Introduction to community mapping and Participatory GIS

Objectives, Aims, Feedback

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The question of „where“

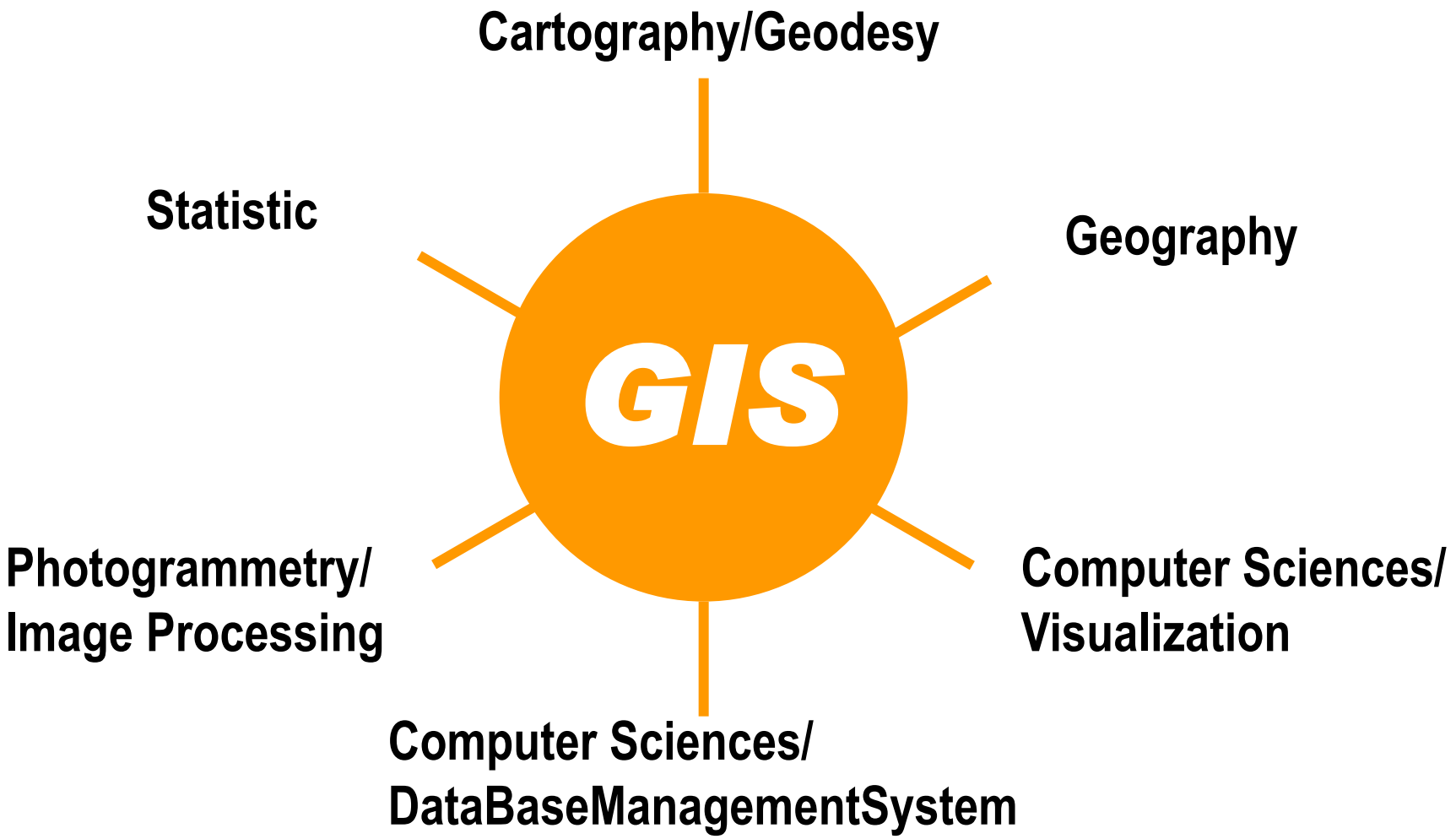
Almost everything that happens, happens SOMEWHERE

Knowing WHERE something happens is critically IMPORTANT

“… over 80% of the information in world-wide use is related to space.”


