

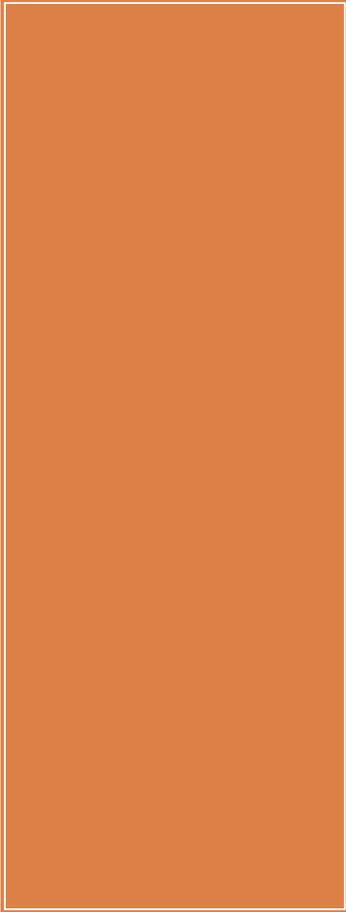


# GEODETTIC INFRASTRUCTURE IN GUYANA

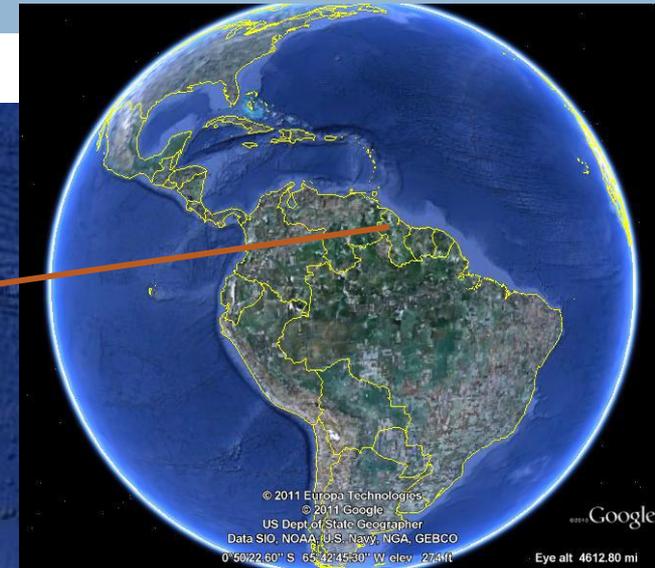
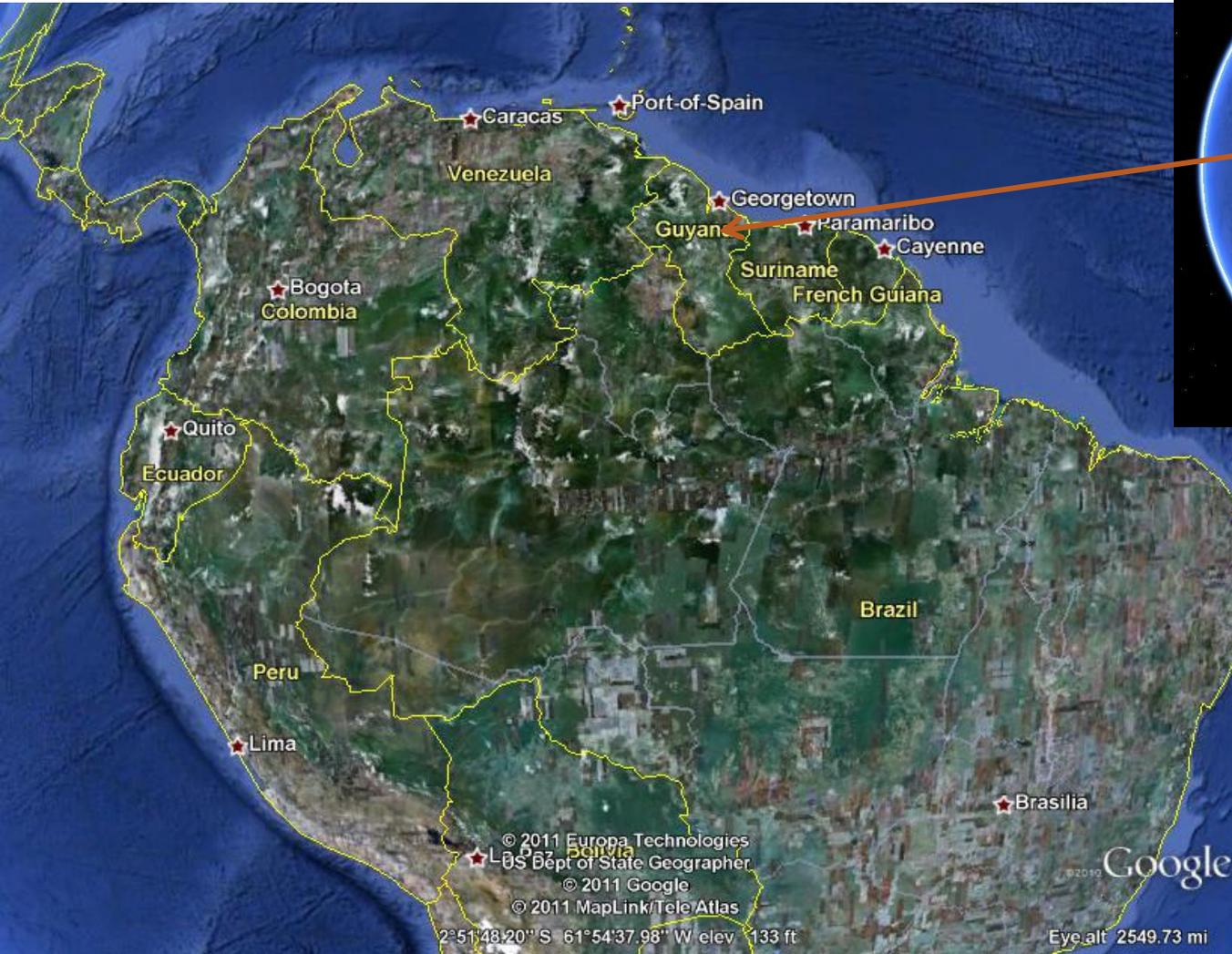
Donald Singh  
Sworn Land Surveyor

