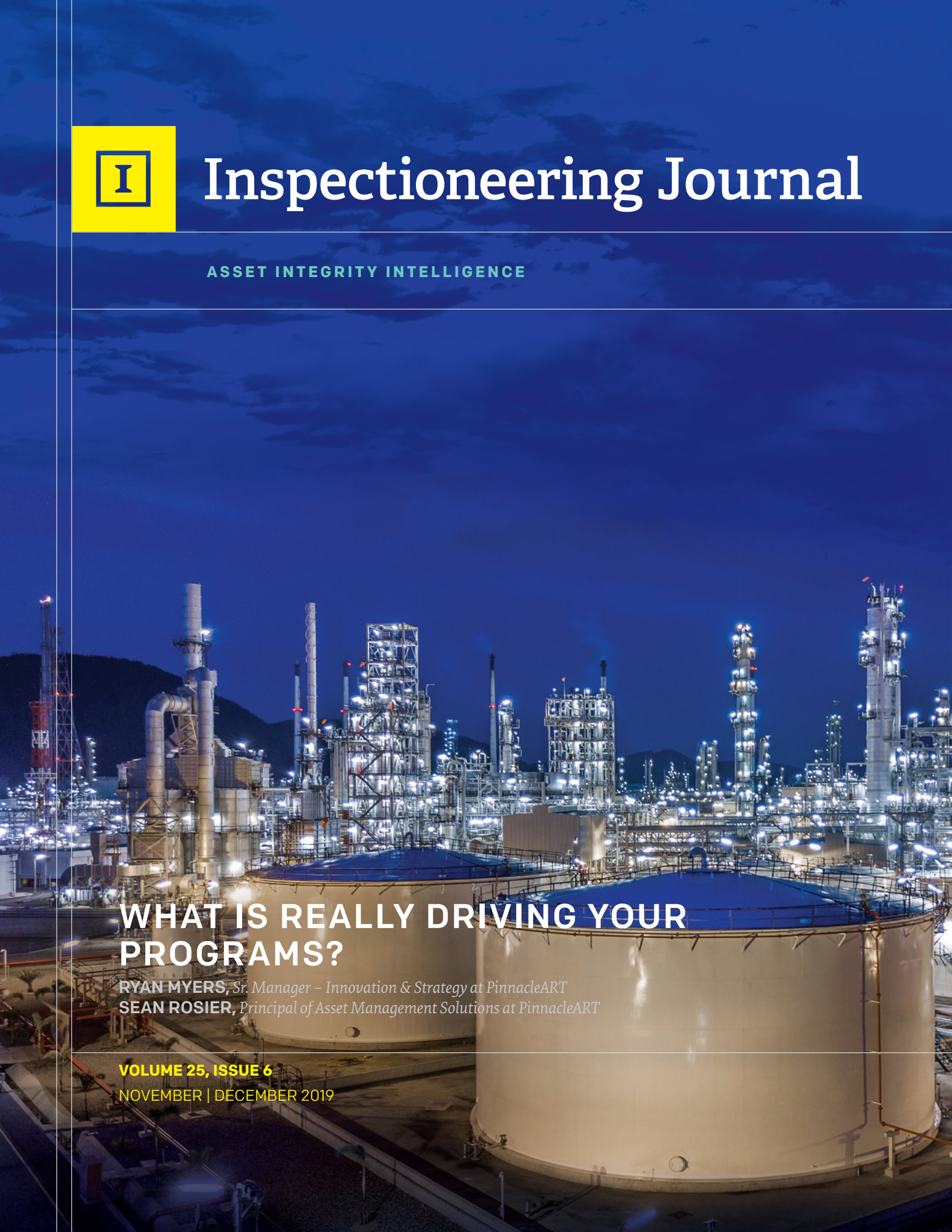
Inspectioneering Journal

ASSET INTEGRITY INTELLIGENCE



WHAT IS REALLY DRIVING YOUR PROGRAMS?

RYAN MYERS, *Sr. Manager – Innovation & Strategy at PinnacleART*
SEAN ROSIER, *Principal of Asset Management Solutions at PinnacleART*

VOLUME 25, ISSUE 6
NOVEMBER | DECEMBER 2019

WHAT IS REALLY DRIVING YOUR PROGRAMS?

BY: RYAN MYERS, *Sr. Manager – Innovation & Strategy at PinnacleART*
SEAN ROSIER, *Principal of Asset Management Solutions at PinnacleART*

INTRODUCTION

In today's globalized market, Mechanical Integrity (MI) and Reliability programs are becoming increasingly more visible due to the impact they can have on a facility and, in turn, an organization. When effectively adopted and utilized, MI and Reliability programs result in safer, more efficient operations for facilities. In addition to becoming more visible in the market, these programs have also grown larger and more complex. Risk-Based Inspection (RBI), Integrity Operating Windows (IOWs), special emphasis programs, Reliability-Centered Maintenance (RCM) and Predictive Maintenance technologies are implemented throughout facilities around the world. Couple these programs with the ever-expanding innovations in data science, computational power, and new technologies and it's easy to see why more organizations are looking to these analytics to improve availability and safety and lower risk and cost.

