Active Travel England

The Active Travel Infrastructure Platform (ATIP)

Mapping proposed infrastructure to for a step change in walking, wheeling and cycling

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Abstract

ATIP is an open source web app initially developed in early 2023 to enable local transport planners to document, store and share geographic data on planned interventions. As of May 2023 ATIP provides an intuitive interface to quickly sketch the location of a wide range of interventions including:

- Linear infrastructure, including new routes, pavement widening and road diets projects
- Crossings, including new pelican, zebra and other types of crossings
- Area-wide traffic management schemes, including modal filters and boundaries

Users can also add describe their planned schemes with free test or ATE's taxonomy (in progress). ATIP is designed for ease-of-use. It makes drawing lines and polygons snapped to existing streets and paths easy with 'route snapper' functionality, a world first for polygons.

The talk will outline the thinking behind ATIP, how it's been used in ATE to collect, for the first time, detailed geographic data on schemes, and the roadmap towards ATIP becoming **a one stop shop for active travel infrastructure nationwide**. ATIP. Finally, the talk will cover the technology powering ATIP, including Svelte, MapLibre GL, Rust, WebAssembly, and OpenStreetMap and how to harness these tools for other projects.

Active Travel England's data needs

Distribute funding
- Overall quality of funding
- Inter-authority learning

Inspect infrastructure and plans
- Need for consistency in plans
- Dozens of file formats in use

Evidence for national policies
- Evidence on effectiveness to different types of intervention
- Requires monitoring

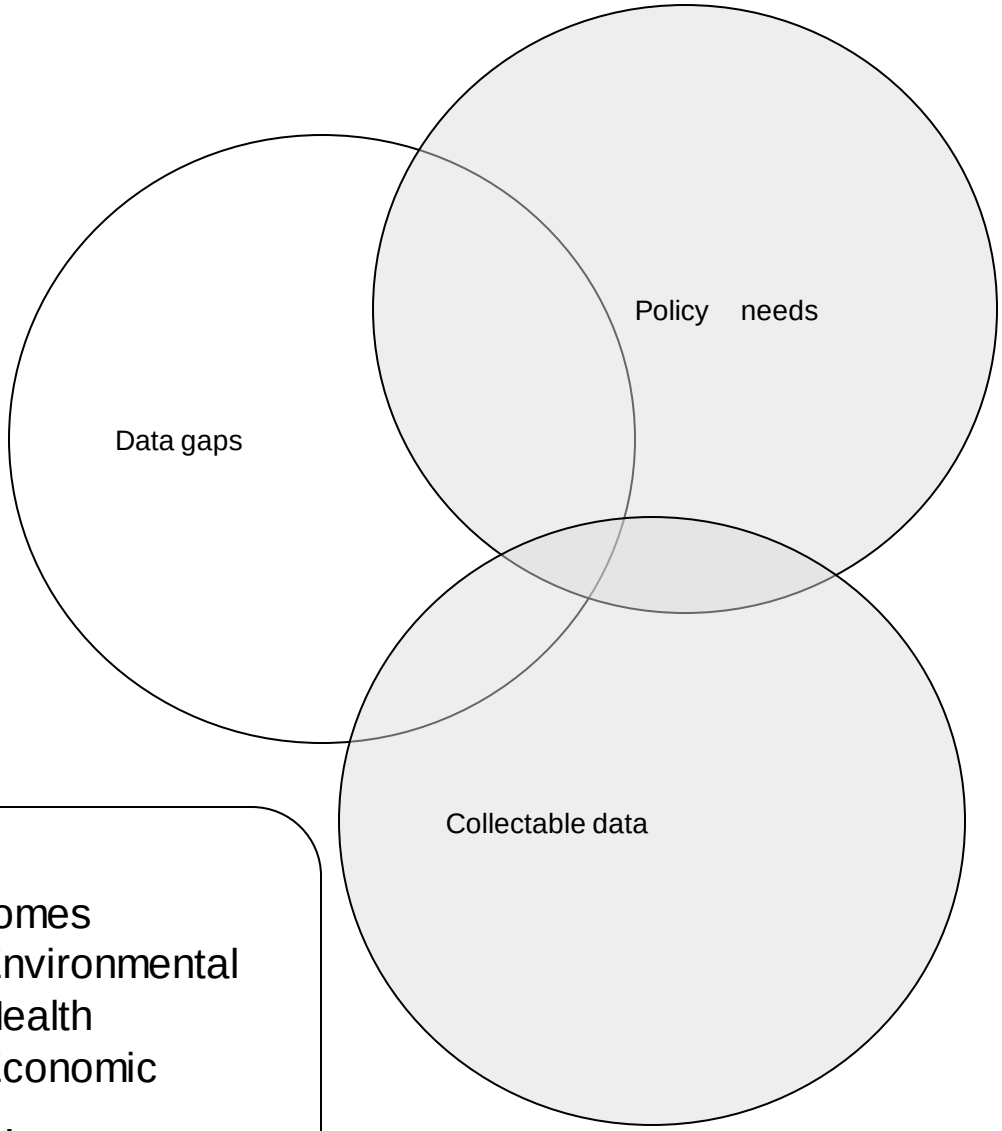
Statutory consultee in planning process
- Where are planned developments?
- Active travel potential
- Active travel provision

Source: Department for Transport. Gear change: A bold vision for cycling and walking. (2020).

Data gaps and policy needs

Behaviour data
- Travel survey data
- Preferences
- Movement data
  - GPS data
  - Point/area counts

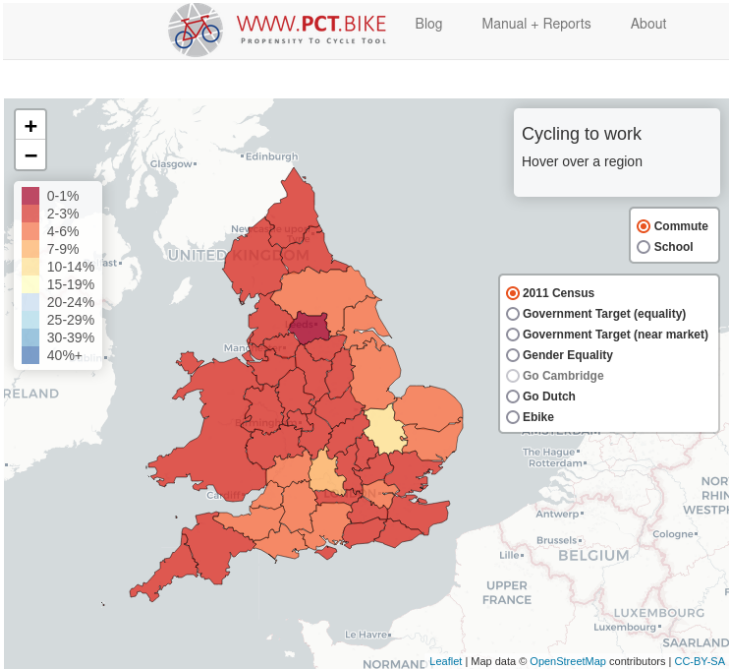
Infrastructure data
- Existing or (e.g. OSM/OS) **planned** infrastructure
- Geometries (space)
- Lifecycle (time)
  - Completion date
  - Planned infrastructure
  - Dates
- Attribute data
  - Infrastructure type



