Creating the future of transport

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Developing an interface between SATURN and SITLUM land-use transportation model SATURN User group

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Researcher

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Requirement

- Strathclyde Partnership for Transport (SPT) uses a number of different transport models for different purposes
- SPT wished to strengthen the links between the different models, so that data and results can be more easily passed between them
- This project is designed to facilitate the integration of two of these models

What are the two models?

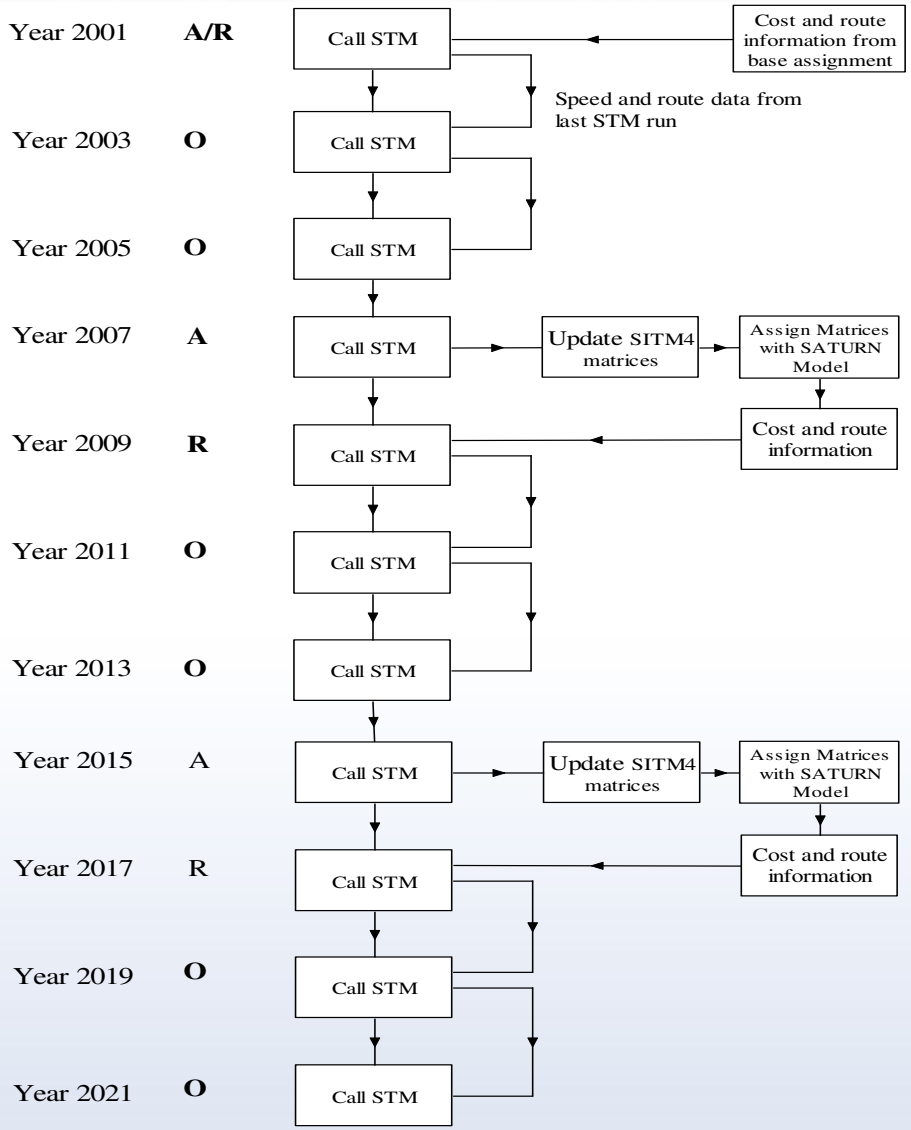
- **SITLUM (173 zones)**
  - Using Strategic Transport Model (STM) – designed for the quick turnaround of results for option testing
  - DELTA land use model
  - No internal assignment model
  - Predicts the effects of area wide transport and land-use polices as far as 2026
- **SITM4 (1,056 zones)**
  - Strategic 4-stage multimodal
  - Using SATURN highway assignment model
  - Detailed link-and-junction model, and simulation network within Glasgow
  - Full model only implemented for base year (2002) so far

