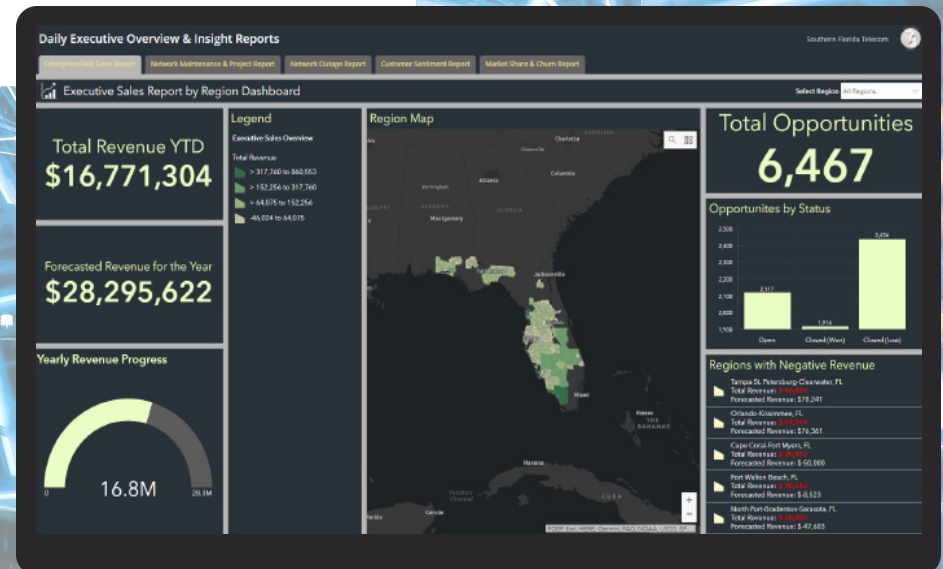


# Network Operations and **Maintenance** for Telecommunications



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# 1

## Introduction

### Modernising how telecoms manage their resources

For telecom organisations, successful network operations and maintenance not only includes optimising communication networks, but also the people, processes, and systems that maintain and manage telecom networks. Recent research conducted by industry analysts suggest telecom organisations struggle with ensuring resilience of networks, maximising network return on investment (ROI), managing expectations of stakeholders, and reducing the effects of climate change on their operations.

As outlined in [Esri's Location Intelligence for Telecommunications ebook](#), ArcGIS technology can help telecom organisations and CSPs optimise their resources using location intelligence and GIS technology. Because it leverages the one thing all telecom operations have in common (location), ArcGIS unifies OSS/BSS through a common understanding of location and maps, while enhancing situational awareness through real-time network and field operations.



# 2

## A Comprehensive GIS

### More than making maps

Changes in the telecom environment and the explosion of data demand vastly better ways of managing, examining, and communicating telecom information.

The Telecom industry requires new solutions to meet the evolving business needs. They need solutions that provide a complete network operations and management picture and provide powerful insights - insights that include exceptional visualisation on any device, anywhere, at any time. As the requirements for GIS have evolved, so has ArcGIS. It delivers the power to increase effectiveness in every corner of the business.

ArcGIS is a Comprehensive Modern GIS.

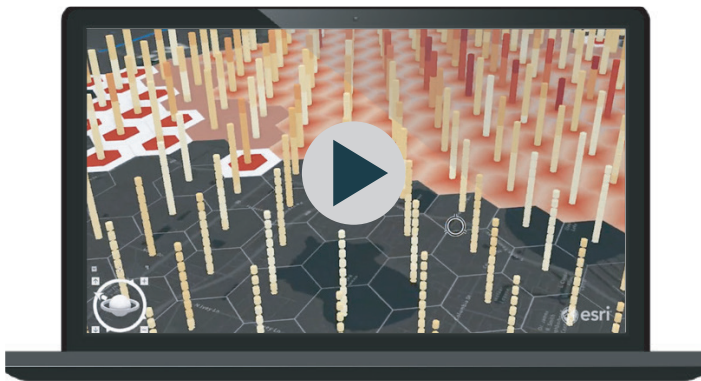
Comprehensive means it contains all the elements needed to solve telecom challenges. It maintains the network model, the assets and all the associated transactional data.

