Cross-Asset Optimization of Transportation Infrastructure Assets

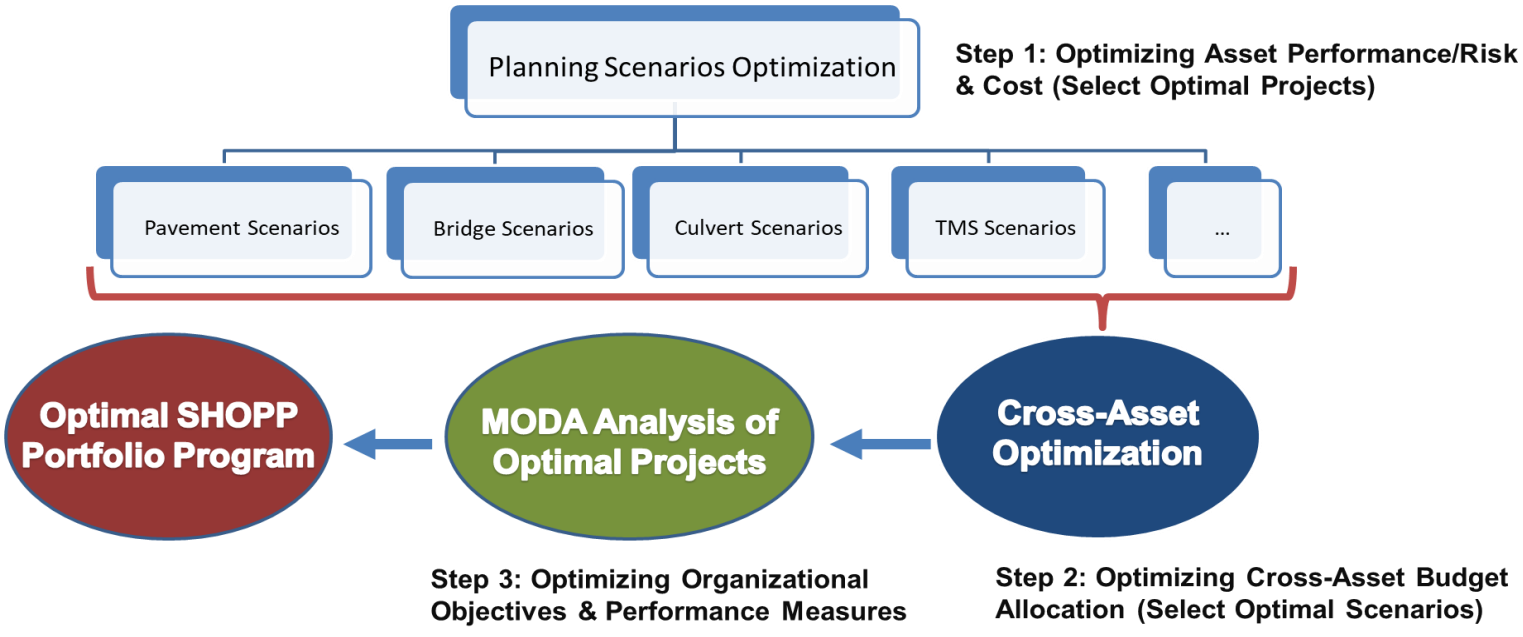
Summary:

Client: California Department of Transportation (Caltrans)
Project: Cross-Asset Optimization Model Development Services

IDS is working with Caltrans to develop and demonstrate an innovative cross-asset multi-objective optimization model to support project selection and prioritization of transportation infrastructure assets for the State Highway Operation and Protection Program (SHOPP). IDS Asset Optimizer™ software is being used to support the development and implementation of this model.

Challenge: Long-Range Cross-Asset Optimization of Large Asset Portfolio

Caltrans has been striving to optimize strategies and programs for preserving and improving its vast transportation network. As part of its business strategy to enhance transportation asset management, Caltrans needs to develop cross-asset optimization decision models to support the prioritization and optimal programming of improvement and replacement projects across all highway system assets. Cross-asset multi-objective optimization will optimize project selections and budget allocations while considering overall portfolio performance targets and risk levels. Analyzing assets at the portfolio level provides the opportunities to find investment and work efficiencies through coordination of program development, management, and project delivery across different asset classes. Bringing a broader perspective to the portfolio planning process over longer planning horizons can also maximize the value of investment and enable Caltrans to achieve overall performance targets by directing investments where most needed. However, developing cross-asset optimization models for a large transportation asset portfolio poses several modeling and computational challenges. This project is addressing these challenges to help Caltrans optimize strategies and programs for preserving and improving its transportation asset portfolio.



