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The Industrial Data Historian of the Future

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Keywords

Industrial Data Historian, Industrial Data Platform, Next Generation Historian

Summary

Operational historians' technology is evolving and changing with new digital technologies. The future of the historian consists of next-generation platforms, as well as advanced analytics including AI, containers, and new architecture infrastructures (e.g., cloud, edge, data lakes, data hubs). The volume of industrial data will continue to increase, and the technology will become more important than ever for intelligence-based decisions. The trend of incorporating emerging technologies into historians or data platforms will continue. Ease of use, deployment, and maintenance will continue to be critical capabilities for historians, as will data connectivity, data accessibility, and usability that enable the ability to get insights in real time.

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Historians have evolved and are still evolving along with newer emerging digital technologies. Even for what is considered a mature technology today, the historian technology has been updated and the market continues to grow, and this is due to the evolution and integration of innovative technologies like new low code-no code platforms and advanced analytics. With the historian evolution and the new capabilities, users are finding there is even more value in the data they collect.

The Industrial Data Historian Defined

Industrial Data historian functions include connection, integration, aggregation, data orchestration, data storage, data management, analysis, and data visualization. The historian functions include storing the data in context, performing analytics and analysis, and getting the information

to the workers in specialized reports – on digital dashboards, in trends, or as alerts on a mobile device. The technology empowers workers with the right information and intelligence for the right worker or system, so that the worker can make intelligent data-driven insights or take actions at the right time to increase production efficiency.

The historian supports the data collection and connection to industrial sources, including integration, trending of data, reporting, analytics, visualization, and digital dashboards or reports that enable workers to obtain intelligence at a glance. The visualization enables collaboration and is a big enabler for the digital transformation during the pandemic because of the remote worker.

Industrial Data Historian Key Differentiators

The industrial data historian connects, collects, and stores data from the industrial data sources, like automation systems, PLCs, MES, machines, sensors, and other modern IoT sensors, and often integrates data from sources outside the plant-like weather or financial data that can be combined with the structured plant data to help optimize operations in the plant. The largest source of data stored in a historian is structured time-series data.

There are a lot of characteristics and functions of historian that differentiate the technology from other types of data platforms. The historian includes and supports the data infrastructure, the data collection, the integration, the trending of data, the reporting of the data, the analytics, visualization, dashboards, or digital displays that operators use for intelligence at a glance. It also supports algorithms, the ability to compress the data, and other data management tools that help make the data more accessible, searchable, available, and fast enough for most industrial processes. It is also important that the data is extremely reliable, robust, accessible, secure, and lossless for actionable decision-making.

New Platform Infrastructures

The future historian or the next-gen historian will include newer low code-no code-platforms. These platforms allow the user, worker, operator, engineer or industrial data scientist with minimal or no programming experience to visually drag and drop functionality. These newer platforms are easier to use, improve accessibility, improve interoperability and visibility, and im- prove the workers' ability to collaborate and obtain intelligence throughout the enterprise. When considering new data platforms, it is important that the decision-makers understand not only the

technology that comes with the new platform and the applications, but also the people involved and how it will enable them to optimize production.

Analytics and Autonomous Operations

While basic analytics tools have always played a role in historians, advanced analytics including machine learning (ML) and AI are enabling the ability to get more out of the data in future historians. New predictive analytics tools are either integrated to or embedded in the historian and can be combined with domain expertise to enable better and faster insights. Historian suppliers are also using advanced analytics for newer capabilities and enhancements like auto features that include auto- connect or recognize, auto-updates, auto maintenance, auto data management and auto model updates that are leading to a more autonomous future
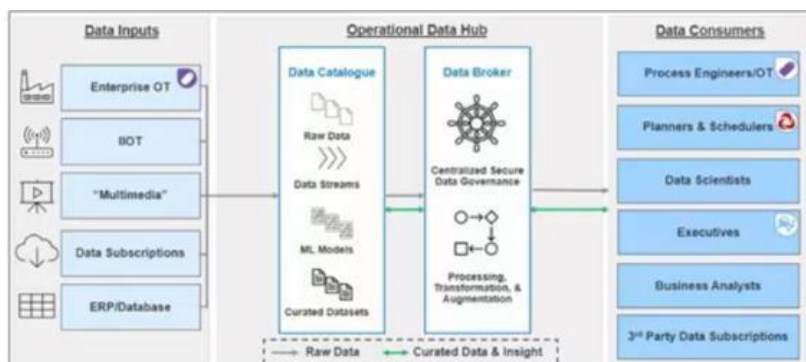
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Operational Historian Components

