



Executive Insight



in association with



Manufacturers in a world of constant change

Why ERP modernization could yield
the ESG and Industry 4.0 synergies
that you need

Introduction

Manufacturers have a lot to think about as we write this paper in the first half of 2022. The disruptive influences keep coming, from major geopolitical shifts, through acute supply chain and labor availability issues, to profound changes in customer behavior. Overarching all this is the ongoing march of automation and an imperative to respond to growing pressures - from investors, customers and governments alike - to prioritize the environment and future of our planet.

Against this background, does anyone really have time to think about modernizing their ERP environment? It's an understandable question given that previous upgrades and migrations have often consumed significant time and effort, only to deliver questionable levels of business advantage.

We'd argue though that now is absolutely the time to consider updating your core business systems. In this document we'll explain why, but briefly, it's so they will help rather than hinder you in dealing with major change.

This isn't just about the challenges and opportunities facing you now, but also those we don't yet know about that are coming down the line. If recent years have taught us anything, it's that world-changing events and big shifts happen very quickly, and you often have no choice but to respond.

With all this in mind, the real question is therefore how ready you are from a systems perspective to move forward confidently in an increasingly fast-moving and uncertain environment.

As we consider this question, we'll be framing our discussion around two key strategic imperatives for all manufacturers - namely Industry 4.0 and the very hot topic of environmental, social and corporate governance (ESG). In particular we'll be exploring how the right investments in core business systems such as ERP, can simultaneously help to address evolving needs across these areas, especially if you work with the right partners.

With this mission in mind, we hope you find this paper interesting and useful as you continue to review your systems-related priorities and plans.

Freeform Dynamics, 2022

Disruptive trends and influences continue to create both challenges and opportunities for manufacturing businesses like yours.

The right investments in core business systems can help to address the evolving needs of both Industry 4.0 and ESG.

Manufacturers face a future of change

Much has been written on the myriad industry-level trends and challenges likely to be impacting your high-level plans and activities. Whether these are concerned with geopolitics, economics, public health, regulation, or simply ongoing market evolution, you don't need to be schooled on the importance of being ready for change.

Being ready for change is critical, but you need a clear frame of reference within which to act.

But in practical terms, aspiring to become 'ready for anything at any time' clearly isn't that helpful. We need a frame of reference within which we can consider how to drive increased business agility with a little more focus.

Given the complex and diverse nature of a manufacturing business, there's no single 'right' way to approach this. For the purposes of this paper, however, we have chosen a perspective that is particularly useful at this point in time when looking at systems-level investments.

The yin/yang of Industry 4.0 and ESG

A strategic imperative relevant to all manufacturers is the shift towards Industry 4.0. By this we mean the exploitation of modern technology to enable positive digital transformation and create business advantage in a manufacturing context.

Another key imperative is dealing with evolving ESG (environmental, social and corporate governance) requirements. While much of the environmental sustainability impetus comes from customers and investors, governments are also introducing ESG laws and regulations. These will constrain how your business can operate legally and responsibly.

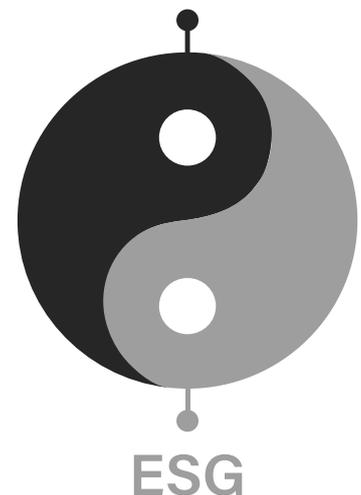
While Industry 4.0 and ESG can be viewed as representing opposing pulls (hence the 'yin yang' reference) they are intimately entwined.

You can't consider a major change initiative without understanding the ESG impact. Conversely, new ESG requirements often mandate digital transformation.

As we examine the case for modern ERP, it will become clear that the same set of capabilities can support both your Industry 4.0 and ESG agendas.

The same set of capabilities can be used to support both Industry 4.0 and ESG agendas.

