

Assessing usability of an existing geographic information product

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Ordnance Survey, the national mapping agency of Great Britain, maintains a continuously revised database of the topography of Great Britain. The database contains around 500 million features, representing everything from forests, roads and rivers down to individual houses, and street level detail. This data acts as a referencing framework, underpinning many other government, commercial and scientific data.

The products that are derived from this database contain complex data structures such as those required to express polygons and networks; some products additionally contain complex topologic and mereological relationships. Most benefit from these products can be obtained using specialist software such as Geographic Information Systems (GIS) and databases with spatial extensions. This can mean that some end users face difficulties in importing, configuring and using the data.

As would any information provider, Ordnance Survey places great importance on understanding how its products can be enhanced to meet the ever growing needs of people that use geographic information. The complexity of the data products means that a key factor in developing and improving them further is to address issues of usability. To achieve this there must first be an assessment of their usability from end user perspectives.

A research project, summarised in this poster, aimed to provide a broad ranging assessment of the usability of Ordnance Survey's OS MasterMap® product, as experienced by users from the point of taking delivery of the product through to the user producing output from it that they require. OS MasterMap is regarded as the flagship product and the most complex. It is successfully used in diverse, predominantly professional work contexts, such as urban design and emergency response. Though referred to here as 'a product' customers may choose to access one or more of OS MasterMap's data layers according to their requirement for topographic detail, transport networks, address data and imagery.

Objectives:

Objectives of the project were to identify usability issues affecting the end user experience, through the trial application of appropriate usability research methodologies. From this understanding of usability issues, recommendations for product development could be put forward. The relative value of research methodologies applied could also be assessed.

Methodology:

While much work exists within design disciplines on usability of physical products, and within the fields of software engineering and Human Computer Interaction on software interface and website usability, relatively little published research appears to focus on usability of information products. Some examples with a focus on information, as distinct from applications and interfaces, are cited by Hunter et. al. (2003).

Using qualitative research methods we first extracted product specific usability information from a body of existing user and task focused research interviews (fifty five in total), and from other internal information sources. We then carried out an 'expert review' of selected product layers to experience the end user process first hand, and thirdly piloted a diary based means of directly capturing experiences from a small sample of users who work with the data on a daily basis in their own contrasting work contexts.

Results:

Usability issues identified were recorded against stage in the user process (receiving data, translation, loading etc) and categorised by type, for example: data format, data quality. The combined analysis of internal information sources, the expert review and diary-based results identified usability issues in all stages of the process, though few were of major impact on the users concerned. The majority of usability issues were identified in relation to taking delivery of the data product (25%) and working with the data in a GIS application (47%). In some use contexts, for which participants were involved in the task focused interviews and diary based feedback, it can be difficult to isolate data usability issues from software application usability issues.

Conclusions:

The user and task focused interviews were, overall, the most fruitful source for identifying usability issues. An advantage of the 'Expert review' was that it could cover the entire process from receiving data on delivery media through to working with the data to produce output. In this way usability issues could be systematically noted throughout the end to end process, whereas the task focused interviews and diary based approaches tended, with most participants, to focus on part of this process as constrained by their day to day work involving geographic information. Having said this, the expert review was most effective in identifying issues at the initial stages of the process, from taking delivery of data through to loading it to a GIS. The user diaries and task focused interviews revealed more information about issues which occur in the context of working with the data in specific task contexts. The piloted diary based approach further proved a useful way of gauging impact of usability issues on the individual user.

Hunter, G., Wachowitz, M., Bregt, A.K. (2003) Understanding Spatial Data Usability. *Data Science Journal*, 2. 79-89.