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Geodata Maintenance and Collaboration in GIS Implementation in Health Sector in a Developing Country Context: The Case of DHIS2 GIS in Malawi

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Presentation Outline

- Problem Area
- Research aim and questions
- Research context
- Research methodology
- Geodata Maintenance Framework
- Conclusion

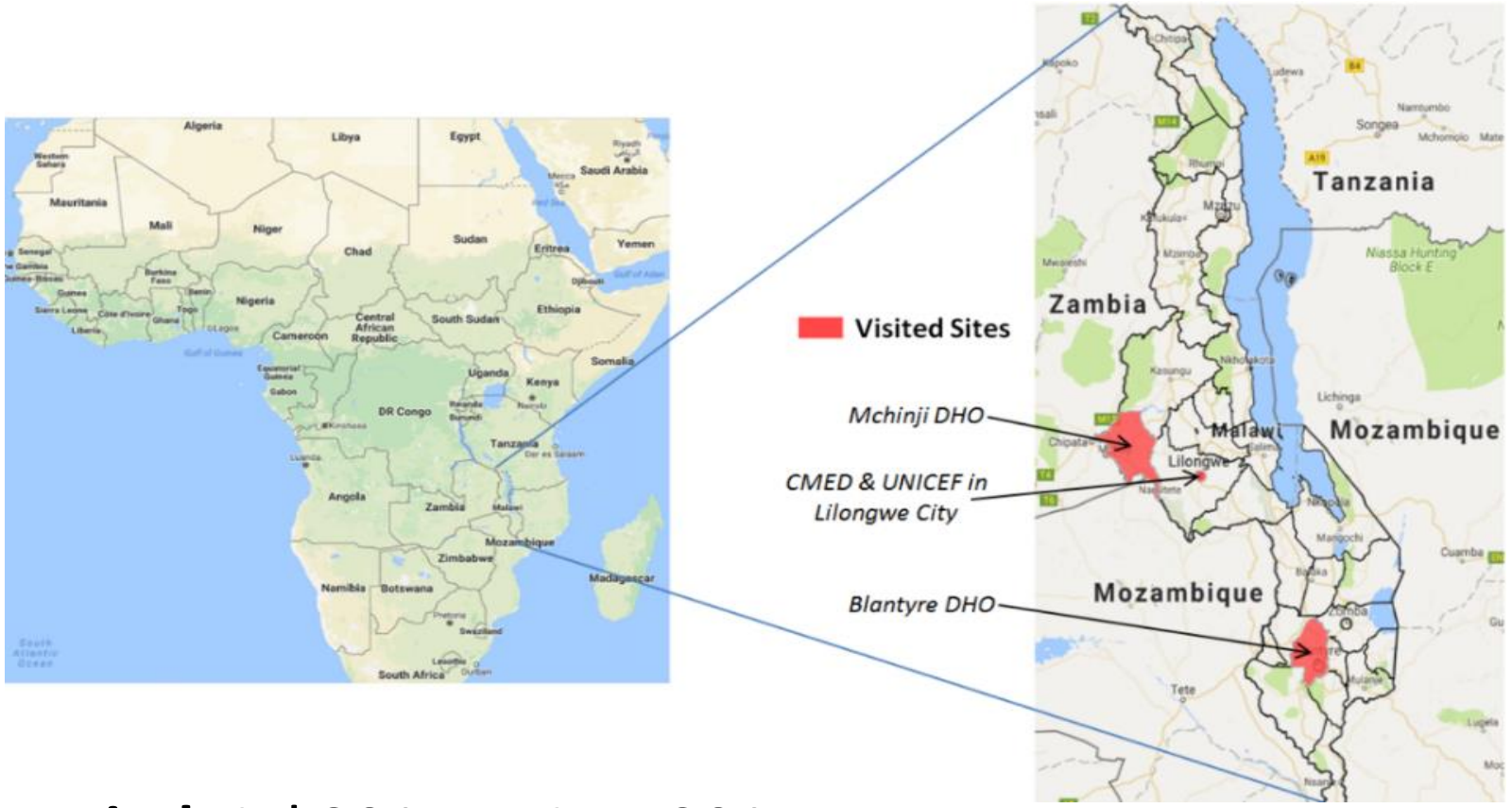
Problem Area

- the lack of long-term maintenance of databases leads to underutilisation of GIS in health in DCs
  - **requirement:** geodata maintenance
- In DCs, one concern is the shortage of local GIS expertise
  - **requirement:** hiring GIS experts; collaboration
- Heavily depending on external GIS experts brings knowledge-related challenges
  - **requirement:** building local GIS expertise

