Digitally Transform Your Telecom With ArcGIS

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Introduction

Leveraging ArcGIS for Digital Transformation

Location intelligence is fundamental to all communications services—mobile and fixed, residential and enterprise. Esri's ArcGIS® software is a comprehensive geographic information system (GIS) for telecommunications, empowering all aspects of an organization with geospatial infrastructure. ArcGIS is composed of a GIS system of record, system of engagement, and system of insight, leveraging the power of location intelligence to directly support digital transformation.

Since everything in telecommunications can be tied to location, organizations can apply a geographic approach to modernize and digitally transform how they reference and utilize the data and information contained within their operations support systems (OSS) and business support systems (BSS). Throughout the organization, ArcGIS provides the comprehensive foundation for unifying ecosystem workgroups, such as leadership, planning and engineering, network operations and maintenance, customer service, sales and marketing, and IT, allowing staff to leverage the insight and understanding that modern communications service providers (CSPs) need.

ArcGIS enables organizations to focus on the following:

- Increasing revenue or operations and decreasing capital expense
- Bridging the digital divide by providing equitable access to services
- Maintaining sustainability or network resiliency
- Providing quality customer service and a positive experience
- Managing network capacity
- Increasing real-time availability of key performance indicators (KPI) throughout the organization

With ArcGIS, every team member, at every level of the organization, can be assured they are viewing the latest information for decision-making while streamlining workflows and improving communications.

A Comprehensive GIS

To maintain competitive advantage and deliver the best possible products and services, communications service providers throughout the world demand superior methods of identifying and gauging market demands, enabling staff to meet consumer needs and providing and communicating vital business intelligence throughout the entire organization. Because ArcGIS is purposely designed to provide integration, insight, and engagement, CSPs benefit whether they are working toward individual or team goals or taking on major industry initiatives.

ArcGIS is a comprehensive GIS. *Comprehensive* means it contains all the elements needed to solve complex telecom challenges throughout the company, not simply making conventional network maps faster. It maintains key information, analyzing and distributing it to teams needing real-time business intelligence.

ArcGIS does things other traditional mapping GIS systems can't perform. It employs an unparalleled data model and consumes most any form of external data. The rich data supports out-of-the-box analytics and the latest artificial intelligence (AI) and machine learning tools. The results are easily exploited with engaging apps and dashboards personalized to each user's role, providing focused capabilities that align to how people work today.

ArcGIS

Supports Three Fundamental Types of Systems

System of Engagement
(Apps and Maps)

System of Record
(Transactions)

ArcGIS

Real-Time Measurement
(Find/IoT/Remote Sensing)

System of Insight
(Analytics)

These capabilities create a seamless experience for sales and marketing teams when using the following systems needed to thrive:

- **System of record**—Data management and integration
- **System of engagement**—Sharing, collaboration, and dissemination
- **System of insight**—Analytics, models, and data exploration
- **Real-time Internet of Things (IoT)**—Measurement and status
- **Location services**—Developer tools for integration and customization

To keep pace with consumer demand and technological evolution, the telecommunications industry needs the best digital tools capable of showing the complete picture and providing powerful insights—insights that include exceptional visualization on any device, anywhere, at any time. As the requirements of the industry and of GIS have evolved, so has ArcGIS. It delivers the power to increase effectiveness in every corner of a company.

A Geographic Approach to OSS and BSS

Throughout the telecommunications industry, teams across every organization have traditionally relied on outdated methodologies to access information and data, network maps, reports, customer details, and countless other decision-making resources to perform their individual tasks and take care of customers. Many of the OSS and BSS systems used have proprietary graphical user interfaces (GUI) designed to interact with that individual system to produce reports, create or access maps, and serve as a resource for that one dataset.

