

THNS Forum

2011 November 6

GREBERT Jean
RENAULT



New Mobility & Alternative solutions in Metropolitan Regions



SOMMAIRE

01 WORLDWIDE MOTORIZATION
AS A MATTER OF FACT

02 TOWARDS COOPERATIVE
CLOUD MOBILITY SYSTEMS

03 OPPORTUNITIES OF
COOPERATION

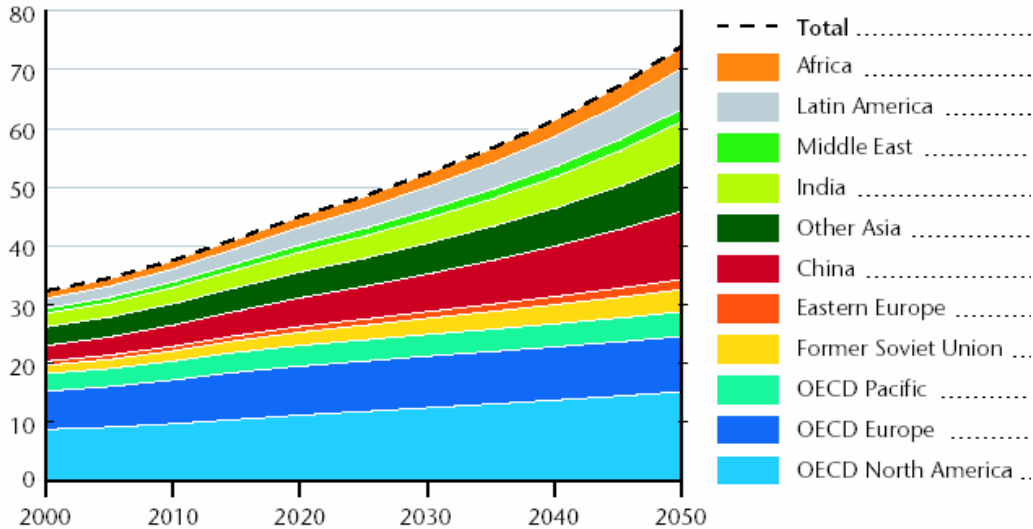
01



Worldwide Motorization as a matter of fact

Growing personal mobility trends

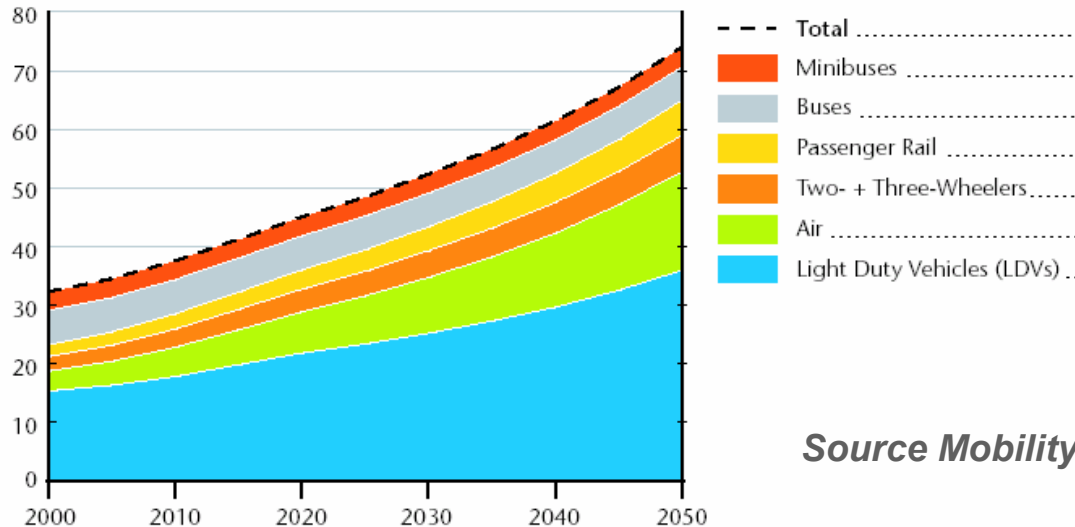
Trillions (10¹²) of Passenger-Kilometers/Year



by region

Average annual growth rate 2000-2050
2% former Soviet Union
2,1% Africa
2,3% India
2,9% Latin America
3% China

