# NEED TO UPGRADE & CONTROL GEOMATICS PRACTICE IN PAKISTAN

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Surveying has traditionally been defined as the science and art of determining relative positions of points above, on, or beneath the surface of the earth, or establishing such points. This is the simplest form of definition; more exact and elaborate definition has been produced by FIG[1]. In a more general sense, however, surveying can be regarded as that discipline which encompasses all methods of gathering and processing information about the physical earth and environment,. Conventional ground systems are now supplemented by aerial and satellite surveying methods, which evolved through the defense and space programs.

As role of the profession has expanded to covers sub-specialties there was a need to redefine it and so the name ***Geomatics*** has come about.

Surveying or Geomatics is among the oldest professions still in existence from the dawn of recorded history to the present age. There was time when it was the only bit of civil engineering that was practiced. The surveyors have contributed a lot and played an important role in the development works execution in the early period of civilization in Egypt, Indus Valley in Sindh, Harapa in Punjab and Mayas in South America. Without the knowledge of surveying none of those massive monuments and layout of the towns, their streets pattern and their drainage works could have been possible. We salute those early surveyors for their achievement using some of the most primitive tools of the profession.

The credit for introducing modern surveying to the huge mass of undivided India goes to the British of the Raj days. It was a great scientific achievement of the time to establish survey control network over such a vast and difficult terrain and thereafter carryout mapping through Plane Tabling process.

Pakistan at the time of independence in 1947 inherited the same training and rules and regulations governing the mapping and its disbursement to public as was practiced by the Raj. With the passage of time and as new techniques and technologies became available they were adopted depending upon the resources allocated by the Government of the time.

British of the Raj days had certain reservations as to who should have access to the surveying and mapping information and there were strict rules and regulations regarding the secrecy of this information to extant that only very trusted Indians were inducted in this profession.

With passage of time British at home slackened the level of secrecy but it did not happen in our country. Our government survey department (the Survey of Pakistan-SOP) and I believe the same applies across the border where SOI treats survey and mapping information a top state secret like it was practiced way back in $18^{th}$ or $19^{th}$ century by the Raj.

In this age of GPS and remote sensing when almost nothing is secret anymore it can be rated as illogical or irrational approach to deprive public the planners ready access to the geomatics information.

There is so much talk of GIS and LIS etc. in Pakistan but both of these are fully dependent upon geomatics. The accuracy and back bone of GIS and LIS is geomatics. For quality geomatics we need to produce quality geomaticians (surveyors). But the situation in this specialty is alarming because none of our Universities teach geomatics at undergraduate level. The universities have started to teach GIS but without doing something about teaching geomatics at university degree level.

Country's largest employer of geomaticians SOP has their own training institute where they train their survey technicians or junior survey officers, the same goes for the army where there is equally large demand for geomaticians. Punjab Mining department also has training institutes; one year diploma and advanced 3 years diploma level. There many Polytechnics offering six months to one year survey diploma courses.

But the quality of training is directly proportionate to the quality of the teaching faculty and availability of modern surveying instruments including computer aided mapping facilities etc. We grossly lack in both trained faculty and surveying equipment. The students graduating from these institutes are in general are of very low caliber technicians who learn the profession on the job through their own efforts. It is amazing that after a few years in a good organization they excel and if they have had proper training at the institute of learning things would have been even better.

The prime university of engineering and technology of the country (UET-Lahore) have degree programmes for all types of engineering studies under the Sun except surveying (B.Sc.Geomatics). This unfortunate situation stems from the short sightedness of our education policy makers.

Geomatics is the basic activity for all development projects. In the sixties and early seventies huge water resources projects related to infamous Indus Water Treaty between India and Pakistan were implemented. The foreign consultants and contractors of those projects brought their own chief surveyors and senior surveyors, only technician level surveyor were from the local pool. Those projects produced in the end

highly experienced local surveyors, majority of them ended up working for better wages in the Oil boom days of mid seventies in the Middle Eastern countries.

Geomatics is also very basic and important activity in cadastre as well. An important government activity for all nation states is building and maintaining a land administration system (LAS) with the primary objective of supporting an efficient and effective land market. This usually includes cadastral surveys to identify and subdivide land, land registry systems to support simple land trading (buying, selling, mortgaging and leasing land) and land information systems (LIS) to facilitate access to the relevant information, increasingly through an Internet enabled e-government environment[2].

In Pakistan unfortunately cadastre is in the hands of poorly qualified revenue department's famous or should we say infamous personnel called *Patwaris.* Their performance in land related surveying work is full of opportunities for cheats to flourish unchecked and innocent citizens to suffer. Computerization of land record is in progress at district level and one would hope that *Patwari* culture may end soon.
In our country courts are loaded with land related civil cases and other disputes including very many murder cases stemming from land disputes. Geomatics can be instrumental to put an end to all this. No LAS or LIS can function without credible basic land related data and only geomatics will provide this. It is a very important technology of this age and we have neglected it for too long[3].

If we look closely at the trend of young engineer who go abroad for studies from our country we find that few want to take up geomatics at the undergraduate level at foreign universities. This is a disappointing situation and need correcting.

The end result of this situation is that in private sector the profession is also in the hands of technicians because there is no licensing system in place. Any technician who can operate a total station and leveling instrument and has financial resources to buy one set of instruments end up forming a surveying company in private sector. Computers are very cheap and there is no dearth of mapping soft wares so one is in business. There may be (in Pakistan) two or three companies which are headed and owned by civil engineers and only one by a fully qualified survey engineer and chartered land surveyor.

The price competition between a technician run survey company and that of an engineer / professional survey engineer goes in favor of the former. The public sector departments, major source of surveying contracts and even bulk of the private sector companies go for the cheapest quotation with complete disregard for quality of end product. The amazing thing is that it will be a multibillion dollar project and the owner would be trying to make savings and compromise quality of survey data on which the project design and earth work quantities are to be based.

Pakistan Engineering Council (PEC) was created by an act of parliament and there is dire need to have one for Geomatics to act as controlling authority. As has been said in another article on similar subject geomatics may be made part of PEC through revision

in the PEC Law. Unfortunately our parliamentarians are not alive to the importance of such a law plus the fact they have their own priorities. What we need is a member of the national assembly who is also a geomatician to push such a law through. In the last Parliament we had a surveyor who was deputy speaker of the parliament but unfortunately priorities were different. Nothing was done for the betterment of the profession. We may have to wait for another opportunity.

There is severe shortage of qualified and experienced surveyors to work on on-going major projects. Unfortunately at present the image of Pakistan is tarnished in the world due to certain amount of unrest in the country but many of the major projects are under executions and more are in the offing where geomaticians will be in demand.

References:
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