

## MICRO LEVEL UTILITY MAPPING FOR HEALTH AND SOCIAL INFRASTRUCTURE BY GPS SURVEY

By

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### ***The Introduction***

Mapping of the health infrastructure to the micro level is the ultimate requirement for successful monitoring of the health referral system and distribution of amenities. The work of such mapping has already been initiated and completed to a certain extent. The mapping had been done from macro to micro level as per data available from the department of health, and district level. NGOs played an important role in social mobilization and towards the success of the programme.

The pulse polio eradication monitoring programme in West Bengal by GIS/GPS was intended to develop a methodology by which the routine immunisation, (one of an ongoing series in which every child below the age of 5 years is vaccinated) can be monitored phase wise. India has conducted several such campaigns, known as pulse campaigns, in the past and more will be needed if polio is to be eradicated. Health workers and volunteers set up immunisation booths and visited households in cities and rural areas throughout the week seeking to immunise all children aged less than 5 years.

In 2003 the figure says every 1 case of Polio out of 7 reported in the world is from West Bengal being 14%(24 no) of the polio cases out of 48%(38 no) in India. However the present(2005) situation is 1 out of 460 cases of the world is in West Bengal. A booth level/block level/district level monitoring system was introduced with GIS/GPS since February 2003, in order to achieve a perfect performance indicator of the Project.

The project now has been effectively extended for monitoring of routine immunization in the sub centre level (the lowest government health infrastructure) in Block/District level which depicts a clear picture regarding the man power availability, health infrastructure and the performance of the health indicator.

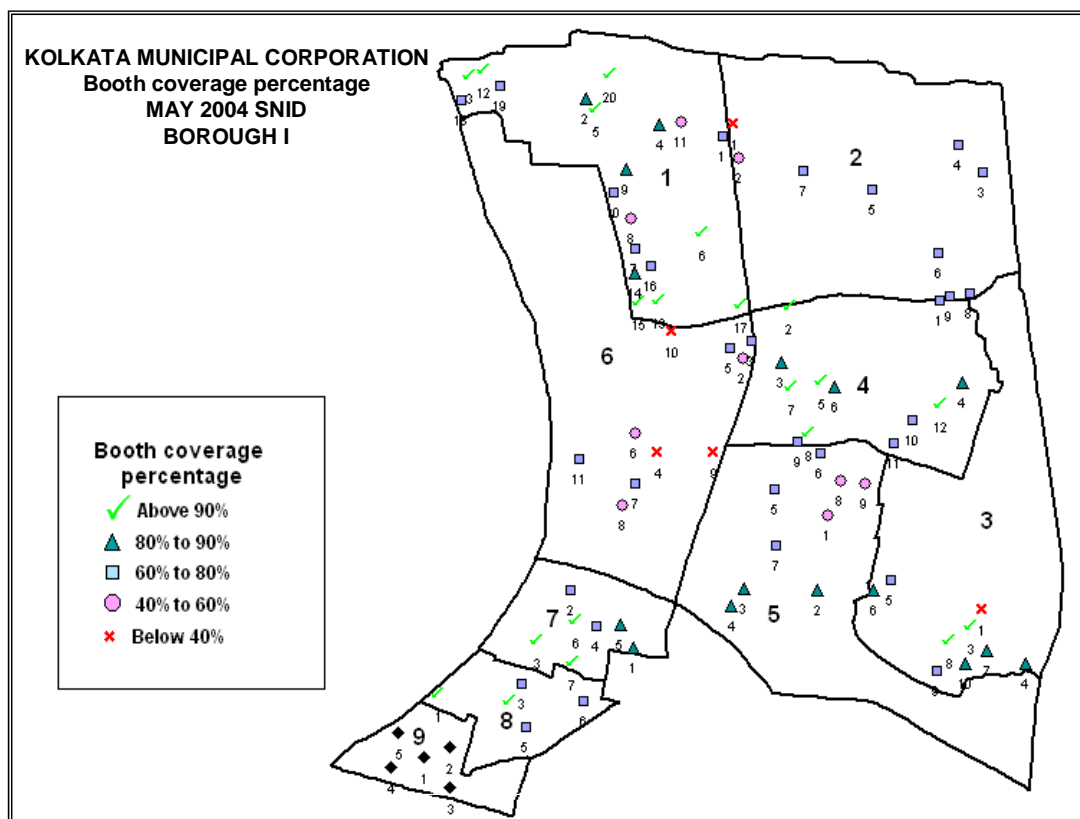
Similar attempt has also been taken in mapping other social and physical infrastructure of the state through GPS/GIS.

