



Introduction to Digital Twin

Unlocking the Power of Digital Twin

Our Capabilities & Experience

Audax labs is an Innovation Partner with a strong System Integrator background. We work with enterprise clients in their innovation journey from ideation to enterprise grade deployment.

PARTNERS

HITACHI
Inspire the Next

Microsoft
Solutions Partner

talend Partners

Google Cloud
Partner

CUSTOMERS

HITACHI
Inspire the Next

Microsoft

Parker

KARMA

EV Bike Manufacturer

Rabobank

9to5
seating

Kelvin

Bonsai
mediagroup



AUDAX
LABS

INDUSTRIES

Automotive

Manufacturing

Healthcare

BFSI

Retail

TECHNOLOGIES

AI
Artificial Intelligence

AR, VR, & XR
Augmented Reality

IoT
Internet of Things

Cloud
Storage & Computing

Data
Managing Data lifecycle

GLOBAL PRESENCE



Making Enterprise Smarter Leveraging Outcome Driven Innovation!



AI
Artificial
Intelligence

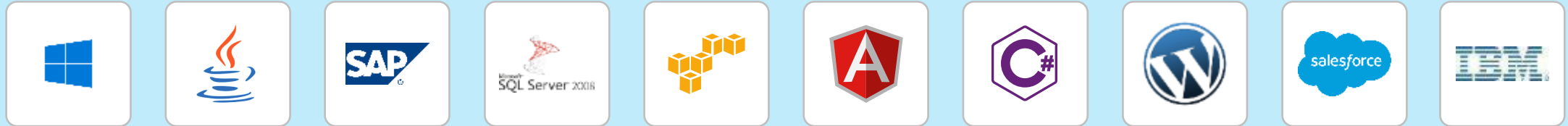
AR
Augmented
Reality

IoT
Internet of
Things

Cloud
Data Storage
And Computing

Big Data
Managing
Data Lifecycle

**Traditional
Technologies**



Importance of Digital Twin

The digital twin revolutionizes industries by enabling real-time monitoring, predictive maintenance, and simulation, optimizing efficiency and innovation.



Why Choose DIGITAL TWIN?

ENHANCES DECISION-MAKING

Digital Twin empowers organizations to make data-driven decisions by providing actionable insights into asset performance and behavior.

IMPROVES EFFICIENCY

By simulating processes and systems, Digital Twin optimizes operations, reduces downtime, and enhances efficiency.

Enables Innovation

Digital Twin fosters innovation by facilitating experimentation, testing new ideas, and predicting outcomes before implementation.

Industries Where Digital Twin is Used

Manufacturing

- Digital Twin optimizes production processes, predicts equipment failures, and enables predictive maintenance.

Automotive

- Digital Twin enhances automotive manufacturing by optimizing processes, improving vehicle performance, and enhancing safety features.

Healthcare

- In healthcare, Digital Twin is used to simulate patient outcomes, personalize treatments, and improve healthcare delivery.

Aerospace

- Digital Twin is used in aerospace to monitor aircraft performance, predict maintenance needs, and enhance safety.

Smart Cities

- In smart cities, Digital Twin models urban infrastructure to optimize energy usage, manage traffic, and improve public services.

How Digital Twin Works

1

2

3

4

Data Collection

Sensors collect real-time data from physical assets.

Data Integration

Data is integrated into a virtual model using cloud platforms like Azure IoT Hub.

Analysis

Advanced analytics and AI algorithms analyze data to simulate behavior and predict outcomes.

Visualization

Insights are visualized through dashboards and reports in tools like Power BI.

Benefits of Digital Twin

_01 Predictive Maintenance

Digital Twin enables predictive maintenance by detecting anomalies and predicting failures before they occur, reducing downtime and maintenance costs.

_02 Improved Efficiency

By optimizing processes and systems, Digital Twin improves efficiency, reduces waste, and enhances productivity.

_03 Enhanced Safety

Digital Twin enhances safety by identifying potential risks and implementing proactive measures to mitigate them.

_04 Cost Savings

By preventing unplanned downtime, reducing maintenance costs, and optimizing resource usage, Digital Twin delivers significant cost savings over time.

DIGITAL
TWIN

Microsoft Technologies Involved



Azure IoT Hub

Collects and manages real-time data from physical assets.



Azure Digital Twins

Provides a platform for creating and managing Digital Twin models.