It provides advanced visualisation and analytics to improve overall business intelligence. And it enables the distribution of information to everyone that needs it, creating a platform for sharing and collaboration across teams, organisations and communities.

These capabilities manage an organisation's authoritative data, create relationships and streamline workflows. This is enabled through a system of systems, which provides the foundations to enabling digital transformation for telecoms:

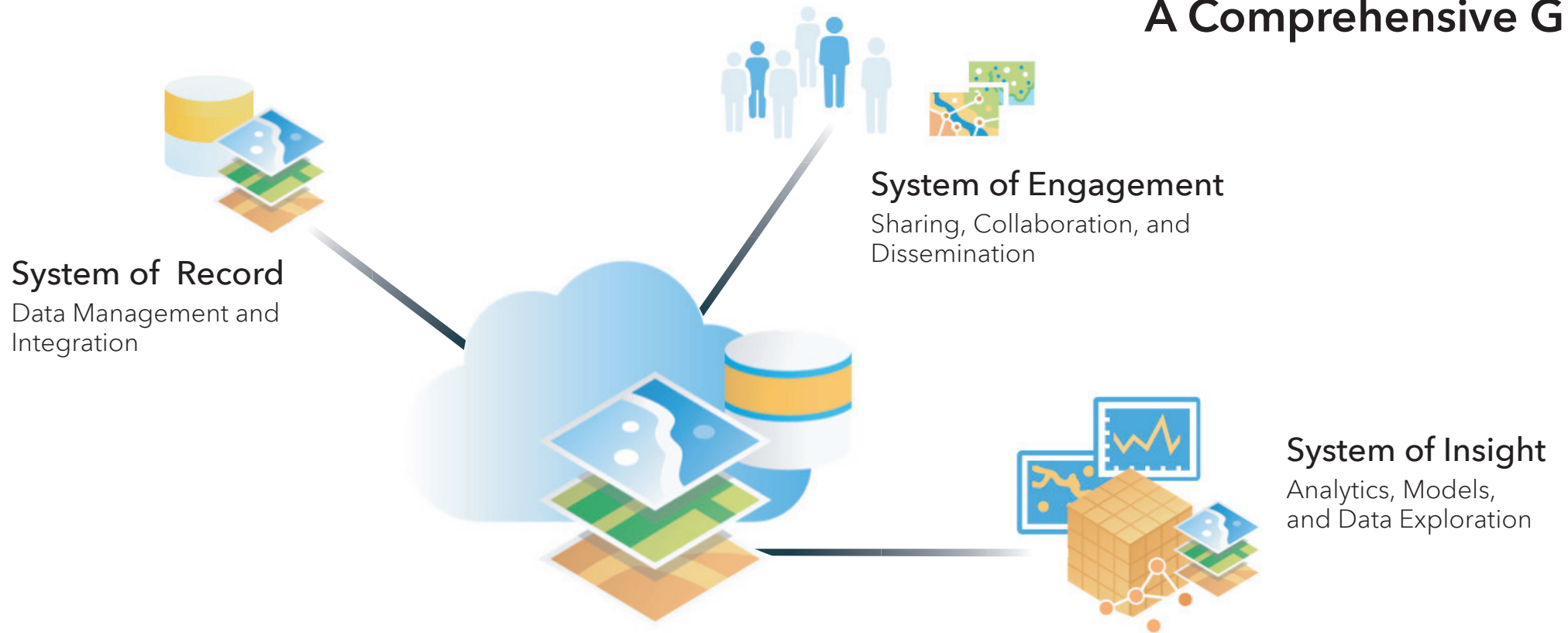
- **System of record - Data management and integration**
- **System of engagement - Sharing, collaboration, and dissemination**
- **System of insight - Analytics, models, and data exploration**

Modern means that ArcGIS does things traditional mapping GIS can't touch. It employs an unparalleled data model and integrates all types and formats of data. The rich data supports out-of-the-box analytics and the latest artificial intelligence (AI) and machine learning tools. It creates a 3D Digital Twin of your network and allows for real-time analysis, reporting and business decisions. The results are easily exploited with engaging apps personalised to each user's role. They provide focused capabilities and align to how people work today and into the future.



