

eBook

Leaders' Guide to Unified Performance Excellence (UPX)

The Improvement Engine for Industrial Transformation

Connect:



Insresearch.com



Leaders' Guide to Unified Performance Excellence (UPX)

The Improvement Engine for Industrial Transformation



Table of Contents

Section 1: Executive Summary	<u>2</u>
Section 2: Business Objectives and Strategic Initiatives	<u>6</u>
Section 3: Operational Architecture	<u>8</u>
Section 4: Solutions and Platforms	<u>12</u>
Section 5: Change Management	<u>18</u>
Section 6: Summary	<u>20</u>
Section 7: Recommendations	<u>22</u>



ACRONYM
QUICK REFERENCE

[VIEW ON BLOG](#)

Insresearch.com



Section 1

Executive Summary

00010
01101000100010
001000101010 011010001000
01010001101000100010
01101000100010
00100010

1010 01101000100
001101000100010 1010001
101000110100 001010100011 1000
10100011010001000101
1010 011010001
01000100010 10100
001010100011 10

Executive Summary

Heads of Operations Challenges

There are several challenges facing Heads of Manufacturing Operations in today’s fast-paced industrial environment.

Labor productivity has been stagnant for over a decade (Figure 1). During the Great Recession of 2008-2010, manufacturing labor cuts were deep, and manufacturing has not recovered; in fact, labor productivity has declined slightly since 2010. Heads of Global Operations have not re-established the labor productivity trends that were the norm between 1980 and 2008.

Additionally, since the beginning of the COVID-19 pandemic, manufacturers have been faced with unprecedented and rapid changes, threatening the sustainment of industrial operations. With early challenges for remote operations centers to workforce migrations, sudden supply chain shortages, and the associated widely-fluctuating quality from

suppliers, now more than ever, Heads of Operations, need to be as proactive as possible in maintaining operational viability. Threats to the sustainment of operations are many, fast-moving, and highly variable.

Traditional approaches to continuous improvement eventually run up against a brick wall as successive “at-bats” are more difficult to hit the home run of step change productivity improvement. Organizational inertia favors entropy, or the dissipation of energy back to its original state. As such, the vast majority of traditional Continuous Improvement (CI) management programs experience a tipping point of diminishing returns. This can be attributed to experienced people resources transitioning out or up in organizations and being replaced by inexperienced workers – or not being replaced at all as “role consolidation” has been the trend since the Great Recession.

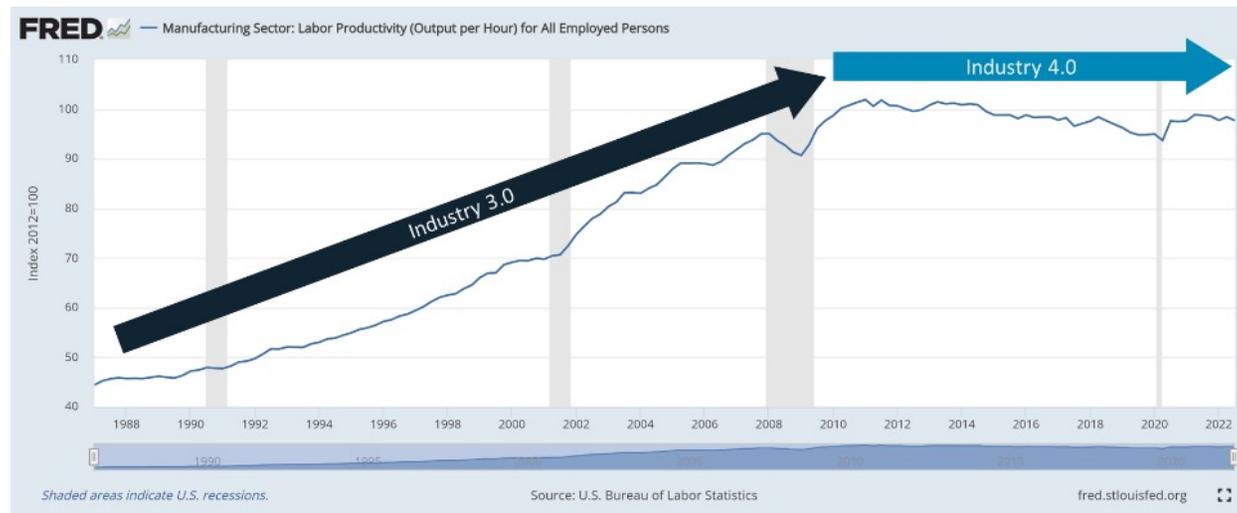


Figure 1 - Manufacturing Productivity Plateau

This sets the stage for Heads of Operations to break out of the spreadsheet mode of management. This is particularly true for industrials that are approaching scale in their Industrial Transformation (IX) programs. Continuing to manage-by-spreadsheet creates a disconnect from the dynamic reality of today’s rapidly changing landscape.

Executive Summary (Cont.)

Continuous Improvement Toolkits and Management Systems to Unified Performance Excellence (UPX)

Traditional CI toolkit programs are very skilled and motivated labor-dependent for their sustainment. Largely guided by policies and procedures and lacking structured accountability systems, last-gen Performance Excellence struggles to keep the flywheel turning and suffers diminishing or plateauing returns.

Traditional pre-Industry 4.0 era programs have significant headwinds around:

- High requirements for special knowledge to perform
- Long learning cycles

- Patience for long project cycle times and project failure
- Long latency to results
- Turnover of trained practitioners
- Shrinking labor pool to pull from to develop special knowledge

Unified Performance Excellence (UPX) transforms the practice of Performance Excellence from a policy and procedure-driven manual activity to a holistic, digitally embedded approach, encompassing all aspects of operational agility, flexibility, and resilience (Figure 2).

LNS Research Unified Performance Excellence (UPX) Framework

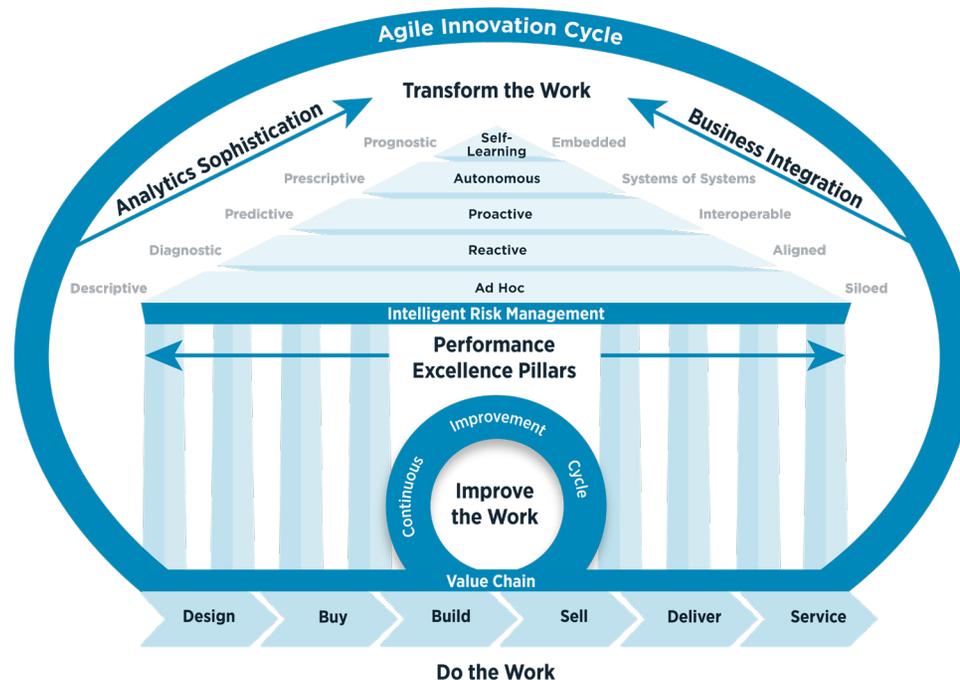


Figure 2 - Unified Performance Excellence (UPX) Framework

Executive Summary (Cont.)

