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# SURVEY DEPARTMENT: National Mapping Agency, Nepal

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*Deputy DIRECTOR GENERAL, SURVEY DEPARTMENT*

..October 2022



SURVEY DEPARTMENT, GON



## Presentation Outline

Organizational Arrangement

Legal framework

Major achievement of Survey Department

Major achievements










Standardization of Surveying and Mapping

Authorization of Specification for Maps and Data Prepared by Various Agencies

Regulating of Surveying and Mapping Activities from other Agencies

Contribution in Professional Development

Works as a Secretariat of Surveying and Mapping Committee







# Organization Structure



## Survey Department

**Topographic  
al  
Survey and  
Land Use  
Management  
Division**

**Geodetic  
Survey  
Division**

**Geographic  
Information  
Infrastructu  
re  
Division**

**Cadastral  
Survey  
Division**

**District  
Survey  
Offices  
(130)**



**Special  
Survey  
Offices  
(5)**

**Digital  
Survey  
Office  
(1)**





## Activities and Programme






## Geodetic Survey Programme: Activities



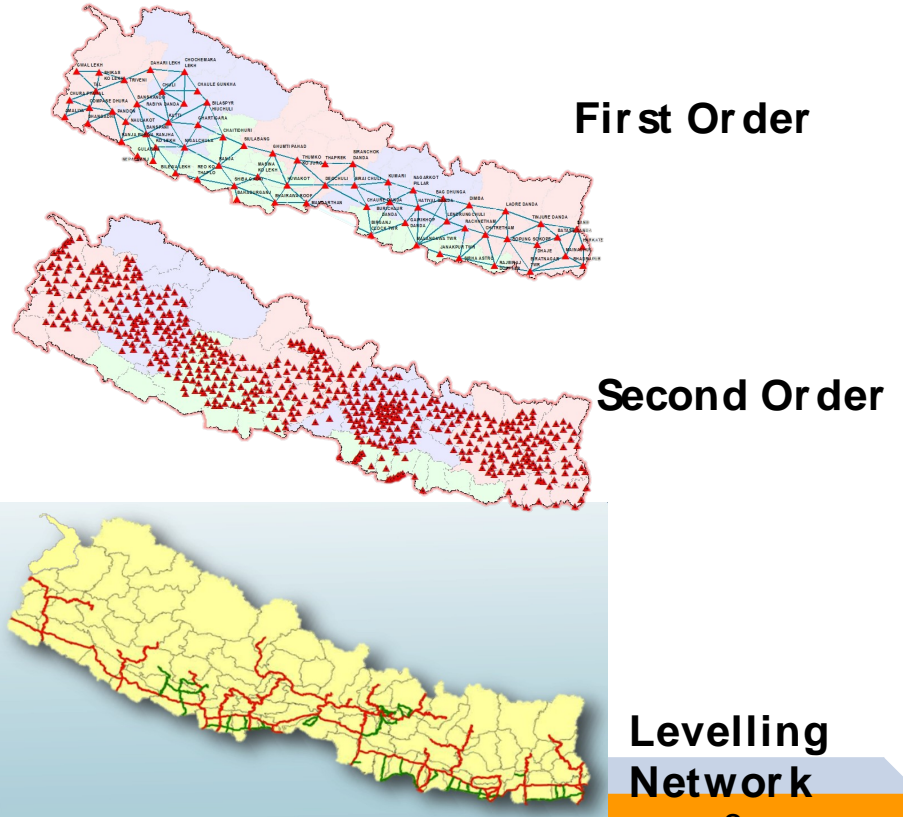
Horizontal Control Survey  
Levelling Survey  
Gravity Survey  
Deformation Study in the place of  
National Importance  
Strengthening of Geodetic Network





