

Cyclescape: GeoVation funding: final report

1. Summary of the innovation and goals of the work undertaken with Geovation funding

Cyclescape - <http://www.cyclescape.org/> - is a web-based toolkit to enable campaigners to gather, discuss and make best use of dispersed knowledge about cycling problems, within the specific context of local groups.

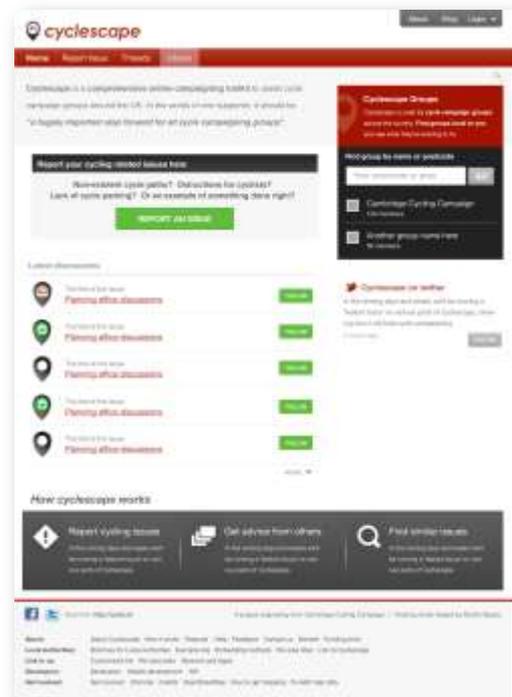
People can report problems they face on the street/path network via the website. These issues appear on the map as locations that local groups will pick up. Subscribers are automatically informed of new issues that coincide with the places they cycle (having 'drawn' these on the map).

Groups can discuss any issue in a variety of ways, pull in best practice, add in contextual information (e.g. planning applications), prioritise issues, and turn them into well-researched proposals that can be discussed with, and implemented by, Local Authorities.

The toolkit will help facilitate the work of these groups, enable much easier sharing of information, and provide a range of tools that make clearer the problems that cyclists face, all in a delegated manner that reduces the barriers for getting new people involved.

Outcomes are:

- Fundamentally, increased resolution of problems on the street/path network and therefore an improved cycling environment, meaning:
 1. The removal of barriers that stop people starting to cycle for everyday journeys;
 2. Safer cycling for those who already cycle;
- The development of long-term institutional capacity of (under-resourced, volunteer-run) local campaign groups;
- Reduction in workload, and more focussed, effective input from interested volunteers;
- Increased involvement of local people;
- Improved and better-organised working practices through access to a new tool to help them manage the deluge of cycling problems that they get told about or wish to see resolved;
- Improved working relationships between campaign groups and Local Authorities, thus reducing the need for objections at a late stage to planning applications and transport proposals;
- Increased ability for Local Authorities to justify central government investment;
- Increased reporting of network problems.



2. Description of the work carried out

Significant amounts of preparatory work were undertaken at the start of the project following the confirmation of the funding.

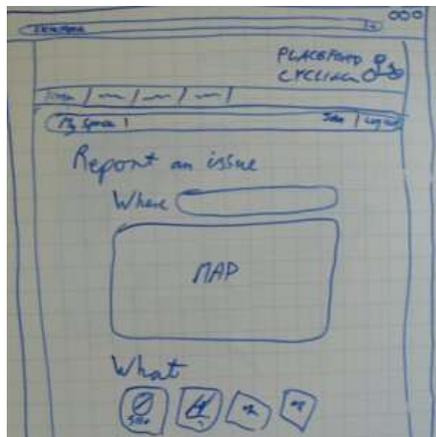
The first activity was the drawing-up of a technical specification, which became a long and detailed document but which continued throughout the project to be very useful. This involved much liaison with multiple stakeholders and future users of the site, and four initial iterations. The fundamental principles of the system, and its features as proposed during the bidding process were not significantly changed, but assumptions about implementation in more detail led to useful revisions and review. The spec was published online and kept updated.

