



智慧交通的永續發展

Sustainable Development of Smart Transport

Yuelin Liang

西門子首席交通顧問、交通諮詢部大中華區總經理
Principal Transport Consultant, Siemens AG
Head of Transport Consulting, Greater China

Challenges of transport development

Negative Impacts of Transport Development



Travel Delays



Economic Loss



Environment Effects

Figures and Facts

Beijing: Serious network delay at peak time; Average speed less than 20km/h; Frequent accidents; Unpredictable travel time which would be more than half of normal time.

Istanbul: Wasting 125h in congestion per driver per year

America: Wasting 54h in congestion per driver per year

San Paulo: loss due to traffic congestion up to \$30 billion per year (7.8% of GDP).

America: Economic loss due to traffic congestion up to \$124 billion (1.1% of GDP), rising to \$186 billion by 2030

Beijing: Direct economic loss due to traffic congestion up to RMB70 billion (3.6% of GDP)

Beijing & Shanghai: Over 30% of PM2.5 is from motor vehicle emissions

Mainland China: 10-25% of PM2.5 first emissions and 20-25% second emissions (eg. SO₂ or NO_x) are from motor vehicle.

Global: Greenhouse gases lead to global climate change and disastrous climate

Sustainable transport development

Sustainable development



Transport development

- Integrated infrastructure
- Optimised organisation
- Energy saving equipment
- Intelligent management
- Clean/renewable energy
- Public transport



Land conservation, easing congestion, higher efficiency, lower costs, reducing energy consumption and emissions

Sustainable transport development

Evolution of smart transport

1.0/2.0 Electrification Semi-automated

- Meet basic needs of transport demand
- React and cure approach
- Manual operations
- Isolated solutions without any form of information sharing



YESTERDAY

3.0 Informatization

- Intelligent systems
- Labour-intensive tasks are automated through ICT
- Mostly static management
- Partially integrated
- Data and information sharing



