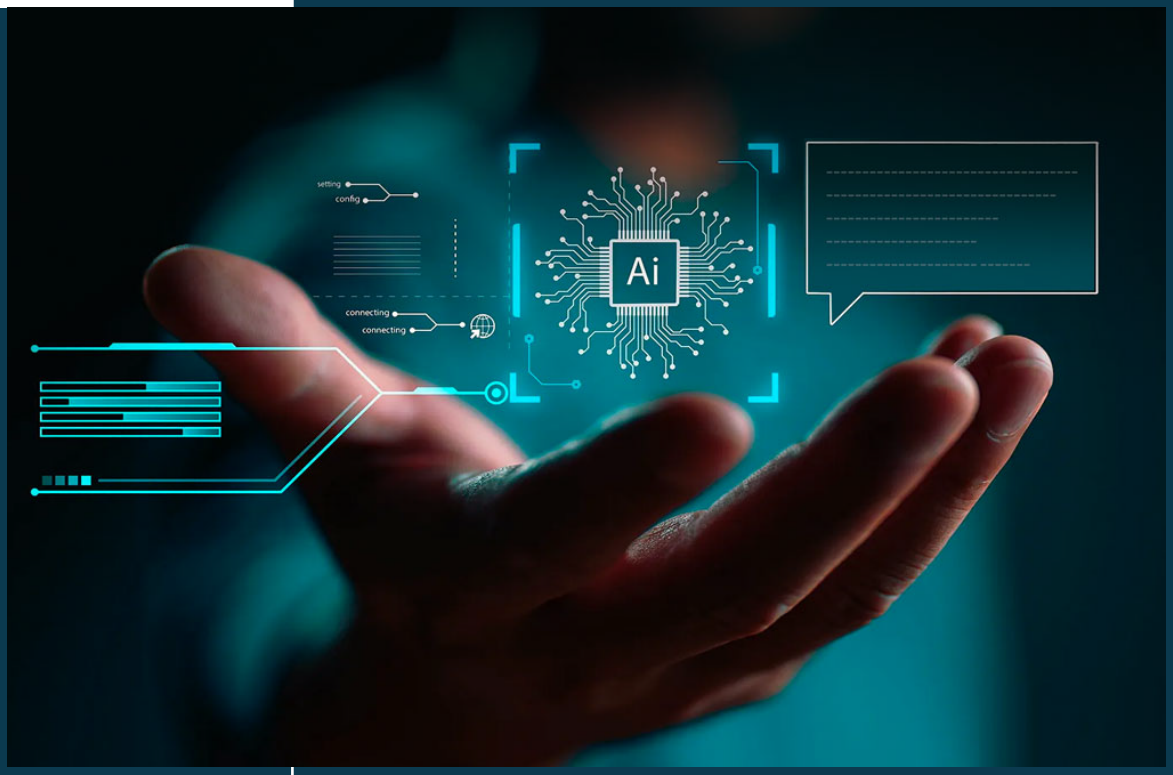
SOLIX™
Empowering the Data-driven Enterprise

SOLIXCloud Enterprise AI

Generative AI and Machine Learning for the Enterprise

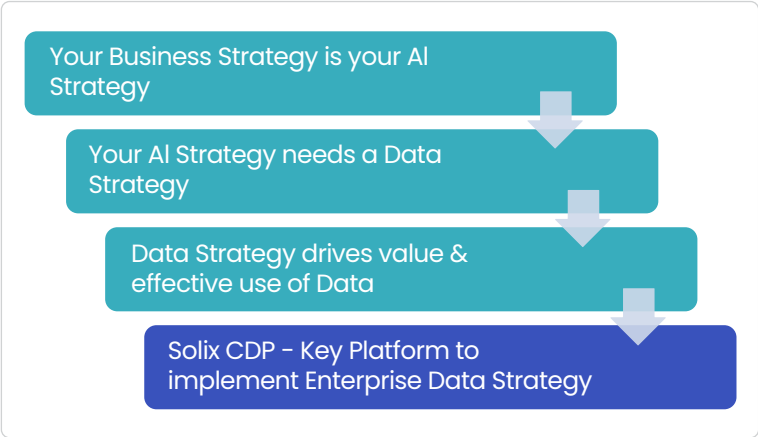


John Ottman,
Executive Chairman, Solix Technologies, Inc.

