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Improving a Contractor's Cash-Flow Using the CINX tm Platform

Cash Flow

Contractors generally understand that managing "cash-flow" is second only to their ability to manage field labor. One of the best ways to impact positive cash flow is to speed up internal processes by eliminating manual redundant transactions and replacing them with digital automation. Procurement experts agree that, at a minimum, improving a firm's exchange of data between internal departments through data automation, and expanding this exchange of data to the firm's external supply partners using data management software (such as the new content and pricing platform offered by Harrison Publishing House, called CINX) could easily reduce their annual material expenses from 3 to 5%. On a $10M yearly materials budget a mechanical contracting firm would realize an annual savings of $300-$500K.

It is the combination of exchanging and reusing digital data between departments that will help you reach a goal of making "best buy" decisions within the purchasing department. It is the key for planning effective material handling practices and coordinating JIT deliveries within project management. It is also the primary driver for expediting back office customer invoicing. These practices collectively will lay the ground work for creating efficiencies and reducing costs. In addition, by taking advantage of payment terms and conditions, contractors can recover and recognize the annual saving referenced above.

One of the secrets to realizing this benefit of material cost savings is taking advantage of a typical distributor prompt payment discount (e.g., contractor agrees to pay within some specified terms and timeframe and by doing so receives anywhere from a .5-2% discount off invoice if paid within 10-30 days.) The second secret to realize this savings is on the "Revenue side." Many contractors miss this opportunity by not efficiently building a process to invoice their customer as soon as possible following site installation. The typical timeframe from purchase of materials to delivery and installation and then to invoicing and final receipt of payment in the Value Chain of a contractor can take anywhere from 60-120 days. Consider this;

> …on a $10M, 12 month on-site project, a contractor should be billing and receiving approximately $830K a month. The problems begin when digital data is not being

actively exchanged and shared between the supplier, the contractor and the contractor's back office accounting department. The process is hampered due to a lack of automation and a number of manually driven exchanges of data. The lag resulting from a manually-driven workflow occurs anywhere between EOR (engineer of record) sign off and model release, 3D model detailing to purchasing, purchasing to supplier procurement, site readiness for materials, equipment and material delivery by supplier, JIT accounting of field installation and finally, invoicing to customer of completed work for payment. There are numerous instances within this typical manually driven contractor workflow that do not take advantage of reusing existing digital data to automate, communicate and exchange information. It is no surprise that invoices are deferred and not delivered for upwards to 60 days from the time they should have been sent. Add to that the reality that the General Contractor could hold off payment for another 30-60 days. The impact on positive cash flow is obvious in this example and should be the motivation for firms to establish processes within their specific workflow for utilizing data when and wherever possible. In this example, if the contractor had the capabilities to reduce the lag in payment by just one week, that firm's positive cash flow and profitability would increase.

Adding CINX to the Mechanical Contractor Toolset

Using the above example, let's look at the ways CINX could assist this contractor with new functional capabilities and tools that will help him 1) Connect internal departments through shared data, 2) liminate internal redundant manual exchange of data, 3) utomate processes currently accomplished through manual intervention, and 4) euse model data to bridge the gap and provide a digital connection between the contractor, their purchasing department, and the firm's supply chain.

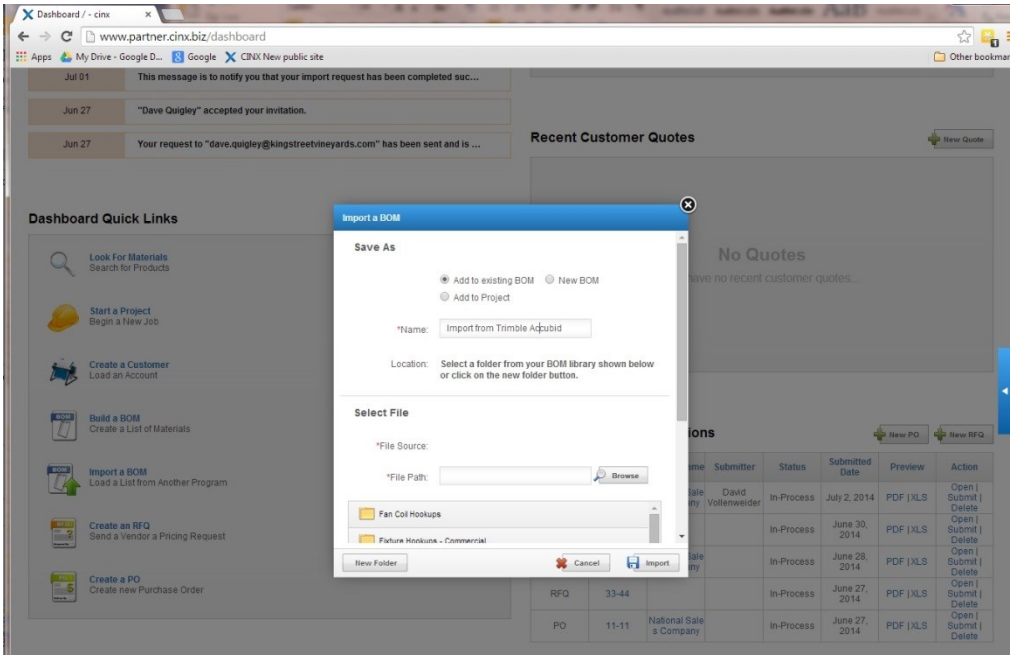
1. Connect Internal Departments Through Shared Data

