Zen and the Art of GIS Program Coordination – The Community Transit Experience

July 17, 2012

Jeff Anderson
GIS Program Coordinator

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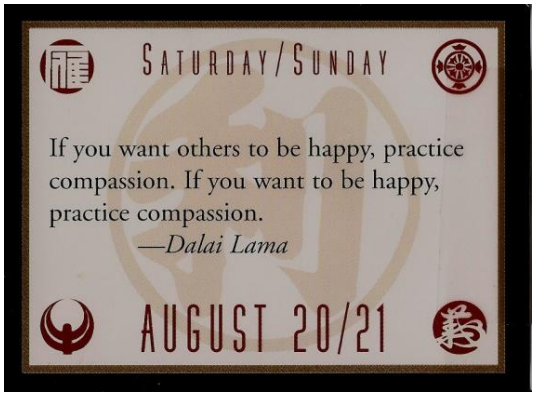
Why this title for this presentation?

- Zen and the Art of Motorcycle Maintenance (by Robert M. Piersig, 1979)
- Words of “Wisdom from the East” day calendar from 2005



- Need for connection with day to day on the job experience based on 20+ years of professional GIS experience

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Presentation Overview

- Community Transit Overview and the GIS Program Landscape
- Highlight Some GIS Program Accomplishments
- Some Current Projects, Leveraging Resources, and Expanding the GIS Footprint
- Sprinkle in some “Wisdom from the East”, plus other popular wisdom
- Interactive Questions, Answers, and Sharing Stories (time permitting)

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Community Transit
A Brief Summary

- Local and Regional Transit Agency for Snohomish County since 1976
- 26 Local Routes, 20 Commuter Routes
- 9.6 million Passenger Trips in 2011
- An average of 35,400 passengers on an average weekday.
- 800 Employees (including contracted services)
- 21 Park & Ride Lots (6736 spaces)
- 27 Park & Pool Lots (893 spaces)
- 280 Fixed Route Buses
- 396 Vanpool Vans (3400 passenger trips per day)
- 54 DART Paratransit Vehicles (760 passenger trips per day)

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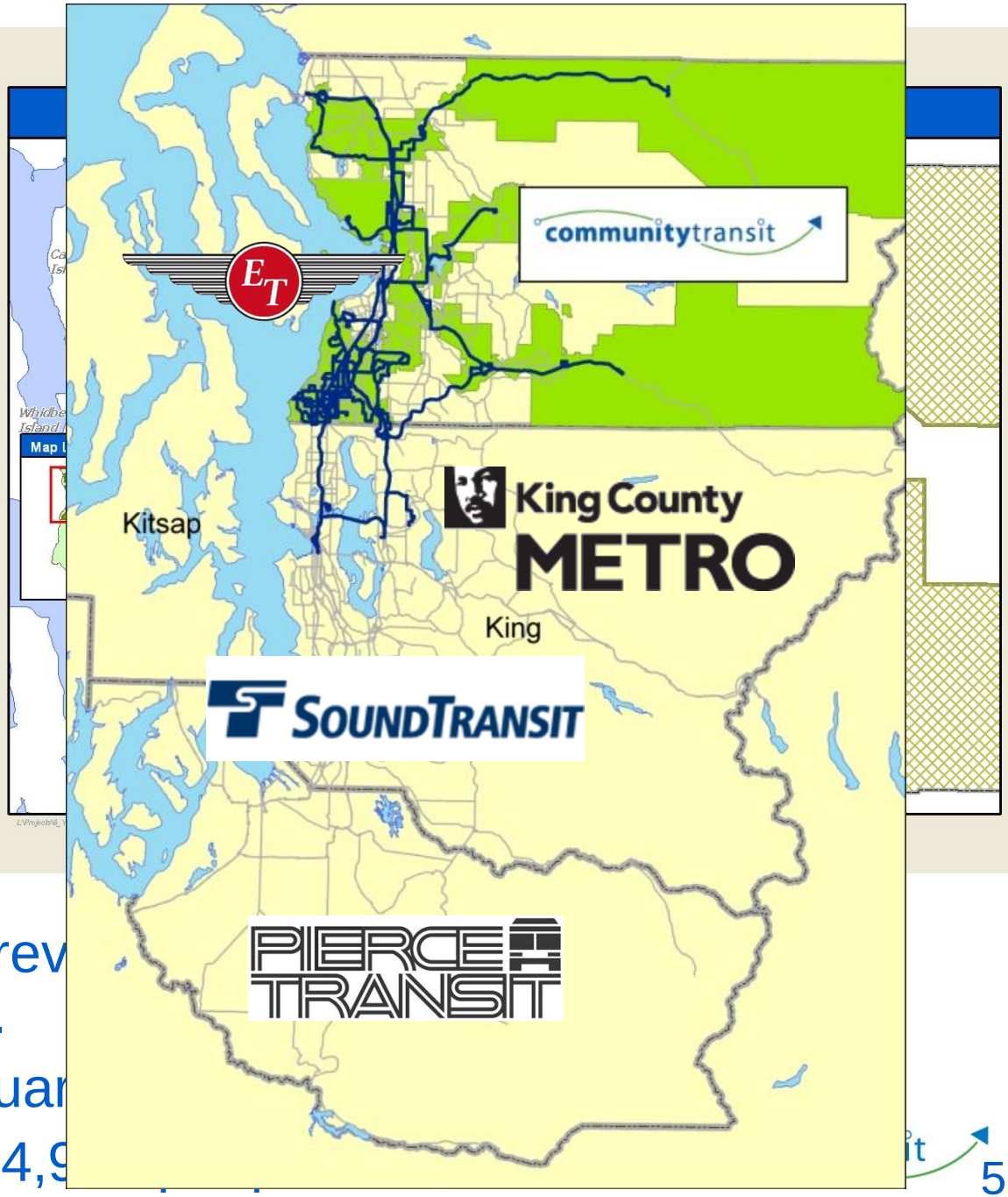
Service Area



- Majority of CT rev
  tax in this area.
- Area: 1308 squar
- Population: 524,9

Community Transit
Service Highlights

- *Swift* Bus Rapid Transit Service on Hwy 99
  - Over 3900 riders per day

- Double Tall Buses
  - 23 in service now on Commuter Routes into Seattle

GIS at Community Transit

A Brief History

- GIS program started in the mid 1990's.
- Program initially was led by a GIS Analyst. Position was later upgraded to GIS Program Coordinator.
- Since the late 1990's the program has resided in the Strategic Planning Division of the Planning & Development Department.
- Development of the Regional Automated Trip Planner (RATP) at CT served as the catalyst for the development of the modern GIS program. GIS Program Coordinator served as the RATP Project Manager and coordinated system development with regional partners.
- GIS program development efforts in the first 15 years has focused on regional trip planner development, enterprise GIS database development and integration, mapping, analysis, mission critical project support, and GIS user development.
- Program started as Project-Based GIS, graduated to Departmental GIS, and is transitioning to Enterprise GIS.

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GIS Program Overview

- Mission Critical Community Transit Project GIS Support
- ATIS Regional Trip Planner Support and Administration
- GIS Mapping, Data, and Service Requests
- GIS Database Administration and Maintenance
- GIS Software Management and Administration
- GIS User Support
- Special Enterprise GIS Projects
- APTS (Real Time) System Support

Balance *is very important . . . not just in karate, but for your whole life. Find your balance.*

- Mr. Miyagi
The Karate Kid

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Community Transit has completed its Re-Balancing

- Recession is now in its fifth year; showing signs of abatement and stabilization
- Revenues are down since 2007
- Current annual revenue is at 2005 levels
- Operating expenses are higher than in 2005
- GIS Program has grown and thrived and stretched during this time.

平衡

Balance

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Focus

Make a punch! Focus your entire body on one square inch and make a punch!

