


Cartography and GIS in Non-Standard Situations

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不出戶，知天下
不窺牖，見天道。
(老子)



Without leaving home,
you can know the whole world;
without looking out of the window,
you can tell the ways of Heaven.

(Lao Zi)

Introduction



What have we done?

The world has become a small place



Sometimes we behave as if we own it

We have conquered Earth



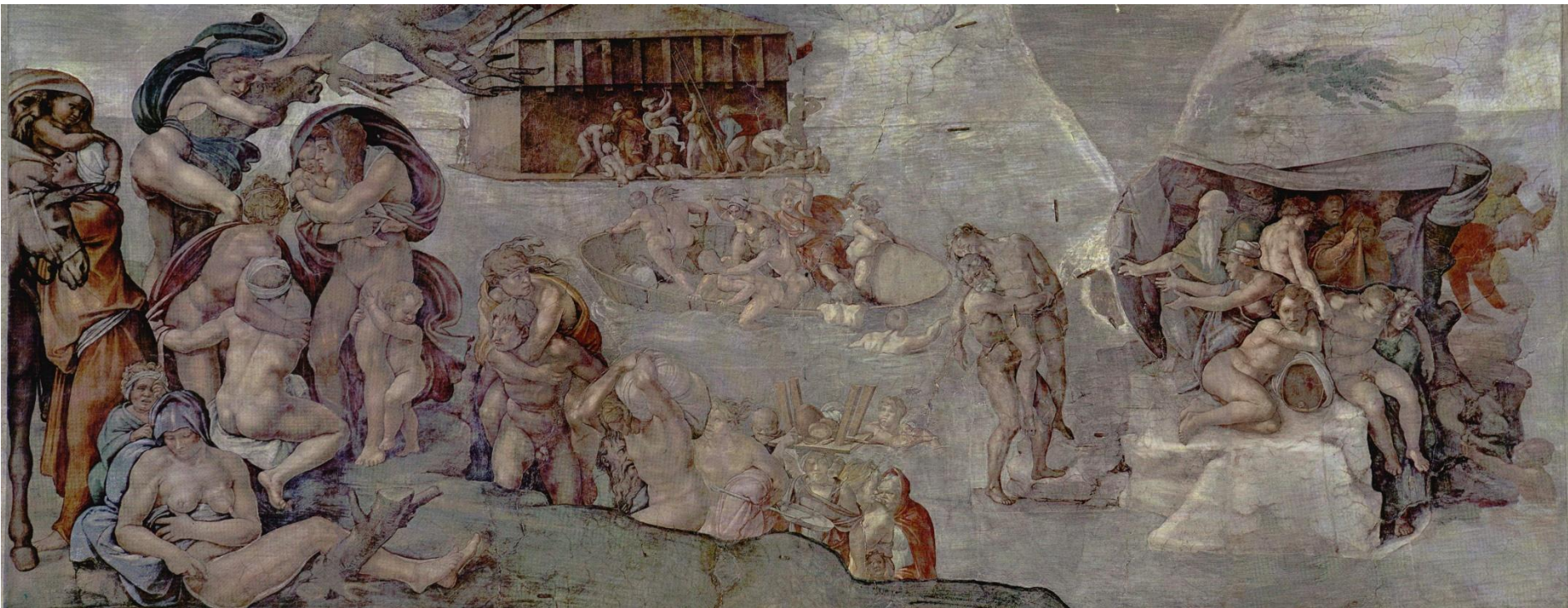
Standard Situation

- According to the textbook we have
 - Clear problem description and understanding
 - Good data
 - Working software
 - Functioning infrastructure
 - Knowledgeable personnel
 - Time

Non-Standard Situation

- When disaster strikes
 - Shock and chaos
 - Missing or incompatible data
 - Software problems
 - Breakdown of infrastructure
 - Lack of experts
 - Lack of time

The Flood (a long time ago)