## Geodetic Survey Programme: Major Achievements

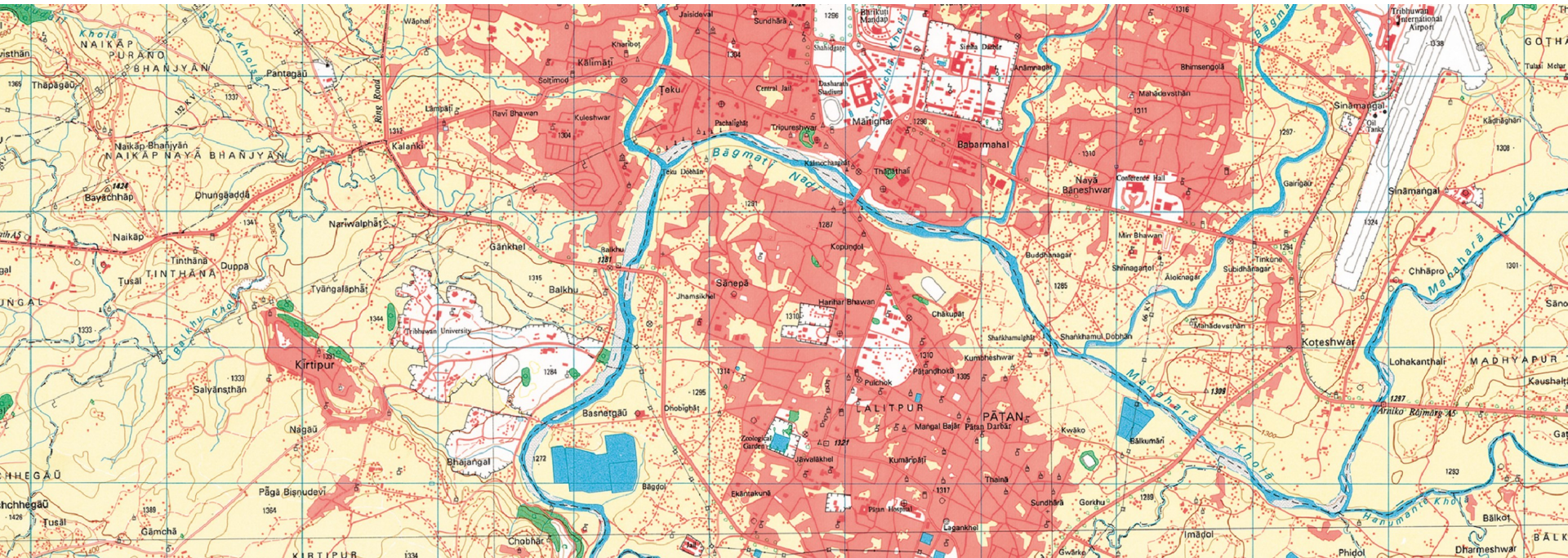
Order	Nos.
First	68
Second	653
Third	3701
Fourth	256402
Levelling Network	More than 7000 km







## Nationwide Coverage of Topographic Base Map Series





Preparation of Administrative Maps

Preparation of Thematic Maps

International Boundary Survey and Mapping

Rehabilitation of boundary pillar

Preparation of Land Use Maps for local administrative units (completed 753 local levels)

Updating of Topographical Maps (all 706 sheets completed)







## Cadastral Survey





Preparation of Cadastral Documents, Registering of land and Distribution of Land Ownership Certificates