TO
EAST
TO
WEST
NORTH
TO
31
31
601
219
NORTH
TO
281
TO
SOUTH
985
28
ING
NOISE IN
GENCY

Definition of GIS



!!! There are many !!!

Definition of GIS

"A GIS is a computer system designed to allow users to collect, manage, and analyze large volumes of spatially referenced and associated attribute data." [Hemenway 1989]

A GIS is "a powerful set of tools for collecting, storing, retrieving at will, transforming, and displaying spatial data from the real world" [Burrough & McDonell, 1998]

"A spatial decision support system" [David Cowen]

"A system of hardware, software, data, people, organizations and institutional arrangements for collecting, storing, analyzing, and disseminating information about areas of the earth." [Dueker & Kjerne, 1989]

"a computer based system for the capture, storage, retrieval, analysis and display of spatial data" [Clarke, 1986]

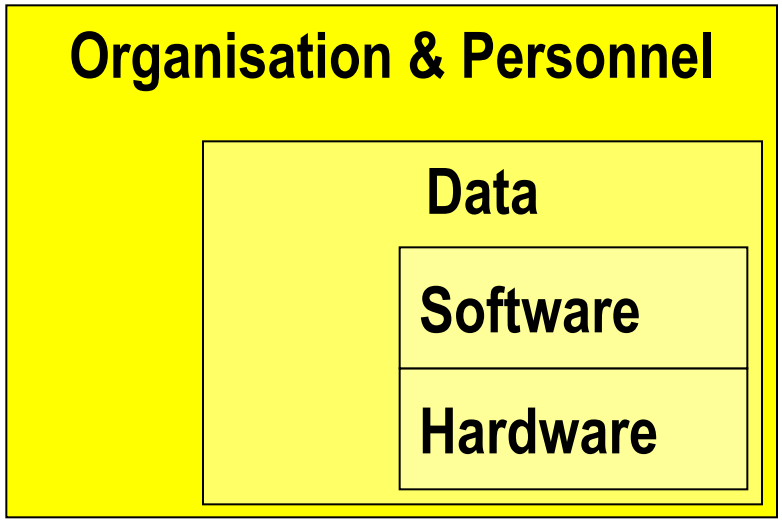
" ... a system which uses a spatial database to provide answers to queries of a geographical nature."... " Since putting spatial data into a computer at great expense for the sole purpose of getting it out again would be pointless, a GIS must allow a variety of manipulations to be carried out, such as sorting, selective retrieval, calculation and spatial analysis and modeling. We also expect a full range of functions to allow input of data in map form, and cartographic output ..." [Goodchild, 1985]

Definition of GIS

- **A GIS is:**
  - … a computer based system
  - … based on explicit spatially referenced data
  - … combination of different working procedures
  - A GIS strongly supports the administration and analysis of spatial data

- **A GIS is NOT:**
  - ONLY maps
  - ONLY a spatial database
  - Not every „Information System" with spatial data is a GIS

Components of a GIS



Components of a GIS

- **Hardware**
  - Fast development in the last years, PCs; GPS, Digitizing board, Scanner, Printer, Potter, Internet Connection, Network
- **Software**
  - Different Software companies (e.g. ESRI, ERDAS, Intergraph, Idrisi, Smallworld); significant development of Open Source GIS products (e.g. GRASS)
- **Georeferenced Data**
  - „Data is the rocket fuel of GIS, the elixir of life for a box of tools“
  - Spatial Object → Attributes + spatial orientation (see later)
- **Organisation**
  - GIS within institutional structures embedded
  - Tasks:
    - Administration/Organisation/Acquisation of Data
    - Meta-Information of data basis in the context of the referenced area
    - Development of applications
    - Qualifications of personnel

A short history of GIS

1963 → Canadian Geographic Information System is developed (CGIS), „Birth“ of GIS

