Manufacturer's Technology Playbook

A digital transformation guide to ERP, CRM and BI system infrastructure to support compliance, profitability and supply chain excellence

Contents

“If you’re not moving forward, you’re falling behind” is truer than ever for the manufacturing industry.

The old cliché that “if you’re not moving forward, you’re falling behind” is truer than ever for the manufacturing industry. Firms must continue innovating to stay competitive, and as product life cycles keep shrinking, they need to get their products to market even faster, while keeping margins in mind.

To succeed in this demanding environment, companies must operate more efficiently and increase their productivity. By leveraging cloud technology, manufacturing firms can build comprehensive, swiftly deployable solutions that improve their processes companywide.

A single, unified platform of core business systems — enterprise resource planning (ERP), customer relationship management (CRM) and business intelligence (BI) — provides seamless connections to suppliers and customers, and access to real-time information. This allows firms to streamline their business functions and gain a 360-degree view of their customers’ past, present and future needs.

This digital transformation enables companies to tighten their complex supply chains, design new products more efficiently, intelligently manage their extensive sales functions and respond more quickly to future business demands, all while reducing the burden on their IT staff.

As companies evolve and encounter changing regulations and disruptive forces like blockchain and artificial intelligence, this unified technology foundation can support their changing organizational, reporting and compliance needs.

01

Business Value at Different Life Stages

Although they share fundamental needs, mature manufacturing companies and high-growth newcomers have their own distinct business challenges and priorities for their technology platforms.

When your company is young and growing fast, your strategy is all about execution.

Value for High-Growth Companies

When your company is young and growing fast, your strategy is all about execution. You establish many new relationships with vendors and suppliers, and your focus is on creating new products and getting them quickly through production and distribution to meet customer demand. You need to be able to react quickly to accommodate changing client needs and market shifts and seize new opportunities. Speed is your currency, and profit — although always important — is a lower priority.

Any operational weaknesses you have now will only be magnified as demand for your products increases. At this stage of the game, implementing systems that free employees from manual input of data and various external spreadsheets is most critical. Streamlining key processes such as supplier communication will make it easier for your staff to manage transactions and interact with suppliers.

Most growing companies look for a platform that streamlines management of their operational transactions — buying materials, processing receipts and shipments, paying for manufacturing services and more. While these transactions may start at a modest volume, where the workload of manual processes can be absorbed, forward-thinking companies know that demand can surge.

Laying the foundation to prepare for that growth is key to ensuring the scalability to support it. In some cases, companies will seek automation with a few suppliers initially and plan to roll it out to others over time.

7 Ways Manufacturers Use ERP, CRM and BI Systems to Streamline Business

Anticipate demand trends and determine resource focus

Generate new leads and predict the best business opportunities

Optimize marketing campaigns

Communicate efficiently with vendors and suppliers

Forecast capital requirements and cash flow

Handle quick product life cycles and design revisions

Scale nimbly and manage growth

For young businesses looking to completely automate their processes, establishing best practices from the outset is key. Define specific automation goals, put a backup plan in place and implement your automation initiatives gradually rather than all at once. Focus first on the necessities. Having the right framework in place is more critical than the integration itself at this stage.

The timeframe for implementing an enterprise software platform varies. Some companies can follow a template approach of best practices and business processes and implement a platform in a rapid two- to six-month cycle. Others may use a more tailored and potentially customized solution that takes six to 12 months.

Value for Established Companies

If you're an established company, you also need to forecast trends, market your products and manage your supply chain through quick product life cycles and revisions.

Unlike younger companies, however, you've probably reached a point where you are able to focus on maximizing your system efficiencies and reducing costs. Your growth has stabilized and now you want to get every last cent of profit from your business.

You can't keep throwing additional bodies at manual processes that weren't designed to scale. Rather, you can achieve product and cost efficiencies by identifying opportunities to automate your processes and better integrate with vendors and suppliers.

For example, suppose a vendor ships goods to your company. With a system that enables full automation, your receiving department would get advance notification of quantity, lot and serial number information via electronic data interchange from the vendor. This enables receiving personnel to focus on verification of details, rather than manual tracking and data entry.

On the subcontracting side, automation provides instant confirmation from the supplier that they have executed an operation on a production order and are advancing the material through production, invoicing for the cost of the services, and moving on to the next operation. This synchronizes both the operational and financial aspects of the outsourced manufacturing process while providing complete traceability of the material.

If you don't have an automated system, you have to rely on spreadsheets or other communication from the supplier to determine the status of their production jobs, and your staff has to manually reconcile the financial and inventory transactions — a burdensome task often fraught with errors.

A company may phase in the deployment of its new CRM and ERP solutions' capabilities, or it may opt for more of a "big bang" approach and implement everything at once. A number of factors will influence the timeline and best practice for rollout of the new solutions, including company geographies, product line diversity, operational complexity, legacy application, sunsetting strategy and organizational readiness.

Although some staff oversight is still necessary, you'll save time and money by automating as many operational, reporting and compliance activities as possible, including:

- **Advance shipping notices (ASNs) from vendors, subcontractors and third-party logistics providers (3PLs)**
- **Transfers between vendor-managed or consigned inventory locations**
- **Purchase order invoicing and three-way matching**
- **Rebate and royalties processing**
- **Sales and use tax**
- **Periodic standard cost calculations and roll-ups, and inventory revaluation costing**
- **Product returns**
- **Demand planning, forecasting and tracking to minimize excess and obsolescence (E&O)**

02

Mergers & Acquisitions

Growth through acquisition is a hallmark of the manufacturing industry. The right integrated technology platform can make these transactions easier from organizational, reporting and operational standpoints, whether you're making an acquisition or planning the sale of a business unit.

