Your Ticket to Smarter Service

Public Transport for Smart Communities

esri

As congestion increases in our urban environments, the demand for public transport grows significantly. In the United States, public transit ridership has increased by 39 percent since 1995—almost double the population growth. Worldwide, the International Association of Public Transport (UITP) is dedicated to doubling the market share of public transport by 2025 in support of reducing greenhouse gases and providing better mobility in our growing metropolitan centers.

Concurrently, ridership is becoming more diverse, as new populations emerge and come with different expectations of public transportation. Young riders and others want more travel options for work and leisure as well as smartphone access to information about these options.

At the same time, cities and communities are emphasizing livability and sustainability even more. They do this by encouraging better urban design and providing the technological infrastructure so that they can become smart communities. The latest technology helps officials deliver the hallmarks of smart communities:

- Better service delivery at lower costs
- Greater citizen involvement and transparency
- High-quality public transportation options

These three components comprise an integral part of enhancing the economic, social, and environmental health of cities.

The Need to Transform Public Transportation

All too often, public transportation agencies have not been prepared for these changes. Shifts in ridership patterns and community demographics have often left these agencies focused on providing traditional services to a population that has become fundamentally different and has new expectations. To meet these challenges, public transportation agencies need to transform their services—and their approach to customer service. This transformation will require greater reliance on information and analysis to help staff better plan—and deliver—services to this more diverse public.

Leading public transport agencies all face three interrelated requirements in addressing these challenges:

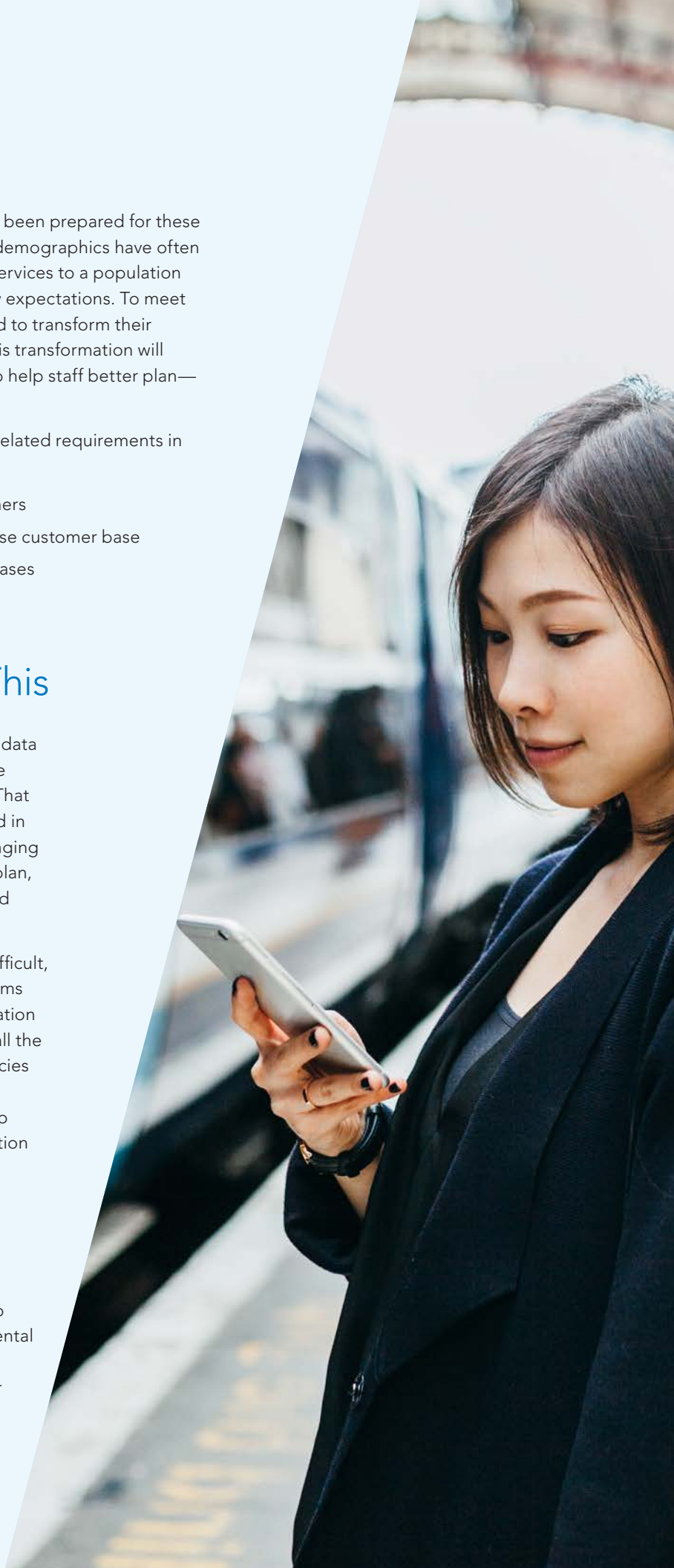
- Deliver optimal service at the lowest cost to customers
- Provide excellent customer service to a highly diverse customer base
- Continually improve performance as ridership increases

