



# Census GIS

## Planning and funding

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# Building Blocks of GIS

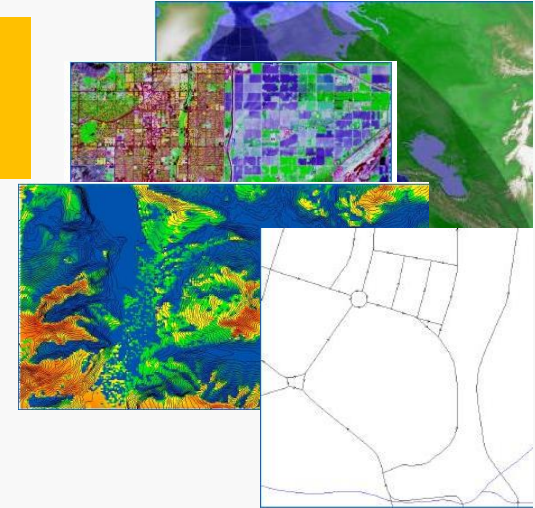


## Brain:

- Proper education
- Experience
- Motivation
- Creativity

## Data:

- Spatial
- Attribute

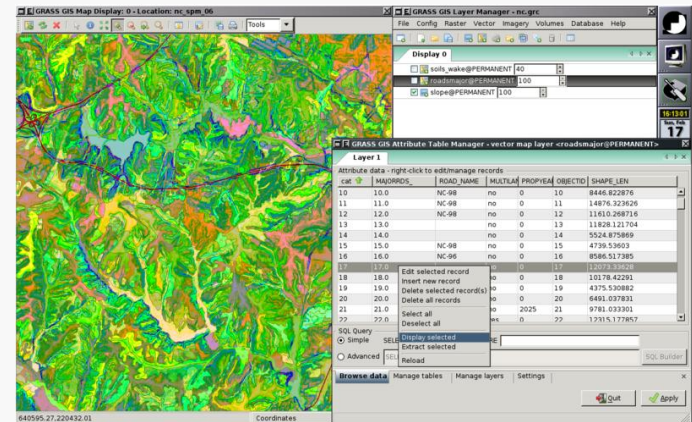


# GIS

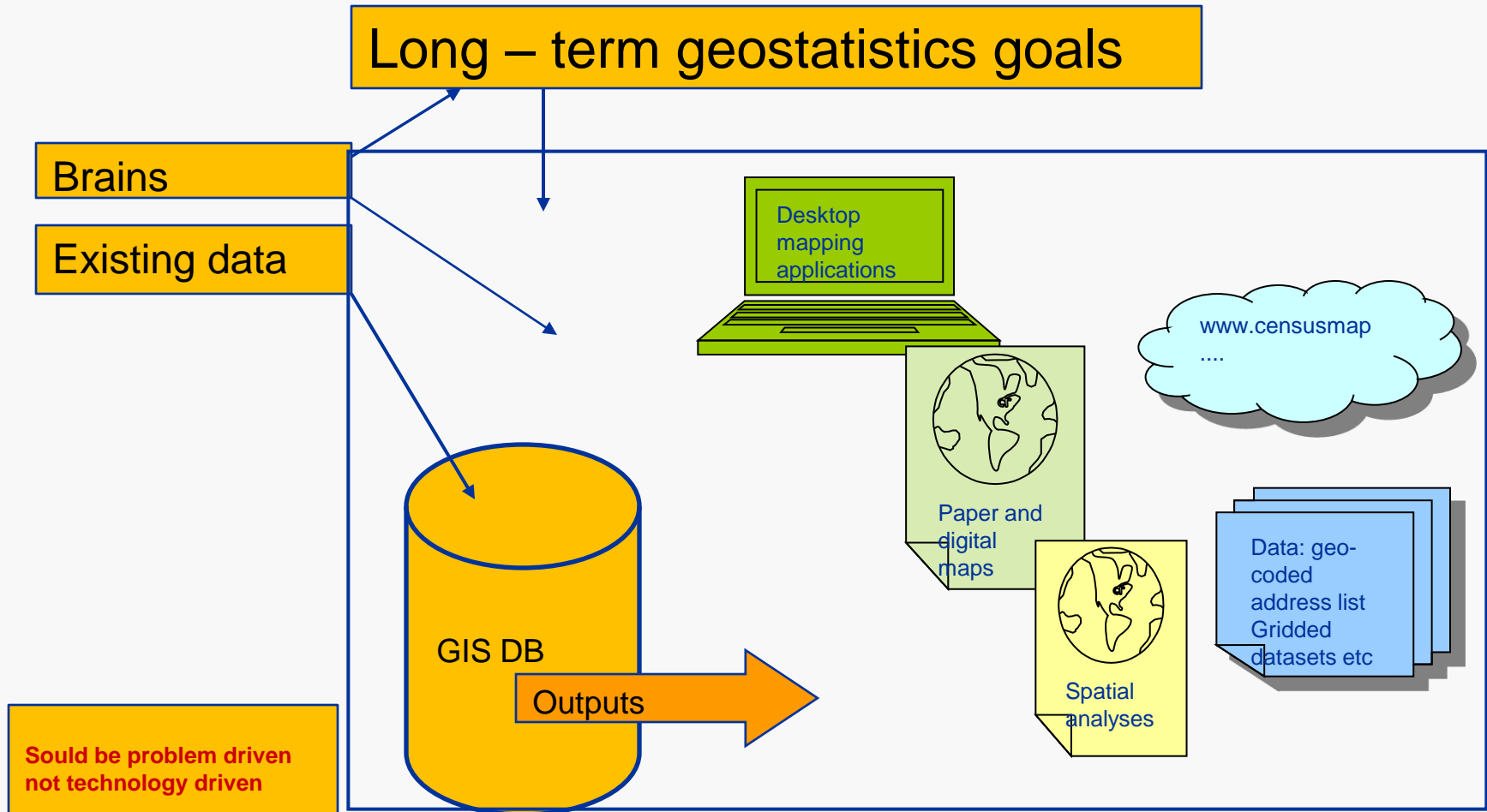
## Hardware



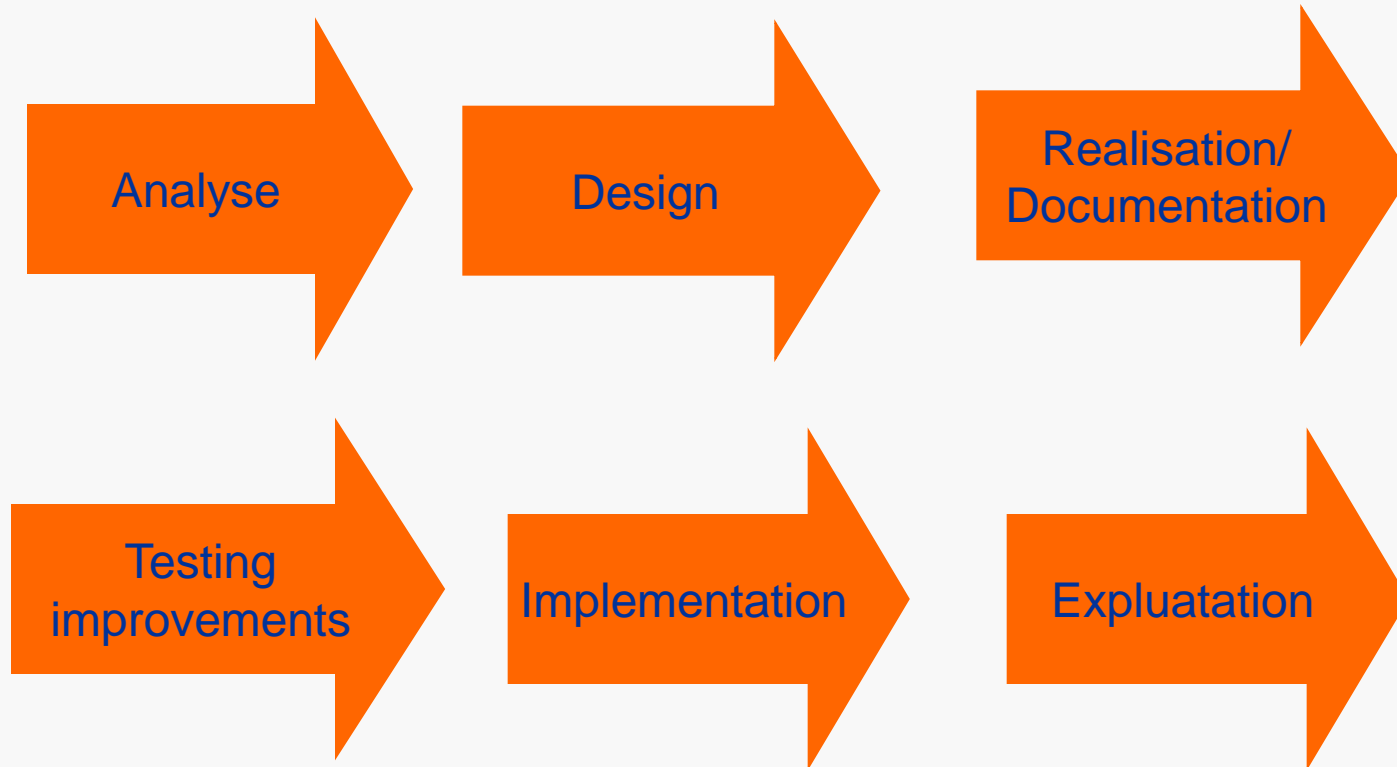
## Software



# Goal oriented building blocks of Census GIS



# Main phases of GIS project





# Planning steps of GIS – Analyse

- Needs assesment
- What type of census method will be implemented (traditional, register, e-census, post )
- What do we need from GIS at different stages of Census :
  - preparatory
  - data collecting
  - data processing
  - dissemination
- What are your long term goals?

It ´s not forth to implement human and financial capital ONLY FOR CARRYNG OUT THIS CENSUS => Think ahead!  
Census GIS should be appropriate for your needs and add value to the society



# Traditional Census vs Register Based Census

- Traditional Census GIS
