CITY SCIENCE
endless possibilities

THE PRODUCTIVITY IMPACT OF VERSION CONTROL

Laurence Oakes-Ash loa@cityscience.com

HAVE YOU EVER?

ROUTINE PROBLEMS FACING MODELLERS

- Had to manage large distributed teams working on a transport model?
- Made changes to a transport model and lost them?
- Lost track of all the assumptions that went into the latest version of a transport model?
- Wanted to prove that a particular change to a transport model stopped it converging?
- Had to maintain multiple versions of a model with different scenarios or assumptions?
- Wanted to see how much work is being done, and where, when and by whom?

CITY SCIENCE
endless possibilities

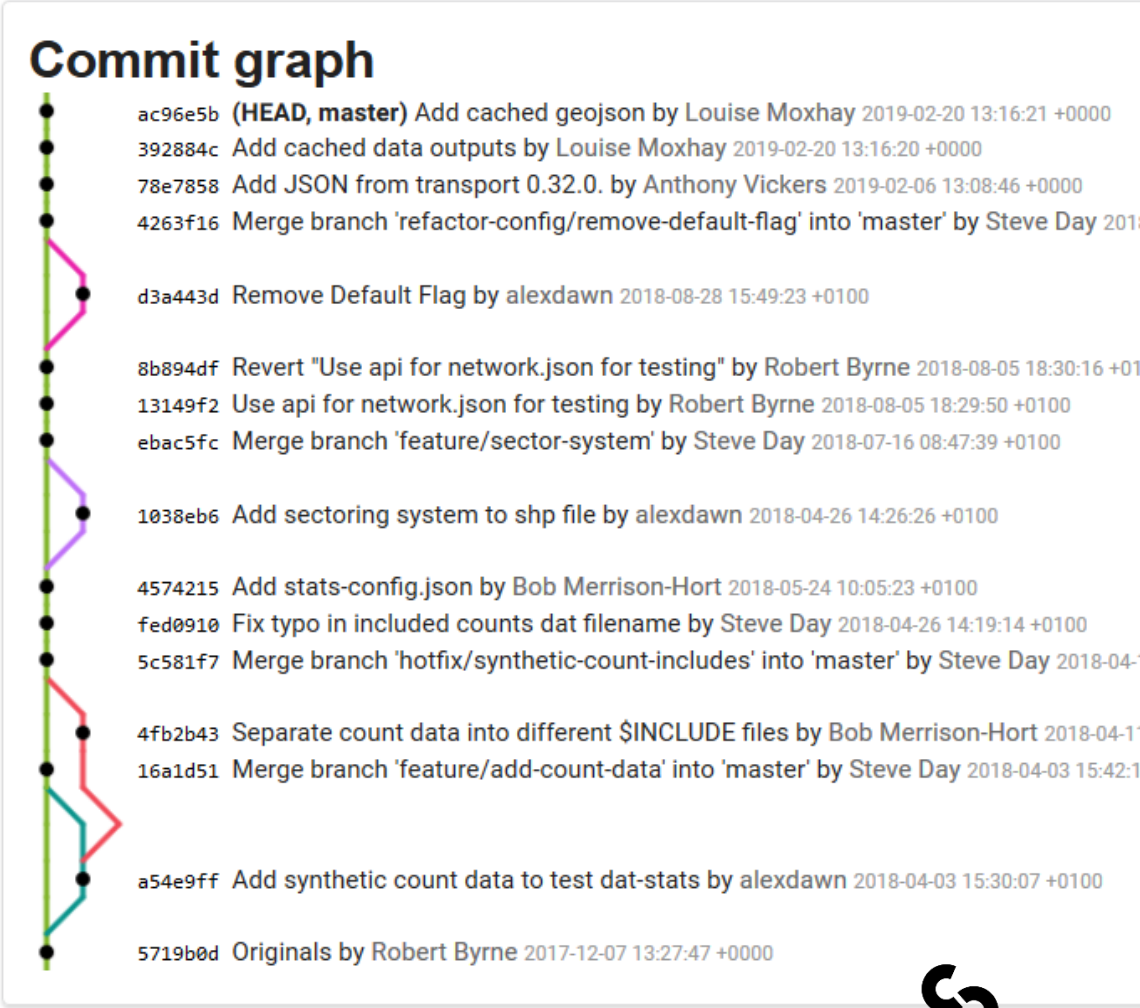
WHAT IS VERSION CONTROL?

