Advanced Transit Traveler Information Systems: Practice, Developments, and Challenges

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Based on Research by Anthony Rizos

Agenda

- TTIS – Traditional
- State of the Practice
- State of the Art
- Cutting Edge
- Issues
- Recommendations

Transit Traveler Information: Traditional Means

- Static information materials and print media, such as schedules, maps, brochures, bulletins, and advisories
- Operators
- Customer service call centers
- Automated Interactive Voice-Response (IVR) telephone systems
- Pathfinding at stops / stations/ pedestrian access

Transit Traveler Information Systems (TTIS): Initial Deployments

- Intelligent Transportation Systems (ITS) and Real-Time Information Systems
  - Displays at bus stops (scheduled arrivals / real-time ETA)
  - Monitors at terminals
  - Next stop information on-board vehicles (AVA)

TTIS State of the Practice

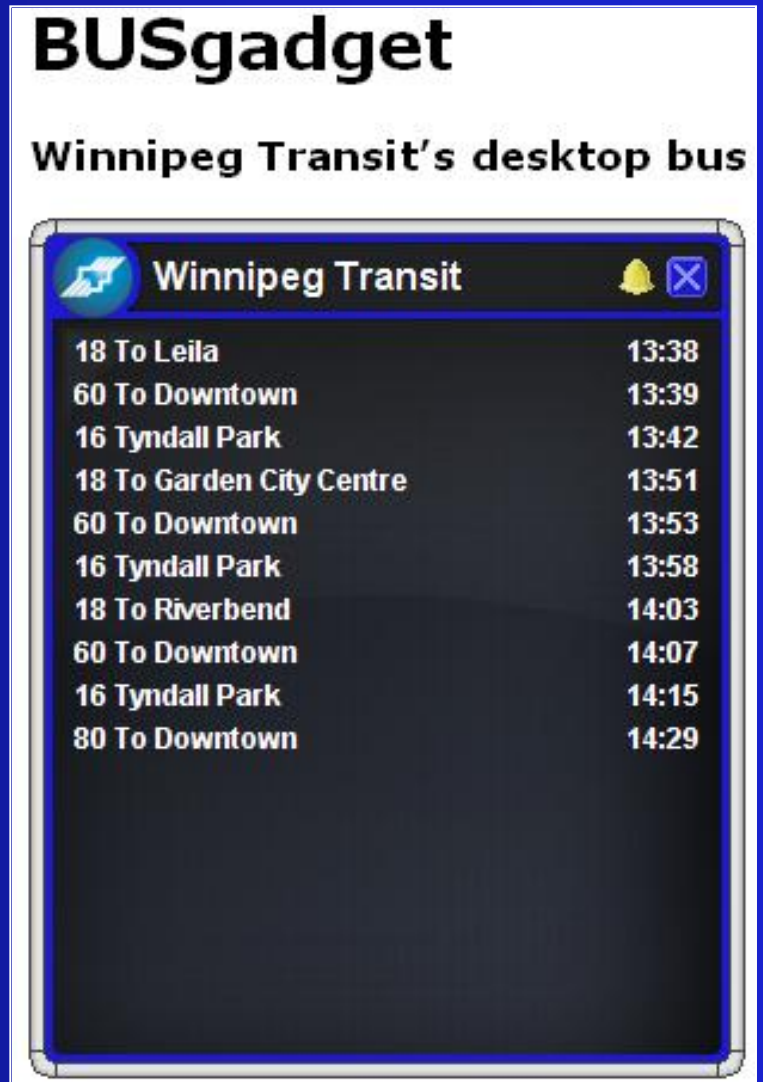
- Web-based Applications
  - Transit agency trip planning systems (typically commercial)
  - Google Transit trip planning
    - Requires export / translation into GTFS
  - E Alerts (especially in rail systems)
- Smart Phone Applications
  - Schedule information, GIS-based applications
  - Scraped data
  - Provision of GTFS data
  - Policies for applications developers
- 511 Systems and Transit
  - Provincial / Federal TIS initiatives