*Everything in telecommunications happens somewhere. As the world leader in location technology, Esri provides the most advanced capabilities in the industry.*

# A Comprehensive GIS



# 3

## Network Operations and Maintenance using ArcGIS

As a comprehensive GIS, ArcGIS brings location intelligence to network operations and maintenance, and modernises how telecom organisations manage their resources. ArcGIS integrates GIS with OSS and BSS in order to connect authoritative business data with geographic information. ArcGIS offers real-time situational awareness by tying real-time network events to the physical network location and providing access of those maps to field or office personnel. ArcGIS provides automated network maintenance alerting using spatial analysis, allowing telecom organisations to become predictive instead of reactive.

Digitally transform the way your organisation approaches network operations and maintenance with ArcGIS.



### **OSS/BSS Intergration**

- Connects business data to operational data
- Integrates IoT/real-time systems
- Reduces technical debt and total cost of ownership
- Provides common set of maps and geospatial tools

SYSTEM OF RECORD

### **Real-time Situational Awareness**

- Timely communication and understanding
- Improves disaster response and business continuity
- Simultaneously integrate, analyse and display data
- Enhances coordination and stakeholder management

SYSTEM OF ENGAGEMENT

### **Resource & Network Optimisation**

- Optimises workforce utilisation and efficiency
- Improves customer satisfaction
- Streamlines business processes
- Enhances software defined networks