Completion of one way (First survey) cadastral survey except few rural blocks

38 districts surveyed in grid sheet

37 districts surveyed in free sheet

Cadastral Mapping of Rural blocks in its last stage

Technology advancement

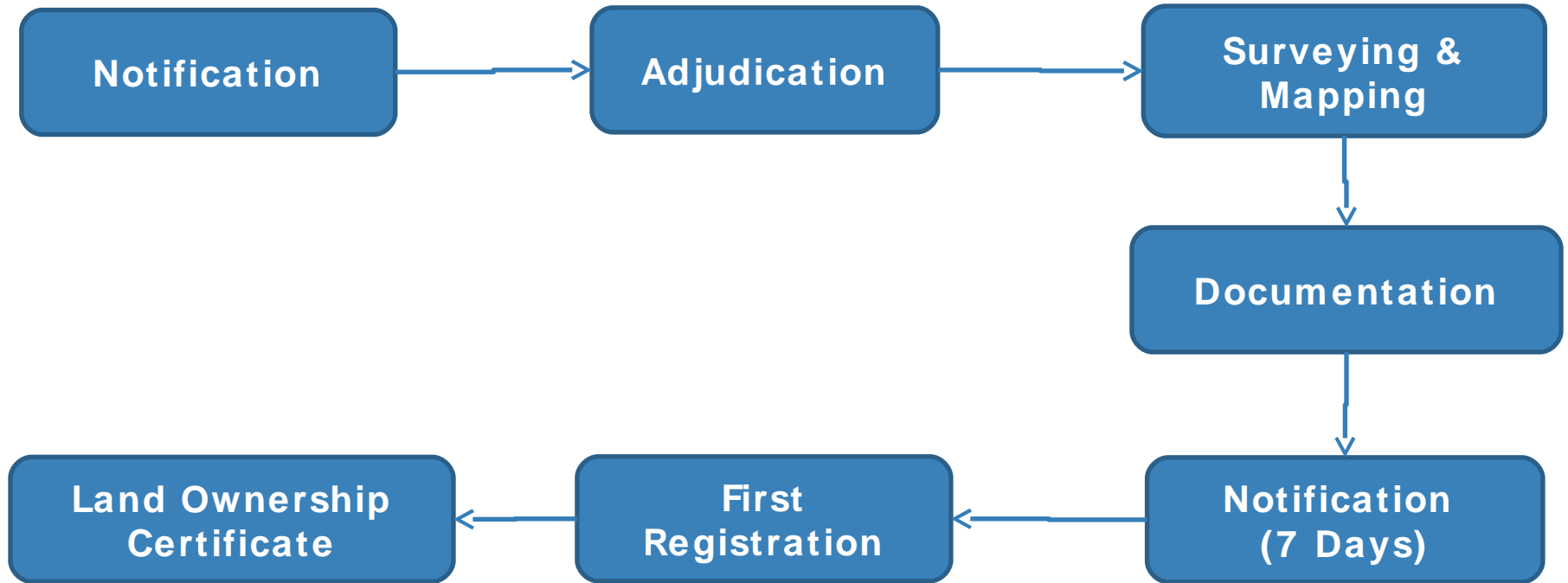
Reestablishment of Cadastral Documents of conflict area







## Cadastral Survey : First Registration





## Nationwide Coverage



Analogue



Digital





## Cadastral Survey : Land Registration Characteristic

The cadastre is based on systematic adjudication  
Registration of deeds takes place with negative system of land registration  
The cadastral boundary is regarded as general boundary  
The cadastral surveying and land registry organizations in the district are under the same ministry, but having independent existence and independent hierarchical system  
Most of the land parcels are already registered, leaving individual parcels in village-block areas and some parcels with disputes





## Cadastral Survey : Land Registration Characteristic

Registration of deeds is compulsory guided by law using standard deed form signed by both parties

Unique parcel number connects cadastral maps and the land registers

Restrictions, mortgage and information in deed are checked before conducting land transaction

