

Report To: Greater Cambridge City Deal Executive Board

3 November 2015

Lead Officer: Graham Hughes, Cambridgeshire County Council

Smarter Cambridgeshire update and investment proposal

Purpose

1. The purpose of this paper is to provide an update on the progress of the Smarter Cambridgeshire work stream and to outline a proposal for the implementation of a “smart” technology platform to facilitate the Smart Cities approach within the City Deal Programme.

Recommendations

2. It is recommended that the board:
 - a) Notes the progress of the Smarter Cambridgeshire workstream to date.
 - b) Agrees in principle to support the investment of up to £280,000 to implement a Smart Technology Platform subject to a more detailed investment proposal in early 2016.

Reasons for Recommendations

3. The Smarter Cambridgeshire work stream has progressed well to date. The implementation of a Smart Technology Platform will enable the Smart Cities approach to be developed and exploited within the City Deal Programme.

Executive Summary

4. The Smarter Cambridgeshire work stream which was approved by the City Deal Executive Board on 4th August, incorporates three key strands:
 - Development of strategy, vision and resourcing
 - Development of “Smart” Technology Architecture
 - Development and delivery Demonstrator/Test bed solutions
5. Two of the initial objectives for the work stream are to

- i) Generate an outline “smart architecture” blueprint which will facilitate the delivery of a test bed / demonstrator programme.
- ii) Establish and deliver an initial one year test bed/demonstrator programme of work packages which implement small scale “smart” solutions, with a focus on transport related opportunities

Smart Cambridgeshire Work stream up-date

6. An outline of progress to date is set out below:

- The Smarter Cambridgeshire Project Board, which comprises officers representing the five participating organisations, has been established and is now overseeing the multiple strands of the Smarter Cambridgeshire work stream.
- The wider Smarter Cambridgeshire Advisory group, with representation from both Universities and local “tech” companies has met and follow on workshops are planned.
- A “hack” event, to encourage wider community engagement in the Smart Cities agenda has been provisionally planned for the end of October.
- Work is progressing in support of a number of demonstrator test bed work packages including:
 - a planned workshop for identifying the key components for a “Smart A14”,
 - outline agreement for station gateway way finding improvements
 - enabling work packages to support the development of a dynamic journey planner.
- A collaborative joint bid is being developed for the Innovate UK Internet of Things competition. This involves joint working with Milton Keynes and Leeds City Councils, with support BT and the involvement of several other commercial organisations, including Cambridge based SMEs. The bid will be submitted at the end of September with the outcome expected by the end of the year.

Smart City Technology Platform

7. An outline proposal has now been developed for the implementation of a Smart City Technology Platform to support the full delivery of the Smarter Cambridgeshire work stream within the City Deal Programme.
8. This comprises a city management network, a data hub and sensor deployment plan and is the result of the work undertaken to create a smart architecture blueprint. A City management network will provide the connectivity layer to enable communication between traffic infrastructure such

as variable message signs, traffic lights and other street furniture which will then enable small amounts of data typically from sensors to be fed into a data hub or platform.

9. In turn the data hub, will support the acquisition and management of diverse data sets relevant to city systems from a variety of sources, such as local and national open data repositories; data streams from both key infrastructure networks (energy, transport, water) and other relevant sensor networks (e.g., weather and pollution data); satellite data; data crowd-sourced from social media or through specialised apps; and others.
10. This ability to combine data sets in new and different ways can then inform analytics to support intelligent planning and usage of resources across city systems. For example in relation to transportation the ability to gain new information and insights about traffic and people movement across the city, will support the development of “test-bed” pilots which will help to:
 - Ensure that transportation capacity is optimised.
 - Encourage modal shift by improving the experience of using public transport through greater use of real time information and alerting.
 - Enable greater use of dynamic modelling to understand the impact of different transport management schemes and options.

Considerations

11. As outlined in the Smarter Cambridgeshire paper to the August Executive Board a successful smart cities approach needs to have the technology components in place to provide a platform for the delivery of the demonstrator and test bed projects.
12. Having a leading edge smart technology platform is also key in gaining credibility for Cambridge as a location to showcase smart technology. This is important both in terms of local and national reputation and for the increasingly competitive environment for government and EU “smart” funding streams amongst UK cities.
13. The purpose of a smart city technology platform is to allow a wide range of city assets to communicate with each other to create new data sets which can then enable better management of traffic, environmental and other related services.
14. In addition the technology platform facilitates a two-way communication flow with other devices and with the wider public to inform and influence behaviour. This type of technology platform in essence provides the architecture for the “Internet of Things” which is seen as being the basis for the next wave of radical digital innovation.
15. Although many assets are already connected – e.g. traffic lights, variable message signs, parking ticket machines, CCTV cameras etc., they currently operate in vertical silos with the data locked into separate management

information systems, which means that neither the connectivity nor the data can be shared to provide a holistic approach to city management.

16. A ubiquitous city management network that will extend as far as possible across Greater Cambridge with an interoperable data store that can receive and store data about Interconnected “things” will enable a greater range of sensors to be deployed and many more devices to be Internet connected.
17. Crucially it will also allow new types of data sets to be created and used to provide greater insight than traditional information management systems allow. These will then form the building blocks for some of the exemplar/test-bed outcomes such as intelligent journey planning apps etc.

Options

18. A number of larger cities such as Glasgow, Manchester and Birmingham have initiated their Smart Cities programmes with multi-million pound investments in their technology platforms with consequent lengthy deployment timescales, high running costs and extended refresh cycles. Smart cities technology developments and concepts are moving extremely quickly and therefore a prototype approach to the technology platform deployment can be more effective.
19. This proposal recommends a more modest, open and agile approach which will allow greater local participation and enable the demonstrator and test-bed work streams to be fast-tracked. It includes a relatively small scale deployment that will be sufficient to facilitate the demonstrator programme and provide a foundation for the forward strategy.
20. Given the fast moving nature of the technology it will also include the potential for further iteration as standards evolve and new technology is developed. It is anticipated that it could provide functionality for up to 3-5 years before significant and wide scale refresh or replacement will be required.

Implications

21. In the writing of this report, taking into account financial, legal, staffing, risk management, equality and diversity, climate change, community safety and any other key issues, the following implications have been considered: -

Financial and other resources

22. In order to provision and deploy the technology platform a capital investment of up to £280,000 is proposed. An in principle decision to approve the funding will enable further work to be undertaken to provide a detailed specification and implementation plan.

Risk Management

23. The Smarter Cambridgeshire work stream is intrinsically speculative and therefore higher risk in terms of delivery, however the technology architecture proposal has been devised in a manner which minimises cost and therefore financial risk

Equality and Diversity

24. Smart technology offers opportunities to engage with citizens via different mechanisms which can support greater citizen engagement from population groups usually less likely to engage with Councils. Wider engagement regarding smart city solutions is incorporated within the work stream where it is feasible to do so.

Climate Change and Environmental

25. There are opportunities to support pilot and trial schemes as part of the demonstrator/test bed work packages which include climate change mitigation and environmental management

Background Papers

No additional background papers were used in the writing of this report.

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