Assess the newly acquired business alongside your own and identify opportunities to drive additional value from the acquisition.

What Buyers Need to Consider

When your company is making an acquisition, it's important to complete a thorough due diligence process to determine how to best integrate the two businesses and align your people, processes and technology.

Assess the newly acquired business alongside your own and identify opportunities to drive additional value from the acquisition. Are there collaborative marketing opportunities you can utilize? What about complementary product lines? How can you achieve economies of scale?

Developing a technology strategy based on the right intersection of people, process and technology creates a solid framework that aligns the two companies with your future goals.

You also need to assess whether your ERP, CRM and related business applications are capable of supporting any legacy business requirements that may come along with that new acquisition. What you don't want is to have a solution that is so inflexible that it requires a re-implementation to support the new company you're bringing in.

An integrated platform provides the necessary organizational flexibility and makes it easy to either fold the acquisition into an existing entity or adjust the corporate reporting structure. It allows you to add a new entity or series of entities — including consolidations and elimination entities — at any point in time.

On a day-to-day level, your finance team needs reporting that enables them to manage regulatory compliance and also supports a higher-level analysis of the overall business. You don't want to have to compromise your monitoring of existing reports and metrics when you bring in a new entity. Because of the acquisition, you may also need to add visibility into metrics that you weren't monitoring before, such as:

- Inventory turns
- Leads/opportunity pipeline growth or shrinkage, potentially cross-referenced against overall market performance
- Expense management and budget-to-actual indices

Your business intelligence (BI) structure must be capable of supporting multiple entities and adjusting to changes in corporate structure. Agility is key, and your BI strategy and framework need to support inorganic growth and allow you to fold in new business units, entities and markets for reporting, charting, trending and KPI analysis.

From a supply chain and operational standpoint, you need a robust ERP solution that allows you to handle intercompany buy-sell activity and any kind of markup involved. Manufacturing companies often make acquisitions to vertically or horizontally integrate their business, so having the ability to manage intercompany trade and planning is critical for operations.

For example, a company may elect to funnel all sales activity through a single "shell" entity, where all customer purchase orders are entered as sales orders. The fulfillment of these orders requires intercompany purchases from various other corporate entities, which in turn creates intercompany sales order obligations for those additional entities to fulfill.

Often, the shell nature of the sales entity requires direct delivery to the actual customer without physically shipping the goods to the centralized sales entity. This means that intercompany direct delivery is necessary, but intercompany accounting must still apply, such that the purchase/sale of inventory between entities is executed financially with appropriate accounting in the relevant entities for accounts receivable, margins, commissions and so on.

You will also benefit from a system that allows you to create additional entities.

What's Important for Sellers

If your strategy involves selling part of your business, providing trustworthy, auditable financial statements on a proven ERP system adds value to the sale and makes it more trusted and turnkey upon acquisition.

You will also benefit from a system that allows you to create additional entities, even when you are not required to do so for compliance reasons. This capability enables you to do reporting and analytics by business segment or practice area, and to segregate information for a particular entity. A nimble BI solution and strategy gives you the flexibility to highlight relevant metrics, and having this focused data makes it easier to position the unit for a sale.

From an execution standpoint, a sale requires you to roll an entity out of the corporate structure. So you need a system that allows you to segregate the unit and remove it from any elimination or consolidation framework that you have in place. Nimble solutions can save valuable time — a luxury most do not have in these environments — and get you to a successful divesture more quickly and effectively.

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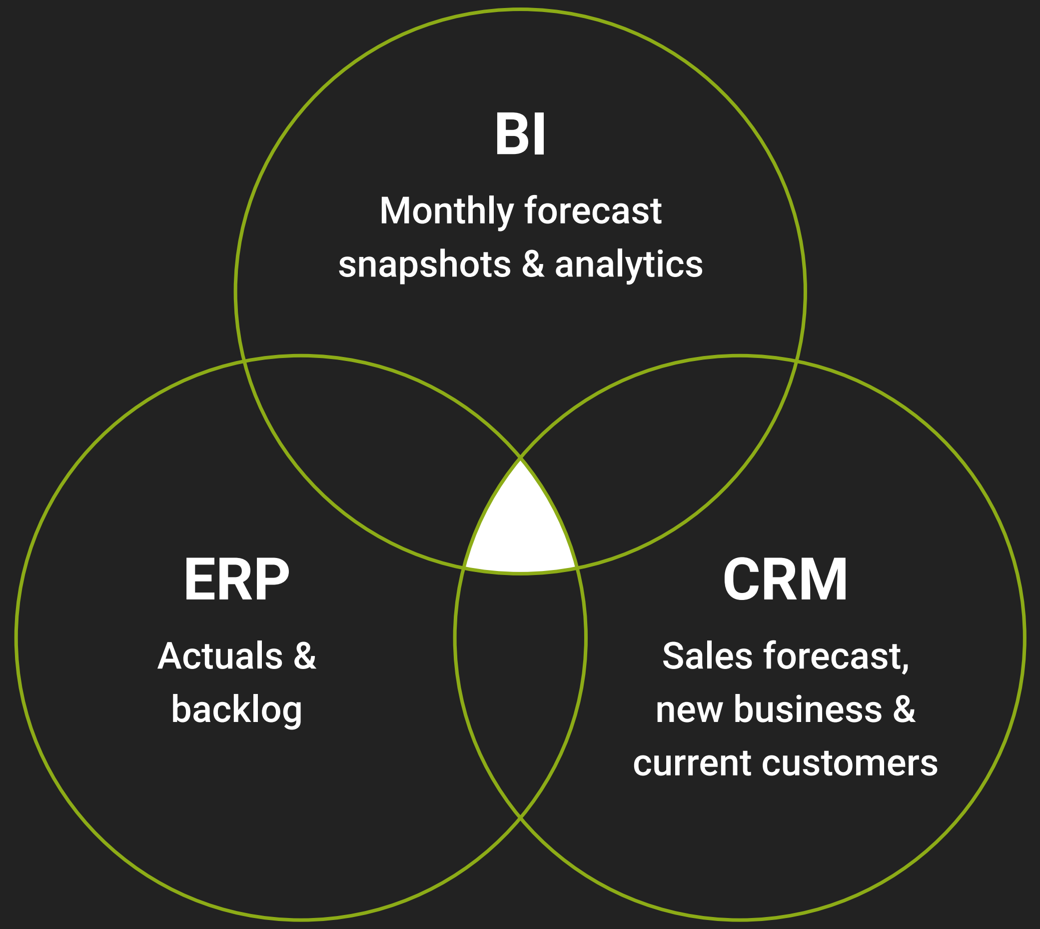
The Value of Integrated Systems

