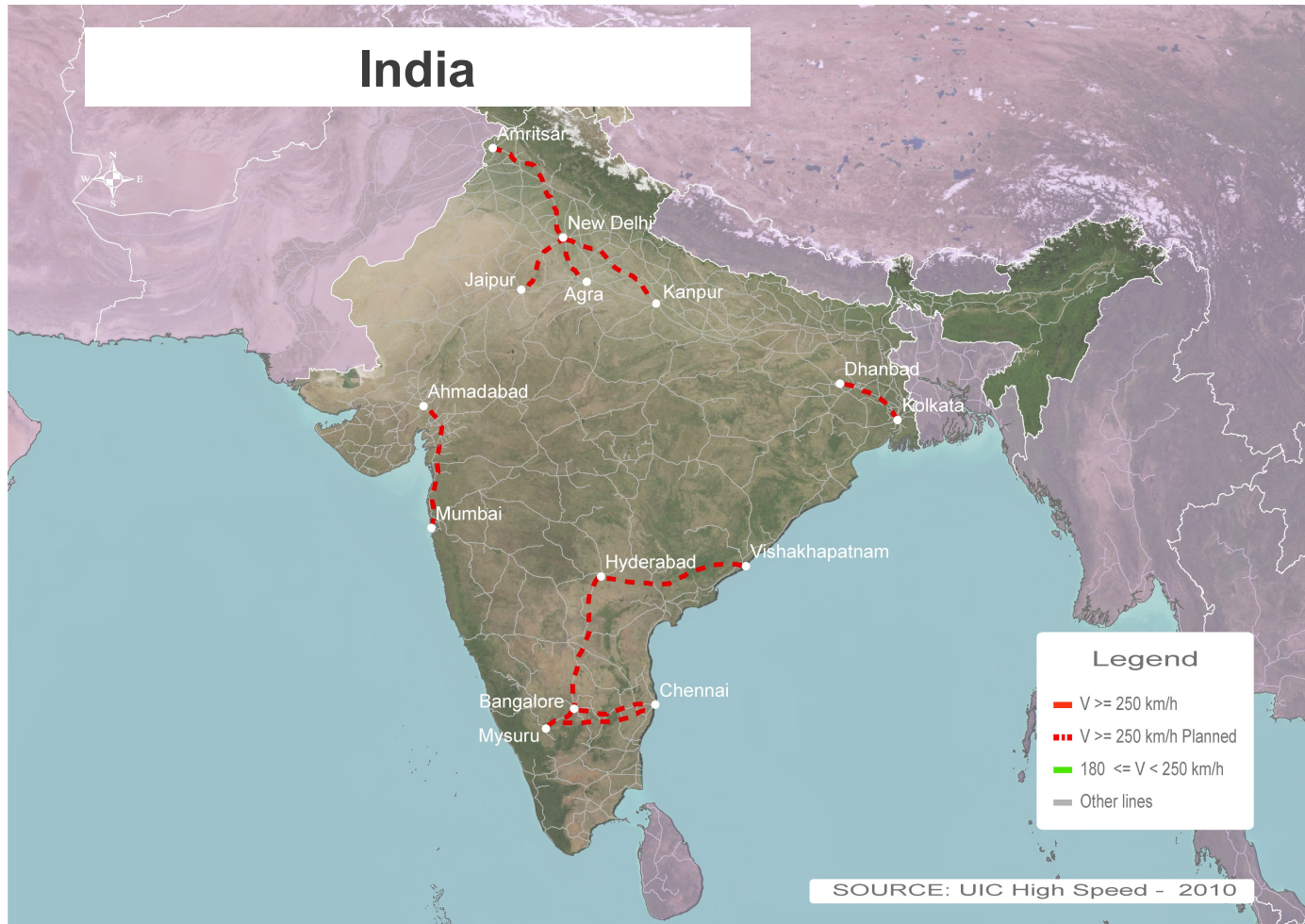






India







Iran

Tehran

Qom

Esfahan

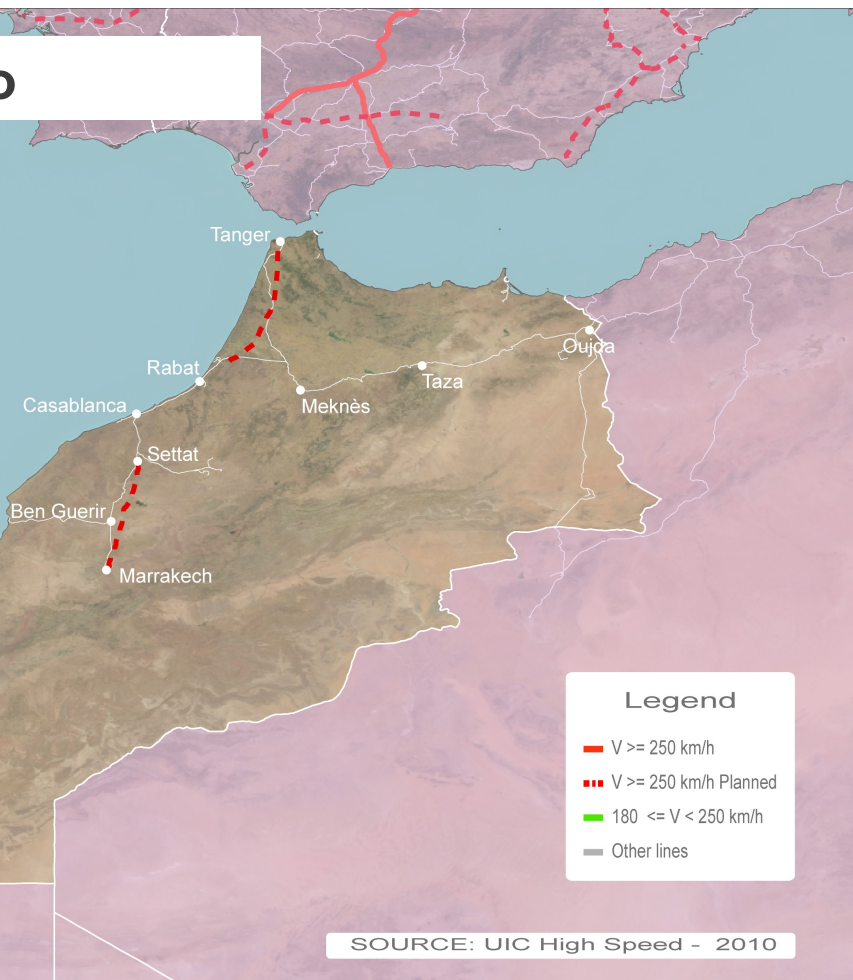
Legend

-  $V \geq 250$ km/h
-  $V \geq 250$ km/h Planned
-  $180 \leq V < 250$ km/h
-  Other lines

SOURCE: UIC High Speed - 2010



Morocco



Saudi Arabia



Medina – Jeddah – Makkah,
488 km



The UIC and the high speed rail
High speed rail principles
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High speed around the world
The future of high speed rail
Concluding remarks

The future of high speed rail

- High speed technology is fully competitive today but new developments are necessary if we want keep this competitiveness for the next 20-30 year
- Developments in new technologies immediately follow the implementation of the first high speed system in any country