Management systems for Performance Excellence have evolved slowly over time from systems of highly proceduralized and policy-driven activities to “dipping the toe in the water” on digital technology. Performance Excellence has not kept pace with Industrial Transformation (IX) to date (Figure 3).

As a result, 75% of manufacturers report losing momentum in their Performance Excellence programs for various reasons. Some even have reported losing momentum after initial success (Figure 4).

Performance Excellence is poised for a radical transformation that is highly invested in the digital environment, leveraging advanced digital tools to become the engine for improving processes in the digital environment.

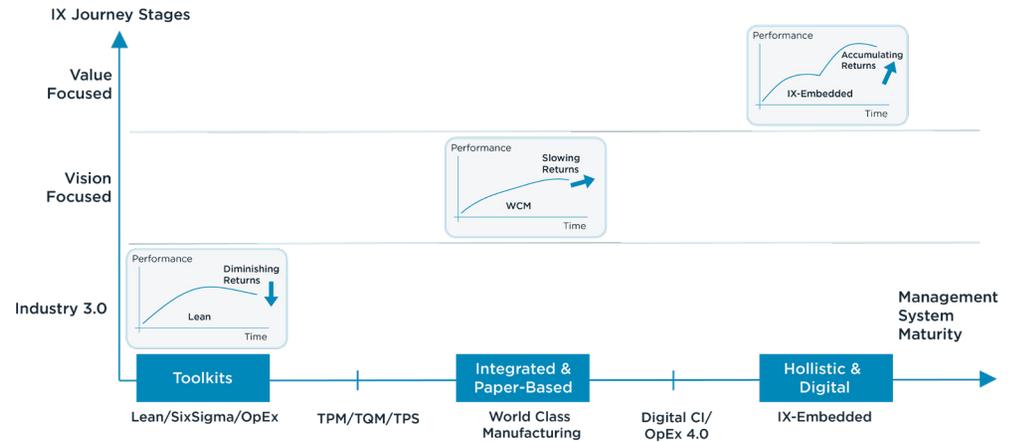


Figure 3 - Evolution of Management

Challenges Scaling UPX

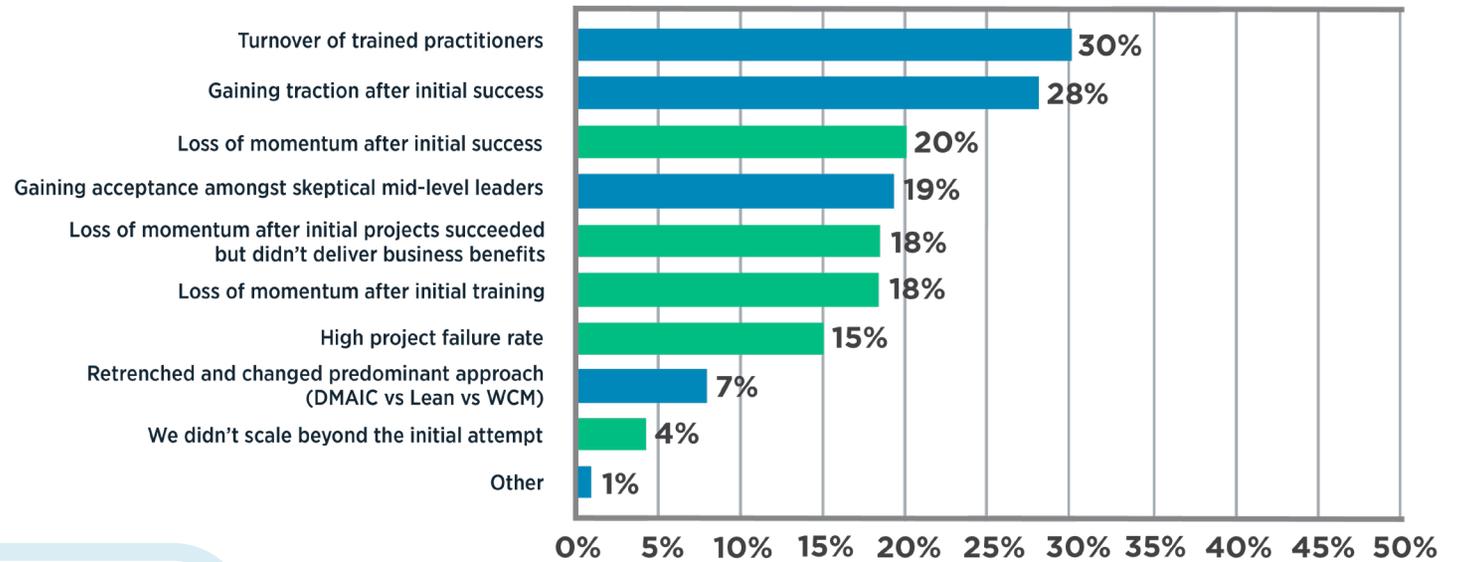


Figure 4 - Organizational Inertia Steals Momentum From PX Programs

Section 2

Business Objectives and Strategic Initiatives

00010
01101000100010
001000101010 011010001000
01010001101000100010
01101000100010
00100010

1010 01101000100
001101000100010 1010001
101000110100 001010100011 1000
10100011010001000101
1010 011010001
01000100010 10100
001010100011 10

Business Objectives and Strategic Initiatives

Business Objectives

To become more agile and flexible, UPX Leaders have a priority to achieve a better, clearer view into Operations within the company. To achieve this, Leaders are connecting process and product data as the first step, then adding Advanced Industrial Analytics, Artificial Intelligence (AI)/ Machine Learning (ML), and Digital Twins into the mix, at both the execution layer and the Intelligent Risk Management layer.

Strategic Initiatives

LNS Research, in our past research on Industrial Transformation (IX) Readiness, has discovered a tendency for Leaders to have several IX programs ongoing simultaneously, with twice the scope of Followers. As a result, we've coined the term "The Power of More" to describe this behavior (Figure 5).

UPX is no different from any other aspect of transformation in this Power of More behavior. UPX Leaders are approximately twice as likely than Followers to have a full suite of IX initiatives.

Transformation is a "Yes, and" approach rather than an "Either, or."

Transforming the business requires a transformation in ALL aspects of the business.

