Getting you there. Smarter.

CUBIC | Transportation Systems

For nearly half a century, Cubic Transportation Systems' ideas and innovations have helped revolutionize the transportation industry.

Our history of creating and implementing payment and information technologies for the world's most renowned transportation authorities and operators has taught us that to promote progress, **you must create collaboratively** – with your technology partners and your customers – and foster a culture of innovation within your company.

We are committed to not only helping shape the transportation landscape, but are prepared to lead, envision and enable industry disruptors. Our technology platforms are designed to factor in the unknown, allowing our systems today to be relevant years down the road.

Transportation providers share a common goal – dedication to their customers. We want to help you achieve an enhanced experience for those you serve. By simplifying and making travel a pleasure rather than a hassle, we are inspired to deliver innovative technologies that connect people. Virtual assistance kiosks and mobile payment systems are just a few of the advances that put the power of decision-making in the palm of a traveler's hand.

Our **commitment to customer-focused solutions** is also embodied in our services for our agency partners. Not only do we support our clients in their everyday revenue management operations, but we provide direct customer service to their travelers through call centers, in-person walk-up centers, and through their branded websites and social media. These interactions teach us what travelers and their service providers want and need, and ensure their feedback is incorporated in our next-generation products and services.

The trends and challenges of global urbanization will continue to encourage all city stakeholders to work together to improve mobility and quality of life in urban centers. We have a vested interest not only as a company, but as constituents, to make smart cities a reality.

At Cubic, we are committed to **getting you there, smarter**. We look forward to showing you how.

Sincerely,

Matt Cole
**President, CTS
Senior Vice President,
Cubic Corporation**

Over 38 million journeys taken using Cubic systems daily

1

nextcity ▶

**Predictive
Analytics**

**Revenue
Management**

Services

**Transport
Management/
Safety**

Integrated
Customer Support

Data

Operations
& Analytics

One Account

Tolling

Parking

**Real-time
Passenger
Information**

Building a smarter tomorrow.

The world's population is moving to urban centers, resulting in greater traffic congestion, frustrated travelers and lessened productivity. These trends contradict the very economic excitement cities were designed to inspire.

We are addressing these challenges with NextCity, Cubic's vision for city management and integrated traveler payment and information that centers on three core principles: the delivery of an integrated customer experience, one customer account for all travel and integrated operations and analytics across all modes of transportation. It is the answer to the challenges of how to make choices that will improve road use and public safety, reduce greenhouse emissions and increase economic viability.

Is my bus running on time? Is road work or a car accident causing backups on the highway I normally take to work? Is there a better option? We answer these questions by combining our progressive technologies in mobile, open payment, intelligent traffic systems, tolling and real-time passenger information, along with the data produced from disparate sources to connect multiple solutions together. We are able to create more informed and empowering choices so we can give travelers more of what they want most – time.

And so we can give back to cities what they need most – smarter mobility for their citizens.

2   3
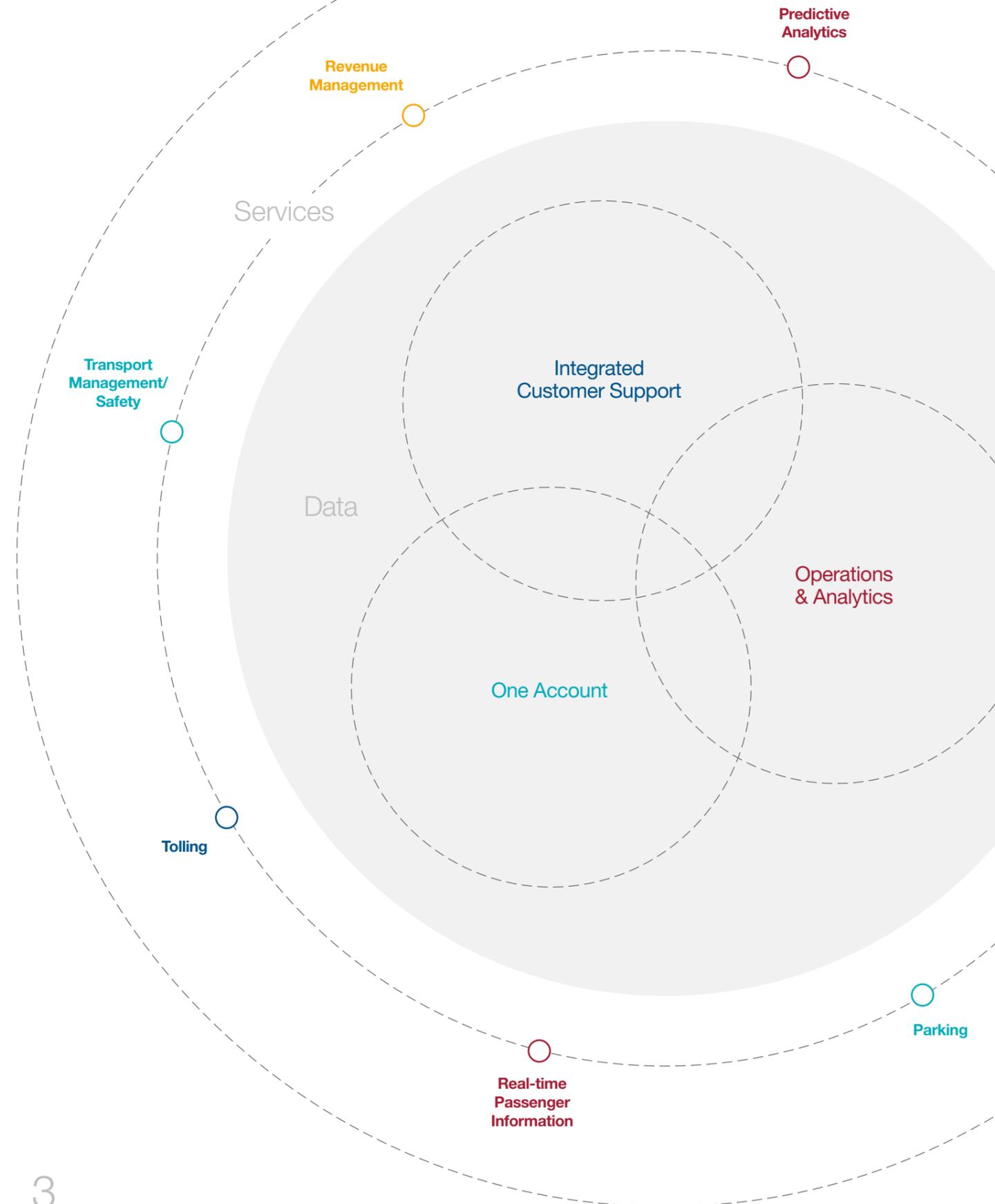
Who We Are

We've come a long way, together.

