

David E. Quigley

The Contractor's Next Frontier Exchanging Model Data with their Supply Chain

Of all of the opportunities Building Information Modeling (BIM) offers stakeholders in the commercial construction industry, none is more untapped than the exchange of digital model data between the contractor and the firm's supplier network of wholesale distributors.

The first step in tapping into this opportunity lies with the contractor and is important in reframing and changing how they perceive the relationship between themselves and their supply chain. In contrast to years of viewing suppliers as a necessary expense to the construction process, the contractor should consider the value and the benefits of also viewing them as project collaborators and business partners. It is equally important for the wholesale distributor to also consider reframing and viewing their role in a project, not just as a supplier of mechanical products, but as an important project contributor to the contractor's overall Value Chain.

Until recently, one of the stumbling blocks for most wholesale distributors was that they hadn't had access to off the shelf software tools to electronically exchange contractor project data for tasks associated with managing and processing RFQ's and PO's. This is exactly where Harrison Publishing House's (HPH) newest cloud-based software as a service (SaaS) platform, called CINX, could be of great help to both constituents. In addition to being HPH's next generation digital pricing service, CINX (Construction Information Network & Exchange) provides a toolset of data management tools that supports the flow and exchange of model data back and forth between the contractor and his/her suppliers.

CINX was developed to bridge the gap of exchanging digital data quickly, changing what used to take a half day to a few days of manual intervention by a purchaser to create an full project RFQ, and for a supplier's sales person to respond with a quote, to now taking less than an hour for the full RFQ and a completed quote. CINX accomplishes this by eliminating many of the manual data input and mapping steps traditionally used by purchasing managers when processing a project BOM. CINX also, on the wholesale distributor side, eliminates most of the manual copy, paste and mapping traditionally handled by the supply side salesperson. By

eliminating these manual operations, tasks are completed in a fraction of the time once required, reducing human error in the process.

The benefits of using CINX for the contractor include 1) eliminating a large portion of a purchasing department's weekly manual mapping and matching of a project's BOM or MTO to the firm's purchasing database of prices and suppliers, 2) coordinating multiple formats from multiple suppliers, 3) freeing the purchasing department from non-value redundant tasks, allowing them to spend more time researching and delivering "best buy" decisions for the firm, and 4) creating faster turn-around times between submitting an RFQ and receiving a set of quotes.

The benefits to the wholesale distributor include 1) eliminating Fax-based RFQ's and the time spent by the distributor's sales staff to manually input, copy, paste and map an RFQ to the supplier's price sheets, 2) providing more time for the sales staff to be more "customer focused" on tasks that differentiate the firm's services from the competition, 3) automating many internal transactions and processes associated with RFQ's and creating quotes, 4) reducing human errors and 5) for those distributors who do not have an e-commerce solution, providing a state-of-the-industry electronic commerce platform for interacting and connecting directly to the supplier's contractor customer base.

Distributors who include "increasing their customer-focus" as a means for increasing their market share and competitive position in the coming year(s) are the ones more likely to be the first to adopt CINX. These are the type of suppliers who pride themselves in being attentive to their customer and who seek to better understand how to best support and engage in a BIM-driven spatial coordination process with their contractor customer. They are also the type of firm that is willing to adapt their business processes to match their customer's new technologies with services that increase the supplier's value to the contractor. For example,

A contractor using his 3D project model was able to quantify exactly how much threaded pipe of a particular spec and set of systems would be needed and how much it would cost (labor and materials) to pre-fabricate in their shop. Using this information, the contractor contacted a large regional distributor with fabrication capability and compared the two sets of costs. As a result, the contractor ended up out-sourcing to the supplier who delivered fully threaded pre-fabricated material at a much reduced expense. In addition, the price included warehousing the pipe, JIT (Just In Time) delivery of the products when they were needed by the installation teams and to the location (site and level) at exactly the cost quoted (versus waiting for an invoice before the contractor could begin the process of invoicing its customer). The benefit to the contractor was reduced cost for materials, improved material handling,

and a much improved positive cash flow. The benefit to the distributor is a happy customer and one who will return.