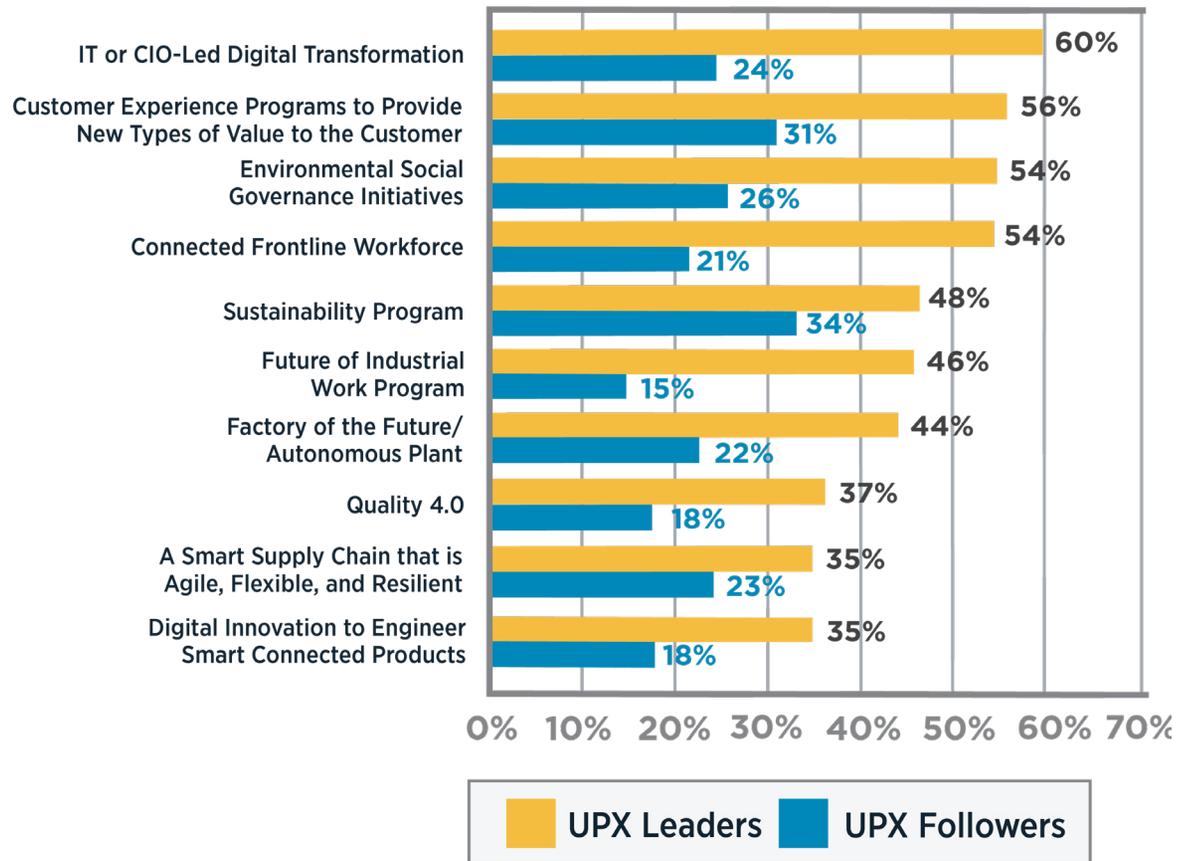


Figure 5 - The Power of More in UPX

Section 3

Operational Architecture

00010
01101000100010
001000101010 011010001000
01010001101000100010
01101000100010
00100010

1010 01101000100
001101000100010 1010001
101000110100 001010100011 1000
10100011010001000101
1010 011010001
01000100010 10100
001010100011 10

Operational Architecture

Extend Intelligent Risk Management to UPX and built it into the Operational Architecture

Intelligent Risk Management traditionally focuses on human safety, environmental, and sustainability risks. LNS Research's expanded definition of Intelligent Risk Management includes threat monitoring for potential impacts on operational agility, flexibility, and resiliency (Figure 6).

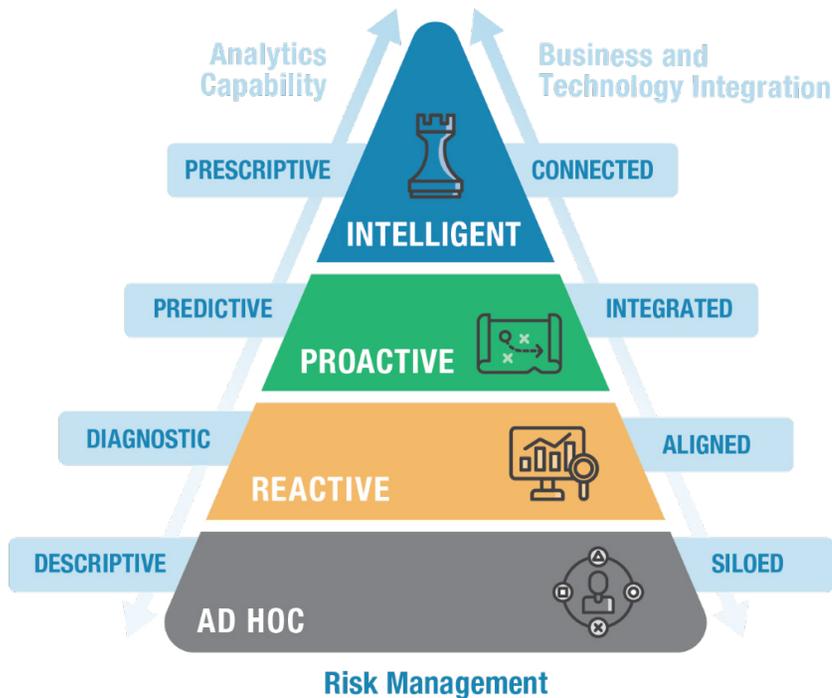


Figure 6 - Intelligent Risk Management

- **Agility** affects the organization's ability to rapidly shift priorities in a nimble fashion based on customer preference changes. An example of an agility situation would be rapid changeovers from one product to another.
- **Flexibility** affects the organization's ability to manage resources efficiently and productively handle unexpected situations. An example of flexibility is shifting production lines or equipment when the main piece of equipment fails or shifting the production plan based on the availability of qualified people.
- **Resiliency** involves those concerns that affect the ability of the organization to weather unforeseen problems. A typical example of a resiliency problem is an unexpected supplier shortage.

The boundaries between agility, flexibility, and resiliency are porous to non-existent. It is not important what categories you place certain risk vectors into; rather, it is a frame of reference for how to think about what risks to include in the framework. These are the things that could shut an operation down.

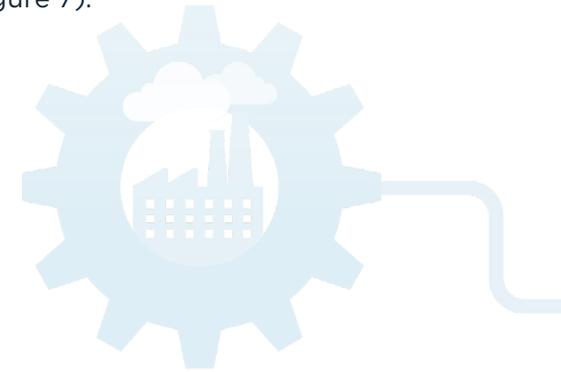


Operational Architecture (Cont.)

The idea is to take advantage of commonalities to make Risk Management (RM) more efficient and effective.

Given the greater complexity and interconnectedness of the risk environment, developing a unified RM framework makes more sense than ever. Developing an Intelligent Risk Management framework is as individual as a snowflake. Each organization's risk profile, threats, and tolerance are different. This requires a "cookie cutter to customization approach," starting from a standard risk framework that is open and customizable by the company to fit its unique risk situation.

