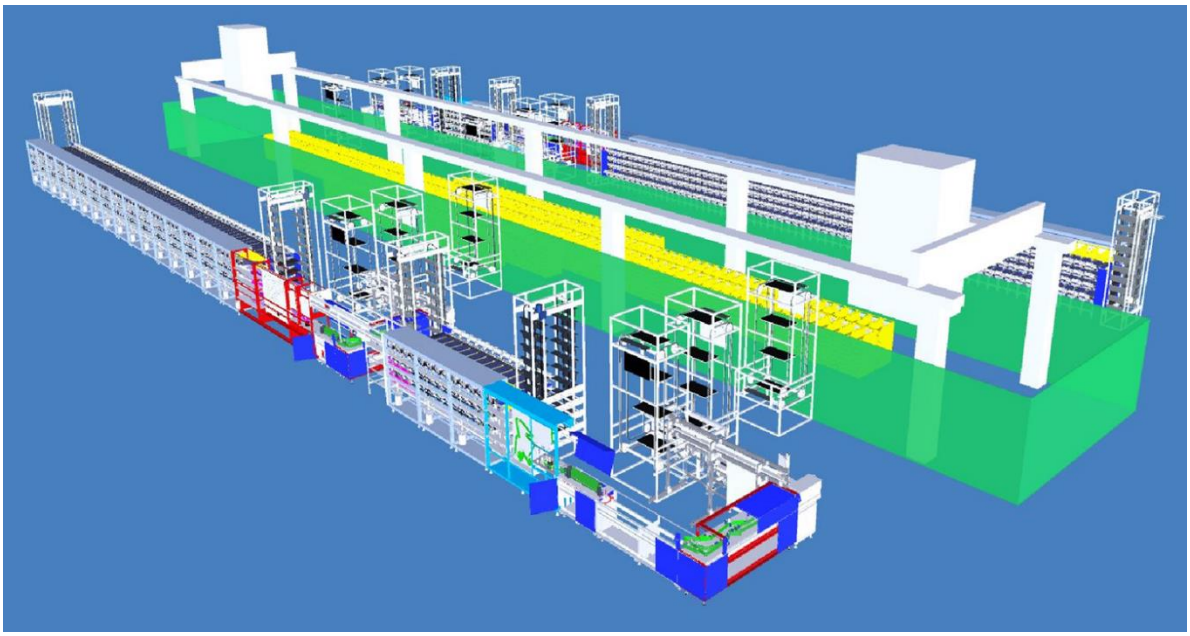
CTO Service by Cluster LLC

Representing the owner



Executive Summary

Since inception, A cluster LLC has provided technical solution for the Robotics, Logistic and Material Handling solution in USA. As an expert solution provider and designer, the company has worked in many partnerships. Partnering with PostIs USA and Fluence USA it has designed many solution which is deployed globally by Northrop Grumman, Lockheed Martin, General dynamics, USPS, DHL, UPS,UK Mail, Russia Post, Canada Post, Sick AG, Amazon etc....

Our expertise includes mathematical modeling, concept simulation, business "use cases" modeling, straw man conceptualization, Robotics integration, machine vision, machine learning, eCommerce fulfillment center design, postal automation, factory automation, auto-ID, camera based and X-Ray inspection systems for the industry. We are committed to provide a complete and proven technology solution for the project, leveraging many years of experience in the process automation and engineering innovation.

1 Purpose

As time changes, the gigantic fusion of the System automation, eCommerce and Logistic is reshaping the humanity in a unique way. A new kind of economy is evolving due to the merger of the titans like Big Data, automation, mechanical design, and Machine learning.

Our CTO service by our top technologist with many international patent will enable company owners and top managers to have someone with industry experience to guide them through accusation of large-scale industrial project or their design team in selecting and managing the right consultant or company or engineering solution on behalf of the owner or the CEO.

2 CTO service responsibilities

Responsibilities of the consulting firm

- Case studies
- Capacity calculations for the network
- Infrastructure layout recommendation
- Project management
- Selection of appropriate technologies
- Produce SOW
- Qualify potential suppliers
- Mechanical System calculation
- Mechanical, Electrical, Software interface design

- Control interface design
- Software protocol development
- Quality implementation
- Acceptance test
- Implementation of ECR
- Web interface design
- Produce Training documents