Trillions (10¹²) of Passenger-Kilometers/Year



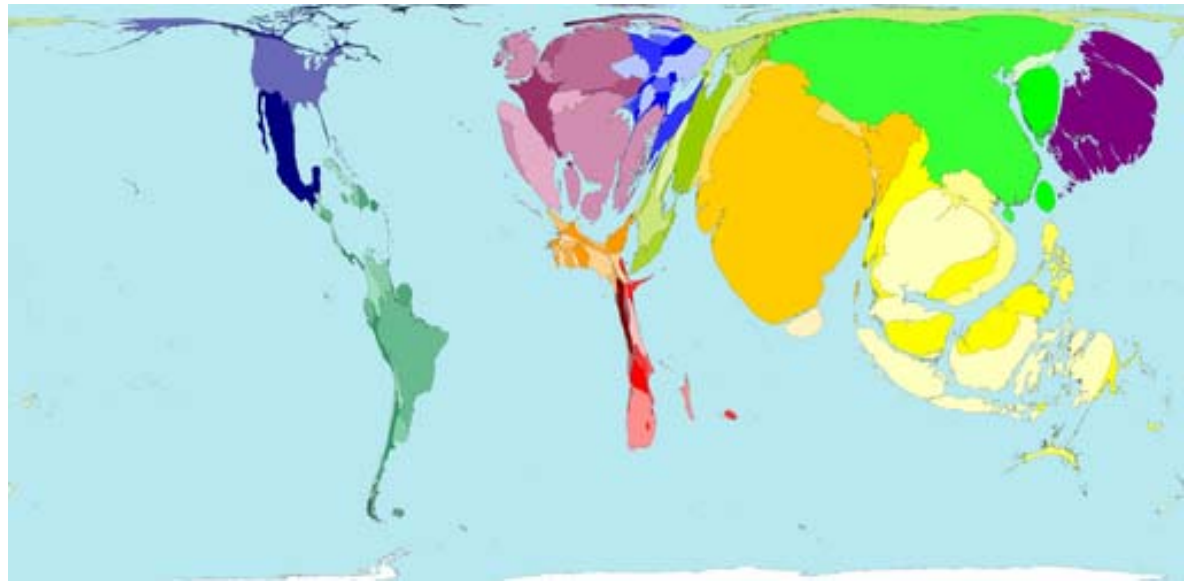
by mode

Source *Mobility 2030 WBCSD*

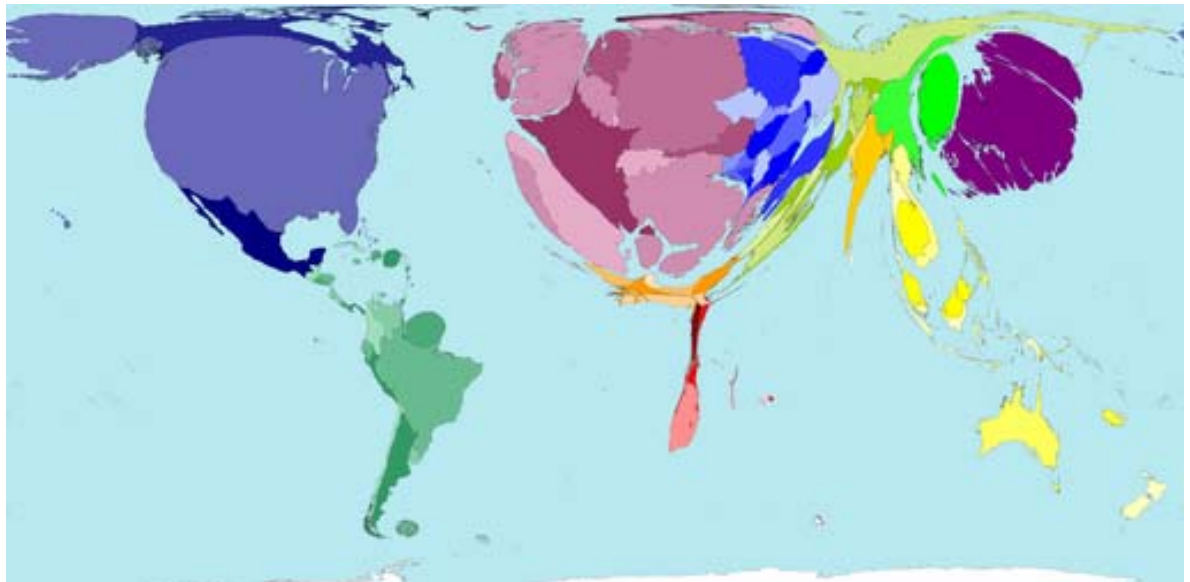
Main features

- **Motorization growth trend in fast growing countries**
 - 600 cars / 1000 inhabitants in Europe, 800 in USA
 - 130 cars/ 1000 inh. In Brazil, 34 in China, 14 in India
 - If 184 cars/ 1000 inhabitants in China = the fleet of USA, 250 million cars (46 million of private cars in China and 38 in France)
- **Is car growth sustainable, desirable, even possible?**
- **Massive population, high density levels, deficit of parking provision, ... an unreliable challenge?**
- **Public transport may not match the entire mobility demand, even if mass rapid transit corridors remain a priority**
- **Have to be fed but they suffer from saturation as well as road congestion**
- **New mobility services and alternative means able to provide intermediate needed solutions and implement sustainability**
- **Ride-sharing, self-service systems, electro-mobility as significant contributions**

**Worldwide
Two-wheelers & mopeds**

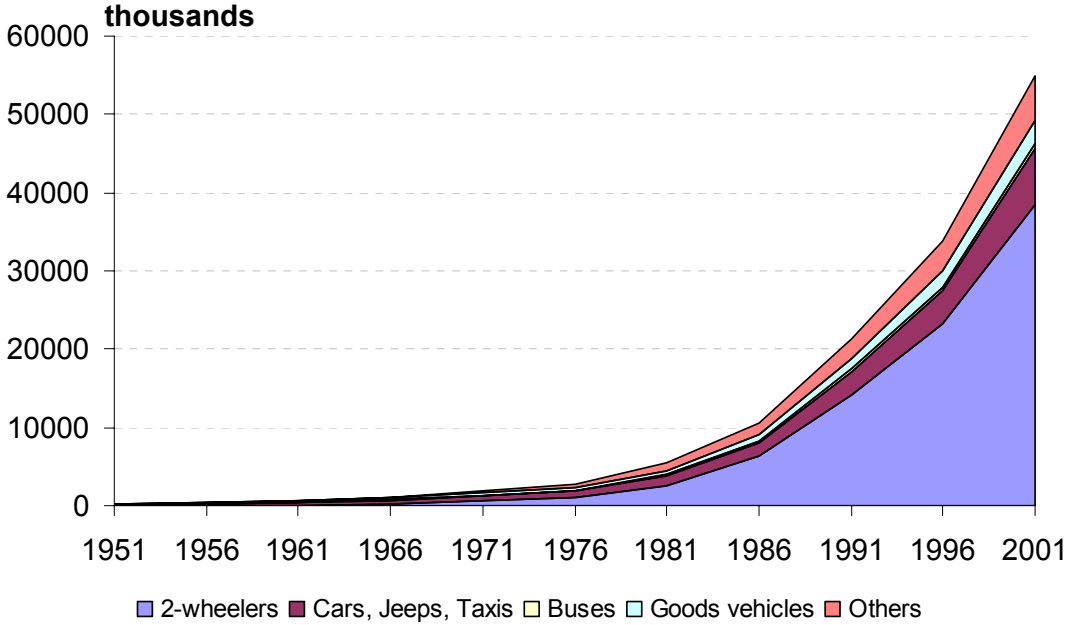
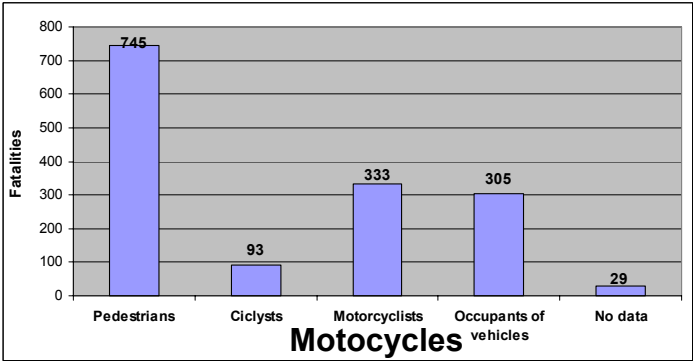


**Worldwide
Passenger cars**



Source: Worldmapper

A worldwide growth of Motorized two wheelers



Existing modes of the « public Transport supply chain »