# Presentation Outline



- 
- Location of Guyana
  - Guyana's Country Profile
  - Geodetic Infrastructure
  - Strategic Plans
  - Conclusions

# Location Map - Guyana



# Country Profile

**Language:** The only English speaking country in South America

**Population:** 761,400 (UN2010)

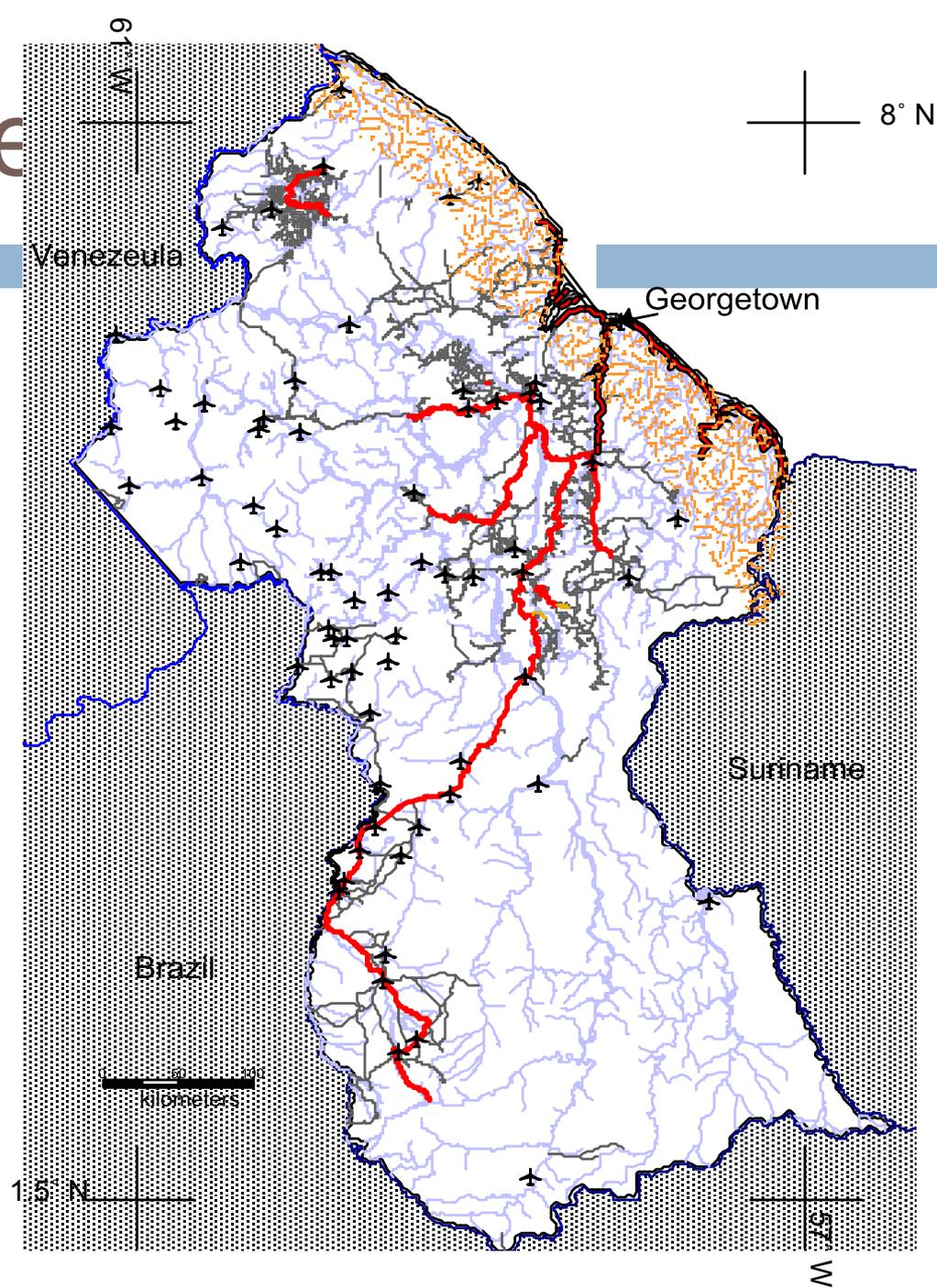
**Area:** 214,969 sq Km

**Currency:** GY\$ (~ 2 Colones)

**Capital:** Georgetown

**Major Challenges:**

Most of the Population lives on the Coast, which is 2m below MSL



# Geodetic Infrastructure

- Reference Framework
- Data
- Physical Components
- Intellectual Components
- Institutional Arrangements

# Reference Framework

- ❑ Guyana employs a “localised” Provisional South American 1956 Datum (ASPRS2006);
  - ❑ International 1924 Ellipsoid ( $a = 6,378,388$  and  $1/f = 297$ )
  - ❑ Delta x :  $-298\text{m} \pm 6\text{m}$
  - ❑ Delta y :  $+159\text{m} \pm 14\text{m}$
  - ❑ Delta z :  $-369\text{m} \pm 6\text{m}$
- ❑ the Georgetown Vertical Datum is set to 56 feet below MSL of which traverses have been done along the coast.
- ❑ Guyana straddles 2 UTM zones; Z20 and 21 North.
- ❑ No geoid model in place...

