

 PROPOSAL

# Altair for Enterprise Data Analytics

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## WE ARE ALTAIR

Solving your toughest challenges.

Helping the innovators innovate, drive better decisions, and turning today's problems into tomorrow's opportunities.

**\$459M**

FY19 REVENUE

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ENGINEERS, SCIENTISTS AND  
CREATIVE THINKERS

**1985**

FOUNDED AND HEADQUARTERED  
IN MI, USA

**11,000+**

CUSTOMERS GLOBALLY

**86**

OFFICES IN 25 COUNTRIES

**150+**

ALTAIR AND PARTNER  
SOFTWARE PRODUCTS

**DISCOVER CONTINUOUSLY.  
ADVANCE INFINITELY.**

#ONLYFORWARD

Analytics and Big Data are inherently complex, that doesn't mean that deploying and utilizing data analytics solutions needs to be complicated. Altair Data Analytics enables organizations to deploy a simple yet powerful unified platform that reduces the complexity inherent to enterprise data management and analytics

To learn more, please visit <https://www.altair.com/data-analytics/>.

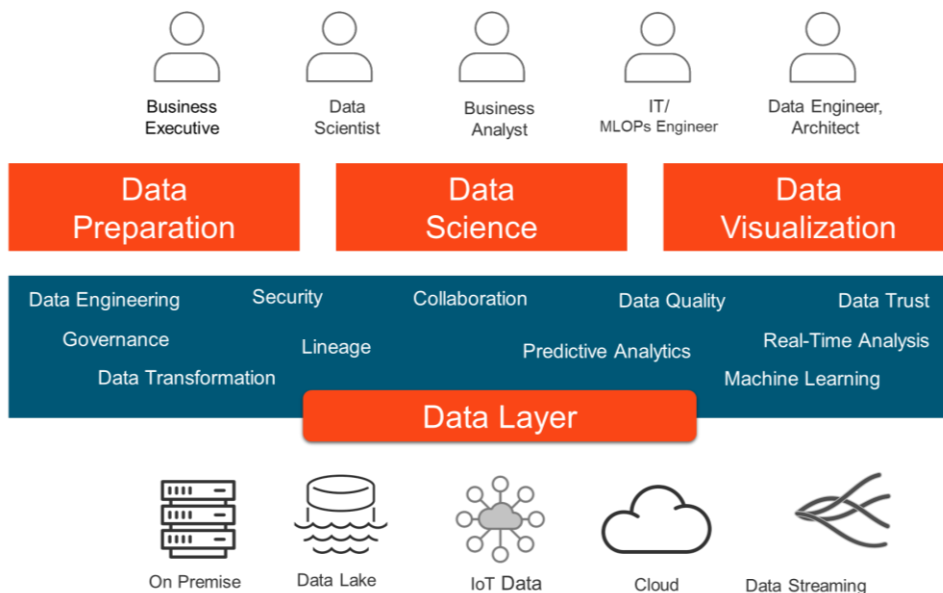


# EXECUTIVE SUMMARY

Data is unlike any other asset your organization owns. It never wears out, it never depletes, and can be used repeatedly at zero additional marginal cost. The value in data is not having it, it's in how you use it. Altair drives this value from your data with solutions that automate data transformation and machine learning (AutoML) processes and tasks.

Organizations aren't struggling from a lack of data, what the struggle with is that their data is found in unstructured sources like PDF, TXT, CSV, and XML. These disparate data sources are in a format that makes it impossible to work with data stored in legacy mainframes and databases like such as Oracle, SQL, or MS Access. In fact, 80% of time spent on data science projects is making the data ready for analytic use or to export to business intelligence tools like Power BI and Tableau. Because enterprises are overwhelmed by the sheer volume and number of sources they must draw insight from, this leads to most decisions being made using less than 50% of the available data costing organizations 10's of millions of dollars annually in inefficiencies. Fortunately, there is a solution, the Altair Data Analytics platform.

