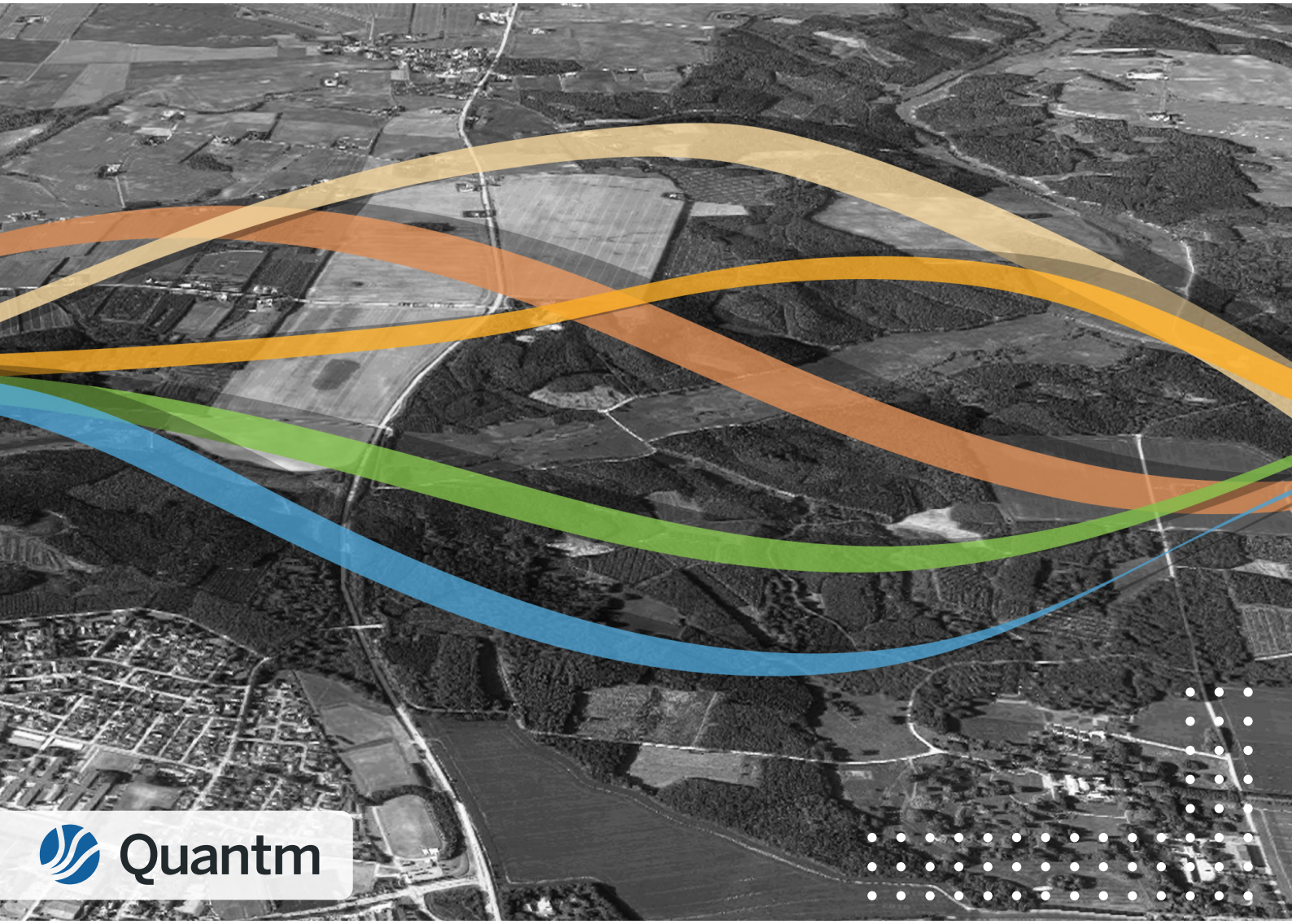
Alignment Planning

Conceptual Design - Route Optimization



Validate and compare feasible route options for your construction project

Trimble Quantm conceptual design software lets planners, engineers and cost estimators analyze, optimize and visualize all infrastructure design concepts — improving decision making and accelerating project approvals.

