

# 7 STEPS

## TO BRING OPERATIONS DATA TO YOUR ENTERPRISE

*Deploying software across the enterprise is easy. Making sure it works and delivers value... that's another story.*

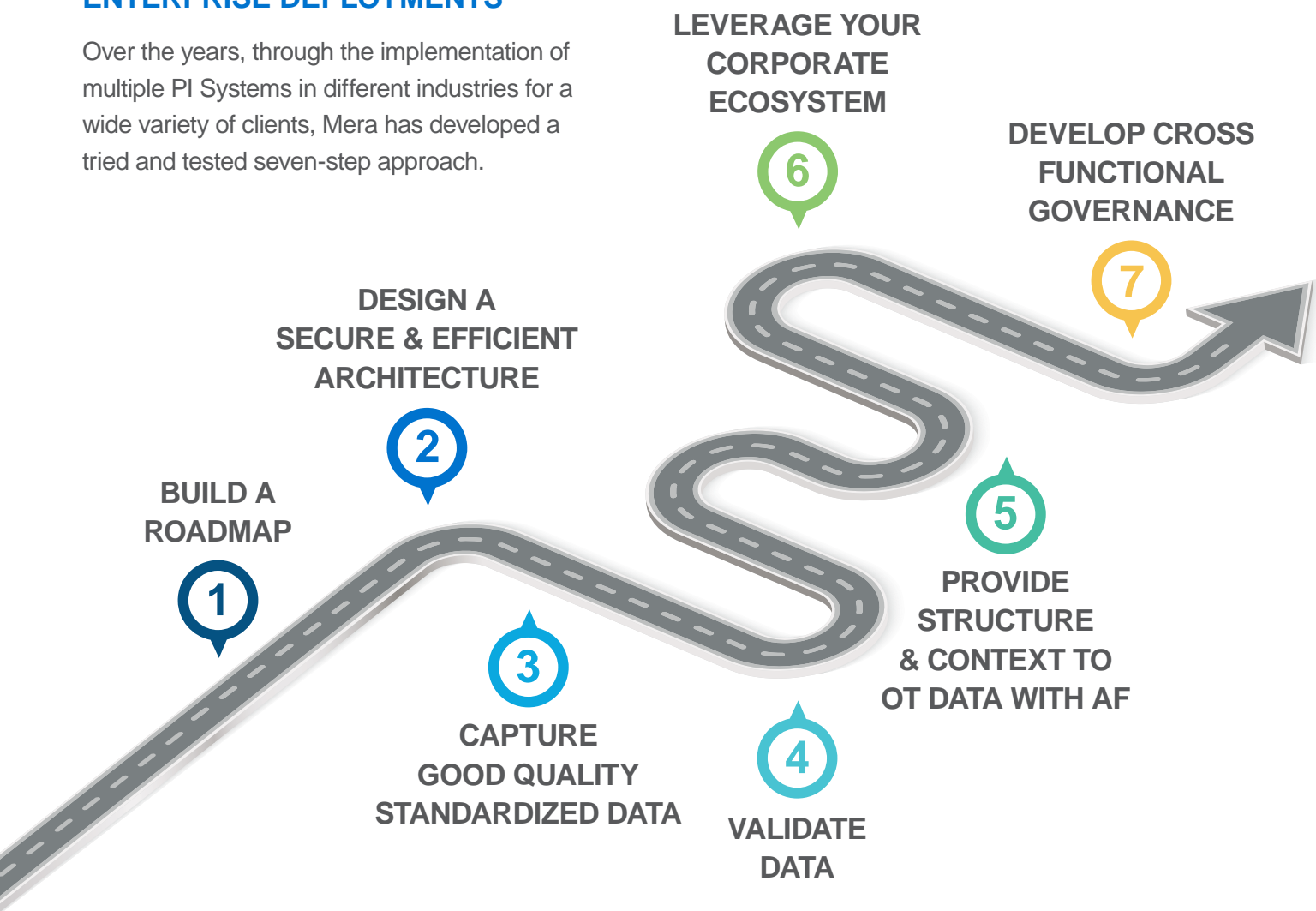


# INTRODUCTION

*Mera Group has implemented PI Systems for industry leaders in oil and gas, pipelines and mining organizations. The deployments vary from small site solutions with hundreds of tags to complex enterprise PI Systems with millions of tags. Over 17 years, Mera has developed a proven process to transition clients to an enterprise PI System. In this white paper, Heather Quale, President of Mera Group, shares their seven-step process for successful enterprise deployments.*

