

# Data and AI shields for the battle of “new normal”

Enabling Analytics-led Business  
Continuity for Manufacturing Industries

# Adapt or Perish is a Reality

The implications of a VUCA world – one which is volatile, uncertain, complex and ambiguous – has been in discussion in strategic leadership circles for well over a decade.

**“What the COVID-19 pandemic has done over the past year is to provide a reality-check on how the “new normal” actually affects businesses and organizations.**

Several organizations in their initial transformative stages have scurried to accelerate business transformation, while others have been forced to imbibe digital capabilities as a matter of survival.

The manufacturing sector has not been spared the effects of the pandemic, and the impact has been widespread, disruptive and sudden. Jobs have been lost, remote work necessitated, and supply chains disrupted, all while consumer behavior and buying patterns have changed unpredictably.

Even as recent as the start of 2020, the outlook for the sector was bullish: In late 2019, Markets and Markets<sup>1</sup> forecasted year-over-year growth for the smart manufacturing market with a total market value of \$214.7 billion in 2020 and continued strong growth through 2025, reaching a projected total market value of \$384.8 billion at a CAGR of 12.4 percent.

This was quickly revised at the end of Q1, 2020 to an estimated growth from \$181.3 billion in 2020 to \$220.4 billion in 2025, a CAGR of just 4.0 percent - less than one-third of the pre-COVID-19 forecast.

While the above revised forecast looks bleak, a deeper study offers hope for a rebound and recovery at an industry level starting from 2021. This provides a significant opportunity for organizations to reimagine their business structures.

**“Although the crisis has created an unprecedented level of uncertainty, one thing is certain: This will not be the final disruption faced by the world’s manufacturing businesses.**

From pandemics to geopolitical triggers to natural catastrophes, manufacturers need to increase their maturity in intelligent manufacturing — from data modernization to adoption of AI and Machine Learning in digital manufacturing – in order to be agile, flexible and prepared to face disruptions akin to the one currently being witnessed.

With companies being increasingly reliant on analytics and AI to stay abreast with a rapidly changing world, these radical shifts underscore a key takeaway for business leaders:

- Data/Analytics/Models need to evolve keeping pace with the transient situation and business scenarios to ensure business continuity.
- Companies need to modernize their data, prepare for transformative development and scaling, continuously refresh models, and overall be more flexible to rapidly to changing scenarios.

## Case-Study

### Predictive Maintenance for Motor and Control Systems Manufacturer

#### Objective

- Offer equipment health monitoring and predictive maintenance to customers in “as-a-service” model
- Help end-customers lower operating costs and achieve longer equipment life

#### Business Problem

- Repeated failure of equipment because of component failures & damages
- Unplanned equipment shutdown leading to significant revenue loss

#### Solution

- ML Models to analyze maintenance, engineering & operational data
- Anomaly detection and analytics features to provide insights for maintenance, repair and overhaul
- Supervised learning techniques to predict failure occurrence

#### Benefits

- New line of revenue with an annual potential of over USD 400 million
- Spare parts inventory cost witnessed a steep decline of 30-40%
- 30% improvement in utilization of field services team and over 20% reduction in warranty costs

## Beacons for Survival and Growth

Some of the key areas which have come under focus, and where data and AI can have a major role to play in businesses surviving the effects of widespread disruption and building strategic competence are as follows:

1. **Optimized manufacturing processes and consolidated command view:** This will enable transformation of data into intelligence in a vendor-agnostic environment where all machines speak the same language, increasing production efficiency from machine to machine across the shop floor. Data transparency and modernization are key baselines for organizations to take up futuristic data initiatives which can help bring in strategic differentiation
2. **Predictive maintenance:** Keeping production lines free from disruptions and unscheduled downtime is key in a period of sporadic demand. AI-enhanced predictive maintenance of industrial equipment can generate a 10% reduction in annual maintenance costs, up to a 20% downtime reduction and a 25% reduction in inspection costs
3. **Automated material procurement:** Companies need to work towards integrating AI and machine-learning algorithms into procurement, strategic sourcing and cost management. This will help tackle uncertainties with relation to material supply, build resilience and robustness into the procurement process and enable increased efficiencies for downstream processes
4. **More accurate demand forecasting:** Adaptive planning and scheduling systems, as well as simulation models are key imperatives to building a responsive and agile supply chain. Using AI and machine learning, systems can test hundreds of mathematical models of production and outcome possibilities, and be more precise in their analysis while adapting to new information such as new product introductions, supply chain disruptions or sudden changes in demand
5. **Hyper-personalized manufacturing:** The advent of increased personalization expectation in several consumer-focused sectors has led to higher number of variants required to be produced. A highly flexible manufacturing set-up, aided by machine learning engines, is required to effectively tackle the variations.
6. **Data Management, Security and Compliance:** With increasing proportion of the workforce connecting remotely, it has become more difficult for companies to analyze a growing range of data to keep track of changing business conditions, and also protect data that is being generated and make it available across distributed systems. Remote or reduced workforce also necessitate novel requirements in the training and compliance areas, where artificial intelligence systems can have a major role to play