Outcomes
- Environmental
- Health
- Economic
- …

Landscape of pre-existing tools

- **AMAT: Excel tool for estimating benefits**
- **PCT: provides evidence but no design**
- **StreetMix: cross section tool, with no ability to design geographic detail**



Source: Propensity to Cycle Tool https://www.pct.bike/

Source: shareable, simple and **editable by anyone** representation of Scott Hall Road. Publicly available at https://streetmix.net/-/1981496

Open access tools
https://www.pct.bike/
https://actdev.cyipt.bike/
https://twitter.com/activetraveleng

Not reinventing the wheel
No tool to rule them all
Right tool for the job

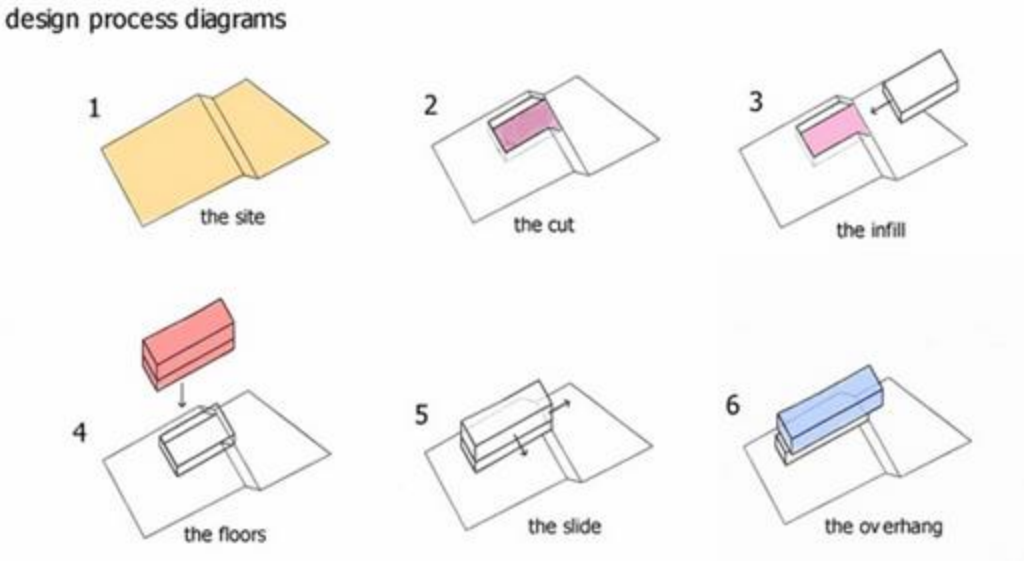
ATIP
Build with existing tools of the trade

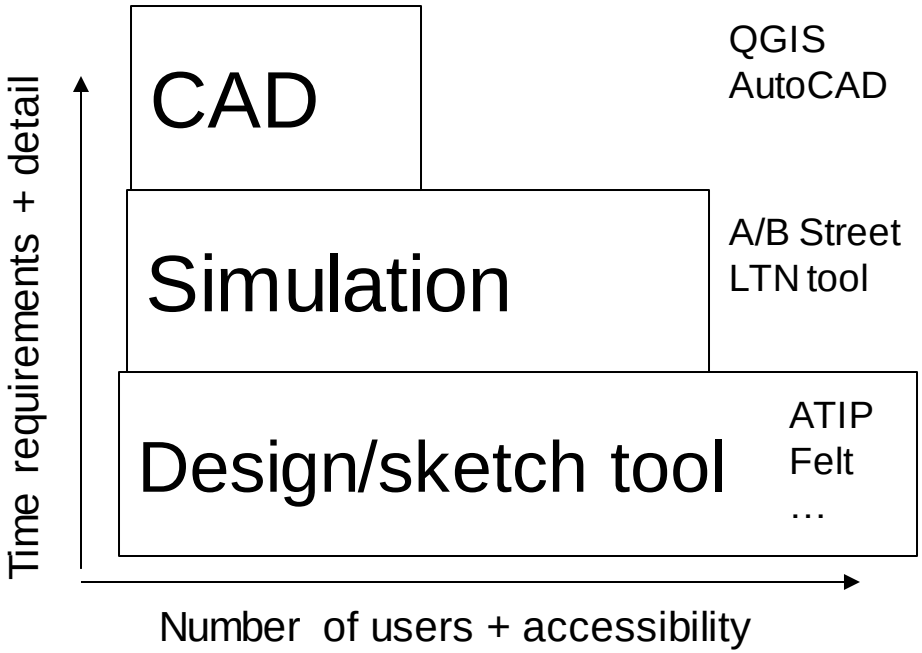
- StreetMix.net
- A/B Street
- Bikedata

Modularity and transparency

Community buy-in

- User input
- Co-creation
- Compelling, authoritative

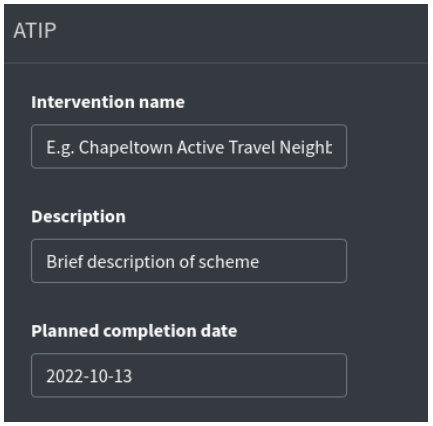


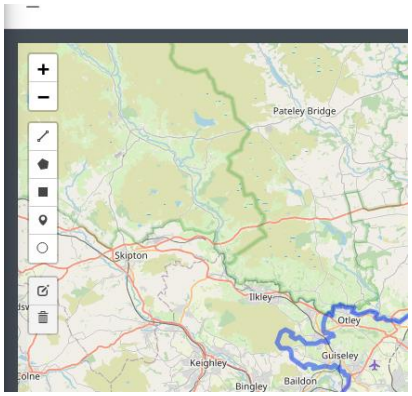


Introduction to ATIP

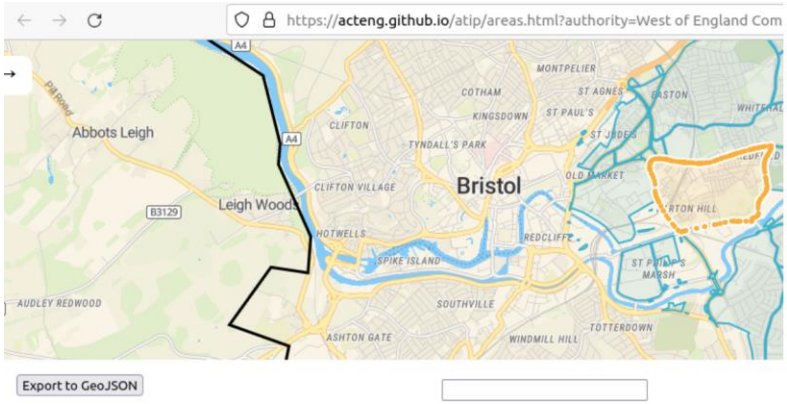
An early ATIP timeline

- Conversations with Active Travel England (ATE), Dustin and others: Early 2022
- Department for Transport roundtable on transport appraisal: 25th May 2022
- Secondment to ATE: September 2022
- ATIP name coined: ~October 2022
- Decision to ask **all** authorities to draw their interventions with **our** tool (credit: Brian Deegan): ~November 2022
- Submission to fund the ATI to work on ATIP submitted to the Minister: 1st December 2022
- Funding approved 13th December 2022