Research Aim and Questions

- Aim
  - To propose a framework for geodata maintenance in health in DCs and investigate the contribution of collaboration towards geodata maintenance
- Research Questions
  1. *What are activities of geodata maintenance in health sector in a developing country setting?*
  2. *How can collaboration contribute towards the maintenance of geodata in health sector?*

Research Context – Malawi's MoH

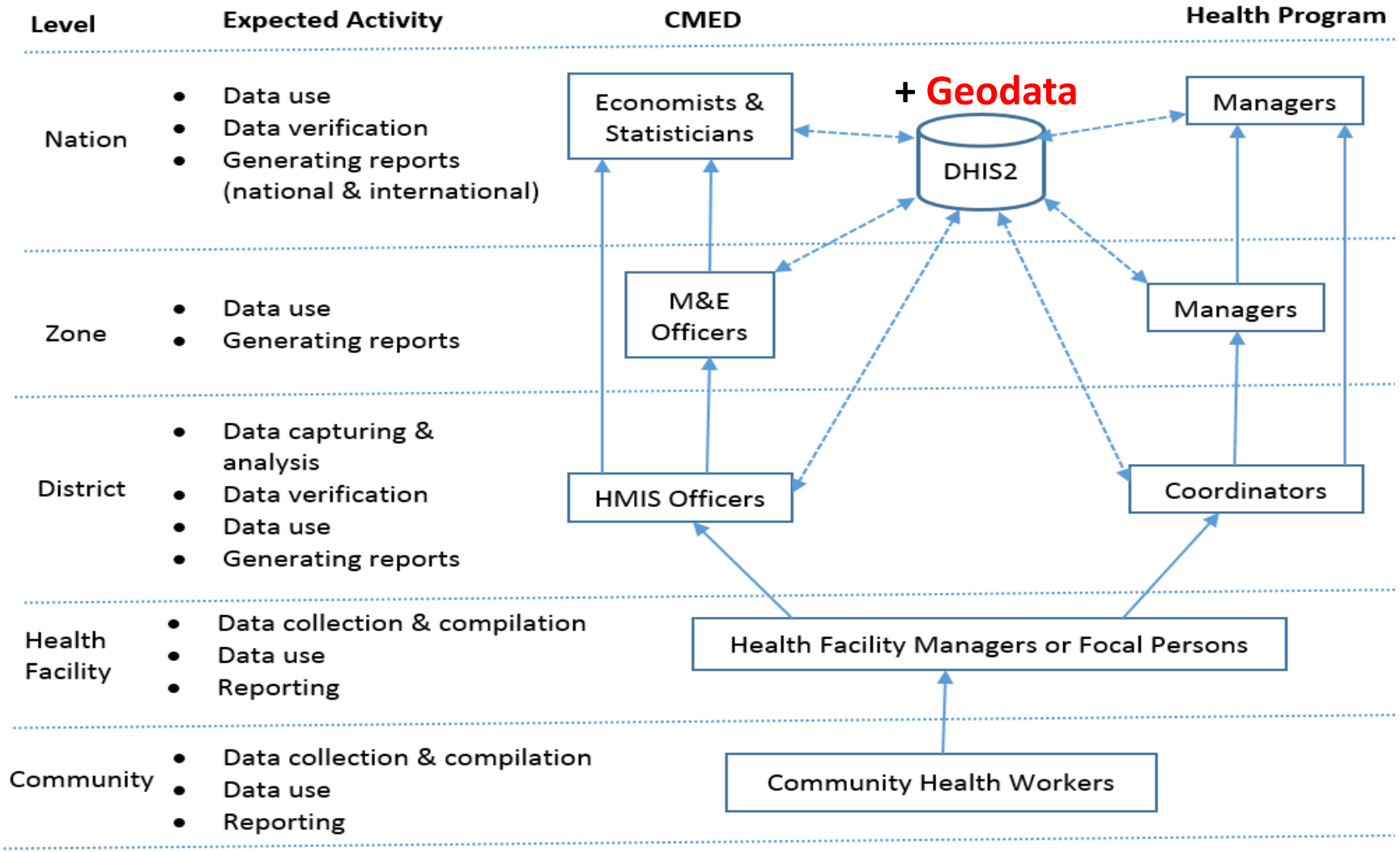


- **Period:** Jul 2015 to Jan. 2017
- **Visited sites:** CMED, UNICEF, Blantyre & Mchinji DHOs