Portfolio-Level Approach for Cross-Asset Optimization and Program Development

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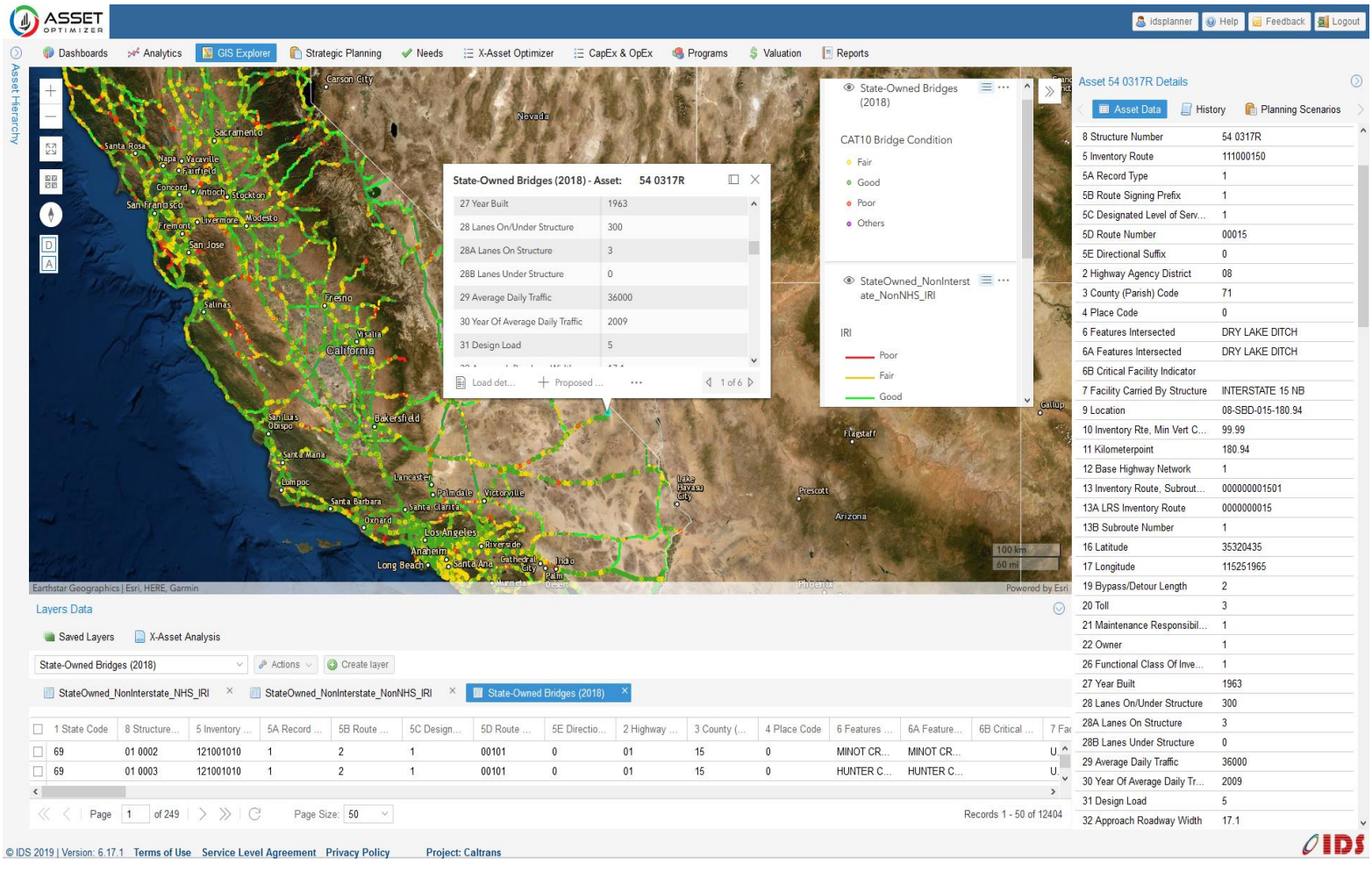
Cross-Asset Optimization of Transportation Infrastructure Assets

Solution: Asset Optimizer™

Asset Optimizer™ GIS-centered cloud-based software is being used to implement an innovative 3-step cross-asset risk-based multi-objective optimization approach to optimize budget allocation and generate long-range network-level project portfolio. The optimization model will support the development of 10-year optimal plans under a range of scenarios and investment strategies, with an initial focus on bridge and pavement assets. The optimization model extends Caltrans' current MODA methodology to enable efficient prioritization and optimal programming of projects across highway system assets. The model will help evaluate the impact of different funding levels on system performance and risk metrics and determine required funding levels to meet performance and risk targets. The cross-asset optimization model will help Caltrans make optimal programming and investment decisions to meet organizational objectives and performance metrics, and deliver optimized long-range programs for its entire transportation asset portfolio.



For More Information

To learn how Asset Optimizer™ can help your organization optimize long-range asset investment plans and make better decisions, contact us today at +1 (306) 790-1415 or visit www.ids.consulting

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