SYSTEM OF INSIGHT

**MODERNISING HOW TELECOMS  
MANAGE THEIR RESOURCES**

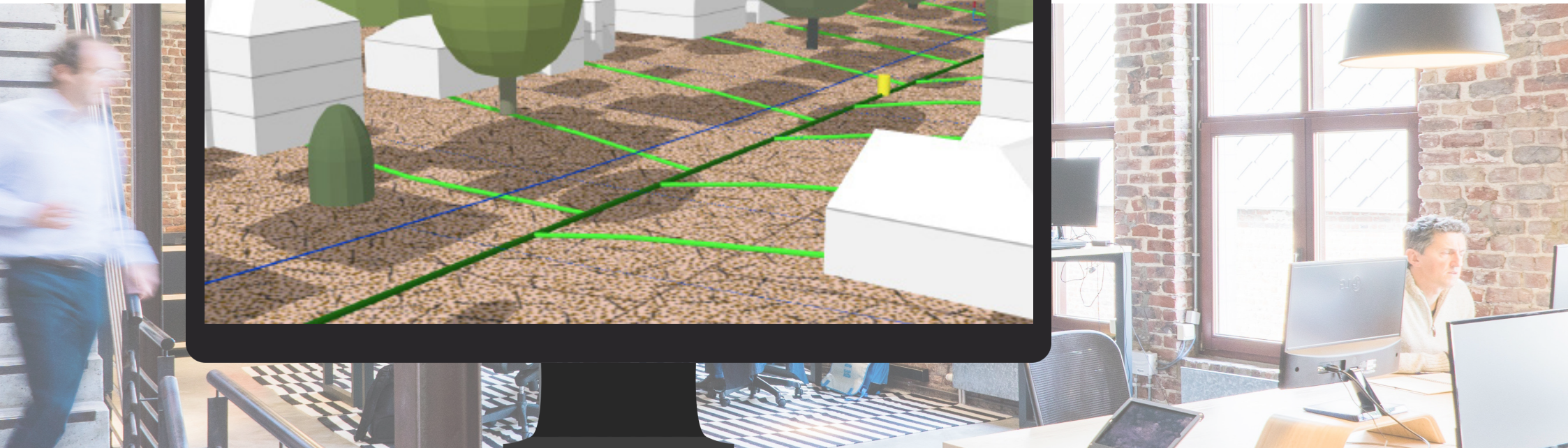
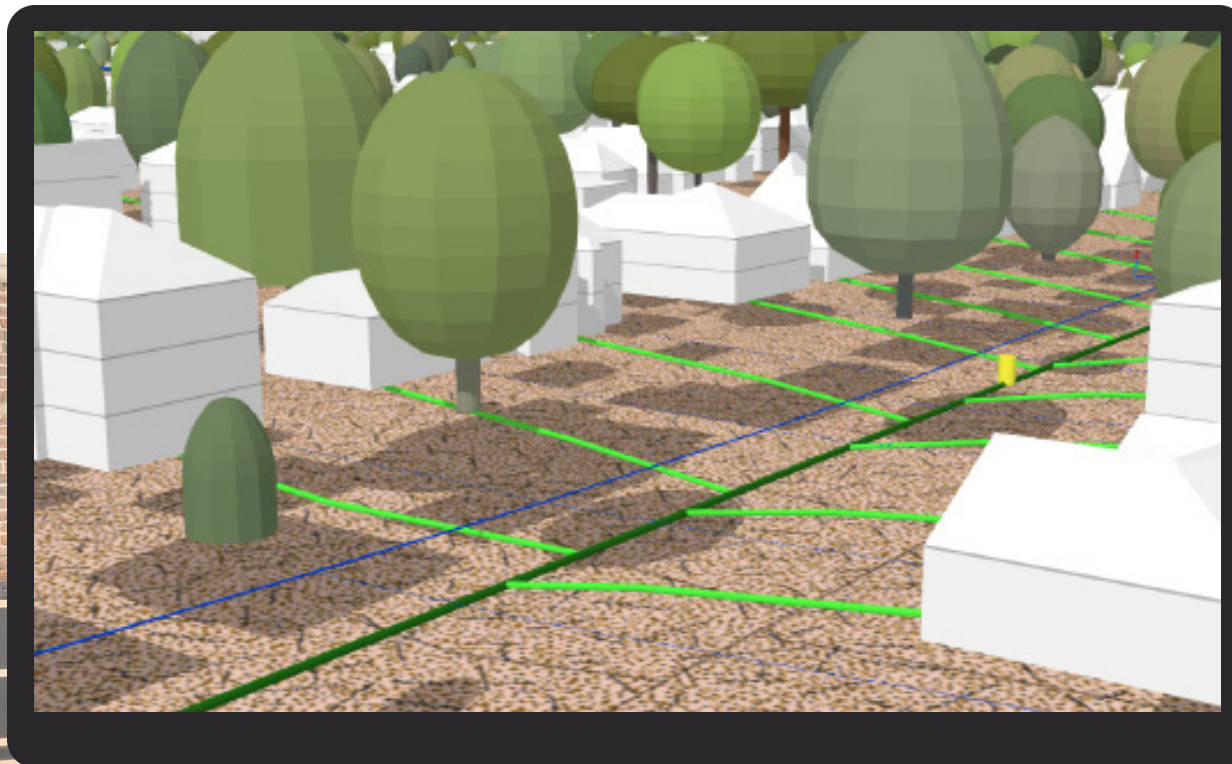
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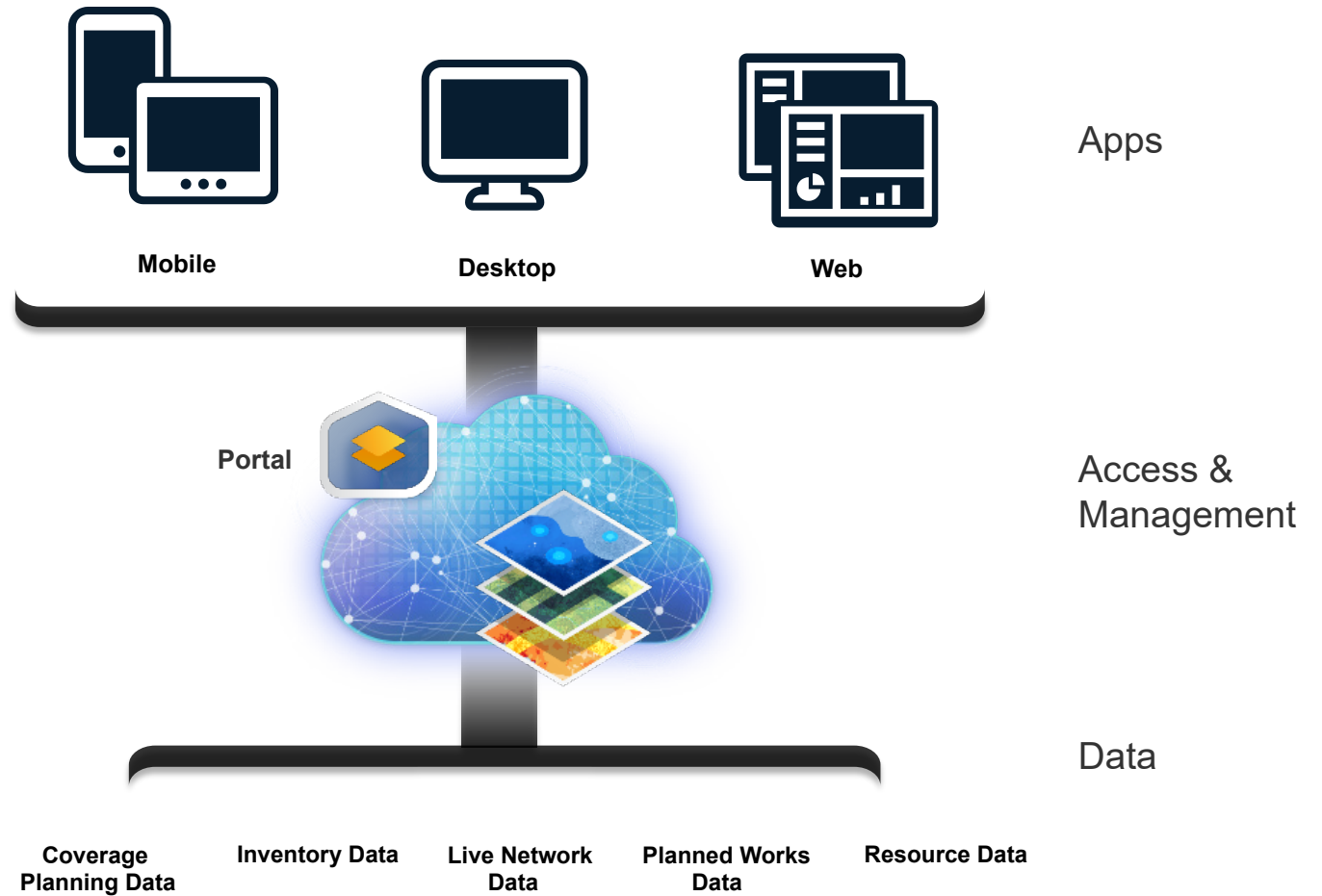
## **OSS / BSS Integration**

