TECHNOLOGY AND SOCIAL MEDIA: FUTURE TRENDS AND FORWARD-THINKING APPROACHES

Learning Objectives

At the end of this lesson, you will learn how your peers:

- Use technology and social media to connect system information and the customer and contain costs
- Develop service designs that maximize efficiency

Additionally, you will learn:

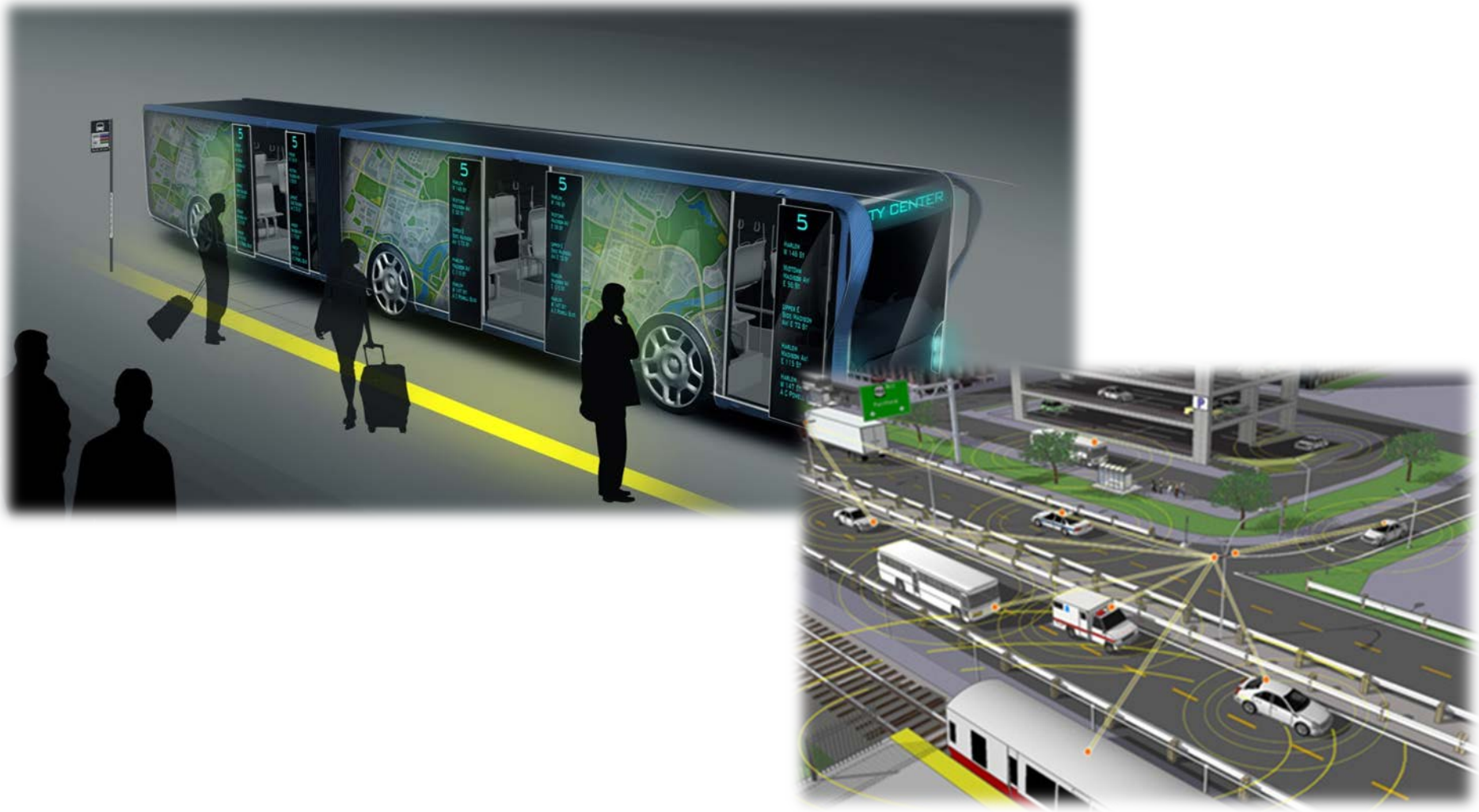
- Examples of statewide and national examples in technology
- Social media considerations for transit providers

TECHNOLOGY TYPES AND BENEFITS

Technology Types

- Fleet maintenance software
- Dispatch and scheduling software
- Mobile data computers
- Vehicle location and communication systems

Technology Benefits



Traveler/Passenger Information

Tool for providers who are trying to pool resources

Considerations:

- HOW information is made available
- Scope/range of information: local, regional, statewide
- The needs of the system as a whole

Scheduling Software

- Fixed-route packages that help plan routes, schedules, and rosters
- Demand-response tools that enable or automate the scheduling of demand-response transit trips

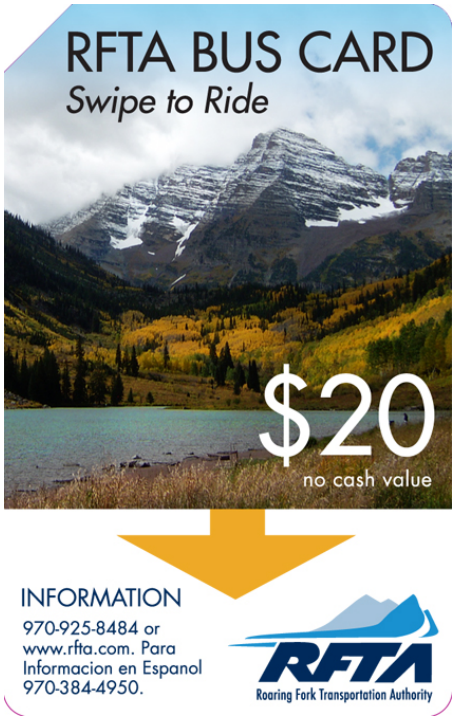
Considerations:

- Whether multiple providers should use similar software packages

Image credit: CARTA

Fare Media

- Bar codes, magnetic stripe fare cards, and "smart cards" with embedded microchips provide ways to easily identify passengers, collect fares, and record trip data



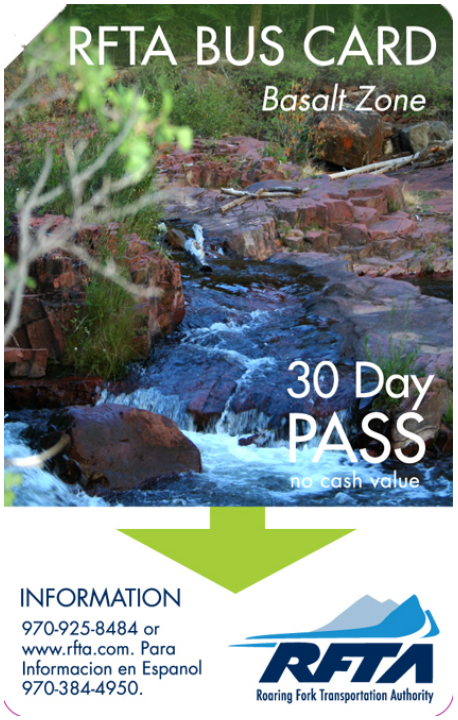
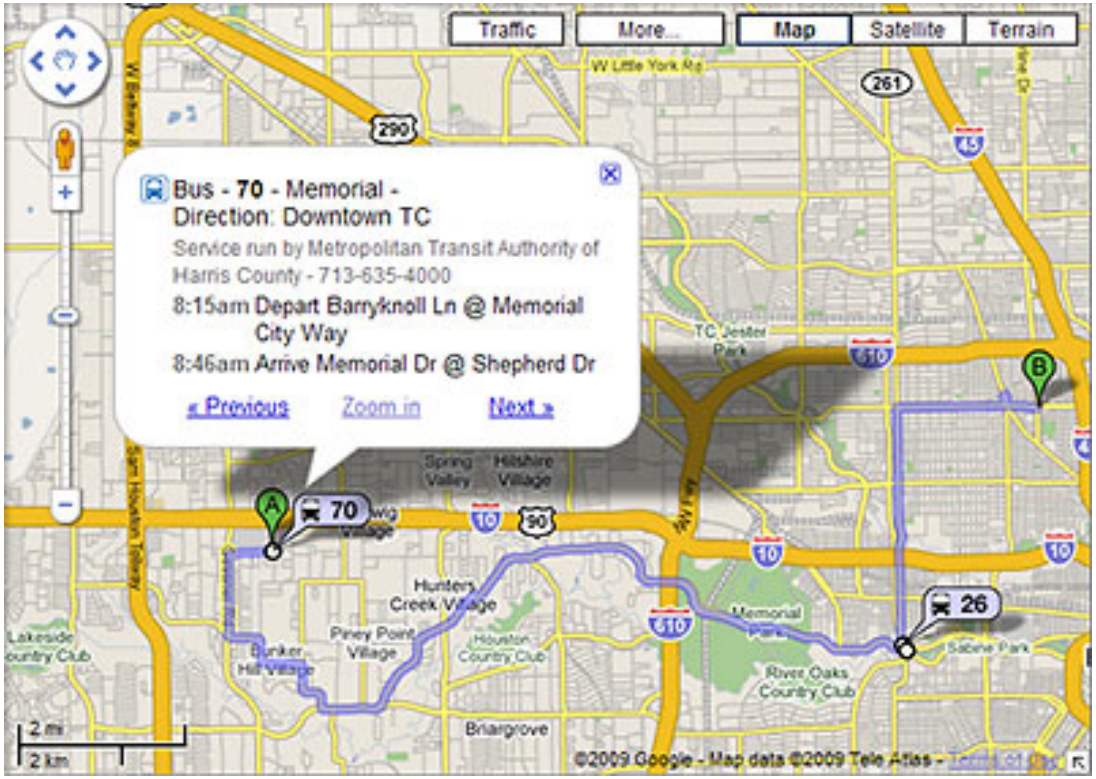