- Mr. Miyagi
The Karate Kid

What you focus on determines what you miss.

- Eric Allenbaugh, PhD
Peak Performance Seminar 1995

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From 2009 to 2012
Our Focus – Reestablish Our Balance
GIS Program Focus: Support This Effort

- February 2012 Service Change
  - 20% service cut successfully executed
  - Year long process during 2011
- Advanced Public Transportation Systems (APTS) Project
- Additional Projects to Support
  - Regional Trip Planner
  - Mission Critical Mapping

***GIS Program Approach**: Focus, Punch! Refocus, Punch!*
Always remembering to focus on the Most Important Project

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In truth, to attain to interior peace, one must be willing to pass through the contrary to peace. Such is the teaching of the Sages.

- *Swami Brahmanada*

Baptism by Fire

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Lessons Learned through "Baptism by Fire"

- Learn / Know the Business Functions and Drivers in Your Organization
- Learn / Know What GIS Technology Can Do and What Your Program Can Do With It
- Communicate to Your Clients What Your GIS Program Can Do for Them
  - What it Can Do
  - What it Cannot Do
  - What it May Be Able to Do with Additional Resources

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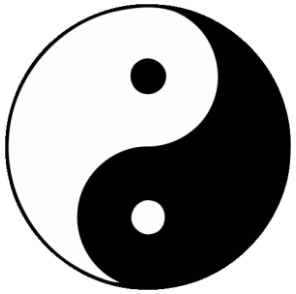


Deal with it before it happens. Set things in order before there is confusion.

- Lao-Tzu

Planning and Design

Advanced Public Transportation Systems (APTS) Project

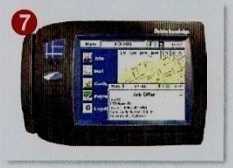
Advanced Public

APTS Components and Capabilities

1. Automatic Vehicle Location
Through the use of GPS guided Automatic Vehicle Location (AVL), dispatch is able to track the movement of buses and analyze schedule adherence, transfer points and route inefficiencies, helping to improve system performance and service reliability. AVL provides the real-time locational information to the central software system, Computer-Aided Dispatch (CAD), and will be used in both fixed route and paratransit applications.

2. Automatic Passenger Counters (APC)
Automatic Passenger Counters are devices for counting passengers automatically as they board and alight buses at each stop along a route. APC provides real-time loading information for each route to help planners improve schedule adherence and reduces data collection and analysis time. (fixed route only)

3. Automated Stop Annunciation (ASA)
Automated stop annunciation systems use electronic reader boards and public address speakers to "call out" or announce (visibly and audibly) the next stop along a bus route, both externally as well as onboard. The ASA supports ADA legal requirements and corrects issues of volumes and clarity. (fixed route only)



4. Computer-Aided Dispatch (CAD)
When used in conjunction with AVL, CAD improves the efficiency of operations, the speed of emergency response, and the communications between dispatchers and vehicle operators. CAD can also support more efficient and effective data processing and the provision of real-time information to customers.

5. Advanced Traveler Information Systems (ATIS)
Advanced Traveler Information Systems (ATIS) include Real-time Traveler Information Displays, Interactive Voice Response (IVR) Systems, and Web Accessible Information. Real-time Traveler Information Displays provide customers with real-time bus arrival information at transit shelters, terminals, or on transit vehicles. (fixed route only)

Interactive Voice Response (IVR) Systems provide real-time bus arrival information and other schedule and fare information through a touch-tone telephone. Web Accessible Real-Time Information can provide customers with real-time information 24-hours-a-day, 7-days-a-week over a computer or web-enabled mobile phone. (both fixed route and paratransit)

6. Data Radios to Support CAD/AVL (not pictured)
Data Radios are used to accommodate data communications between vehicles and the CAD/AVL central processing equipment at the dispatch center.

7. Mobile Data Terminals
Mobile Data Terminals (MDT), also known as Driver Display Units (DDU), allow two-way communication between dispatch centers and operators via a digital display, and provide an integrated on-board operations console for the driver. Schedule or route changes, weather, and traffic information can be communicated to the operator efficiently and effectively.

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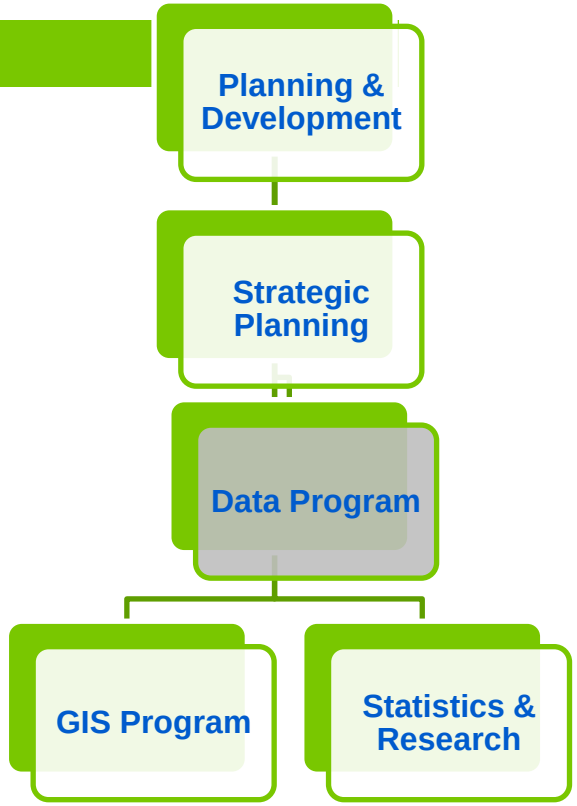
Planning and Design

Strategic Planning Approach to APTS

- Create a New Program: Data Program
- Create a New Position: Data Program Manager
- GIS Program now resides under the Data Program



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Planning and Design

ADA Callouts & Stop Names

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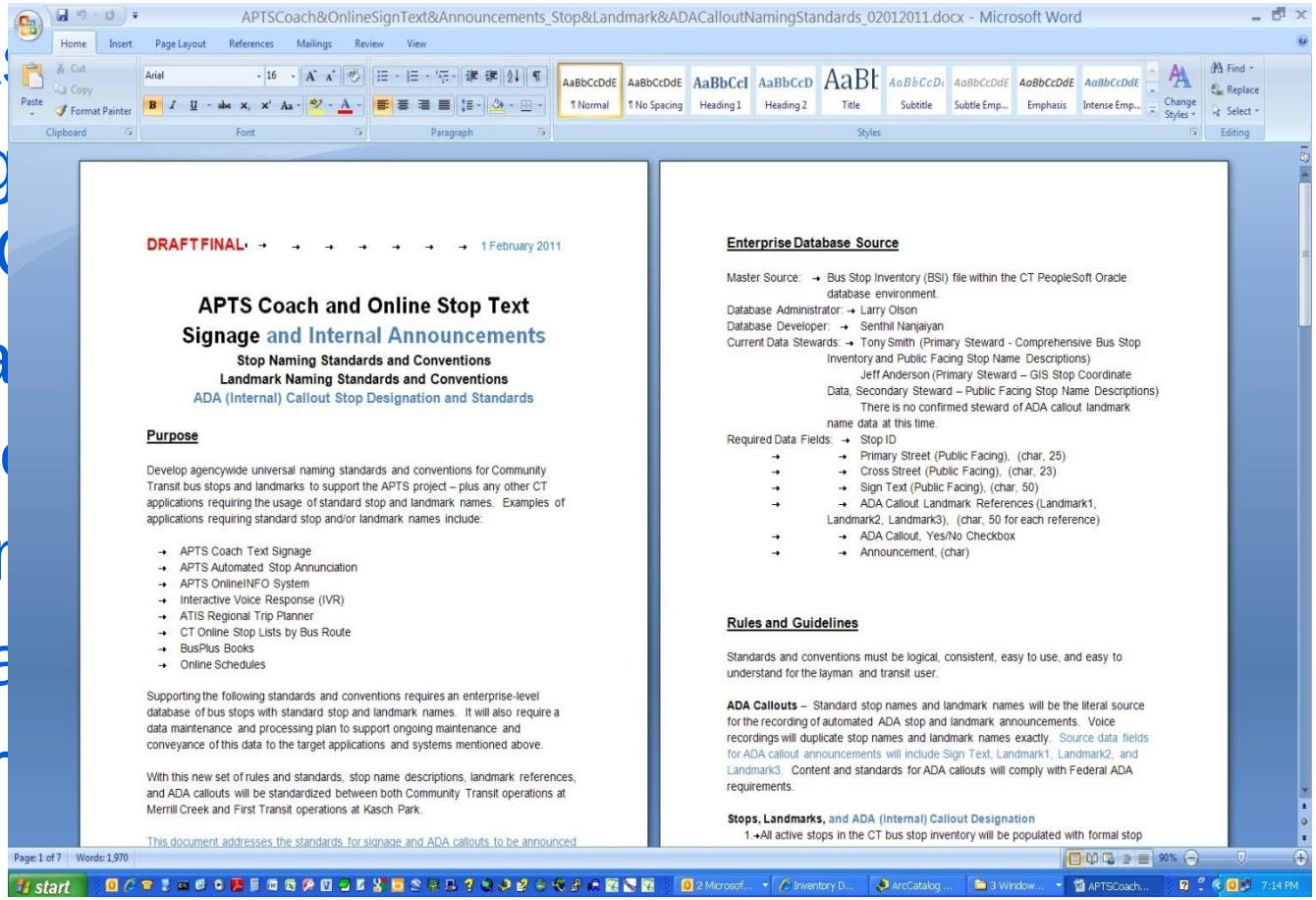

