

Leading Pathological Diagnosis Firm Enhances Assay Processing Accuracy and Reliability



Client Overview

ReaMetrix, a leading medical/pathological diagnosis player, partnered with Bluehatsoft to improve the firmware and software stack of their cellular pathology assaying product, which utilized a rotating disc and digital camera for high-resolution image capture.

The Problem

ReaMetrix encountered several obstacles with their existing cellular pathology assaying product:



Sluggish processing times and constraints on assay sample sizes impeded operational efficiency.



Manual intervention was necessary for image processing, resulting in errors and inefficiencies.



Assay platform markers and camera focal adjustments exacerbated image capture and processing delays.

The Solution

Bluehatsoft proposed and implemented a solution focusing on the following:

- ✓ Re-architecting the software stack and leveraging FPGA code to automatically identify assay boundaries, eliminating the need for manual interaction.
- ✓ Deploying Xilinx Ultrascale+ MPSoC hardware and recommending a commercial-off-the-shelf (CotS) Ultrascale+ processor board for improved processing power and speed, and for lowering the BoM (Bill of Materials) of the product.
- ✓ Suggesting a USB 3.0 high-resolution camera with customized OEM support to ensure compatibility and simplify maintenance.
- ✓ Integrating FPGA operations for boundary detection and ARM64 processors for image processing reduces processing time and eliminates manual steps.

Business Benefits

The solution implemented by Bluehatsoft resulted in significant business advantages for ReaMetrix:

- ✓ Drastic reduction in processing time, with a 5mmx5mm assay fully processed in 7 to 8 minutes and a typical 3mmx3mm assay completed in less than 3 minutes.
- ✓ Enhanced capability to provide larger assay sizes, surpassing client expectations and improving diagnostic capabilities.
- ✓ Elimination of manual errors and operational inefficiencies, leading to increased accuracy and reliability in assay processing.
- ✓ Cost-effective solution with hardware Non-Recurring Engineering (NRE) costs below budget and the potential to integrate third-party AI algorithms to enhance image processing further.