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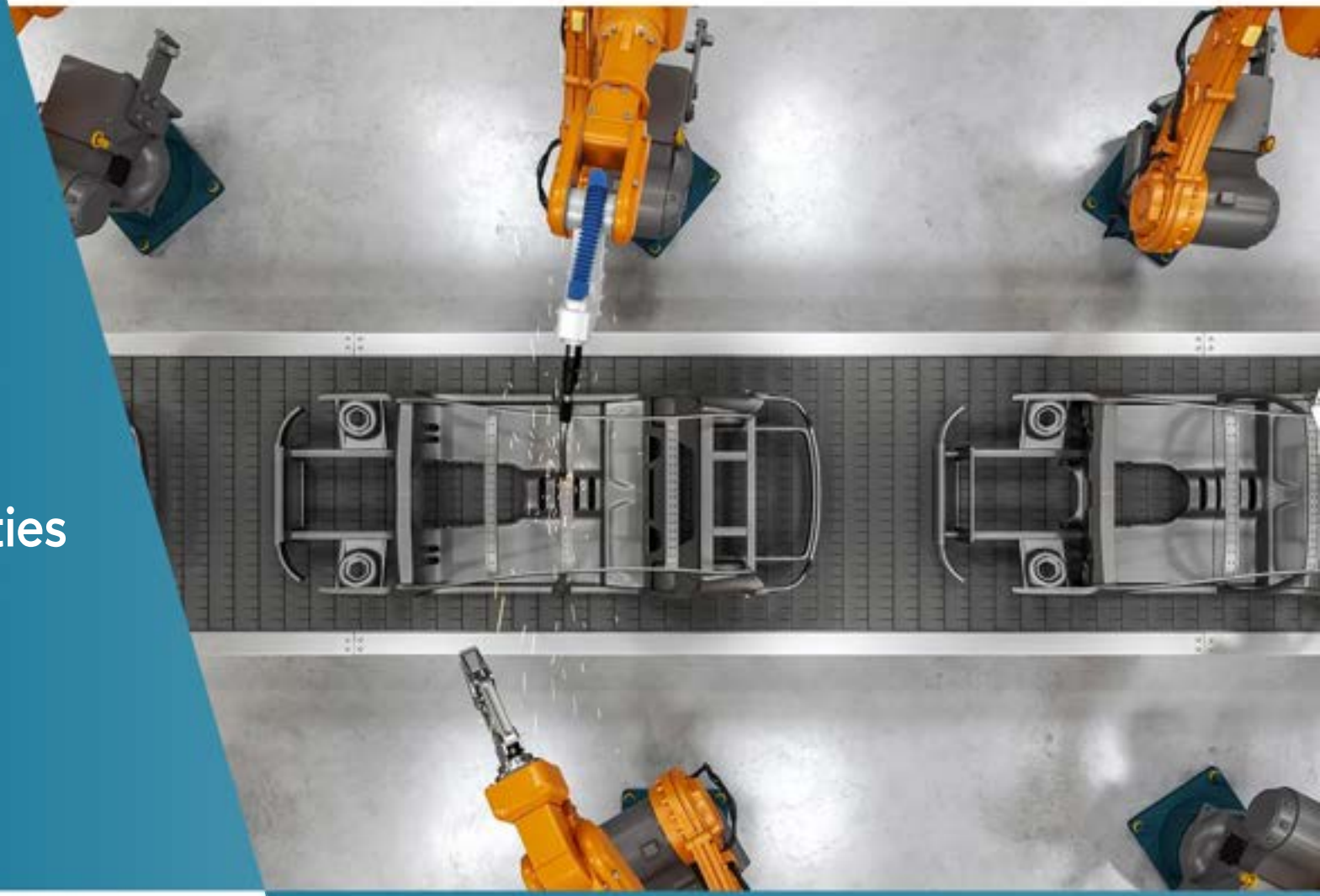
VALUE LEAKAGE:

Hidden Risks & Costs Impacting Operating Facilities



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A Message to Executives

In the early morning hours of a November day, a fractionator fire at a large processing facility knocked out over 100,000 barrels and halted production for eight months.