APTSCoach&OnlineSignText&Announcements_Stop&Landmark&ADACalloutNamingStandards_02012011.docx - Microsoft Word

DRAFT FINAL → → → → → → → 1 February 2011

APTS Coach and Online Stop Text Signage and Internal Announcements

Stop Naming Standards and Conventions

Landmark Naming Standards and Conventions

ADA (Internal) Callout Stop Designation and Standards

Purpose

Develop agencywide universal naming standards and conventions for Community Transit bus stops and landmarks to support the APTS project – plus any other CT applications requiring the usage of standard stop and landmark names. Examples of applications requiring standard stop and/or landmark names include:

- APTS Coach Text Signage
- APTS Automated Stop Annunciation
- APTS OnlineINFO System
- Interactive Voice Response (IVR)
- ATIS Regional Trip Planner
- CT Online Stop Lists by Bus Route
- BusPlus Books
- Online Schedules

Supporting the following standards and conventions requires an enterprise-level database of bus stops with standard stop and landmark names. It will also require a data maintenance and processing plan to support ongoing maintenance and conveyance of this data to the target applications and systems mentioned above.

With this new set of rules and standards, stop name descriptions, landmark references, and ADA callouts will be standardized between both Community Transit operations at Merrill Creek and First Transit operations at Kasch Park.

This document addresses the standards for signage and ADA callouts to be announced

Enterprise Database Source

Master Source: → Bus Stop Inventory (BSI) file within the CT PeopleSoft Oracle database environment.
Database Administrator: → Larry Olson
Database Developer: → Senthil Nanjaiyan
Current Data Stewards: → Tony Smith (Primary Steward - Comprehensive Bus Stop Inventory and Public Facing Stop Name Descriptions)
Jeff Anderson (Primary Steward – GIS Stop Coordinate Data, Secondary Steward – Public Facing Stop Name Descriptions)
There is no confirmed steward of ADA callout landmark name data at this time.
Required Data Fields: → Stop ID
→ → Primary Street (Public Facing), (char, 25)
→ → Cross Street (Public Facing), (char, 23)
→ → Sign Text (Public Facing), (char, 50)
→ → ADA Callout Landmark References (Landmark1, Landmark2, Landmark3), (char, 50 for each reference)
→ → ADA Callout, Yes/No Checkbox
→ → Announcement, (char)

Rules and Guidelines

Standards and conventions must be logical, consistent, easy to use, and easy to understand for the layman and transit user.

ADA Callouts – Standard stop names and landmark names will be the literal source for the recording of automated ADA stop and landmark announcements. Voice recordings will duplicate stop names and landmark names exactly. Source data fields for ADA callout announcements will include Sign Text, Landmark1, Landmark2, and Landmark3. Content and standards for ADA callouts will comply with Federal ADA requirements.

Stops, Landmarks, and ADA (Internal) Callout Designation

1. →All active stops in the CT bus stop inventory will be populated with formal stop

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Grip it and rip it!

- Roy McAvoy
Tin Cup
- John Daly
PGA Tour Golfer

Production and Implementation

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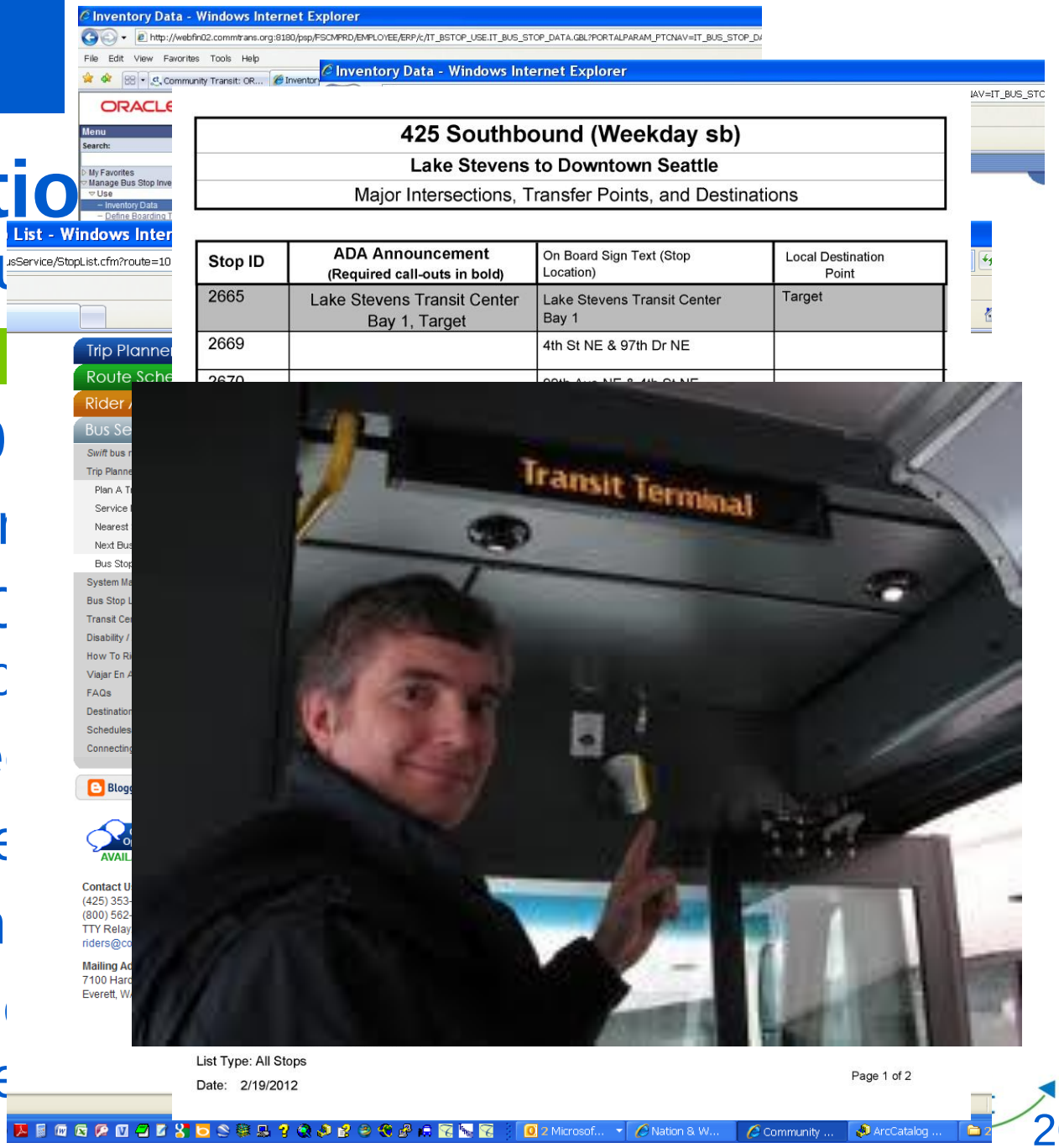

