

Smart Industries

Industry 4.0

Today Industries should be capable of responding to volatile demands, uncertain supply and constrained capacity. But as the pandemic takes over the world, the industries need to strengthen their customer relationship and meet the demands, looking for individualized and sustainable products.

It is the need of the hour for Internet of Things and Industry 4.0.

Arnova's Industry 4.0 solution is based on its proprietary Multi-Protocol Spatial Intelligence and Control System (MUSIC) that connects with existing or new infrastructure at your industry setup making it the Internet of Things (IOT) enabled and enhances its capability by adding cloud computing, advanced data analytics and artificial intelligence to enhance the performance, automation, remote monitoring, remote control and increasing efficiency which results in maximum productivity of your industrial processes.

Industry 4.0 solution using Arnova's MUSIC system

- ◆ Digitizes the processes and strategically transform business models. Provides
- ◆ operational visibility.
- ◆ Reduces the waste which adds to improving performance and productivity.

Top Challenges and Issues Faced by the Industries



Energy Consumption

Depleting about 54% of the world's total delivered energy.



Industrial Emission

Accounts for up to 24 % of global CO2 emissions



Safety Concerns

Poor Maintenance operation results in the workplace hazards



Waste Generation

Greatest producer of wastewater among the main industrial sectors.



Unplanned Downtime

Saddles with unnecessarily high costs and labour time



Ineffective Remote Access

which adds to security risks and losing physical access



Poor Inventory Management

Causes inefficiency and inaccurate real-time information, resulting in huge losses



Continual Improvement

Lack of it results in poor optimisation and hampers decision making

ARNOWA'S Industrial IoT Solution - Pillar of your business

Our Mission

ARNOWA with its technology wants to empower the community by building an intelligent and smart solution for managing resources proficiently.

1. Utility Management

ARNOWA provides precise advice based on advanced Big data analytics and correlations on multiple parameters using its interactive and engaging application. This helps in transparent billing, managing load and detection of leakages, inefficient points and alertness.

2. Improving Productivity with a reduced cost

Through AI and Analytic advancements, we help in providing insights that reduce the cost by lowering the downtime, taking into consideration the predictive maintenance, safer and incident-free workplaces and better information.

3. Industrial Sensor system

From being ignorant to responsible, sensor systems add up to a quality workflow. With Hardware and software, you need intelligence, alarms and advice which Arnova provides for industrial issues.



"If you can't measure it, you can't manage it"

- Mike Bloomberg

How does ARNOWA Industrial IoT Solution Works?



Sensors, meters and cameras

Collects data or connects to existing data logging equipment which is either SCADA or BMS systems.



Multi-Protocol Edge Devices

Multiple protocols to transmit data from sensors to the cloud wirelessly using its IP Multi-protocol Edge Devices.



CARBON Cloud Analytics Platform

CARBON cloud analytics platform and a device-agnostic advanced analytics application which is agile and highly scalable.



