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# Some Future Scenarios for '*in the wild*' Visualisations

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## INTRODUCTION

Migration from desktop-based to alternative out of the desk visualisations, could help to overcome some of the issues that are related to traditional screen representation problems. But simultaneously, it represents a challenge in which many technical and ethical questions have yet to be answered. In the following sections some thoughts about how visualisation outside the desktop could be applied are presented through three different categories: common objects, large scale augmented reality and natural devices.

## 1 COMMON OBJECTS

Visualisation could be integrated into the daily decision-making and communication processes without the required presence of desktops or laptops. Representation, or presentation, of information could be integrated into everyday objects such as clothing, household furniture, road signs, street lights or vehicles.

Information such as personalised weather forecasting could be filed directly into the windowpanes, making it possible to superpose how the street or back garden would look like in the next few days.

In the daily decision-making process, the use of LED lights embedded in house walls or bathroom elements, which are now a reality (e.g. they are incorporated into showerheads to warn us of burning water), might generalize the use of colours for displaying information in an easily interpretable way. In private households monthly gas consumption and forecast could be integrated into radiators using colour codes. Coloured or flashing street lights could be used in networked smart cities to warn drivers about real time incidents such as accidents or icy roads.

## 2 AUGMENTED REALITY

Traditional screen representation problems, such as the scalability and readability of graphs [1], could be overcome using augmented reality visualisations. Augmented reality, which is already used with marketing purposes and in cultural and training applications, could evolve further, particularly collaborative large-scale augmented reality, once the small individual devices overcome their network dependency and energy consumption issues [2]. In this sense, individual devices such as Google glass might be the way to go.

Augmented reality on a large scale combined with real time data edition, could be used in the infrastructure and landscape designing processes. Being in the place where an infrastructure is intended to be built, sharing simultaneously a visualisation with several team members or stakeholders, and making changes in real time to the prototypes, would be a valuable tool to facilitate conversations and to notice problems or issues that sitting in front of a computer are hardly observable. This technology could be extended to the consultation process. People could go on site and see the proposed infrastructure, displayed from their perspective as they move around, which would give them a better understanding (e.g. about the accessibility) of the proposed building.


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Additionally, these tools could be used more and more for impact or risk communication, presenting different scenarios and consequences, moving the traditional risk matrices to an observable representation thereof. For example, the words '*high risk of flooding*' would acquire more significance if it was possible to 'see' what the level reached by the water in a flood plain would be if proper measures were not taken.

In smart cities, where geographical and non-geographical data from several origins would be perfectly integrated and served in real time, large scale augmented reality could even replace some temporary infrastructure or assets. For example, signage in a city when hosting a big event could be replaced by augmented reality panels displayed directly into driver's windscreens, with associated economic potential savings. However these savings should be contrasted with what the potential impacts could be: Is this technology available to all the drivers? Might the lack of 'physical signage' cause confusion to regular road users?

In the future, systems capable of interpreting conversations in real time could also appear. These systems would represent data and ideas graphically in an augmented reality environment as they appear in a discussion, without having to pre-process data prior to rendering. These visualisations could be especially useful in the early stages of infrastructures and services designing process or with educational purposes. In the field of Building Information Modeling (BIM), these systems could facilitate discussions on the design of public spaces and buildings, public services or transport networks, for example modifying building height visualisation in real time when words such as "higher" or "lower" appear, or increasing electricity demand graphics of a city as it is mentioned in a discussion. In education, teachers could bring to life as they talk about what the union of sets means, if these sets could be represented in a virtual environment, or demonstrate experimentally Archimedes principle without having to install a bathtub in the classroom, raising questions for which visualisation was not prepared in advanced.

## 3 NATURAL DEVICES

Other media, away from electronic devices, could be used in the future. Genetically modified trees or plants could be real time indicators of air quality in cities or houses, varying the colour of their leaves accordingly to air contamination rates. The use of such 'natural' visualisation supports would initiate an intense discussion about ethical uses and limits of technology. What would be the impact if these species breed? Is it worth the benefit that these '*no electricity consumption*' indicators provide? Could alternative unplugged supports with less impact be found?

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