The second preparatory activity was the selection of technology, a process which delayed by two months the start of the coding work, but was again an important stage that went on to determine many aspects of the remainder of the project. Four technical options were proposed, with two options finally shortlisted, namely use of (i) Ruby on Rails with the PostgreSQL database, or (ii) PHP plus PostgreSQL using object-orientated techniques.

Ruby on Rails, the chosen technology, is a framework designed for rapid prototyping and creation of websites much in line with our proposals. It is known for being robust, quick for prototyping, a strong emphasis on well-tested code, and having good support for many common web application scenarios. Its downside is a smaller developer base than our second option, using PHP. The other key downside has been that our original intention for the project, namely extending the existing CycleStreets Photomap codebase, had to be dropped.

In the end, the robustness of Ruby on Rails, and its almost-guaranteed result of a solid codebase, won out in this argument. However, the more specialised nature of Ruby on Rails has meant that development costs have been higher than anticipated, and developer availability has been more limited. Furthermore, the relatively long period of time it takes to learn Rails has meant that internal CycleStreets development resources have not been available, meaning that significant periods of additional work have required paying contractors who are, nonetheless, excellent specialists, and therefore finding funding for this.

The work on the spec and the selection of technology led onto selection of developers. A pair of Rails developers, one of whom had specialist knowledge of the required advanced mapping techniques, were selected fairly quickly. Throughout the development period, the developers worked together well, with a good programming process in place, and made good progress.



An intensive, two-day period of spec development and scrutiny began the coding phase. Many parts of the spec were clarified and improved, and the result was that the spec provided an excellent point of reference whenever things were unclear in the months that followed.

The developers worked solidly for several months. Development proceeded satisfactorily. Internal funding of £5k of funding from other CycleStreets projects was allocated for an extra period of time to cover December. This brought the project to an alpha release at the end of January. Although this was a later than hoped, it was clear many of the building blocks of the site were solidly in place.

Design work was commissioned from Supercool, an agency based in Birmingham after seeking tenders. A process was put in place to enable their design work to be integrated in a way that was reasonably efficient despite the main site's coding work proceeding rapidly.

Automated testing has remained a strong feature of the development process. There are over 600 automated tests in place, meaning that the risk of breakage or insecure changes to the system during further development is low. There is also automated reporting in place. The time requirement for implementing testing was not budgeted for, but the long-term benefits of this are clear.



Similarly, internationalisation of the codebase has been built in from the start. This work entails ensuring all the pieces of labelling of text around the site are in one place, so that they can be easily translated or repurposed for a usage other than cycle campaigning. Again this means slower initial development but opens significant potential for future opportunities (as discussed later in this report).

A name and brand, Cyclescape, was chosen after much deliberation and consultation. We wanted a name that made clear the theme of 'fixing the landscape of



cycling', with the clear geographical connotations associated with this. Three names (from 70 suggestions) were shortlisted, but options then became subject to availability from domain name hoarders, with an eventual cost of £1,000 after careful and researched negotiation.

As of the January alpha point, many the features were in place, but, with little polish, the question of unleashing users onto the site was a problematic one. On the one hand, getting users starting use of the site was important as funding was becoming tight but, on the other hand, the unfinished state of the site would disillusion users who would run into known bugs and incomplete work. This is a typical situation with software projects that take longer to complete than expected. In the event, the need to ensure continued momentum of the project meant getting users in, though with much expectation-management in place.

Further internal funding of £8k was also assigned from other CycleStreets funds after much discussion. The funding difficulties meant that by about March, development had slowed to a trickle, but the site had got to an early beta phase with the main testing group, Cambridge Cycling Campaign's main campaigners using the site as a complete replacement for their nearest equivalent system, a bog-standard mailing list (a form of technology whose well-known and much-suffered flaws Cyclescape has always aimed to overcome).

Users did encounter many problems, almost all known-about in advance, and in these initial months they encountered problems that they just-about coped with. This period identified useful usage patterns, and this informed subsequent iteration work.

Usability testing and user feedback was ongoing through Q1 of 2012, ensuring that scarce development resources were continuing to be used in an effective manner.