Image credit: RFTA

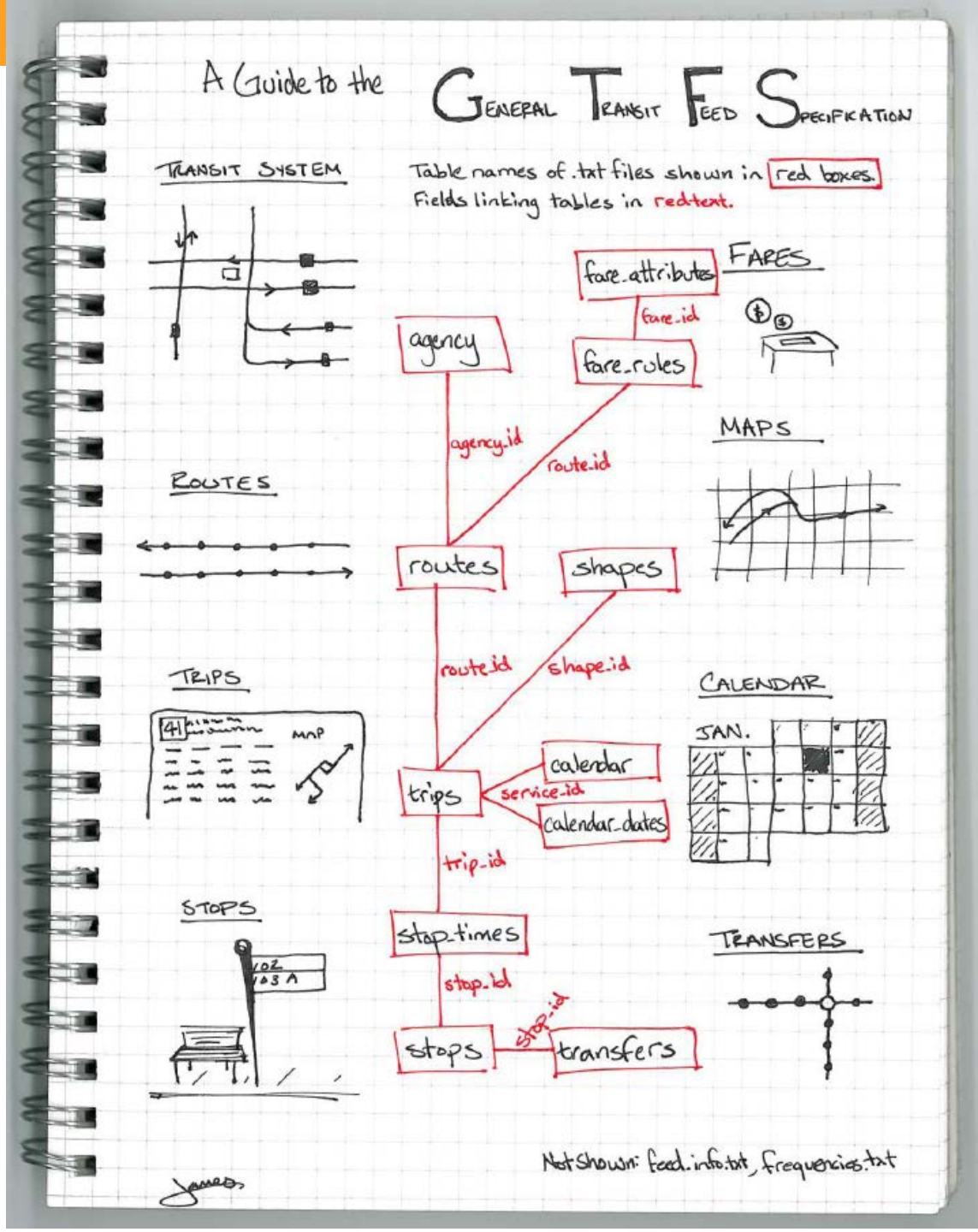
Mapping and Planning Software

- ESRI—Geographic Information Systems
- General Transit Feed Specification
- Google Maps



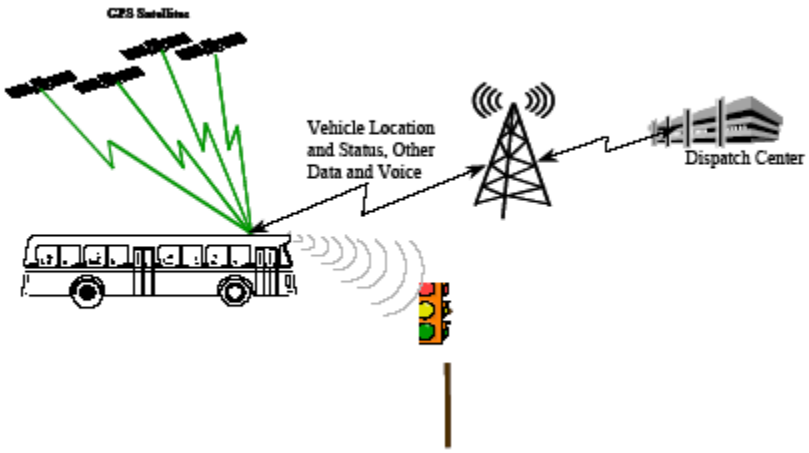
GTFS Guide

Credit: James Wong,
GA Institute of Technology



Communication and Automatic Vehicle Location

- Most operate using GPS technology, and many communicate vehicle position.
- Mobile Data Computers facilitate AVL for providers.
- Systems may also wish to incorporate communication channels that link transit vehicles with emergency services ("mayday" systems) when needed.



Summary

- The various types of transit technology include fleet maintenance software, mobile data computers, fare media, and mapping software packages
- Benefits:
  - Understand actual operating costs through development of periodic reports.
  - Increase passenger boardings per vehicle trip.
  - Enable planning staff to extract trip reports to help evaluate route performance.
  - Convey scheduling information directly to drivers, improving communication efficiency re schedule information.

SELECTING AND IMPLEMENTING TECHNOLOGY FOR TRANSIT OPERATIONS

Identifying Needs

- More accurate, easier reporting and record keeping
- More efficient service coordination
- Safer, more accurate cash handling
- Improved operations staff performance and productivity
- More effective maintenance tracking
- Clearer communications
- More effective dispatching
- Faster, more efficient trip request processing
- Improved scheduling productivity
- Improved service quality
- Greater safety
- More accessible, more useful customer information

ITS Architecture

- Identify stakeholders and regional needs.
- Inventory system/stakeholder resources, needs, and services/functions (also called market packages).
- Define connections and information flow between system elements.
- Identify ITS standards, decide on project sequence, and develop agreements for acquisition and implementation of technologies.