TTIS State of the Art

- Social Media
  - Facebook
  - Twitter
- Real-Time Information
  - Requires accurate AVL: stand alone or Transit ITS
  - ETA via multiple media (including texting)
- Transit Agency Sponsorship of Open-Source Traveler Information Software Development
  - Proactive partnerships with applications developers

    Tri-Met, BART, CTA, MassDOT, NY MTA
  - OpenTripPlanner (Multi-modal)

TTIS State of the Art



TTIS State of the Art

TRIMET

TriMet App Center

Email Tweet Share

Transit tools for the web and mobile devices

Since TriMet made its schedule and arrival data available to the public several years ago, independent programmers have created a number of useful transit tools for riders. Below are some of the free and commercial applications that are available from third-party developers using TriMet's open data.

Questions? Comments? Let us know what you think. Email us at developerapps@trimet.org.

Arrival
Provides arrival

New ArrivalTracker
Searches for nearest stops,

BrailleNote and VoiceNote

TTIS Cutting Edge

- Special Mobile Applications for Customers with Special Needs
  - Path finding for visually impaired
  - “Buddy” system for persons with cognitive disabilities
- “Augmented Reality” and Implementation in Custom Smartphone Applications
  - Combine compass, visual recognition, other tools
- Peer-to-Peer, On-Line, Real-Time Exchange by and between Transit Passengers
  - Social interaction
  - Loyalty

TTIS Cutting Edge

iNap

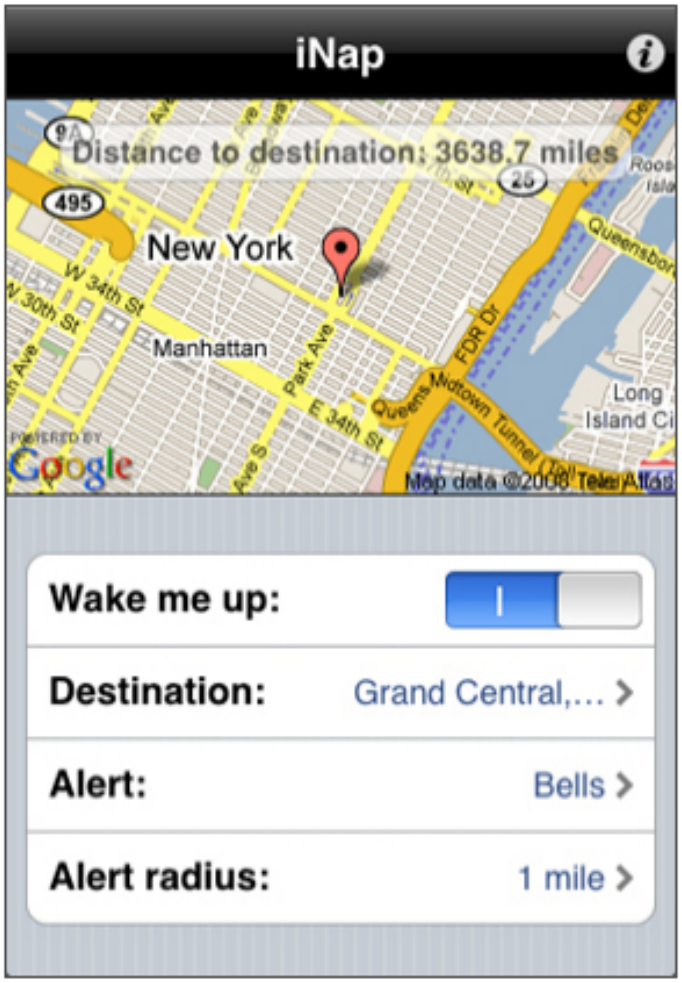
Ever wanted to get some sleep during a train ride, or a quick powernap on the bus to work? You either hoped to wake just in time not to miss your station, or set an alarm to wake you far too early... Let iNap wake you when you get close to your stop!

iNap is a 'next-generation' travel alarm. Using the GPS in your iPhone it will determine where you are, and wake you when you are close to your destination!

