**Tools**

IBA selected and used a number of tools and components in the development of the prototype that are considered “Modern” open source based on the definition given as Note # 2 of the RFQ. The following table provides the information about each tool used.

IBA, Inc. certifies that the prototype and all underlying platforms and components and tools that we have used in its creation are openly licensed and free of charge.

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| --- | --- | --- | --- |
| **Tool** | **Description of how we use it** | **Version** | **Tier** |
| Jenkins-CI | Used for continuous integration and supports our building and testing of functionality. It is also used to deploy our code across platforms. |  | Build |
| AWS  CodeDeploy | Used in our Continuous Deployment/Continuous Integration process to deploy our application to an AWS EC2 instance |  | Build |
| HTML5 | Used for structuring and presenting content |  | Front |
| CSS3 | Language that helps modify the templates coming from Bootstrap and AngularJS |  | Front |
| AngularJS | The toolset with which we consume, repackage, and display FDA’s data. Due to its extensible characteristic, it works well with the libraries in our development environment. It allows us to pass returned and repackaged data (received from the API) to the user's browser. | 1.3.16 | Front |
| Bower | One of two package managers that we utilized to pull down code packages to help fortify the application. (npm is the other). This step updates the configuration file(s) to include the new dependencies. | 1.4.1 | Front |
| JSON | JavaScript Object Notation has been used primarily to exchange data between our server, application and openFDA API |  | Data |
| Mocha | Has been used to automate and document unit testing for the site/application | 0.16.1 | Test |
| npm | One of two package managers that we utilized to pull down code packages to help fortify the application. (Bower is the other) | 1.3.10 | Build tool |
| Node.js | Build and serve up our code for the event-driven, non-blocking I/O functionality to make it lightweight and efficient well suited for our data-intensive real-time app that runs across distributed devices. | 0.10.25 | Mid |
| Bootstrap | Our responsive design, mobile first, front end framework | 3.3.5 | Front |
| Ubuntu | Our operating system of choice for hosting applications and containers, due to its robust user and support community. | 14.04 | OS |
| Docker | Used to build, deploy, and run our application in our AWS environment Virtual Machines (VM). Docker is being deployed to auto build containers based on the GIT master branch. | 1.0.1 | Container |
| Express | (Library) Works with Node.js to bundle the query request to pass to FDA’s API (Express Passes queries from browser to API and brings results to the server to be served to the user browser | 4.12.4 | Mid |
| jQuery | Used to simplify our client-side scripting | 1.11.3 | Mid |
| Selenium | Is used to automate application testing via the browser | 2.90 | UI Test |
| WAT | Used to conduct 508 testing on the application | 2012-09-13 | 508 Test |