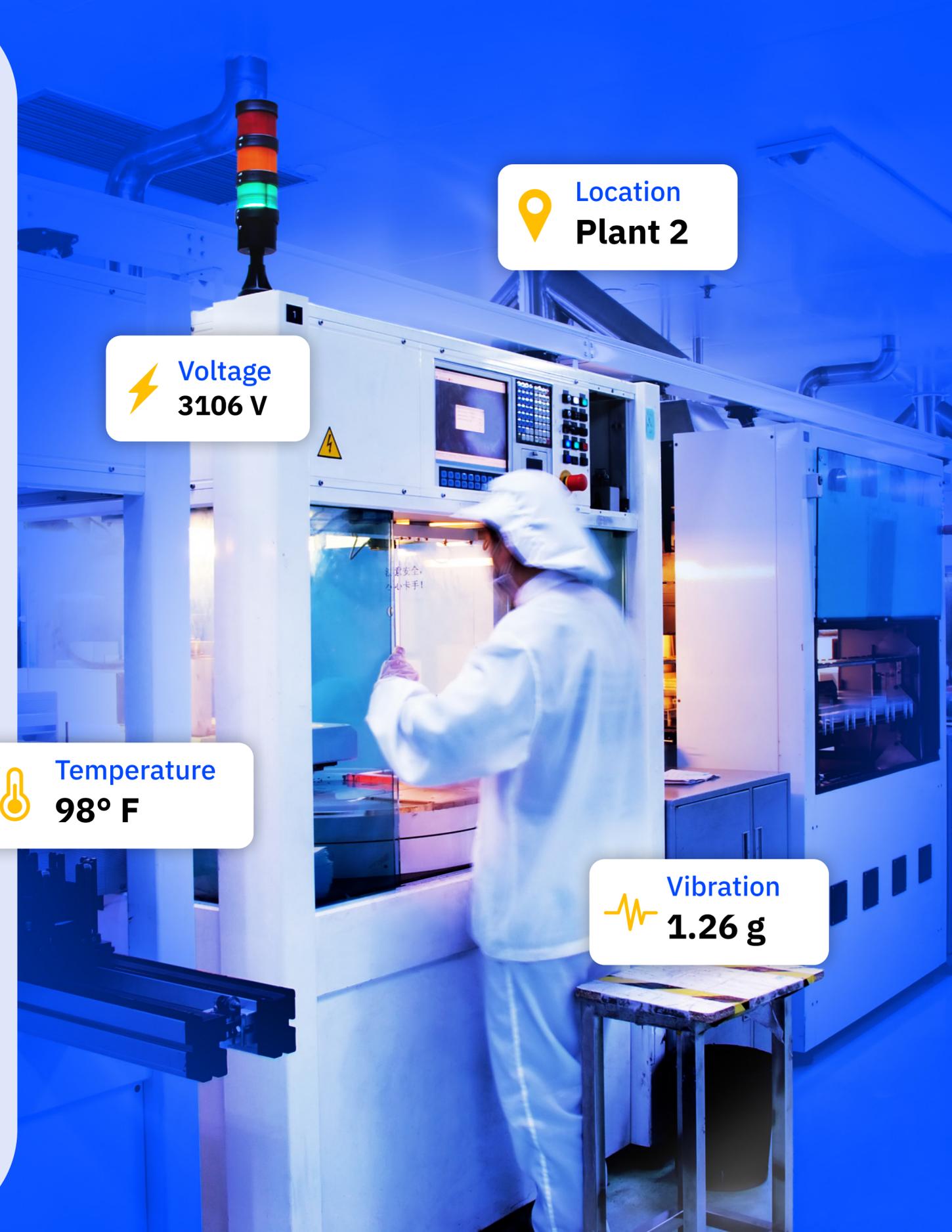


Track the Untrackable

How to fill manufacturing blind spots for better production decisions and the most complete data set for AI Initiatives

thinaer



Location
Plant 2

Voltage
3106 V

Temperature
98° F

Vibration
1.26 g

Table of Contents

Executive Summary.....	3	The Second Pillar of Success: Digital Twin.....	10
Understanding Manufacturing Blind Spots.....	5	The Third Pillar of Success: Thinaer.....	12
The Three Pillars of Success.....	8	How To Track The Untrackable.....	13
The First Pillar of Success: Asset Management.....	8	How It Works.....	16
The Second Pillar of Success: Digital Twin.....	8	Thinaer Delivers Security and Privacy At Scale.....	17
The Third Pillar of Success: Thinaer.....	8	Thinaer Safeguards Classified Operations.....	18
The First Pillar of Success: Asset Management.....	9	What's Next?.....	19

Executive Summary

Digital data is the most precious commodity of every organization today and as digital transformation and AI initiatives take priority, the need for more and accurate data becomes the difference between success and failure.