These individual and purpose-built legacy OSS and BSS systems play an essential role for the organization but are often unable to integrate directly with other systems. Unfortunately, these often siloed and expensive OSS and BSS platforms unintentionally add a high volume of technical debt to an organization's processes and workflows. Some examples of technical debt are a need to individually access systems via "swivel chairing" from one GUI to another and downloading information from one system in order to upload into another or for

integration into a common stand-alone report. This kind of technical debt prevents teams from making real-time decisions, facilitating tasks easily, and fulfilling customer requests quickly.

By leveraging ArcGIS to integrate this powerful location-based information into a map, CSPs can take a geographic approach and utilize a new way of thinking and problem-solving to modernize outdated methodologies.

Simplified and Streamlined Workflows

Today, CSPs can easily streamline their organization's work with OSS and BSS systems by using ArcGIS as a unifying system integrator. Teams can easily visualize and analyze information in one view what was traditionally kept in different systems. For example, critical business data, such as network maps, capacity metrics, customer usage details, weather conditions, billing, work orders, and competitors, can be mapped together, analyzed to understand how they relate, and interpreted to reveal the best action to take.

What makes this possible is ArcGIS; it is purpose built to integrate with any and all types of data while leveraging a user's identity to securely share view or edit access. CSPs using ArcGIS provide a streamlined, single-pane-of-glass user experience to teams throughout their organization. This facilitates trust, amplifies

return on investment (ROI), and improves efficiency because the need to swivel chair across multiple applications or data sources is eliminated.

Through modernizing how organizations engage with OSS and BSS systems, CSPs can truly transform their workflows and eliminate much of the technical debt that legacy workflows provide. With the streamlined workflows, tools, and improved communications that ArcGIS provides, organizations can quickly realize operational efficiencies, maximize capital investment, identify opportunity in the marketplace, and empower their teams with simplified workflows. In doing so, they will gain the best possible understanding for decision-making—all while delivering world-class networks and customer experience faster than ever before.

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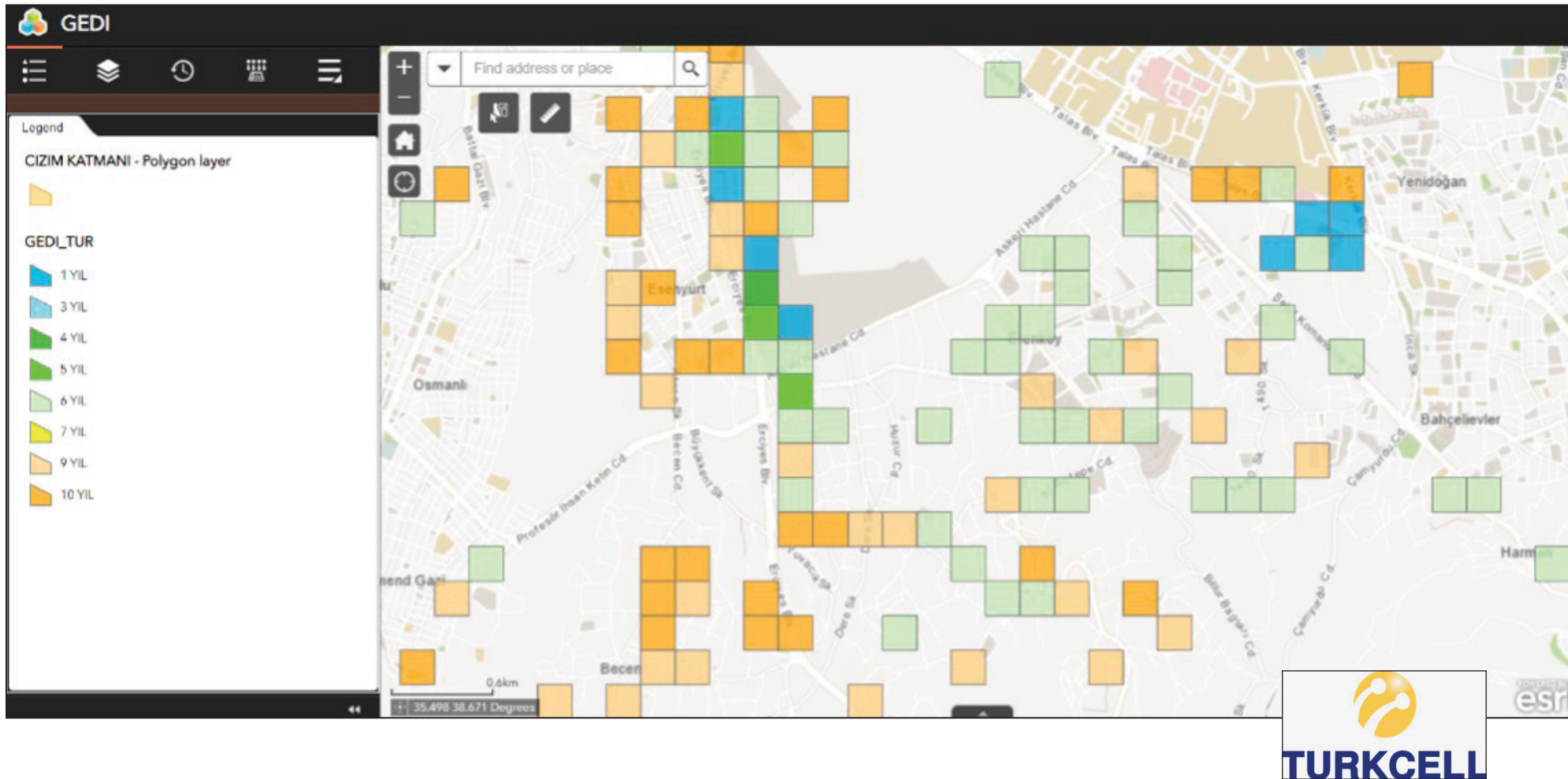
Case Study 1: Turkcell