If your front-office systems (for sales, marketing and other customer-facing functions) and your back-office systems (for accounting, tracking, fulfillment and operations) can't communicate, you end up with silos of information.



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As a result, your daily business processes can't run seamlessly. Executing an order-to-cash process, for example, may involve much paper and manual transfers of information as the order makes its way from department to department.

Systems integration removes these silos, so you can streamline your processes and enable your employees to do their jobs more efficiently, using whatever interface they need. It also gives you clear visibility into your business, from the moment a quote is approved until you collect payment.

System integration begins with a unified ERP. For manufacturing companies, it's particularly important to implement an ERP that enhances your key manufacturing-specific systems. These systems may include:

1 Custom manufacturing systems

A custom manufacturing system is designated for a specific product line, typically one designed or engineered to order for each customer. Every job and every product is different. As such, custom manufacturers must determine how to maintain their customization capabilities while optimizing profitability and maximizing efficiency. By implementing an industry-specific ERP that integrates with your custom manufacturing system, you can offload tedious, error-prone tasks such as reconciling costs and tracking resources and suppliers and devote more time to product preparation and customization.

2 Intermittent manufacturing systems

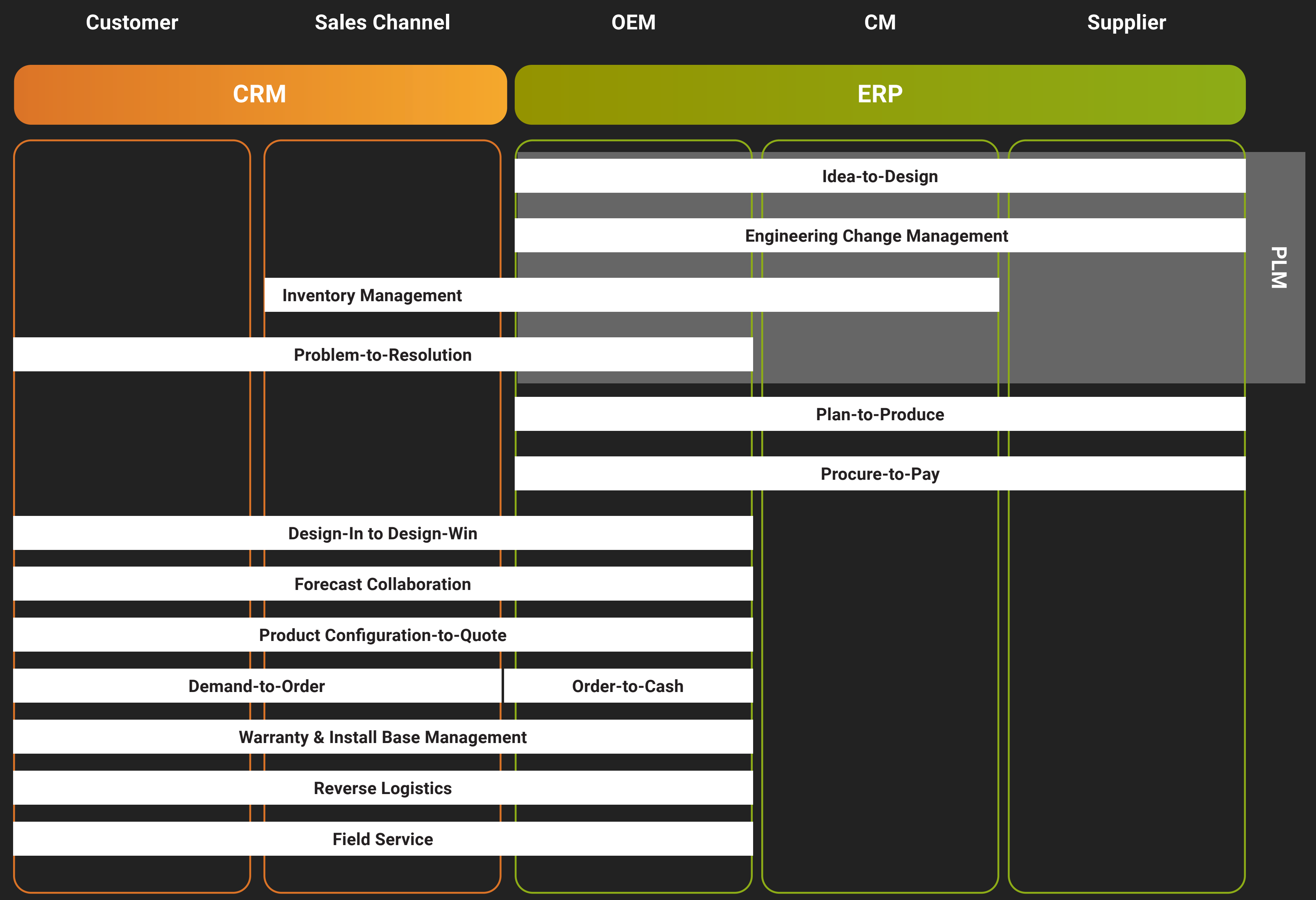
Intermittent manufacturers follow irregular production schedules to produce different types of products using one production line. Organizations using intermittent manufacturing systems can benefit from flexible, modern ERP systems that can be used to respond to ongoing changes in their product type, volume or business environment.

