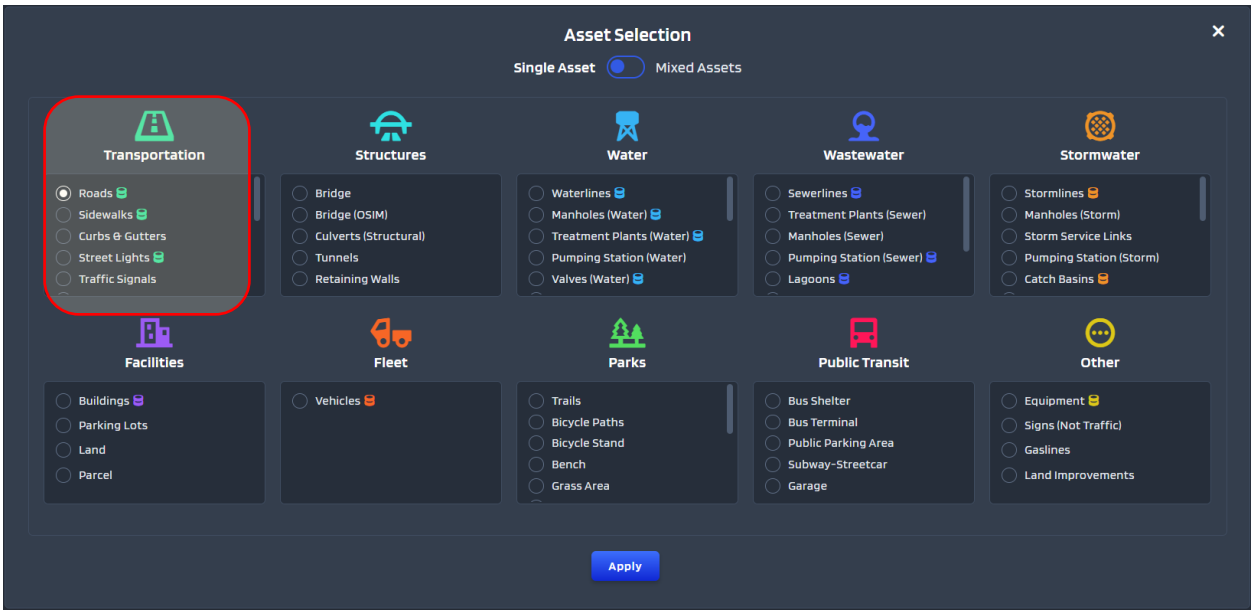
Decision Optimization Technology (DOT)™

DOT-Transportation

DOT

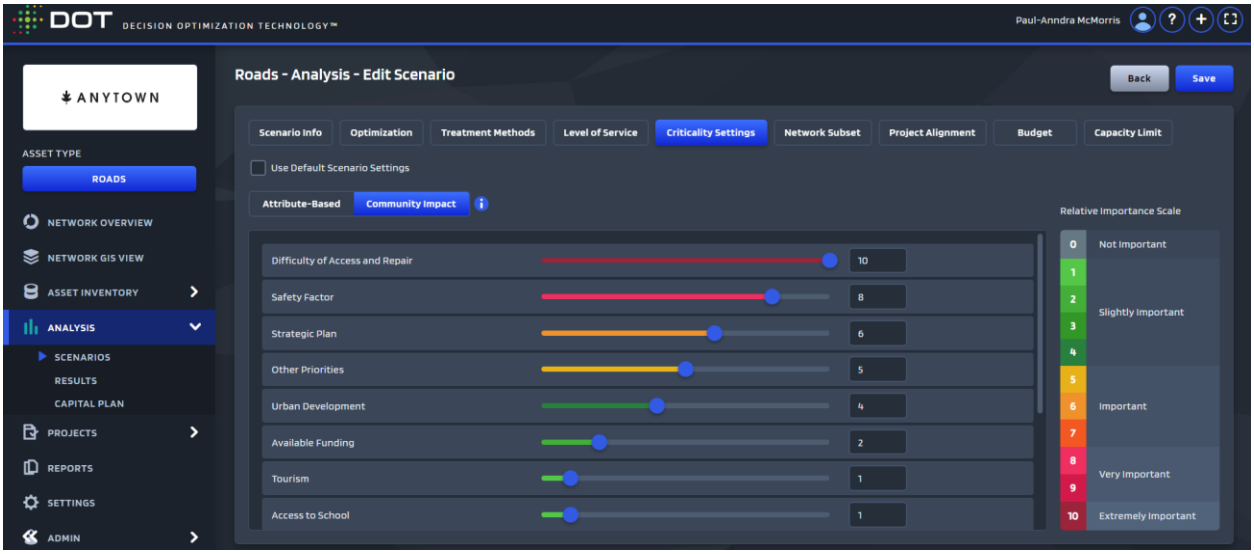
In the design of DOT™, the objective was to build an intuitive analytical tool that used sound engineering principles and performance models rather than following the conventional path of relying on simple straight-line degradation and limited treatment options. Extensive research and development occurred, and professional pavement engineers worked for 3 years to develop a multitude of road degradation models based on traffic characteristics, surface types, soil conditions, functional classes, etc. DOT™ also provides a comprehensive treatment database covering a variety of preventive maintenance, minor and major rehabilitation, and full reconstruction methods. Every treatment in DOT™ has been analyzed for its structural and functional impact, depending on its current condition, service life, and other attributes.

