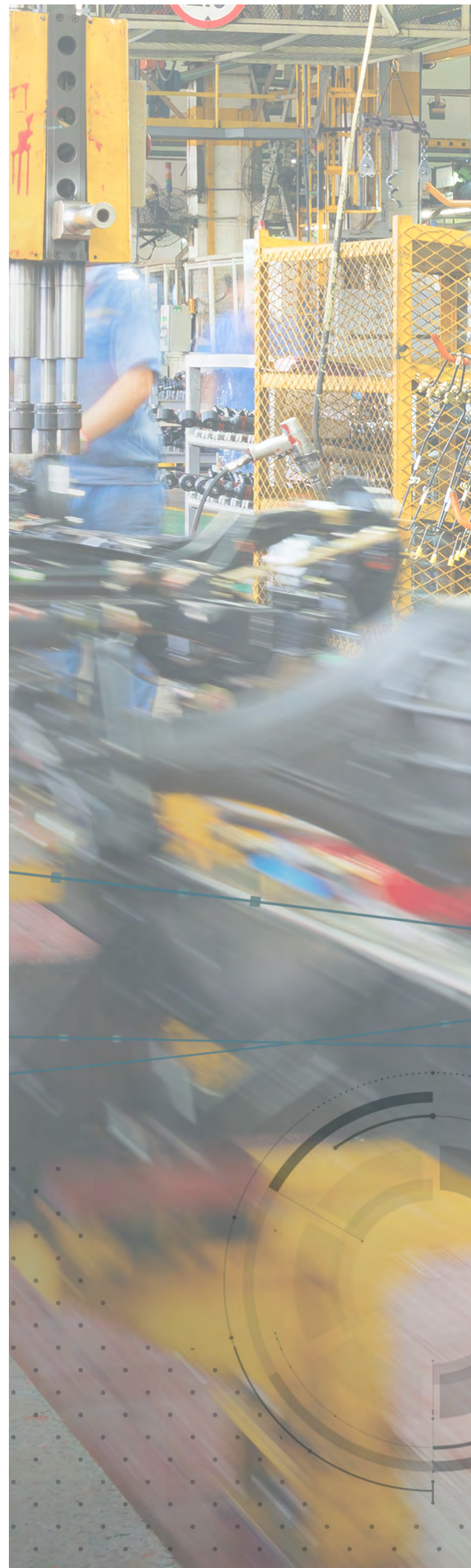




# Choosing the Right Technology for Right Now: How to Maximize Throughput During COVID-19

WHITE PAPER





In 2020, many production pain points became breaking points for manufacturers. Processes and throughput are being tested like never before—but most of these issues were already recognized across the industry. Why were they allowed to persist until this global breaking point?

In most cases, the answer is simply a lack of urgency. Workarounds that fixed immediate issues were good enough in the moment. Even as the need for change was recognized, executives were often overwhelmed by an “overflow of options and potential use cases.”<sup>1</sup>



In today's new normal for manufacturers, there's no more time for technology buzzwords and pilot projects that linger indefinitely. But you still need to find the right solution for your challenges, supported by proven results. In order to improve throughput today and support tomorrow's unpredictable demands, your technology investment needs to be provable, actionable, and directly address immediate demands on efficiency, cost, productivity, and utilization.

## Moving Quickly in an Unpredictable Market

Increased throughput, lower production costs, faster time to market, and the ability to quickly respond to changing consumer demands are the oft-touted benefits of industrial Internet of Things (IIoT) technology. And with such significant business outcomes, it is a compelling investment.

1. *How to rebound stronger from COVID-19: Resilience in manufacturing and supply systems.* World Economic Forum white paper, May 2020.

COVID-19 has shown the world something that the manufacturing industry should already know. Traditional supply chains and manufacturing ecosystems are failing and we need to shift to a more adaptable, agile solution that is fully digitally enabled. The virus, like any crisis, has merely underlined both that need and the urgency and will likely serve to accelerate that change. This needs to result in real plans of action, rather than debate.

*–Post COVID-19, The Answer Is Digital Transformation, Now  
What's The Question? Forbes, May 2020*

Unfortunately, due to the intricacy of the manufacturing industry, along with the soft ROI of IIoT, it's often difficult to fully quantify the direct value of IIoT initiatives.

How do you measure the value of “increased agility,” for example? Or predict the future value of scalability—especially in today's unpredictable world?

