

Chapter 18

Final Considerations

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EveryAware was a pioneering project and very soon new initiatives have been conceived and are thriving along the same direction.

We think the very important lesson we can take from EveryAware is a very early proof of concept of the powerful feedback loop linking technology and people engagement, with the final goal of enhancing both environmental and civic awareness.

From this perspective, it is important to summarize what we learned and the possible directions ahead to make the EveryAware experience durable and sustainable on a large scale. We identified three main developments that should coexist, in our opinion, in all next initiatives, to support a large scale approach. First of all the ICT infrastructure should be deeply redesigned to become modular, flexible and ready to accommodate progressively new technologies. Second, a strong attention should be paid to a cooperation with a diversity of environmental grass-root communities in different countries (e.g., cyclist communities, NGOs aiming at creating a network of environment-aware communities, nature-preserving NGOs, etc.), that will act themselves as hubs for a variety of other local communities. Finally, it would be important to provide community services and setting up crowdfunding facilities, with the aim of attracting further local communities, in locations not already reached by the project activities. This last point is related to a further crucial goal, that of the self-sustainability of the EveryAware or similar activities, well beyond the naturally short and finite duration of the funding activities giving the initial boost. To this end, possible commercial solutions could be considered with the open source licensing

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scheme adopted so far. This, together with the modularity of the whole platform, will also trigger further advances on the whole infrastructure, allowing users to improve it and to readapt it for specific needs.

More specifically, we can foresee the following points as promising steps to extend the EveryAware experience and make it sustainable on a large-scale, endowing citizens with effective tools to gauge and steer the evolution of our cities and triggering a long-awaited U-turn in the management of our environment.

Developing an open source hardware platform letting citizens to capture, process and send online geo-referenced physical data about air-quality. The platform has to incorporate an interoperable set of sensors and has to be developed with a modular approach, aiming at guaranteeing interoperability between communication standards, as well as low consumption. The board could communicate with a smartphone, possibly with a WIFI connection or a 3G tower, in order to give an immediate feedback to the user and to further exploit, through a specifically devised app, all the potentiality already embedded in the mobile device (such as accelerometers, microphone, etc..), or directly to a central server unit for data storage and processing. The platform has to be thought as intrinsically modular, to also allow different communities to integrate it with possibly different sensors corresponding to their specific requirements. A specific effort should be devoted on the usability of the whole hardware platform, including wearability and horizontal economical accessibility (low cost compatible with reliability). As already in the framework of EveryAware, it will be crucial to put a great deal of attention to a proper calibration and periodic (re)calibration of the sensors, a notoriously non-trivial task for low-cost sensing devices, also considering the natural degradation of sensors and their innovation tracks. Further, the board and the site infrastructure should be released under open licenses, thus allowing users to hack it and possibly make it better, following the ideas of active citizenship, transparency, open data and open source models. The whole approach is based on allowing users and communities joining the project activities, including taking part to the development and bug fixing processes, with the aim of providing an affordable, reliable and scientific tool to witness and testify environmental and living conditions.

Developing an open source software platform to collect subjective data and engage citizens to provide information, related to their perceptions, learning, behaviour and choices. Further, a web platform specifically devised for web-based games/experiments (such as www.xtribe.eu), could be exploited to set up a set of web-based experiments, presented with a playful aspect in order to attract players at most. Such experiments are meant as complementing the information acquired with direct methods of measuring and provide progressively more reliable maps of the cities as perceived by users. Possible game scenarios can cover negative environmental aspects as the detection of polluted spots, uneven roads, broken or unused common facilities, while positive aspects can involve best locations in the city, aggregation points, agreeable areas. Also, simple polls could be used to directly probe citizen opinions. Finally, specific experiments

could investigate the mechanisms affecting the behaviour of single agents at a microscopic level and how complex phenomena at meso- and macro-scales may emerge. In particular, measuring behavioral inertia would be key to elucidate the role of the network of acquaintances as well as that of different timescales in the emergence of new opinions or shifts in behaviour. Overall, this platform could provide geo-localized information related to the way citizens perceived their urban environment, as well as possible hyperlocal recommendations. Those annotations could be validated by other users in a self-sustaining mechanism with the potential to provide the community as a whole and policy makers in particular with trusted and capillary information about their city and the way citizens perceive it. Those data could integrate the objective data concerning air-quality and noise pollution.

Fostering the creation of a network of environmentally aware communities. It is important to create platforms that could act as basins of attraction both to coordinate collective actions towards a more sustainable organization of our cities, and a meeting point for different communities, from technically oriented (e.g. Civic Hacking or Maker Movement) to socially oriented (nature-preserving, educational, clean-mobility promoting, etc..) ones, fostering interdisciplinary collaborations. A special attention could be devoted in engaging users and communities to join the activities to take part also in the development processes, in an aim of providing an affordable, scientific tool allowing them to witness and testify climate conditions, and more in general to foster actions towards an environmental monitoring and care. Different methods could be foreseen, from involvement through community hubs directly involved in the project, to attendance to public events (local or with a broader audience), workshops, mass-media communication channels, web based dissemination, social networks, etc. The role of each of these methods in recruiting participants, and their level of engagement, should be carefully analysed, and continuously refined to achieve effective standards for a wide scale participation.

We think the combination of the above mentioned tools could be key to foster and detect the outset of awareness and monitor it in time. The study of the combination of subjective and objective data, accomplished through statistical physics and machine learning tools, has the potential to shed light on which factors affect human perception and how people elaborate their own information to react accordingly. The personal involvement in sampling the environment has the potential of leading to an increased awareness of citizens with respect to their living surrounding. We should aim at understanding under which conditions the emergence of awareness is supported and for this EveryAware already tested a suite of different methods coming from data science, complex systems modelling and web-based experiments, always taking advantage and inspiration of the long experience of social sciences as applied to opinion and cultural dynamics, decision making and behavioural changes.