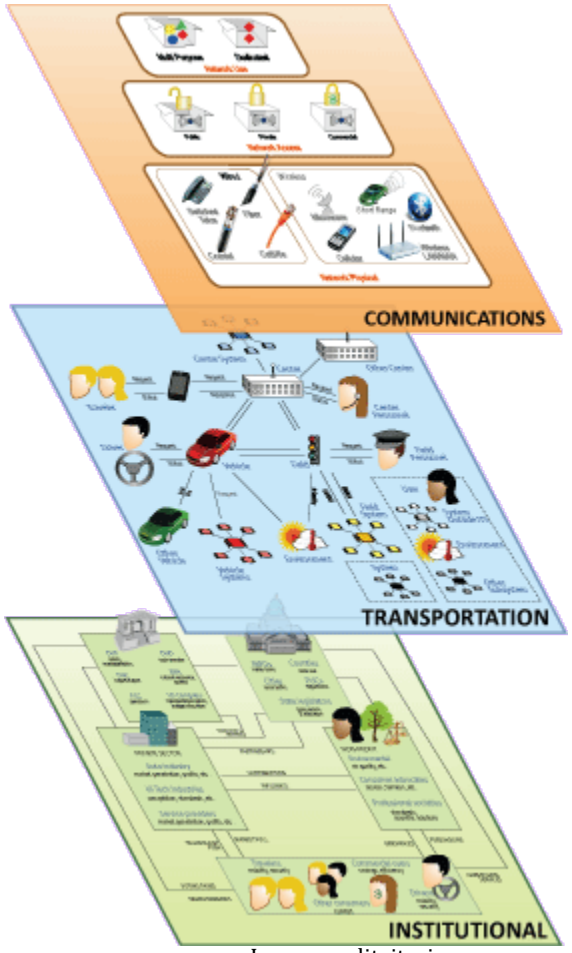


Image credit: iteris.com

Selecting Technologies—Considerations

1. How does the product apply—or not—to transit business practices?
2. Have the customers had a thorough opportunity to investigate the various products available?
3. Are the customers willing to give and take between the product's price and capabilities to get the best match for their system?
4. Is the product/technology scalable?
5. What are the computer literacy/training needs of transit staff?
6. At the end of the day, will stakeholders be able to get the biggest bang for the buck?

Lessons Learned

- Integration and Interoperability
- Regional Systems
- Standards
- Equipment

Image credit: MIT & MBTA

General Principles

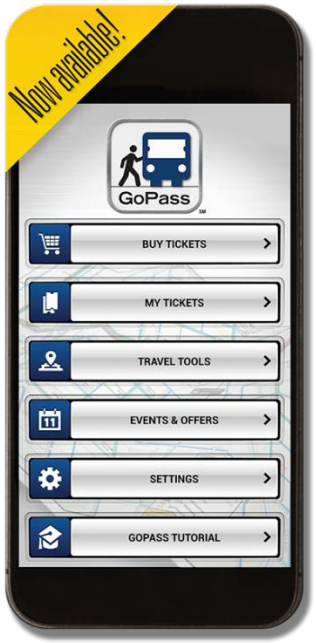
- Focus on desired outcomes
- Use technologies that will be compatible with other commercial software and hardware systems
- Select “scalable” systems
- Introduce new technologies gradually
- Educate employees and the community on the new systems
- Ensure Information accuracy

Summary

- Identify needs based on day-to-day functions of the agency
- When selecting which technologies to apply, be sure to consider how appropriate the technology is for your agency
- Any new technology implementation takes time—for staff, customers, and others—to adjust to the new change

STATEWIDE AND NATIONAL EXAMPLES IN TECHNOLOGY

DART GoPass Farecard System



GoPass℠

Examples in Technology

Participants

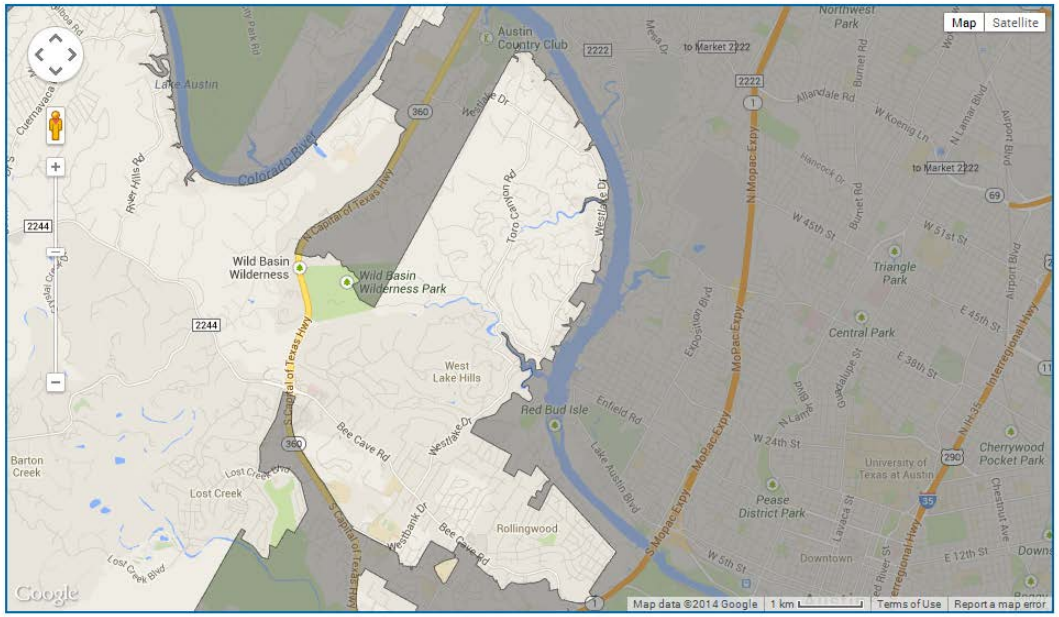
Agencies	DART, the T, DCTA
Software Vendor	unwire
Gateway	CyberSource®
Payment Issuers	VISA, MasterCard, American Express, Discover Network
Future Payment Issuers	NTTA North Texas Tollway Authority, PayPal

Fort Smith Transit—Tablet Program

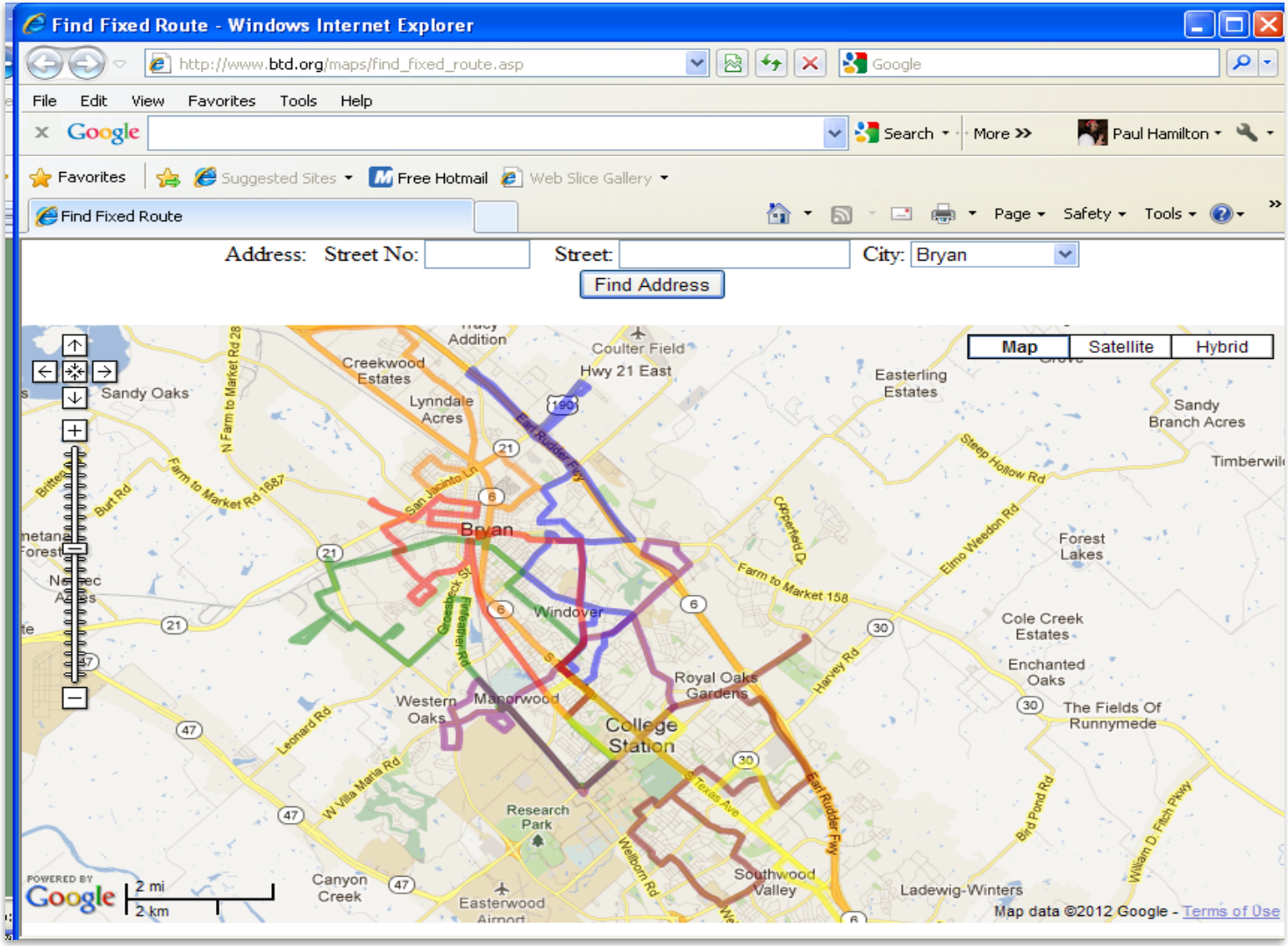
- Provides more accurate tracking of passengers per hour.
- Drivers receive updated schedules in real time.
- Rapid reprogramming allows for quick replacement or reassignment.
- The program has language translation abilities.
- The program uses off-the-shelf applications.
- Monthly operational costs are limited to the cell data plans for each tablet.
- Using a locator application enables dispatchers to find specific vehicles on duty.

