IQGeo fact sheet:
Fiber fault identification

Network Manager capabilities
A digital twin of your network transforms every asset and data point into a single geospatial view, enabling teams to easily collaborate across workflows and proactively identify incidents and opportunities. Best-in-class mobility enables field teams to identify and document data in real time, online or offline, more powerfully and flexibly than other solutions.

Fast, cost-effective deployment and management pre-packaged workflows and flexible configurations easily integrate with all your data sources and internal systems to accelerate your time to revenue. Network Manager's easy-to-use intuitive user interface encourages high adoption and consistent usage across every team to optimize work execution.

The network-centric approach of IQGeo's scalable solution can model existing and future network architectures, operational requirements, business insights, and data sources to continuously enhance your network. We optimize your network operations by helping you design from anywhere. You can quickly build, connect, and configure a new network, while validating every data source and reporting across every team - all thanks to these industry-leading capabilities.

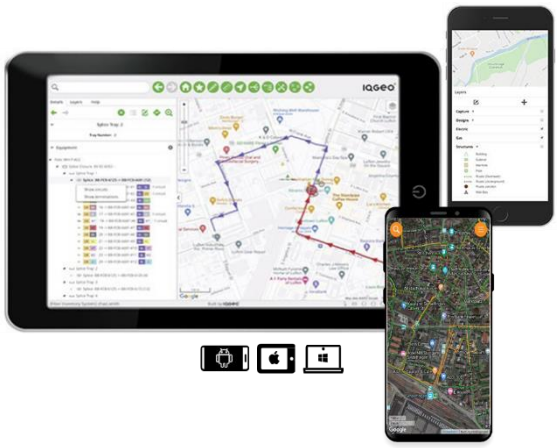
With a single geospatial view of all data sources and pre-emptive conflict resolution, IQGeo improves your network data quality. A key aspect of this strategy is the ability to integrate with network monitoring hardware such as EXFO, VeEX and others in order that fault information on the fiber cable can be correlated with geospatial information on our platform. This enables the engineer to get very accurate fault location, as well as identification of the type of fault, and to isolate the cable and device.

The benefits are significant, allowing rapid fault location identification so repairs can be carried out faster and in a more cost-effective way using mobile phones and tablets.

Fiber network tracing

With an intelligent and complete network model, planners, designers and operations teams can analyse customer impacts, determine new customer routes and report on capacity constraints.

IQGeo integrates with remote fiber monitoring systems (RFTS) which enables the oversight of an entire fiber optic network from a central location, including dark fiber configurations. Using this comprehensive method, the performance of the network can be continuously evaluated, and Mean Time to Repair (MTTR) can be minimized.



Fiber monitoring strategy

Fiber monitoring refers to the ongoing assessment of fiber quality using software tools and devices that comprise an integrated fiber monitoring and management system. These elements collectively facilitate the detection of faults, degradation, or security intrusions, and alarm the system administrator in real-time when threats to fiber optic network integrity occur. Monitoring systems can also be used to proactively trend and analyse attenuation and other fiber optic performance metrics over time.

The benefits of fiber monitoring

Optical cabling supports the communication infrastructure of our connected planet. Inherently fragile by nature, this same optical cable is susceptible to water ingress, misplaced construction digs, rodent infestations, security intrusions, and many other potential hazards. Maintaining optimal fiber condition and performance requires advanced fiber monitoring practices to identify and react to problems quickly.

New technology and network expansion continue to push the boundaries of fiber optic monitoring capabilities. Submarine cables are extremely long fiber optic runs laid in trenches on the ocean floor, installed by specialized ships at a rate of 200 kilometers or more per day. While the value of these optical fiber runs is obvious, the expense of installing and maintaining them can be considerable. When problems occur, divers or robotic vessels may be required to investigate and repair defects. Robust fiber monitoring can lead to earlier detection and precise locating capability, thereby reducing reaction and repair times.

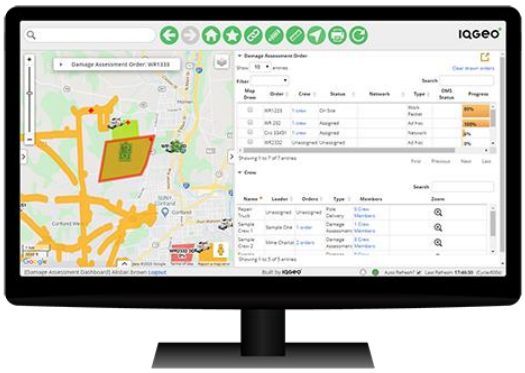
Fiber optics continue to usurp the territory once dominated by conventional coaxial cabling and telephone wires. Fiber to the home (FTTH) is now becoming more common, with direct fiber optic runs to individual homes enabling higher bandwidth and improved data integrity for users. Extending the reach of fiber optics is inevitable, so fiber optic monitoring systems must now be capable of accurately detecting fiber faults from the source all the way to the subscriber.

Active fiber monitoring

Fiber optic security concerns have become increasingly relevant as more intrusions and data theft incidents are reported each year. Although fiber optic cabling is generally perceived as being more secure than conventional cabling, fiber tapping incidents continue to challenge authorities and fiber monitoring system capabilities.

Tapping techniques, including the introduction of optical splitters or fiber bending to induce leaks, have continued to evolve in an attempt to elude detection. Encrypting data is an obvious first line of defense for such intrusions, but fiber monitoring technology can also be used to identify the shifts in optical feedback that the perpetrators seek to disguise.

One innovative approach to fiber monitoring that can improve security with minimal additional hardware infrastructure is active fiber monitoring (AFM). By detecting small changes in light transmission across active fiber lines, alarms can be raised so that appropriate security measures can be taken. Using AFM, it is not necessary to dedicate additional fibers for monitoring purposes, since active fibers already carrying high priority data can be strategically selected for observation.



Remote fiber monitoring

A remote fiber monitoring system (RFTS) enables the oversight of an entire fiber optic network from a central location, including dark fiber. Using this comprehensive method, the performance of the network can be continuously evaluated, and MTTR can be minimized.

MTTR is the measure which best encompasses the overall effectiveness of a fiber monitoring and management system. This is simply the average amount of time required to troubleshoot a failure and return the system to working order. The repair and troubleshooting process is made up of the “find" or fault localization process and the repair process.

When a major break or bend event occurs, often 4-5 technicians are dispatched over several hours to find the problem before the fix can be made. Remote monitoring reduces the localization portion of the repair process to less than five minutes and is done remotely and automatically. This is typically 30-40% of the full span of the repair process timeframe. Thus the accuracy of remote fiber monitoring, utilizing OTDR technology to pinpoint fiber faults, is one key to minimizing MTTR and improving user satisfaction.

Alert messages produced by remote fiber optic monitoring systems can be communicated via email, as well as SMS or SNMP protocols. SMS messages are simply out-of-band text messages that are automatically pushed out to the appropriate users when alarms occur. This can minimize the need for constant oversight of monitoring interfaces. Simple Network Management Protocol (SNMP) is another communication tool that is commonly used to monitor devices remotely, and relay alerts to a central location or host.