

# Malvern Panalytical Inc., Longmont, CO

*"Malvern Panalytical is working on developing our flagship product FieldSpec5 Spectro-Radiometer. Rhoynar team acted as our development partner for web-server which acts as a front-end for our instrument behavior. They exceeded all our expectations during this development - and completed the project within time and budget."*

- Dave Oliver, Engineering Manager, Malvern Panalytical, Longmont, CO

## **Business Challenges:**

Malvern Panalytical (formerly ASDI, Inc) develops scientific embedded instruments for Spectro-Radiometric analysis to Universities and Research Institutions around the world. FieldSpec5 is their flagship product for 2018 which uses a wholly new architecture, better processors and sensors.

Malvern Panalytical wanted a web-server which could run on the instrument and provide status, configuration and debug front-end functionalities to the end-user.

Primary goals were that the application had to be light-weight, modern and easy to maintain. It needed to support instrument calibration, configuration, logging, triage and debug functionalities.

## **Results:**

Rhoynar team was engaged in a 3 month project with Malvern Panalytical where-in the instrument web-app was developed. We used Angular as the front-end technology, rendered through Nginx server back-end.

Our development process included daily stand-up meetings with MP team which accommodated changing requirements into our web-application smoothly. Our solution was a complete solution - we not only developed the web-application within 2 months, but a complete CI/CD system, plus unit and integration tests for the website.

## Project Details:

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Malvern Panalytical (formerly ASDI, Inc) engaged Rhoynar's services as a external development partner because of good references and past work with them for Test Automation and CI/CD for Firmware Software. For the project development, we were tasked to develop a web-application which would run on the instrument (based on Poky Linux Distribution). Technologies used for the project was Angular5, Bootstrap, Nginx, Karma/Jasmine for Unit Testing, Python/Selenium WebDriver/Behave for integration testing. Below were some of the salient features of the web-application.

- **Web Application for Calibration, Configuration, Triage and Debug:** The FieldSpec5 Instrument provides user-facing mobile application for day-to-day usage. The website had to be a catch-all for internal QA teams, V&V teams, Customer Support Teams which would allow for maintenance, triage and debugging of the instrument.
- **Integration with Instrument REST APIs:** The instrument supports several REST APIs for communication, calibration and diagnostics. The web-application integrated on top of these REST APIs to provide a smooth, seamless end-to-end workflow for the consumers.
- **Web Sockets Integration:** Several of the functionalities of the instrument, such as light collection, optimization, reference collection and status notifications were done through web-sockets. Website displayed this type of dynamic information on the front-end with the use of charts, graphs, toast messages and battery/GPS status notifications.
- **Calibration Work-flows:** Website needed several calibration work-flows going through multiple steps in-order and saving the acquired calibration data. Our solution provided a robust workflow model which could be reused across multiple work-flows.
- **Test Confidence:** One of the key requirements for Malvern Panalytical was to have an end-to-end CI and Test Automation System to ensure all changes and check-ins were well-tested before mainlining. Our solution (within the two month specified) developed end-to-end UI automation Testing and CI solutions that are run through Jenkins Pipelines. The CI system includes building a Mender Image on every trigger and loading the entire image and running through various test-cases.

### Before:

- Product idea and rough mockups

### After:

- Angular5 + Bootstrap Web Front-end Application.
- Unit Tests (Jasmine/Karma) and Integration Tests (Selenium WebDriver/Python)
- NGINX Server integration
- Support for Calibration Workflows

## Technologies Used:

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## Our Guarantee:

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At Rhoynar, we believe in providing honest and exemplary customer service to our clients. We understand that the client may have hesitations in employing any consulting company for any internal project. *Will the solution meet all our needs? Do they really have the expertise and experience in delivering this solution? What if it is not extensible and requires constant upkeep? Will adequate training be provided to our staff after the project is over? What if the technologies they use become obsolete? Will they consultant have enough expertise in the said domains?*

We are confident that you would be absolutely delighted by our experienced team: they will use the latest technologies and come up with a robust and extendible solution in record time. They will perform a graceful handover of the project with ample continuous training sessions, documents and specifications and training videos. Our team will respond immediately if there are any questions, issues or bugs found during and after the project.

## Conclusions:

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The Instrument web-application developed by Rhoynar is in use across FieldSpec5 devices with internal and external customers. The application has been robust, stable and has solved several of Malvern-Panalytical's business needs. Rhoynar team is in talks with MP team to development engagements for future projects as well.

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