OKLAHOMA
OMES Enterprise
Data Driven Services

State of Oklahoma Emerging Technology Playbook

Version 1 – May 2024

Navigating Emerging Technologies

Understanding emerging technologies

Artificial Intelligence

Overview:

- Refers to the simulation of human intelligence in machines designed to think and learn like humans.

Applications:

- Automates tasks, enhances decision-making and improves efficiency across various sectors.

Benefits:

- Increases productivity, reduces human error and provides insights through data analysis.

Generative AI

Overview:

- A subset of AI focused on generating new content, such as text, images and music, based on input data.

Applications:

- Content creation, virtual assistance and personalized recommendations.

Benefits:

- Enhances creativity, streamlines manual processes and personalizes user experiences.

Machine Learning

Overview:

- A branch of AI that enables systems to learn and improve from experience without being explicitly programmed.

Applications:

- Predictive analytics, fraud detection and personalized marketing.

Benefits:

- Improves accuracy over time, adapts to new data and automates complex decision-making.

How emerging technologies can help state agencies

- Emerging technologies offer state agencies unprecedented opportunities to **enhance efficiency**, **effectiveness** and **service delivery**.

- By leveraging innovative technology such as artificial intelligence (AI), machine learning (ML) and generative AI (GenAI), public sector organizations can **automate routine tasks**, **improve decision-making** and **enhance transparency**.

- AI and ML can be used for **predictive analytics**, helping agencies **anticipate** needs and **allocate resources** effectively.

- GenAI can **generate** new content and insights, aiding in **personalized communication** and **innovative** problem-solving.

- Additionally, these technologies can **enable better data management** and **citizen engagement**, ultimately leading to **more responsive and citizen-centric services**. Through the adoption of emerging technologies, state agencies can drive innovation, streamline operations and **improve the overall quality of public services**.

Emerging Technologies Service Catalog

GenAI Chatbots and Virtual Agents

Generative AI (GenAI) chatbot – ready to deploy

GenAI chatbots, like those listed below, are transforming the way businesses interact with their customers and manage internal processes. These advanced chatbots are intuitive and efficient, using natural language processing to understand and respond to user inquiries in a conversational manner.

Vendor	Tool / Technology	Tech Stack	Estimated Cost Model	Time to Implementation	Procurement Vehicle	User Experience
Google	GenAI chatbot	Agent Builder	Request info from Data Services team	2-4 weeks (OMES)	IA SOW (OMES effort)	Enterprise search
AWS	GenAI chatbot	Lex	Request info from Data Services team	2-4 weeks (OMES)	IA SOW (OMES effort)	Enterprise search
Microsoft	Sharepoint chatbot	OpenAI - GPT 4 Copilot Studio	Request info from Data Services team	2-4 weeks (OMES)	IA SOW (OMES effort)	SharePoint search used for documents w/ complex questions

Benefits include:

- Customer support.
- Information retrieval.
- Task automation.
- Personalized interactions.
- Data collection and analysis.

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Generative AI (GenAI) virtual agents – ready to deploy

GenAI virtual agents, like those listed below, are transforming the way businesses interact with their customers and manage internal processes. These advanced agents are intuitive and efficient, using natural language processing to understand and respond to user inquiries in a conversational manner.

Vendor	Tool / Technology	Tech Stack	Estimated Cost Model	Time to Implementation	Procurement Vehicle	User Experience
AWS	GenAI chatbot and virtual agent	Lex / Amazon Connect	Request info from Data Services team	8-12 weeks (vendor)	SW1050	Enterprise search and integration with call center
Google	GenAI chatbot and virtual agent	CCAI	Request info from Data Services team	8-12 weeks (vendor)	SW1050	Enterprise Search and integration with call center

Benefits include:

- Customer support.
- Information retrieval.
- Task automation.
- Personalized interactions.
- Data collection and analysis.

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Case study: Leveraging Google Agent Builder for a scalable enterprise search

Problem statement: A chatbot solution to help users navigate state websites at scale.

