Urban Transportation Sustainability

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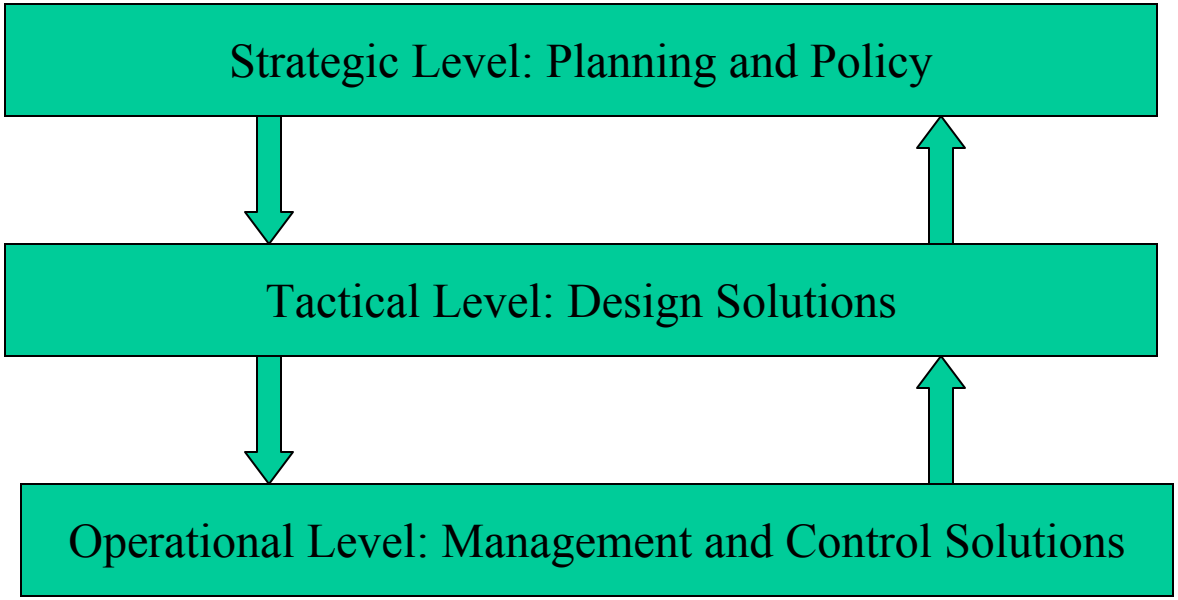
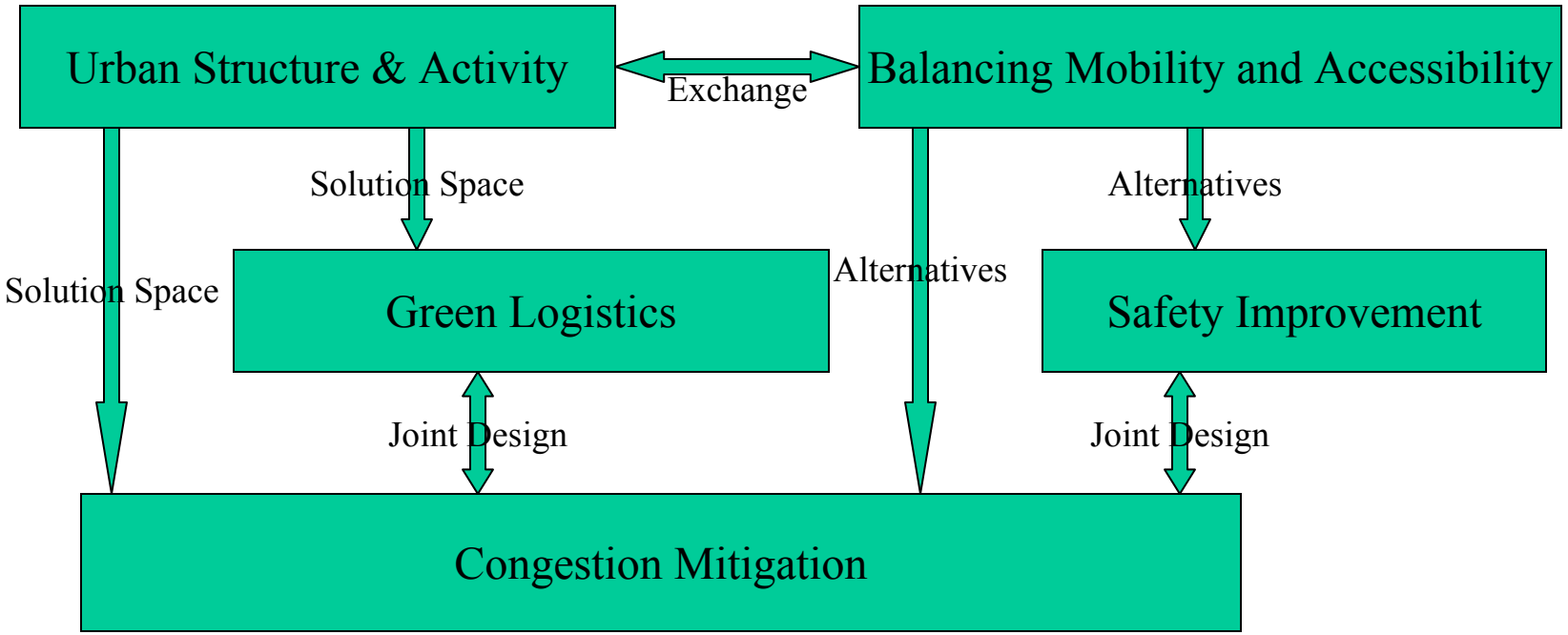
Levels of Analysis



