view
REAL-TIME INTELLIGENCE

# Streaming data and Rule-based Analysis: Airport Data Monitoring

**Airport** business industry is characterized by the presence of international standards, guidelines and operational targets that require industry players to adhere to specific procedures and regulations in order to ensure the safety and security of passengers and operators working in this field. For example, Airport regulations set out the obligations assumed by various airport operators to ensure the regular use of the infrastructures and facilities. Moreover, each airport operator determines a number of parameters on a yearly basis, based on the minimum quality standards of all the services offered at its airport, which must be observed and respected.

The international scenario over the last few years has pushed the management of leading airline companies to find new solutions to improve overall airport security levels. As a matter of fact, there has been the need to implement very strict prevention and control measures, structured and developed based on international standards, combined with continuous monitoring of the entire organization of air transport, infrastructure, operators and companies, in order to the control of passengers, luggage, goods and aircrafts. ⟶

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⟶ Therefore, the goal of airport management companies is to identify innovative technology and cutting-edge tools that are capable of monitoring and coordinating assets and resources, minimizing the likelihood of disruption, while also improving the quality of the services provided (e.g. cutting down waiting times at queues for control and security) and increasing the overall level of safety and security.

VIEW provides the tools needed to collect, process and analyze airport-related data in real-time in order to improve perceived customer service levels, overall security, and process efficiency.

## Challenges and advantages

**The** complexity of the variables that affect the airport system, along with the tight constraints to which it is subject, require the airport industry to undertake a phase of change, which translates into the ability to provide intelligent systems that can improve performance and service levels provided, while also achieving significant economies of scale and properly containing operating and management costs.

Along the same lines as any other industry, the ability to centralize key data and monitor them in real time is a source of operational benefits, in terms of efficiency as well as effectiveness. A more in-depth view of a company's systems, operating flow, and processes ensures more awareness and a proactive approach in handling extraordinary or unplanned events, as well as scheduling common operations.

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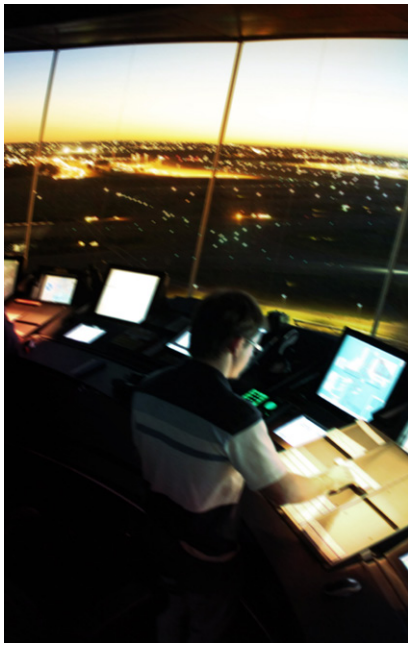
However, there are factors that considerably complicate the ability to fully exploit the inherent potentials in real-time analysis of unstructured data. In fact, in the vast majority of cases, data is managed and processed by different platforms, designed to adhere to specific functions, which accordingly use different languages, protocols and interfaces.



Moreover, when certain information is duplicated in multiple cases, if this information is not perfectly synchronized and up-to-date, inconsistencies or incoherent data may occur. The integration of different software and systems can therefore be time-consuming and complex in terms of time and resources. Finally, the majority of software products are limited to thoroughly analyzing complete sets of historical data.

However, the architecture of these solutions does not allow for the collection and processing in real-time large unstructured data flow, which require platforms with features that are clearly defined and quite advanced. Only an analysis that includes both historical data and real-time analytics allows the user to properly map complex scenarios and identify appropriate measures to achieve the desired results.

# VIEW Real-time Intelligence

**VIEW** collects data from any type of digital source and dynamically processes the data according to customizable rule sets.
Moreover, VIEW develops a centralized and global vision of operational activities and processes, with full control of airport systems in terms of flights, passenger traffic and managed assets.
The platform analyzes data regarding the main key performance indicators (KPIs) of the airport, and also monitors passenger traffic trends and correlates this information to data on inbound/outbound flights. VIEW also provides an effective tool for security operations and, thanks to the integrated alerting system, sends notification of significant events in terms of security, performance, and operational functions.