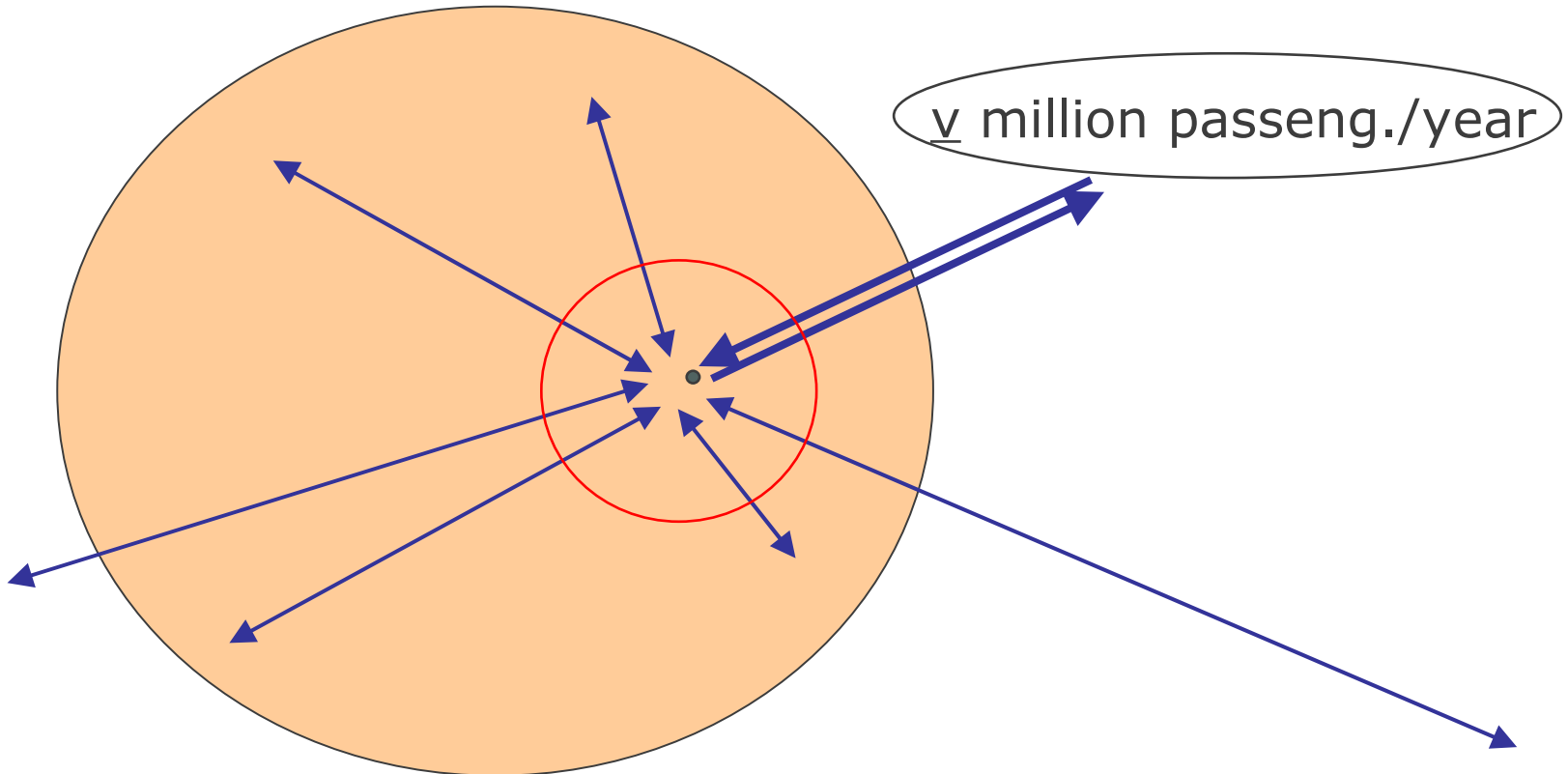
Stations for high speed

Different points of view:

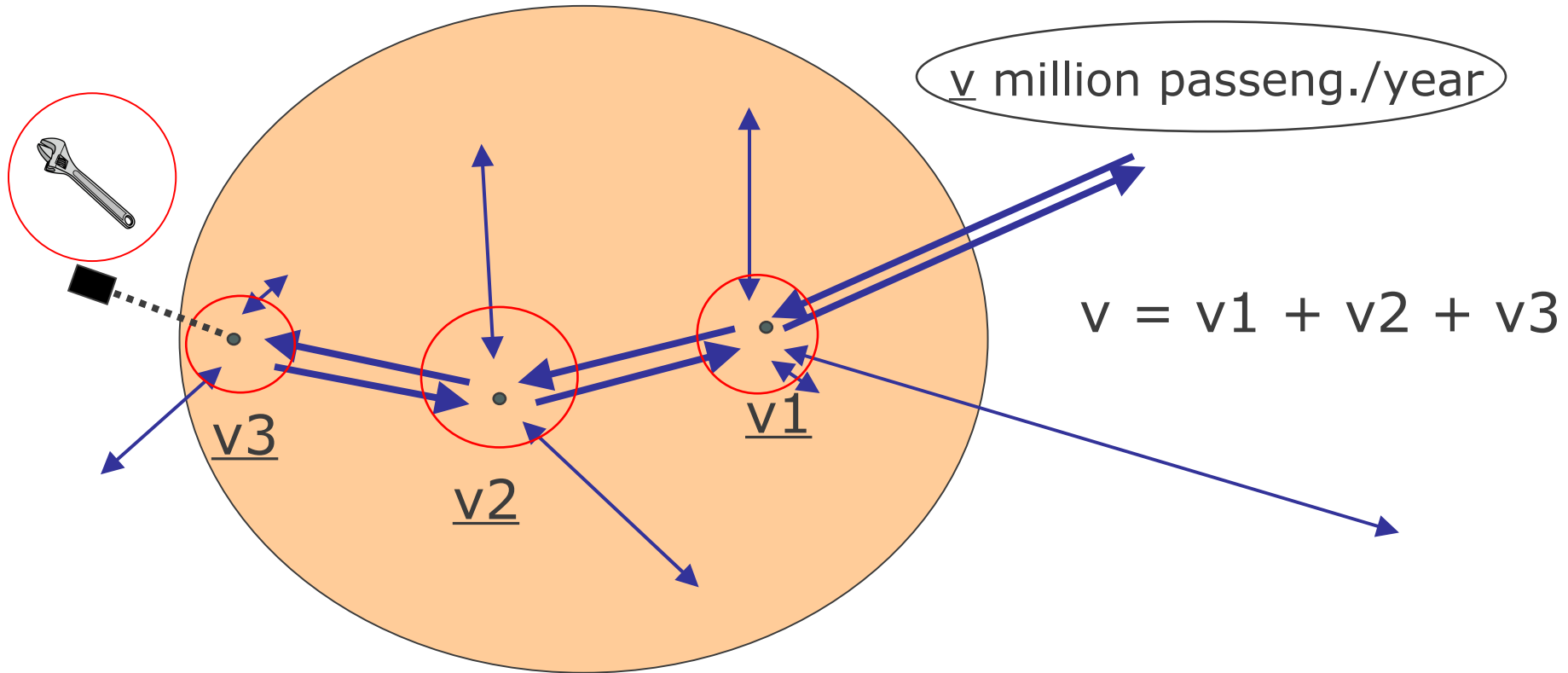
- Infrastructure manager or owner
(traffic, business, etc.)
- Railway undertaking
(operations, cleaning, crew, catering, etc.)
- City
(transport, multimodality)
- Customer
(comfort, total time travel, cost)