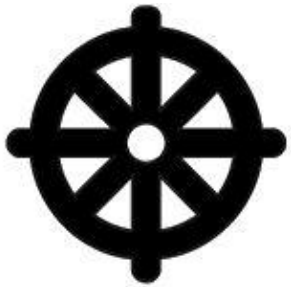

"To be" is to inter-be. We cannot just be by ourselves alone. We have to inter-be with every other thing.

- Thich Nhat Hanh

Partnership Building

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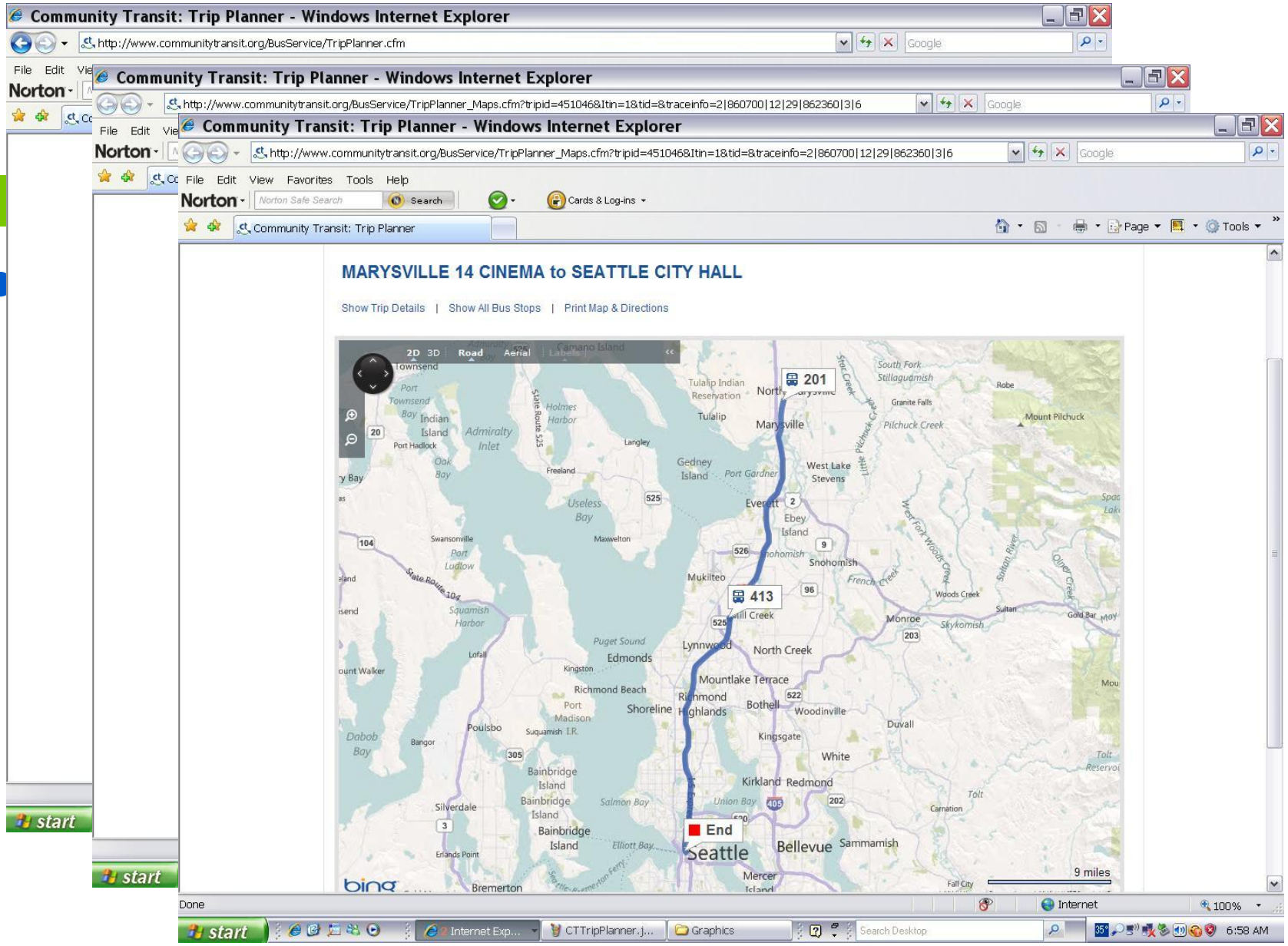
Partnership Building
Regional Trip Planner Mapping

- Spring 2010 Sound Transit Initiative
- Invitation to Partner
- Collaborative Effort
  - Metro Transit
  - Pierce Transit
  - Everett Transit
  - Sound Transit
  - Community Transit
- Completed in Spring 2011
- Coming in Late 2012 – Regional Google Transit (GTFS) Data Export