Manufacturers are making decisions without a complete data picture. What most don't know is that up to 75% of manufacturing processes are not connected leading to digital data blind spots. Because of this, manufacturers make strategic decisions that impact everything from production, yield and profitability, to waste, energy consumption and regulatory compliance with only about one third of the data they should be evaluating. This challenge is further magnified by a dependence on extending legacy equipment investments and manual processes that hinder accuracy and efficiency ultimately even leading to regulatory breaches and fines.

75%

of manufacturing processes are not connected to digital analytic tools



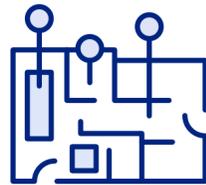
Spending just 20 minutes with this eBook will help you to:



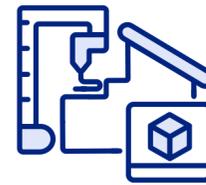
Understand the challenges involved with manufacturing blind spots and the impact on digital transformation projects and AI initiatives



Understand how to evaluate manufacturing energy transformation solutions



Demystify IIoT asset tracking and the nuances of asset management



Learn more about Thinaer and how they fill manufacturing blind spots



Understand digital twin solutions



Identify the steps required to track the untrackable for better production decisions and deliver the most complete data set for AI initiatives

Understanding Manufacturing Blind Spots

The promise of Industry 4.0 and Smart manufacturing is built on the foundation of frictionless movement of information between real-time operations and the people, equipment and processes that create value in manufacturing organizations and across the supply chain.

However, according to industry analysts

- Upwards of 90% of manufacturers are relying on digital data that is only supplied by 20-30% of their equipment or automated processes.
- The remaining 70-80% being dependent on legacy analog equipment and manual processes that require human-enabled data reporting or worse yet, assumptions of what is being done in those areas.

