



Road tolling and Parking – Key Levers for Sustainable Mobility

道路收费和停车费——推动可持续交通发展的重要手段

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B. Green Urban Mobility:
绿色城市交通:

B.3.- Sustainable Urban
Mobility Management
可持续城市交通管理



Agenda

会议议程

1

Policy Framework, System Design and Operational Management Hierarchy
政策框架、系统设计及运营管理层次

2

Urban Tolling and Managed Motorways
城市道路收费及高速公路管控

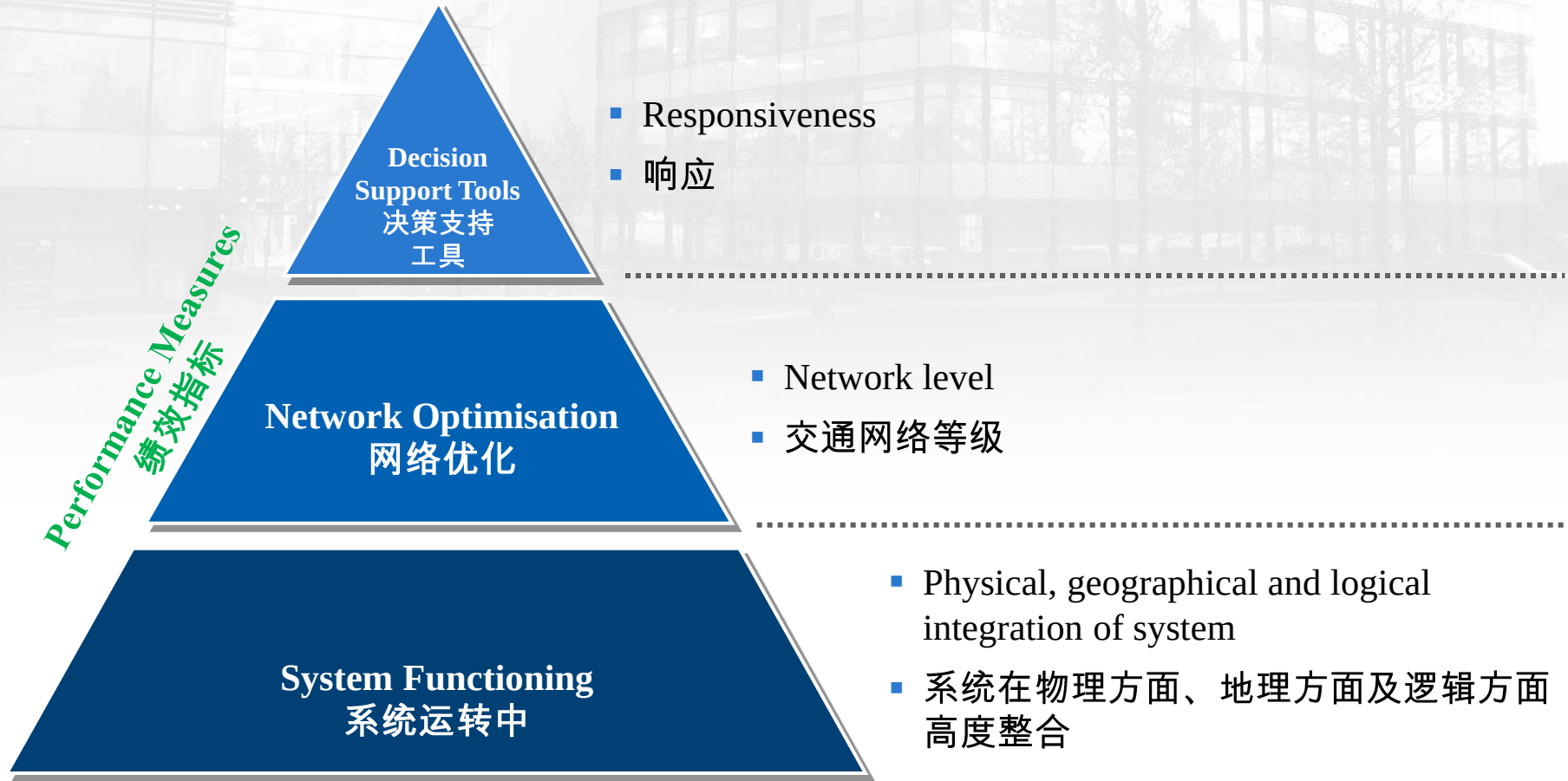
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Parking – a key lever for influencing behaviour
征收停车费是影响人们出行方式的重要手段