  - Maps on the preparatory stage
  - Enumeration and supervisory maps
  - Field work monitoring
  - Data Processing
  - Dissemination
  - More resource dependant
- Register Based Census GIS
  - Data processing
  - Dissemination
  - Less recourse dependant

Availability of spatial data for map production, geocoded address list

Geocoded address list, Linking registers and data availability on registers



## Example: main steps for producing gridded census data in Norway (register based census)

- Register management in Oracle (databases on population, buildings, dwellings, ground properties, enterprises, education etc) with links to coordinates
- National grid defined and documented ([Document 2009/9](#))
- Statistics in SAS tool (scripts may be provided)
- Map production in Open Source solutions ([gvSIG OADE 2010](#) for paper/map-files and e.g. [Adaptive](#) for WMS/WFS)
- Analysis in gvSIG or ArcGIS
- Linkage between [StatBank](#) and internet solution planned
- Most census variables are already published annually

# Example: main steps for producing gridded census data in Estonia ( mixed method: e- and traditional census)

Address register ADS  
 AKP – address updating project, 2010  
 Geocoded addresses



Building register



Population register

link ADS\_ID

1 to 1 link does not exist,  
 separate linking based on  
 address string => loss

Using unique building ID – Hoone\_ID generated by SA

Enumerators task is to georeference the building addresses, SW automatically generates unique Hoone\_ID . This is linking address + each census form

Census results ( persons + housing units) will be aggregated on the building address level, which are georeferenced

With the aid of GIS the results will be aggregated on the bases of grids



# Planning steps of GIS - Analyse

- Recourses assessment:
- Personnel
  - In house GIS brain? Should we outsource the brains? Where from?
  - What competences are crucial to hold in house?
- Data
  - What data do we need?
  - Do we have data?
  - How / where from we can obtain the data?
- HW and SW
  - What kind of hardware we need?
  - What kind of Software / GIS technology do we need?