Project overview

OMES Data Services is revolutionizing state agency operations with Vertex AI's Agent Builder. Agent Builder not only enhances service capabilities but also offers unparalleled scalability, enabling seamless integration across multiple state agencies. This scalability allows agencies to implement robust enterprise search functionality, making it easier for agencies to access and share critical information.

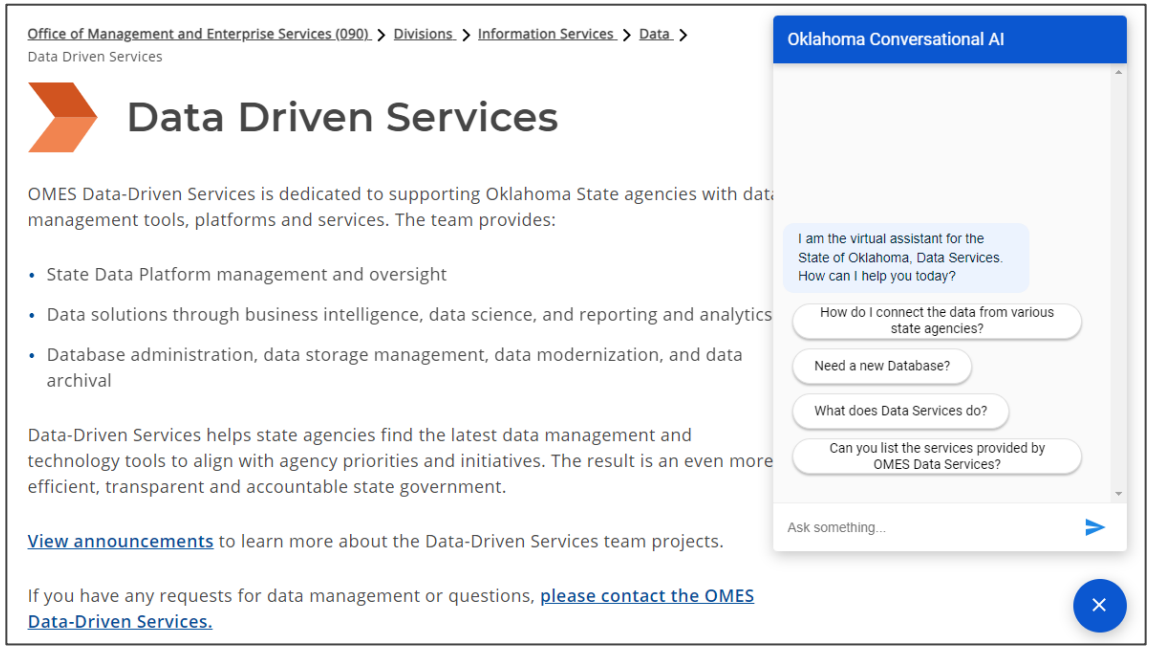
Tools and integrations

Vertex AI

Timeline to deploy

2-3 weeks from kickoff.

Data Services solution



Link to chatbot

OMES Data Services page

Virtual Agents

Virtual agent – ready to deploy

Virtual agents, also known as intelligent virtual assistants, are AI-driven programs designed to interact with users in a natural, conversational manner. They leverage advanced technologies, such as natural language processing, machine learning and artificial intelligence to understand and respond to user queries effectively.

Vendor	Tool / Technology	Tech Stack	Cost Model	Time to Implementation	Procurement Vehicle	User Experience
AWS	Virtual agent	Amazon Q	Request info from Data Services team	2-4 weeks	IA SOW (OMES effort)	Virtual agent searchability
Microsoft	Virtual agent	PubSec Information Assistant	Request info from Data Services team	TBD	IA SOW (OMES effort)	Virtual agent searchability

Benefits include:

- 24/7 availability.
- Efficient.
- Scalable.
- Consistent.
- Cost effective.