West Bengal, India



Jakarta, Indonesia



Surabaya, Indonesia

Asian Urban Patterns



Jakarta, Gang

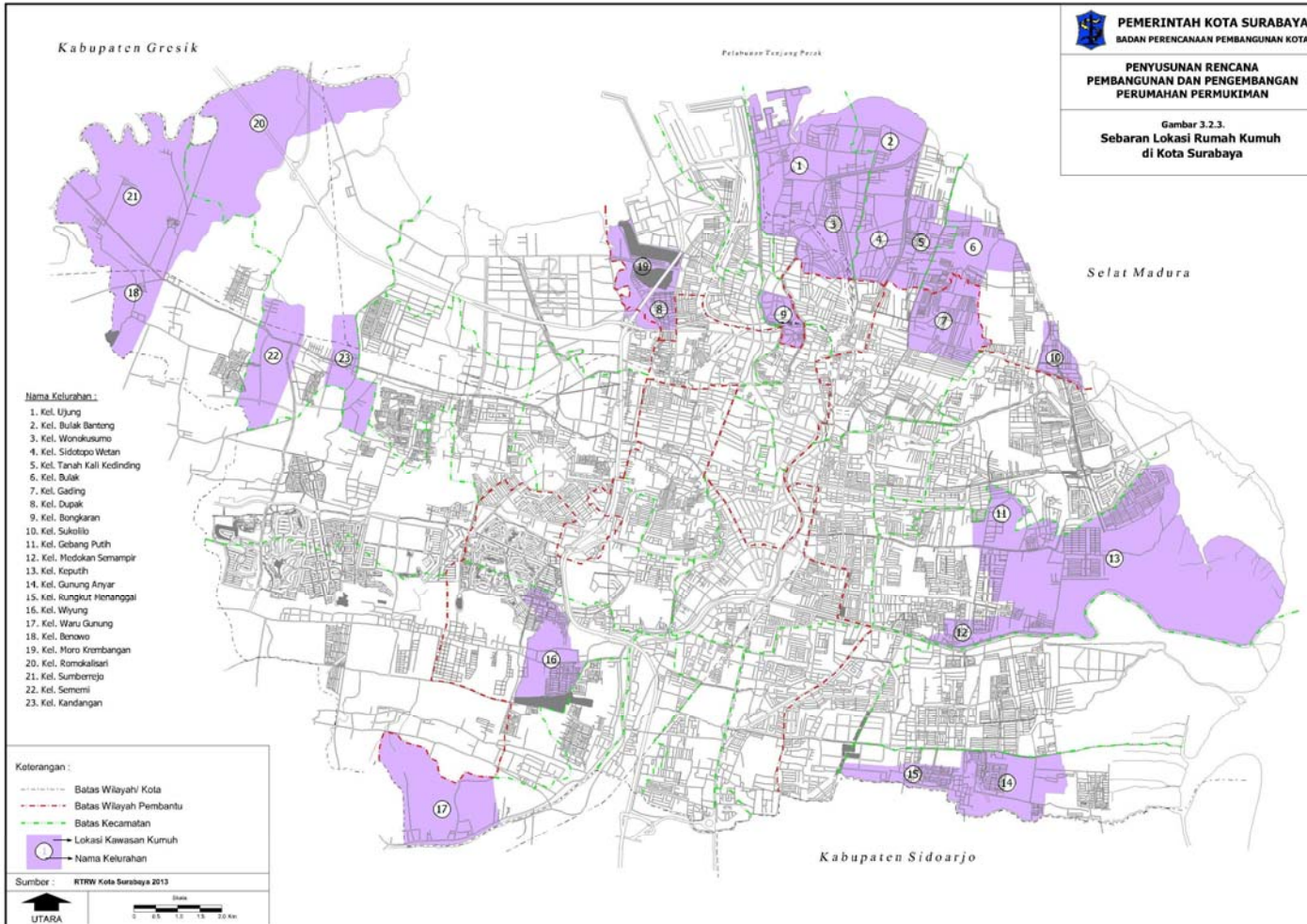


Beijing Hutong, Lilong in Shanghai



Bangkok Soi

Asian urban schemes with restricted access areas



Surabaya 2nd largest city of Indonesia

Parking provision at stake



Parking optimization in Delhi



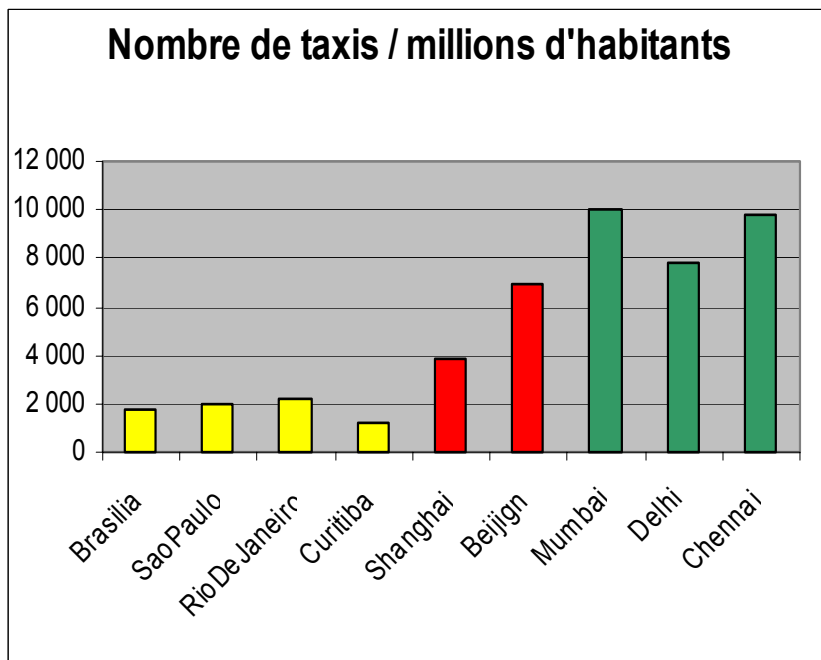
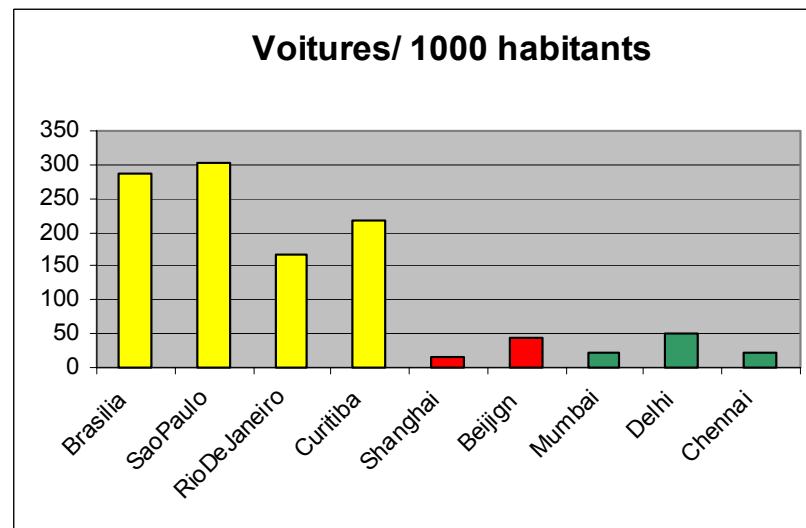
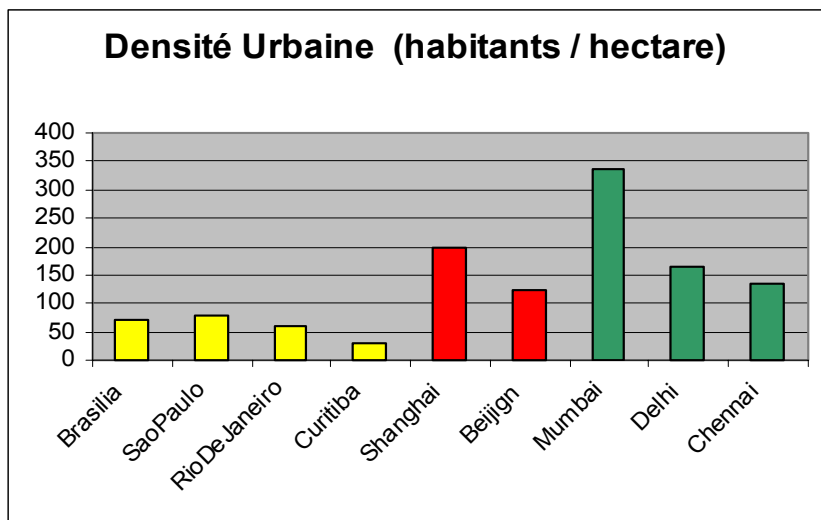
Reshaping cities in western countries

The car use universal growing constraints

*Periphery of Shanghai: parking provision deficiency in the real estate planned projects
(according to european ratios and motorization rate)*

USAGE OF THE LAND 质		用地性	UNITS 位	单	SUGGESTED INDEX (DENSITY) 建议指标 (密度区)			
Office 办公	Administration		Parking Place/100 square meter 车位/100平方米		First District	Second District	Third District	Fourth District
					0.6-0.8	0.6-0.8	0.6-0.8	0.6-0.8
	Business Affaires	S>5000 square meter			0.3-0.5	0.4-0.6	0.4-0.6	0.3-0.5
		15000 < S<50000			0.4-0.6	0.5-0.7	0.5-0.7	0.4-0.6
		S<15000	0.5-0.7	0.6-0.8	0.6-0.8	0.5-0.7		
Commerce 商业	Market Place	S>40000	Parking Place/100 square meter		0.4-0.6	0.4-0.6	0.5-0.7	0.5-0.7
		S<40000			0.5-0.7	0.5-0.7	0.6-0.8	0.6-0.8
	Wholesaling Trading Place				0.4	0.4	0.5	0.5
	Large Super Market				0.7-1.0	0.8-1.2	1.0-1.5	1.0-1.5
	Primary Goods Trading Place				0.3	0.3	0.3	0.3
Residence 住宅	Ordinary Residence	Average S<80	Parking Place/Residence 停车位/户		0.25	0.25	0.3	0.3
		80<S<120			0.25-0.3	0.3-0.4	0.3-0.5	0.3-0.5
		S>120			0.3-0.4	0.4-0.5	0.5-0.8	0.5-0.8

Relationship between Density/ Motorization rate/ number of Taxis



The number of taxis/inhabitants is related to the population density and inversely correlated to the motorization level

High rate of taxis in growing large metropolises

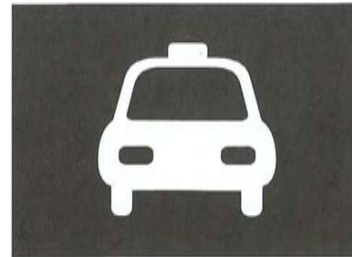
Shanghai before Expo 2010:

- 47 000 taxis move 25% of public transport passengers, 3 million/day, 754 M/year
- 70 trips/taxi/day
- 30,65 passengers/day