ELECTRONIC VERSION MANAGEMENT SYSTEMS

Version control is a system that keeps track of every change to a file or set of files over time.

Users can see what's changed, when it changed and who changed it.

As a consequence Version Control enables multiple people work on the same files at the same time, with a clear process for validating and authorizing what changes are accepted.



CITY SCIENCE
endless possibilities

TRANSPORT MODEL CHANGES ARE DIFFICULT TO SEE

VERSIONS OF TRANSPORT MODELS ARE DIFFICULT TO PROCESS

What you often encounter

Nanaspartyv1.gif

Nanaspartyv1_simonsedits.gif

What's needed

CITY SCIENCE
endless possibilities

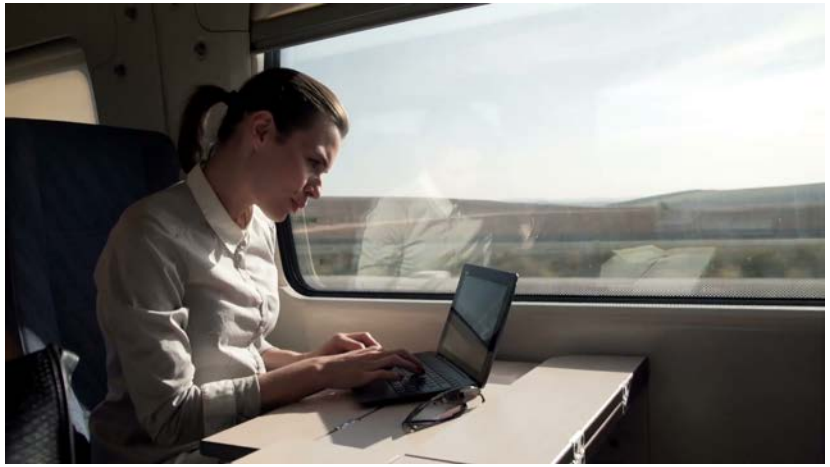
IMMEDIATE PRODUCTIVITY BENEFITS

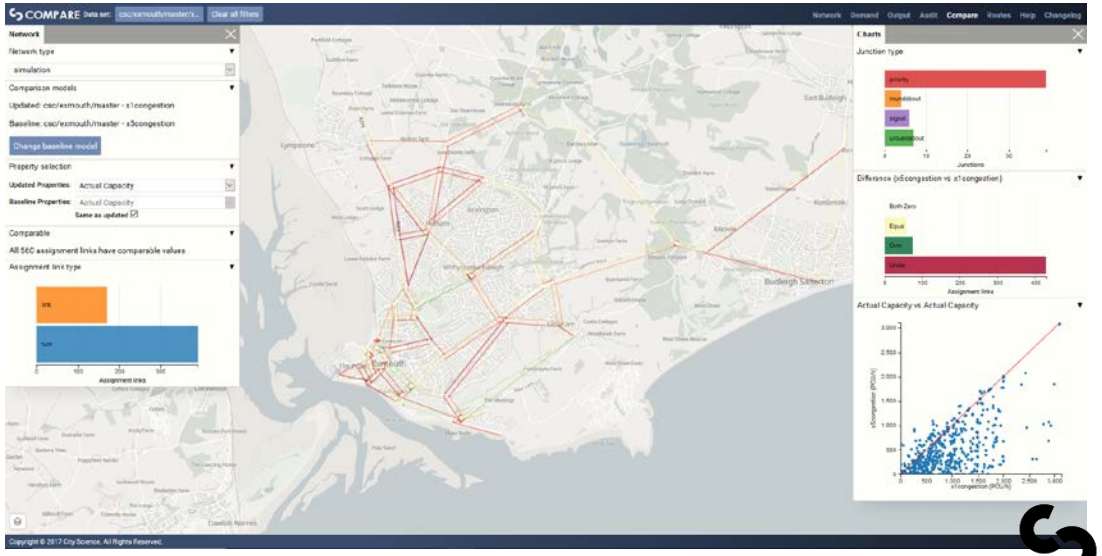
KEY BENEFITS OF USING A VERSION CONTROL SYSTEM

Distributed & Collaborative Working

System to Track All Changes to a Model

Quickly Identify What Has Changed & Why





CITY SCIENCE
endless possibilities

IMMEDIATE PRODUCTIVITY BENEFITS

KEY BENEFITS OF USING A VERSION CONTROL SYSTEM

Quickly Identify What Has Changed & Why

Change roundabout to signal

this junction was changed in late 2017, saturation has been recalculated
signal stages estmated, TODO: get actual timings