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Case study: Executive order virtual agent

Problem statement: Create an intuitive, executive-facing tool to easily understand and search Oklahoma EOs.

Project overview

OMES Executive Leadership recognized the need for a more efficient way to access executive orders. They engaged OMES Data Services to develop a tool that leverages emerging technologies, including GenAI, to meet this need. The goal was to create a ChatGPT-like experience that provides a state executive-friendly, conversational interface.

This tool enhances accessibility, efficiency and informed decision-making.

Tools and integrations

Azure AI Search

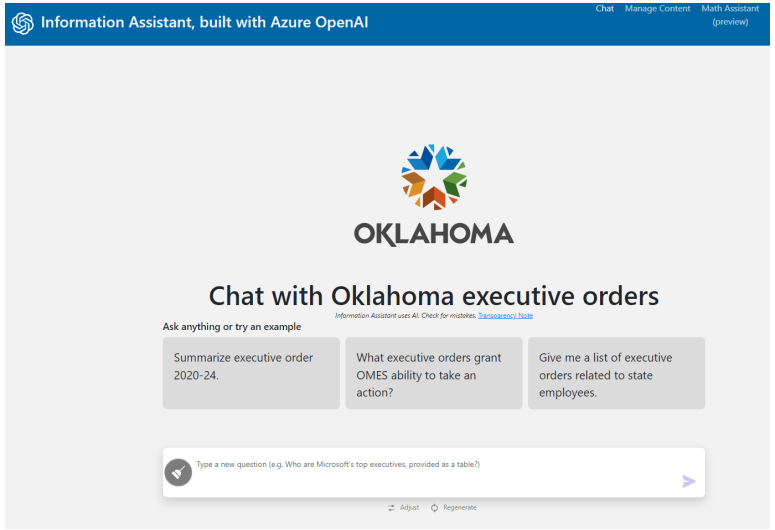
Azure OpenAI

Azure OpenAI

Timeline to deploy

2-4 weeks from kickoff.

Data Services solution



Tool solution

OMES Data Services has developed a sophisticated virtual agent using Microsoft Power Virtual Agents. This tool is designed to help executives effortlessly search, access and comprehend executive orders issued by the State of Oklahoma, enhancing accessibility, efficiency and decision-making.

This tool uses natural language processing, search functionality, includes a user-friendly interface and boasts integration with the Microsoft ecosystem

Vision and Document AI

Vision AI and Document AI – ready to deploy

This is a revolutionary technology to manage and access visual and textual information through advanced Vision AI and Document AI technologies, including optical character recognition (OCR). Vision AI can assist with image recognition, OCR integration, data governance (tagging and metadata), and facial recognition. Document AI helps with automated document processing; enhanced search and retrieval; real-time analysis and digital archiving.

Vendor	Tool / Technology	Tech Stack	Cost Model	Time to Implementation	Procurement Vehicle	User Experience
Google	Vision AI	Cloud Vision API	Request info from Data Services team	8-12 weeks POC	IA SOW (OMES) SW1050 (vendor)	Photo/video data extraction
Google	Document AI	Cloud Vision API	Request info from Data Services team	8-12 weeks POC	IA SOW (OMES) SW1050 (vendor)	Document data extraction
AWS	Textract	ML, AWS Services	Request info from Data Services team	8-12 weeks POC	IA SOW (OMES) SW1050 (vendor)	Document data extraction

Vision AI benefits include:

- Image recognition.
- OCR integration.
- Real-time image analysis.
- Automated tagging and metadata.
- Facial recognition.

Document AI benefits include:

- Efficiency.
- Productive document search.
- Better decision-making.
- Accessibility.

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Case Study: ODOT leverages Vision AI for image recognition

Problem statement: Drive efficiencies with Vision AI technology for manual processes.

Project overview

ODOT leadership communicated a business opportunity to automate the manual process of reviewing images YOY evaluating deterioration in pavement markings, missing or damaged signs, guardrails, light poles and rumble strips.