Like many telecommunications providers throughout the world, Turkcell had a two-decades-long practice of assessing customer demand. However, it was looking to be more surgical this time in understanding where customer demands will come from over the next 10 years.

To meet the needs of its business and improve its capabilities, the Turkcell team leveraged the tools and capabilities of ArcGIS, such as ArcGIS Pro, ModelBuilder™, and machine learning, to develop the web app, GEDI. GEDI delivered a streamlined method for quickly analyzing and communicating future customer demands.

"We came together as Strategic Planning and Location Intelligence teams under the Access Transport Network unit within Turkcell Access Network Capabilities and created a modern analysis method using artificial intelligence and machine learning algorithms based on our past analysis experiences. In these studies, we have seen how valuable GIS technologies are."

—*Semih Öğün, Manager, Location Intelligence, and Faruk Bakan, Manager, Access Transport Network Strategic Planning, Turkcell*

A Single Pane of Glass

Service providers throughout the industry face an ever-growing and evolving list of challenges as they work to connect people and companies to what's important in their lives. Whether the challenge is providing equitable access, delivering broadband deeper into rural communities, improving process and workflow, connecting remotely working teams, maintaining network resiliency and sustainability, or one of a hundred other challenges, the need for CSPs to evolve is critical to their success.

To overcome these challenges and ensure operational success, a world-class customer experience, and excellence in employee satisfaction, CSPs must digitally transform their business and adapt a flexible, agile, and unified method of working with their OSS and BSS systems. This is where a geographic approach rooted in ArcGIS comes in. ArcGIS is perfectly suited for unifying OSS and BSS and serving as the third enterprise business system CSPs need for managing and operating modern telecommunications networks.