Overview

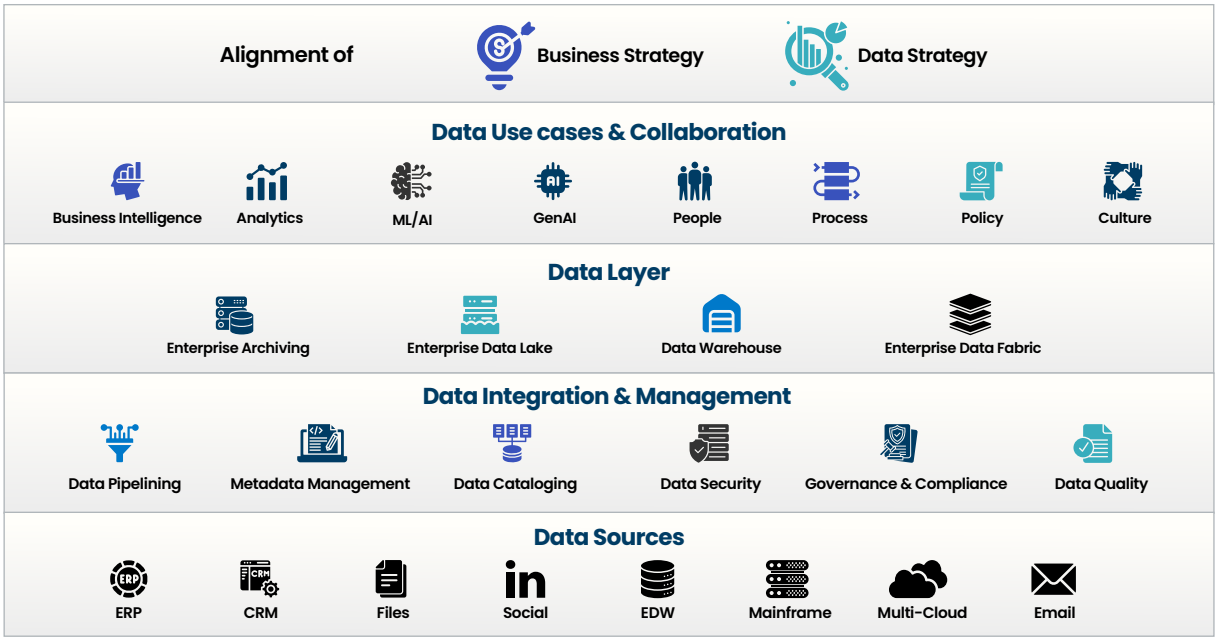
In the race to achieve digital transformation, Enterprise AI represents an opportunity to achieve strategic advantage through the power of generative AI and machine learning. This convergence of artificial intelligence and enterprise applications offers game changing potential to revolutionize core business processes and achieve improved business results. SOLIXCloud Enterprise AI helps organizations gain operational efficiency and improve employee productivity across various business functions.

Every employee from every level of the organization, in every industry, is able to leverage generative AI to automate repetitive tasks, help develop actionable business insights and improve decision-making. Enterprises of all sizes may utilize generative AI to optimize an unlimited number of applications, use cases and operational processes.



Successful AI strategy must first align with your business strategy. Next, your AI strategy requires a data strategy to ensure the highest data quality is always available. By training on 'your' business data, enterprise AI results are fueled by the context of your own enterprise data to become more accurate, fine-tuned and specific. An effective cloud data management strategy is required to pipeline data to a landscape of enterprise AI applications.