## Our view towards Modernized Data and AI

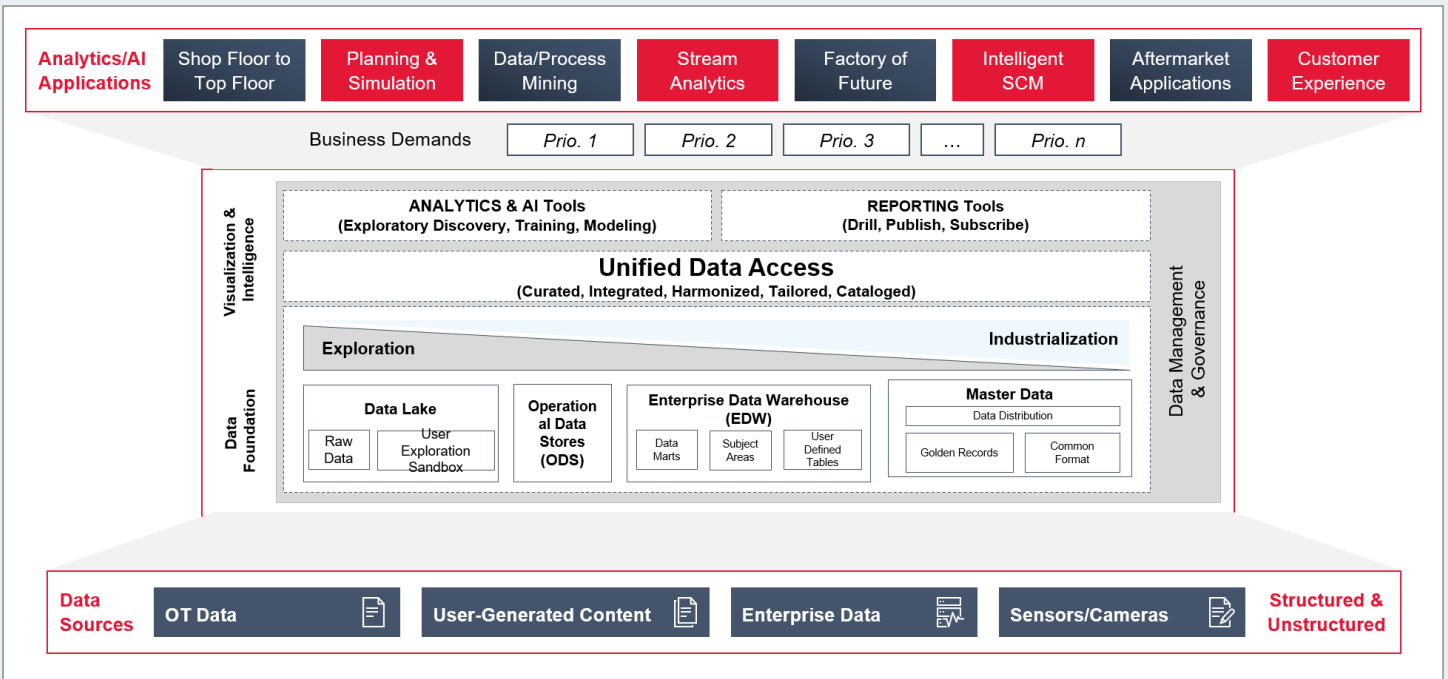
At Tech Mahindra, we believe that

“ The success of any analytics and AI initiative lies in sound data management and modernization practices.

The below lay the foundation for future effectiveness of data-driven deployments:

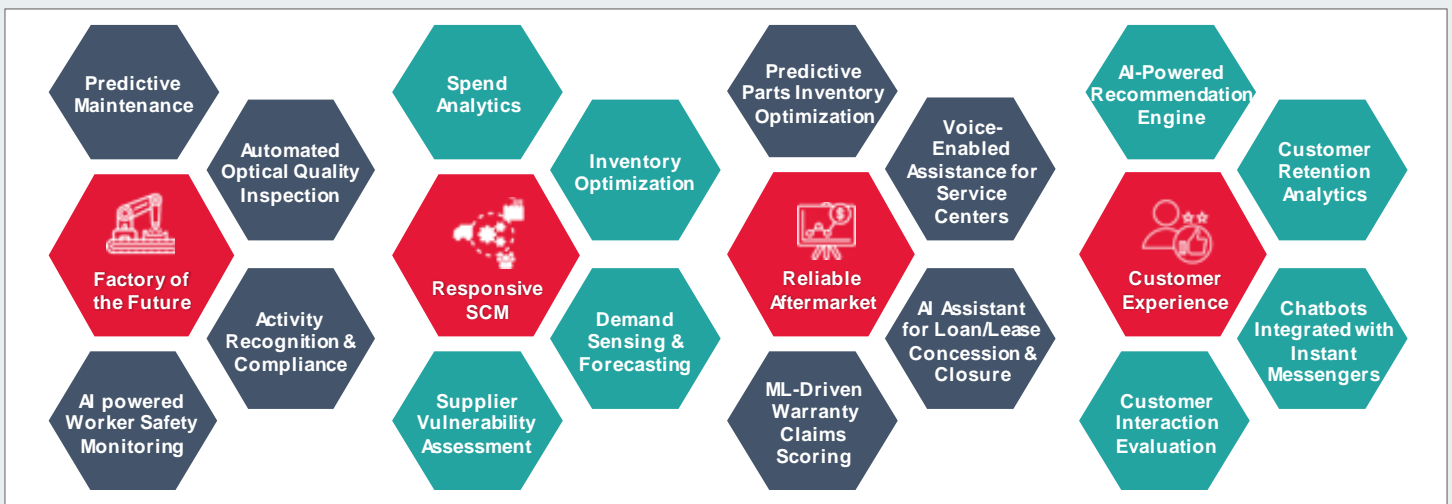
- Well defined data governance policies
- Data quality analysis and mapping
- Clearly outlined master and meta data management, and
- Architectural design and rationalization decisions