1964 → Harvard Lab (USA) is established

Era of Innovation

1969 → Jack Dangermond (Student Harvard Lab) form the Environmental Systems Research Institute

1972 → Landsat 1 launched

1981 → ArcInfo launched

1985 → GPS operational

1987 → First Journal on GIS (International Journal of Geographic Information Science)

1994 → Open GIS Consortium born

Era of Commercialization

1996 → Internet GIS products introduced

> 2000 → GIS has 1 million of core users; going Mainstream

Era of Exploitation

History of ‚participation'

- **Mid1980s**
  - **four decades** of development cooperation **did not lead to a sustained improvement**
  - infrastructure was "**imposed on**" the Countries of the South
    - **Without** considering the **cultural and social environment**
  - **Cognition** → active participation of the stakeholders as a core condition for successful and sustainable development

- **> 1990s**
  - core issue within the field of development cooperation
  - used by NGOs and development agencies (GTZ, USAID, World Bank, FAO,…)
  - → **BUZZWORD ?!**

Defining Participation and PGIS

*"Participatory development stands for **partnership** which is built upon the **basis of dialogue** among the various actors, during which the agenda is jointly set, and **local views and indigenous knowledge** are deliberately sought and respected. This implies **negotiation** rather than the dominance of an externally set project agenda. Thus **people become actors** instead of being beneficiaries" [UNDP 1998]"*

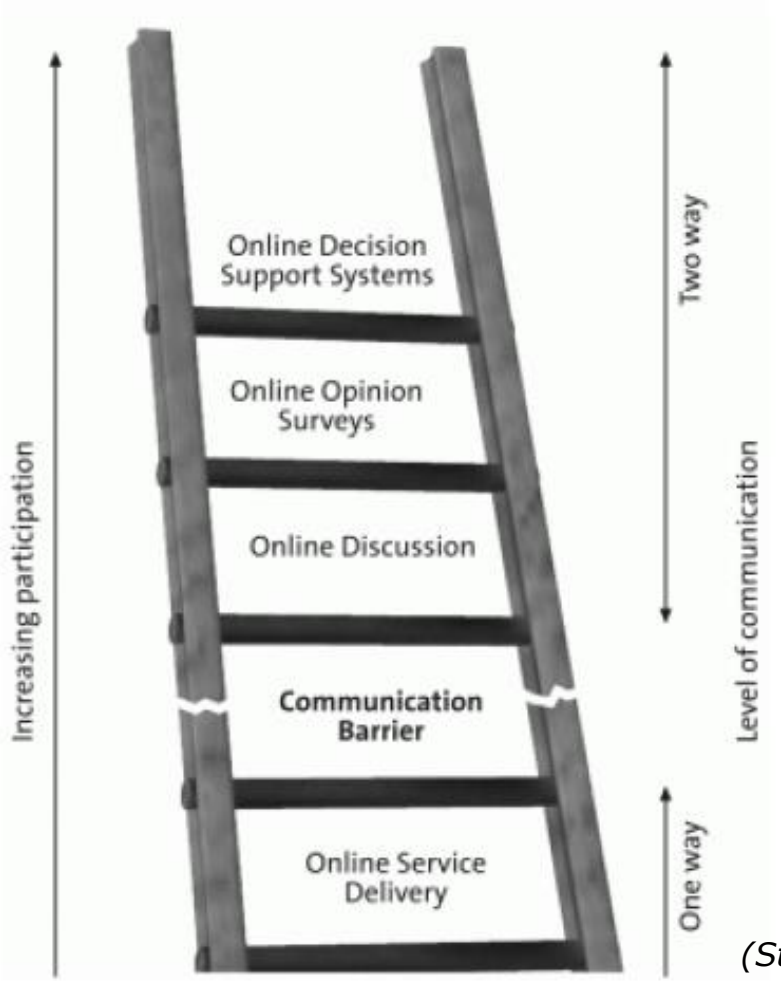
Defining Participation and PGIS

- **not a common understanding** of participation (also within organisations)
- **Instrument** OR **goal**
- **Pseudo-participation** OR **Empowerment**