Analytics and AI application

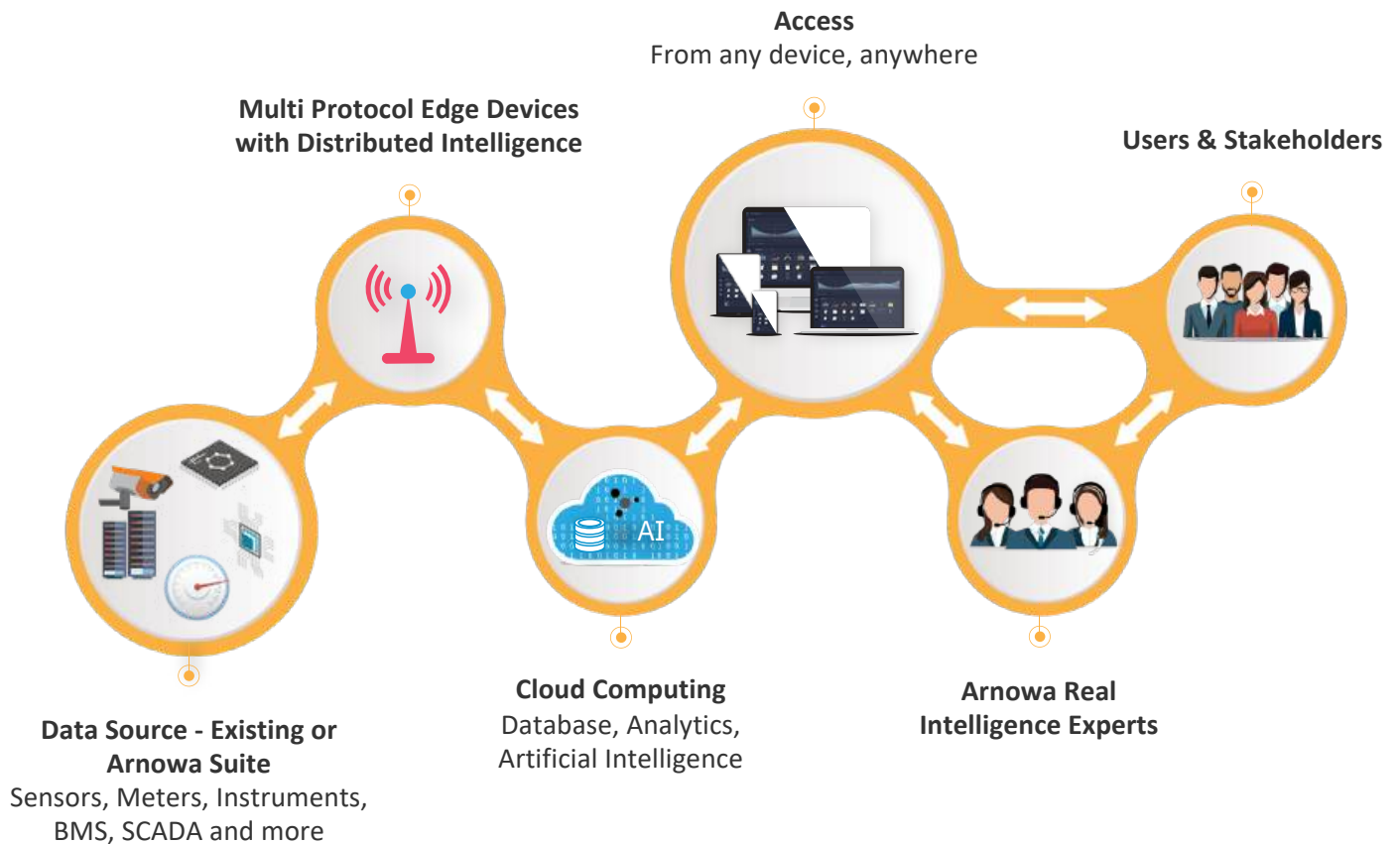
Analytics and AI application backed by a Real Intelligence Team provides actionable insight on any device, anytime, anywhere.

Our Protocols

The core component of IoT is connectivity which enables communication. A multi wireless communication protocol transceiver can facilitate sensor node to sensor node communication for a better quality of service and decision making. Arnowa uses a strong communication protocol between remote and dispersed entities. We deploy sensor nodes and work together to provide higher quality sensing in time and space as compared to traditional stationary sensors. The sensor nodes use their processing abilities to locally carry out simple computations and transmit only the required and partially processed data. In essence, wireless sensor networks with these capabilities may provide the end-users with intelligence and a better understanding of the environment. In the future, the wireless sensor networks may be an integral part of our lives, more so than the present-day personal computers



ARNOWA's Ecosystem



Our Solution to Industries

- ✓ Energy Management
- ✓ Predictive Maintenance
- ✓ Digital Twin
- ✓ Industry Campus Management
- ✓ Process Optimization
- ✓ Safety Analytics
- ✓ Utility Management

Energy Management Solution



Conducts

Sub-metering across the industries to recognize and better understand the highest energy-consuming processes.



Visualizes

Works out on converting energy consumption data onto a simplified dashboard. This can be used by stakeholders to establish a consumption pattern and demand.



Energy Switching

We provide advisory to switch between energy service providers based on their tariff rate.



Analysis

Real-time and near-real-time information from energy meters, building control systems and IoT devices to project energy wastage from inefficient points, improper setpoints, faults and failures.



Real-intelligence Support

It ensures energy efficiency in the best possible ways.



Renewable Integration

Arnowa's smart grid solution allows industries to easily integrate renewables, reducing dependency upon the grid



Identifies

Gets to the root cause of energy waste. It then prioritizes conservation measures through data collection from meters, submeters, sensors, and building.



Energy Audits

Reports to uncover energy savings in order to enhance performance opportunities.