However, as most people in industry can attest, not all MI and Reliability programs are created equal. These programs vary based on several determining factors, such as implementation strategies and levels of maturity. Regardless of how a program is structured, there is one common denominator they all require to function—data. For each of these programs to be effective, they must be fueled by quality and up-to-date data. High quality and up-to-date data are important not only because they help these programs function, but also because these programs produce additional data that is often used by other programs and business processes. For example, IOWs should be developed based on an effective degradation assessment and in partnership with an RBI program. As the program matures, the facility should utilize these IOWs to continually update the RBI program to ensure its effectiveness over time.

WHAT ARE CHALLENGES WITH DATA?

You've probably heard the phrase "Data is the new oil," which was coined in 2006 by mathematician Clive Humby. This mindset is becoming more prevalent throughout the world with large technology companies whose business models and products are based on collecting, analyzing, and learning from massive amounts of data to provide value to their customers.

However, if raw data is not properly collected, organized, and processed into useful information, then what value is it really bringing to the table? The most common data challenges in industry are:

- Uncertainty that the right data is being collected in the correct quantities and from the proper locations, which can lead to unknown risks for the facility.
- Unnecessary data collection in certain areas, leading to a waste of resources.
- Data stored in multiple systems, used by different teams, and sometimes duplicated, making it difficult to see the entire picture of facility health or have a single source of the truth.
- Data stored in systems does not always match what is in the field, potentially leading to inaccurate assessments and programs that require this information to be effective.
- Data not structured in a way that is usable. For example, free-form text fields allow information to be easily entered into a system, but can result in information that is inconsistent, incomplete, or difficult to utilize for other applications such as lookups or calculations.
- Lack of data fluidity and synchronization between programs, which leads to missed opportunities or risks simply due to not connecting the relevant inputs and outputs.

WHAT DATA DO YOU NEED AND WHAT DO YOU DO WITH IT IF YOU HAVE IT?

These questions are some of the most commonly asked questions in industry today. We recently conducted an exercise in which representatives from various Maintenance and Reliability backgrounds came together to study what data facilities are collecting and how the data is being used. The primary focus was to determine, from an MI and Reliability perspective, if the collected data provided:

- Visibility into the health of their assets
- An understanding of the key drivers of performance and opportunities for improvement
- Where to focus available resources on the activities and investments that make the largest impact in terms of availability, safety, and cost

When you take into account the amount of data being collected and stored not only in systems like process historians, Distributed Control System (DCS) storage, and Enterprise Asset Management (EAM) systems, but also discrete systems like vibration analysis systems, operator round systems, and Automated Process Controls (APCs), it was determined that upwards of 50percent of all data being collected in a traditional facility potentially does not make a direct impact to the reliability of the facility. Why is this? Or more importantly, why do facilities gather large amounts of data if it's not making a direct impact to the facility? Do facilities simply collect data for the sake of it because it's easy to do, they feel like they should do it, or their competition is doing it? More importantly, are facilities' decision-making and strategy development processes centered around using good, quality, up-to-date information to improve reliability?

There are a couple schools of thought regarding these questions. The first mindset is that when it comes to data, the more the

merrier. In other words, with the enhanced computing power and storage capacities available to organizations today, why not gather every bit of data possible? While there is a higher potential value addition with the utilization of advanced engineering, data science, and technological capabilities, more often than not, the associated data requirements can also be exponentially higher.

The other school of thought is to only collect the data that is needed to make informed decisions. In order to determine if you are collecting the data needed to make informed decisions, ask yourself how data plays a role in your day-to-day activities.

- Are you spending more time collecting data or actually using it?
- Do you have the data needed for you and your team to be successful?
- Is data accessible? Is it digitized, meaningfully organized, and cleansed? Can people easily locate the data and use it?

Once you have answered those questions, another consideration is whether you can trust your data.

- Is the data accurate? How do you know?
- Do you understand what the data is telling you?
- Do you use data in your decision-making processes to drive facility reliability?

WHERE SHOULD YOU START?

You've identified the need for a more effective data foundation for your facility. Now, where do you start?

1. Understand program vision

Before you begin the effort to gather or cleanse your data, create a vision for your program that clearly outlines and identifies what you desire of your program and how it aligns with your strategic goals. This will help you prioritize the information you need to gather, maintain and define data, and integrate the data into your decision-making processes. When creating a vision for what your program will look like in the end, it is the intricacies, the ways in which the data is pushed and how it is used in different places, that will have the largest impact on your facility.

Benefits of understanding program vision:

a. Helps you clearly understand what data needs to be gathered and routinely reviewed based on its value and usage

b. Allows you to save time, money, and resources in data collection in the implementation and sustaining phases of the program

c. Creates efficiency in data gathering, eliminating rework in the process

2. Ensure accuracy of data to field

Conducting field walkdowns is crucial to ensuring you are cleansing the right data. Conducting field walkdowns allows you to clarify that the data in your files matches exactly what is in the field. While this process can take time and resources to achieve, it is a critical component to avoiding wasted effort in the long run. Conducting field walkdowns can also increase reliability by ensuring your data stems from an accurate Master Asset List (MAL). For example, when conducting a degradation assessment, it is critical that the information used is accurate. If the metallurgy in the field does not match what is used during the assessment due to either poor data management practices or lack of maintenance records, there could be significant unknown risks to your facility.

