

Social Media GIS to Support the Utilization of Disaster Information for Disaster Reduction Measures

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This study aims to design and develop a social media GIS for reducing the effects of natural disasters in normal times through to disaster outbreak times. This is achieved by designing and developing a social media GIS that integrates a Web-GIS with an SNS and Twitter, and includes a function for classifying submitted information. The social media GIS enables disaster information provided by local residents and governments to be mashed up on a GIS base map, and for the information to be classified and provided to support the utilization of the information by local residents. Further, the present study also aims to operate the social media GIS and evaluate the operation. During normal times when there is no disaster, disaster information is collected via the SNS, and local disaster information is accumulated. Through this, the system aims to improve the disaster prevention awareness of local residents. Further, during disaster outbreaks when there is an excess of information, if a communications environment (electricity, internet, information terminals, etc.) can be secured, the system aims to support evacuation activities by automatically classifying disaster information, promptly displaying it on the digital map of the Web-GIS, and ensuring its noticeability. Through having people use the system routinely and get used to it in normal times in this manner, the possibility that the system can be effectively used with no problem as a means for reducing the effects of natural disasters even in tense situations during disaster outbreaks can be anticipated.

The conclusions of this study are summarized in the following three points.

- (1) Social media GIS, an information system which integrates Web-GIS, SNS and Twitter in addition to an information classification function, a button function and a ranking function into a single system, was developed. This made it propose an information utilization system based on the assumption of disaster outbreak times when information overload happens as well as normal times. The system unambiguously has the function for full-screen display of digital map, and the button function and ranking function of disaster information.
- (2) The social media GIS was operated for fifty local residents who are more than 18 years old for eight weeks in Mitaka City, Tokyo. Although about 32% of the users were in their forties, about 30% were aged fifties, and more than 10% of the users were in their twenties, thirties and sixties or more.
- (3) The system was evaluated based on the results of an access survey using log data during operation and an analysis of the submitted information. The access survey showed that 260 pieces of disaster information were distributed throughout the whole city of Mitaka. Among the disaster information, danger-related information occupied 20%, safety-related information occupied 68%, and other information occupied 12%.

Keywords: Social Media GIS, Web-GIS, SNS, Twitter, Disaster Reduction, Support for Information Utilization