



WHITE PAPER

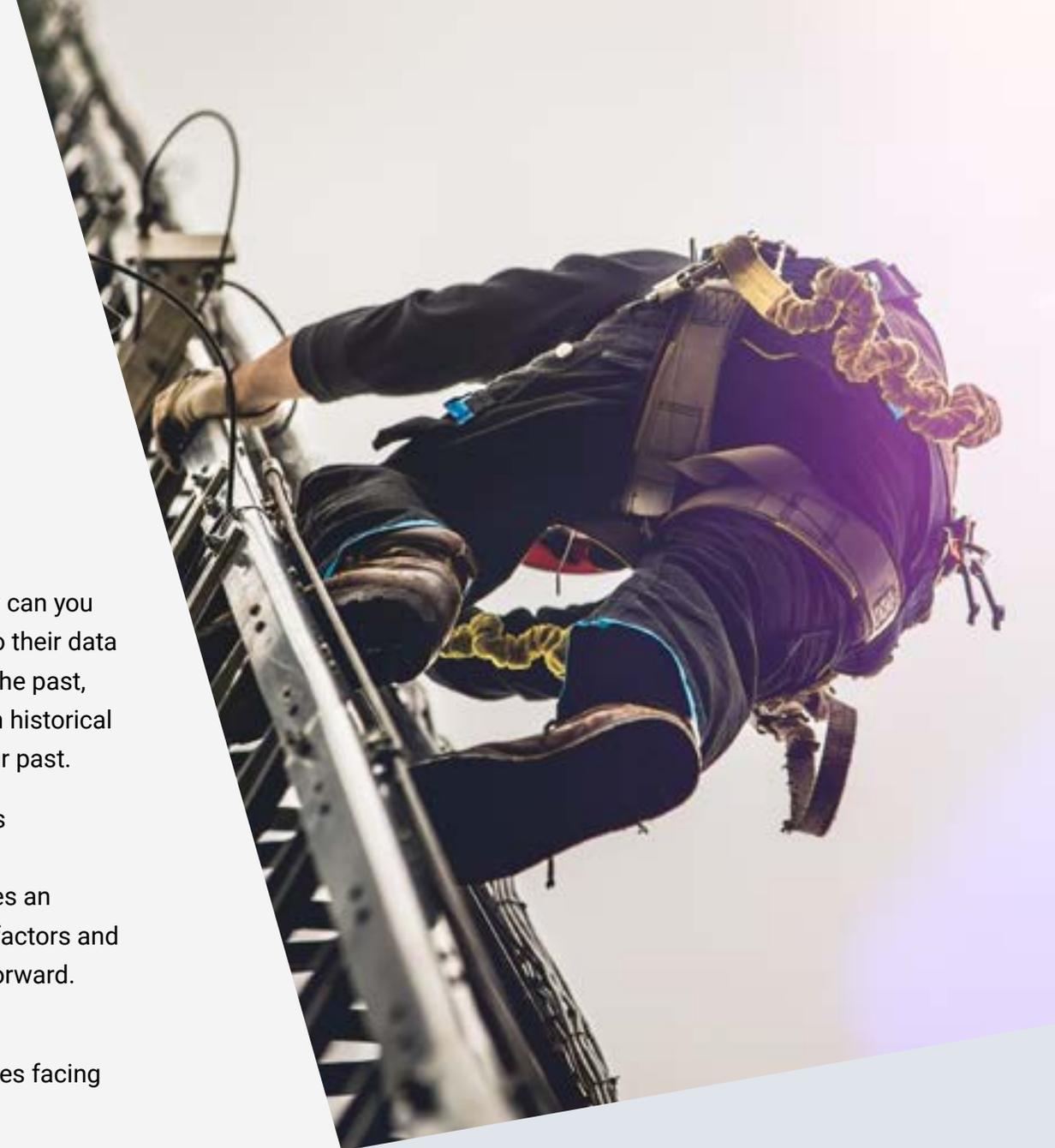
Three ways decision-making AI is transforming CSP operations

As a telecom leader, you face extremely complex challenges. It's your responsibility to lead your organization to optimal profitability, performance and reliability, while minimizing risk and maximizing scalability. However, you must achieve this amid global change, supply chain disruptions, regulatory restrictions and complex interdependencies.

