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Bridging the ERP Gap for Services in the Electrical Distribution Industry

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Introduction

The need for this whitepaper to be developed was recommended by the Chief Executive Officers of ConneXion, Edges Electrical Group, Kendall Group, Mayer, Rexel, Springfield Electric Supply, Standard Electric Supply Co, United Electric Supply, Werner Electric Supply, and Wiseway Supply as part of a discussion among the NAED member distributors. The goal of this whitepaper is to outline the limitations of the existing technology provided by Epicor Eclipse and other ERPs as related to service management, and to provide a product definition of the functional requirements for service management tools for wholesale distributors.

This committee identified nine functional areas for services that need to be addressed: industrial automation, building automation, wire cutting, customer training, light manufacturing – custom products, storage and staging, onsite trailers, onsite job boxes, and fixture carts. Within these functional services we identified five categories of functional requirements: advanced logistics, field services, customer products – manufacturing, software license renewals, and software integration that are necessary for wholesale distributors to accurately measure and bill for services to our customers.

Bridging the Gap

Overview

Possible avenues to bridging this gap include:

1. Approaching Epicor Eclipse to build the following functionality into their core product; or
2. Engaging a third-party application development organization to build the solution; or
3. Utilizing existing Eclipse APIs to interface with existing software solutions.

The Zerion Group, a third-party Eclipse solutions provider, has informed us that they are actively working on a software solution using their custom APIs that intersects part of our needs. This may be a viable solution in the future as they continue to develop for peripheral Eclipse customer needs. Depending on the chosen avenue, it is possible other APIs for other ERPs, like SAP, may benefit if we are required to pursue a third-party solution in conjunction with Eclipse APIs.

Advanced Logistics

One of the key differentiators that traditional wholesale distributors have over online competitors is the ability to perform hands-on value-added services related to advanced logistics for their customers. This includes services such as storing of materials, kitting, custom packaging, custom logistics/transportation, material mobility (conduit carts, lighting carts, job boxes, etc.), onsite storage (job trailers), and wire services (cutting, paralleling, pulling heads, etc.).

Each of these advanced logistics services requires a mechanism for tracking related features, revenue, and associated costs. Existing ERP solutions for electrical distributors do not easily handle the complexities necessary for these services. Some examples of requirements include:

- Storage: Tracking of lines received, lines picked, and length of storage required by the customer.
- Kitting: Lines picked and labor of packaging.
- Custom Packaging: Special shipping supplies utilized, custom labeling required, and labor.
- Custom Logistics/Transportation: Time and mileage related to the custom request.

- Material Mobility: Setup labor, equipment rental costs, and equipment tracking.
- Onsite Storage: Setup labor, equipment rental costs, fees for customer use of stockroom software, material replenishment labor, and material movement labor.
- Wire Services: Labor, number of wire legs required, and equipment rental.

When determining labor related costs alone, most distributors perform this outside of the ERP today with Excel-based labor calculators, as Eclipse and similar ERPs focus on products as opposed to labor related services. Additionally, existing ERPs do not easily track rental of equipment related to advanced logistics services.

Field Services

As wholesale distributors look to distance themselves from online competitors there is a growing need to be able to add services as a differentiator. While many distributors give away 'value added services' as part of their go to market strategy, there needs to be a way to capture the true value of the offering. That being said, it is necessary to add a line item to the invoice that clearly shows the distributor added value in dollars and cents to the sale of that product. It may be that the line item ultimately nets out to $0.00 but if there was $250 worth of labor expended to provide the added value, it needs to be shown for the customer to appreciate it.

With the shortage of skilled workers, distributors are not only tasked with providing the pre-sales support to get the sale, they are now required to provide post-sales support to keep the sale. Post-sales service can be time consuming and expensive. Distributors need to be able to account for service labor and projects. These items cannot be easily inventoried and marked up as hardware is in Eclipse. It is difficult to create a demand within Eclipse of a non-inventoried item like service hours or projects and it is difficult to invoice for same.

Many distributors offer post-sale services at an hourly rate, integration and project management at lump sum prices, and monitoring services on a recurring schedule. While some services are repeatable and easily characterized, others are not.