Registration can be done in the district office

Land registers are open to the public

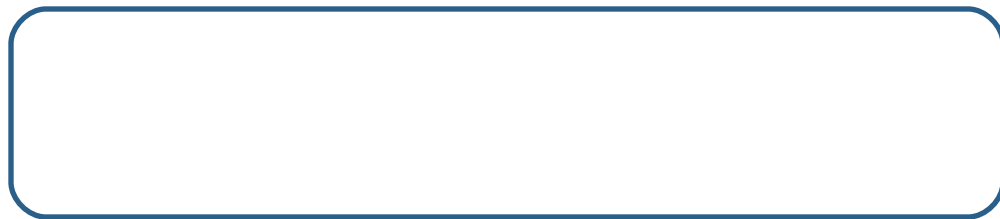




## Geographic Information Infrastructure: Activities

Dissemination of Geographical Information for Nation Building  
National Spatial Data Infrastructure Clearing House  
Freely Available Topographic Maps (1:1000000) and Administrative  
Boundary  
Standardization of Geographical Information  
Publication of Metadata of Geographical Information  
Preparation of digital topographic database of different scale  
Publication of Population and Socio-Economic Atlas  
Working with UNGGIM for building Country Action Plan in IGIF under  
Development Account Project  
LiDAR Survey









# The Everest Measurement





## The Everest Measurement: Activities conducted

**Precise levelling of 178 kms**

**Datum height at *Maadar* station connected from Indian datum**

**Temporary CORS established at the height of 5050 m during GNSS observation at the summit**

**GNSS and Gravity survey at 298 stations**

**GNSS observation at the summit for 1 hr 15 minutes**

**Snow height declared as 8848.86 MASL**





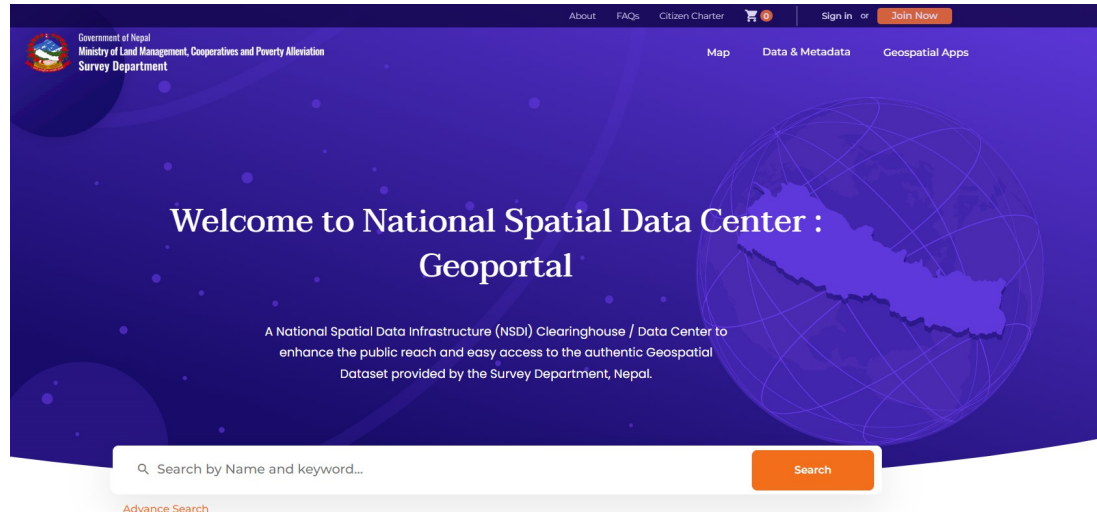


## NSDI Initiation In Nepal

### NSDI Clearing House (Inline with IGIF)

Inform the general user about the data by creating Metadata

Launch the metadata via Clearinghouse Which will pave the way for data accessibility  
(nationalgeoportal.gov.np )





## Metadata function of NSDI Clearing House

[Map](#) [Data & Metadata](#) [Geospatial Apps](#)

[Advance Download](#)

### Available Datasets

- ☐ Administrative Boundaries
- ☐ Geodetic Control Points
- ☐ Hazard
- ☐ Land Use Data
- ☐ Others
- ☐ Orthophoto
- ☐ Cadastral Data
- ☐ Topographic Data
- ☐ Social Infrastructure

### Data Contributors

- ☐ Others
- ☐ Survey Department

[Advance Search](#) Sort by [Sort](#)

Go to **Advance Download** to download filtered data.

[Advance Download](#)

**Administrative Boundaries** [Free](#)

**Administrative Boundary - National ( 1:1000000)**

Administrative Boundary layer contains National boundary according to new...