ArcGIS provides the ability to integrate information in OSS and BSS systems and simplify how teams reference and use it. Customer service providers can quickly create purpose-built, configurable apps aligned to the specific needs of the frontline worker or the organizational leader. Teams can leverage ArcGIS to communicate and display the real-time status of regional activities and construction projects or to gauge customer satisfaction. The organization can streamline workflows and eliminate the need for manual manipulation or translation of data from one business system to the next, and provide a comprehensive view and environment delivering the same information, at the same time, across the organization in real time.
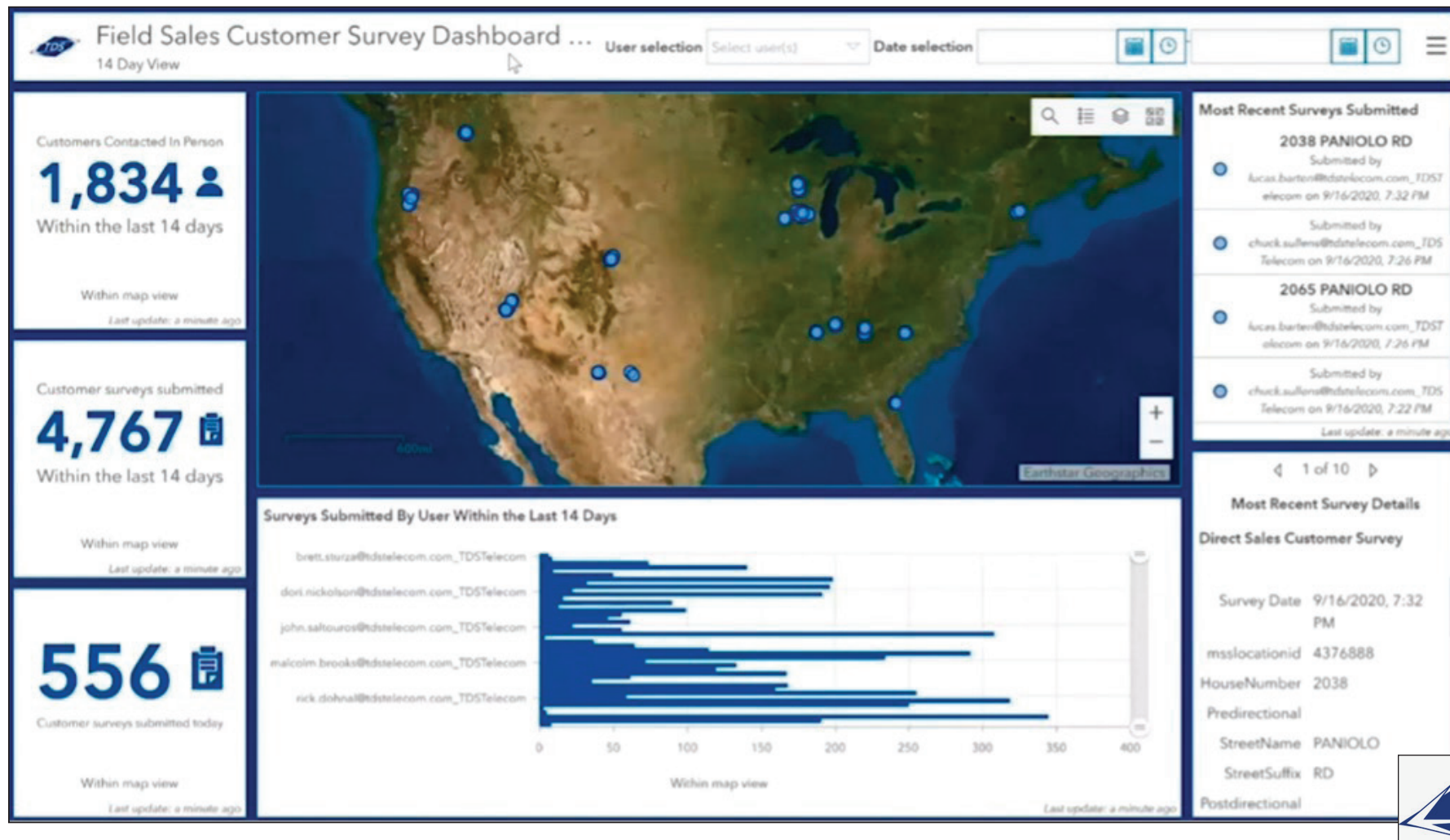
Case Study 2: TDS

As TDS Telecom sales staff resumed field operations after transitioning to inside sales due to the COVID-19 pandemic, they needed to ensure the health and safety of employees and customers by digitally tracing field activities in a real-time manner. The solution needed to be quick to deploy and easy to use. The sales data needed to be readily available as it was collected remotely for reporting, mapping, and analysis throughout the organization.