This is just one example of a distributor who was willing to fabricate, build, and warehouse commodity assemblies from a contractor's model. Not all will want or need to go this far down the road of integrating with the contractor. There are countless other examples, particularly related to improved material handling, delivery of materials to the job site, and JIT (Just In Time) delivered to the staging location defined within the construction schedule.

In 2013, industry publications reported that wholesalers have focused much of their internal improvements and operations on:

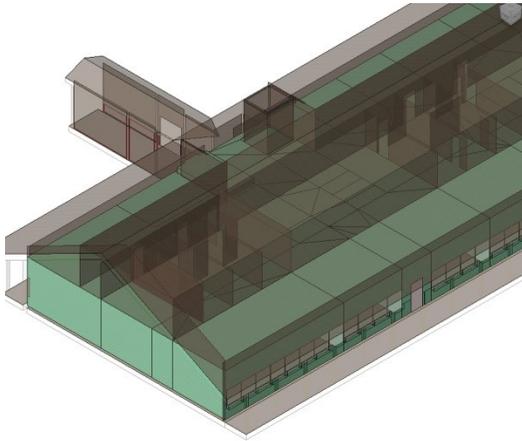
- Reducing costs
- Eliminating internal redundancies
- Increasing productivity

Integrating CINX into a wholesale distributor's operations addresses each of the above three key areas of improvement. By eliminating non-value added manual redundant tasks for its sales staff while automating digital data exchanges with its customer base, a firm will achieve goals set within all three.

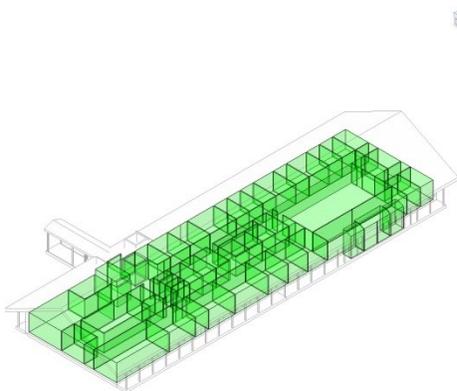
It is also being reported that the overall wholesale distribution industry is going through a significant amount of consolidation. This typically reflects an industry in possible decline. Prices are flattening and, as they flatten, it will be harder for most firms to hide inefficiencies in their businesses. The suppliers who adapt and change, driven to find ways to better manage their costs, will be easy to identify because their prices will be lower than their competitors'. As a result of these hard facts and challenging business conditions, many wholesale distributors have begun to question the basics of their existing business models, such as locking their customers in at the highest sales margin. This is an outdated sales approach and most contractors are more sophisticated and are searching for supplier partners who are building a sales model around collaboration and cooperation. This will spell success for those suppliers who understand that all markets change and the successful participants are those that are willing to make the necessary changes in order to reduce service costs and match service provisions to what the customer requires.

The following are illustrations of the series of steps where data is being exchanged within a contractor's Value Chain and including the CINX exchange of data (Steps 6-8) between the

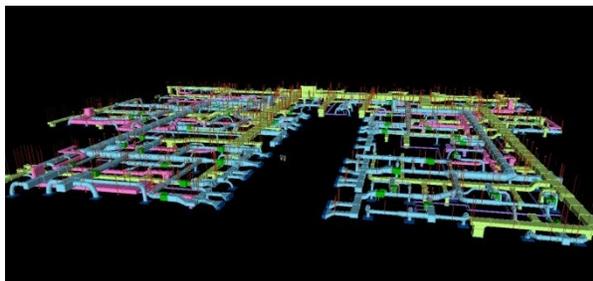
contractor's Virtual CAD Department, the Purchasing Department, and the Wholesale Distributor's Sales Department. Each contains a brief explanation below the illustration.