Difference between North and South

- **PGIS in the North**
  - Urban neighbourhood identification
  - Problem prioritisation
  - Participatory learning
  - …
- **PGIS in the South**
  - Natural resource identification and management
  - Environmental hazard mapping
  - …
- **PGIS and Indigenous**
  - legitimising customary land and resource claims
  - …

e-participation ladder



(Steinmann et al 2004)

Roots PGIS („South‘)

- Spontenous merger of **Participatory Leraning and Action (PLA)** and methods of **GIS**
- **Represent people‘s spatial knoweldge** in the forms of **virtual or physical maps** (2D/3D)
- Making **GIT&S available to disadvanted groups in society** → generating, managing, analysing, communicating spatial information

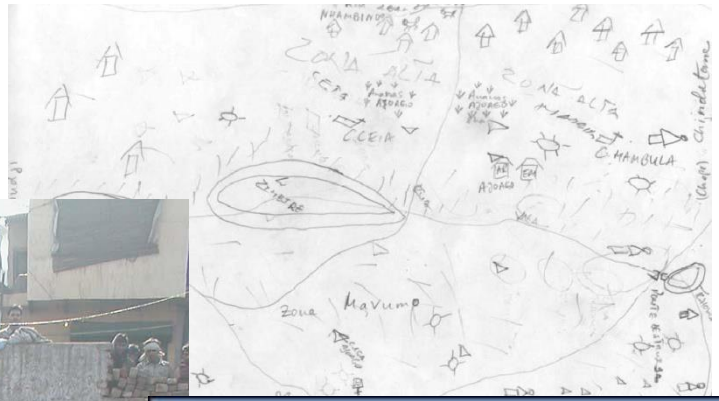
(Rambaldi et al 2006)

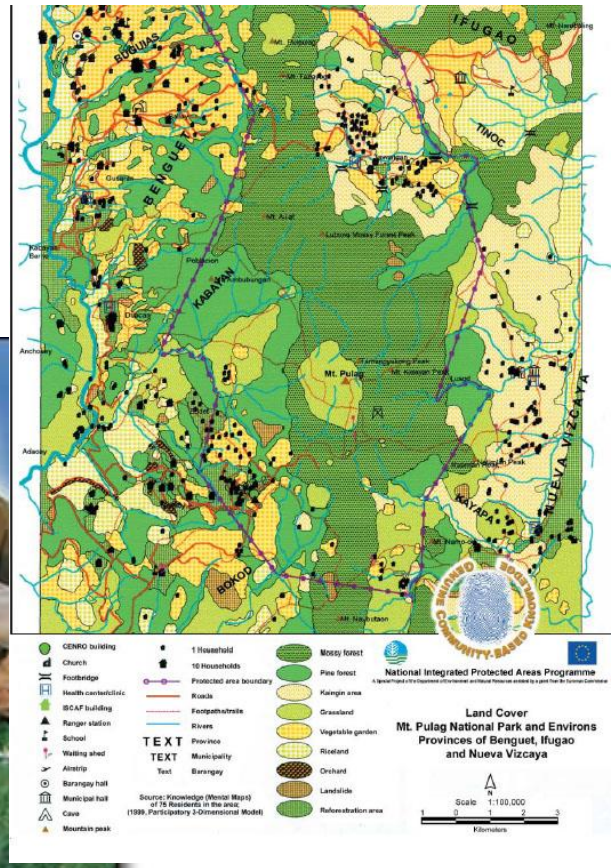
Tools, methods, technologies

- **Ephemeral maps**
- **Sketch mapping**
- **Scale mapping**
- **PGIS spatial analysis**
- **Participatory 3-Dimensional Modelling**
- **Photomaps**
- **Mobile devices (PDA and GPS)**

(Rambaldi et al 2006)

Examples - South





(www.iapad.org)

Examples - South

(www.iapad.org)

Questions to be adressed

- **Whose GIS** is it?
- **Whose questions** are adressed?
- Who **sets the agenda**?
- What will happen **when the experts leave** or donor funding dries up?
- What is left with those **generated the data and shared the knowledge**?