parent 22e8d39e demo/jct-change

Showing 1 changed file with 8 additions and 5 deletions

Hide whitespace changes | Inline | Side-by-side

Exemouth_Network.dat — View file @ f2dda7fa

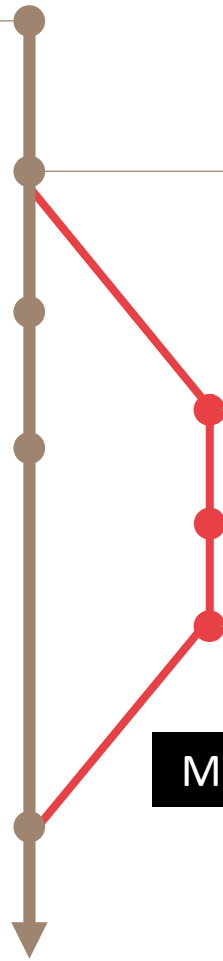
```
@@ -54,11 +54,14 @@
      1001    1   30   72 1100  1 1 1100  1 1
      1019    1   30  161 1100  1 1 1100  1 1
      1030    1   30  242 1100  1 1 1100  1 1
-1003    4    5   10 1600            23 *Single Lane Rbound
-     1030    1   30  463 1100  1 1 1100  1 1 1100  1 1
-     1021    1   30  639 1100  1 1 1100  1 1 1100  1 1
-     1012    1   30  593 1100  1 1 1100  1 1 1100  1 1
-     1011    1   30  189 1100  1 1 1100  1 1 1100  1 1
+1003    4    3    3    0   60   60
+     1030    1   30  463 1200  1 1 1500  1 1 1200  1 1
+     1021   F1   30  639 1200  1 1 1500  1 1 1290  1 1
+     1012    2   30  593 1500  1 1 1800  1 1 1500  2 2
+     1011    1   30  189 1200  1 1 1500  1 1 1200  1 1
+          25    5    4 1030    0 1012    0
+          10    5    2 1021    0
+          10    5    2 1011    0
  1004    3    2   10 1440            25 *Mini Rbound
      1062    1   30  452 1100  1 1 1100  1 1
      1011    1   30  112 1100  1 1 1100  1 1
```

CITY SCIENCE
endless possibilities

BRANCHING – HOW IT WORKS

SIMPLE INTRODUCTION TO THE BRANCHING PROCESS

Alice starts work on a new Transport Model for Victoria



Bob wants to add some saturation flows to update the junctions around Buckingham Palace… while on the train.

Version Control creates a new **branch** of the model in which Bob can make his changes

