

WHITE PAPER

The Alteryx Approach to Generative AI For Analytics



The Alteryx Approach

Generative artificial intelligence (GenAI) is one of the most innovative technologies to emerge in the last decade. It represents a tectonic shift in how we interact with technology. Alteryx is committed to integrating generative AI capabilities into our analytics platform. Alteryx is reimagining the delivery of analytics in a world where generative AI is ubiquitous, ensuring customers reap the benefit of this groundbreaking technology in an enterprise-grade analytics platform.

To make this a reality, the Alteryx approach to generative AI consists of a three-pillared strategy to infuse the power of generative AI across the Alteryx AI Platform for Enterprise Analytics

1. Generative AI Features.

Across the Alteryx product portfolio, the organization is rapidly identifying opportunities to improve the productivity and efficiency of Alteryx customers by infusing generative AI innovation into existing products.

2. Enterprise-Ready Generative AI Platform.

Generative AI presents new opportunities to apply proprietary or customized large language models (LLMs) to organizational use cases. With an enterprise-ready generative AI Platform, Alteryx customers will have the ability to train and deploy proprietary models tailored to their workflows, with the ability to operate entirely inside the customer's firewall.

3. New Generative AI Applications & Interfaces.

Data analytics is a team sport, and with prompt-driven applications, generative AI presents an opportunity to lower barriers to adopting analytics for anyone and everyone. Additionally, multi-modal analytics offers real-time collaboration among all the analytical roles: analyst, data scientist, engineer, and knowledge worker. Supported by generative AI, each can utilize their analytical tool of choice: prompt, SQL, Python, notebook, and of course Alteryx workflows.

The Alteryx Generative AI Approach

- 1 **Generative Features in Existing Products**
- 2 **Enterprise Ready Generative AI Platform**
- 3 **New Generative Applications and Interfaces**



Alteryx AiDIN

Artificial intelligence and machine learning (ML) is familiar territory for Alteryx. Since 2019, Alteryx has empowered customers with the latest language model powered capabilities and curated applications in the forms of topic modelling, text summarization, and sentiment analysis. The combination of existing Alteryx AI & ML intellectual property with recent generative AI innovation outlined above is Alteryx AiDIN.

Alteryx AiDIN Explained

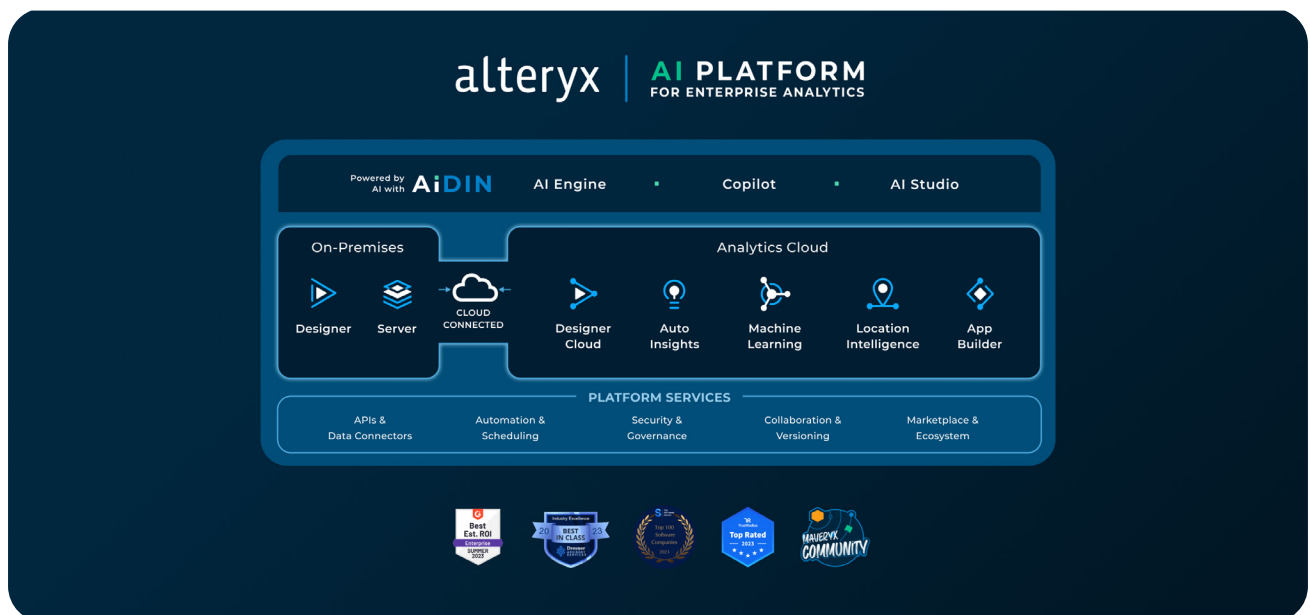
Think of Alteryx AiDIN as an umbrella for all the AI capabilities Alteryx offers – including existing capabilities in products and now new generative artificial intelligence (AI) capabilities. Alteryx AiDIN is the artificial intelligence (AI) engine that infuses the power of AI & ML across the Alteryx AI Platform for Enterprise Analytics. Alteryx AiDIN is comprised of a set of existing features, recently released features, and planned innovations that span multiple categories of artificial intelligence and machine learning. All embedded AI & ML within Alteryx products fall under the AiDIN umbrella. The Alteryx vision is to deliver innovation that combines the best of generative AI technology with a trusted, secure, and enterprise-grade analytics platform.