(Rambaldi et al 2006)

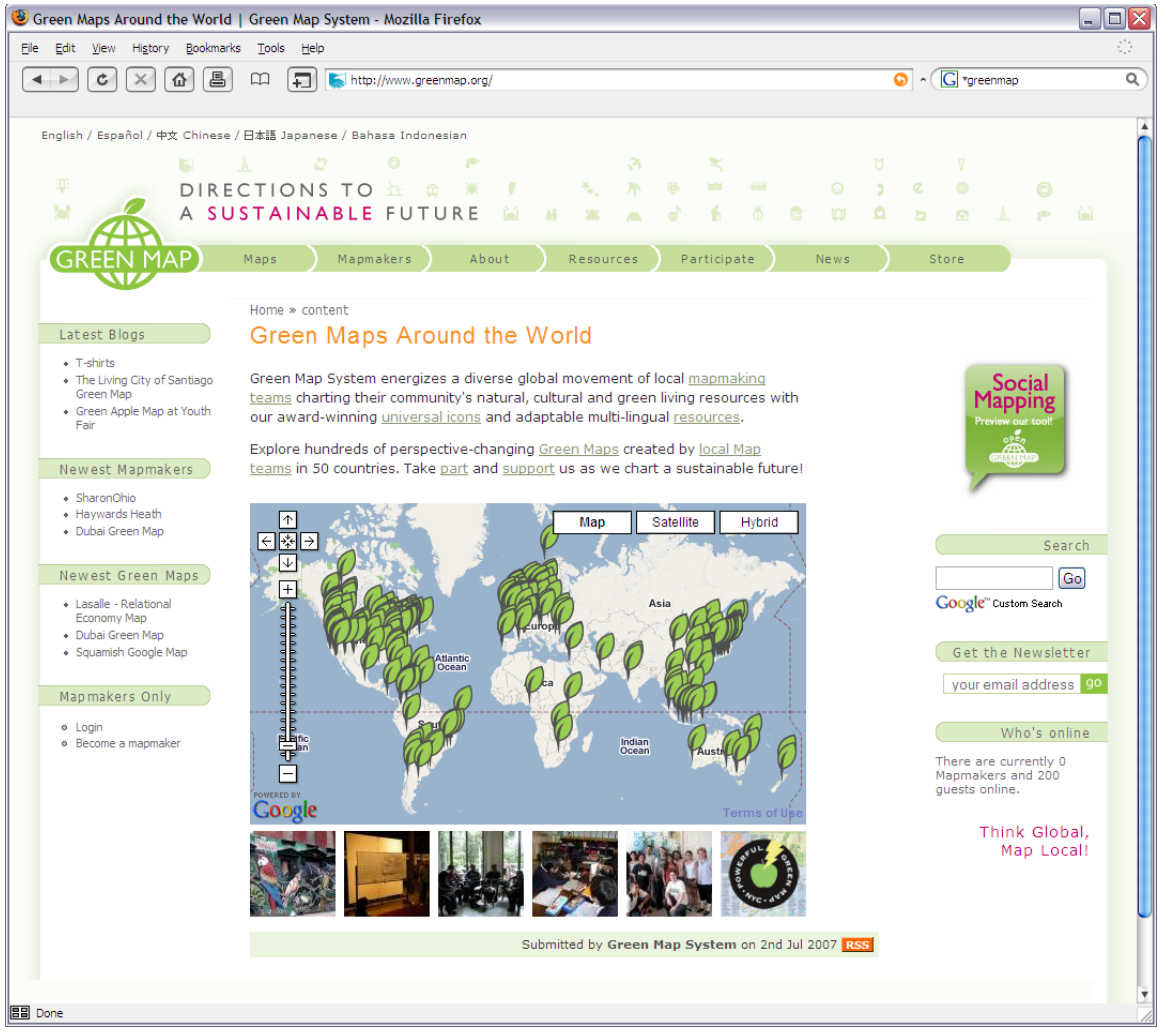
Differences between North and South

- **PGIS in emerging countries**
  - "an attempt to utilise GIS technology in the **context of the needs and capabilities of communities** that will be **involved** with, and **affected** by **development projects** and **programmes**". [Abbot 1998]