1:2 000 000  
**NETWORK DIAGRAM**

**GROUND CONTROL:**

- ▲ HIRAN TRILATERATION STATION
- △ AERODIST TRILATERATION STATION
- DOPPLER
- ▲ POINT POSITIONING STATION
- TRANSLOCATION STATION

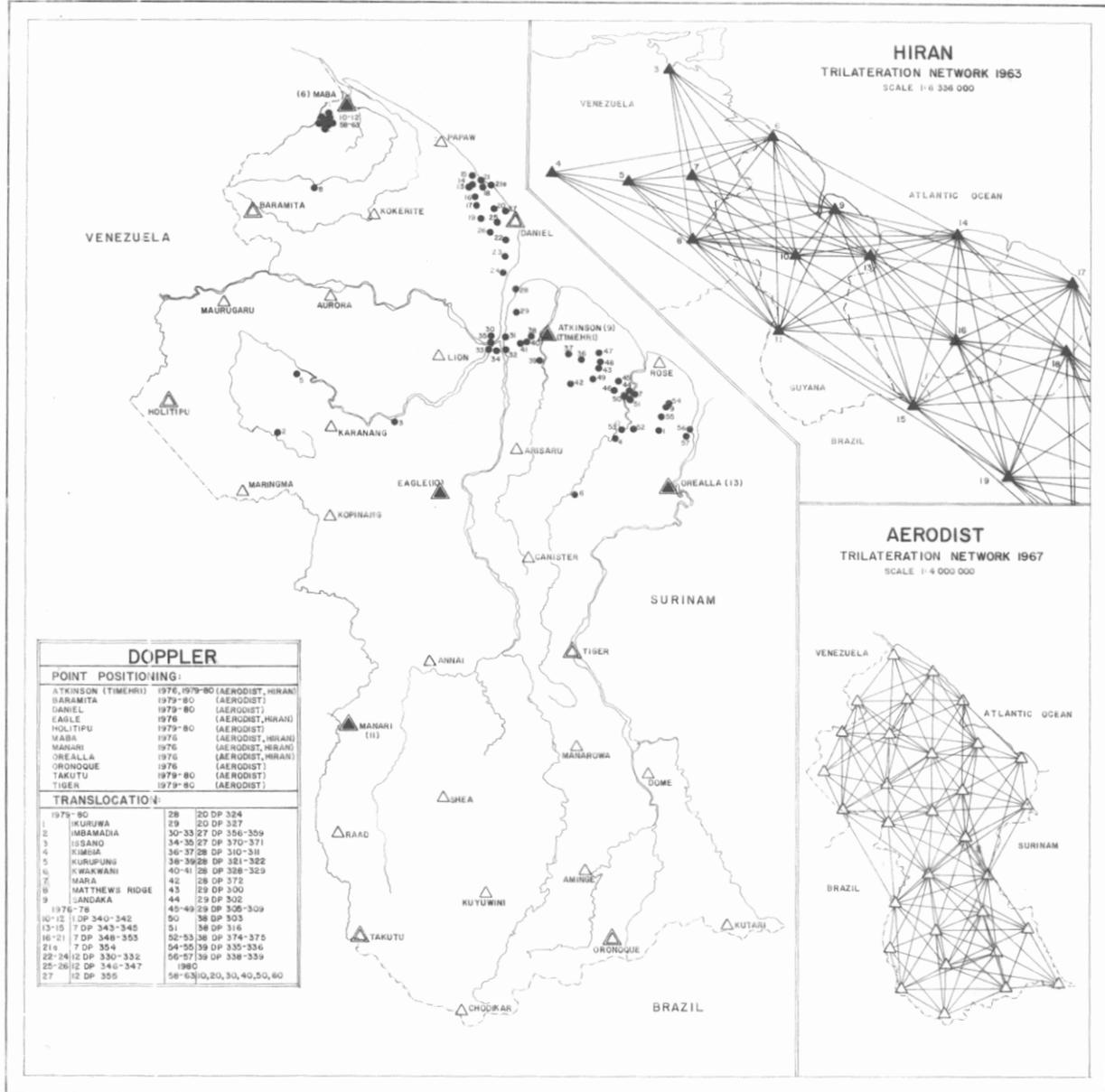
PREPARED MONTHLY BY THE DEPARTMENT OF LANDS & SURVEY AND THE UNITED NATIONS "ESTABLISHMENT OF A TOPOGRAPHIC DIVISION" MARCH 1981