Shanghai

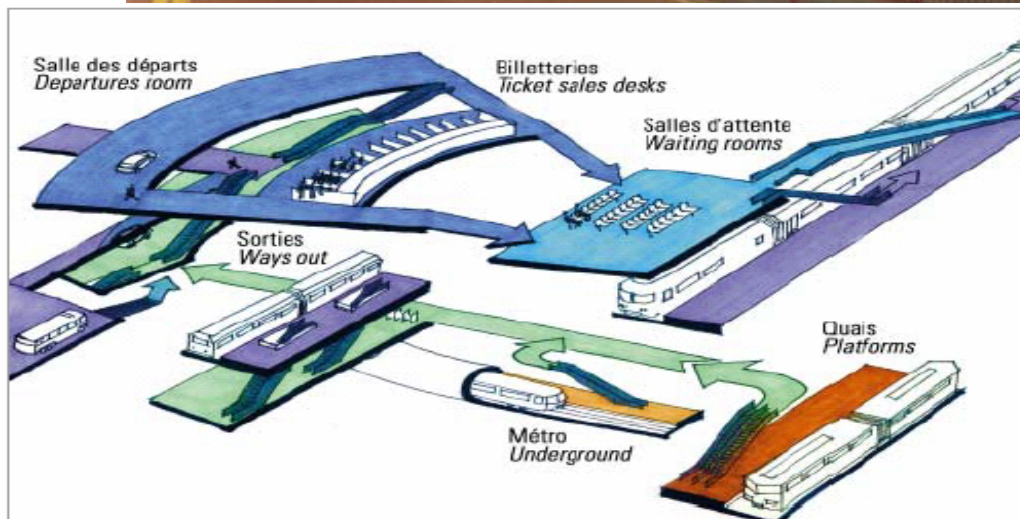
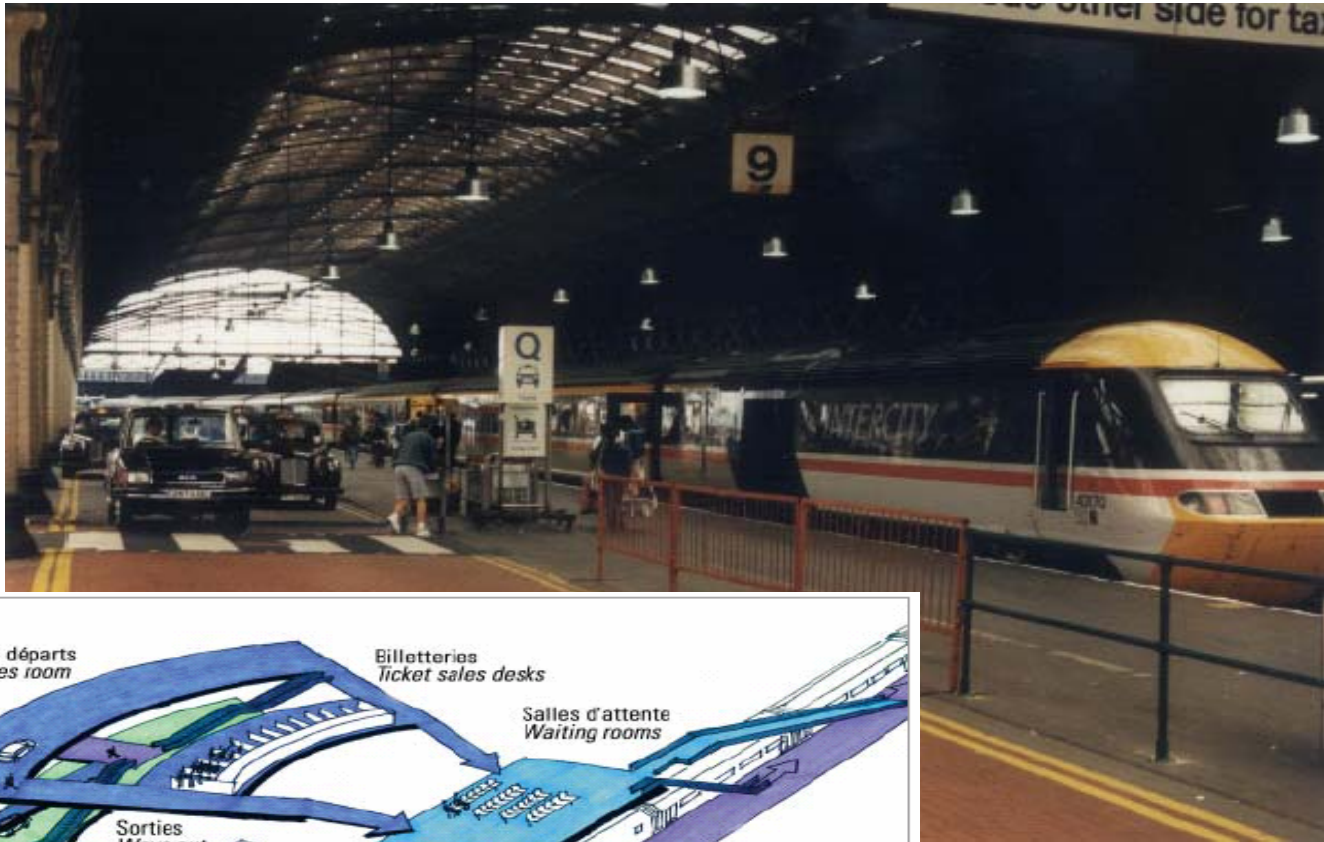
- taxis account **50% of the traffic** in the city central area
- 193 passengers.km/day



**TRAVELLING BY
TAXI IN
THE CBD**

Land Transport Authority
Singapore

Intermodality growing issues



Source AREP

Need of a hierarchical organization of the different transportation means



*As incremental
feeders of more
massive
corridors*

Surabaya interchange Becak - minibuses



02



Towards « cooperative cloud mobility systems »

Diverse solutions of mobility services

MIT stackable cars



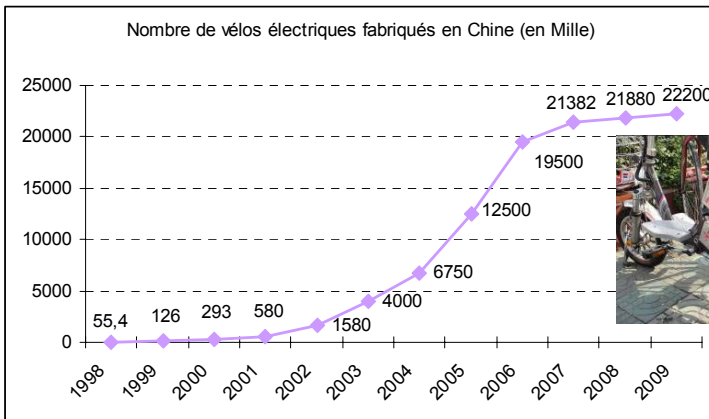
London bike system



Self-service bike sharing system



Jiangchuan in Minghang



- 6000 bikes in Minhang district managed by Forever
- 140 million electric bikes in China
- No special border definition between e-bike and e-scooter
- Classified as non-motorized transport

