Technology Advancements

CASE STUDY

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Transportation authorities throughout America are launching innovations to entice potential customers to get out of their cars and take the bus, while making public transit more convenient and pleasant for daily commuters. Public transportation in the 21st century has something for everyone, thanks to high-tech advancements that personal vehicles and private car services can’t rival.

The Jacksonville Transportation Authority (JTA) has launched or implemented many transformational initiatives in the past four years and innovative technology has not taken a back seat.

In the United States, the JTA is a leader in the technology movement among mid-sized agencies, driven by a forward-thinking CEO and dynamic executive leadership team who have been at the vanguard of change.

With the support from a progressive Board of Directors, the JTA administration has identified and implemented leading-edge solutions that enhance service and security for customers, improve efficiency for employees and put the Authority at the forefront of the industry.

Fueling this drive was the Blueprint for Transportation Excellence (BTE), the Authority’s long-range plan for the future, and Blueprint 2020, a subset of the BTE that contained already planned or ready-to-go initiatives the Authority could implement by the year 2020. To be effective, the initiatives required technology the JTA did not have on its radar. But that soon changed.

By 2016, the JTA had risen to a new level by launching in record time technology that typically would take years to plan and implement.
Innovations
FUELED BY TECHNOLOGY

Improving Internal and External Operations

Breaking down silos between departments to improve internal communications, operational efficiencies and external operations was a top priority for the JTA. The goal was informing employees about the organization’s mission, vision and goals. The JTA also wanted to establish transparency and consistent communication with the staff to bridge divisions, foster a spirit of collaboration and, enhance employee responsibility and accountability.

In addition, the JTA wanted to improve communications with customers and the general public by making the organization’s website easier to navigate and easier to access specific information about such things as bus schedules, trip planning, JTA news and the myriad of services the Authority provides.

Bringing Information to Light

The Issue

In 2013, the JTA was operating with a 20-year-old computer system that lacked many of the features needed to operate in today’s business world. The archaic “green screen” environment was so outdated it did not encompass Human Resources, Finance, Inventory, Maintenance or Payroll and it lacked modules for basic functions such as accounting and processing requisitions. There was no system for Procurement which required staff to manually process all requests for and responses to proposals. Departments could not share information so the same data had to be entered into the system multiple times, greatly increasing inefficiency and the chances of error.

The Authority’s primary business functions – operating buses, paratransit services, the automated people mover (Skyway), and building roads and bridges - were stored on separate hard drives that could not be integrated.

The limited capabilities of the computer system resulted in a duplication of efforts among staff, decreased productivity and work processes that were tedious and unnecessarily time-consuming.
The Solution

One of the first major initiatives the JTA implemented was a new, Oracle based computer software system that changed the way the JTA does business. The Authority branded the system “FireFly” with the tagline “Bringing JTA’s Information to Light,” because a firefly is a symbol of economy, efficiency, inspiration, ideas and communication – all elements critical to the JTA’s success. The tagline also made the system less intimidating to long-time employees who were reluctant to change.

FireFly was implemented in four stages that included an assessment of the current system as well as designing, building and testing FireFly before it went live in April 2014. JTA staff experts in each department were assigned full-time to implementing the program. Their daily responsibilities were handled by other employees. The phased work was guided by a command center to coordinate efforts across all platforms. Consultants were heavily involved and on-site during the process from start to finish.

The launch took nine months from planning to implementation, less than half the time it typically takes to implement a system of this scope.


The Results

With FireFly, employees no longer have to input information multiple times, there is more collaboration between departments because they can share data electronically and handle less paper resulting in increased efficiency.

In addition, the new software enables the JTA to utilize the latest transit technology available and provides an extra layer of security to protect the Authority’s data systems. FireFly also enables the JTA to better plan and make business decisions.

LESSONS LEARNED

- Conduct value stream mapping to determine where you want to be when the systems are implemented.
- Ensure that outside consultants completely understand the operation of your business before they make recommendations.
- Devote staff to the initiative full-time so they can focus on the project from planning through implementation.
- Manage the change by putting people who are open to the change in key roles.
Keeping Employees in the Know

The Issue

Like many transportation authorities, the JTA’s more than 850 employees are spread throughout different locations including the Administrative offices, the Myrtle Avenue campus, Skyway Operations & Maintenance, and Information Technology.

Sending mass emails wasn’t sufficient because many bus operators and mechanics do not have access to the Internet during business hours, so they were always last to receive important information from the Administration. The bimonthly employee newsletter was the main form of communication.

The Solution

In early 2015, the JTA installed 20 LCD monitors throughout the organization’s four campuses. The technology enables the Authority to send immediate messages and real-time data to all of its employees at the same time, so everyone has an equal opportunity to stay abreast of what is happening in the organization.

