California
DEPARTMENT OF TECHNOLOGY
STRATEGY INNOVATION DELIVERY

CALIFORNIA
GENERATIVE ARTIFICIAL INTELLIGENCE
SANDBOX PROJECT

CATEGORY:
State CIO Special Recognition

PROJECT DATES:
September 2023 - March 2024

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EXECUTIVE SUMMARY

California has long been a global leader in technological innovation. As technologies continue to grow and develop, the Golden State has established itself as the world leader in generative artificial intelligence (GenAI) innovation. It is home to 35 of the world's top 50 AI companies and a quarter of all AI patents, conference papers, and companies globally. In December 2023, California Governor Gavin Newsom took a bold step and issued a first-in-the-nation executive order to study the development, use, and risks of artificial intelligence technology throughout the state and to develop a deliberate and responsible process for evaluation and deployment of AI within state government. The Gen AI Executive Order is a comprehensive approach that considers technical innovation, ethical use and impacts on the state workforce. It establishes the California Department of Technology (CDT) as the lead state entity for the technical evaluation of GenAI. To facilitate this process, CDT developed a cloud-based sandbox capability to safely assess proof of concept (POC) GenAI technologies.

In May 2024, California entered into agreements with five vendors to test, iterate and evaluate GenAI through POCs. The selected vendors will utilize GenAI technologies developed by OpenAI, Anthropic, Google, Meta, and others to develop these solutions utilizing Amazon (AWS) Cloud, Google Cloud, Microsoft Azure and ServiceNow (SaaS) cloud environments. These use cases are:

Department of Transportation

- **Traffic Management Insights (TMI).** Process and interpret complex data to improve traffic pattern analysis, address bottlenecks, and enhance overall traffic management.
- **Vulnerable Roadway User.** Investigate near misses of injuries/fatalities to identify risky areas and monitor interventions designed to increase safety of vulnerable road users.

California Health and Human Services

- **Language Access.** Ensure that Californians with limited English proficiency have timely access to information about public benefits and can navigate public programs with ease and without confusion.
- **Healthcare Facility Inspection.** Leverage tools to expeditiously document the facts or findings seen by a surveyor during health care facility inspections to develop a concrete set of outcomes or citations that match state and federal requirements.

California Department of Tax and Fee Administration

- **Team Productivity.** Improve call center operations to reduce call times, improve customer service, and increase taxpayer compliance.

IDEA

In alignment with the GenAI Executive Order, CDT needed to create an environment for state entities to test GenAI solutions safely, securely, and with confidence so they could use the results to make informed decisions on GenAI procurements. The solution was to design sandboxes that could accommodate the needs of any state entity and pay each proof-of-concept vendor $1 to test in a sandbox, which provides a safe environment, utilizing the following principles.

- **Vendor agnostic, cloud-based environments:** CDT wanted to provide flexible offerings to state entities to test GenAI.
- **Isolated and secure environments:** To protect State assets, employees, and citizens, the sandboxes will be isolated from state networks. Each sandbox will be its own standalone instance and therefore major faults in the sandbox cannot impact state resources or people.
- **Economical implementation:** Due to the potential cost of testing GenAI, CDT employed an architecture that allowed vendors to maintain the resource-intensive GenAI processes, while the state maintains the data and business logic within the sandbox.
- **Data Management:** To mitigate risks to privacy or misuse of sensitive data. The sandboxes should only contain and process publicly available, non-sensitive information.