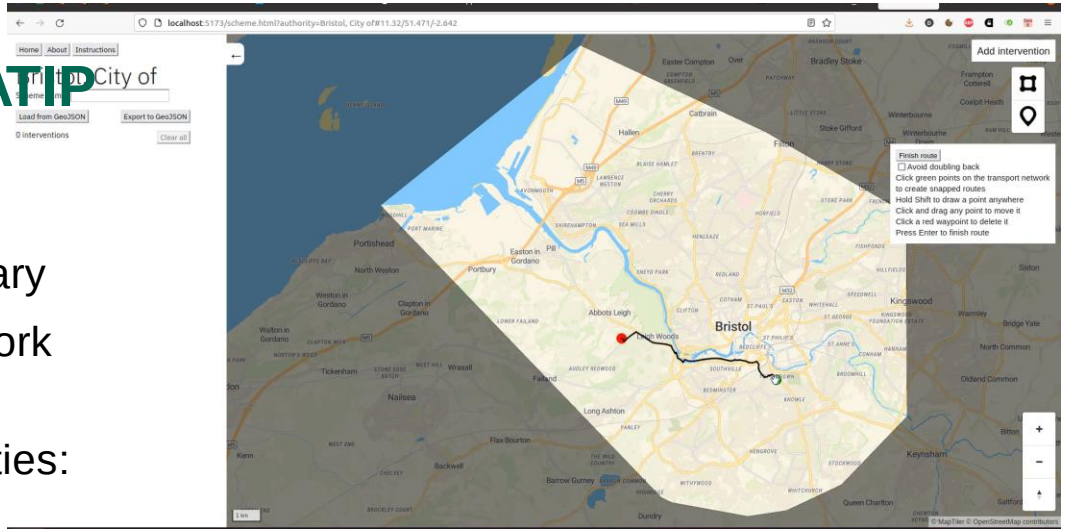
Early prototype of ATIP in shiny



Early prototype of ATIP in JavaScript

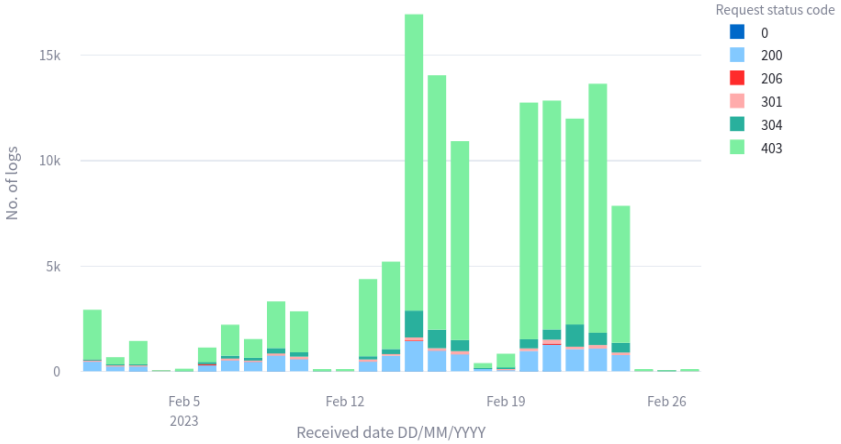
Open access tools
https://www.pct.bike/
https://actdev.cyipt.bike/
https://twitter.com/activetraveleng

How we've built and used ATIP

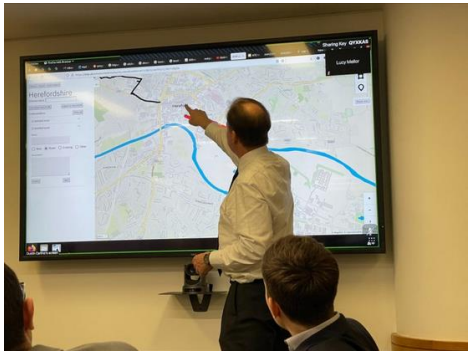


ATIP: from idea to data collection

- Killer feature 1: route snapper ~January
- Slicker landing page (but still more work to do) ~February
- Training session for transport authorities: mid February (credit: Alex Coleman)



Demo of new 'double back' functionality.
Source: github.com/acteng/atip



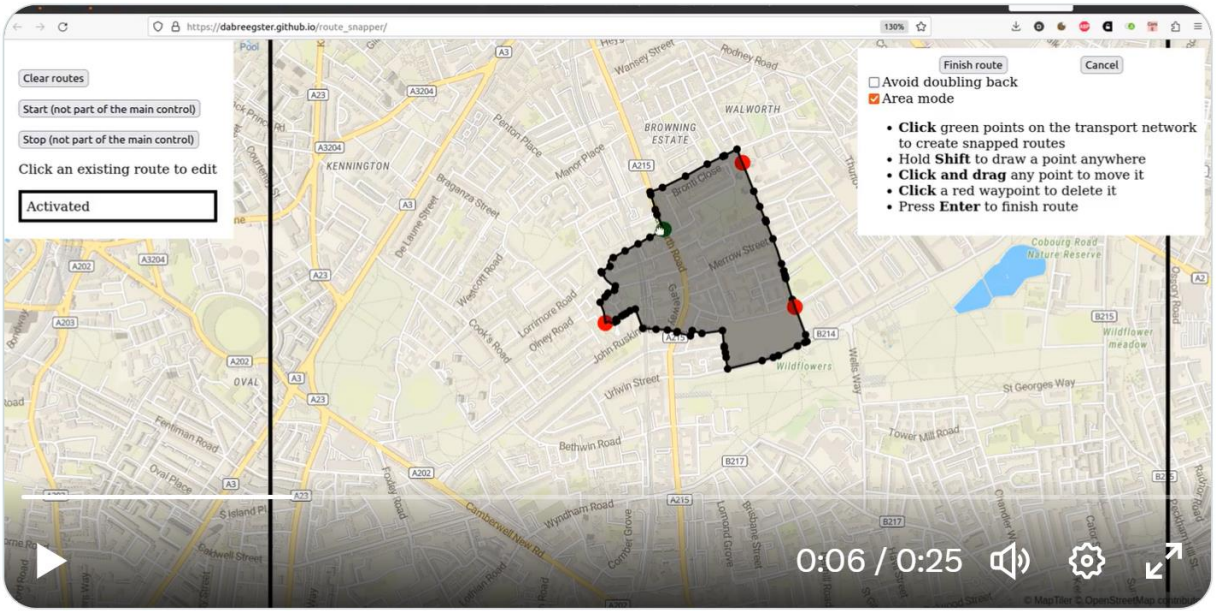
Ministerial visit to the ATI and Minister Norman testing the latest version of ATIP: 13th March