4

Conclusions
结语

Policy framework + System Design + Dynamic Operational Management (level of responsiveness) = Effective Traffic Management Systems Hierarchy
政策框架 + 系统设计 + 动态运营管理 (响应水平) = 高效的交通管理系统层级



European policy framework

欧洲政策框架

- User and Pollutor pays principles
- 使用者和污染者付费的原则
- Common rules for distance-related tolls and time-based charging for HDV (+3.5 tonnes)
- 针对重型载重车（载荷3.5吨以上的），制定以行驶里程和行驶时间为依据的统一收费规则
- Tolls and vignettes system
- 道路收费和计时收费系统
- Based on
 - 征收依据
 - Distance travelled
 - 行驶里程
 - Vehicle type
 - 车辆类型



Source of revenue and helps to clean the fleet
是重要的收入来源，也有助于实现车队的排放清洁

Improving efficiency with other tools - Managed Motorways 提升效率的其他工具——高速公路管控

Benefits – M42 ATM example

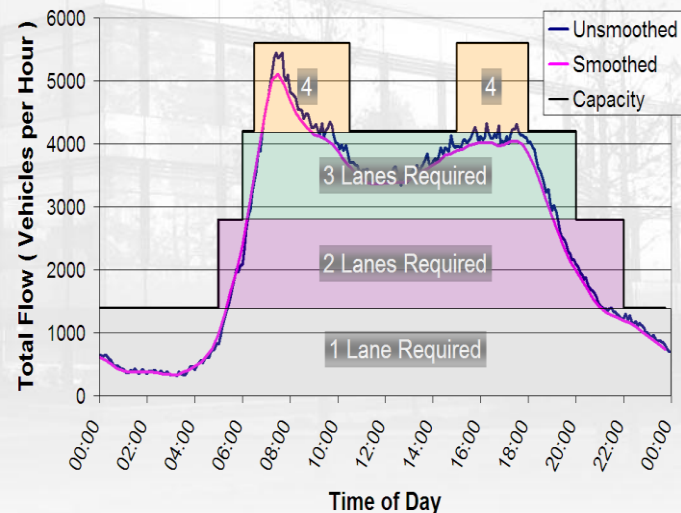
好处——以M42公路的ATM系统为例

- Smoother and more reliable journeys:
 - 出行更顺畅也更可靠；
- Reduced congestion:
 - 交通拥堵得到缓解；
- Safer journeys:
 - 出行更加安全；
- Vehicle emissions down by 10%
 - 汽车尾气排放减少10%；
- Fuel consumption down by 4%
 - 油耗降低了4%；
- Noise reduction of 2.4 Db
 - 汽车噪音降低了2.4分贝
- Cheaper than widening or new build
 - 比拓宽道路或新建道路更节约成本



Helping Contractors and Operators to avoid causing congestion 有助于避免由道路承包商和运营商工程救险车造成的拥堵

- **Dynamic Roadspace Utilisation Manager (DRUM):**
- **动态道路空间利用管理系统 (DRUM) :**
- portable web-based tool enables road construction contractors to optimise the timing of lane closures for construction
- 为道路施工承包商提供了一种便携式网络工具，使其可以合理选择时间进行封闭车道施工。
- **Abnormal Loads:** to assist specialised heavy transport hauliers and approval authorities to manage the safe movement of very large loads
- **处理超载货车事故：**为重型载重车专用拖车提供协助，提高交管部门管理超大型货物安全运转的能力



An integrated approach to research



The Automated Road

Satellite and radio communications for road infrastructure, drivers and network control.

Integrated asset management communications and tolling system.

Between vehicle sensors and communication systems (public/private transport).

In-pavement demand responsive LED speed and guidance systems for vehicle to highway cooperation and network management.

