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Accelerating AI adoption for improved citizen services and satisfaction

City of Stockton, California | State & Local Government

Business opportunity

The City of Stockton serves more than 320,000 citizens in California's Central Valley. The City had collected years of stored data they wanted to leverage using AI to improve citizen services and satisfaction. Its data management team determined that Public Works data was ideal for delivering an initial solution. To bring its vision to life and create an app with a smart dashboard for citizens, the team partnered with Kyndryl to help operationalize its data.

To create a Minimum Viable Product (MVP) to address the first identified use case, the joint team chose to focus on creating a machine-learning model for forecasting the time it would take to repair reported potholes, following initial citizen complaints.

For city residents and workers who travel the same route frequently, it's frustrating to navigate around potholes and not have visibility into repair schedules. The City saw this MVP as an opportunity to ease these frustrations and generate taxpayer value while also creating efficiencies for roadwork crews.

Technical challenge

The use case was jointly identified by the City and Kyndryl because through discussions, Kyndryl learned that Stockton had gathered years of data on road damage and repairs, including GIS location data, construction dates, pavement materials and dimensions.

The City also had historical data on street conditions, workorder data, including repair start and completion dates. They also had access to industry standard information such as the pavement condition index and traffic index. This data was effectively invisible to citizens and underutilized by the City itself: there were no forecasting capabilities in place and existing web-based guidance was static in nature.

The vision was to create a dynamic, publicly accessible dashboard app, that would aggregate the selected public works data sets and use AI to continuously predict repair timelines for newly reported potholes. This would require significant data cleansing, the development and training of AI and machine learning models, and the creation, testing and validation of automation pipelines.

Our solution

Together, the City of Stockton and Kyndryl created a citizen-focused online dashboard that provides accurate forecasts for pothole repairs and helps road workers plan more efficiently.

Kyndryl Consult helped define a minimum viable product (MVP), secured funding from alliance partner, Microsoft, and co-created the solution in just 30 days. This included building:

- A machine learning regression model to predict pavement conditions
- A binary data classifier to determine 1-day job probability
- A forecast model to estimate repair timelines
- Pipelines in Azure Databricks providing daily updates to citizen-facing dashboards on Microsoft Power BI

The City plans to extend the dashboard to include information on traffic and public safety.

"Rather than letting the technology drive the process, our method starts with understanding our customers' unique business needs and constraints as well as their industry context. Then we determine how to leverage their data assets and appropriate technologies to provide a business-outcomes focus that creates more value from their data."

- Daren Child, Kyndryl Consult Partner

The power of partnership

For the MVP, which is designed to run on Microsoft Azure, Kyndryl drew on its strategic alliance with Microsoft to access vital funding on the City's behalf.

The entire solution was designed to run on the City's existing Azure tenant and uses:

- Azure Databricks open data lakehouse
  - Databricks Autoloader
  - Databricks MLflow
  - Databricks Unity Catalog
- Microsoft Power BI on Azure
- Azure Data Lake Storage Gen2 configured with a medallion data transformation architecture.

In addition to Microsoft, Kyndryl also now has a strategic alliance with Databricks.

What progress looks like

Kyndryl Consult's technical leadership and cloud expertise helped the City of Stockton create its first-ever public AI tool in under 30 days. Delivering real-time engagement and visibility into estimated repair times, the Kyndryl solution helps the City provide value to citizens and increases the credibility of the administration.

- Launched first public AI tool in city history
- Gives citizens useful information through a user-friendly dashboard
- Provides city workers with more efficient planning insights with which to speed time to repair
- Leverages the City's existing Open Data Portal for cost-effectiveness
- Boosts confidence in the City's leadership
- Established framework for future smart city data products

"Working with Kyndryl allowed us to get a modern, predictive tool into citizens' hands in weeks. This first AI project allowed us to show what's possible when data is used for the public good and we hope to repeat similar solutions across other citizen service areas."

- Harikishan Perugu, Director, Office of Performance and Data Analytics, City of Stockton

About the City of Stockton

The City of Stockton is a local government body in the United States serving more than 320,000 citizens in California's Central Valley. The administration provides essential services including public safety, transportation infrastructure and public works.

Meet the team

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