Created Sep 20, 2022 Last Modified Sep 20, 2022

**Administrative Boundaries** [Free](#)

**Administrative Boundary - Districts ( 1:1000000)**

Administrative Boundary layer contains District boundaries according to new...

Created Sep 20, 2022 Last Modified Sep 20, 2022

**Administrative Boundaries** [Free](#)

**Administrative Boundary - Province ( 1:1000000)**

Administrative Boundary layer contains Province boundaries according to new...

Created Sep 20, 2022 Last Modified Sep 20, 2022





## NSDI Initiation In Nepal

# Applications of NSDI Clearing House

Map Data & Metadata Geospatial Apps

Search...

Search

Sort by Sort



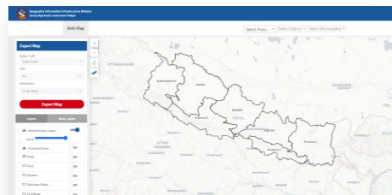
### Basemap Application

This app contains Basemap of Nepal.

Published

-

View App



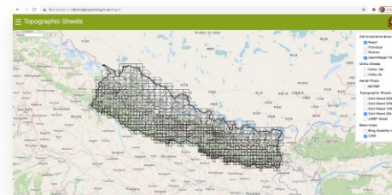
### Nepal Local Unit Maps

View and download local unit maps in pdf format. There are two options: 1. Hard Copy Map and 2. Custom Interactive Ma...

Published

May 13, 2019

View App



### Topographic Application

This app contains topographic data of Nepal.

Published

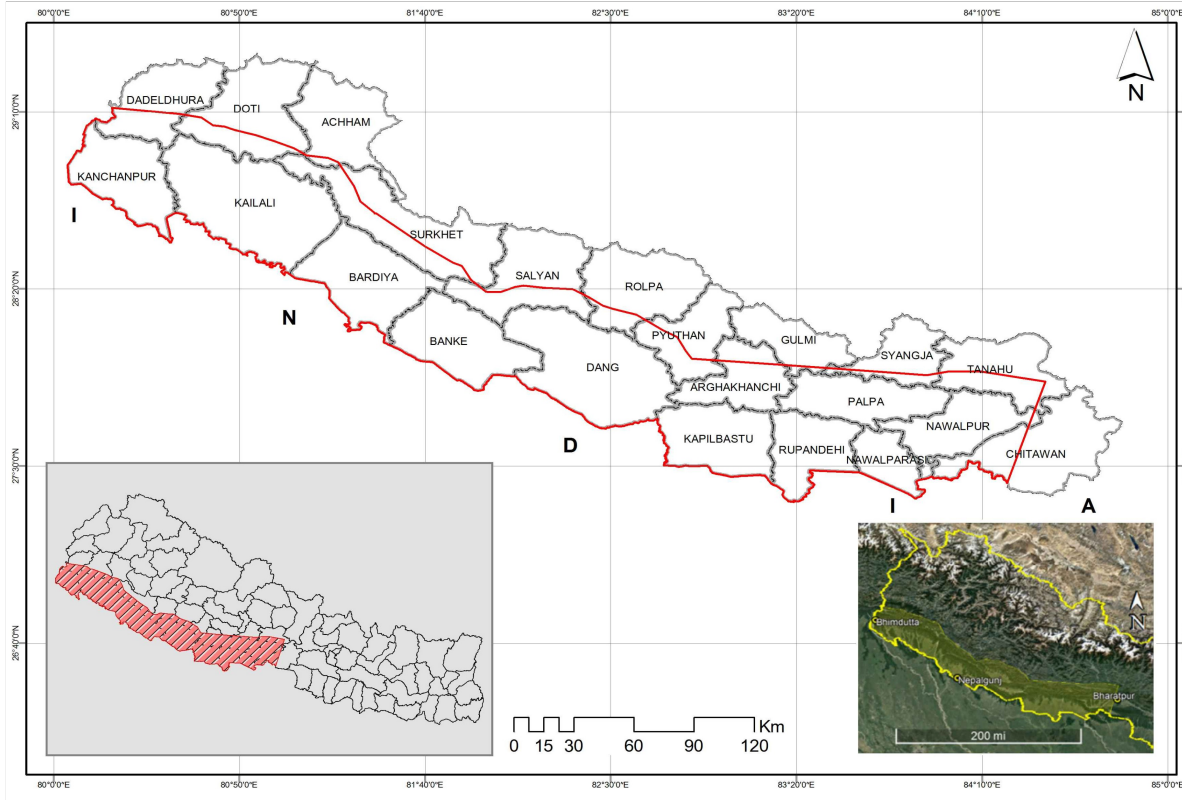
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View App