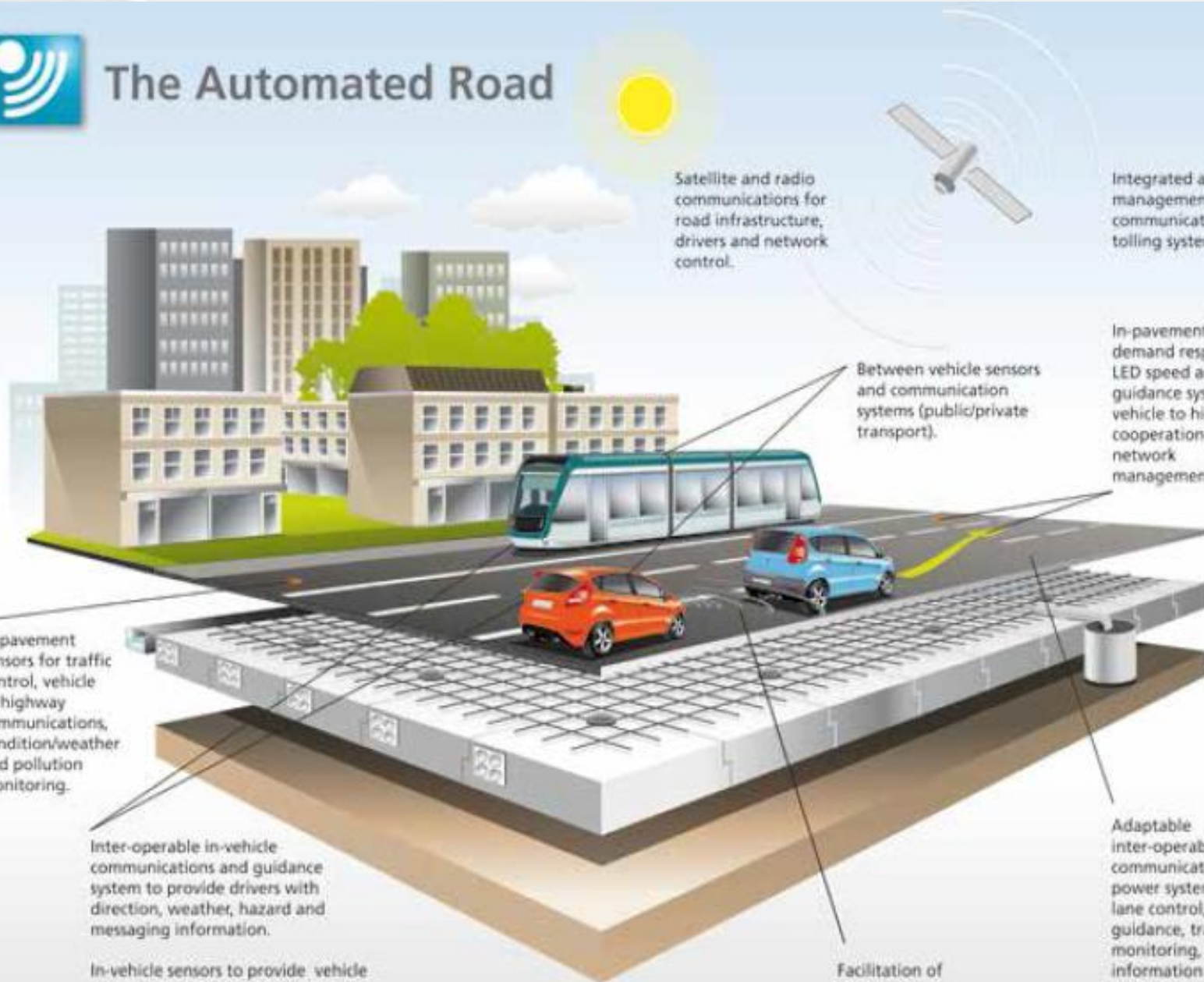
In-pavement sensors for traffic control, vehicle to highway communications, condition/weather and pollution monitoring.

Inter-operable in-vehicle communications and guidance system to provide drivers with direction, weather, hazard and messaging information.

In-vehicle sensors to provide vehicle location, performance information and incident management.

Facilitation of platooning of vehicles.

Adaptable inter-operable communication and power system for lane control, vehicle guidance, traffic monitoring, driver information and condition monitoring.



