

WEB 2.0 GEOTAGGED PHOTOS: ASSESSING THE SPATIAL DIMENSION OF THE PHENOMENON

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Among popular Web 2.0 applications are the social networking, photo-sharing websites like Flickr, Panoramio, Picasa Web, and Geograph. The phenomenon of user-generated content and the increased presence of geographic information in such applications have motivated researchers to consider them as a source of geographic information. In this paper we question whether such web applications can serve as reliable sources of spatial content. We differentiate between spatially explicit and implicit applications, in accordance to their declared aims, and evaluate if they have an impact on the spatial distribution of geotagged photos for Great Britain. We also compare the spatial distribution of the photos submitted with population data, and the patterns of contribution to these sources over a period of 18 months. Finally, at a larger scale, we examine the spatial distribution of photos and their spatial density for 15 test areas and look into issues such as data currency and user behaviour. Our findings show that only web applications that urge users to interact directly with spatial entities can serve as reliable, universal sources of spatial content.



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Parmi les applications Web 2.0 populaires, nous avons accès aux sites Web de réseautage social et de partage de photos comme Flickr, Panoramio, Picasa Web et Geograph. Le phénomène du contenu généré par l'utilisateur et la présence accrue de l'information géographique dans ces applications ont motivé les chercheurs à les considérer comme source d'information géographique. Dans le présent article, nous tentons de déterminer si de telles applications Web peuvent servir de sources fiables de contenu spatial. Nous faisons la différence entre les applications spatialement explicites et implicites, conformément à leurs buts déclarés. Nous évaluons aussi si ceci a une incidence sur la distribution spatiale des photos avec balise géographique (géotag) pour la Grande-Bretagne. De plus, nous comparons la distribution spatiale des photos soumises avec les données sur la population et les modèles de contribution à ces sources sur une période de 18 mois. Enfin, à plus grande échelle, nous examinons la distribution spatiale des photos et leur densité spatiale pour 15 régions d'essai et évaluons des questions telles que l'actualité des données et le comportement des utilisateurs. Nos constatations démontrent que seules les applications Web qui incitent les utilisateurs à interagir directement avec les entités spatiales peuvent servir de sources universelles fiables de contenu spatial.



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1. Introduction

The advances in the technologies associated with the World Wide Web (the Web) over the past few years have been significant, leading to the identification of a step change in web technologies that is termed Web 2.0. While users contributed to the Web in its early days, Web 2.0 users are now central to the process of creating, sharing, consuming and disseminating information. This bi-directional flow of information leads to the growth in user-generated content (UGC). UGC has also affected the delivery of Geographic Information (GI) on the Web. By today's standard, the majority of web maps around 2005 had a very basic and trivial form. Today, common users and experts interact and publish spatial information using sophisticated web mapping services ranging from Google Maps, Microsoft's Bing Maps, or Yahoo! Maps, through to Virtual Globes like Google Earth or NASA's World Wind.

The growth of UGC opens up new opportunities for mapping the world. As *Goodchild* [2007b] states, the arguments made by *Estes and Mooneyhan* [1994], about a mistaken popular notion of a well-mapped world, are still true. In fact, mapping and map updating programs are suffering serious delays in many countries due to budget limitations and rapid development. Thus, in the area of GI, it seems that UGC opens up the possibility of supplying information that can be used to update and maintain existing databases. The core question that is raised by this suggestion is, how effective is this data for updating existing spatial information databases?

Researchers have acknowledged the fact that the evolution of the Web and the maturation of certain enabling technologies, such as Javascript Application Programming Interfaces (APIs), GPS-



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