With internal funding now pushed to the limit, GeoVation was formally approached to see whether additional resources of £5k-10k could be obtained. This approach failed, for entirely reasonable reasons, but it did mean that the progress of the project was now very slow.

However, in March, funding of £5k for some Cambridge-specific functionality of the site (work for which was not anticipated to be funded by the main GeoVation funding award) was obtained and confirmed from a local funder. The functionality concerned, for the Cambridge group, required underlying changes to the system to be made to support this new functionality, and this provided a useful step forward in confidence of the system by users.

With a further £2k of newly-available funds from other CycleStreets work for some tidying and feature completion, this has brought the project to a stage now where the site is almost ready for wider usage. The site will be formally launched at the main Cyclenation cycle campaigning conference in October, and groups are being added to the system on a by-request basis. A 'beta guide', to guide users through known unfinished areas, has been created, and this is being shortened as each of these remaining areas fall into place. Some design work is not yet fully-integrated, but this will be done as resources permit. 2-3 weeks of work now will take us to a launchable state, and 2-3 months' worth of work will ensure much greater user satisfaction.

The codebase is solid and featureful, and it has proven robust in usage. The system is in a very good state for additional innovation to take place as user demands come forward.



3. Summary of the outcomes/outputs of the work

As of end-July, the site is at a late beta stage, with most features in place and usage heavy by those registered on the site. It is clear that this is going to be an innovation that is actually used and that it will genuinely solve problems. Local Authority interactions should also improve in future as a result. Recent stakeholder presentations have seen a keen, positive response.



"The use of maps at the centre of Cyclescape illustrates the point that if a picture is worth a thousand words, so is a map. The maps really facilitate sharing issues and solutions to them. They also mean that you can easily filter which topics are relevant to where you work or live.

Cyclescape is also a big advance on email lists in the way in which threads can be followed and documents stored for future use in an easy to find location."

- John (user, Cambridge)

There remain known bugs to be fixed, further user workflow iteration to be done, design work still to be integrated, and various other fixes needed, noted above, but the site is in a useable (though not fully self-explanatory) state. This work will be done to push the site to a full release, namely a site available other to groups around the UK, with a formal launch in October.

Usage amongst the beta tester users is high and certainly shows positive signs. Despite having only one beta group's committee forming the main user-base during the testing phase, as of end-July over 3,500 messages, almost 250 issues, and over 400 discussion threads on these issues, have resulted. These are at <http://camcycle.cyclescape.org/> (though this group works on a membership basis so the content of discussion threads are not generally visible).

This usage, compared to the previous (and inadequate) solution of a mailing list has shown:

- Higher levels of usage, measurable in numeric terms
- Qualitatively better and more focussed discussion
- A wider range of people becoming active participants; indeed, people who were inactive campaigners before have become involved – which for us is a particularly positive sign
- A more solution-focussed outlook by participants
- Virtually no off-topic discussion, which is extremely rare for discussion systems

4. Reflections on challenges faced and lessons learnt regarding progression of the innovation

In many respects, this project has not suffered from many of the problems often faced by complex software projects (such as things like internal disagreements, unsuitable personnel, lack of developer enthusiasm, resignations, low-quality code with increasing defect rates, or other problems). A solid, working product has been created (albeit later than hoped). This can be attributed to the extensive spec development phase, and the selection of excellent developers who were well-suited to the task at hand and whose work is of a high standard.

As evidenced by the description in section 2 above, the key challenge, due to longer-than-hoped development has been funding. £30k was budgeted for the initial grant application to GeoVation, and £27k was received. In total, just under £50k has been spent on the project, comprised of £27k (54%) from GeoVation, £18k (36%) from CycleStreets, plus £5k (10%) from the local funding source for the Cambridge-specific functionality.

We feel this remains good value despite the 66% overspend against the expected project costs. Software development literature that has been read as part of identifying good management practices identifies that development periods 3-times longer than expected are not uncommon. The comparative 1.66x figure was undoubtedly helped by the long period of work to pre-define a specification with prioritised objectives and thereby lower risks.