4 Continuous manufacturing systems

Continuous manufacturing systems are marked by their end-to-end, uninterrupted production. An ERP can monitor every aspect of this process, from process coordination to payroll to quality control.

3 Flexible manufacturing systems

A flexible manufacturing system favors robotic and automated processes in lieu of human labor. With a flexible manufacturing system, companies place a heavy investment in machines that keep production high and costs low. An industry-specific ERP can contribute to this pursuit of automation, eliminating manual processes and bolstering efficiency.



The Value of a Data Warehouse

To run their businesses efficiently, manufacturing companies need to know what a customer has done in the past, what they are doing now and what they are likely to do in the future. A sales representative might need data on a client's purchase history and habits, for instance, when preparing for a client visit.

To get this 360-degree view of the customer, you have to be able to pull information from different internal and external systems. This can be a challenge, particularly when you are bringing together systems after an acquisition, or when you are importing point-of-sale (POS) or other external data.

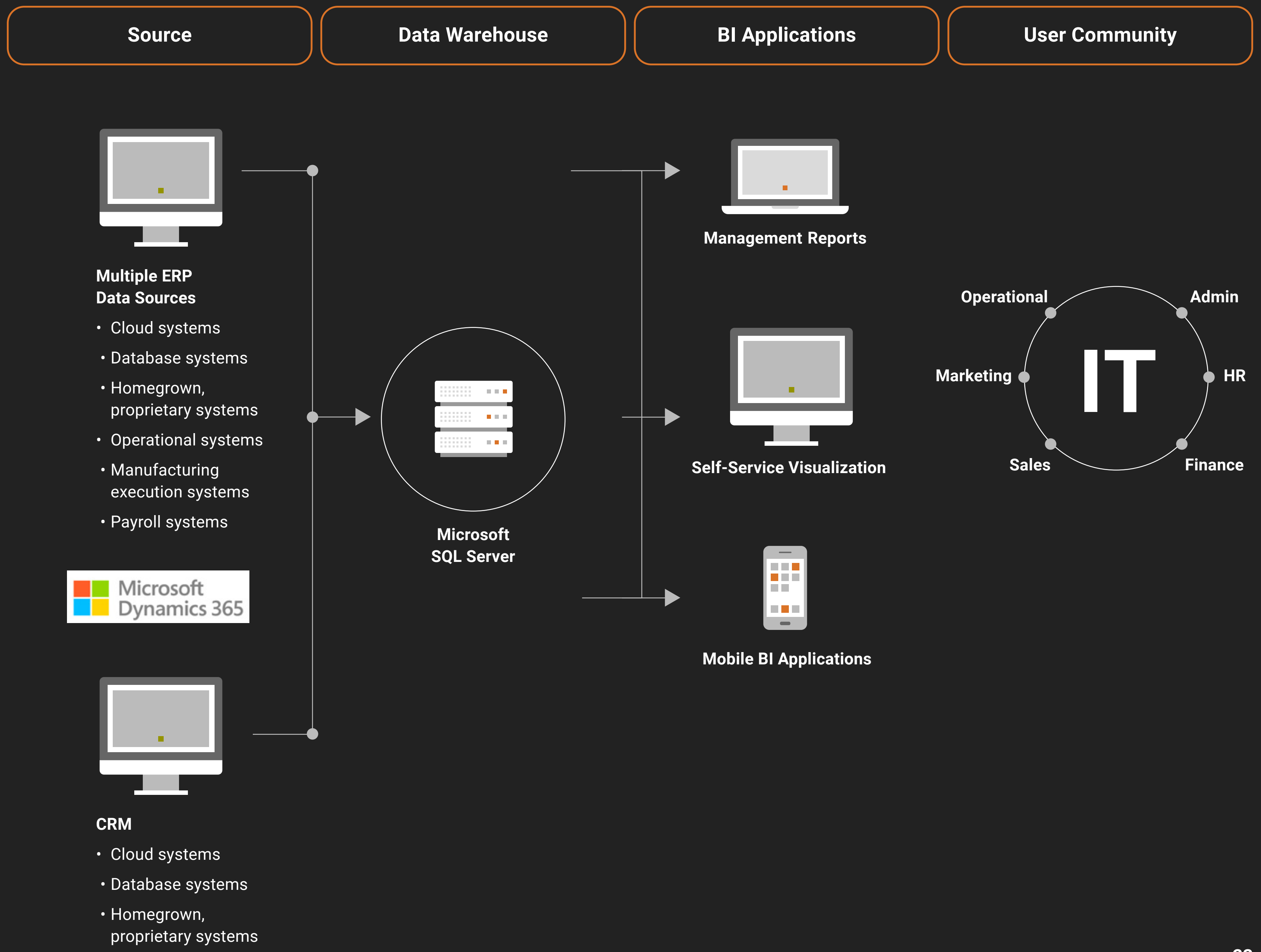
The solution? A data warehouse — a database that is specifically designed to collect and combine data from multiple transaction systems and is tuned precisely to meet the reporting and analytics needs of an organization.

