How Smart Citizens can build the Smart City from the ground up

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10.5 million domain names
4 billion DNS queries every day

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Nominet R&D and Future Internet

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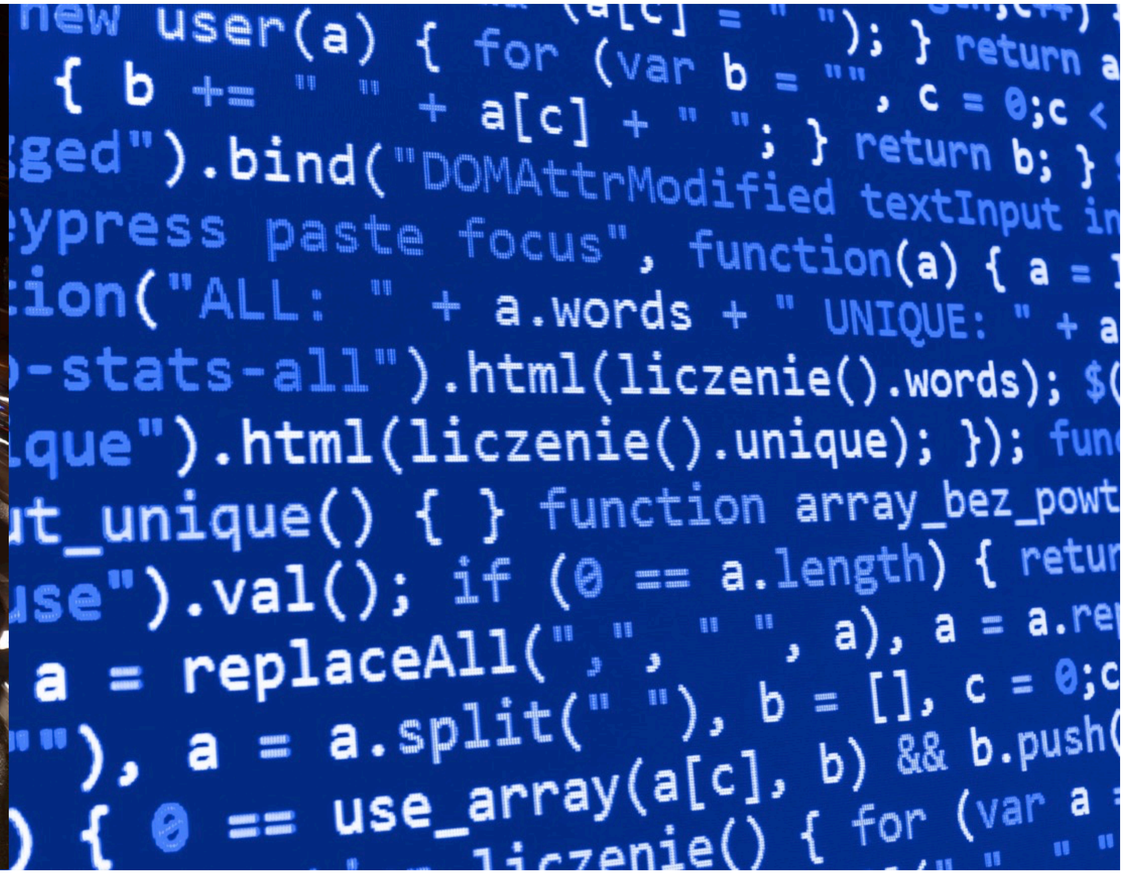
Smart Cities and the ‘I’ in IoT



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Data availability

Where is it?

Who owns it?

Can we reuse it?