When faced with such complex, mission-critical challenges, how can you make confident, unbiased decisions? Many organizations look to their data analytics for answers. Your data can reveal what's happened in the past, why and what's likely to happen next. But data analytics relies on historical data—so it falls short when your present no longer looks like your past.

To make unbiased decisions for achieving your optimal business outcomes, you need to be able to take all of the complexity into consideration—every objective, every constraint. And that requires an artificial intelligence (AI) capability that can explore all of those factors and all of the possible solutions and help you identify the best way forward.

Let's take a look at how decision-making AI—and, specifically, mathematical optimization—can address several major challenges facing telecom leaders today.



Optimize 5G network planning

To remain competitive in the age of 5G, you need to bring your networks to maximum capacity—optimizing coverage and service levels. That requires making complex decisions around deployment site selection, infrastructure availability in terms of fiber, installation costs, and mast adaptation and/or construction. This becomes even more difficult when you add in variables such as various technology options per spectrum band, and their location and business case dependencies.

You need to identify the best course of action—a solution that's explainable, justifiable and sustainable. And you need to be able to repeat this process continually, so you can make optimal decisions at the speed of change.

With mathematical optimization's decision-making AI capabilities, you can let the AI do the complex calculations for you. You let it know your objectives—such as maximizing coverage, minimizing costs and maximizing revenue—as well as your constraints, and let the AI consider all of the possible ways you can achieve those objectives. Often in seconds, it can identify your best course of action. As soon as factors change, you can update your inputs and run it again.

Telecom leaders use mathematical optimization for everything from fiber optic network and facility location planning to coverage, frequency, and radio planning. You can model entire scenarios for 5G deployment, including your parameters and constraints, and obtain the optimal solution.



Optimize CSP retail and supply chains

The supply chain is the backbone of a great customer experience. You want to help your customers buy what they need, when they need it, and in the way they prefer—whether that's in store or online. But with the pandemic upending supply chains everywhere, you need a better way to keep your products flowing.

If you're like many telecom organizations, you operate on a relatively rigid, fixed system that doesn't give you the flexibility or insight to quickly respond to customers or global events. As a result, you may have too much or too little stock on hand at different stores—and regularly pay high rates for expedited shipping at crunch time.

But with mathematical optimization, you can re-imagine your retail and supply chain operations. You can automate your decision-making and replenish stores with the right products at the right times, while minimizing retail inventory and meeting your out-of-stock targets.

And because mathematical optimization decision-making is model based, you simply need to update your model whenever your variables change—or whenever you want to explore new possibilities. Often in seconds, you can identify your best, unbiased decision.



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MANUEL RASSI
GUROBI OPTIMIZATION

Optimize telco marketing campaigns

Telecom organizations also look to mathematical optimization for their marketing campaigns—often in combination with machine learning. They use machine learning and other advanced analytics tools to target customers and prospects with their 5G solutions. Tools like these are highly effective because they predict elements such as expected response rate and lifetime value.

What machine learning can't do, however, is incorporate your company's unique business objectives and constraints into your targeting decisions. These tools also fail to deliver when your company is faced with new challenges, and you find yourself having to redo the whole process from scratch.

Mathematical optimization provides an opportunity to utilize machine learning to make the best possible targeting decisions, with the flexibility to adapt to any new constraint or parameter of your business. By combining machine learning

and mathematical optimization, you can efficiently target the right person, with the right offer, through the right channel, at the right time and ultimately drive increased sales and ROI with your marketing campaigns. For example:

- **Sales and marketing campaigns:** Optimally shape your 5G marketing campaigns and sales packages and automatically determine which packages of products and services to offer to which customers, when and at what price.
- **Customer acquisition and management:** Use the power of advanced analytics to manage risk in customer acquisition.



Transform your decision-making

Gurobi helps leading telecom organizations—from the US Federal Communications Commission (**FCC**) to **A1 Telekom, AT&T** and others—address their toughest decision-making challenges.

Vodafone is one such example. Having applied Gurobi mathematical optimization in each of the ways described above, the CSP has been able to maximize ROI by optimizing its fiber network design. With Gurobi, Vodafone configured its retail shop network to optimize its support of sales, given a variety of constraints—and it was able to strategically open as many shops as possible after pandemic lockdowns, as safely as possible.

How can Gurobi transform your CSP operations? Reach out to me and we can talk about it. Drop me an email at rassi@gurobi.com.

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