# LiDAR Survey





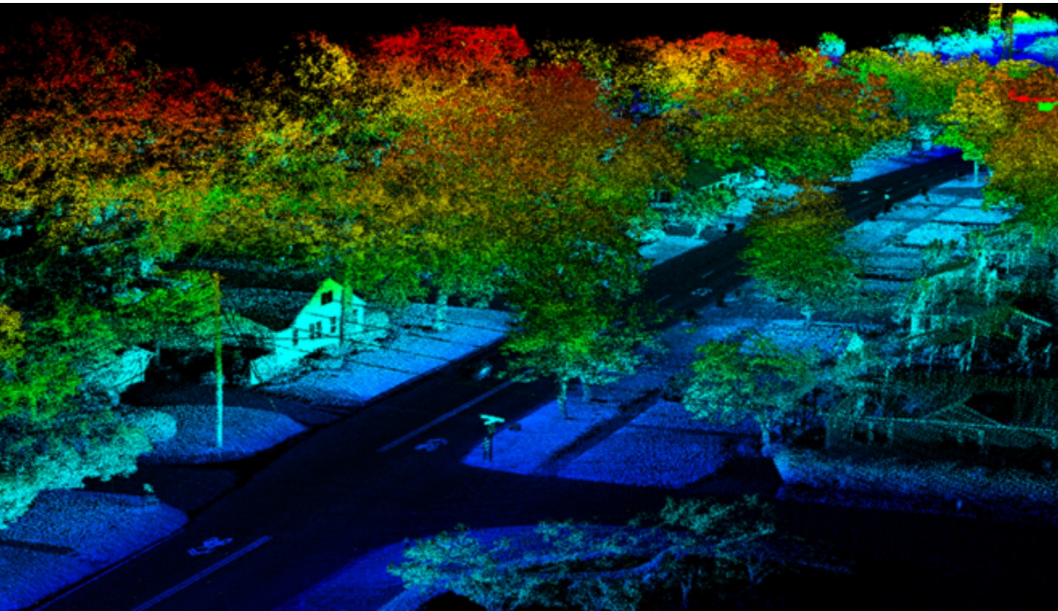
## LiDAR Survey

1. West terai area of 20,000 sq km. (Chitwan to Kanchanpur district)
2. Point Cloud density of 4 points per sq meter
3. Orthophoto resolution 15cm
4. Contour interval 1m
5. Current Status: Data acquisition completed and Data Processing ongoing