The Results

The monitors in the workplace have dramatically changed employee culture and habits. Staff routinely stand around the monitors to obtain the most up-to-date information about JTA programs, events and initiatives, and no longer rely on the rumor mill to stay in-the-know.

LESSONS LEARNED

Survey employees to learn how they want to receive communications from the Administration.

Install LCD monitors simultaneously at all locations so all employees get the benefit of the new system at the same time.

Understand that monitor placement might vary by location depending on how employees use the physical space.

Clearly identify the owner responsible for timely information and updates.

Brand your monitor output so staff knows what to look for.
The JTA V2.0

The Issue

With all the new services, route changes and transportation amenities, and with technology changing at warp speed, the Authority’s website needed updating. At nearly 10 years old, www.jtafla.com was like using a rotary telephone in the age of smart phones. It was no longer functional for content management or for customers and, with a mish-mash of colors, fonts and logos, it no longer reinforced the JTA’s brand. In addition to moving at the speed of a turtle, the site was not optimized for mobile viewing even though 80 percent of traffic comes from customers looking up bus schedule information on their cell phones. Customer complaints escalated as the system became more outdated and broken links were a regular occurrence.

The Solution

In 2014, the JTA determined a complete overhaul of the website was urgently needed. A total revamp was also imperative to communicate the availability of the new real-time passenger information app that let customers know when the next bus was arriving, and to utilize improved trip planning and scheduling features. To get the job done on a fast track, the JTA contracted with Station Four, a local web developer, to build a better website. The firm began by conducting a SWOT analysis of the website’s strengths, weaknesses, opportunities and threats, and did in three months what would typically take six to eight months to complete. Designers scrubbed the existing website, removed content, added new coding and a filterable dataset to make navigation easier. This occurred after working with each department to ensure that unnecessary URLs were deleted and existing content was accurate.

The Results

The newly designed, high-speed website is a shell of its former self with an integrated trip planner, real-time passenger information apps, better display of schedules and a filterable database that enables customers to easily access specific information. The site is 508 Compliant with the Americans with Disabilities Act (ADA) to accommodate the visually impaired who use screen readers to view it. To make it user-friendly to Jacksonville’s Spanish speaking population, the site has the bilingual capability from Google to translate into English or Spanish. The procurement function that came online in June 2016, enables the Procurement Division to advertise Requests for Proposals online, making the entire procurement process more open and transparent. The Authority also built new portals for JTAMobilityWorks, the First Coast Flyer bus rapid transit and JTA’s St. Johns River Ferry.

LESSONS LEARNED

- Don’t limit your thoughts about how a website can function based on what you currently have. Be open to all possibilities.
- Research websites outside of your industry to get ideas about how to improve the functionality of yours.
- Before an overhaul, obtain input from customers of various ages to determine their technology skills and intuitive ways of searching for information.
- If your organization has more than one site, update them at the same time so the look will be consistent from site to site.
- Understand how your customers are using your website.
Since 2006, the JTA had in its long-term plans an initiative to provide a single point of access for all of the transportation options in the region to enable users to coordinate trips across county lines. However, neither the technology nor the funding to implement such a program existed, and the plan sat idle waiting for a champion to come along and revive it.

The Solution

With an expanded geographical area to cover, the JTA decided to broaden the program to anyone who wanted to use it, with special emphasis on veterans and their families. The Authority made the service distinct from other JTA services by branding it “TransPortal.”

Developing a coordinated mobility plan across county lines with private companies such as Greyhound and Megabus, as well as paratransit services and social service agencies wasn’t easy. After nearly three years of extensive planning and public hearings about where the gaps in transportation services existed, the Authority upgraded their Trapeze software. This proprietary, open source, trip planning software interfaces with other agency transit feed systems enabling a JTA customer to plan every leg of a trip anywhere in the 13 county service area.

The Results

TransPortal has revolutionized the way the public plans trips in the region. The technological components include the regional Trapeze scheduling system to optimize trips across county lines; mobile data terminals for real time vehicle tracking and trip modifications; an interactive website to allow users to identify the trip mode best suited to their specific trip needs and to book and modify paratransit trips; and an interactive voice response system to route callers directly to their selected transportation provider or the automated trip booking system.

The Issue

In 2011, the JTA finally received the $1.9 million grant it needed from the Federal Transit Administration (FTA) to create a multimodal transportation information system. The “Veteran Transportation and Community Living Initiative” was designed to help Northeast Florida’s sizeable veteran population access medical services in the six county region.

However, there are no Veterans Affairs (VA) medical centers in Jacksonville, only medical clinics. The nearest VA centers were miles away in Gainesville and Lake City; to get there would require expanding the scope of the one-stop transportation portal to 13 counties with nine separate transit agencies, instead of limiting it to six counties.

LESSONS LEARNED

When creating new software, anticipate it taking longer than planned.

Don’t make assumptions about the site’s functionality, such as your partners have the same Internet speed as you do.