At Cubic, we believe our identity is intrinsically linked with our customers, and the people our customers serve. How they get from one place to the next–how that impacts their lives, their fellow travelers and their cities–and how it feels along the way.

That's why we're passionate about developing transportation solutions that improve the way we move throughout cities. Innovation is in our culture, and our history speaks for itself. We've delivered successful large-scale transit fare collection systems and traffic management systems on four continents, spanning five decades. We are a company of firsts, focused on inventing solutions in collaboration with our customers and partners:

- Mag stripe ticketing deployment, WMATA 1975
- National Traffic Control System, Traffic Scotland 1994
- Motorway Dynamic Speed Control scheme, Highways Agency UK 1995
- Smart card deployment, WMATA 1999
- Mobile ticketing app, RMV 2006
- National Journey Time System, Highways Agency UK 2009
- Large-scale open payment deployment, TfL 2012
- Large-scale account-based open payment deployment, CTA 2013
- Mobile app for fully integrated regional transit services, CTA 2015

Understanding your business; ensuring quality of process, talent and technology; and earning your trust are foundational attributes of our partnerships. With a focus on customer convenience and organizational efficiencies, we are shaping the future of transportation–together.

1970   1990   2000   2010

1971
Cubic Acquired Western Data Products

1975
1st Mag Stripe Deployment:
Washington DC WMATA

1994
1st National Traffic Control System: Traffic Scotland

1995
1st Motorway Dynamic Speed Control Scheme: Highways Agency UK

1999
1st Smart Card Deployment: Washington DC WMATA

2002
Chicago ChicagoCard™

2003
London Oyster

2004
BART EZ Rider

2004
Minneapolis Go To Card

2006
1st Mobile Ticketing Customer: RMV/KVV

2006
MARTA Breeze™

2007
PATH SmartLink™
PATCO FREEDOM Card

2008
Los Angeles TAP®
Brisbane *go* Card

2009
Miami EASY® Card
Modena, Italy

2009
San Diego Compass Card

2009
National Journey Time System: Highways Agency UK

2010
MTA CharmCard™
MTC Clipper® Card

2010
Skåne, So. Sweden

2011
So. Florida - EASY® Card
Google Wallet Acceptance

2012
Open Payment Launched

2012
Sydney Opal Card

2013
Chicago Ventra Card

2013
Acquisitions

2015
Vancouver Compass Card

2015
Ventra App

2015
New Hampshire Tolling Project Awarded

2016
Awarded Cloud and Mobile Contract

4   5

Where We Are

Stockton-on-Tees
Dublin
Manchester
Malmö
Hamburg
London
Frankfurt

Edmonton
Vancouver
Seattle
Portland
Minneapolis
Toronto
New Hampshire
Chicago
New York
San Francisco
Denver
Baltimore
New Jersey
Washington, DC
Tullahoma
Atlanta
Los Angeles
San Diego
Jacksonville
Miami
Puerto Rico

Dubai
Hyderabad
Hong Kong

Perth
Brisbane
Sydney
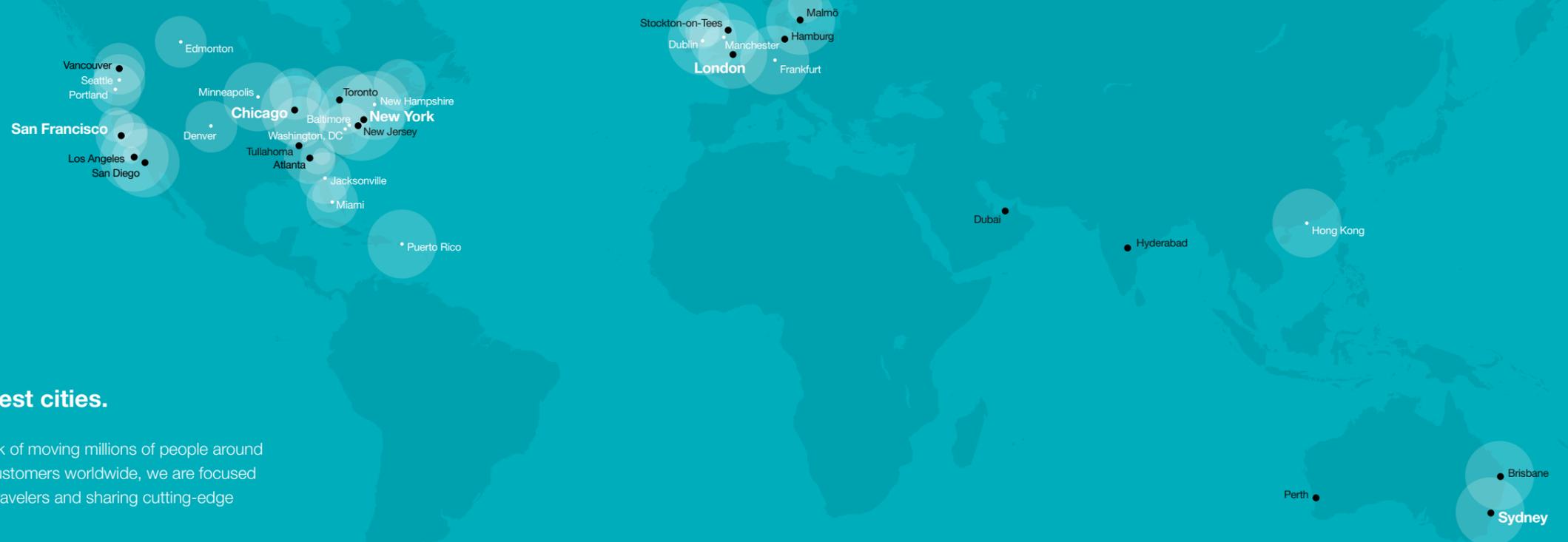
Enhancing mobility in the world's greatest cities.

We are proud to support our customers in the very difficult task of moving millions of people around cities safely and efficiently. With over 450 transport operator customers worldwide, we are focused on understanding agency challenges to delivering mobility to travelers and sharing cutting-edge innovations from our key properties around the globe.

An essential ingredient to our customers' successes is being the right-sized partner for the job. We focus on one market – transportation – while ensuring our growth is proportionate to the size of our base so that we can service our clients with the best of our resources. This includes establishment of local operations to support our customer partnerships promoting cohesive collaboration and knowledge-share. This insight into our respective operations provides customers with local access to a wealth of international resources and experience.

Also helping facilitate collaboration with customers, partners, and industry leaders is our Cubic Innovation Centre. Established in London, we bring together teams to work on solving tomorrow's transportation problems.

Thinking global, acting local. Every day.