Azure Machine Learning

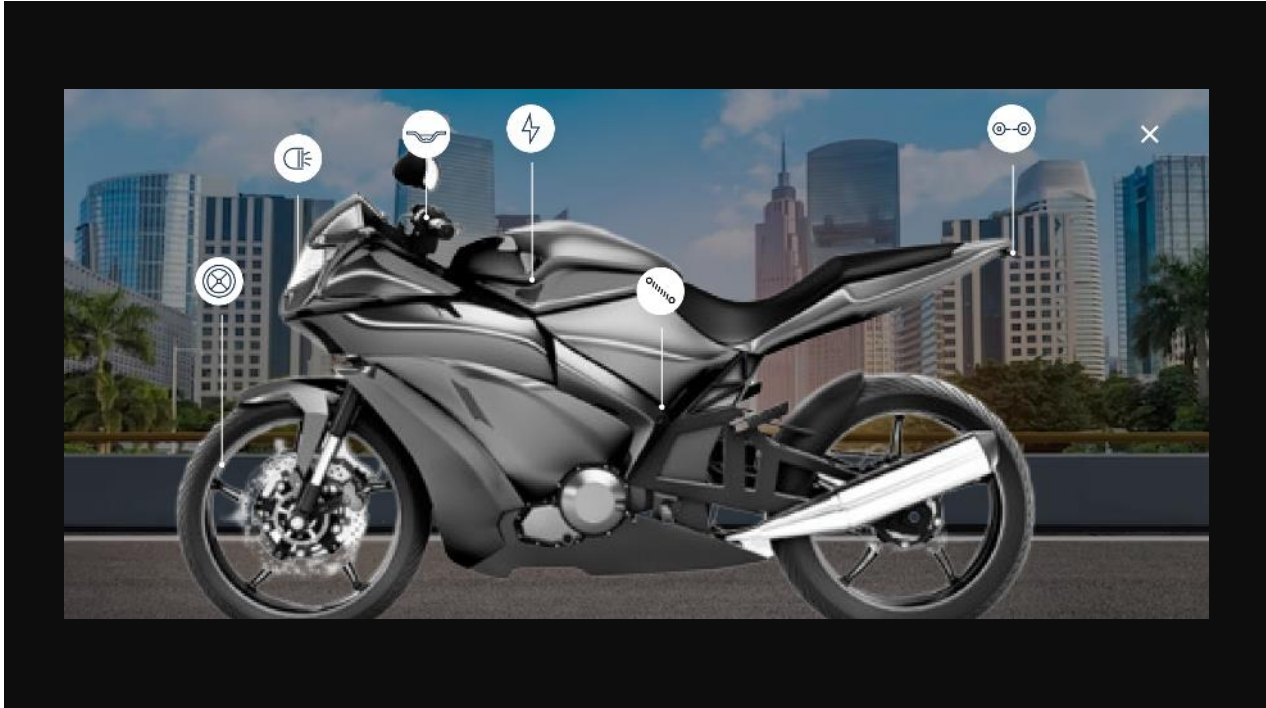
Powers predictive analytics and AI algorithms for simulating behaviour and predicting outcomes.



Power BI

Visualizes insights and data-driven decisions through interactive dashboards and reports.

Digital Twin - User manual and Predictive maintenance



Challenge:

A large automotive manufacture, wants to provide their bike owners, the user manual in Augmented reality.

Currently the owner manual is paper based, and the new digital manual is required to be integrated with their existing bike connect mobile app.



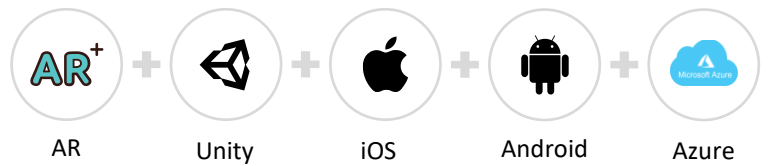
Solution:

Audax Labs created a solution for the electric motor bikes by using Unity, Vuforia and native iOS.

The application would enable users to scan the specific component of the bike and recognize it. The system would then render the videos or animation in augmented reality.



Solution Component:



Outcome (ROI):

- Paperless user manual
- Saves cost & Time
- Better user experience
- Seamless updates to the manual

Connected Vehicles: Maintenance (Digital Twin)



Challenge:

Karma Auto wants to provide their car owners with a capability to know the health of their car at anytime.

Karma wants to give users a capability to view a digital replica of their car to know various health metrics like diagnostics information of engine, tyre pressure, battery, heat etc.