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**The Objective**

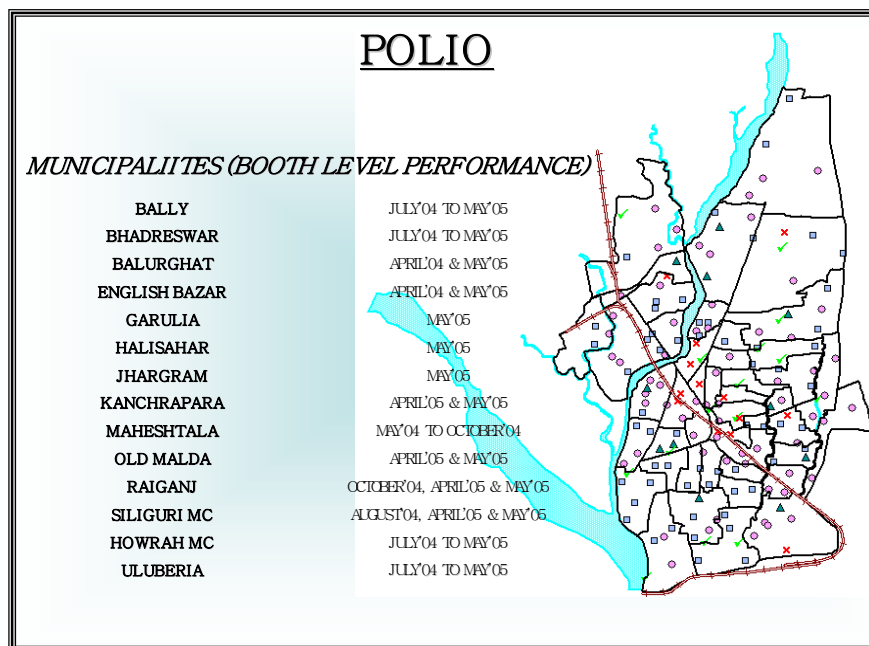
During last few decades health sectors of the 3<sup>rd</sup> world countries got a special attention from different section of the international bodies and several attempts were made for improvement of the health services both in the urban and rural sectors of India. Focusing towards West Bengal the largest and the most successful programme in the recent past was Indian Peoples Programme commonly known as IPP VIII which was implemented in Below Poverty Level population of 52 urban local bodies of west Bengal. The effect of this was a total upsurge in the urban health services and health indicators improved dramatically. This was a first programme owned by the community and both its achievement and failure was shared by the community .How ever it never reached the total population and Urban health care system remain one of the most unattended areas of the society. Its only from last few years with the drive to eradicate polio from Unicef and WHO, a comprehensive and strategic programme : Pulse Polio which had a community base



approach and department of health Govt of West Bengal provided the leadership with the Chief minister leading from the front. All the political, social and religious leaders assembled under one banner for eradicating polio. Technology also played a pivotal role in the entire success story. Specially the Geographical Information System which not only mapped the deficient area for a prior attention but also provided a direction of the status of progress in District /Block/ and Booth level.