GIS initiatives in Malawi MoH

- Mapping health facilities; catchment areas (2002-2003)
- Acquiring GPS for health districts (2005)
- User training (2009, 2010, 2013)
- Basic geodata collection for health facilities (2013, 2015, 2016)
- DHIS2 GIS implementation (2015 to 2017)
- Challenge:
  - MoH has geodata for 10,000 health facilities (90% are village and outreach clinics);
  - no framework to guide geodata maintenance

Case of DHIS2 GIS in MoH



Research Methodology

- Qualitative, interpretive case study
- Data collection
  - Participant observation; as one of GIS implementers
  - Semi-structured interviews

Level	Interviewees	No. of participants	No. of interviews
National Level	CMED managers	4	7
	DHIS2 programmers	3	6
	Officers from Jhpiego and UNICEF	4	4
District Level	HMIS officers	4	4
	Health program coordinators	5	6
	Total	**20**	**27**

  - Artefact examination including geodata and maps

Geodata Resource Dependence

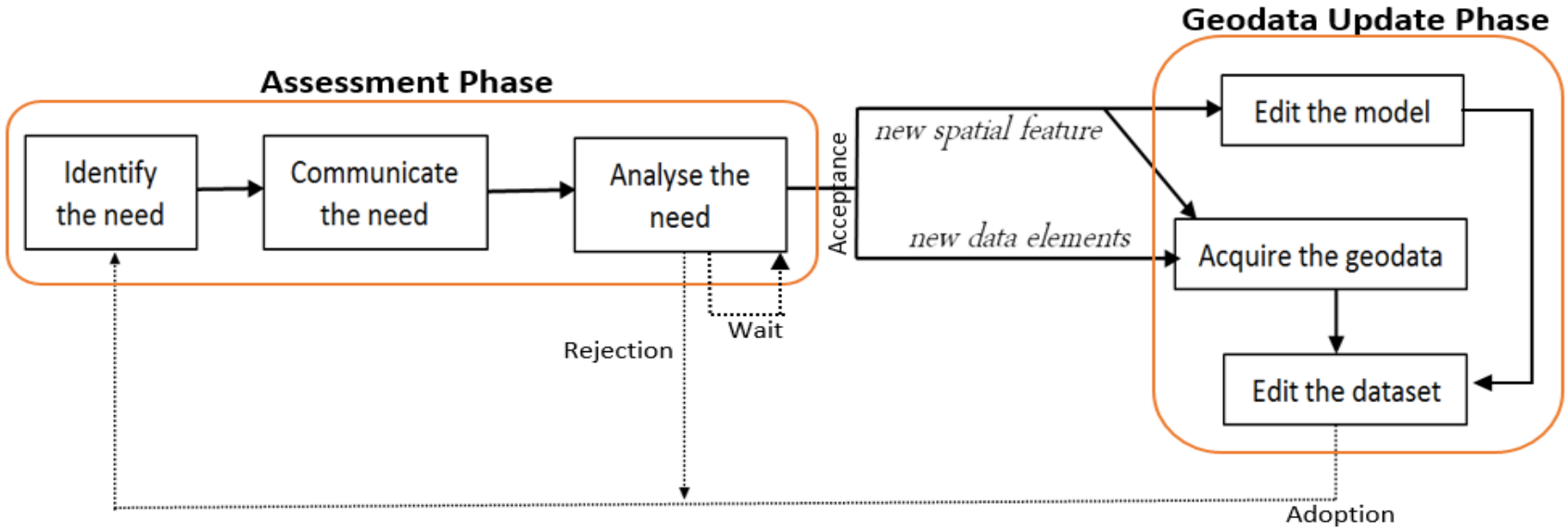
- Geodata resource criticality
  - GIS is not useful without reliable geodata
- Geodata resource scarcity
  - not all required geodata is available and accessible through data sharing
    - Omissions exist; e.g. health facilities
- Geodata resource replaceability
  - geodata as the resource cannot be replaced
  - **requirement**: geodata maintenance process

Geodata Maintenance

- Proposed Six Actions for Geodata Maintenance
  1. Identify the need (administrative)
  2. Communicate the need (administrative)
  3. Assess the need (administrative/technical)
  4. Edit the model (technical)
  5. Acquire the geodata (technical)
  6. Edit the dataset (technical)

