Overview of mnubo SmartObjects™

Analyzing the world's IoT data

mnubo

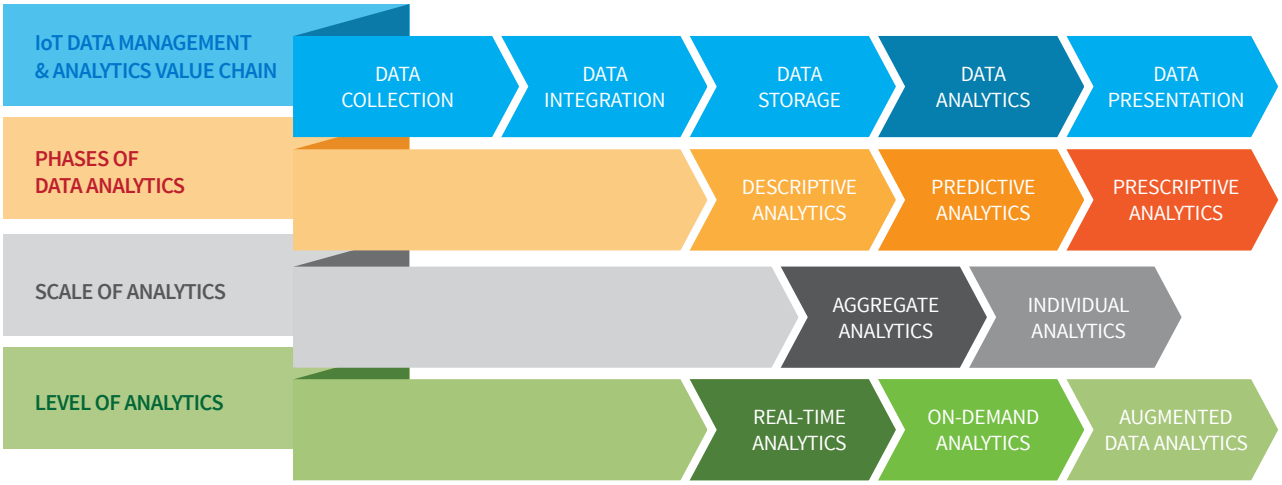
INTERNET OF THINGS - THE NEXT BIG DATA FRONTIER

From smart buildings, connected cars, wearables and the Industrial Internet, there is no question that the Internet of Things (IoT) will connect more 'things', ignite new revenue streams, spur product innovations and enable the delivery of real-time, actionable insights like never before.

It is predicted that by 2020, connected things will generate 16-20 Zettabytes of sensor data annually . But with the majority of this IoT sensor data currently untapped, IoT service providers and manufacturers must collaborate with specialized IoT analytics platforms to derive real business value.

LEVELS OF IoT ANALYTICS

Purpose-built IoT analytics platforms empower connected product manufacturers with a real-time insights engine to improve their connected products and optimize their services. Much has been said about the phases – descriptive, predictive, and prescriptive – of analytics but there are also three levels of analytics that relate to the *timing* and *value* of the insights, which render it actionable.



Real-time Analytics (RTAs)

There are certain business questions that need to be calculated and analyzed in the stream of the data. This level allows the users to extract insights as the data flows.

For example, how many product usage events are being generated and what are the usage trends, how many objects are reporting fault events and how is the frequency changing over time, what is the geographic distribution of the objects and which of those are active or inactive at any given time, amongst other out-of-the-box insights.

On-demand Analytics (ODAs)

Most connected product manufacturers, service providers and other stakeholders, require the flexibility of querying the most pertinent and relevant IoT datasets, in aggregate or individually. The results can be analyzed periodically and delivered in the form of ad-hoc business reports.

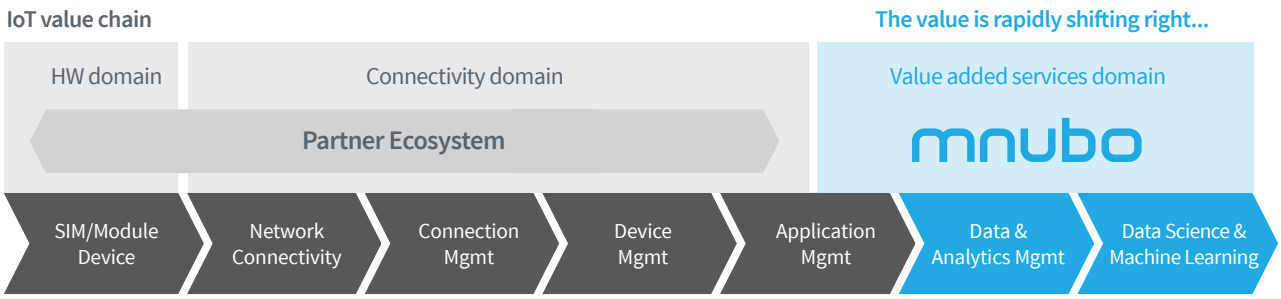
For example, provide me a list of machines with the lowest asset health score so that one can focus their service efforts, which products will be out of warranty, how did the product usage change after the latest feature update, and many more powerful analytics.