How Agencies Achieve This

Public transportation agencies often have a wealth of data in their organizations but few effective ways to analyze that data or transform it into actionable intelligence. That is because, in most cases, the information is contained in individual business units—silos of information. By bringing together this information, these agencies can better plan, deliver, and continually improve their performance and service delivery.

But integrating and sharing this information can be difficult, not for a lack of modern information technology systems or a standard method for describing public transportation features, but rather because there is no way to bring all the information together easily and intuitively. Most agencies simply don't know where to begin. Without a single information source, public transportation agencies too often fail to realize the full benefits from their information technology investments.

Esri's ArcGIS® platform provides a framework for information integration. ArcGIS creates a unified information layer and provides all the tools needed to manage, share, analyze, and act on this information. Consequently, staff can quickly make data available to your entire organization and promote cross-departmental awareness and collaboration. Your teams can better understand how to plan and deliver better service, for greater efficiency and effectiveness.



The ArcGIS Platform for Public Transportation

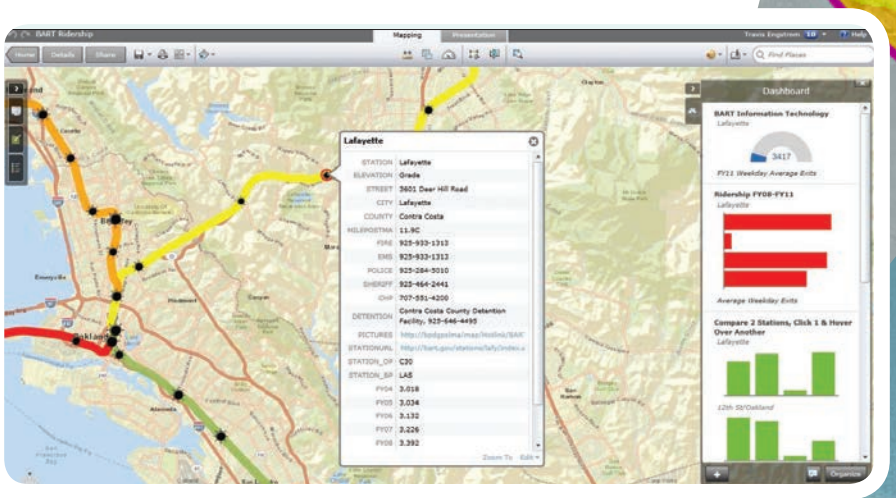
Using Esri's ArcGIS platform, your workforce will be able to access this information from any device, so that staff can make better decisions in both the office and the field. ArcGIS helps executives, senior managers, knowledge workers, and fieldworkers use and understand information that is timely, accurate, consistent, and spatial, so they can act on the challenges your agency faces today.

It All Begins in Planning

Effective service planning is both an art and a science. It all begins with a thorough understanding of your community demographics, existing travel patterns and modes, accessibility issues, home and work locations, and other factors. Service planning should also reflect community goals and values. Additionally, it can support land use and economic development policies, all to advance more livable communities. To maximize each of these goals, transportation service planners need to rely on comprehensive data sources with the latest information, together with intelligence collected from their own systems.