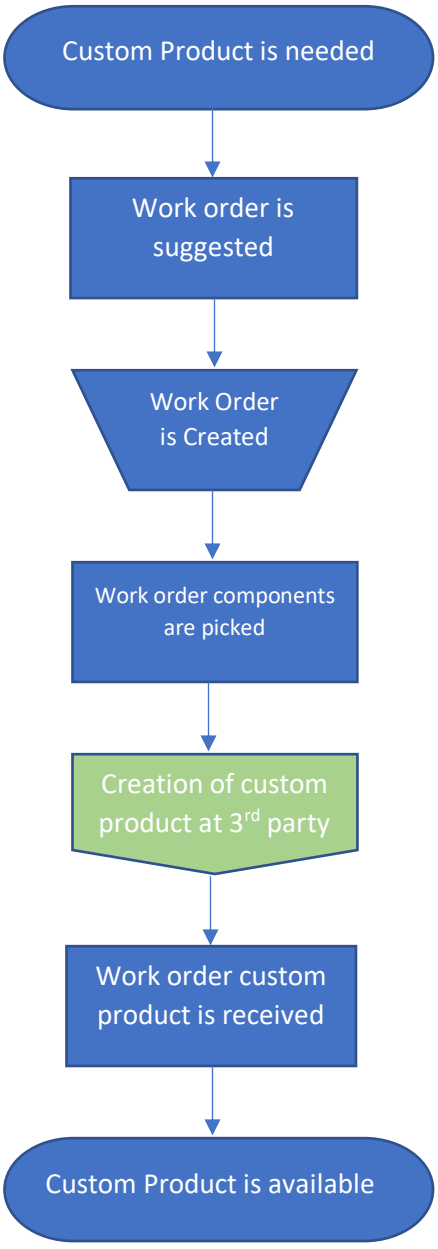
In the case of recurring monthly services, customers demand accurate invoices on a given day each and every month. Since distributors are doing buy/resell on the monitoring components, reconciliation of incoming invoices needs to be complete before customer is invoiced.

Think of it as the Best Buy model. Best Buy will match online prices to get the sale, but they never deviate on the cost of the Geek Squad to deliver and install the system. Geek Squad is the value component of the sale. Services is the future of the electrical wholesale distributor and our business systems need to fully support these efforts; however, distributors decide to charge (or not) for these services.

Custom Products/Manufacturing

To fulfill customer needs in an efficient manner, distributors are choosing to supplement kitting and light manufacturing needs. This reduces the dependency on suppliers for custom work when it can be done locally or internally, giving the distributor better control over the who, what and when, which is necessary with ever-changing customer needs.

The Epicor Eclipse work order processing module has fulfilled the basic needs of working with a third party. However, there are gaps and inflexibility in the implementation and the management of these custom product processes, particularly when the distributor is its own third party.



The workflow diagram shows the basic steps of a work order. The Eclipse features (in blue) are the basic ins/outs of the components/finished goods. The heft of the custom product creation is in the non-Eclipse portion (in green).

The main areas that need attention are disbursed throughout the entire work order process, including:

- Improvements to the existing work order processing module.
- Visibility of component level pricing and inventory.
- Ability to manage and schedule custom product jobs/personnel/equipment or port this to a project management system for management.

In Eclipse, there are basic tools for managing custom products but there are avoidable extra steps. For instance, if a work order doesn't have all of the components, it shows up in the "short" queue and it displays how many are short but not which parts. This requires the work order to be opened and each line item reviewed. A queue or report of backordered line items would be beneficial. This is just one of the many improvements that have been identified.

Due to the volume of in-house custom products, we need an Eclipse-integrated utility. This tool needs to pass work order information to and from Eclipse to manage these work orders. If manufacturing/mod shop changes the completion date in the module, it needs to pass the date back to the work order to make it visible to sales to manage the customer experience. The need extends to scheduling specialty equipment and the personnel to run it.

Increasing customer focus has required a complete revamp of what services are provided at the distributor level. The available tools are getting the job done but not well. While not a large percentage of Epicor Eclipse customers utilize this module, there seem to be enough distributors that are turning into a hybrid of distributor and manufacturer/modification shop which have pushed the limits of work order process and are desperately awaiting the next step.

