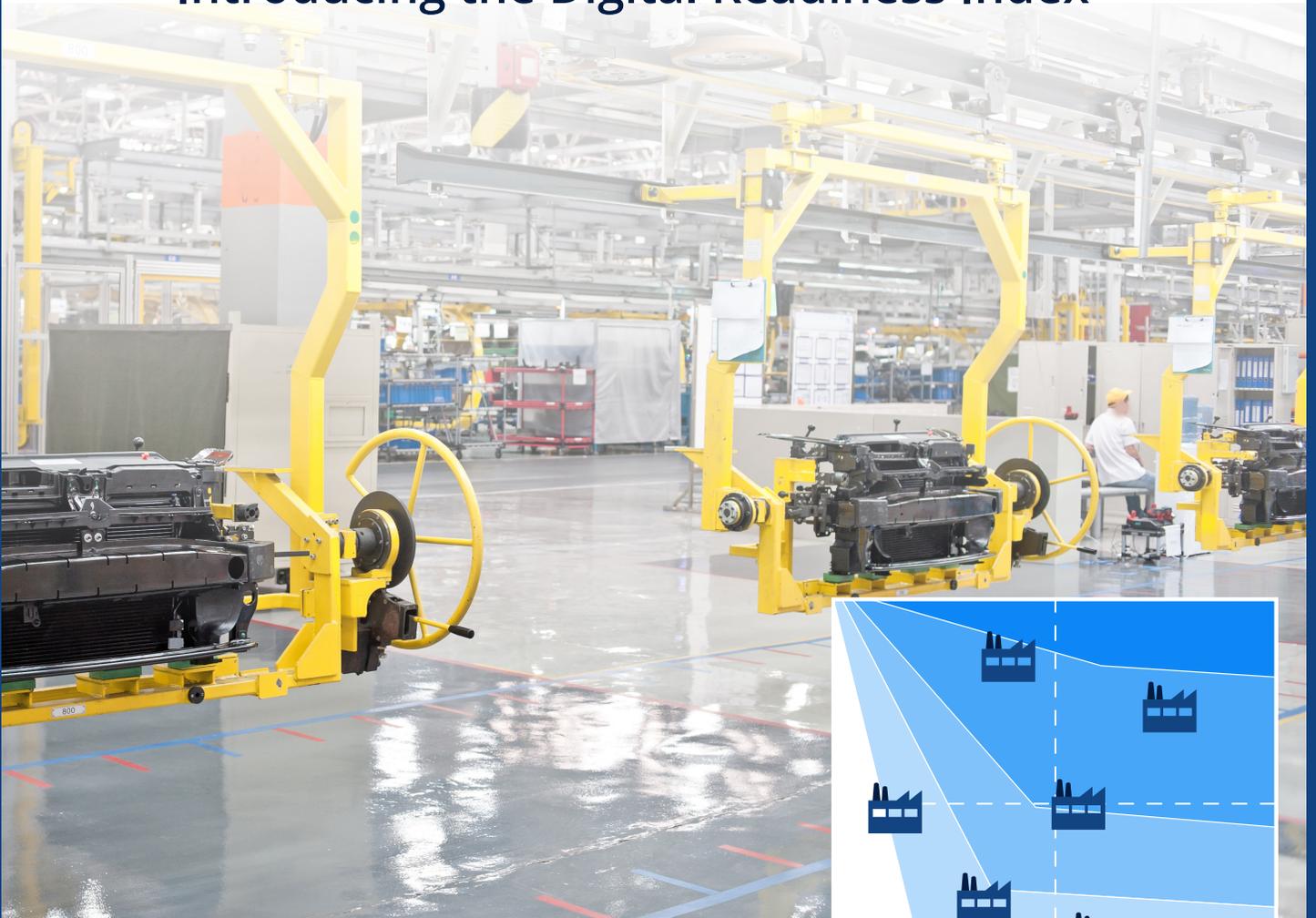


Is Your Company Ready for Digital Transformation?