The net result was millions of dollars of lost production and extensive damage to equipment. A design issue caused the fire, and the emergency response team's inability to identify all fuel sources turned the incident into a lengthy and significant financial catastrophe.

The fire originated in an older part of the plant that had a mix of legacy, new, paper and electronic P&IDs and drawings. Confusion occurred in the emergency response because the available drawings did not reflect the actual field installation, causing delays and further equipment damage. There were not any personnel injuries; however, the result was a costly and prolonged plant outage. Additionally, regulatory fines for violations followed.

Improperly managed asset and process safety information was the primary reason why mitigation efforts were unsuccessful.

VALUE LEAKAGE:

The Price You Pay for Poor Quality Information

Our research shows that over 70% of plants have 33% to 50%+ of their asset and process safety information missing, incomplete, inconsistent, or outdated. The most common complaints from technical staff, engineers, maintenance planners, reliability specialists, process safety and compliance managers, and equipment specialists, are: “We can’t find it,” “It’s not complete,” and “We don’t trust it.”

Another common complaint is that information is scattered across many systems and repositories with multiple conflicting copies of the same information. There is no clear source of truth.

It is not surprising that the second and fourth largest number of citations issued by regulatory agencies such as OSHA, are in process safety information and management of change, where companies do not formally document changes.

As a result, the staff make safety, engineering, financial, capital, maintenance, and operations decisions without full access to complete, consistent, and up-to-date information. These decisions are often suboptimal and cause process companies significant loss.

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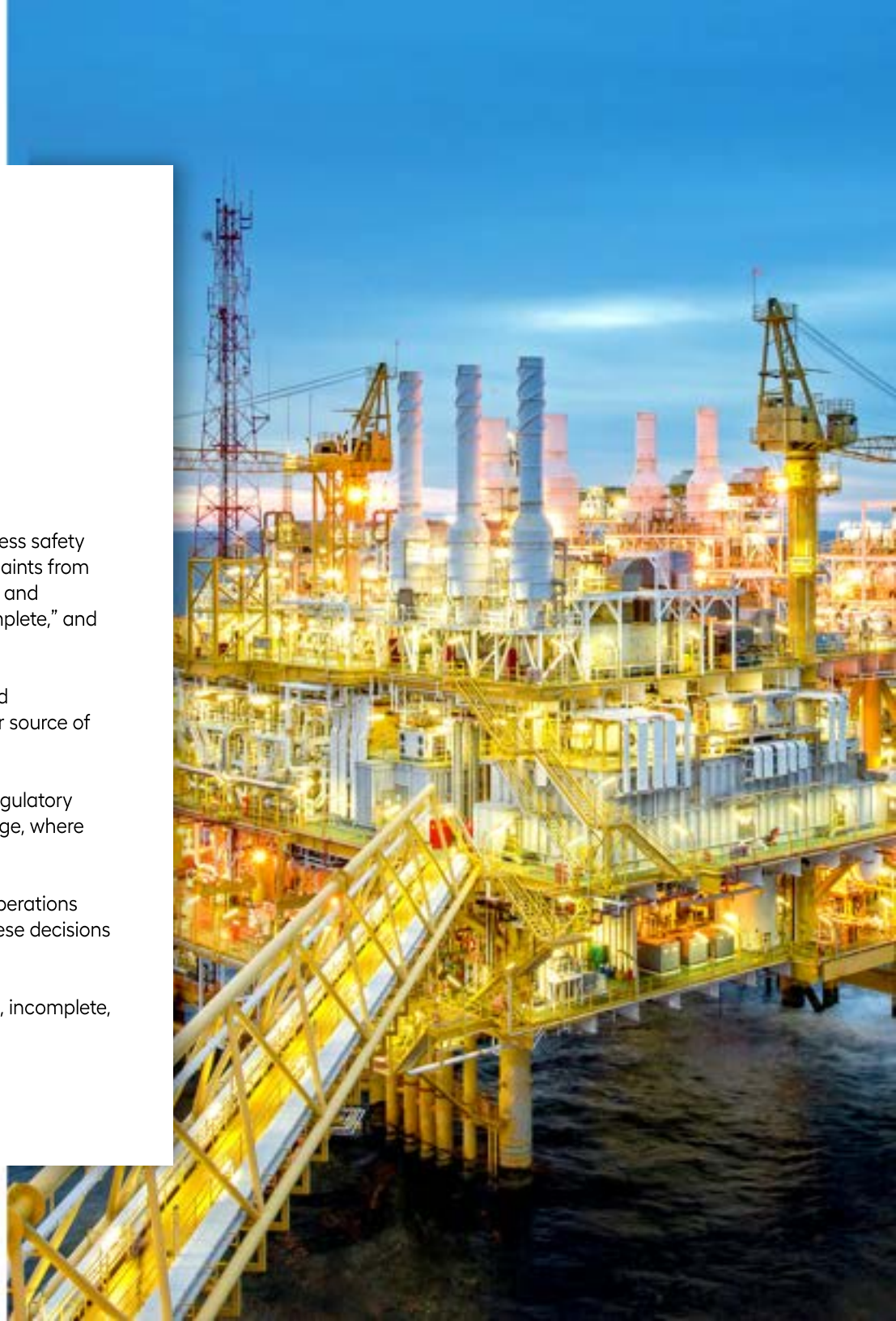

