A digital transformation guide to ERP, CRM and BI system infrastructure to support compliance, profitability and supply chain excellence.
The old cliché that “if you’re not moving forward, you’re falling behind” is truer than ever for the high-tech 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, high-tech 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.
Business Value at Different Life Stages
Although they share fundamental needs, mature high-tech companies and high-growth newcomers have their own distinct business challenges and priorities for their technology platforms.

Value for High-Growth Companies

When you’re young and growing fast, your strategy is all about execution. You establish many new relationships with vendors and suppliers in a short period of time, 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.
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.

Most growing companies look for a platform that streamlines management of their operational transactions—buying materials, processing receipts and shipments, paying for manufacturing services, etc. 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.

Young businesses generally aren’t ready to completely automate their processes. One reason is that automation of transactions through integration requires additional work on the supplier’s end, and a company may not be generating enough volume for their suppliers to agree to implement automated feeds. Young companies also need to focus first on the necessities, and 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
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 error.

A company may phase in the deployment of its new CRM and ERP solution’s capabilities, or it may opt for more of a “big bang” approach to the deployment and implement everything at once. A number of factors will influence the timeline and “best practice” for rollout of the new solution, 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)
Mergers & Acquisitions
Growth through acquisition is a hallmark of the high-tech 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.

**What Buyers Need to Consider**

When your company is making an acquisition, you need to be able to make quick changes to your corporate reporting hierarchy. 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:

- Bookings, billings and backlog (BBB), with a focus on segment performance (regions, business units, product lines and more)
- 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. High-tech companies often make acquisitions in order 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.

**What's Important for Sellers**

If your strategy involves selling part of your business, you will 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.
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. 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.
For high-tech companies, this translates into improvements in key industry-specific capabilities, as well as core business processes. These key capabilities include:

1. **Forecast management.** You can pull in external point-of-sale (POS) data from distributors, tie it into your systems and analyze it to forecast demand, so that you can determine how much to produce in the next three to six months.

2. **Connected field service.** Product maintenance/repair services are scheduled with a field service technician in the CRM system. The technician can then use their mobile device to order replacement parts onsite, or to bill their time and invoice the customer for the service call.

3. **Samples management.** Your customer can request a sample from a website, and the request automatically goes from the website into your CRM system. The salesperson can view and approve the order and electronically send it off to accounting, which approves it and automatically sends it to fulfillment. Meanwhile, all the information flows back to the salesperson, so they can make sure the samples are shipped on time and arrive on schedule.

4. **Distributor relationship management.** Distributors and manufacturer’s representatives can log opportunities, record accounts and contacts, request samples and submit return material authorizations (RMAs), etc. via a portal. This makes it easier to manage these many relationships and respond quickly to your markets and customers.

5. **Customer self-service.** End customers can use a portal to access knowledge base product and troubleshooting information or submit a case, which can then be automatically routed to a technical specialist. This helps you meet service-level agreements, improve your customer service and contain costs.

The right platform of integrated systems also enables you to easily integrate new functionality down the road. You may want to add business intelligence for analytics, for example, or connected field service capabilities that leverage the Internet of Things (IoT) with predictive signals that enable you to schedule preemptive repair and replacement. This flexibility allows you to evolve on your own terms.
The Value of a Data Warehouse

To run their businesses efficiently, high-tech 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 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 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, etc.

This environment enables high-tech 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, product line, etc. and measure these results against your target goals.
Top 9 System Challenges
High-tech companies struggle with a wide range of operational, financial and regulatory issues. The following nine areas demonstrate how an industry-specific ERP solution such as Armanino’s High-Tech Industries for Microsoft Dynamics 365 addresses these challenges.
1  New Product Introductions

CHALLENGE: Market Visibility
High-tech 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 market 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
Armanino’s High-Tech Industries for Dynamics 365 provides a more streamlined way of forecasting trends. It gives you visibility into your market and provides insights that can influence decisions from a design and engineering standpoint.

2  Pricing and Distribution Complexities

CHALLENGE: Pricing Variation
High-tech 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
Using a high-tech solution, you can maintain pricing based on the end customer and manage discounts on sales orders, without “kitting.” This means that all items can be picked, packed and shipped as individual parts, but then discounted later using bundled pricing.

Built-in functionality also allows you to manage end customer, sold-to, ship-to, and bill-to designations for sales orders.
### Sampling and 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**

Armanino’s High-Tech Industries for Dynamics 365 has sample-specific order types that give you better control of the sample distribution process. This 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 for accounts receivable and cost-of-goods sold (COGS), for example.

### Supplier Performance Monitoring

**Challenge:** Meaningful and Actionable Reports

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

**Solution**

A high-tech solution 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 can help you understand performance on a supplier-by-supplier basis and see how individual suppliers perform based on nominal expectations in order to enact a comprehensive sourcing strategy.
5 | Export Compliance and Regulatory Controls

**Challenge:** Compliance Controls
High-tech 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**
An industry solution has built-in functionality that enables you to institute compliance controls around regulated products, jurisdiction exclusion or inclusion lists, the country of origin and ever-evolving regulatory reporting requirements.