The solution TDS Telecom deployed uses the ArcGIS Field Maps application to visualize and identify existing service locations to visit; the ArcGIS Survey123 mobile app for form-based data collection; and ArcGIS Dashboards to summarize, display, and easily communicate the collected field survey data.

"Challenges that industries face with field teams in today's global health climate are unprecedented. For those with resources working in the field, the safety and health of those employees, as well as the safety and health of their customers, is a top priority. . . ."

—Quinton Maximoff, Lead Software Engineer, TDS Telecom

Geospatial Infrastructure

The starting point for modernizing how organizations work with OSS and BSS platforms and begin digital transformation is to establish a foundation. Simply put, geospatial infrastructure is GIS technology deployed on standard IT infrastructure components. The server-side infrastructure components of the ArcGIS system let you deliver, access, and use data and capabilities wherever and whenever they're needed in a secure environment.

ArcGIS system capabilities, such as data management, analysis, visualization, software developer kits (SDKs) and APIs, and storage, are delivered by server-side infrastructure components. You can host these components on-premises or in a cloud environment like Amazon Web Services or Microsoft Azure. By leveraging these components, you can expose GIS content and capabilities as web services and consume those services in your apps. This enables users to access and apply useful GIS resources in their work.

What makes ArcGIS different from other geospatial software is how it's built. Even in the smallest of deployments, ArcGIS is an enterprise system. It's capable of providing a unique credential that lets a user securely access maps, apps, data, and analysis tools. You can manage ArcGIS identities using the built-in security features in ArcGIS or using a third-party identity provider. By effectively managing ArcGIS identities for your users, you can enable people across your organization to access, use, and participate in the ArcGIS system.

Another key feature, Portal for ArcGIS, organizes users and connects them with the appropriate content and capabilities based on their role and privileges. The portal uses a person's identity to deliver the right content to the right person at the right time. From a product perspective, the portal is either ArcGIS Enterprise (software) or ArcGIS Online (software as a service, or SaaS). The portal provides access controls, content management capabilities, and a sharing model that enables users to share information within and/or between organizations.

Summary

With ArcGIS as a foundation, communications service providers are best prepared for modernizing OSS and BSS systems to tackle the simultaneous challenges of

- Increasing revenue while decreasing capital and operations expenses.
- Understanding market demand and future growth.
- Ensuring a successful customer journey and experience.
- Using real-time analytics to maximize network efficiency.

Telecom organizations can leverage ArcGIS as the ecosystem for unifying OSS and BSS resources, allowing for proactive and predictive workflows, simplified real-time processes, and clarity of quality information for informed decision-making. With ArcGIS, CSPs have the competitive advantage and resources needed for successfully meeting the demands of today's consumers and ensuring that networks will meet the needs of tomorrow.

Esri, the global market leader in geographic information system (GIS) software, location intelligence, and mapping, helps customers unlock the full potential of data to improve operational and business results.

Founded in 1969 in Redlands, California, USA, Esri software is deployed in more than 350,000 organizations globally and in over 200,000 institutions in the Americas, Asia and the Pacific, Europe, Africa, and the Middle East. Esri has partners and local distributors in over 100 countries on six continents, including Fortune 500 companies, government agencies, nonprofits, and universities. With its pioneering commitment to geospatial information technology, Esri engineers the most innovative solutions for digital transformation, the Internet of Things (IoT), and advanced analytics.

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