Correspondence

Public health & GIS: Views & opinions of Indian users

Sir,

The importance of geographic information system (GIS) in public health was discussed for GIS users through a series of four workshops during September 2010 - February 2011. A total of 146 participants that included public health workers, scientists, statisticians, senior level programme officers and GIS analysts from 18 States of India attended these workshops. The participants' views and opinions on 'GIS and public health' have been summarized below.

The importance of creating geo-databases at the micro level in public health departments and the need to relate data on census, demographics, health, meteorological, hydrological, environmental, and geographical aspects was emphasized. It was felt that bringing all such data under one umbrella of "Geo Data Bank" could provide easy accessibility and better utility. Establishing effective linkages between geographic data, disease reporting system and registration of vital events as well as continuous updating of data were recommended to improve the overall quality of health related data. Although data sharing was encouraged; the need to mask sensitive data using appropriate methods was well-appreciated.

It was commented that the maps should be apt and simple. Easy accessibility of standard macro/ micro level base maps was stressed. It was recommended that all existing maps at various scales from town/ city planners to national mapping agencies should be made in the digital format with a common reference system. It was emphasized that all complex maps and spatial models should be developed by personnel with sound knowledge of GIS technology.

There was consensus on avoiding replication, frequent change of names of places and boundaries of wards, cities, villages, *etc*. Spelling variants should be avoided and country specific lexicon of names of places made readily available. Other recommendations included establishment of standard address referencing system and propagating that among all levels of GIS users.

It was suggested that all States should establish their own optimally functional GIS centres. These should be well equipped with hard ware, software and spatial data banks. It is crucial to have well-trained personnel with interest and commitment to GIS activities. A public health analyst must acquire a sound knowledge of GIS technology. Networking of public health GIS analysts and propagation of standard GIS ethics in the country would be extremely beneficial. It was recommended that all GIS related studies from macro to micro level should be recorded in a national level registry of India to avoid duplication of efforts.

All the future GIS software should be enabled with spatial analytical tools and made compatible with the current operating systems. Maintenance and upgradation of standard software should be made cost-effective. Geo-community develops a wide range of freely downloadable software but their reliability, accuracy, precision and acceptability must be assessed in the field conditions. The overall perception was that the purpose of open source GIS will be defeated if it is not user friendly and self-learning modules are not made available with the software.

In India, the main difficulties related to the use of GIS were highly priced software and their non availability at multiple locations; lack of micro level data and shortage of trained personnel[1,2]. The "Computer Aided Utility Mapping Project for six cities" is a significant benefit for the GIS users[3]. A city wide unified

large scale [1:1000] 3D Spatial Data Infrastructure has been developed. It is re-assuring that "spatial literacy" is increasing by sponsored programmes. The usage of Open Source GIS software is gaining importance in India and is expected to overcome the barrier of highly priced commercial software. It will be necessary to expand the six city mapping to rural areas soon. It is also critical that the data are updated periodically to keep the system alive.

It will be crucial to promote de-facto standard automated procedures for epidemiological geographic data collection using suitable scale and temporal settings and to emphasize the importance of collation of spatial geo-database of health under one source or a spatial registry of India. Propagation of quality disease maps and encouragement of studies related to spatial technology would strengthen the applications in public health domain of India.

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