DATE REVISÉ	BY	NOTES

**HIRAN, AERODIST & DOPPLER**

THIS SHEET OF DIAGRAMS IS AN APPENDIX TO THE MANUAL, "COMPILED AND IMPACTING OF TRIGONOMETRICAL LISTINGS IN GUYANA", COMPILED 1960-81 BY S. HEDINGER (UNT) AND C. DHARANDIAL (D.L.S.)

USERS NOTING CORRECTIONS OR NEW GROUND CONTROL INFORMATION ARE REQUESTED TO ANNOTATE AND SEND IT TO THE DEPARTMENT OF LANDS AND SURVEYS OF GUYANA, GEORGETOWN



PSAD 1956 Datum was derived from the HIRAN network with adjustments from astrofixes and traverses of Aerodist Surveys



# Physical Components

- The Geodetic Network of Guyana consists of thirty-one (31) Aerodist Stations, established during the period 1967-1968, five of which are identical with Hiran Stations established previously as part of a South America Tri-lateration control survey of 1963.
  
- Secondary Networks
  - (a) Inter American Geodetic Surveys (I.A.G.S) 25 stations.
  - (b) Directorate of Overseas Surveys (D.O.S); both Horizontal and Vertical Controls localised along the coastland (401 st).
  - (c) United Nations Development Programme (UNDP) – Horizontal Network - Timehri Airport to Eagle Mountain.
  - (d) The 90 bench Marks located in the three (3) Towns that are part of the Guyana Water Authority Network. Benchmarks exist along the coast. These are well defined and accessible.