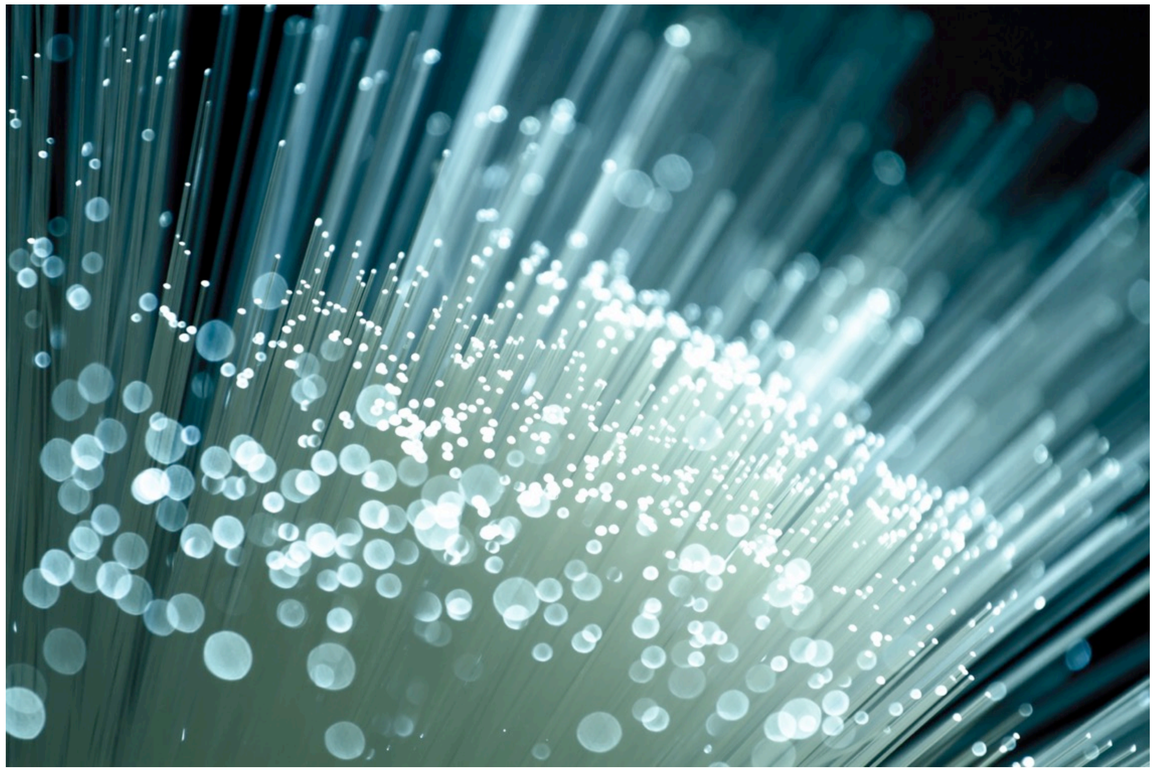
What form is it in?

It is a useful measurement?

Is it static, dynamic, real-time or out of date?

What are the spatial and temporal resolutions?

Do we trust it?



Smart Citizens

If the data doesn’t exist what can a Smart Citizen do to generate it?

And then what can the Smart Citizen do with this data?

What tools can help them with this process?

Case Study: The Oxford Flood Network

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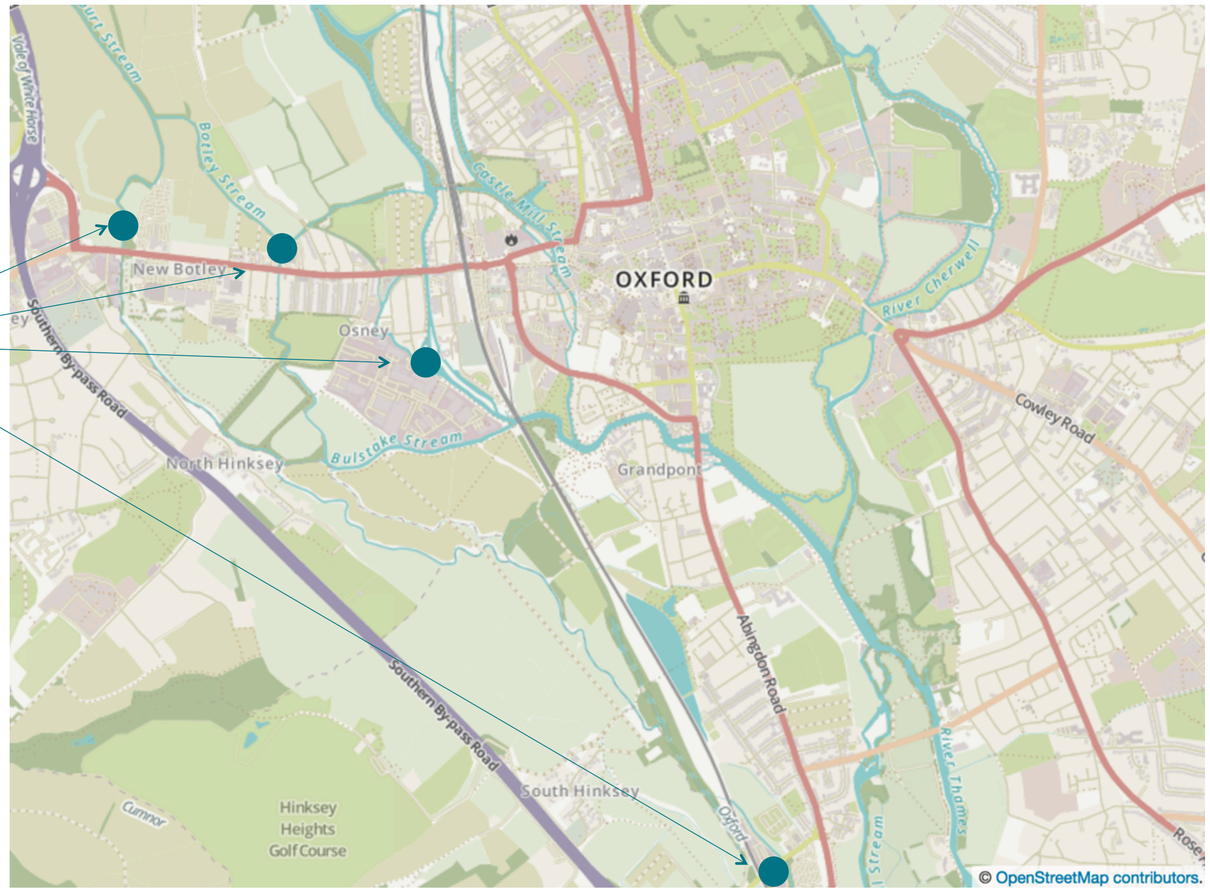
Current river monitoring is trusted, well maintained but expensive



