

Myron L

INDUSTRY

Instrumentation & Manufacturing

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ABOUT THE CLIENT

Ultrapen is a recent innovation by The Myron L® Company, a reckoned Research and Development organization based in California, USA. The company is in existence since 1960's and has got a gigantic acquisition as a leading manufacturer of high-quality conductivity and pH instrumentation for municipal, commercial and industrial water quality control, chemical concentration testing and process control.

The Myron L approached us, at Clavax, to develop a mobile application (compatible with Android as well as iOS) that peers to the excellent hardware functioning of Ultrapen which basically, is a test pen introducing a technological drift in instrumentation industry.

GOALS

The major goal of the project was to build a resilient connection between the Ultrapen device and its conforming mobile application. Bluetooth connectivity, we believed will do the best for such connection. Further, in accordance with all five versions of the device (which meant to measure and calculate diverse factors), the client required an app with a high-end flexibility and an exceptional compatibility that could easily meet the requirements of all versions. The application was therefore supposed to be able to perform precise calculations and measurements of various factors, such as conductivity, salinity, temperature, chlorine, and dissolved oxygen; developing an app that satisfies all such requirements seemed elusive as we started, and so became our principal goal for the project afterward.

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CHALLENGES

Ultrapen was a different project, in the initial stage we understood that we need to build a compatible mobile app (Android and iOS) capable of providing easy-to-read displays and user-intuitive GUIs. We came across several definite and subtle challenges with this project, some of which were:

- ✔ Providing a precise pairing between the hardware device and the app proved out to be one of the most appealing challenges throughout the project. A minor mismatch in the syncing between the two could have affected the expected functionality of the app.
- ✔ Another key challenge was to connect the most apposite device to the app when multiple devices get turned on at the same time. This task was crucial and required an ample attention from our developers.
- ✔ During the testing phase, we realized that some recently turned-off devices were displaying as turned-on, filtering out this ambiguity was an obvious tough chore and needed an immediate and specific solution.
- ✔ Handling the devices via a mobile application required an excellent calibration backed up with meticulous time management, which itself was a big challenge.
- ✔ Opting for a powerful database that can store all the measurement and calibration records without any hassle was again one of the challenges we came across during the entire project.



● SOLUTIONS

As we moved ahead with a clear picture of all the expected and unexpected challenges and trials of the project, the development team conferred about the possible solutions to make the project scale huge success heights, these solutions encompassed the following:

- ✔ For a perfect syncing between the app and the device, an expedient calibration was utmost required which further called for a stringent time delay that we decided to introduce in the program library. This also eradicated any time gap in showing the ON/OFF condition of the device.
- ✔ Detecting for turned-on devices seemed to be quite elusive, and thus, we entrenched a regular scanning at the rate of one cycle per second to detect any switching in the ON/OFF condition of the devices. Per this, the device that switched ON first gets connected to the app.
- ✔ We decided to keep the provision of a notification for every device that's being switched off. With this, the device needs to be restarted for a new connection, and each time a connection is made, device details get fetched by the app. This eliminated the possibility of muddling between ON and OFF devices.
- ✔ To store the relative values of the measurements of distinct solutions and calibration of the devices, we opted for Core Database from Apple which provided us with useful filters such as, for a specific date & time, for a specific mode of a device, and a lot more. We provided various options in the setting panel where the user can apply these filtrations as per the preferences and requisites. Further, these records can be easily edited, cleared, deleted, reset, or even emailed in the form of excel sheet or Xlsm format, compatible with Mac. This proved out to be an absolute solution for making the app user-friendly.

● RESULTS

Project Ultrapen came out to be a great success for Clavax as well Myron L. The succinct and precise requirements from the client made it easier for team Clavax to get started with the project with an unparalleled excitement and ecstasy. Ultrapen has certainly been a project with sheer challenges and opportunities to explore more in terms of innovation, it has made a definite mark in the measurement and instrumentation industry. We are glad to be a part of it!