Within a mechanical contractor's Value Chain of processes one of the first collections of project content and data occurs during the estimating process. It is within this phase that the contractor collects and the estimating department inputs their first legitimate set of real content into a company database. It is, if the contactor wins the project, the first opportunity to reuse digital data for other purposes. The basic premise is that once mechanical data has been inputted once, no one should ever need to input the same object data again.

In a typical non-CINX automated process, the estimate's collective data is shared with a project manager, detailing and shop, and field superintendents/managers in an initial estimate turn-over process often used to initiate the start of a building project. Typically, the data is often shared via spreadsheets and reports. This set of data, if reused properly could ultimately determine the success or failure of the internal departments in making the project profitable.

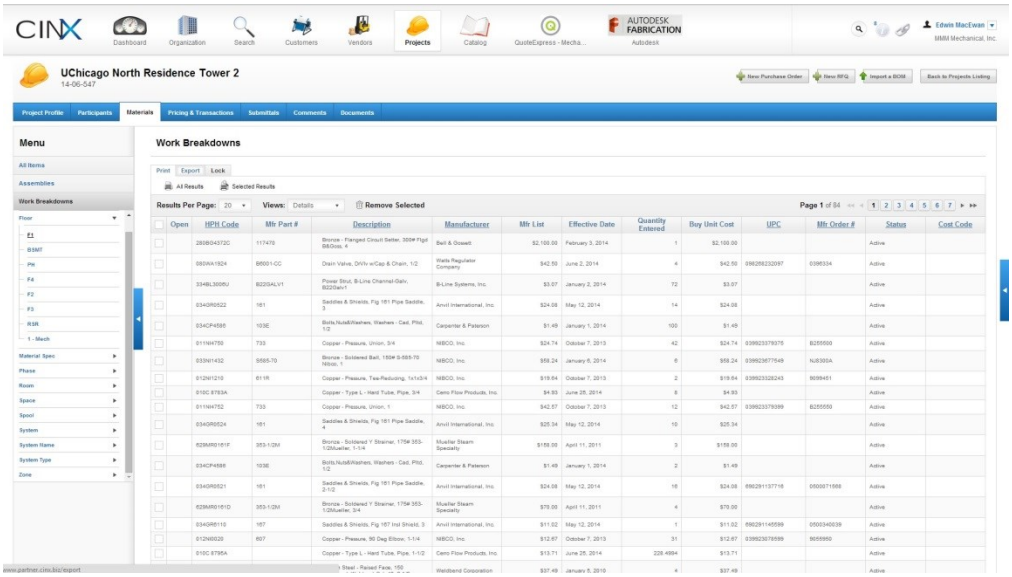
The problem in the above process has everything to do with the format of the data exchange and how well the other departments and internal project stakeholders in the firm utilize, benefit from, and reuse the data.

CINX provides the contractor and its internal departments with an automated way to import the collection of mechanical object data used in the estimate and to deposit it into CINX's data management platform with all of the object relevant pricing and content references for the other stakeholders and their domain specific software applications to use (see CINX Screenshot 1.A below).



Screen Capture 1.A - Trimble's Accubid estimating data from project imported directly into HPH CINX

Once the estimate is imported into CINX, the data is available to be reused and repurposed with no manual input or copying and pasting required whatsoever – it is completely automatic. CINX as a data management software tool now contains full details, including the work breakdown structure (WBS) used to win the project, all of the real content ultimately to be detailed, fabricated, purchased, installed, and invoiced(see Screen Capture 1.B below.)