6 | MES 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**
Armanino’s High-Tech Industries for Dynamics 365 has the flexibility to enable you to integrate MES and ERP and create a single system of record. We have extensive experience with MES solutions such as Camstar and Wonderware.
Supply Chain Integration and 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**
To address the challenges associated with varied and complex supply chains, Armanino’s High-Tech Industries for Dynamics 365 includes a built-in supply chain integration tool that allows supply chain partners to interface with your system and send electronic updates through various EDI, XML, .CSV, .XLS, and other file formats, regardless of what systems they use.

This eliminates the need for manual monitoring and purchase order and production order updates, and allows you to visit transactions and activities in real time. This also enables a crawl, walk, run approach with supplier integration whereby you can utilize varying degrees of sophistication and pure automation in your integration efforts between different suppliers.

You can view the status of production orders and production yields, move them through work in progress (WIP), split lots, request lot changes, have early insight into whether the expected-out quantity or date moves up or down, see when products have left one supplier and arrived at another, and even get updates from third-party logistics providers (3PLS). The supply chain integration tool can be rolled out and maintained by in-house power users, which makes integration a cost-effective option.
**8 Integration to PLM Systems**

**CHALLENGE:** Accurately Evaluating Errors
Because of their sophisticated engineering processes, many high-tech companies 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**
A high-tech solution gives you the flexibility to integrate ERP with PLM without extensive development and testing, and enables you to evaluate errors and rectify any issues. This simplifies the physical integration process and provides you with “one version of the truth.”

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**9 Complex Lot/Serial Traceability and Inheritance**

**CHALLENGE:** Comprehensive Traceability
Due to the critical nature of many high-tech products, it’s essential that manufacturers have the ability to track the history and genealogy of specific parts or a set of parts through receiving, production and distribution.

**SOLUTION**
With an industry-specific solution, you can achieve comprehensive traceability and assign lot and serial numbers that are inherited from the raw material lots, through assembly, to finished goods—all while ensuring cradle-to-grave and install base traceability.
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.

**Link Your ERP Initiative to the Company Plan**

Armanino’s CFO Evolution® 2.0 research has shown that in today’s environment of constant change, CFOs are expected — and want — to play a more strategic role to help their organizations transform and succeed. Technology is key to transformation, and the CFO 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, in order 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

High-tech manufacturers must manage a growing list of regulatory compliance issues, such as conflict minerals regulation, denied parties lists and trade bans. 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 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 our ERP implementations with a mutual understanding of our clients’ critical business objectives. In order 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.

<table>
<thead>
<tr>
<th>Vague Project Objectives</th>
<th>Actionable, Measurable Project Objectives</th>
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<tbody>
<tr>
<td>Improve productivity</td>
<td>Automate processes prone to human error, eliminate redundant steps, refine roles and realign resources to perform higher value work.</td>
</tr>
<tr>
<td>Retire old software systems</td>
<td>Consolidate 10 software applications, establish a business intelligence strategy and integrate applications to the cloud.</td>
</tr>
<tr>
<td>Meet reporting requirements</td>
<td>Produce reliable financial statements consistent with GAAP that are suitable and available for the organization and appropriate for the reporting period.</td>
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The key business objectives for your project will always be specific to your circumstances but usually fall into some common categories.

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 hand-pick 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. There are any number of studies to back you up. For instance, Forrester Research, Inc. completed a detailed analysis of the costs and benefits of implementing Dynamics 365 for a composite organization. The three-year risk-adjusted ROI was 92% over a payback period of 21 months. Furthermore, a recent Ovum Research study revealed Microsoft as the preferred ERP vendor for enterprise organizations.

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.

**MICROSOFT PREFERRED VENDOR FOR NEXT INVESTMENT IN ERP FOR GLOBAL ENTERPRISE ORGANIZATIONS (>$1B)**

![Graph showing Microsoft as the preferred vendor for ERP investments]
Investing in a Platform

By investing in Microsoft technology, high-tech 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.

Because Microsoft uses the same framework for core applications, IT can eliminate the need for specialized skillsets often required to support a wide variety of disparate technologies. This also enables easier user acceptance throughout different Windows applications by centralizing authentication and security across the network, using single sign-on and user profiles for BI, ERP, CRM, SharePoint, Office and more.

Benefits can also be realized at the user level. With a familiar look and feel throughout applications, you can reduce training time and increase adoption rates while providing a seamless user experience.

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.
About Armanino

Armanino is a Gold Certified Microsoft Dynamics 365 ERP and CRM Partner with a reputation for developing innovative solutions for high-tech manufacturers. Let us bring industry knowledge, Dynamics 365 expertise and business strategy to your next project. At Armanino, we deliver the tools you need to focus on your customers and grow.

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