Altair offers enterprises a complete approach to data analytics from data transformation and predictive analytics, to real time data streaming and visualization. Our solutions are designed for many different skill sets: from experienced data scientists, IT/MLOps engineers, to business analysts and executives. Connect to and transform almost any data source, unstructured PDF/TxT files, to structured databases, real-time streams, and cloud data sources. Our focus on an extensible data analytics platform means that Altair will not disrupt existing analytic investments. Altair Data Analytics will help find the insight hidden in your data as you look to transform your business.



# DATA PREPARATION AND TRANSFORMATION

Analytics projects begin with data preparation. Often many sources of data will be used to solve for complex problems, including data from external sources. Raw data is rarely trustworthy or accurate to begin with, and needs to be transformed into reliable, trusted data. Altair's data preparation solution Monarch seamlessly connects to different data sources and formats. Business users and data specialists can easily discover, access, and transform data to be used for next-level decision making intuitive workflows. Automated tasks and pre-built data models make governed, collaborative data preparation effortless.

## Ease of Use

An industry leader with over 30 years of experience in data discovery and transformation, Altair offers the fastest and easiest way to extract data from any source. Simple to construct workflows that require no coding enable users to collaborate as they transform difficult data such as PDFs and text files into rows and columns. Whether data is on premises or in the cloud, Altair can automate preparation tasks for expedited results and deliver data you trust for smart business decision making.

## Automate

Our desktop, server, and browser-based options allow employees to work collaboratively as they store, share, and retrieve reports and data models. Advanced data preparation and model building processes are seamlessly automated to remove complexity and errors. Our solution manages the storage, indexing, search and retrieval of core reports and text-based files through integration with common third-party content management system providers. Altair fits perfectly with robotic process automation (RPA) initiatives by automating repeatable data transformation processes with easy-to-create models that ensure standardized reporting formats.

## Collaborate

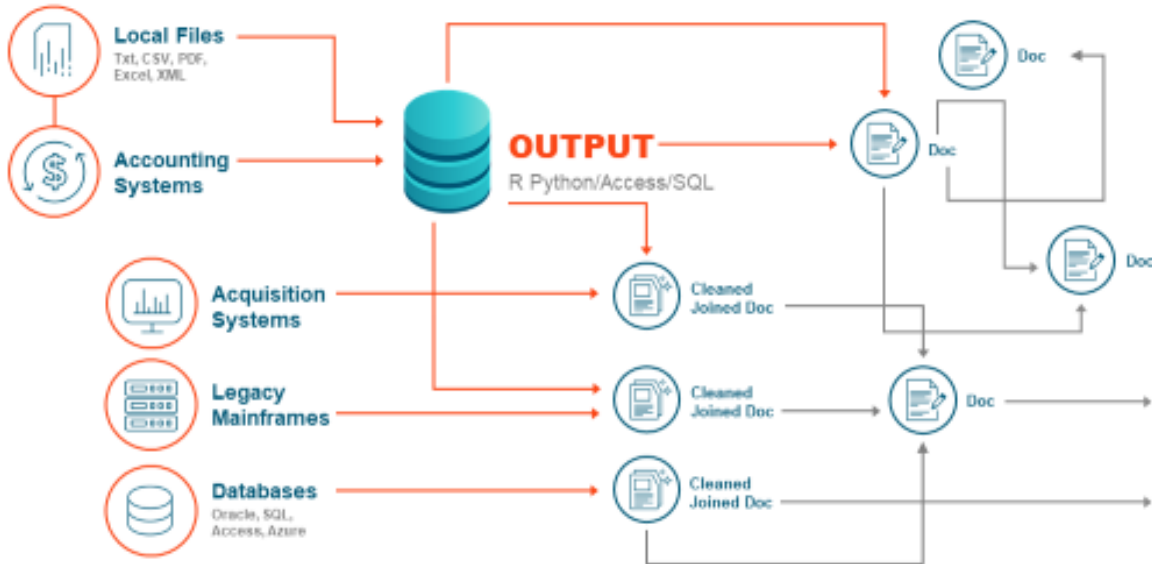
Altair's innovative approach to analytics starts with data preparation that centralizes and governs curated and audited datasets. Manual or automated changes to data is logged to ensure that data remains trustworthy. True collaboration is realized as people with different skills and knowledge depth use the same accurate data to make decisions.