**On any device, any system, anywhere, anytime**

Telecoms businesses have many critical information systems that are often not related or natively integrated. To create a valuable digital operating model, telecoms need to invest in integration between Operations Support Systems (OSS) and Business Support Systems (BSS) to truly gain insights into their network and the subscribers they proudly serve.

ArcGIS provides advanced capabilities for leveraging insights gained from OSS and BSS integrations to plan for future network expansion and uphold a world class quality of service. Location intelligence enables critical data such as Customer Relationship Management (CRM), Billing, and Network Management Systems (NMS) to uncover hidden trends. It allows for maximum efficiency in sales and support activities.





With all the location information within telecommunications, a geospatial platform can integrate OSS and BSS with a common set of maps and geospatial tools. It is through this integration that you can obtain a single operational view and gain insight across the organisation.



# 5

## ***Real-time Situational Awareness***

Telecoms are inundated with many forms of location data and will benefit from a comprehensive geospatial platform that enables OSS and BSS integration with effective and easy to use analytical tools. It isn't until combining this critical data on a geospatial platform that you can truly obtain a single operational view and gain insight across the entire organisation.

A common requirement in a modern telecoms company is access to timely information to make more informed business decisions. Latency caused through legacy

processes or paper solutions have restricted telecoms companies from modernising their operating model. ArcGIS allows real-time network operation views to be configured through web-based dashboards, visualising the environment via digital twins, analysing network capacity using location analytics, and providing restoration times to your customers through outage viewer maps. Information is integrated and shared across the organisation as it is captured, eliminating back log and creating new business opportunities.