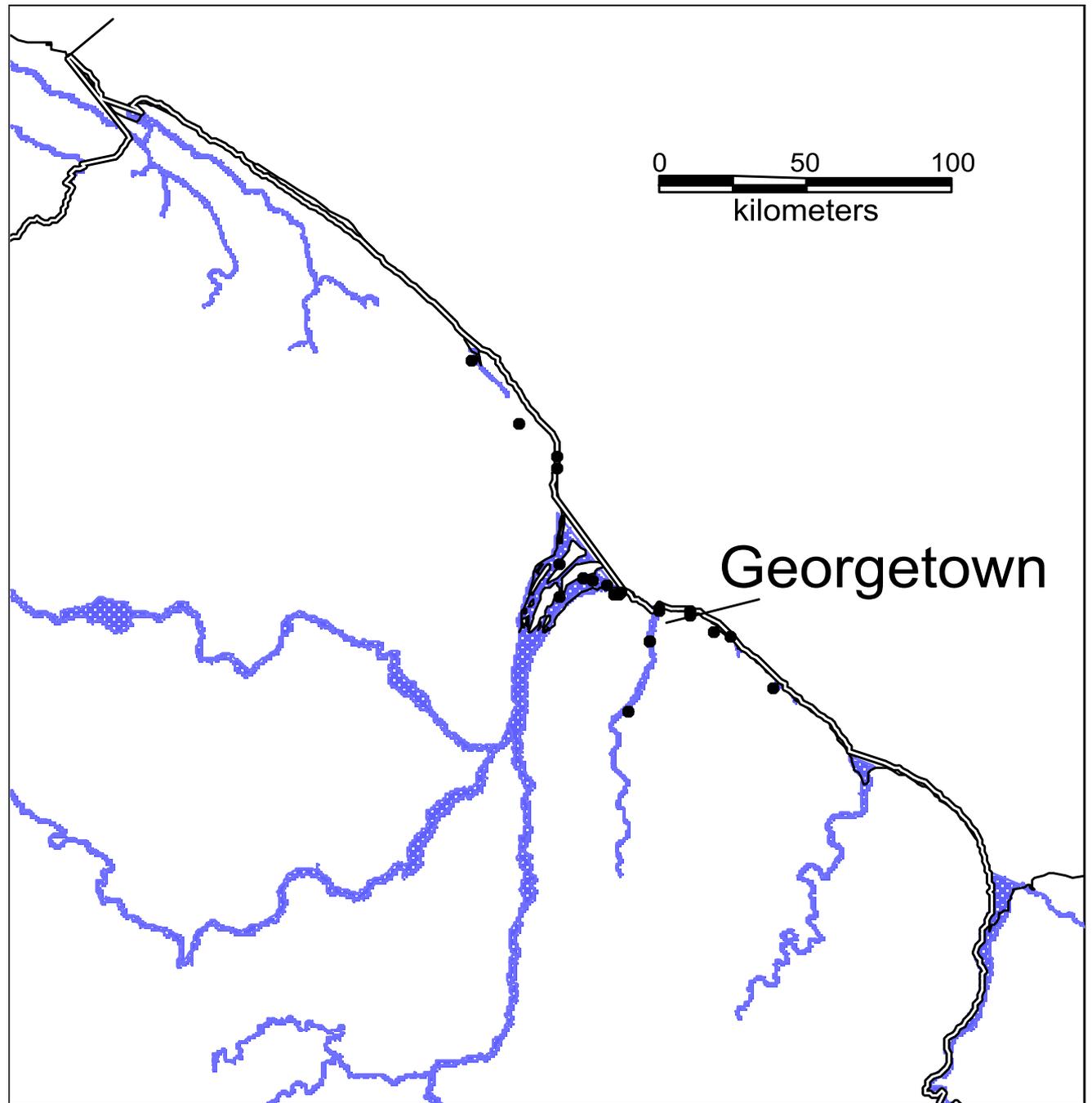
# Primary Horizontal Geodetic Controles

United Nations Development Programme (UNDP) – Horizontal Network - Timehri Airport to Eagle Mountain

