

Keysight's PathWave Data Analytics Software

Software that integrates data analytics, machine learning, and artificial intelligence unleashes a new era of engineering insights.

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Keysight — the world's leading electronic measurement company — provides end-to-end hardware and software solutions for designing, testing, and securing Internet of Things (IoT) devices and network infrastructures. Here's a closer look at how Keysight's open, scalable, and predictive PathWave software automates manual tasks to catapult engineering productivity to new levels.



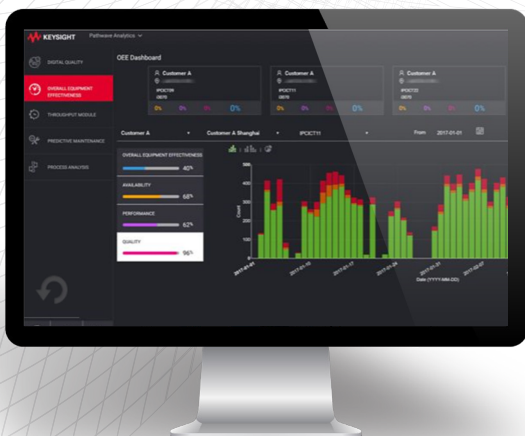
PathWave Waveform Analytics

Measurement science meets data science. Streamline your waveform analyses, saving time and resource costs.



PathWave Measurement Analytics

A simple and powerful user interface lets you easily visualize and analyze measurement data.



PathWave Manufacturing Analytics

Drive manufacturing improvements with an Industry 4.0 electronics data analytics solution.

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Efficiencies Gained From Integrated Data Analytics

By 2025, the world will have an estimated 175 zettabytes of data, up sharply from 33 zettabytes of data in 2018, according to IDC. Given this proliferation of data, it's anticipated that within the next five years, organizations will utilize data engineering services far and wide. Big data architectures that embed analytics will replace old data warehouse architectures across the board. These new architectures will initiate a significant shift by organizations to employ data analytics in their business, processes, and products.

A zettabyte of data is far beyond the scope of human organizations to analyze — which is why data analytics software will continue to come to the rescue, sifting through massive amounts of information to uncover efficiency from chaos. Such software simplifies workflows, automates manual tasks, makes measurements more accurate and repeatable, and ultimately raises engineering productivity.

Data science does not happen in silos. It must be integrated as a common thread across engineering operations and processes, from start to finish. Keysight's analytics software platforms do just that, allowing for simple, quick, non-tedious integration into any design and test workflow.

As a result, engineers are free to focus on their designs, rather than spending copious amounts of time consolidating test results and conducting data visualization. Integrated data analytics software allows engineers to shorten design cycles, reduces the number of redesigns, and connects design and test workflows to increase productivity and minimize risk. From uncovering operational efficiencies to providing business continuity, data analytics software accelerates innovation on many levels.



Benefits to Engineers Using Data Analytics Software

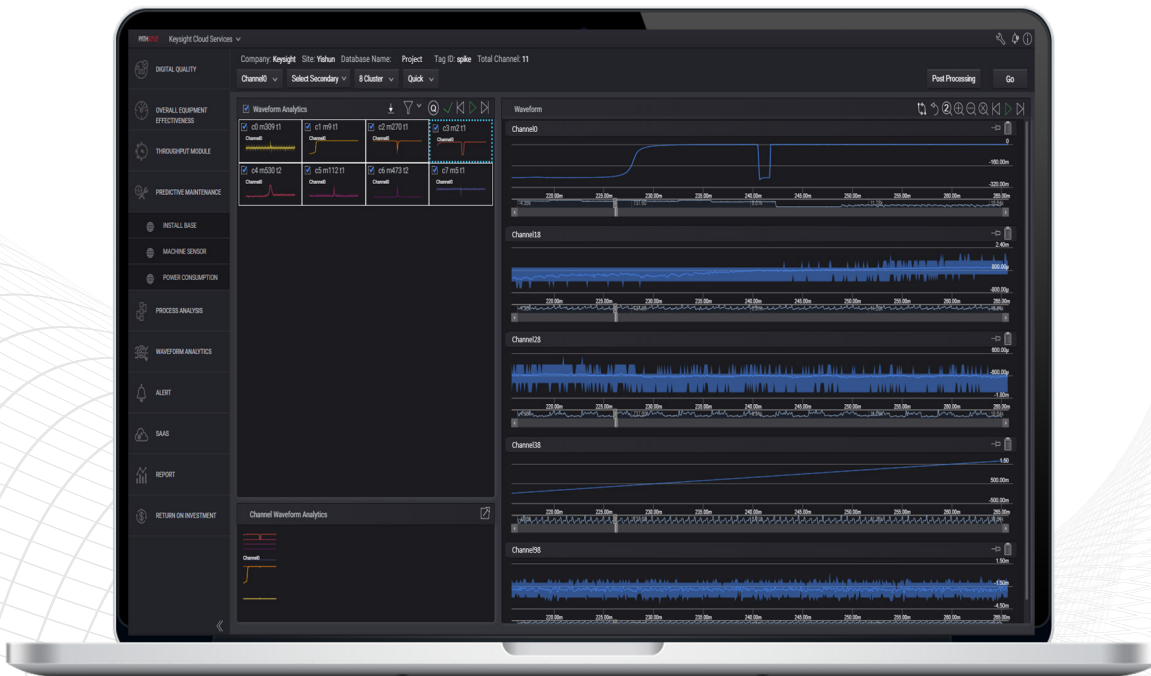
- faster decision-making
- more accurate predictions
- consistent data capture, display, and visualization
- lower project cost
- improved time-to-market

