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Technology-Driven, BUSINESS-FOCUSED

Aligning Technology Initiatives with Business Objectives to Lead in Industrial Transformation

Technology continues to be a key focus for modern manufacturers, with 67 percent of companies reporting that they have implemented or plan to implement an IIoT platform, advanced analytics, and/or technologies geared towards an industrial transformation (IX) program[1]. While important, implementing innovative technology solutions is not sufficient in order to achieve IX leadership. In fact, many manufacturers take a technology-first approach to growth, allowing crucial business initiatives to fall by the wayside.

How can manufacturers achieve a fully connected, Industry 4.0-powered environment while also ensuring their important strategic goals are met?

To bring about real, long-term transformation, industry leaders must take a business-first approach to deploying technology, prioritizing crucial business objectives and strategic initiatives, then managing IT / OT convergence in order to drive solution selection.

In this whitepaper, we will explore key findings from LNS Research that demonstrate critical success factors for a successful industrial transformation journey. By breaking down methodologies of leaders who are realizing value in their IX programs, we'll define key criteria to help you benchmark your organization and achieve your full Industry 4.0 potential.

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The Industrial Transformation Value Gap

While the majority of companies have digitalization efforts underway, research indicates that few have progressed those efforts in order to achieve real value for their businesses. In fact, only 28 percent of companies have made progress in their IX journeys and are seeing value in their digitalization efforts, while 72 percent of companies are only just beginning to lay out a plan for IX programs.

At the highest level, the value gap between IX leaders and other organizations can be boiled down to three primary areas:

Business First, Technology Second

When initiating an IX journey, many companies tend to spin their wheels deploying high-impact technologies that require large amounts of time and energy. These high-impact technologies often never translate into real benefits for the business. **IX leaders, on the other hand, are 31 percent more likely to focus on business objectives and 60 percent less likely to implement technology-driven initiatives.**

Technology Innovation, Beyond IIoT

Although IX leaders put business objectives first and solution selection second, they are also 3.5 times more likely to deploy technology throughout their complex industrial environments. Interestingly, IX leaders do not limit technology investment to IIoT, instead focusing on technologies are most likely to yield an operational benefit. Leaders achieve success by tying each solution to a specific operational initiative with a plan to manage change and maximize value over time.

Buy-in & Budget, at All Levels

Arrested progress is due, in part, to a backwards funding mechanism that leaves many digital initiatives underfunded, even when corporate buy-in appears strong. **Conversely, IX leaders are 2.7 times more likely to self-fund programs necessary to reaching their goals, with or without corporate buy-in.** In addition, lack of involvement at the plant manager level often limits the success of initiatives. **IX leaders involve individuals at all levels of the organization as active change agents.**

Pervasive Organizational Disconnects

Limited value realization from IX initiatives makes sense given pervasive organizational disconnects. In IX programs alone, organizational challenges have more than doubled since 2012. In most cases, these issues are related to people, culture, change management, and business organization.

LNS Research found four organizational disconnects that run rampant through the modern manufacturing space. These include:
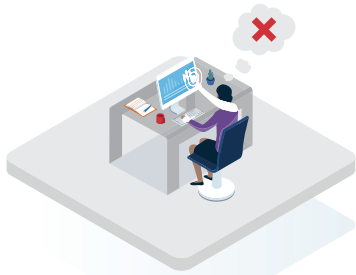
Limited Plant Manager Involvement

Despite industrial transformation focusing on operations, plant managers are given the smallest role in defining and executing these digital initiatives and programs. As a result, there is often a disconnect between solution selection and operational realities.

Lacking Chief Digital Officer Empowerment

Despite being tasked with leading digitalization efforts, Chief Digital Officers often do not have the authority or budget needed for a successful IX program. Without ample authority or budget, they have little to no power to drive real change in the organization.

Insufficient Funding for IX Initiatives

Despite corporate incentives and executive buy-in appearing strong, IX budgets often remain small. With inadequate funding to support successful implementation, many initiatives never reach maturity, or cut corners that compromise the end outcome.
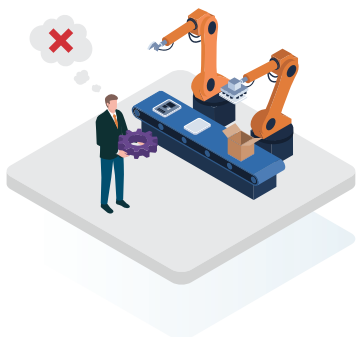
Misaligned MBOs & Goals