Thinking   global, acting local. Every day.

Customers (by population)   ● Cubic CTS Offices

>20 million   >1 million   >500,000   >100,000   <100,000
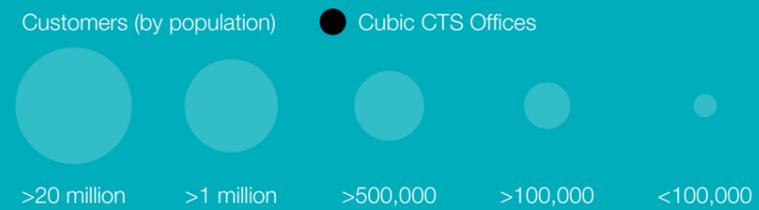
Systems Integration

Uncompromising access, uncompromised customer reach.

Technology is driving the pace of change in the transportation industry. As a system integrator, Cubic can ensure that legacy systems and unpredicted disruptors complement and support one another. We believe that open architecture promotes collaboration and allows agencies to pull together best-of-breed hardware and software to design systems meeting their unique needs. Our systems are built to be flexible and future-proof, designed on industry standard technologies including application program interfaces—allowing third parties to create new apps and features that keep advancing transport systems quickly and with minimal cost.

Integrating third-party solutions means ensuring data and privacy are protected—and doing it simply and securely. Cubic can include the necessary management utilities for simple and secure access by third-party service providers chosen by our partner transportation agencies. Third parties are no longer hampered by proprietary technology to manage device security, applications and near field communication (NFC)--enabled devices, such as mobile phones, retail merchant networks, bike-sharing systems and other services, including parking and taxis.

With Cubic providing the integration gateway, there is no need for extra hardware in third-party locations. And no worries about security because we provide the protection.

In an increasingly connected world, partnership between Cubic and leading technology experts in their fields brings together payment and information sources to define a higher level of solutions for our customers.

TVMS/ATMs/Kiosks

Contactless Enabled POS

NFC Smart Phones

CUBIC
Transportation Systems

Road Sensors

Parking

Bike-Share Stations

Traffic Control

Partnership defines a higher   level of solutions.

One Account for Travelers

Retail

Car Share

Parking

One Account

Train

Tolling

Bike Share

Bus
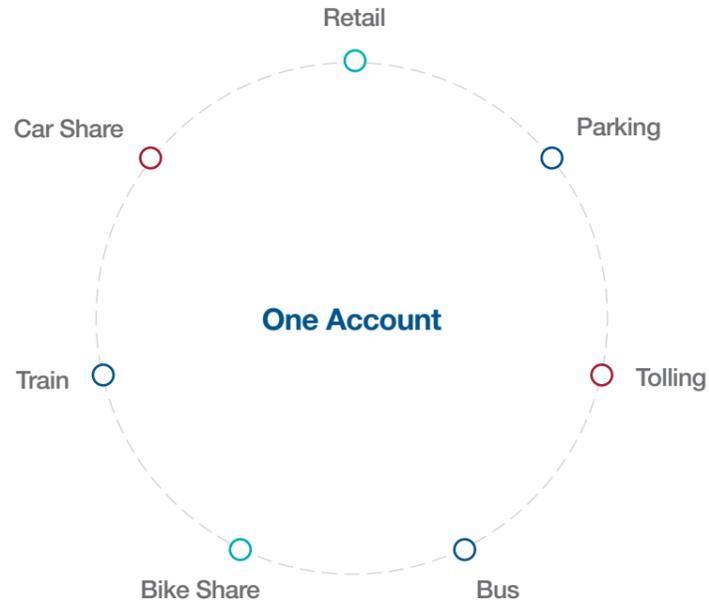
A thoughtful payment solution travelers don't think twice about.

Paying doesn't have to mean navigating different fare media or ways to pay every step along the way. The Cubic One Account Solution links all transportation modes used. It allows seamless payments for public transit, tolling, parking, or third-party services like bike or car sharing, without having to manage these service providers independently. Travelers move all their activity into one account to link their travel choices to preferred payment methods, such as bankcard, checking account or prepaid transit benefits. Account management is simple and secure, with a single customer interface, logon, and custom alerts.

The One Account Solution gives travelers a big picture that can show them how to reduce the cost of a journey, with smarter, personalized and actionable end-to-end journey planning. It adds up to less stress and uncertainty, and more decision-making power.

Cubic's One Account Solution. It goes with you, wherever you go.

It goes with you, wherever you go.
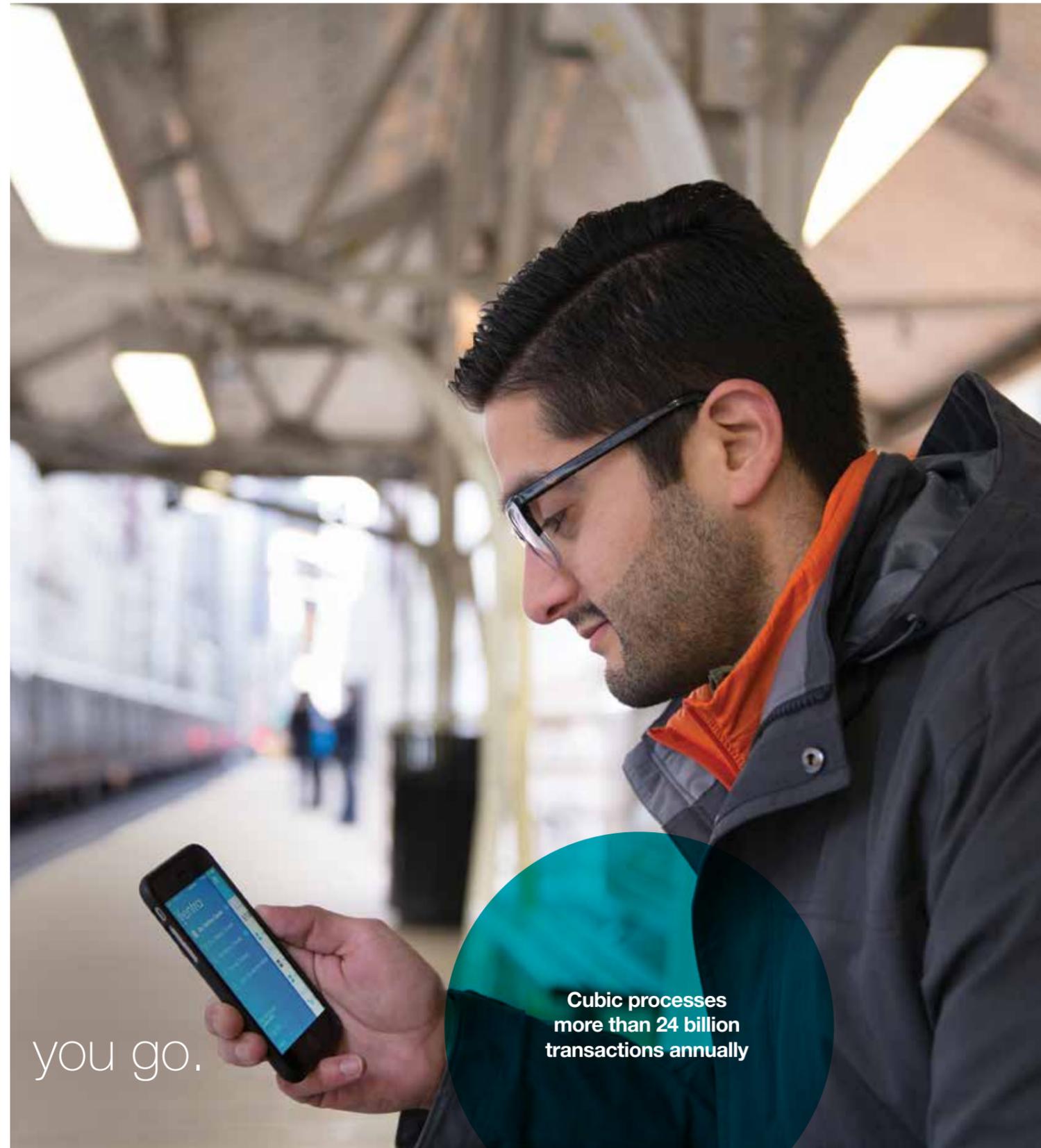
Cubic processes more than 24 billion transactions annually