As Leaders are building out their risk frameworks, they are 82% more likely to be connecting data sources for the identified threats to make their intelligent risk framework as near real-time as possible (Figure 7).



Recalculation Frequency of Risk

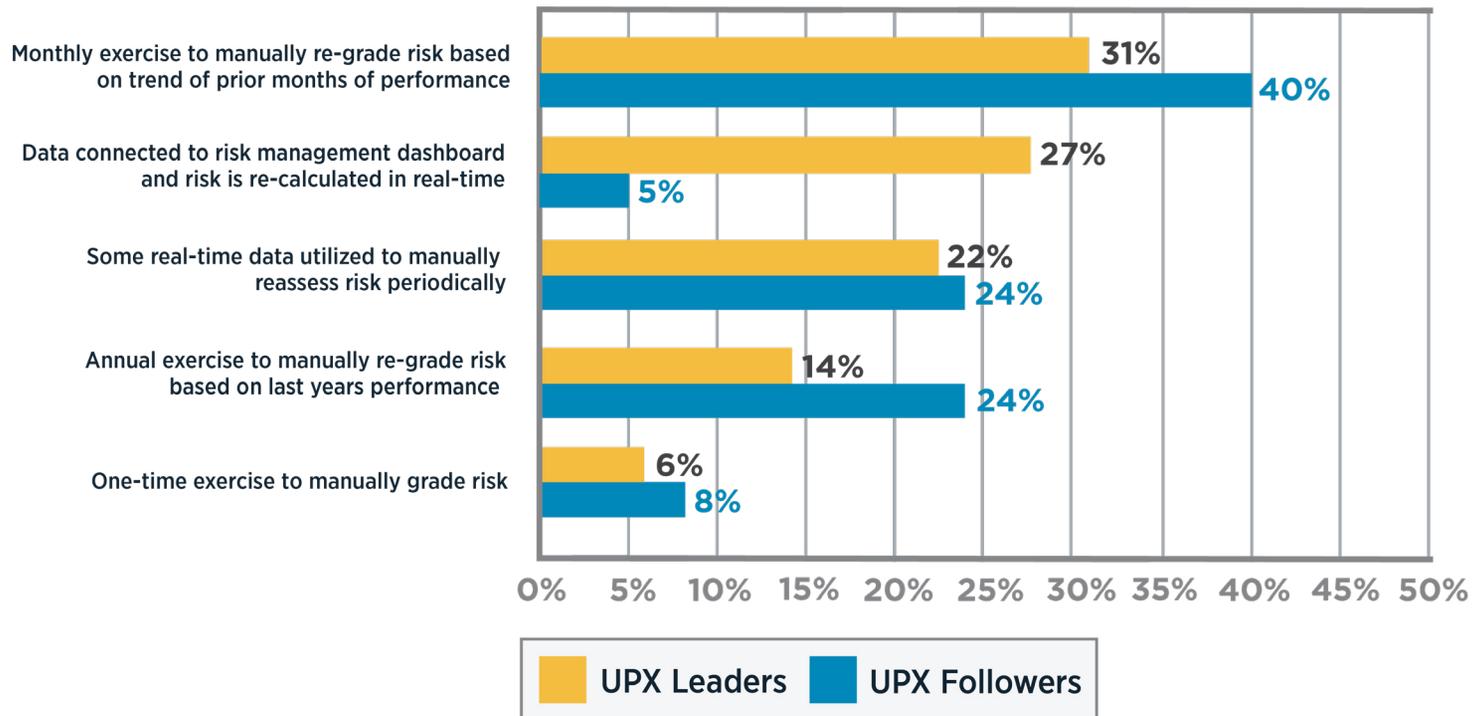


Figure 7 - Real-time Monitoring of Risk

Operational Architecture (Cont.)

UPX Leaders are also 85% more likely to apply AI/ML at the risk level to flag indications of increased risk.

This use case for Artificial Intelligence to “catch the fly balls” of risk relieves the person from identifying and prioritizing, a task that people are not particularly good at when there are multiple priorities.

This use case of AI in a “supervisory” role is indicative of the advancements made in AI/ML in the last decade (Figure 8).

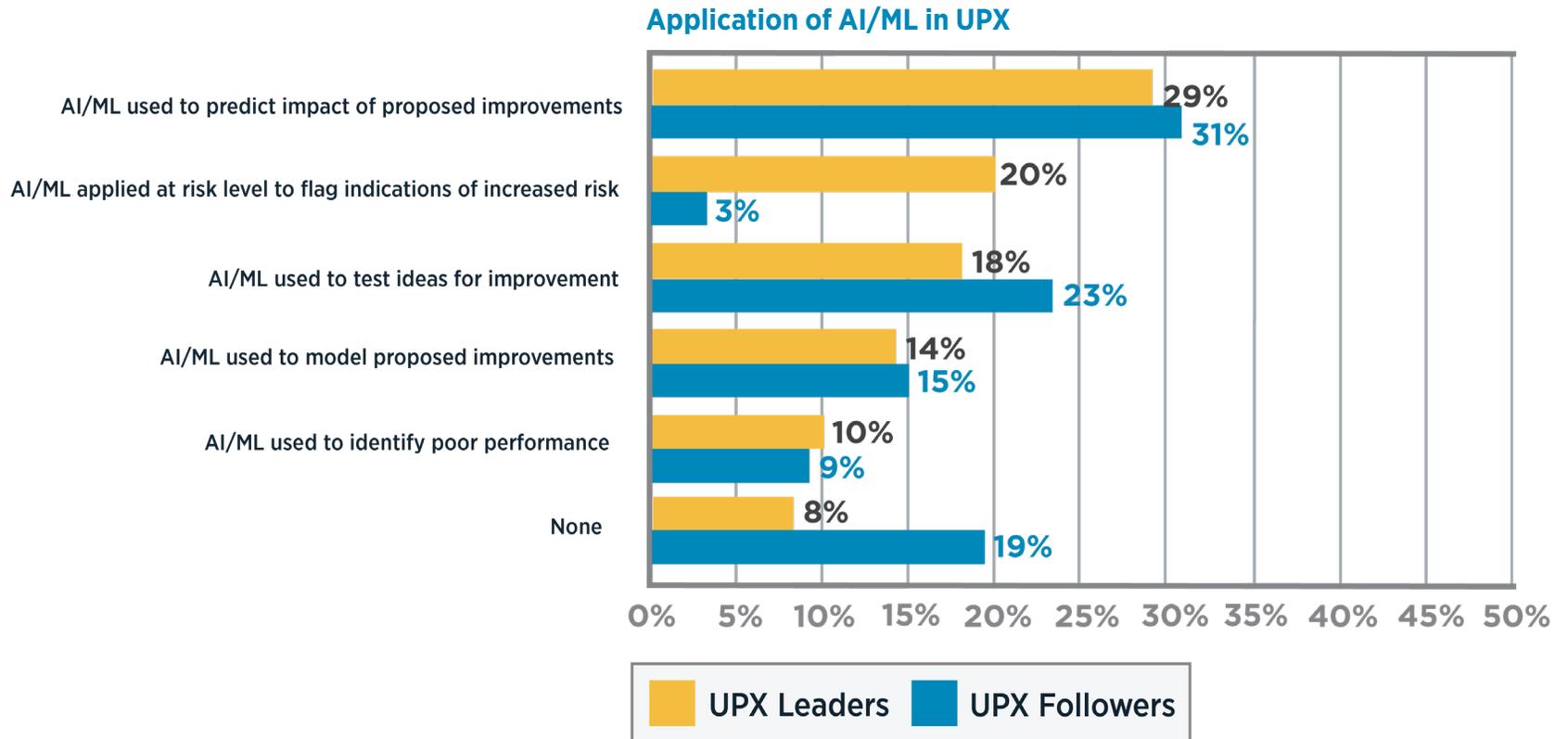


Figure 8 - Application of AI/ML to Monitor Risk

Section 4

Solutions and Platforms

00010
01101000100010
001000101010 011010001000
01010001101000100010
01101000100010
00100010