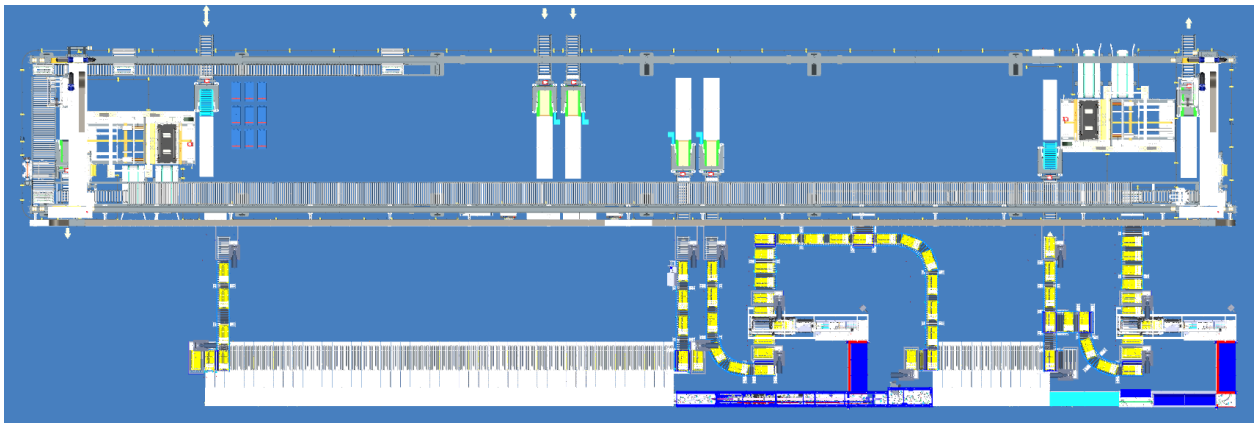
3 CTO service overview

3.1 Asses the project for right engineering solution

All engineering solution which is presented by a vendor, contractor or the internal design team may not be the most cost-effective solution. And sometimes they may not be a solution at all!

We examine the engineering project:

- Verify all engineering calculation
- Verify system constrain
- Verify cost effectiveness
- Choose the solution by modeling accusation economy vs operational economy
- Future enhancement possibilities to comply with “Business Case”
- Project plan evaluation



3.2 Risk assessment and mitigation

A seasoned CEO always knows that the path to a successful completion of an engineering project is fraught with various unseen risk!

We minimize the project risk using following methodology:

- Identify critical component
- Create clearly defined milestone for progressive payment from engineering risk assessment point of view
- Create test requirements for the critical components
- Create evaluation process of the project based on the critical components
- Alternative solution generation for critical components
- International and local Regulatory compliance assessment
- Asses the project plan to eliminate collision or jumping to reduce the potential loss from a failed project

3.3 Business case compliance

Unfortunately, all successful engineering project or engineering design does not necessary comply with original "Business Case". The loss will be inevitable even after a glorious accusation or design success!

We have a measurement matrix for that:

- Engineering compliance with the "Business Case" assessment
- Infrastructure assessment
- Bottleneck analysis
- Safety and Hazard assessment
- Consumable assessment
- Storage
- In/ out
- Transportation requirements
- Exterior planning
- Interior planning

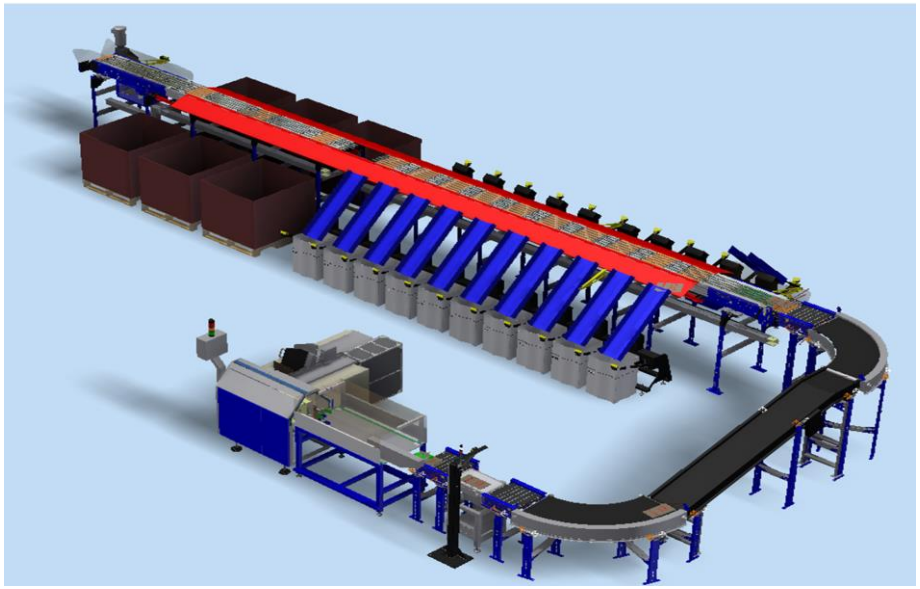
- Tax, duty, and other potential hidden cost

3.4 Design evaluation

A smart CEO always knows that it is the habit of the engineers to tackle the hardest problem at the last, and that attitude can ruin an entire project if that hardest challenge is unsolvable or economical.