Brazos Transit District—GTFS Use

- BTD developed a fixed-route mash-up that displays route corridors in each of their serviced urban areas.
- Users type in their street address and street name, then select "Find Address."
- The map zooms automatically to identify the route closest to that address point.



BTD Mash-Up and GTFS Maps



Wichita Falls–Falls Ride Shared Facilities

- Sharp Lines provides intercity bus and rural service into Wichita Falls.
- Falls Ride had no location to conduct passenger transfers between bus systems.
- Falls Ride is currently building an intermodal transfer center to allow intercity operators, the rural provider, and city bus service to leverage ridership via a common transfer point.

Longview Transit—Pedestrian and Bicycle Considerations

- Identified pedestrian and bicycle access as an important aspect of route development.
- Collected data on bus-stop inventory, including amenities such as benches, signage, bike racks, and pedestrian access.
- Seen as important elements to help grow access to transit routes.

Image credit: bikemd.org

CARTS—Bike Racks on Buses (BOBs)

- CARTS installed BOBs on all fixed-route buses and commuter-bus routes.
- BOB overloads or left-behinds are already common.
- Over time, the risk-averse will leave their bicycles at their trip origin.

IDENTIFICATION AND IMPLEMENTATION OF NATIONAL TRENDS (TECHNOLOGY)

Activity: Localizing Savings from Implementation

Technology

- What technology to consider
- How can our system benefit?
- What is our current status…goals?
- Identify new technology to deploy
- Develop deployment plan
- Identify metric to evaluate deployment
- Identify deployment concerns

Technology

- Technology Used?
- System Benefit(s)?
- Deployment Plan elements (chronologically)
- Identify metric to evaluate deployment
- Identify deployment concerns

INNOVATIVE SERVICE DESIGN

Service Innovations

Occur when Transit Agencies adapt themselves to:

- Changing demographics
- New technology
- Economic challenges

Coordination vs. Connectivity

- ***Coordination*** implies the ability to maximize resources within a specific service area with service often provided by one agency serving the general public and/or multiple social service agencies

Spectrum of Coordination and Integration :

Independent Systems **Coordination** **Integration** **Consolidation**

Coordination vs. Connectivity

- ***Connectivity*** refers to the development of inter-agency or inter-governmental service agreements between service agencies

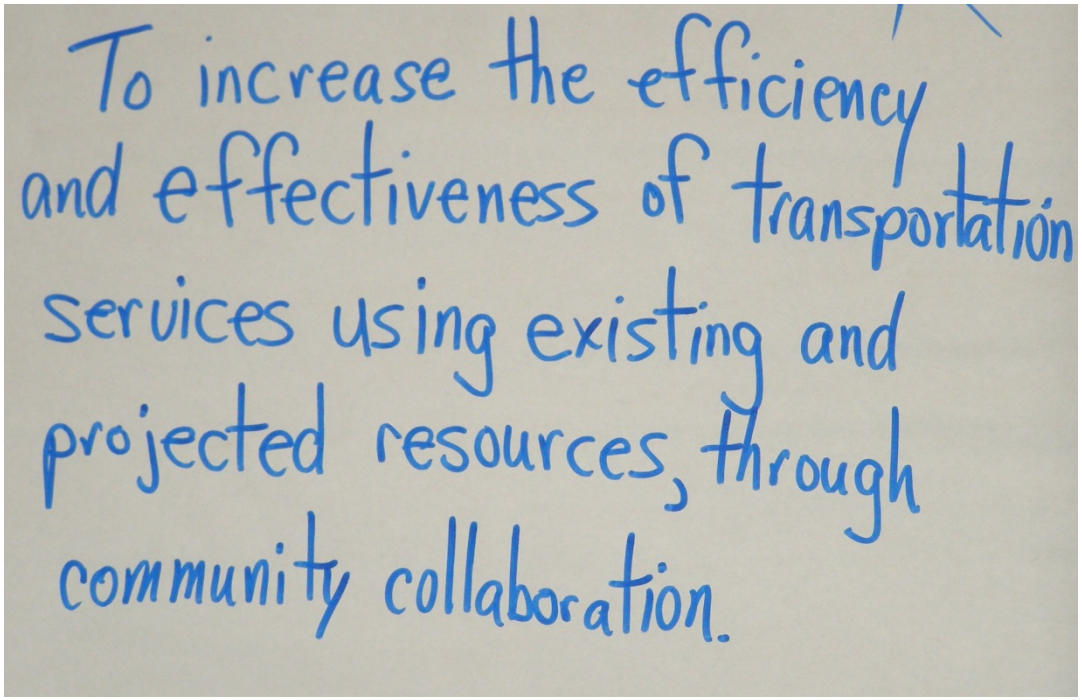


Image credit: National Center for Mobility Management

Connectivity –Advantages

- Seamless fare payment
- Connect rural and urban providers with consistent branding
- Improved service frequency
- Enhanced route information

Summary

- Transit agencies should be flexible—adapt and change based on regional needs
- Forming partnerships for service provision not only provides customer convenience, but may make for more cost-effective service
- Start small—capture low-hanging fruit when first coordinating

SOCIAL MEDIA FOR TRANSIT PROVIDERS

Usage and Considerations

The popularity of web-based networking sites such as Facebook, Twitter, and blogs have led private enterprise and government to embrace these channels for communicating with customers.

TCRP Synthesis 99

Social Media (the Other Technology)

Types of social media:

- Facebook
- You Tube
- LinkedIn
- Vine
- Twitter
- Blogs

Five Categories of Social Media Usage

- Timely updates
- Public information
- Citizen engagement
- Employee recognition
- Entertainment