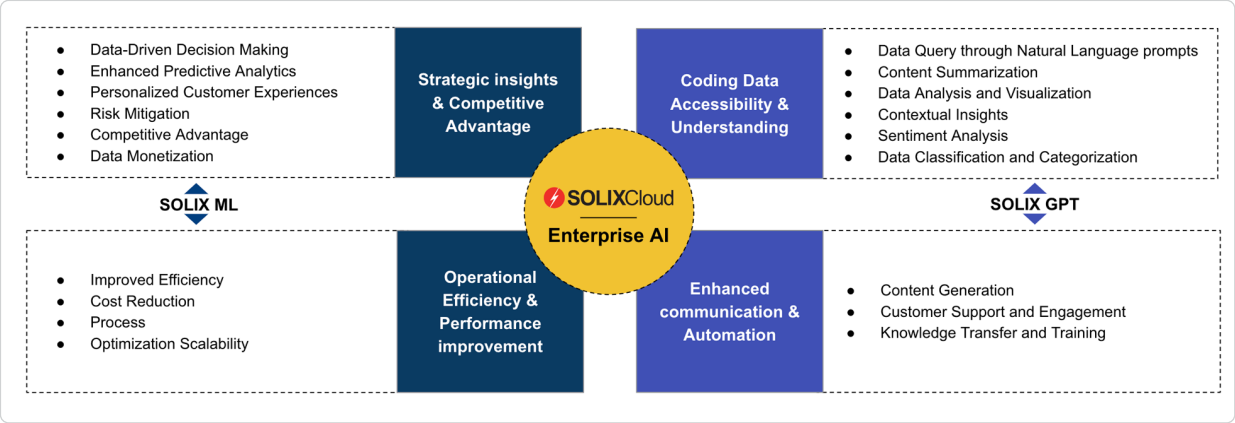
The development of generative AI applications at scale creates significant challenges related to moving and processing large data sets considering security and privacy, large scale data collection and data storage, data catalogs, metadata management, data governance and complex data preparation including complex tagging and labeling. Such a significant data management challenge requires multi-level planes of operational management, and a new information architecture and data fabric to ensure that enterprise AI data is "fit-for-use."



Why SOLIXCloud Enterprise AI?

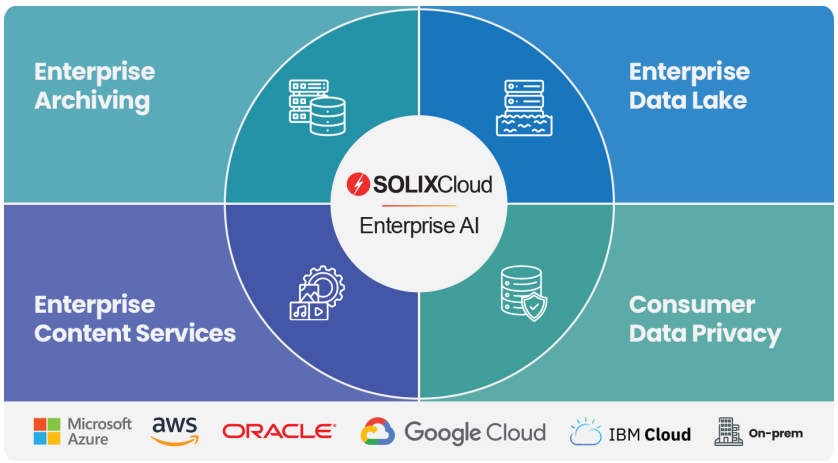
SOLIXCloud Enterprise AI provides generative AI applications for the enterprise and manages the machine learning lifecycle for your enterprise AI applications.

To ensure high availability of properly prepared enterprise data necessary to train AI applications, SOLIXCloud Enterprise AI leverages the Solix Common Data Platform (CDP) and Solix Cloud Data Management applications for data storage, access control, security and privacy controls.



Solix Common Data Platform (CDP)

SOLIXCloud Enterprise AI is powered by Solix CDP, a multi-cloud data fabric and information architecture that helps organizations manage and process their structured,semi-structured and unstructured enterprise data. Solix CDP connects and pipelines enterprise data from any source to any target and provides robust data governance, data privacy, data catalog, discovery and security for large scale enterprise data repositories.



Solix CDP powers the Solix Cloud Data Management application framework including SOLIXCloud Enterprise Archiving, SOLIXCloud Enterprise Data Lake, SOLIXCloud Consumer Data Privacy and SOLIXCloud Enterprise Content Services (ECS).