New study by UIC-High Speed

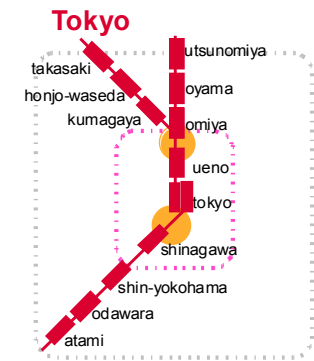
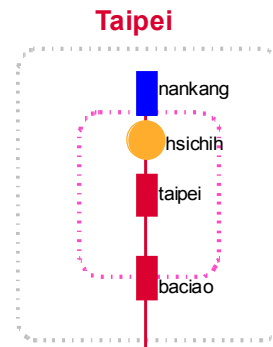
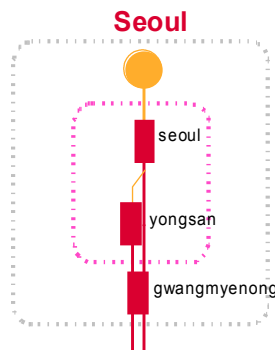
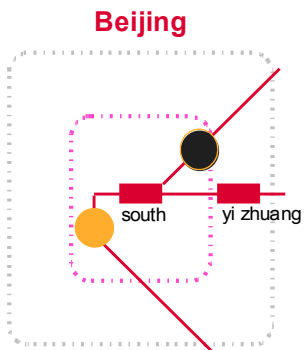
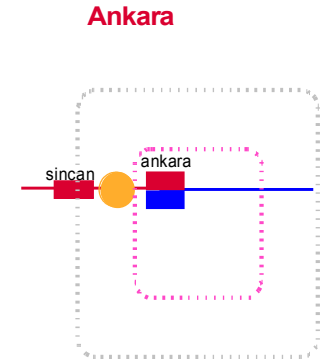
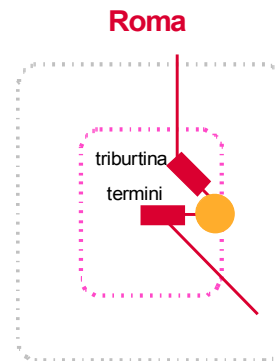
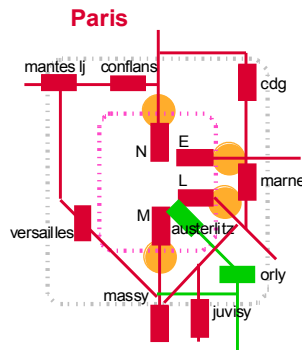
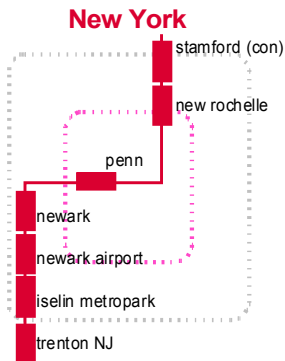
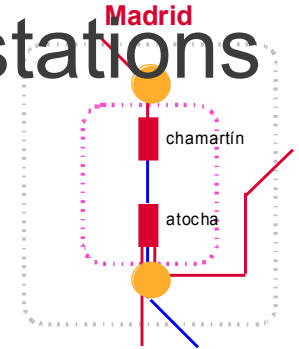
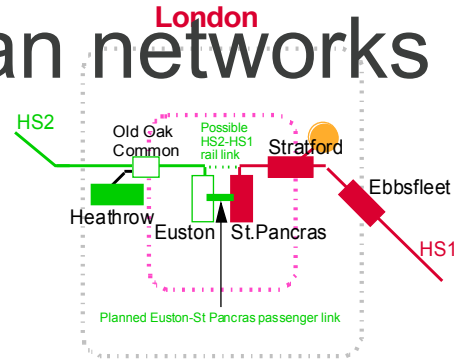
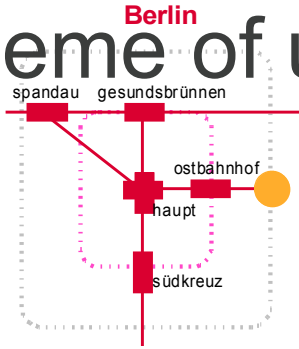
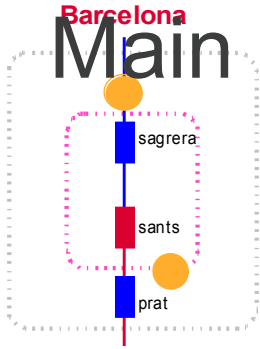
City C (h million inhabitants)



City C (h million inhabitants)