Because of this, IIoT initiatives often linger in pilot stage, cost-analysis purgatory, or devolve into a problematic and expensive do-it-yourself strategy as teams scramble to figure out the most high-value use cases or measure ROI-expectations.<sup>2</sup> The problem isn't a lack of provable value—it's that the value has evolved past traditional analyses. And that's even more true today, when “traditional” has been left behind in more ways than one.

2. *Success with the Internet of Things Requires More Than Chasing the Cool Factor*. Harvard Business Review, August 2017

## Value Analysis: Investing During Uncertainty

An IIoT implementation can't be treated as just yet another IT project or plant-level initiative, such as upgrading a network or implementing a new ERP system. A vital part of IIoT is continuous, flexible scalability towards new challenges and opportunities. Traditional ROI calculation methods don't work well for investments that are as flexible and growth-scalable as IIoT, as they tend to overstate early-stage costs and devalue the long-term strategic investment—presenting a greater uncertainty at the outset and underplaying future value.<sup>3</sup>

The best way to determine the value of your specific IIoT investment—both as a short-term, immediate need and as a long-term, scalable solution—is to work with industry experts who can analyze your business objectives, including how they are likely to evolve post-COVID-19. With industry experience, analyst research, and use cases at their fingertips, these experts can help you make immediate investments that address your most urgent needs—without introducing long-term problems down the road.



3. *The ROI of IIoT: Quantifying the Strategic Value of IIoT*. Barkai, Joe, July 2018.



“Our survey shows that senior executives – across all industries– have witnessed first-hand what capabilities and requirements in the supply chain were crucial during the crisis. Increasing visibility, improving risk assessments and increasing flexibility to a changing demand were consistently ranked as top three priorities coming out of the crisis.”

*-How to Rebound Stronger from COVID-19: Resilience in Manufacturing and Supply Systems, World Economic Forum white paper, May 2020*

In the value analysis table and use case proof points that make up the rest of this paper, we provide expert insights into how an IIoT solution can solve the immediate challenges presented by the COVID-19 pandemic, while creating a strong foundation for further value. We've structured the table sections according to the most common challenges that manufacturers are currently struggling with as they try to maintain throughput and drive high productivity.

# Value Analysis Table: Immediate Solutions for Throughput Drains

THROUGHPUT DRAIN	IMMEDIATE SOLUTION
<p><b>Unplanned Asset Downtime</b></p> <p>Unplanned downtime is one of the costliest drains on manufacturers. No matter the cause of downtime, the detrimental effect on throughput is immediate. And over the long-term, downtime can impact equipment's lifespan—a huge CapEx drain.</p> <p>Most plant floor maintenance activities take place on a planned schedule, whether they are needed or not. Or worse, maintenance only occurs when a machine breaks down.</p> <p>This reactive approach regularly requires machines to be taken offline—whether or not maintenance is needed. This is hard on machines, wasteful of time and resources, and lowers plant floor productivity, throughput, and ROA.</p>	<p><b>Predictive and Prescriptive Maintenance</b></p> <p>Understanding the different failure modes of equipment is the best way to prevent machine downtime.</p> <p>IIoT solutions can gather information about device and equipment states, temperature, speed, vibration, individual components, and other objective data for an integrated look into a machine's health and performance in real-time.</p>
<p><b>Limited Visibility into Asset Utilization</b></p> <p>Siloed and inaccessible asset utilization data obscures visibility into operations. This makes scheduling difficult and creates unnecessary downtime. Meanwhile, manufacturing operations rely on a number of disparate IT and OT systems across the shop floor. But these disconnects reduce plant floor efficiency and product quality.</p>	<p><b>Unified, Role-Based Dashboards</b></p> <p>With an integrated, single-screen view providing bi-directional access to all data from various systems—such as MES, ERP, PLM, historians—all employees have access to real-time, unified data. This specific, and integrated information improves production efficiency and product quality.</p>
<p><b>Yield, Scrap, and Rework</b></p> <p>Lack of real-time insight into the production process means it's harder to identify issues or delays as they are occurring—and impossible to prevent the issues. The result is higher operating costs, more waste, and delayed ability to fix product and quality-impacting conditions on the production floor.</p>	<p><b>Process, Production, and Correction Awareness</b></p> <p>With real-time alerts and insights into the production process, technicians can proactively identify quality inefficiencies and correct them, saving scrap, stopping waste, and freeing up time for more valuable tasks.</p>
<p><b>Slow to Adapt to Market Needs</b></p> <p>Due to today's increasing product complexity and mass customization of products, the production floor can't easily pivot to meet new market demands. With inflexible IT and OT systems and processes, manufacturers are unable to continuously improve or adapt to changing market expectations.</p>	<p><b>Iterative and Innovative Flexibility</b></p> <p>With real-time, in-depth industrial ecosystem awareness, businesses can easily adjust production and roll out new products and processes to meet market demand. They can provide up-to-date, agile forecasts on plant output and risk assessments, while driving supply chain and workforce management accordingly.</p>

## Long-Term Results

The IIoT combines data with powerful analytics to prevent downtime by predicting what maintenance is needed and its potential impact. IIoT solutions enable maintenance to be performed only when it is truly needed, preventing unplanned, costly downtime in the short term and increasing ROA over the long term.