One Account for Agencies

We didn't reinvent the wheel, just the hub.

Leadership leads to ridership when it comes to attracting and retaining customers. The One Account Solution is built on the Cubic Back Office to further multimodal integration and create a convenient traveler experience. It opens opportunities for agencies with a common ridership to build business partnerships, and collaborate in programs that incentivize travel. These may be fare discounts or even the redirection of travel patterns to third-party providers during service disruptions. The Cubic One Account Solution's key benefits for agencies include:

- Ability to price across modes
- Manage demand
- Better understand their customers for shaping user demand and behavior
- Reduce fare collection costs
- Flexibility to keep pace with payment innovations
- Create a channel for revenue sharing among agencies in the region

For third parties, the Cubic Back Office reduces the effort on their part to manage or curate their information, easing their participation in regional transit programs. For agencies, Cubic's account-based technology simplifies business rule management in one location—the Back Office. For travelers, this simplified access to modes and services makes it easier to manage funds and choices in travel.

Seamless. Secure. Straightforward.

Seamless. Secure. Straightforward.
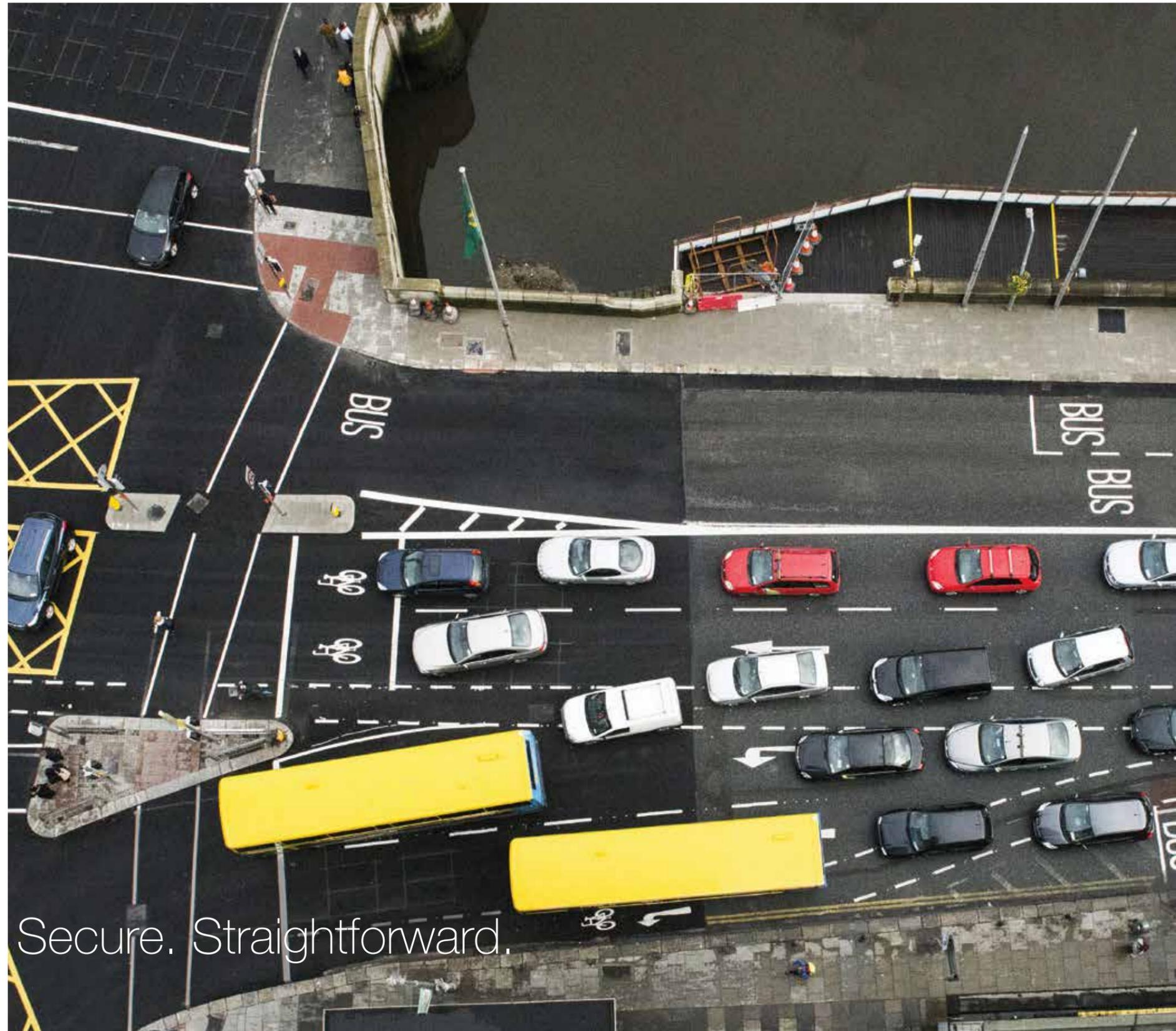
Over 60% of public transit rides in the US, UK and Australia are taken using Cubic systems

Operations & Analytics

Ensure data security, accuracy and integrity.