Energy and Tariff Optimization

Optimizes industrial operation in a way to reduce peak-hour energy consumption, hence saving huge operational cost



Process Optimization

ARNOWA helps you to optimize the entire production by connecting together all the processes, manufacturing units and machinery. We deploy sensors across the process and equipment to collect data for monitoring key components, acquire performance feedback and identify actual usage patterns. It also informs and alerts anomalies in advance to eliminate the unplanned, on-site incidents.

Process Optimization ensures:

- ◆ Timely production and delivery
- ◆ Lower operation cost
- ◆ Increased equipment life
- ◆ Equipment condition to be at the best levels for performance
- ◆ Lower downtime by predictive maintenance
- ◆ Safety

Predictive Maintenance

For many years, the manufacturers have considered the machinery age as a crucial aspect for planning the maintenance routine. The older they get, the more repeated repairs they need. As per ARC group stats, only 18% of equipment has failed due to machinery age, while 82% of failures occur randomly. To address this problem and avoid the additional cost to the company, manufacturers are now taking the benefit of Industrial IoT predictive maintenance. It foresees the danger ahead and the failure of machines. The emergence of IoT has changed the way we do predictive maintenance.

Critical Assets Identification

Identify assets with high repair and replacement costs that are critical to production.

Database Establishment

Historical data can be collected from different sources such as maintenance management systems, hard copy files, maintenance record register and charts, etc.

Analyzing Failure Modes

This involves analysing previously identified critical assets to establish their failure modes.

Foreseeing failure events

This involves designing appropriate modelling approach that will form the basis for failure predictions.

Utility Management

Producing, distributing and consuming utilities in situ is an integral part of any industrial process. The operation and maintenance of this equipment are vital to manufacturing competitiveness. Incidents in a utility tunnel could result in a chain of incidents caused due to water leaks, electrical outages, gas leaks, and maintenance operation.

As water is very crucial to any industrial operation; some industries have water-intensive needs to monitor and control water wastage.

ARNOWA Smart Industrial Water Management Solution is an end-to-end solution consisting of a smart ultrasonic meter with remote valve (works on multiple communication protocols). Our solution allows you to effectively visualize water consumption, identifies inefficient points, monitor the real-time inflow, outflow & water level in the tanks and reservoirs with real-time alerts/notifications via multiple channels like e-mail and SMS in case of faults or leakages.

Effective leak management in gas distribution utilities is the growing need in the industries. With smart technology solutions, gas utilities leverage real-time data with prioritized alarms that take safety to new levels. Arnowa Smart Gas Management Solution is the combination of smart metering technology with sensors for smart valves, gas pressure and gas leak detectors on the same network to enhance safety and improve overall efficiency. Our solution allows you to streamline your industrial operations and replace outdated practices, such as rotating actual and estimated readings.

Features



Remote Valve Control



Automatic Monthly Bills



Leakage Alerts

Benefits

- ◆ Real-time data to evaluate the gas flow
- ◆ Consumption and leakage with prioritized alarms
- ◆ Employee safety and meeting regulatory requirements
- ◆ Automated readings to reduce unaccounted use
- ◆ Smart gas meter to monitor, measure and predict utility performance

Industry Campus Management

Data, and the interconnectivity of all processes and machines, are the key components of an industry's transformation. It is the time to evolve your traditional factory into a smart factory by considering the one-stop solution for industry needs. Industry Campus Management envisions increased productivity through seamless physical-digital integration of humans, processes, systems, and machines for the effective and efficient functioning of industries.

End to End Industry Campus Solution

- ◆ Waste Management
- ◆ Traffic and Parking Management
- ◆ People Counting
- ◆ Logistics and Supply Chain Management
- ◆ Comfort Monitoring
- ◆ Security

Industrial Safety Analytics

ARNOWA maintains smooth and streamlined production by ensuring the safety of workers and maintaining the industrial facility. It monitors the following -



Occupational Safety and Health

It is paramount to regulate the health and safety of the workers. We monitor and maintain safe work practices in the workplace. For say, we determine and alert employees to wear PPE, human-machine interaction, etc.



Process and Production safety

We are proactive about production safety by altering and detecting hazardous events such as gas leakage, SOS broadcasting, preventing fires, explosions, accidental chemical/gas releases, maintaining proper functioning of valves and water hoses.