Intertitial mobility gaps



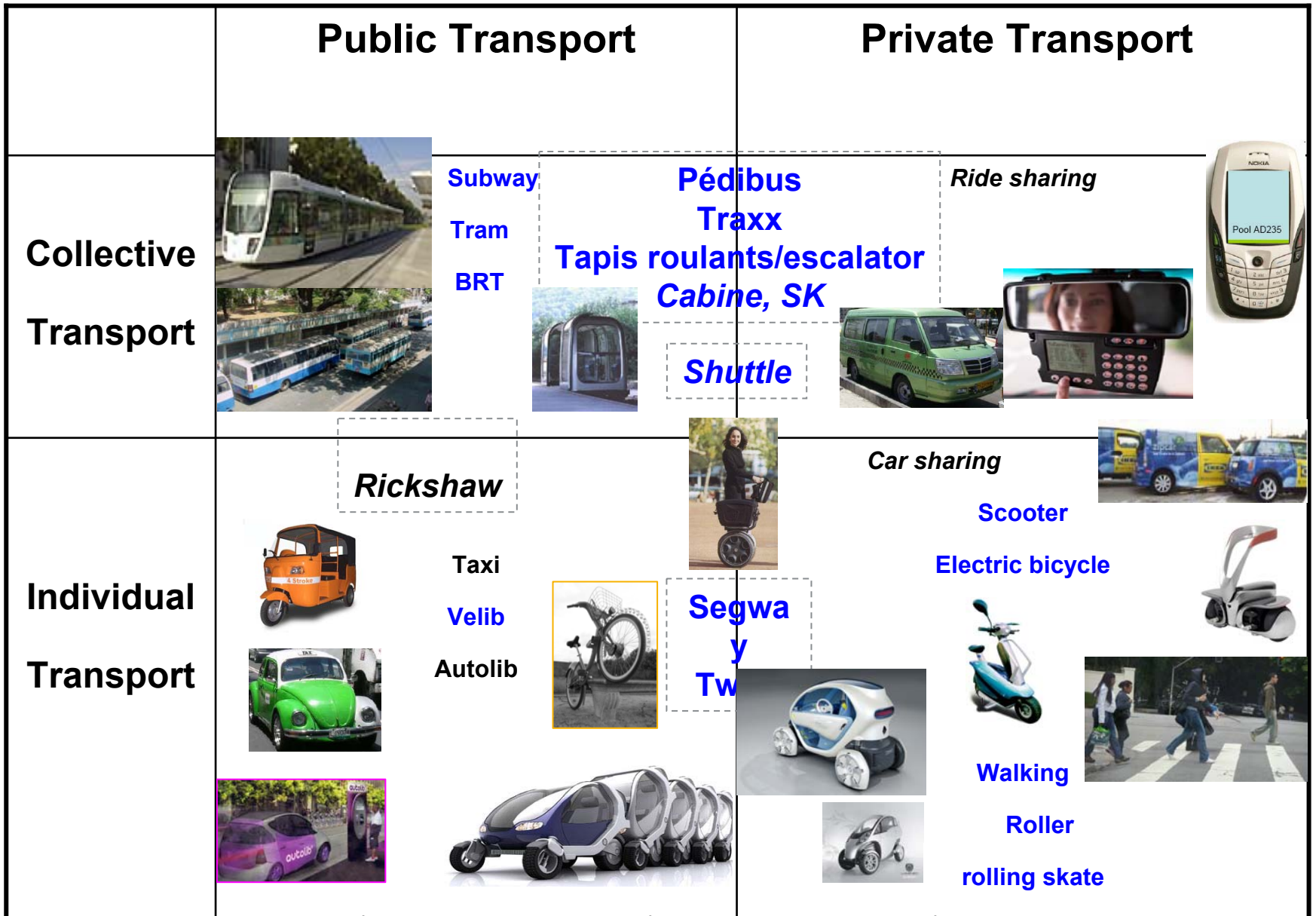
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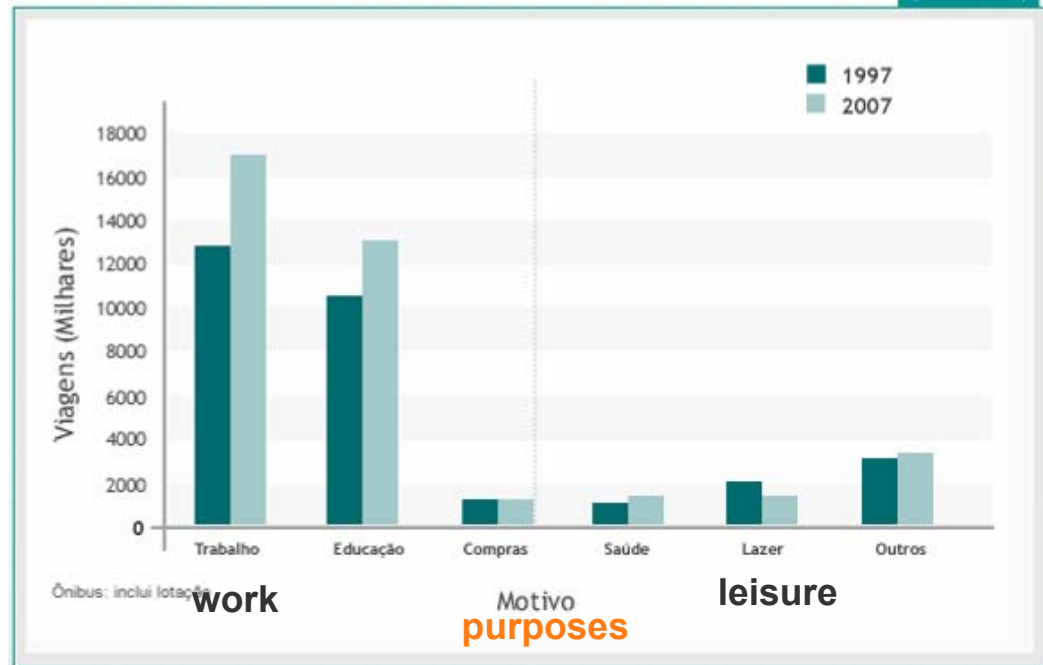


Promoting multimodality by « Drive the change »



A change of Value

- **Compulsory mobility**
 - commuting trips: on going continuous growing traveler.km trend forecast
- **Chosen mobility**
 - a new shrinking trend
 - the trip cost
 - cost
 - time
 - Equipment of the domestic dwelling
 - urbanity and neighbourhood value
 - Sustainable issues



Sao Paulo Transportation Survey 2007

Weekly mobility related to the household's income, 2007- 2008

Kilometers travelled weekly by people aged of 6 years and more

Décile	1 ^{er}	2nd	3rd	4th
	Poor	Lower middle classes	Upper middle classes	wealthy
Public transport	273	211	213	226
Motorized 2 W bicycle	42	36	30	48
car	1338	2006	2451	2388
total	1683	2274	2726	2693
Number of trips/capita/day	12,7	19	16,9	17,8

Source: ENTD 2007-2008

Potentiality appraisal of the each alternative mode to conventional private car in Greater Paris

Transfers:

Mode	%Users	% trips	Conventional car trips suppressed	Paris- near suburb loops duration 63 mn	Far periphery loops duration 55 mn
bicycle	24%	21%	5%	85 mn	154 mn
Electric bicycle	35%	30%	9%	57 mn	119 mn
Light M2W	45%	40%	19%		
scooter	63%	62%	31%	43 mn	51 mn
EV100 km autonomy	100%	100%	100%		

For each alternative mean:

Source: Jean-Pierre Orfeuill, Paris 12

-Substitution of 10 to 20% of the trips between Paris and near suburb more than in far periphery

-Share of substitution distance: 50% more

Mobility services based on car use



The Singapore carsharing systems



- North Zone
- East Zone
- West Zone
- Central Zone

- subscription, fees
- reservation
- automated access
- Single port, loop trip
- price:kmXmn