Screen Capture 1.B - Project Estimate including WBS now available for Reuse, Repurposing, and Project Team Review and Analysis.

CINX's simple import process facilitates a seamless exchange of data between the estimating department's successful award winning efforts and the internal departments that are now preparing to make use of that data for their own purposes and real tasks of detailing, project managing, procuring, pre-fabricating, installing and invoicing throughout the life-cycle of the project.

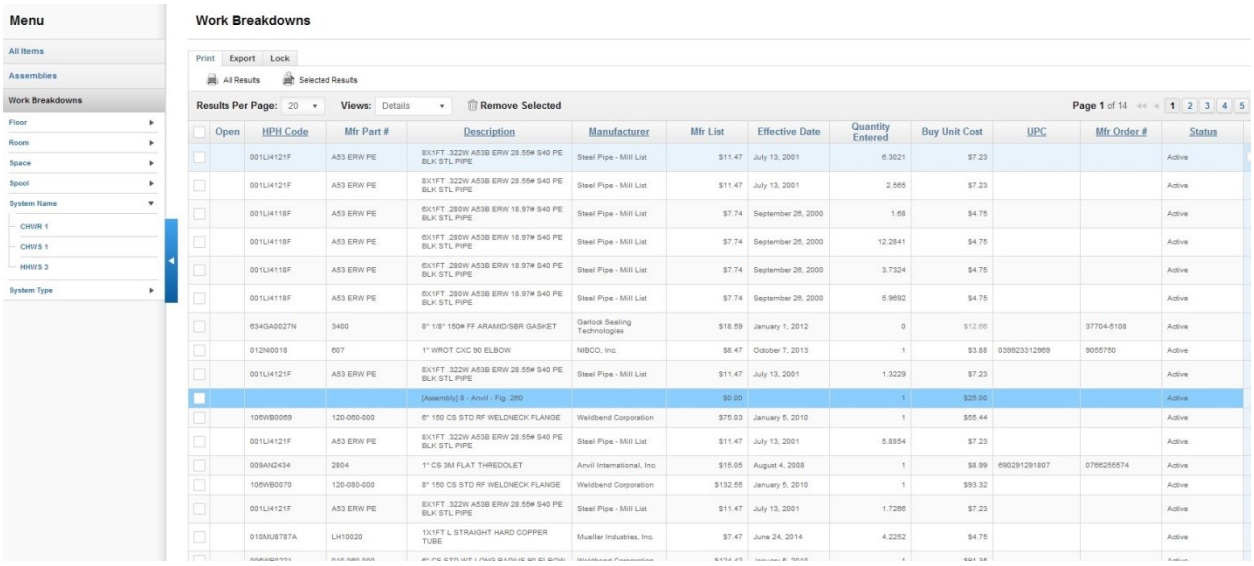
2. Eliminate Internal Redundant Manual Exchanges

One of the immediate benefits when using CINX is a contractor's discovery of the elimination of many manual redundant tasks or inputting of the same content over and over again as the project passes through each of the firm's departments. The basic premise to CINX is that project data should never be created or inputted more than once. Once the data has been entered it should be available to be tracked, measured, analyzed and reused.

A good example of eliminating manual redundant activities can be highlighted using the following real-world scenario.

> A multi-year commercial $500M hospital project has been under way for more than a year. The hospital's MEP design has been under some review but has been stable for the past few months. The building method is Design-Bid-Build and the sub contracts were awarded six months ago. The mechanical contractor's project team has completed three months of detailing and has submitted the basement and first floor model to the Engineer of Record to release and to initiate procurement and pre-fabrication. Suddenly, the mechanical contractor receives notification that there's been a design spec change. The PVC system spec has been altered specifying a new set of manufacturers and material type. This not only requires returning to both levels to make significant spatial coordination adjustments, it is also incredibly

important for the mechanical contractor to understand the contractual and financial implications of such an alteration. In the past, the spec change would be sent back to the estimating department to do a full take-off and to complete a re-estimate. With the state of 3D intelligent CAD systems, and now with the availability of a pricing and data management tool such as CINX, the financial impact to the spec change could be done directly from the redesigned detailed model in seconds versus hours or days using a conventional approach of engaging the estimating department. In Screen Capture 2 below, the reader will find a BOM taken off directly from a 3D model and imported into CINX. As you can see in the screen shot, once the BOM was imported, a variety of pricing data points were automatically added to the import, all based on this firm's CINX custom catalog.



