



# 2021

## Automated Data Exchange Initiative for the Electronics Industry



mETaL Corporation  
1/15/2021

## The Purpose

This **white paper** provides a guide that informs readers concisely about a complex issue and presents the issuing body's philosophy on the matter. It is meant to help you understand the issue and the solution to the problem, which in return will enable you to make informed decisions surrounding said problem.

## The Problem

Sales, the critical component to any business. The electronics industry, like many verticals, has a variety of business entities that enable sales. Every day of every month of every year people associated with sales run reports to calculate "how much in sales" has occurred. What if these "calculations" were wrong. What if your company decided based on incorrect sales data? What if you did not truly know how much was sold. Are these relative numbers "good enough"?

The electronics industry has a business framework that enables end customers the ability to request information from a Representative, about a Manufacturer's product(s) that are then sold to a Customer through a Distributor. The information required to manage that process is typically held within each company's Customer Relationship Management database or CRM. A CRM system is a software application that is installed on an Operating system that is powered by a physical computer. This system allows businesses to manage business relationships with the information maintained within them.

The current process to eventually get a product to the end customer, leverages these CRMs, and requires numerous steps through the manual addition, update, change and deletion of information. These actions take place across multiple CRMs, over a number of entry pages with a variety of "fields" that the end user interfaces with. Companies that work together set up "rules" that govern how data gets entered into these "fields" and humans define and "interpret" what fields are "important". Some of the fields, for some companies, some of the time can be agreed on. Some cannot. The irony is that companies want to work together but need business independence.

Therefore, every company's CRM is unique. The field names can be different depending upon their requirements. Fields can have dependencies on other fields, they can be auto generated, have dynamic values, pickable from a list and/or have character length limitations, the location can be different, the meaning can be different. Simply, the "rules" can be different. Today, humans manually "interpret" these "rules" with the intention that these "interpreted rules" will be extrapolated across the pertinent systems intending to provide cross platform accuracy and data integrity. This intention unfortunately creates an environment that requires redundancy in effort, opportunity for errors, inevitable delays and creation of inconsistencies which is the exact opposite of the initial intention. This "environment" continues to be exacerbated by each business's financial reporting schedule which directly collides with a sale's persons busy schedule - creating moments of chaotic updates to these "sales" reporting tools and proliferates the

inefficiencies. Ongoing product updates, SKU modifications, price changes, special pricing requests, deal registrations and product availability all have their own logical human rules and “virtual” flow diagrams for quotes and NBO creation. These are not documented but “understood”, which creates misalignment of expectations, reporting discrepancies and requirement for retraining employees as they come and go. The problem is simply we are human.

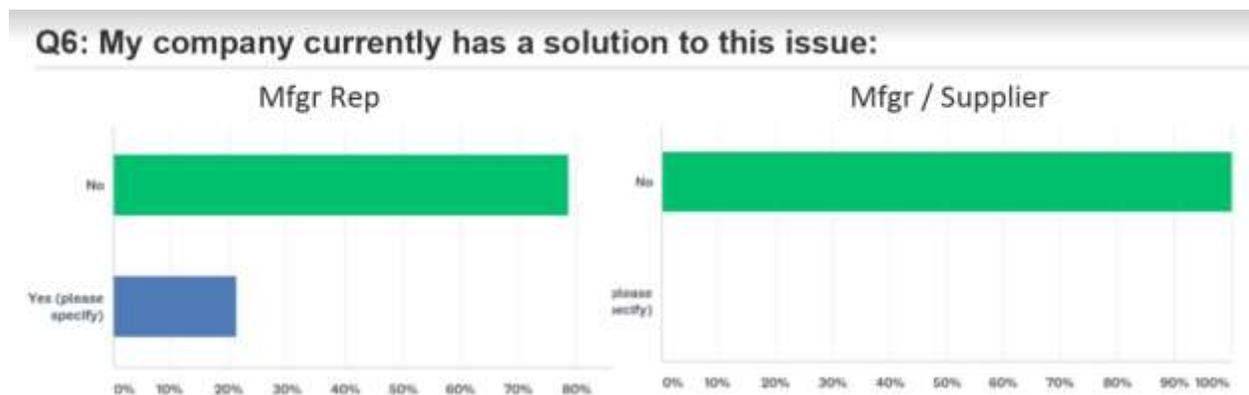
## The ECIA’s Decision Making Process

The ETL initiative was one of three selected by the ECIA board for further research for several reasons outlined below, the biggest of which is that it falls within complete alignment of the ECIA’s vision statement.