SITLUM / SITM4 zones compared

The SITLUM zonal system in Glasgow (heavy lines) superposed on the SITM4 zone system

TRL is a licensed Ordnance Survey Developer Partner 100021177

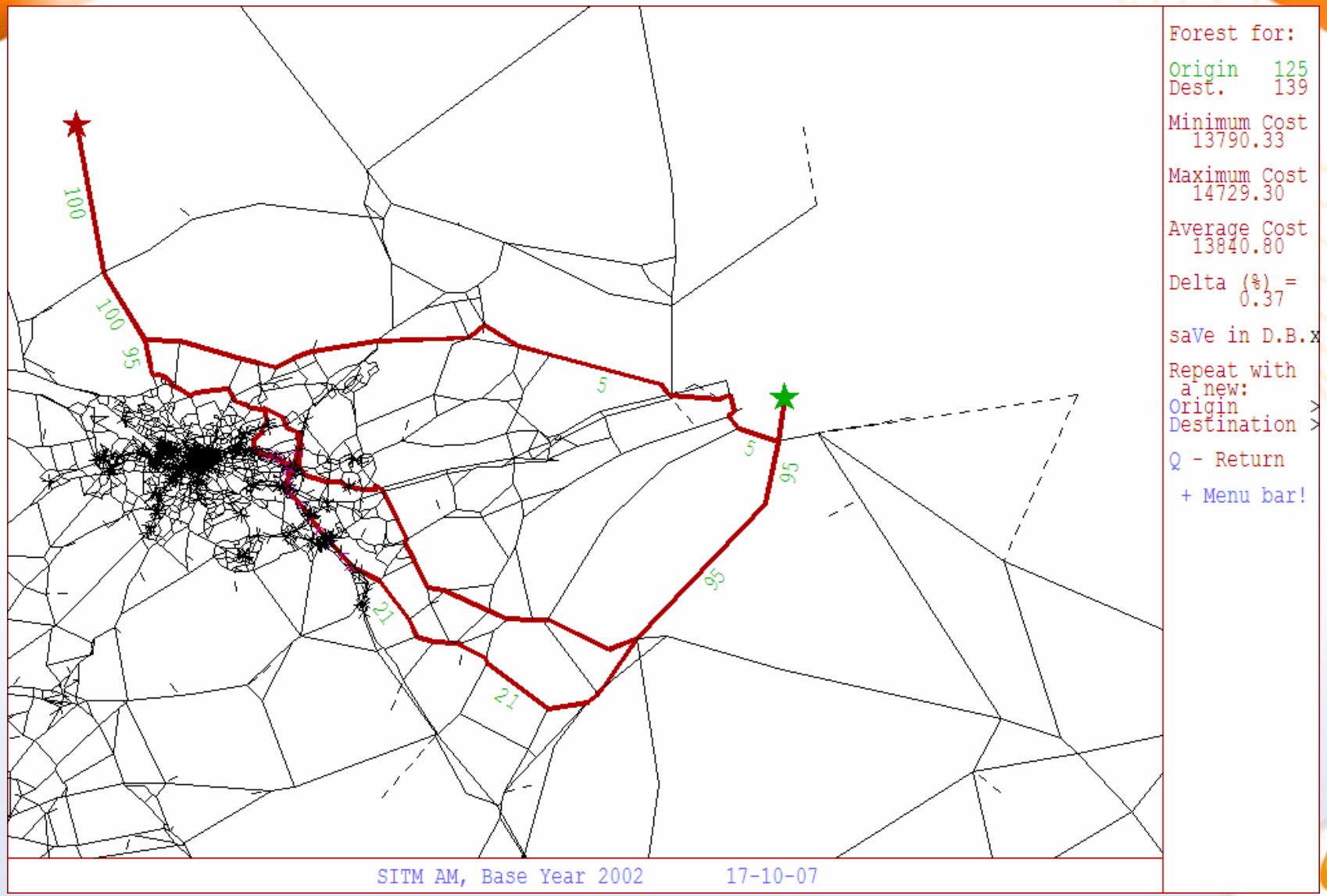
Basic idea- illustrated



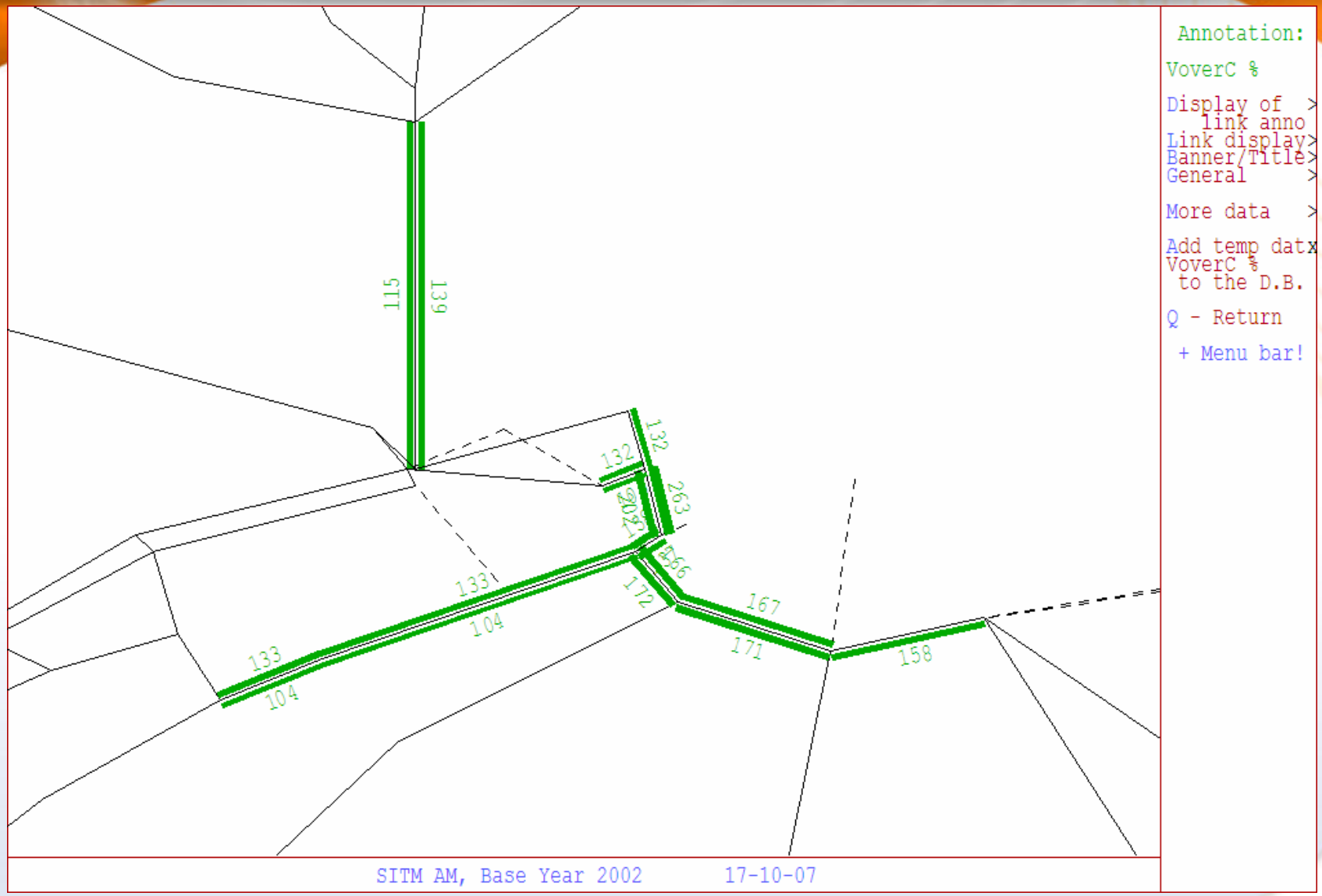
Procedure (1)

1. **Run Saturn network**
2. **Bufferise simulation network**
3. **Run bufferised network with SITM4 matrix**
   - Compare routing, flows and times with simulation network
4. **Strip off old zoning system, add SITLUM zoning system plus additional zone centroid connectors**
5. **Convert SITM4 matrix to SITLUM-style (173 zones)**
   - SITM4 – average peak hour
   - SITLUM – average of whole time-period
   - Used TMfS factors to convert matrices
   - Divide up flows by area when zone boundaries differ
6. **Run new buffer network with SITLUM-style matrix**
   - Compare routing, flows and times with simulation network