Unfortunately, while implementation of digital initiatives is a top goal, many manufacturers fail to define specific objectives around the business impact of these initiatives. For example, while plant managers typically have a strong influence in the organization and within their sphere of influence, they are not yet goaled on the impact of IX.
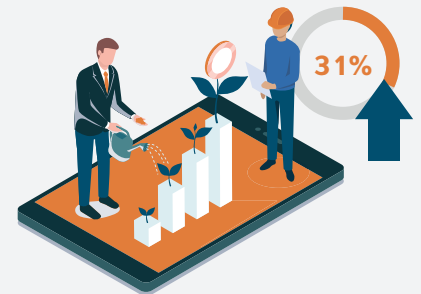
How IX Leaders Are Leading

Despite prevalent organizational disconnects and business challenges among today's manufacturers, forward-thinking leaders are trailblazing the way to smart manufacturing with successful IX programs and a fully-dynamic factory environment. **Following are some of the methods IX leaders are employing to set themselves apart:**

Embracing the "Power of More"

IX leaders are doing more in every sense of the word, from enabling a larger functional scope, to adopting a broader focus, and establishing more breadth in teams with greater subject matter expertise. By involving more suppliers, customers, and third-party specialists in their IX ramp-up, incremental and joint funding models are made possible, enabling plants to roll out more IX initiatives. These new sources of funding empower manufacturers to find the meaningful solutions that fit their business needs.

IX leaders are **31% more likely to be focused on business...**

Shifting from Top-Down to Cross-Functional

Many companies have a top-down approach to digitalization. While executive support is necessary, it alone is not enough. In fact, subject matter expertise from plant management and staff is equally critical. Currently, non-IX leaders typically involve only two business functions—one being corporate business management. IX leaders, on the other hand, have more significant buy-in across departments, including IT, plant floor personnel and management, quality, and OT.

...and **60% less likely to be focused on technology alone.**

Reimagining Processes Organization-wide

True industrial transformation comes from step-change empowered by collaborative technologies. While a traditional focus on technology may re-automate within a silo, IX leaders are looking to automate silos throughout the entire organization.

Extending Technology beyond IIoT

Industrial transformation is a subset of digital transformation. While IIoT is a significant part of digital transformation, IX is substantially more than IIoT alone. In fact, only 40 percent of IX leaders are deploying IIoT technology. Smart manufacturers and leaders of IX deploy more technology across a greater diversity of areas in order support an Industry 4.0-driven factory.

Built on a Solid Foundation

The leading reasoning for companies' absence of IX plans is a weak operational architecture. A solid systems foundation is critical to a successful IX roll-out. True leaders have strong OT and IT systems in place, with best-in-class systems and a high degree of commonality across the plant.

IX Leaders Implement
More Technology, Across
More Business Areas

35% Upgraded OT

39% IIoT Platform with
Advanced Analytics

39% Converged OT / IT

36% Remote
Operations Centers

Benchmark the Success of Your IX Journey

On average, a company executing an IX program should expect a three-year journey. Many spend that time merely defining their plans or stuck in the pilot phase with unclear results. In order to evaluate its path to successful adoption and ROI, a company can measure itself against five major pillars of evaluation that reflect a smart factory's ability to achieve the full potential of Industry 4.0.

These five pillars of IX evaluation include:

ADAPTABILITY

When looking at technology solutions to support your digital transformation efforts in manufacturing, it is key to evaluate not only based on your business today but also ensure the solution can adapt to future business demands/changes.

Ask yourself, Does the system enable real-time adaptability to machine-down conditions, staffing fluctuations, mass customization, CTO, and any other real-world contingencies without needing customization? Is the solution 100% location-aware of all material at the lowest level of component detail when it comes to scheduling jobs – is it leveraging a combination of real-time consumption data (not inferred or calculated consumption), a knowledge of all of the asset information – such as warehouse operating hours, material movement times – and a knowledge of the predicted completion times of the jobs? How easy is it to transfer product & process details to another line or another factory?

VISIBILITY

Visibility through real-time dashboards, interactive reports, and mobile apps. Visibility is a key driver for companies deploying manufacturing automation. But this data is meaningless without a way of contextualizing that information to provide actionable insights. True drag-and-drop construction of real time dashboards and reports is only possible if the structure of the system itself is designed in such a way that any incoming data, whether implemented today or four years from now, are normalized and stored in a meaningful way. The reporting engine should be designed in such a way for it to be a collaborative tool for teams – the ability to traverse the data in real-time to get deeper insights than possible with basic static dashboards & reports. The key is in the contextualization of information every time you add a data source like a machine.