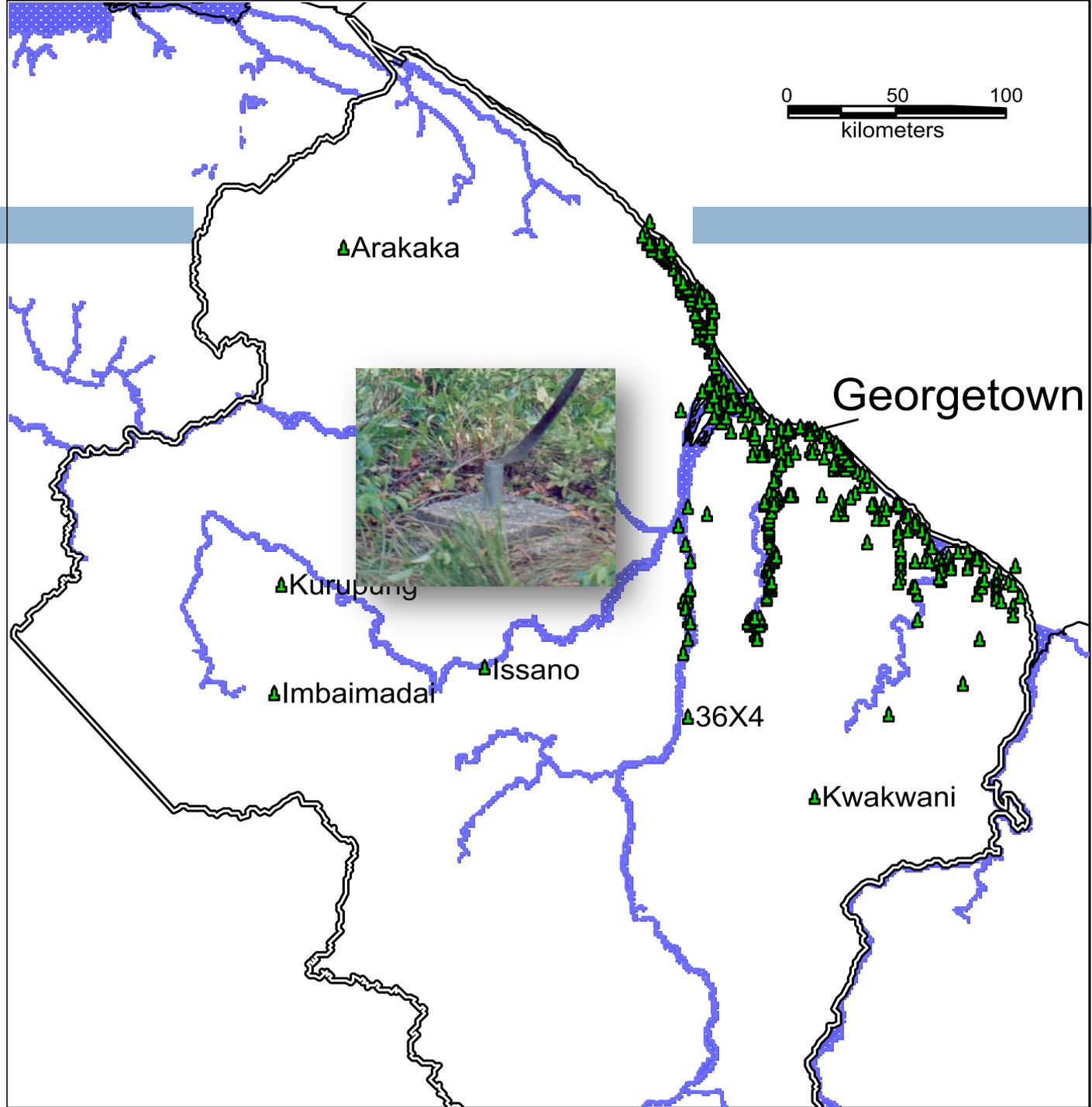


Inter  
American  
Geodetic  
Surveys  
(I.A.G.S)

23 Stations  
Confined  
mainly along  
the Coast



Directorate  
of Overseas  
Surveys  
(D.O.S);  
both  
Horizontal  
and Vertical  
Controls  
localised  
along the  
coastland  
  
(407  
Controls)



# Intellectual and Institutional Component

The Guyana  
Lands and  
Survey  
Commission

- The Geodetic Network is managed by the Geodetic Section, which comes under the Surveys Division of the Lands and Survey Commission
- The Section is staffed by <10 Surveyors
- Currently no staff of the Commission has a degree in Geodesy
- Laws are in draft to permit GPS