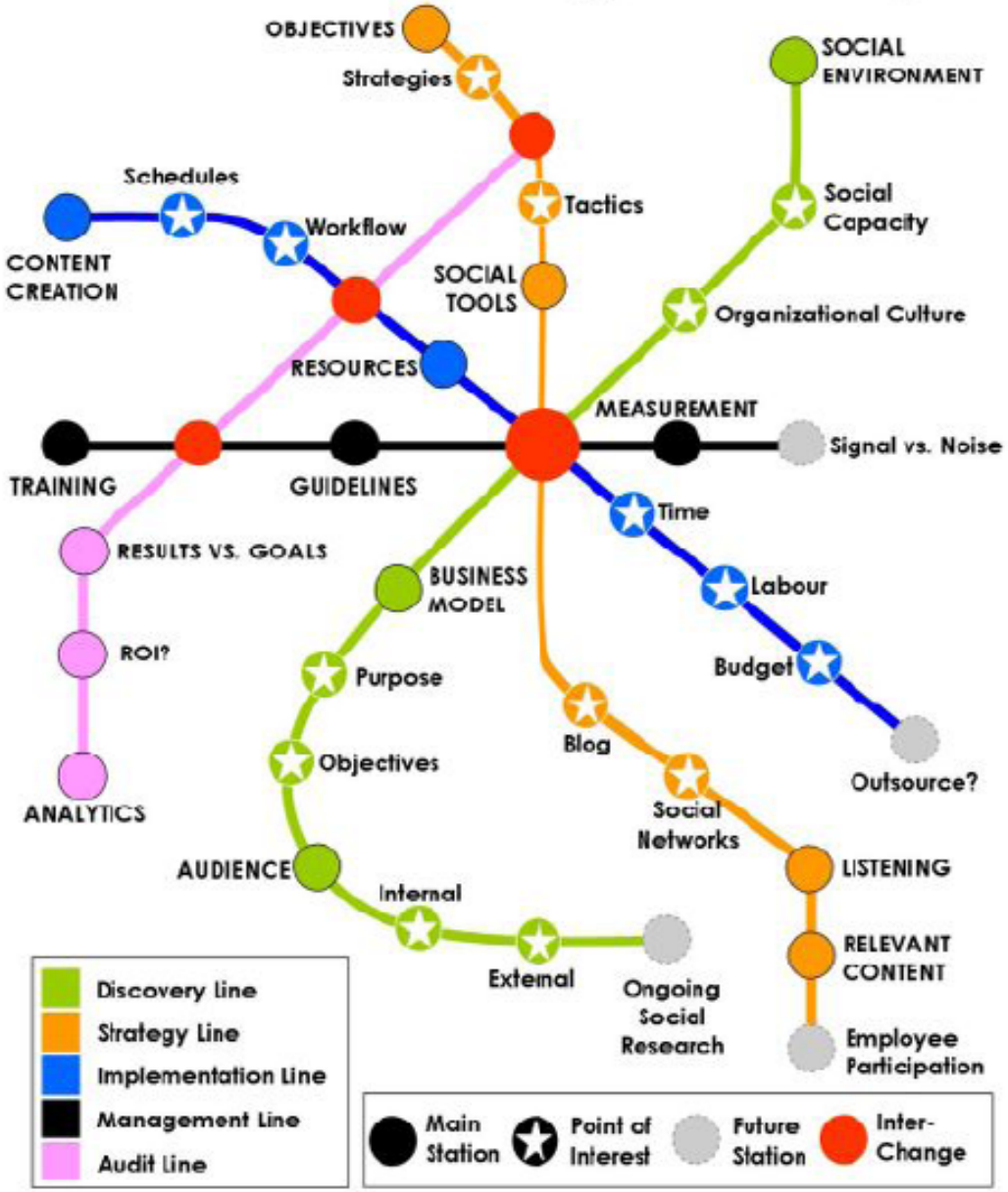
Social Media

Transit agency uses for social media:

- Better engage with citizen feedback
- Enlighten passengers with more detailed route and schedule information
- Provide prompt updates regarding service changes or disruptions

Image credit: cosccampusonline.com

Social Media Strategy Transit Map



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Considerations for Social Media

- Keep it in perspective
- Consider organizational impacts
- Identify the real costs
- Find the right voice
- Listen, listen, listen
- Respect the strengths of social media
- Have fun
- Just get started

Example: Online Promotions

Campaign/photo credit: "I'm on board with Metro"; Metro St. Louis

Example: YouTube

Updated Regionally Coordinated Transportation Plan

For several years the Houston-Galveston Area Council's Transportation Department has served as the lead agency, coordinating with other public transportation stakeholders in the Gulf Coast Region to develop a coordinated public transportation plan. In 2005-2006 the first regionally coordinated public transportation plan was developed which identified many barriers, constraints and opportunities to improve public transportation coordination in the region. Since that time several new and improved transit coordination projects and services have been implemented to address the gaps in regional services and to advance efforts for better coordination. More information about the 2006 plan documents and that development process is available through the H-GAC Transportation Department Publications Archives.

http://www.youtube.com/watch?v=OsqkNFcFEoA

Example: Online Blogs

Tales from a MetroRail rider

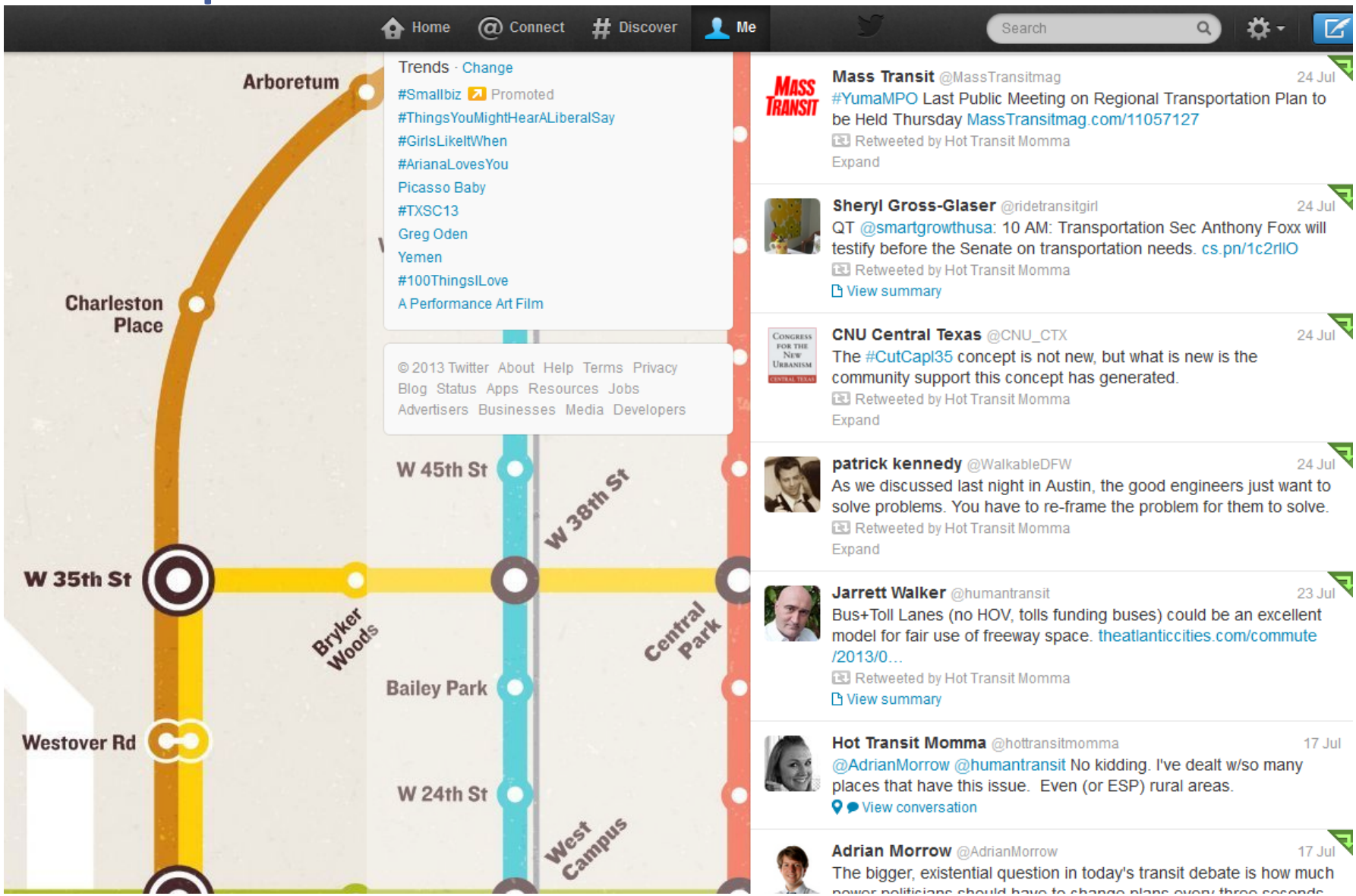
Posted in bike by bus, Carol's Adventures on May 17, 2010 | 12 Comments »

******Editor's note: Carol Keesee is a new Capital Metro rider. She contacted me out of the blue, wanting to capture her observations about making a lifestyle change that included public transit, as well as the stories of the interesting people she has met on MetroRail. Stay tuned for more blog posts by Carol. ********

For those who do not know my story, I am a recently-converted MetroRail commuter. Having lived in the Austin area all of my life, I must admit that I had never given the thought of using Capital Metro a second thought. Instead, I had spent more than thirty years commuting more than thirty miles to work and back home each day.

Riding the bus had never appealed to me. Quite frankly, if I was going to be stuck in traffic, I preferred being stuck in the privacy of my own vehicle. However, the introduction of MetroRail offered a more appealing approach to getting to work. Howard Station is within five miles of my home and the Downtown Station is within one mile of my office. The thought of driving only five miles to the station, boarding a cool-looking train, and de-boarding downtown had a very metropolitan feel. Still, MetroRail would mean a lifestyle change. Was I ready to commit to becoming a commuter?

Example: Twitter



Other Considerations

Summary

- Social media is a useful tool for reaching populations an agency may not otherwise reach through traditional methods
- Be thoughtful about posting through social media, but don't get overwhelmed
- Using social media is a relatively inexpensive—or free—means of sharing information

Image credit: geraldineconrad.com

MORE COMMUNICATION TOOLS

Technology in Communication

What is a Dashboard?

