

SMART MANUFACTURING INDUSTRY 4.0 SOLUTION



The fusion of the online world and the world of industrial production and smart manufacturing. We call it Industries 4.0.

KEY FEATURES

- Ability to cross-reference, interface and mix various types of data (geo-located, operational or contextual, batch or real time)
- Location-based analysis
- Real time pattern recognition
- Machine learning-based probability scoring
- Ability to share cross-validated data between stake holders

KEY BENEFITS

- Deep Industry Sensor and Network Topology Expertise
- Ability to Connect Hardware Sensor with the Software Infrastructure
- Prebuilt Solution
- Comprehensive Business Intelligence
- Demand Forecasting
- Strategic Sourcing
- Predictive Maintenance
- Warranty Management
- Transport Logistics
- 8-10 Weeks of Implementation Time

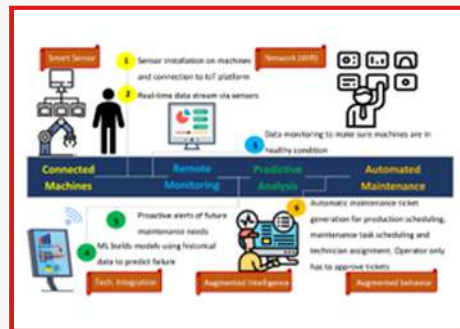
OVERVIEW

Industrial firms must close the gap between their familiar IT systems and the complex, expensive, and often proprietary systems driving factories, supply chains, and Manufacturing processes. The initial driver for most efforts to modernize and digitize manufacturing is often operational — and though that may not be enough. Manufacturer is embracing digital in a big way. Reason is obvious - their customer is digital, the ecosystem is digital, and the future is digital. Digital must be core to everything you do. It can't be an add-on or an afterthought. As per the latest McKen-

30 to 50 percent reductions in machine downtime, 10 to 30 percent increases in throughput, 15 to 30 percent, improvements in labor productivity, 85 percent more accurate forecasting. With this paradigm shift in the manufacturing, we believe our manufacturing solution are in the best shape to help manufacturer driving digitization. With our solution, we exactly demonstrate how we can bridge the chasm between Technology and IT, and enable the manufacturing enterprise to have digital transition..

CONNECTING THE DOTS TO THE DATA DRIVEN REVENUE

As the volume, variety and complexity of sensors and other telemetry sources grows, the connections between them create an IoT value curve that's rising exponentially. The real value, however, depends on the analytics applied to investigate this massive pile-up of fresh and timely data.



Key priorities include intelligent "listening" to massive streams of IoT data to uncover distinctive patterns that may be signposts to valuable insights. But in order to realize the full value, every bit of data must be integrated in an analytical ecosystem with advanced machine learning algorithms, operating at scale to reap sophisticated, actionable (and oftentimes hidden) insights.

In Manufacturing there are five pillars to focus one – Productivity, Cost, Quality, Safety & Security across 5 key “M” dimensions – Man Machine Method Material and Management. One can see Machine Method & Material are primary in the domain of OT whereas Man and Management are primarily in the domain of IT. Therefore one needs to contextualize and integrate OT data with IT data to provide the insight that a VP manufacturing needs and needs right now - getting notified on Realtime of any deviation so that plant manager have way better control on unplanned downtime or quality defects – these all are to improve the bottom-line as well as to support top-line growth.