World first: open source tool to sketch polygons while snapping to road network

Source: https://twitter.com/CarlinoDustin/status/1651555058897625088

Dustin Carlino
@CarlinoDustin

Introducing the world's first? open source tool to sketch areas bounded by streets! Give it a shot at dabreegster.github.io/route_snapper/ and feedback at github.com/dabreegster/ro...
#openstreetmap #rust #wasm #gis

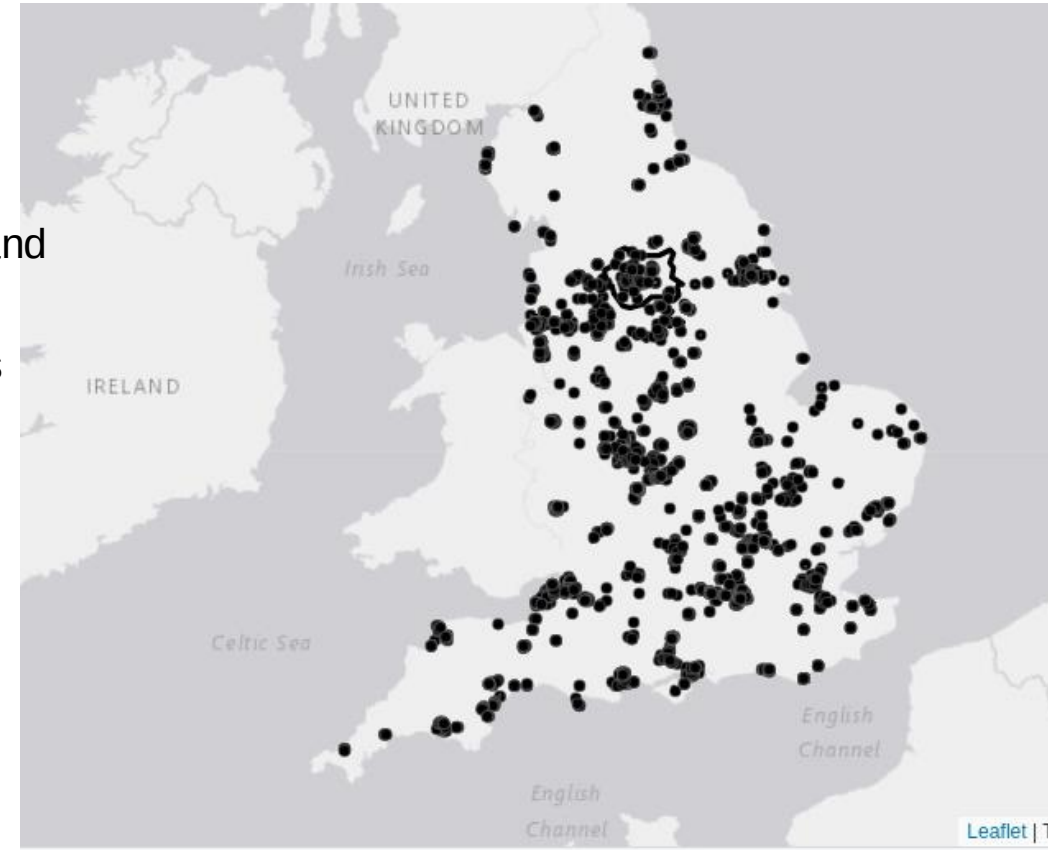


12:53 pm · 27 Apr 2023 · **98.5K** Views

111 Retweets **5** Quotes **772** Likes **341** Bookmarks

The impacts of ATIP (so far)

- We now know where schemes are
- Inspectors have a baseline for remote and on site inspections
- Reduced friction between different parts of the transport planning process
- We can do additional analysis, e.g. to identify all schemes in proximity to schools

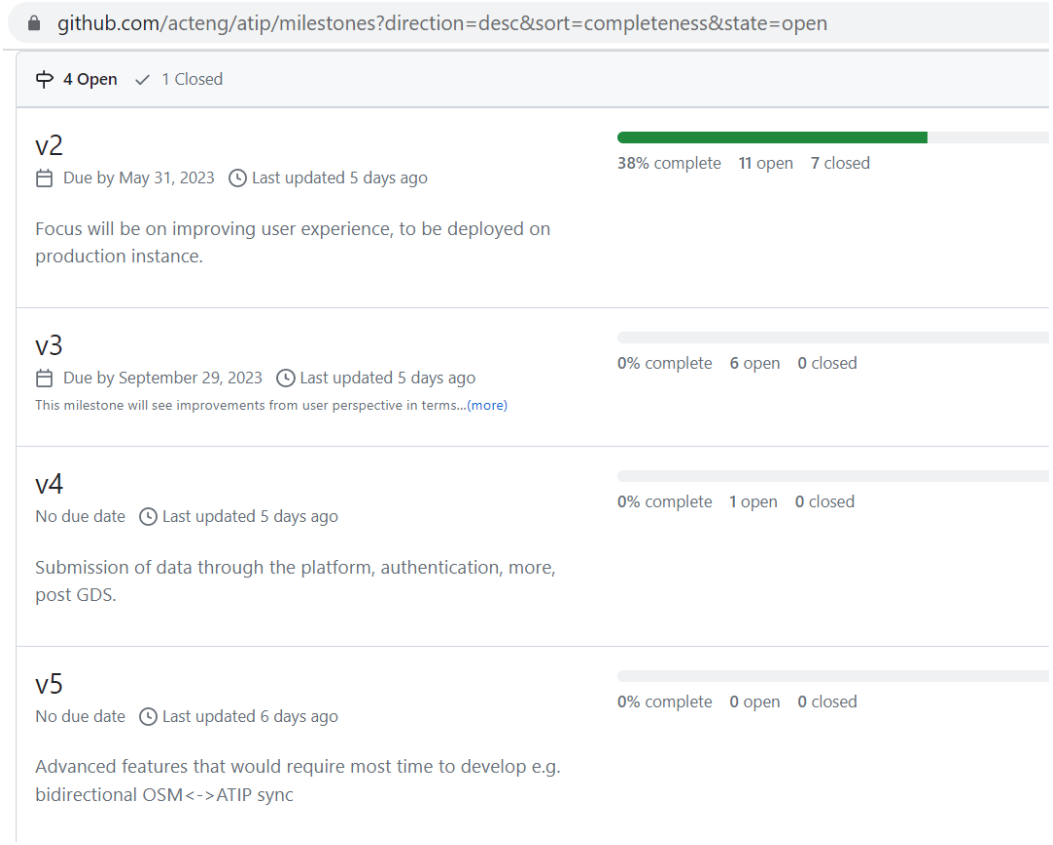


"The inspections team at Active Travel England used ATIP to quickly determine location, context and whether the correct approach was being taken with the proposed scheme assets. Furthermore, ATIP gave the team a chance to assess network cohesion across multiple government programmes and compliance with LCWIP (Local Cycling and Walking Infrastructure Plan) priorities."
Brian Deegan, Director of Inspections, Active Travel England

Features + roadmap ideas

- v1: Sketch where interventions planned ✓
- v2: Polished UI (June)
  - Contextual data
- v3: Schema integration (September)

- V4+ features:
  - GDS compliance
  - Authentication
  - Auto real-time evaluation + guidance
  - OSM integration
  - Not necessarily in this order…



Details: publicly available issue tracker (comments welcome): https://github.com/acteng/atip/milestones?direction=desc&sort=completeness&state=open

Shared schemas -> shared language

Source: Tait et al. (2022)

Full segregation
Cycle lane is physically separated from main carriageway, usually using a continuous or near continuous kerb or island.

