

User name: Transport for London

Project name: The Elizabeth Line

Location: London, England, United Kingdom

Background:

- Fully opened in May 2023, the Elizabeth Line is the largest addition to London's public transport network since the Victoria Line in 1968.
- Operating up to 24 trains per hour with the capacity for 1,500 passengers per train, the line has transformed how passengers use public transport within London.
- Operator Transport for London wanted to understand future demand patterns to keep the line moving for decades to come.

Challenges:

- Scale and complexity of the project made spreadsheet-based models unusable.
- Ridership continues to increase, reaching 210 million passengers annually by 2023.

Solution:

- OpenPaths EMME and LEGION assisted with conceptual creation, route selection, and final delivery of an operational railway.
- LEGION tested iterative station designs over the project lifecycle.

Outcomes:

- By better connecting people and leveraging data, engineering and construction firms and owner-operators can achieve greater awareness and collaboration.
- Can now provide a complex crowd assignment in two hours, a reduction of 70% from previous model run times.
- Ensured the line has sufficient capacity until 2076, reducing road transportation by 10 million cars per year, a net reduction of 24.6 million grams of carbon emissions per day.

Quote: "Bentley's open products allowed the transformational impacts of the Elizabeth Line to be fully integrated into London's wider transport network. The accuracy and reliability of the forecasting tools in the form of OpenPaths EMME and LEGION have resulted in an over-200-million passenger forecast that is to within 11% of actuals and there is no unexpected surprises when it comes to at station and on train crowding levels. This has created a forecasting and appraisal benchmark in terms of speed and accuracy for future projects." – *David Warner, Principal Transport Modeler, Transport for London*

Image caption/courtesy 1: Transport for London used OpenPaths EMME and LEGION to ensure sufficient capacity until 2076. *Image courtesy of Transport for London.*

Image caption/courtesy 2: OpenPaths EMME and LEGION assisted with conceptual creation, route selection, and final delivery of an operational railway. *Image courtesy of Transport for London.*

Image caption/courtesy 3: LEGION tested iterative station designs over the project lifecycle. *Image courtesy of Transport for London.*

For more information, please contact Bentley PR at PR@news.bentley.com.

###