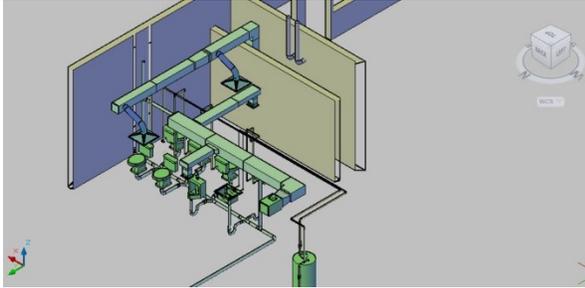
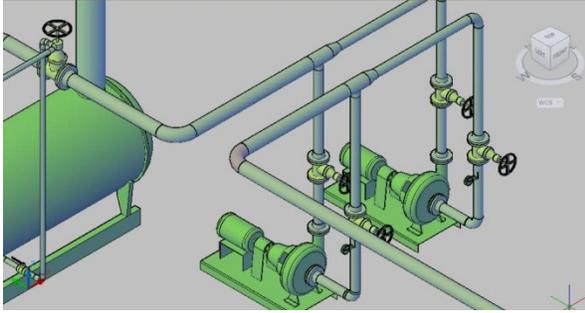
Step 1. LOD (Level of Development) 100 - Representing early stage of conceptual model



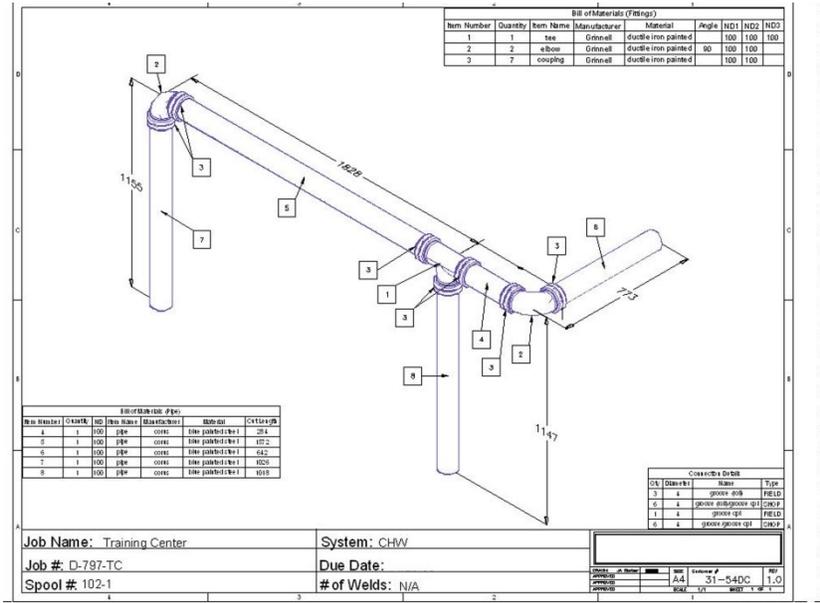
Step 2. LOD 200 - Analyzing space requirements for MEP Design



Step 3. LOD 300 - MEP design passed to Mechanical Contractor from Project Design Team



Step 4. LOD 350 and LOD 400 - Mechanical Contractor 3D detailing
Virtual model for spatial coordination with other trades
and preparation to submit to EOR, purchasing, shop and field



Step 5. LOD 400 – pre-fabrication drawings sent to shop pre-fab department

Pipework											
Item Number	Quantity	Length	Manufacturer	Item Name	Material	ND	Joint 1	Joint 2	Class/Type/Sch	Cut Length	
1	1	3.3	pioneer	pipe	steel black	2.5	groove (roll)	groove (roll)	extra heavy	3.3	
3	1	2.7	pioneer	pipe	steel black	2.5	groove (roll)	groove (roll)	extra heavy	2.7	
4	1	2.1	pioneer	pipe	steel black	2.5	groove (roll)	groove (roll)	extra heavy	2.1	
5	1	27.3	pioneer	pipe	steel black	2.5	groove (roll)	groove (roll)	extra heavy	27.3	
8	1	18.8	pioneer	pipe	steel black	2.5	groove (roll)	groove (roll)	extra heavy	18.8	
10	1	6	pioneer	pipe	steel black	2.5	groove (roll)	groove (roll)	extra heavy	6	
13	1	2.7	pioneer	pipe	steel black	1.5	groove (roll)	groove (roll)	80	2.7	

