

Drug-Formulary Sorting & Packaging Automation

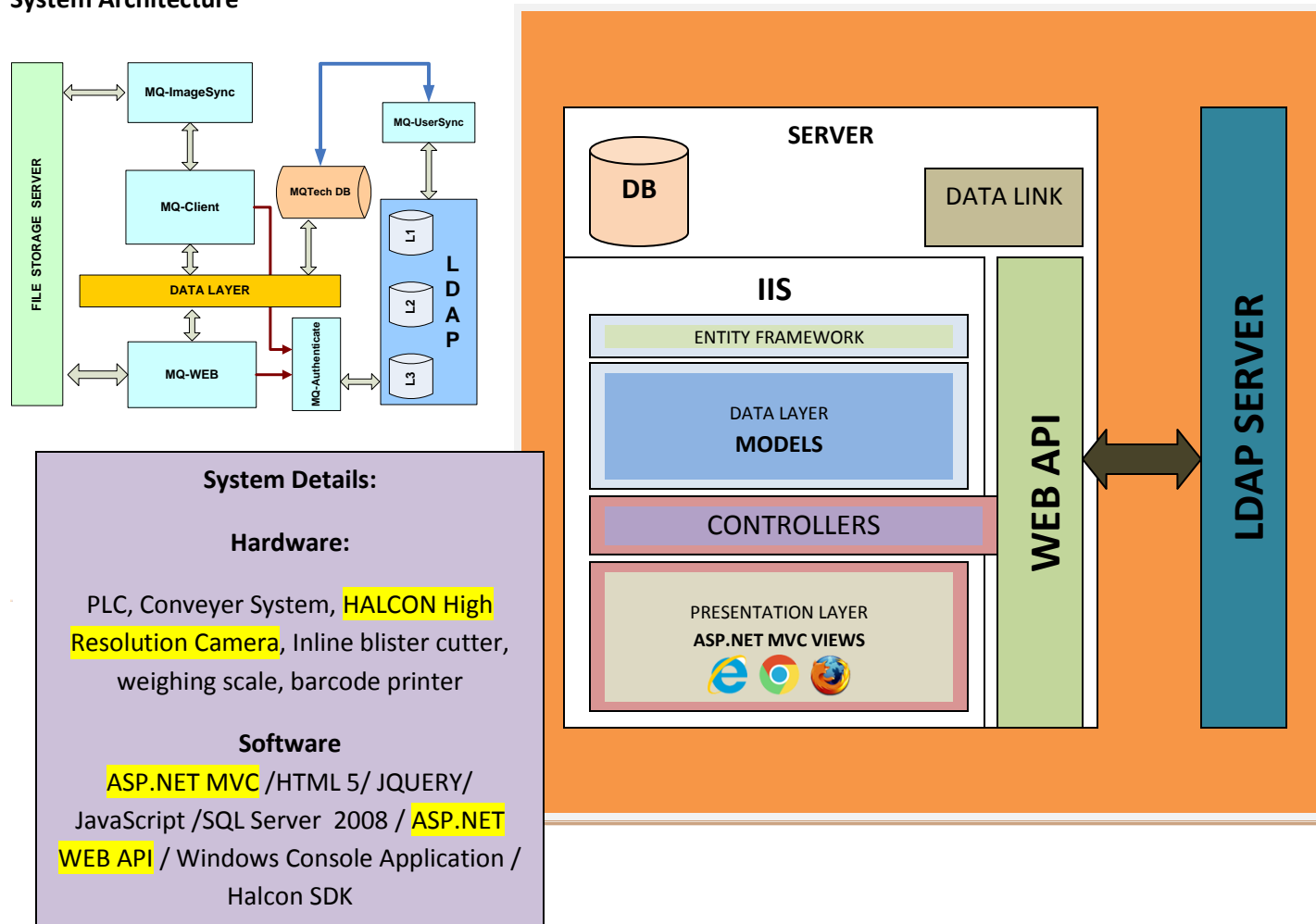
Introduction

The Hospital formulary automation is an ongoing process whereby the medical staff working through the Pharmacy evaluates and selects those drugs it considers to be the most beneficial in patient care, a formulary represents a continually revised compilation that reflects the current clinical judgment of the medical and pharmacy staff. Drugs evaluated and recommended as such are called “formulary drugs” and are the only agents that shall be routinely stocked in the pharmacy.

The drug packing organization can own single high-volume packager to service multiple hospitals reducing the fixed costs associated with packaging machines, as well as achieving some savings on packaging supplies.

The automation system has been developed to provide utmost security of formulary drugs and system users.

System Architecture



System Details:

Hardware:

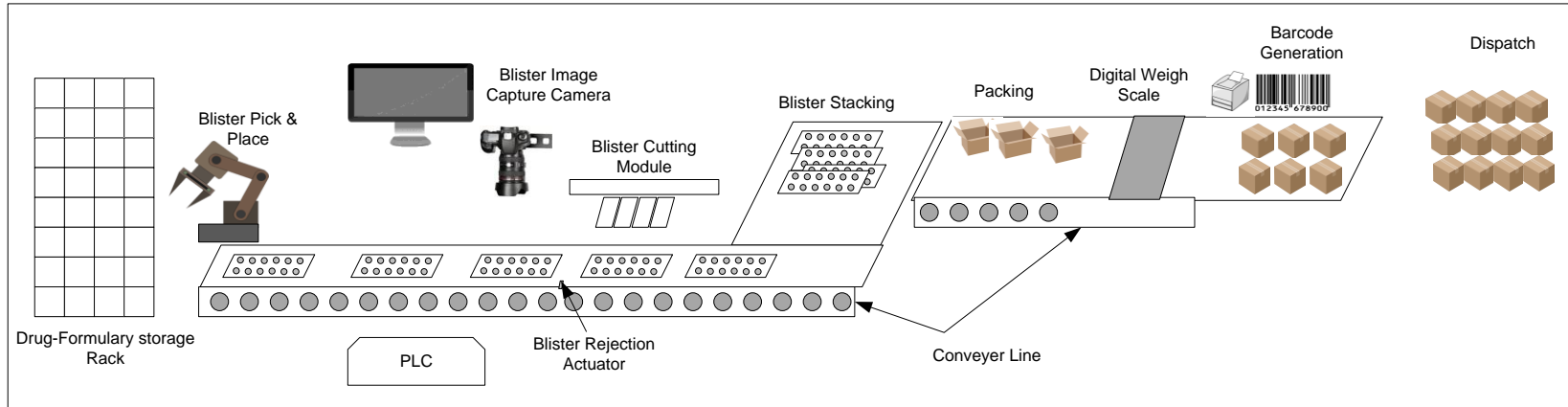
PLC, Conveyer System, HALCON High Resolution Camera, Inline blister cutter, weighing scale, barcode printer

Software

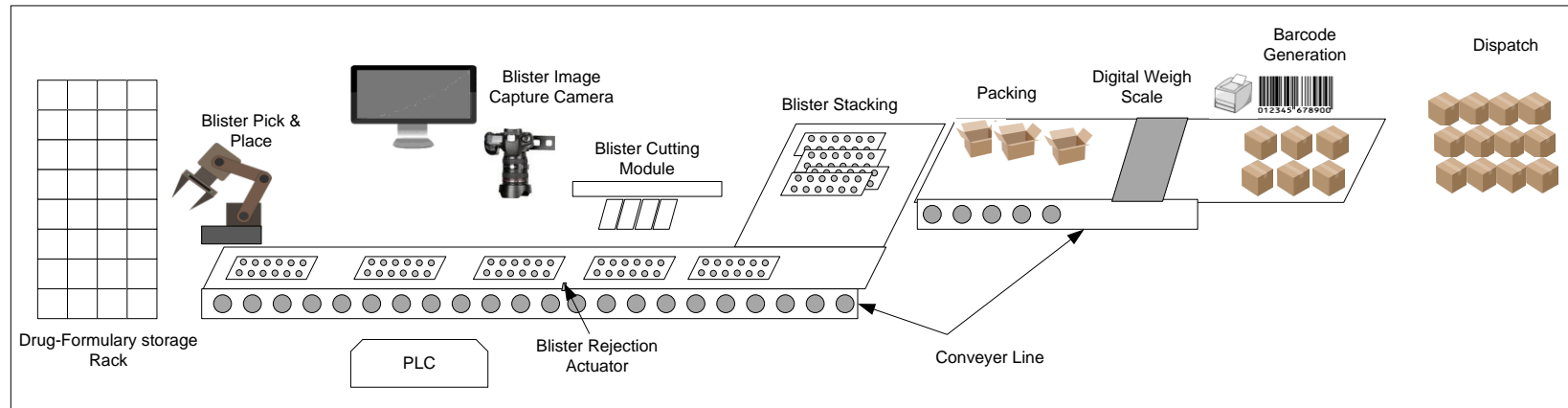
ASP.NET MVC /HTML 5/ JQUERY/
JavaScript /SQL Server 2008 / ASP.NET
WEB API / Windows Console Application /
Halcon SDK

System Overview

LINE -2



LINE -1



System Details

1. The system has a common **centralized database of drug formulary**, users across different hospitals using the same packaging conveyer line.
2. The users are **authenticated** from the respective hospital LDAP servers providing system security by allowing only authorized users to access the system. Also users belonging to a particular hospital shall be able to access drug formulary created by the respective hospitals only.
3. A web base configuration system provides addition of new drug formulary remotely by authorized users. The master image of the drug formulary is captured by high end cameras and stored for each type of blister to provide additional validation during packing process.
4. Front and back images of the drug blister is captured from high resolution cameras and stored and synced to the main server.
5. During packing of the drug blister, the system captures the front and back image of each blister passing on the conveyer system and compares with the master image to verify the company, name of the drug, quantity of the drug, pattern of the blister, quantity per blister ensuring drug safety as per requirements.
6. The conveyer line is also interfaced with an inline **blister cutter** to meet the exact quantity of the drug formulary to be packed. The cutting patterns are automatically decided by system based on the quantity required per box.
7. Finally system also verifies the weight of the final box for additional confirmation of the quantity packed per box. The system integrates with a digital weighing machine for weight comparison.
8. The entire flow of picking the formulary from the racks, comparing with the master, inline cutting, packing weighing and generating final barcode to each box is carried out on the conveyer line controlled by a PLC and as per the defined workflow.
9. The user creation, connecting and syncing with the remote LDAP servers of configured hospitals are automatically handled by a WEB API hosted on the server.
10. The system has a configuration management tool to define a particular drug, manufacturer, dosage, quantity required for each box and defining the process workflow.

Advantages of the system

- Establishing a Centralized Unit Dose Packaging Center to Reduce Costs and Improve Efficiency.
- Eliminates errors during cutting and packing the exact quantity of drugs required per box.
- Ensures the right blisters are processed by comparing the rear image of each blister.
- Automatic rejections in case of different company, dimensions and quantity of blisters.
- Limited user interference