Solving for efficiencies, where customers need services most.

Cubic's data-driven systems ensure data security, accuracy and integrity. This gives agencies maximum value out of their data through more efficient planning, insight into optimizing operations, and a better understanding of how their customers use the system, so the overall experience can be improved.

Open architecture also allows agencies to pick and choose the best-of-breed applications for specialized functions. A general ledger for financial settlement, business intelligence tools for data visualization and analytics, business process management, and customer relationship management solutions add to the holistic suite.

All are integrated into a comprehensive system with full traceability for operational, financial and security audit.
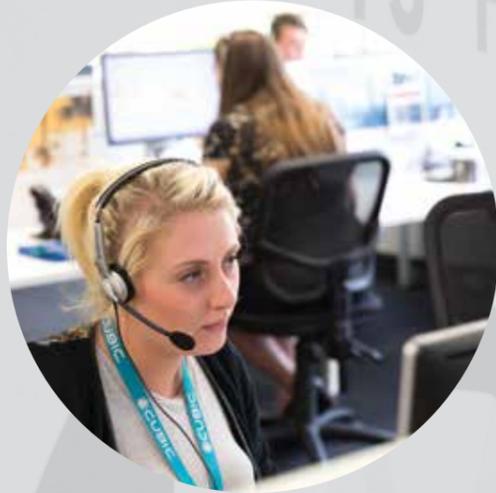
Services

Service that goes a long way.

We view our client relationships like the traveler's journey: As a whole, and every step along the way. Whether we're partnering in a comprehensive system or delivering individual services, experience and innovation guarantee performance that meets or exceeds the industry's highest standards.

At the core is **Business Support Services**, for the management of day-to-day operations, including all customer contact and sales channels and a high overall system availability through our 24x7x365 Service Desk. Our dedicated contact center directs media and distribution channels including third-party retail, and institutional programs. Multiple customer touchpoints and traveler feedback loops improve future products and services, strengthening customer trust and confidence in your brand.

Accurate and timely revenue management is provided through **Financial Services** focusing on revenue protection. We bring all the processes and accounting practices associated with revenue management. We manage the day-to-day general accounting functions, including refund processing, customer adjustments and chargeback processing. And, as importantly, our fraud reduction strategies and implementation provide constant monitoring and analysis of your system.

IT Operation Services is the highway of the transportation world, and with an unrivaled record of designing and implementing advanced infrastructure, we can reduce overhead, simplify management, maximize performance and increase revenue. We also keep a pulse on attacks happening in the broader IT world ensuring customer information is protected at all times.

With a 98%+ availability rate, the most visible aspect of your operation—your installed assets—couldn't be in better hands. From vending machines and fare gates to road signage and traffic management tools, our comprehensive, all-inclusive **Asset Management Services** carries out continuous advanced diagnostic remote monitoring, ongoing preventive maintenance, and rapid corrective maintenance.

Of course, it's all overseen by a **Professional Services** department with nearly 50 years of experience in analytical and operation management to understand and communicate with customers—because keeping them happy is at the center of your business. Our services in community outreach and customer education, operational planning assistance, and data analytics provide the key to a positive traveler experience. And one they'll be satisfied with to repeat again.

All so you can focus on your core business—of moving people.

Solutions

Finding solutions faster
means getting there sooner.
And enjoying the ride, more.

We've learned a lot over the last half of a century designing, building, operating, and maintaining transportation systems, but the lesson that resonates most of all is that when we collaborate with our customers and engage with travelers who interact with our systems—our products become better. We learn, innovate, create, and repeat.

As technology improves and traveler expectations increase, so do our products and solutions. We're committed to being ahead of the curve, designing to meet the needs of users in to the future— with a focus on open architecture, integration and partnership with third parties—to ensure our customers are prepared for the inevitable disruptors in the industry.

Our systems allow travelers to transition from multiple modes of transport without friction. There is no need to worry your customers with the details behind the scenes. Whether for traffic management solutions or revenue accounting and information management, we address the gamut of transportation systems and make the data digestible and actionable for you. In turn, this provides travelers the ease of knowing their information is safe and our systems are reliable.

Transport Management

Cloud-based IT data integration.

Intelligent Transportation Systems –
The perfect journey is our destination.

There are many moving pieces in a city's transport network, and service disruptions of any one of these could bring the entire system to a halt. By constantly monitoring and managing traffic data from different sources, along with the enforcement and maintenance aspects, and understanding how they integrate with one another, Cubic ensures motorists, pedestrians, cyclists, transit and freight move along, smoothly.

We specialize in the development and supply of complex traffic management systems for the monitoring and control of urban and intra-urban road networks, encompassing integrated traffic and incident management, decision support, bus tracking and passenger information through integrated user interfaces. Managing traffic congestion, maximizing existing infrastructure to expand its utility despite the strains, protecting driver safety, knowing where to dispatch maintenance crews, minimizing the environment impact of dirty emissions—these are just a few examples of the touchstones of our solutions.

We are further developing these core competencies for the future of integrated transport management with Cubic Transport Management, our cloud-based intelligent traffic system data integration management solution. The first of its kind, this solution is built on a flexible and scalable platform that allows for the continued operation of legacy systems while reducing costs of operation. Travelers benefit from improved information and increased support—all leading to a safer and happier journey.

No matter where you're going, the information is all in one place.