Collect your Car Key



Singapore accounts about 10 000 car sharing members

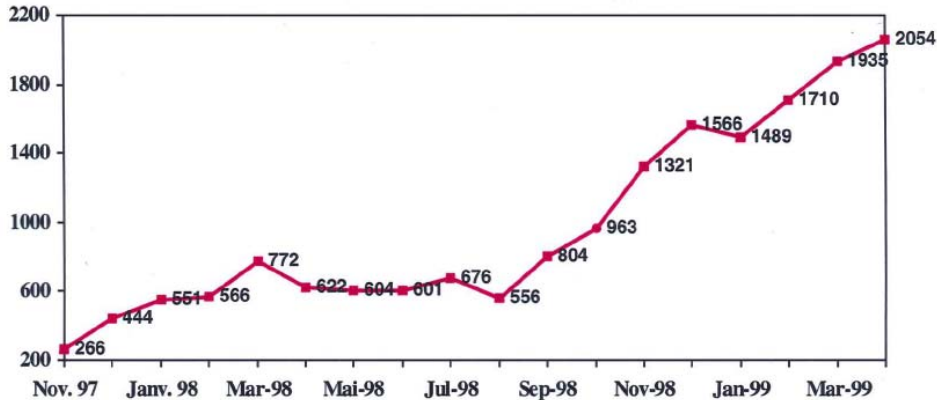


Check your car and drive away

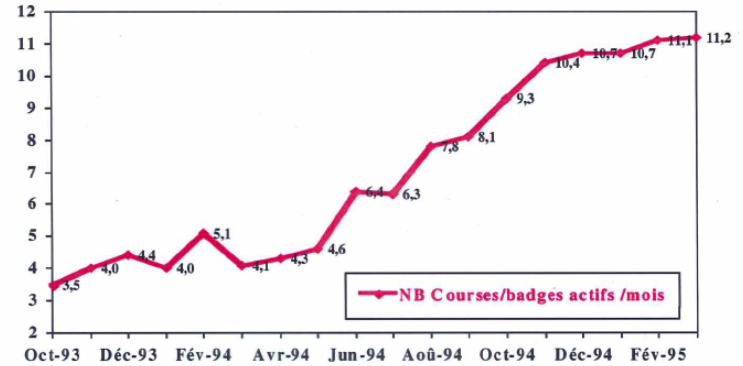


PRAXITELE dynamic use of the system

Une croissance forte, continue et sans asymptote
du nombre mensuel de courses



• Une intensité d'usage par client également croissante



- Disparition des badges "à l'essai" depuis Septembre 1998
- 35% des badges activés tous les mois de Juin 98 à Avril 99

• profile of the trips

- short duration: 20 minutes in average
- port to port trips: 90%
- short distance trips: 7 km in average

• trip purposes

- private purpose: 55% of the users
- feeding railway system: 30% of the users

• mode effectiveness

- complémentaire to Public Transport for 60% of the users (off peak hours) and feeding of the railway system
- private car substitution for 40% of the users



PRAXITELE Customers segmentation

Majoritairement	Des Hommes, Des actifs	74%, 89%
	Des Jeunes	52% < à 35 ans
	Des résidents SQY	80%
	Et Proches d'une station	(62% à - 400 m)
	Tjs une VP à disposition	44 %

ET moyenne des niveaux d'usages liés à la disponibilité de la voiture et à la proximité de la Station (résidence ou lieu de travail)

Type de Clients	Pas de voiture au foyer	Une voiture à disposition de temps en temps	Une voiture à disposition permanente
% des clients	27	29	44
Nbre moyen de courses/mois	9	5	4

Use within a concentrated schedule:

- 56% of the peak hour traffic
- global growing trend but ++ during peak hours
- 8% of traffic 21h- 6h
- traffic saturday+Sunday = Week day

Use located in precise areas:

- 14 stations, but
- 73% of traffic in 3 stations
- 75% of traffic on 4 links
- 70% of the trips in connection with the Railway Station

- « *an innovative concept, a usefull service* » related to the image of the **New Town** of Saint-Quentin en Yvelines
- the comfort of the electric car able to settle the use of the system on long term
- the service was not convenient for professional trips

PRAXITELE service dynamic for customers

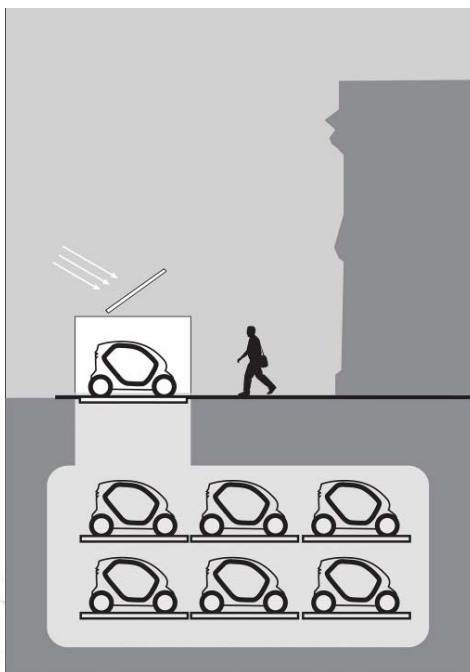
- **A strong interest and willing for innovation implementation in SQY**
 - 800 contactless pass given between October 1997 and April 1999
- **Renewal of the customers profile**
 - 19 new contactless pass users from June 1998 to April 1999
 - Half of the customers April 1999, were early adopters
- **Productivity growth indicators**
 - 36 to 43 operational cars
 - 2 trips/ cars/ day
 - 32 minutes of use /day/ car
 - A car for 8,6 customers
 - Simulation of the number of véhicules:

With Reservation: 36 cars

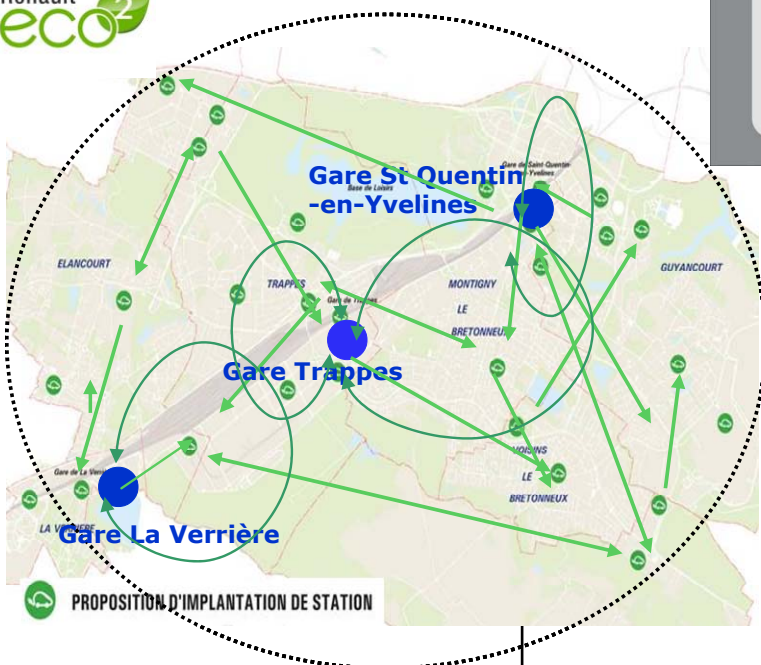
Self-service (from june 1998): 43 cars



New vehicle format and mobility services

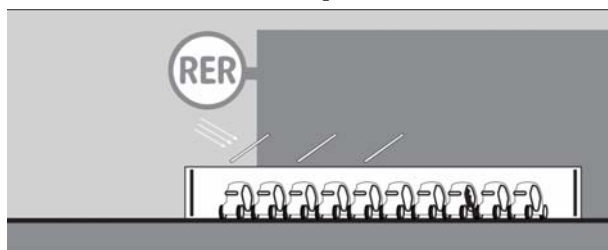


Renault eco²

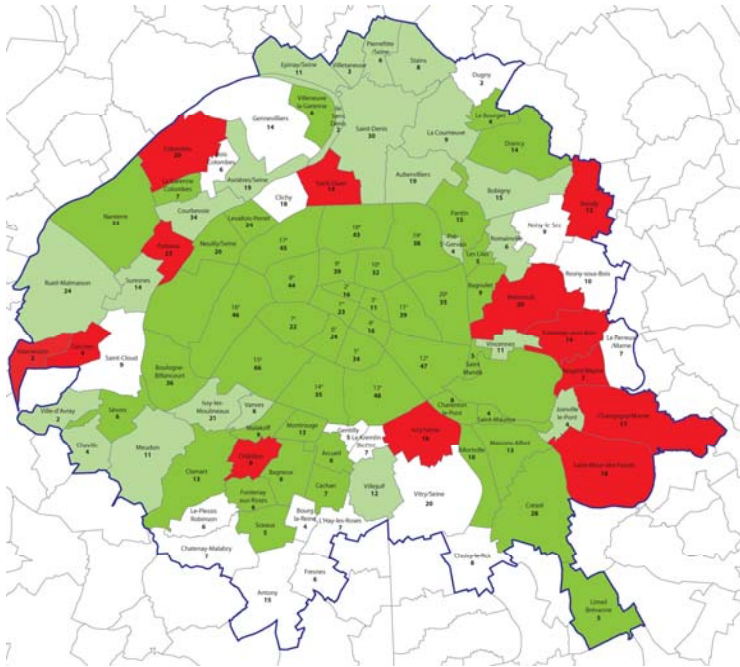


RENAULT Z.E.