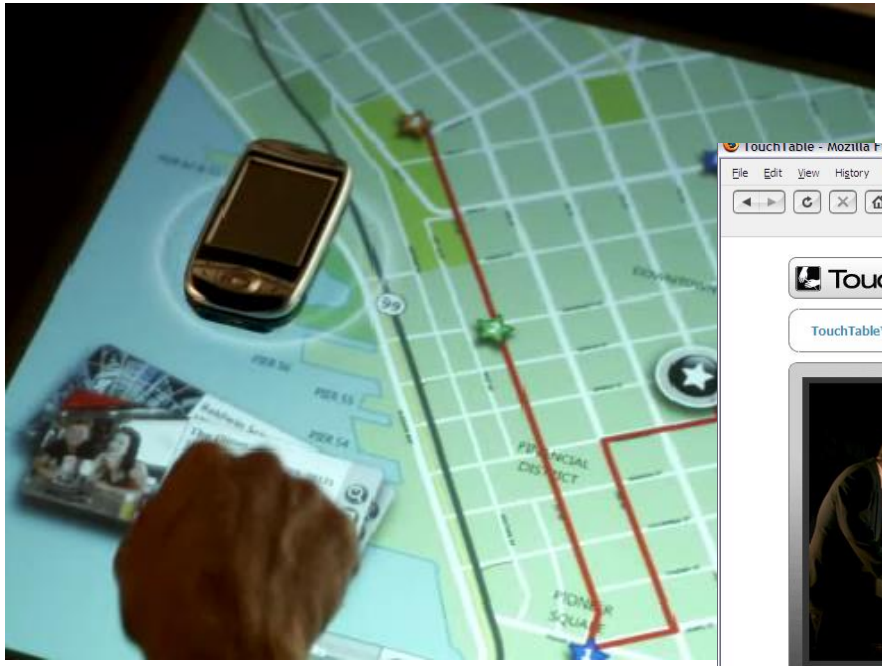
- **Presently**
  - **Not a common definition for PGIS**
  - **Confusion of terms** (PPGIS, PGIS, CiGIS, P-Mapping…)
  - But **improvements** made in recent years…
  - **Different communities** (North & South)

- **Applied**
  - Community Mapping, Decision Making (Communities), Baseline Data Acquisition…

Examples - North



Examples North



PGIS and disaster risk reduction

- **Currently also more emphasis on community-based disaster risk management programs**
  - vulnerable people themselves will be involved in planning and implementing disaster risk management measures along with local, provincial, and national entities through partnership
- **Different methodologies**
  - de Dios 2002 (Oxfam), ADPC 2004, Action Aid 2005

- **But only a few publications available**
  - Contrary to the fact that one of the typical application fields of PGIS is Disaster Risk Reduction

  → still lacking evidence of the efficiency and effectiveness of PGIS practice in regard to disaster risk reduction.

Link hazard and poverty

The occurrence of **natural disasters** is based on the convergence of two major factors:

- **Hazard**
- **Vulnerability**

- It might seem self-evident that disasters have a **greater impact on poorer countries**
- It is important to **understand how poverty and the impact of disasters** are linked!

Link hazard and poverty

(Source: EM-DATA)

- **Poor population often end up:**
  - living in high risk / environmentally degraded areas,
  - having the least access to social safety nets or infrastructure,
  - having a few savings or available credits.

- **Problem context of migration and urbanisation**

Brainstorming (groups of two):

What do you think are the

- **benefits**
- **challenges**

in working with **participatory approaches** (e.g. community mapping) in **Malawi** in regard to **disaster risk reduction**?