Retail Order Fulfillment with a Micro-Fulfillment System

VIVID CLOUD
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Executive Summary

Dematic is a global leader in automated material handling and logistics solutions. The company provides a range of products and services, including automated storage and retrieval systems, conveyor systems, sortation systems, robotic systems, and software solutions.

Micro-fulfillment is an order fulfillment system with high storage density and high throughput, designed to fulfill orders within one hour. The density of the design allows them to fit into small footprint locations closer to the consumer.

Dematic needed software development support to increase their development velocity for their Micro-Fulfillment product while also developing a new software architecture that transitions their products from a monolithic software to a modern cloud-based microservices architecture.

Client's Key Challenges

Dematic was facing a challenge in meeting the demand for automated warehousing solutions for small and mid-sized retailers. Dematic decided to create a Micro-Fulfillment (MFC) product that could efficiently handle small-scale order fulfillment.

This this was also an opportunity for Dematic to develop a new architecture for the software that controls their MFC systems. A cloud-based microservices architecture would provide a huge increase in flexibility and agility, and a much greater capacity to scale during peak periods of fulfillment.

Evolving from monolithic software to cloud-based microservices required a significant software development effort while facing a pressing time to market requirement. To accelerate development, Dematic engaged VividCloud to gain the advantages of our fully managed teams and our disciplined agile development process.

VividCloud's Solution

VividCloud assembled two fully managed teams of experienced developers, scrum master, and principal level architects, to support their MFC product. Each VividCloud team worked in close collaboration with Dematic's product team, utilizing agile methodologies and continuous integration and delivery (CI/CD) processes.

This project was implemented on the Google Cloud Platform (GCP) utilizing Java, Quarkus, Hibernate, and PostgreSQL, running within containers. The front end is implemented in Python with a custom framework written on top of Vue.JS.

DEMATIC

Industry: **Warehouse Automation**

Location: **Atlanta, GA**

Website: dematic.com

About DEMATIC

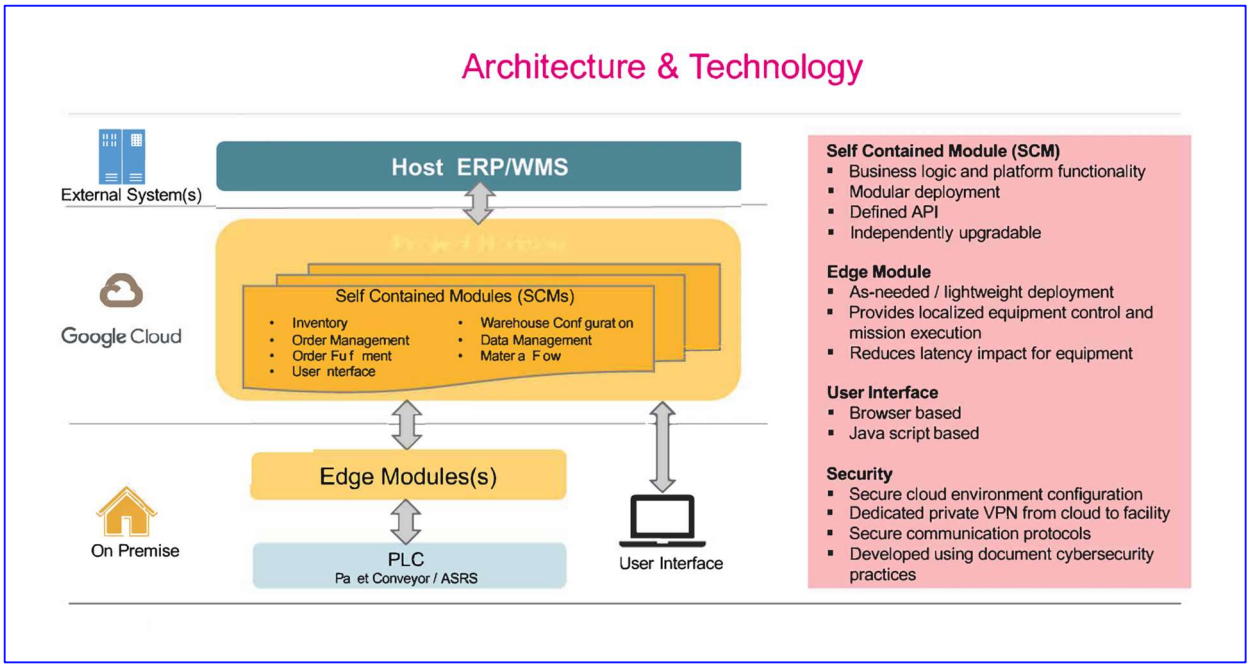
Dematic is an American supplier of materials handling systems, software, and services.

With a growth rate of 21.2% in 2021 Dematic was listed as the world's second-largest materials handling systems supplier with a revenue of $3.2 billion.

They design, build, and support intelligent automated solutions for manufacturing, food & beverage, warehouse logistics, and retail order fulfillment.

Despite the complexity of the domain, VividCloud's development teams quickly ramped up and began a series of sprints. VividCloud's teams completed design, implementation, testing, and deployment on multiple components of the Micro-Fulfillment product, including receiving, shipping, and staging.

Focused hard work and dedication to understanding the domain resulted in a high-quality product.



Results and Benefits

Two principal outcomes Dematic targeted for this project were creating a Micro Fulfillment product and replacing their aging monolithic software architecture. While both involve technology, those outcomes address different, but complimentary, business needs.

A microservices architecture allowed Dematic and VividCloud to break down the components of the complex Micro Fulfillment system into smaller, independent, services that can be developed and deployed more quickly and efficiently. A microservices architecture also provides an excellent foundation scaling and maintenance over the lifespan of the product. These benefits are necessary to handle large volumes of orders during peak periods while maintaining high levels of uptime, while delivering operational cost savings by automatically scaling down resources during off-peak periods.

With VividCloud's support, Dematic was able to increase its development velocity, reduce time-to-market, and deliver a high-quality product.

Dematic's Micro Fulfillment product enables small and mid-sized retailers to automate their order fulfillment, increase efficiency, and reduce costs.

The successful collaboration between Dematic and VividCloud demonstrates the effectiveness of a high performing, cloud-focused, software development company in helping companies achieve their digital transformation business goals.