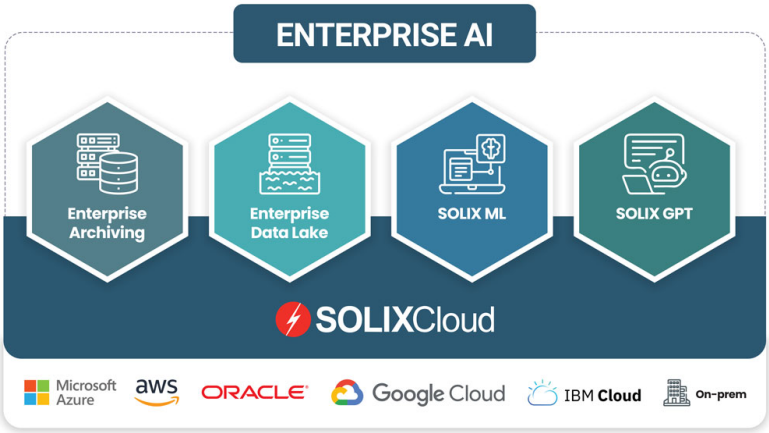
SOLIXCloud Enterprise AI relies on Solix CDP to deliver critical data services including:

- Horizontal scalability against massive (petabyte) amounts of data, and capability to meet ultra high performance objectives
- Enterprise data lake
- Data preparation for AI including complex labeling, data transformation and data quality of all data types
- Data pipelines to create complex and secure data flows ‘on the fly’ from source to target

- Enterprise Archiving including structured, unstructured and semi-structured data
- Consumer Data Privacy including sensitive data discovery, dynamic and static data masking, redaction and compliance reporting
- Cloud native, W3C compliant, software architecture
- Serverless deployment and support for leading open source data resources such as Apache Iceberg, Apache Spark, Apache Hudi and Citus.
- ANSI SQL with support for ACID transactions.
- Support for all forms of data including structured, semistructured and unstructured data, and in particular, the ability to leverage complex business objects such as the enterprise data record.
- Collect any data from any source
- Data catalog and metadata management capabilities including centralized metadata management, data classification, data lineage, data profiling and the creation of business glossaries.
- Federated data governance including, ILM, consumer data privacy, and data compliance reporting
- Data security including roles based access control (RBAC), end-to-end encryption, redaction, static and dynamic data masking
- Test data management including right sized data subsets, data lake zones, and data masking-on-the-fly
- API access
- Data discovery including structured reporting, ad hoc query and text search

SOLIXCloud Enterprise AI

SOLIXCloud Enterprise AI is available as a suite of two products including Solix ML and Solix GPT. Cloud data management functions are performed by Solix CDP and its comprehensive portfolio of services to properly store and manage enterprise data throughout the information lifecycle.

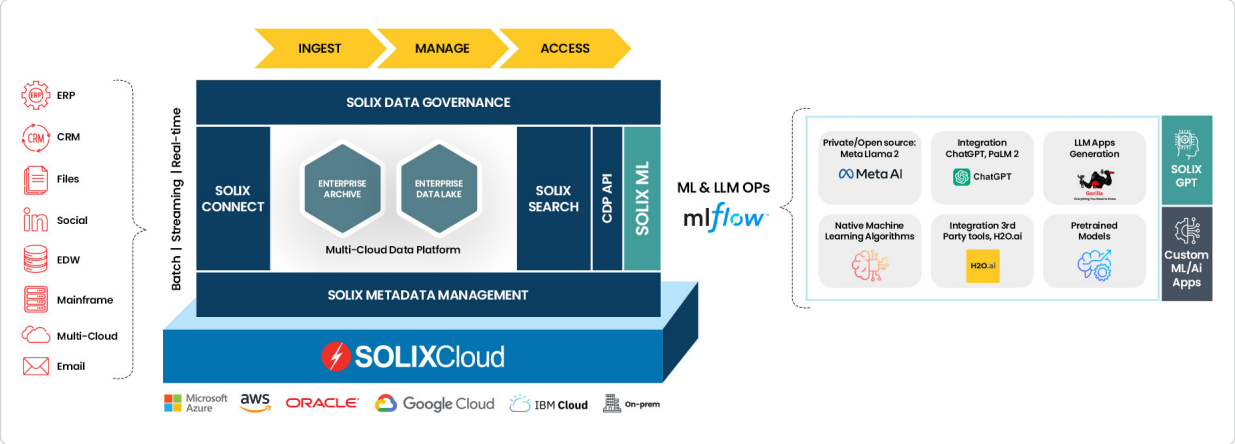


Solix CDP also provides comprehensive, policy-based Information Lifecycle Management (ILM) for enterprise data. Solix Data Governance manages policies for archiving business objects according to data retention and compliance rules, and also provides reporting to support industry compliance frameworks like PCI-DSS, HIPAA, FISMA, GDPR, CCPA, and many more.