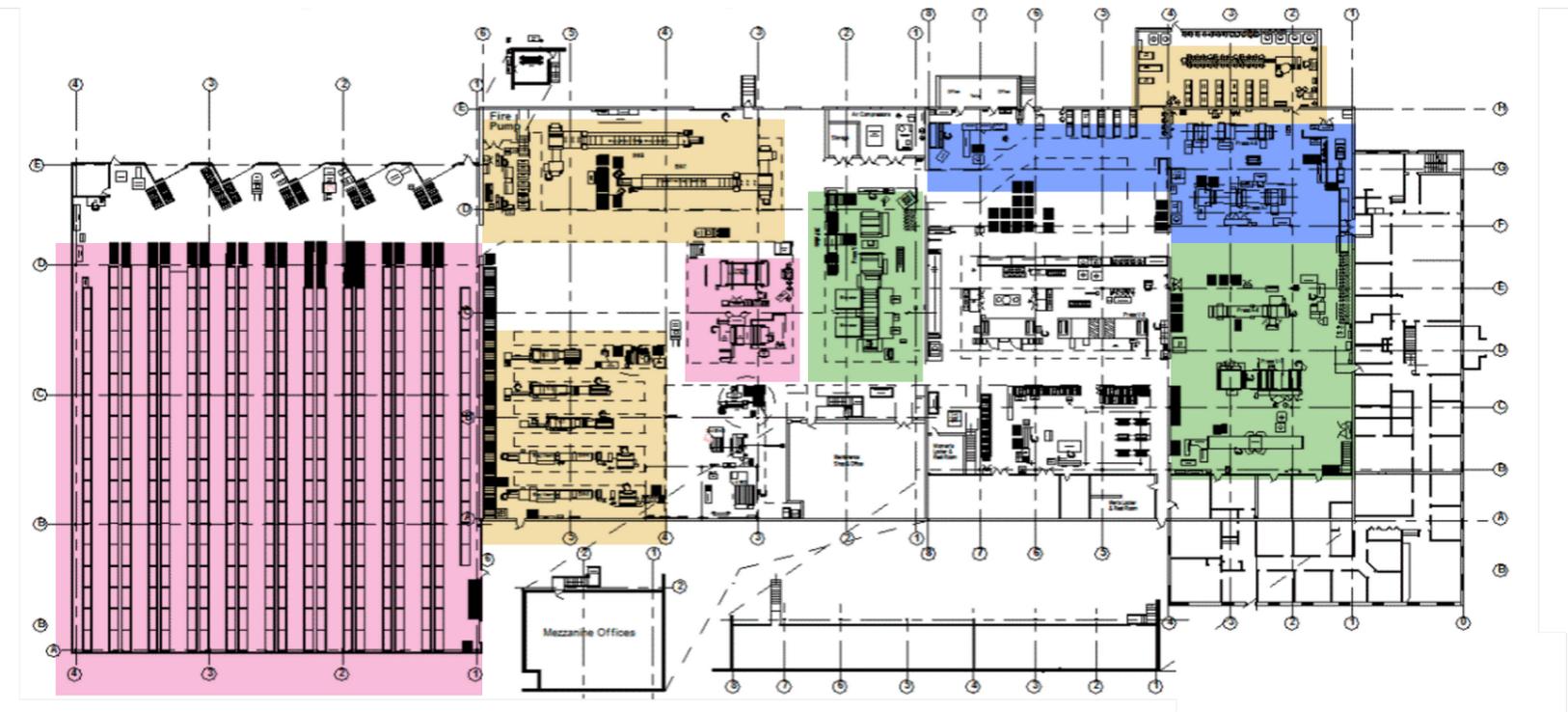
80%

of manufacturing processes are dependent on legacy analog equipment



A simple exercise to understand your vulnerabilities would be to pull up a schematic of your plant floor and use color codes to identify:

- **Connected:** Equipment and processes already integrated with digital systems (ERP, MES, MOM, BI Tools), providing real-time data.
- **Connectable:** Devices and systems capable of digital integration but currently standalone, requiring minimal modifications to become connected.
- **Non-Digital:** Legacy equipment and processes that are either **manual** or **analog**, which do not currently generate digital data automatically. This includes both non-instrumented equipment (traditional analog) and manual processes requiring human intervention for data collection.



If you are part of the 90% identified above, then your diagram will show only about 20-30% “connected and “connectable” today and that means you are making decisions with a grossly inadequate data set.

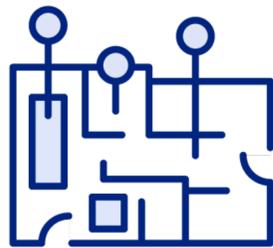
Thinaer offers transformative solutions for asset and raw material tracking and the digital twin of any machine. Its automated system can be completely stand-alone and even air gapped where regulations dictate but has a secure intermediary approach for secure data sharing and integrating with ERP systems.

Thinaer ensures digital transformation with a revolutionary approach that utilizes deidentified active BLE beacons as part of a cost-effective and secure tracking solution tied to a concept of maintaining cybersecurity in classified areas via multiple architecture options for infrastructure. Companies can now drastically improve efficiency, accuracy, and compliance everywhere with contextualized data, including classified areas. More importantly business decisions can now be made with a complete and accurate data picture void of digital blind spots.

Companies can now drastically improve efficiency, accuracy, and compliance everywhere with contextualized data, including classified areas.



The Three Pillars of Success



The First Pillar of Success: Asset Management

Thinaer's first pillar focuses on Asset Management, streamlining the tracking of raw materials, equipment, and inventory across facilities. By integrating automated location-tracking systems with ERP databases, Thinaer ensures real-time accuracy, enhances compliance, and boosts operational efficiency.



The Second Pillar of Success: Digital Twin

Thinaer's second pillar introduces Digital Twin technology, enhancing traditional processes with sensors for real-time data on parameters like location, temperature, and humidity. This innovation empowers executives with comprehensive insights for critical decision-making in production, safety, and regulatory matters.



The Third Pillar of Success: Thinaer

Thinaer's third pillar offers an innovative solution for asset tracking and digital twinning in manufacturing. Using BLE technology and customizable architectures, Thinaer provides accurate location data and digital replicas of machinery. Successful implementations have shown significant ROI in a short time, proving Thinaer's effectiveness at scale.

The First Pillar of Success: Asset Management

Do you know where all of your raw materials, equipment, tools, work in process or finished inventory is at any given time? Asset custodians and analysts try to maintain records for dispersed asset items across domestic and international facilities, but this change is only as successful as the data available.

Companies integrate asset management databases into their Enterprise Resource Planning (ERP) systems to simplify asset management, using bar-coded asset tags for identification and location tracking. However, the manual process of updating records when items are relocated presents significant challenges, consuming time leading to errors and compliance issues.

To overcome these hurdles, organizations need innovative solutions that leverage digital tracking advancements. Automation can optimize operations, ensuring accuracy and efficiency while eliminating human error and freeing up those resources for other uses. Using advanced tracking technology, active beacons transmit

continuous information, which is captured by strategically positioned gateways. The data integrates seamlessly into ERP systems, accurately determining the locations of asset items in real-time, eliminating manual tracking.