Work Environment

ARNOWA also works towards maintaining a safe work environment by monitoring indoor parameters such as temperature, humidity, pressure, oxygen level, toxic/inflammable gases, etc.



Movements tracking across Industrial campuses

You can leverage IoT sensor data for smarter decisions and improved space planning with Arnowa Smart Technology. The sensors detect and monitor occupancy in real time, allowing you to manage and use space more efficiently.



Occupancy Monitoring System

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Facial Recognition based Attendance

Attendance is considered an important factor for the worker as well as the organisation. With the advancement of smart technology the machine automatically detects the attendance performance through facial recognition and maintains a record of those collected data.



Smart Waste Management

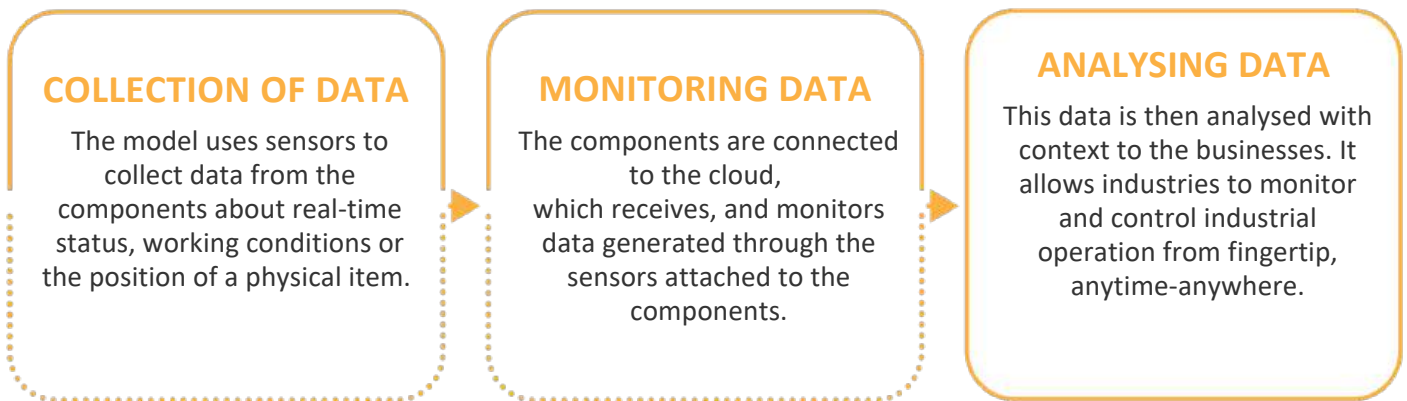
Arnowa's Smart bins include inbuilt fill-level sensors that transmit real-time data and alerts to waste collection centres. Equipped with predictive analytic capabilities, the Smart Waste Management platform can predict filling times and adjust collection vehicle schedules accordingly.