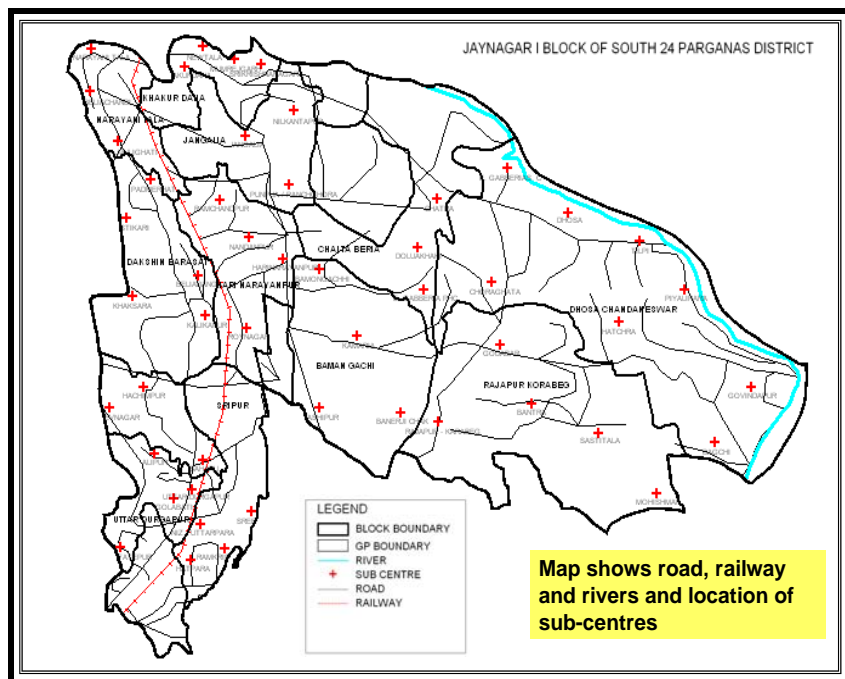
**The Executions**

A location base map prepared by hand held GPS with the instant booth level data helped the entire programme to plan the action strategy through out the state. Most of the urban centers which had a digital georeferenced base map along with the digital Block map all the health infrastructure was mapped by hand held GPS . This mapping technique was fast and had an immediate impact with the ground level staff of the health service provider, they either accepted the spatial accuracy of the location or wanted immediate correction of the inaccurate location with their help. Both were helping to develop a sense of ownership and with the round by round data with a progressive assessing nature helped them to reach a target which was not being done other wise. The visual impact of the identified deficiency of the concern area was an indicator of performance, thereby giving the Block level and District level supervisor a decision making tool for a better target for the following round.

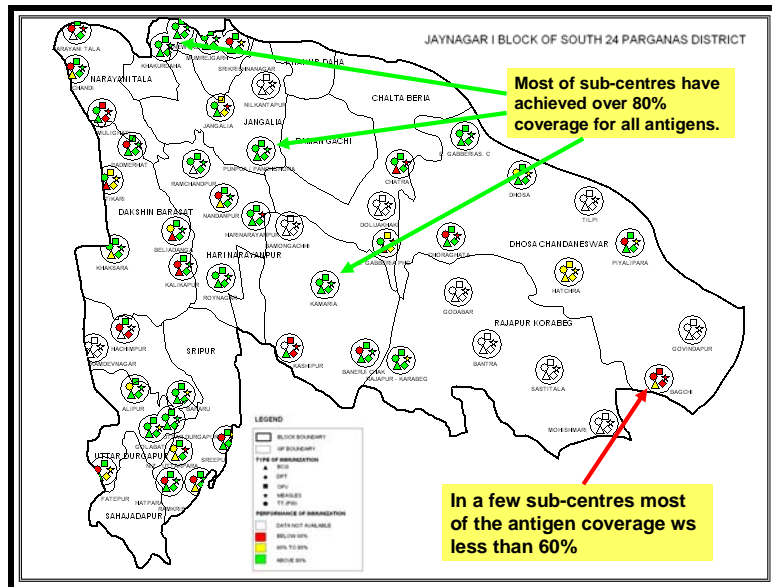


The entire state with all the districts their blocks and booths were mapped and round by round data which was supplied through Department of health Govt of West Bengal was digitally recorded analyzed and an instant feed back was given to the District authority for future course of action. Similarly the Urban centers were also mapped and monitored for a total success of the project.