Bob is now happy with his changes and wants to send them to Alice for approval

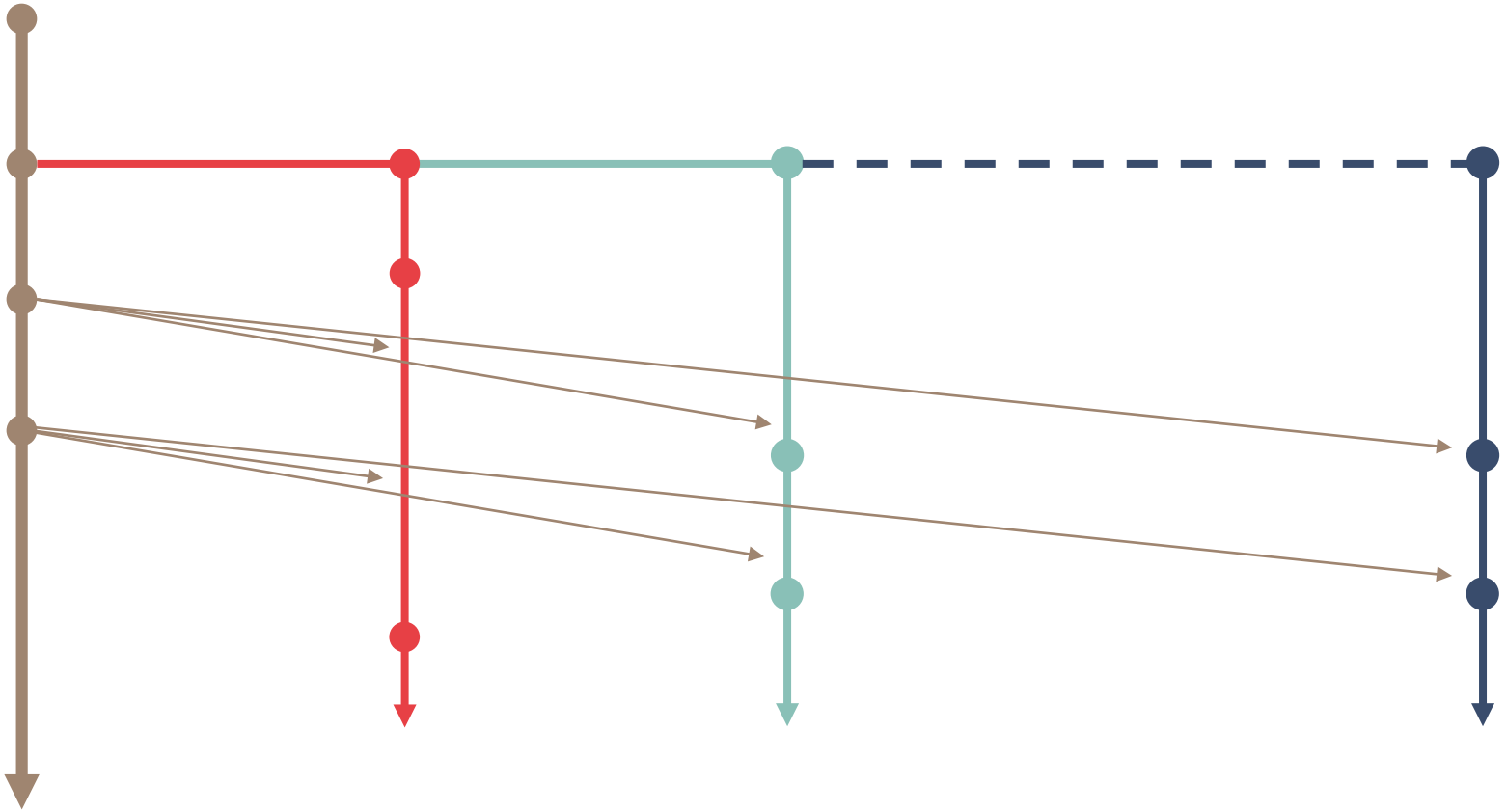
Merge Request

CITY SCIENCE
endless possibilities

BRANCHING – BENEFITS

