

# Deployment Speed Is Key to Funding Access

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An automated design and optimization approach will improve the network design process.

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**N**etwork design historically has been costly and time-consuming. When completed manually, the labor and time spent on planning and costing out materials for a network project are crucial, especially considering that billions of dollars in federal and state grant monies for fiber deployments are on the line. Network operators agree that the saying “time is money” is true for the critical process of designing, building, expanding and upgrading today’s broadband networks.

Leveraging an automated design and optimization (ADO) approach enables network engineers to provide rapid design iterations for deployment optimization and generates a precise bill of materials. In contrast, using manual-based methods can often result in overestimates of materials costs for a project.

By accelerating network design through ADO, service providers can apply for federal and state funding sooner, putting them at the top rather than the bottom of the grant applications stack. Once established virtually, ADO digital network design is available throughout the lifetime of the plant to provide a foundation for expanding existing service areas and network upgrades as they become available.

ADO software provides significant advantages over manual methods in four ways, and those benefits accrue during the grant application process: saving time through faster design, improving design through saved time, saving time and money through automated cost

of materials, and providing a life cycle model for the network.

## **FASTER DESIGN**

Geospatial information tools are a starting point for planning and estimating fiber routes and costs but don’t have the flexibility to evaluate different options at the click of a button. ADO can generate preliminary designs in accordance with a service provider’s rules and equipment specifications, supply optimal routing of fiber as required, and integrate with existing plant engineering platforms when needed. This approach ends up delivering time and cost savings when compared with manual planning and design methods.

The ability to generate a design in a few days rather than weeks makes completing federal and state grant applications and generating the necessary supporting documents much faster.

## **IMPROVING DESIGN**

Creating preliminary designs through ADO allows users the ability to generate scenarios examining the use of different network architectures, elements and coverage areas rapidly and efficiently. Grant applicants can use the initial ADO digital design to explore ways of optimizing network performance, reducing capital network costs where appropriate, and extending coverage areas to increase access and/or improve long-term operational financial sustainability.

Examining the impact of upgrading a network segment from GPON to XG-PON becomes a point-and-click process. Similarly, other network changes and improvements can be rapidly assessed for cost and time impacts on a holistic basis. Because less time is used for manual plotting and estimation on one slice of the network, more time can be invested in examining options for the best overall network design that fits an operator's operational philosophy and current and future customer needs.

Depending on their approach and the types of grants they are applying for, service provider grant applicants may wish to present multiple options for network builds, offering federal and state agencies options to consider and different approaches of coverage based on available funds and future expansion opportunities through other grant programs.

#### **AUTOMATED BILL OF MATERIALS SAVES MONEY**

Once a final design is selected, generating a full, accurate bill of materials is just a click away within ADO. Previously, manual cost estimates for network projects were generated on a best-guess basis, usually generating costs by hand for a small portion of the overall coverage footprint and then extrapolating that to the entire build plan. As a result, build cost figures tended to be padded by a significant amount to ensure there were no material shortages. This introduced a high level of uncertainty to project costs and a greater frequency of erring on the high side.

Applications for broadband grants at the federal level total anywhere from three to 10 times the actual amount of money available for distribution, making the process extremely competitive. A more precise cost estimate using ADO provides both an applicant and the funding agency with confidence in cost estimates and potentially delivers an award over competing, higher-priced applications.

#### **NETWORK LIFE CYCLE MODEL**

With multiple federal and state agencies offering billions for broadband projects

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over the next five years, access networks will be built, expanded and upgraded through use of more than one program. Building an initial network design using ADO provides a digital design for future network expansion and upgrades and supplies easily accessible background documentation in support of new grant applications and the ability to explore expansion scenarios.

For example, a network started today using pandemic relief funds may be able to use Infrastructure Investment and Jobs Act funds to expand coverage areas to adjacent territories. It could also serve as the foundational reference for building service into new areas with USDA ReConnect Loan and Grant Program funding, adding in state monies along the way to further increase network reach.

An investment in an ADO approach provides continuous benefits when taking advantage of new opportunities. Many service providers now completing projects in their initial territories already have plans to expand broadband networks, driven by the needs of their neighbors and the lack of alternatives. Federal and state funding is fueling expansion across the nation in unserved and underserved areas.

Once completed, existing networks will need to be upgraded at multiple points in the future as equipment ages and new capabilities become available. Starting with a digital model allows migration paths for network improvements, delivering lower latencies and higher speeds that can be costed out with a complete, component-level bill of materials as new technologies become available.

#### **FLEXIBLE NETWORK DESIGN EQUALS GRANT SUCCESS**

Given the large volume of grant applications flowing into federal and state broadband offices, implementing ADO alone will not guarantee grant success. There is a lot of competition for dollars today, and it is likely to continue over the next five years as federal, state and local governments work to close the digital divide. Service providers need to have strong, affordable network build plans and be prepared to deliver to communities in need.

The ADO approach provides an advantage. It can be used as a key tool to improve the process of designing, costing, building and maintaining broadband networks; reduce design time from weeks and months to days; and create time for network architects to evaluate network design and territorial coverage options. Deployment scenarios can be rapidly iterated and refined to consider trades between coverage and cost, with a more precise bill of materials estimate one click away. ♦



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