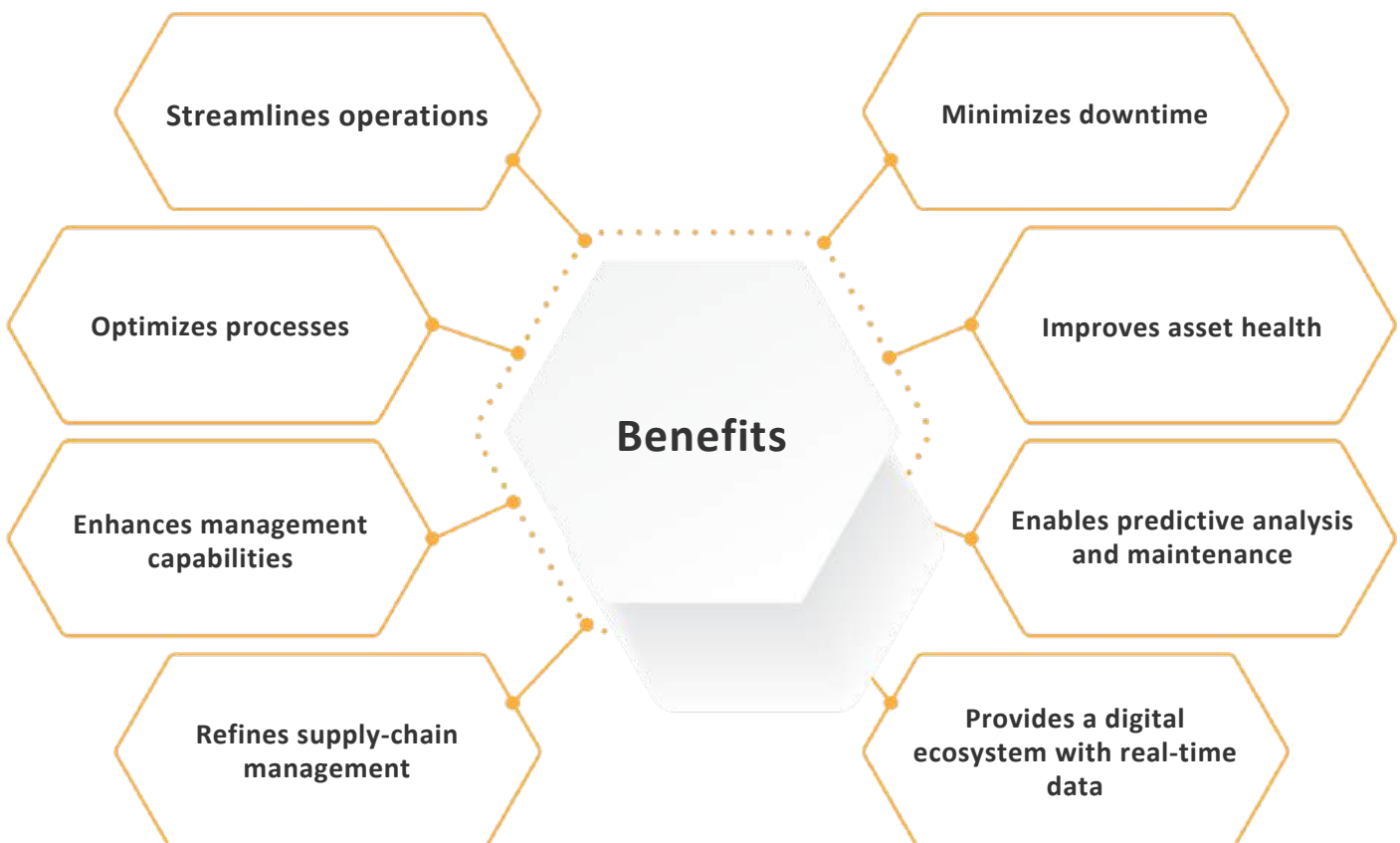
Digital Twin

Digital Twin is one of the transformations in the era of smart technology (IoT) and industrial innovation. The top disruptive technology like Artificial Intelligence (AI), Machine Learning (ML), Real Intelligence (RL), Cloud Computing, Big Data Analytics, and IoT are employed in the Digital Twin concept. A digital twin is a virtual model of a process, product, or service. This pairing of the virtual and physical worlds allows the analysis of data and monitoring of systems to head off problems before they even occur, prevent downtime, develop new opportunities and also plan for the future by using simulations. The primary and simple idea lies behind the Digital twin is that sensor technology, software, a network can be used to create a virtual system of any physical entities and can be monitored and managed by even an individual.

Arnowa's Digital Twin Model



Benefits of Digital Twin to Industries





About Arnowa

Established in 2013, Arnowa is an Australian based smart technology development company which excels in designing, manufacturing and implementing smart city and industry 4.0 infrastructure. We provide solutions that simplify processes, spark efficiency, enable collaborative engagement and promote sustainability.

Our untiring experience in the industry helps us understand your requirements swiftly and formulate an action plan with smart technology. Our focus is on addressing your efficiency and effectiveness needs. It is our ability to analyze local and international markets that creates the centre of our successful business.

Arnowa's Multi-Utility Spatial Intelligence and Control Ecosystem i.e MUSIC integrates with existing infrastructure to wirelessly connect the unconnected. Arnowa's Multi-Protocol Edge Device is a one-of-a-kind product with unparalleled flexibility and agility. It combines the power of IoT, Big-Data, Artificial Intelligence and Subject Matter Expertise. This technology is supported with Arnowa's highly customisable data visualisation, control, and analytics application 'Carbon' to develop a digital twin.

Our ecosystems acquire your undiscovered data in real-time and apply our diagnostic and predictive analytics. It's how we enable informed planning and management to produce true value, regardless of industry and size. Businesses who partner with Arnowa proprietary ecosystems are smarter, more efficient and more effective.

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