Community Transit: Trip Planner - Windows Internet Explorer
http://www.communitytransit.org/BusService/TripPlanner.cfm
http://www.communitytransit.org/BusService/TripPlanner_Maps.cfm?tripid=451046&Itin=1&tid=&traceinfo=2|860700|12|29|862360|3|6
Community Transit: Trip Planner
MARYSVILLE 14 CINEMA to SEATTLE CITY HALL
Show Trip Details | Show All Bus Stops | Print Map & Directions
201
413
End
Seattle
Bellevue
Marysville
Everett
Edmonds
Lynnwood
North Creek
Mountlake Terrace
Bothell
Kirkland
Redmond
Monroe
Snohomish
Mukilteo
Poulsbo
Silverdale
Bainbridge Island
Bremerton
Mercer Island
Sammamish
Duvall
Woodinville
Kingsgate
White
Richmond Beach
Shoreline
Gedney Island
Tulalip
Indian Island
Admiralty Inlet
Useless Bay
Port Gardner
Port Madison
Puget Sound
Dabob Bay
Salmon Bay
Union Bay
Elliott Bay
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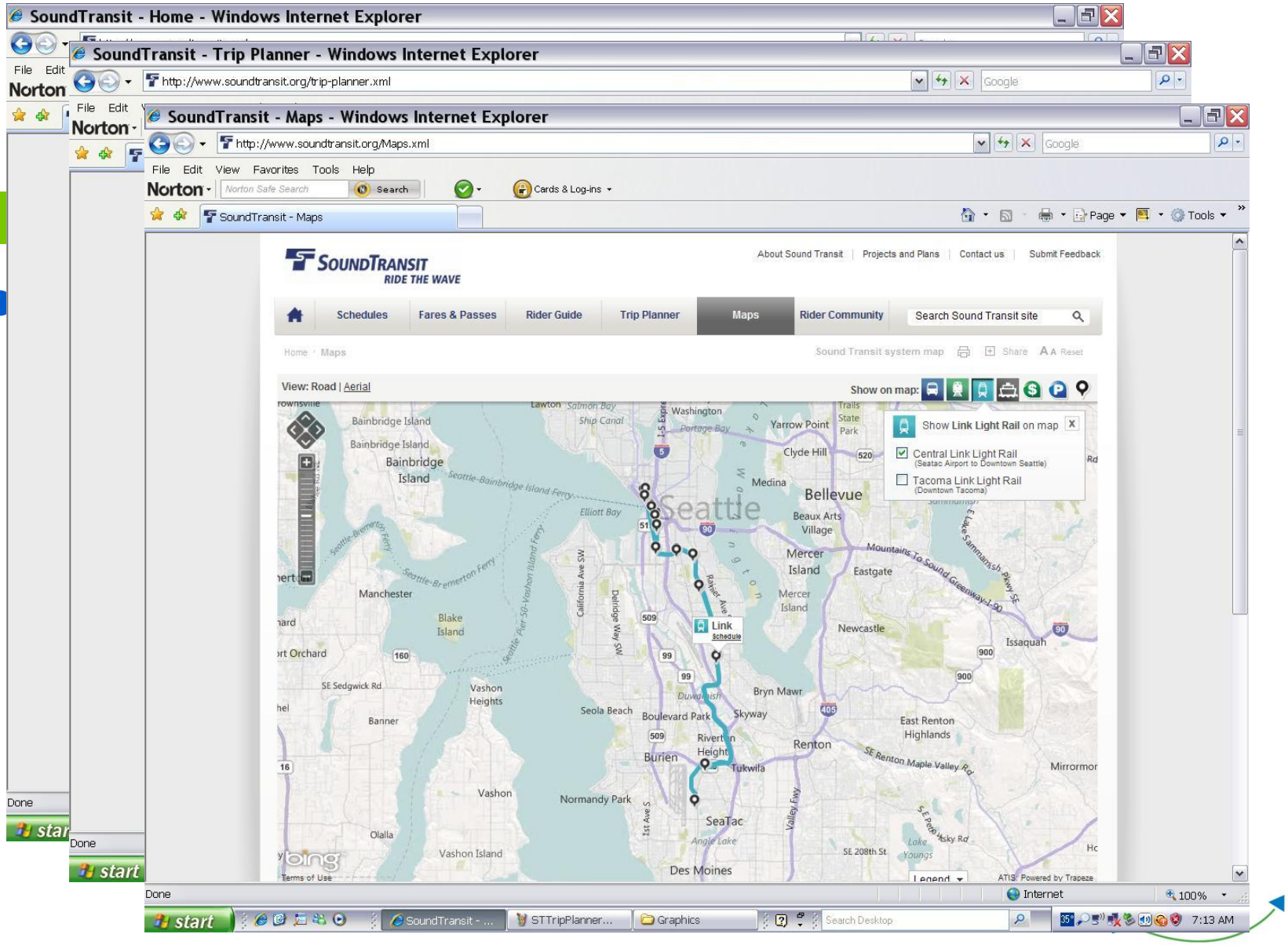
SoundTransit - Home - Windows Internet Explorer
SoundTransit - Trip Planner - Windows Internet Explorer
http://www.soundtransit.org/trip-planner.xml
SoundTransit - Maps - Windows Internet Explorer
http://www.soundtransit.org/Maps.xml
File Edit View Favorites Tools Help
Norton
Norton Safe Search
Search
Cards & Log-ins
SoundTransit - Maps
Page
Tools
SOUNDTRANSIT
RIDE THE WAVE
About Sound Transit
Projects and Plans
Contact us
Submit Feedback
Schedules
Fares & Passes
Rider Guide
Trip Planner
Maps
Rider Community
Search Sound Transit site
Home › Maps
Sound Transit system map
Share
Reset
View: Road | Aerial
Show on map:
Show Link Light Rail on map
Central Link Light Rail
(Seatac Airport to Downtown Seattle)
Tacoma Link Light Rail
(Downtown Tacoma)
Link
Schedule
Seattle
Bellevue
Mercer Island
Bainbridge Island
Manchester
Blake Island
Vashon Heights
Vashon
Vashon Island
Burien
Renton
SeaTac
Des Moines
Issaquah
Newcastle
Eastgate
Medina
Clyde Hill
Yarrow Point
Washington
Seola Beach
Boulevard Park
Skyway
Bryn Mawr
East Renton Highlands
Normandy Park
Olalla
Banner
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Internet
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start
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Graphics
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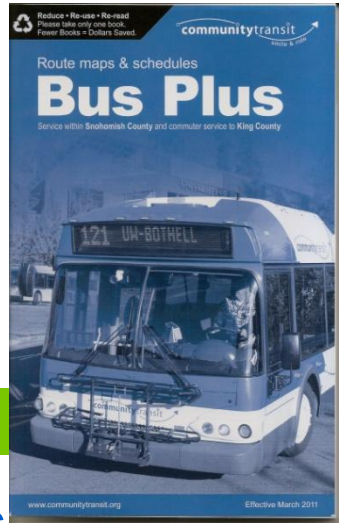
Partnership Building
Bus Plus Rider Guide Route Mapping



- 2007 Project to Update Bus Plus Maps
- Awarded Contract to King County GIS Center
- Collaborative Effort
  - Community Transit
    - Planning & Development Department
    - Marketing Department
  - King County GIS Center
- Produced Geospatially Accurate Maps using the KC GIS Mapping Model

Route 421

Grove St & State Ave
200 201 202 207 221 222 82

Marysville Ash Ave P & R
6th St & Ash Ave
207

I-5 & 4th St Flyer Stop
Southbound only
201 202 207 247 422 821

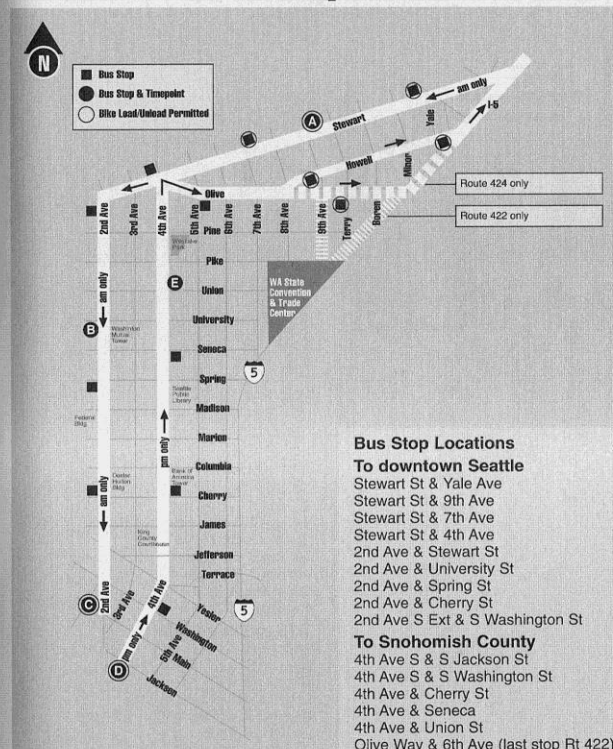
For downtown S

To Downtown Seattle
Going to downtown Sea
stops by request. Sche
traffic conditions.

