Toshi Forrest
Principal

Clevor Consulting Group

SUMMARY

With years of experience in designing and implementing technology solutions for transit and transportation agencies, Ms. Forrest is a true subject matter expert. Her expertise spans a wide range of areas, including fare payment, validation and inspection solutions, CAD/AVL, safety, and security solutions. Collaborating effectively with agencies and vendors, Toshi is well-equipped to handle any technological challenge. Her experience as a solution provider, public agency employee, and transit technology consultant makes her an invaluable asset in planning, designing, developing, testing, transitioning, training, and operating technology solutions.

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PROJECT EXPERIENCE

2019 – Present

TriMet Oncall, Portland, OR

As the Principle assigned to the TriMet On-Call project, Toshi is leading several initiatives for the agency, including:

- Fare Inspection Replacement to replace the existing fare inspection solution, which has reached end-of-life
- Farebox Replacement to replace the existing 30+ years old CentaABill fareboxes with modern, validating fareboxes
- ePOS upgrade industry review which examines standard commercial point-of-sale solutions that could be integrated with the Hop back office
- Mobile application and customer website refresh requirements development is hoping to replace the existing Hop mobile app with a progressive web application and update the customer and institutional website
- Paratransit Payment integration with the Hop back office to enable equipment-less payments for paratransit rides through a back office to back-office integration based on rides performed through the paratransit scheduling solution
- Fixed route mobile access router replacement to replace the existing MAR which had reached end of life

2020 – Present

TriMet IMI Grant, Portland, OR

The Integrated Mobility Innovation (IMI) Program by FTA provides funding for projects that showcase creative and effective practices, technologies, and partnerships to enhance public transportation's efficiency, safety, and quality while improving the traveler's experience. IMI strives towards FTA's vision of providing safe, accessible, and equitable transportation for all Americans. Clevor Consulting received a grant from FTA as part of the TriMet team, and they are leading the effort to expand innovative payment options for all TriMet riders. CCG is working closely with TriMet and its partners to identify the business case for integrated payments and expand open payments. Toshi contributed

to the development of the integrated payments business case building upon her previous work for the TriMet MOD whitepaper for integrated payments.

2020 – Present | **CharmCard System, MTA, Baltimore, MD**
The Maryland Transit Authority's (MTA) fare collection systems are at or near end-of-life. CCG is assisting the MTA with planning, designing, and supporting the procurement of a new account-based fare collection system. CCG developed a comprehensive concept of operations that identified the existing conditions of the agency and described the next generation fare collection system's technical, business, and functional objectives. Our team led the procurement strategy and sourcing plan that resulted in a phased plan that carefully aligned funding and staffing resources with system and operational needs. Following requirements gathering workshops, CCG developed technical requirements and procurement documents for the core electronic fare collection system, TVMs, mobile applications, fareboxes and a retail network, and assisted the MTA with vendor selection. Toshi led the development of the Farebox RFP and was closely involved in the development of the next generation AFC project as a subject matter expert. She coordinated with project team members to develop core sections of the system requirements including the requirements for mobile applications, vending machines, and onboard equipment/solutions. She also was responsible for all system integration requirements.

2019 – Present | **Automated Fare Collection (AFC) 2.0 Implementation, Massachusetts Bay Transportation Authority (MBTA), Boston, MA**
MBTA is in the process of replacing their aging CharlieCard fare collection system with a modern account-based system that will enable customers to pay fares using contactless bankcards, agency-branded smartcards, and Near Field Communication (NFC) devices using both mobile wallets and closed-loop virtual media. Ms. Forrest is supporting the project team as a subject matter expert in mobile solutions and technology hardware integrations. She is also the primary consultant supporting the system design, development, and implementation of the monitoring and performance solution.

2021 – Present | **Key 2.0, Southeastern Pennsylvania Transportation Authority (SEPTA), Philadelphia, PA**
SEPTA is currently undertaking the replacement of its electronic fare collection system, Key 1.0. The objective of this project is to enhance the system's functionality for both customers and agency stakeholders by incorporating the latest innovations, features, and functions in fare collection systems. CCG played a crucial role in the project by creating a comprehensive Concept of Operations, developing a complete set of technical specifications to replace the Key 1.0 system, planning the RFP procurement, issuing, and supporting the RFP, and negotiating the contract till the Notice-to-Proceed stage. Toshi contributed to the development of the technical requirements and is presently aiding procurement-related tasks.

2021 – Present | **PRESTO, Metrolinx, Toronto, CA**
Metrolinx is responsible for overseeing PRESTO, which is considered one of the most extensive and intricate fare systems in North America. This system caters to 11 transit agencies, including the TTC, which ranks as the third-largest transit agency in North America. To upgrade the PRESTO system, Metrolinx assigned CCG to develop state-of-the-art account-based Automated Fare Collection Solution (AFCS) specifications. Toshi played a key role in crafting the technical requirements for this project.