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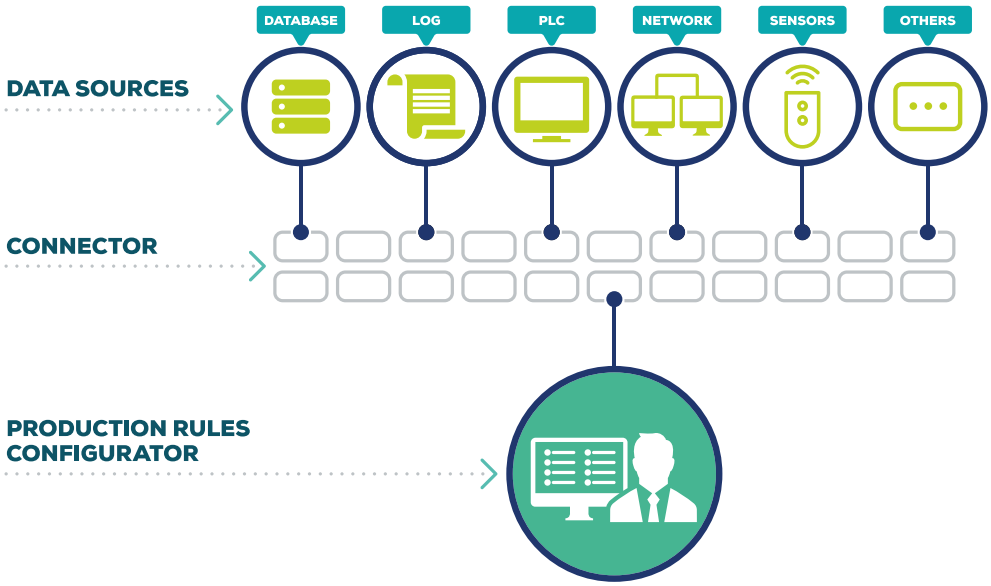
It identifies potential errors or performance decrements, facilitating operations realignment and supporting the decision-making process.




### STREAMING DATA

VIEW integrates with existing IT infrastructure and processes any type of data thanks to the vast extended library of available connectors. This innovative architecture, based on non-relational databases and inference engines, delivers a large amount of streaming data flow in order to help decision-making through precise and timely information on the status of the processes and assets involved.

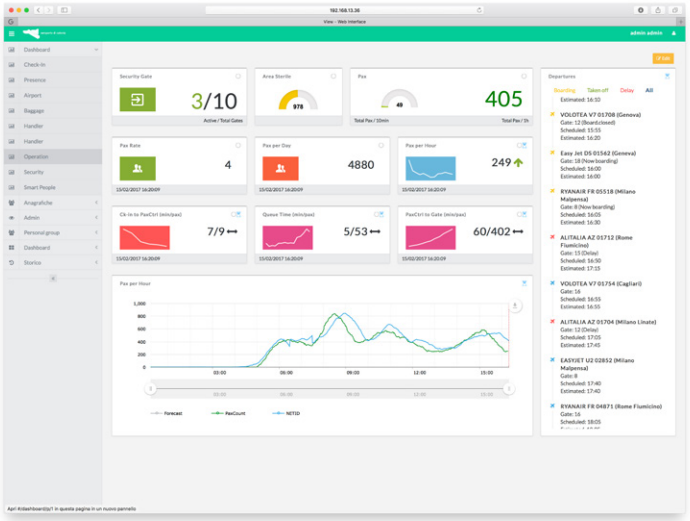
### RULE BASED ANALYSIS

The data collected from the platform is processed through the application of logic based on fully customizable conditional rules and sets. The Rule Builder provides a model-based approach to rule modelling that allows the user to monitor the trend of the set of variables in their operating environment. VIEW detects any deviation and immediately sends notification of an anomaly or pattern to which attention should be given, facilitating the management of all necessary steps in order to bring the monitored process back to the standards set by the user. Thanks to the multichannel integrated alerting system, VIEW notifies in real-time any security breaches, abnormalities in queue waiting times and/or luggage delivery, gate changes, etc.

### REAL-TIME DASHBOARD

Interactive dashboards summarize the information available in a single view with immediate impact, and allows the user to compare open and closed gates, real-time passenger traffic, waiting times, luggage deliver, gate status, and so on.
These Dashboards facilitate parameter tracking and indexes of interest through dynamic and easily customizable widgets.

VIEW monitors flights, passenger traffic, luggage, security gates operations, boarding gates and check-in counters.