A data warehouse is key to deriving analytics from transactional data across your various systems. It is instrumental in delivering a single version of the truth and provides the foundation for rapid, self-service, speed-of-thought analysis and reporting. It enables you to combine data from multiple systems, including legacy databases, to create one master record of the customer that is shared across systems and supports analytics, reporting and other BI functions. Further, a data warehouse allows deployment of a future-state ERP/CRM platform with data mapping from legacy data to enable period-over-period analysis and key decision-making.

For example, when a distributor sends you their POS information, it can be difficult to link their end-user customer names with your own customer names. A data warehouse provides you the mechanism to build a business logic around how to import that data so that you can use it.

As you import POS data from different distributors, the data warehouse can also apply matching machine learning to figure out where a customer record should go, whether you have to create a new record and other details.

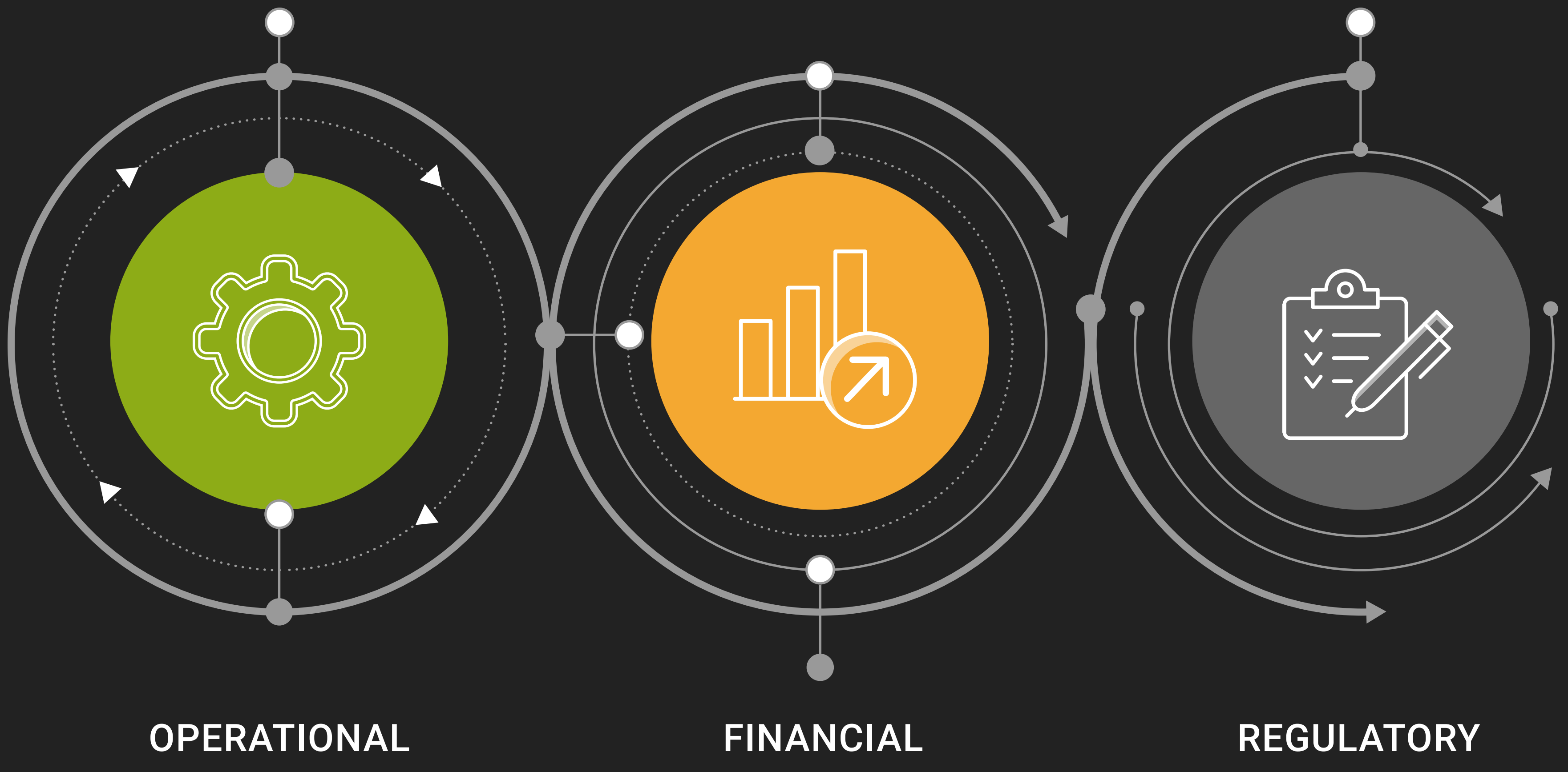
This environment enables manufacturing firms to track and analyze metrics that are critical to their business, such as bookings, backlog and billings (BBB). Shared data provides the foundation needed for these real-time analytics, allowing you to look at BBB by channel, territory, customer segment and product line, among other factors and measure these results against your target goals.