ONCE BRANCHING IS ENABLED, SIGNIFICANT BENEFITS RESULT

Example 1: Managing Scenarios



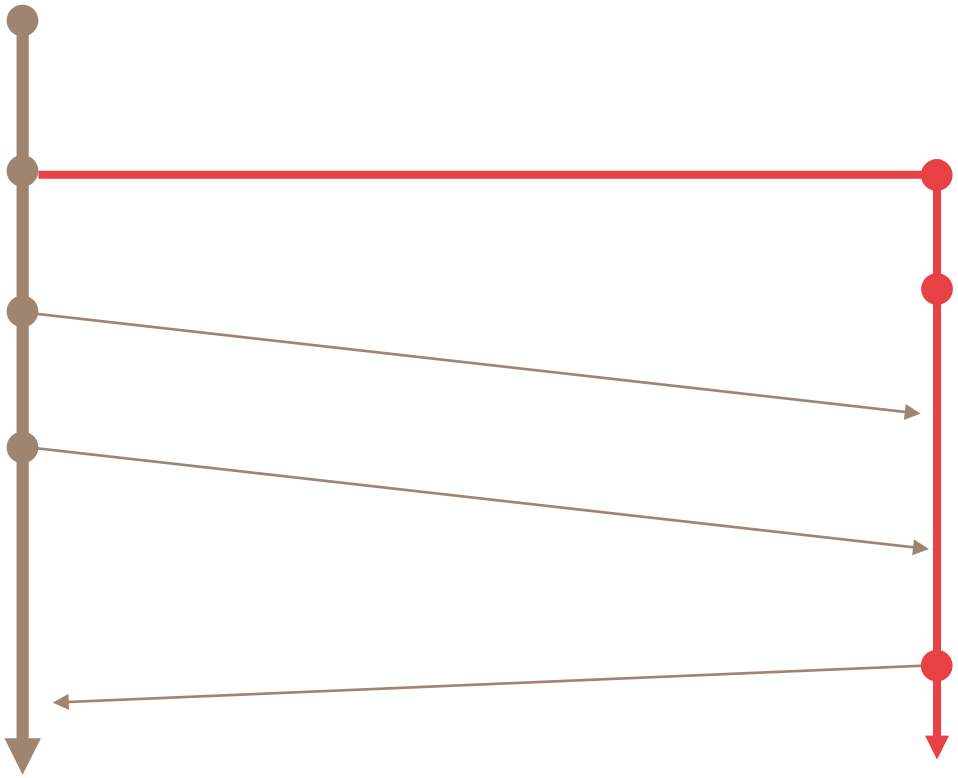
Base Year | Scheme 1 | Scheme 2 | Scenario N