Using the integrated user-friendly Google Maps you determine your destination by typing in an address, city, train-station etc. Determine how far from your destination you want to be woken up (100 meters before your destination? 1km? Up to 100km or Miles? iNap is flexible!) and you are ready to take a nap!

Features:

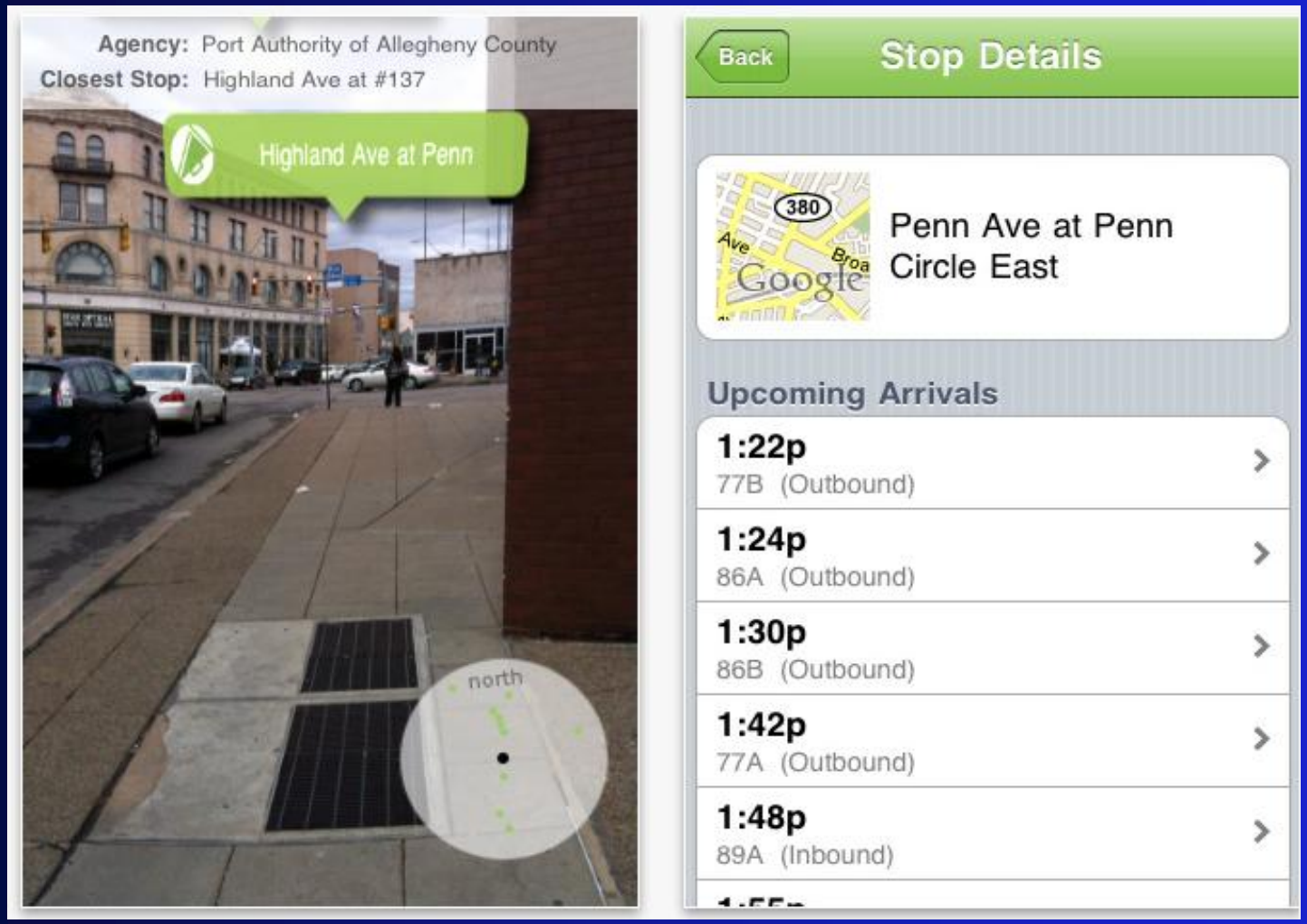
- iNap will wake you when you get near your destination!
- Integrated Google Maps!
- Use a street-name, city, train-station... anything to set as a destination!