Ask yourself, does the system simply know how to handle that data, or do you need an army of integrators and coders to make that data mean something in the data model before it can be used in analytics? Every vendor will tell you that you can get any information you want out of their system but at what cost? Is it something that you and your team can do?

CONNECTIVITY

Connectivity of manufacturing operations, production asset management and maintenance, and field service. In order to capitalize on the connected ecosystem, organizations need to start looking at seamless integration and data exchange with suppliers, customers and other external stakeholders. This is when architecture and standards play a very critical role in breaking down the barriers between disconnected systems and devices without the exorbitant price tag that this traditionally incurs. When looking at solutions, it is important to dig deeper into their technology stack to assess how interoperable the solution is with both machines on the factory floor as well as other business systems in your organization.

Ask yourself, does the connectivity require expensive middleware? How much additional customization services will be required? What will happen when a system changes? Is the vendor leveraging industry standards or a proprietary data protocol?

CONFIGURABILITY

Configurability through process design, analytics, and a user interface. When choosing the right MES solution one must factor in whether the solution requires extensive customization to make the system work as described or if the system is easily configurable to support any modifications. Oftentimes, software vendors will present that their solution is capable of handling everything, but unfortunately it is not until the deployment phase do companies realize that heavy customization is the only way that they will be able to get the system to a level they expected and require. Companies should not have to change their processes to match the software solution, but you also should not just replicate the manual process you have in place today with digital solutions. Therefore, you want to make sure that the solution is feature-rich but also extensible. It is a whole lot easier to "turn off" capabilities that you may not need today, vs trying to customize in the future. If you do need to customize a solution, make sure to ask your vendors how customizations are handled.

Ask yourself, does your customized solution now become isolated from their core code base? Are you left behind when the core product continues to get enhanced and you are left on a branched version of code? What happens when you want to upgrade, is it automatic or is it yet another customization and deployment adventure?

SIMPLICITY

The success of every solution feature and function comes down to simplicity. Regardless of how feature-rich a solution may be if it is hard for your employees to adopt and use then it doesn't matter. People want things that are simple and easy to use but they also want powerful capabilities. The usability of a solution is often overlooked during the evaluation process. When a software interface is poorly designed, it will most likely deliver a poor user experience that can ultimately lead to diminished capabilities of the employee and your company. The challenge lies in delivering advanced capabilities in such a way that the solution is easy for people to understand and use. When exploring solutions, usability cannot be overlooked. Ensure that end users are involved in part of the evaluation process. These folks are going to be the primary users of the solution and it is essential they have the optimal user experience. If it is not easy for your employees to adopt or use, then it will not achieve the productivity or gains you're looking to achieve.

Ask yourself, what happens after implementation? How easily can you modify the system to adapt to change? Do you have the ability to easily change workflows and user experience based on roles in the organization?

The Transformative Benefits of IX

Through transformative digital initiatives and an innovative MES functionality deployed factory-wide, a myriad of industries can reap the benefits of true industrial transformation.

Since deploying FactoryLogix® by Aegis Software, customers have seen many measurable benefits in a short period of time, including:

An automotive manufacturing leader was able to achieve:

- **50% reduction** in rework and debug time.
- **Increased customer growth** and retention.
- **28% reduction** in average assembly rework time.
- **10% increase** in OEE and average productivity.
- **18 hour reduction** in average new product introduction time from 24 hours to 6 hours.

A manufacturer in the medical device industry was able to achieve:

- **Automatic and on-demand quality reporting** to save valuable time.
- **80% reduction** in defective parts per million (DPMO).
- **100% of process documentation** is online and zero paper.
- **Significant improvement** in response time to customer inquiries.
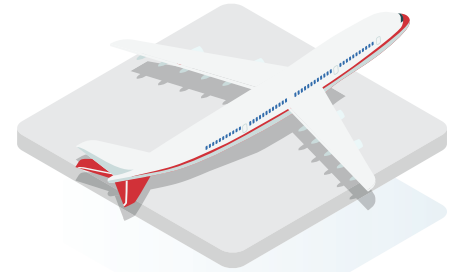
A leader in aerospace manufacturing was able to achieve:

- **25% time savings** when creating a new assembly that is similar to an existing assembly.
- **15% decrease in time** spent data parsing.
- **Enhanced process for managing quality control,** resulting in high first-pass yields.
- **Improved** compliance management and support.