Multi-modal trip



A first worldwide implementation in Paris: AutoLib'



Nombre de places: 20 | N° de station: P10-01 | Commune: Paris-10e Art

Type de station: Parking | Gare du Nord | Statut: Validé

Caractéristiques générales

Type d'équipement: privé
Coord. Exploitant: Vitol Park
email: info@vitolpark.com

Nature: mixte
Nb. emplacements total: 1 200
Présence gardien: oui
Présence gardien 24h: oui

Accessibilité

Plages d'ouverture: 24h/24
Nombre d'axes piétons: 3
Nombre d'axes vélos: 1

Identification Abonnés

Dispositif reconnaissance piéton: oui
Support d'identification usagers: badge
Dispositif de reconnaissance sans contact du véhicule: non

Autolib'

Nb de places allouées: 20
Nb. bornes de recharge de véhicules électriques: 0
Estimation du délai moyen pour libérer 10 places: 2 mins

Techniques

Captation signaux GPS/GPRS: non
Nb. bornes de recharge de véhicules électriques: 0

Tarifification

Tarif ALS annuel à la place (€): 840,00
Tarif horaire public (hors heure): à déterminer

Commentaire

même sortie que pag 8

Environnement urbain

Population couverte	
A 300 m:	1 303
A 500 m:	7 267
Emplois couverts	
A 300 m:	3 453
A 500 m:	7 428

LOCALISATION: 18 rue de Dunkerque

Nombre de places: 4 | N° de station: 75110-01 | Commune: Paris-10e Art

EMPLACEMENT

topologie	apl / talus
profil	plat de surface
sol	gazon

STATIONNEMENTS SUPPRIMÉS

voiture	mixte
bus	gratuit
vélo/CVSA	GC-CGC

COMMENTAIRE

2 marches (pas trop hautes)

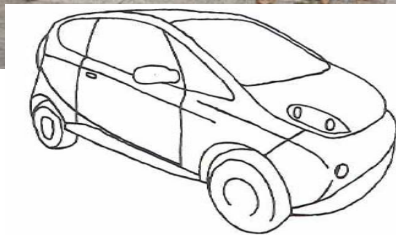
ENVIRONNEMENT URBAIN

Population couverte	
A 300 m:	5 607
A 500 m:	17 812
Emplois couverts	
A 300 m:	2 696
A 500 m:	10 569

LOCALISATION: 172 rue du Faubourg Poissonnière

- In Paris a car remains parked 80% of its time of use
- 1 self-service car would substitute to 6 to 7 private cars
- Strategic location in city centres districts in the periphery
- High density of jobs, inhabitants, commerces, special premises
- Emphasize the locations where the potential demand is high
- An obvious balance of the fleet between stations
- Not an homogeneous mesh in the city, but concentration on some areas





3000 electric cars in 2012

500 stations 4 pk places

200 stations 10 pk places

600 cars december 2011

DREAM

NOVEMBER 2011

4 parking places by 2 cars

2 car Station price: 50 KEuros

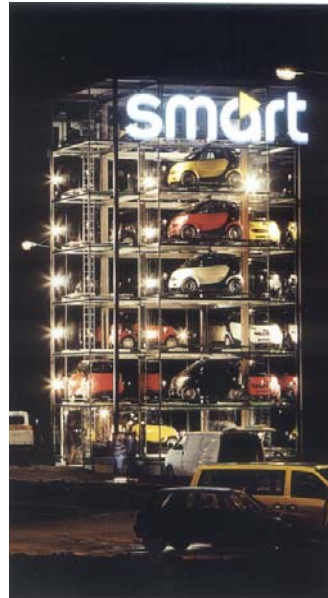
PROPRIÉTÉ RENAULT

CHANGEONS DE VIE
CHANGEONS L'AUTOMOBILE



A new dwelling-Emobility relationship

Expo IVM / Fondation EDF



A new dwelling-electric mobility well-matched couple:

- the house as the mobility pivot, loop trips
- Energy global monitoring and management
- alternative and recycling use of batteries
- New mobility trends proximity and low speed oriented

The ZE vehicles range

The RENAULT corporate Brand Strategy:

Drive the change

Sustainable Mobility for All

from multipurpose vehicles....

www.renault-ze.com

80% of the daily trips < 60 km
with 160 km of autonomy



Kangoo



Zoé

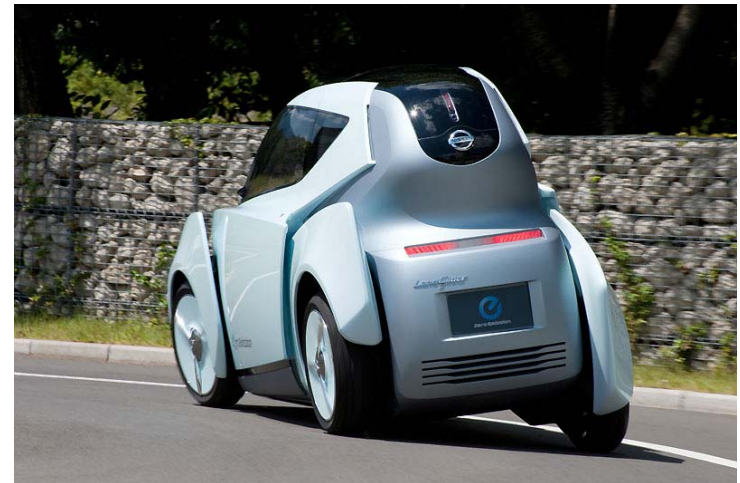


Fluence

2016: 1,5 million EV sold
10% of the sales by the year 2020

... to small size quadricycles

TWIZY by Renault



**LAND
GLIDER
by
Nissan**

CHANGÉONS DE VIE
Avec L'AUTOMOBILE



The opportunities of sustainable motorized mobility

Beijing



Communicating and connected electric vehicles with possible traffic applications

DREAM

ITS
Real time information
Navigation
guidance

RENAULT
CREAMOS AUTOMÓVILES

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Acá es el torneo de golf

Ahora en tu Renault Laguna sabes dónde estás y cómo llegar a donde vas, gracias al nuevo y exclusivo GPS, Sistema de Navegación Satelital, de Renault.

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CHANGEONS DE VIE
CHANGEONS L'AUTOMOBILE



03



Opportunities of cooperation

4 Research cooperation topics

- **Identify new mobility trends in Chinese cities with diversified purposes**
- **Identify intermediate mobility markets, the way they are currently fulfilled, clarify their contribution in the dissemination of the fluxes and feeding of massive public transport corridors. Appraise the ways they can be improved and industrialized**
- **Assess the transportation and mobility markets and forecast needs in Tier II and Tier III Chinese cities by the year 2020**
- **Appraise diversified electric vehicle ranges as a support of proximity of large scale district areas in China. How can they be implemented and managed?**



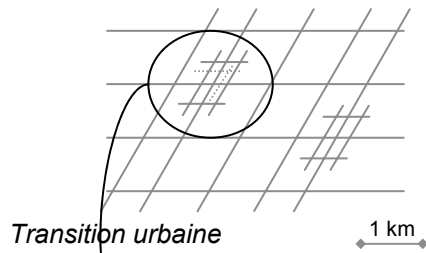
Morphology criterias for Typology

Description

Examples

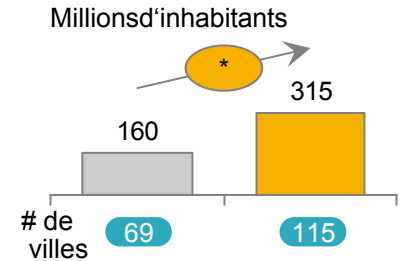
dDemography trends

T3



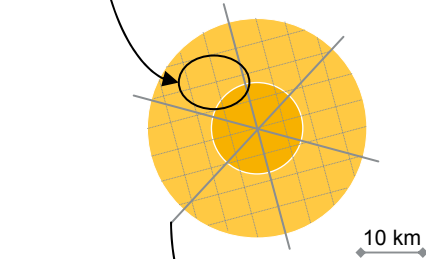
- smaller surface
- Lack of city centre
- Orthogonal structure of the road network