Augmented Data Analytics (ADAs)

Analyzing IoT sensor data in conjunction with 3rd party data, linked data (data from various business systems) as well as enriched data from open datasets, provides powerful context around how the smart objects are behaving and what analytics models are most relevant to create value. Augmented Data Analytics productizes IoT data science by delivering predictive and machine learning models via the SmartObjects platform. It gives IoT manufacturers and service providers a 360-degree view of what, where, when, and how events are occurring, as well as delivers predictive trends and patterns allowing them to take proactive actions.

	as the data streams	*when you request it*	*deliver in context*
INSIGHTS	▪ Trends & scoring ▪ Real-time algorithms ▪ Event-driven computations ▪ Anomaly detection	▪ Object & event distributions ▪ Ad-hoc reports ▪ Geo analysis ▪ Profiling and clustering	▪ Contextual analytics ▪ Custom algorithms ▪ Predictive models ▪ DS and Machine Learning
EXAMPLES	▪ Is my equipment performing below-par? ▪ What's the current performance score? ▪ How is it trending?	▪ What/when/where are the object events happening? ▪ Product engagement: top & bottom usage, trend shifts?	▪ Preventive repair recommendations ▪ 360°-degree context ▪ Self-learned optimization models

BUILDING A TURNKEY IoT SOLUTION



The figure above illustrates the IoT value chain. Focused on IoT data management, multi-level analytics, and IoT data science, mnubo enables the value-added services layer for IoT product manufacturers. Given the large volume, variety and velocity of data generated from these products, the mnubo SmartObjects platform is purpose-built to ingest, store and analyze IoT data across several verticals.

In the current market, there are two crucial observations with regard to IoT value chain. First, there is heavy fragmentation when it comes to delivering a turnkey IoT value proposition. Second, there are several components or platforms that must work together in order to derive value from the IoT investment.

The market continues to evolve rapidly, one of the major obstacles during the early stages of IoT was the proliferation of multiple devices and the interoperability challenge. Standardization efforts have helped mitigate that risk significantly - most product manufacturers now know the answer to 'how to connect?'.

On the other end of the value chain, IoT platforms are building strong partnership ecosystems. This enables IoT manufacturers to benefit from a turnkey solution where they can manage the connection, monitor and control the device, build and deploy IoT applications, and derive powerful insights from their data - accelerating their time to market. This recent phase empowers product manufacturers to derive true value from their IoT investment by answering 'connected… now what?'

KEY BENEFITS OF IoT ANALYTICS

One of the primary drivers for IoT analytics is faster time-to-insight. While time-to-market is one of the strongest motivators, reducing the time to relevant insights allows manufacturers and other players to make faster and better decisions on how they should build the product and improve the overall service efficiency - thereby completing the feedback loop.

In general, the drivers for IoT analytics can be grouped into 5 key benefits:

1. **Product & service feedback** – manufacturers use product usage feedback to assess product quality and monitor behaviour thereby focusing their R&D spend.
2. **Usage behaviour tracking** – understand how customers are interacting with the connected product and enhancing the experience to the customer's behaviour.
3. **Operational analysis** – optimize service offerings based on usage segmentation analysis and reduce the costs associated with providing that service.
4. **Contextual analysis** – enrich the sensor data with external data (weather, geolocation, etc), to provide greater context on how the physical objects are behaving in relation to their surroundings.
5. **Predictive analysis and maintenance** – being able to use previous patterns and the knowledge of current usage to predict future trends and behaviour.

By effectively extracting value from sensor data, IoT analytics allow businesses to create data-driven differentiation and deliver richer applications. mnubo's SmartObjects platform delivers relevant insights that will transform 'connected things' into 'smart objects' – increasing efficiencies, reducing operating costs and waste, and improving the overall customer experience!

SERVICE LEVELS OF MNUBO SMARTOBJECTS PLATFORM

mnubo SmartObjects Platform is a SaaS-based IoT analytics service that is offered in three plans, enabling IoT product manufacturers to derive more value from their sensor data as they go up the tiers. All plans are hosted and managed, dramatically lowering customer's CAPEX and OPEX costs.

Data as a Service (Base)

Organize, modelize and store your IoT sensor data to make it suitable for analysis. It provides data ingestion and management services on IoT data streams. This plan includes data modelling, activity and geo analysis dashboards and some basic time series statistical aggregation.

Analytics as a Service (Pro)

Analyze and visualize your IoT sensor data with meaningful descriptive analytics. Access a rich suite of IoT data analytics libraries to perform real-time and on-demand queries, at an aggregated and per-object level, to gain powerful insights and deliver data-rich apps.

Intelligence as a Service (Premium)

Learn from your IoT data. Our IoT data science leverages our suite of algorithms and libraries to build predictive and machine learning models that address your business questions using the augmented data analytics cluster. The actionable business outcomes are delivered via customizable reports and dashboards providing 360°-context on your connected products.

WHY CUSTOMERS LOVE TO WORK WITH MNUBO?

HORTAU SIMPLIFIED IRRIGATION | SMART AGRICULTURE

"mnubo's ready-to-use SmartObjects platform and expertise in data science will save us years of development work and will help us accelerate our time-to-insight and deliver relevant, real-time value to our rapidly growing customer base!"

– Jocelyn Boudreau, CEO of Hortau

icontrol NETWORKS | SMART HOME

"We are excited to work with mnubo to show consumers how a smart home ecosystem can enhance their lives, using data insights, in ways they haven't even thought of yet!"

– Letha McLaren, CMO Icontrol Networks

buzz. | SMART CONSUMER PRODUCTS

"For the first time, leading connected brands will gain 360° insights on how their media campaigns and marketing strategies impact real-time usage and engagement!

mnubo's purpose-built IoT analytics service will empower connected product manufacturers with a strategic decision-making engine"

– Slade Sherman, Head of Buzz Digital

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mnubo is an IoT Data Analytics company with the purpose of extracting business value from sensor data by delivering real-time insights, predictive analysis and powering richer applications. mnubo offers a SaaS solution to connected object manufacturers and other IoT players to ingest, enrich and analyze their IoT data. mnubo's services benefit customers in consumer, enterprise, and industrial verticals. Over the past year, mnubo has seen a 400% increase in the number of connected objects using its services. For more information, visit www.mnubo.com

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