## 7 STEPS FOR SUCCESSFUL ENTERPRISE DEPLOYMENTS

Over the years, through the implementation of multiple PI Systems in different industries for a wide variety of clients, Mera has developed a tried and tested seven-step approach.



# 1 BUILD A ROADMAP

Regardless of the size and complexity of a project, it all starts with understanding what your organization needs from your operational data. Often this requires coaching, especially if you have not had ready access to operational data in the past. It's imperative to collaboratively create a fit-for-purpose roadmap to deliver the required functionality to meet specific and prioritized business needs.







# DESIGN A SECURE & EFFICIENT ARCHITECTURE



For successful implementations, the system architecture must work for both IT and operational technology (OT) teams and gather operational data efficiently and securely. With today's concern over cyber attacks, security has become a much larger consideration when finalizing architecture design. Historically, many organizations have allowed users and applications to access their process control networks directly, which creates added risk.

An enterprise PI System can securely collect all required data from the control system and make it available to applications and users without the added risk of them directly connecting to the control environment. It is also a more efficient architecture for moving operational data through the enterprise.

# 3

## CAPTURE GOOD QUALITY STANDARDIZED DATA

Once the architecture is in place, the next step is to ensure the data captured in the PI Data Archive is readily available. One of the largest concerns for most of our clients is the sheer volume of operational data. Most companies have vast numbers of sensors in numerous control systems spread out over many facilities, often in multiple jurisdictions and implemented at different times by different teams. Asset purchases, mergers and acquisitions add further complexity.

*The PI Data Archive is specifically designed to easily gather data from the most modern IoT devices as well as from any control devices or systems implemented in the past 35 years and make that data available online for the life of the asset.*

For operational data to be useful, it needs to be accessible by the general user population and by other corporate systems. Because of the historical diversity of systems in the field, pressure discharge tags in the same service can have many different tag names, descriptors, units of measure and data availability. Developing standards ensures that all users and applications can access high quality, trusted data at the required frequency.



**EDGE DEVICES / SENSORS**



**IOT SOLUTIONS**



**ASSETS**



**AUTOMATION SYSTEMS**

# 4 VALIDATE DATA

Ensuring that standardized PI Tags reference the correct data is paramount to future data utilization. Because the same data point can come from multiple sources, often it is replicated within the system. Control systems may have multiple options to gather a single data point. Data can be captured directly from sensors, local HMIs, control systems or field historians. For users to fully embrace operational data, it needs to be validated to ensure that there is a single source of the truth with the correct associated attributes to fully define the data point. Validated data is trusted data.



# 5

## PROVIDE STRUCTURE & CONTEXT TO OT DATA WITH AF

While the PI Data Archive can store vast amounts of operational data, it is stored on a tag-by-tag basis making access challenging for anyone who doesn't know the specific tag required. For those who are building reports or solutions that are not familiar with tag conventions, often incorrect data is referenced. The "game changer" in managing operational data is the implementation of Asset Framework (AF).

AF hierarchies (as shown in the figure below) provide structure to operational data — aligning with corporate data structures. In addition, AF templates can provide added governance to align and capture data consistently in real time for a given type of element. Elements are logical groupings of data by equipment type or reporting needs. Templates define the required data needed for each element. The result is trusted, quality data access across the enterprise.