Downtown Seattle

This downtown Seattle map should be used for the following routes only: Routes 401, 402, 404, 405, 408, 410, 411, 415, 417, 422, 424

Map B



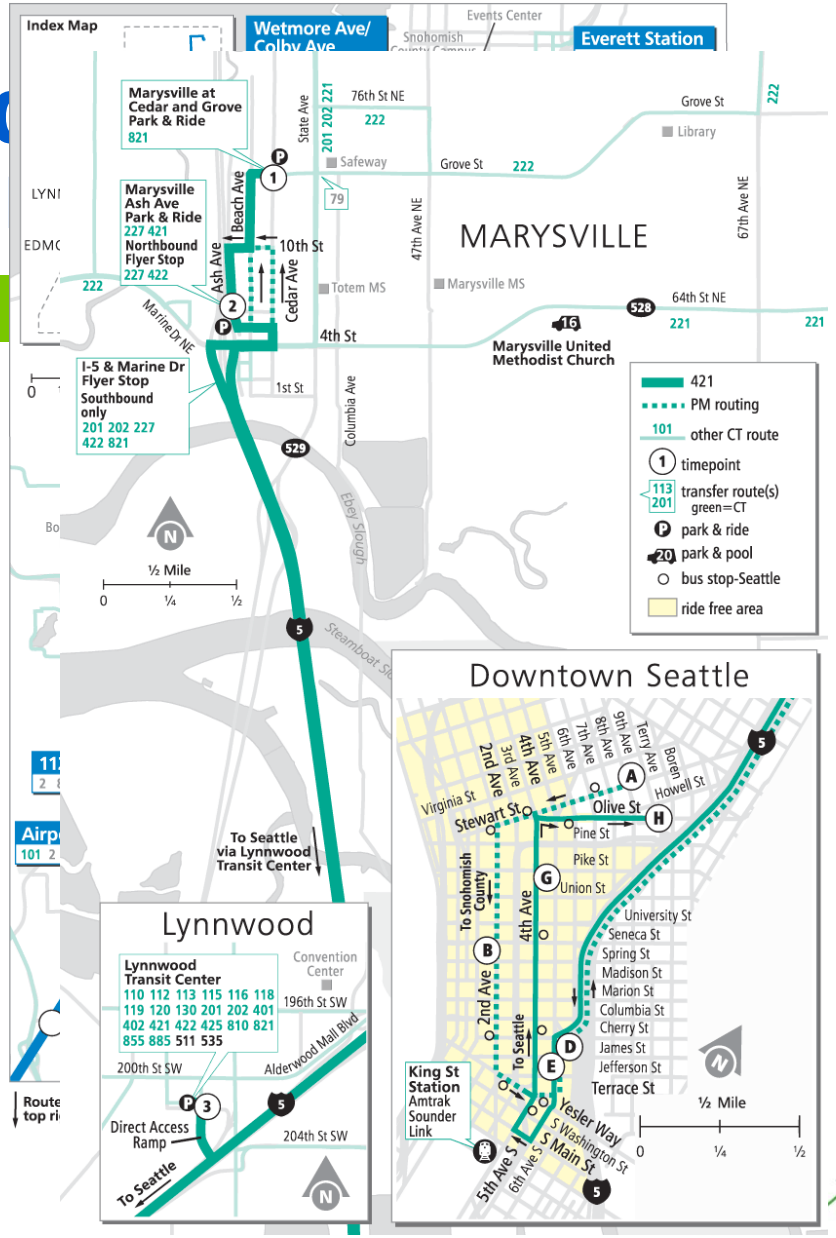
Bus Stop Locations

To downtown Seattle
Stewart St & Yale Ave
Stewart St & 9th Ave
Stewart St & 7th Ave
Stewart St & 4th Ave
2nd Ave & Stewart St
2nd Ave & University St
2nd Ave & Spring St
2nd Ave & Cherry St
2nd Ave S Ext & S Washington St

To Snohomish County
4th Ave S & S Jackson St
4th Ave S & S Washington St
4th Ave & Cherry St
4th Ave & Seneca
4th Ave & Union St
Olive Way & 6th Ave (last stop Rt 422)
Olive Way & Terry Ave (last stop Rt 424)
Howell St & 9th Ave
Howell St & Yale Ave

Ride Free Area and Bicycle Loading / Unloading Area:

Please see page 27 for information.



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Map

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Easy to Use.
Easy to Ride.
Fast, Frequent Service.

How to Ride

1. Pay your fare here at the station before you board and retain your ticket for presentation upon request.
2. Check the route map to find your destination station.
3. Board *Swift* bus when it arrives, at any of the three doors.
4. Buses will not wait.

Fares

Pay before you board *Swift*
A $124 citation may be written for those who fail to pay their fare.

Adult (19-64)	$1.75
Youth (6-18)	$1.25
Reduced Fare Permit	$.75

Cash customers:
- Use ticket vending machines.
- Pay exact fare. No change given.
- Tickets are good for one ride only.

ORCA card users:
- Tap ORCA card before each boarding.
- Readers located at each end of station.
- ORCA gives you transfer credit on next bus within 2 hours.
- If your ORCA pass value does not cover *Swift* fare, purchase a ticket to cover the difference (upgrade).

orca
one regional card for all

Get an ORCA card to save time and money:
- www.orcacard.com
- ORCA Customer Service 1-888-988-6722 TTY Relay: 711/1-888-889-6368
- Everett Station

Add value to your ORCA card at Safeway stores near the route.

Service

Monday – Friday
- 5 a.m. – 7 p.m. Bus runs every 10 minutes
- 7 p.m. – midnight Bus runs every 20 minutes (see schedule next to ticket vending machine)

Saturday
- 6 a.m. – midnight Bus runs every 20 minutes (see schedule next to ticket vending machine)

No Service on Sundays or Major Holidays
Major Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day.

Contact Information

Community Transit
(425) 353-7433
(800) 562-1375
TTY Relay: 711
www.communitytransit.org