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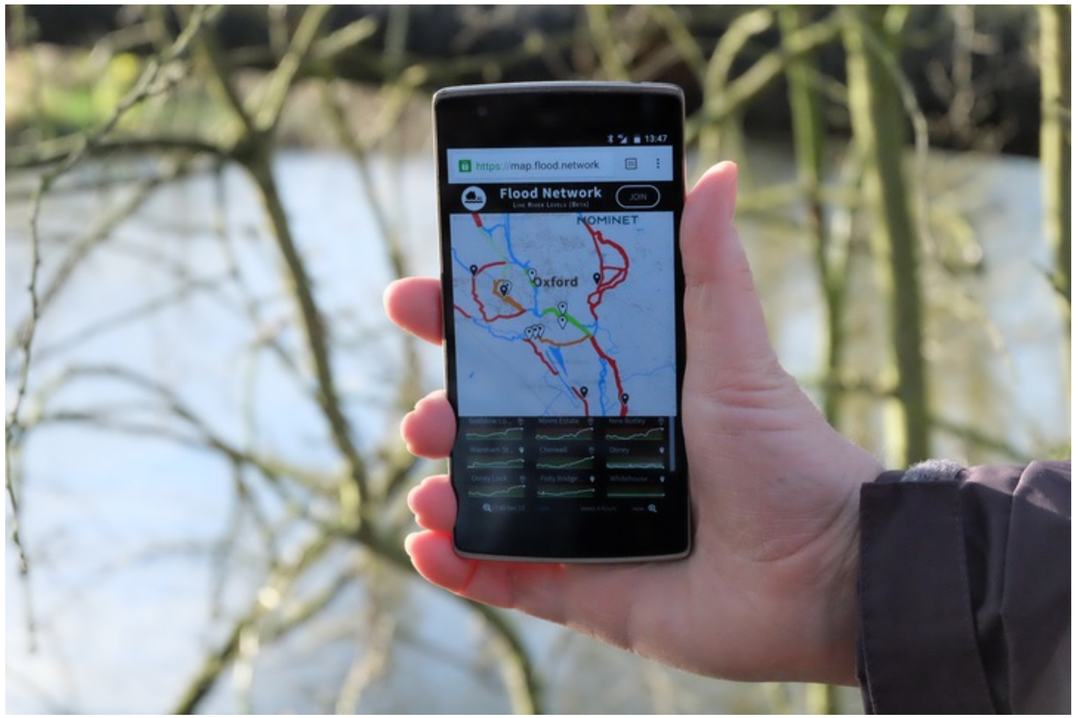
The Oxford Flood Network is a low cost alternative for filling in the data holes



