Hyperloops, Bullet Trains, and Self-driving Cars

Professor Michael McNally

Uber and ZipCar; fuel cell, electric, and hybrid vehicles; self-driving, connected, and autonomous vehicles; magnetic levitation and hyperloop transit. And still no flying cars. And whatever happened to telecommuting? What is the future of transportation? Despite the promise of all of these technologies, it might be bicycles and walking in denser communities.

Syllabus:

A Systems Perspective: Circa 2015

1. Activity Systems: What, where, and when do we travel?
2. Transportation Systems: How do we travel?
3. Institutional Systems: Why do these systems exist?

Transportation Technologies: Today

Transportation Gaps: Institutional and Technical Barriers to Innovation and Deployment

Transportation Technologies: Tomorrow

1. Evolving Modes:
   Shared-use Vehicles: Zip Car, ZevNET, etc.
   Shared-ride Services: Uber, Lyft, Sidecar
   Public transit Modes: high-speed rail, hyperloop transit
   Goods movement: home delivery, distributed package pick-up
2. Evolving Vehicles:
   Energy: Alternative fuel, electric, and hybrid vehicles
   Control: connected-vehicle systems, automated and autonomous vehicles
3. Evolving Data:
   Personal Apps: Smart phones, travel agents, and location-based services
   System: Cell phone tracking, Big Data, Smart Cities

A Systems Forecast: Circa 2035… How about circa 1995?

1. How will travel and activity behavior evolve?
2. Disruptive Innovations: What technologies will or inhibit travel?
3. Non transportation options for the future: Forward to the Past?

Requirements:
Both attendance and seminar participation is critical. There will be three brief writing requirements, each responding to either transportation technology news, trends, or policies. These assignments can be addressed with a concise written paper, a brief set of Power Point slides, or any form of social media that can be shared with the class.