Customer Needs

Jabil's *Supply Chain* organization provides crucial support to the Jabil manufacturing business in ensuring the efficient just-in-time provision of parts and equipment to facilitate manufacturing operations across all Jabil segments. The Jabil Supply Chain organization is a global function which is crucial to Jabil's success.

Jabil Supply Chain is responsible for the worldwide shipping of parts and equipment. The efficiency of this process directly impacts Jabil's performance and associated customer satisfaction.

Supply Chain desired a solution which would automate warehouse receiving processes and minimize manual data input. This approach would reduce material handling costs, reduce processing errors, and improve overall quality and performance. The solution would be applied across all Jabil plants to manage warehouse receiving processes.

Scope

The development of the "Auto Receiving Tool" is executed in several phases, as follows:

- *Phase 1: Minimal Viable Product*
    - Investigate OCR/barcode/label/logo recognition libraries/services and provide a recognition engine delivering stable template-based recognition of text, barcodes, and logos.
    - Develop a Minimum Viable Product with a fully functional user interface to manage the solution.
- *Phase 2: Semi Automated Processing*
    - Further develop the system so that it only interacts with the user when strictly necessary.
    - Include features to filter possible label templates, preselect label templates, and validate all mandatory fields on a largely autonomous basis.
- *Phase 3: Fully Automated Processing*
    - Develop a fully automated system, including interaction with material handling machines (such as conveyors) via Web API's.
    - Develop a mobile user interface.

Phase 1 of the project has been executed by JSS, including the development of a detailed SOW, and supporting investigations. JSS leveraged various OCR libraries and engines to provide stable and consistent label recognition, including OpenCV, Tesseract, FineReader Engine, Google OCR API, Azure OCR API and AWS OCR API.

The development of the Machine Vision solution for shipping label recognition is non-trivial because labels are often dirty or damaged, and contain many elements including text, barcodes, vendor logos, and special markings (such as ROHS).

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