Software Licensing

As industrial and building automation products evolve and become more complex, software to run and monitor these products has also become an opportunity for the distributor. Distributors need a way to sell and license software with end users that can facilitate the number of licenses, the types of licenses, store license agreements and generate billing to customers based on agreed upon terms, (monthly, quarterly, annually, etc.). There should be a way to facilitate the renewal of these software agreements, either by calling on the customer directly, or the ability to renew automatically based on a given set of rules. Software may be a tangible item (inventory), or purchased direct from the manufacturer, on an as needed basis. The installation of software may also be an opportunity for the distributor, and it is thought that this could be accomplished by field service capabilities (also provided in this narrative).

Conclusion

Our recommendation is to present these findings to both Epicor and Zerion for consideration. Ultimately, it would be best to have Epicor design and build services functionality integrated to the core Eclipse product. This would ensure data integrity and functional interrelationships between the existing system and the services requirements. If Epicor decides not to pursue these requirements, Zerion has already expressed interest in developing a services product that can utilize Epicor Eclipse APIs for integration. Either avenue will most likely require Epicor or Zerion to work closely with a core set of distributors in further defining the functional requirements necessary to develop a viable solution.

Appendix

The project team went through a detailed, yet high-level business requirements gathering process. Tables, extracted from the data gathering process, are included below. Each functional area was broken down by business requirement and applicability to each distributor.

	Services Functional Areas
	Industrial Automation
	Building Automation
	Wire Cutting
	Customer Training
	Light Manufacturing - Custom Products
	Storage and Staging
	Onsite Trailers
	Onsite Job Boxes
	Fixture Carts
	Functional Requirements
	Advanced Logistics
	Moving
	Storing
	Handling
	Field Services
	Service Hours
	Services UOM (sq ft, etc.)
	Service Fees (variable, tiers/buckets)
	Service Types (variable)
	Cut Charges
	Installation
	Programming
	Engineering (includes Drawings)
	Design
	Recurring Charges/Billing for Services (Reconciling the two as well)
	Mobile device support for field engineers
	Other
	Custom Products - Manufacturing
	Procurement of Source Materials
	Tracking Material Utilization and Cost
	Storage of Source and Manufactured Product
	Catalog Numbering Creation
	Custom Customer Pricing on Source Materials
	Accounting for Variable Cost Based on New (Additional) Material Lot
	Return of Source Material Post-Billing of a Custom Product
	Scheduling of manufacturing process (shop time schedule)

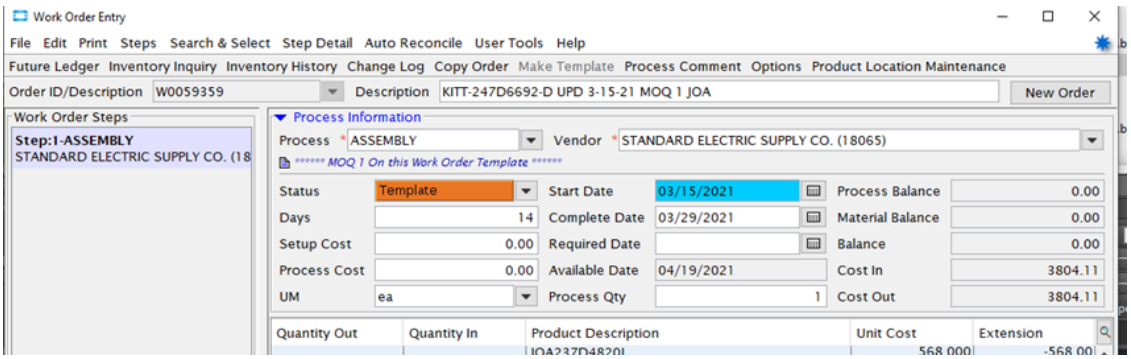
	Tracking of Work Order components including notification of shortages, revision tracking, etc.
	Revision tracking for Work Orders
	Support of multiple types of shops
	Combined Ownership Tracking (Design and Manufacturer)
	Cost of Design
	Cost of Manufacturing
	Cross Team Credit of Sale - Allocation of GP across product groups
	Software License Renewals
	Charging customers for software licensing sold as part of engineering and charging recurring
	Software Integration
	Software APIs for integrating to 3rd party apps if Epicor does not built this
	If Work Orders are not on the roadmap, how about APIs to get to other systems