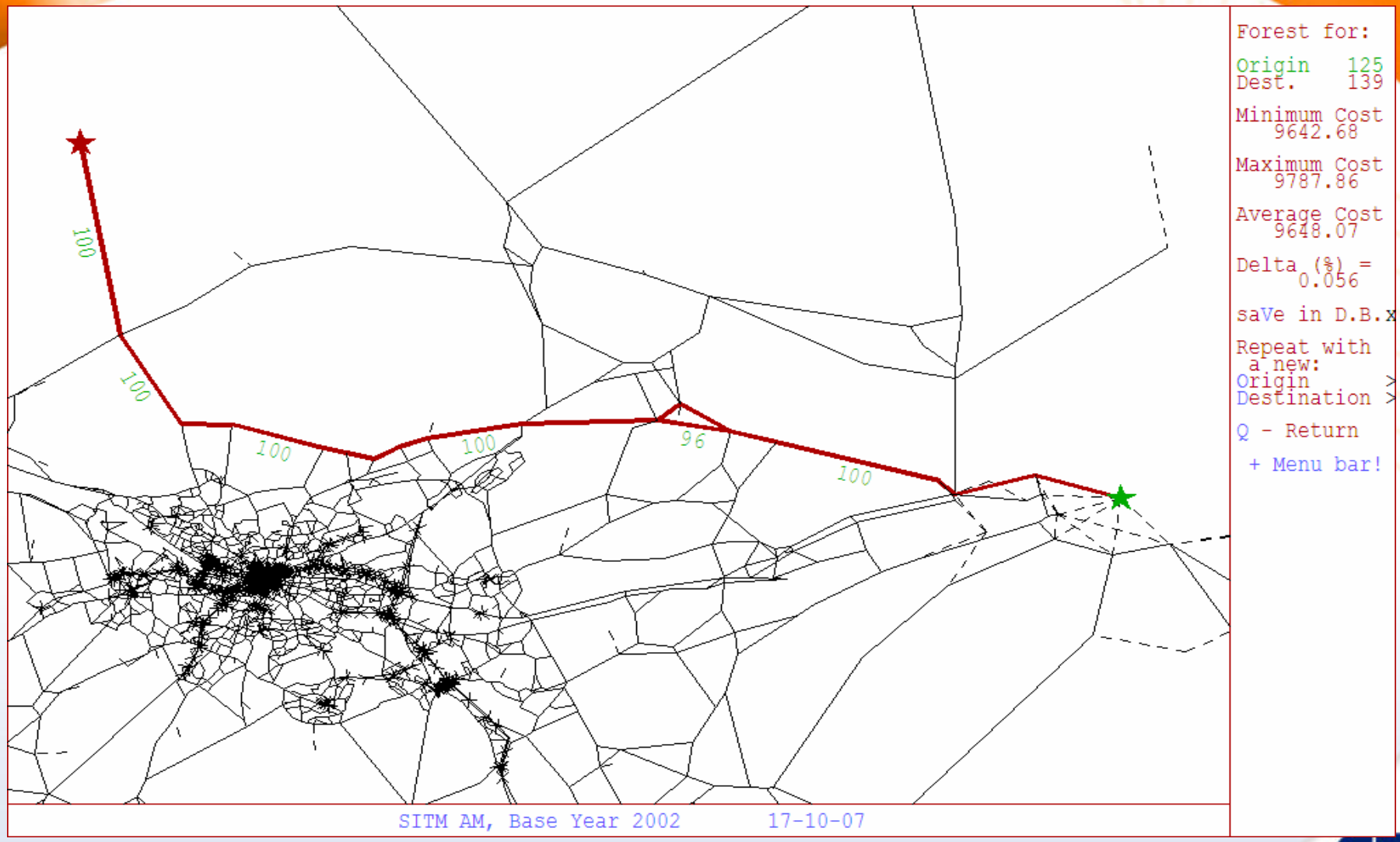
Strange routing choices



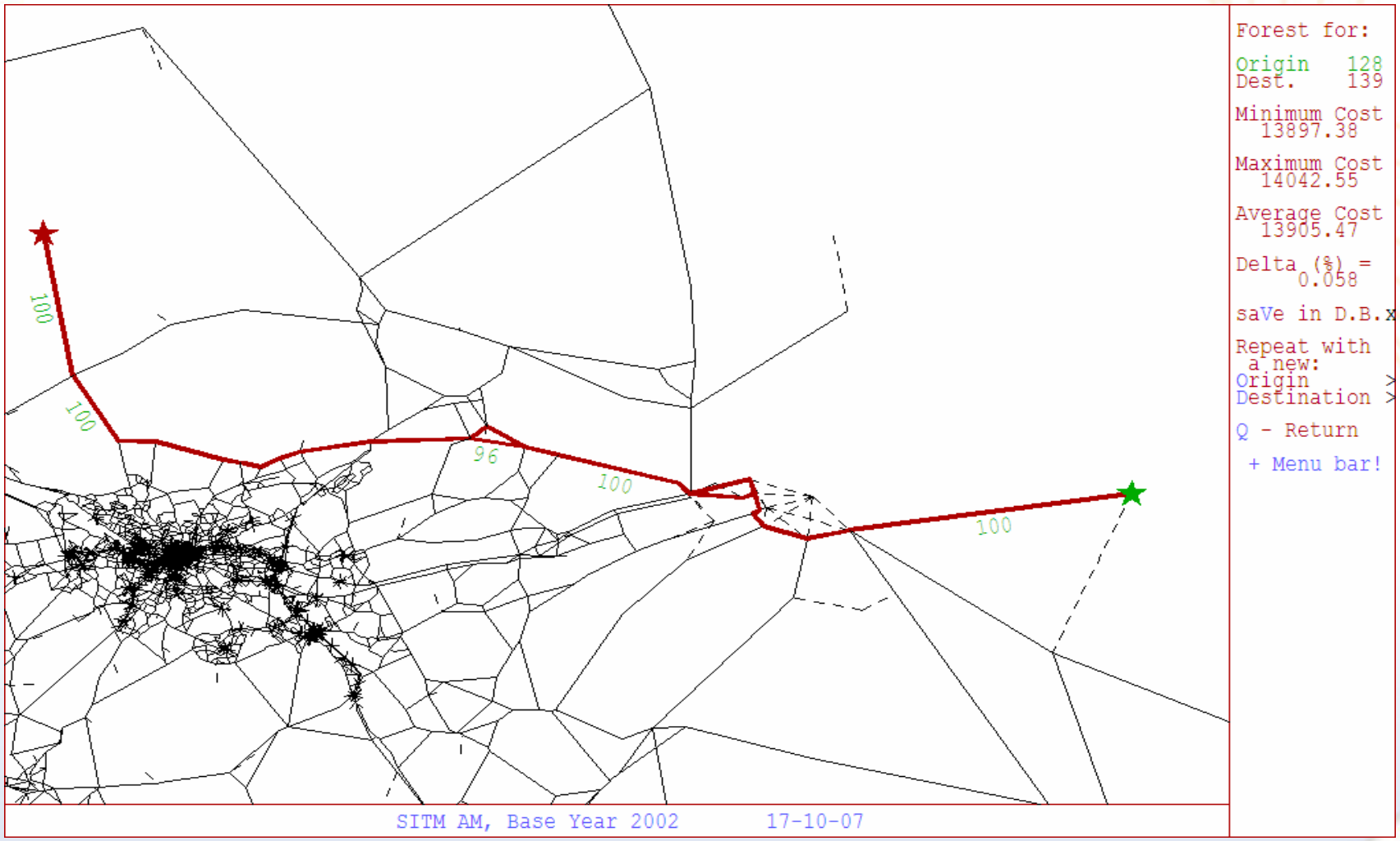
The reason


Annotation:
VoverC %
Display of
link anno
Link display
Banner/Title
General
More data
Add temp datx
VoverC %
to the D.B.
Q - Return
+ Menu bar!
115
139
132
132
263
133
104
133
104
172
166
167
171
158
SITM AM, Base Year 2002
17-10-07

