Regional Transportation Authority

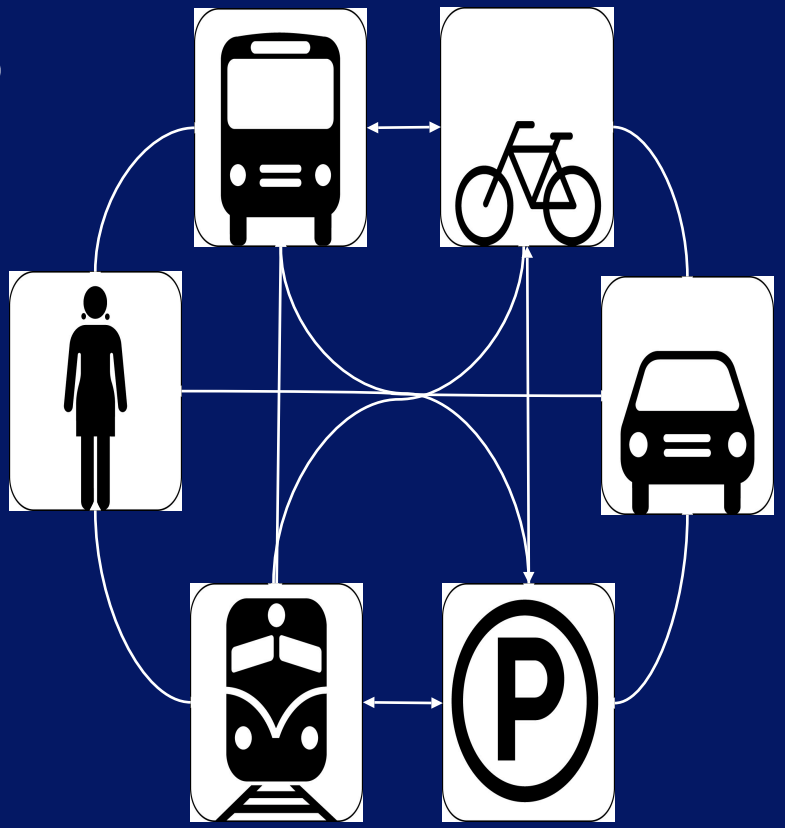
Multi-Modal Trip Planner System

"Trip Planning State of the Practice"

- There is no need to "sell" transit agencies on developing trip planners
  - Common need
- Development is dependent on state and federal funding
  - High price results from market power of a few companies
  - Investment versus commodity buy?
- Federal assistance and research could help transit agencies develop high quality transit trip

MMTPS Project Overview

- Integrate multiple modes (transit, driving, driving to transit, etc.)
- Enable travel choices
  - Historical or real-time travel times
  - Incidents or delay information
  - Travel preferences
    - Departure and/or arrival times
    - Walking distance
    - Accessibility
  - Cost
  - Parking availability
  - Environmental impacts
- Use ITS standards



MMTPS Demo

MMTPS Project Goals

- Evaluate technical and institutional feasibility
- Study transit ridership impacts
- Test ITS Standards
- Lay groundwork for deployment in other regions

Problem Definition

Strategic Business Objective

- Achieve the MMTPS project goal of demonstrating a web-based modally integrated trip planner system

Tactical Business Objective

- Accomplish the integrated trip planning functionality using an approach that is most technically feasible and meets cost and schedule constraints

Alternatives Analysis (AA) Goal

- Utilize a structured methodology to select the MMTPS integrated trip planning approach

Alternatives Analysis

- Identification of technology and/or system configuration alternatives
- Evaluation of each alternative's capability for meeting trip planning functionality requirements
- Assessment of each alternative's development and deployment timeline requirements
- Estimate of each alternative's development, deployment and maintenance cost requirements
- Recommendation of alternative

Problem Definition

Constraints:

- Technical – feasibility of complying with functional requirements
- Financial – There is a cost limit of $XXX,XXX for the trip planning functionality
- Schedule – The trip planning functionality solution must have an implementation period of Y months or less

Description of Alternatives

- Alternative 1: Existing Systems Integration
- Alternative 2: Enhanced Systems Integration
- Alternative 3: Open Source (OS) Development
- Alternative 4: Customize Existing OS Efforts
- Alternative 5: Commercial Off-the-

Alternative 1: Existing Systems Integration

- Utilize RTA's Itinerary Planning System (IPS) as the transit trip planning engine
- Access IPS via RTA's TripsWeb site
- Excludes development of external interface for RideMatch 21, i.e. provides no means of producing or integrating driving directions
- Provides no means of integrating CNT Emissions Avoided Module , i.e. provides no means of providing air quality impact information

Alternative 2: Enhanced Systems Integration

- Procure license for an external interface to the RTA IPS
- Develop an external interface to RideMatch 21
- Allows MMTPS to access RTA IPS directly
- Provides no means of integrating CNT Emissions Avoided Module

Alternative 3: Open Source Development

- Develop trip planning functionality in an Open Source framework
- Produces integrated driving and transit itineraries
- Provides means of integrating CNT Emissions Avoided Module

Alternative 4: Customize Existing Open Source Efforts

- Build on an existing trip planning functionality that was developed or is being developed in an Open Source framework
- Produces integrated driving and transit itineraries
- Provides means of integrating CNT Emissions Avoided Module

Alternative 5: Commercial Off-the-Shelf

- Procure a “best of class” Commercial-Off-the-Shelf product to achieve trip planning functionality
- Produces integrated driving and transit itineraries
- Provides means of integrating CNT Emissions Avoided Module

Alternative 6: Combination

- Utilize RTA's current IPS as transit trip planning engine
- Procure a Commercial-Off-the-Shelf product as driving itinerary engine
- Produces integrated driving and transit itineraries
- Provides no means of integrating CNT Emissions Avoided Module

Analytical Framework

Schedule Evaluation:

- Development timeline
  - Time required, in months, for designing, coding and testing
- Deployment timeline
  - Time required, in months, for establishing production capability

Analytical Framework

Cost Estimate:

- Development
  - Costs ($) incurred in designing, coding and testing
- Deployment
  - Costs ($) that are required to establish a production capability
- Operations and Maintenance
  - Costs ($) associated with supporting the system

Analytical Framework

Selection Methodology:

- Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) [1]
  - Multi-attribute decision-making technique
  - Based on notion that the best alternative should have the shortest distance to the ideal solution and farthest from the negative-ideal solution

References:

1. Kirby, M.R., Mavris D.N., "A Method for Technology Selection Based on Benefit, Available Schedule and Budget Resources", SAE and AIAA 2000-01-5563.

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