*“To promote and improve the business environment for the authorized sale of electronic components by manufacturers, their distributors and independent sales representatives.”*

<https://www.ecianow.org/what-we-do>

Through the ECIA and their Global Industry Practices Committee (GIPC), a questionnaire was developed and delivered to ECIA members for the purpose of evaluating the validity of the initiative. As displayed below, most companies do not have a solution to this problem.



The ECIA provided due diligence and looked at several related technologies and companies to evaluate different options including block chain, data warehouses (ELT) and EDI. A high-level white paper was submitted to the GIPC for preliminary review that outlined the scope of the Proof of Concept (POC). In final review of the initiative’s approval process, it was determined that the issue was “real”, needed to be addressed and the bulleted list below outlines the justification for the ECIA to provide sponsorship.

1. The automated exchange of data would be groundbreaking and beneficial for all parties involved.
2. The initiative would validate the ECIA’s commitment to its members and true to its vision.
3. Proactively promote promising technology advances within the community.
4. Provide a potential solution to an ongoing set of issues
5. Showcase thought leadership through tackling complex problems.

6. Substantiate the true need for the Manufacturers, Representatives, and Distributors to have real time-efficient data exchanges.
7. Encourage ongoing membership enrollment.
8. Improve the speed of B-to-B interactions.
9. Simply, reduce one of the many of the inefficiencies in our industry and provide value to its members.

## The Initiative

Information, and its associated accuracy is critical to every company's core business, profitability, future planning, and overall success. In February of 2019, the initiative was created by the ECIA Manufacturers Representative Council with the guiding objective of determining if a common process (or protocol) could be established that would solve these inefficiencies surrounding the B-to-B processes that occur between Representatives, Manufacturers and Distributors related to the disparate CRM platforms used to communicate.

The validity of the initiative was to be answered through a Proof of Concept (POC) that would help in this determination. The POC's goal would be aimed at establishing a functional automated transference of real time data revolving around New Business Opportunities between Representatives and Manufacturers. If successful, the result would establish a requirements and process document, level of effort baseline along with associated cost analysis report. The findings of this POC could then be extrapolated out to include all parties (Manufacturers, Representatives, Distributors, Developers and CRMs) and other types of transformations such as Design Requests, Special Price Requests, Quoting, Parts and Price lists and Account correlation. The result would allow the ECIA to help its members determine if there was a solution that would provide an answer to the inefficiencies.

The initiative was named "ETL Project", which at its conclusion became more appropriately named "The Impact of Automated Data Transference in the Electronic Industry". The process began with The Rep Council establishing a partnership, through sponsorship, with a group that specializes in the field. The group's vision identified early on that the initiative required a set of processes and procedures that every company could leverage despite each company interacting with the technology through its own lens. The past year was spent working with two companies, Crowley Associates, a Manufacturers Rep company and C&K, a Manufacturer. They developed a "protocol" that would solve the industry's system integration data inefficiencies.

The POC was completed in February of 2020. Below are the findings.

## The Findings

As the team started the project, they quickly realized that this initiative was more than just synchronizing data between two companies. As alluded to in the section "The Problem", the disparities between any 2 companies were more than simple field data values that needed to be

aligned, but also included the process by which the data is evaluated and entered into the systems. They were different and needed to be addressed. The logic behind what was “important” to a Manufacturer was different than what was “important” to a Representative. The process of entering New Business Opportunities alone was more complex from the standpoint of inter-CRM dependencies and subjective “rules” than initially anticipated. When we started to extrapolate out the other transformation processes surrounding Design Registrations and Special Pricing Requests as they relate to quotes, products, pricing and accounts - the only thing that was “aligned” was the disparity. It became apparent that a set of requirements to govern the solutions framework needed to be established. Once a requirements framework could be established, the ability to find a solution that decouples the manual logical process into technical automated process could be developed. The list below outlines 6 principles that laid the framework that governed the technology that could be used.