Screen Capture 2 - Using Model Data, CINX Immediately Identifies Impact of a NEW Design Specification

3. Build Internal Collaboration Between Departments

Concurrent with a firm receiving a projects EOR's authorization to move forward on a submitted LOD 400 contract document (i.e., to initiate the purchase of mechanical materials and to begin fabrication) the detailing department is also generating a material take-off (MTO) or a bill of materials (BOM for the purchasing department. This exchange of data is typically exchanged in the form of a spreadsheet. The MTO or BOM is generated directly from inside the detailed model and contains the names and details of all of the model elements that are to be purchased, fabricated, and installed in the building by the contractor. It is an important exchange between the detailing and purchasing departments, as it initiates the work associated

with each department's obligations related to the project, as well as with the shop and site installation work downstream from this exchange.

Once received by the purchasing department, the responsible purchasing agents begin a process of copying and pasting, making comparisons manually between their software, past product buys, existing inventory, etc… The point being the volume of "manual" tasks involved in the exchange. CINX not only can reduce the time it takes to complete the purchasing department's tasks but in many cases CINX can eliminate a majority of them. Below Screen Capture 3.A highlights some of the tools available to a contractor's purchasing department to manage, secure pricing for the firms mechanical content requirements, and to aggregate all of the business and purchasing data in order to make the "Best Buy" decisions per project. Screen Capture 3.B highlights how a purchasing department could use CINX to associate a mechanical item to both a manufacturer list price and an internal price negotiated with the firm's supply chain.

Screen Capture 3.A - Sample of Some of the CINX Tools for Managing the Process of Procurement

HPH Code	Mfr Part #	Description	Manufacturer	Mfr List	Effective Date	Quantity Entered	Buy Unit Cost	UPC	Mfr Order #	Status	Cost Code
010MU8787A	LH10020	1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.	$7.47	June 24, 2014	0.2464	$4.55			Active	
009AN2434	2804	1" CS 3M FLAT THREDOLET	Anvil International, Inc.	$15.05	August 4, 2008	1	$8.75	690291291807	0766255574	Active	
012NI0018	607	1" WROT CXC 90 ELBOW	NIBCO, Inc.	$8.47	October 7, 2013	1	$5.65	039923312969	9055750	Active	
010MU8787A	LH10020	1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.	$7.47	June 24, 2014	2.9992	$7.28			Active	
001LI4118F	A53 ERW PE	6X1FT .280W A53B ERW 18.97# S40 PE BLK STL PIPE	Steel Pipe - Mill List	$7.74	September 26, 2000	8.8674	$7.05			Active	
010MU8787A	LH10020	1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.	$7.47	June 24, 2014	1.8587	$7.28			Active	
010MU8787A	LH10020	1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.	$7.47	June 24, 2014	0.7276	$7.28			Active	
106WB0069	120-060-000	6" 150 CS STD RF WELDNECK FLANGE	Weldbend Corporation	$75.03	January 5, 2010	1	$56.99			Active	
012NI6984	603	1" WROT CXF ADAPTER	NIBCO, Inc.	$16.20	October 7, 2013	1	$11.45	039923301604	9025251	Active	
106WB0070	120-080-000	8" 150 CS STD RF WELDNECK	Weldbend Corporation	$132.55	January 5, 2010	1	$111.98			Active	

Screen Capture 3.B - Sample of Some of the CINX Tools for Managing the Process of Procurement

4. Reuse Model Data

To complete this review one of the more powerful components to CINX is the connectivity it offers the mechanical contractor with the firm's supply network of wholesale distributors. CINX contains tools that automatically link and exchange project data with a firm's supply network specific to RFQ's and Purchase orders. Below, Screen Capture 4.A contains an example of an RFQ and Screen Capture 4.B contains an example of a PO, both of which were created as a result of an MTO imported directly from a model by a purchasing manager to secure the quote as well as to follow up with a buy. What would normally have taken hours of manual research, copying and pasting between disparate formats and programs, now can be managed within minutes at both the suppliers e-commerce site and inside a contractor's purchasing workflow.