# Institutional Component con'd

## Academic Institutions

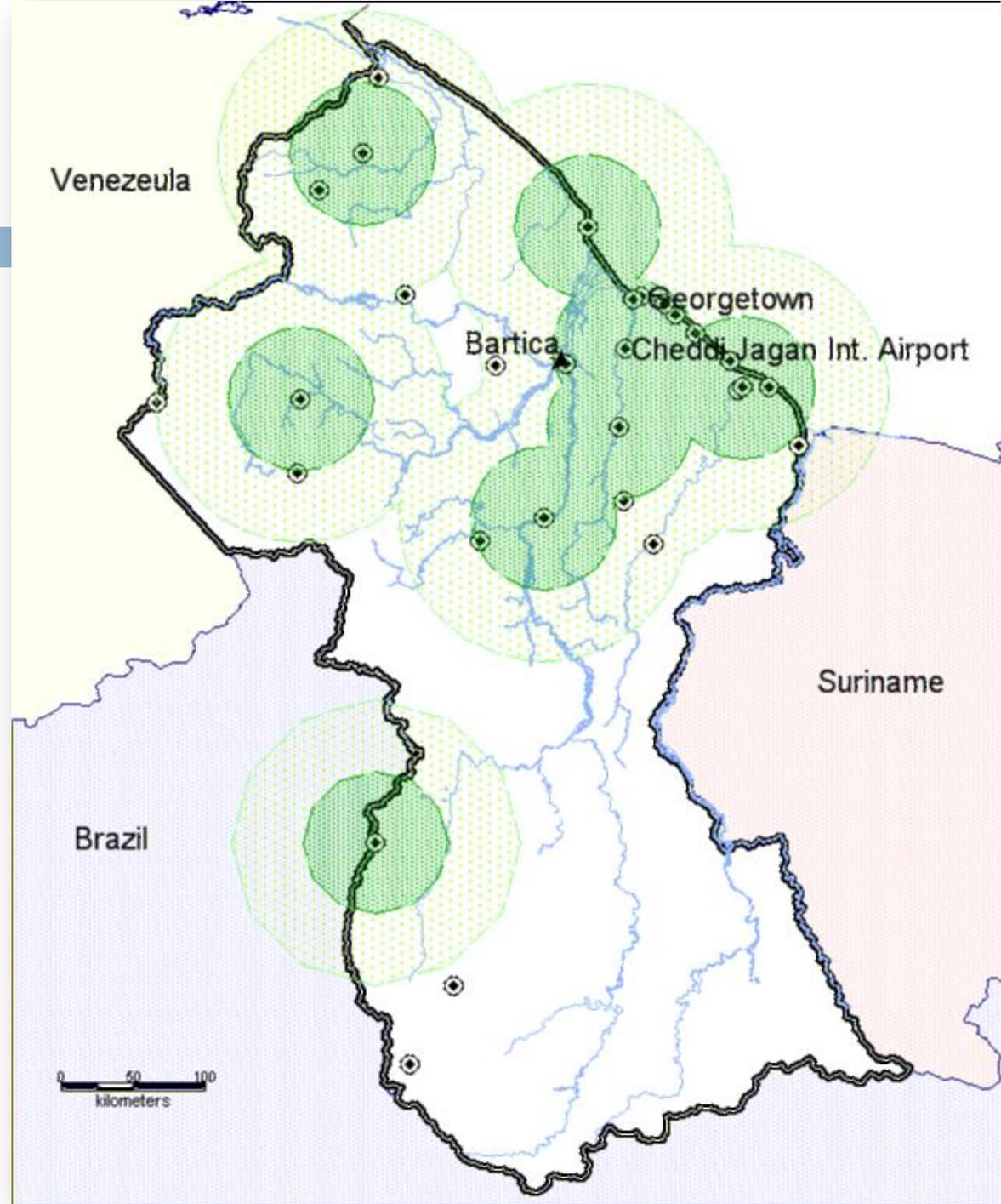
- The Government Technical Institute offers a Diploma in Surveying (land)
- No further specialization, however, surveying is taught as part of engineering courses (no geodesy)
- No GNSS/GPS courses at the university level

# Strategic Plans

## Geodetic Modern

- Adopt new legislation to recognize GNNS/GPS surveys
- Upgrade Geodetic Infrastructure
  - ▣ Install 6 CORS network
  - ▣ Integrate into SIRGAS
  - ▣ Develop transformation parameters for PSAD 1956 – SIRGAS
- Develop Geodetic Capacity through collaboration with existing agencies (SIRGAS, Government Scholarships, etc.)

Preliminary  
Layout of  
Network with  
2 alternating  
stations





Gracias!