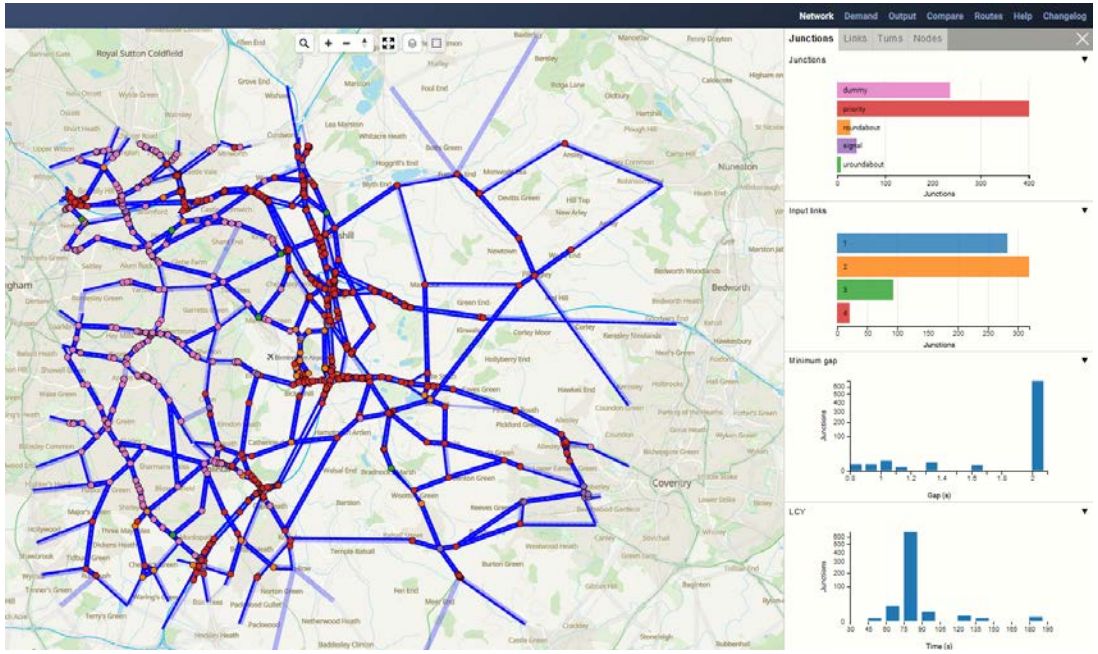
CITY SCIENCE
endless possibilities

BRANCHING – BENEFITS

ONCE BRANCHING IS ENABLED, SIGNIFICANT BENEFITS RESULT

Example 2: Reduced Model Build Effort





Highways England RTMs

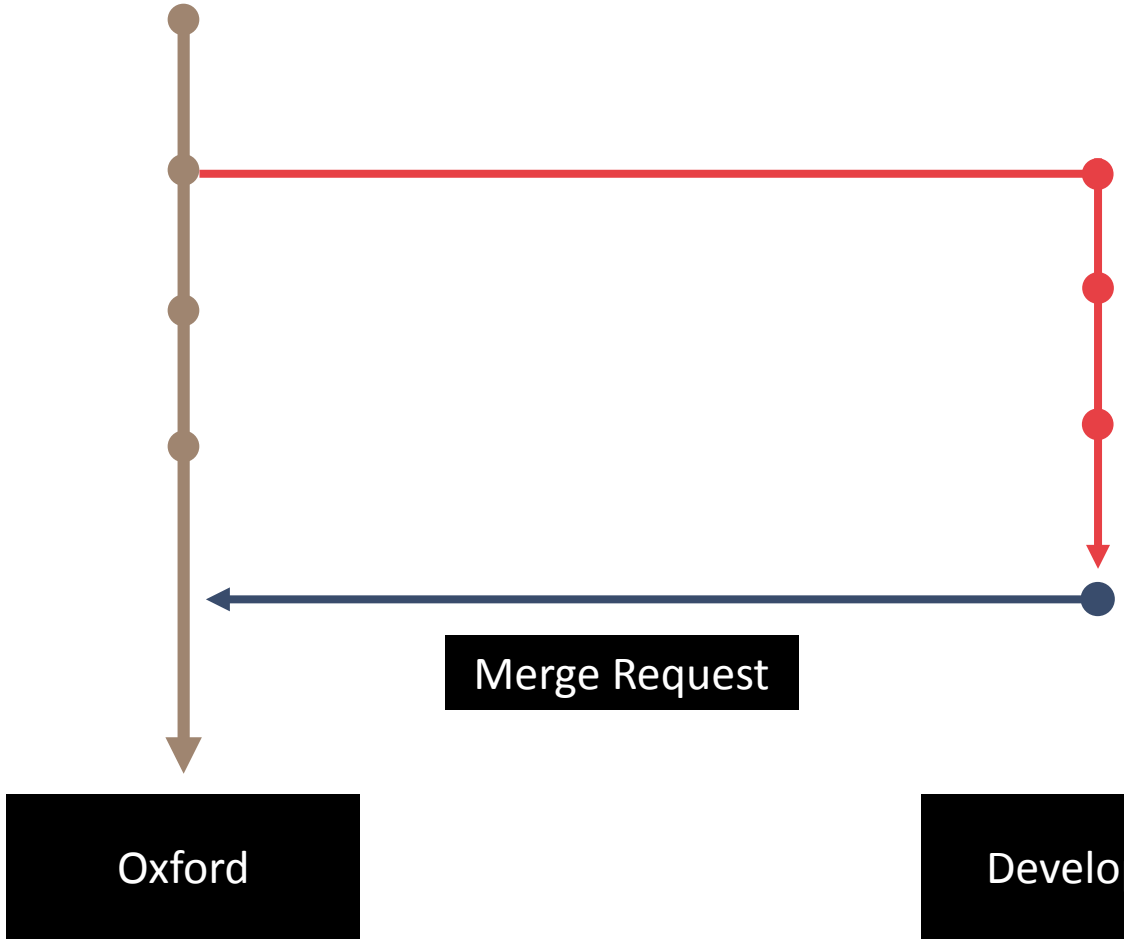
Midlands Connect?

