be used
- That came late for us, we'd benefit from some now though
- Protractor is pretty awesome though @ramonvictor's slides on why

GOTCHAS: OTHER JANITORIAL TASKS

- Need to move to controllerAs syntax
- Consider moving shared data to .value(), separate from .factory()s
- Use of route resolver functions to pre-load more data
- Apparently ng-min was deprecated, move to ng-annotate
- Continue cleaning up file structure to be consistent
- move to angular 1.3

THANK YOU FOR LISTENING!

Questions? Comments? Please give us feedback!
https://www.surveymonkey.com/s/8SWVCBK