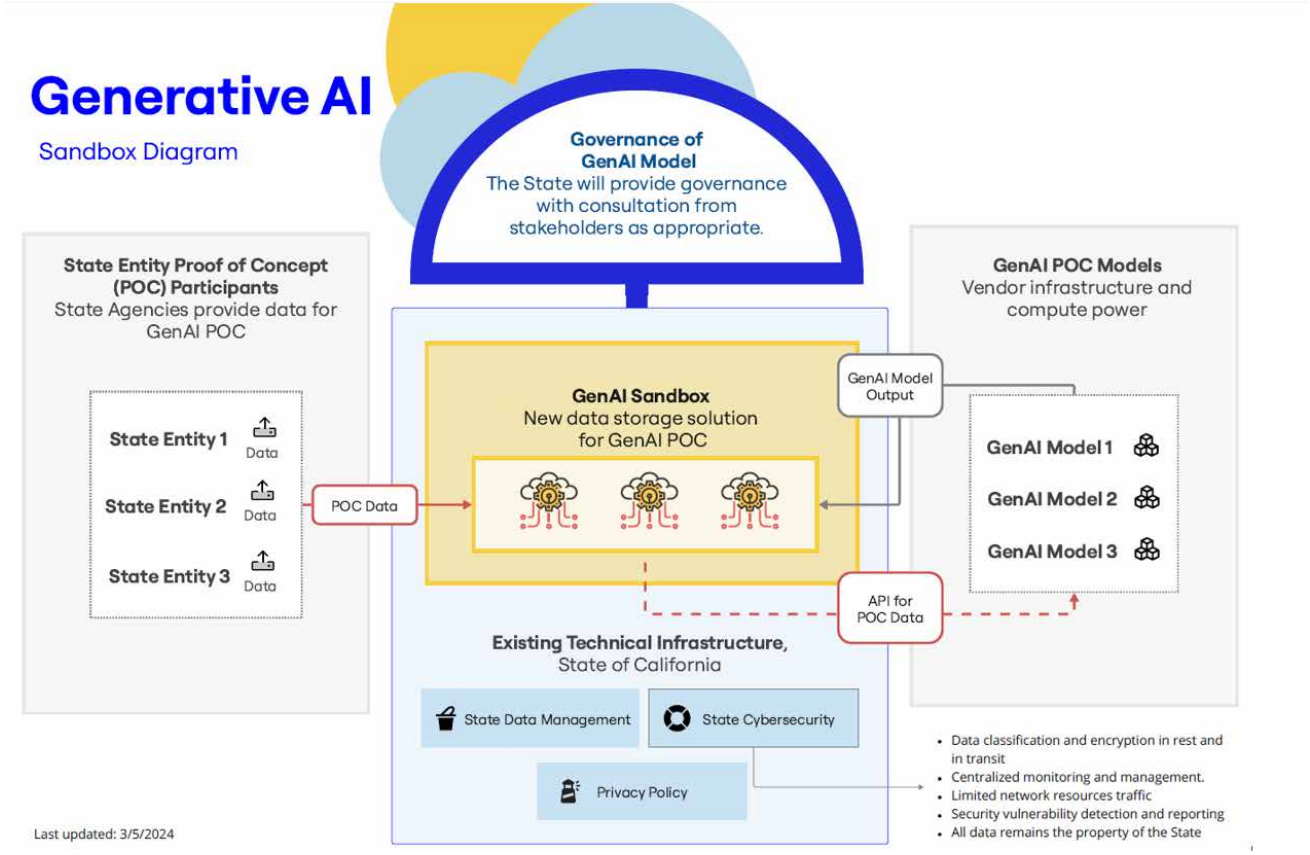


Figure 1 California GenAI Sandbox overview.

The goal is to create an environment where state entities and vendors can explore the widest available options to test their innovative ideas for GenAI solutions. Additionally, the sandboxes can assist agencies in assessing user experience, the impact of solutions on Diversity, Equity, and Inclusion (DEI), and their effects on the government workforce. California now has a repeatable and sustainable approach to quickly evaluate GenAI technologies with a streamlined path to procurement.

IMPLEMENTATION

The Governor's call for California to lead nationally and globally in the implementation and application of GenAI rallied the state to action. To meet the challenge, CDT established a dedicated team and processes to ensure a smooth introduction of GenAI into the state's infrastructure. As GenAI represents a groundbreaking technology, CDT found it necessary to build a cross-functional team tasked with designing, developing, and implementing the sandboxes.