1010 01101000100
001101000100010 1010001
101000110100 001010100011 1000
10100011010001000101
1010 011010001
01000100010 10100
001010100011 10

13 Solutions and Platforms

Digitize the Tools for Improvement

In 2020, we asked some questions about Digital Lean tool usage within a different LNS Research practice area. We repeated these questions in this latest research. Our results show that significant progress has been made since we last inquired about Digital Lean a few years ago (Figure 9).

The focus is still on digitizing Lean tools, such as 5S, Value Stream Mapping, Flow, Kaizen, and Kanban. However, the digitization of tools has increased by approximately THREE times since 2020.

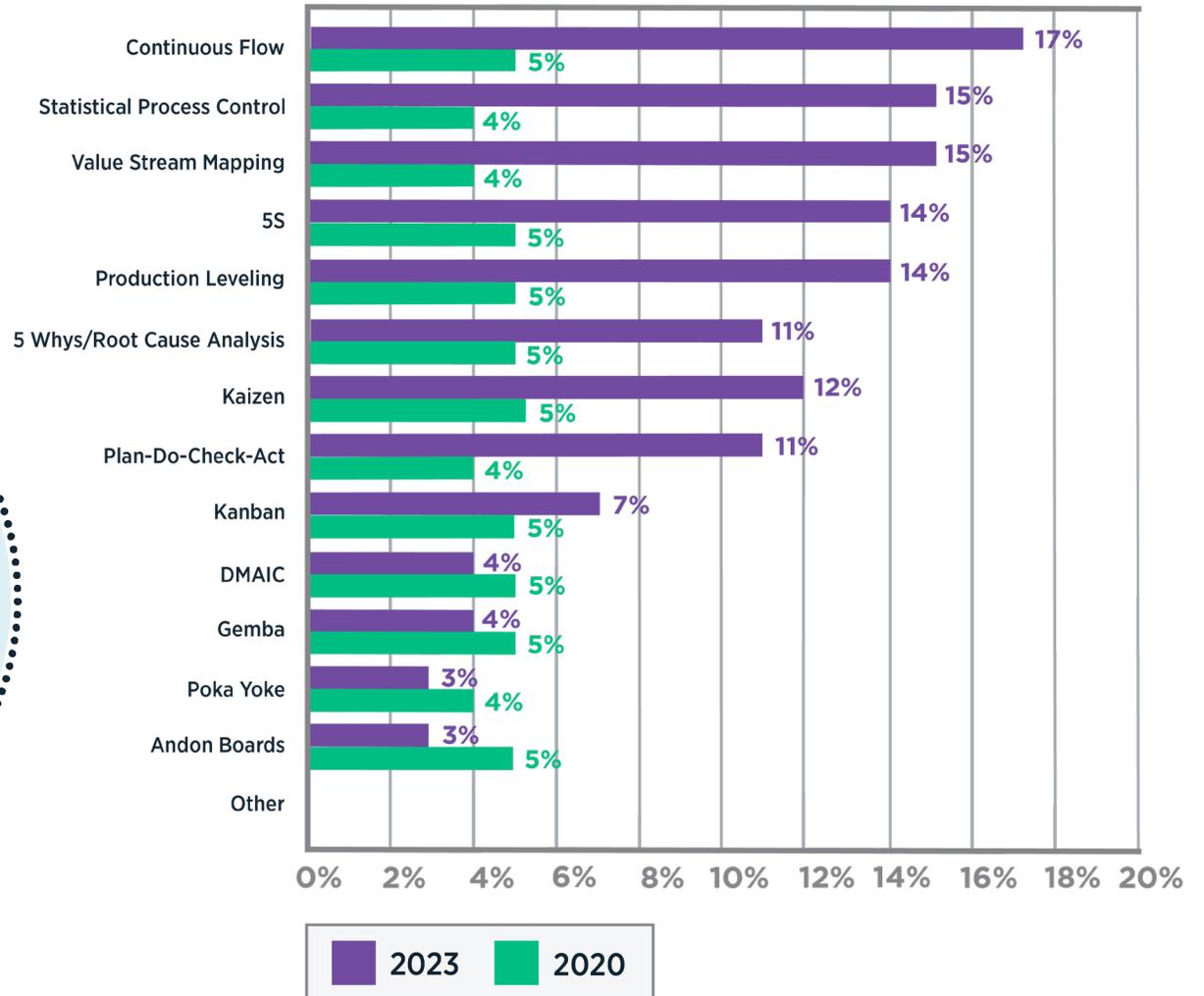


Figure 9 - Progress in Digitizing Tools

14

Solutions and Platforms (Cont.)

Build on What You Have; Scale with What You Need

Early efforts to unify Performance Excellence can be piloted and refined on existing form-based platforms like Enterprise Quality Management Software (EQMS) or an EHS software package. These solutions typically have some limited data and device connectivity, so their value is really on perfecting the digital tools and processes for execution (Figure 10).

As the process is refined to the point of integrating advanced digital tools, such as Digital Twins, analytics, and AI/ML, it bumps up against the capability limits of current offerings in the EQMS and EHS space.

LNS Research views the true home for UPX to be a Low-code/No-code platform where fit-for-purpose apps can be built and connected to large data sources already within the platform, leveraging embedded capabilities for Advanced Industrial Analytics, Digital Twins, and AI/ML.

Enterprise Quality Management Software (EQMS)

