Cracking the Gordian Knot: Advancing ATN Development and Deployment
It’s Been 40 Years!

- If ATNs are so great, why don’t we see them everywhere in our cities and suburbs?
- Heathrow, Masdar City and Suncheon Bay have not yet led to widespread use.
- Perhaps we should ask . . .
  - What is blocking further development and deployments of ATNs?
  - What can we do about it?
The Gordian Knot

Regulatory agencies can’t create approval guidelines for an undeveloped concept

Local authorities reluctant to adopt new technologies where value has not been demonstrated

Federal Government won’t finance R&D to demonstrate value, because of perceived lack of local interest

Industry won’t invest in development without evidence of a market
Cutting the Knot -- Two Parallel Paths

• Bring together local authorities to lead investigation
  • Demonstrate local interest and identify potential demonstration sites
  • Already interested: San Jose and Inglewood in CA. Greenville, SC; Ithaca, NY; Edina and other cities in Minnesota; Uppsala and Goteborg in Sweden

• Fund a proving ground for independent third party assessment and certification of ATN systems
  • Quantify the real potential of ATNs and reduce uncertainty and risk
  • Ensure proposed systems are ready and safe for “prime time”
FRA Transportation Technology Center (TTC)

- 52 square miles
- 48 miles of track
- Specialized laboratories
- Infrastructure components
  - Signalling equipment
  - Safety devices
- Evaluation of vehicle stability, safety, endurance, reliability and ride comfort
- Freight and passenger vehicles
Motor Industry Research Association (MIRA)

- Established in 1946
- Located in Warwickshire, UK
- Originally government funded, now an independent non-profit
- Vehicle engineering / testing facilities and consultation services
Transportation Research Center (TRC)

Established in 1962 by Ohio State University
Facility located on 4,500 acres of land in East Liberty, Ohio
Funded by state highway bond issue
Utilized by automotive component and vehicle manufacturers, government agencies, and industry organizations worldwide
Conducts programs designed to test for safety, energy, fuel economy, emissions, durability, noise, crash, crash simulation and performance
Testing of trucks, buses, recreational vehicles, motorcycles, electric vehicles, passenger cars and components

Transportation Research Center is an independent automotive proving ground providing research and development, and compliance and certification testing for vehicles and components, for crash testing, emissions testing, dynamic testing and durability testing.
Purpose of Proving Ground

Reduce Risk and Uncertainty

- Operational Testing by an independent neutral third party

- Reduce risks of technological, social, economic, environmental, political or physical failure.

- Give confidence to potential buyers of ATNs
Purpose of Proving Ground

Provide Technical Facilities

- Computer modeling, simulation and test
- Physical modeling laboratory
- System simulator allow members of public to experience a ride
- Component testing laboratory for sub-system research
- Earthquake, wind, climate test laboratories
- Guideways for vendors to test and validate their products
- Human factor design and test – comfort, safety
- Station design and alternatives
- Offices
- On-going test facilities to assure safety and acceptance as new systems and technologies are developed
Purpose of Proving Ground

Products

- Feasibility and cost studies
- Concept design, testing of new systems and technologies
- Develop standards of fit, form and function
- Construction design and installation methods
- Inform regulators about ATNs and how to regulate and certify their safety and quality of operations

Performance Monitoring

- Ensure human factors are fully tested and acceptable
- Allow potential buyers to ride the systems and assess their impact in urban environment.

- Educate and train next generation of designers, network planners and operators
To Summarize

- ATN development and deployment is stuck in the Gordian Knot

- Early ATNs are operating, but we need to take “next step” to make them scalable for urban use

- Innovative systems are not amenable to standard purchasing methods

- Local authorities cannot rely on the claims of vendors

- Proving Ground is relatively low cost and could support both ATNs and driverless cars on streets