Main scheme of urban networks & stations



● depot
 ■ in operation
 ■ under construction
 ■ planned

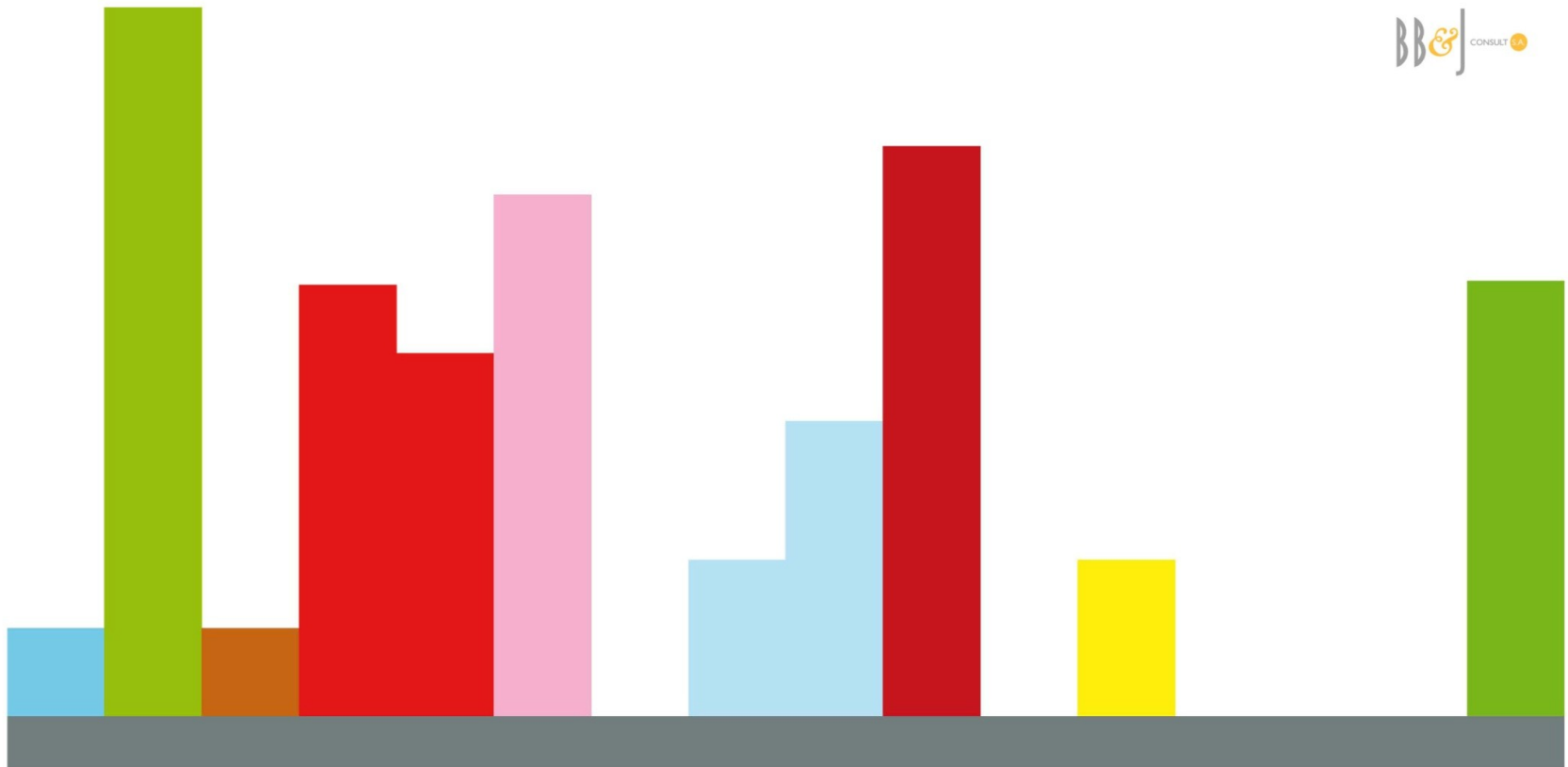
High speed and the city

SEPTEMBER 2010



INTERNATIONAL UNION
OF RAILWAYS

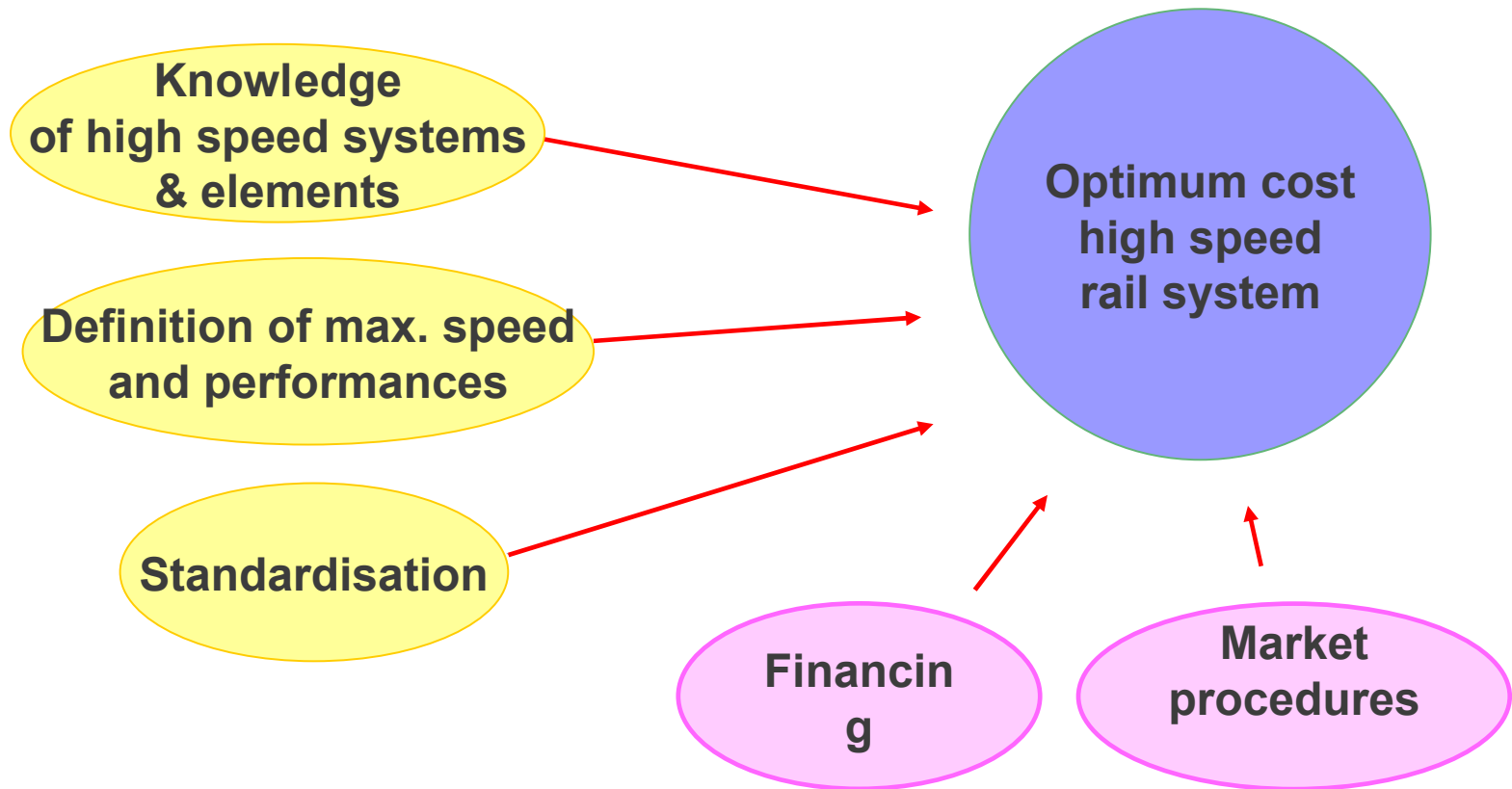
unity, solidarity, universality



Financing

- In some cases, private funding can be attracted for part of total investment
- PPP (Spain – France link) or BOT (Taiwan) are two possibilities to combine public and private resources:
 - Private obtains ROI
 - Public ensures social benefits
- The main question is: how much each?

Key elements to reduce costs



In the coming years, high speed will advance on

- Higher commercial speeds
 - maximum speeds in the range of 320 - 350 km/h
 - more availability time for the infrastructure
- New conception of the infrastructure elements:
 - ballasted or unballasted track, new fastenings systems
 - new materials (i.e. catenary wires)
- Standardisation and modularity of rolling stock
- New braking systems
- More respect to the environment (noise, energy efficiency)
- Improvements on safety, security and comfort
 - crossing winds, earthquake's detection, etc.
- New technologies (telecommunications, WiFi, etc.)

In the coming years, HS rail operators will ask for

Business

- More capacity (double deck &/or 2 + 3 instead of 2 + 2)
- More availability and maintainability of trains (RAMS)
- More reduced costs of (purchase and) maintenance (LCC)
- More reduced fees for infrastructure use
- More energy efficiency and less energy consumption
- Optimisation of the operation costs (i.e. when low occupancy)
- Globalisation
- ...