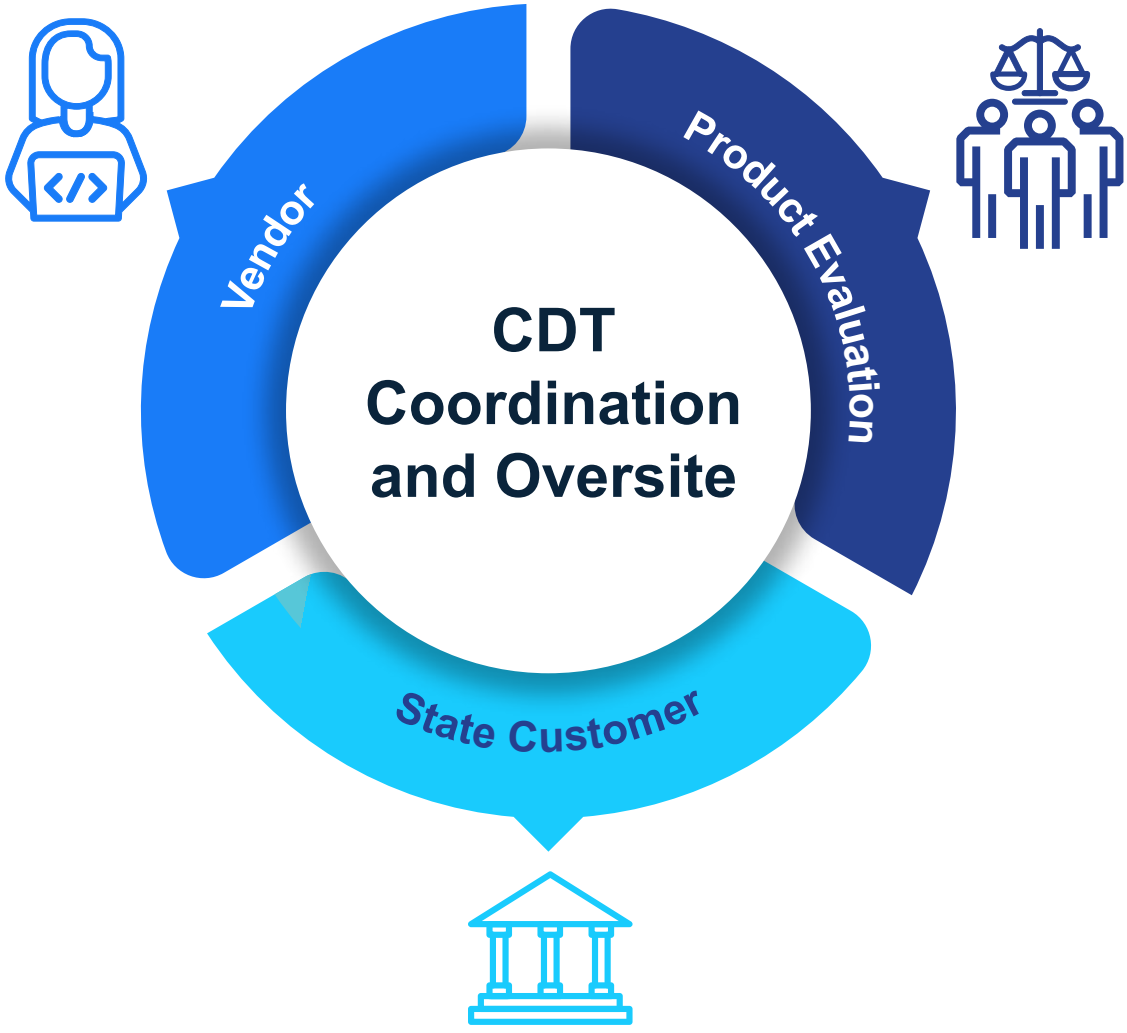


Figure 2 CDT coordinates the activities of the customer agency, the vendor and product management to evaluate GenAI solutions.

The Team

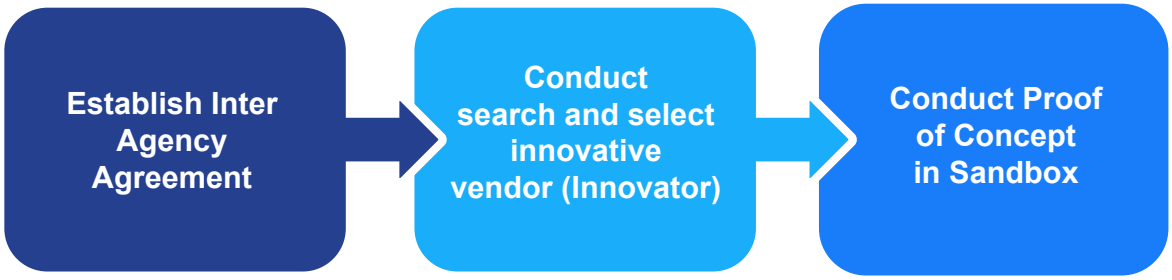
A cross-functional team from CDT's offices of Technology, Security, Data Services, and Enterprise Architecture came together to implement the sandbox environments. The Department appointed the State Chief Enterprise Architect as the executive to oversee the project, and to partner with its sister organization, the California Office of Data Innovation (ODI). ODI provides contemporary product management to facilitate engagement across all parties and coordinates the non-technical evaluations of GenAI solutions tested in sandboxes. Some of the evaluations include workforce impacts and DEI.