整合的研究方法



路面剖面图

为道路基础设施、驾驶员及交通网控制提供的卫星和无线电通信系统

整合的资产管理通信系统及收费系统

应用于车辆传感器及通信系统之间（公共交通工具及私人交通工具）

路面LED需求回应速度、高速公路车辆合作及交通网管理导航系统

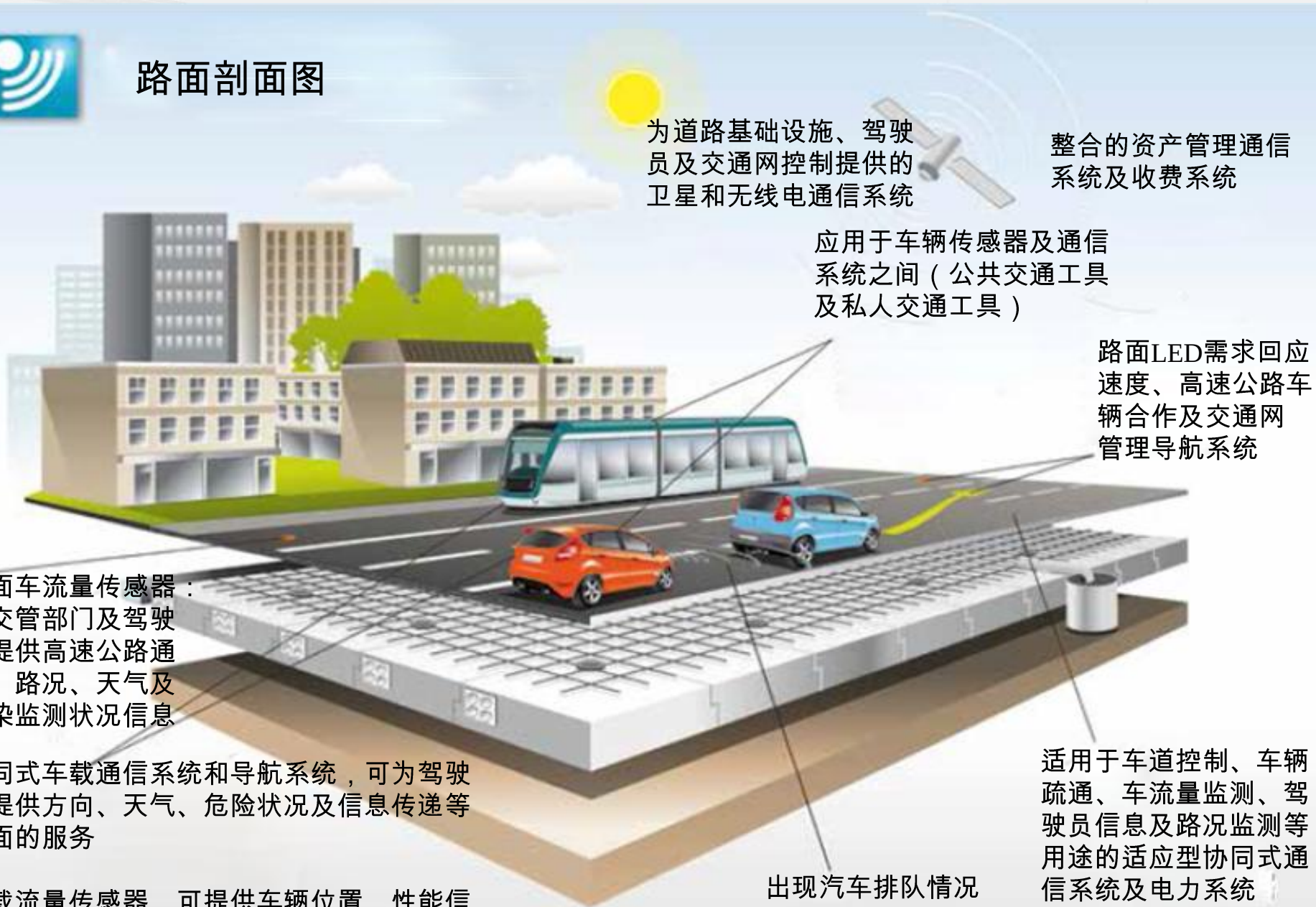
路面车流量传感器：为交管部门及驾驶员提供高速公路通信、路况、天气及污染监测状况信息