Everett Transit
(425) 257-7777
www.EverettTransit.org

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EVERETT TRANSIT

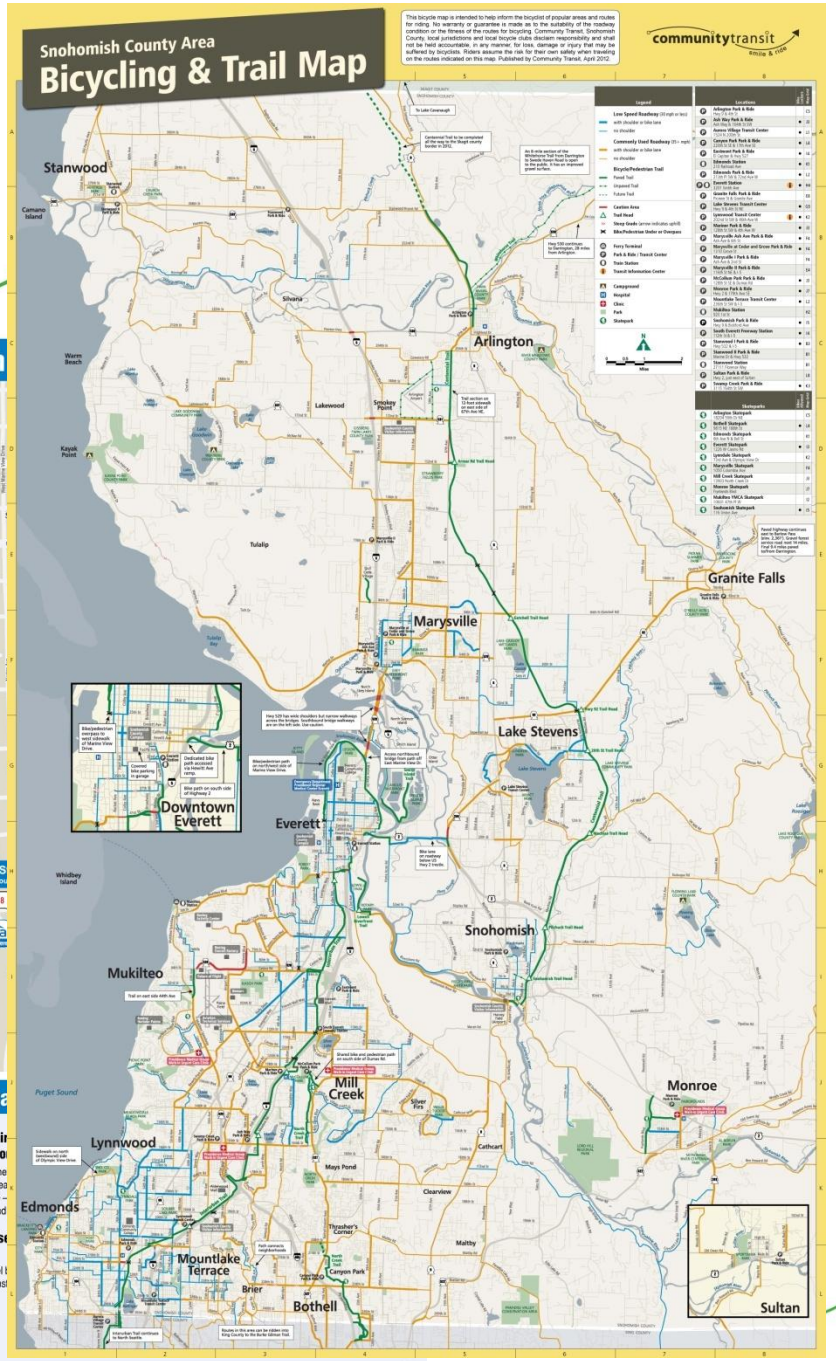
Stop #2838

Everett Station

Swift Rider Informa

Customers using wheelchair mobility devices use the fro
The wheelchair areas on *Swift* can eithe standard, front-facing position or in a rea requires no coach operator assistance – padded backboard, set your brakes and

Customers with bicycles us
Interior Bike Racks
Bike racks hold three standard 2-wheel one-step mechanism to secure bike. Ins bike racks.



Partnership Building

June 2010 Service Change Support

- Planning started in Autumn 2009
- 15% service cut required . . . Cut 80,000 service hours
- Fast track process
- Develop the best plan which cuts service while minimizing losses of ridership
- Developed new GIS support partnership with Service Planners

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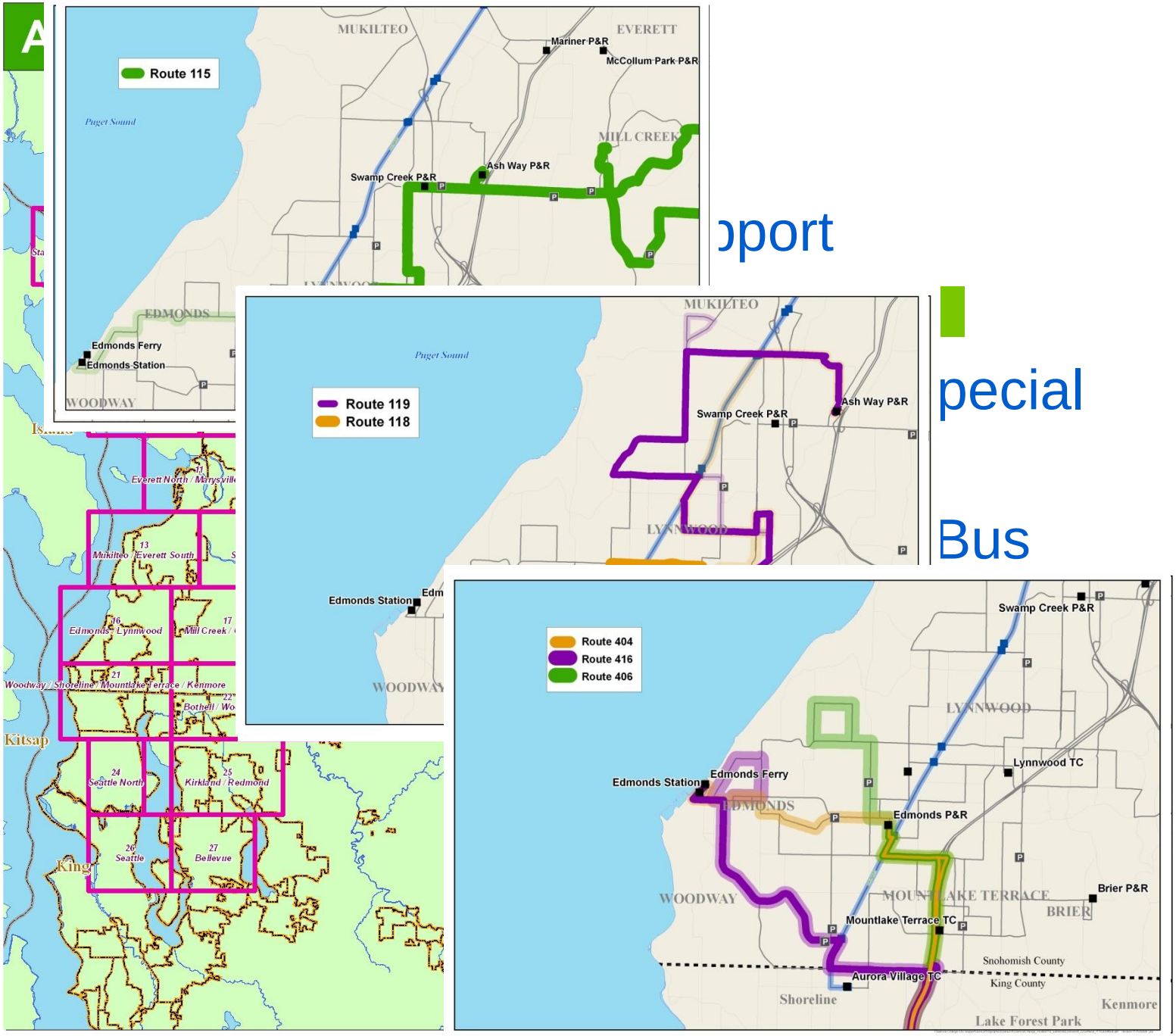

Partnership Building

February 2012 Service Change Support

- Planning started in Autumn 2010
- 20% service cut required . . . Cut 80,000 service hours
- Full year deliberative process in 2011
- Use system rider census data and onboard survey data from Autumn 2010
- Develop three unique alternatives which accomplish the goal above
- Support the decision making process

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Lake Stevens Transit Center
Everett Station
277WestWeekdaywb
Average Passenger Load
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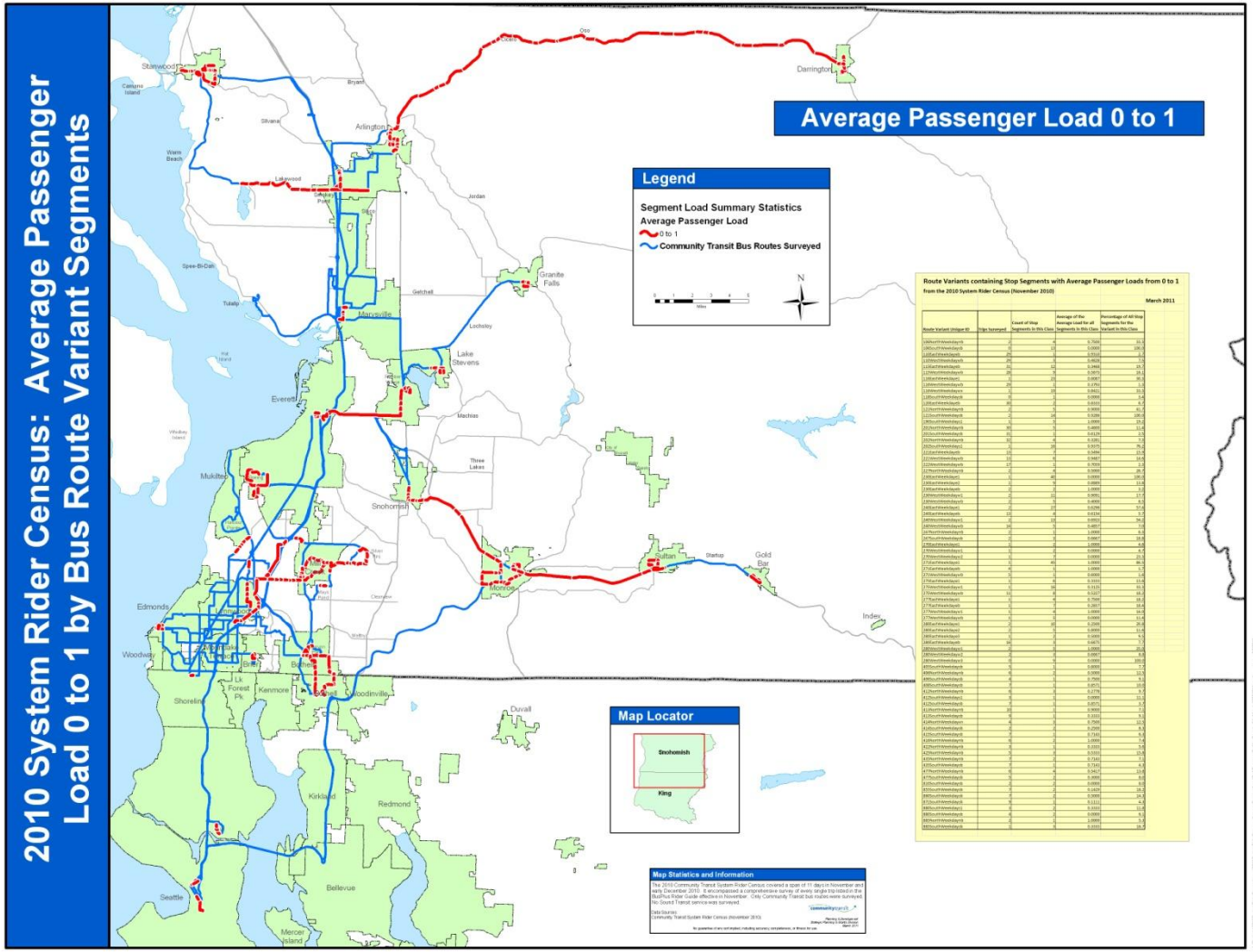
1 to 3