Smarter, More Accessible Analytics for the Business

AiDIN makes it even easier for everyone to perform or consume enterprise analytics. The benefits of Alteryx AiDIN are numerous:

- **Improved Time-to-Value:** AiDIN reduces the time required to derive insights from data. For example, AiDIN allows users to quickly synthesize and summarize key insights for important stakeholders to inform critical business decisions.
- **Improved Operational Efficiency:** AiDIN automates repetitive content creation tasks and reduces manual effort. AiDIN can create insight-rich PowerPoint decks with just a few clicks, or reduce time spent documenting business critical workflows.
- **Enhanced Governance:** With AiDIN, governance is a priority. Enterprise-grade, trusted & secured, Alteryx AiDIN meets the requirements of Alteryx customers across vertical industries and geographic regions.

With Alteryx AiDIN, users will gain the power and convenience of using generative AI (GenAI) while retaining the governance and enterprise-readiness they've come to rely on from Alteryx.



Everywhere That AiDIN is Part of Our Portfolio

Generative AI Features in Existing Products:

Designer

- OpenAI connector: Users can easily use generative AI in Alteryx Designer workflows to transform how data is communicated and shared.
 - [Available free in community.](#)
- Workflow Summary: AI-generated documentation of workflows in Designer for improved governance and auditability.
 - [Available free in community.](#)

Auto Insights

- Magic Documents: AI-generated summary report in e-mail & PowerPoint for faster insight synthesis & communication.
 - Available today as part of Auto Insights licensing.
- Playbooks: Uses generative AI to recommend high value analytics use cases tailored to a user's business and role. Playbooks generates realistic synthetic data for each use case to enable rapid prototyping for faster time-to-insights.
 - Available today as part of Auto Insights licensing.

Designer Cloud

- Brushing: Users can prepare data in seconds by simply highlighting the text they want to transform and selecting an appropriate suggestion.
 - Available today as part of Designer Cloud licensing.



Enterprise-Grade Generative AI for Analytics

Alteryx AI Studio includes enterprise-grade management, customization, and deployment of private LLMs, enabling you to build AI-powered workflows and analytic apps. Read more here: [Introducing Alteryx AI Studio - Alteryx Community](#)

Features:

- Full Control: Manage the complete lifecycle of your models, from development to deployment.
- Customization: Fine-tune models with your specific data to meet unique business needs.
- Seamless Integration: Easily consume your models through existing workflows and applications, enhancing productivity and insight.