Managing Waveform Data Overwhelms R&D Labs

Scenario:

The automotive, IoT, and mobile device markets are growing rapidly. Design engineers must leverage innovative technology to quickly develop products that are robust, reliable, secure from malicious intrusions, and low in power consumption. Capturing, transferring, comparing, and managing large and long-duration waveform data is time-consuming and costly. Analyzing these waveforms during design validation and characterization remains a manual task.

During the validation and characterization process, R&D labs store huge sets of continuous long-duration waveforms from multiple test runs for monitoring or detailed analytics. The size of that waveform data from multiple test runs for just one integrated circuit validation is enormous — in the range of hundreds of gigabits. This results in significant costs for storage space and maintenance. Engineers must eyeball the data to perform multiple correlations of multichannel waveforms and discover anomalies such as spikes and time lags. The process is tedious, inefficient, and prone to outliers and human error.



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Managing Waveform Data Overwhelms R&D Labs

Solution:

Spend less time and money analyzing waveforms during design validation and characterization with PathWave Waveform Analytics. You can automate manual tasks to raise your engineering productivity without sacrificing accuracy.

PathWave Waveform Analytics allows you to:

- Reduce costs by storing data with a high compression ratio, resulting in a much smaller storage space requirement.
- Perform advanced analytics of big vector data or waveforms in pseudo-real time.
- Use machine learning algorithms to perform clustering of similar waveform patterns over multiple test runs for anomaly analysis.
- Query and analyze any captured and stored portion of the big vector data or waveform.
- Minimize data transfer between the edge computer and the server, enabling faster response and better data security.



Data Visualization Eases Communication Across Teams

Scenario:

Engineers spend a lot of time massaging data and consolidating measurement results. The manual process is slow because they perform fault isolation, debug, and analysis from multiple data sources and disparate software applications. This creates confusion, and there is simply not enough time to learn a new tool.

Solution:

PathWave Measurement Analytics provides a simple and powerful user interface for data visualization and analytics. Users can see a histogram profile of data with a pass or fail limit and navigate to different test environments with multilevel split and filter capability. You can also easily include powerful data analytics (both descriptive and predictive) specifically designed for electronic tests built upon a common, shared data repository.

With a large amount of data in a central location, anyone can analyze it, look at data in real time, and even take that data offline to look through it using analytics tools, if needed. The data is freely available and not tied to one application. Moreover, with automated final reports, engineers gain greater confidence in their designs and can focus on getting products out faster.



PathWave Measurement Analytics allows you to:

- easily make data-driven decisions
- turn raw test data into actionable insights
- correlate multiple variables to identify underlying issues
- include compliance standards in analysis
- work with rich graphical data representations instead of raw data and spreadsheets
- reduce need for engineers to become data scientists

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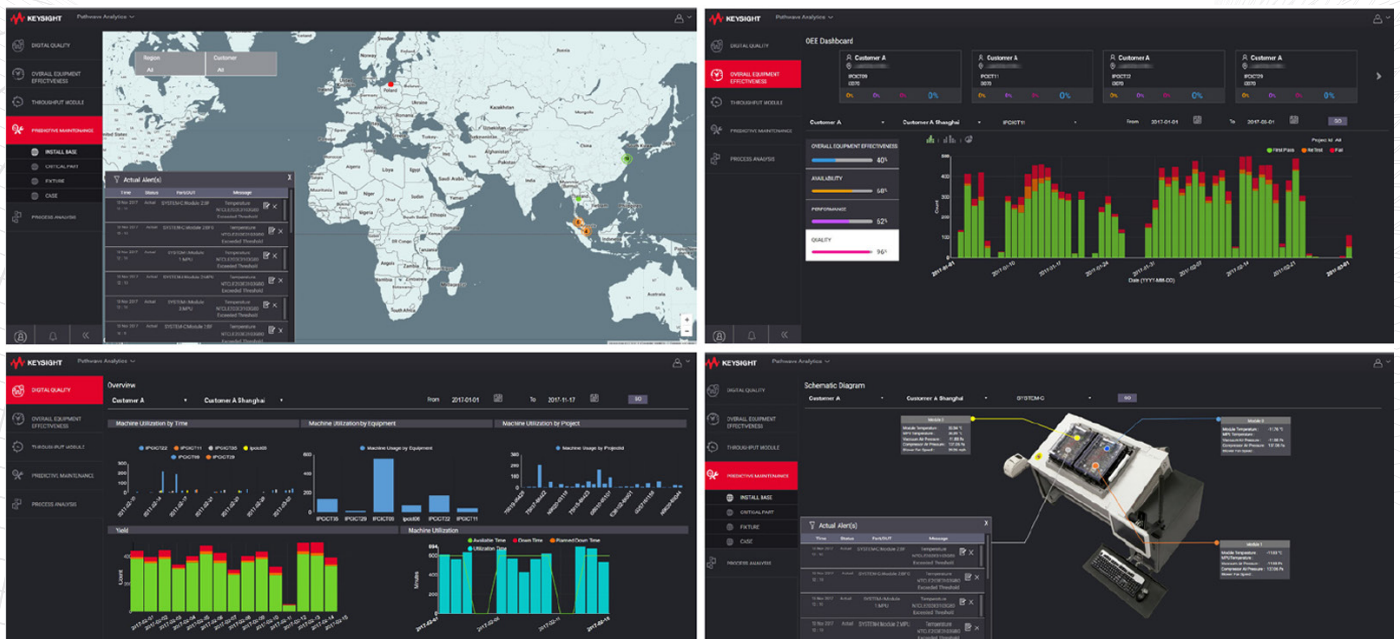
Manufacturers Need Data Analytics to Compete in Industry 4.0