# Planning steps of GIS - Analyse

- Goals setting - Strategy
- Short – term vs long – term goals
  - Enumerators need the map vs georeferenced census data products
- Census GIS should not be driven from statistical office short – term responsibilities as “ we need to collect the data”.
- It should be driven from value added to the society as:
  - one Map represents more than 1000 words or tables
  - census should be easily used for planning at local, regional or global level
  - should be able to give accurate answer to the questions like:  
How many pupils are living in the distance of 3, 5 km from primary schools? etc



## Planning steps of GIS – establishment of Census GIS project plan

- What to consider in addition to the “normal“ project plan criteria?
- Realistic time estimation ( tenders?)
- Proper work steps for mapping and georeferencing household lists and census results
- Proper training should be incorporated
- In-house staff on awareness raising
- Legal issues of spatial data, data ownership



## Most critical, with long – term influence decisions in Census GIS

- What is the smallest geographical unit in Census GIS?
  - Cadastral parcel
  - House
  - Part of the house
- What type of technology to use
- What datasets are needed
- Projection and scale
- What kind of georeferenced census products will be produced?

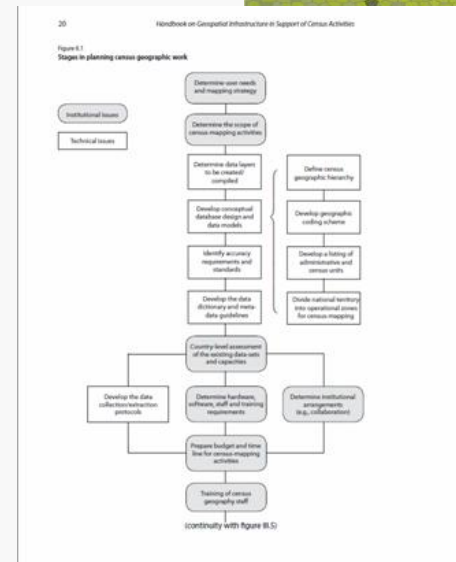
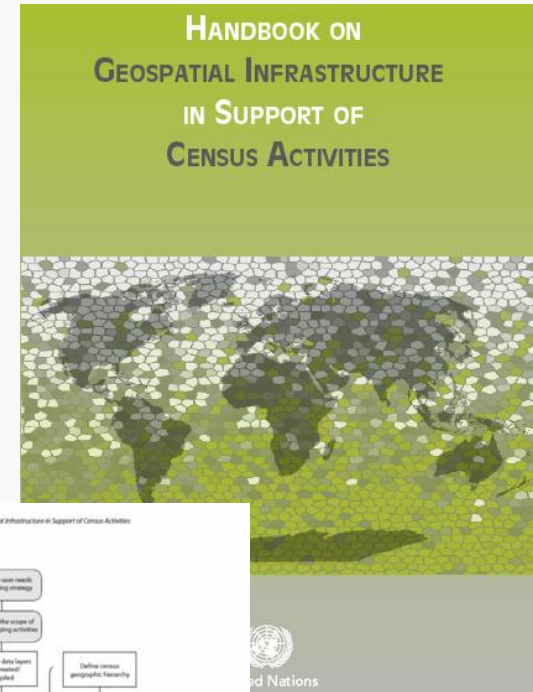


## Planning steps of GIS – organisational topics for successful Census GIS implementation

- An expert on geoinformatics should be included into Census scientific advisory council
- Support from top – managements is high priority
  - Awareness raising of top – management (+ key decisions makers) on Census GIS added – value
- One person ( with GIS educational background and experience) to promote the Census GIS progress in – house and outwards
- GIS technical decisions should be made by the GIS professionals

# Handbook of Census GIS

- co-operation with expert bodies  
[www.efgs.info](http://www.efgs.info)
- co-operation with other state organisations
- Open Geospatial Consortium – OGC
- National Spatial Data Infrastructure - NSDI
- INSPRE in Europe





# Funding

- depends on short and long term goals
  - Personnel including experts outsourcing
  - Training
  - Tenders
  - Data
  - SW
  - HW
  
  - Maintenance costs!
  - Time left until the census



# Thank You!

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