Relationship between tracks



Track 1: Balancing Accessibility and Mobility

- **Tradeoff between auto-mobility and accessibility**
- **Engage partner cities: vision of their futures (Paris vs. LA?)**
- **Identify successful transportation policies and planning processes that balance the two paradigms**
- **Case study approach will examine indicators, analytical tools and institutional reforms**
- **Deliverables: policy and planning lessons learned from case studies, knowledge transfer to transportation planning organizations and institutional capacity building**

Track 2: Sustainability of Urban Structures

- **Develop quantitative relationships between sustainability metrics of different urban structures and their physical attributes (population, density, land use,…), using econometric methods**
- **In parallel, use macroscopic transportation theories to provide scientific support for empirical models**
- **These quantitative models will identify the attributes that are the most critical to both sustainability and mobility**
- **Provide input to public policy debates, and develop better menu of designs and management strategies**

Mode shares in Paris

BY URBAN RING	Work at Home	Walk Only	Cycle Only	Auto Only	Public Transport Only	Multiple Modes	Total
WORKERS							
Ville-de-Paris	51,395	93,072	28,828	180,392	513,358	123,958	991,003
Petite Couronne (Inner Suburbs)	54,317	140,116	43,425	690,376	624,509	197,664	1,750,407
Grande Couronne (Outer Suburbs)	68,544	125,048	46,560	1,193,316	446,416	225,270	2,105,154
Ile-de-France	174,256	358,236	118,813	2,064,084	1,584,283	546,892	4,846,564
MARKET SHARE							
Ville-de-Paris	5.2%	9.4%	2.9%	18.2%	51.8%	12.5%	100.0%
Petite Couronne (Inner Suburbs)	3.1%	8.0%	2.5%	39.4%	35.7%	11.3%	100.0%
Grande Couronne (Outer Suburbs)	3.3%	5.9%	2.2%	56.7%	21.2%	10.7%	100.0%
Ile-de-France	3.6%	7.4%	2.5%	42.6%	32.7%	11.3%	100.0%
MARKET SHARE EXCLUDING MULTIPLE MODES & WORK AT HOME							
Ville-de-Paris		11.4%	3.5%	22.1%	62.9%		100.0%
Petite Couronne (Inner Suburbs)		9.4%	2.9%	46.1%	41.7%		100.0%
Grande Couronne (Outer Suburbs)		6.9%	2.6%	65.9%	24.6%		100.0%
Ile-de-France		8.7%	2.9%	50.0%	38.4%		100.0%

Track 3: Traffic Safety

- **Objectives: identify design and management solutions to reduce traffic fatalities and injuries**
- **Tasks: identify organized stakeholders in traffic safety, develop a process to facilitate communication between them and work with these groups to develop context-sensitive solutions**
- **Range of solutions: from design (improved intersections, sidewalks, …) to management (better enforcement, …)**
- **Attention to non-motorized modes, pedestrians, etc.**

Track 4: Green Logistics

- **Reduce the environmental and congestion footprint of freight delivery in urban areas**
- **Design sustainable service systems; e.g.: consolidate delivery services in logistics centers on the periphery, use low-emission vehicles in city centers, etc.**
- **Use advanced telematics with dynamic management strategies**
- **Evaluation of benefits from proposed design and management solutions across stakeholder groups (operators, urban dwellers, government)**

Track 5: Congestion Mitigation Strategies

- **Traffic and public transit operational strategies to improve mobility**
- **Focus on urban bottlenecks to reduce length of queued vehicles → reduce vehicle emissions and energy consumption**
- **Strategies include traffic signal coordination, ramp metering, tolling strategies, transit priority at signalized intersections, etc.**
- **Interaction with partners will generate feasible solution space for each location**
- **Field testing of strategies**

Transportation Sustainability Research at UCB

- **Berkeley Center for Future Urban Transport – A Volvo Center of Excellence: focused on the interplay between policy and technology for achieving sustainable urban transport (PI: C. Daganzo)**
- **Air quality impacts of highway traffic (R. Harley)**
- **LCCA of passenger transportation modes and telecommuting (A. Horvath)**
- **Transportation Energy Research (A. Farrell, D. Kammen, T. Patzek)**
- **User evaluation of Hydrogen Fuel Cell cars (T. Lipman)**