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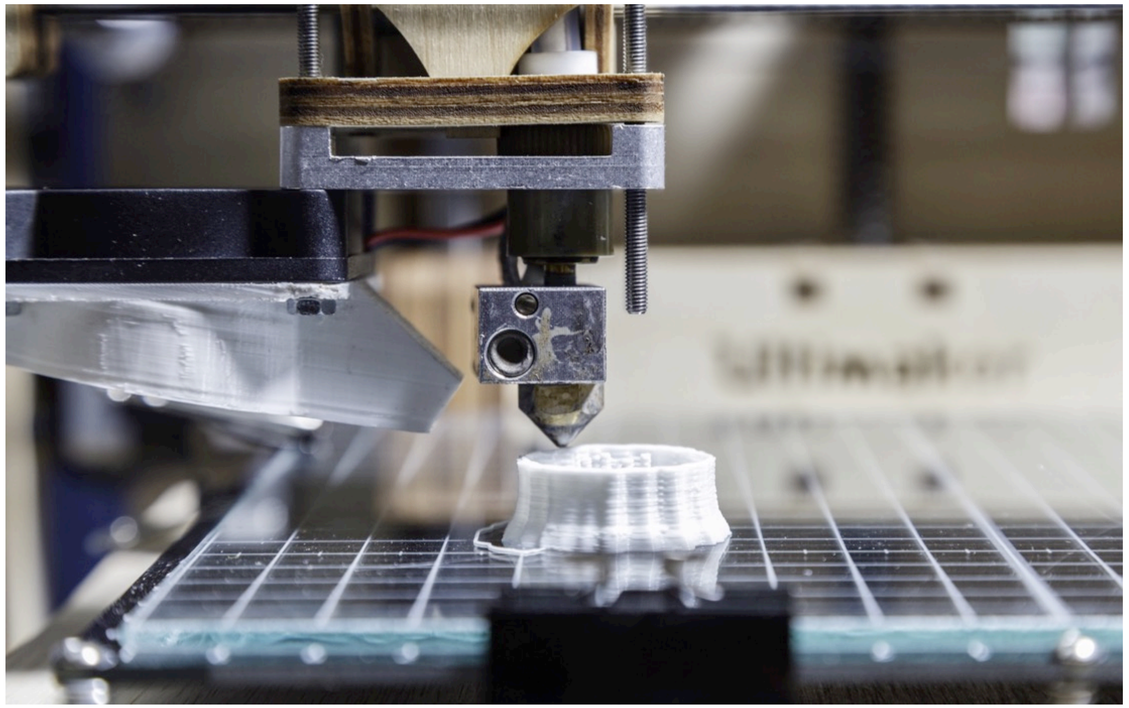
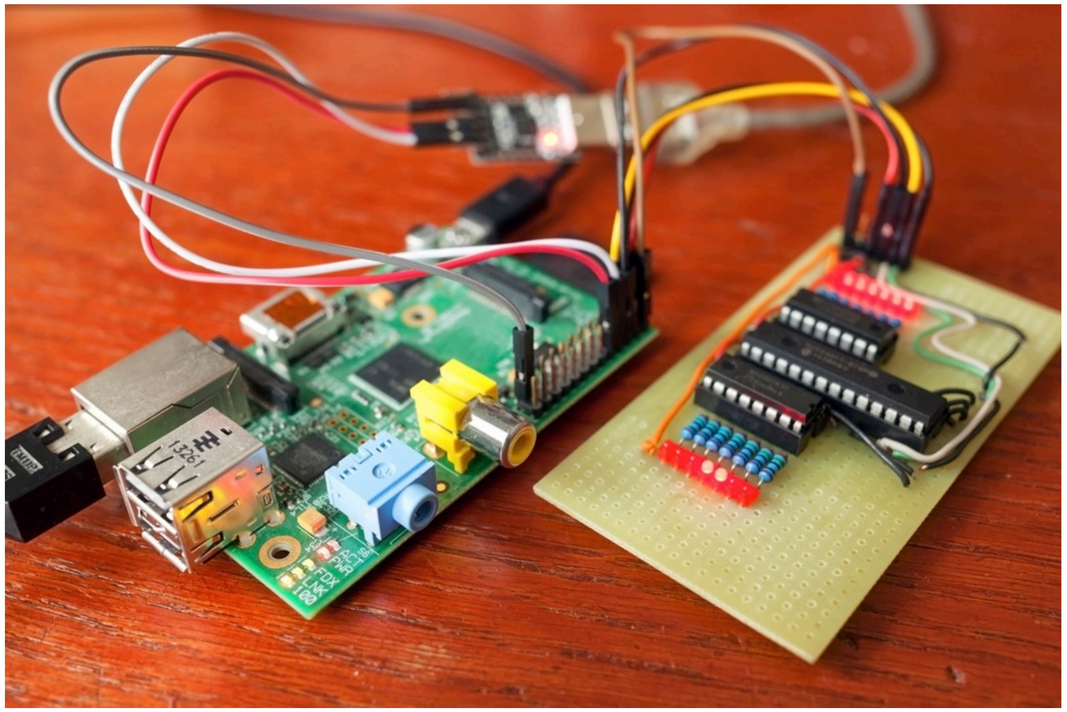
Democratization of technology and the maker movement