DOT™ Software Transportation Module

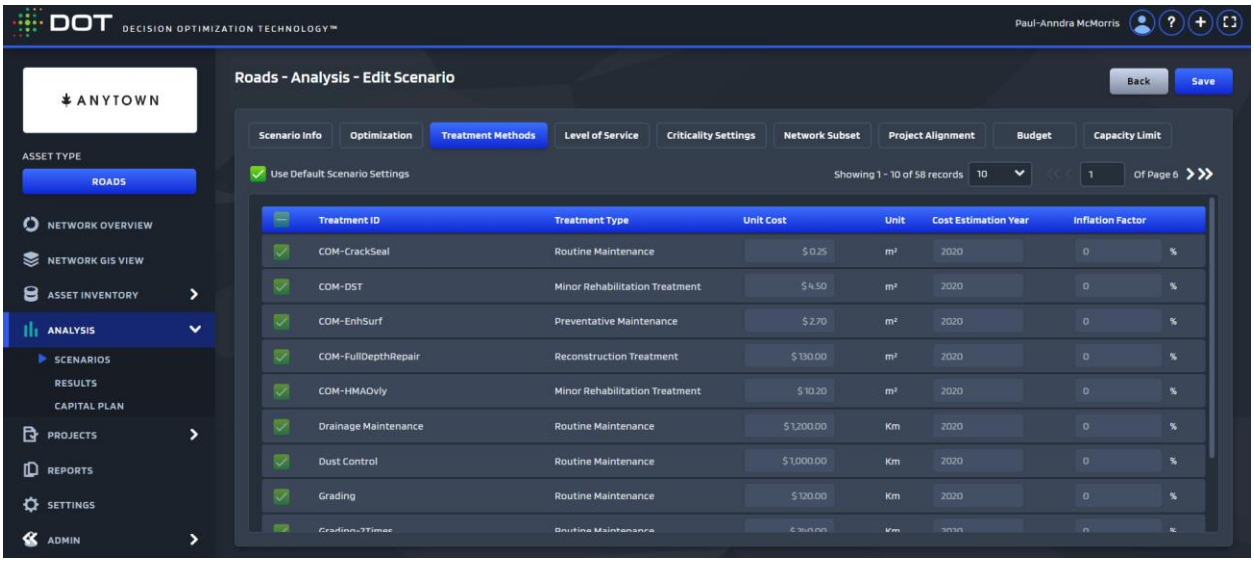


As part of our in-depth research with 171 municipal governments participating, a comprehensive survey was completed to determine which non-financial factors influenced road network capital planning and paved road maintenance practices. Through the survey, cities reported that only 20% or less of their road network is currently maintained based on what respondents perceive to be best practices for preventive maintenance. This contradiction between the benefits of preventive maintenance and the inadequate application of preventive treatments in practice, has deep roots. Municipal governments may be overly reactive to community requests or “Worst/First” recommendations. More comprehensive solutions in the marketplace likely use dated information when it comes to degradation curves, treatment lifecycle gains, or provide an optimized solution from dated strategies. Whatever the circumstance, tax dollars are being wasted without a focus on preventive maintenance. DOT™ software has the advanced features needed to minimize life cycle cost and recommend budget strategies to achieve a target performance level and reduce infrastructure backlogs.