The Importance of Trust & Security

Models Used in Alteryx AiDIN

Alteryx Designer

- Alteryx Intelligence Suite - Locally run open-source models; see tools included here [Alteryx Intelligence Suite](#)
- Workflow Summary - Users can use their own OpenAI (GPT 3.5 or 4) account in Designer : [How To Use the Workflow Summary Tool - Alteryx Community](#)
- OpenAI Connector – Users can use their own OpenAI (GPT 3.5 or 4) account in Designer [How To Use the Alteryx ... - Alteryx Community](#)

Alteryx Designer Cloud

- Brushing: [Proprietary Interactive Results Grid \(alteryx.com\)](#)

Alteryx Auto Insights

- Proprietary for data contextualization, Natural Language Generation (NLG), and root cause analysis: [How Auto Insights Uses Advanced Analytics, AI, and Machine Learning \(alteryx.com\)](#)

- Magic Documents and Playbooks connect to OpenAI via the Microsoft Azure Cognitive Services (GPT-4) within the Alteryx Analytics Cloud infrastructure: [Usage of Magic Documents and Data Security \(alteryx.com\)](#)

Alteryx Machine Learning

- Auto Model: [Open Source Model List](#)
- Feature Engineering: [Open Source](#)

Alteryx AI Studio

- The models supported today are:
 - [Google Flan T5 \(in 5 sizes\)](#)
 - [Pythia](#)
 - [Falcon](#)

How Data/Modeling Is Handled in the Alteryx Portfolio

Products in the Alteryx suite offer unique features tailored to handle data and perform modeling as configured by the user.

- Data can be prepared in Alteryx Designer Desktop, or in the Alteryx Designer Cloud (SaaS), to get it ready for modeling. Models are then trained in Alteryx Intelligence Suite (Designer Desktop), or within the AAC Platform on Alteryx Machine Learning or Alteryx AI Studio.
- In Alteryx Intelligence Suite, a range of AI-based applications are used to mine text, create predictive models, and carry out assisted modeling. The AI capabilities in Alteryx Intelligence Suite ensure that even complex data is handled smoothly, transforming it into easy-to-understand insights. Alteryx Intelligence Suite seamlessly integrates with Designer's expansive suite of tools, allowing efficient handling of data at every stage of the process. Whether the data exists in freeform text or images, Alteryx Intelligence Suite can help unlock insights.
- Alteryx Machine Learning uses automated data science best practices such as sampling, cross-validation, multicollinearity & outlier support, and Bayesian search reduction additional data checks based on the ML methodology. A variety of machine learning algorithms can then be applied to the data automatically using AutoML technology, and the results can be validated on existing and new data sets to ensure high-quality modeling.
- In Alteryx AI Studio, you can bring in data from your local machine or Alteryx AI Platform for Enterprise Analytics library

and use it to fine tune from a selection of provided models. In Alteryx AI Studio, fine tune LLMs with your business data to customize the model to understand and generate text that is specific, relevant, and accurate to your industry, improving the model's performance and effectiveness in business applications. Then, use the finetuned model with Alteryx capabilities to create powerful LLM-driven applications that solve text mining, content generation, and information retrieval use cases.



Model Training and Evaluation

The training and evaluation of models in Alteryx AiDIN are handled using best-in-class, industry-standard algorithms. Our approach focuses on applying the most appropriate algorithms, rigorous validation and testing, and the use of high-quality, diverse data sets. Additionally, we allow the analyst to perform code-free fine-tuning of large language models (LLMs) to users own data, hosted in their own data environment. Alteryx users can train image classification models using our Intelligence Suite, perform machine learning automatically (AutoML) in Alteryx Machine Learning, and customize and manage large language models using their own data or utilizing existing models in Alteryx AI Studio. This streamlined process empowers users to derive valuable insights without the complexity traditionally associated with model development.

Quality in Generative AI

At its core, the objective of Alteryx AiDIN is to facilitate better, faster, and more intelligent decision-making across your enterprise. By mitigating potential hallucinations, enabling fact-checking, and using high-quality training data, we aim to provide you with a tool that is reliable, efficient, and trustworthy.