# Case Study

**"Vincenzo Bellini"** International Airport in Catania, Italy, has supported work towards redefining its operational and functional standards, with the aim of aligning internal processes with international best practices. In June 2015, this airport opted to use VIEW Real-Time Intelligence to increase the security and quality of the services provided at the airport.
VIEW has proven to be an effective support tool: interfacing with airport information systems, collecting and processing different types of information, developing in real-time a complete and thorough vision of the system. VIEW's use facilitated the sharing of information and increased collaboration between different business functions.
The ability to convey the required data in real-time and provide the information needed to proactively manage the aforementioned realignment activities resulted in tangible improvements in the quality of service and overall safety of the airport's passengers and staff.

### SECURITY

In order to ensure the safety of the flight and the passengers in transit, VIEW monitors those passing through the airport by recording and analyzing information from boarding passes. The system verifies in real time the validity of the documents of each passenger, checking the congruity of the airline's data, the flight number, the date of boarding and personal information data. The alerting system notifies the occurrence of anomalies such as invalid boarding passes or repeated passages with the same boarding pass.

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VIEW also verifies that passengers at the gate have previously passed one or more safety controls, monitoring the number of people in the safe area and their average time of stay.

⟶ In order to facilitate the management of the control activities, the user can visualize the security gates on a dynamic dashboard, highlighting the status (active, inactive, error) and the number of passengers in transit through each of them.

VIEW analyzes passengers footprint in real-time increasing the overall level of safety and security without affecting security staff operations.

## OPERATION MANAGEMENT

Within the framework and field of internal operation management, VIEW monitors scheduling of inbound and outbound flights, displaying in real time the information related to each flight (e.g. assigned gate, scheduled and actual departure time, flight status).
VIEW also sends notification of deviations from the scheduled and reports the occurrence of particular events such as gate changes.

The platform suggests the opening or closing of gates by correlating real-time traffic data and forecasts on presentation curves. The use of assets and resources is optimized based on the expected and actual traffic of passengers at the airport.

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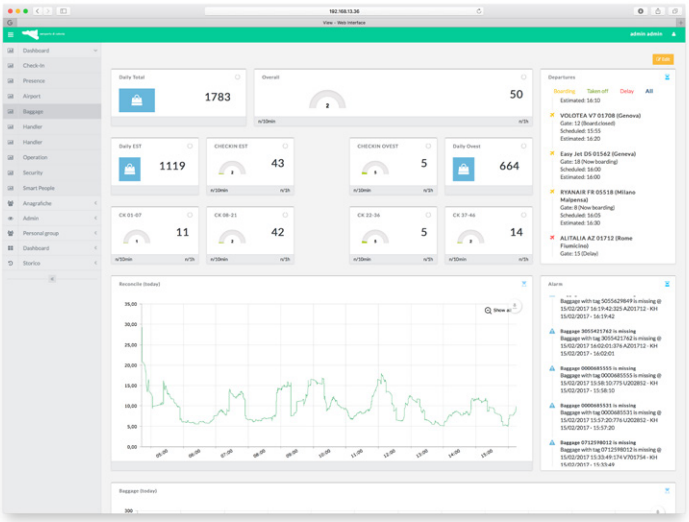
VIEW provides aggregate information on the number of departing passengers.
Moreover, VIEW compares the expected presentation curve with the actual data collected, highlighting possible deviations from the forecasting model. Data is then organized and presented in a manner that can be easily queried and viewed, generating statistics on passengers departing from the airport.

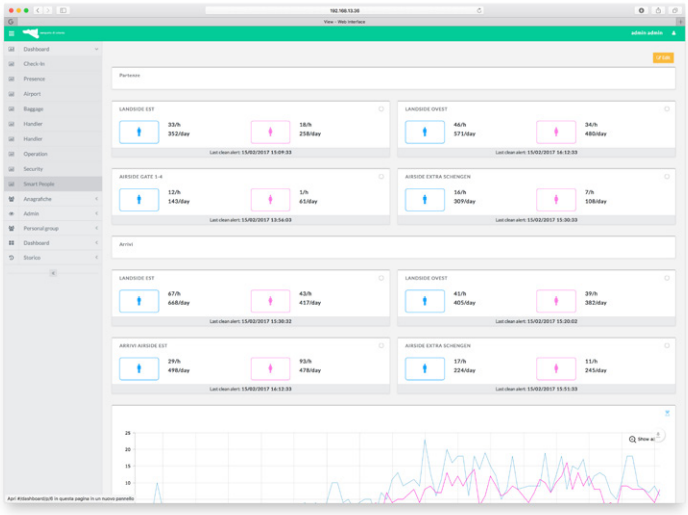
VIEW verifies flights status and luggage delivery time notifying events that require the most urgent attention