Criticality settings with different socioeconomic factors



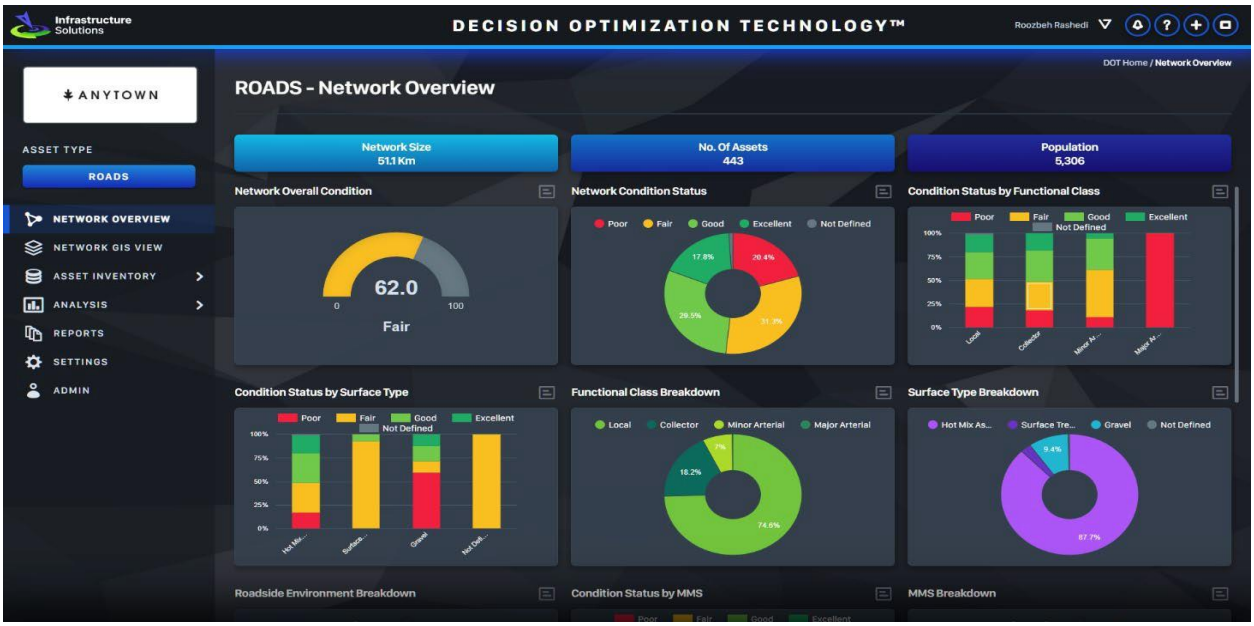
List of treatment selection options for scenario planning feature