Integrating an automated location-tracking system with ERP asset management databases ensures synchronization between physical movement and records. Location changes are automatically reflected and contextualized to improve reporting a decision making.

This enhanced approach to asset management brings numerous benefits:

- Increases operational efficiency
- Enhances regulatory compliance
- Eliminates human error
- Improves transparency and accountability through accurate and up-to-date records

The Second Pillar of Success: Digital Twin

Hundreds of millions, if not trillions, of dollars has been spent on existing analog equipment and manual processes that have been proven effective for decades. Unfortunately, these machines and processes don't provide any usable digital data for business intelligence analysis and leave executives with an incomplete picture when trying to make critical production, safety and regulatory decisions.

Most manufacturers do not have the budget or even an idea on how to replace this equipment and find it cost-prohibitive to transform these processes.



This is where the concept of a digital twin comes in to provide digital data with the simple addition of sensors. These sensors are added to currently uninstrument-able machinery to provide data on everything where Thinaer “associates” the data with assets:

- Real-time Trilateral Location
- Choke Point Location
- Temperature
- Humidity
- Positive/Neg Air Pressure
- Air Quality
- Vibration
- Voltage
- Amperage
- Frequency
- Fault
- Orientation
- Root Mean Square Error
- Root Mean Square Energy
- Zero-crossing Rate
- Chromagram
- Spectral Centroid
- Spectral Bandwidth
- Spectral Roll-off
- Speed
- Status
- Hours
- Light
- Tamper
- Amperage



The Third Pillar of Success: Thinaer

Thinaer has developed an innovative solution for asset location tracking and digital twinning for a broad range of manufacturing and production processes. There are multiple architectures available to accommodate the nuances of each end customer requirement and can even accommodate classified area processes if required.

Thinaer's solution begins with Bluetooth Low Energy (BLE) beacons and sensors which can be configured in many different ways to transmit deidentified data packets. Gateways capture the beacon signals then transfer the data to the Thinaer platform and Sonar visualization layer, where a trilateration engine determines the exact locations during a secure, behind the firewall asset association process.

Furthermore, Thinaer can deliver a digital twin to currently uninstrument-able machinery and processes to fill in the data blind spots that current limit accurate reporting and business intelligence analysis.

Numerous companies have already successfully implemented Thinaer's solution at extreme scale and some case studies have shown tens of millions of dollars in ROI within months of implementation.



How To Track The Untrackable

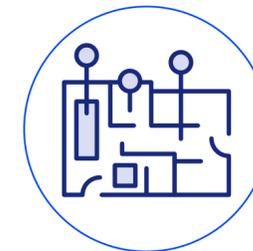
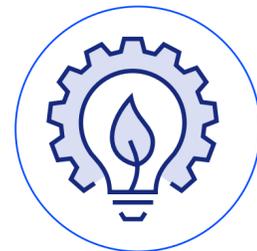
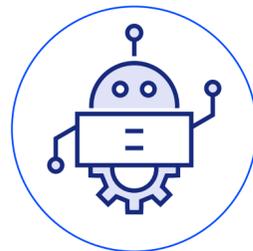
Thinaer, a leader in the industry, offers disruptive solutions using cutting-edge digital tracking technology to modernize asset tracking and management everywhere as well as digital twin to fill in current uninstrument-able machinery and process to fill in data blind spots.

To transform asset management with Thinaer's solution, understand the challenges and potential for improvement and follow these steps to track the untrackable in order to achieve your digital transformation goals or build the most complete data set for your AI initiatives.



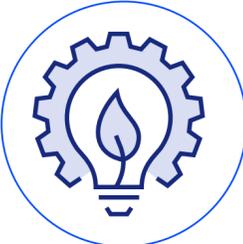
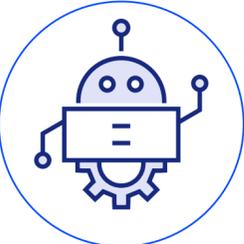
- 1 Understand your data blind spots:** identify your current connected, connectable, analog/legacy and manual processes to quantify the amount of data currently available
- 2 Assess challenges:** Recognize issues with manual processes and bar-coded asset tags, analog machinery, including time-consuming updates, errors, and inefficient resource allocation.
- 3 Embrace technology:** Understand the power of automation and Thinaer's active beacons for real-time asset tracking, digital twinning and elimination of manual updates.