# Case study

## *Situational Awareness*

### **Digital twin helps Schiphol Airport optimise operations**

The airport originally implemented GIS in 1985. Currently, ArcGIS Enterprise is a core technology in its business processes. In 2017, Schiphol Airport began a capital improvement program, scheduled to last for several years, that involves a major renovation of existing facilities and the construction of new ones. To take advantage of the numerous digital assets created for the capital improvement program, Schiphol Airport built a digital asset twin of the airport including ducts for comms and air conditioning. See image.



# 6

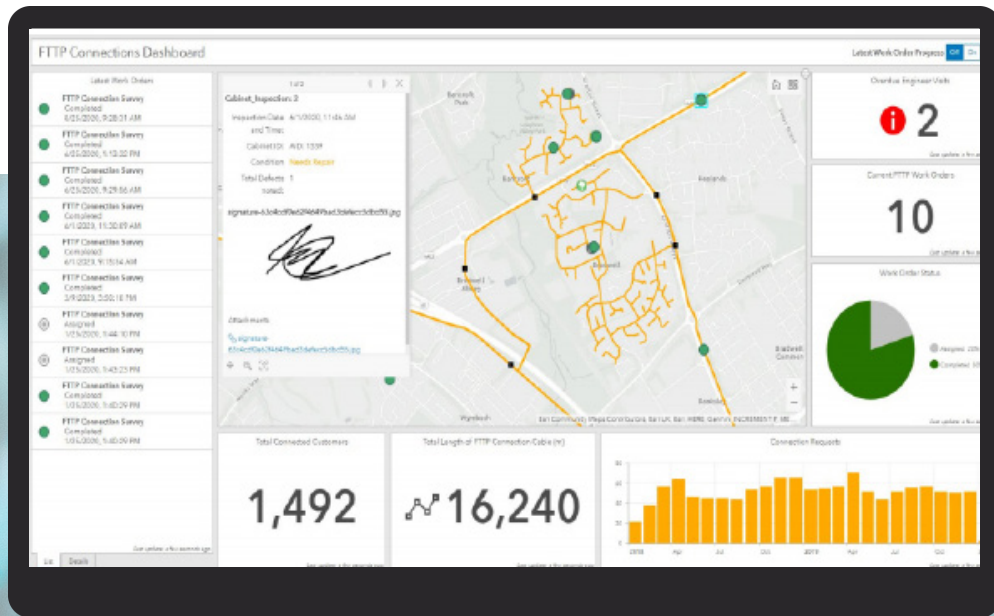
## Resource and Network Optimisation

As telecom companies adapt to new digital operating models, they will endeavour to look for innovative ways to optimise their resources and better understand how their network is operating. Industry experts have long said that optimisation can only be achieved once you have all the information available. This means breaking down organisational silos while creating connected systems and information transparency.

ArcGIS provides the platform to create a digital operating model to improve business processes.

It visualises & interconnects information to create better understanding.

To reduce costs, you need to improve the utilisation of your network assets and people. With location technology users can maximise network resources with tools like network suitability analysis for new wireless or fixed line service planning. To save time and costs it is also possible to optimise field operations with mobile apps showing network, service territories, job details and customer details.





# Case study

## *Fiberlight*

FiberLight, LLC, is a fiber infrastructure provider with more than 20 years of construction experience in building and operating mission-critical, high-bandwidth networks. FiberLight is focused on delivering solutions for complete operational control, security, and scalability, improving business operations and provisioning peace of mind for network and data center providers for large enterprises across the US. To deliver this capability, it requires network management solutions that keep it on track to deliver some of the most agile, secure, scalable, reliable, and flexible custom services in the industry.