NOTE: *The Cubic Transport Management Solution has previously been referred to as NextTraffic.*
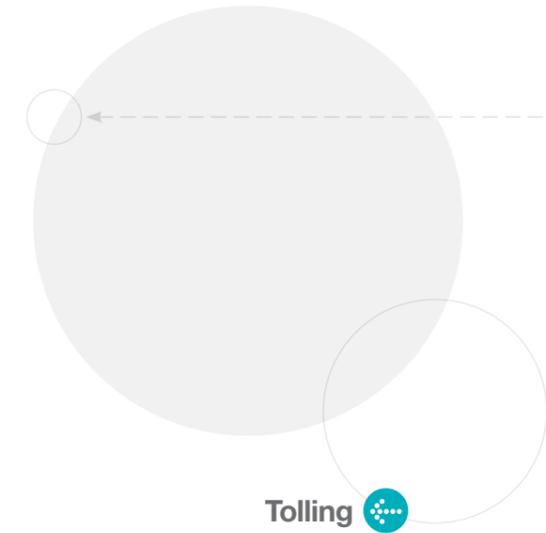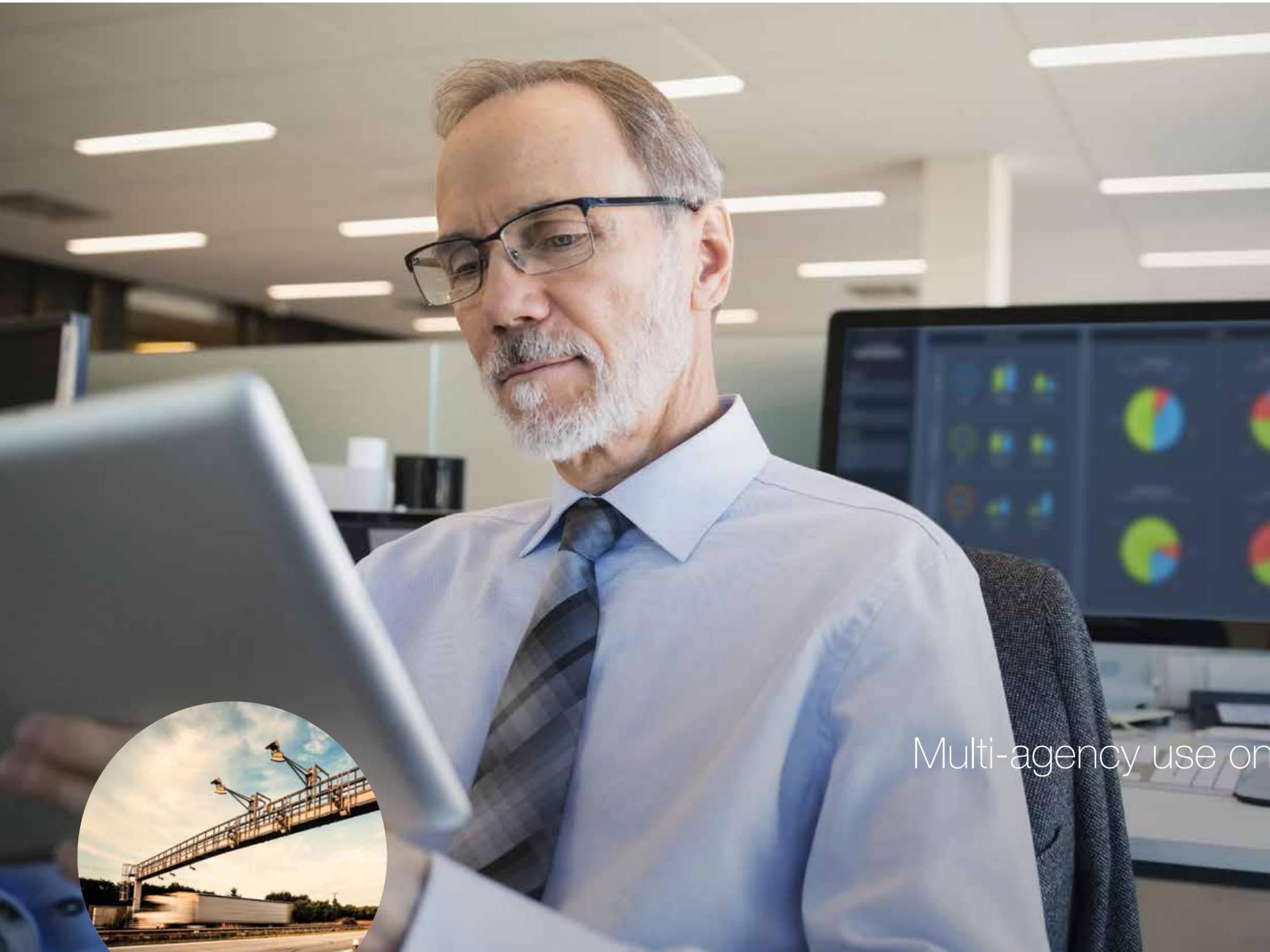
Tolling

Tolling innovation that keeps people and business rolling.

The Cubic Tolling Solution offers an alternative to proprietary back office systems that are expensive and difficult to change, customize and modernize.

We integrate off-the-shelf, best-of-breed components familiar to the best of the blue chips in the financial services and logistics industries. Our applications give toll agencies a back office developed from the ground-up for enhancing operations, customer services, and financial and security management.

Cubic's account-based transaction processing lays the foundation for multi-agency use on a common platform, giving each entity control over its own business rules, revenue apportionment and general ledger. Smaller agencies benefit from a customizable high-quality platform with the flexibility to make rapid changes. The solution can easily adjust to add new agencies as they begin to be used, fully supporting multimodal transportation.

It's a one-size-fits-all approach that provides for custom applications.

Multi-agency use on a common platform.

22   23

Revenue Management

Where payment intersects with smarter decision-making.

Capabilities, innovation, service delivery improvements and cost savings are recurring goals of Cubic's Revenue Management Solutions. Our systems reflect our customers' operational preferences, and our platforms are customized to the travelers' needs, with future scalability built-in for operators–whether card based, account based or open payment "pay as you go."

Card-Based: Cubic has delivered card-based revenue management systems in more than a dozen of the world's busiest transit systems. These systems–built around a common software product suite and back office–is a choice of agencies desiring a closed-loop environment with a single contactless fare media for regional systems with common ridership and multiple transit modes. Card-based systems support transit value and fare products stored on the card.

Account-Based: New contactless bankcard and mobile technologies aimed at simplifying and speeding up payment for consumers have crossed over with new opportunities for use in public transit, and Cubic is leading the evolution. These drivers coupled with Cubic's innovation led Cubic to design the first large-scale account-based system in North America for Chicago. The system supports both account-based processing through an agency-issued smart card, as well as open payment to "pay as you go" with contactless bankcards or mobile wallets. Account-based systems move passenger data and stored value from the card to the back office, along with fare policy, products and pricing.

Open Payment: Cubic has also implemented open payment "pay as you go" in London–a model that offers travelers the option to use their existing contactless bankcard–whether physical or on their smartphone–and helps agencies better service infrequent travelers, such as tourists or infrequent transit users. The London system runs alongside the card-based Oyster system.

We work with our customers to weigh the options, benefits and differentiators for the revenue management system architecture that will provide best value for their operational environments–as well as the benefit to their customers. Every system has different requirements, and our clients look to Cubic as a trusted advisor to guide their decision-making. Cubic services further support our customers with a range of comprehensive coverage for the entire system or select individual choices including revenue accounting, to interactive voice response for call centers, and more cost-savings options.

Our solutions focus on getting you from one place to the next–with freedom, flexibility and efficiency.

Cubic has over 130,000 transit devices installed around the world

Real-time Passenger Information

When you can predict,   you can plan.

With real-time passenger information, you're riding on the cloud.

Link all the city's buses, trains, ferries and trolleys together through an integrated GPS tracking system, then send their data to the Cubic NextBus service center where the most accurate algorithm in the transit industry goes to work, and public transportation truly becomes people oriented.