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We Call This Value Leakage

The incident described above is one example of Value Leakage. But Value Leakage also happens because of operational inefficiencies, such as:

- The compressor is vibrating and the plant engineer cannot find the relevant information to quickly diagnose the issue. The engineer shuts down the compressor or reduces throughput, impacting production volumes.
- During a turnaround, an issue is identified, and a part is quickly ordered and installed. The asset later fails because the wrong part was installed, resulting in additional downtime.
- Equipment is damaged because it was operated beyond its integrity operating limits or safety limits because the information on file was wrong or conflicting.
- The procurement software contains inaccurate data, which means the order has the wrong part. The maintenance crew sits idle, and there is a delay in production.
- The employees do not trust the warehousing and inventory management system data, so surplus parts inventory are stored in the warehouse, leading to parts obsolescence and higher working capital
- Work orders pile up because maintenance planners spend excessive time tracking information, calling vendors to verify equipment data, requesting plant walkdowns to verify as-built conditions to address inaccuracies and inconsistencies of data across multiple systems.

Value Leakage results in millions of dollars lost every year from asset failures, production slowdowns, safety incidents, and shutdowns due to inefficiencies and poor decisions caused by deficient asset and process safety information. The average operating facility incurs tens of millions of dollars per year of Value Leakage, a significant sum that would otherwise go to the company's bottom line