	Details on Advanced Logistics
1	Storing (Need to track: lines received, lines picked, length of storage for shelf/pallet)
2	Kitting (Need to track: lines picked, labor for packaging, etc.)
3	Packaging (Need to track: special shipping supplies utilized, labeling, labor)
4	Transporting (Need to track: time and mileage)
5	Wire Services - Paralleling and Pulling Heads (labor, number of legs, equipment rental to include tracking)
6	Material Mobility - Conduit Carts, Lighting Carts, Job Boxes, etc. (setup labor, equipment rental to include tracking)
7	Onsite Storage - Job Trailers (setup labor, equipment rental to include tracking, fees for stockroom software, replenishment labor costs, material movement labor)
	Most are costed based on labor, which is done 'offline' in an Excel calculator

	Details on Field Services
1	Service Hours
2	Services UOM (sq ft, etc.)
3	Service Fees (variable, tiers/buckets)
4	Service Types (variable) (Should include types like training/education of customers)
5	Cut Charges
6	Installation
7	Programming
8	Engineering (includes Drawings)
9	Design
10	Recurring Charges/Billing for Services (Reconciling the two as well)
11	Mobile device support for field engineers
12	Other
13	Visibility of Tech's time - scheduled/available/worked
14	Ability to enter data in the field
15	Ability to enter certification data in field and send on the spot
16	Scheduling - Ability to schedule technicians, skill level capable, training, certificates, etc.

17	In order to go onsite, enter facility, need training or certificates to come on site, need to be able to identify these requirements and document employees who meet these criteria
18	Ability to add custom defined fields in the service ticket
19	Ability to have/add steps on a service ticket… actions to perform with ability to track actual labor hours
20	Ability to have 3rd party (via purchase order) outsourced for this service/job, those suppliers uniquely identified in supplier maintenance (certified)
21	Ability to schedule required tools, based on type of service, or work order step (comment lines on service work order)
22	Ability to prioritize field service call. Down system, Gold Service Member with 24/48-hour response, etc.
23	Once completed, need signoff (similar to Proof of Delivery)
24	Once job/field service ticket is created, need to be scheduled, need confirmation email sent to customer.
25	Be able to have orders that are variable or fixed price service provided, or on a maintenance type service contract.
26	Be able to provide technician notes on call
27	Ability to purchase a 'block of time' and then be able to track hours against that 'block of time'. The block of time would be billed all upfront, and revenue recognized at time hours are put towards the block, or total recognition at end of contract.

	Details on Work Order Requirements Needs
1	The ability to have backorders on work orders. In other words, being able to release a work order prior to having all the material available, and having the nonstock material stay open on the work order and then allocating to the In Process step once it becomes available. Currently we are handling this with WIP orders.
2	Costs
2.1	Costs flowing correctly to the 2nd, 3rd, 4th, etc… step on a work order.
2.2	Costs flowing correctly when a KITT is included in the inputs of the BOM (For instance the plotted cards or cut din rail included as Quantity Out on W40587).
2.3	The ability to record a "Process Cost" representative of our internal labor cost and have it flow through to the cost of the KITT in SOE.
2.4	When creating a work order from a KITT on a sales order in the schedule, once created, the sales order stops reflecting the negotiated into stock pricing in the KITT.
3	Enhance the functionality for work orders to become more similar to sales orders or purchase orders
3.1	From Sales Order Entry, add an option under the Edit Order dropdown to Copy Order To… Open Work Order, and from there have the ability to make it into a template.
3.2	The ability to perform an Import (from .csv) into a work order
3.3	The ability to send the work order step detail via email instead of just fax or print options.
3.4	The ability to open a work order in Edit mode from the future ledger/inventory history ledger.
3.5	Indicating what line of the work order you are on when you select an item within step detail.
4	Management and Reporting
4.1	More robust reporting in general relative to work orders
4.1.1	Reporting on sales history by process/subcontractor
4.2	The ability to have a defined field within a work order (such as process comments) that is visible in the suggested work order queue
4.2.1	Could include notes such as "This work order must be released in 600EA increments" or similar
5	The ability to attach drawings/VAS documents to a work order
6	An easier/cleaner process for receiving in partial work order finished goods
6.1	For example, a work order is open to build 10EA KITTs. Currently 5EA of the KITT is completed and we want to receive them in, while keeping the other 5EA on backorder. The backorder goes back to open status instead of remaining In Process.
7	If the quantity on a work order component is "downed" during picking, the balance disappears and does not become backordered.
8	Considering attaching the drawings/etc for the work orders are possibly going to be attached to the work order in Eclipse, a checkbox to automatically print the attached docs when the product is picked would be good.