Turn your alarm on in iNap's main-screen!

TTIS Cutting Edge

StopFinder



TTIS Cutting Edge

Roadify

StreetCARma Points

Earn StreetCARma points with every GIVE and see how Roadify proves that what goes around comes around.

With Roadify you GIVE and you GET. Each time you GIVE, you earn StreetCARma points. StreetCARma points measure your community impact, so GIVE throughout your day and feel good watching your CARma grow.

Certain GIVES are worth more StreetCARma:

- GIVE your spot before you go: 5 StreetCARma pts
- GIVE an open parking spot: 3 StreetCARma pts
- GIVE a bus location: 1 StreetCARma pts

Combine your StreetCARma with your neighbors' by joining a Roadify Team. Join a Roadify Block Team to track neighborhood GIVING or join a Roadify Business Team to GET freebies and discounts from your Team's sponsoring business.

Issues: Resource Constraints

- Lack of understanding that TTIS entails significant resources (distortion caused by popular portrayal of Web 2.0)
- Overall financial constraints / general lack of financial resources
- Difficulty in Securing Operating (as opposed to Capital) Funding
- Lack of board / management recognition of it as a strategic resource for transit
- General lack of IT resources

Issues Related to TTIS Strategy Development

- Lack of focus on market research, and lack of surveys to inform strategy
- Sensitivity to the Digital Divide

  (Smart Apps don’t replace traditional means for all customers)
- Use of social media and strategy
- The debate about controlled versus open data

Issues: Data Availability and Technical Challenges

- Implications of being locked into commercial, proprietary systems and contracts
- Lack of use of open standards for ITS / transit traveler information systems (e.g. TCIP)
- Difficulty in adapting legacy systems to new uses – for example, transit traveler information systems

Challenges Related to Specific Information Delivery Mechanisms

- Labor-intensiveness of E-alerts composition and maintenance
- Cost of SMS message transmission
- Targeted deployment trends for real-time information displays at stops

Recommendations for Transit Systems

- Develop an Informed TTIS Strategy
  - Conduct necessary market research on transit traveler information systems (TTIS)
  - Sensitivity to digital divide
  - Develop a multi-format TTIS strategy, consistent with Technology strategy
  - Clarify role/structure for social media and E-alerts as part of overall TTIS strategy

Recommendations for Transit Systems

- Acquire Sufficient Resources (Financial and IT)
  - Build and support sufficient information technology (IT) resources
  - Ensure sufficient operating as well as capital funding for TTIS initiatives
- Develop a Data Strategy: Interoperability, Open Source, and Open Government
  - Eliminate constraints on use of data and interfaces of commercial software
  - Adopt open-source and intelligent transportation systems (ITS) standards
  - Adopt and benefit from “open government” approach to public data

Critical Need for Research

- Research Needed to Develop Transit Agency Strategy
  - Use of TTIS: Who? How? When? Why?
  - TTIS and Travel Behaviour?
  - Impact on Ridership?
- Basis for Transportation System Policy Decisions
  - Multi-Modal Trip Planning / Travel Behaviour and Climate Change Implications

Research Partnerships

- Role for Senior Governments!
- Work with academics
- Where TTIS exists: monitoring / analyzing TTIS use patterns
- Sharing of market research data and experience with TTIS

Conclusions

- Exciting period
- But also confusing period

- Need better understanding (research)
- Need more coherent strategies

Thank You!