TODAY

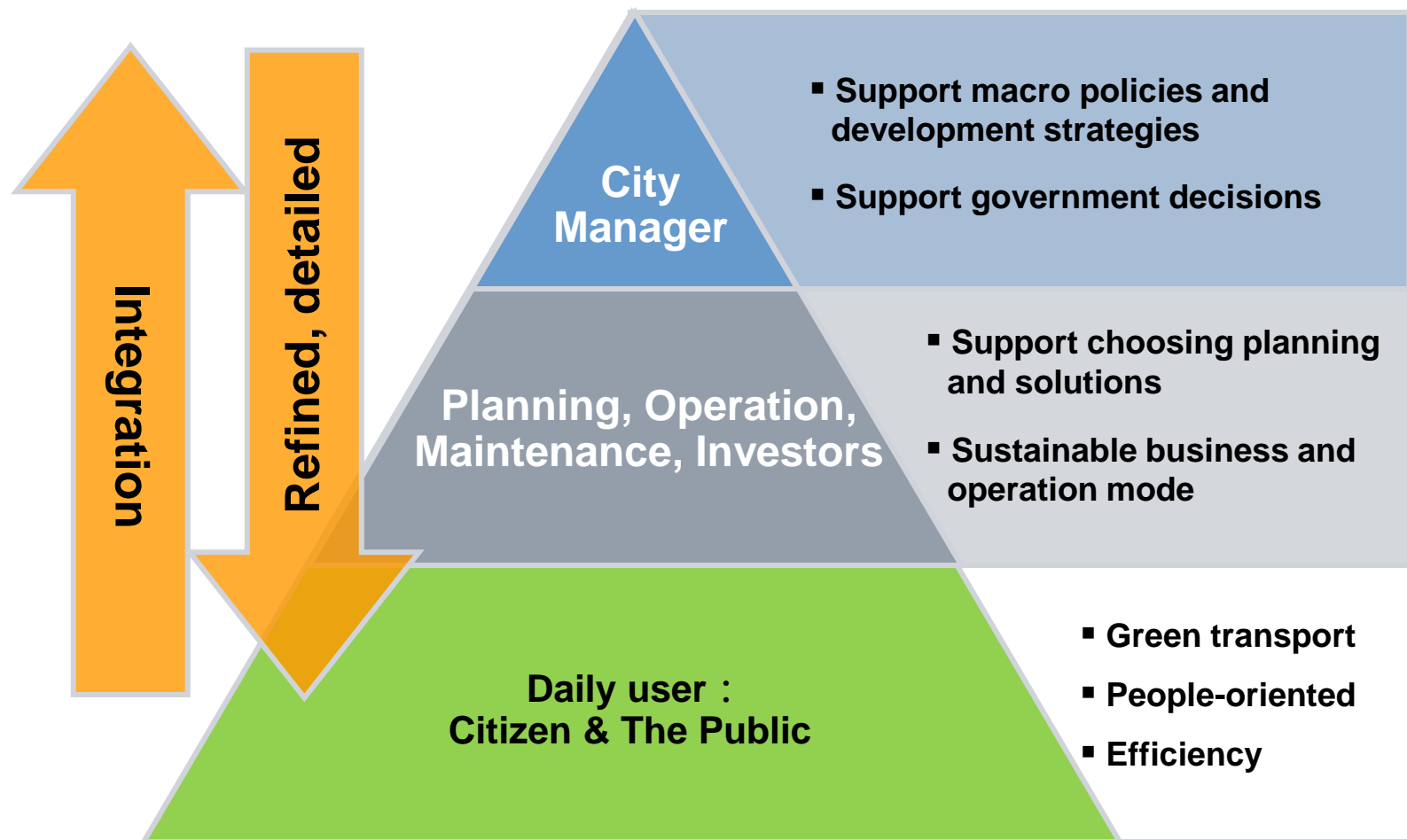
4.0 Digitalization

- Smart systems
- Proactive and predictive
- Highly integrated
- Fully automated
- Big data and cloud based
- Sustainable dev. as the goal
- IoT



TOMORROW

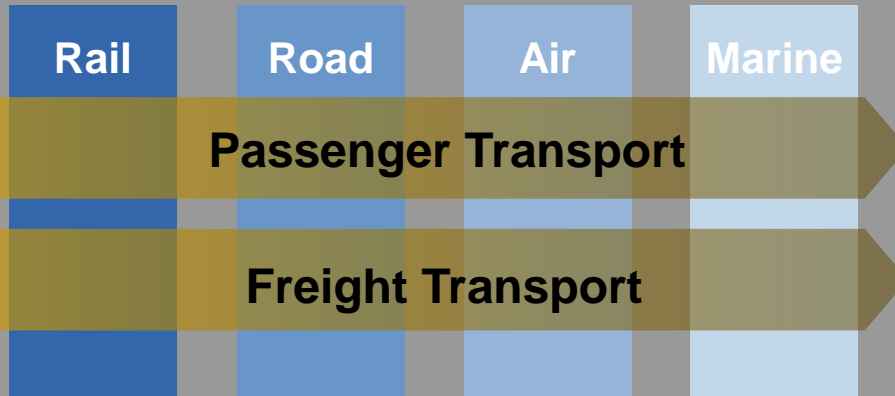
Meet stakeholders' needs



Realise sustainable smart transport development

SIEMENS

Concept, planning and design, construction, management and operations



- Transparent decision-making
- Quantitative infrastructure
- Better implementation and flexibility

- Low cost
- Efficient operation
- Long-term sustainable development
- Intangible assets
- Public and public issue

- Low emissions · green transport
- Increase utilization of energy
- Efficient operation management

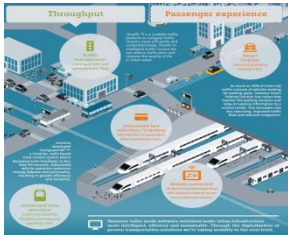
Smart Transport Infrastructure : Technologies, Equipment Manufacture, Maintenance

Soft measures



Concept

- City positioning, development strategies, conforming to trend and getting innovation and guidance under global competitive condition
- Draw and absorb good practices from global project experiences to avoid mistakes



Planning and design

- Detailed planning and designing: Quantitative solutions and development models
- Proactive planning supports transport development policies



Construction processes

- Detailed construction, creating quality and demonstration projects
- Reducing impacts on resource and environment through technologies and improving contractors' awareness