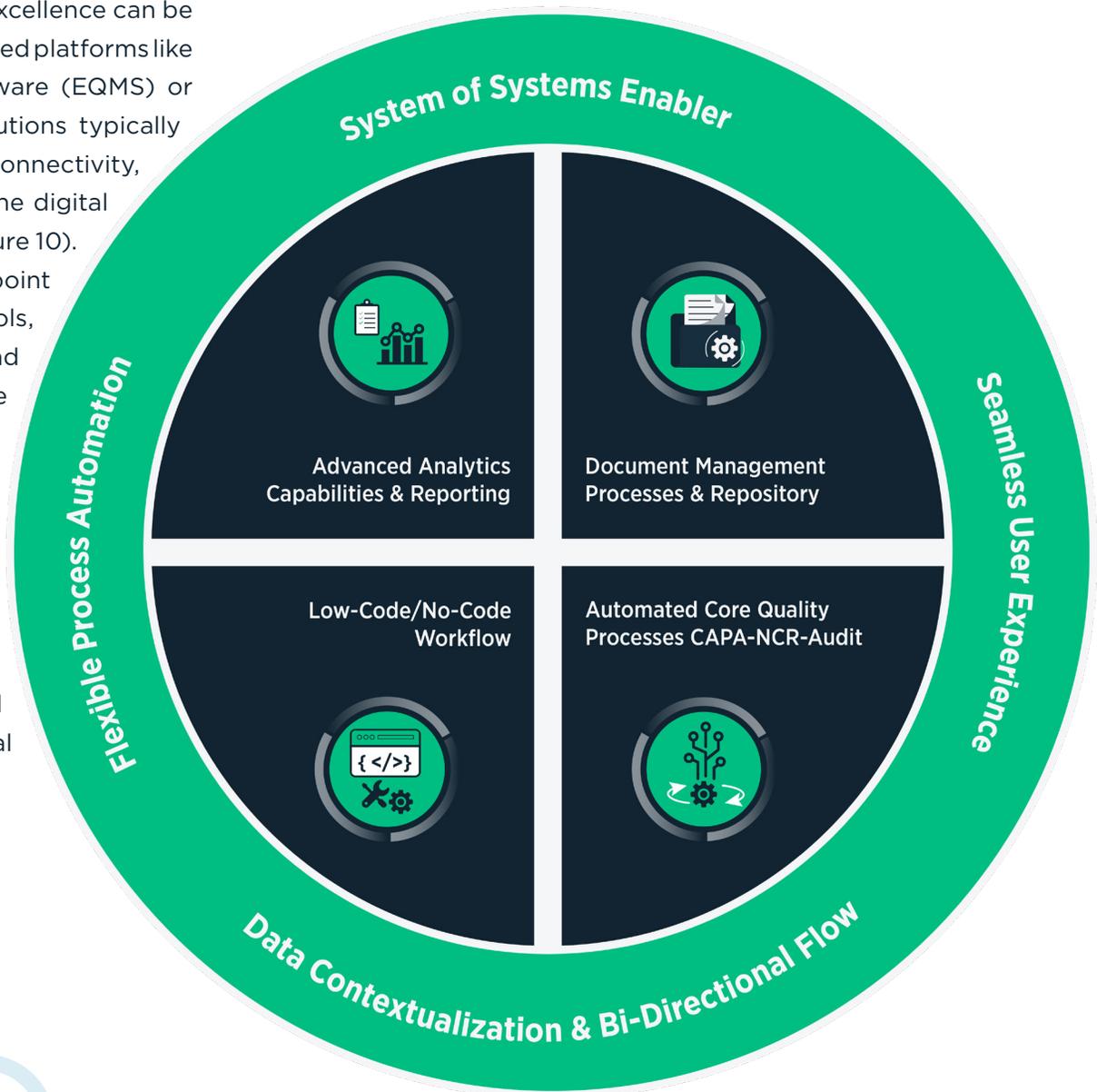


Figure 10 - Enterprise Quality Management

Solutions and Platforms (Cont.)

Leverage Advanced Digital Tools to Uncover Opportunities and Speed Up Time to Results

Conventional wisdom has long been that, early in a transformation initiative, processes should be streamlined and made as efficient as possible BEFORE digitizing, and then automating these processes.

The conventional wisdom was that automating a bad process bakes in bad practices and inefficiency. Our latest research on UPX turns that conventional wisdom on its head. Leaders are turbocharging their UPX efforts and transforming UPX into the improvement engine for Industrial Transformation (IX).

Leaders are leveraging advanced digital tools such as:

- Digital Twins
- Artificial Intelligence/Machine Learning
- Advanced Industrial Analytics

Our research indicates that more than 50% of survey respondents utilize Digital Twins to find, model, and validate potential solutions (Figure 11).

Leveraging Digital Twins speeds up time to insight into improvement.

Digital Twins are utilized to model planned improvements and study results

Data mining to build understanding of potential impacts to performance

Analytics are utilized to identify improvement opportunities

Data mining to validate improvements

Digital Twins are utilized to develop potential solutions

Unified Performance Excellence Teams are key players in developing AI/ML Models for production and validating same

AR/VR to “go to the Gemba” virtually and see the problem in-situ

UPX Use Cases for IX

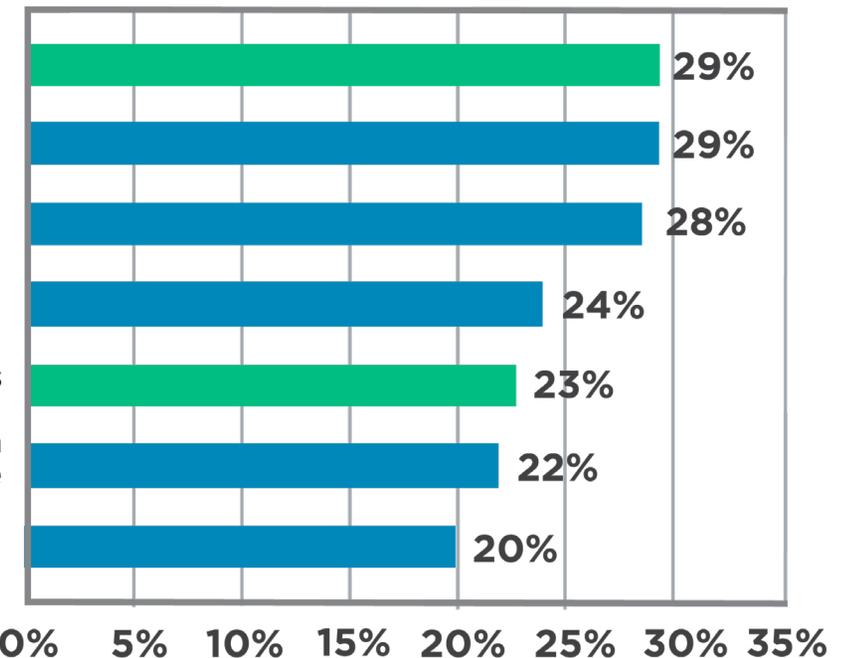


Figure 11 - Rise of the Digital Twin

Solutions and Platforms (Cont.)

Moreover, UPX Leaders are nearly 70% more likely than Followers to be investing in Artificial Intelligence to aid in the identification of opportunities (Figure 12).

This use case for AI outstrips the current AI capabilities in some EQMS solutions.

Additionally, UPX Leaders are nearly 40% more likely than Followers to utilize advanced analytics to help identify opportunities.

Additionally, UPX Leaders are nearly 40% more likely than Followers to utilize advanced analytics to help identify opportunities.

Analytics are leveraged at two levels within the UPX environment. At the operational level, analytics and advanced digital tools are used to drive speed to insights.

At the business level, Analytics and advanced digital tools are leveraged to aid in risk monitoring. These use cases create the system for improving digitized processes within the IX environment. This interoperability, along with Connected Frontline Workforce Applications, delivers insight to the shop floor, where most of the improvement occurs.