Introducing the Digital Readiness Index



Sight Machine regularly meets with large manufacturers who are embarking on journeys of digital transformation. They understand the tremendous potential of applying big data analytics techniques to digital manufacturing data, but don't know whether their companies are ready or where to begin.

Others have a pilot project or two under their belts and are ready to apply the technologies more broadly, but need to decide where to focus. They often have multiple product lines, factories, or divisions with widely varying levels of digital connectivity and staff capabilities.

Through our experience with dozens of companies embarking on digital transformation, Sight Machine has developed a standardized process to evaluate corporate readiness, identify appropriate projects — those most likely to succeed based on current readiness — and rank projects according to their readiness. We call this the Digital Readiness Index (DRI).

A Roadmap for Digital Transformation

DRI provides a roadmap for digital transformation. It guides companies on selecting projects that will deliver immediate value and recommends key areas for investment to develop more advanced capability.

DRI looks at two big questions:

**Do we have the technical assets in place for a digital manufacturing initiative?
(Technical Readiness)**

**Do we have the organizational assets and buy-in we need for the initiative to succeed?
(Organizational Readiness)**

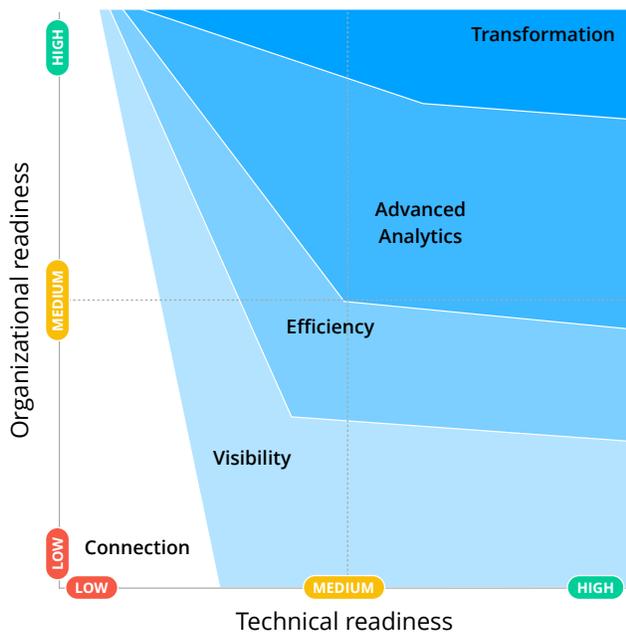
Sight Machine has learned that digital manufacturing project success varies by the level of organizational and technical readiness a specific plant has. It isn't the overall level of sophistication in these areas that determines success, but rather selecting appropriate projects that align with the current level of readiness.

Understanding where individual plants sit in terms of these readiness attributes allows companies to select the appropriate use cases that will more readily deliver value.

DRI is a companion tool to the Manufacturing Performance Index (MPI), introduced by Sight Machine in March 2017. MPI offers a common language that lets manufacturing and financial executives determine the potential impact on profitability of changes to manufacturing operations. These changes can include investment in new technology, increased machine uptime, added production shifts and other inputs. Among other uses, MPI provides a tool for estimating the ROI of improvement opportunities identified through data analytics.

The DRI Process

The DRI process starts with a questionnaire that walks companies through key aspects of technical and organizational readiness. While the answers to these questions can be illuminating on their own, we have created a system for scoring and summarizing the results, enabling comparisons between projects, plants and companies.



The answers place a plant into one of five Digital Readiness Zones. Each Digital Readiness Zone includes use case examples for projects that are achievable at that level of readiness, and recommends where to focus investments in digital readiness to enable more ambitious, higher-return results.

