

Bring Back the Tram!

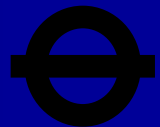
Steve Miller

Transport *for* London



Introduction

- **Transport for London**
- **The Tram Scheme**
- **Models available to TfL**
- **Proposed Models For the Tram**
- **Current State of the Models**



Transport for London

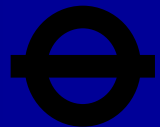
Transport for London (TfL) is the integrated body responsible for London's transport system.

Its role is:

- to implement the Mayor's Transport Strategy for London
- To manage the transport services across the capital for which the Mayor has responsibility.

TfL manages:

- London's Strategic Road Network
- London's buses
- The Underground (LUL)
- Docklands Light Railway (DLR)
- London Trams (Croydon Tramlink)
- London Riverboat Services



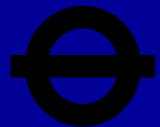
Public Transport Issues for London

Limited investment in new rail infrastructure

Limited potential to increase rail capacity

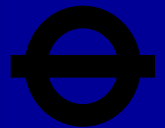
“Sweat the Assets”; i.e.:

- Spread the Peak (demand and supply)
- Increased crowding



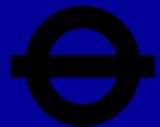
The Tram Scheme

Old Tram or New Tram?



Why a Tram?

- **Relieve tube crowding**
- **Stimulate regeneration**
- **Improve accessibility**
- **Better connection between mainline stations**
- **Environmentally friendly mode of transport**
- **Cost efficient**
- **Connect target areas south of river**
- **Improve overall system efficiency of highway based public transport**



Possible Route

New 16.5 km tramway

Core alignment:

Euston to Waterloo

30 trams per hour

Branches

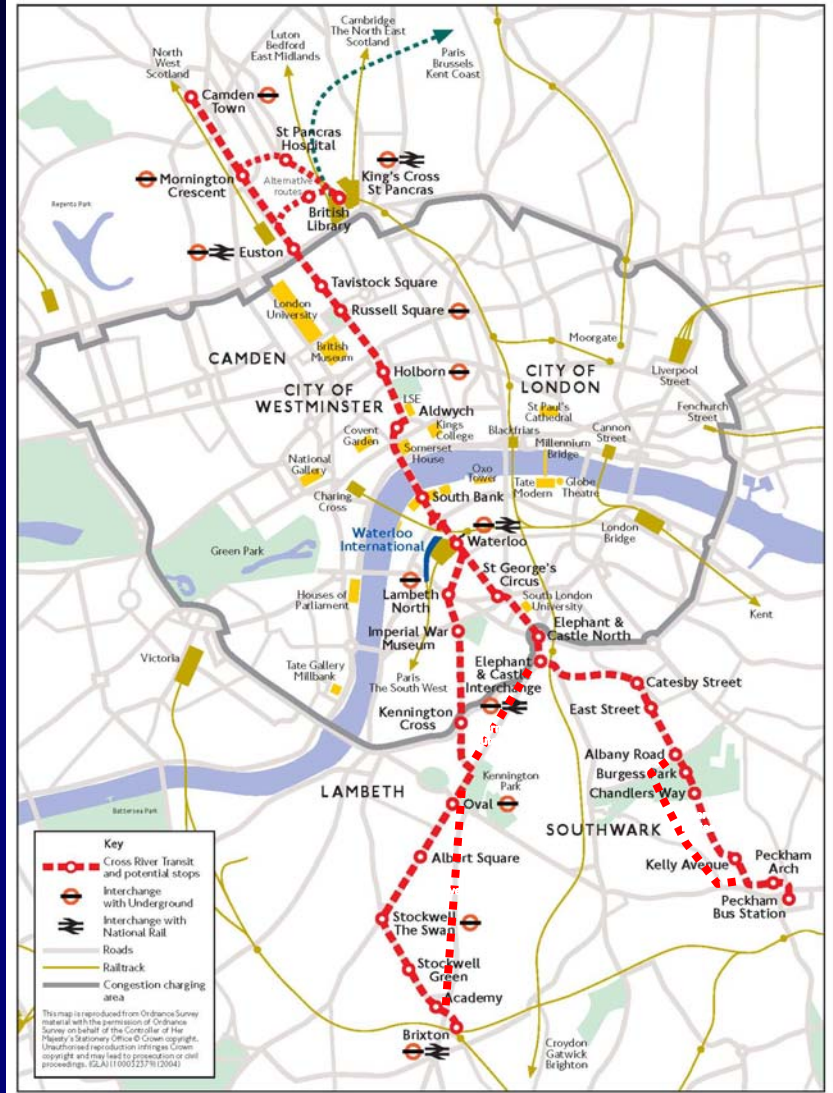
North: to Kings Cross and Camden Town

Camden Town

South: to Peckham and Brixton

15 trams per hour each branch

Cross River Tram Indicative Alignment & Stop Locations



Initial Assessments

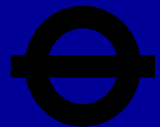
Started in 1997: Intermediate Modes Studies

Then further Studies:

- Tram v high-quality bus services
- Tram was feasible and beneficial
- Ruled out bus option due to capacity and attractiveness

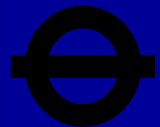
Refined Progressively to demonstrate:

- **Sound Business Case (BCR: 2.64:1)**
- **Road Traffic Impacts can be managed**



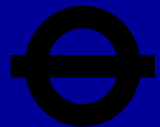
Models available to TfL

- **LTS (London Transportation Studies) Model**
- **Railplan**
- **SALT (SATURN Assignment of London Traffic)**
- **SALT-C (Congestion Charging)**
- **Micro-Simulation and Junction Models**



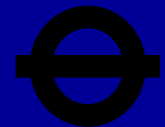
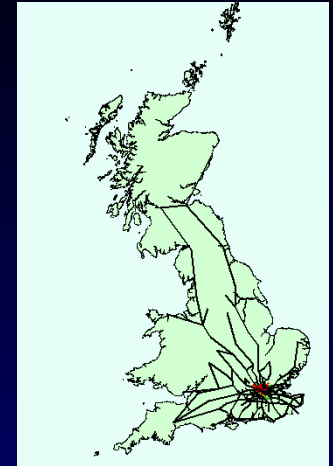
LTS (London Transportation Studies) Model

- **Strategic 4 Stage Model, based on legacy software and TRIPS/Cube**
- **Covers London and South East England**
- **Network representation is not that detailed**
- **1016 zones**
- **Run for 2001, 2006, and then every 5 years to 2031**



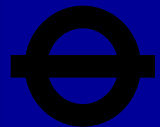
The Railplan Model

- Runs on EMME/2 usually under UNIX
- AM Peak Crowded Transit Assignment model of London (Based on Congtras.mac)
 - Underground
 - Rail
 - Tram
 - Bus
 - Docklands Light Rail (DLR)



The Railplan Model

- **Uses Size 16 licence**
- **1,500-3,000+ Zones**
- **50,000+ Links**
- **Distribution-Mode Split model outside Railplan – usually reliant on LTS**



Railplan Features

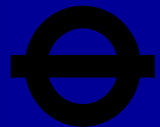
Developed since 1988 (Rel 3!)

All Public Transport sub-modes

Congestion in Route Choice (not Bus)

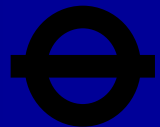
Quantifies social benefit of reduced crowding

**Forecasts station flow patterns to aid station
planning**



Standard Railplan Model: Level of Demand

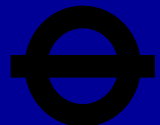
| Year | Trips (3 Hrs) |
|--------|---------------|
| 2001 | 1,836,318 |
| 2011 | 2,195,962 |
| Growth | 2% p.a. |



Standard Railplan: Model Dimensions

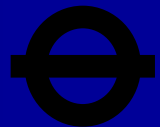
Network (2001 Base)

| | |
|--------------|--------|
| No. Zones | 1,571 |
| No. Nodes | 14,648 |
| No. Links | 49,596 |
| No. Lines | 1,836 |
| No. Segments | 84,225 |