Below is a representative view unifying data analytics, visualization and vertical AI applications:



Based on the current trends and market implications, we bucket the AI/analytics interventions into four broad buckets:

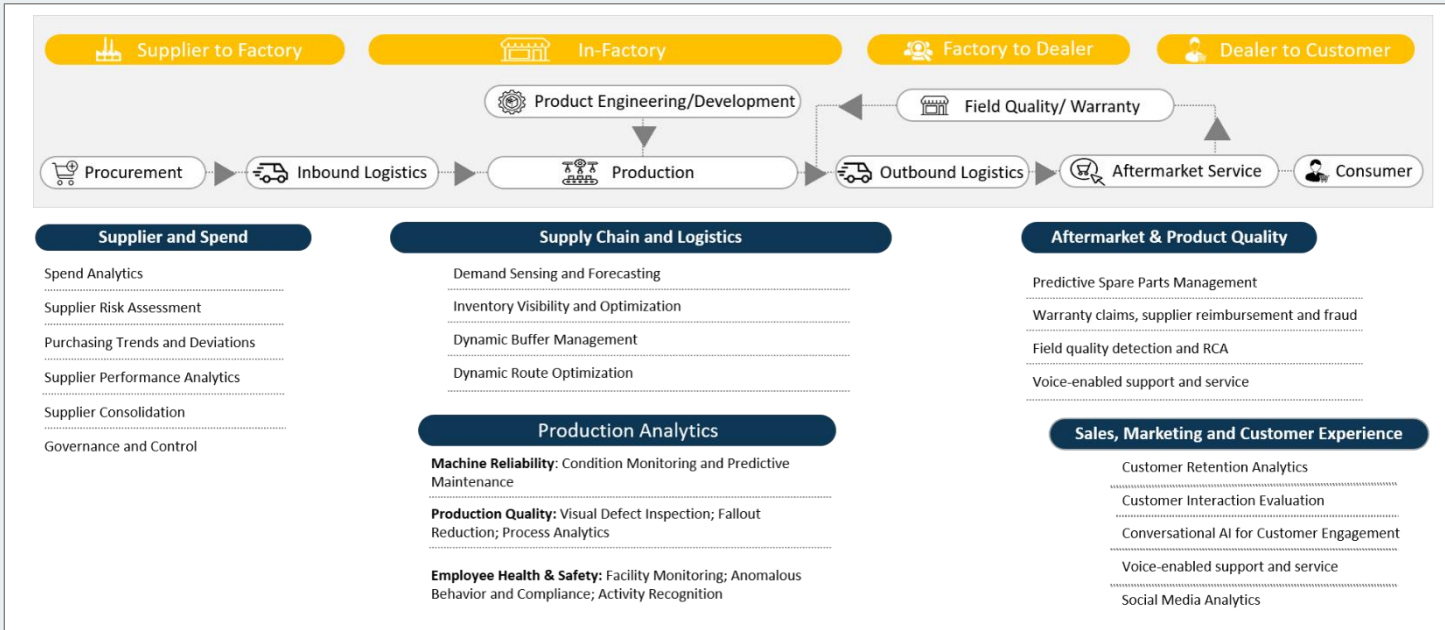
- Factory of the Future
- Responsive Supply Chain Management
- Reliable Aftermarket Operations, and
- Customer Experience



Each of these themes have multiple business applications which can derive value for business operations.



Some of the common deployment use-cases where organizations are finding value from data and AI implementations have been mapped and illustrated in the below value chain:



## End-Note

Looking ahead to the rest of 2021 and beyond for a horizon of at least 5 years, Manufacturing companies will probably continue to face challenges of evolving business scenarios. Intelligent workspaces and factories will become hygiene, as managers grapple with challenges of sporadic demand and supply, reduced workforce operations, and productivity and quality pressures.

Disruptive supply chains will become a norm and being able to tackle such variations may well be the key to competitive differentiation. Customer needs and field requirements will continue to evolve as all parts of the value chain come to terms with the changed environment.

For leadership teams, the important considerations will include understanding the business outlook and tailwinds, making data resiliency a C-suite-level conversation, investing in digital analytics initiatives, ensuring a well-defined collaboration and data security strategy to improve the value chain and enable the workforce, and customer and aftermarket programs to the new normal that we are all faced with.

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