### ASSET FRAMEWORK

**Structure**

AF Hierarchy

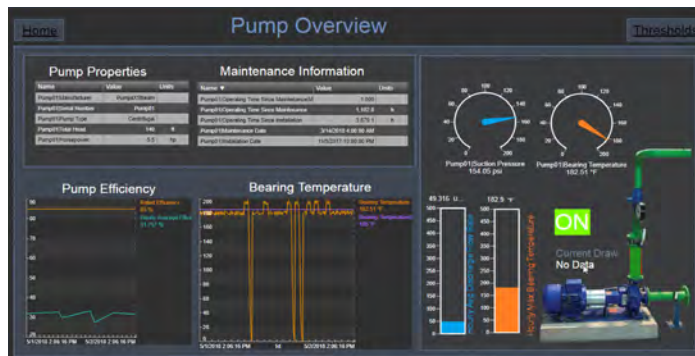
**Context**

AF Template

**Calculations**

Asset Analytics

### PI VISION Visualization







The element templates described above start with the data from the controls system, but can be expanded to provide a more complete view of the element. While most data leveraged in the AF templates originate from the control environment, with AF it is possible to integrate data from other business systems to provide added context to operational data. Graphics templates can be part of an element template to provide the user with a common view of the data for dashboards. Finally, element templates can be further enhanced with the addition of Performance Equations and AF Analytics to provide consistent computations and analysis to ensure one version of the truth.

AF hierarchies, templates and graphics can be developed for role-based solutions to allow a given user group access to the operational data view they require in a couple of clicks. For example, with a fully deployed PI System, a rotating equipment specialist can have ready access to operating conditions on equipment that is augmented with make, model, serial number and open work orders from the maintenance management system. Within AF, calculations, such as simple run times or more advanced performance calculations, can be added. With centralized, organized data, these calculations can then be deployed quickly across all assets to address emerging issues and share best practices.