协同式车载通信系统和导航系统，可为驾驶员提供方向、天气、危险状况及信息传递等方面的服务

车载流量传感器，可提供车辆位置、性能信息及事故处理等方面的协作

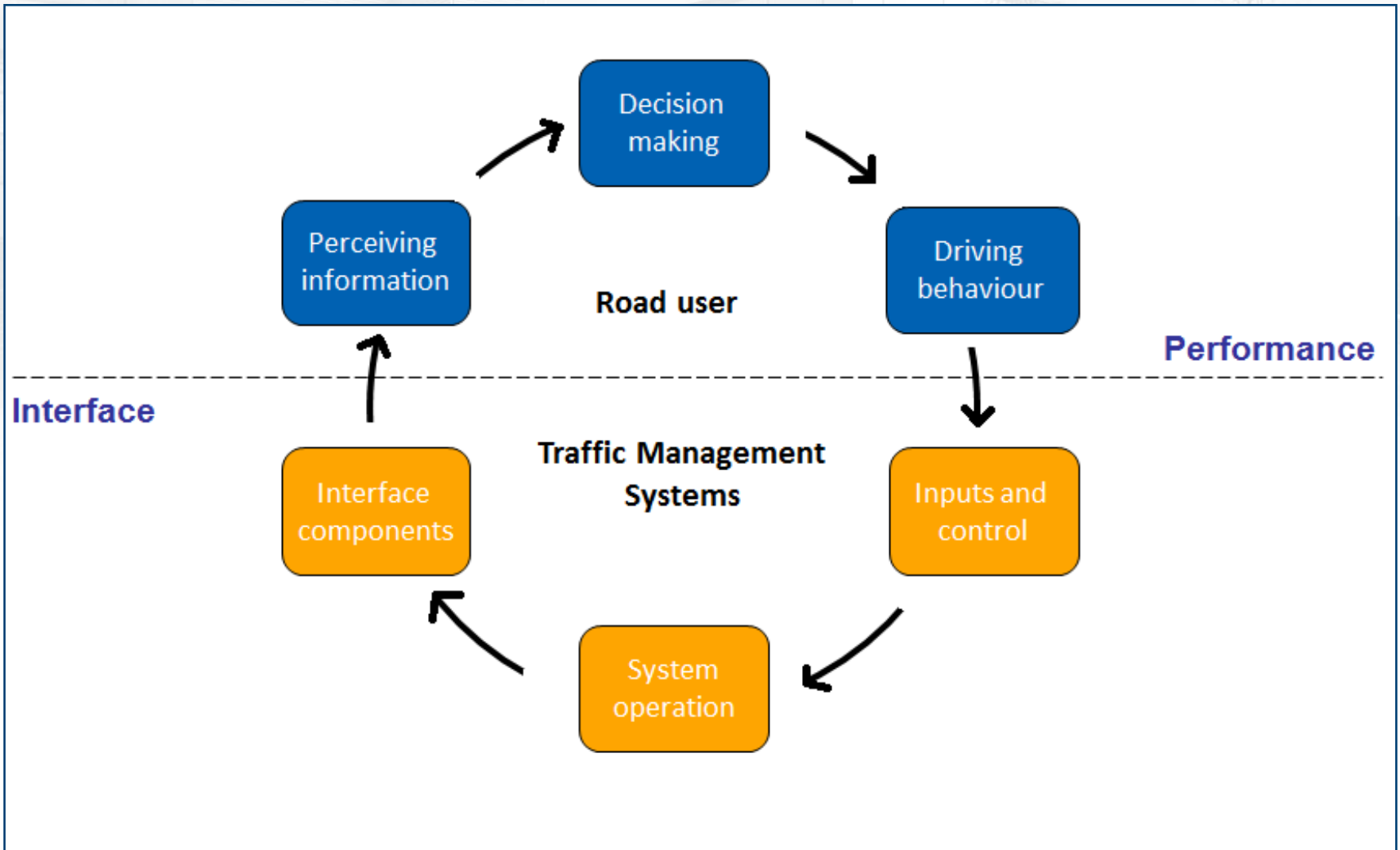
适用于车道控制、车辆疏通、车流量监测、驾驶员信息及路况监测等用途的适应型协同式通信系统及电力系统

出现汽车排队情况时，提供帮助



Parking is a key lever in mobility behaviour

征收停车费是影响人们出行方式的重要手段



Parking a key lever in mobility behaviour

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Gent, Belgium

比利时根特

- Mobility plan with integrated parking management, improvements to public transport and pedestrianisation
- 实施一套整合了停车管理系统的交通规划，改善公共交通以及行人步道
- City parking company and mobility department have merged
- 将城市停车公司和交管部门合并