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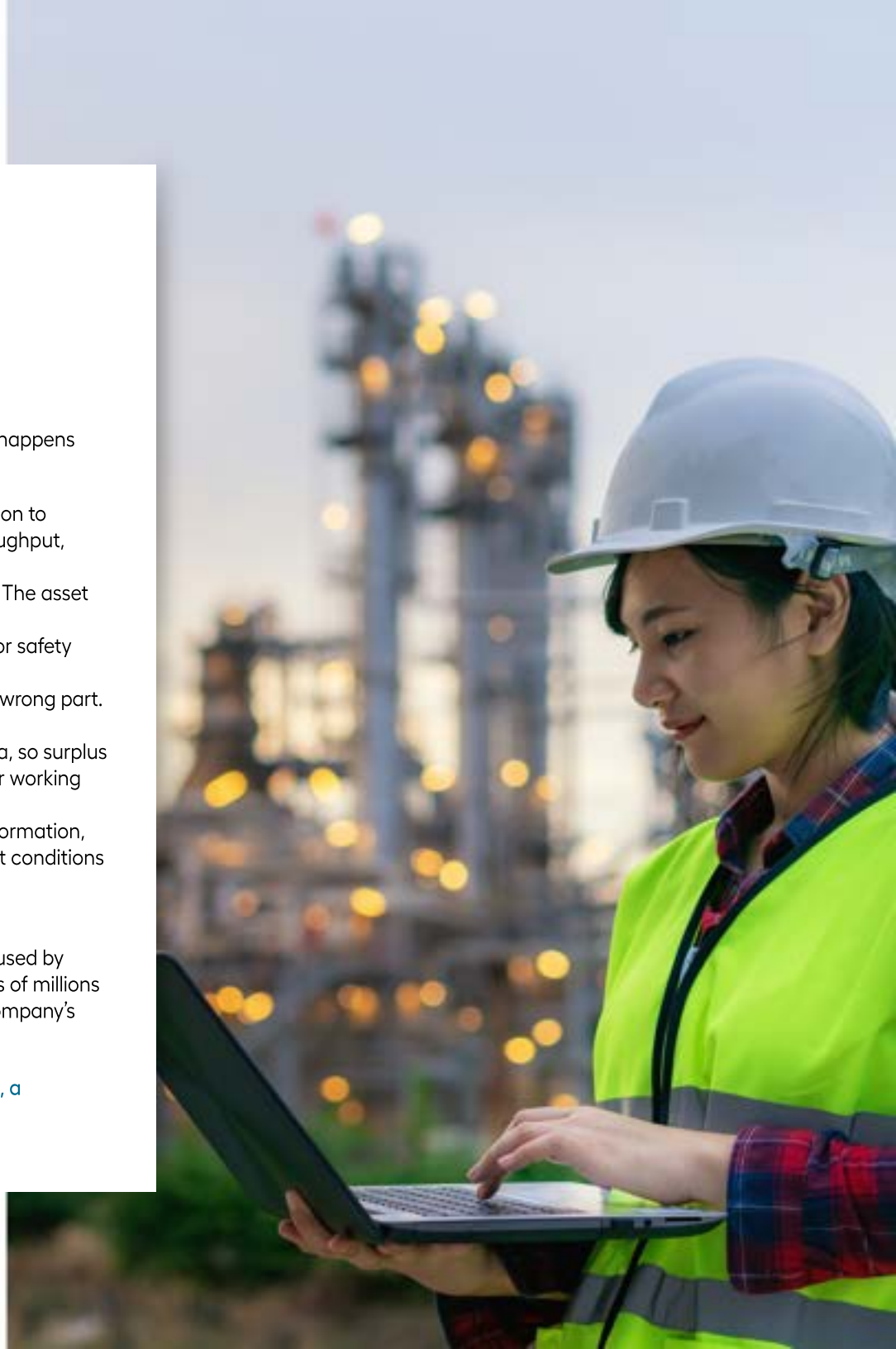

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Accounting & Financial Information vs. Asset & Process Safety Information

Many COOs want to know why everyone trusts the company's accounting and financial information but not their asset and process safety information.

The answer is in the standards, processes, governance, and technologies that the CFOs have established to ensure accurate, up-to-date, consistent, and trustworthy accounting and financial information. No CFO would accept a situation where accounting and financial information across different repositories is inconsistent, incomplete, and outdated.

Accounting and financial information are subject to many policies, expenditure authorization limits, disclosure controls and procedures, and internal controls over reporting. Yet, these same controls are often not in place with asset and process safety information. For example, controlled engineering records (such as drawings, datasheets, standards, and procedures) are often found in non-controlled environments such as SharePoint and shared drives. These repositories allow easy access for users to modify documents, leading to duplicate, inaccurate and inconsistent information across systems.

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Obstacles to Better Quality Asset and Process Safety Information

Based on our research, we have identified four primary obstacles that are preventing process companies from ensuring their asset and process safety information is high-quality:

Lack of executive awareness

Information quality issues do not typically get escalated to business executives. The causal linkage between information quality, suboptimal decision making, and avoidable inefficiencies and losses are not documented and publicized.

Perception that IT is the problem

Because we are talking about data, information, and systems, the perception is that information quality is an IT issue and not a critical business issue.

Lack of internal tools and KPIs

Most process companies do not have the tools or expertise to objectively measure the impact of deficient asset and process safety information.

Company inertia and complacency

We often hear employees at all levels say that they've always done it that way, or that information degrades as fast asyou fix it, so it's better to spend money where the returns are clear.