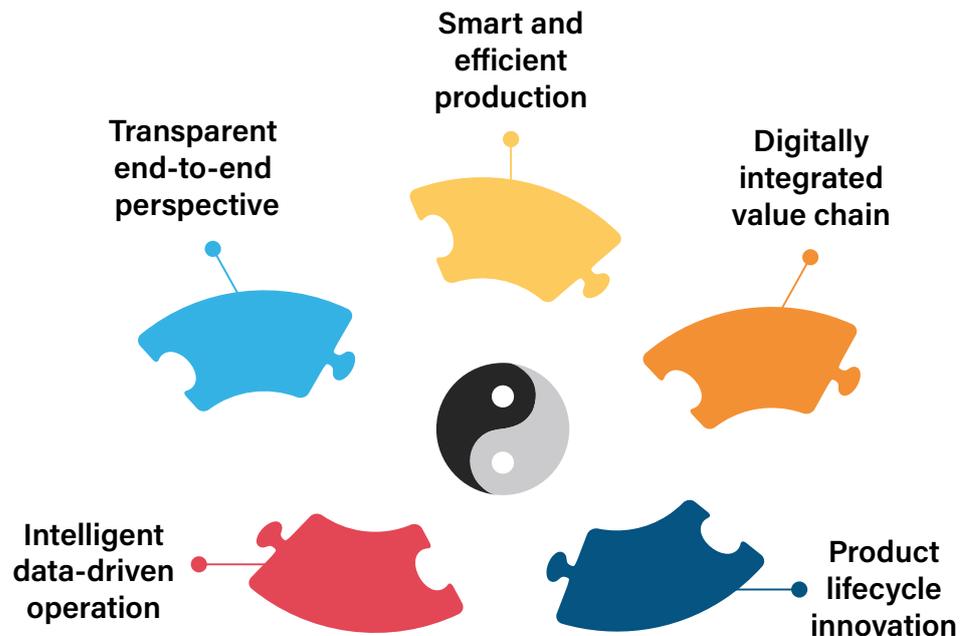
Industry 4.0



Drilling down to the functional level is needed to appreciate the potential.

The management and functional jigsaw

While Industry 4.0 and ESG provide an overarching frame of reference, we need to drill down to the functional and operational level to consider specific requirements and impacts. Again, there are various ways we could do this, but here's a view that works pretty well to help us think through where and how modern technology can really make a difference:



We'll look at how these puzzle pieces fit together in a minute, but first let's quickly review what each represents, and get a flavor of what's important in each area from an Industry 4.0 and ESG perspective.

Transparent end-to-end perspective

You need a clear view and understanding of how everything works together to identify and act on digital transformation opportunities. End-to-end visibility across internal functions and along supply and demand chains is also needed to manage energy and waste, enable carbon accounting, and demonstrate social responsibility.

Product lifecycle innovation

Traditional R&D cycles are increasingly giving way to more agile product development methods. At the same time, commercial delivery is now often based on the 'product-as-a-service' model. The 'whole lifecycle' perspective is also needed in order to meet ESG expectations of manufacturer accountability throughout a product's entire lifespan.

Some of the same themes come up as we look across functional areas.

Transformation is relevant across all aspects of the business, including across the supply and demand chains.

Smart and efficient production

End-to-end automation across the OT (operational technology) and IT domains is the name of the game here, along with a level of flexibility that allows rapid and easy configuration and reconfiguration of your operational environment. Requirements here go hand-in-hand with the need to source responsibly and operate efficiently to minimize overall environmental costs.

Intelligent data-driven operation

The trend in this area is away from batch processing and the traditional dependency on historical data. Industry 4.0 demands real-time visibility and in many cases, an ability for systems to act intelligently without human intervention. This also allows potentially dangerous or damaging incidents to be pre-empted or prevented in an ESG context.

Digitally integrated value chain

Whether it's suppliers, partners or customers, the entities with which you trade and collaborate will themselves be striving to become more agile, automated, intelligent, and so on. This opens up huge possibilities to extend the principles we have been discussing through greater digital integration along both the supply and demand chains.

Of course, this is by no means an exhaustive view of your business operations, and neither have we tried to be complete within each of the areas shown. Our aim is to call out some high-level principles and requirements to illustrate the overlap between Industry 4.0 and ESG when it comes to fundamental needs that can be addressed at a systems and technology level.