They engaged OMES Data Services to create a solution that not only allowed them to automate this manual process but also increase response time to critical road issues.

Tools and integrations

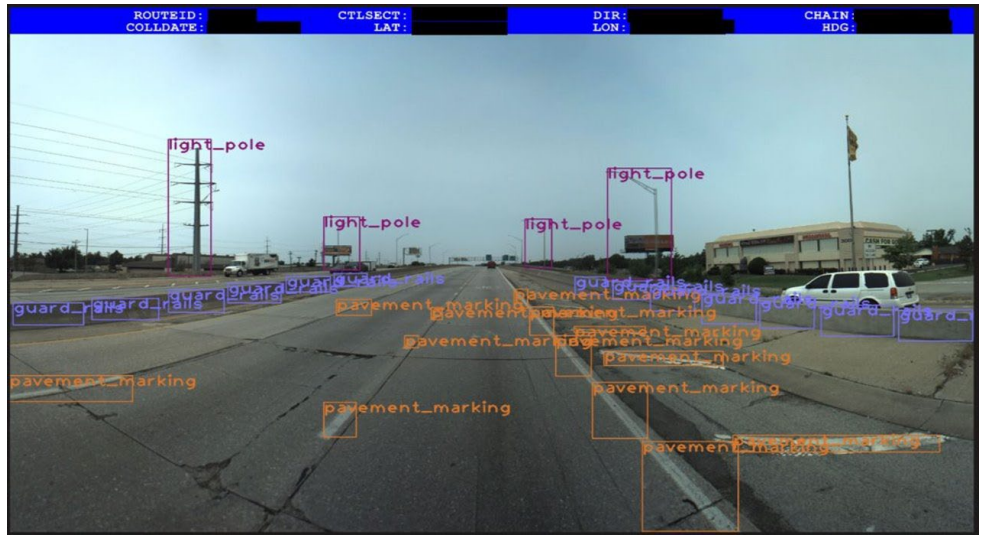
Cloud Vision

Vertex AI

Timeline to deploy

8-12 weeks from kickoff.

Data Services solution



Tool solution

OMES Data Services developed a robust image recognition model focused on precision and reliability. This tool utilized Optical Character Recognition (OCR) to extract latitude and longitude as well as a systematic geospatial mapping to visually represent YOY change.

Case Study: ODOT leverages Document AI for content management

Problem statement: Drive efficiencies and cost savings with Document AI for manual processes.

Project overview

ODOT and OTA have a vast library of documents describing warranty deeds and easements. At present, when information is needed, a technician needs to look up the document manually in their document repository. However, to increase public transparency and improve efficiency, this archive needs text extracted with Optical Character Recognition (OCR) and for the descriptions of easements turned into a GIS feature class. This will enable a public map and dashboard where people can examine the record.