SOLIXCloud Enterprise AI achieves superior performance because it is architected with open source, best of breed components including data resources like Apache Hive, Apache Spark, Apache Iceberg and Apache Hudi, large language models like Meta AI Llama 2 and ML Flow to support the machine learning lifecycle.

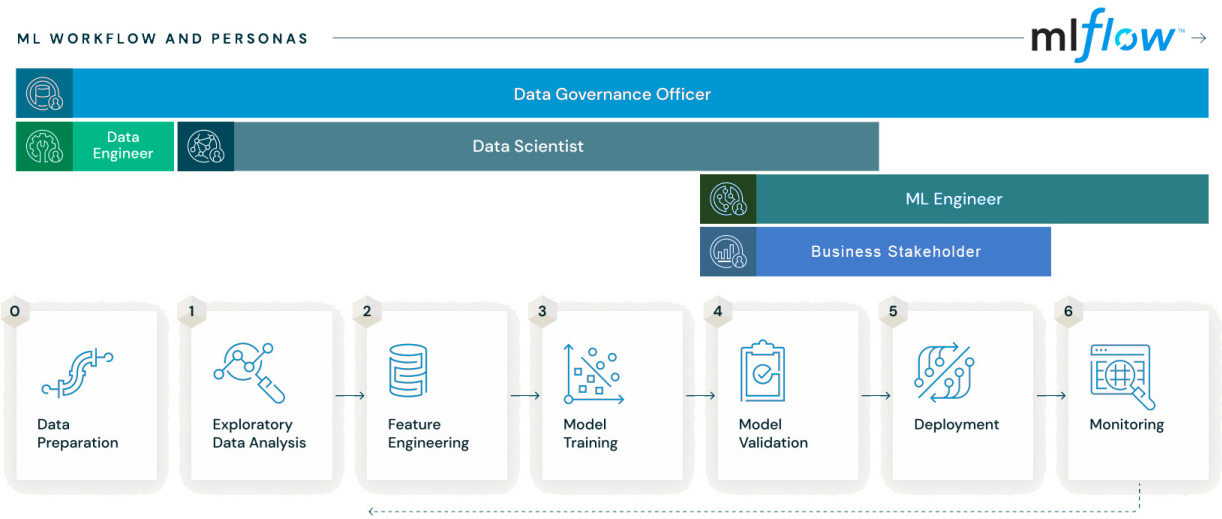
Because SOLIXCloud Enterprise AI is able to process all forms of data (structured, unstructured and semi structured), complex business objects may be created called enterprise business records (EBRs) which may contain data attributes from anywhere no matter the source of the data.

SOLIXCloud Enterprise AI is also tightly integrated into the Solix Cloud Data Management suite of applications thus providing a complete, end-to-end solution including archiving, data lake and consumer data privacy solutions.



Solix ML

Solix ML is a machine learning platform based on MLFlow. Solix ML allows for efficient deployment, monitoring, and maintenance of machine learning models by managing workflows and artifacts across the machine learning lifecycle from initial model development through deployment and decommissioning.



An enormous portfolio of AI applications is being developed worldwide to service the enterprise AI market, and there are thousands of third party applications which share the requirement to train on high quality enterprise data. Data quality is essential for machine learning and AI insights, and SOLIXCloud Enterprise Archiving and SOLIXCloud Enterprise Data Lake are ideal repositories for enterprise AI data.

SOLIX ML Stories

Human Resources Management: AI/ML can streamline recruitment processes, analyze employee performance and support talent management. Other use cases include Natural Language Processing (NLP) for resume screening, Classification models (Logistic Regression, SVM) for candidate ranking, and clustering for employee segmentation.