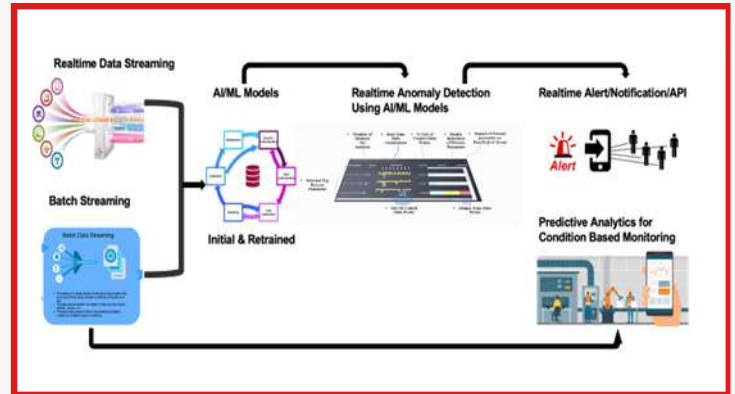
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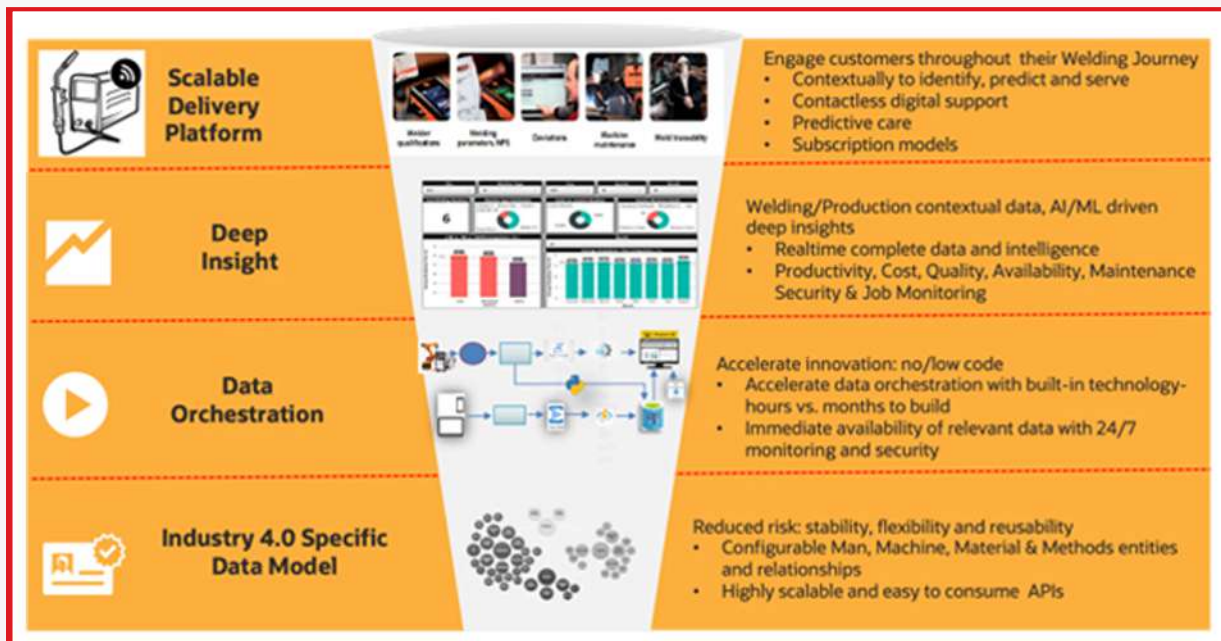
HOW DO WE APPROACH

Customer needs what works best—or what they are already using (NoSQL, Spark, Hadoop, Elasticsearch, Redis) for data that is raw, less well understood, older, or less valuable. Typically in manufacturing, the workload on Spark, Elasticsearch and NoSQL are huge as for them transitioning to Industry 4.0 is a survival question and the only way to transition to that is the expansive usage of IoT data and Machine Log which are usually managed by these types of open source service.

On the other hand, Hadoop is used for staging prior to loading to data warehouse, archive of older, and a comprehensive repository for training machine learning models. It usually handles data that is raw and un-curated, of unknown value or low value. Though this is not a very cool subject (as it is behind the scene) but this is the fundamental of the modern data management platform where one is required to have all varieties of data streaming data sensor data historian data and regular system of records data – all in a manageable scalable way. But storing data is not enough. We should be able to query the data sets, inter-mingled and contextualize the data sets, also should be able to manage the vast amount of metadata scattered all over the place in a very cohesive searchable trustworthy manner – key requirements of data governance.