- 4 Evaluate benefits:** Recognize operational efficiency, compliance improvement, transparency, and accountability achieved with Thinaer's solution.
- 5 Integrate active beacons:** Implement Thinaer's automated location-tracking system using active beacons and Sonar for real-time accurate data.
- 6 Understand the ROI:** Evaluate cost savings, increased efficiency, and improved security offered by Thinaer's solutions.
- 7 Implement secure tracking:** Adopt Thinaer's high-level concept of operations for efficient asset tracking and robust cybersecurity in classified areas.

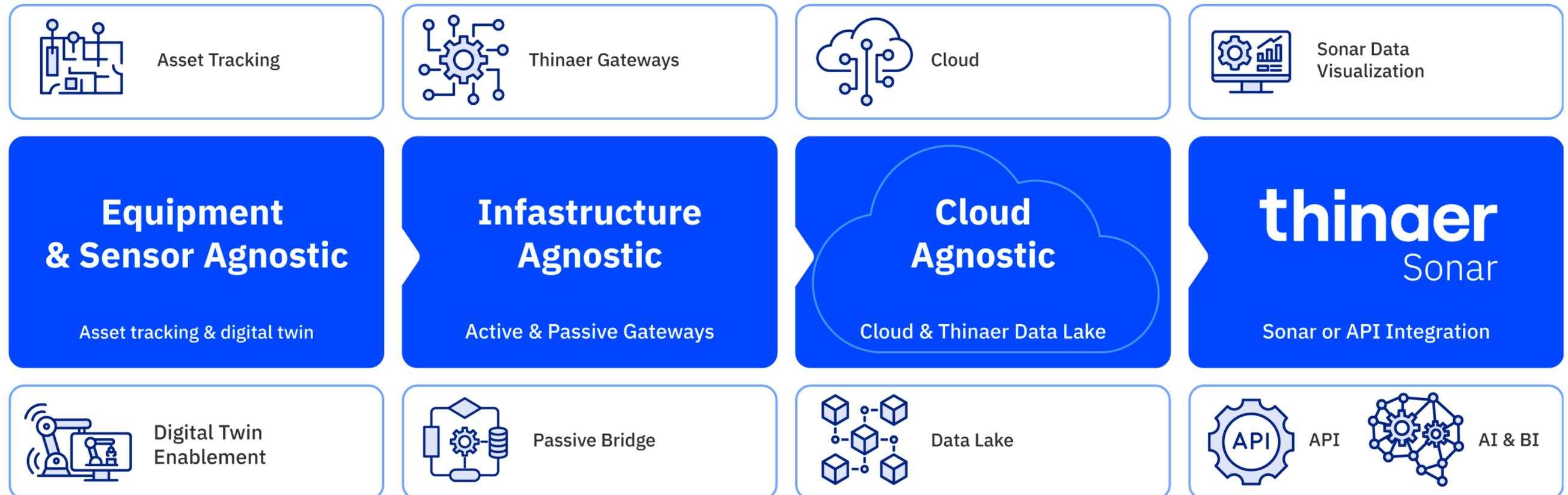


By following these steps, organizations revolutionize asset management and digital twinning, optimizing resource allocation, filling data blind spots, enhancing transparency and accountability, reducing costs, and ensuring compliance.

Thinaer's asset management solution combines advanced tracking technologies, stringent security measures, and regulatory compliance to protect your assets.



How It Works



Monitor your assets, equipment, and raw materials across one site or the entire globe within a single, unified view. Thinaer is device, infrastructure and cloud agnostic to maximize ease of integration into most every environment.

Thinaer Delivers Security and Privacy At Scale

Thinaer's capability to seamlessly manage both commercial and classified area manufacturing processes with stringent security measures underscores its versatility and reliability in catering to diverse industry needs while upholding paramount confidentiality and safety standards.

For commercial areas, Thinaer's IIot asset tracking and digital twin solution provides

- Non-classified areas are still Highly Secure!
- Deidentified one-way signals from all BLE Beacons
- Thinaer Platform & Sonar - FedRAMP Compliant
- Secure intermediary, arms length integration with ERP and Data Lakes



What's Next?

Tracking the untrackable is just a phone call or email away.

Our experienced team can conduct a Manufacturing Blind Spot Workshop specific to your requirements ensuring your success today as well as your scale requires. The results of this workshop will include:

- Understanding where your legacy analog equipment and manual process leave digital blind spots that negatively impact production decisions
- Refine your problems by accurately defining them to identify the root-cause
- Identify systemic vs siloed business problems
- Maximize AI initiative and digital transformation success with the most complete data set available
- Learn how similar—or different—your business problems are from your colleagues

Contact Thinaer today to unlock the full potential of IIoT asset management and digital twin to embrace innovative solutions for increased efficiency, accuracy, and cost-effectiveness, leaving behind outdated processes.

