Using Protractor to Build Automated UI “Smoke Tests”

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Why Have Automated Tests?

- Smoke tests
  - Know when apps are down or having performance issues
- Functional UI tests
  - Tests that are tedious and time consuming
  - Testing with lots of data

But I Have Unit Tests…

- Unit Tests only test that part of the code
- UI tests launch browser and interacts with the browser as a user
- Tests database, UI, server-side code, server/network hardware

The Tools

- Webdriver
  http://www.seleniumhq.org/projects/webdriver/
- Selenium
  http://www.seleniumhq.org/
- Protractor
  http://www.protractortest.org/#/

Setup

Install Node.JS
https://nodejs.org

Command Line Statements

```
npm install protractor -g
webdriver-manager update
webdriver-manager start
```

Protractor Config

```
//conf.js

exports.config = {
    framework: 'jasmine',
    seleniumAddress: 'http://localhost:4444/wd/hub',
    specs: ['spec.js'],
    getPageTimeout: 30000,
    allScriptsTimeout: 30000,
    onPrepare: function() {
        browser.driver.manage().window().maximize();
        browser.ignoreSynchronization=true; //for non-angular apps
    },
};
```

Full list of options
https://github.com/angular/protractor/blob/master/lib/config.ts

Test script

```
// spec.js

describe('From Seed to Spoon Smoke Test', function() {
    it('should verify the main page loads', function() {
        browser.get('http://www.seedtospoon.net/');
        expect(element(by.css('h2.maintitle')).getText()).toEqual('Grow Your Own Food');
    });
});
```

Full list of capabilities
http://www.protractortest.org/#/api

Controlling the Browser

```
browser.get('http://www.seedtospoon.net');
browser.navigate().back();
browser.navigate().forward();
browser.sleep(10000);
browser.getLocationAbsUrl() // get the current address
browser.ignoreSynchronization = true; // non-angular
```

Using Locators to Find Elements

```
element(by.id('user_name'))
element(by.css('div.blog-post .entry-title'))
element (by.input( 'username' ));
element(by.buttonText('Save'));
element(by.partialButtonText('Save'));
element(by.linkText('Save'));
element(by.partialLinkText('Save'));

Angular-specific
element(by.model('person.name')) // refers to ng-model directive
element(by.binding('person.concatName')); // refers to ng-bind directive
```

Collections of Elements

```
var list = element.all(by.css('.items));

expect(list.count()).toBe(3);

expect(list.get(0).getText()).toBe('First’)

expect(list.get(1).getText()).toBe('Second’)

expect(list.first().getText()).toBe('First’)

expect(list.last().getText()).toBe('Last’)
```

Elementor

Elementor
https://github.com/andresdominguez/elementor

Actions

Click

```
element(by.buttonText(‘Submit’)).click();
```

Use Keyboard

```
element(by.id('user_name')).sendKeys("user1");
sendKeys(protractor.Key.ENTER);
sendKeys(protractor.Key.TAB);
```

Clear a field

```
element(by.id('user_name')).clear()
```

Checking Data/Visibility

```
element(by.id('create')).isDisplayed() //Is element currently visible/displayed?

expect(element(by.css('h2.maintitle')).getText()).toEqual('Grow Your Own Food');
```

Demo

Enhancements

- **Multiple Browsers**

```
multiCapabilities: [{
'browserName': 'firefox'
}, {
'browserName': 'chrome'
}]
```

- **Screenshots**

  protractor-screenshoter-plugin
  https://www.npmjs.com/package/protractor-screenshoter-plugin