In order of increasing readiness, the Digital Readiness Zones are:

- Connection
- Visibility
- Efficiency
- Advanced Analytics
- Transformation

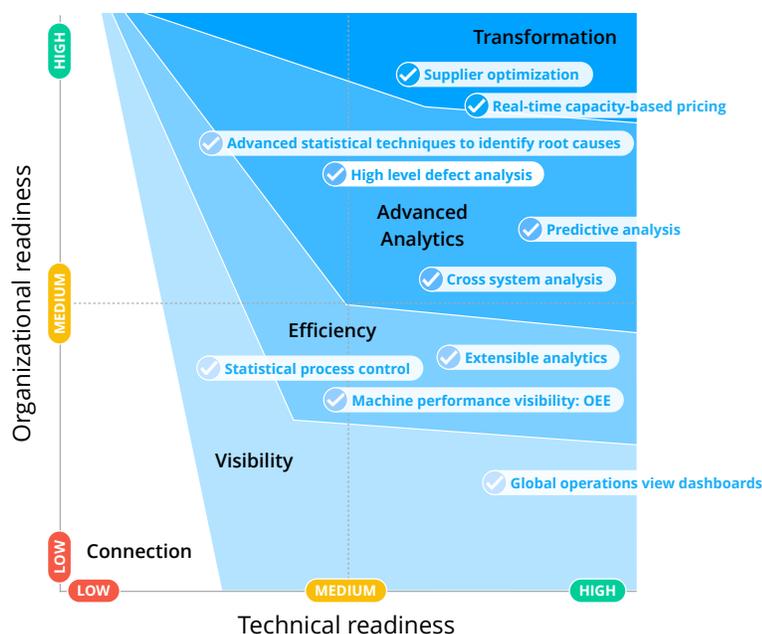
In some cases, the technical assets may be there, but the political, financial or staffing support is missing. For example, if the project will require extensive support from the IT department, but the project isn't among the IT team's priorities for the year, a prudent approach would be to quickly focus on obtaining alignment between IT strategy and a digital roadmap for plant operations.

In other cases, the exercise will help pinpoint specific technical steps that must be taken. For example, if the focus is enabling root cause analysis for solving quality or productivity problems, then it is critical to capture timestamps, part serial numbers or batch IDs at each process step.

We map the results of the DRI exercise onto a chart with technical readiness as the x-axis and organizational readiness as the y-axis. The chart is broken into the zones of digital readiness.

Quick Win Projects for Each Digital Readiness Zone

As companies move into higher Digital Readiness Zones, they are able to take on projects that can deliver greater impact in operations, quality, and profitability. Sight Machine has published a DRI Recommendations table that lists quick win projects and recommends development areas for each zone.



For organizations in the lowest Digital Readiness Zone, the **Unconnected** zone, the first step is to start gathering the data that needs analysis. In the second zone, **Visibility**, use cases include a global operations view of real-time production across the network, and statistical process control to provide alerts for out-of-control events.

At the **Efficiency** level of readiness, companies move beyond visibility into improving efficiency and quality. The projects can deliver significant profitability impacts by solving stubborn quality problems, reducing scrap, and increasing productivity by optimizing processes. Potential

use cases include parts traceability across the value chain, high level defect analysis and measuring machine performance using the Overall Equipment Effectiveness metric. Typical attributes of companies in the Efficiency zone include the ability to capture machine downtime, defect data and part serial numbers.

The fourth Digital Readiness Zone, **Advanced Analytics**, enables the use of predictive analysis to provide advance notification of impending downtime or defects, and enables use of advanced statistical techniques to identify root causes (e.g., multiple regression, factor analysis, decision trees and clustering). Potential impacts include increasing production by reducing processing cycle time, and eliminating defects caused by combinations of conditions.

For companies in the top Digital Readiness Zone, **Organizational Transformation**, use cases may include new business model innovation and supply chain transformation.

Evaluating Organizational and Technical Readiness

DRI's Organizational Readiness aspect determines whether the needed institutional support is in place.