- Hallucinations: "Hallucinations" in generative AI refer to instances where the model confidently generates false information, making it appear as though a quality result was produced. At Alteryx, we understand the potential impact of such anomalies on your analyses and decisions. Hence, we employ stringent quality checks and validation methods during model training and output generation to minimize the risk of hallucinations. Moreover, our models are continuously improved and updated based on feedback and performance evaluations, which helps to identify and quickly remediate errors in outputs.
- With retrieval-augmented generation (RAG), Alteryx AI Studio gives answers based on existing documentation and information as provided by the user to the vector database, and in the future, it will provide citations for those answers (e.g., Volunteer_Hours.pdf page 2 paragraph 3). There are certainty scores assigned to possible answers, and users can decide the certainty threshold for the answers they want and how many possible answers they want to see.
- Fact-Checking : Fact-checking in AI is a crucial step to ensure the validity and reliability of the generated content. With Alteryx AiDIN, you have the ability to cross-check generated outputs against source data, use auxiliary databases for verification, or even use human moderation for critical tasks. While our AI models strive to produce accurate and trustworthy outputs, we encourage users to keep a human-in-the-loop and apply standard fact-checking procedures as an extra layer of validation.
- Training Data: The quality of the training data directly influences the performance of an AI model. At Alteryx, we use diverse, high-quality, and relevant data sets to train our models. This ensures that the models are capable of handling a wide array of scenarios and can generate reliable and accurate outputs. Our data sets span various domains and are thoroughly vetted for quality and relevance. They undergo industry-standard preprocessing steps like cleaning, normalization, and augmentation to ensure they are suitable for model training. For generative AI, the training data is specifically selected to encompass a wide variety of patterns and structures, ensuring that the model can learn and generate a broad range of outputs.

Security and Privacy

The new generative AI capabilities in AiDIN have two deployment options:

Deployment Option 1: Private Data Handling

Private Data Handling allows for the processes that handle the customer's data to be deployed within a customer-owned cloud account that enables private storage and processing of customer data within a customer-owned cloud account. This data can be securely accessed by end users through a browser using HTTPS, with encryption applied both in-transit and at-rest, ensuring data security. Additionally, the system ensures high availability of the control plane through multiple instances, enhancing reliability and accessibility.

When you provide a prompt, for customers that are leveraging Private Data Handling for Alteryx Analytics Cloud, the data is maintained within your private data plane where the AI model is hosted and generates the required output. Rest assured, this process is encrypted and designed to protect your data in your own ecosystem from potential threats.

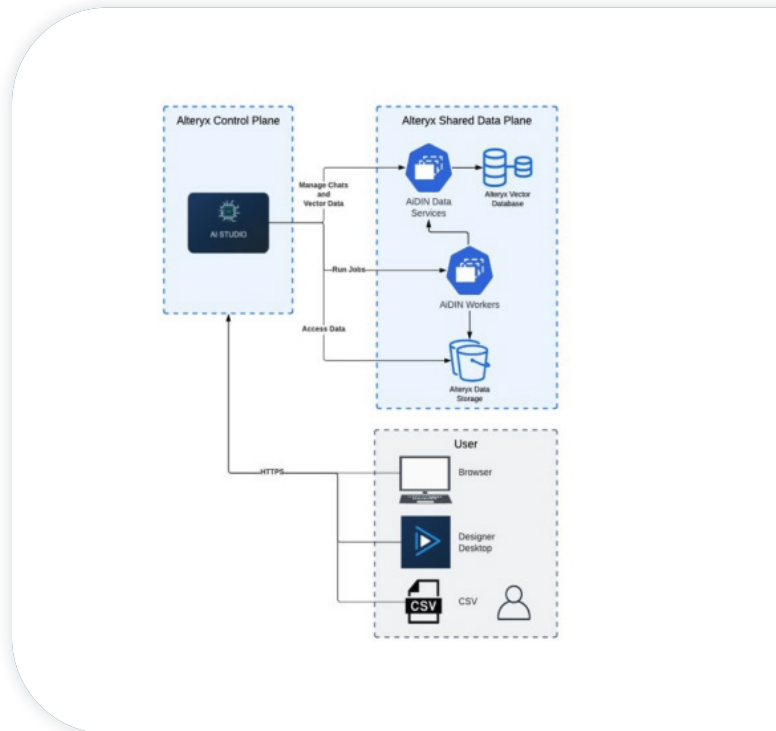
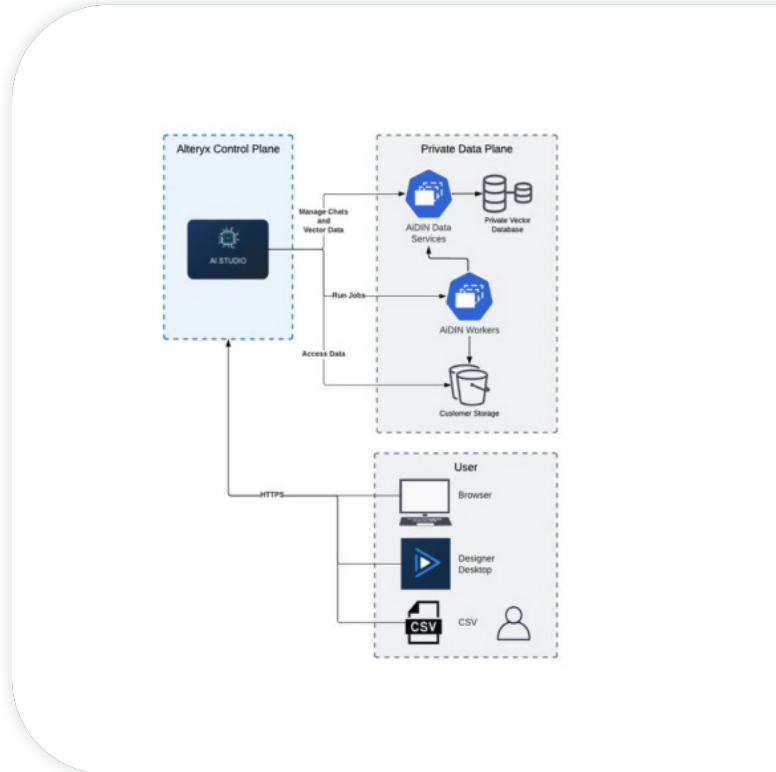
Deployment Option 2: Cloud Software-as-a-Service (SaaS)