1. The solution should not force companies to store sensitive data on any platform other than the Reps CRM and Manufacturers CRM. We have identified this guideline as an important fundamental point from both Manufacturers and Representatives and would be a strong deterrent, from their viewpoint, in engaging in the solution for security and privacy reasons.
2. The solution should allow companies to continue using the same CRM programs that they use today to automate the transference of data. They would not have to change the software package(s) that they use today for them to leverage the solution.
3. The solution should prevent vendor lock-in if any of the components that facilitate the initiatives goals becomes not viable. Considerations were years of business, the type of technology its wide adoption and the ability to move to a separate transference tool that would not dismantle the entire strategy.
4. The solution must provide a secure transfer of data solution that minimizes data loss and compromise. A solution should simply replace the "human in the middle" manual entry of data twice and the Manufacturer/Representative has complete control over who has access to what.
5. The solution should be able to be used by all, which would eliminate splintering so that all parties can benefit both from a functional and cost perspective.
6. Lastly, the solution must provide an independent mechanism of transferring NBO data from Manufacturer to Representative, which would then allow for other transference of data as it continues to grow.

Abiding by these fundamental principles, an evaluation identified types of technology that could meet the criteria. The data integration technology called ETL quickly surfaced as the most viable solution for its relevance in task, widespread adoption, and ability to scale. ETL is an acronym referring to a three-step process (extract, transform, load) used to blend data from multiple sources. During this process, data is taken (extracted) from a source system, converted (transformed) into a format that can be utilized, and loaded into a completely disparate system. In the case at hand, the solution needed to handle a bidirectional flow of data as some of the source fields were from a Rep’s CRM and others originated at the Manufacturer. There are many companies that offer services that leverage this technology and although this white paper does not specifically identify names, it does present a variety of benefits that the electronics community

would recognize by utilizing the same ETL technology. To understand the reasoning behind this statement, we need to look how an ETL works and then identify the benefits as they surface.