Original plan in the new maker world

Get people interested in the project

Design open source hardware and distribute plans and code via github

Get home owners to build their own sensors from kit and plans

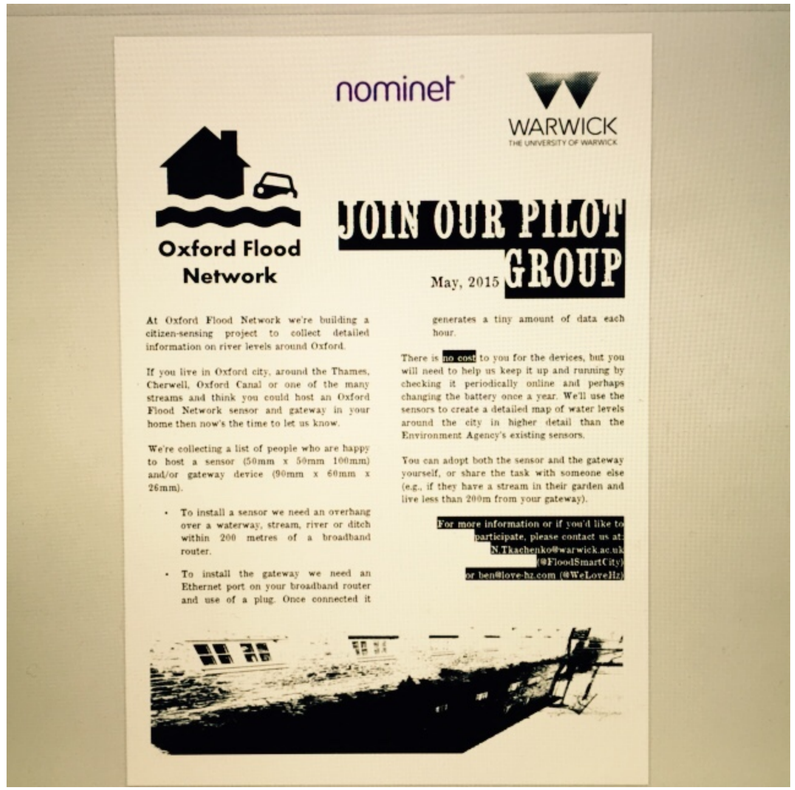
Connect sensor to a home gateway via low cost short range radio

Connect to Internet via home owners broadband

Send data to an ‘IoT platform’

Engage with wider community via website

Challenge - getting people interested in the project with correct balance of interest, location and skills



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Oxford Flood Network

JOIN OUR PILOT GROUP

May, 2015

At Oxford Flood Network we're building a citizen-sensing project to collect detailed information on river levels around Oxford.

If you live in Oxford city, around the Thames, Cherwell, Oxford Canal or one of the many streams and think you could host an Oxford Flood Network sensor and gateway in your home then now's the time to let us know.

We're collecting a list of people who are happy to host a sensor (50mm x 50mm 100mm) and/or gateway device (90mm x 60mm x 26mm).

- To install a sensor we need an overhang over a waterway, stream, river or ditch within 200 metres of a broadband router.
- To install the gateway we need an Ethernet port on your broadband router and use of a plug. Once connected it generates a tiny amount of data each hour.

There is no cost to you for the devices, but you will need to help us keep it up and running by checking it periodically online and perhaps changing the battery once a year. We'll use the sensors to create a detailed map of water levels around the city in higher detail than the Environment Agency's existing sensors.

You can adopt both the sensor and the gateway yourself, or share the task with someone else (e.g., if they have a stream in their garden and live less than 200m from your gateway).

For more information or if you'd like to participate, please contact us at:
N.Tkachenko@warwick.ac.uk
@FloodSmartCity
or ben@love-hz.com (@WeLoveHz)

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Hardware and RF development is complex, reliability hard to achieve, costs still relatively high at low volumes

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Software to support the Internet of Things – we built an end-to-end application to understand the issues

Immature software and lack of hard use cases

Myriad of new standards (ignoring existing)