The last operational puzzle piece we listed - the digitally integrated value chain - is worth highlighting before we get onto technology enablers. Greater overall connectivity, automation, intelligence, responsiveness and transparency doesn't just translate to competitive advantage. It also allows you to take full control of your sustainability posture.

- ✓ More connected
- ✓ More automated
- ✓ More intelligent
- ✓ More responsive
- ✓ More transparent

Let's turn then to the potential for modern ERP to bring all this together, consolidating these needs and acting as a kind of shared hub.

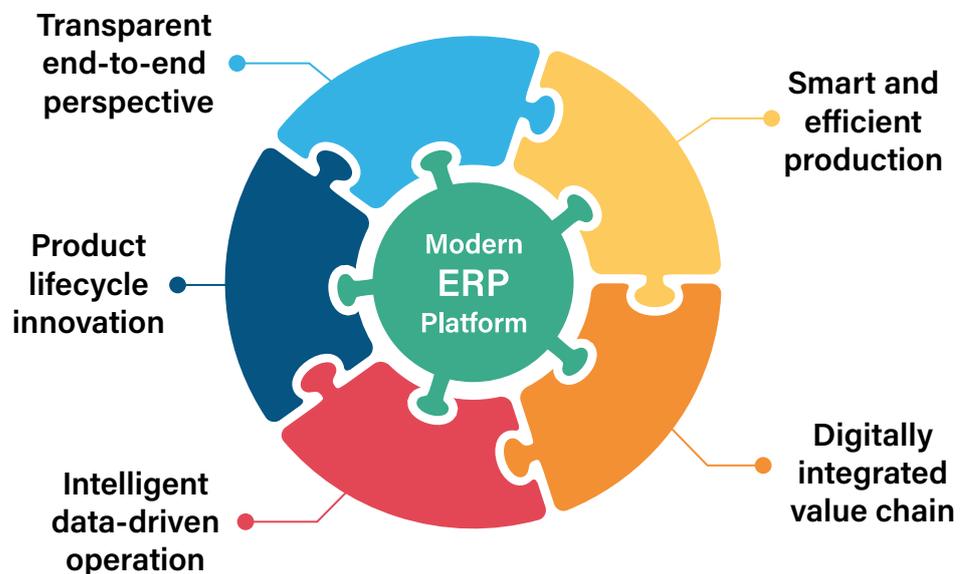
Your ESG posture can be significantly improved as you progress along your Industry 4.0 journey.

Modern ERP is a key piece of the puzzle

Trying to make progress while fighting against old solutions is both wasteful and frustrating.

In practical terms, it's only possible to move forward efficiently and effectively with your combined Industry 4.0 and ESG agenda if you have the right kind of technology in place. Trying to make significant progress while fighting against the constraints and distractions of older solutions is frustrating and wasteful of time, effort and budget, not to mention management bandwidth and stakeholder patience.

Continuing with our jigsaw metaphor, this is what's missing - the part that links all the others together. Perhaps more importantly, each of those operational requirements can be seen from the perspective of Industry 4.0 or the perspective of ESG. ERP, as the central linking 'hub', is what can bring those perspectives together and make them the two sides of a single coin.



Exploit advances in technology to enable the shifts needed for industrial digital transformation.