Montpellier, France

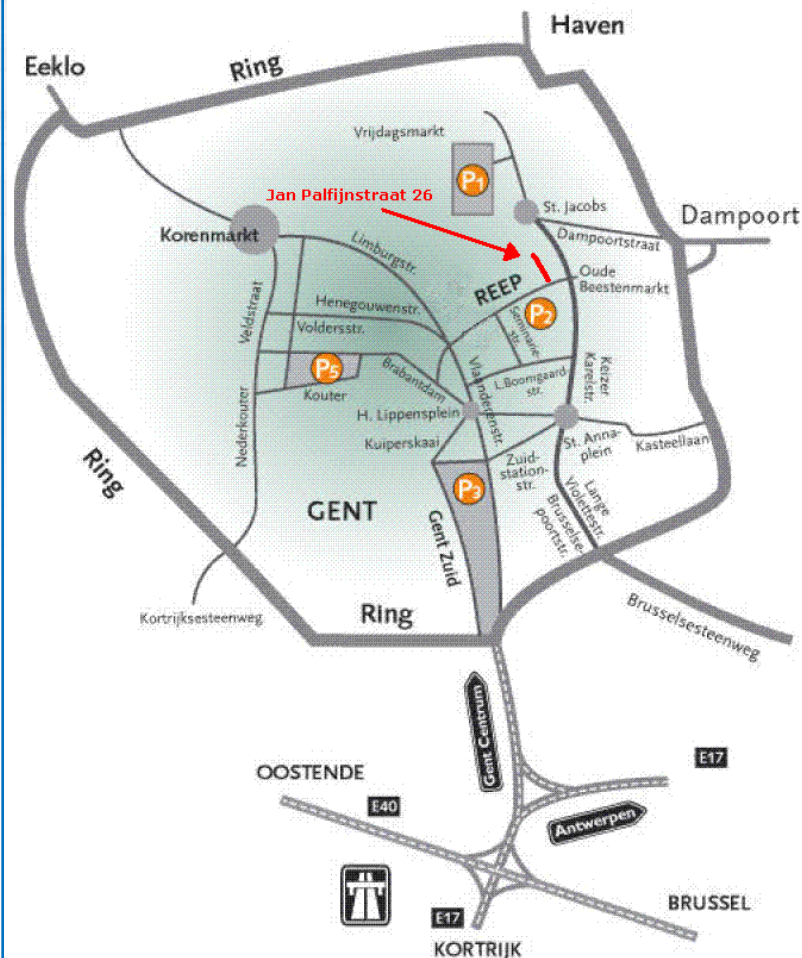
法国蒙彼利埃

- City parking is managed by the public transport operating company
- 公共交通运营公司负责城市停车管理事宜
- Extra revenue is used to improve public transport
- 获得的额外收入用于改善公共交通

Parking data and business models

停车场数据及商业模式

- Dutch parking dataware house (national parking register)
- 荷兰停车场数据库 (国家停车场登记簿)
- UK DoT National Car park database with details of location of 23,000 car parks (public and private sector)
- 英国交通运输部国家停车场数据库。可以查询到 (由公共和私营部门运营的) 23,000个停车场的具体位置



SFpark - using today's technologies to help guide choices (San Francisco)



Demand-responsive pricing to open up parking spaces on each block and reduce circling and double-parking.

- Free app
- Prices raised or lowered based on demand
- Rates vary by block, time of day and day of week.
- Rates are adjusted by no more than 50 cents per hour down or 25 cents per hour up, and no more often than once per month



Rates will increase incrementally until **at least one space** is available on each block **most of the time**. Where parking spaces are plentiful, rates will **decrease until some of the empty spaces fill**

SFpark – 运用新技术引导出行选择 (旧金山)



根据车位需求量调整价格，从而促使各社区开放停车场地，减少汽车转圈寻找车位和双排停车。

- 免费手机资讯
- 根据车位需求量提高或降低停车费
- 停车费价位根据不同社区、每天的不同时段以及每周的不同日期而变化
- 价位下调每小时最低不超过50分、上调最高不超过25分，每月不超过一次



价位将逐步上调，直到每个社区在大多数情况下能够至少有一个空车位。如停车位充足，价位将下降直至一些空车位得到使用。

IT - using today's technologies to help guide choices 信息技术——利用最新信息技术让选择多样化



**Parking is part of integrated mobility
management**

停车是整合的交通管理的组成部分

**Transparant revenue use
收入使用情况透明**

**Credible enforcement
可信的执行**