

Smart Seeds for City Sensing / My Sensor Life

A discussion paper about community urban sensing and applications

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1 Urban sensing: from smart dust to smart seeds

Cities are increasingly thought of as systems [0], in which software, social systems and physical infrastructure all play a part. Software is used as part of urban systems to modify behaviour, for example in the congestion charge [1]; software and sensors are used to instrument (gather data about) the city [2]. The data gathered is sometimes opened up for public consumption through APIs and web portals, e.g. [3].

However, in many cases data is typically derived from a narrow set of city stakeholders such as councils and transport operators, which is then handed down to citizens and other stakeholders.

This is reminiscent of “smart dust”, one of the presiding visions of pervasive computing [4], in which tiny sensors are dropped onto an area, where they monitor the environment and communicate with one another to aggregate data about it.

What is primarily missing from these notions is a viable model of engagement with stakeholders on the ground. The notions are problematic in the following ways: the activity of data collection itself is supposed to be invisible and not of concern to those in the environment; sensing is ‘parachuted in’ to the communities being instrumented; and data is gathered according to what third parties consider to be of interest about the communities and environments where the sensing takes place.

An alternative vision proposed here is that of “smart seeds”: a model of engagement in which citizens decide what they want to measure in their environments, take part in the instrumentation, and participate in the design of the representation and applications of that data according to community agendas. Citizens choose and ‘plant’ their own sensor ‘seeds’ – in their homes, their streets, in parks, in their cars, in shops and even on themselves, in order to measure what is of interest to them. These planted ‘seeds’ may not be solely pieces of hardware: they may involve citizens themselves in actively gathering data about their environments. The ‘seed’ metaphor is intended to suggest a proliferation of sensor ‘species’, community choice, and functionality that integrates organically with the surroundings.

The Smart Seeds programme is intended to be part of urban informatics and not to replace it. It has three types of advantage compared with “smart dust” urban informatics:

- for citizens, it is intended to answer their own particular questions about their neighbourhoods or city-wide ‘systems’;
- for those rolling out informatics infrastructure, this type of bottom-up development – of seeds, their communication mechanisms and of applications

to consume the data – can play a technologically disruptive role in ways that may extend to more conventional urban data collection and processing;

- for those with city-wide agendas such as sustainability, citizen engagement may lead to more persuasive ways of conveying information.

2 Smart seeds research

Smart seeds research entails development of:

- methods for community engagement;
- new types of sensors, construed in new ways according to citizens' own research agendas;
- ways for the data collected to be fed back to the community in engaging and even playful ways, in order to maximize participation not only in gathering the data but in consuming it.

This research should be conducted both bottom-up and top-down. The top-down perspective will drive the research questions and lead to commissioning of engagements with communities on the ground; the bottom-up engagement with those communities will lead to new solutions for answering citizens' questions.

References

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