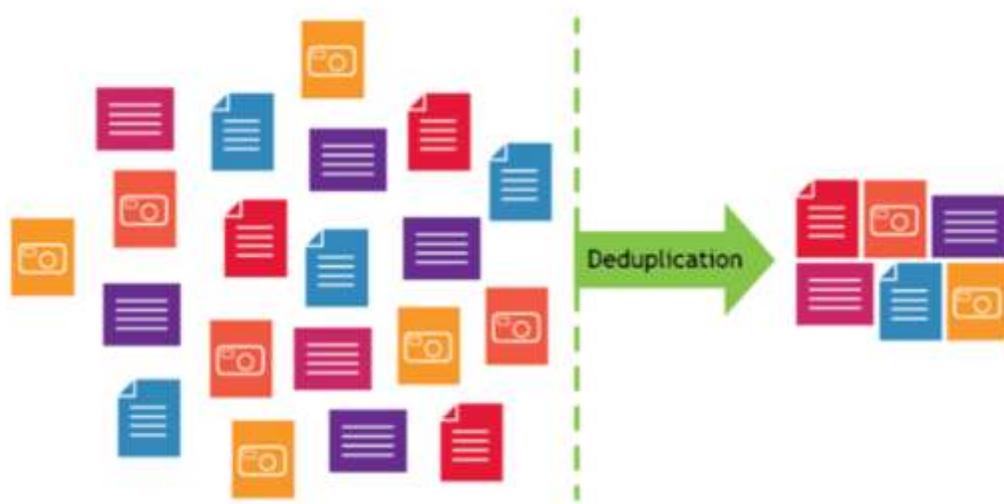
## How an ETL Works

Ironically the first letter in the acronym ETL that stands for Extract is not actually the first step that needs to occur in the process of transforming data. The first step is to “Map” out the dependencies between the two systems and find the answers to the questions of what is required to make the process a success. This mapping produces the logical correlation between the required fields from the source and their corresponding field values in the destination. As mentioned in the section “The Problem”, the process of collecting all the required “field’s” properties, both logical and physical, will allow for the creation of the “automated rules” that will be utilized during the transformation process. With these documented field requirements, we can then extract the relevant data, by creating a secure connection to the source CRM. This secure connection, or what is called a “connector” in the ETL vernacular, is like a VPN connection. When an ETL connects to a CRM the required “credentials” such as usernames, password or tokens and associated permissions are sent encrypted through a “virtual tunnel” that allows the data from the source to be encrypted from source to destination. This connection to the CRM, is established through a “lock and key” mechanism, where the lock is called an API or Application Programming Interface and the key is the supplied credentials. APIs are created by the developers of the CRM, which define how the “lock” can be “unlocked” and how the data being secured can be accessed. We leverage this API “lock and key” mechanism every day. The common cell phone provides a suitable example. Apple, Samsung, or any device manufacturer writes code, or API, that allows other apps developed by other software manufacturers to be downloaded, installed and integrated or “authorized” to access the smart phone’s “lock and key” functionality. From the ETL integration developer’s perspective, a CRM specific connector needs to be created for every CRM. Every ETL has a different mechanism for creating these connectors. The creation of these connectors by developers takes time. Time costs money. A simple technical algorithm creates a trite yet ironic “no-brainer” moment where doing a job once takes less time than repetitively. Imagine if the Manufacturers, Reps and Distributors did not have to pay for the creation of these connectors each individually, but leveraged a common pool of “connector code”?

CRMs are constantly updated. These updates to the data can be immediately relevant to the end user. The creation of new opportunities, sending revised quotes, adjusting pricing, updating status, communicating ideas, and adding accounts needs to occur in a timely manner. Understanding both what to extract and when are important. An ETL can schedule and run the transformation “jobs”. The number of jobs is based on the number of transformations and the type of transformation that needs to occur. The timing of the job is based on the relevant importance of the data. Every ETL has their own unique way of creating, coding, and scheduling these jobs.

When the job executes, the extraction begins and the transformation follows. Multiple jobs can run in parallel and multiple “streams” of extracted data can be processed simultaneously. While one stream may be extracting data, another is transforming data that was earlier extracted. This type of processing would be considered “Multi-threaded”, where there are multiple tasks on multiple sets of data being performed at the same time. Imagine if we could reduce the number of systems needed to process these transformative jobs and host multiple companies on a streamlined footprint of systems. The efficiency would be like that of an apartment building versus a home. Both take up the same space, but we can fit many more tenants in an apartment building.

Physically transporting and appropriately formatting the data is the role played by the transformation engine. Transformation is the process of “cleaning”, joining, validating, filtering, splitting, deriving, summarizing, and calculating the required values of fields of data. This transformation is where the logical “rules” that were obtained during the “Mapping” phase come into focus. Every CRM is a database of tables. Those tables have fields. Fields have values and properties that provide definition. What if Manufacturer A hired Developer A to work with Representative A to Map, Extract, Transform and Load (mETaL) their two systems together. In concert Manufacturer B hired Developer B to work with Representative A as both manufacturers used the same Rep company. Developer A would need to go through the process of finding the correct contacts, setting up meetings, establishing credentials, working through a demo, developing the map, determining the jobs, testing, troubleshooting, monitoring, and maintaining. Developer B would have to go through the same set of processes. The Rep is now having to spend time showing, creating, sending, and updating information to both Developers to support these two different transformations. Extrapolate that out to 10 Manufacturers and 100 Reps, or 1000 Manufacturers and 1000 Reps! An open framework where common sets of mappings were shared to the community, the mapping process would need to be performed once, but could be used by many. Deduplication!



Lastly, the data is loaded. Notifications are sent out. Monitoring begins. Despite all the automation in the world, if humans have access to it, anomalies will arise. A common and consistent “Protocol” needed to be established.

## The Protocol

A protocol is defined as an “official procedure or system of rules governing affairs”. As mentioned in the “Initiative” section of this document, the ECIA commissioned a third-party group of subject matter experts, to determine if it was possible to find said protocol, or “systematic procedure” that all parties could leverage to gain efficiencies in the process of transferring information surrounding NBO data. Again, as identified in the “Findings” section of this document,

an understanding of the protocol's success criteria was established. From this set of "Criteria" the SMEs understood that the protocol could not be product specific, nor entity specific, but hinged on the need to create an industry specific set of rules that would help govern the idea. A centralized entity (or Hub) was thought to be required to help organize the different elements. This Hub could concentrate the information, such as "standard operating" procedures, "integration specific" data and "transformation relevant" updates. It could provide a single pane of glass for all pertinent end user information, such as ticketing system, a Q&A forum, a knowledge base, financial information, and project management. This simple "hub and spoke" framework would help give structure to the protocol and streamline the development process while minimizing the redundant work that would be required if the framework were not established.