Perform a technology assessment with partner agencies to make sure they have the capability to access the networks.
Assemble a project team to see the initiative through from planning to implementation and make sure there are decision makers on the team to avoid unnecessary delays.

Develop a project charter that identifies specific responsibilities of project team members and the implementation schedule.

Make sure you understand the organizational requirements of the technology to ensure it provides all the tools desired.

There’s an App for That

The Issue

Paying for bus fare with cash or tokens is so 20th century. With its focus on improving bus arrival and departure times, known in the transit industry as on-time performance, and providing customers with more trip planning options, the JTA researched best practices that it could adopt using the most current technology.

The Solution

The branded MyJTA mobile ticketing technology enabled customers to purchase fare media with their smartphones. Launched by the Authority on December 7, 2015 to coincide with the implementation of the First Coast Flyer Bus Rapid Transit System, MyJTA is powered by Passport, a leading mobile payment provider for transit and parking. The app is free to download from the iPhone App Store and Android Google Play. The technology was implemented in only 93 days.

The Results

The app is one of the most popular service amenities the JTA provides, and enables customers to quickly and efficiently plan trips, track routes and pay their fares with a credit card through a secure account.
The Issue

Public transit customers have more important things to do than wait for a bus. They want to know exactly when the next bus will arrive before they go to a bus stop or transit hub so they can better plan their trips and their daily schedules.

The Solution

After implementing a year-long pilot program that was favorably received by customers, the JTA launched Real-Time Passenger Information (RTPI) technology system-wide to provide customers with up-to-the-minute details on bus arrivals and departures. The Authority contracted with NextBus Inc., to provide the service that can be accessed via the Internet, smartphone, SMS text messaging, telephone Interactive Voice Response and at electronic signs installed at bus stops at major transit hubs.

A key component of the bus rapid transit system is the Bus Stop Totems with LED signs that let customers visually track real-time information. The Authority has installed 29 such totems on the north, south and downtown quadrants of the city to provide customers with every tool available to monitor their bus.

Service alerts are also posted on totems; global messages are posted at JTA’s major hubs such as Rosa Parks, Gateway, Pearl and Water, the Regency Mall and the Convention Center, which display real-time arrival information. There are also LCD displays at Rosa Parks which communicate bus bay locations, news, weather and JTA current events.

The Results

The real-time initiative was expanded system-wide to coincide with the launch of the Route Optimization Initiative that overhauled the Authority’s route system for the first time in recent history.

The app reduced confusion about the new routes by enabling customers to track the status of their bus and it continues to help regular and choice customers better plan their day. The RTPI functionality is available on all fixed-route and First Coast Flyer buses. The initiative improves the customer experience and has increased operational efficiencies.

LESSONS LEARNED

Ensure that the technology is open architecture so if a decision is made to switch vendors the hardware is adaptable to future changes with the system and newer technology.

Educate customers about the value of real-time passenger information to facilitate a quick start and reduce the number of calls to the customer call center.

Have a good project plan and team in place to get it done. Engage all departments that will be impacted.

Make sure that bus stop totems are the proper design for the surrounding environmental conditions.
Enhancing paratransit service is more cost effective when similar services are also provided on fixed-routes.

**LESSONS LEARNED**

Clearly define responsibilities between construction and technology so each team knows its role and expectations.

Launch a prototype prior to full implementation to ensure the totem works properly and meets your expectations aesthetically and environmentally.

Enhancing paratransit service is more cost effective when similar services are also provided on fixed-routes.

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**The Issue**

The Authority realized that customers riding the JTA Connexion, the Authority’s paratransit service for disabled and medically fragile customers, wanted the same convenience of planning their schedules as those riding fixed-route and First Coast Flyer buses. However, the JTA’s paratransit contractor, like many paratransit providers around the country, have a 30-minute window (15 minutes either side of their schedule time) to arrive for pick-ups and drop-offs. The uncertainty required customers to simply wait by the door for the vehicle to arrive; if it was running late because of an accident or other unforeseen delay, the customer had no way of knowing.

**The Solution**

In early 2016, JTA’s Connexion implemented MOBI, short for mobility, which works similar to RTPI and uses the same Trapeze software. By accessing jta.thebus.mobi on the Internet or their cell phones, paratransit customers can find out precisely when the bus is going to come by looking up their identification number on the MOBI system. Not only does the tracker indicate as early as 90 minutes before scheduled exactly when the bus will arrive, but family members can also use the identification number to track when their loved ones will be home.

**The Results**

Customer calls to the Connexion office inquiring about the status of their scheduled ride have decreased.

