CUBIC

dexda

Cubic partners with Dexda to deliver next-generation event management for customers in New York and London.

The Dexda solution enables predictive event management for transport authorities managed by Cubic in New York and London.

Background

The New York City (NYC) subway and bus system is one of the most efficient public transportation systems in the world. Ridership across both is approximately eight million daily and more than 2.5 billion journeys annually. Cubic Transportation Systems (Cubic) has worked with (MTA) for nearly three decades now, starting with the implementation of the entire subway system accepting MetroCard, a magnetic swipe card allowing customers to load fares electronically. Today, more than 90 per cent of trips taken on NYC subways and buses are made with MetroCard.

As part of an ongoing modernisation programme, the current swipe MetroCard is expected to be phased out by 2023. It is to be replaced by OMNY, a fare payment system enabling travellers to pay with mobile and open payments via contactless bankcards and mobile wallets or MTA-issued contactless smart cards, to improve customer convenience and service for travellers.

'More than 2.5 billion journeys annually'

Cubic was selected by the (MTA) to deliver and manage this major project based on the success of Oyster. A similar next-generation fare payment system used on the bus, underground and rail services that the company designed and implemented for Transport for London (TfL).

The new OMNY system allows customers to create personalised transit accounts to see travel history, check balances, add value as well as report lost or stolen cards to protect their funds. As a result, customers will experience greater convenience and shorter lines, allowing them to move faster through the transit system.

Challenge

Cubic is responsible for the design, integration, supply and implementation of the new fare payment system; as well as associated services for platform hosting, hardware and software maintenance and transition services including supplemental call center support.

Cubic prides itself on its customer service and has developed powerful monitoring, event collection, and incident management solutions as part of the service provided to Transport for London. This has been running successfully for several years, processing millions of events daily across the infrastructure. While the easy option would have been to rework this system for the MTA, Cubic's commitment to world-class service meant they treated this as an opportunity to look at new technologies that would both benefit MTA and enhance the Transport for London's solution.

'It can be deployed quickly and integrates off the shelf'

Comprehensive event management is a crucial part of the service management toolset for both MTA and TfL. Cubic's commitment to continually improving and evolving service meant that they wanted more than just an event collector. Cubic wanted a tool that could use the vast amounts of data collected and learn from it. Using the data to create Machine Learning (ML) insights that could be fed back into robust engineering and service decisions was a key goal. However, this would only be of value if the event collection tool itself was fully capable of meeting the demands.

Benefits

Cubic approached Dexda, a London-based software company that specialises in event management solutions but is also a pioneer in Data Science as a Service (DSaaS). At its core, Dexda is a robust, easily configurable event management system that can examine thousands of events each second from many data sources. It can be deployed quickly and integrates off the shelf with key parties such as ServiceNow, Solarwinds, Kafka and App Dynamics, making it a very flexible solution.

Dexda monitors the throughput of these events using configurable dashboards that allow service desks and resolving teams to visualise the journey. Crucially though, Dexda manages and makes sense of the health and status data generated by IoT devices, removing the need for transit managers to build and operate complex and costly monitoring solutions and instead focus on using their device data to drive growth.

Dexda's intelligent software carries out three processes with this data to help Cubic gain a better understating of operational status and react faster to potential issues. The first is Data Enrichment, where Dexda adds available metadata about the asset along with additional context to an event that is useful for onward processing and escalation. For example, which subway station the barrier is deployed to, which barrier the card validator is attached to and whether it's in service.

Next Dexda carries out Event Processing that uses a rules engine that helps to categorise if alerts need to be generated based on severity, from routine to critical. Aggregation alerts are used extensively within Cubic to identify persistent issues.

Cubic has implemented Dexda in both New York and London. In New York, it is collecting events from the OMNY rollout of Validators across the subway and buses. It is handling many thousands of taps per day having reached

'Dexda's SaaS offering has enabled Cubic to optimize it's tools landscape'

quickly reached its millionth tap by August 2019 following its introduction at the start of May 2019. Its enrichment of events and integration with ServiceNow means that both non-critical and critical incidents are dealt with by the service team quickly and effectively. As the rollout continues and the system expands, Dexda is comfortably scaling up accordingly, with more data sources added to give further clarity.

In London, Dexda is being used to collect and manage events from the back-office services that underpin the TfL services. Its integration with ServiceNow means incidents are quickly managed, logged and resolved. Dexda is currently being used to manage the front office retail and validation systems now with completion expected Q2 2020.

The flexibility and reliability of Dexda's SaaS offering has enabled Cubic to optimise the tools landscape by removing legacy/duplicate solutions, as well as simplify the end to end event management process. In doing so, Cubic has cut the time it takes to deliver new and innovative monitoring solutions to its customers.

In both implementations, Dexda is collecting, aggregating and processing the data ready for Cubic to utilise the DSaaS capabilities. Cubic used data collected from Transport for London to pilot Dexda's machine learning capability. We were able to demonstrate Dexda generating several Machine Learning Insights based on defined user stories. The plan is that as the data collected grows and is further enriched we define user cases specifically around increasing device availability and reducing outage times. This ability to make sense of the events and data collected, to proactively feedback into higher levels of service is an exciting development that will take Cubic to new areas of service management.

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Dexda combines big data and machine learning to automate the complex process of identifying costly asset failures before they happen.

Our cloud-based disruptive technology finds incidents fast, providing operators and engineers with critical information that identifies:

- **Time to failure**

- **Probability of failure**

- **Sequence to failure**

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