It is broken into three sub-categories:

- **Commitment and Budget.** For a large project to succeed, it requires buy-in from staff at many levels, e.g., machine operator, plant manager, executive management and IT. And sufficient budget must be available, both for upgrading the underlying infrastructure (e.g., networking) and for the analytics project itself.
- **Skills and Resourcing.** Sight Machine has categorized the key staff members needed for digitization projects. These include, for example, subject matter experts, data scientists, and change management experts who can implement the identified improvements.
- **Change Management.** To capture the value opportunities identified by analytics, companies need the right leadership in place to implement process, staff, and product changes

DRI's Technical Readiness aspect provides a checklist of technical factors needed for most projects. It is broken into three sub-categories:

- **Data Connectivity and Accessibility.** This measures a fundamental requirement for any digital transformation project: availability of data and breadth of data. Do the key machines have sensors, are they networked, is data flowing into a system of record or database? To enable more sophisticated analytics, are part serial numbers or batch numbers with timestamps captured at each process step?
- **Cloud and Security Strategy.** Is the key data remotely and securely accessible? Does the company have a strategy for working with cloud providers? Are there any special requirements to segregate sensitive data, such as classified, ITAR or HIPAA data, which can't be seen by people lacking special clearances? If so, is that data segregation already implemented?
- **Data Awareness.** Does documentation or expertise exist to interpret the data coming from the machines and understand how that maps to the physical process?

The Birth of DRI

DRI was inspired in part by Sight Machine’s contrasting experience at two plants owned by a large industrial manufacturer.

The first plant was seen as having a high level of technical readiness, with its machines networked and its data flowing into a historian. However, from an “Organization Readiness” standpoint, the plant/project had some challenges that ultimately limited the success of the project. Although the project had strong organizational support at the supply chain leadership level — because the factory was experiencing an especially high scrap rate, crimping profits — local leadership and data experts at the site were not fully bought into the project and offered limited cooperation.

When the project team began using Sight Machine to analyze their data, they realized they would be unable to extract data from several key machines. The manufacturer proceeded with the project without data from these key machines, reducing the comprehensiveness of the analytic results and ultimately limiting their ability to determine the true case of the problem.

A second factory was highly prepared both technically and organizationally for a project to understand and fix quality problems with a critical component used in high-value products. The project had strong sponsorship at both the site and corporate level. On the technical side, the team had extensive data from all steps of the production process. Sight Machine was brought in to turn the voluminous data into a digital twin of the process and then uncover the root cause of the problems. At the end of the three-week rollout, the company had already identified more than \$500,000 in potential scrap savings.

Corporate IT captured the lessons learned from their digital transformation experience at these plants and others, and working with Sight Machine developed a very comprehensive checklist for assessing their readiness. They are now using this checklist to assess readiness for the digital manufacturing journey at more than 300 other factories.

In turn, Sight Machine’s experience with this manufacturer and other similar organizations helped inform the development of the Digital Readiness Index.

Start evaluating your digital readiness by visiting www.sightmachine.com/dri

Evaluation Questionnaire and DRI Matrix

Sight Machine's [DRI evaluation questionnaire](#) uses a set of readiness statements (e.g., “The key machines are networked”) that companies mark as True, Partly True or False. We weight each answer to reflect the varying levels of importance of individual factors, and sum the results to get scores for Organizational and Technical Readiness.

A plant's Organizational and Technical Readiness scores are then combined to place the plant within one of the five Digital Readiness Zones.

POTENTIAL ALTERNATIVE WEIGHTING SCHEMES

In real-world situations, an answer of False on certain readiness statements could be a deal breaker for a company. For example, in many companies, a project has little chance of succeeding (or even proceeding) without buy-in from the plant manager.

Therefore, our model allows users to assign their own weightings to questions. If you would like to have a in-depth conversation about the current weighting schemes, and potential alternatives, please contact us at info@sightmachine.com.

What's next: Evaluate your digital readiness by visiting www.sightmachine.com/dri.

The Digital Readiness Index helps you identify where you are on the path to Digital Transformation, where you'd like to go, and what you'll need to do to get there. If you'd like expert guidance for your Digital Transformation journey, contact info@sightmachine.com.