RFQ

RFQ NUMBER: 9-26-53
DATE:
JOB NUMBER: 14-654
PHASE:
COST:
REQUESTER:

MMM Mechanical, Inc.
425 Route 117, Sugar Hill, NH, 03586 603.823.5556

VENDOR

SHIP TO

PROJECT MANAGER	VENDOR TELEPHONE	TERMS	TAXABLE
			No
F.O.B	SHIP PREPAID VIA	DELIVERY REQUIRED	ALLOW PARTIAL DELIVERY
			No

QUANTITY	MFR. PART NO.	VENDOR PART NO.	DESCRIPTION	MANUFACTURER
1	120-060-000		6" 150 CS STD RF WELDNECK FLANGE	Weldbend Corporation
1	607		1" WROT CXC 90 ELBOW	NIBCO, Inc.
1	88		3/4" GAL MAL IRON I-BEAM C-CLAMP	Anvil International, Inc.
3.62	A53 ERW PE		6X1FT .280W A53B ERW 18.97# S40 PE BLK STL PIPE	Steel Pipe - Mill List
2.9992	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
2	165 E		3/4" GAL FINISHED HEX NUT	Carpenter & Paterson
1.8587	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
0.2464	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
0	3400		8" 1/8" 150# FF ARAMID/SBR GASKET	Garlock Sealing Technologies
	120-060-000		6" 150 CS STD RF WELDNECK FLANGE	Weldbend Corporation
0.388	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
6.3021	A53 ERW PE		8X1FT .322W A53B ERW 28.55# S40 PE BLK STL PIPE	Steel Pipe - Mill List
0.3988	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
3.5268	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
6.3021	A53 ERW PE		8X1FT .322W A53B ERW 28.55# S40 PE BLK STL PIPE	Steel Pipe - Mill List
1	47-TT		1" THDXTHD STL DIELECTRIC WATERWAY	Victaulic Company
2.3939	A53 ERW PE		6X1FT .280W A53B ERW 18.97# S40 PE BLK STL PIPE	Steel Pipe - Mill List
12.2841	A53 ERW PE		6X1FT .280W A53B ERW 18.97# S40 PE BLK STL PIPE	Steel Pipe - Mill List
3.2034	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
0.902	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.

Screen Capture 4.A - A sample RFQ

Purchase Order

PO NUMBER: 11-11
DATE:
JOB NUMBER: 14-654
PHASE:
COST:
REQUESTER:

MMM Mechanical, Inc.
425 Route 117, Sugar Hill, NH, 03586 603.823.5556

VENDOR
National Sales Company

SHIP TO

PROJECT MANAGER	VENDOR TELEPHONE	TERMS	TAXABLE
			No
F.O.B	SHIP PREPAID VIA	DELIVERY REQUIRED	ALLOW PARTIAL DELIVERY
			No

ITEM NUMBER	VENDOR NUMBER	DESCRIPTION	UM	QUANTITY	UNIT COST	EXTENDED PRICE
LH10020		1X1FT L STRAIGHT HARD COPPER TUBE		3.2034	7.28	23.32
3400		8" 1/8" 150# FF ARAMID/SBR GASKET		0	18.59	0.00
A53 ERW PE		6X1FT .280W A53B ERW 18.97# S40 PE BLK STL PIPE		8.8674	7.74	68.63
010-060-000		6" CS STD WT LONG RADIUS 90 ELBOW		1	124.42	124.42
607		1" WROT CXC 90 ELBOW		1	8.47	8.47
LH10020		1X1FT L STRAIGHT HARD COPPER TUBE		2.9992	7.28	21.83
090-080-060		8X6" CS STD WT CONCENTRIC REDUCER		1	128.46	128.46
607		1" WROT CXC 90 ELBOW		1	8.47	8.47
LH10020		1X1FT L STRAIGHT HARD COPPER TUBE		1.8587	7.28	13.53
607		1" WROT CXC 90 ELBOW		1	8.47	8.47
050-060-000		6" CS STD WT STRAIGHT TEE		1	206.76	206.76
LH10020		1X1FT L STRAIGHT HARD COPPER TUBE		0.2464	7.28	1.79
A53 ERW PE		8X1FT .322W A53B ERW 28.55# S40 PE BLK STL PIPE		5.8125	11.47	66.67
050-080-000		8" CS STD WT STRAIGHT TEE		1	360.69	360.69
A53 ERW PE		6X1FT .280W A53B ERW 18.97# S40 PE BLK STL PIPE		5.9692	7.74	46.20
607		1" WROT CXC 90 ELBOW		1	8.47	8.47
S-595-Y		1" 150SWP/600WOG 3PC SDR BRZ BALL VLV		1	155.70	155.70
607		1" WROT CXC 90 ELBOW		1	8.47	8.47

Screen Capture 4.B - A sample PO