As a result, a requirement to define what information the Hub could/would manage, providing some "rules of engagement" needs to be defined. The following outlines the thoughts collected throughout the POC, from a variety of sources that were involved, that might provide some guidance in developing the framework for this protocol.

1. Governance –

- a. With historical validation, we know that if a country does not drive the direction of its people, then the people will start to drive the direction of the country. This leads to factions of society, unrest and discord. In this light, if an industry trade group such as ECIA does not create, subcontract, or leverage a framework for everyone to work within, the industry will drive the initiative and inevitably the idea of splintering will occur. Splintering significantly reduces any initiatives potential efficiencies and is the result of people doing the same thing, but in different ways. During this POC, the proof of concept not only considered the merits of the technology but also identified the need to showcase what a governing framework could look like. During the time the technical merits were being validated, a prototypical portal was developed. The meTaLHub.org, a website, was built to use for demonstration purposes exposing the potential structure for the protocol's framework. It contains a knowledge base, ticketing system, document portal, webinar information, account and subscription management and project management areas.

2. Investment

- a. The ECIA, when deciding on the initiative's "Next Steps", will need to evaluate the "value" of this protocol's service. Again, historically speaking, people value what they pay for and the members of the electronics industry are no exception. Although it is out of the scope to define this "value" for the ECIA in this paper, looking at it from an investment standpoint to build, grow and maintain the protocol's "Hub" will require both human and technical resources.

### 3. Standard Procedures

- a. There are many areas to think about for the governing bodies during this protocol establishment phase. Of critical importance is the governance of the protocol's Standard Operating Procedures. These procedures need to be comprehensive in nature but provide a clear and easy to follow path for the potential subscribing members. Again, through the protocol's portal, the ability to understand intent, automate the onboarding, manage the subscription, enforce the rules and provide assistance should be the focus.

### 4. Membership Benefits and Requirements

- a. Membership comes with benefits. The entire purpose of this initiative is to reduce inefficiencies. Inefficiencies from everyone's viewpoint. As you are reading this document, you may be interpreting it from the perspective as an employee of a Manufacturer. You may be the owner of a Rep company. You may be a Distribution partner. You may be the VP of Sales from a CRM. But the common thought is and will be, how can this benefit me and "my" company. Supply and demand are central to the protocol's relevance. Does the protocol "supply" enough benefit to create demand. Ironically, despite the obvious initial benefit from the Rep's perspective of not having to enter data twice, an outline of the benefits for the other entities may be helpful. Below is a breakdown of the different perspective viewpoints. These benefits were accrued and documented during the POC.

## A. The Benefits from Representative's Viewpoint

- The "Sync to Manufacturer" feature or some configurable "trigger" allows a per opportunity enablement to replicate data to the Manufacturer. The Manufacturer Representatives saw a 50% reduction in manual tasks related to cross-data pollination eliminating multiple entries, multiple times in multiple locations for multiple NBOs.

The screenshot displays a software interface for an opportunity titled "Opportunity - 20V B&D String Trimmer". The interface includes a navigation bar with "Lookup Results" selected and other tabs like "Abrakon Open Opps", "Dialight Open Opps", "Inside Open Opps Detail", and "Inside Open Opps High". Below the navigation bar, there are several input fields and dropdown menus for opportunity details:

- Application or End Product:** 20V B&D String Trimmer
- Principal:** C&K Components
- Customer:** Stanley Black & D
- Program:** Black & Decker 20
- Distributor:** Addcom Asia
- Contract Manufacturer:** Shanghai Kaige EI
- Account Manager:** Souder, Dan
- Line Manager:** Jackson, Brooke
- Status:** Open
- Est. Close:** 4/15/2020
- Actual Close:** (empty)
- Top Opp ID:** DS-602
- Principal #:** 201908650
- NBD:**
- Manufacturer Account:** (empty)
- Sync with Manufacturer:**

On the right side, there is an "Opportunity Snapshot" section with a "Summary" box indicating "Opened 428 days ago or activity".



- Numerous efficiencies regarding quote processing for NBO and Design Registrations were a byproduct of the NBO integration. Examples such as automated “Convert to Opportunity” eliminated the need to enter the same data from a quote into an opportunity. See pictorial representation.