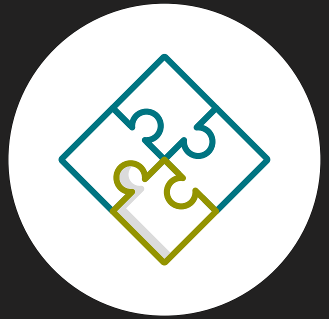
04

Top 10 System Challenges

Manufacturing companies struggle with a wide range of operational, financial and regulatory issues. The following ten areas demonstrate how an industry-specific ERP solution addresses these challenges.



1 M&A Activity



Challenge: Complex Transactions
Mergers and acquisitions can be overwhelming and complex, and it can be difficult to keep track of all of the moving parts.

Solution
The right ERP platform can make transactions easier from organizational, reporting and operational standpoints, whether you're acquiring or planning a sale of a business unit. System flexibility and agility enables rapid migration of newly acquired entities as well as value creation through shared services models.

2 New Product Instructions

Challenge: Market Visibility
Manufacturing companies must always keep innovating. The product development process is long and costly; however, companies have to get it right. They need to be able to forecast trends and analyze ROI on an ongoing basis, and they must also be able to re-evaluate their parameters in response to market shifts.

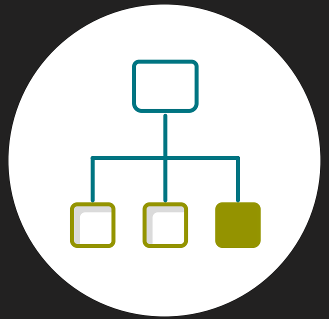
Solution
An industry-specific ERP solution provides a more streamlined method for forecasting trends. It enables you to gain visibility into your market and gain insights that can influence new product decisions from a design and engineering standpoint.

3 Pricing & Distribution Complexities

Challenge: Pricing Variation
Manufacturing companies generally sell their products through distributors, using a complicated mix of tiered pricing, rebates and discounts that may be negotiated with the distributor or with the end customer. The high degree of pricing variation makes it difficult for companies to manage discounted or bundled pricing, handle reporting and determine royalties.

Solution
Manufacturers need to maintain pricing based on a complicated mix of tiered pricing, special pricing agreements, rebates and discounts that may be negotiated with the distributor or with the end customer. Some may also need distribution sell-through management capabilities to recognize revenue only when a unit is sold to the end customer.

4 Sampling & Evaluation Units



Challenge: Controlling Sample Distribution Process
Companies need to be able to ship samples to customers and prospects, and have their accounting accurately reflect their reduced margin or loss on the goods. They also need to strictly differentiate the samples from the regular sales orders, so that they can monitor and potentially limit sampling levels.

Solution
Use sample-specific order types to enable better control of the sample distribution process. This process allows manufacturers to set the quantity and pricing for test samples and ensure that physical inventory is updated and accounting segregation is maintained within the general ledger.

5 Supply Chain Insights

Challenge: Meaningful and Actionable Reports

There is a high degree of outsourced manufacturing in the manufacturing industry, and many companies leverage multiple suppliers to spread their risk. To maintain margins and meet deadlines, companies need to closely monitor supplier performance and manufacturing cycle times.

Solution

The Microsoft product Supply Chain Insights enables visibility that allows you to quickly correct for supply chain disruptions to delivery, quality and yield, while keeping track of how each supplier is performing. Strong reporting is necessary to help you understand performance on a supplier-by-supplier basis and see how individual suppliers perform based on nominal expectations.

6 Export Compliance & Regulatory Controls

Challenge: Compliance Controls

Manufacturers have an increasing need to see and control where and how their products are being distributed. Companies must manage a growing list of compliance and regulatory issues, such as conflict minerals regulation, denied parties lists, trade bans and general data protection regulations (GDPR).

Solution

Institute compliance controls around regulated products, jurisdiction exclusions or inclusion lists, the country of origin and ever-evolving regulatory requirements.

7 MES/MOM Integration

Challenge: Creating a Single System of Record

Manufacturers need to be able to take information from their manufacturing execution system (MES) and reflect that same level of detail in their ERP system. If they can't integrate the two systems, they're forced to manually input data. This is time-consuming, increases the risk of errors and can mean that they have to compromise the level of visibility they provide in ERP, from both a real-time and a reporting standpoint.

Solution

Integrate your ERP with your specialized MES or MOM system to align the inventory control and costing in your ERP solution with your purpose-built manufacturing systems. Achieve real-time integration through modern APIs and a live dashboard to track integration event history and error handling.

8 Supply Chain Integration & Real-Time WIP Visibility

Challenge: Supply Chain Integration

Companies that outsource can only plan as fast as they can get data from their suppliers on the status of their orders, the yield and so on. One of the top bottlenecks they face in the planning process is the lack of insight into their supply chain.

Solution

Supply chain integration and real-time WIP visibility enables integration with supply chain partners, allowing you to receive electronic updates for near real-time work in progress (WIP) visibility. View the status of items and yields in real-time, move them through WIP, split lots, request lot changes, see if an expected out-of-date moves up or down, see when products have left one supplier and arrived at another, and receive updates from 3PLs.