We follow strict procedure for design evaluation:

- Evaluate the project for use of sound math and physics
- Simulation modeling
- Throughput calculation
- Process flow analysis
- FEA analysis
- Electrical enclosure compliance analysis
- System control analysis
- Define multi system handshake mechanism
- Define prototype requirements
- Create procedure for In-house assembly, integration and testing of the system, to meet or exceed published throughput rates



3.5 System compliance for future enhancement and deliverables

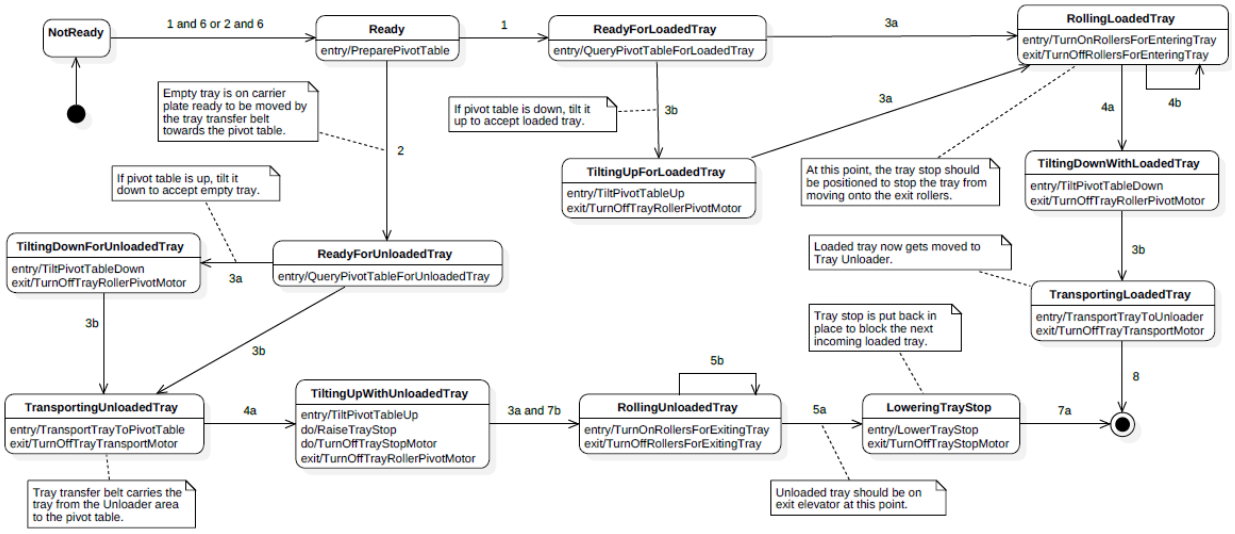
An acquired system can be forever tied to the original manufacturer for future support or enhancement, because all the interface was kept propitiate to the manufacture. That will tie the growth of the business to the performance of the original manufacturer and the future enhancement or expansion can be curtailed by the high price demand from the manufacturer or designer.

As and expert CEO we have learnt to control our own destiny by creating open protocol compliance requirements and clear deliverable requirements:

- Local and International regulatory compliance assessment
- Create clearly defined FAT for hardware and software
- Create technical statement of work (SOW) on behalf of the owner for the supplier
- Create software protocol for all controllers thus enable the company to do the future expansion and enhancement with or without cooperation from original supplier
- Create clearly defined TDP (technical delivery package)
- Mechanical interface compliance
- Electrical interface compliance
- System layout design

3.6 Software System and control system

A CTO confirms that all software is designed following the correct state machine and right implementation of design patterns.



We clearly define:

- Software system architecture
- State machine and Design pattern requirements
- SDD and SVD
- Protocol
- Operating system
- Version control and Test requirements

3.7 Test support

No engineering project success can be guaranteed without proper unit testing. A single untested component can take down a billion-dollar project if in the critical path!

Our solution for that:

- Create clearly defined unit test requirement for the project or the system
- Verify proposed test set and test cases
- Create documents entailing test fixtures for load testing of the motors, I/O, PWM, Analog I/O, communication devices, software, mechanical and electrical devices

4 Pricing

All pricing is in US dollars. Price reflects the accelerated rate project.

Part Number	Description	Qty	Unit price	Extended price
CTO services	Yearly subscription of 104 Hrs. Minimum)	1	$$$$$	$$$$$
Design service Project management Additional Engineering service	Negotiated as needed	0		

- Weekly 2 hours minimum

5 Terms and Conditions

Pricing Terms:

- All payments in US dollars
- Progressive payments
- Net 30 Days