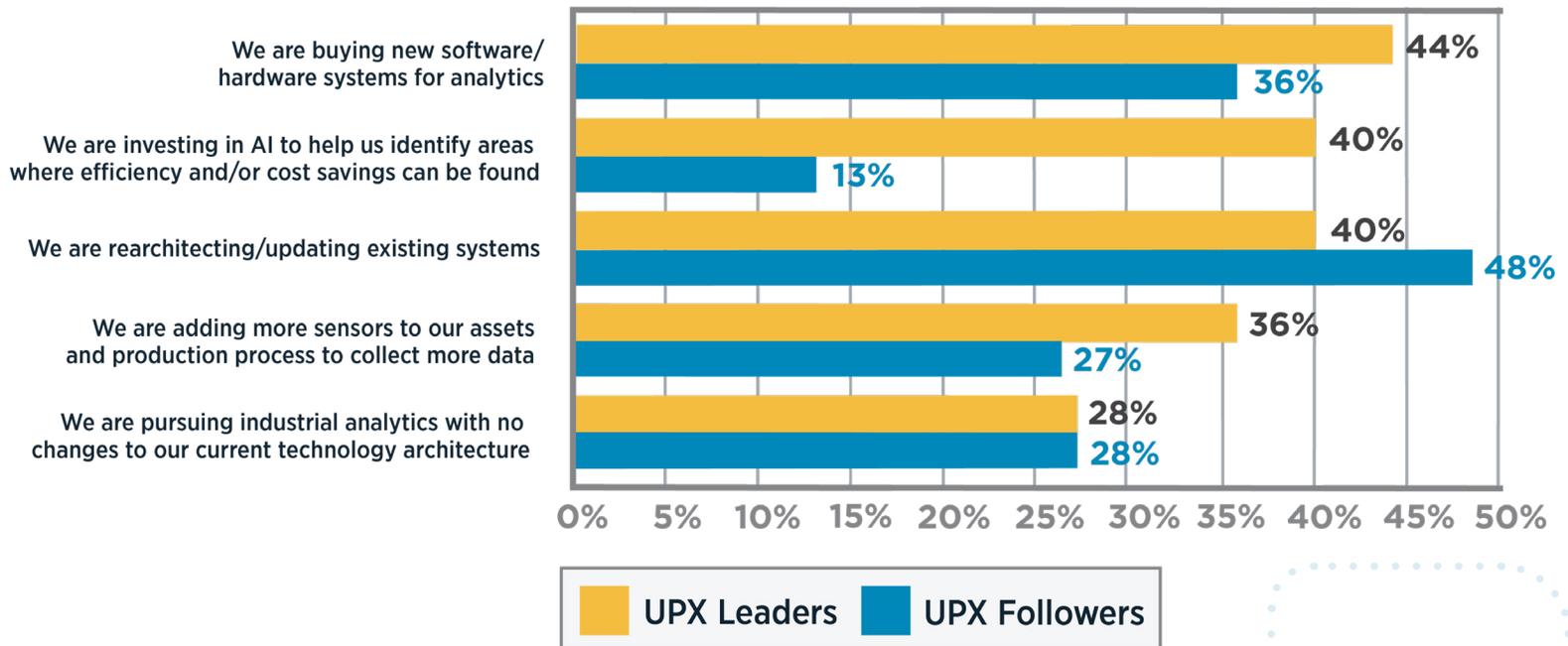


Figure 12 - Advanced Digital Tools Help Find Opportunities

Solutions and Platforms (Cont.)

Connecting UPX with Connected Frontline Worker Applications completes the “last mile” of the journey in delivering valuable insights to those on the frontlines, empowering them to improve the work that they are doing (Figure 13).

UPX Leaders are over SEVEN times more likely than Followers to be connecting Analytics, Machine Learning, and UPX execution together toward automating improvements.

Connected Worker Value Curve

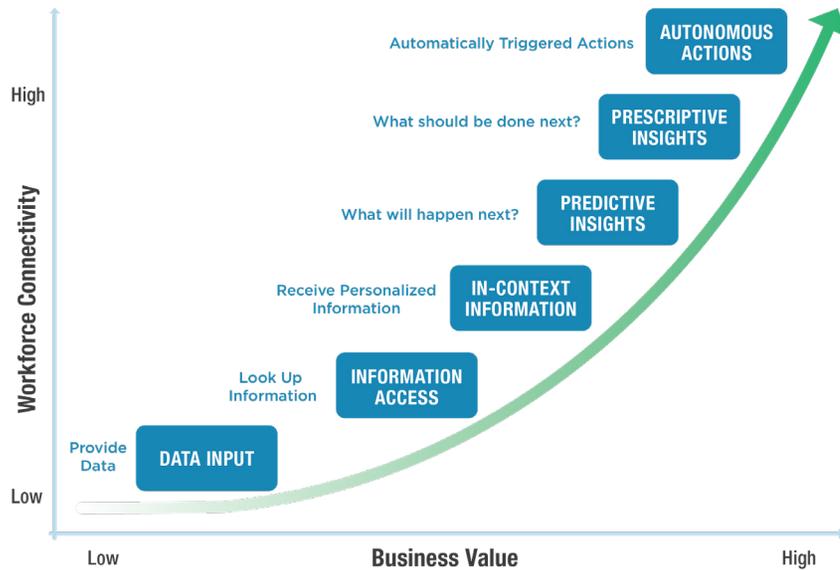


Figure 13 - Connected Frontline Workforce

UPX Leaders are
7x
more likely than
Followers to be
connecting Analytics,
ML, and UPX.

Section 5

Change Management



Change Management

Traditional CI Management is plagued with struggles:

1. Loss of momentum
2. Turnover of trained practitioners
3. Lack of trust in technology
4. Attracting and retaining Digital Natives

Eighteen-percent of our survey respondents see real value, but even Leaders are struggling to retain trained practitioners. This is an opportunity for digitizing the processes and tools to lower the “special knowledge” requirements that characterize traditional improvement approaches (Figure 14).

The vast majority are struggling to gain and maintain momentum in their traditional CI management system approach. Further, vision-focused organizations are struggling to pivot across the IX Chasm. Part of this problem comes down to the choice of platform strategy being used predominantly to digitize Performance Excellence initiatives. The dominant platform is an EQMS solution, which reflects a “build on what you have” mindset rather than a “build it where it belongs” mindset.

Success in Unified Performance Excellence (UPX)