The reasons for this longer period and higher costs have been identified. They are:

- The creation of a codebase that involves automated testing (and to a lesser extent, internationalisation) and internationalisation requires a longer development process. CycleStreets' unfamiliarity with a test-driven development approach (or internationalisation) meant not budgeting for this. However, this 'coding for the long-term' has proven its worth, with later development and iteration risks lower as a result.
- The initial spec was challenging and time estimates would have been useful to add.
- The starting of open source development by unpaid developers has been impossible to achieve while the site has been a closed beta. The release of the site will mean that potential developers will become users, who will then find they have an 'itch to scratch', resulting in contributions. Although obvious in retrospect, this was not anticipated.

- The use of Ruby on Rails, being a technology relatively new to the project manager from CycleStreets, means that estimation of project delivery has been much more difficult.
- An unexpected cost of £1k on acquiring domain names.

With a solid codebase in place, it is clear that subsequent work to iterate and add missing features has been relatively painless, as demonstrated by the Cambridge-specific work.

5. Concluding remarks concerning forward plans and exploitation potential

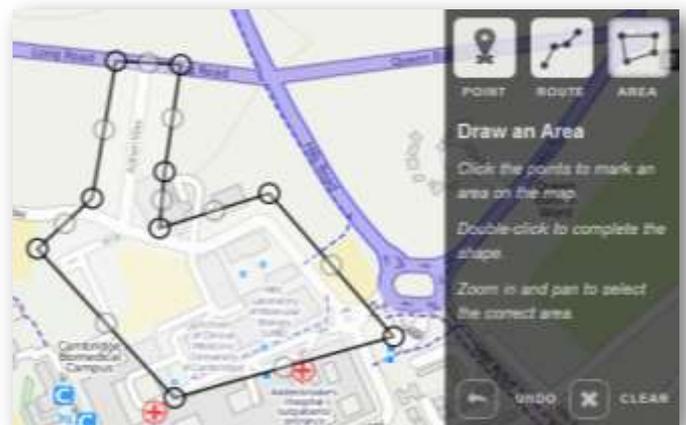
The project now is moving into its launch phase. We and stakeholders are looking forward to the availability of a system whose innovations have been specifically design for their needs.

The CycleStreets project manager will be becoming more involved in actual coding and implementing user feedback as time progresses. The existence of wide and open usage from around the UK will improve the likelihood of obtaining open-source contributions.

A grant application for a (much-needed) 10k sum has been submitted to a funder for development to get the site to as featureful and user-friendly a state as possible.

In the medium term, we feel that sponsorship or possibly even funding from some kind of governmental/official source, to support a full-time developer, could be achieved, once the site has been launched (since usage brings awareness). In the last six months, the effect of The Times newspaper's 'Cities Fit for Cycling' campaign has massively increased the profile of cycle campaigning, and Cyclescape will shortly be in a good position to capitalise on the objectives of this and similar initiatives.

We have also seen some initial exploratory interest from a well-known organisation regarding the possibility of repurposing the Cyclescape codebase for geographically-based campaigning for another community of interest. This kind of scenario would create a wider pool of funding opportunities, and backs up the work to ensure all labelling on the site is easily changeable.



6. Comments regarding the Geovation Challenge process

We felt the GeoVation Challenge arrangements were good, enabling applicants to progress ideas in a way which ensured assurance that proposals were achievable and scalable.

The reporting requirements were sensible and not onerous. Irrespective of this, however, we considered it important at all times to report informally to our GeoVation contact as well as reporting publicly through a series of blog posts at <http://blog.cyclescape.org/> to demonstrate progress and to help ensure the continued support of stakeholders.

The arrangements for scrutiny we felt were also good, with the availability of light-touch mentoring forming a useful resource for occasional discussion, which we called upon twice.

We would like to thank everyone involved in GeoVation for enabling this project to go ahead. We are excited to have been able to deliver it, and are very encouraged by its potential.

Martin Lucas-Smith, CycleStreets, 5th August 2012.