Cloud SaaS, characterized by its multi-tenant architecture, offers accessible services through web browsers via HTTPS, ensuring secure data transmission and storage with encryption both in-transit and at-rest. It guarantees high availability through the deployment of multiple instances.

For customers that choose to deploy Alteryx Analytics Cloud (SaaS), the data follows best practices for standard privacy and security protocols for AWS. [Learn more here.](#)

What data gets shared from a training set?

Training sets are used solely for the purpose of training your AI models and are not shared outside of that context.





What is prompt injection, and how do I prevent it?

Prompt injection is a form of cyberattack where malicious instructions are embedded within a user's input to an AI model. These malicious instructions can cause the model to generate harmful or inappropriate outputs. At Alteryx, we have several safeguard mechanisms in place to prevent such scenarios. These include stringent input validation procedures and the use of AI models that can detect and filter out potentially harmful instructions.

What mechanisms are you using for memory?

We use both short-term and long-term memory mechanisms within our AI models. Short-term memory is used for processing immediate tasks while long-term memory stores the model's learned patterns and experiences. These mechanisms are securely implemented and do not store any identifiable user data.

Who can access my data and for what purposes?

Access to your data (also called "Cloud Content") is strictly limited to a select few authorized personnel and sub-processors who are bound

by comprehensive confidentiality and data privacy training and agreements. Any access is strictly for the purpose of providing you with or supporting our products and is always carried out in compliance with our stringent privacy policy.

Security and Privacy

Your security and privacy are our utmost priority at Alteryx. We adhere to the industry's highest standards and all applicability regulatory requirements with respect to the data we hold and process on your behalf. You can learn more about how we implement privacy and security measures at Alteryx by visiting our [Trust page](#).

Notice: This white paper is intended for general educational purposes only. It provides an overview of the features, security, and architecture of our product but is not meant to be comprehensive. For those who are seeking a more detailed conversation regarding any specific aspects of our product, we welcome and encourage direct communication. Please feel free to reach out to us [here](#), and we will be delighted to arrange a more in-depth discussion tailored to your specific interests and requirements.



alteryx | **AI PLATFORM**
FOR ENTERPRISE ANALYTICS

About Alteryx

Alteryx powers actionable insights with the AI Platform for Enterprise Analytics. With Alteryx, organizations can drive smarter, faster decisions with a secure platform deployable in on-prem, hybrid, and cloud environments. More than 8,000 customers globally rely on Alteryx to automate analytics to improve revenue performance, manage costs, and mitigate risks across their organizations.

To learn more, visit www.alteryx.com.

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