CITY SCIENCE
endless possibilities

BRANCHING – BENEFITS

ONCE BRANCHING IS ENABLED, SIGNIFICANT BENEFITS RESULT

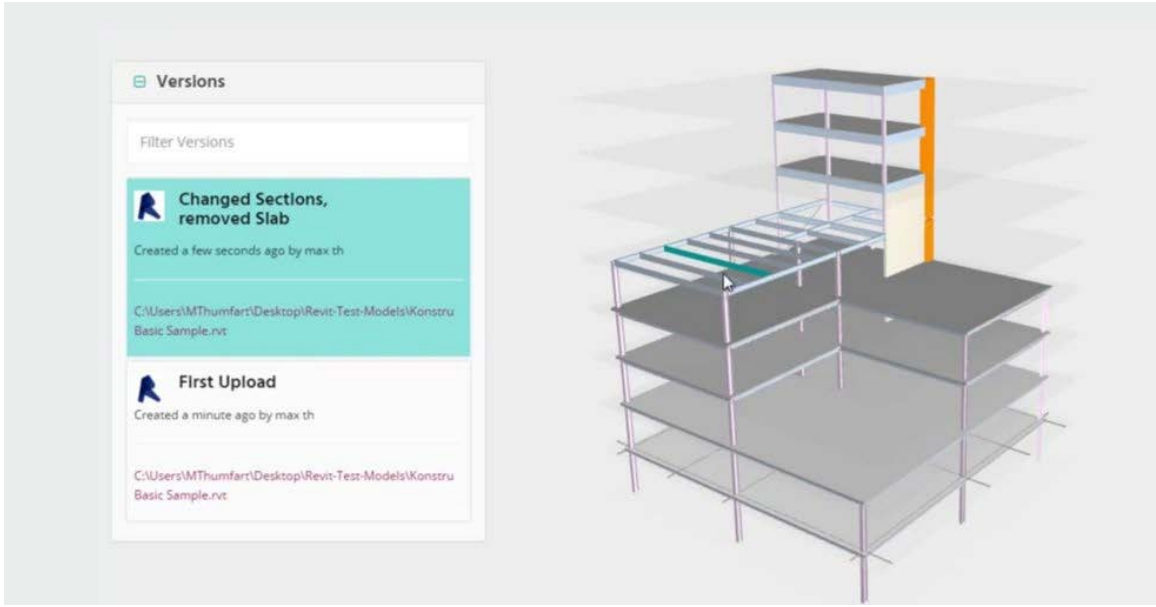
Example 3: Digitise the Planning Process