Stepped
Cycle lane is vertically separated at a level between the carriageway and footway.

Part segregation
Cycle lane is delineated using intermittent objects such as planters, wands or bollards.

Mandatory cycle lane
Cycle lane delineated using continuous painted white line and motor vehicles prohibited within it.

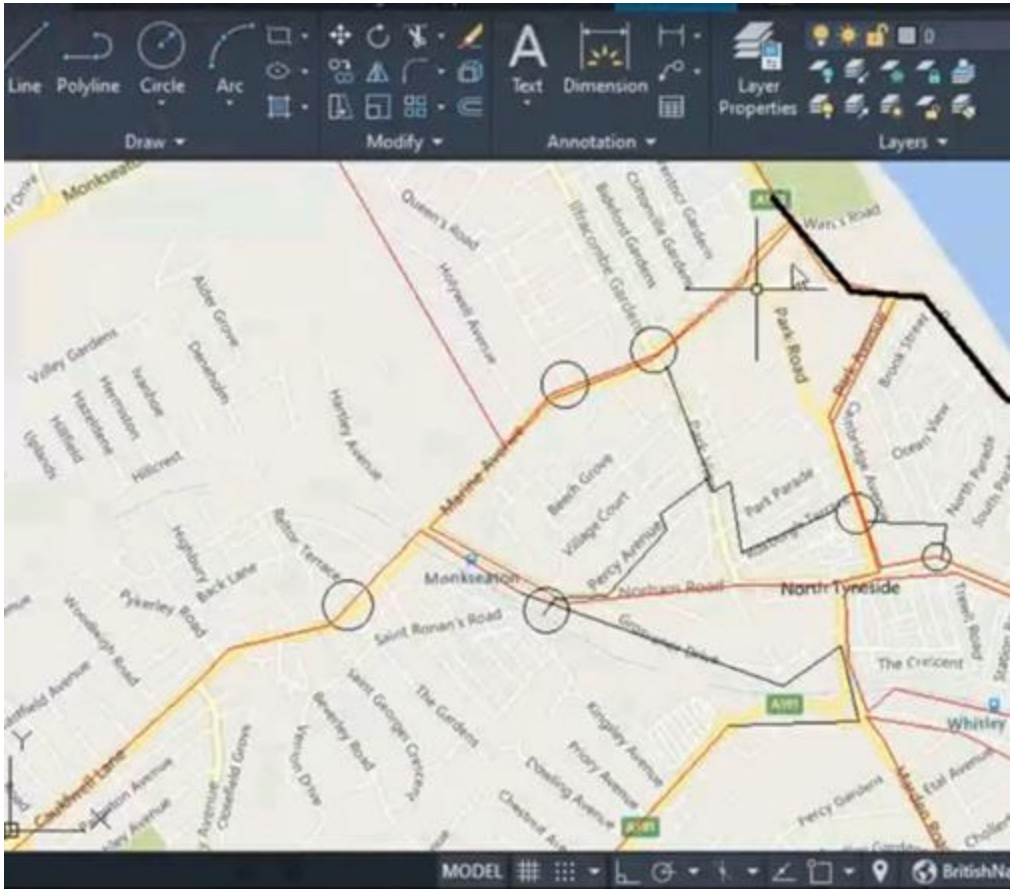
Advisory cycle lane
Cycle lane delineated using intermittent painted white line but no prohibition for other vehicles.

No separation
CID cycle lane does not have any of the separation characteristics

Fig. 1. Categorisation of CID on-road cycle lane separation from motor vehicles (images taken from TfL, 2019b).

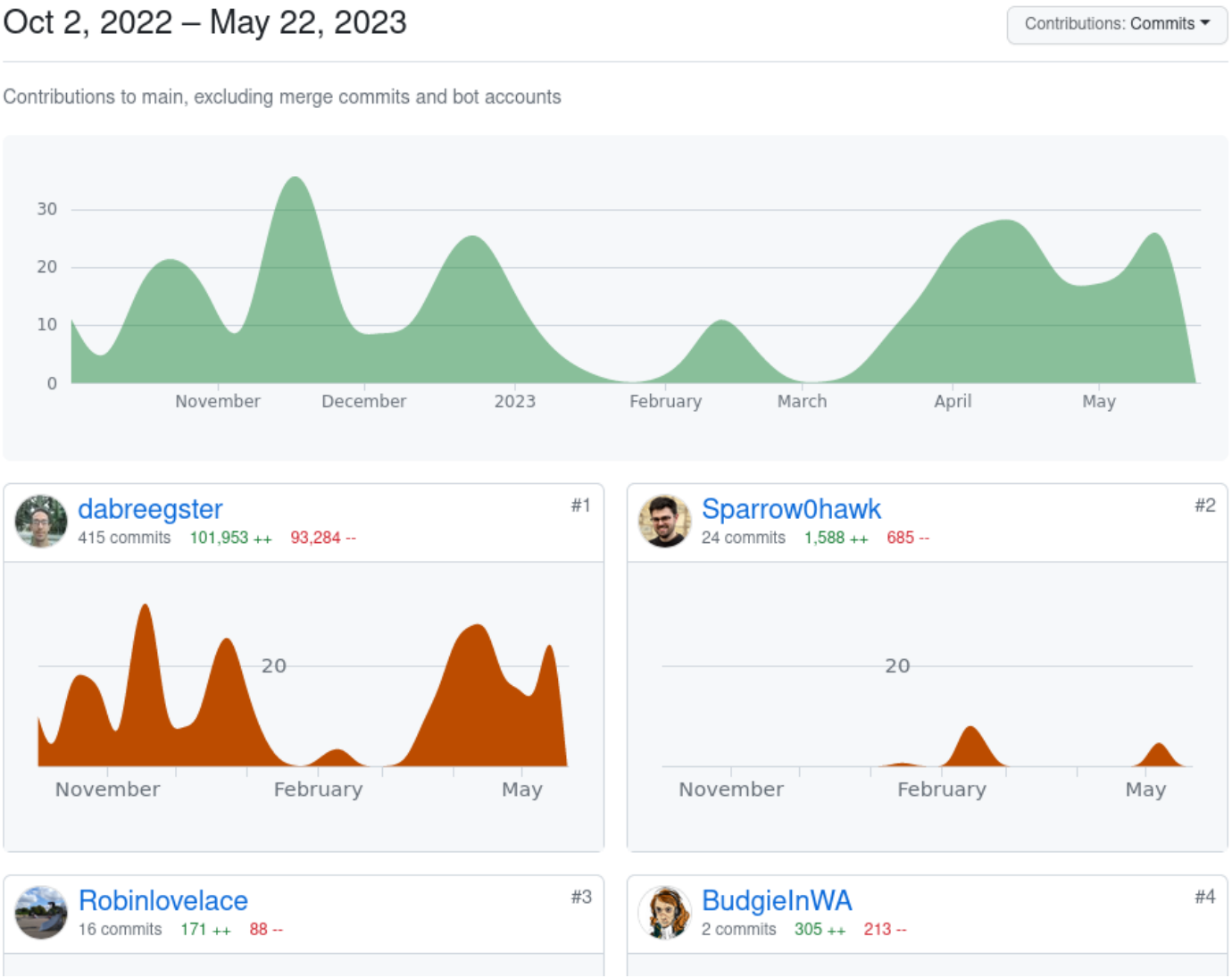
Simplicity + speed vs complexity + detail