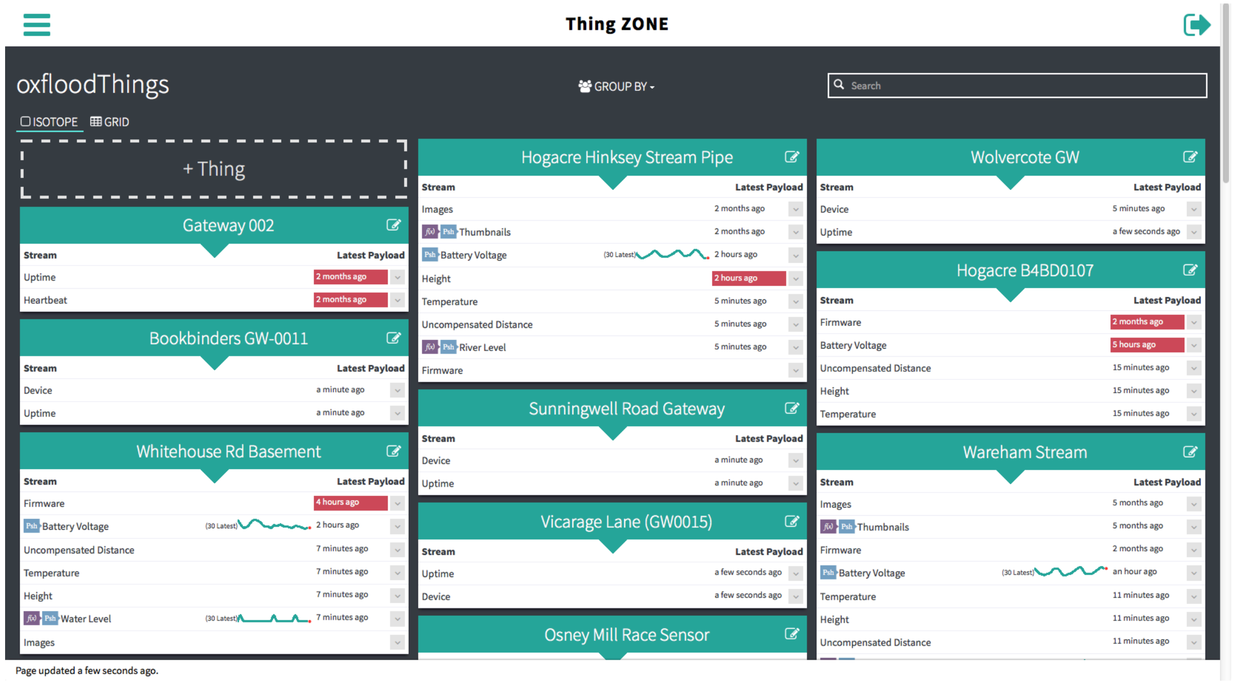
Simplistic web security approaches

Privacy implications

Lack of productivity tools

Real deployment processes ignored

Lifetime stability concerns with start-ups



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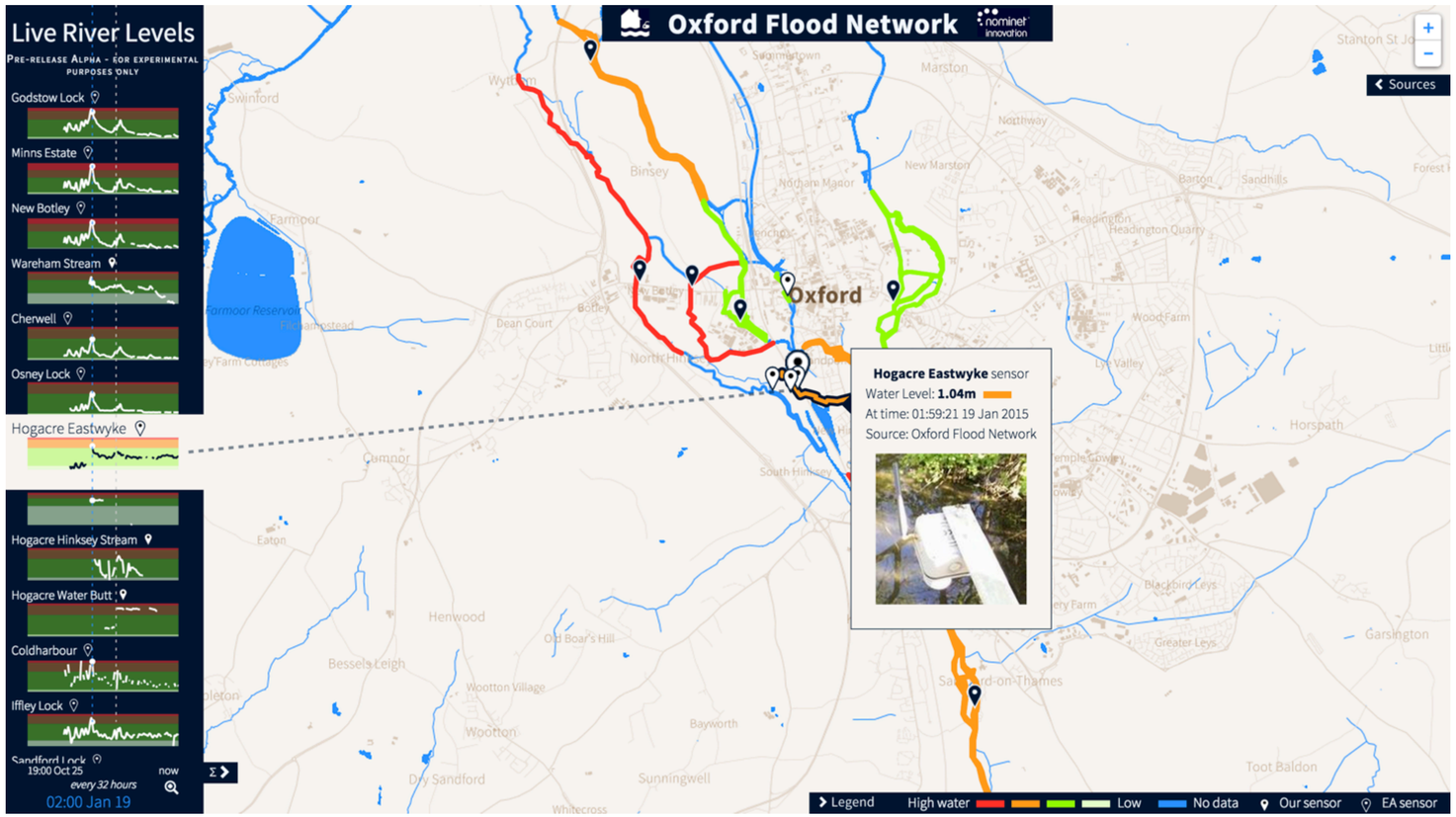
A public map interface needs to intuitively engage and inform the curious Smart Citizen