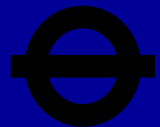
Network Usage (2001 Base)

| Mode | Lines | Serv. Kms | Pass. Kms |
|-------------|-------|-----------|-----------|
| N Rail | 949 | 41,470 | 9,195,488 |
| Underground | 125 | 13,778 | 2,826,332 |
| Light Rail | 6 | 615 | 67,120 |
| Tram | 4 | 471 | 24,575 |
| Bus | 752 | 77,433 | 998,301 |



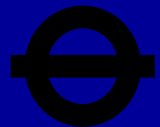
SALT (SATURN Assignment of London Traffic)

- **Covers the complete (Greater London) area in detail**
- **Slow to run**
- **No longer directly supported or used – difficult to find resources to develop and maintain a detailed network model over such a large area**
- **Demand derived from LTS**



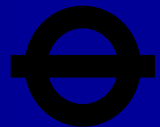
SALT-C (Congestion Charging)

- Designed to model the “Boundary Route” around CC Scheme
- Based on a cordoned SALT model for run-time efficiency
- Matrix Estimation, prior matrix from LTS via SALT
- Demand externally split between “YACS” and “NACS” on a sector – sector basis
- 615 zones



Micro-Simulation and Junction Models

- **TRANSYT is the normal basis for such models**
- **Micro-simulation (VISSIM) increasingly adopted for the more complex areas**
- **Individual models are developed and validated to represent specific junction groups**

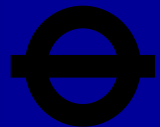


Proposed Models For the Tram

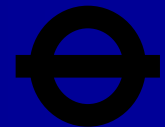
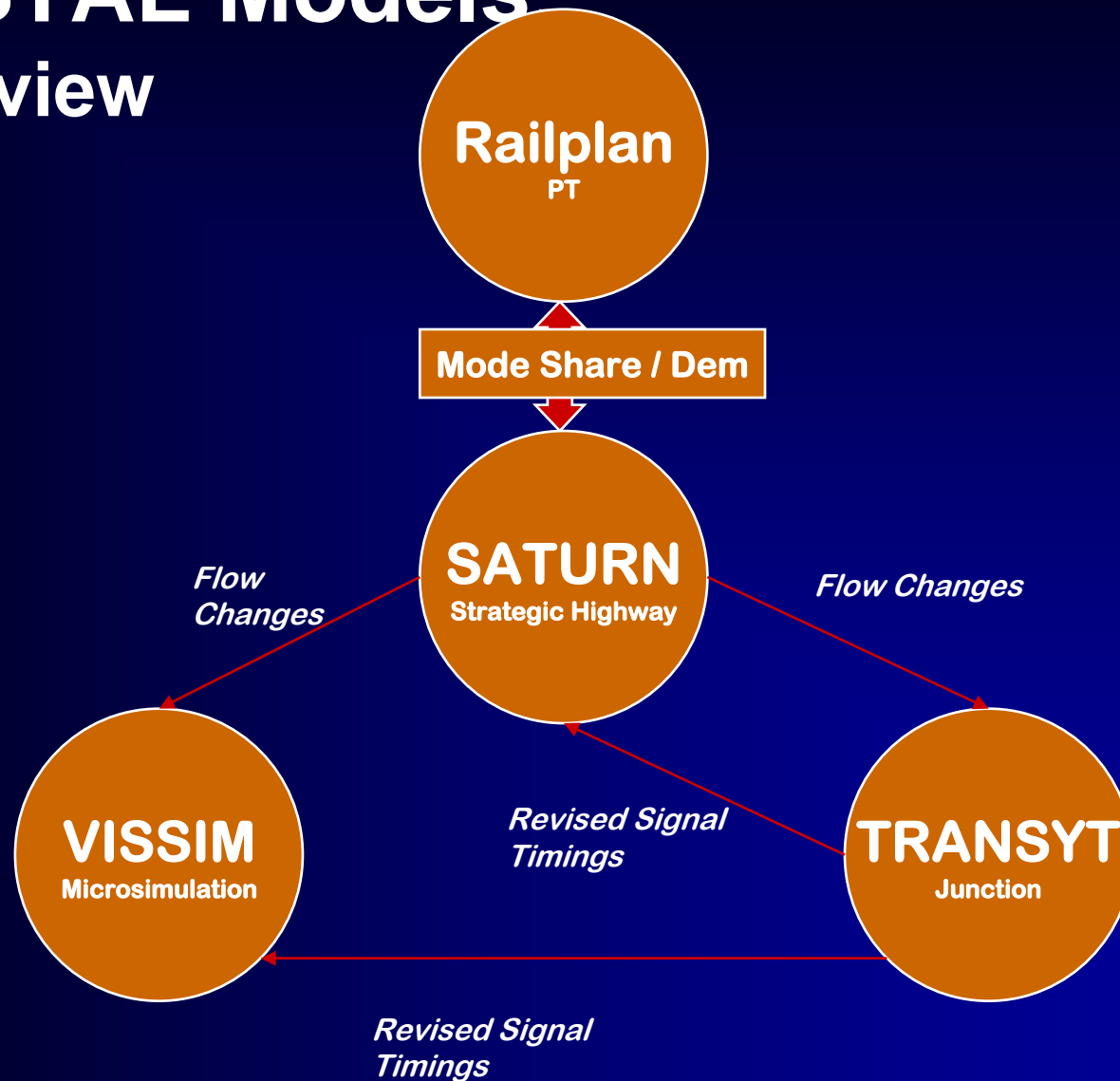
A New family of models: CRISTAL