Source: shareable, simple and **editable by anyone** representation of Scott Hall Road. Publicly available at https://streetmix.net/-/1981496



Source: AutoCAD, shown in Brian Deegan's Low Traffic Neighbourhood (LTN) design surgery – live design and advice workshop. Publicly available on YouTube: https://youtu.be/pHucS2F33W8

The tech stack: over to Dustin Carlino, creator of A/B Street traffic simulation software, Rust expert, and Lead Developer of ATIP



Source: https://github.com/acteng/atip/graphs/contributors

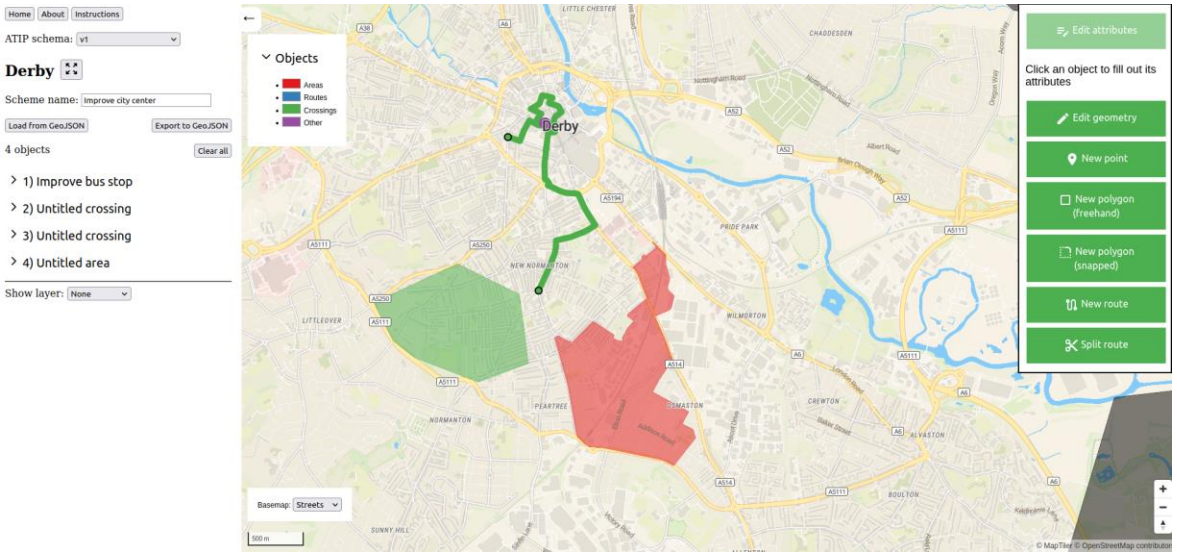
How ATIP works

A standard web map

- MapLibre GL, using MapTiler data
- Svelte and TypeScript

With some specializations:

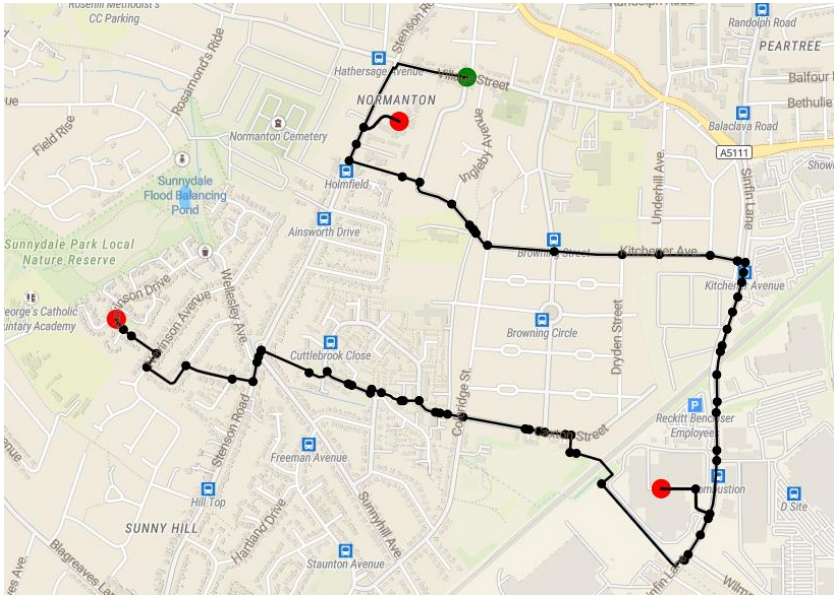
- Tools for drawing routes, areas, crossings
- Data entry about these interventions
- Contextual layers and automated analysis



Drawing on the map

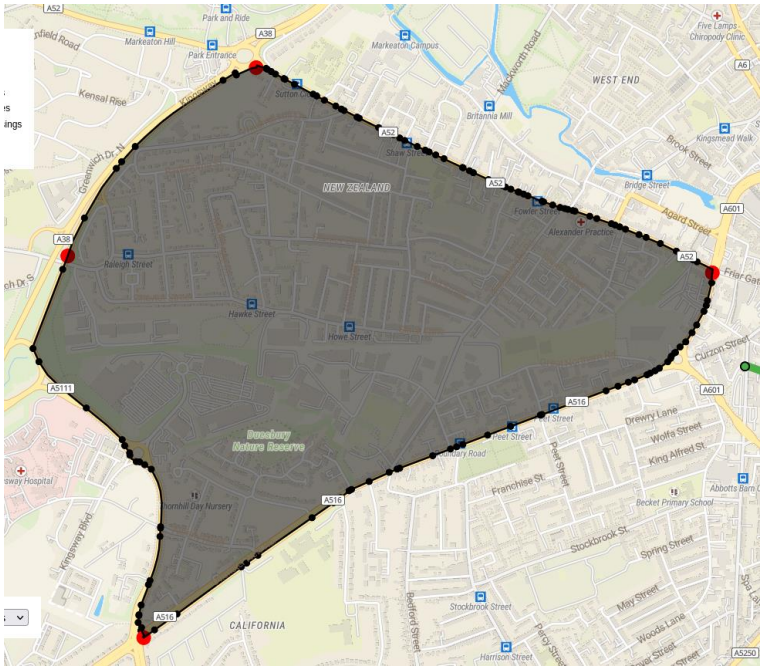
Current tools

- Freehand points, polygons, and line-strings
- Snapping routes and polygons to existing roads & paths
  - Dragging waypoints to adjust
- Splitting routes



How?