Derived from user support practices in HMIS

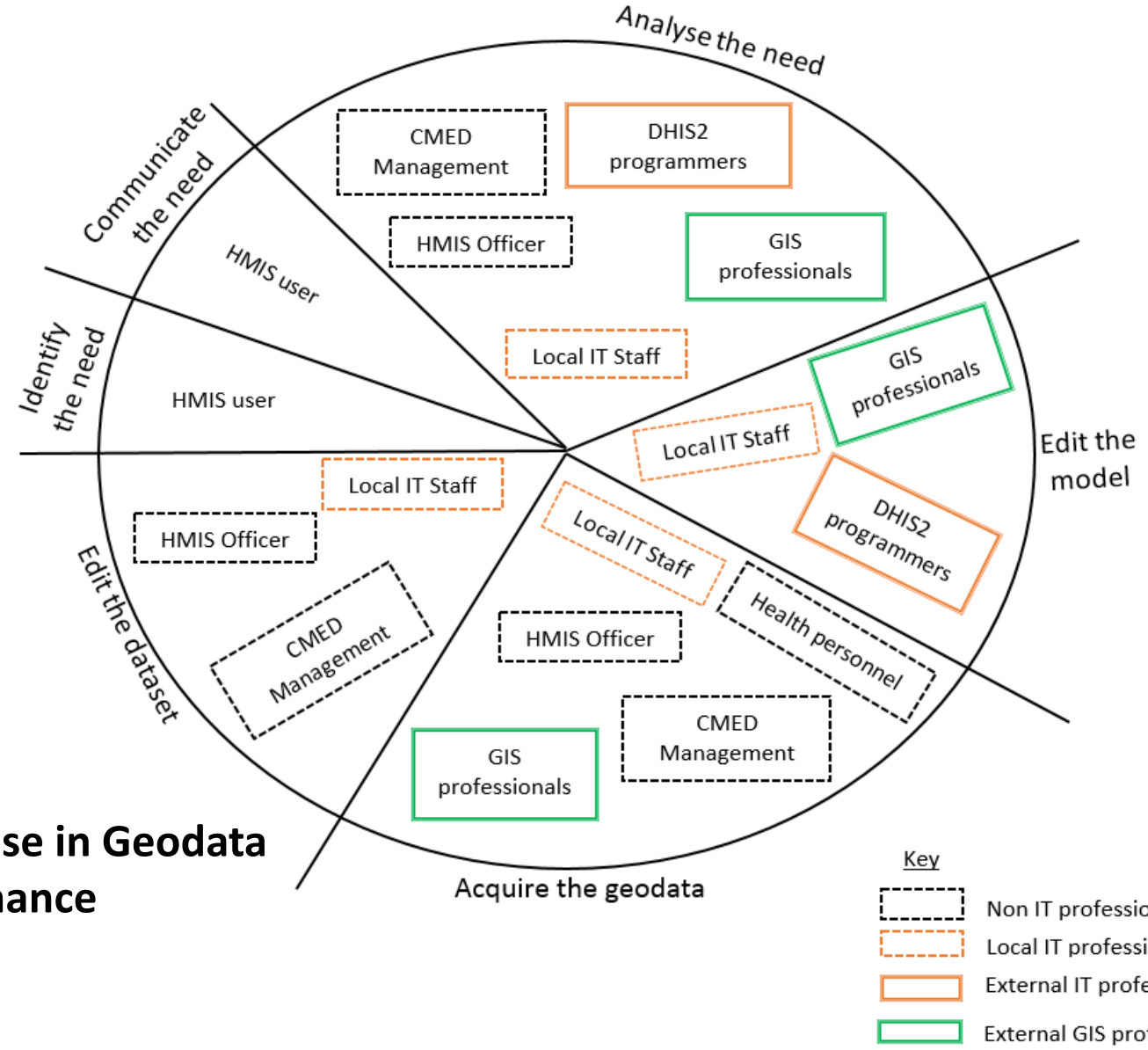
Derived from geodata acquisition and geographic database update



Expertise Resource Dependence

- Criticality
  - expertise is critical resource in GIS
- Scarcity; due to
  - limited budgets
  - employment set-up
- Replaceability
  - Possible in some actions in geodata maintenance