The solution



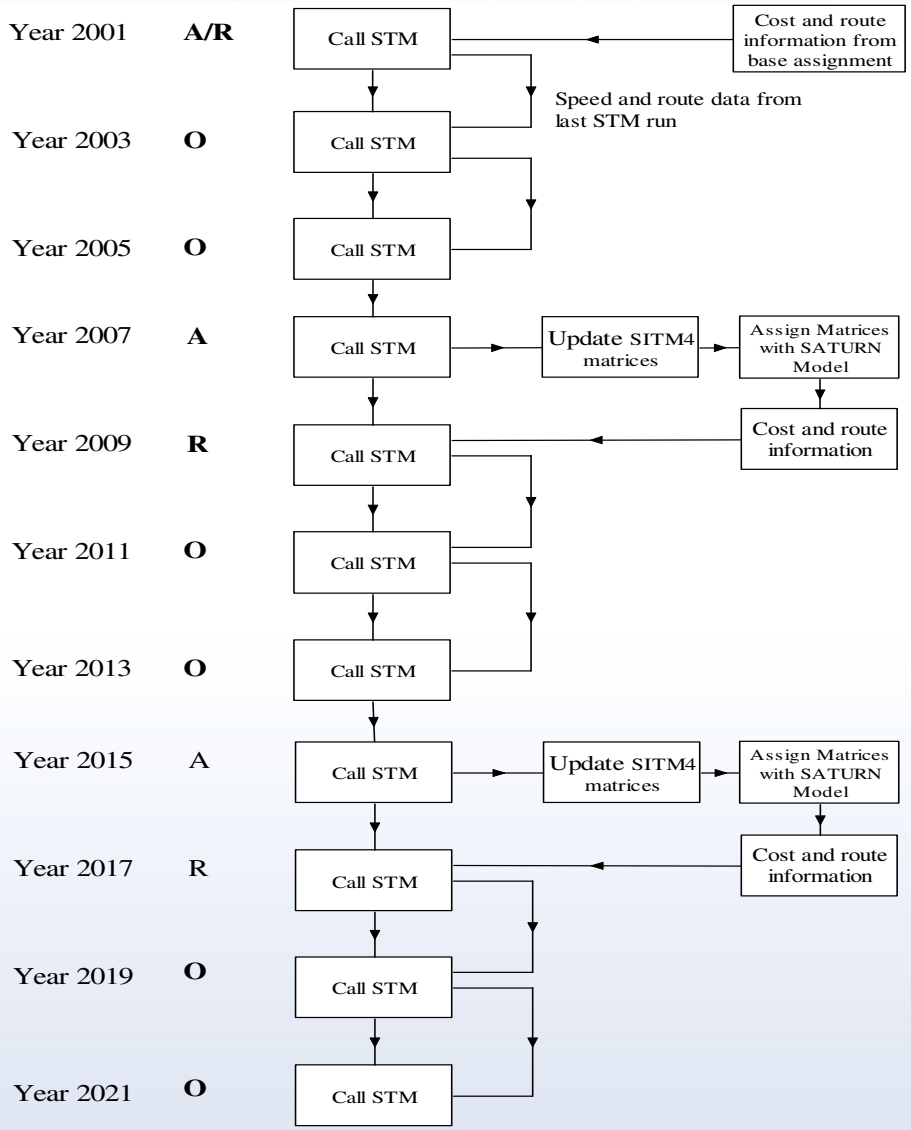
… even from East Lothian



Procedure (2)

7. **Create a link definition file using P1x/SATDB**
   - used to set up a link definition file including fixed flows (Buses & HGVs) and Tolls
8. **Use SATLOOK to create time/distance matrices for matrix synthesis**
9. **Add small values to all cells and rerun SATURN so that routes between ALL possible zone-to-zone combinations can be produced**
10. **Produce route files by trip purpose and time-period using SATPIG**
11. **Using routes data and MAPINFO data to produce a translation procedure between link-based and zone-based travel modelling**
    - Bus and slow modes modelling based on zonal modelling – rail partly so.

Basic idea- illustrated



SITLUM to SITM4 matrix conversion

- **Originally based on simply proportionating the flows based on area.**
- **Now based on population and employment estimates for each forecast year (from DELTA)**
- **Similar to that used in the Multi-modal studies for SE Manchester**

Uses for the interface

- **Transport schemes can be tested**
  - Network changes
  - Road user charging
  - Parking supply & charges
  - Public transport changes
  - Land use (educational, retail…)
- **Applications**
  - Strathclyde – to provide forecast year trip matrices for detailed SATURN Highway and TRIPS PT assignment
  - West Yorkshire – Base network an amalgam of two SATURN networks. Interface used to provide base network and alternative forecast networks for option testing within STM. Reverse facility not used at present.
    - Transfer of network data to the Urban Dynamic Model (UDM) land-use model

End of Presentation
Developing an interface between SATURN and land-use transportation model
SATURN User group

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