Marketing and Personalization: AI/ML can improve marketing campaigns, customer segmentation, and personalized content delivery. Collaborative filtering for recommendation engines, Decision Trees for customer segmentation, and Deep Learning models for content generation.

Quality Control and Product Inspection: AI/ML can automate quality control processes and ensure product compliance. Computer Vision Models and Convolutional Neural Network (CNNs) for defect detection in manufacturing, and anomaly detection algorithms for identifying irregularities in products using image classification.

Customer Relationship Management (CRM): AI-powered CRM systems can help optimize customer interactions, personalize customer experiences, and improve customer support. Natural Language Processing (NLP) for sentiment analysis, chatbots using transformers like BERT, and collaborative filtering for personalized recommendations.

Financial Analysis and Fraud Detection: AI/ML can automate financial data analysis, detect anomalies, and improve fraud detection. Machine Learning models like Random Forest and Gradient Boosting for fraud detection, LSTM for time series-based financial forecasting, and Autoencoders for anomaly detection.

Supply Chain Management (SCM): AI/ML can optimize inventory management, demand forecasting, and logistics planning for more efficient supply chain operations. Time Series Forecasting (ARIMA, LSTM) for demand forecasting, Reinforcement Learning for inventory management, and Convolutional Neural Networks (CNNs) for image-based product quality control.

Image Generation with GANs (Generative Adversarial Networks): Generating synthetic images for product catalogs, video or audio sequences for content creation and entertainment. Variational Autoencoders (VAEs) and GANs can learn the patterns in video, audio and image data and generate new content.

Text Generation with Large Language Models (e.g., Llama 2): Automated content creation, chatbots, and creative writing applications. Large language models like Llama 2 utilize deep learning and transformer architectures to generate human-like text based on learned patterns from vast amounts of training data. Variational Autoencoders (VAEs) and GANs can learn the patterns in video, audio and image data and generate new content.

Sales and Revenue Forecasting: AI/ML can predict sales and revenue trends to support strategic planning. Application scopes include Time Series Forecasting (ARIMA, LSTM) for sales forecasting, and Regression models for revenue prediction.

Healthcare Diagnosis and Treatment Planning: AI/ML can aid in medical image analysis, disease diagnosis, and personalized treatment planning. Convolutional Neural Networks (CNNs) for medical image classification, Support Vector Machines (SVM) for disease diagnosis, and Reinforcement Learning for personalized treatment recommendations.

Document Management and Data Extraction: AI/ML can extract information from unstructured documents and automate data entry tasks. Capabilities include Optical Character Recognition (OCR) for document scanning, Named Entity Recognition (NER) for information extraction, and Document Classification Models.

Risk Management and Compliance: AI/ML can assist in risk assessment, regulatory compliance, and fraud prevention. Scoring models (Logistic Regression, Random Forest) for risk assessment are required along with Rules-based systems for compliance checks.

Streamline and Optimize Business Processes: AI automation reduces manual intervention and increases operational efficiency. Emagia chatbots offer a great example on how to use AI to automate accounts receivable collections and reduce days sales outstanding (DSO). Every industry has processes as candidates to improve operational results with AI automation.

Enhanced Customer Experience: AI-powered applications are able to enhance customer interactions, provide personalized experiences and provide more efficient query resolution. Every organization seeks better customer relationships, but the expense or even ability to execute in different time zones with different languages often becomes a barrier. AI applications are able to interact with clients effectively and provide improved results at far lower cost.

AI-driven customer engagement provides customer support managers with AI-powered chatbots delivering real-time assistance to customers, answering common queries, and escalating complex issues to human agents. This will improve customer satisfaction, reduce response times, and enhance the overall customer experience.

AI-powered chatbots may successfully handle up to 80% of customer queries without human intervention, with seamless handoff to human agents for more complex issues.

Innovation and Research: AI tools and applications are able to scale against very large data sets which may be otherwise impossible, or out of the reach of human research. Research results may be accelerated to drive innovation, and develop cutting-edge products and services that address rapidly developing market demands.

A research scientist may seek an AI system that can analyze complex scientific data and simulations to accelerate drug discovery and research initiatives, thus enabling breakthroughs by performing pharmaceutical research more efficiently. AI systems may reduce the time required for complex data analysis and simulation processing by at least 30%, leading to more rapid research progress.