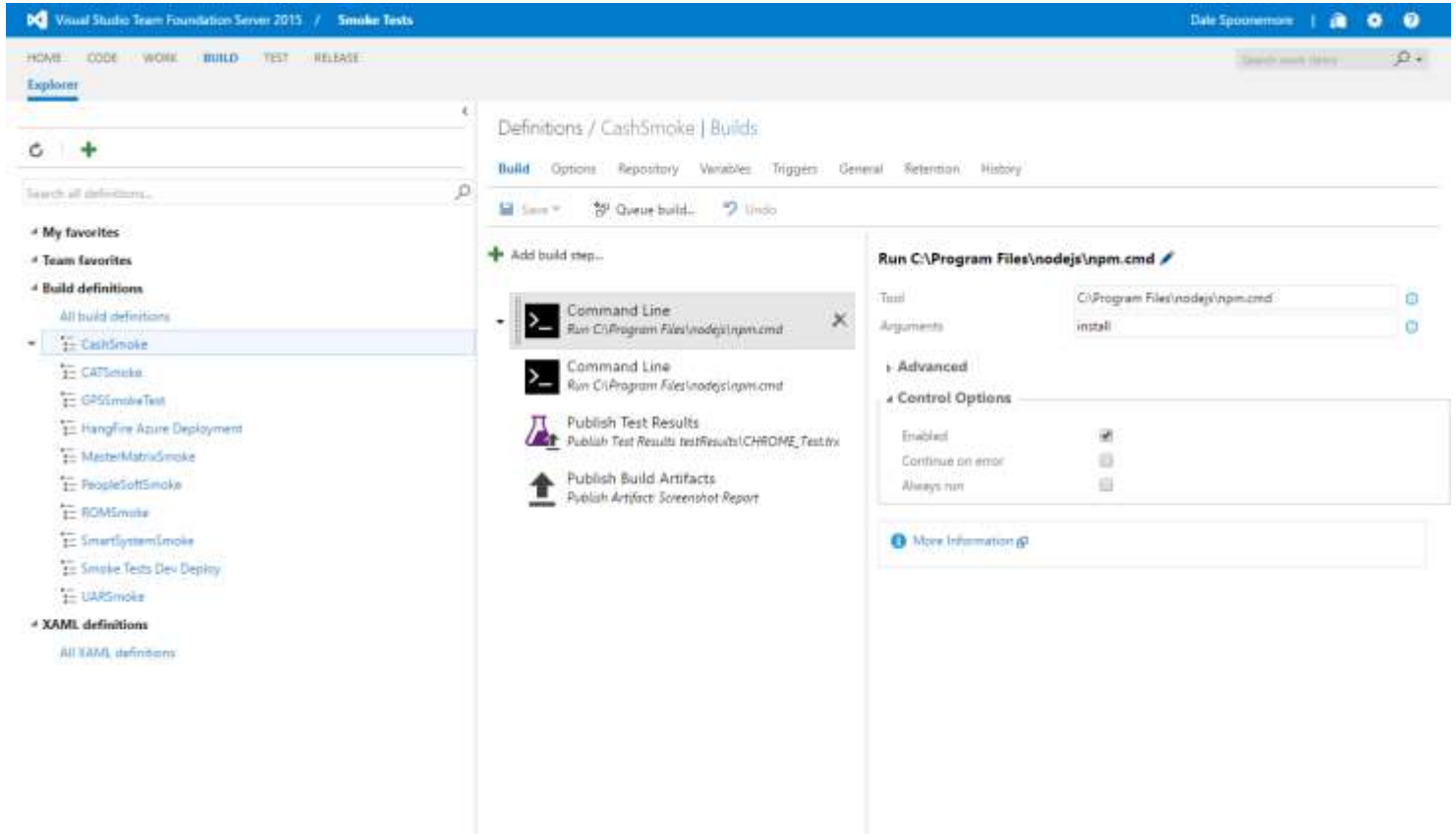
- **Generate test data files**

  jasmine-trx-reporter
  https://www.npmjs.com/package/jasmine-trx-reporter

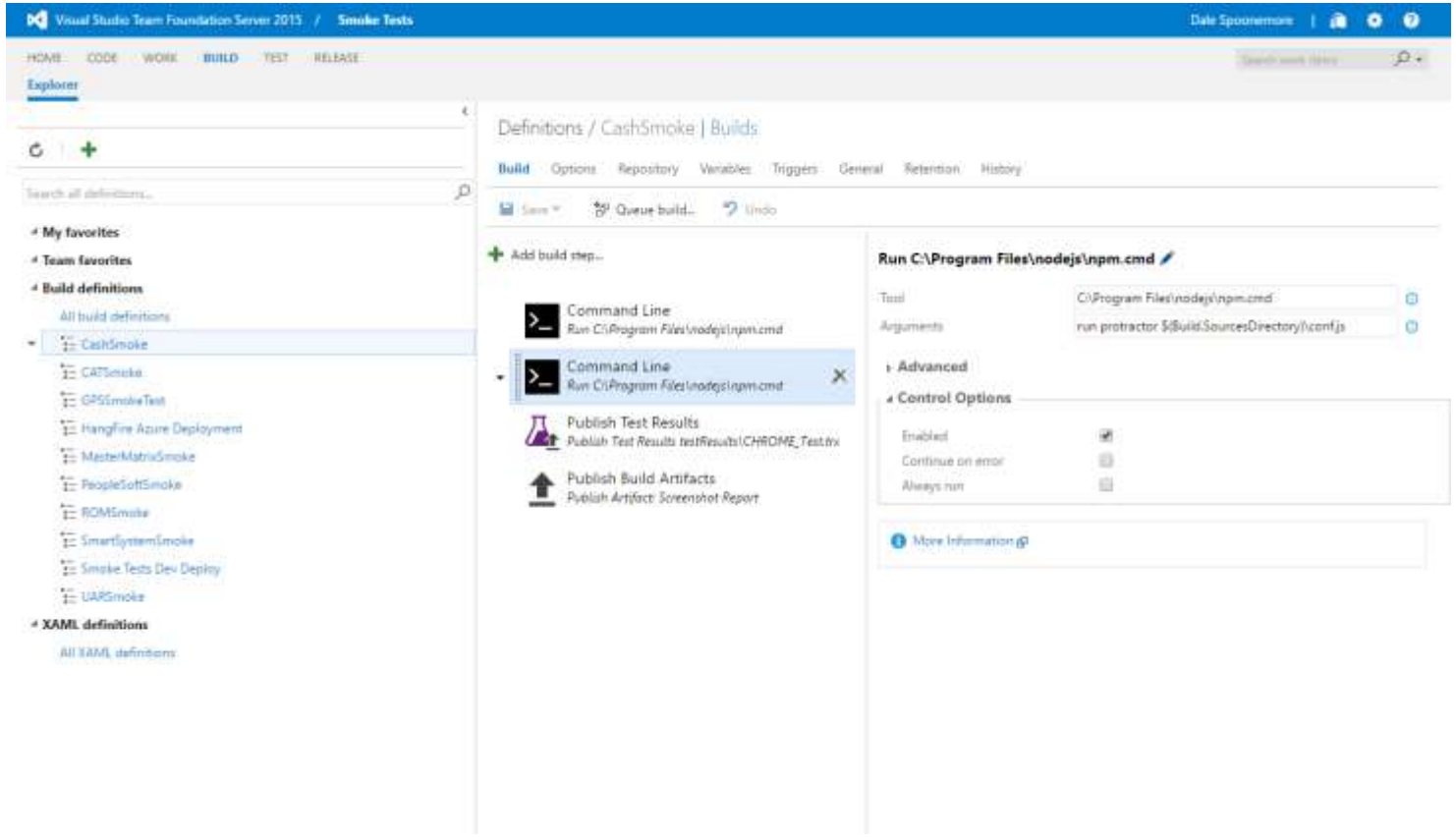
Automating test runs

- TFS
- Jenkins / Grunt / Gulp
  - https://www.linkedin.com/pulse/automating-angular-apps-using-protractor-integrating-continuous

