

The Problem

- Merck Laboratories currently labels each vial by hand.
- Having a scientist write on each vial is time consuming and produces highly variable results.
- Whenever an unidentifiable vial is found, testing is stopped, and a team is brought in to help identify the contents and author. These stand downs cost Merck thousands in time lost.
- The QR Team has been tasked with creating an inventory system that will mitigate these stand downs.

The Pivot

We started this project in September with a RFID based solution, but our project scope was shifted in October to a more QR-code based solution. The new project required a digital inventory of the information on the vials and a user interface to scan in vial data. The team concluded that Merck would produce the stickers for the vials in house. So, a custom QR code printer was purchased sample vial labels were generated using dummy data. Soon, the team had the web-app created and started working on the redesigning labels for the vials. With the vials being so small, all the space on the label is crucial and must be filled with only necessary information.



Figure 1: Project Shift from RFID Technology to QR Codes

QR Code Generation + Printing

- Merck previously used a third party for printing labels
- Our solution brings printing in house and combines readable text with a QR code to retrieve more vial information

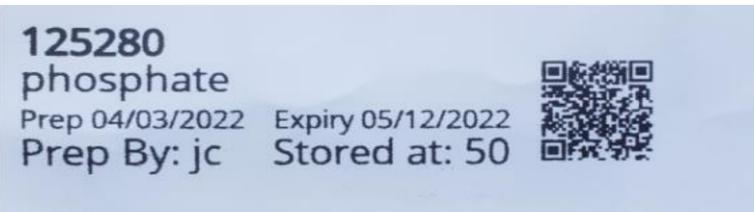


Figure 2: Sample QR Tag for Vial

Data Workflow

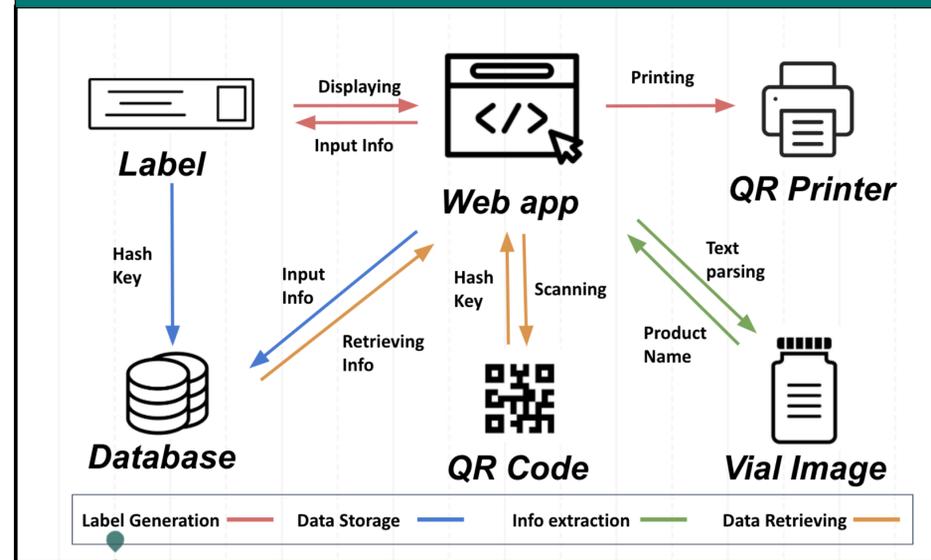


Figure 3: Project Flowchart

Label Generation

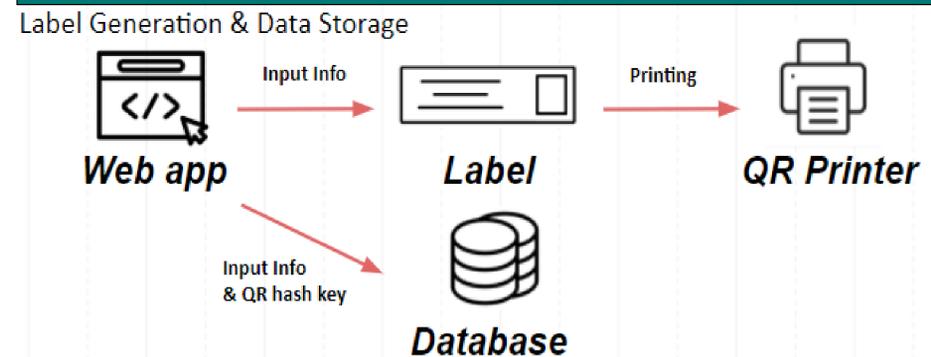


Figure 4: Basic Project Workflow

Image to text solution

The algorithm takes 6 points on the label, and interpolates, creating the final output image. It then isolates the part of the label with the most words and crops the image accordingly. After the image has been isolated, we can use a text parsing algorithm, extract the product name and compare it to an existing database of possible products.



Figure 10: Bottle Image to be Processed



Figure 11: Flattened Image of Text

Web App Display

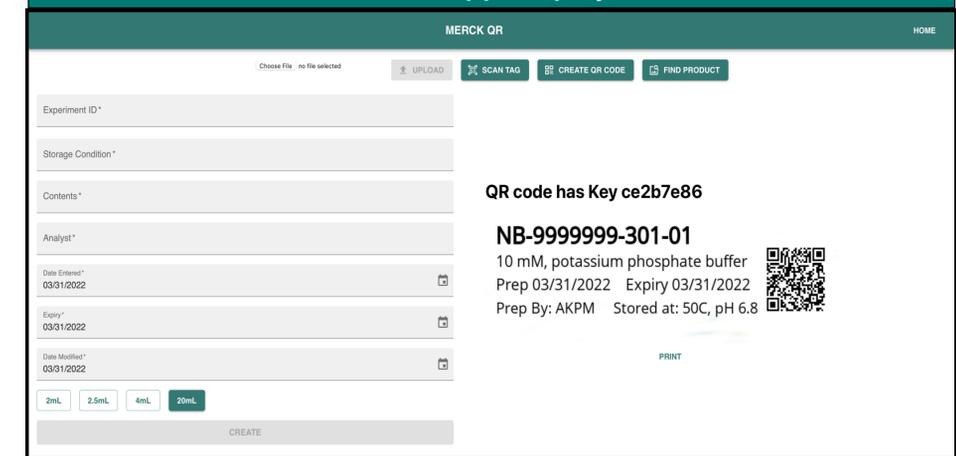


Figure 6: QR Generation on Web App

Labels



Figure 7: Handwritten Label

Figures 8&9: QR Printed Label

Data Retrieval



Figure 5: Data Retrieval Process

Acknowledgments

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