The need for trustworthy asset and process safety information is growing. Information requirements are becoming more sophisticated, and the number of stakeholders is expanding. As a result, thecomplexity of collecting it, keeping it current, and sharing it, increases. It is important to note that advanced applications artificial intelligence, machine learning, big data analytics) need structured data (not PDFs or Excel) to share between them. What worked in the past is unlikely to work in the future

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Digital Twin as a Business Strategy to Reduce Value Leakage

Digitalization can be leveraged in many areas of your business but for a process company with operating facilities, it must be applied to reduce Value Leakage. This is where digitalization has a lasting and transformational effect on the business with clear, and measurable results.

Digitalization is when high-quality, cross-disciplinary data (design, equipment monitoring, maintenance, operations, financial, procurement, warehousing, process safety) from an operating facility is available in a format that advanced digital technologies can use. Digitalization leads to fundamental changes in business processes that result in new business capabilities. It should not be confused with digitization, converting analog to digital format such as paper to PDFs and Excel.

At the heart of digital transformation is the Digital Twin, an accurate 360-degree digital replica of a physical plant. The Digital Twin is made possible by the convergence of three separate, but interrelated technology domains: Engineering Technology, Operations Technology, and Information Technology

Digital Twin: An accurate digital replica of a physical plant providing an integrated 360 degree view of the asset at any point over lifecycle of the asset

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Implementation of the Digital Twin helps process companies improve and optimize operating facility performance with the ability to:

- Support remote operations and monitoring
- Optimize maintenance and turnaround planning
- Perform end-to-end process hazard analysis
- Foster cross-departmental collaboration
- Simulate turnarounds and reduce the potential for surprises
- Leverage augmented reality for training

Users access all asset and process-related information through a single portal. Because data are structured, advanced analytics such as machine learning and artificial intelligence can be used to:

- Identify patterns in data to predict the next asset failure
- Discover patterns in underlying performance deficiencies
- Optimize production and reduce energy consumption

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The Digital Twin is a business strategy to reduce Value Leakage and create new value; it's not just a technology. At ReVisionz, we view it as a collection of tools, systems, KPIs, standards, and governance that enable new capabilities to transform how companies can leverage asset and process safety information to improve safety and operational performance.

Innovation and automation over the last ten years have brought down the cost of digitalization. Traditional, manual methods of sorting, extracting, and managing asset and process safety information have been costly, time-consuming, and error-prone and are no longer acceptable.

Consider the cost of extracting master data from engineering and vendor documents to populate enterprise asset management systems such as SAP, MAXIMO or Oracle. Manual extraction from multiple documents starts at $350/tag but when automated the extraction process and costs can drop to under $50/tag. In another example, document management staff traditionally extracted metadata manually at $15-$40/document. The use of machine learning and automation is bringing the costs as low as $1 per document.

- The Digital Twin is not just a technology, it is a business strategy to reduce Value Leakage and create new value.
- Innovations such as machine learning and automation are bringing down the cost of digitalization.

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READY TO START YOUR DIGITAL TWIN JOURNEY?

Achieving the Digital Twin is a journey, and where you start depends on the state, processes and governance of your information, application landscape, objectives, and business priorities. Coupling clear business objectives with industry best practices, templates and the latest automation tools allows Digital Twin projects to be defined and executed in months instead of years while reducing overall project risk and improving incremental business value.

WE'RE HERE TO GUIDE YOU THROUGH THIS JOURNEY.

For over two decades, ReVisionz has been unlocking the power of asset and process safety information to help process companies avoid unnecessary costs, improve shareholder value, and meet regulatory compliance requirements. Unlike larger consulting and services companies with broader offerings, we are asset and process safety information experts focusing on the physical plant's lifecycle, from design and construction to commissioning, operations, maintenance, and retirement.We combine our extensive understanding of asset and process safety information with our in-depth knowledge of capital projects, operations, maintenance, process safety, and information technology to help clients manage asset and process safety information through the physical asset lifecycle. We have turned our expertise into functional templates, frameworks, and automation tools to reduce project risk and costs.

CONTACT US TODAY AT INFO@REVISIONZ.COM OR CALL 1-855-444-8181 TO SCHEDULE A DISCUSSION.