We often talk about the executive dashboard designed for head of Manufacturing. It typically demonstrates what's going on in the plant – Machine logs, Device control system, sensor data sets, downtime data all from shop floor technology and personnel, as well as the productivity quality information from MRP MES systems. So the Head of Manufacturing gets the full blown picture. But this cannot happen in the vacuum – you need solid foundation to produce – call it whatever, a COMPREHENSIVE MANUFACTURING DATA MODEL– that not only caters to the structured data sets like MES MRP SCM but the semi structured data sets like sensors data machine log images, as well as the historical datasets of MES MRP to make good on the promise. Solution we offer has the ability to ingest data from variety of data types and product KPIs those meet the needs of both OT and IT stakeholders.



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OUR DELIVERABLES

 <p>PRDUCTIVITY</p>	 <p>QUALITY</p>	 <p>COST</p>	 <p>AVAILABILITY</p>
<p>Real time actual vs target and past data. Supports benchmarking against global standard to derive the targeted output.</p> <p>Provides granularity to get to the Root Cause</p> <ul style="list-style-type: none"> ● Person-Machine Output ● Machine-Type & Make of machines and outputs. ● Material-Type of Consumables(source & make) ,source of input Jobs. <p>Identify & Isolate the constraining point in the production Chain for taking necessary action</p>	<p>Measure Quality failures Machine wise, Job Wise. Provides data backed confidence to Customer that all jobs have been done within the given WPS. Traceability of faults of a particular job. Can carry out data driven Inspection process to ensure zero Product failure analysis. Performance of each machinist, make & classifications, identify training needs ,and plan out suitable incentives & disincentives.</p> <p>Provides predictive alert to change Wear parts on time to prevent quality issues.</p>	<p>Actual production cost / component, each stage .Compares with the target to take real time counter measure to prevent any Month or Quarter end surprise in the P&L.</p> <p>Granularity of all cost data including use of wire, gas, electricity, can be compared with benchmarked target cost and area of loss. can be identified for taking proper countermeasure to keep all consumptions within set limit.</p> <p>Can compare machine model wise electricity cost. Data will be generated by machine types & real time efficiency - a key input in future purchases. Generate wear parts life data of different makes & types to enable purchase decision.</p>	<p>Machine Utilization</p> <p>Machine Performance Analysis – Brand and Model</p> <p>Machine Efficiency</p> <p>Supporting Machine Brand Model Selection Criteria</p> <p>Wear parts change schedule based on parametric variation</p> <p>Prevention of major breakdown of machine based on measured machine health parameters</p> <p>Prevent unwarranted downtime to maintain production continuity Supports Data Driven Spares and ear parts planning</p>



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HOW DOES THE CUSTOMER BENEFIT

Our smart manufacturing solutions are helping manufacturers across the Midwest increase their factory floor visibility. The increased automation, made possible by our Smart Manufacturing Solution, is also enabling them to integrate various factory networks that were previously isolated. Even Welding systems HVAC systems can be integrated allowing companies to implement smarter energy usage policies.

- Cut down on maintenance expenses with predictive maintenance
- Reduce your warranty management costs by monitoring how the machines are being operated
- Create a better field service program by assigning tasks to the appropriate field service technicians
- Get real-time information on where your assets are and when they will reach their destination
- Perfect for companies in the Maintenance, Repair and Operations (MRO) industry

VALUE ADDED OPPORTUNITY TO ORACLE

Application Development Tool	<ul style="list-style-type: none">• OCI APEX Service
Data Integration	<ul style="list-style-type: none">• OCI Integration Cloud Service
Data Transformation	<ul style="list-style-type: none">• OCI Streaming Service• OCI Data Integration Service• OCI Data Flow Service
Data Storage & Governance	<ul style="list-style-type: none">• OCI Object Storage Service• OCI Autonomous DW Service• OCI Data Catalog Service
Data Analysis & Visualization	<ul style="list-style-type: none">• OCI Analytic Cloud Service• OCI Data Science Service

CONTACT US

For more information about **SMART MANUFACTURING INDUSTRY 4.0 SOLUTION**, visit ebiw.com or call to speak to an EBIW representative.

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