Globalisation

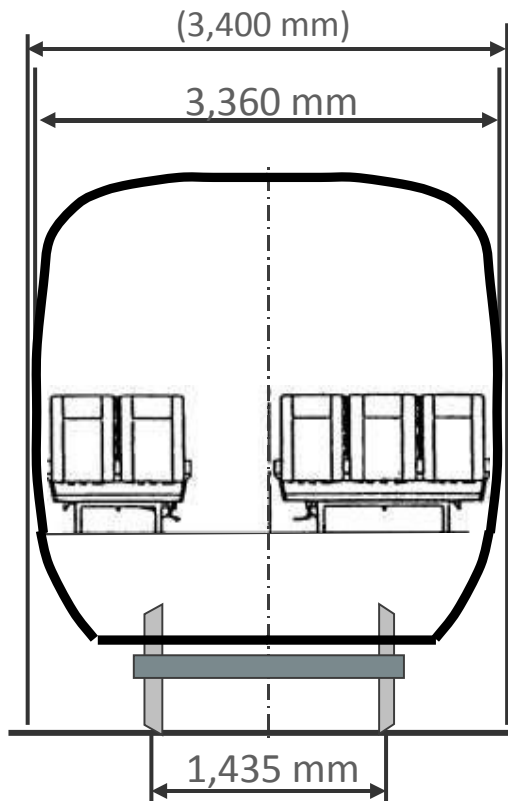


Capacity

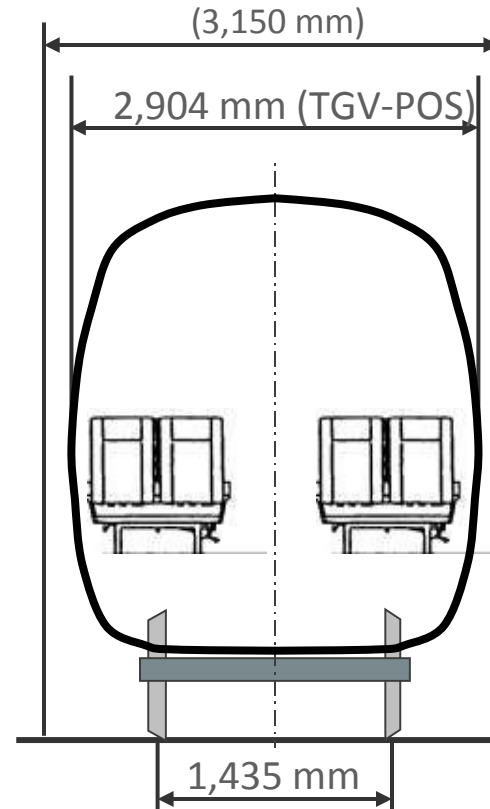


Capacity

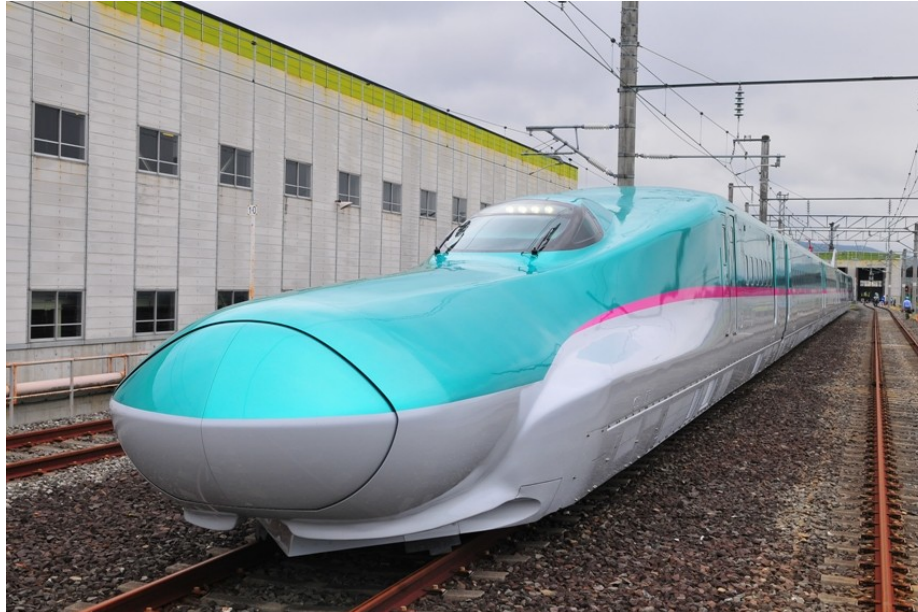
Shinkansen loading gauge



European loading gauge



New prototypes becoming series trains



New prototypes to compete



New prototypes developed by the industry



New prototypes developed by the industry



Appearance of new private operators (Europe)



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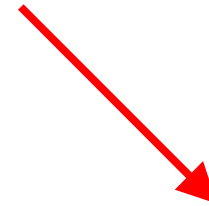
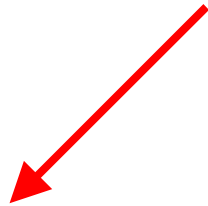
Conclusion

- High speed is **expanding dramatically** around the world
- A **good transport system for Society**
- High speed is a **complex system**
- High speed conception is **not unique** and it must be adapted to each case

Conclusion

Thinking on

SERVICES



INFRASTRUCTURE

TECHNOLOGY

Complement and not compete



■ ■ ■ Thank you very much for your kind attention

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