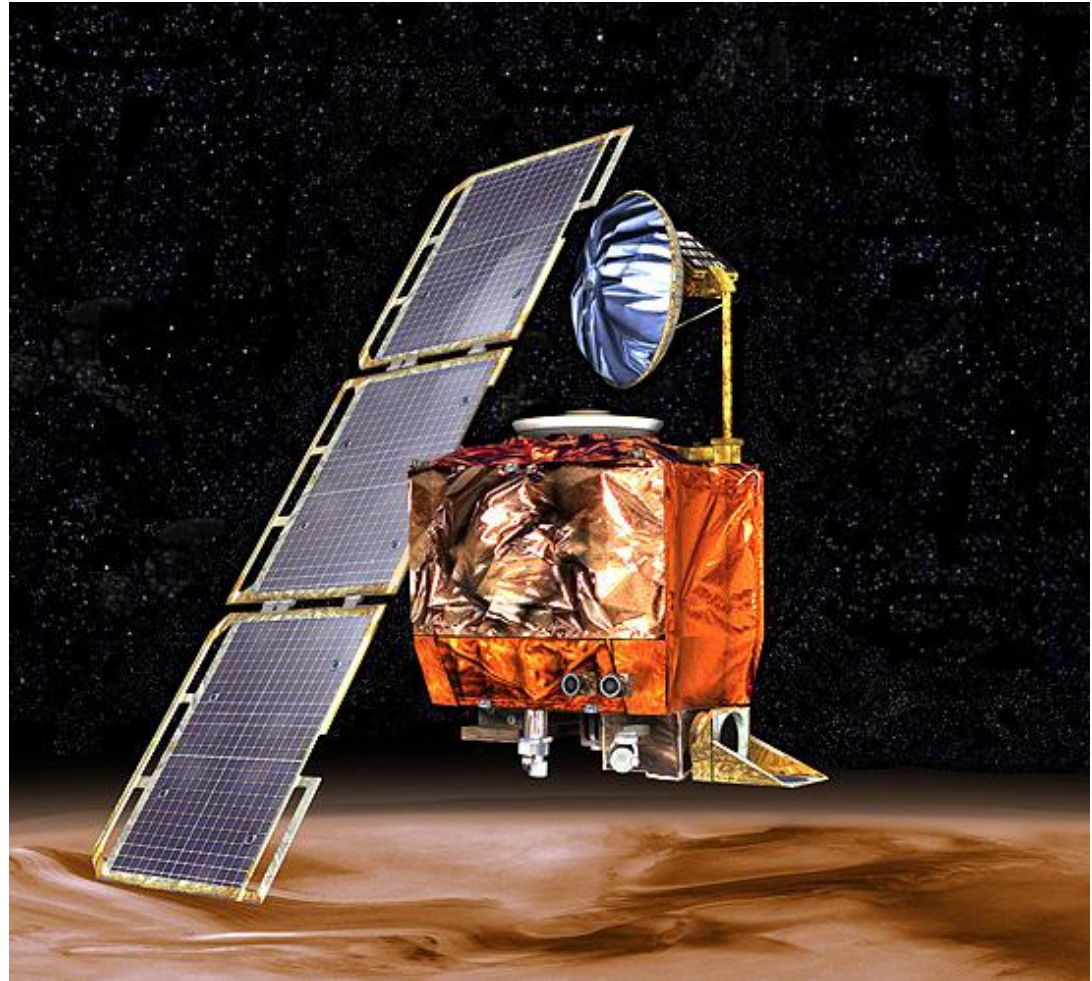
Galtür avalanche (23 February 1999)

- 31 casualties
- Worst avalanche disaster in Austria



Mars Climate Orbiter (23 Sep 1999)