Automate the Process

Quantm explores and analyzes millions of alternative routes and returns a range of options to the planning team for consideration. Unlike the traditional manual process, Quantm uses algorithms combined with professional domain knowledge to evaluate all possible route alternatives. This modern approach, quickly visualizes all reasonable concepts and preliminary design options have been investigated as required by planning legislation and financial managers.

Reduce Planning Time

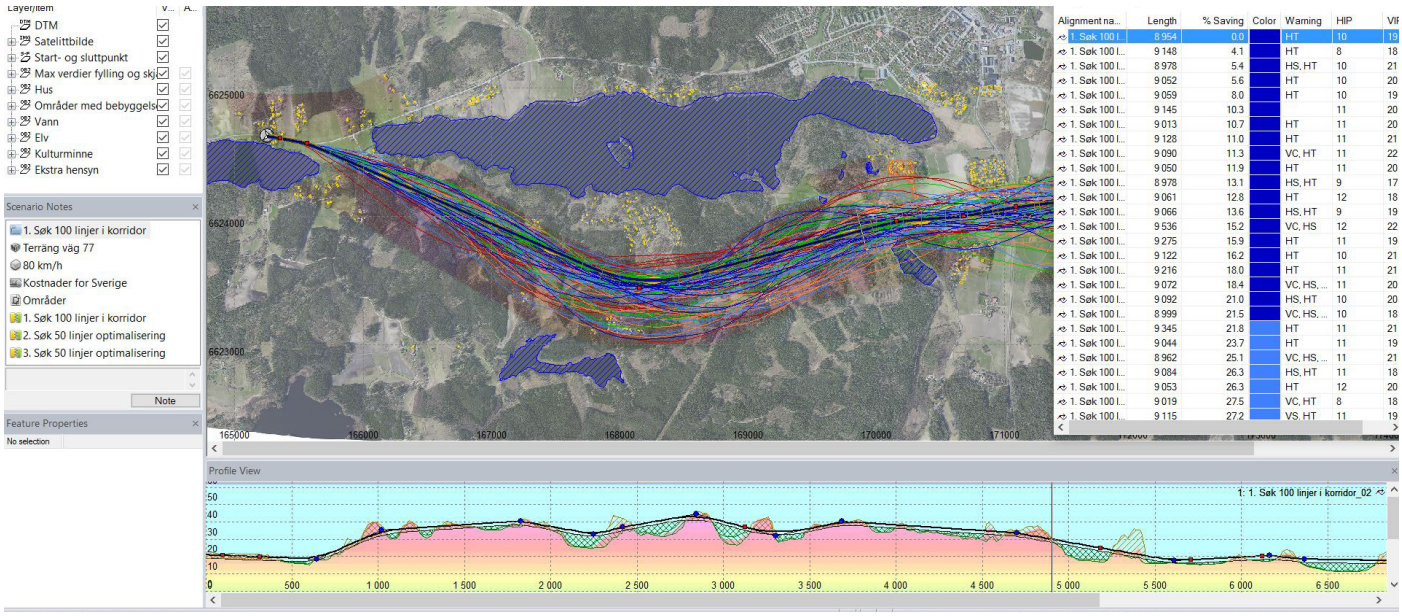
When planners are working on finding the optimal corridor or alignment, manual and subjective methods are usually applied. With Quantm everything is done in one single analysis. Planners can organize and analyze the existing situation, design standards, terrain, geological, and hydrological data, environmental areas and property ownership. By combining GIS data, unit costs, and geometric parameters, Quantm takes care of all data factors being calculated in a simultaneous optimization process.