## By Leveraging Altair and Monarch, your Organization will be able to:

- Extract and add structure to data from workbooks designed for reporting or that have multiple worksheets into rows and columns for further analytic use
- Easily and quickly extract data from spreadsheets that use multiple worksheets, merged cells, specialized casing, rows / cells/ columns that use conditional formatting (colors) and more
- Complex structures in PDF files are easily understood by Monarch's patented PDF extraction engine
- Clean and transform data with pre-built functions — no coding required
- Click to join disparate datasets to enrich analytics
- Build trust in metrics with auditable change histories and clear data lineage tracking
- Export trusted data to reporting, analytics or visualization tools. Using Monarch Automator, feed data pipelines such as Oracle,

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### Traditional Data Management/Transformation



1

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### Enterprise Data Management with Altair



2

# PREDICTIVE ANALYTICS AND MACHINE LEARNING

Altair's machine learning and AI solutions quickly gets to the granular, low-latency data that contains the insights you are looking for. AutoML streamlines model building so that more time is spent on analyzing and sharing results. Our no-code approach does not remove the flexibility often required to fine-tune and deploy models, to score them and to monitor model health. Support for popular open-source languages and engines means you can integrate new models built using Altair into your existing analytic infrastructure.

## Start Your Machine Learning Journey

Easily investigate data using a wide variety of traditional and modern statistical models, from decision trees to regression models to neural networks. Designed for people with different skill sets, the Altair Platform includes our predictive analytics and machine learning solution, Knowledge Studio, which will help you quickly generate actionable insight from your data. Begin your analytics journey by visualizing your data to get a quick understanding of its most important features. Quickly build out predictive and prescriptive models that can easily explain and quantify insight found in your data. Apply and share that insight by deploying models natively or exporting them to common BI tools. Data scientists rely on Altair to efficiently build powerful and insightful predictive models to make better business decisions.

## No Code

An interactive and intuitive interface allows users of different skill sets to quickly connect to a wide range of data sources, transform disparate data formats into usable datasets, and generate insights by using a wide range of modeling techniques and algorithms, from decision trees to regression models to deep learning (neural networks).

## Transparent, Explainable AI

Details about how a model is configured and what the model's output means is shown using Explainable AI. Along with AutoML Altair's approach towards responsible AI means all users of a model's output can be confident in making decisions, knowing how and why a prediction was made.

## Predictive to Prescriptive Analytics

Altair's patented Strategy Trees combines your knowledge of the business with predictive modeling results, allowing you to prescribe treatments to different segments of your customer bases. Optimize strategies and campaigns by scoring the impact of controllable change to multiple scenarios. Maximize the ROI you are looking for as you drive towards new business opportunities.



# OPERATIONALIZE PERFORMANCE IN REAL TIME

Spot anomalies, trends, and outliers in seconds with real-time data. Share results across the organization using rich, powerful visualizations. Our stream processing and data visualization solution is built for people who need to make fast, fully informed decisions based on massive amounts of fast-changing telemetry, sensor, and trading data.

## Streaming Analytics

Altair gives business users and engineers the tools they need to build and deploy their own real-time data monitoring and analysis systems without writing a single line of code. The platform consists of Panopticon Visual Analytics software, the only true real-time data visualization system on the market, and Panopticon Streams, a stream processing engine that enables users to program sophisticated business logic and data functions using a fully visual interface. The platform is built from the ground up for users – not the IT department. Rather than waiting months for expensively produced custom applications, users can build and deploy their own systems in a few minutes.

## Make Insightful Decisions Quickly

Delays in decision-making are costly. Waiting means, you're likely to respond too late to take advantage of opportunities or avoid threats. Data visualizations help decision-makers focus on the most relevant and important information without losing sight of the big picture.