2020 – Present | **10-Year Fare Collection Outlook, Toronto Transit Commission (TTC), Toronto, Ontario**
The Toronto Transit Commission (TTC) hired CCG to create a 10-year plan for fare collection in the GTA. CCG worked with stakeholders to develop a future-oriented vision, conducted a thorough evaluation of the TTC's current fare collection processes, including the PRESTO card system. Our team gathered feedback from industry professionals and identified areas where the current solutions did

not meet agency requirements. Based on experience in designing and managing complex technology solutions, CCG presented a comprehensive plan to turn the TTC's vision into reality. The plan includes technology, procurement, and operations strategies to guide future activities for the next decade. Toshi played a crucial role in leading the development of the Vendor RFI, which resulted in over 21 responses. She also oversaw the peer agency review and provided recommendations based on the findings of both tasks.

2020 – Present	**QUICKTICKET, Nashville Transit Authority (MTA), Nashville, TN** The MTA implemented a new account-based electronic fare payment system to support bus, rail, and paratransit services. To ensure a seamless project launch, the MTA reached out to CCG to develop a comprehensive list of Standard Operating Procedures (SOPs) and prepare customer-facing staff for public launch through customer service and sales training. Toshi developed SOPs and training related to onboard operations and ticketing sales. She participated in system testing, finding multiple gaps in the vendor-provided test scripts and developed onsite, agency-led quality testing.
2019 – 2020	**Industry Assessment for the Ireland National Transport Authority, NTA-Ireland, Dublin, Ireland** Ms. Forrest led peer agency review for the NTA Industry Assessment. This assessment included detailed peer agency reviews and interviews, case studies and identification of innovative solutions to address customer needs as it relates to fare collection technologies. The overall Industry assessment included a detailed SWOT (Strengths, Weaknesses, Opportunities, Threats) for fare collection vendors. The assessment examined 11 peer agencies from around the world, their fare collection solutions and lessons learned in deployment and ongoing operations and maintenance of their systems. It also identified fare collection "trends" and how these trends have been successful (or not) in addressing the needs of riders, the agency, and the region.
2019 – 2020	**SmarTrip® Mobile App and Fare System Strategy, Washington Metropolitan Area Transit Authority (WMATA), Washington, DC** Clevor Consulting Group is assisting WMATA with the development of a strategic plan to modernize their system with innovative technologies. As one of the first fare payment systems in the U.S., SmarTrip is approaching 20 year in age and continues to have a strong adoption with residents and tourists. As part of the innovation strategic plan, Ms. Forrest led the research for all North American peer agencies. This included detailed research and interviews with a focus on lessons learned as agencies implemented industry leading technology. The goal for this plan is to assist the agency with developing an approach for the introduction of modern payment technology without disruption to ongoing operations.
2018 – Present	**Next Generation ORCA System, Sound Transit, Seattle, WA** ORCA is a fare collection system that enables payment across nine transport agencies in the Seattle region. The transition to a new fare collection system is led by Sound Transit, which will support account-based payment and an open architecture design philosophy. This includes a closed loop regional card in the mobile wallet. Toshi is the mobile application and customer website Project Manager responsible for overseeing the development and implementation of the region's Fare Inspection application, fare validation application, Customer facing mobile applications, the electronic closed loop card in a mobile wallet, and the customer website. Additionally, she contributed significantly to the development and implementation of their point of sale and customer support solutions.
2018 – Present	**Flamingo Fare Payment System, Hillsborough Area Regional Transit (HART), Tampa, FL**

The Hillsborough Area Regional Transit and four other regional transit agencies introduced a new electronic fare payment system to enhance bus and paratransit services. Ms. Forrest led the effort to prepare the regional team for the system's public launch. Her responsibilities included creating regional Operating Rules for the Flamingo Fares system, updating standard operating procedures (SOPs) for Operators and Maintenance for the new hardware, and developing new SOPs for new systems and components (for example, fare media ordering and management of PCI compliant devices). She thoroughly reviewed front-line staff applications such as the point-of-sale system and customer service applications to streamline efficiencies and provide detailed, scenario-based training directly to staff in the ticketing sales offices. By blending application instructions with regional operating policies, she produced a Launch handbook that enabled the agency to train both new and current staff on the new fare collection system. Ms. Forrest supported the agency in the rollout and transition of their mobile application and provided design review and testing support for the system upgrade that provides customers with the ability to tap and pay with open payment cards.