An electronics manufacturing leader was able to achieve:

- **33% reduction** in assembly rework time.
- **Level-4 component traceability** down to individual reference designators.
- **3% reduction** in defective parts per million (DPMO).
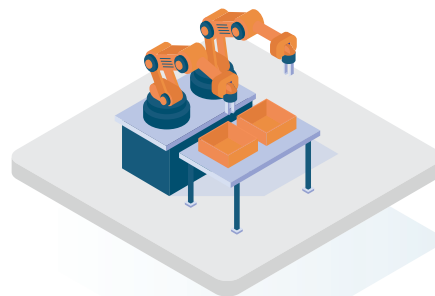
A manufacturer of industrial equipment was able to achieve:

- **Faster turnaround** for customers without compromising quality.
- **80% reduction** in manual data entry.
- **Greater flexibility** to configure and adopt solutions to meet customer needs.
- **Overall reduction** in the number of non-conformance events.

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S O F T W A R E

Aegis FactoryLogix®

MES Technology for Factory-Wide Industrial Transformation

In order to become a leader of industrial transformation, manufacturers must leverage the right technology, including, but not limited to, IIoT. Without a solid platform for advanced technology, the true capabilities and value of Industry 4.0 initiatives will be lost. Aegis' **FactoryLogix**® MES has the proven ability to drive tangible benefits across manufacturing operations, delivering the leading-edge yet reliable technology required for successful IX.

FactoryLogix® MES is a nimble yet robust manufacturing platform that supports the entire factory lifecycle, joining shop floor to top floor for actionable Industry 4.0 insights across the supply chain. IX leaders thrive only when there is strong OT / IT convergence prior to solution implementation, and Aegis builds the solid systems foundation needed for ongoing digitalization.

With **FactoryLogix**®, key stakeholders from the C-suite to plant personnel can lead a reimagined business, implement meaningful solutions, and drive change over time.
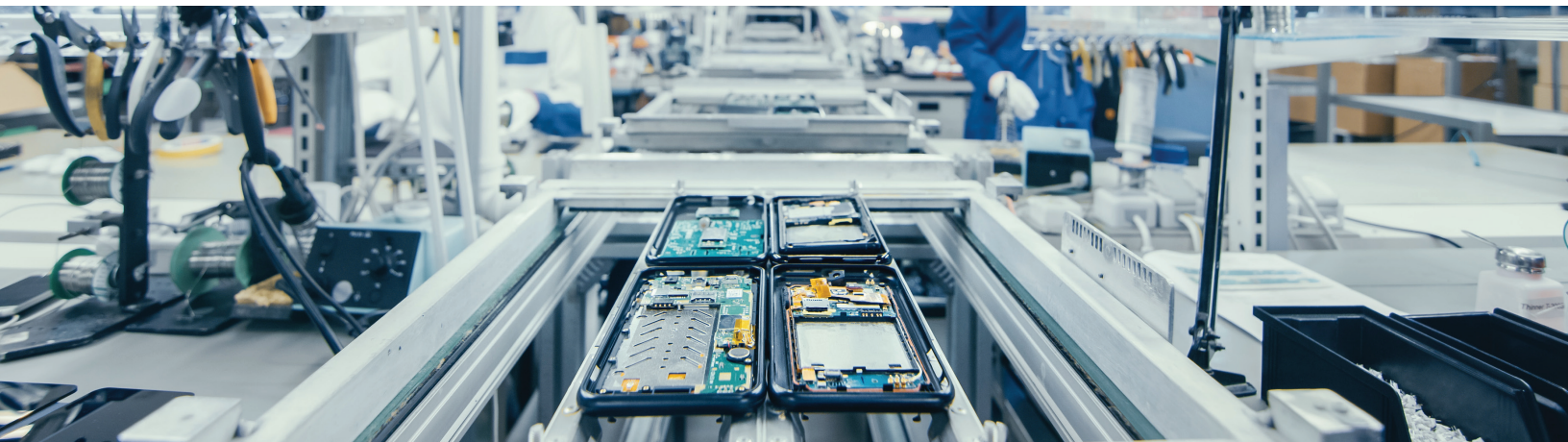
AEGIS
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Email: info@aiscorp.com
Visit: www.aiscorp.com
@FactoryLogix
linkedin.com/company/aegis-industrial-software

Corporate Headquarters
220 Gibraltar Road, Suite 300
Horsham, PA 19044
Phone: +1.215.773.3571

European Headquarters
Wetterkreuz 27
91058 Erlangen, Germany
Phone: +49.9131.7778.10

Asia Headquarters
Rm. 809, Dahua Hucheng Business Center
No 6, Lane 239, Dahua No. 1 Road
Putuo District, Shanghai, 200442, P.R. China
Phone: +86 2 1 5882 4882