The transportation experience is more pleasant for customers and operators alike when people know exactly when the bus will come to pick them up or drop them off.
The Issue

Riding the bus once was the perfect time to catch up on reading, be it a good book or the daily newspaper. But in today’s wired world people, particularly millennials and students, typically prefer to pass the time surfing the Internet on their cell phones or reading online publications. However, without built-in Wi-Fi on buses, those functions were not possible. The JTA believed if it could offer wireless fidelity on its premium bus service, the First Coast Flyer (FCF) bus rapid transit, it would give more people an incentive to ride.

The Solution

Part of the technology the JTA would need to launch the FCF was a computer-aided dispatch automated vehicle locator (CAD/AVL) to track the location of buses to ensure on-time performance. The state-of-the-art system included the technology needed to implement Wi-Fi on the FCF. Recognizing that this amenity would instantly appeal to JTA customers, along with other high-tech perks such as transit signal priority that would take them to their destinations faster, the JTA administration easily embraced the service.

The Results

Wi-Fi has been so popular on the FCF that the Authority has implemented the amenity system-wide on all fixed-route buses, community shuttles and the Skyway. The CAD/AVL system also interfaces with the following JTA systems:

- Remote Video Surveillance
- Electronic Payment System
- Wireless Data Transfer
- Real-Time Passenger Information System
- Public Service Announcements

Lessons Learned

- Pilot the Wi-Fi several times before implementation to make sure the system is fully functional before going live. Then test again.
- Make sure there are easy instructions for customers to follow to access the system.
- Maintain constant communication between agencies about the goal for transit signal priorities and upgrades so everyone on the team knows the big picture.
Educate operators on the purpose of the DriveCam equipment to mitigate the perception that it will be used to discipline rather than to train.

Use seasoned bus operators as coaches on the simulator.

Make sure the simulator training room is in close proximity to where operators check in at dispatch, so it is easily accessible.

Consider having remedies on hand for the motion sickness that employees can experience from the virtual ride.

**LESSONS LEARNED**

The JTA recognizes that customer safety and security are the foundation of a first-class transportation system. To ensure that the organization’s bus operators maintain safe driving skills and to protect the Authority in the event of a disaster, the JTA has implemented technology and set the tone for best practices that agencies of all sizes and scope can adopt.

**Accident Prevention**

**The Issue**

One accident is one too many if it can be prevented or if a customer is hurt, yet data revealed that a greater emphasis needed to be placed on safe driving.

**The Solution**

The JTA purchased a Lytx DriveCam that analyzed risky behaviors and required all bus operators to attend quarterly safety refresher training. DriveCam cameras are mounted on bus windshields that record “events” such as braking late, driving too fast and making sharp turns. Every time a JTA bus does an excessive maneuver, the DriveCam records on video both the event and what occurred eight seconds before and four seconds after the event. JTA analysts review, on a regular basis, the video to determine if the event was avoidable or if it was caused by risky behavior on the part of the bus operator. If it is determined that the operator needs more training or defensive driving tactics they are required to receive additional training with the Authority’s state-of-the-art onsite simulator which was purchased in the Spring of 2015. Designed like a bus, the simulator is equipped with controls, steering wheel, a seat and pedals, and a 160 degree view. During three-minute intervals, operators are tested on reaction time, judgment calls and split-second maneuvers that could cause an accident.

**The Results**

The safety measures have yielded significant results, including a 40% reduction in judgment errors and traffic violations through the DriveCam project. In addition, operators with a history of multiple incidents and collisions at the beginning of the program experienced a 50% reduction in unsafe decision making and the JTA’s bodily injury liability and property damage payouts decreased. As further proof of the success of the initiatives, the JTA won a 2015 Gold Award for Bus Safety Excellence from the American Public Transportation Association (APTA) and from the Florida Public Transportation Association for having a 10 percent reduction in preventable accidents.

JTA Safety Enhancements
The JTA’s technology innovations have not gone unnoticed by industry peers. In the last four years, the Authority has received the following awards:

### 2015: Innovative & Creative Concepts

- FPTA Innovation and Creativity Award for demonstrating innovative and creative concepts and effective problem-solving techniques for the public transportation industry
- JTA CEO Nathaniel Ford received the White House Champions of Change in Transportation Award for the Route Optimization Initiative

### 2016: Industry Awards

- BizTech Innovation Award from the Jacksonville Business Journal
- Conference of Minority Transportation Officials (COMTO) Industry Innovation Award
- JAXUSA Industry Leader Award
- APTA Outstanding Public Transportation System Achievement Award for mid-sized properties
- FPTA Outstanding System of the Year
- 2016 FPTA Print Collateral for “Momentum” Magazine

### 2014: IT Dream Team & TransPortal

- BizTech Innovation Award from the Jacksonville Business Journal
- Industry Innovation & Leadership Award at COMTO
- Innovation of the Year award by Trapeze Group
- Innovation of the Year Award from the Commission for the Transportation Disadvantaged
- Regional Award for Excellence in Transportation from the Regional Mobility Coalition