Data-driven Strategies: Develop AI models that analyze large datasets, enabling data-driven strategies and predictive outcomes that future-proof organizational growth.

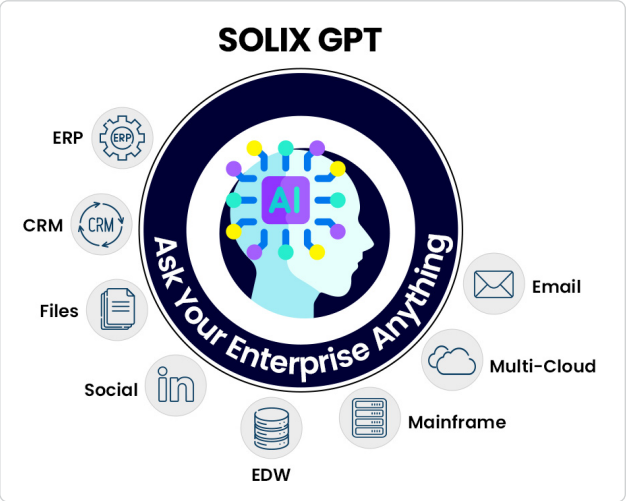
Predictive Maintenance: As a maintenance supervisor, I want an AI system that predicts equipment maintenance needs based on usage patterns and performance data. This will help us proactively schedule maintenance activities, reduce downtime, and extend the lifespan of our machinery. Predictive maintenance systems are able to accurately predict maintenance needs with a minimum of 90% accuracy, triggering alerts and work orders as necessary.

Financial Forecasting: As a financial analyst, I want an AI model that can analyze historical financial data and market trends to provide accurate revenue forecasts for the next fiscal year. This will support more precise budgeting and financial planning. Financial forecasting AI models may achieve a margin of error within 5% for revenue predictions compared to actual results from the previous fiscal year.

Personalized Marketing: As a marketing manager, I want an AI-driven recommendation engine that analyzes customer behavior and preferences to deliver personalized product recommendations and targeted marketing campaigns. This will increase conversion rates and drive sales growth. Personalized marketing recommendations result in a 15% increase in conversion rates for targeted campaigns compared to non-targeted campaigns.

SOLIX GPT

Solix GPT is a generative AI application and enterprise chatbot that enables employees to "ask the enterprise anything." SOLIXCloud Enterprise Archiving and SOLIXCloud Enterprise Data Lake users leverage Solix GPT for personal productivity and to make more informed business decisions. The better the data, the better the AI, and Solix GPT uses Solix ML to train on enterprise business records stored in archives or data lakes running on Solix CDP.



Solix GPT offers superior performance over most publicly accessible large language models as its foundation is the advanced Meta AI Llama 2 set of large language models (LLMs). Llama 2 and Code Llama excel in natural language conversational interactions including generating code and discussions related to code.

Llama 2 is a collection of pre-trained LLMs ranging in scale from 7 billion to 70 billion parameters. These fine-tuned LLMs, called Llama 2-Chat, are optimized for dialogue use cases.

From that foundation, Solix GPT trains on 'your' enterprise data to contextualize responses to your business which results in enhanced reasoning, accuracy, coding and knowledge assessments.

Solix GPT Stories

'Ask Your Enterprise Anything': SOLIXCloud Enterprise Archiving and SOLIXCloud Enterprise Data Lake customers use Solix GPT not only to improve access to their data, but to reengineer business processes, automate repetitive tasks, raise personal productivity, improve situational awareness and make more informed business decisions. Interactions with Solix GPT are natural language based, and reasonably accurate and reliable, but may not always be perfect.

'Write code': Not every employee is trained to use SQL or other query languages to extract information from an enterprise archive or data lake. Natural language interfaces like Solix GPT represent a game changing productivity opportunity for average employees. Simple questions like "What is the warranty on this product?" or "What sales results do we expect from this sales rep in Q4?" may require code to be written, and now employees with less IT training may have access.

Data Governance: With all employees now able to access any information in the enterprise, data governance, access control and data security become critical capabilities. As a result, role based access control (RBAC), dynamic and static data masking, data redaction and compliance with consumer data privacy policies are essential requirements for Solix GPT.