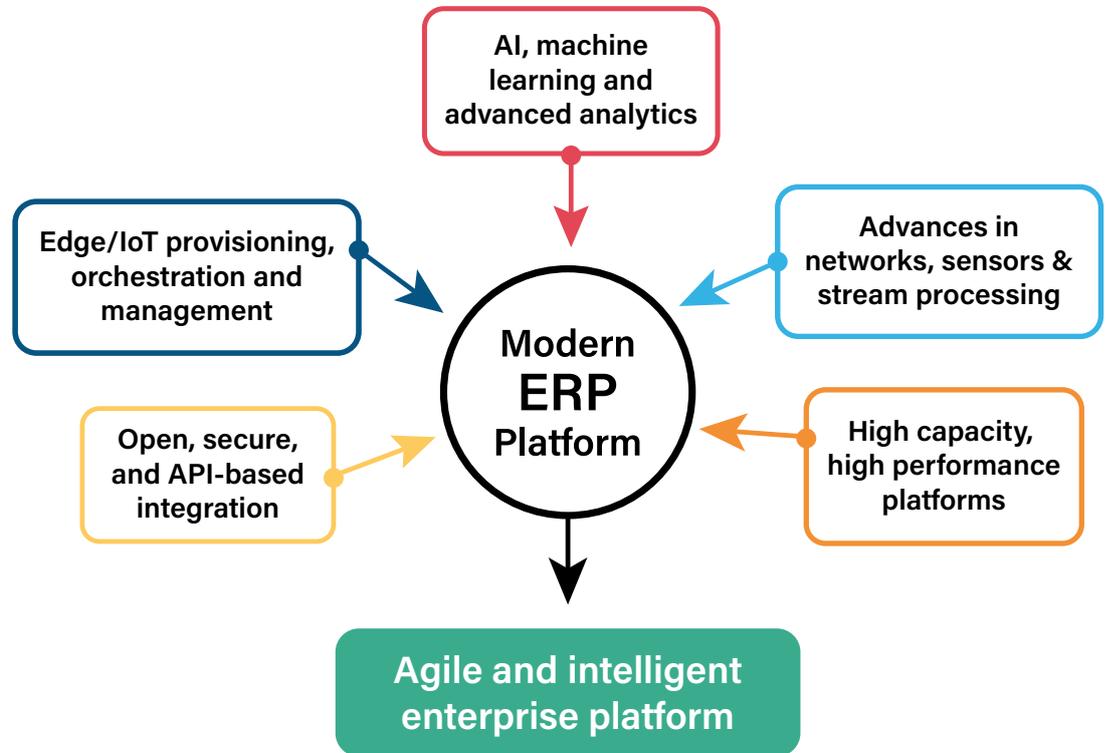
Why? Because whether your aim is Industry 4.0, smart manufacturing, ESG or sustainability, they all require timely and reliable data. And if you need data to support multiple requirements, a single platform that can support them all is a logical and cost-effective solution.

Note too, that the growing importance of data within manufacturing - just like in every other industry, of course - also raises the profile of everything else to do with data. That means data acquisition (e.g. sensors, IoT, interfaces into other systems), data visibility and transparency, data security, data analysis, automation and so on.

With all that in mind, let's look next at the role of technology, and specifically review some of the key capabilities and advances incorporated into modern ERP platforms.

What constitutes modern ERP?

Rather than dwell on the limitations of existing systems, it's better to focus on how modern solutions exploit advances in technology to enable the kinds of shifts and transformations we were discussing earlier.



While the technology advances mentioned on this graphic are not specific to ERP, a modern ERP system is likely to incorporate all or most of them, making it easier to exploit advanced systems functionality in context.

High capacity, high performance platforms

The technology platforms that underpin modern ERP are designed to deal with orders of magnitude more data and throughput than older systems. This allows transaction processing and analytics to be mixed - this is key for real time visibility - while handling more data feeds means better support for IT/OT integration and for IoT more broadly.

AI, machine learning and advanced analytics

Advances here enable 'intelligence' to be built into your systems. From planning through operations, the latest analytics and machine-learning capabilities go hand-in-hand with modern platforms to allow your organization to become fully data-driven. This includes hands-off automation where it makes sense to drive speed and efficiency.

Leveraging analytics and ML can help your organization become fully data-driven.

Modern ERP pulls together the technologies required to implement IoT.

Advances in networks, sensors and data processing

Better wireless connectivity and modern software make it possible to embed smart sensors around the business, streaming back data in real-time. Whether it's to report machine tool status, stock levels or delivery vehicle locations, all this allows planning systems to work on current data, not data from yesterday or last month.

Edge/IoT provisioning, orchestration and management

Those smart sensors need to be looked after from deployment, through keeping their software up to date, to watching for anomalous behavior that might indicate a fault - or worse, malicious activity. And because there's so many of them, wherever possible they need to be handled as a fleet, not as individuals.

