

Article Overview

Fiber optic cable routes can be detected and monitored using Distributed Acoustic Sensing, Ground Penetrating Radar, and AI-powered mapping platforms for real-time and precise network management.

Distributed Acoustic Sensing (DAS)

DAS technology converts existing single-mode fiber optic cables into distributed sensors by injecting laser pulses into the fiber and measuring backscattered light, which is modulated by vibrations and sound along the cable. This allows continuous, real-time detection of vehicles, traffic events, or environmental vibrations along the fiber route. Each Interrogator Unit can monitor up to 40 km of fiber, providing high-resolution spatial data every 10 meters. DAS is widely used for traffic monitoring, incident detection, and infrastructure management, enabling faster and less disruptive deployments compared to installing new sensors .

Ground Penetrating Radar (GPR)

GPR is used to physically locate and map fiber optic cables, especially in urban or congested areas. Modern GPR systems, such as the MALA Easy Locator Core, provide real-time interpretation, cloud-based post-processing, and integration with GNSS for precise positioning. GPR can detect fiber optic ducts, telecommunication cables, and other utilities at typical depths of up to 2 meters. This method is particularly useful for pre-excavation studies, avoiding infrastructure damage, and planning maintenance or upgrades .

AI-Powered Fiber Mapping Platforms

Platforms like FiberMap offer end-to-end fiber network mapping and management. These solutions capture coordinates of all active and passive network equipment, track fiber paths at the core level, and integrate with existing NMS, ACS, and BSS systems. AI-driven analytics enable proactive fault detection, predictive maintenance, and optimization of FTTH rollouts. FiberMap also allows visualization of subscriber connections, splicing details, and real-time network parameters, making it ideal for telecom operators and ISPs managing complex fiber networks .

Choosing the Right Solution

- o For real-time monitoring and traffic-related applications: DAS is highly effective, leveraging existing fiber infrastructure without excavation.
- o For physical cable location and mapping: GPR provides accurate subsurface detection, especially in urban environments.
- o For network management and operational optimization: AI-powered platforms like FiberMap offer



Fiber Optic Cable Route Detection Solution

comprehensive mapping, predictive analytics, and integration with network management systems. By combining these technologies, organizations can achieve accurate fiber route detection, proactive maintenance, and enhanced operational efficiency, while minimizing disruptions and improving safety.

Solution Fiber optic cable mapping often requires working on streets, which may involve navigating pavements, parked cars,

Advancements in GPR technology, along with the installation of fiber optics in ducts, have made it easier to

To the best of our knowledge, we present the first underground fiber cable position detection methods using distributed fiber optic

Deutsche Telekom AG will optimize the planning for new fiber-optic cables in the future using infrastructure data it

Underground Fiber Optic Cable Detection with K-DAS Technology Ksense's Distributed Acoustic Sensor (DAS)

Deploying the RaySense fiber-optic intrusion detection system provides a reliable perimeter security

Each Interrogator Unit can enable up to 40 km of fibre optic cable for sensing purposes. This allows vehicles to be detected and

Distributed Temperature Sensing Technology Distributed Temperature Sensing (DTS) systems provide temperature information for

With a detailed inventory of both active and passive network equipment, fiber routes, and real-time network parameters, FiberMap

Fibre optic acoustic sensing (FOAS) is a relatively new technology that allows a seamless,

Modern fiber-optic communication systems generally include optical transmitters that convert electrical

Learn about the best methods for locating fiber optic cables, who you need to call, and whether you should

Using new or existing fibre optic infrastructure as an intelligent traffic sensor allows faster, less disruptive and more economical



Fiber Optic Cable Route Detection Solution

A leading telecom infrastructure provider responsible for planning, deploying, and maintaining optical fibre cable (OFC) networks to

What makes DAS one of the most effective solutions for monitoring external threats is its ability to convert a fiber optic cable into an

Distributed Acoustic Sensing (DAS) technology has become a key tool for underground

Web: <https://bssoda.pl>