## Build and Deploy Dashboards Faster

Analysts, engineers, and other decision-makers must be able to build their own real-time data monitoring and analysis applications without waiting for IT.

## Real Time Operations

- Monitor: Identify anomalies in massive amounts of streaming data quickly.
- Investigate: Examine the events that led up to an anomaly with nanosecond granularity.
- Backtest: Analyze how alternative responses will affect future performance.
- Optimize: Update algorithms, alerts, and thresholds based on back-tested results.



## PAST PERFORMANCE

*Information Optimization Keeps Edwards AFB, 412<sup>th</sup> MXG, Mission- Ready*



### Background

The 412th Maintenance Group (MXG) provides maintenance, as well as Logistics Test and Evaluation (LT&E) support, for the U.S. Air Force, Department of Defense, Foreign Military Sales, and contractor aircraft at the Air Force Flight Test Center (AFFTC). The AFFTC is the Air Force Material Command center for excellence of research, development, testing and evaluation of aerospace systems for the United States and its allies. The mission of the Training Division is the planning, administration, development, instruction and evaluation of a training and readiness program for military members and civilian employees within the 412th MXG.

### Challenge

The 412th MXG at Edwards Air Force Base (AFB) uses weekly and monthly reports to track personnel that are qualified to work on each aircraft and when they are due for additional training. These reports are leveraged by the Base Commander for administrative decision-making. Effectively tracking this information is vital for keeping Air Force personnel, as well as the aircrafts themselves, safe and mission ready.

Don Winters, Chief of Maintenance Training Division, explained that to compile and analyze these reports, he, and his team monitor 7 different databases. Each database stores disparate information on training records and up-to-date qualifications for each crew member, troop and/or unit, requiring manual effort to find the proper item needed for analysis. "These databases are great at keeping track of our information, but our problem was that they don't interoperate," noted Winters. It was necessary to download and print the reports from each database and then manually locate, verify, merge and format the information by re-keying all the data into a usable report.

Winters explained that this method created snapshots of needed training but were ultimately useless

for long-term analysis. “If we wanted to compare reports, we had to pull out old reports and perform another manual comparison and additional data entry.” This process was time-consuming, prompting the 412th MXG to look for a solution.

## Solution

With Altair Monarch, the 412th MXG eliminated its database roadblock and expedited its reporting process. Winter’s team now extracts, manipulates, and summarizes data from a variety of traditional report formats and data sources (ie. plain text, PRN, ASCII, ANSI, PDF, XML, HTML, XPS, etc.). Monarch directly imports data from select sources, allowing users to skip the report extraction phase for many file formats. With Monarch, the team can easily spot critical trends across multiple databases, including staff who are overdue/are approaching mandatory training, or which shops have personnel with varying degrees of training needs. “Altair Monarch is an extraordinarily powerful information optimization solution and has become a vital tool for the 412th Maintenance Group Training Division and Edwards Air Force Base,” said Winters.

## Results

Edwards AFB created multiple data models using Monarch: “Reports that used to take us countless hours of manual preparation now take about 30 seconds to complete.” Visualizations of the datasets produced using Monarch are used to keep the whole base in-the-loop and aid in long-term analysis of maintenance processes. “Thanks to Monarch, we can easily group and analyze data accumulated over time using the same model that is employed to process a single report. This allows for quick summarization, comparison, and examination of trends in the data manifested over months, quarters and even years. We can even sort our reports by troop, aircraft, and unit or by any other grouping necessary to send the data up the chain of command” said Winters.

## CONCLUSION

With over 30 years of supporting enterprises, Altair and the Altair Data Analytics give organizations the capability, flexibility, and scalability to handle all their data analytics needs. By offering a unified no-code/low code platform, Altair democratizes the data analytics lifecycle (prep, predict, visualize) for users of all levels, reducing the complexity inherent to enterprise data management and analytics. Please visit <https://www.altair.com/data-analytics/> to learn more.

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**Access & Prepare**



**Understand**



**Predict**



**Automate**



**Share**



**Achieve**