With the achievement in the Pulse Polio which has been internationally, the focus now has been given to the routine immunization area which is tougher. Principally it is a programme which is carried out throughout the year and has different vaccine to be given, secondly it needs a perfect infrastructure both in human and physical of a permanent nature. So the mapping was extended for both the parameter and success indicator was related with them. It was difficult to get the data base of about 9000 odd location of the sub centers. Same methodology was also extended here also by providing them and initial format and incorporate the correction provided by the District/Block authority with the relevant data base. The process is on and so far about 7500 sub centers has been located digitally and data base attached with about 70% of them.

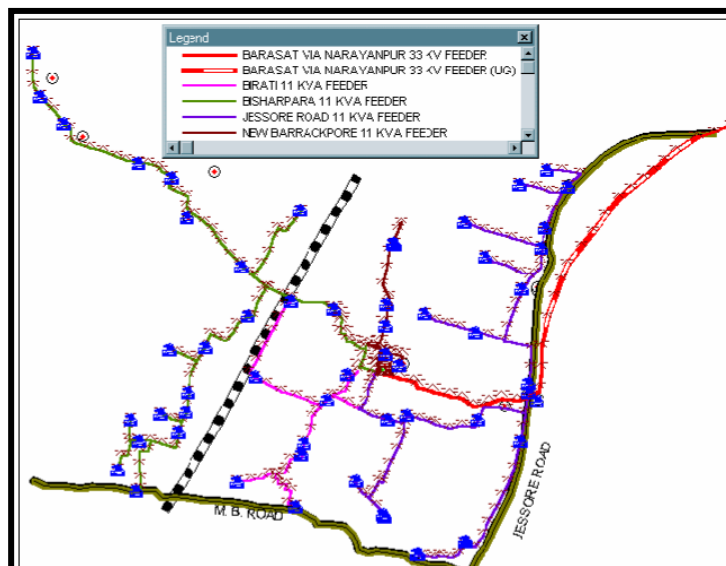


The process of data collection was the toughest among the entire procure. But a huge group of social mobiliser through a number of dedicated group of NGO bridged the gap. A timely intervention from the District authority and to provide the leader ship was also matered.