Quote - 251630

Lookup Results Qts 2 Yrs Inside Qts 30 Inside Qts 60 Inside Qts 7 Inside

Type: Quote

Distributor: Future Electronics

Principal: C&K Components

Customer: Deka Research & ...

Status: Pending

Quote Date: 3/10/2020

Expires: [ ]

Follow-up Date: [ ]

Prototype Date: [ ]

Production Date: [ ]

Program: [ ]

MFG #: SP3342B0

Potential: \$9,072.00

Create User: Benoit, Jessica

Comments: [ ]

Internal Comments: [ ]

Convert to Oppor...

- Product Pricing enhancements were recognized that eliminates the need for referencing external sources, with identified “Real-Time” pricing from the Manufacturer was established.

Edit Quote Item

Part #: R2C4110 200H LFS

Name: KSC

Customer Part #: [ ]

Internal Part #: Y31C1448PP LFS

Comments: [ ]

Special Price:

NC/NR:

Design Registration:

Reg'd Cost: [ ]

Rebate: [ ]

Delivery: [ ]

PK: 1000

MO: 55,000

NO: 55,000

EAU	Price	EAU (\$)
EAU 1: 50,000	0.182	\$9,072.00
EAU 2: 0	0	
EAU 3: 0	0	
EAU 4: 0	0	

Price Details

Minimum Order Qty: 14000.0

Package Size: 1000.0

Lead Time (weeks): 10

Price Levels:

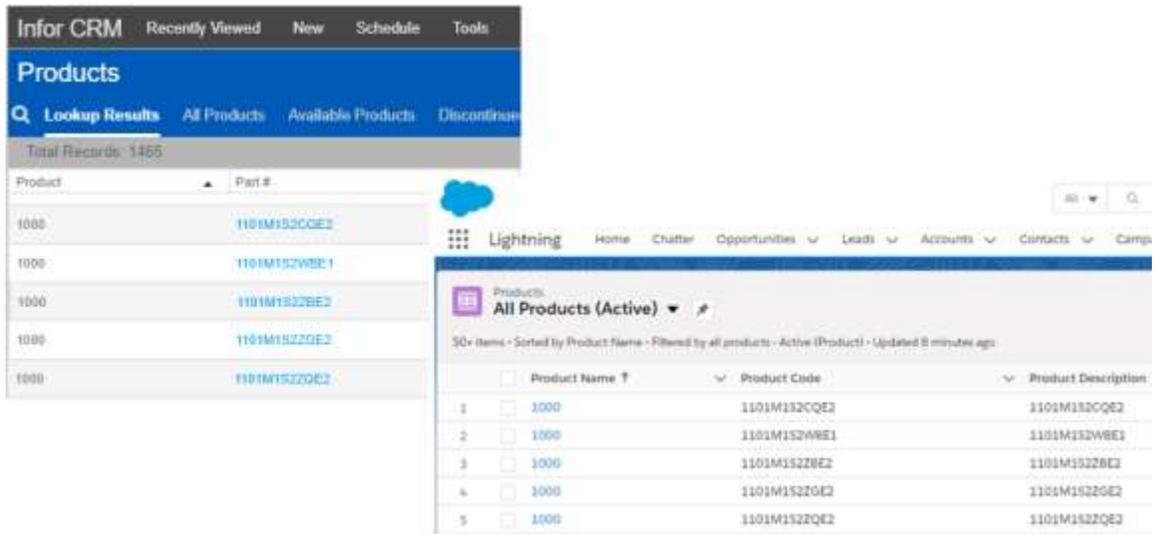
- Antenna(14000-49999): \$0.21
- Antenna(50000-99999): \$0.18
- Antenna(100000+): \$0.18