Esri's software comes bundled with some of the richest sources of information—not just the latest census data. Esri's ArcGIS platform includes updated forecasts and comprehensive data on employment, consumer spending, and lifestyle characteristics, all of which help you gain a deeper understanding of your existing and potential markets. With Esri's software tools, you can analyze and visualize residential and employment densities as well as overlay existing and planned land uses to help maximize ridership and development goals. Accessibility tools, together with travel pattern data, help guide the development of effective route planning and the design of differentiated services to maximize overall ridership. Community values and goals can be built into your analysis, ensuring that your service planning best serves your community.

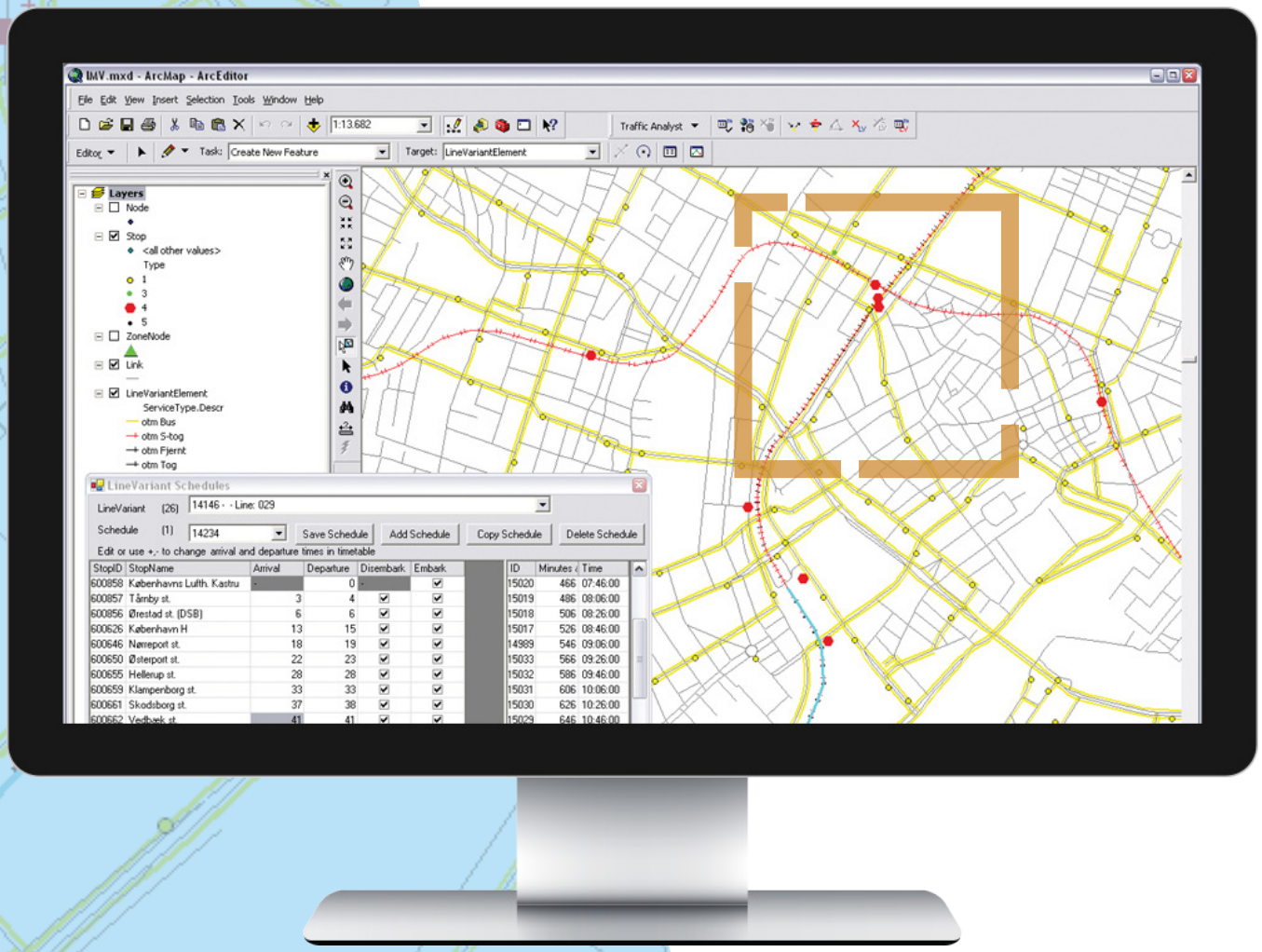
Esri's spatial platform helps you manage and maintain your existing stop, route, and pattern data, which provides the baseline for analyzing your existing service effectiveness. Combine this information with your passenger count data to help dissect ridership trends over time as well as the performance of your existing routes. In addition, you can quickly analyze the impact of service changes on specific populations to meet Title VI requirements. Esri gives you the platform to take your service to new levels.