## SMART PEOPLE

Thanks to the integration with the detection and security devices installed at the Airport, VIEW counts the number of passengers using the restroom facilities located in the airport. Information on real and actual inflows at every point of service allows the user to manage their staff in such a way as to modulate cleaning activities based on the actual use of these facilities. This ensures that the passengers are offered an adequate level of hygiene, ensuring comfort and extreme ease of use and practicality.

VIEW uses graphs and visual trends improving the awareness of organizational processes.



## QUALITY CONTROL

From the point of view of quality control of the process, VIEW processes the collected data in order to monitor the main KPIs of the airport, providing complete information on the activity of the airport and the services provided.

The platform calculates analytical quality indicators of the airport, selected within a set of indicators identified by the Guidelines as well as ENAC's [Italy's civil aviation authority] Service Charter, with the aim of monitoring overall performance and allowing constant benchmarking activities with the main European airports of reference.

More specifically, VIEW monitors the service level provided to passengers by calculating, for example, the waiting times of passengers at the airport:

- From the check-in counters to the beginning of the queue for security checks
- In the queue at security
- From security checks to the boarding gate (time of stay in waiting area).

VIEW notifies the user of any excess with regard to thresholds, in order to rapidly intervene and optimize staffing to provide the passenger with an experience that is defined by efficiency and operational regularity.

Moreover, VIEW monitors the baggage delivery process: it warns the airport staff if timing thresholds are passed and detected with regard to the baggage claim process or if there are any irregularities in the delivery process.

## CHATBOT ASSISTANT

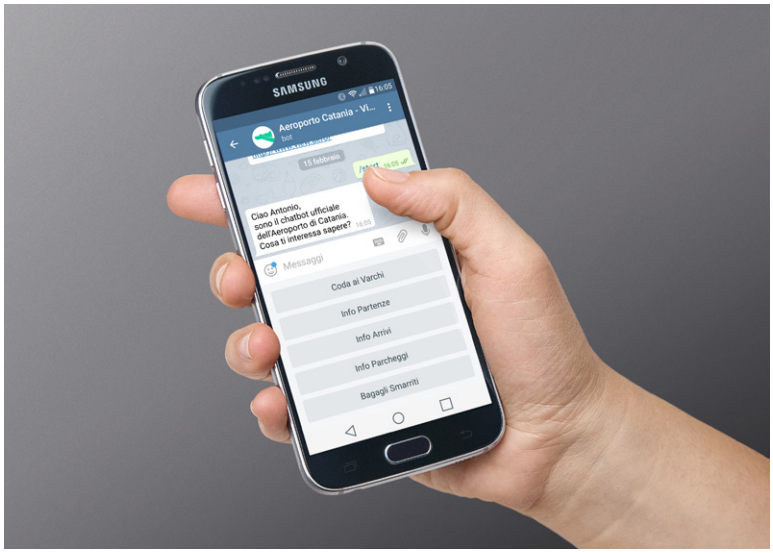
Part of the information processed by VIEW is also available to airport passengers through the use of the Airport's Chatbot Assistant, an automatic bot that interacts with passengers through common and widespread applications such as Telegram, Facebook Messenger, and Cisco Spark.

Until now, airports have attempted to inform their passengers through the use of digital screens, automatic audio alerts and announcements, websites and institutional mobile applications. Chatbot provides the necessary information immediately, without requiring passengers to navigate through website pages or download external applications. Information on all incoming or outgoing flights is available on applications used by most travellers on a daily basis.

Each passenger will be able to chat with their virtual assistant in order to know, in just a few seconds, the status of their flight, the boarding gate, and the average waiting time to get through security checks. This makes it easy for passengers to plan their arrival time at the airport or to stay at the airport in the event of a layovers or transfers.

Moreover, there is also a personalized alert and alarm service available. Each user may choose to receive alerts or warnings on incoming or departing flights and be automatically updated on flight status changes for the flight they are following.

VIEW Chatbot provides passengers with information regarding flight status, waiting time at security checks, parking spaces and missing luggage. Chatbot users can also receive live updates about their flight.

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