CELEBAL TECHNOLOGIES

Weather Forecasting

Microsoft Solutions Partner

Infrastructure (Azure)
Data & AI (Azure)
Digital & App Innovation (Azure)
Security
Biz Applications

Celebal Specialization and Strength

CELEBAL TECHNOLOGIES

Microsoft
AI Partner Of The Year 2023
Global

databricks
Partner Of The Year 2022 & 2023
Asia Pacific and Japan
2 YEARS IN A ROW

databricks
Migrations Partner Of The Year 2023
Asia Pacific and Japan

Partnerships

Microsoft Solutions Partner

databricks Elite Partner

SAP Silver Partner

Red Hat Ready Business Partner

Advanced Specialization

- AI & Machine Learning
- Analytics
- Infra and Database Migration
- Kubernetes
- Cloud Security
- Low Code No Code
- Intelligent Automation

INDIA | USA | CANADA | APJ | MIDDLE EAST | AUS

2800+ Employees

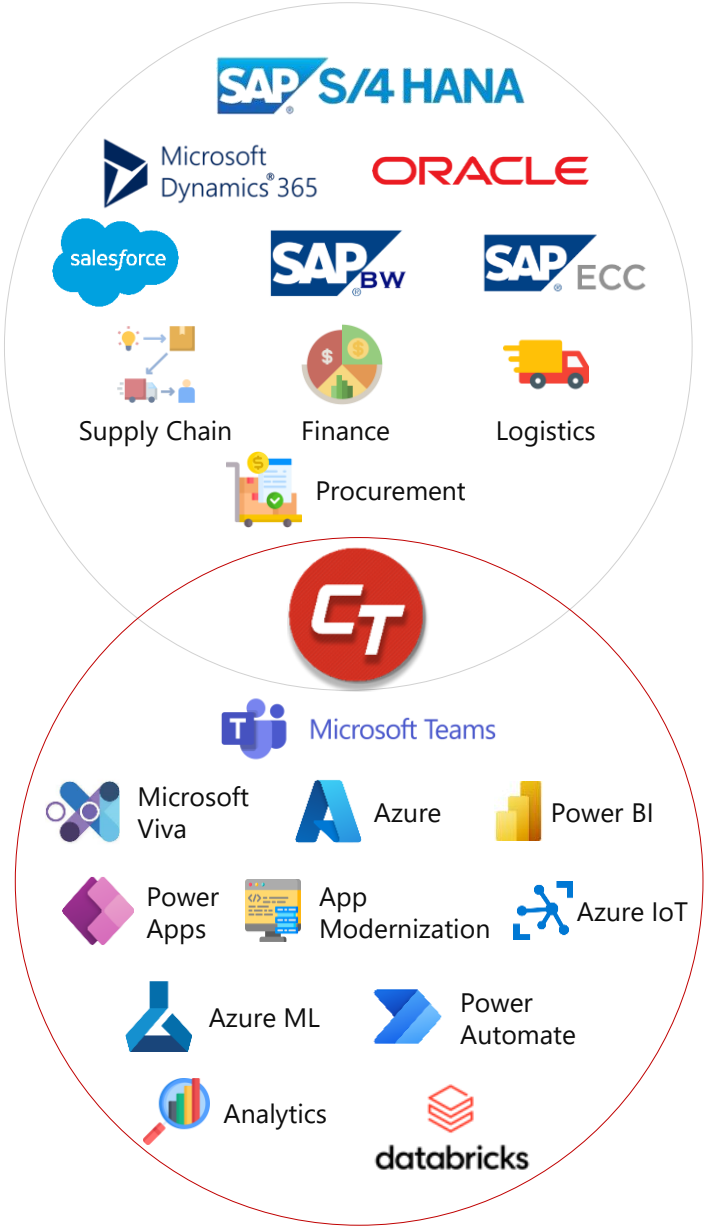
800+ AI experienced professionals

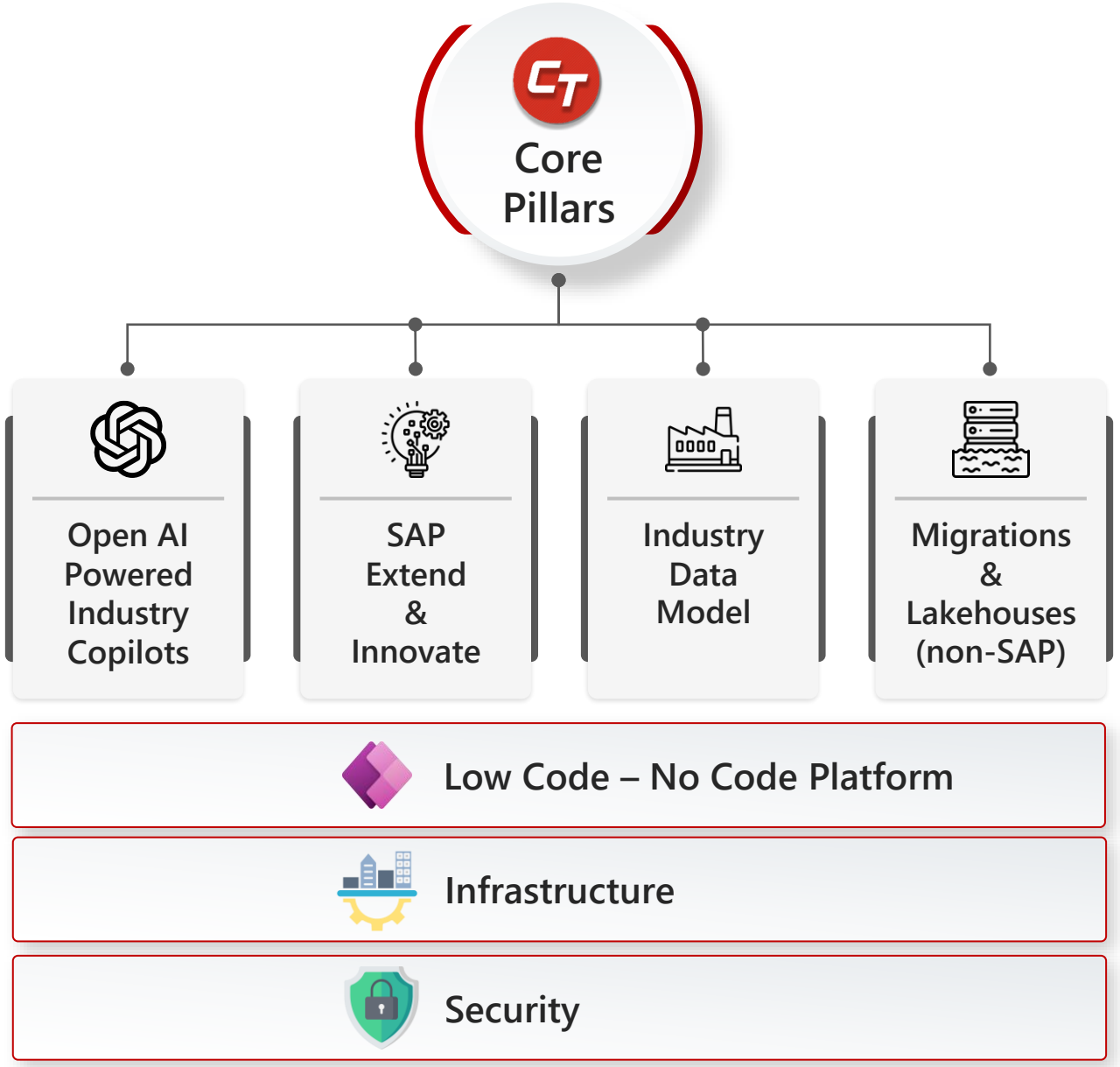
500+ AI Certifications

Industries We Serve

- Manufacturing
- Retail & CPG
- Financial Services
- Energy & Sustainability
- Healthcare & Life Sciences
- Media & Entertainment

Celebal Core Pillars





Weather Forecasting

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1. Brief Description of the Solution:

Improve forecasting accuracy and operational efficiency with our AI-powered Weather Forecasting Solution. Built on Azure Machine Learning, Azure Kubernetes Service, Azure Storage, Function App, and Azure Container Registry, it delivers detailed short- and long-term predictions for key variables such as temperature, wind speed, and solar irradiance. Unlike conventional models, our system processes real-time data and continuously re-trains to maintain precision. This supports dispatch planning, curtailment, storage control, and grid management. Integrated with energy management systems, the microservices-based architecture supports adaptive load forecasting, automated demand response, and strategic energy market participation. Enterprises can reduce costs, maintain regulatory compliance, and improve grid reliability by aligning renewable output with accurate weather insights.

2. Business Problem It Solves:

Energy companies face significant challenges in forecasting and planning amidst volatile market conditions and evolving regulatory landscapes. Traditional forecasting methods often fall short in accuracy and fail to incorporate real-time data effectively. This leads to suboptimal resource allocation, increased operational costs, and missed opportunities for revenue optimization.