A Single Data Storehouse

You invested considerable time and effort to develop effective schedules of service. With geographic information system (GIS) technology, that schedule information can be reintegrated with the stop and route information from your planning processes, creating the core elements of your centralized spatial information center. This information can then be shared and used by a host of downstream applications such as customer service, automatic vehicle location (AVL), automatic passenger count, and stop enunciation systems. This approach prevents the common problems of data duplication and error and helps to establish a single source of truth within your agency.

In turn, information drawn from your passenger count and fare collection systems, along with real-time arrival information, can be brought back into your data storehouse. Doing so helps you further analyze your performance and gain rich insight. A single source of information allows you to monitor and continually improve your service delivery and performance, increasing your agency's overall efficiency.



A Real-Time View

Your customers demand current information, and you need to monitor and control your operations in real time. As a complete platform technology, ArcGIS provides the tools to manage your assets in real time, allowing you to make adjustments in order to maintain schedules, respond to unforeseen events, and supply this information to other systems as well. GIS brings the spatial dimension to your real-time information, giving you a comprehensive common operational picture to help you track vehicles, assets, and events in order to deliver actionable intelligence.

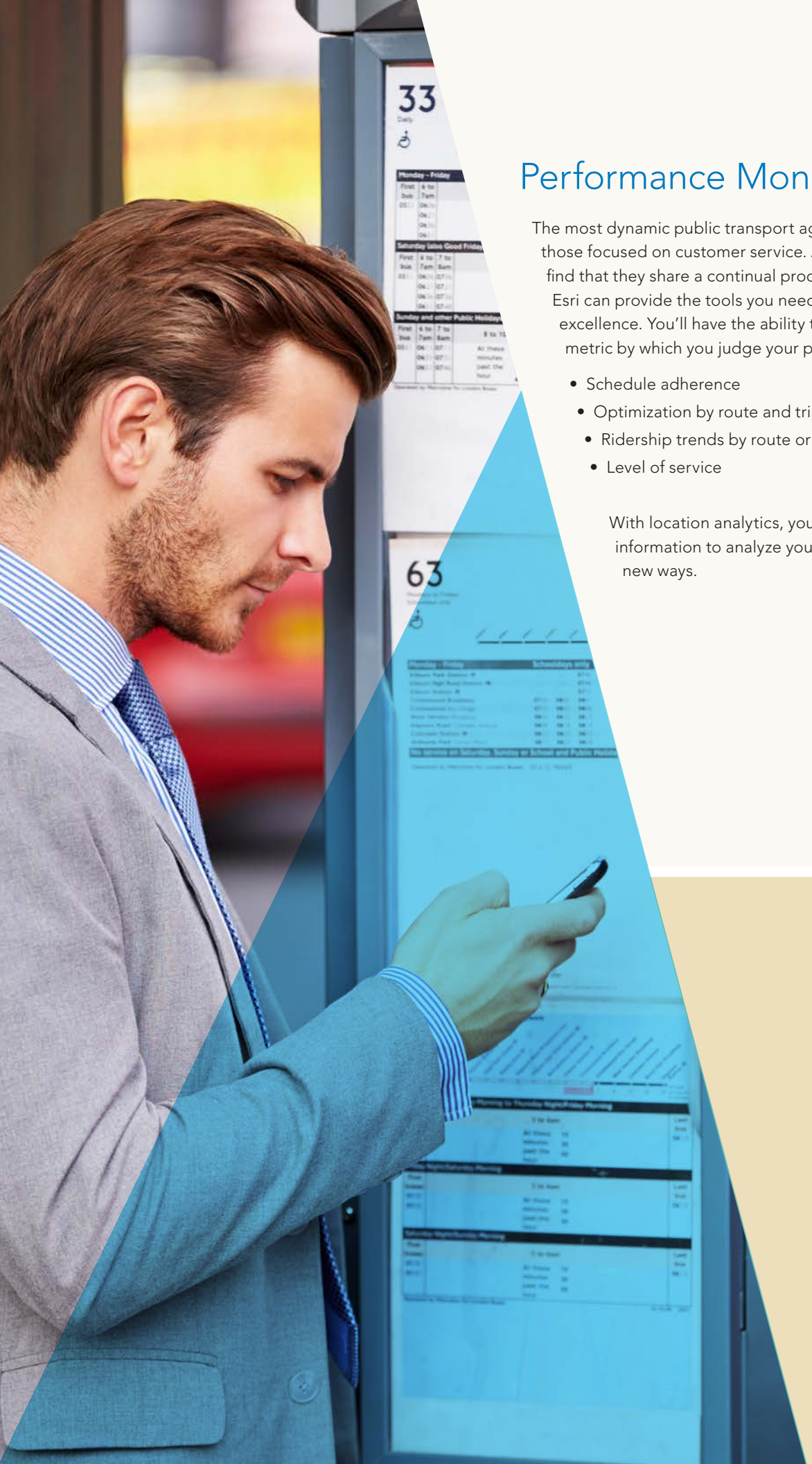
ArcGIS integrates seamlessly with your existing AVL system, bringing data into a spatial environment to allow you to better control your real-time operations as well as analyze your performance and share insight with customer information systems. With a centralized, spatially enabled information platform, you can determine schedule adherence and provide updated arrival status at the stop or on your user's phone.