(**C**ross **R**iver **S**tudy of **T**rams **A**cross London)

- CRISTAL-H (Highway – SATURN)
- CRISTAL-P (Public Transport – EMME)
- CRISTAL-J (Junctions – TRANSYT and LINSIG)
- CRISTAL-M (Micro-Simulation – VISSIM)
- CRISTAL-MS (Mode Shift)



CRISTAL Models: Overview



Current State of Models : CRISTAL_H

Based on SALT-C

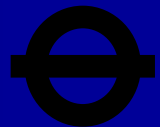
615 zones expanded to 697 zones

New treatment of taxi user class

AM Peak hour model nearly validated

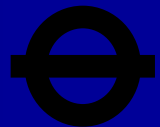
PM Peak Hour to be validated

IP to be developed



AM Peak Hour Demand (PCUs/hr)

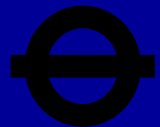
| | YACS (Accept C.Charge) | NACS (Divert around Zone) | Total |
|--------------|---------------------------------------|--|----------------|
| LIGHT | 77,000 | 254,000 | 331,000 |
| HEAVY | 36,000 | 12,000 | 48,000 |
| TAXIS | 20,000 | | 20,000 |
| Total | 133,000 | 266,000 | 399,000 |



Current State of Models : CRISTAL-P

Based on Railplan

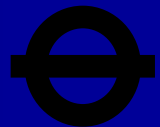
- **1571 zones expanded to 1645 zones**
- **AM Peak period model nearly validated**
- **PM Peak hour to be validated**
- **IP to be developed**



Current State of Models :

CRISTAL-J

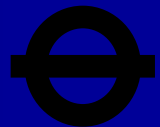
- **Individual local models being developed and validated for AM and PM Peak hours**
- **Mainly using TRANSYT for individual signal groups**



Current State of Models :

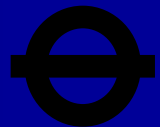
CRISTAL-M

- **VISSIM Model was developed from a series of local models used previously**
- **Adequate to confirm general principles of scheme operation**
- **Route corridor being confirmed at this stage**
- **Initial model will be expanded and developed for the chosen route corridor**



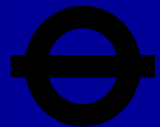
Current State of Models : CRISTAL-MS

- **Previous MS model was developed using EMME**
- **This will be refreshed for CRISTAL**

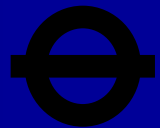


Conclusions

- **There seems to be a commercial case for a new Tram in central London**
- **Congestion Charging has offered some highway capacity for the core section**
- **The tools and data are available to develop robust forecasts of demand, traffic impacts and benefits**
- **EMME is an important part of that package of tools**
- **However, other tools are also required to complement EMME, partly to provide stakeholder confidence**



A Vision of the Tram



www.tfl.gov.uk