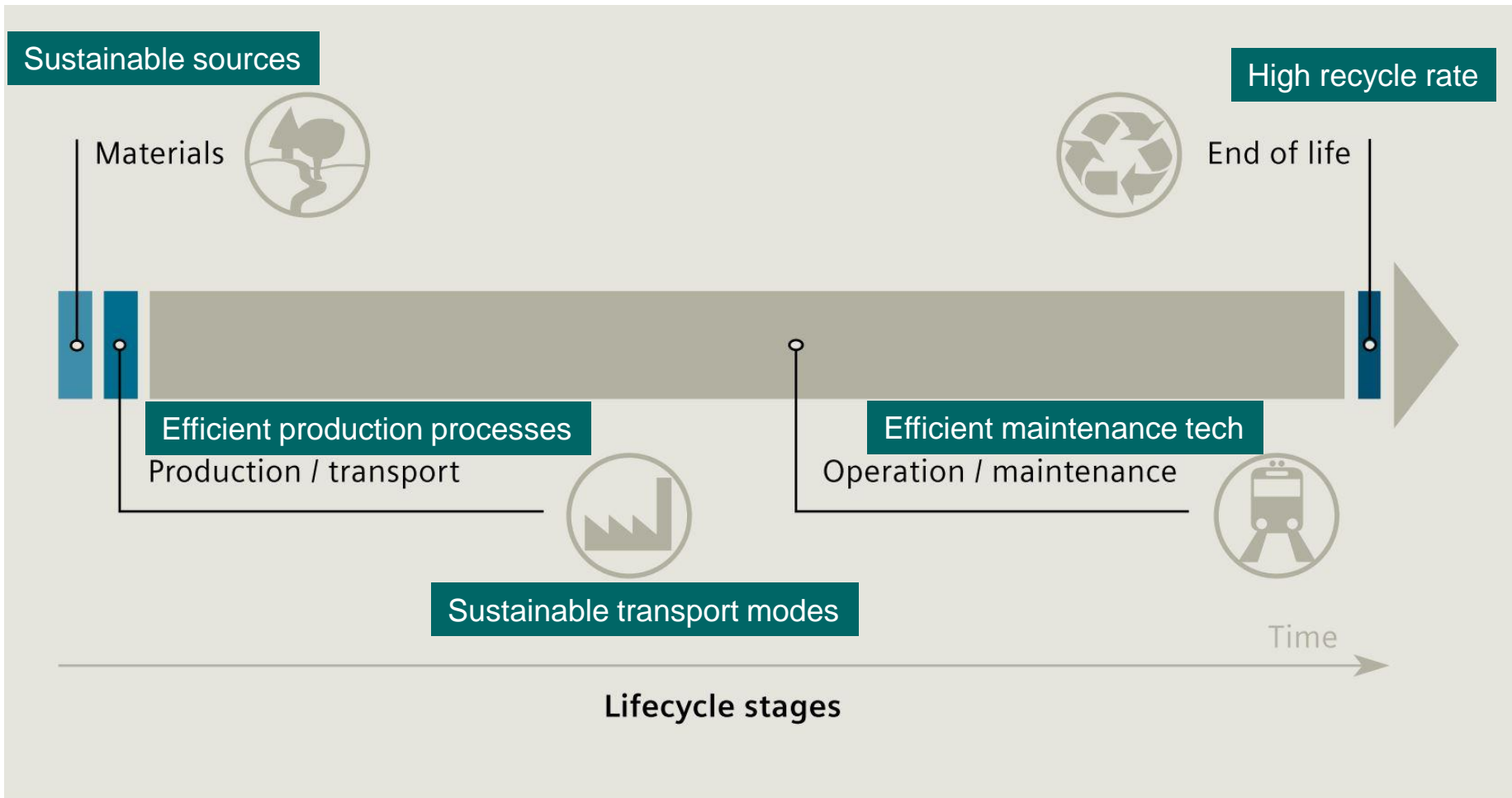


Management and operations

- Detailed/refined management and operations: dynamic management, evaluation system, guidance on planning and designing
- Dynamic benchmarking, business intelligence, big data support long-term development decision making

Smart transport infrastructure: solution lifecycle

SIEMENS



Some cases

City and solutions

London

- Congestion charge
- Quantitative solutions
- Integrated travel system



Singapore

- Promote public transport
- Congestion charge
- Low emissions driven



Potsdam

- integrated solutions to reduce pollution
- Environment-oriented



Zhuhai

- Promote public transport
- Green transport indicators
- Transport decision platform



Feature summary

1

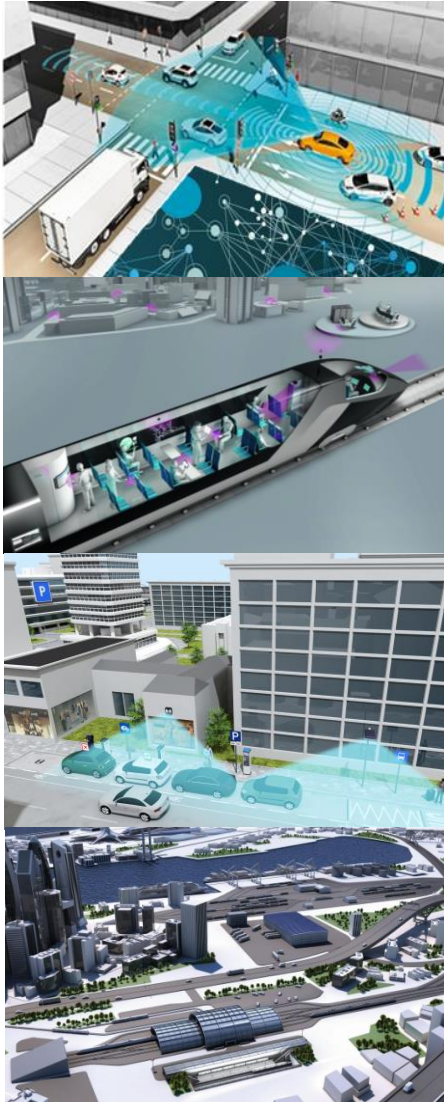
- Long-term vision and determination
- Aiming for sustainable development
- Quantitative understanding of solutions, technologies and service, and guide decision making
- Intelligent/Smart transport drives development of public transport
- Highly integration
- Guidance and demo effects of innovation

2

- Lifecycle contributions support PPP model
- Advanced tech for maintenance (e.g. Remote diagnose tech)
- Smart driving assis. Systems reduces energy consumption
- Digital tech. Increase efficiency in operations
- Pay attention to the costs of equipment updating and recycling

Smart Transport Drives Sustainable Development

SIEMENS



The ultimate goal of smart transport is to support sustainable development

Digitalization and smart transport are the trends of transport development

Smart transport development in metropolis is to support effective transport demand management

Solution-selection emphasises on the sustainability of whole product lifecycle

Smart transport includes all transport modes and meets the needs of different stakeholders

Smart transport development enables detailed/refined planning, operation and management

謝謝關注！

Thank for you for your attention!