Maintenance teams can anticipate problems before they occur and empower employees to quickly address issues when they arise, minimizing unplanned downtime and maximizing throughput.

By providing greater visibility into the myriad of value chain activities, IIoT solutions coalesce data for easier and faster productivity analysis. Technicians have real-time visibility at all times, which gives them the flexibility to respond immediately and effectively to any transpiring value chain events and increase asset availability, productivity, and throughput.

For example, with an IIoT solution, shop floor workers get access to all relevant information—including work instructions and inspection requirements—tailored to their unique business unit or geography. Meanwhile, plant managers gain increased visibility into all levels of the manufacturing process—including insights into ways to increase throughput, efficiency, and more.

During the COVID-19 crisis, [manufacturing] senior executives have regularly stressed that their past investments in new technologies are paying off now. Two regularly mentioned benefits involve increased supply chain visibility as well as the ability to quickly simulate alternatives for quicker and data-backed decisions . . . companies which effectively leverage new technologies feel that their supply chains are well capable to deal with COVID-19, whereas companies which do not effectively leverage new technologies feel a lot less well-prepared.

*-How to Rebound Stronger from COVID-19: Resilience in Manufacturing and Supply Systems, World Economic Forum white paper, May 2020*

## Industry Results: How IIoT is Improving Throughput

The IIoT improves throughput by reducing unplanned downtime and improving performance monitoring, asset utilization, and predictive maintenance. Here's what those benefits looked like when IIoT was put into practice by leading manufacturers.



### **Predictive, Real-Time IIoT Maintenance Reduces Downtime Losses by More Than 40,000€ Per Minute**

A large German automotive manufacturer uses IIoT to create role-based production line information. Maintenance teams get real-time information on any low performing or failing component and can immediately pinpoint the exact maintenance need.<sup>4</sup>



### **91% Accuracy in Predicting Alarm States for more Preventative Maintenance**

In a similar use case, a large automotive tier one supplier was able to develop new models that could predict alarm states with approximately 91% accuracy. Technicians are now able to be more proactive with maintenance and prevent downtime, rather than react to it.<sup>5</sup>



### **Sophisticated Data Analysis Eliminates Need for New Machine Investments**

HIROTEC collected and analyzed real-time and historical in-depth data to improve inefficiencies. Along with process improvements, HIROTEC fixed other bottlenecks that resulted in removing the need for a new CNC machine investment.<sup>6</sup>



### **100% Reduction in Time to Manually Inspect Production Systems, Enabling Technicians to Re-Invest that Time in More Value-Driving Tasks**

HIROTEC's IIoT solution provides real-time visibility into its business operations, which in turn enables real-time solutions for inefficiency, waste, and throughput issues.<sup>6</sup>

Using IIoT and analytics for condition monitoring and predictive maintenance can help ensure high uptime for critical assets – particularly among those 82 percent of assets having a random failure pattern. IIoT provides an opportunity to significantly improve operational performance with higher reliability, business process automation, and even transformative changes."

*-Improve Asset Uptime with Industrial IoT and Analytics,*  
ARC Advisory Group report

4. PTC Customer results 5. PTC Customer results 6. HIROTEC case study



## Acting with Urgency to Improve Throughput

COVID-19 is disrupting manufacturing enterprises around the world. A strategic and accurate investment assessment is the best way to ensure that you get the most value out of any new productivity initiative—both in the immediate results and long-term scalability.

These value analyses are only starting points. With a focus on your specific business objectives, an industry expert can help you balance the immediate value and long-term benefits of whatever throughput technology you focus on.

[Learn more](#) about developing an accurate value assessment for throughput-based investments in IIoT.

COVID-19 requires the modernization of manufacturing . . . we're going to see many years worth of innovation in the next 18 months. Many of these solutions will bring greater efficiency, lower costs, and less waste, enabling them to outlast the pandemic and pay for themselves quickly.

*—Due to Covid-19, Manufacturing Will Experience Five years of Innovation in the Next 18 Months. Shedletsky, Ann-Katrina. Forbes, May 2020*



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