3. Value Add for Customer:

- Superior Forecast Accuracy: Harnessing advanced machine learning models and rich historical datasets, our solution delivers highly precise forecasts, enabling better anticipation of weather-related disruptions.
- Boosted Operational Efficiency: Real-time analytics and dynamic scenario planning empower teams to make proactive decisions, streamline resource allocation, and minimize operational risks.
- Maximized Cost Efficiency and Revenue Growth: Clients gain from smarter energy trading, optimized load distribution, and strategic market positioning, driving higher profitability and a stronger competitive edge.
- Seamless Scalability and Integration: Powered by Microsoft Azure, our solution scales effortlessly with your growing data needs and integrates smoothly into the existing IT infrastructure, ensuring continuity, agility, and high ROI.

Case Study – India-based Client

Business Challenges

- The client required accurate forecasted power values to minimize the penalty resulting from discrepancies between the actual power and the forecasted power.

Business Impacts

- Better Accuracy and reduced penalty thereby less revenue loss to the client
- Accurate Forecasting
- Comparative analysis of the data in real time
- Easy monitoring and better tracking of generation and weather data

Solution

Celebal Technologies had proposed a time series model-based solution developed on Microsoft's Power and Utilities framework to help increase their forecasting accuracy and reduce penalty and thereby reduce revenue loss.

For Intra Day Forecast

Time Series model was prepared to predict power generation at the below-mentioned specificity.

- Granularity for Prediction was 15 minutes
- Time Range for prediction was in 9-time slots in a day where each slot will be of 6 steps prediction.
- Grace Period mentioned below as per confirmed by client

For Day Ahead Forecast

Time Series model using was prepared to predict power generation at the below mentioned specificity.

- Granularity for Prediction was 15 minutes
- Time Range for predicting day-ahead values will be 5:30 AM to 7:00 PM


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Thank You