Open, secure and API-based integration

Nothing stands still. In the future, perhaps you will add new logistics software or an AI-based quality control system, or need to feed data to a sustainability dashboard or SaaS-based CRM tool. Modern ERP systems are built - and need to be understood - as adaptable platforms or hubs, with secure standardized interfaces for connecting in and out.

Worked example: how Fujitsu does it

To illustrate the process of using modern ERP to help build a consolidated platform that meets and supports the requirements of both ESG and Industry 4.0, let's look at how Fujitsu, the sponsor of this paper, deals with this via its partnership with SAP.

A specific example can illustrate how key principles and demands translate into practical reality.

We won't go into a lot of technical detail, and please note that nothing we say should be taken as an endorsement or recommendation of any product or service. It's useful, however, to run through a specific example to provide an idea of how some of the key principles and demands can translate into practical reality.

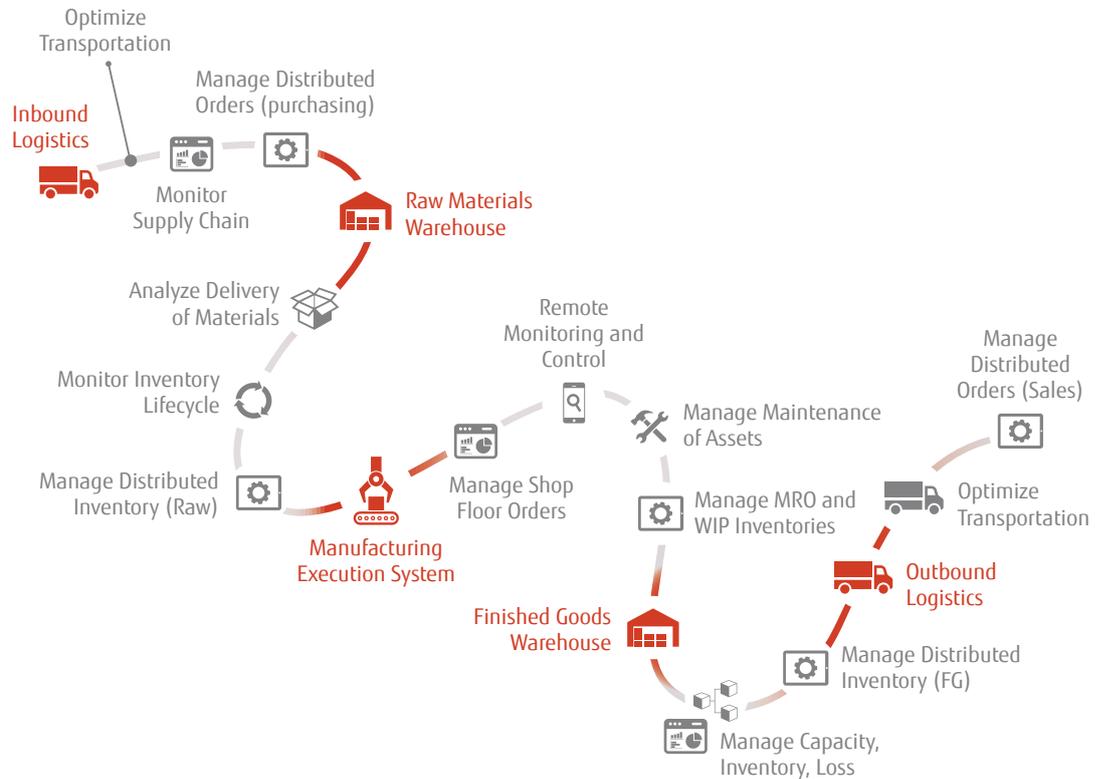
An end-to-end vision

As well as being a long-standing SAP partner, with several decades of experience delivering professional and managed services to SAP customers across a wide range of industry verticals, Fujitsu is itself a manufacturer. Its own experiences with Industry 4.0 and ESG mean that it has the necessary vision - the understanding of the big picture, and of

Take a broader view than just ERP: the aim is end-to-end and global coverage for the entire business.

how, and perhaps more importantly **why**, to re-engineer the whole manufacturing process.

This is crucial because both Industry 4.0 and ESG are complete end-to-end propositions. That's from inbound logistics to outbound sales, and from raw materials to net-zero.



