Engineering Solutions to Congestion
Institution of Civil Engineers London
Who we are

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Overview of ICE London

- 9,000 Members in a variety of sectors – energy, water, transport, resource management

- Aim:
  - To provide professional development
  - To educate and inform
  - To provide thought leadership
  - To be an impartial and independent voice
  - Act as a forum for new innovations and ideas
ICE London Public Voice activities

- London and South East Water Panel
- London and South East Energy Panel
- London Transport Expert Network
- Climate Change Taskforce

Bringing together senior civil engineers to determine ICE policy and provide expert analysis to Government, media, external organisations and the public.
Investigation into congestion
Congestion Levels

Source: London First, March 2015
Congestion by Vehicle Type

Figure ES3: Percentage Change in Counts by Vehicle Type, 2012 to 2014
(Source: Department for Transport)

Source: London First, March 2015
The Findings

- Congestion in London has risen noticeably between the years of 2012 and 2015 with journey times in Central London increasing by 12% annually.
- Car traffic, including taxis and private hire vehicles (PHVs), is decreasing in Central London and the Congestion Charge Zone (CCZ); thus, as a category, cars are not causing an increase in congestion in these areas.
- Roadway travel demand, as seen in vehicle counts, is flat or decreasing in Central London and increasing only slightly in Outer London; increased use of alternate modes of transit may explain why roadway traffic volumes remain flat.
- Truck (LGV) traffic is increasing in Central London, possibly related to the rise in e-commerce. This is the only vehicle type to show more roadway volume in all three zones of London.
- One of the most significant drivers of increased congestion in London is roadworks, increasing 362% during the study period.
London drivers spend more than 12 working days sitting in stationary traffic last year.
The challenges...

- Growing population in London
- Limited road space
- Growth of online deliveries
- Large amount of redevelopment & construction
...which cause problems

- Reduce productivity
- Low air quality
- Worsening environment
- Congested transport system
What can we do?

- Solution is not just building more

- Instead, it's about using what we have better:

  1. Changing behaviours
  
  2. Utilising under-used capacity
1. Changing Behaviour

- Data sharing and management of traffic
- Consolidation
- Charging & levies
Data Sharing & Traffic Management

The Olympics
The Olympics

Findings:

- Forecasting travel demand is an important part of the preparations

- There should be an increased emphasis on encouraging people to walk, cycle or use river services
The Olympic Legacy

- Strategic modelling
- Real-time analytics and monitoring
- Mapping
- Transport Knowledge Management
Consolidation

- Final mile deliveries for construction & retail

- Not enough consolidation centres because:
  - Developers must choose, but often contractors feel the benefit
  - Cost and space

- E.g. Heathrow Consolidation Centre & Euston Station
Charging & Levies

- Tolling
- Workplace parking levies
- Devolving vehicle excise duty
- Smarter congestion charging
Utilising under-used capacity

- River transport
- Public transport
- Taxis and delivery vehicles
- Car share schemes
River Transport

- Over five million tonnes of freight were transported on the Thames in 2013, up 62% on the year before (DfT/PLA)
- Helps keep over 265,000 lorry movements a year off London's congested roads
- However, issues with waste transfer licenses
- Only large developers, like TfL are utilising the river e.g. Northern line extension, Crossrail
Public Transport

- **Rail at capacity.** Makes schemes like Crossrail 2 all the more essential

- Bus use falling due to high congestion

- Issues with suburban connectivity & accessibility of transport network
Taxis and delivery vehicles

- Empty for significant periods of time

- Creating financial incentives for both to be utilised fully.

  - **Taxis**: Best information to pick up passengers

  - **Delivery vehicles**: Taking waste from sites after deliveries
Car share schemes

- Car sharing is on the rise
- Boosting understanding of car share schemes
- However, issues with car ownership in suburban centres

Source: Carplus Annual Survey, April 2016
Suburban versus central

- Inner London: \(709,952\) licensed cars
- Outer London: \(1,924,635\) licensed cars

Top 5 boroughs for most and least cars licensed.

Source: London Data Store, 2015
Looking to the future

Autonomous vehicles: the end of congestion?

- More efficient use of the road
- No need for parking
- Combined with electric vehicle technology
- Perhaps the end of the grand projet?
Looking to the future

Electric vehicle technologies:

- Rapid charging
- Induction charging pads
- HGV and LGV charging
Thank you - Questions?

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