The Vision for the AspenTech Industrial Data Foundation

AspenTech's recent investments in Industry 4.0 and Industrial IoT helped industrial companies unlock value in data with capabilities provided by the AspenTech Process Historian Suite. The AspenTech Process Historian Suite enables seamless and flexible data mobility and integration across the enterprise from sensors to the edge and cloud and accelerates the delivery of visualization and insights. AspenTech Process Historian Suite is taking Aspen Tech's heritage in the process historian market combined with their subject matter expertise for 40 years to create a cloud ready industrial AI infrastructure. This infrastructure will support new deployment models common with IT departments and leverage the large hyperscalers and AspenTech's cloud partners.

Looking to the future of the industrial data historian and the next generation of InfoPlus (IP-21), AspenTech is planning for the cloud. The company is working toward a new data foundation with its cloud partners to containerize IP 21 to achieve scalability, elasticity, ease of deployment, and reduce the total cost of ownership while retaining IP 21 customer data and the legacy of customer intellectual property.

AspenTech's future Industrial Data Foundation will embrace the traditional on prem data sources through OT data access layers using OPC UA, ODBC, or MQTT, IP.21 and other legacy process historian products will exist as part of a larger offering on its own as a standalone historian. The foundation will be scalable, highly performant, highly secure, and will include a central point for processed data with access through a unified data access layer. Data types can include tagged data, custom records, batch data, event data, other contextual information, data from data lakes and more.

AspenTech's Vision for the Process Historian of the Future: The Operational Data Hub

Conclusion

The traditional industrial historian is a trusted technology that has lived below the firewall in most facilities for decades and customers will continue to trust the historian as their primary connection point for their automation systems regardless of how far cloud technology has come it will most likely not make it to the plant floor close to automation anytime soon. Customers of industrial historians are turning to vendors like Aspentech to update and modernize security on our industrial historians versus switching to new technology for primary industrial automation data collection. Many companies that have a variety of legacy historians from older manufacturing plants or from acquisitions struggle with how to deal with data disparity and storage. End users seek a strategy for all data because they need to be able to make sense of the data quickly across the enterprise.

The future historian will continue to evolve with newer technologies and tools, become more autonomous, easier to use, and will enable management of data across the enterprise. Users should collaborate with suppliers with extensive domain expertise that understand complex industrial processes in their industry. These suppliers should also have strong successful partnerships with other technology providers including the hyperscale's like Microsoft or AWS who can provide infrastructure for the cloud.

The next generation industrial data historian or future will include modern platforms, more advanced analytics, have the ability to scale and store data on-premise, in the cloud edge, and in data lakes or data hubs, make use of newer advanced analytics, containers, better visualization, and more. It will be robust, reliable, and secure. Users will consider the value of the suppliers' domain expertise that is built into the historian and value the supplier's eco-system. The future historian should continue to evolve with newer technologies and become more autonomous. Having data-driven insights will bring a lot of value to your company and will have a huge competitive impact for users who invest in the next generation historian.

ARC researches historians/industrial data platforms and author frequent reports on the topic. The information for this report is derived from ARC Advisory Group research. For more information on this or related topics, see https://www.arcweb.com/market-studies/operational-historiansdata-platforms/

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