Tools and integrations

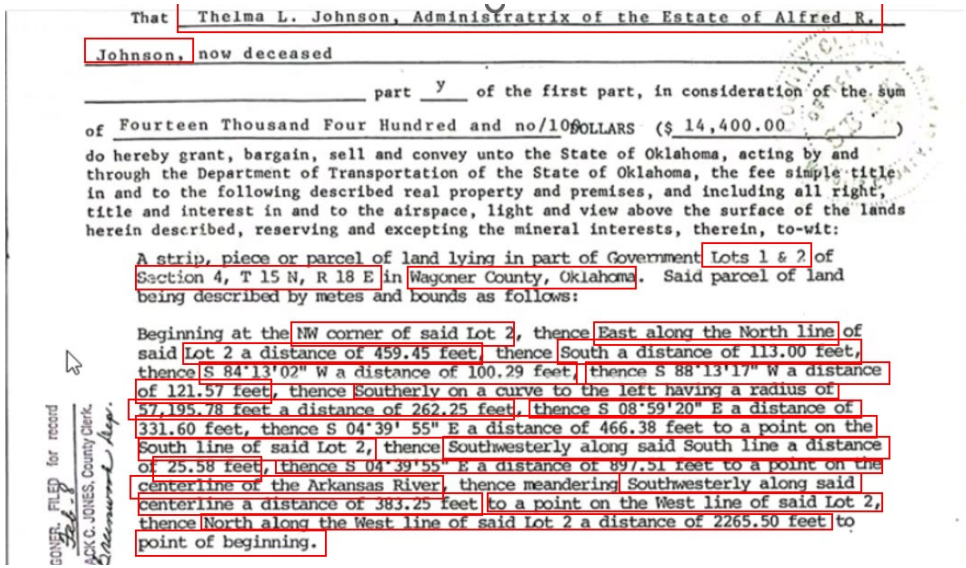
Document AI

Vertex AI

Timeline to deploy

4-6 weeks from kickoff.

Data Services solution



That Thelma L. Johnson, Administratrix of the Estate of Alfred R. Johnson, now deceased

part y of the first part, in consideration of the sum of Fourteen Thousand Four Hundred and no/100 DOLLARS ($ 14,400.00)

do hereby grant, bargain, sell and convey unto the State of Oklahoma, acting by and through the Department of Transportation of the State of Oklahoma, the fee simple title in and to the following described real property and premises, and including all right, title and interest in and to the airspace, light and view above the surface of the lands herein described, reserving and excepting the mineral interests, therein, to-wit:

A strip, piece or parcel of land lying in part of Government Lots 1 & 2 of Section 4, T 15 N, R 18 E in Wagoner County, Oklahoma. Said parcel of land being described by metes and bounds as follows:

Beginning at the NW corner of said Lot 2, thence East along the North line of said Lot 2 a distance of 459.45 feet, thence South a distance of 113.00 feet, thence S 84°13'02" W a distance of 100.29 feet, thence S 88°13'17" W a distance of 121.57 feet, thence Southerly on a curve to the left having a radius of 57,195.78 feet a distance of 262.25 feet, thence S 08°59'20" E a distance of 331.60 feet, thence S 04°39' 55" E a distance of 466.38 feet to a point on the South line of said Lot 2, thence Southwesterly along said South line a distance of 25.58 feet, thence S 04°39'55" E a distance of 897.51 feet to a point on the centerline of the Arkansas River, thence meandering Southwesterly along said centerline a distance of 383.25 feet to a point on the West line of said Lot 2, thence North along the West line of said Lot 2 a distance of 2265.50 feet to point of beginning.

GOVER. FILED for record
ADK C. JONES, County Clerk.

Tool solution

OMES Data Services performed Optical Character Recognition (OCR) to extract text from the document archive, performed text analytics against the extract to generate metadata, and extracted the easements descriptions that was used to power a public map and dashboard for users to view the records.

Code Assistance

Code assistance – ready to deploy

Code assistance tools, such as GitHub Copilot and Gemini Code Assist, leverage AI and machine learning to enhance the coding experience, boosting productivity and ensuring higher code quality and standardization. These tools provide real-time code suggestions and completions, helping developers write code faster and with fewer errors. Additionally, they enable seamless collaboration by ensuring consistency across the codebase, making it easier for teams to work together effectively.

Vendor	Tool / Technology	Tech Stack	Cost Model	Time to Implementation	Procurement Vehicle	User Experience
Github	Copilot	OpenAI Codex, Azure, OpenAI API	Request info from Data Services team	2 weeks	TBD	Efficient and intuitive coding
Google	Gemini Code Assist	Visual Studio Code	Request info from Data Services team	2 weeks	TBD	Efficient and intuitive coding

Benefits include:
- Faster development cycles.
- Faster onboarding.
- Error reduction.
- Best practices.
- Consistent code.
- In-context learning.

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Getting Started with Emerging Technologies

Ready to get started with emerging technologies?

Please reach out to the Data Services team to get started with emerging technologies or submit a project initiation request.

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Project initiation request form

Thank You