MetricHub

Collaborative Continuous Improvement

"The ultimate goal of logistics is a network that efficiently delivers the right goods, at the right time, to the right place. As operators within a network you need to drive revenue growth and reduce operating costs but in todays competitive environment it is not enough to simply optimize your operations in isolation. Your competitive position is dependent on external cooperation and coordination therefor different operators within a chain need to work as a team to collaboratively improve their performance and drive down harmful variation which increases delays and reduces utilization. Through collaborative continuous improvement you can:

o Drive improved efficiency, reduce demand variability and increase utilization by monitoring the performance of partners and working together to achieve win-win results.

o Offer customers added value by automatically sharing real time information about expected transit times or any problems.

To implement collaborative continuous improvement you need to share both performance data (to drive collaborative continuous improvements) and real time event data (to coordinate activities) however you don't want to invest in expensive IT integration. MetricHub is a low cost, lightweight and flexible system that can be used without significant modification of your existing IT systems. It gives collaborating terminal operators, intermodal operators and Hauliers improved visibility across their shared operations. With it you can:

o Capture data from a variety of data sources

o Detect significant events and calculate performance metrics

Example Benefits

Collaborative data sharing between Terminals

There is frequent traffic between a maritime and an inland intermodal terminal. These terminals use MetricHub to share data on the delay at each stage of the round trip journey so they both have a full overview of the bottlenecks in the process and how delays depend on time of day. They use this overview to collaboratively optimize the timing of shipments between the two terminals flattening demand and increasing utilization.

Internal event detection

MetricHub is used to integrate data from different internal systems and to automatically alert management when queues at different process stages exceed defined limits so that action can

Collaborating to provide supply chain visibility

Actors in a supply chain provide real time performance information beyond that available in track and trace to freight forwarders helping them monitor multimodal corridors.
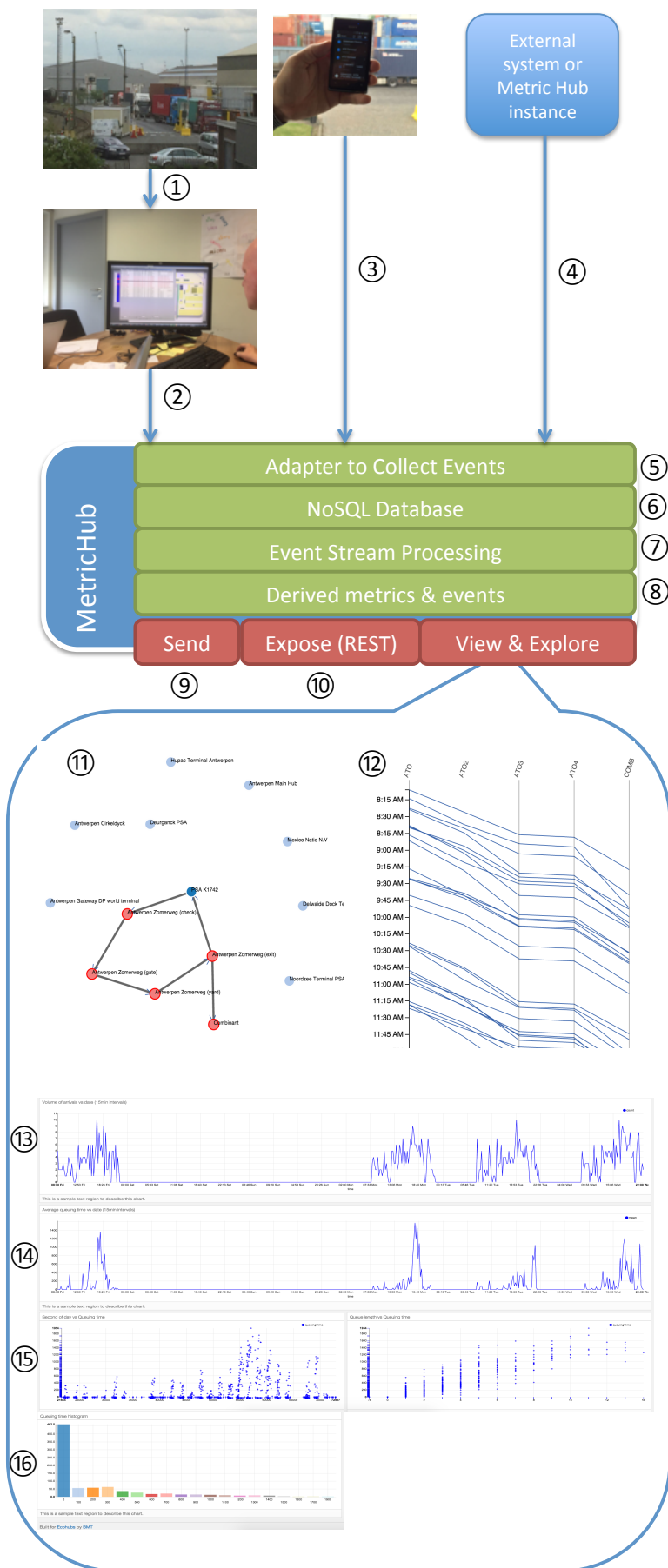
Sharing alert information with other operators and freight forwarders

Event detection is used to provide automatic notification of any problems as soon as they are detected allowing quicker re-planning and increasing the routes attractiveness as an operator.

Sharing comparative punctuality data with Hauliers

A terminal appointment system captures the agreed slot times and actual arrival times of truck companies and MetricHub is used to calculate how early or late each vehicle is. The terminal shares data on each haulage companies' punctuality with that company and also provides aggregated punctuality statistics so that hauliers can see how their performance compares with their competition. The haulier sees that they are underperforming relative to their competitors and decides to investigate. They use the data provided by metric hub to identify that underperformance is confined to certain drivers who are given training in the new truck appointment system.

How it works

MetricHub

Adapter to Collect Events	⑤
NoSQL Database	⑥
Event Stream Processing	⑦
Derived metrics & events	⑧

| Send | Expose (REST) | View & Explore |
| ⑨ | ⑩ | |

① ② ③ ④

External system or Metric Hub instance

⑪ ⑫

⑬ ⑭ ⑮ ⑯

Events are registered into your existing TOS or other systems ① and can be sent to MetricHub ② as messages using any one of 80 protocols ranging from http to XMPP and from XML to EDI to text files. Data can also be obtained from external systems ③ or sent by collaborating organizations who use MetricHub to share data with you.

This flexibility is achieved using an adapter ⑤ based on Apache Camel which transforms the messages into a common format. The data is then stored in a NoSQL database ⑥ which means the database does not need to be redesigned every time you want to deal with a new message type. We then calculate the metrics you want by using event stream processing to aggregate information from different messages into meaningful events ⑦.

These derived metrics and events are then stored⑧ and can be shared with other authorized parties ⑨, exposed via a HTTP interface ⑩ and viewed using a graphical interface.

Here process steps within and external to a terminal is shown on a graph diagram ⑪ and dots representing containers are animated showing movements. Clicking on steps of interest shows the movement of each container vs time as lines on a chart ⑫. For each stage the user can see detailed performance charts including: a time series moving average of volume ⑬ & queuing time ⑭; statistical plots of delay vs time of day ⑮ and punctuality of arrival times by haulage company ⑯.

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