Scenario:

Industry 4.0 is a catalyst for smart factories. Many factors are driving the digitization of manufacturing, from Industrial IoT and product security to cloud solutions, augmented reality, robotics automation, intelligent sensors, and big data analytics. Information extracted from big data can help optimize and improve manufacturing efficiencies and processes. But without a platform to convert all the data into insightful and actionable results in real time, engineers often fall short in their optimization efforts.

Solution:

PathWave Manufacturing Analytics enables engineers to drive manufacturing improvements with an Industry 4.0 electronics data analytics solution. Analyze process, test, and equipment data to predict and avoid equipment anomalies. Mitigate the risk of failure and downtime with real-time detection algorithms. Get alerts when it detects an anomaly, increasing your productivity and asset utilization.



Manufacturers Need Data Analytics To Compete in Industry 4.0

Built-in advanced algorithms perform a holistic and extensive range of data analytics that unlock deeper insights about manufacturing processes, data, and equipment. Its powerful yet platform-agnostic nature means you can seamlessly integrate the solution into any existing equipment or database with minimal changes, keeping investment costs low. You can configure the database on-premises or in the cloud, giving you the flexibility to scale as your business grows.

From providing a 360-degree view of operations and real-time asset management to advanced outlier analysis for process controls and machine health measurement, PathWave Manufacturing Analytics positively impacts the manufacturing ecosystem. It adds value to the entire supply chain.

PathWave Manufacturing Analytics allows you to:

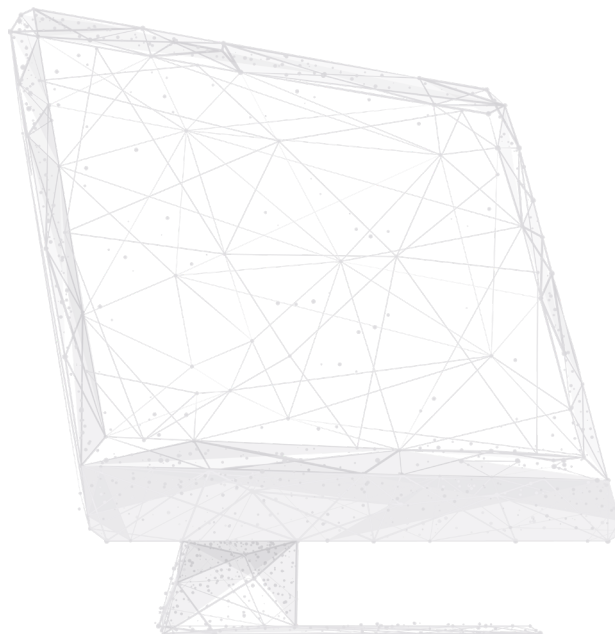
- analyze data from every step in your production process
- identify and isolate outliers and trends in real time
- collect and analyze environmental, machine health, and measurement data
- identify root causes of quality issues with historical data
- quickly take action with automatic alerts
- increase productivity with real-time analysis of global operations



Reach New Levels With Integrated Data Analytics Software

Keysight's open, scalable, and predictive PathWave software automates manual tasks, driving your engineering productivity to new levels. Streamline your waveform analyses to save time and resource costs. Enlist a simple, powerful user interface for data visualization and analytics. Drive manufacturing improvements with an Industry 4.0 electronics data analytics solution. Then, integrate data science as a common thread across engineering operations and processes. From empowering engineers to uncovering operational efficiencies, you'll be well on your way to accelerating innovation.

Click [here](#) to learn more about how PathWave data analytics software can accelerate innovation in your organization today.



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