Solution:

Audax Labs developed a mobile app leveraging IoT and AR capabilities that allows users to know diagnostics information of the car instantly.

It also enable users to track their service and warranty to schedule their service with nearest dealership. The app is built on iOS and Android to using Karma Cloud Service (vehicle control & monitoring) with various function.



Outcome (ROI):

- Enhanced customer experience
- Diagnostics and communication
- Predictive service & maintenance
- Connected to Enterprise backend/Car TCU
- Easy to locate features
- Saves time



Solution Component:



Digital Twin: Predictive Maintenance for Heavy Engineering



Challenge:

There is a lack of predictive and preventive maintenance repair tracking for mechanical and hydraulic presses.

A heavy engineering equipment manufacturing company wants to develop a solution for their presses to monitor and enhance productivity and uptime.



Solution:

Audax Labs proposed to deliver an efficient solution using Azure Cloud and IoT Edge that would collect data from various IoT sensors (installed on presses). Custom connectors would be developed to transfer data from PLCs on the machines to Azure Cloud.

The custom cloud solution would include Analytics dashboard for system admin, service engineers, and customers for analysis and taking informed decisions.

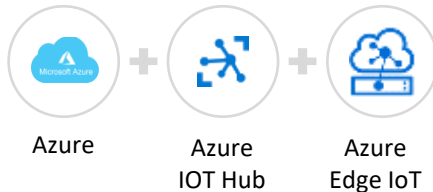


Outcome (ROI):

- Operational data analytics of the machine in real time.
- Increase productivity and uptime
- Improve customer satisfaction, predict failures, and perform predictive maintenance.



Solution Component:



Digital Twin with IoT Data: Remote Monitoring of Windmills



Challenge:

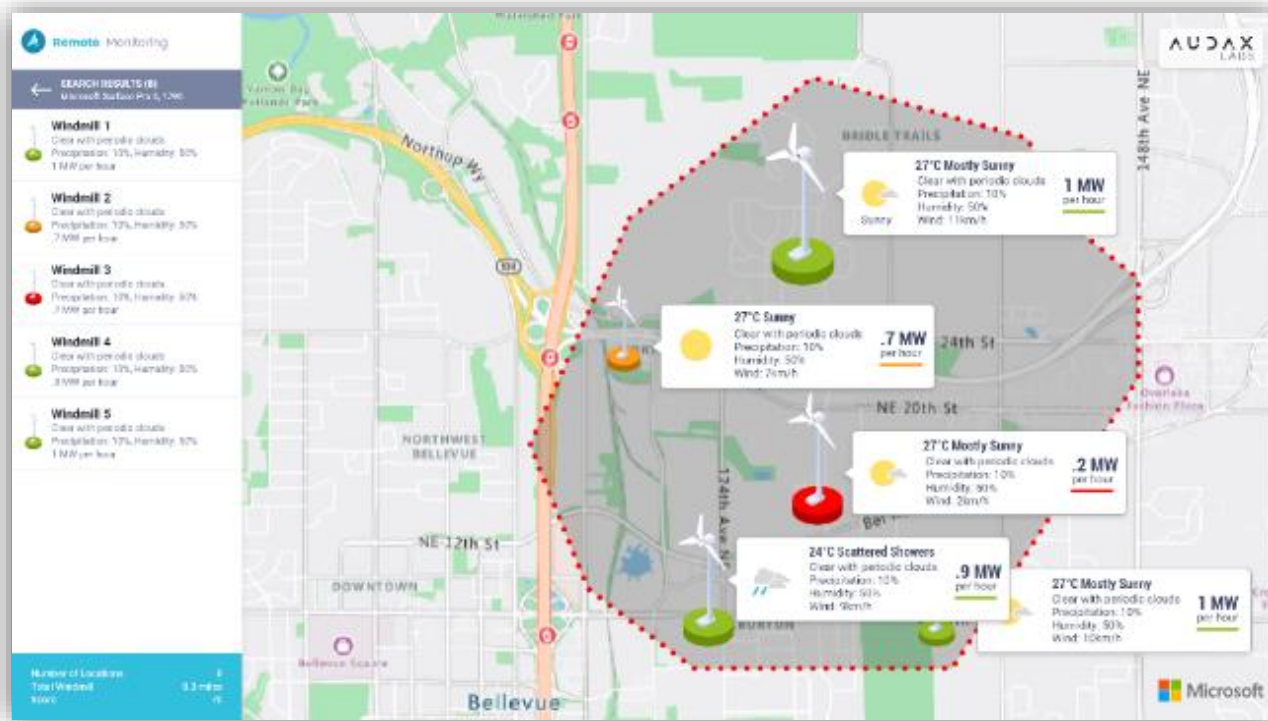
Drop in energy production, huge cost of maintenance, and monitoring issues.



