

Geo-referencing - A Challenge in Urban Planning and Development Projects

Satish Chandra Gaur

Asstt. Town Planner
Meerut Development Authority, Meerut
[E-Mail-scgaurus@yahoo.com](mailto:scgaurus@yahoo.com)
Ph-0121-2601566

Introduction:

Plan Position of the topographical features is of ought most importance for Geographical information system Professionals and actual map users. This has become further important because in GIS all the layers depict different activities and field of interest, as well as different themes.

This topography layer acts as a base layer and provides positional accuracy and much-desired Geo-reference in terms of latitude and longitude or any other coordinate system to all the special features in the GIS database. If the topographic base layer has been prepared with desired accuracy, the database available from other or outside sources can be integrated and utilized for the desired analysis or final output. As we know there are multiplicity of agencies working in urban development and urban planning . Therefore the maps prepared by all the agencies should be Geo-referenced, so that these could be utilized by others and micro level information could very easily be integrated with the macro level information and vice versa.

Geo-referencing and urban Development Plans

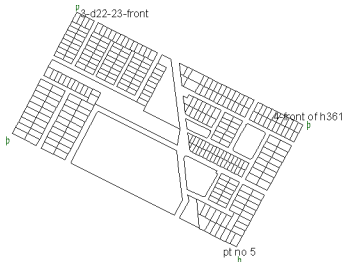
Urban areas are complex multidimensional system evolving out of interaction of multiple agents at several levels. At any given singular moment of time, several transformations may be occurring simultaneously.

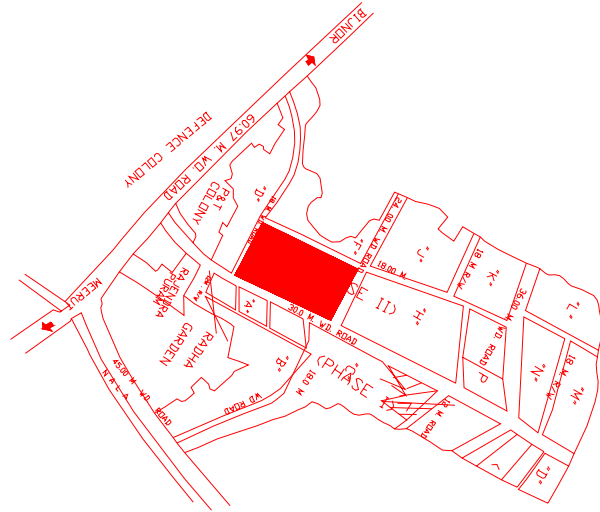
A management plan for any Urban Development project has to be necessarily start with understanding the transformation that have taken place in the study area or area concern.

The Geo-referenced plans if available to desired accuracy can be better utilized in GIS. It is a useful tool, particularly because of its capability to support both spatial and nonspatial attributes and also combines purely representational technique with analytical technique.

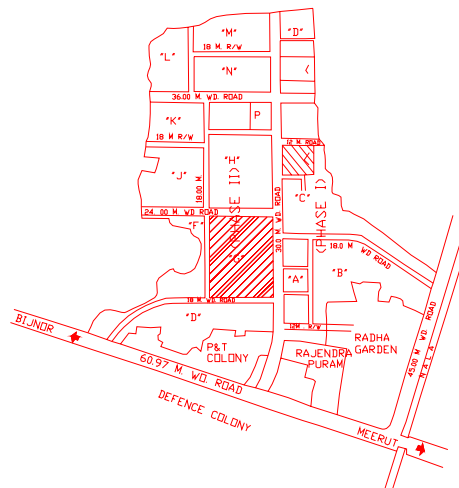
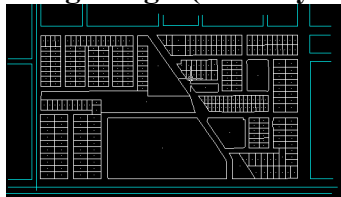
Illustration

The effect of Geo-referencing in one of the residential projet of Meerut Development Authority is illustrated here :-





Ganga Nagar(Acolony developed by M D A)and its G pocket after Geo-referencing



Ganga Nagar(A colony developed by M D A) and its G pocket beforeGeo-referencing

Accuracy in Geo-referencing:

If the base layer has not been prepared keeping the positional accuracy in mind, the whole information system will behave like a floating system. Any thing desired out of such a system may lead to very high order of inaccuracy and mistakes. Therefore, it is must to keep accuracy desired for Geo-referencing in mind for the

type of the job to be carried out. A solution in general urban development projects could be that the scale of coastal map (1:4000), which is actual land record available for initial exercise, an accuracy of 1m. is good enough for all practical design and planning.

Geo-referencing with Global Positioning system:

Single GPS system will not serve the purpose of referencing, as there is likely hood of major error to the tune of 8 to 10 meters. Besides the Coordinates obtained with the use of single GPS have to be converted to our Everest system from WGS –84 systems. The single GPS receiver cannot be a trustworthy source of referencing topographic features. Differential GPS (DGPS) can provide the required coordinates to the expected accuracy. DGPS provide conversion from WGS – 84 to Everest system of Coordinates. It is desirable to have a mesh of DGPS points in the area of interest. These points will not be useful for Geo-referencing but for subsequent surveys also. Required number of Geo-reference points can be obtained by bringing the known survey of India topographical station to the concerned area by a standard method of Triangulation and Traversing. Independent control can also established by assigning (0,0) coordinate to one of the point in the area.

Conclusion:

The paper tries to explain some basic concept and importance of Geo-referenced spatial data to make Geographical Information System (GIS) more useful. As we know GIS can be useful in handling data from diverse sources and forming links and interconnection between them. With number of agencies and organizations involved in the field of Urban Planning, the integrated process can well be participatory one. GIS can serve as a common platform and interface that permits data exchange and collaborate decisions.

The above requirement of common platform can be achieved when all the plans prepared by different agencies are Geo-referenced and derived from the basic topographic layers. All the plans Prepared in the future should mandatory to be Geo-reference.