9 Integration to PLM Systems

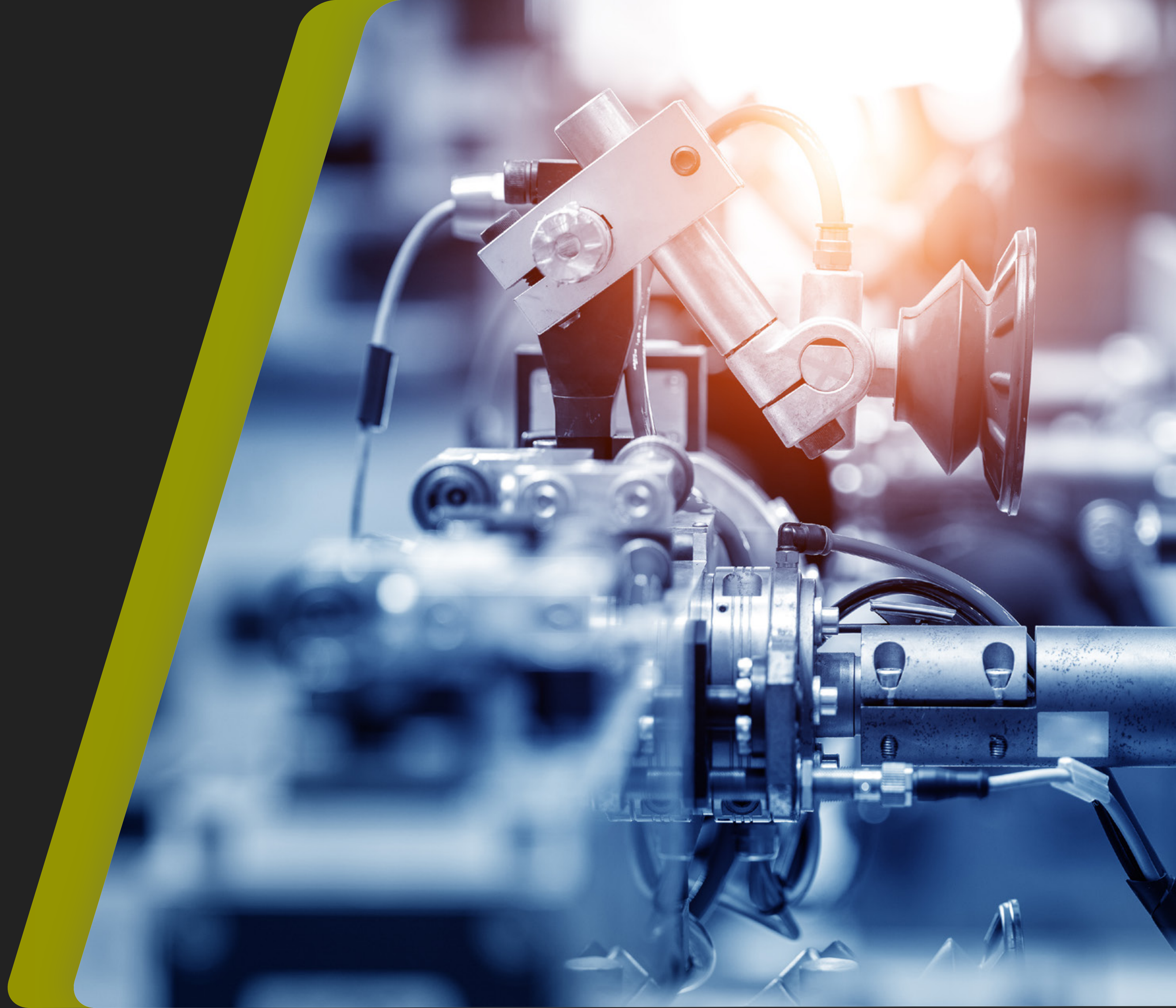
Challenge: Accurately Evaluating Errors
Depending on their various complexities, manufacturing companies may use best-of-breed product lifecycle management (PLM) applications. They need to be able to manage bills of materials and engineering changes in PLM and then tie that information back into their ERP system, so that their engineers don't have to go into the ERP system and make manual changes. Integrating the two systems so that you have a seamless, bidirectional flow of information is critical.

Solution
Integrate your ERP with your PLM system using a standardized API framework and enable your company to manage your product life cycle through engineering, release to manufacturing, changes and phase out with master data in alignment. This simplifies the physical integration process and provides you with a centralized "single system of truth."

10 Complex Lot/ Serial Traceability & Inheritance

Challenge: Comprehensive Traceability
Due to the critical nature of many manufacturing products, it's essential that manufacturers can track the history and genealogy of specific parts or a set of parts through receiving, production and distribution.

Solution
Mitigate risk and achieve comprehensive traceability with the ability to assign lot and serial numbers that are inherited from the raw material lots, through assembly, finished goods, returns and service or repairs.



05

Building the Business Case for a New ERP

This chapter covers three straightforward, effective ways to build your business case for instituting a best-in-class IT infrastructure. By laying this foundation, your company will be better able to manage all aspects of its day-to-day business, from sales and operations to finance.

Technology is key to transformation.

Link Your ERP Initiative to the Company Plan

Investing in the right ERP software is an invaluable way to prepare for future growth and transform the way you do business. Preparing a compelling business strategy can help you gain buy-in and commitment from other executives and business leaders.

Armanino's CFO Evolution® 2.0 research has shown that in today's environment of constant change, company decision-makers are expected — and want — to play a more strategic role to help their organizations transform and succeed.

Technology is key to transformation, and all decision-makers must help articulate the drivers and business problems a technology investment will solve. Linking your recommendation to invest in ERP to your organization's strategic goals will demonstrate your grasp of, and focus on, strategic priorities.

Start by critically assessing your current technology and defining your future business needs and system requirements. This will enable you to align your technology to your growth and create a deliberate, realistic roadmap for your ERP journey that lays out the steps needed to integrate platforms, eliminate manual tasks, etc.