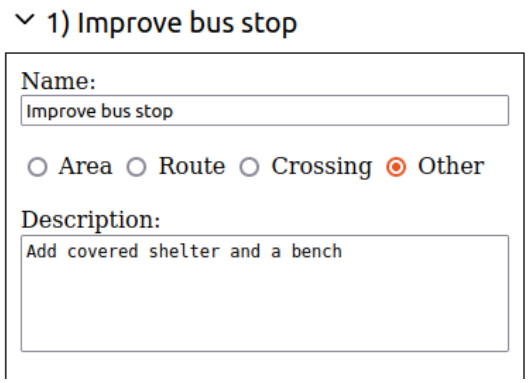
- Originally mapbox-gl-draw
- Moved to custom Svelte components
- Load a custom file per area, use for local routing
  - Built from OpenStreetMap data and osm2streets

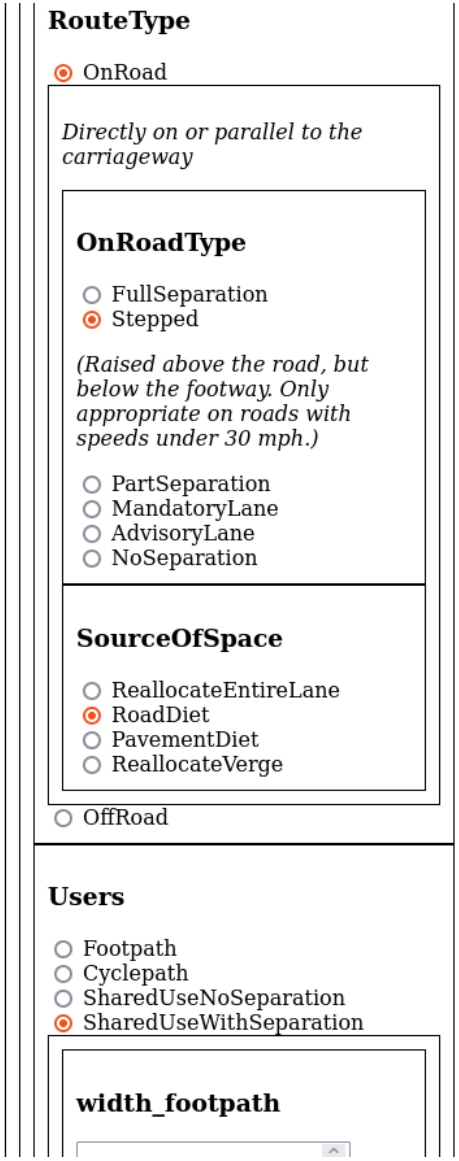


Generic data entry

What properties do objects on the map have?

- Express everything as standard GeoJSON
- Auto-save to browser local storage, import/export files
- Describe a schema, then:
  - Auto-generate a form for the user to fill it out
  - Auto-generate TypeScript types
- 4 schemas today, all in progress





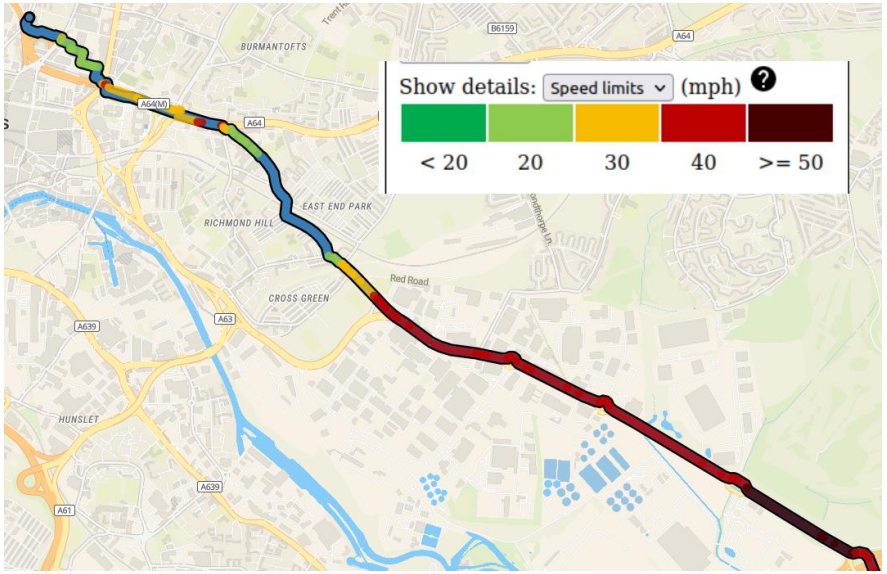
Contextual data

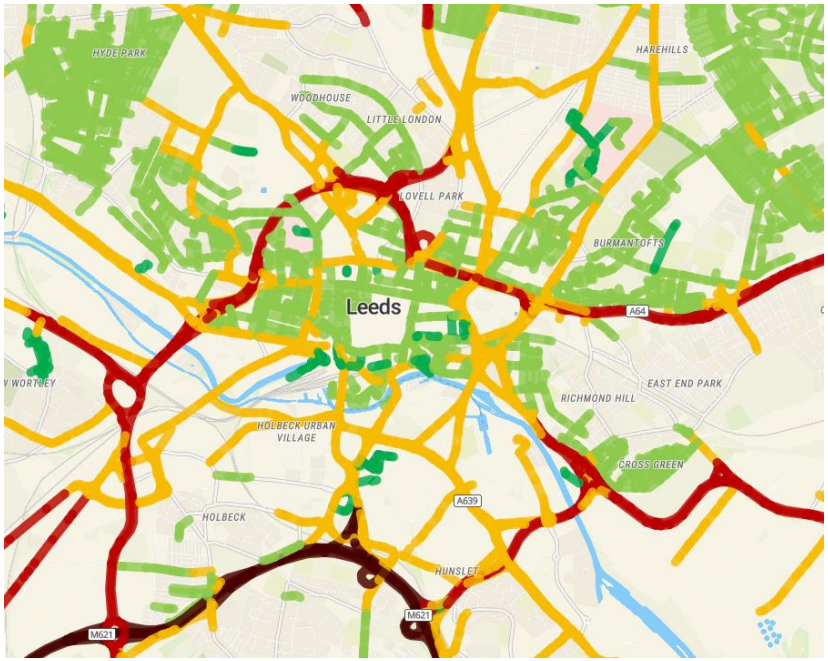
What's important to consider when designing or assessing a scheme?

- What's the current speed limit along this route?
- How wide is the road today? Where are the pinch points?
- Who lives within a 5 minute walk of the new crossing? What schools, shops, healthcare facilities are nearby?
- How does the mesh density or porosity of the area look today? How will the intervention change it?

How?

