GIS Handbook
for municipalities

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FOR A BETTER URBAN FUTURE

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Disclaimer

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CONTENTS

1 PREFACE

1.1 What is the purpose of this handbook?

This handbook serves as an introductory guide to geographic information system (GIS) technology for local government and other interested stakeholders. It suggests some common opportunities for GIS application, the benefits a GIS provides to users, and what is required to set up a GIS and sustain it. This is not a technical GIS manual, but a handbook that provides basic knowledge on GIS.

1.2 Who should use this handbook?

The GIS handbook is intended for local government decision makers (mayors, executive secretaries, heads of departments) and staff, as well as other stakeholders (e.g. NGOs and international agencies), particularly those engaged in development activities that deal with infrastructure, agriculture, hydrology, land administration, urban planning, crime mapping, solid waste management, or natural resource management.
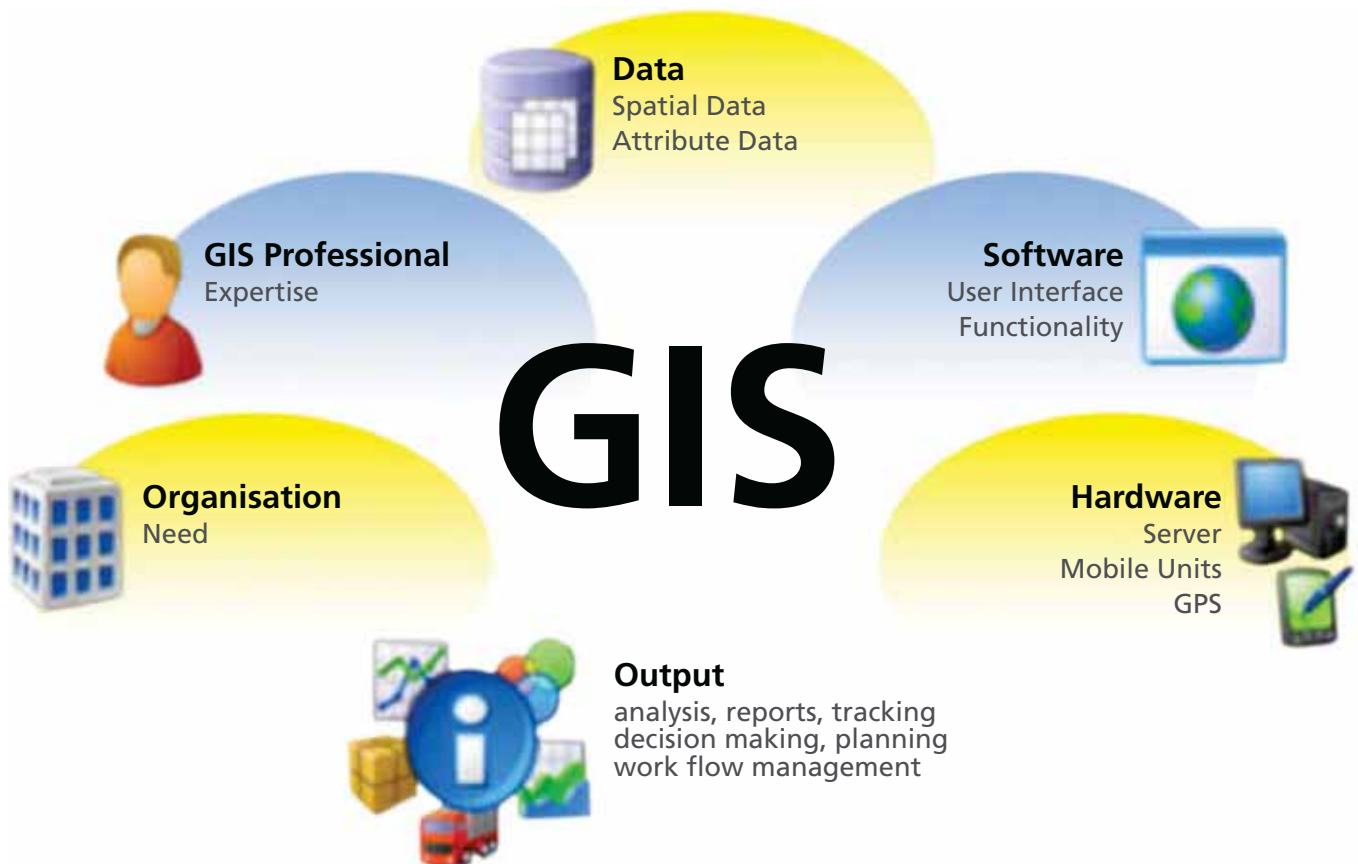
2 WHAT IS A GEOGRAPHIC INFORMATION SYSTEM?

GIS technology has emerged as a powerful set of tools for managing and analysing spatial data (data tied to a specific point or area on the ground). The various types of spatial data are at the core of many development efforts, and GIS is seen as a solution to a number of problems local governments face in their area of jurisdiction.

In simple terms, a GIS can be described as an integrated system that combines hardware, software, and spatial data for the purpose of capturing, managing, analysing, and displaying all forms of geographically referenced information. Geographic information systems are a special class of information systems that keep track not only of events (e.g. environmental disasters), activities (e.g. construction), and things (e.g. facilities, institutions, or natural resources), but also of where they happen or exist.

The figure below describes the components of a GIS.

Data
Spatial Data
Attribute Data

GIS Professional
Expertise

Software
User Interface
Functionality

GIS

Organisation
Need

Hardware
Server
Mobile Units
GPS

Output
analysis, reports, tracking
decision making, planning
work flow management

3 | **WHAT DOES** A GEOGRAPHIC INFORMATION SYSTEM DO?

A GIS allows the user to view, understand, question, interpret, and visualize data in ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts. The GIS answers questions and solves problems by presenting data in a way that can be quickly understood and easily shared. By understanding geography and people's relationship to location, we can make informed decisions about the way we live on our planet. A GIS can answer the following questions:

- What is at a given location? For example, what facilities (e.g. clinic, school, market) are

For example, in which areas does flooding occur? Why are these areas prone to flooding?

- What is nearby? For example, what sorts of facilities, services, or dangers are close to a particular school?
- What trends are occurring? For example, what changes occurred to properties in the municipality since 2006?
- What happens "if"? For example, what happens if we expand this road? How many properties will be affected?
- What interactions occur? For example, what