- Dashboards can aid in depicting and monitoring performance
- When creating a useful dashboard, consider the following steps:

  -Determine which goals to show

  -Think about how to depict goals and objectives

  -Select appropriate measures

  -Design and arrange the dashboard

Commissioner of Highways
Gregory A. Whirley, CPA

DASHBOARD

Performance Reporting System for Projects and Programs

HIGHWAY

PERFORMANCE

Congestion Free Travel on Interstates
Daily Updates

SAFETY

Highway Deaths Since
the Beginning of the Year

CONDITION

Quality of Road Surface

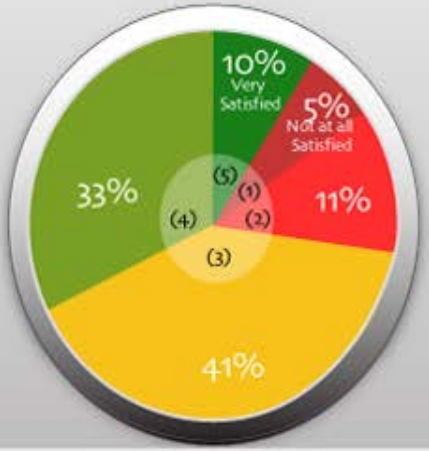
FINANCE

YTD Planned vs. Actual Expenditures
(Variance)

VDOT PERFORMANCE

VDOT MANAGEMENT

Management Performance Areas



CITIZEN SURVEY RESULTS

Interaction with the Public

PROJECTS

On Time

CAN Community Dashboard

we achieve our full potential

- kindergarten ready
- high school graduation
- college ready
- unemployment

our basic needs are met

- low income
- housing cost burdened
- vehicle miles traveled
- homeless

we are healthy

- health insurance
- mental health
- smoking
- obesity
- air quality

we are safe, just & engaged

- violent crime
- arrest demographics
- voting

COMMUNITY DASHBOARD

Technology & Communication Tools

LEARN MORE

we are safe, just, & engaged

- crime
- proportionality of jail bookings
- voting

our basic needs are met

- low income
- housing cost burdened
- vehicle miles traveled
- homeless

we are healthy

- health insurance
- mental health
- smoking
- obesity
- air quality

we achieve our full potential

- kindergarten ready
- high school graduation
- college ready
- unemployment

vehicle miles traveled

vision

Our basic needs are met.

We have safe, affordable, accessible and reliable transportation.

23.3 Daily vehicle miles traveled per capita in Travis County in 2011

Indicator: Vehicle miles traveled per capita in Travis County

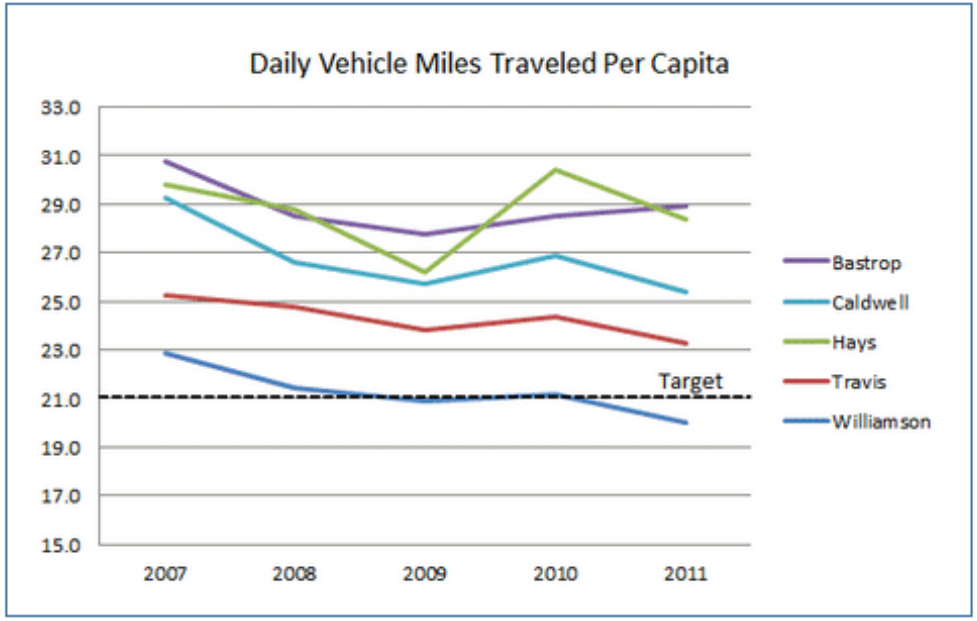
Goal: Reduce vehicle miles traveled per capita in Travis County

Target: 21 daily vehicle miles traveled per capita by 2017

Significance of Indicator: Vehicle miles traveled (VMT) per capita divides the total number of miles traveled on public roads in Travis County by the population. From a transportation perspective, lower VMT per capita is almost always a good thing. Lower VMT per capita equates to less roadway wear and tear saving taxpayers money. It also means that roadways are less congested which improves air quality and improves families' quality of life by reducing the amount of time that they spend stuck in traffic. However, because VMT also serves as an indicator of economic activity in terms of commuter trips and goods movement, it is important to assess whether any declines in VMT are happening due to weak economic situations or because of genuine improvements to transportation systems.

what the data tell us

In 2011, VMT hit an eleven year low for Caldwell, Travis, and Williamson counties. In Travis County VMT per capita is lower than surrounding counties with the exception of Williamson County.



Click on graph to view a data table of this information.

Definition: Daily vehicle miles traveled on public roads divided by population

Data Source: Texas Department of Transportation (TxDOT)

Data Considerations: VMT reflects miles driven by both personal vehicles and commercial vehicles including freight trucks. VMT is calculated by TxDOT based on traffic counts collected using permanent counters on some roadways as well as regular saturation counts of major roadways on and off the state highway system. The actual miles driven by residents in the region may be lower or higher than average daily VMT per capita.

the story behind the indicator

There is much speculation about why VMT per capita has been declining. While the lingering effects of the recession and high gas prices are cited as factors, there is rising evidence that the decline is also tied to the Millennial generation. The report "Transportation and the New Generation: Why Young People are Driving Less and What It Means for Transportation Policy" states that people ages 16-34 tend to travel fewer miles per year and are more likely to walk, bike, or take public transit to their destinations. A recent study by the Pew Institute found that households headed by someone 25 years or younger are less likely to own a car than a few years ago (73% in 2007 compared to 66% in 2011).

State of Washington Transportation Improvement Board

Transportation Improvement Board
Performance Management Dashboard

Menu

Expand All | Close All

- TIB At A Glance
- TIB Strategic Plan
  - TIB Portfolio Data
  - Balanced Scorecard
  - Mission & Core Values
- Projects
  - Project Inventory
  - Current Inventory Status
  - Project Selections
  - Project Mapping
  - Small City Maintenance
- Financial
  - Account Balances
  - Active TIB Customers
  - Financial Statement
    - All Accounts
    - TIA
    - SCPSA
  - Future Liability
    - Accounts Payable
    - Adjustment to Grant Amounts
    - Bond Debt
    - Remaining Commitment
  - Forecast
    - Demand Forecast
    - Revenue Forecast
  - Funding Partners
- Performance
  - GMAP Reporting
  - Key Performance Indicators
  - Key Target Levels
  - Measures
    - Project Management
      - Agency Contacts
      - Delayed Billings
      - Delayed Projects
      - Project Closeouts
    - Operations
      - Average Payment Cycle