## B. The Benefits from the Manufacturer’s Perspective

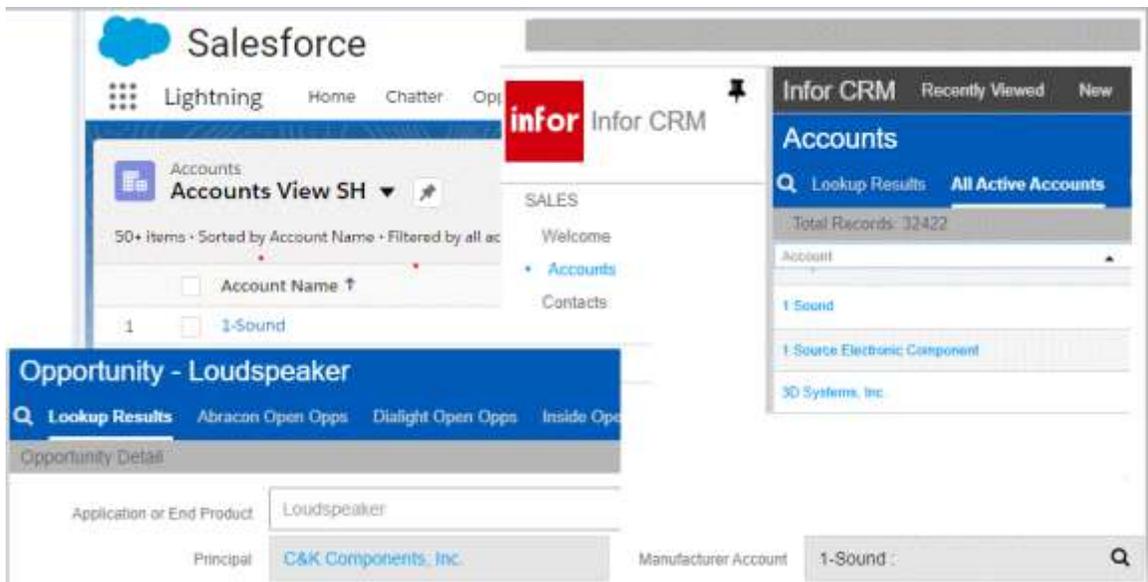
- The Manufacturers will see “real-time” information about their sales opportunities on a per opportunity basis with the “Sync with Manufacturer” Button.

- Comments and Notes are synchronized at both the opportunity level and product level to keep the Manufacturer Account Manager abreast of “Real Time” pertinent opportunity and product notes.

- The Manufacturers products will be synchronized with the participating Manufacturer Representatives and only active products will be available. New parts can be added



- Accounts are aligned eliminating name discrepancies or if names are changed in the future.



- Manufacturers will have the opportunity to leverage the NBO integration for other purposes in the future such as Design Registrations directly from the Distributors or additional transformations with Leads etc.
- The Manufacturers Reps will have more time to sell the manufacturers products and less time typing.
- In Phase 2 of the initiative, the goal is to streamline the Design Registration and SPA process to eliminate the need for the Rep to enter the data into the Manufacturers portal. The Distributor's submittal process for Design Registrations, Special Price authorizations, Ship and Debit requests, will result in near time approval, yielding revenue opportunity to the Manufacturers.

## C. The Benefits from The Distributor's Perspective

- Again, in Phase 2 of the initiative, because of the streamlined Design Registration and SPA mentioned above, the Distributor's submittal process for Design Registrations, Special Price authorizations, Ship and Debit requests, will result in near time approval, yielding faster "turn around" times and a competitive advantage of speed to market.
- Integration can occur utilizing a similar export process as it happens today.

## The Project

To understand the developed "protocol", one needs to navigate the process required to transform data from one system to another. The process begins at the human level, by identifying the subject matter expert within a company that are responsible for the management of the company's CRM and determining the pertinent parties as they relate to permissions, development and authority to instantiate the project. Initial meetings are required to set a level of expectation and create a project plan with milestones, accountability and requirements. Once access to a "sandbox" which is term used within the CRM world for "demo instance" and production instance are established, an evaluation of the environments to ensure congruence between the two systems is important.

Once the basics have been addressed, the next phase is geared towards understanding the relationship between the tables within each CRM. Often within a CRM there is a development "view" that enables the ability to see the visual dependencies between tables, their primary and secondary keys and the coinciding field names and data. This will be key, (no pun intended) to properly map the tables and relevant fields in and between the disparate CRMs. Documentation is key and establishing a framework that allows for a visual understanding of the relationships between the different "fields" is paramount.