	
9	I think the best place would be to put a box to check someplace here so you'd need to tab through it when creating a new template.
10	How the most current drawing is added to print at the time the work order is picked and printed will be a concern for the quality team as it should be.
11	Biggest struggles coming from multiple places the mod-team needs to go to for every order:
11.1	Eterm - Picking
11.2	SharePoint / ISO prints and written instructions
11.3	Smart Sheet to track project status
11.3.1	Open – waiting for parts
11.3.1.1	What are we waiting for
11.3.2	In Queue – Hasn't been started because other jobs are being worked on
11.3.2.1	When do we anticipate starting
11.3.3	In Process – How many hours were quoted to do the job
11.3.3.1	When was the job started
11.3.3.2	What's the status of the job
11.3.3.2.1	Are we machining it – Chicago Ridge
11.3.3.2.2	Is it at a machine shop or painter - Sheboygan
11.3.3.2.3	Are we assembling
11.3.3.3	What's the expected completion date
11.2	Manual process to do all the preceding
11.2.1	Can something be created with data entry fields to enter information or retrieve information
	Additional
	Procurement of Source Materials
	Tracking Material Utilization and Cost
	Storage of Source and Manufactured Product
	Catalog Numbering Creation
	Custom Customer Pricing on Source Materials
	Accounting for Variable Cost Based on New (Additional) Material Lot
	Return of Source Material Post-Billing of a Custom Product
	Scheduling of manufacturing process (shop time schedule)
	Tracking of Work Order components including notification of shortages, revision tracking, etc.
	Revision tracking for Work Orders
	Support of multiple types of shops
	Combined Ownership Tracking (Design and Manufacturer)

	Cost of Design
	Cost of Manufacturing
	Cross Team Credit of Sale - Allocation of GP across product groups
	If not using RF pick, print Eclipse ID on pick ticket and Step Detail
	Allow multiple "in" finished products with appropriate cost when changing out components
	Have integrated calendar/scheduler so know which jobs are scheduled when - regardless of component availability - possibly link to SO required date
	Have method of identifying technician doing work and record actual time spent - regardless of what may have been estimated or costed
	Sub-group of processes for reporting
	Be able to recognize SPA costs on material that falls under a SPA to issue to WO at the SPA cost.
	Ability to have labor costs by branch so more reflective of where being built, (Labor costs in CA is more than labor costs in TX)
	Ability to have a 'standard' BOM and routing for pricing to customer and comparison of actual to standard
	Ability to have burden rates on labor (apply overhead)
	Ability to have special instructions (internal and external) on work order header and work order 'steps'
	Ability to be able to 'sub-contract' (purchase order) for a particular step… should 'ship out' and 'receive in' within the work order.

	Details on Software License and Renewals Needs
1	Charging customers for software licensing sold as part of engineering and charging recurring
2	Be able to handle a 'bundle' (similar to a kit)
3	Software, engineering, consulting fees, technician hours…
4	Be able to customize based on customer needs.
5	Automatic renewal notification trigger… to provider (Supplier) and customer
6	Revenue recognition
7	Licensed period, monthly/quarterly/annual and recognize revenue
8	Very similar to Maintenance Agreement
9	Simple Buy/Resale with triggers on when to 'renew'