Solution:

Using IOT sensors/devices the wind farm vital parameter information can be monitored in real time. This data along with location's weather condition can be stored on Azure from various locations. It can be further analyzed using ML models to check if a windmill is performing at optimum capacity.

Weather conditions, energy output, potential failures could be displayed on Azure Maps for a powerful, and meaningful visual layer.



Solution Component:



Outcome (ROI):

- Remote monitoring
- Real time data and Alert
- Reduces downtime and cost
- Increased production

Digital Twin with IoT Data: Remote Operations of Windmills



Challenge:

Drop in energy production, huge cost of maintenance, and monitoring issues.



Solution:

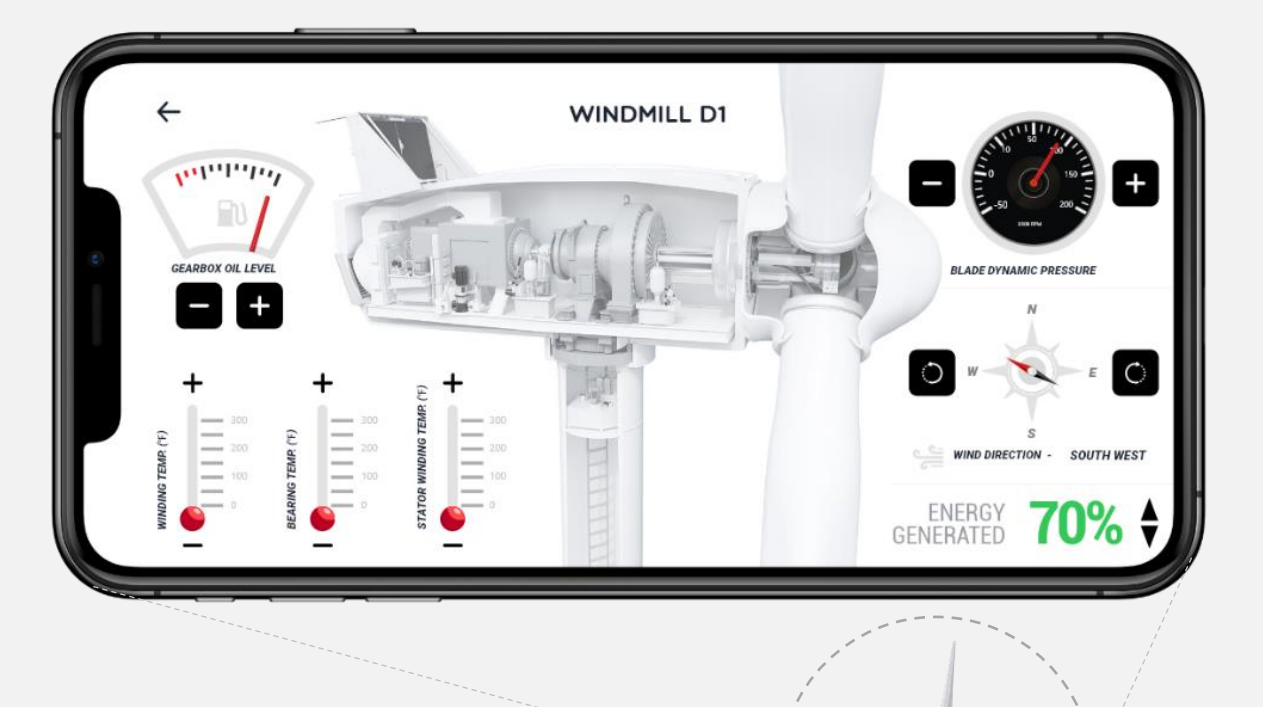
With the help of various sensors and Lumada edge intelligence a robust application can be made that allows user to operate it from any remote location. It enables user to monitor oil level, pressure of different units, temperature of various controls and identify the wind direction to optimize energy production.

With additional sensors preventive maintenance can be integrated as well.



Outcome (ROI):

- Monitor and operate from anywhere
- Optimize energy generation to full capacity
- Reduce operational cost & preventive maintenance
- Reducing risks and manage data



Solution Component:





Outcome Driven Innovation!