The key concern for transit agencies is how to provide high-quality, real-time information that is cost effective regardless of agency size. Our customizable solution allows you to select the management tools and customer touchpoints you need, whether you have a few vehicles or several thousand. Because traffic variations, breakdowns, and day-to-day problems faced by any transit provider can interrupt service, NextBus was designed to provide passengers the information to keep on schedule, even if their bus or train isn't.

Real-time departure and arrival information are relayed through the internet to smart phones and other mobile devices, LED signage at transit stops, and also through text alerts so riders can adjust their schedules to fit. At the same time, operations managers can use the same tools to evaluate vehicle performance, location, scheduling, headway management, and missed blocks. Automatic Passenger Counting (APC) even allows reallocation of vehicles to manage supply and demand.

Providing real-time arrival data allows riders to plan their trip, increasing the likelihood they'll continue to use public transportation. And our comprehensive transit management system saves operators time and money by optimizing existing routes and schedules.

When you can predict, you can plan.
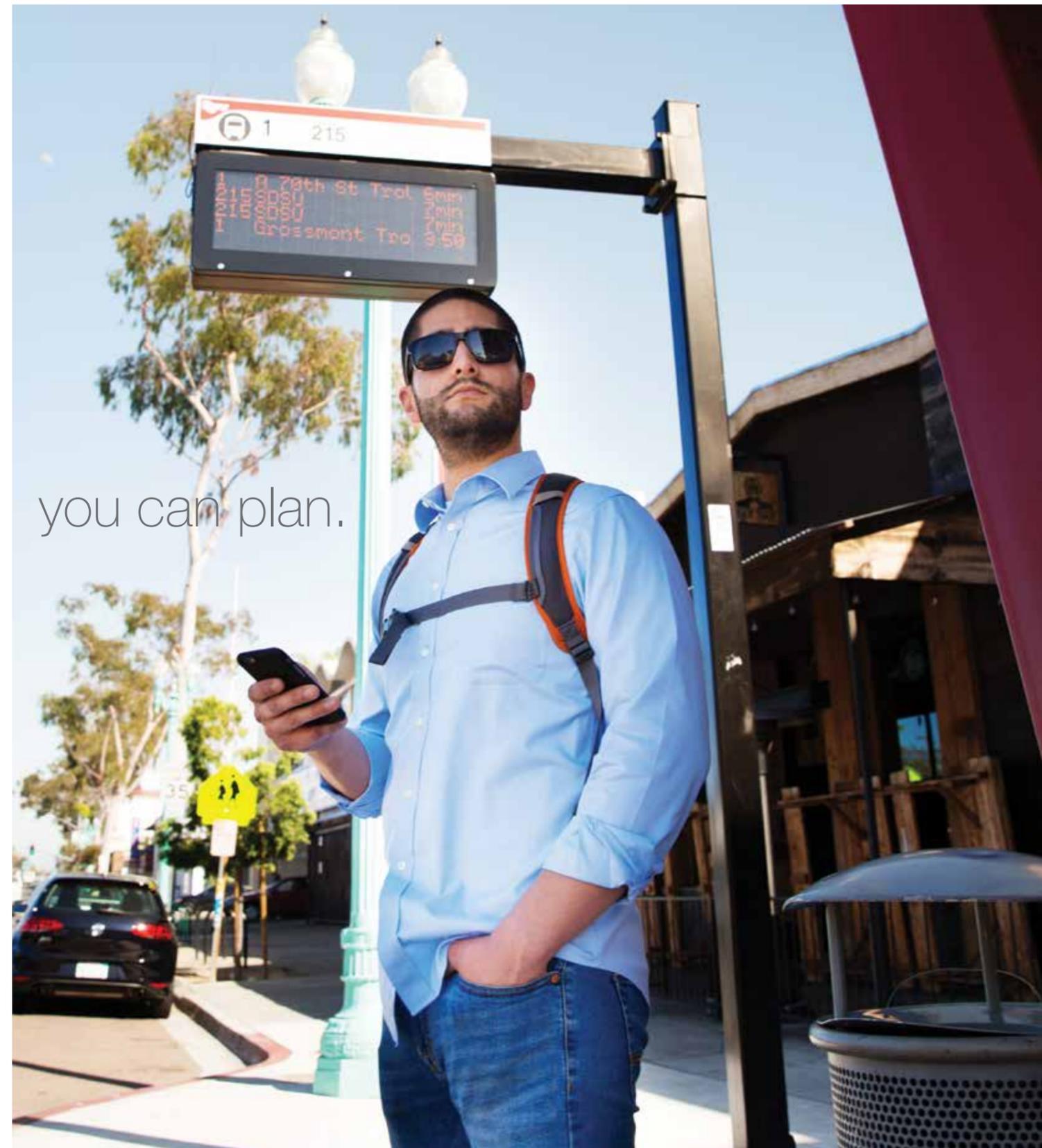
Customer Experience

The customer's experience is ours, too.

The traveler's primary goal is to get from place to place as seamlessly and enjoyably as possible. Understanding the natural process of movement and motivation helps us to innovate and integrate applications that inform and add value to travelers' decisions and make their journeys feel better.

A new generation of Cubic customer-focused payment and information solutions are being implemented around the world to do just that—make life easier:

- **Check In/Be Out (CIBO)** app lets bus riders check in with a Bluetooth-enabled smart phone when they board, and then automatically checks them out and charges them at their destination. The result: Less infrastructure, less cash handling and lower prices.
- **Mobile journey planning and payment applications** bridge the gated/ungated divide in regional systems seeking a universal fare payment technology. The self-service features create a one-stop shopping experience for riders for fare purchases, account management anywhere on the go, receiving alerts for account balance, low balance, expiring passes, and receiving transit tracker information.
- **Cubic's NextBus** perfects planning by delivering real-time bus, rail, ferry and other NextBus-powered arrival and departure information.
- **Open application program interface and mobile apps** help travelers plan trips, pay fares and get service information through a smartphone app, and if it's NFC-enabled, the traveler doesn't even need to carry a separate fare card.
- **Virtual Ticket Agent**, the future of face-to-face ticket vending, allows customers to interface with a live agent through a virtual video port. This hybrid of ticket office, call center and ticket vending machine combines the confidence of personal contact travelers enjoy, and the flexibility of personnel management agencies demand to optimize customer service and cost.

We're focused on delivering "what's next" in transportation to keep your business relative in the future.

Predictive Analytics

Gather. Comprehend. Act.

Big data, better understanding.

Today's urban transportation networks generate huge amounts of operational data and information. The data can tell us who, what, when, and where about the travel experience. But agencies often need help understanding and maximizing their data potential to answer the crucial question: Why do travelers make the decisions they do?