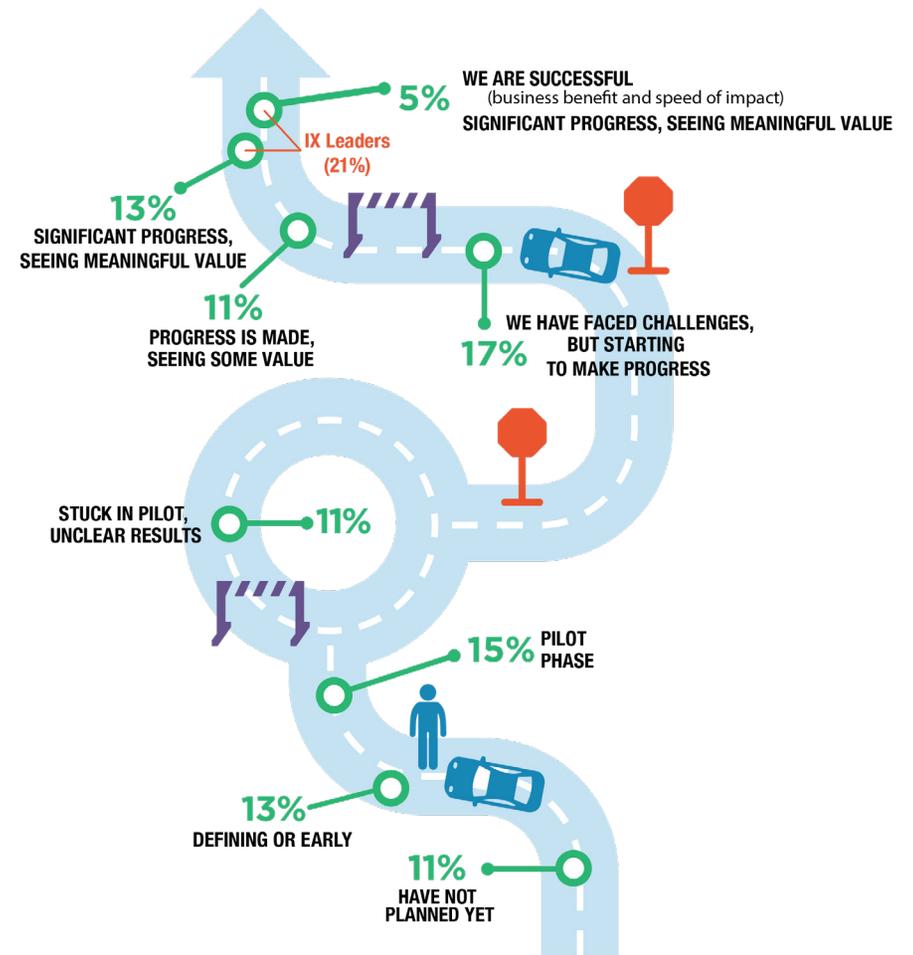


Figure 14 - Leaders and Followers

Section 6

Summary

0010
1101000100010
01000101010 011010001000
1010001101000100010
01101000100010
00100010

1010 01101000100
001101000100010 1010001
101000110100 001010100011 1000
101000110100010001010
1010 0110100010
01000100010 10100
001010100011 10

Summary

The risks to operational sustainment are much more complex today than at any time in the past. Traditional improvement approaches are centered on people-dependent approaches that are unsustainable. Traditional CI management approaches suffer under several headwinds, from special knowledge to long wait times for results, failed projects, and loss of program momentum. Management runs out of patience while waiting for the culture to change and results to accumulate.

Digitizing the execution process and toolkits, connecting large data sources, and leveraging advanced digital tools turbocharges the process. Speeding up time to insight and results, while at the same time lowering some of the hurdles associated with traditional CI management approaches, is critical.

Build custom risk frameworks based on your unique risk profile. Then, digitize those risk frameworks, connect data to them to make them real-time, and layer on AI and analytics to make them intelligent. Intelligent Risk Management is the way forward from the current paradigm of managing-by-spreadsheet and catching flaming flyballs every day.

Important factors in beginning a digitization program include starting with a Center of Excellence that is representative of the plant network but has broad digitalization already implemented, along with a well-established improvement culture.

LNS Research Unified Performance Excellence (UPX) Framework

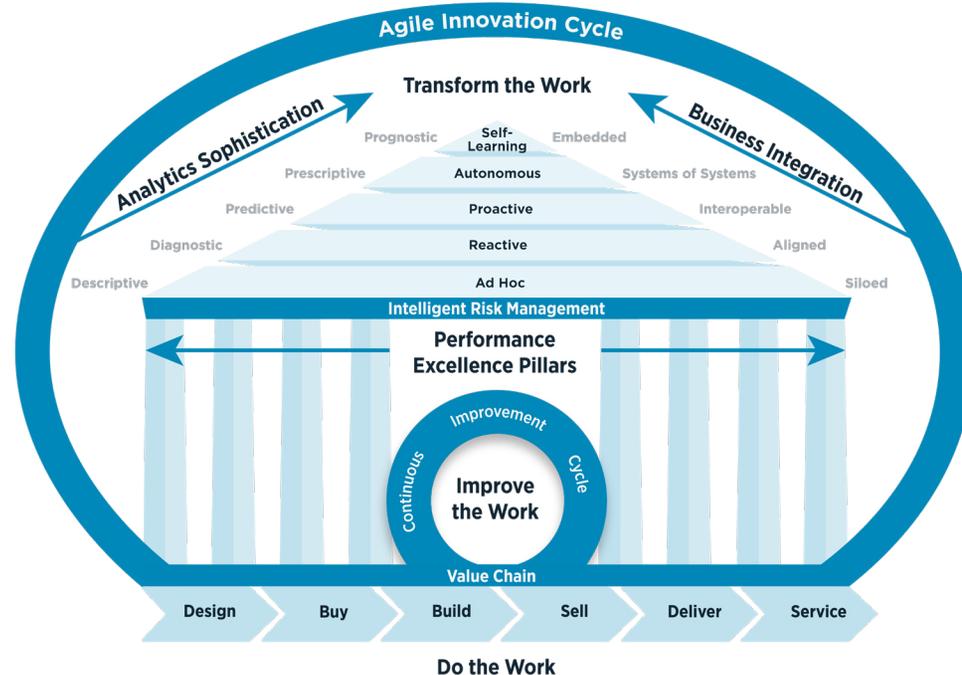


Figure 15 - Unified Performance Excellence (UPX) Framework

Section 7

Recommendations

00010
01101000100010
001000101010 011010001000
01010001101000100010
01101000100010
00100010

1010 01101000100
001101000100010 1010001
101000110100 001010100011 1000
10100011010001000101
1010 011010001
01000100010 10100
001010100011 10

Recommendations

We recommend that industrial organizations seeking to implement a UPX strategy follow these essential steps:

1. **Embed the execution process to standardize and lower “special knowledge” requirements.** Turnover of trained practitioners is the number one issue preventing the scaling of Unified Performance Excellence across companies. Digitization can address this significant issue associated with traditional CI management systems.
 - Digitize the preferred toolset and process into a composable Low-code/No-code environment.
 - Leverage your expert practitioners to lead the digitization effort.
 - Leverage digital connectivity and advanced digital tools like AI/ML, Analytics, and Digital Twins to lower the hurdle that special knowledge places in front of the sprint for results.
2. **Connect UPX to Connected Frontline Worker applications.** CFW, from our perspective, is the “killer app” for manufacturing. Much of the focus in traditional CI management systems is on improving work processes on the manufacturing floor. Today’s workers are less experienced than previous generations, yet the demands on today’s workers are greater than at any time in the history of manufacturing from Industry 1.0 forward. Connecting the frontline worker to the insights, recommendations, and assistance they need to be successful is critical. Therefore, it is not surprising that UPX Lead-

ers are 40% more likely than Followers to have their UPX application connected to their CFW application to drive improvement and capture actions taken.

3. **Build a real-time risk view of operational Agility, Flexibility, and Resiliency.** Leaders in UPX are building their own custom risk frameworks, digitizing them, connecting data sources from the specific variables affecting the risk calculus, and then layering on AI and analytics to help manage changing threats in real time. This creates an extended, clearer view of real-time risk.
4. **Leverage AI and Advanced Industrial Analytics** to aid the revelation of risks and opportunities at the top level and at the operational layer to speed execution.

Leaders' Guide to Unified Performance Excellence (UPX)

The Improvement Engine for Industrial Transformation

Presented by:



Connect:



[Insresearch.com](https://www.insresearch.com)



ACRONYM
QUICK REFERENCE

[VIEW ON BLOG](#)

Authors:

James Wells
Research Analyst
james.wells@lns-global.com

Matthew Littlefield
President and Research Lead
matthew.littlefield@lns-global.com