2010 System Rider Census: Average Passenger Load 0 to 1 by Bus Route Variant Segments
Average Passenger Load 0 to 1
Legend
Segment Load Summary Statistics
Average Passenger Load
0 to 1
Community Transit Bus Routes Surveyed
Map Locator
Snohomish
King
Map Statistics and Information
Route Variants containing Stop Segments with Average Passenger Loads from 0 to 1
from the 2010 System Rider Census (November 2010)
March 2011

Partnership Building

Snohomish County E-911 Office GIS Street Centerlines

- Since 2010, Needed a New Street Network GIS Dataset
  - GIS Program (geocoding and mapping)
  - ATIS Regional Trip Planner (geocoding and trip planning)
- Found, Acquired (at No Cost), & Tested E-911Office Street Centerlines GIS Data
  - Best Geocoding Rate among Competitors
- Developed New Trip Planner GIS Data Loader based on New Data
- Now Full Partners

GIS program coordination and management can be like herding cats.

- Anonymous

Managing Adventurous Independent Clients

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Herding Cats 101

- First Prerequisite: Hungry Cats
- Second Prerequisite: A Very Attractive Moving Food Source
- Try to Stay Ahead!

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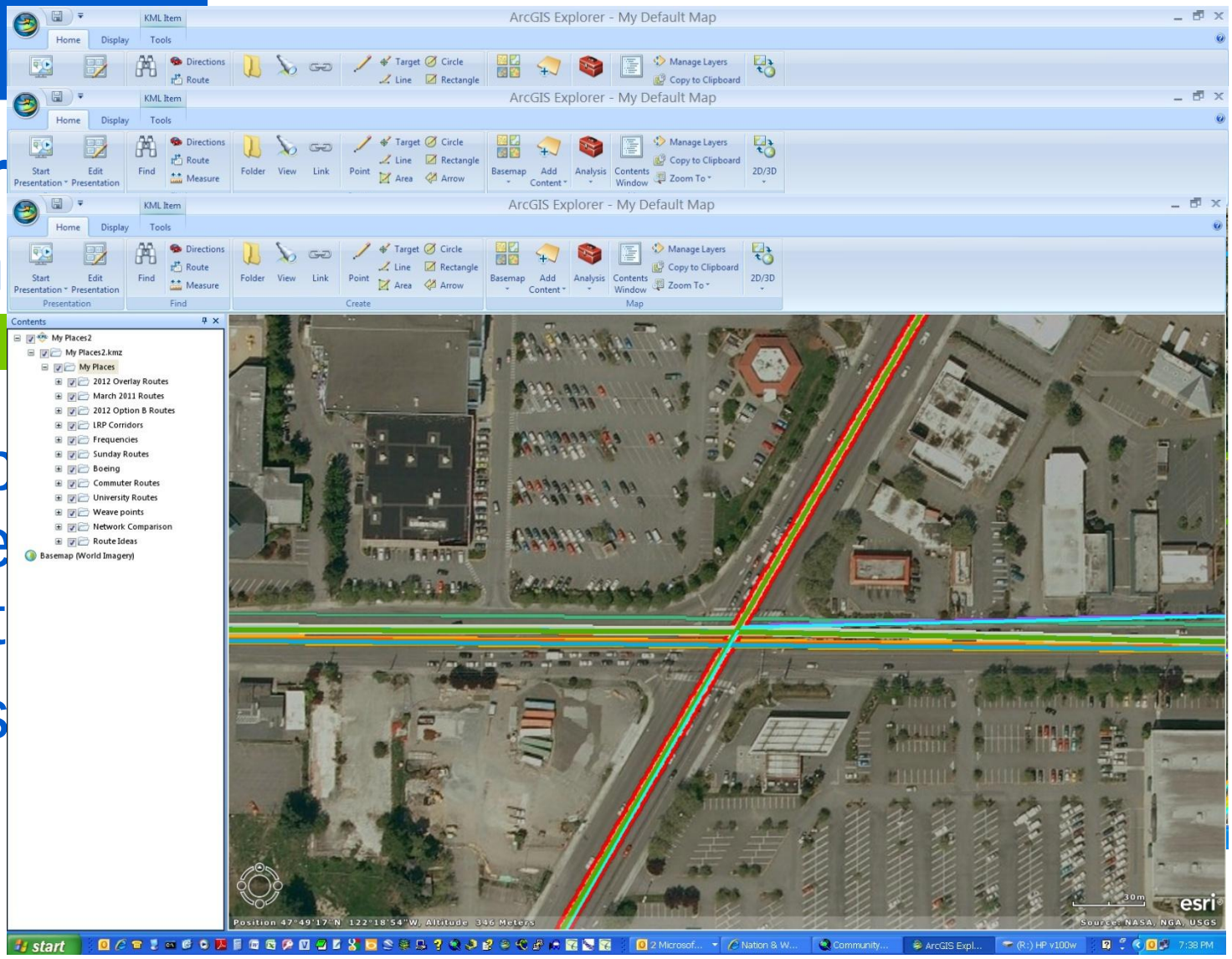

- A New Solution: Provide Support with the ArcGIS Data Interoperability Extension

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In Closing . . . A Brief Review

Ingredients for a Successful GIS Program

- Balance
- Focus
- Baptism by Fire . . .Look for the Learning
- Plan and Design
- Produce and Implement
- Build Partnerships
- Prepare to “Herd Cats”

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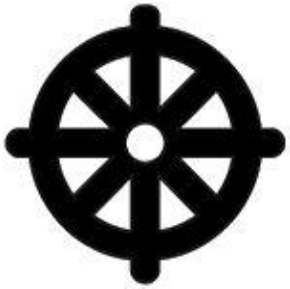
A Final Thought



If you want others to be happy, practice compassion. If you want to be happy, practice compassion.

- Dalai Lama

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Thank You!

Jeff Anderson
GIS Program Coordinator
jeff.anderson@commtrans.org
425.348.7129