Keeping Your Customers Informed

Customers are tech savvy and want access to real-time information to help guide their public transit choices. Whether looking for the optimal route across town or needing to know when the next bus will be at a stop, your customers can access this information on any device, anywhere, anytime, thanks to ArcGIS.

With the ArcGIS platform, you can even push real-time web maps and text messages—ensuring that your riders know how and where to get the most out of your services. And that helps to increase ridership and build brand loyalty.

Customers need more than just current arrival information. With GIS, you can help your customers find out where to buy smart cards and monthly passes. GIS tools can help you determine the optimal locations for such services.



Performance Monitoring

The most dynamic public transport agencies are those focused on customer service. Among them, you'll find that they share a continual process of improvement. Esri can provide the tools you need to work toward excellence. You'll have the ability to visualize almost every metric by which you judge your performance:

- Schedule adherence
- Optimization by route and trip
- Ridership trends by route or individual stops
- Level of service

With location analytics, you can use your agency information to analyze your overall performance in new ways.

A Location Platform to Integrate Your Business

ArcGIS integrates your existing business systems, which helps you visualize and compare the information they contain. ArcGIS converts your data into actionable intelligence to form the basis for sounder decision-making. That means you have the tools to improve efficiency, achieve community goals, and build better relationships with your customers. Esri's ArcGIS platform gives you the information you need—on any device, at any time—to keep you constantly apprised. Leading public transportation agencies worldwide have turned to Esri to help them improve their service performance and their bottom line.

Your Next Steps

You can arrange a preliminary assessment of how ArcGIS, Esri's spatial platform, can help your agency achieve its business objectives. When you contact an Esri representative, our transportation and public transit experts will help you conduct a business value assessment. With this, you can understand where the opportunities for a location strategy exist. You will see how bringing spatial information together from your existing business systems can help meet current challenges. Esri's jump start engagements can help you quickly implement intelligent solutions that will put you on the path to greater productivity. Stand up to today's rapidly changing environment with Esri.

Visit **go.esri.com/public_transport_paper**.

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Esri inspires and enables people to positively impact their future through a deeper, geographic understanding of the changing world around them.

Governments, industry leaders, academics, and nongovernmental organizations trust us to connect them with the analytic knowledge they need to make the critical decisions that shape the planet. For more than 40 years, Esri has cultivated collaborative relationships with partners who share our commitment to solving earth's most pressing challenges with geographic expertise and rational resolve. Today, we believe that geography is at the heart of a more resilient and sustainable future. Creating responsible products and solutions drives our passion for improving quality of life everywhere.

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