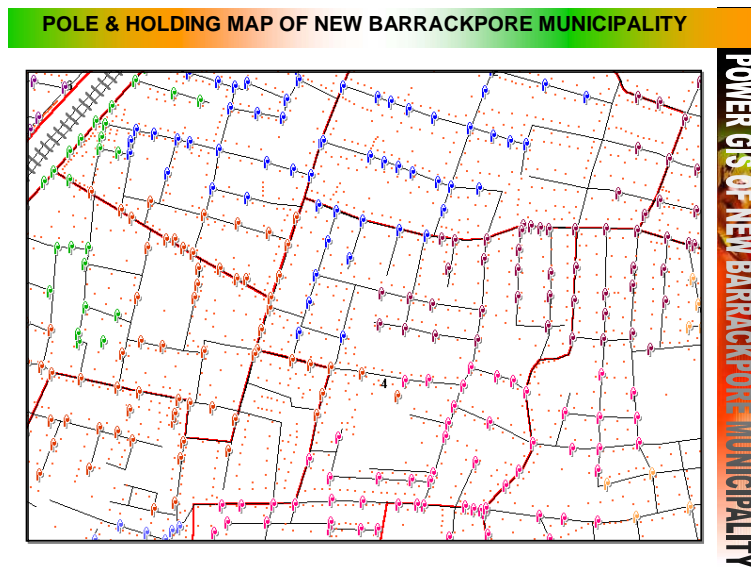


**The Extension in other Sector**

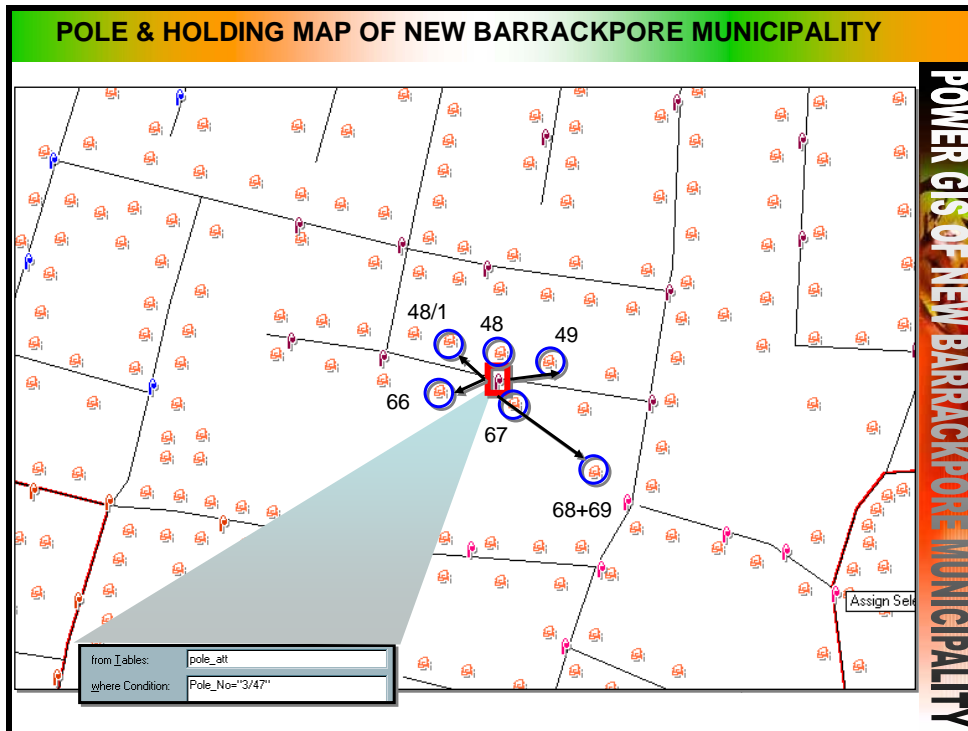
The success of the booth wise mapping in the Polio and sub center level mapping of Routine Immunization gave the system of micro level mapping with hand held GPS gave a state wise recognition and as an immediate result West Bengal state Electricity board took a decision to map the group supply wise networking with GIS under APDRP Project of the World Bank and asked Kolkata Metropolitan Development Authority to Execute The POWER GIS for them.



Environment Cell of KMDA 189 group supply is within the present grip of this project and all electrical utilities of 63 group electric supply have been mapped by hand held GPS . The POWER GIS networking starts from the sub center and ends up with the consumer and in between, the feeder, the HT lines, the DTR, the poles are connected.



The present mapping includes 2 million electrical utility mapping with their respective data base in a GIS platform being operated with a customized GIS /GPS soft ware.



### The Conclusion

The learning process of the entire system is about the simplicity in its operation and replicability. It was fast, cost effective and acceptable. The GIS/GPS technology though so far being promoted as a tool for planning but never been taken in a such a ground level real level application, both in social and physical infrastructural mapping. The technology is available easily and does not need any high level sophistication. However the entire data base finally is being managed by a server base centrally located Data Management Center but in its day to day application it is only the stake holder who operates the system in their place of work. This has given the entire system a speed, a sense of competitiveness and finally a sustainability through increase revenue generation in the Physical sector and a improved Health Care system in case of Social Sectors