TIB At A Glance

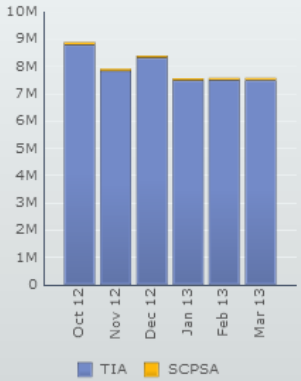
Financial Status

TIA Fund Balance: $33,164,137

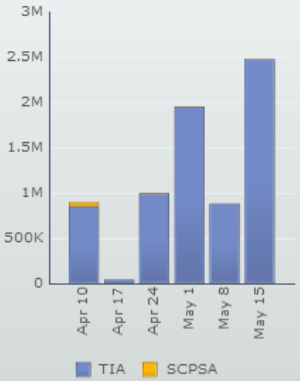
SCPSA Fund Balance: $1,603,072

Project Payments (MTD): $4,493,157.88

Gas Tax Revenue
Recent Activity



Accounts Payable
Recent Activity



Project Status

Remaining TIB Commitment: $248,430,898

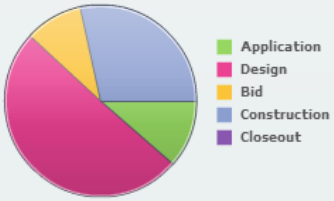
361 Active Projects

119 Completed Projects

134 Under Construction

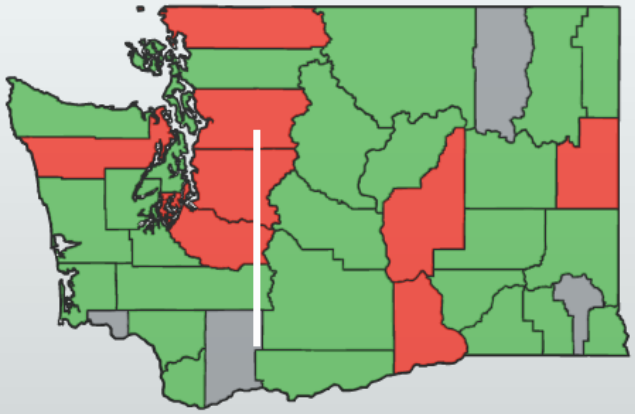
Change in TIB Funds (MTD): -$399,159

Remaining Commitment by Phase



TIA | SCPSA | Total

Current Inventory Status



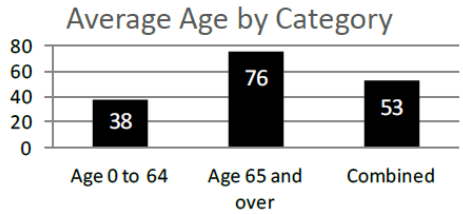
Key Performance Indicators

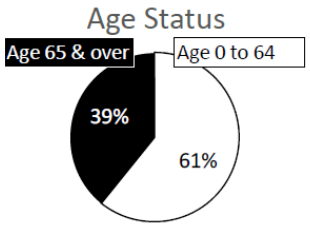
Delayed Projects | Transaction Processing | TIB Commitment Level | Net Revenue | Construction Payments | A

Manifest Sample: Week of March 5-9, 2012

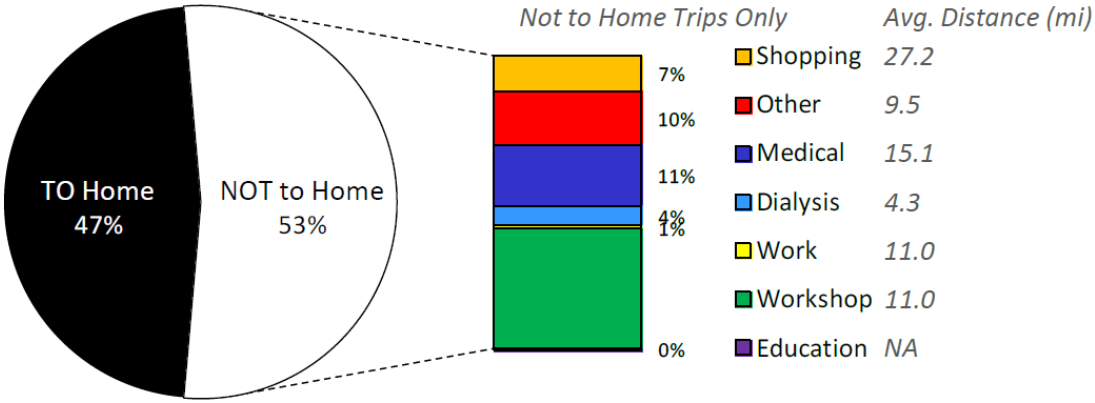
VEHICLE 543

RIDER AGE INFORMATION





TRIP PURPOSE



WEEKLY RIDERSHIP

Number of Unlinked Trips:		199
Number of Unique Riders:		47
Average # of Trips per Rider:		4.24
Average Trip Length:	46 minutes	13 miles
Average Vehicle Speed:		17 mph

PRODUCTIVITY MEASURES

Passenger Trips per Vehicle Rev. Hour: 3.81

(Max 6.41, Min 0.69, Avg 1.68)

Passenger Trips per Vehicle Rev. Mile: 0.24

(Max 0.40, Min 0.04, Avg 0.08)

COST ALLOCATION (TRIP AVERAGE)

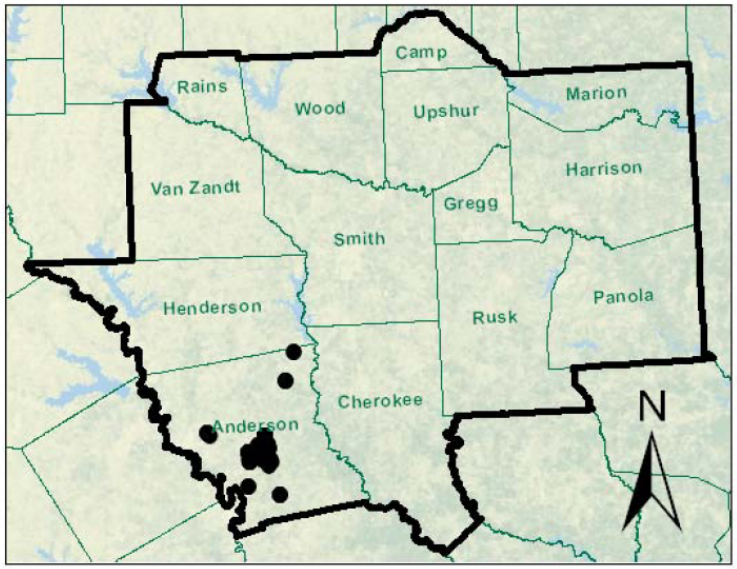
Cost based on Pass. Hours (2011 rate): $12.83

(Max $70.45, Min $7.62, Avg $29.05)

Cost based on Pass. Miles (2011 rate): $10.43

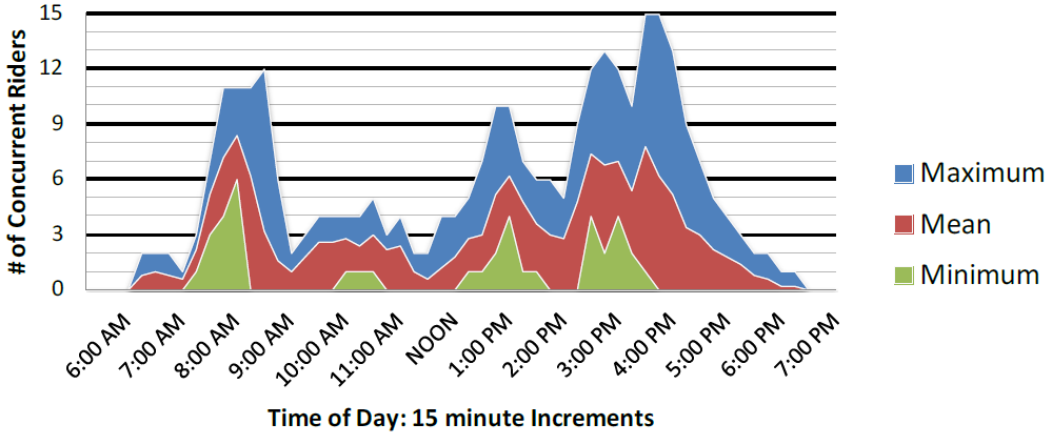
(Max $62.33, Min $6.28, Avg $30.60)