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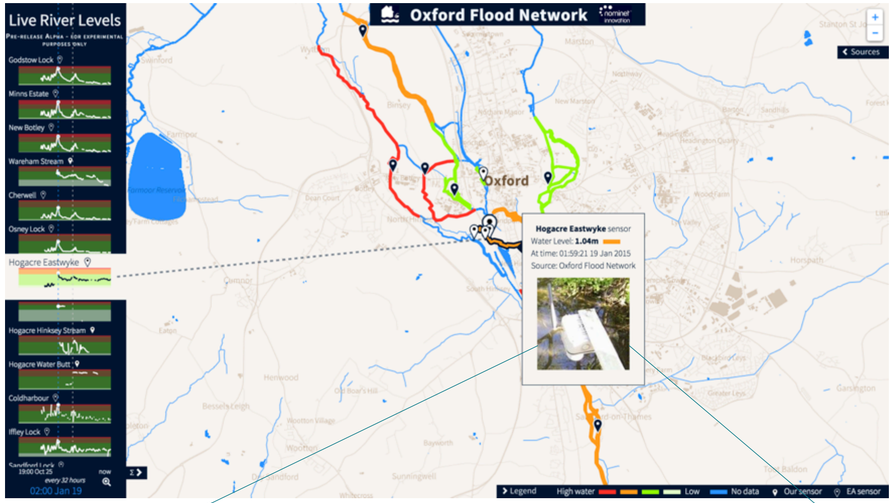
Data quality and trust – implications of providing wider contextual information



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Other Smart Citizen IoT projects