Apply a range of specific project rules and constraints

Define multiple project criterias and integrate them into the algorithm optimization process. Import a large amount of iterative data to generate a rich context model, seamlessly integrate
design parameters, geometry, GIS data with geospatial, environmental and cultural constraints.

Flexible for Infrastructure Projects

- Railway
- High speed rail
- Carriageway
- Highways
- Small roads projects
- Transportation routes and haul roads
- Wind farm projects

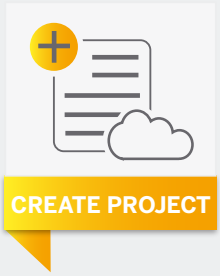


> **Analysis and Management Tool**
> *Not only do we save time and money, we always have a more complete route plan.*
>
> - Tim Belliveau, Transportation Engineer, Stantec

Quadri

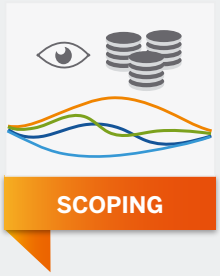
Quantm

Novapoint, Tekla, Tilos, Quadri, Connect & SiteVision



CREATE PROJECT

Create a project
Import existing situation - Collaborate real time on latest dataset with software connectors

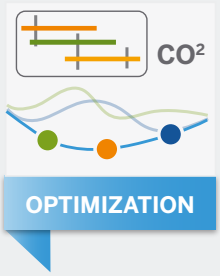


SCOPING

Identify
alternative corridor options, with terrain, costs, geometry and feature data like environmental constraints. Help with decision-making and evaluation

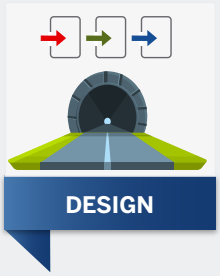
FEASIBILITY

Validate
alternative corridors, quickly identify viable route concepts with detailed information



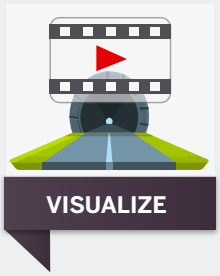
OPTIMIZATION

Evaluate
and fine-tune construction alternatives, reduces CO2 and create a optimized time distance plan for planning and construction



DESIGN

Effectively
design all aspects of modern roads, railways, tunnels, bridges, water and sewer



VISUALIZE

Visualize
design on web, at site or at smartphone. View 3D georeferenced models in true-to-life scale above and below ground

Sustainable construction projects

- Carbon Dioxide Emissions Overview
- View daily traffic flow and average speed
- Environmental impact on fuel consumption
- Noise analysis

Work with cost and CO2 estimate from day one
Forecast CO2 emissions that will be produced by traffic using the new infrastructure, enabling major construction projects to evaluate millions of alternatives to understand the viability and to optimize the tradeoffs between cost, traffic, CO2 impact of construction, and the long term CO2 impact of operating the infrastructure.

Ensure socioeconomic benefits and environmental constraints
Apply manually or import an editable cost and CO2 library for moving materials, geology, cross section template materials, bridges, tunnel, retaining walls, culverts, linear cost or area cost.
Reduce financial risk and project viability with alternative alignment transparency.
Enable alignment comparison and cost summary for each design alternative.

> **Not Possible Manually**
> *In a few hours, Quantm can find hundreds of line options, which of course is impossible manually. The tool has been of great help, not least also to eliminate alternatives and to bring forward alternatives that otherwise would not have been thought of. It is very effective.*
>
> - Lars Kastet, Road Engineer, Asplan Viak

TRIMBLE CONNECTED CONSTRUCTION

Optimized for early phase construction projects

Connect all the elements of the construction projects and exchange data in real-time among all stakeholders from engineers, project managers to project owners. With integrations to a common data environment and other construction software tools makes your construction project workflow quicker and smarter. These benefits provide faster project completion, improved project management and lower overall project costs.

- Increased productivity
- Higher quality
- Increased safety
- Lower costs

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