Capacity Building for GNSS Education in Nepal

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Introduction

- Nepal is land lock country with **Mount Everest** Earth highest mountain (8848m).

- Country had Maoist war problem from 13 February 1996 – 21 November 2006 (10 years, 9 months, 1 week and 1 day)

- Earthquake of 7.8 rector scale killed more than 8,857 people and injured 22,304 and damages 80% houses and infrastructure of 18 districts in 25 April 2015

- Now fuel crisis and other logistic commodities due to the Unofficial Indian blockade
Although Nepal had a series of problems, it tried to adopt and develop the capacity building in space science technology.

The first Geodetic activity was started in Nepal in 1970.

For the first time, topographical Survey, a branch of Survey Department, bought a pair of WM102 GPS receivers and used in Nepal-India boundary survey in 1988.

Lumbini Zone Topographic Mapping Project was funded by Government of Japan.
Collaborative project work

- Trimble receivers were used for the topographical mapping works in 1988.

- During 1992-95 Eastern and Western Nepal Topographic Mapping Project, funded by Finland Government, also contributed to GPS receiver handling training with Ashtech receivers.
University of Colorado and Massachusetts Institute of Technology (USA) work with new GPS station

Trimble and Ashtech receivers were used station at 29 different locations covering Nepal.

Satellite data were captured from those stations in 1991.

University again tracked continuous data from those stations for few days for crustal movement studies in 1996.
Global Navigation Satellite System (GNSS) and its Application in Nepal

- Tourism
- Disaster management (earthquake, forest fire and flood)
- Search and rescue
- Forestry
- Military
GNSS Education in Nepal

- GNSS education and training is lacking behind in Nepal.
- GPS has started in the middle 1980’s
- There has been a shortage of skills in its use at several levels.
- Recently few Universities and government’s institutions and agencies taking the initiation in GNSS Education.
- Few private industries such as GNSS vendors are also running specialized short courses, specifically hardware and software specific.
Those courses come from utility companies, the military and non-governmental organizations.

There are very few GNSS and related textbooks from abroad at local book stall.

Now we have very little knowledge about the Use of GNSS bring serious threat of data quality and accuracy.
GNSS Education Programs In Nepal

- GNSS education started in Geography and Civil Engineering Curricula with limited subject matter in Nepal.

- Lack of practical activities due to the limited budget for laboratory.

- Few GNSS education and training programs appear under Geomatics field of study.
GNSS Education Programs (Academic)

- First course in RS and GIS started in Private University and government collaboration
- University: Kathmandu University (KU), collaboration with Land Management Training Centre (LMTC),
- Intake: 24 students.
- Level: Bachelors in Geomatics Engineering
- Started: 2007
- Course: RS and GIS, Surveying and some credit course of GNSS
Government University

- University: Trivubhan University, Institute of Engineering, Pashchimanchal Campus
- Intake: 48
- Level: Bachelor in Geomatic Engineering
- Started: 2011
- Course: RS, GIS, surveying and some credit of GNSS
Future Course offer

- Campus has started Master in Civil, electrical and computer Engineering in 2015

- Center for Geomatics and space science research has initiate for the workshop for curriculum develop of master in Geomatics Engineering

- Campus and Dean administration agreed to start the course in 2016-2017
Short-Courses

- Land Management Training Centre, Government of Nepal offers courses in one year long Senior and Junior Survey Training as a part of in-house HRD programs.

- They use limited study about GNSS during the survey period

- These courses are mainly focused on field Surveys.
Land Management Training Centre also offers specific short training courses for Survey Department personnel.

The training course is aimed at imparting the participants with knowledge about GPS/DGPS/GNSS, its working principles and modern day applications.

Local institutions also organize seminars and meetings on Space technology, GNSS and related field.
The other parties that offers short-courses, which on the other hand focuses on instrumentations – hardware and software – are GNSS related vendors.

Non Government Organizations such as Open Street Mapping Nepal and ICIMOD provide training to their staff about the use of GNSS.
In this era of the so-called GNSS era, it is well known fact that the innovative activity which is the primary source of knowledge generation, concentrated only in a number of developed nations.

Within these developed nations, these activities are only concentrated and dominated by only a small number of corporations.
In developing nations, the primary mode of promoting technology advances is through technology acquisition.

However, in this new era of economy, the focus hold direct towards on innovation and the creation of new technology and higher value-added activities by increasing basic and applied research.
Issues of GNSS Education in Nepal

- Universities should focus on research, seminars and workshop related to GNSS.

- Training for Trainers

- Academic and Training institute should conduct survey camps which should focus not only in data acquisition but also in data processing

- GNSS topics should be introduced to student project.
University has to make Collaboration between national and international organizations

Continues leading academic and research activities is needed in this field instated of project oriented work
CONCLUSIONS

- Capacity building is one of the important components in the development but capacity building of application of GNSS technology lack behind in Nepal.

- Developing of university course and operating for the human resource would benefit the society from the GNSS technology.

- Implementation the new teaching curricula and training trainers with international organization is essential in Nepal.

- GNSS network with international cooperation and regional cooperation would give the valuable result for solving the emerging task.
Thank You for your kind Attention!!