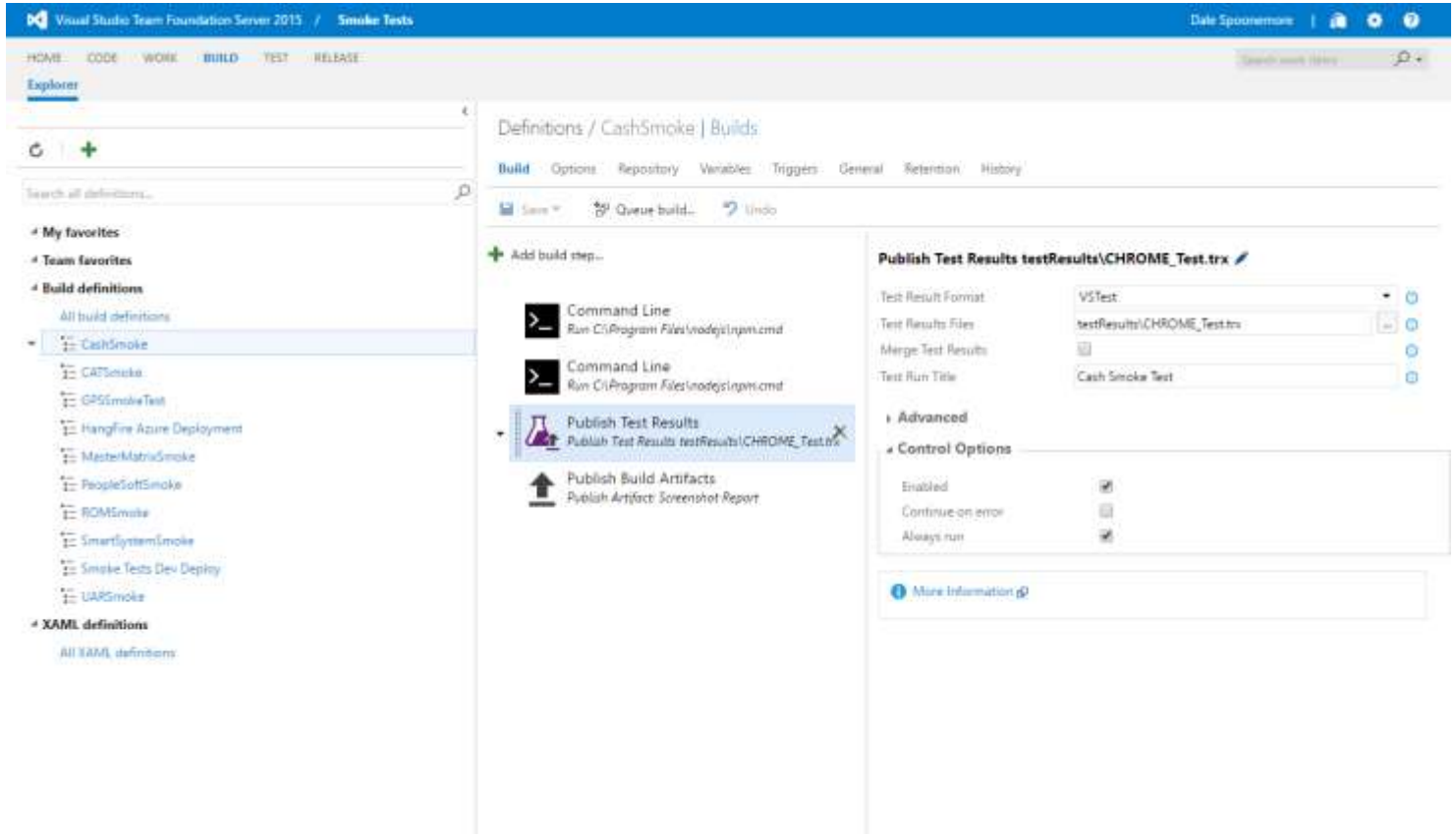
TFS build steps – Run install



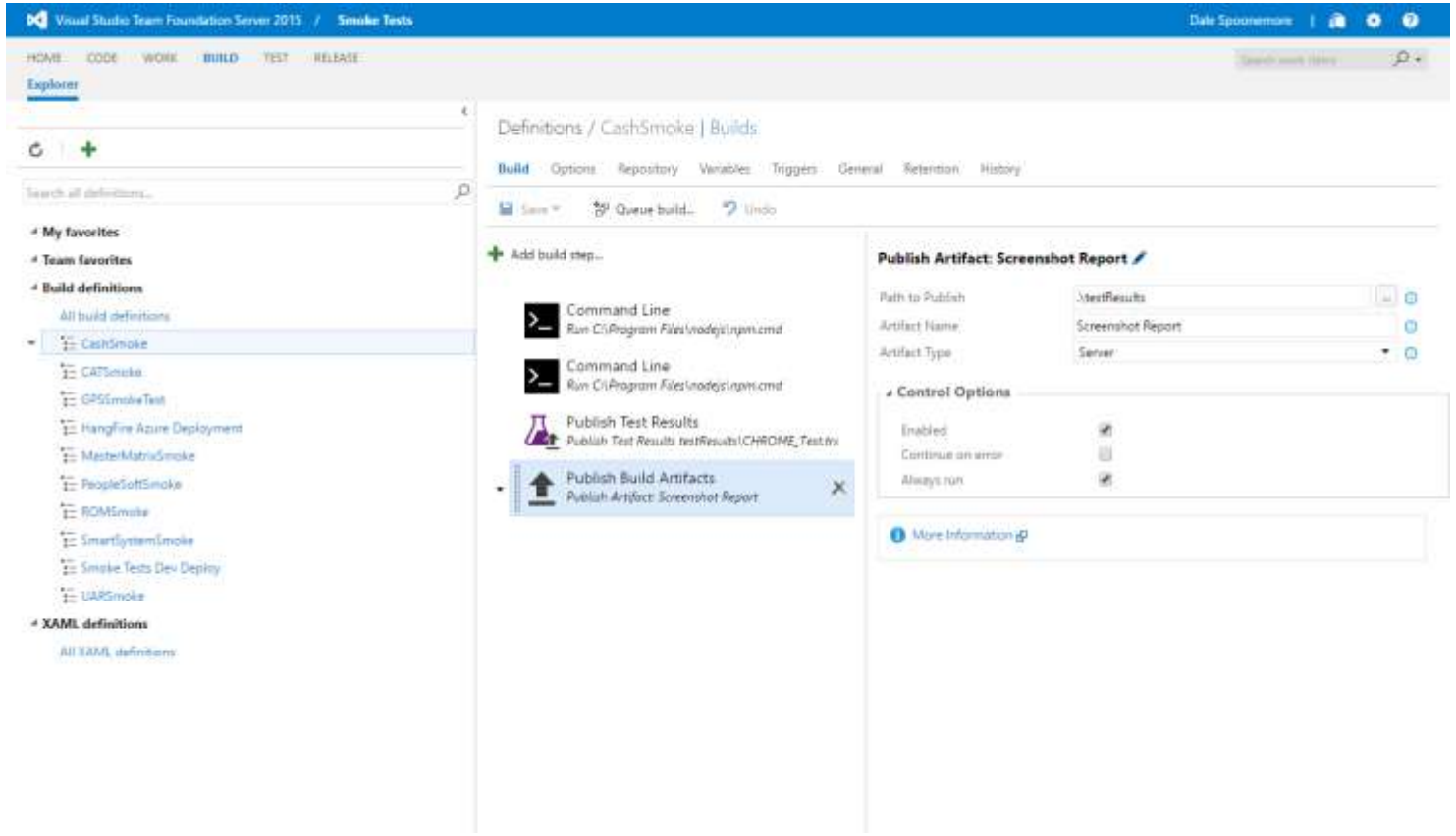
TFS build steps – Launch test



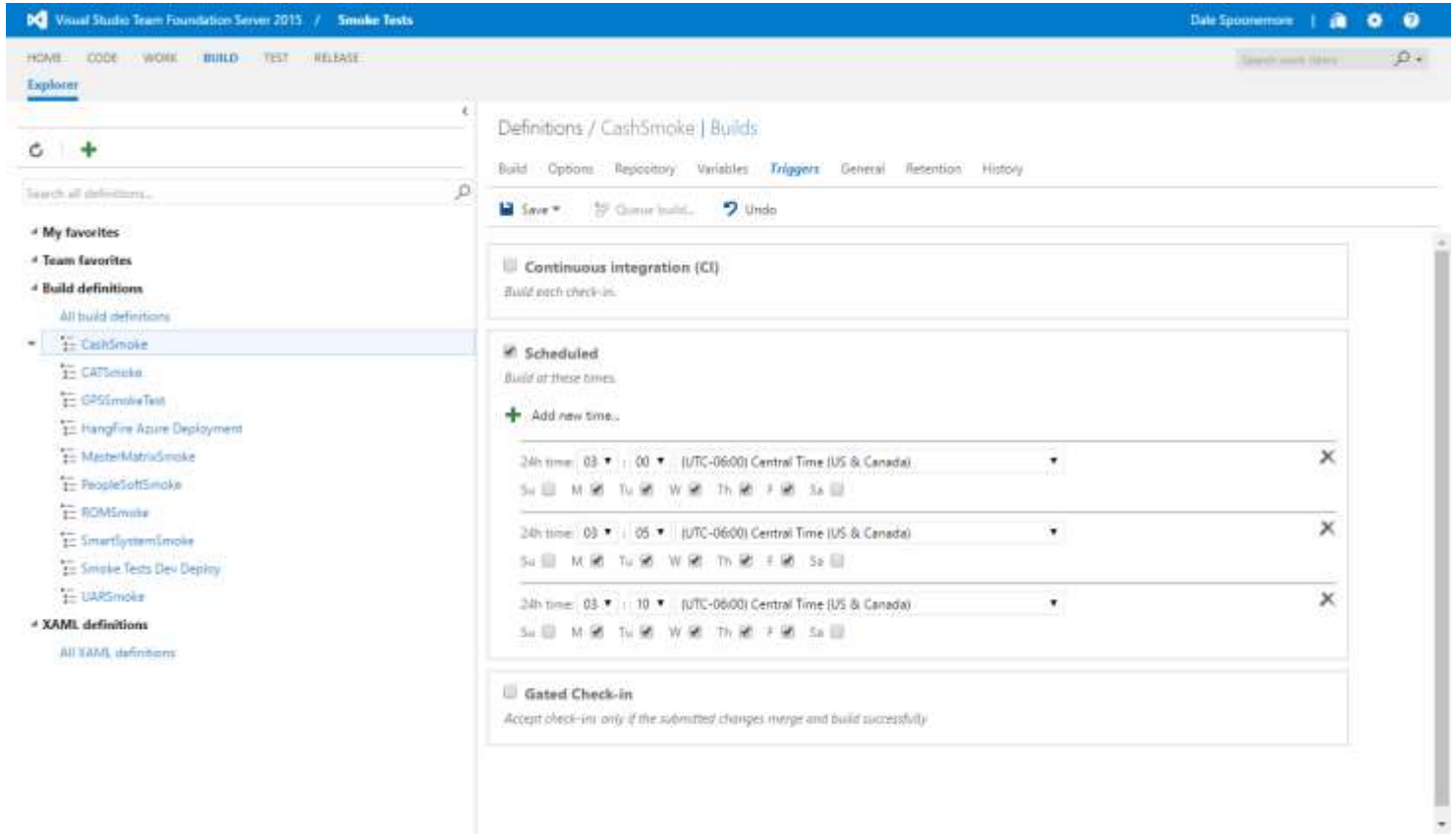
TFS build steps – Publish Test Results



TFS build steps – Publish Build Artifacts



TFS build steps – Scheduling



Automating Builds

Wil Isaacs
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Hangfire

http://hangfire.io/

Demo

http://hangfiresmoketestpres.azurewebsites.net/

Next Steps

- UI for business users to subscribe to and manage email notifications
- More advanced CI UI tests

Credits

Protractor
http://www.protractortest.org/#/

Protractor Cheat Sheet
https://gist.github.com/javierarques/0c4c817d6c77b0877fda

Introduction to Protractor PluralSight Course
https://www.pluralsight.com/courses/protractor-introduction

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