- OpenStreetMap data cleaned and processed by osm2streets, queried locally in-browser



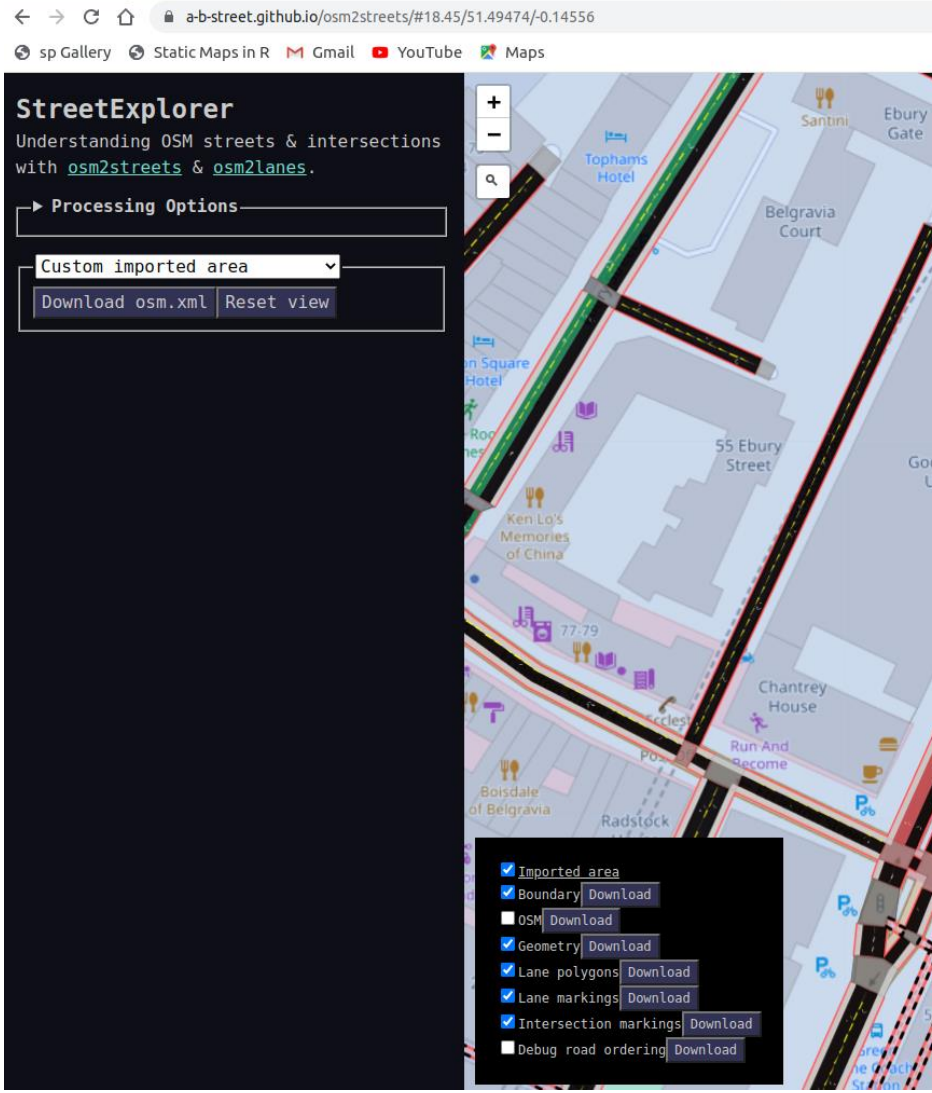


Possible next steps for v3 (around September) + beyond

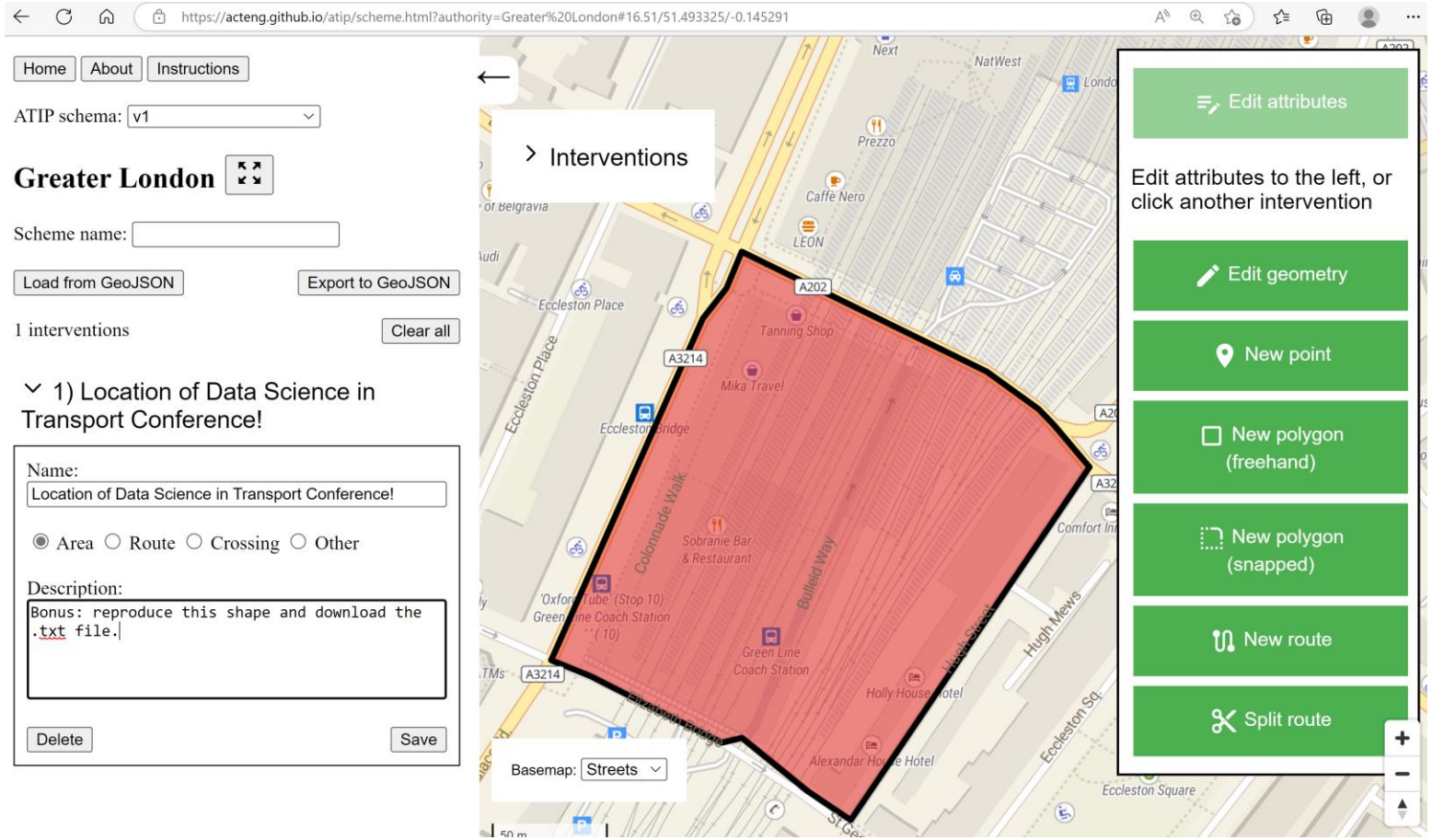
- More contextual data
- Assessment while you draw
- Understand existing infrastructure (and improve upstream OpenStreetMap data)
- Communicate about schemes through ATIP and the cloud (v4)

Try it out or get involved!

- https://acteng.github.io/atip/
- dcarlino@turing.ac.uk



A call to action



- **Please try dev version of ATIP: acteng.github.io/atip**
- **Check our issue tracker, any comments/suggestions/stars welcome** acteng/atip: Active Travel Intervention Platform (github.com) ☆

Thanks

Credit: https://carboncopy.eco/initiatives/connecting-leeds

Get in touch: https://github.com/acteng/atip

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Active Travel England

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gov.uk/government/organisations/active-travel-england