*Research:*

* Narzędzia do budowania aplikacji (GULP, GRUNT)
* Zarządzanie javascript
* Testy jednostkowe (QUnit, Jasmine, etc.)

*GRUNT:*

- fast task runner for web application running via npm

- a lot of plugins to use e.g. less, sass, jshint, jasmine, ngmin, cssmin, uglify, concat, etc. <http://gruntjs.com/plugins>

- minifying and concatenating JavaScript

- compiling CSS from LESS or SASS

- active community of developers releasing new plugins regularly

- great plugin HTML Hint   
https://github.com/yaniswang/grunt-htmlhint   
<https://github.com/yaniswang/HTMLHint/wiki/Rules>

- watch changes in files (after save) and do some task e.g. uglify js file  
<https://github.com/gruntjs/grunt-contrib-watch>

**Bower:**

* Good tool for managing frameworks, libraries, assets, utilities, etc.
* Easy to install via npm
* Saving packages to ‘bower\_module’, bower.js
* Created by Twitter
* Open Source
* There is no need to download the dependencies from e.g. GiHub in browser
* Nice tool to reproduce software stack
* Grunt-wiredep (https://github.com/stephenplusplus/grunt-wiredep)  
  Create <script> in index.html

Npm and Bower are both dependency management tools. But the main difference between both is **npm is used for installing Node js modules but bower js is used for managing front end components like html,css,js etc**.

Karma:

* Installation via npm and grunt
* It can be run in background in command line via PhantomJS
* Dedicated to AngularJS framework (but still can be run with other stuff:
  + RequireJS
  + Travis CI
  + Jenkins CI
  + Cloud9
  + Yeoman
  + Ember.js
  + Codio
* Based on Jasmine
* Made because of Angular’s DOM manipulation
* This tool can run unit tests in different browsers – and this is the main advantage of the tool:
  + [Chrome and Chrome Canary](https://github.com/karma-runner/karma-chrome-launcher) (install karma-chrome-launcher)
  + [Firefox](https://github.com/karma-runner/karma-firefox-launcher) (install karma-firefox-launcher first)
  + [Safari](https://github.com/karma-runner/karma-safari-launcher) (install karma-safari-launcher first)
  + [PhantomJS](https://github.com/karma-runner/karma-phantomjs-launcher) (install karma-phantomjs-launcher)
  + [Opera](https://github.com/karma-runner/karma-opera-launcher) (install karma-opera-launcher first)
  + [IE](https://github.com/karma-runner/karma-ie-launcher) (install karma-ie-launcher first)
  + [SauceLabs](https://github.com/karma-runner/karma-sauce-launcher) (install karma-sauce-launcher)
  + [BrowserStack](https://github.com/karma-runner/karma-browserstack-launcher) (install karma-browserstack-launcher)
  + [many more](https://www.npmjs.org/browse/keyword/karma-launcher)

When should I use Karma?  
https://github.com/karma-runner/karma

* You want to test code in real browsers.
* You want to test code in multiple browsers (desktop, mobile, tablets, etc.).
* You want to execute your tests locally during development.
* You want to execute your tests on a continuous integration server.
* You want to execute your tests on every save.
* You love your terminal.
* You don't want your (testing) life to suck.
* You want to use [Istanbul](https://github.com/gotwarlost/istanbul) to automagically generate coverage reports.
* You want to use [RequireJS](http://requirejs.org/) for your source files.

There is possibility to generate <script> and <link> using **wiredep**.

bower install jquery –save

grunt wiredep (and scripts will be generated)

CMD: bower install –save jquery, bootstrap ….

Index.html <head>  
<!-- bower:js -->

<!-- endbower -->

CMD: wiredep –s index.html or  
wiredep: {

target: {

// Point to the files that should be updated when

// you run `grunt wiredep`

src: [

'index.html',

'app/tpl/\*\*/\*.html'

],

https://github.com/stephenplusplus/grunt-wiredep