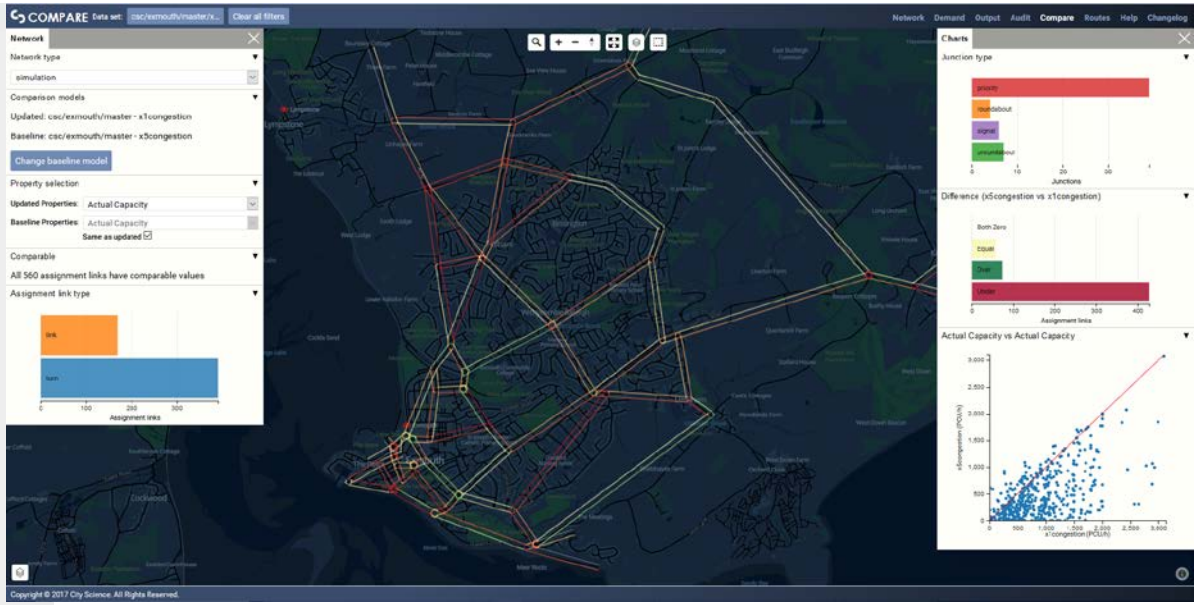


CITY SCIENCE
endless possibilities

ROLE IN DIGITAL TWINS & BIM

MANAGING CHANGES IS ESSENTIAL FOR DIGITAL TWINS





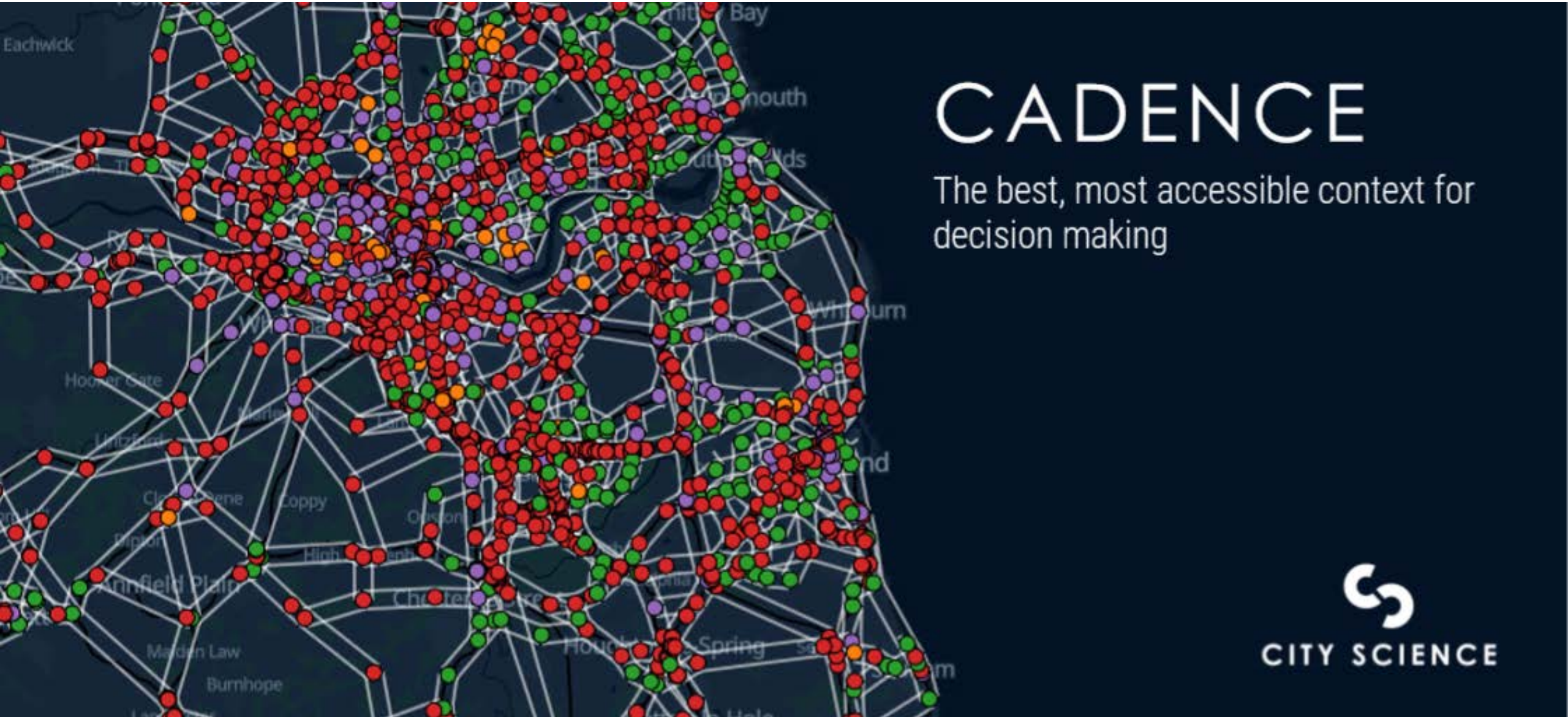
Assets in the Built Environment

Infrastructure Assets Geospatially

CITY SCIENCE
endless possibilities

CITY SCIENCE: CADENCE

VERSION CONTROL (& OTHER TOOLS) FOR TRANSPORT PROFESSIONALS



CITY SCIENCE

endless possibilities

THANK YOU