Enterprise Business Records (EBR): The better the data, the better the AI, and Solix GPT leverages Enterprise Business Records (EBRs) to train AI applications. Enterprise Business Records are complex business objects that are derived from multiple disparate data sources and combined into a single object. For instance, an enterprise business record may include a spreadsheet, email document and row of columnar data to represent a single business event.

User training: Generative AI can reduce user training requirements to zero… "Just type any question into the box." It is assumed that the productivity of every employee from the mailroom clerk to the executive suite may be improved using Solix GPT. As a result the solution must support a natural language interface, and large numbers of named users with high concurrency.

Intelligent Auditor: Provide functionality to enable an auditor to quickly find the information from the archive to support their audit needs. Audit use is one of the primary drivers for customers to use an archiving platform. For example, an auditor may need to test that the revenue being shown on the P&L is accurate. To do this the auditor takes samples of invoice data to see if the numbers add up. The auditor might ask the question, "What is the sum of invoices for Q2 from the North America division?" Ideally, Solix GPT would be able to analyze the data model, find where invoice data is being stored, construct the query to sum the invoice amounts for Q2 in NA and return the result.

Intelligent Discovery: Similar to the intelligent auditor, Solix GPT should include functionality to make the current discovery process intelligent. Currently, discovery requires rules and parameters to be entered. Intelligent Discovery functionality should replace this rules-based methodology with a simple conversational interface as is mentioned above.

Intelligent DSAR: Responding to DSAR requests is a key requirement to comply with GDPR and other privacy regulations. Currently, we use a rules driven methodology to discover the information contained in the archive and then a workbench to act on this information (using methods like reporting, destructive masking, redaction, or deletion). An Intelligent DSAR agent would use the Intelligent Discovery functionality described above and when asked, fully automate the requested action. For example, the compliance officer might make this request: Prepare a DSAR report for John Doe. And after some time, the officer might make this request: Remove all data previously reported on the DSAR report for John Doe (and use destructive masking or redaction to do so).

Intelligent Data Modeler / DataAccess: 90% of the data in our customers archives are structured data. Almost all structured data ingested into a Solix archive is in normalized form, making it difficult using text based methodologies (like search or LLM logic) to find and retrieve information. An intelligent data modeler would be able to review the data model (by reviewing metadata), understand the parent / child relationships in the data model and construct appropriate sql queries to return the answers to simple questions like "calculate the sum of invoices in Q1 for the North America division".

Intelligent Data Access: In the absence of intelligent data modeling, intelligent data access would rely on pre-staged denormalized views of the data model that were setup by humans in the form of an EBR or view.

Conclusion

The convergence of artificial intelligence, machine learning and enterprise applications offers game changing potential to revolutionize core business processes and achieve improved results. However, a successful AI strategy requires a data strategy to ensure the highest data quality for generative AI applications.

SOLIXCloud Enterprise AI is a generative AI and machine learning lifecycle solution suite powered by the Solix Common Data Platform (CDP). Solix Cloud Data Management Applications such as SOLIXCloud Enterprise Archiving and SOLIXCloud Enterprise Data Lake are tightly integrated as data repositories to ensure information lifecycle management, data governance and compliance with business rules.

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Solix ML is a machine learning platform based on MLFlow. Solix ML allows for efficient deployment, monitoring, and maintenance of machine learning models by managing workflows and artifacts across the machine learning lifecycle from initial model development through deployment and decommissioning.

SOLIXCloud Enterprise AI leverages the Solix Common Data platform (CDP to safely and securely collect, govern, catalog, pipeline and prepare data as fit for use by AI applications across the enterprise. SOLIXCloud Enterprise AI is tightly integrated with other Solix Cloud Data Management applications including SOLIXCloud Enterprise Archiving, SOLIXCloud Enterprise Data Lake, SOLIXCloud Consumer Data Privacy and SOLIXCloud Enterprise Content Services (ECS).

The scope of possible applications for SOLIXCloud Enterprise AI appears quite open-ended! SOLIXCloud Enterprise AI, Solix CDP and Solix Cloud Data Management deliver next generation process optimization, enhanced customer experiences and data-driven strategies for enterprise AI.

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