## LiDAR Survey



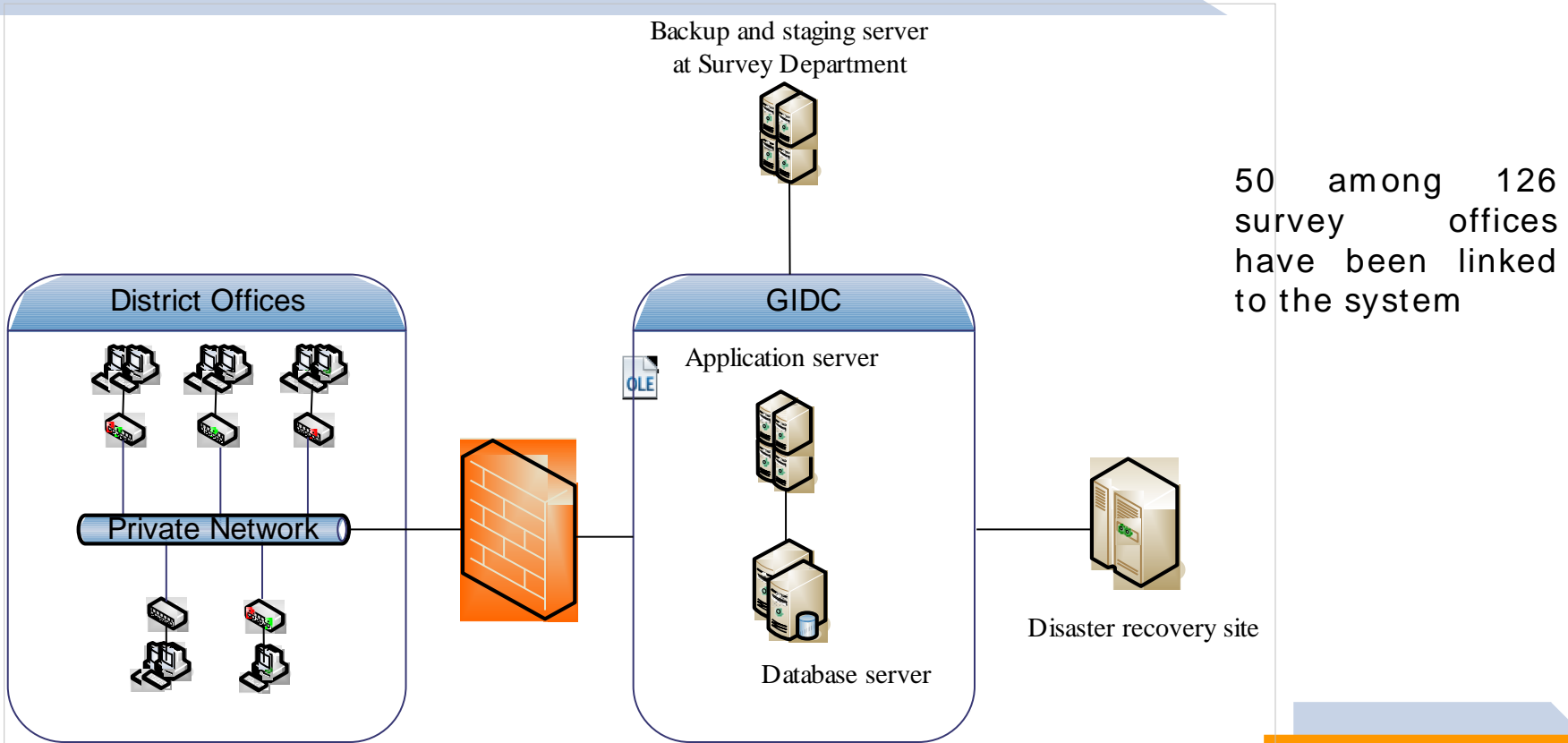
Point Cloud

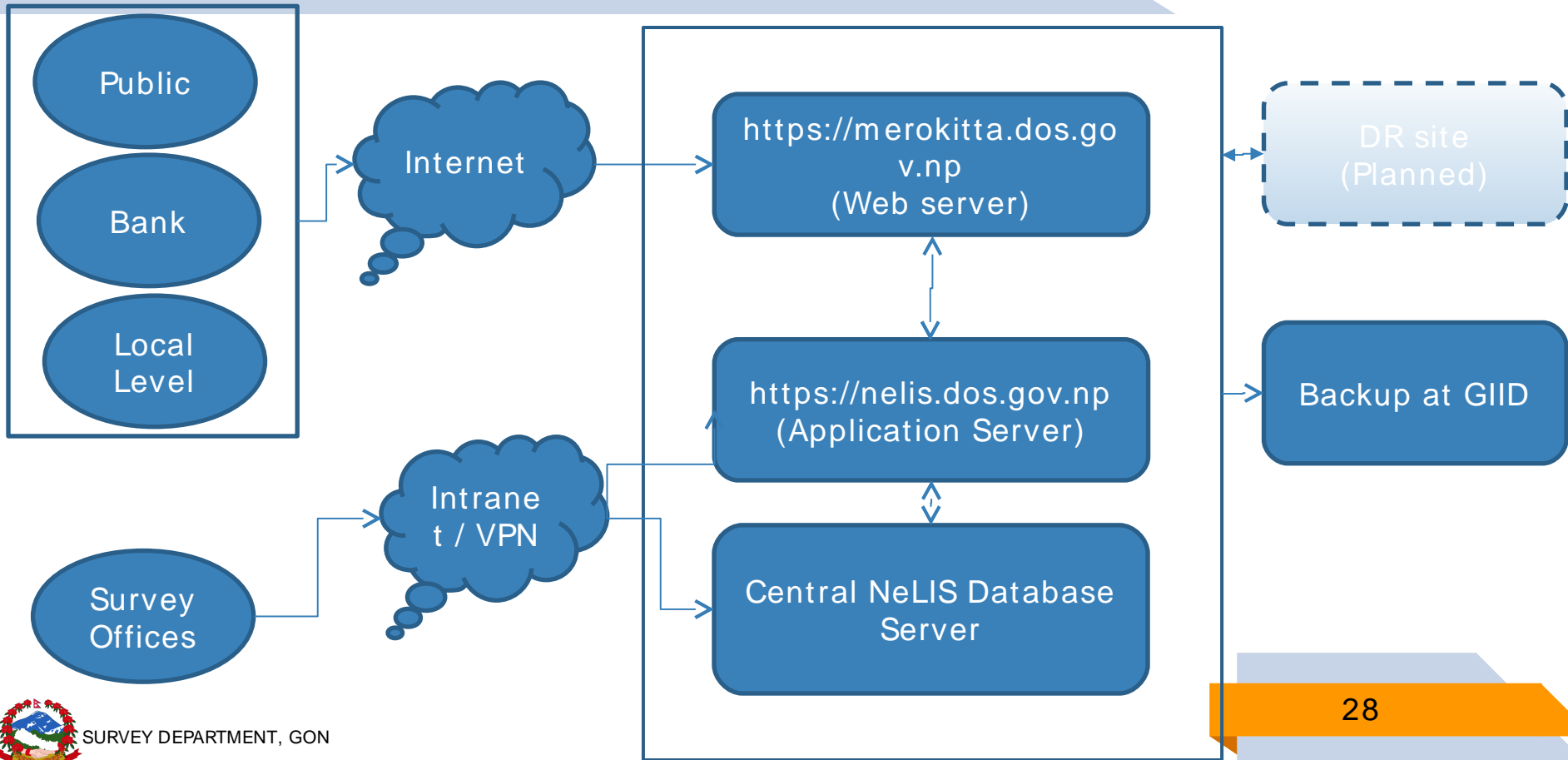


Photo













**Rural Municipality/Municipality level land use mapping completed for all 753 local level**

**All the data have been handed over to respective local level**

**Local level are in stage of implementing land use act and rules on the basis of those maps**





System deployment in all Survey Offices

Production of multipurpose maps and data for infrastructure Development

LiDAR survey of whole country,

Large scale mapping,

high resolution DTM, Orthophoto generation

Establishment of Continuously Operating Reference Stations (CORS)

Enhancement and strengthening of clearing house and metadata

Exploring usability of UAV for Cadastral Surveying

Application of UAV for large scale topographical mapping

Application of UAV for disaster mapping supporting post disaster activities





# THANKS!