### Results using ArcGIS

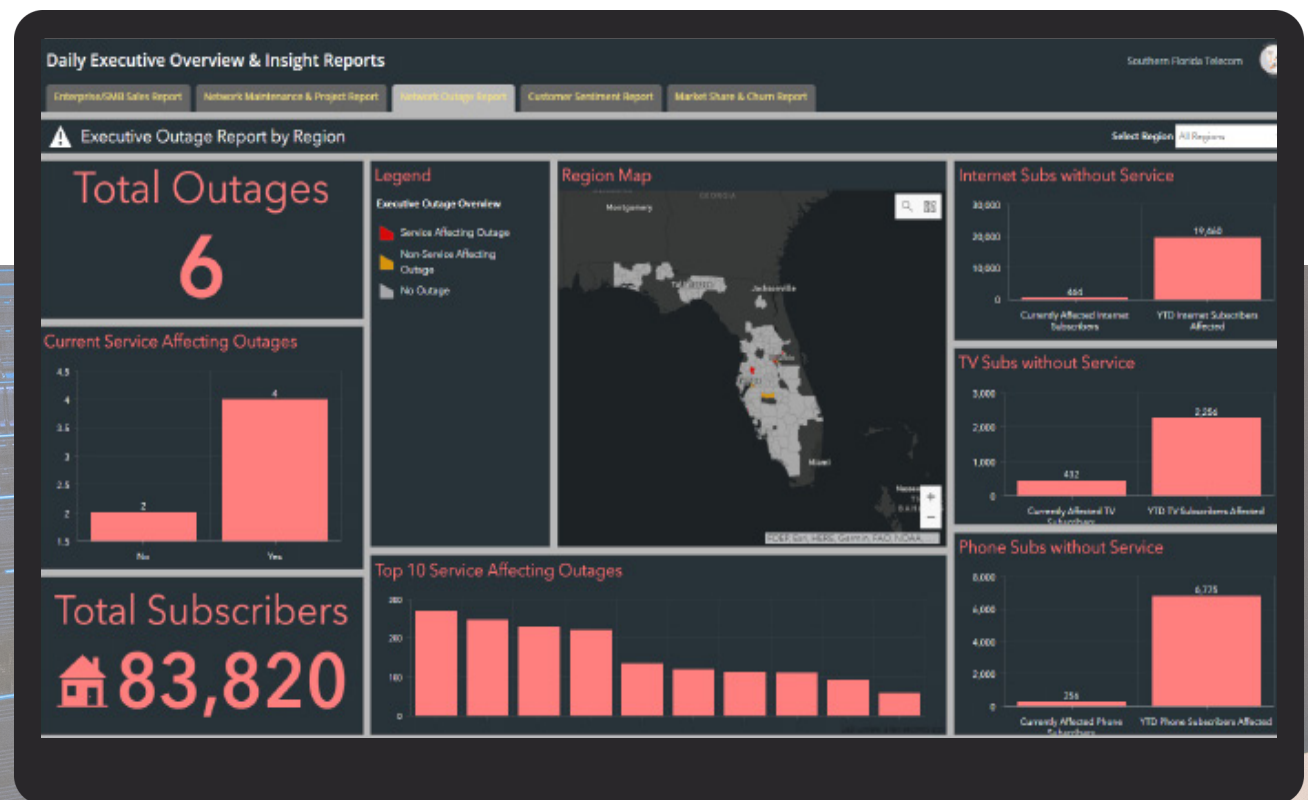
- More than 3,100 signal updates to reconcile inventory
- Faster network routing and readiness to submit permits
- Reduced cost of network construction
- Reduced time for municipal and regulatory reporting
- Better field operations

# 7

## Summary

Esri's ArcGIS technology can help telecom organisations and CSPs optimise their resources using location intelligence and GIS technology. ArcGIS unifies OSS/BSS through a common understanding of location and maps, while enhancing situational awareness through real-time network and field operations.

By using ArcGIS solutions, telecoms can digitise workflows, take advantage of digital network models, geospatial visualisations and analytics. With ArcGIS, meet your organisations' next gen network initiatives and digitally transform your business.





Esri, the global market leader in geographic information system (GIS) software, offers the most powerful mapping and spatial analytics technology available.

Since 1969, Esri has helped customers unlock the full potential of data to improve operational and business results. Today Esri software is deployed in more than 350,000 organisations including the worlds largest cities, most national governments, 1 in 5 FTSE 100 companies and more than 4000 UK colleges and universities. Esri engineers the most advanced solutions for digital transformation, the Internet of Things (IoT), and location analytics to inform the most authoritative maps in the world.



***For more information, visit [esriuk.com/telecommunications](https://esriuk.com/telecommunications)***

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