Benefits of ensuring accuracy of data to field

a. Utilizes your CMMS, IDMS or other analytical software to its full capacity

b. Identifies critical pieces of equipment to ensure completeness of your criticality analysis

c. Refines which pieces of data you need to collect to make a difference in the availability of your facility

d. Gives confidence that the analytics and decisions derived from the data are accurate

3. Define data formatting

Within this step, you will identify how information will be displayed and communicated internally and externally. For example, SAP short descriptions only allow you to utilize 40 characters. Since this is where all work processes are issued, the naming conventions need to be intuitive. If the naming conventions aren't intuitive, filtering for items that occur could be incorrect if something was labeled "bi-annually" versus "every 6 months." If possible, utilize structured data fields instead of free-form text as this improves consistency, makes it easier to sort and search, and allows the information to be used for other purposes such as lookups or analytics.

Benefits of defining data formatting

a. Allows you to have common naming conventions so that you can identify what you are using and reduce uncertainty

b. Builds consistency in how data is organized and lays the foundation for analytics, which are easier to implement and maintain when data is structured

4. Outline methods to gather data

To begin outlining methods to gather data, start by asking why you want to gather the data and what the quantitative benefit of gathering the data is. Outline what data provides direct insight into asset health, ideally in advance of a major issue, such as vibration or thickness measurements, versus data that can only indirectly inform you of a potential issue, generally after an issue has occurred, such as process data. This will help prioritize how you will gather data as well as what techniques and equipment you will need to sustain your program. There will be capital investment required for some of these techniques, so you will need to put a business case together that focuses on the justification of the equipment and training that will be needed to highlight the

benefits of gathering your data and understanding your probability of failure. Additionally, you will need to determine how often you need the data based on its value as compared to the cost to acquire and you will need to outline the processes, including periodic reviews, to ensure only good data goes into your systems. It is much easier to proactively conduct periodic reviews than to wait a few years and have to perform a massive data cleanup effort followed by major program updates.

Benefits of outlining methods to gather data:

a. Collects critical/most valuable information that can be used to make decisions that drive reliability

b. Provides focused use of scarce resources to provide the most benefit

c. Ensures reliable data collection and organization processes

5. Make better decisions

With the right data routinely collected and organized and the right algorithms to analyze the data, you can start to gain valuable insights into the health of your facility, future performance projections, and areas for improvement. For example, you can quickly identify and quantify the large-impact reliability improvements that drive facility availability or prevent an HSE incident. These could be a series of critical inspections that need to be performed, the right quantity of spare parts to keep on hand, or potentially a field upgrade.

Benefits of making better decisions

a. Has the ability to systematically analyze the facility or enterprise to focus resources on the highest risk or most valuable improvements

b. Helps to justify reliability improvements and initiatives based on the value they can provide

c. Lays a foundation that will enable you to continually gain insights and dynamically update your strategies as actions are completed in the field and new data becomes available

CONCLUSION

In today's Reliability and Mechanical Integrity programs, there are numerous data sources, technologies, and interfaces creating data management challenges, which are compounded by the move to a data-centric reliability model. Getting the basics right with an effective data foundation not only sets the stage for continued innovations in data science, engineering, and technology to be successful, but will also start moving programs to new levels of reliability performance and ultimately a value-based Reliability and Integrity operation.

We all know the potential value of these programs. The question remains—are you building a solid foundation or a house of cards? ■

For more information on this subject or the author, please email us at inquiries@inspectioneering.com.

CONTRIBUTING AUTHORS

RYAN MYERS

Ryan Myers is the PinnacleART Senior Manager, Innovation & Strategy. Ryan has more than four years of experience implementing comprehensive mechanical integrity and Risk-Based Inspection programs in the oil and gas and petrochemical industries. His prior experience in the upstream oil and gas industry includes statistical optimization and decision analytics to maximize business performance. Ryan has also led R&D projects for multi-variate statistical reliability models, corrosion modeling software applications and CML optimization.

SEAN ROSIER

Sean Rosier has almost 25 years of reliability experience in the oil and gas industry. He is a highly experienced operations and maintenance leader with a reputation for exceeding expectations in project execution, project controls, business development, continuous operations performance, and financial delivery. Sean has served in a variety of roles, including Director of Asset Management, Regional Director of Maintenance Operations, and Operations Manager. His broad range of experience makes him an industry expert in the implementation of Reliability Centered Maintenance (RCM) and Maintenance Optimization principles. Sean holds many industry certifications including, Six Sigma, Lean Manufacturing SME, Asset Performance SME, and ISO-9001 and ISO-14001 auditor.

PINNACLEART

The right data.
The right strategies.
The right decisions.

Leverage your data to make better reliability and integrity decisions.

+1 281 598 1330 | info@pinnacleart.com | pinnacleart.com