Cubic Business Analytics provides a solution for unlocking the hidden, actionable information in big data through comprehensive collection from enterprise sources, filling in traditionally overlooked gaps, and analyzing from multiple perspectives. These insights are helping to shape the future of urban transportation including the ability to:

- Anticipate traveler responses to service changes by predicting the impact on journeys
- Identify stress points in transportation networks and propose remedies
- Improve journey planning tools and accuracy
- Support frictionless travel across multiple modes of transportation
- Facilitate the restructuring of transportation networks to achieve strategic and operational efficiencies

Our collaborative process has extended to partnerships with financial enterprises to derive a richer behavioral picture, employing predictive analytics to deliver a more holistic, up-to-date picture of how well an urban transport network supports access to services and the economic center of cities.

Now that we understand how travelers think, we can anticipate what they'll do, even during the unexpected.

Gather. Comprehend. Act.
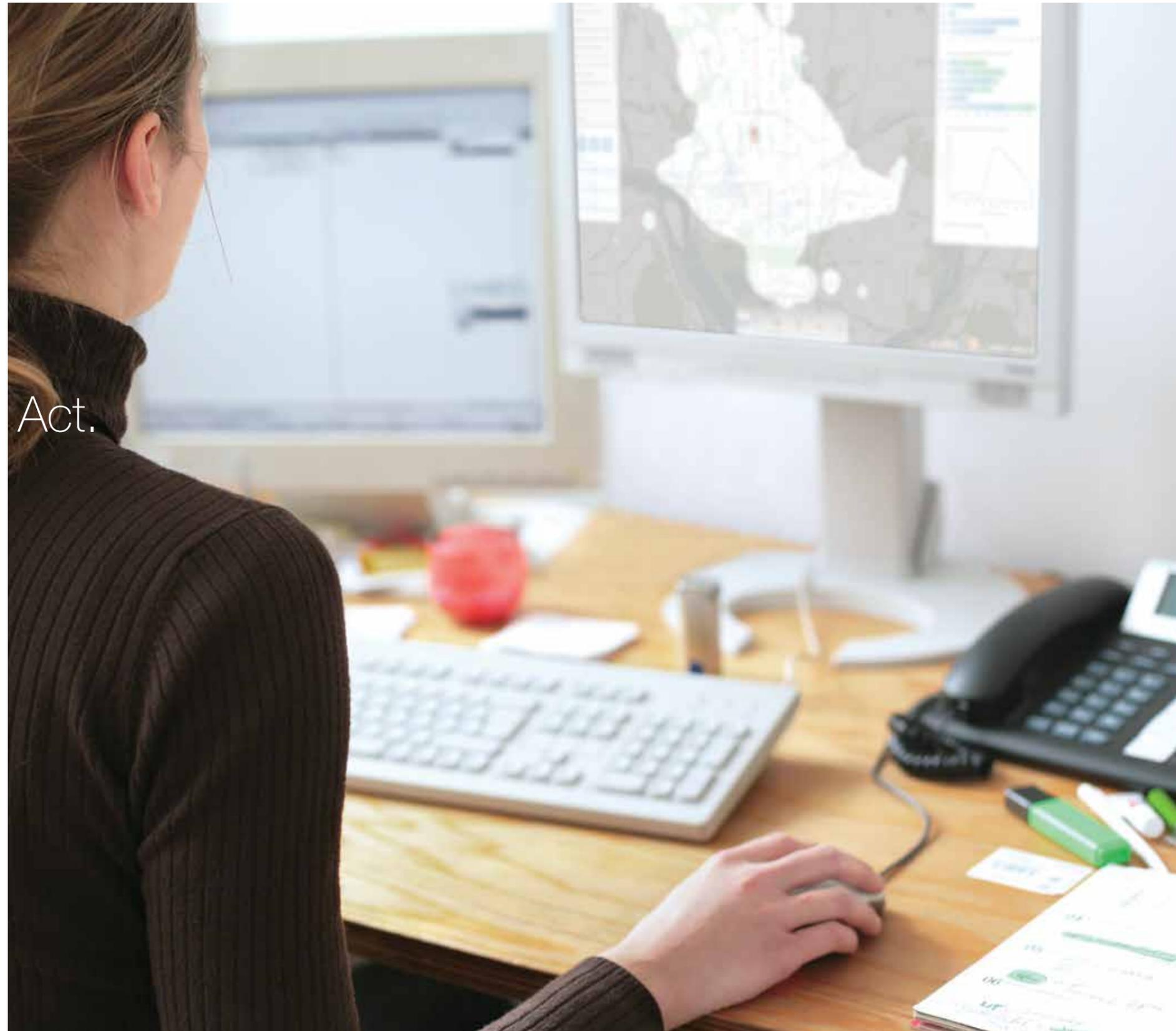
Getting you there. Smarter.

To move our cities forward, we need not only adapt to the current trend of urban migration, but capitalize on the incredible potential energy of these diverse concentrations of citizens.

Rather than just managing information, we should be thinking of motivating travelers. We need to make the most of the tools they currently use to navigate their world, and partner with like-minded innovation and technology leaders to invent new assets and incentivize new habits that will add to their productivity and quality of life.

Improving and integrating your journey is Cubic's passion. We are unlocking technology to solve transportation problems, preparing our customers for unknown disruptors and improving the traveler experience. We are helping stressed infrastructures cope with increasing demand, and nurturing a thriving interactive economy where people feel at home.

Smarter, faster cities. Let's build them, together.
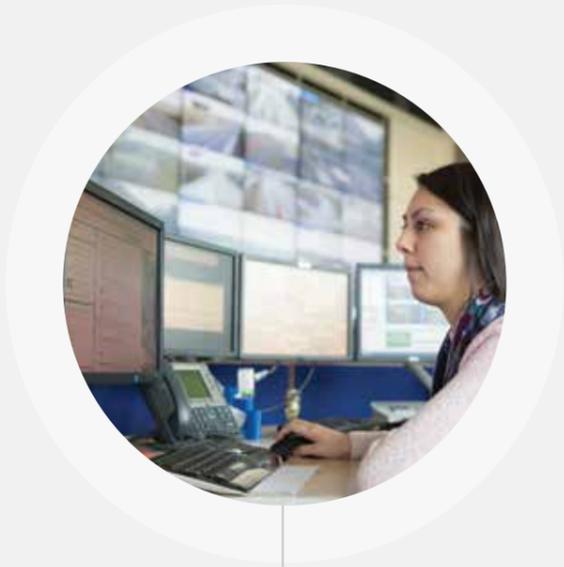
Smarter, faster cities. Let's build them, together.

CUBIC™ | **Transportation Systems**