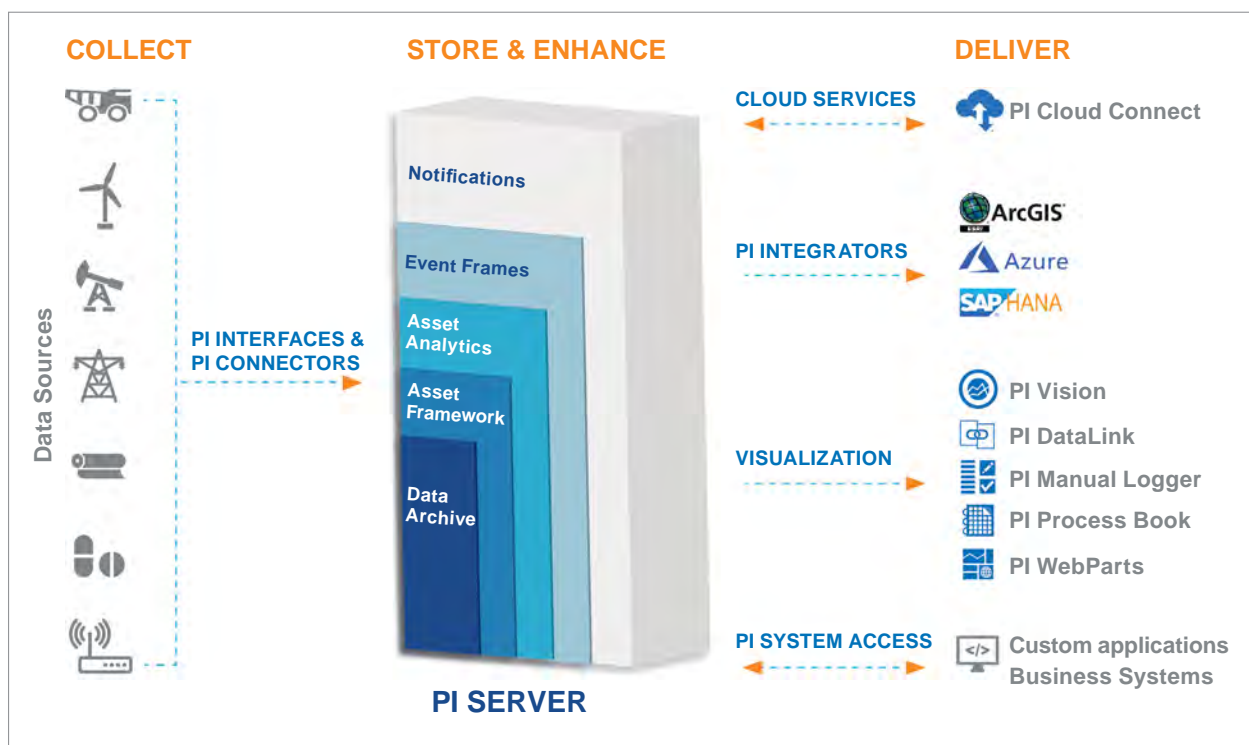
# 6

## LEVERAGE YOUR CORPORATE ECOSYSTEM

Each organization has their own unique business processes, needs and ecosystem of vendor applications. Highly customized applications inevitably lead to an ever-expanding requirement to update those applications when there is a slight change anywhere in the ecosystem and this comes at a cost. The reality is custom applications can't address change efficiently nor can organizations afford to maintain them in terms of cost and time while moving to a proactive operating model that leverages OT data.

### THE PI SYSTEM: YOUR IT DATA WAREHOUSE

The PI System with AF provides organizations with a trusted infrastructure that makes operational data accessible to a wide variety of enterprise tools.



*The better option is to leverage the PI System as an OT Data Warehouse with fit for purpose, “out of the box” functionality.*

For high frequency, real-time response, PI Tools — PI DataLink reports, PI Vision dashboards, PI Event Frames and PI Notifications — are the best tools for operational data. Care should be taken to allow power users ad hoc access to the tools that define and resolve emerging problems. The solution can then be quickly deployed across the organization by implementing dashboards to address future occurrences of the issue through standard operating procedures.

However, all organizations have a suite of highly effective third party tools designed to address specific operational issues. The PI System is specifically designed to make the required operational data available in the form best suited to meet those tools requirements. For example, the PI System can provide calculations for daily runtimes required by maintenance management systems or production volumes needed in accounting systems, while PI Integrators share data with applications, including SAP Hana, Microsoft Azure, and ESRI ArcGIS without the need for custom coding.



# DEVELOP CROSS FUNCTIONAL GOVERNANCE

Today, technology and data availability are no longer the restriction to turning operational data into a valuable asset. The limiting factor is the ability of teams to work together and draw on all their respective capabilities, expertise, relationships, software tools and processes. To be successful, organizations need the combined expertise of IT and OT data specialists to support business subject matter experts to jointly create sustainable solutions and processes that meet the organization's business needs. Over the course of the deployment of an enterprise system, the organizational capability for data management and governance will grow, providing the potential for solving increasingly complex and more valuable challenges.





# CONCLUSION

*In summary, a PI System, designed to meet your specific business needs, can greatly simplify secure access to trusted operational data by both users and applications. Over the long term, the system reduces support costs and makes it much easier to deploy best practices across the company. Perhaps, most importantly, the PI System as an enterprise data infrastructure allows your team to solve complex operational challenges with the best combination of tools and data.*

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## ABOUT OSISOFT

For over 37 years, OSIsoft has been dedicated to helping people transform their world through data. Our software turns the vast data streams from sensors and other devices into rich, real-time insights. You'll find the PI System in oil refineries, mining sites, wind farms, national labs, pharmaceutical manufacturing facilities, distilleries, data centers and even stadiums helping people save energy, increase productivity or develop new services. Worldwide, the PI System handles more than 1.5 billion sensor-based data streams. Founded in 1980, OSIsoft has over 1,200 employees and is headquartered in San Leandro, California. To learn more, please visit [www.osisoft.com](http://www.osisoft.com).

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