- Zhengzhou
- Taiyuan
- Jinan
- Nanchang
- Fuzhou
- Changzhou



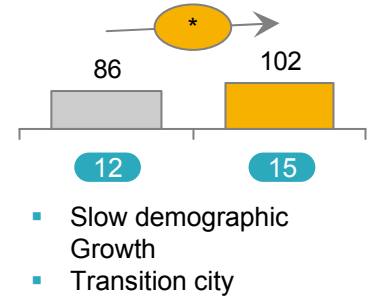
T3 -> T2

T2



- Large area
- Emerging city centre
- Circular structure of the road network based on the previous orthogonal

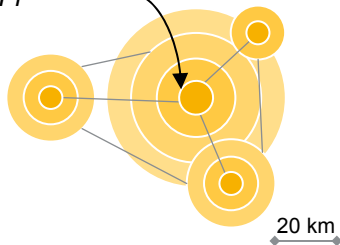
- Wuhan
- Kunming
- Hefei
- Shenyang



Transition urbaine

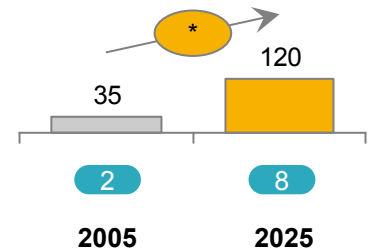
T2 -> T1

T1



- Large area
- Decentralization, satellite cities
- circular and multi modal structure

- Shanghai
- Beijing
- Guangzhou
- Shenzhen



Sources : McKinsey Global Institute, 2009 ; analyse OEEC

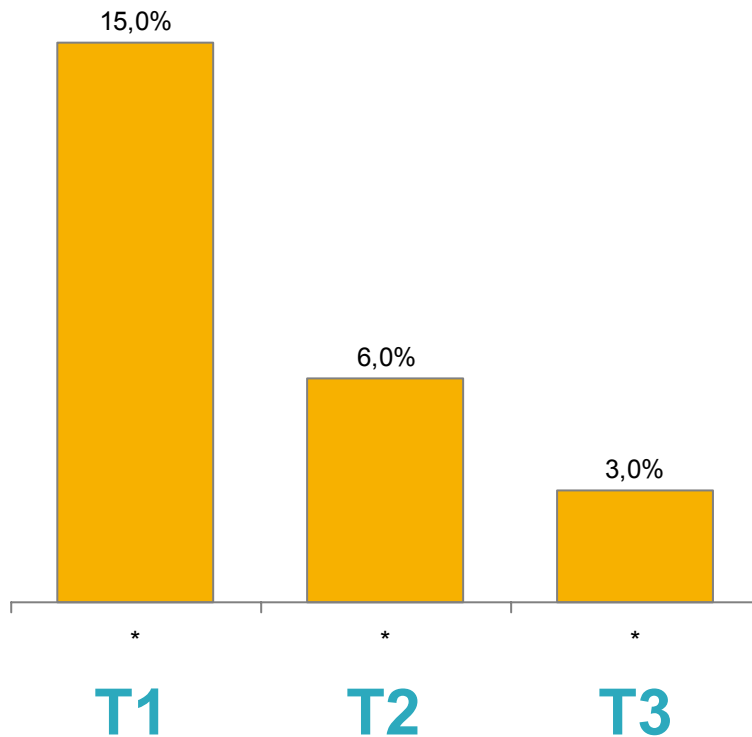


Un rythme soutenu de transition au multimodal caractérise les villes de type 1



Augmentation du nombre de déplacements multimodaux

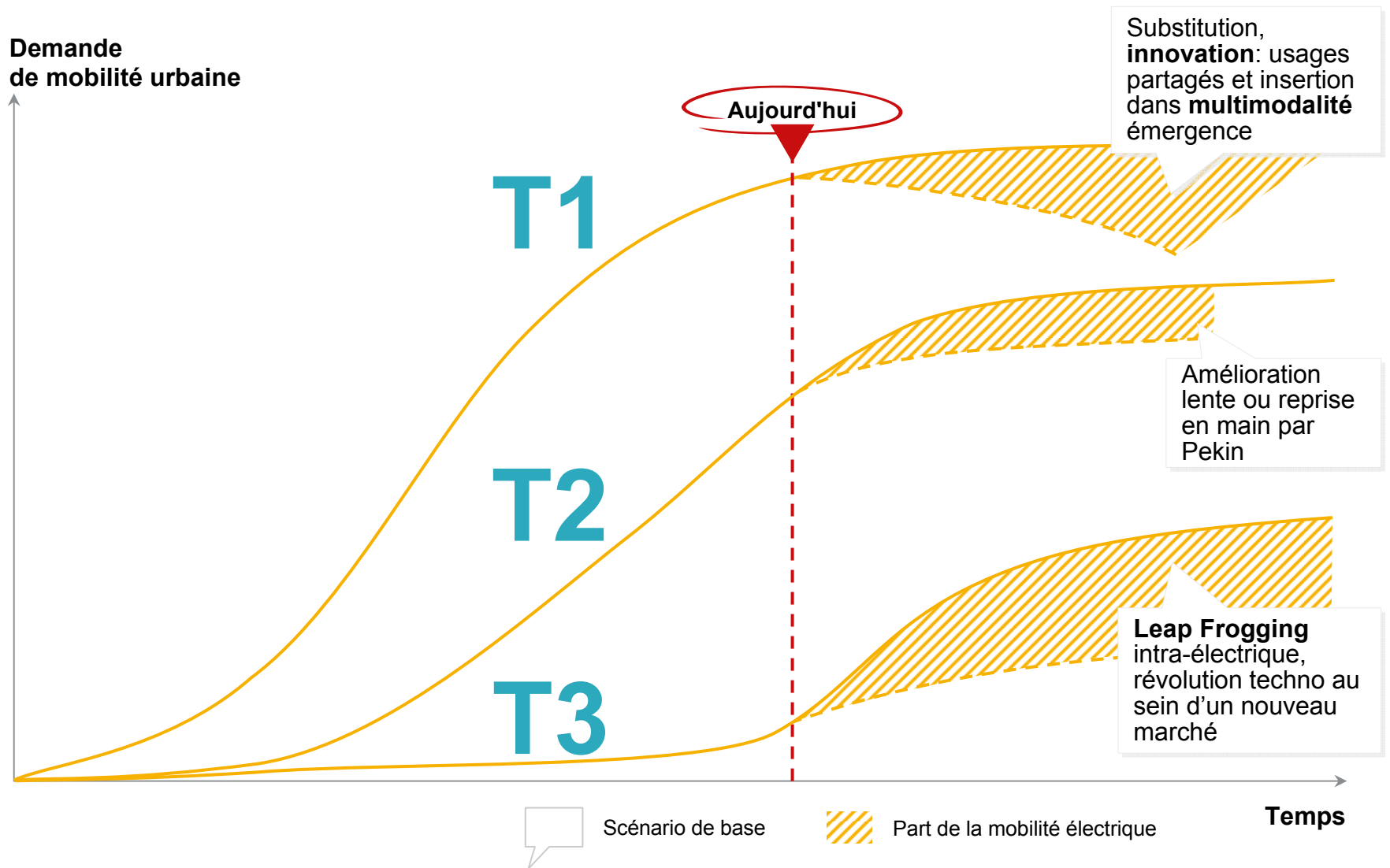
% Accroissement annuel moyen 1986 – 2006



- La dynamique centre-périphéries puissante des villes 1 entraîne une accélération du rythme de passage au multimodal
- Hausse des prix du Fonciers dans le centre ville → Spécialisation dans l'immobilier commercial
- Les classes moyennes migrent en périphérie
- Périphérie souvent mal couverte par les transports en commun → La **multimodalité** (mobilité motorisée + TC) permet de **répondre à cet étalement urbain**

Source : Banque Mondiale

Les trajectoires de développement de la mobilité urbaine et le potentiel de l'électrique varient sensiblement selon le type de ville





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