Image courtesy of WickedDevices

Image courtesy of Thing Innovations

From a single app to a Smarter City

Image courtesy of Bath Hacked

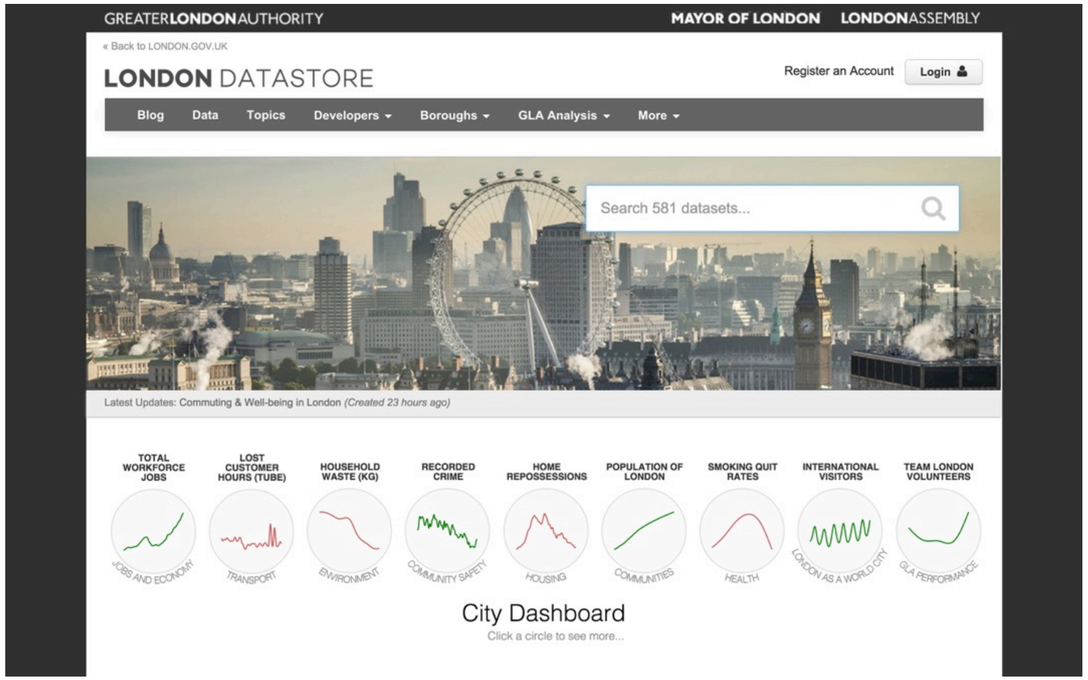

Image courtesy of Datapress

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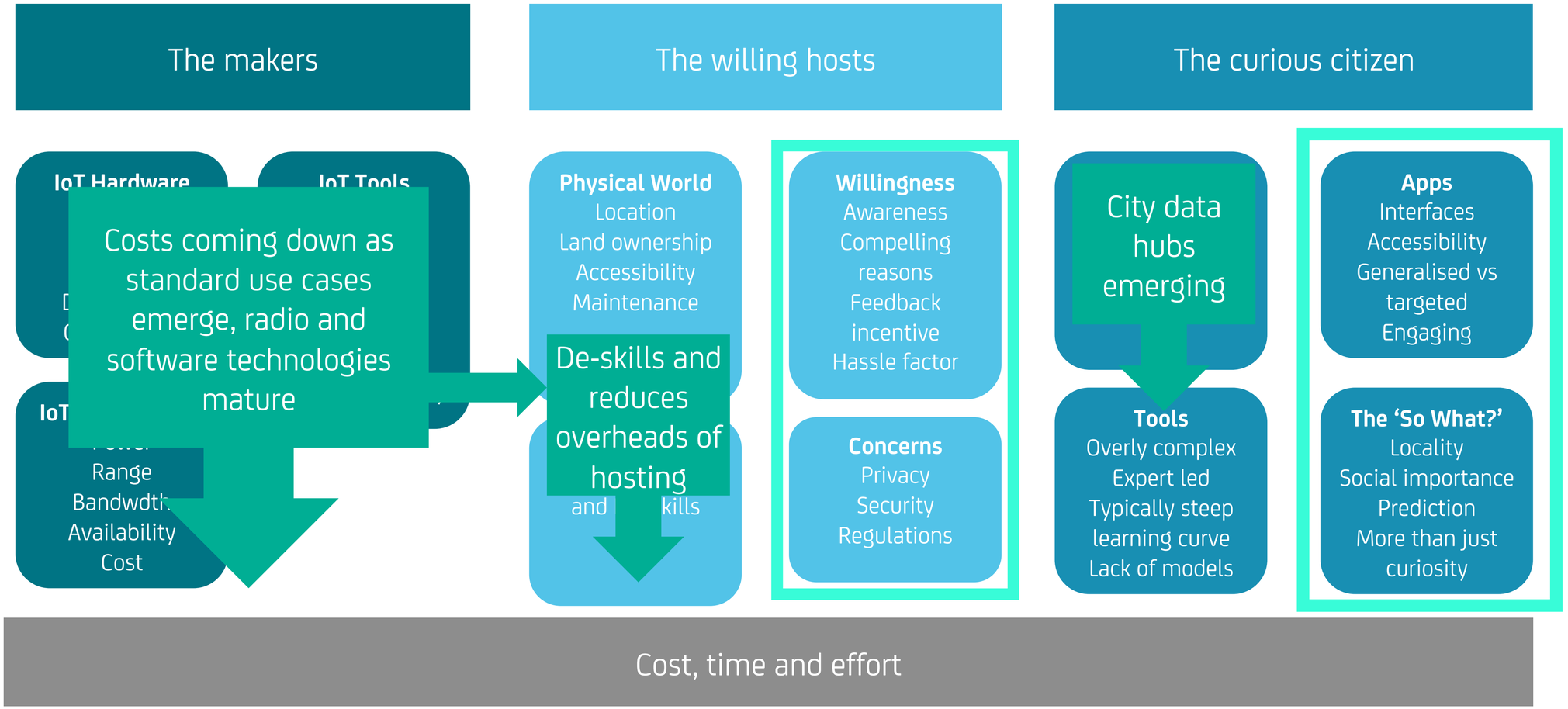
But where does the Smart Citizen go after that?

Data hubs are targeted at data scientists and app developers

GIS, planning tools etc are too generalised or expert led

This is all about capturing data, where are the (accessible) city models for prediction?

Barriers to the Smart Citizen..



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Some summary thoughts

It’s likely the data you want, in the form and resolution you want, is hard to get hold of

Don’t underestimate the complexities of designing and deploying hardware in the field

Many IoT software ‘platforms’ are still maturing and very few deployed on live projects

Think of the citizen as a consumer and lower the barriers to entry at all points or even incentives to help them build the data mountain

The market is changing very quickly though, and new technologies will help break some of these barriers down


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