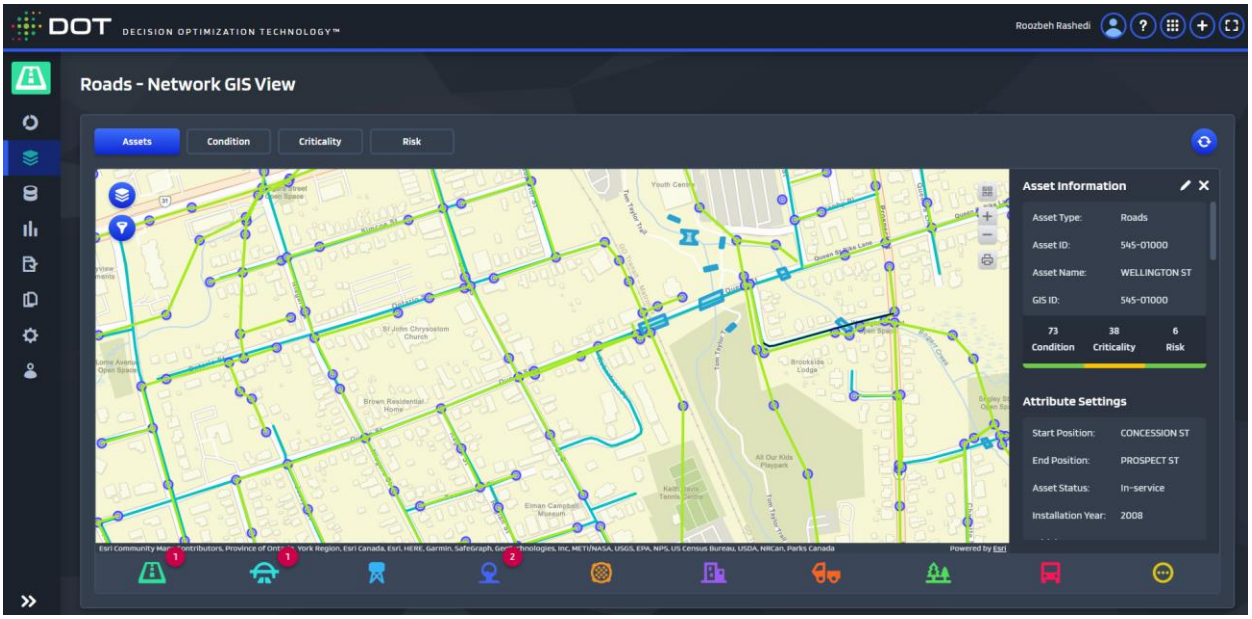
Presently built into the DOT™ software are over 60 different road maintenance, rehabilitation, and reconstruction treatments, each one with its own degradation curves and lifecycle impact, dependent on the condition of the road when the treatment is applied. Prior to running an analysis, DOT™ goes through a unique process that gathers and correlates current and historical condition data with the repair history for each asset. It then applies a host of degradation curves and a detailed matrix of treatment improvement models to automatically provide an accurate estimate on current asset condition.

Predictive modelling and service life set up for transportation assets

Transportation and Portfolio level customization dashboard visualization of KPI's and other attributes