2020 – 2022	**Implementation Support Services, Pinellas Suncoast Transit Authority (PSTA), Pinellas, FL** PSTA is a major regional partner involved in the Flamingo Fares account-based automated fare collection system. Unfortunately, the system's public launch was postponed due to unforeseen circumstances surrounding the COVID-19 pandemic. To support new fare policies implemented in 2020, the agency quickly implemented a temporary fare-free policy. Clevor provided technical support and options to help issue Flamingo Fares media and achieve card penetration goals while still supporting the free fare goals. In addition, Toshi provided focused training to Transit Ticketing Office personnel to support the revised standard operating procedures within the Flamingo Fares point of sale solution. Clevor also provided comprehensive training for all PSTA customer service personnel, updated documentation, and technical support to ensure the agency was able to respond quickly to any unpredictable situations that arose during the pandemic.
2020 – 2021	**Integrated Fare System Planning – Clackamas County (Oregon City, OR)** Clackamas County assessed the feasibility of implementing an integrated fare collection system and creating an implementation plan for transit providers within the county. Based on the outreach and finding, an options analysis was provided to the region that included four options and a recommended approach that focused on delivering a regional mobile ticketing solution that can migrate to an account-based ticketing (ABT) solution. Toshi led the agencies through a needs and requirements gathering session which became the foundation for the draft mobile ticketing solution requirements.
2021 – 2023	**NCDOT Statewide Demand Response Scheduling Software RFP, North Carolina Department of Transportation (NCDOT), Raleigh, NC** The North Carolina Department of Transportation (NCDOT) aims to simplify transit reporting and offer demand response solutions to all operators through the acquisition of a statewide demand response scheduling software. CCG, as part of the WSP team, developed the statewide scheduling RFP technical requirements, evaluation criteria and bid sheets. With over 97 independent operators throughout the state, the solution must be adaptable to various features, functions, and pricing. To accomplish this, Ms. Forrest conducted industry outreach to demand response scheduling vendors. The scheduling software requirements follows a software as a service (SaaS) model focused on providing a basic functionality with additional advanced features and functionality as modules for larger agencies. CCG led requirement gathering workshops to determine the fundamental needs of all interested and participating operators within the state. Toshi authored the scheduling requirements, proposal format, evaluation criteria, and bid sheets. She guided agencies through the needs assessment and requirements gathering workshops and is working closely with the state and operators.

| 2018 – 2021 | **NITC Grant, TREC, Portland, OR** |
| | In 2018, the National Institute for Transportation and Communities (NITC) provided funding for a research grant to investigate the effectiveness of equity strategies in cashless fare collection technology. Led by a professor at Portland State University, the project created two usability frameworks. The user framework focuses on convenience and access to various dimensions such as spatial proximity, knowledge, age, and access to technology and banking services. The agency framework considers the costs of installation, capital, maintenance, and operations. Toshi played a significant role in securing the funding for the research project from NITC by writing the grant application, securing matching funds from agency partners, developing the SOW for the research team, and serving as the Technical Advisory Committee Chair and primary point of contact for the Principal Investigator team. |

WORK HISTORY

2019 – Present	**Principal, Clevor Consulting Group**
	In late spring 2019, Toshi joined Clevor Consulting Group as a Principal, blending her experience from the vendor, public transport and past consultancy roles to provide perspectives grounded in experience and real-world problem solving.
2017 – 2019	**Program Manager, moovel North America**
	Led company strategy alignment across departments bringing new products to proof of concept. Project managed new product pilots and full system deployments. Worked closely with European developers and product teams to localize our European products for the north American market and vice versa. Developed strategy on working with external vendors and implemented product integration and partnerships with 3rd party vendors.
2013 – 2017	**Fare Revenue Systems Manager, TriMet**
	Responsible for operations of fare collection technologies including electronic fare collection systems (including mobile ticketing and smartcards), fare validation and inspection applications, Ticket Vending Machine (TVM) software, onboard fareboxes, and the TriMet developed point of sale solution. Worked closely with all departments within the organization to maintain operations and communications to riders with minimal disruption.
2004 – 2013	**Associate, IBI Group**
	An Associate at IBI Group, Toshi led ITS and transit technology planning, design and implementation projects for agencies across the United States and Canada. She was the project manager for CAD/AVL, CCTV, TSP and AFC projects for transit agencies, as well as leading communication design and traditional ITS projects for transportation departments.
2002 – 2004	**Engineer, Castle Rock Consultants**
	As an intern, Ms. Forrest developed ITS planning and concept of operations for public agencies focused on advanced traffic information and management solutions. She was hired full time upon graduating in 2003

EDUCATION

| 2003 | **B.S., Civil Engineering, Portland State University, Portland, OR** |
| | Ms. Forrest studied Civil Engineering, focusing on Transportation and Intelligent Transportation Systems. |