A new ERP implementation is an opportunity for widespread operational change and process improvement. The prospect of improved financial and operational functionality is enormously valuable to any organization preparing for an IPO or merger/acquisition, poised for rapid growth or geographic expansion or looking to save money through greater efficiencies. That said, to secure the investment necessary for this major undertaking, expect your CEO and board of directors to hold the new ERP implementation project leadership accountable for its realization.

Anticipate that bonus compensation for the key project leaders will be tied to the bottom-line impact the new ERP initiative has on the entire organization. In turn, align finance and operational staff compensation and incentives around the successful implementation and adoption of the new ERP solution in support of your company's priorities.

Include Improved Internal Controls in Your Scope

Manufacturers must navigate a growing list of regulatory compliance controls implemented by regulatory frameworks like the FDA, ISO and ITAR. Therefore, you have an increasing need to see and control where and how your products are being distributed. An industry solution with built-in functionality that enables your organization to institute compliance controls around regulated products, jurisdiction exclusion or inclusion lists, the country of origin and ever-evolving regulatory reporting requirements is essential to the continued success of your business.

Perhaps most important to public companies or those preparing for IPO, a modern ERP system's automated controls (e.g., segregation of duties in the system, standardized processes and workflows) provide management and investors an increased level of confidence and assurance around the reliability of their financial reporting.

Adding an integration component will also be invaluable to achieving a centralized system. Ensure your team realizes that by integrating ERP with CRM, your sales team can create quotes that are then pushed into the ERP for fulfillment — reducing errors and creating an end-to-end system.

Establish Well-Defined, Measurable Objectives

To set a clear expectation of what a successful ERP implementation will look like, define SMART (specific, measurable, achievable, realistic, time-related) objectives for each of the key solution elements. By providing the desired and needed accountability to the CEO and board, you've created a shared vision for the project team to work toward.

At Armanino, we begin each ERP implementation with a mutual understanding of our client's critical business objectives. For the ERP project objectives to support the strategic plan of the business, they have to be defined at a level of detail that is actionable. Here are some examples of project objectives that are too vague and others that are quantitative.

The key business objectives for your project will always be specific to your circumstances but usually fall into some common categories.

Vague Project Objectives	Actionable, Measurable Project Objectives
Improve productivity	Automate processes prone to human error, eliminate redundant steps, refine roles and realign resources to perform higher value work.
Retire old software systems	Consolidate 10 software applications, establish a business intelligence strategy and integrate applications to the cloud.
Meet reporting requirements	Produce reliable financial statements consistent with GAAP and IFRS that are suitable and available for the organization and appropriate for the reporting period.

New skill development is one common example of people-related project objectives. Also keep in mind that a new ERP system implementation provides the opportunity for organizational culture change. It forces a cross-functional redefinition of core business processes and brings finance and operations teams out of their silos to develop joint approaches. As the project leader, you have the opportunity to handpick team members to participate in the ERP implementation. They will become your change agents and champions for collaboration throughout the entire organization.

Using technology to automate new and improved "best practice" business processes is another category of relevant ERP initiative objectives. When proposing a new ERP system, it's easy to point to modern software and say that it will make your organization more efficient and productive.

You might also suggest that a new ERP software solution will provide the data to help executives speed their decision making and take advantage of market opportunities. For instance, Nucleus Research completed a detailed analysis of the costs and benefits of implementing Dynamics 365 for a composite organization. They found that, over the course of three years, for every dollar spent a company realized an average of $16.97 in returns.

Governance objectives are your internal controls objectives (as described above). These include ERP-related, implementation and operations, best practice and regulatory compliance, financial operations and IT controls. Objectives specific to the ERP implementation project itself (on time, on budget, high quality as expected, etc.) fall under the IT project objectives sub-category.

Invest in a Platform

By investing in ERP technology, manufacturing companies are better positioned to take advantage of a wide array of business applications that work alongside each other to build unparalleled value for manufacturers.

With the right ERP technology, your organization can:

- **Gain a single source of truth** to improve profit and business control. A modern platform provides visibility to critical data and flexibility for your evolving, industry-specific needs.
- **Achieve multi-faceted planning and automated processes** by combining finance and supply chain under one platform. This enables your organization to adapt and optimize across the end-to-end value chain.
- **Grow from operational efficiencies and optimize fluctuating costs** by using an integrated platform to see — and quickly adjust to — changing financial and supply chain statuses.

IT investments, particularly large-scale ones like ERP implementations, are often regarded as risky at best. A new ERP solution will have a long-lasting impact on the culture, productivity and profitability of your organization.

By taking the three steps outlined in this chapter, you are making the commitment to your CEO, your board of directors, and — perhaps most importantly — your entire finance and operations team that you will work hard to achieve the clear bottom-line objectives for your ERP project's success.

IT investments, particularly large-scale ones like ERP implementations, are often regarded as risky at best. A new ERP solution will have a long-lasting impact on the culture, productivity and profitability of your organization.

About Armanino

Armanino LLP is an award-winning Gold Certified partner for Microsoft Dynamics 365 ERP and CRM solutions, partnering with a reputation for developing innovative solutions for the manufacturing industry. Our approach to digital transformation is through **DataVue**, a holistic methodology to elevate your company's strategic digital vision to unparalleled heights. At Armanino, we deliver the tools you need to focus on your customers and grow. Let us bring industry knowledge, Dynamics 365 expertise and business strategy to your next project.

For further information contact:

Chris Moore
Partner | Armanino Advisory LLC
Chris.Moore@armanino.com
408 712 1893

Jeff Russell
Partner | Armanino Advisory LLC
Jeff.Russell@armanino.com
925 498 1974

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