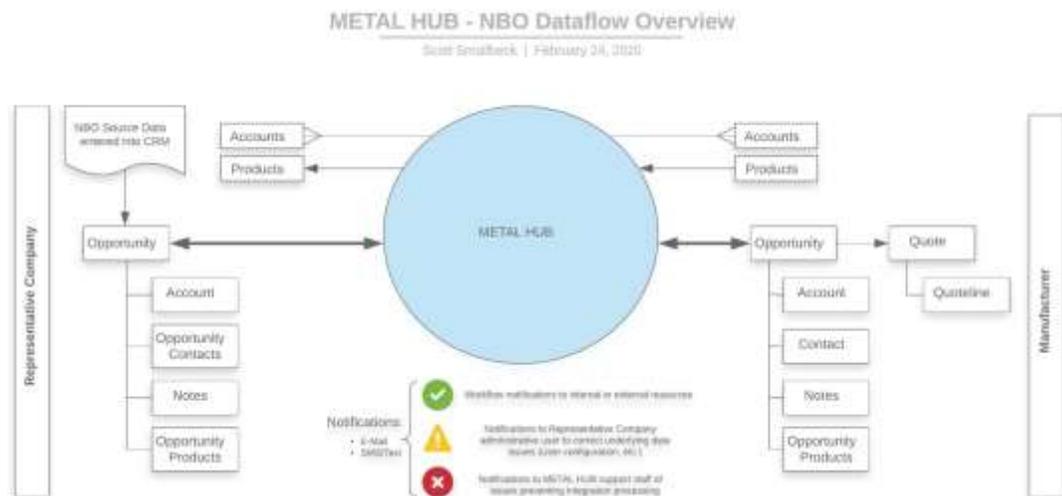
Once a basic understanding of the CRM structure is obtained, scheduling a meeting, working with an end user to walk through the creation process of a New Business Opportunity and quote is helpful, which should be recorded for future reference and identification of the required fields within each CRM that are "In Scope". During the interaction with the end user, usually a Product Line Manager, it will be paramount to document the comparative values of the required fields that are logically aligned but have value discrepancies. Below outlines an example of this logical discrepancy.

Example: Rep Company "A" uses CRM "X", Manufacturer Company "B" uses CRM "Y"

- Step 1 – Enter Data into Rep CRM
  - A Rep enters an Opportunity into CRM X, fills out all the fields and selects "Open" as the value for the field "Status" in the Opportunity from a drop-down list that has 3 different options, "Open", "Closed Won", "Closed Lost".
  - Rep clicks Save.
- Step 2 – Enter Data in Manufacturer CRM

- The Rep enters the same information for an Opportunity into CRM “Y” (the Manufacturer’s CRM), fills out all the fields and notices that there are different values for the “Status” field. They include “Registered”, “In Progress”, “Closed – Won” and “Closed – Lost”.
  - NOTE: As you can see there are discrepancies between the number of options and names of options.
- Step 3 – Validation
  - Obtain validation from the “End User” on the logical correlation between the disparate fields and accommodate for variables that may not align on a one-to-one correlation.
- Step 4 – Programming
  - Every ETL has a different programming language or languages that it can use to process the logical correlation into programmatic rules. Regardless of the “language” used, they all can manipulate the logical input into automated output.

Once the developer has obtained all the information required about the permissions, tables, fields, values and properties of the data that needs to be transferred, creating a high-level pictorial representation is beneficial as it helps see the individual components required to begin creating the required logic.



From a “flow” perspective we can identify the various processes (or transformations) that will need to be addressed and the order of operations can be determined.

## The Conclusion

The answer to the ECIA’s original question of “Is there a way to automate the transference of NBO data from a Manufacturer’s Representative to a Manufacturer?”, is Yes! The ECIA and the associated members of the electronics industry have a unique opportunity to accomplish an

unprecedented endeavor. No single vertical has ever attempted to put forth an effort of such broad reach.

As a result of a few key individuals and an organization that was willing to put forth the capital to understand the opportunity better, a unified group of people recognized that the industry's processes could be improved and could benefit all. Despite the time and money which will inevitably accompany the identified actionable items, we believe the benefits will far outweigh the costs. The issues, although complex, are not insurmountable. It is estimated that the hundreds of hours will result in thousands of hours of time saved across a variety of areas because of a well-executed plan and properly structured protocol. A variety of discussions and answers to an array of questions will need to be addressed. What has been proven through the POC is that there is a method that can be reproduced, would provide a protocol benefiting all, if leadership is provided from the top down. There is zero doubt that this initiative is technically viable. The interesting fact is that it is not the technology nor the need that is the roadblock, but it may simply be the squeaky wheel that says, "It can't be done".