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INTEGRATING MANUFACTURING (ERP) AND DESIGN (CAD/PDM/PLM) DATA

When Is The Best Time To Implement?

Current release: August 1, 2016

The ROI Challenge: Maximizing the "R", Minimizing the "I"

The ROI Challenge: Maximizing the "R" While Minimizing the "I"

When selecting a new ERP solution, the best business decision is often to include an integration solution for Computer-Aided Design (CAD), Product Data Management (PDM) or Product Lifecycle Management (PLM) data in the ERP system.

Such an investment makes a lot of sense, especially for manufacturing businesses that operate mostly in an Engineered-To-Order (ETO), Built-To-Order (BTO) and/or Made-To-Order (MTO) production environment. Taking an integrated approach (notably the less error-prone bidirectional strategy, as opposed to the low-priced but mush less reliable, export-import method) offers numerous benefits and savings, namely:

Elimination of some costly errors on the shop floor

Although this payback is usually the most difficult to assess ahead of time, it is also most often where the bigger portion of the ROI comes from. Many of us have heard of horror stories about costly manufacturing errors arising from the use of an erroneous or out-of-date, which can be largely eliminated by using a tool that ensures consistency of BoM data throughout the transition from design to manufacturing.

Better yield through the optimization of materials use

Allowing design changes and new orders to get to the shop floor faster translates into significantly reduced scrap, while dramatically shortening lead time. One manufacturer has made recurrent savings of $250,000 on an initial investment of less than $10,000, simply by optimizing raw materials use.

No more redundancy in data entry

Based solely on the elimination of manual transcription from CAD to ERP, a bidirectional CAD-ERP integration solution typically pays for itself within 60-90 days of implementation.

ERP and CAD data always in sync

Instantly communicating design changes from Engineering to Manufacturing usually translates into better collaboration between both functions of the company, as well as increased feedback from both sides. Once again, although this benefit is not easy to quantify, virtually anyone working in any manufacturing business has heard stories where disasters—big and small—could have been avoided with better communication between the people who design the product, and those who actually make it.

Minimal disruption of design changes throughout the production process

Seamless, bidirectional communication and synchronization between manufacturing and engineering data reduces the risk of disruption between all players involved in the manufacturing process. It turns the various changes to the company into smoother and more natural transitions.

The Money Factor

The Financial Factor: Is CAD-ERP Data Integration Really Is a Sound Investment?

Figure 1 presents a typical ROI assessment, based solely on the elimination of manual transcription of data from CAD to ERP. It is important to note that the number of hours represents the time spent on transcription on a **regular** basis. During the implementation phase, where many more brand new Bills of Materials must be created and/or updated, the ROI can easily reach 2-3 times that level, hence the huge benefit of implementing CAD-ERP integration right from the start, thus increasing the ROI accordingly.

Figure 1—Typical ROI assessment, based solely on elimination of manual BoM data transcription

INVESTMENT	
Software purchase	$13,465
First year maintenance	$2,693
Implementation support	$5,000
Total investment	$21,158
COMPANY DATA	
Hours per week spent on manual CAD-ERP BoM transcription	40
Average fully burdened hourly labour cost (per user)	$40
Number of average work weeks per year	50
Total opportunity loss due to labor cost	$80,000
Total opportunity loss due to by transcription errors in BoMs	TBD
Total recurring yearly savings	$140,000
Approximate Payback Period	3.2 Months (97 days)

The Human Factor: Advancing Faster on The Learning Curve

The Human Factor

Implementing a new ERP system invariably changes the business processes, hence the workflows, and eventually the work. This largely explains while some implementations fail, mostly due to inadequate end-user adoption. Involving all departments as early as possible in the process ensures a much better adoption and guarantees a much more successful implementation.

Involving the engineering department is key to adoption, as they are the prime suppliers of manufacturing data and, as such, they should be involved as early as the system design stage, thus having sufficient time, if needed, to make the required changes in their workflows, to be ready when implementation of manufacturing functionality occurs. In other words, the implementation of engineering and manufacturing data integration should be done as early as possible. This gives everyone involved sufficient time to successfully tailor their workflows for when "the gates are opened"- and engineering data flows freely between CAD/PLM/PDM and ERP systems.

And, come to think of it: would we consider rolling out Accounts Receivable and Invoicing without integrating them? If not, why would we consider keeping our engineering and manufacturing Bills of materials in isolated « silos »?

Plan ahead...
... to avoid pitfalls

The Technical Factor: Avoiding The Pitfalls of CAD-ERP Integration by *Planning Ahead*

So you have made the oh! so wise decision of including CAD data integration into your future ERP system? Congratulations! You will be forever thankful to both yourself and the other wise people who talked you into it. Keep in mind, however, that we are talking about the high road to integration. It **needs** to be a two-way street, which means that your ERP implementation will have to be designed, right from the start, taking into account the (often new) business process of sharing engineering and ERP data. With proper consultation from the right people, it should not be a bumpy road - but it must first be traveled at a moderate speed. As always, careful implementation planning, leads to a successful (and highly profitable) implementation. This requires careful planning, otherwise you may end up with two beautiful half-bridges that will never properly connect.

Bottom Line?
Your Bottom Line!

Long Story Short: The Sooner, The Better

The value of the ROI associated with the integration of CAD/PDM/PLM and ERP data is perceivable on many fronts, especially over the implementation phase. During this period, the volume of new data that needs to be created in the ERP system is more significant that which is produced once the initial implementation is complete.

This is why the answer to « When? » is usually « ASAP ». By investing in CAD-ERP integration early on, you will reap greater benefits, for a longer period of time, as well as the flexibility to work with virtually any CAD, PLM or ERP product.

Established in 1979, Elmo Solutions, a subsidiary of IRISCO du Québec Inc., develops and markets software solutions dedicated to the creation, management and diffusion of CAD/ PLM metadata. Its flagship software product is Agni Link, an award-winning CAD to ERP integration solution that supplies a "hot" link through a "live" approach.

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For further information, you may also email the Elmo Solutions team at info@ElmoSolutions.com, or call our toll-free number (North America only): +1-844-4-CAD-ERP (+1-844-422-3377). Outside of North America: +1.418.623.7755.

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