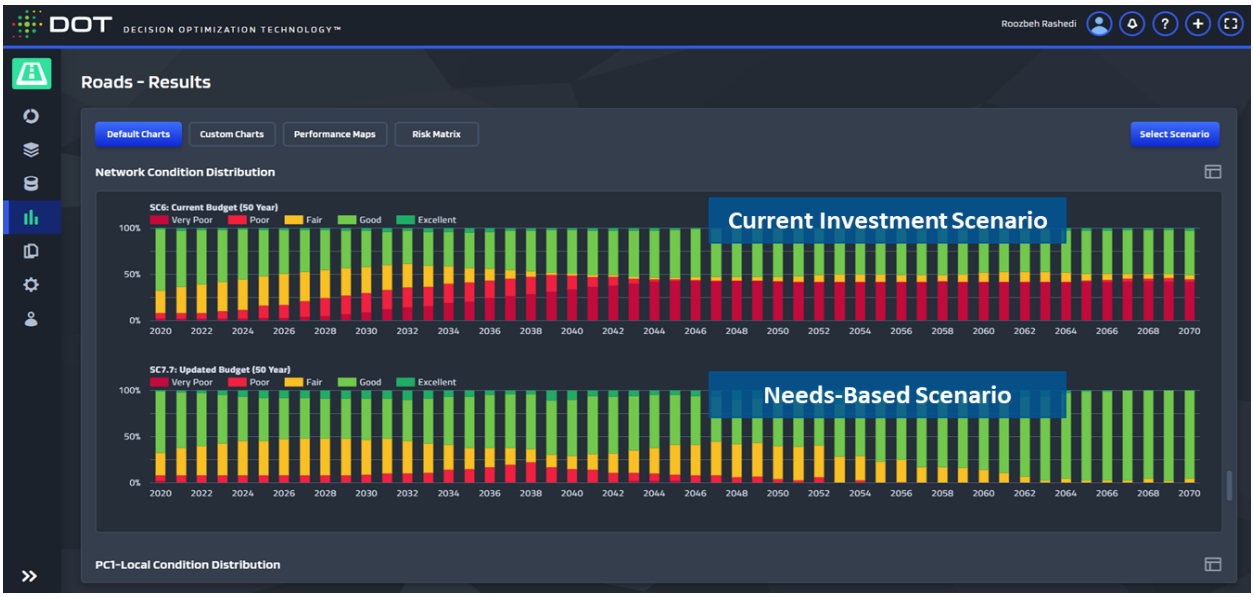


Map-centric transportation GIS location view and detailed condition data

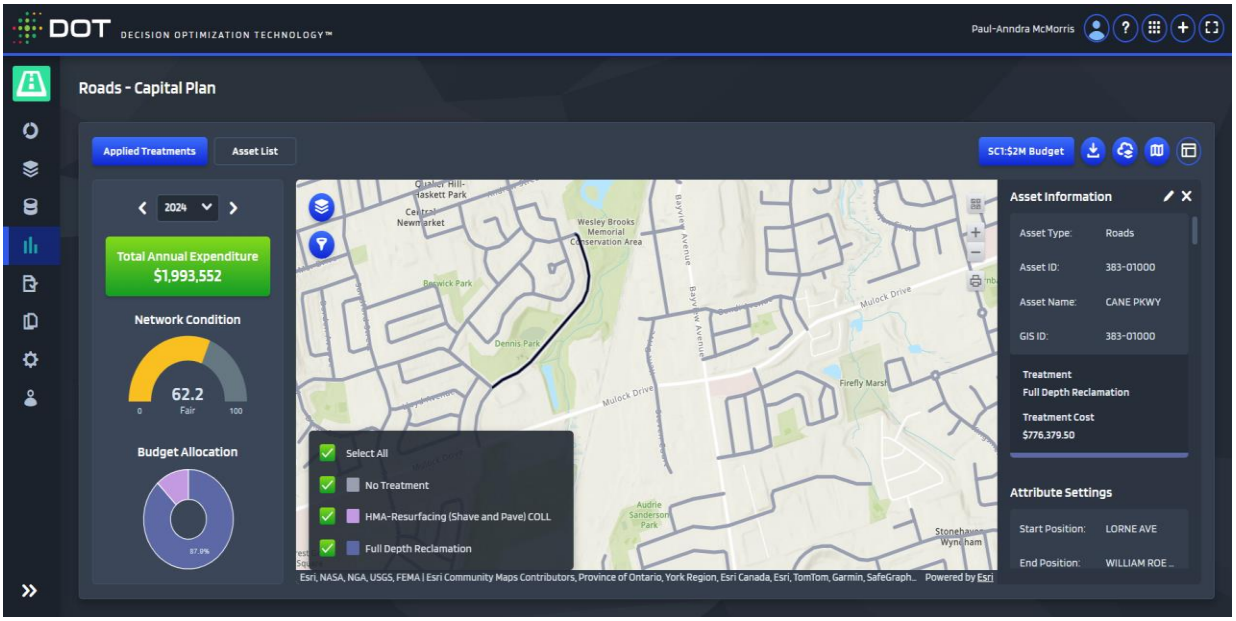


Through the DOT™ Transportation module, users have the the flexibility to investigate the impact of a variety of parameters such as optimization objectives, serviceability criteria, criticality and risk settings, treatment alternatives, alignment with other projects, and budgeting strategies for maintenance and capital expenditures. The software's analytical capabilities extend to predictive modeling and forecasting, utilizing historical, physical, operational, costs, and performance data to project future asset conditions and requirements vital for scheduling maintenance and future expenditure planning.

Scenario Results Charts



Detailed maintenance, repair, rehabilitation strategies across transportation portfolio



Project Planning Dashboard