Source of Expertise in Geodata Maintenance



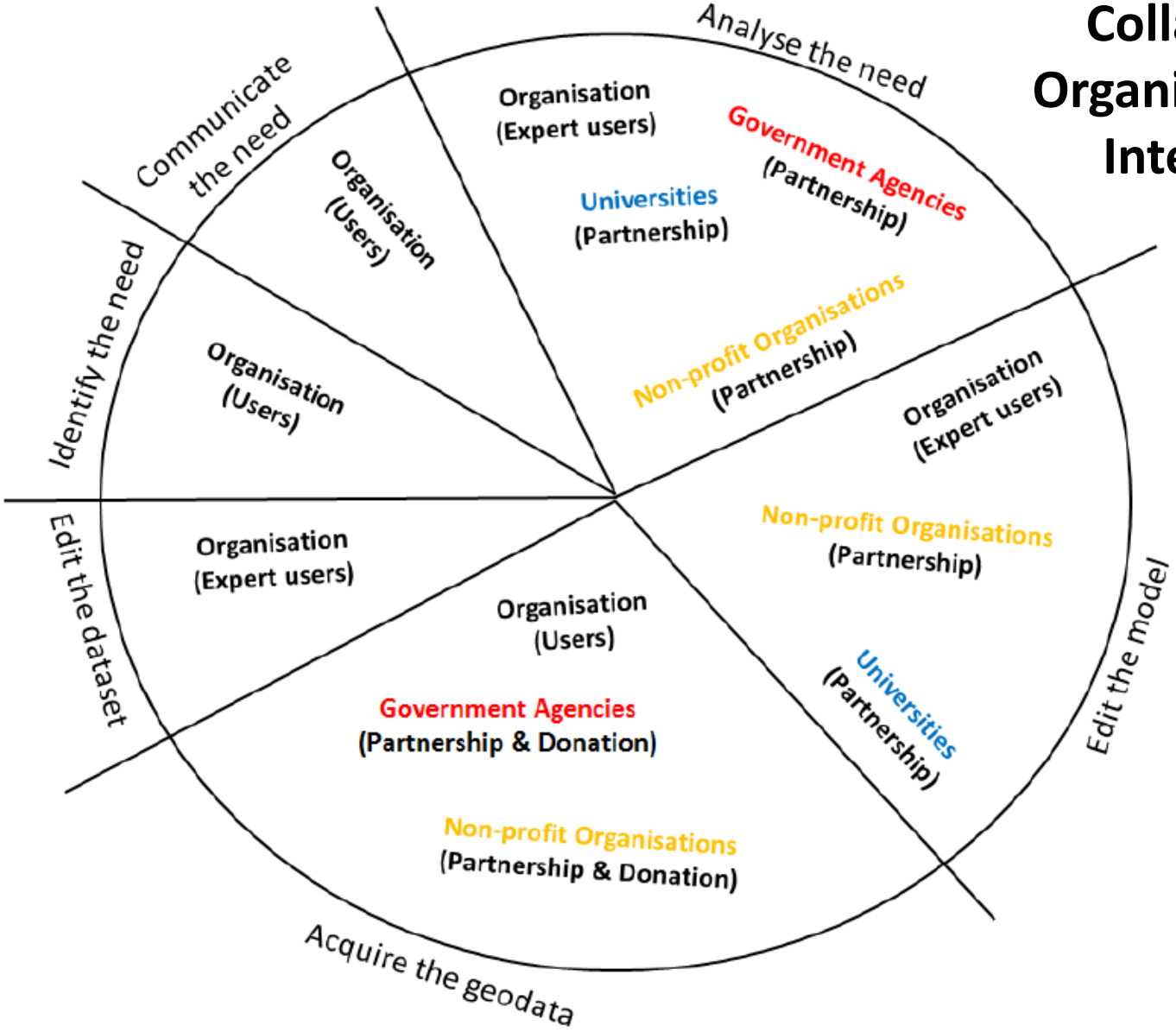
Identifying Substitutes

- 2 identified ways
  - GIS implementation tasks as official duties, e.g. HMIS officers
  - the integrative approach of GIS implementation e.g. health personnel
- Building local expertise – knowledge sharing
  - User training in GIS
  - Work teams of experienced and non-experienced users
  - GIS user manuals
  - Online resources

Geodata Maintenance and Collaboration

- Collaborating organisations
  - Government agencies
  - Non-profit organisations
  - Universities
- Structure of Coalition
  - **Donations**: geodata; finances
  - **Partnerships**: deployment of IT/GIS experts

Collaborating Organisations and Interactions



Conclusion

- the framework for geodata maintenance in health in DCs
- highlighting key decisions on
  - actions of geodata maintenance that may require collaboration
    - to access GIS expertise at low cost
  - collaborating partners and their roles
  - local users to be the substitutes for GIS experts
  - mechanisms of building capacity to local users

END OF PRESENTATION

THANK YOU VERY MUCH