Part of solving that end-to-end challenge is to fully integrate your enterprise IT, plant-level OT, data and processes with a virtual control panel of analytics. If it's done well, unifying and visualizing your data should reduce development cycles and optimize reaction rapidness, for example.

Fujitsu therefore presents itself as a partner with broad and deep expertise, from process design, systems architecture, business case development, through complete project management and implementation, to operational best practices and even the likes of supply chain traceability via Blockchain.

Business and people first, technology second

In a transformational business re-engineering project like this, it's vital to remember that technologies, from ERP and IoT to AI and Blockchain, are merely tools and enablers. They may be useful or even essential as you travel towards Industry 4.0 and ESG, but they cannot take you there by

Fujitsu presents itself as a partner with broad and deep expertise.

themselves. You'll also need a coherent, confident and inclusive plan, and equally essentially you'll need your people on-board and engaged.

Fujitsu therefore starts not with technology, but with the business processes, the people who run them, the key pain points today and the potential blockages involved in the implementation process. For example, the cultural misunderstandings and incorrect assumptions that frequently occur between corporate IT and plant-level managers and supervisors. Also important here is to identify, understand and engage the opponents of change that exist in every organization.

All this enables Fujitsu to work with the customer first on a Proof of Value (PoV), assessing the relevance of the project and the potential value of the business case, and subsequently on roadmaps, pilot projects, PoCs and of course the migration processes.

The OT discovery process

A true end-to-end digital manufacturing platform must integrate both all the way out to suppliers and customers, and right down to the OT layers and individual manufacturing cells - the PLCs, machine tools, sensors, etc.

It's highly likely that your project may also involve consolidating multiple manufacturing execution systems (MES) and ERP platforms. That's because in many organizations these will have been acquired and operated on a plant-by-plant basis, often with complex customization that's now redundant thanks to the subsequent evolution of the base platforms.

The next step is therefore a technology inventory, but while enterprise IT asset management is typically fairly thorough, this is not always the case for OT. As a result, this process can require cultural and social engineering skills as much as technical ones: the information will be there, but the project team must find out who curates it. They may also then need to format and combine multiple data sources.

Neither a blank sheet nor one-size-fits-all

No two organizations are alike, so templated ERP implementations have their limitations. At the same time though, organizations will inevitably share some features and needs, making a clean-sheet or bespoke approach potentially wasteful of time, effort and money.

Start with your processes, move onto the people that run them, then consider the technology.

Technical skills are not enough; you also need cultural and social expertise.

Instead, Fujitsu takes a pragmatic and technology-agnostic approach. Not only must the plan be adaptable but so must its components. For example, SAP is key to most of the manufacturing projects Fujitsu undertakes, but it cannot suit every need so Fujitsu will integrate other software as appropriate. Similarly, if your organization has ties to particular IT suppliers, those can be respected.

Fujitsu uses a co-creation approach, where it works through the process with the customer.

Iterate and collaborate

Following on from the need for an adaptive and pragmatic partner is the requirement for a design and implementation process that engages and involves your organization as fully as possible. Fujitsu employs a co-creation approach, where it works through the entire process with the customer, from discovery and gap analysis through to managed implementation and subsequently mapping the business benefits.

- ✓ Discovery
- ✓ Gap analysis
- ✓ Proof of value
- ✓ Roadmap
- ✓ Pilot
- ✓ Managed implementation
- ✓ Map business benefit

Summary

Manufacturers today face a range of challenges: they need to become more agile, automate more, keep up with new technologies and regulations alike, optimize supply chains and improve customer service, find advantages in sustainability and the circular economy, and much more. Perhaps more importantly, they need to do all this in an integrated and inspiring way - a way that stimulates new conversations and creates opportunities.

Fortunately, there is one place where all these challenges make contact. Modern ERP, if implemented with the right vision, can act as the hub around which they all revolve or the platform on which they all stand.

But what is the right vision, and how can we find it? The answer, in most cases at least, is via the right implementation partner. That's a partner who doesn't just have the broad and deep expertise and skills needed, but who also has the right spirit - who expects and plans to work with you, and to help you and your people understand what needs to happen and why.

Partnership is about more than expertise and experience; the spirit of the relationship really matters.

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