TRIP O/D VICINITY MAP



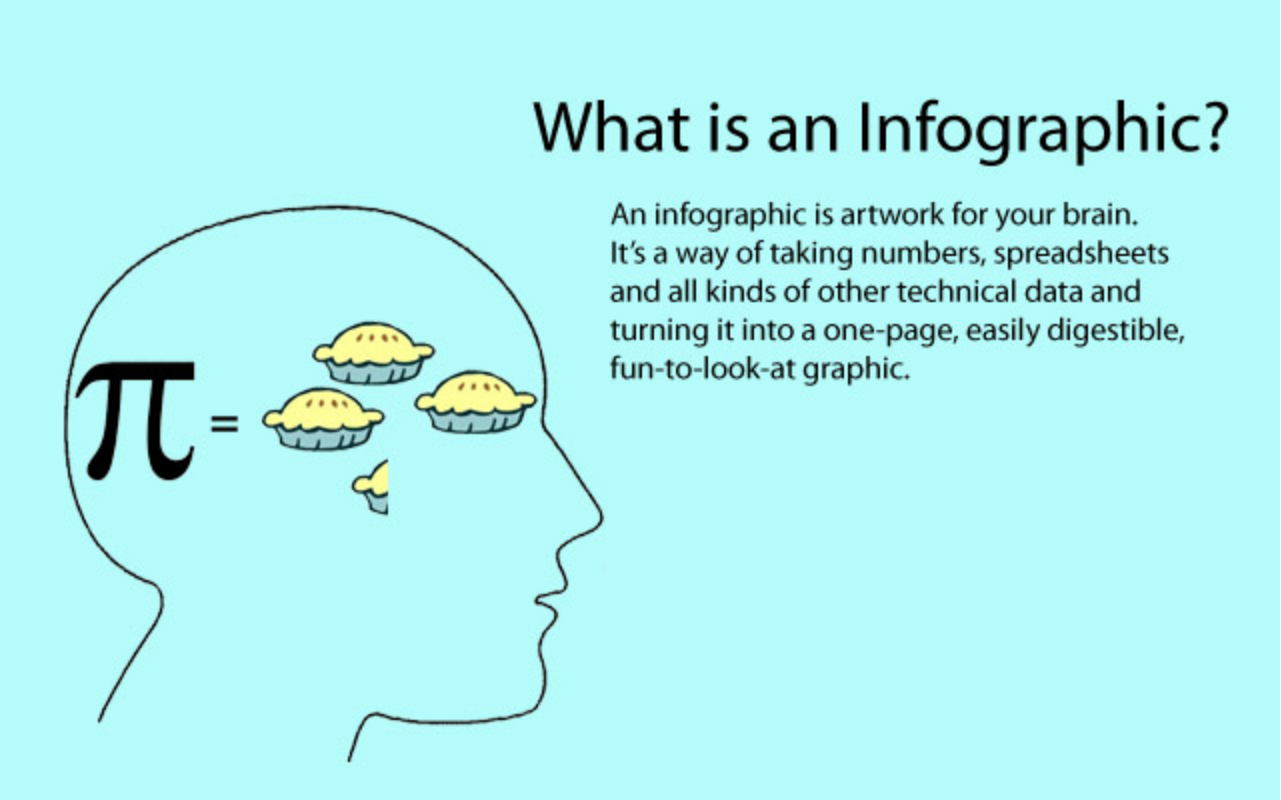
AVERAGE RIDE-SHARE (SLACK TIME ANALYSIS)

(5 Days: Mon-Fri, Week of March 5-9, 2012)



Infographics: Communicating Your Value

- A visual image, such as a chart or diagram to depict "nuggets" of information or data.



Hidden Savings of Public Transportation

340

million gallons of fuel saved due to less congestion because of public transportation

1.4 to 9

less auto miles traveled for every mile traveled by public transportation

3.4%

of annual U.S. vehicle miles traveled

37

million metric tons of CO_2 are not released

102.2

billion fewer miles traveled because of public transportation

FOLLOW THE MAP

HOW FEDERAL DOLLARS FLOW FROM CONGRESS TO YOUR COMMUNITY IN THE NEW TRANSPORTATION LAW, MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY (MAP-21)

In the new transportation bill, MAP-21, Congress combined previous programs dedicated to biking and walking and put them into one, smaller pot called Transportation Alternatives.

PREVIOUS BILL

2011 - $1.2 billion
for biking and walking programs

- Safe Routes to School: $202 million
- Transportation Enhancements: $928 million
- Recreational Trails: $97 million

CURRENT BILL

2013
$809 million
TRANSPORTATION ALTERNATIVES

MAP-21
2013
$52 billion

Biking projects are eligible under many funding programs, but one of the most important is ...

2013
$809 million
TRANSPORTATION ALTERNATIVES

EACH STATE DEPARTMENT OF TRANSPORTATION GETS ITS SHARE OF THIS MONEY

$81 million
State DOTs can take Recreational Trails funds off the top and ...

$728 million
... the rest of the money is available for local projects through competitive processes.

$364 million

The state DOT distributes half the money based on population ...

- Communities with populations of less than 5,000 residents
- Communities with populations of 5,000 to 200,000 residents
- Metropolitan areas of more than 200,000 residents

Entities in large metro areas can participate in a separate MPO competitive process.

For the other half of the money, the state DOT runs a competitive process to fund local projects.

$364 million

Local entities can apply for money through the state-run competitive grant process

WARNING!
Your DOT can decide to take this money, that could be spent on biking and walking, to fund highways or other road uses!

The local entities that are eligible to apply for funding are school districts, local governments, local transportation planning agencies, tribal governments and public land management agencies.

School districts, local governments, local transportation planning agengies, tribal government and public land management agencies

Learn more about MAP-21 and find additional resources at www.AdvocacyAdvance.org/MAP21

AUSTIN TRAFFIC

THE BOTTOM LINE

The UGLY.

Austin's traffic problem is worse than most large cities

On a typical day
The extra time you need for what should be a half-hour commute

AUSTIN	SAN ANTONIO	RALEIGH-DURHAM	KANSAS CITY	AVG. LARGE U.S. CITY
10 minutes	6 minutes	4 minutes	4 minutes	6 minutes

On the worst traffic day of the month
If it's normally a half-hour trip, what you should allow **if you really can't be late***

AUSTIN	SAN ANTONIO	RALEIGH-DURHAM	KANSAS CITY	AVG. LARGE U.S. CITY
2 HR 8 MIN	1 HR 27 MIN	1 HR 10 MIN	1 HR 19 MIN	1 HR 34 MIN

* plane flight, piano recital, medical appointments

The BAD.

What it means to every **Austin commuter**

(In 2011)

$930 out-of-pocket

44 hours of delay

20 gallons wasted fuel

400 pounds excess CO_2 pollution

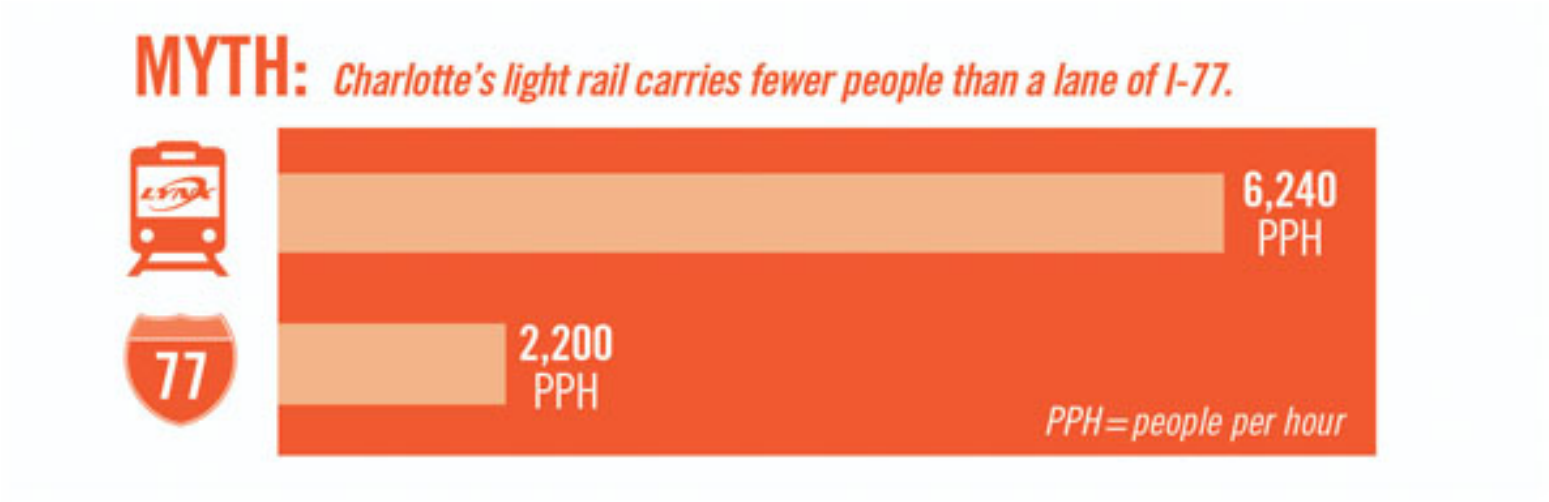
The GOOD.

As a region, we're already doing a lot to **address the problem**

Here's how much money we're saving
from transit service, traffic signal coordination, and improved street/driveway connections to make traffic run smoother.

Austin	$91 million
San Antonio	$67 million
Raleigh-Durham	$30 million
Kansas City	$42 million
Avg. Large U.S. City	$101 million

SOURCE: *2012 Urban Mobility Report*, Texas A&M Transportation Institute


MYTH: Charlotte's light rail carries fewer people than a lane of I-77.
6,240 PPH
77
2,200 PPH
PPH = people per hour

SUMMARY

Telling Your Story

Summary

- Technology
  - Fleet Maintenance
  - Dispatch and Scheduling
  - Mobile Data Computers
  - Communication Systems
- Service Design
  - Coordination to Connectivity
- Social Media
- Communication Tools

QUESTIONS

Discussion, Comments, Observations