While CDT serves as the project lead, it acknowledges a need to collaborate with others on this leading-edge technology, realizing that working together beats working alone, it formed partnerships with other government organizations and academic institutions, including the White House, NASA, the City of San Jose, and the University of California Berkley.

Figure 3 The CDT Sandbox Team

The Process

The three major processes involved with the GenAI sandboxes are detailed in the following diagram.



Establish Inter Agency Agreement

While CDT "owns" the sandboxes, each state agency is responsible for evaluating their own GenAI needs. CDT created an Interagency Agreement (IAA) that outlines the services the sandbox will provide. The IAA provides an established template for CDT to offer GenAI sandboxes as a service to state entities. The IAAs also outline service-level agreements and cost limits. This helps to set expectations for the state entities evaluating GenAI. CDT has capped the cost for each sandbox at $500,000 dollars, estimating this cost to provide ample funding for data and processing power, but conservative enough to not make evaluation cost prohibitive.

Conduct Search and Select Innovative Vendor

Once a service-level agreement is in place, the state puts a call out to innovators to propose ideas for proofs of concept through its Request for Innovative Ideas (RFI2). The RFI2 is a competitive procurement approach that seeks to engage innovators, entrepreneurs, scientists, vendors, and experts to collaborate on designing leading-edge solutions. Instead of asking for a particular product, the state identifies the problem and seeks solutions that will yield comprehensive and effective results. The goal is to capitalize on California's innovative economy, better inform the state's investment of taxpayer dollars, and identify solutions in the best interest of the people of California.

The result of the RFI2 process is a pool of innovators from which the state entity can choose to conduct a proof of concept. The entity can select any number of innovators, and CDT will create a sandbox for each one.

Conduct Proof of Concept in Sandbox

After the state entity selects a vendor, CDT conducts a kickoff with the entity and the vendor- and obtains the technical requirements needed to build the sandbox. Once the sandbox is established, the state entity can upload test data, and the vendor is able to set up its proof of concept. CDT's GenAI Sandbox team monitors performance and provides a customer concierge service for the state entity and innovator to ensure that the sandbox meets their needs.

Vendors are required to load all prompt, response, and intermediate data into the sandbox for evaluation by CDT and its partners, such as ODI.

IMPACT

GenAI is one of the fastest growing digital technologies. Through Governor Newsom's foresight, California is now a leader in the large-scale implementation of GenAI technologies. The GenAI Sandbox Project provides California with a safe and secure way to evaluate this new technology. All state entities, regardless of size or technical ability, have access to world-class innovators, in a transparent environment. The sandboxes use publicly available, non-sensitive data, which will allow California to share its findings with the public, academia, and other interested parties.

The sandbox capability that we have created goes beyond evaluating the technical aspects of GenAI. California now has a framework to assess and address risks to the employees and citizens of the State. This framework provides state senior IT leaders with a streamlined pathway to adopting GenAI while mitigating adverse impacts to diversity, equity, inclusion, accessibility, and the state workforce.

This innovative approach to human-centered product management provides guidance for GenAI adoption through direct observation into the proofs of concept within the sandbox environments. This will provide the state with best practices to maximize employee participation with the use of GenAI to maintain the human in the loop.

To date, California is in the process of conducting 10 proofs of concept at an estimated cost of $5 million. Due to the architectural approach that separates the GenAI processing from the sandbox, it is estimated that the state has saved over $3 million in processing costs.

California will continue to be a world leader in advancing the innovative use of GenAI. CDT is looking to expand its testing capabilities, which will assist the state in creating standards for GenAI procurement and use. One goal is to make CDT's evaluation capability a center of excellence where state and local governments that may lack the resources for extensive evaluation can have the opportunity to test GenAI technology before investing.

CDT's GenAI sandbox capability has become an integral component of the state's GenAI enterprise.