Spool Fabrication Report												
Item Number	Quantity	Manufacturer	Item Name	Material	Angle	ND1	ND2	ND3	Joint 1	Joint 2	Joint 3	Class/Type/Sch
2	2	victaulic	elbow	ductile iron painted	90	2.5	2.5		groove	groove		-
6	1	victaulic	redecc	steel galvanized		2.5	2		groove	groove		
7	1	victaulic	wyetrue	steel painted		2	2	1	groove	groove	groove	
9	1	victaulic	cross	ductile iron painted		2.5	2.5	2.5	groove	groove	groove	-
11	2	victaulic	cap	ductile iron galv		2.5			groove			-
12	1	victaulic	redecc	steel galvanized		2.5	1		groove	groove		
14	1	victaulic	wyetrue	steel painted		1.5	1.5	1.5	groove	groove	groove	
15	2	victaulic	coupling	ductile iron painted		1.5	1.5		groove cpl	groove cpl		-
16	2	victaulic	coupling	ductile iron painted		2	2		groove cpl	groove cpl		-
17	12	victaulic	coupling	ductile iron painted		2.5	2.5		groove cpl	groove cpl		-

Step 6. LOD 400 - Release authorized by EOR and BOM/MTO taken directly off model by CAD Department and submitted to contractor's Purchasing Department



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

VENDOR

SHIP TO

RFQ

RFQ NUMBER: 9-26-03
DATE:
JOB NUMBER: 14-454
PHASE:
COST:
REQUESTER:

PROJECT NUMBER	VENDOR TELEPHONE	TERMS	TAXABLE	
			No	
P.O.B.	SHIP PREPARED VIA	DELIVERY REQUIRED	ALLOW PARTIAL DELIVERY	
			No	
QUANTITY	UPL PART NO.	VENDOR PART NO.	DESCRIPTION	MANUFACTURER
1	120-060-000		8" 150 CS STD RF WELDNECK FLANGE	Weldbend Corporation
1	607		1" WROT CXK 90 ELBOW	NIBCO, Inc.
1	88		3/4" GAL MALL 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	185 E		3/4" GAL FINISHED HEX NUT	Carpenter & Paterson
1.8587	LH10020		1X1FT L STRAIGHT HARD COPPER TUBE	Mueller Industries, Inc.
0.2484	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		8" 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.
3.5288	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 DELECTRIC 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.

Step 7. Contractor's Purchasing Department imports BOM/MTO directly into HPH's CINX and automatically creates RFQ (or PO).

www.partner.cinx.biz/transactions/org-0000-7068/c6da1c87-5d4b-2cca-3d23-fa34e00286cf/quote/preview



National Sales Company
1533 Delmar Avenue, St. Louis, MO, 63103 314.531.3200

QUOTE TO

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

SHIP TO

Quote

CUSTOMER NUMBER: Q14-07-5874
QUOTE NUMBER: July 02, 2014
EXPIRATION DATE: August 09, 2014

Attn: Edwin MacEwan

CUSTOMER PURCHASE ORDER NUMBER		CUSTOMER RELEASE NUMBER		SALESPERSON		WRITER	
						David Vollenweider	
SHIP VIA		TERMS		ALLOW PARTIAL DELIVERY			
		15/10		No			
ITEM NUMBER	OUR PART NUMBER	DESCRIPTION	UOM	QUANTITY	UNIT COST	EXTENDED PRICE	
W-01622	COPCBFL12	1/2" WROT CXC 90 ELBOW		1	5.00	5.00	
W-02085	COPCBFL112	1-1/2" WROT CXC 90 ELBOW		1	2.00	2.00	
W-02084	COPCBFL114	1-1/4" WROT CXC 90 ELBOW		1	4.00	4.00	
W-01634	COPCBFL34	3/4" WROT CXC 90 ELBOW		1	6.00	6.00	
W-01647	COPL1	1" WROT CXC 90 ELBOW		1	3.00	3.00	
SUBTOTAL						\$ 20.00	
TOLLS						\$ 2.00	
TOTAL						\$ 22.00	

Step 8. Contractor's supplier network responds in minutes with their Quote on the materials.