Destroyed due to a navigation error on entry into Martian atmosphere

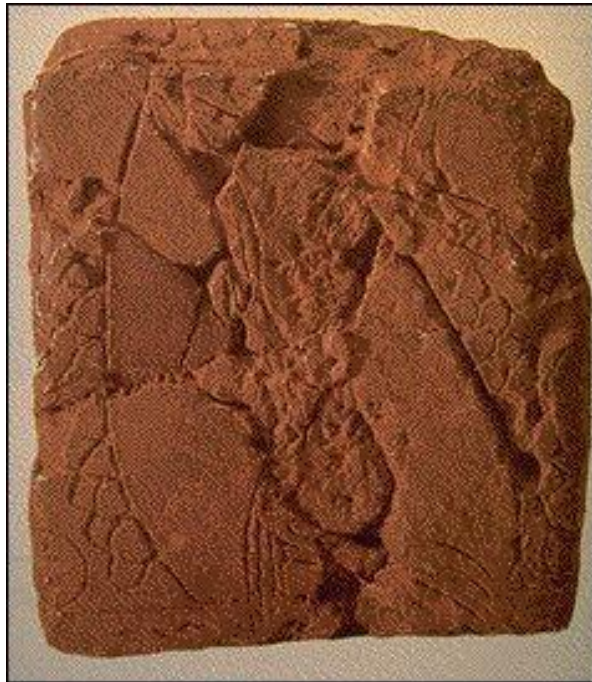


Looking back



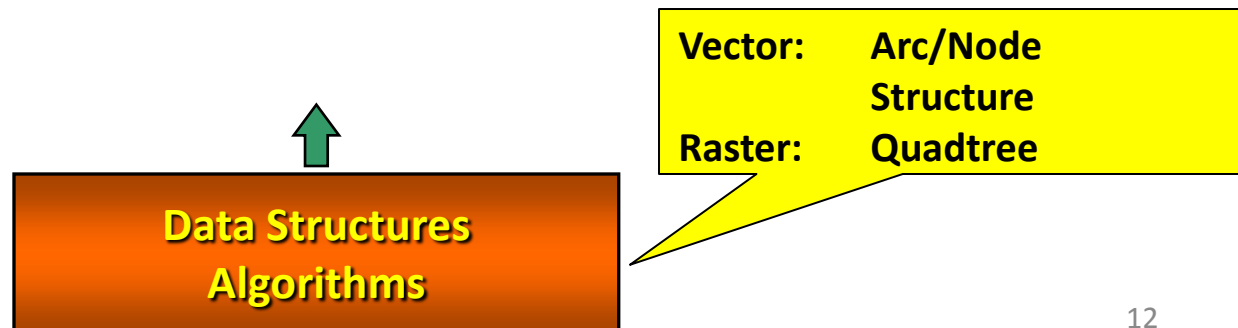
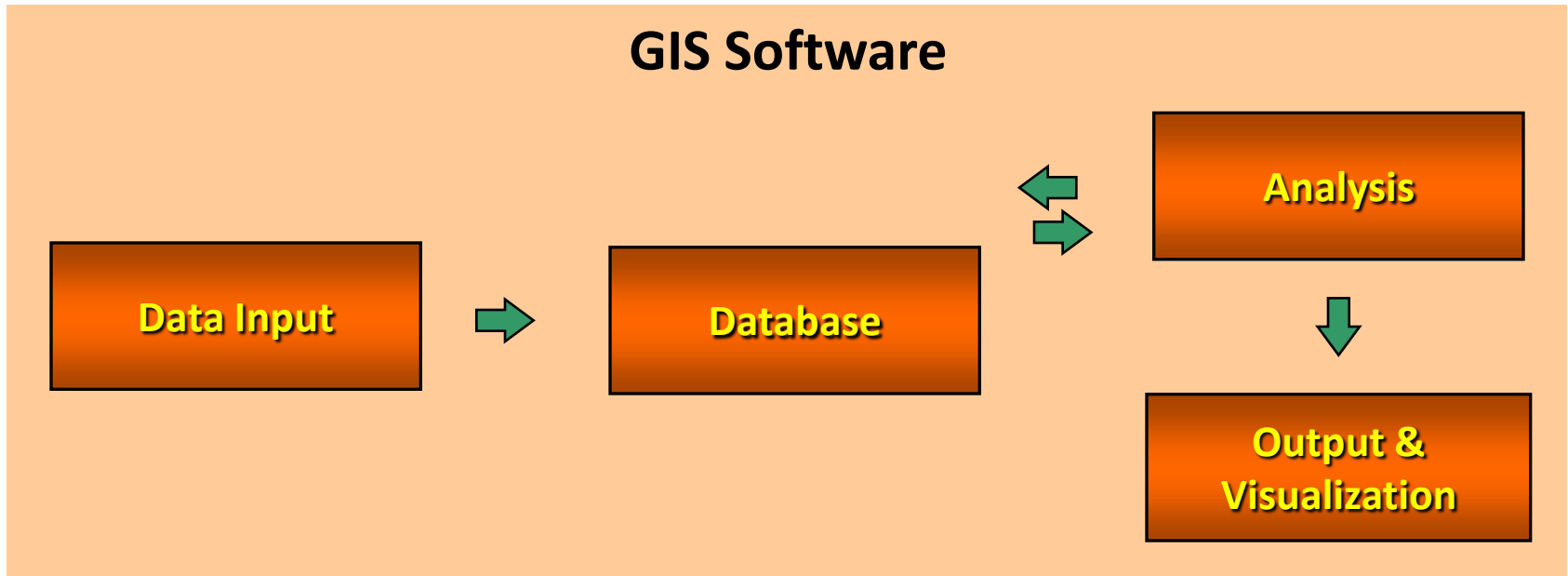
From a Description of the Earth to Earth Observation and Mobile Systems

From ancient times



To the present time

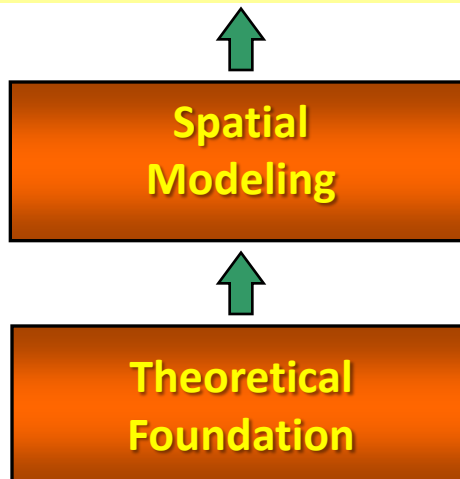
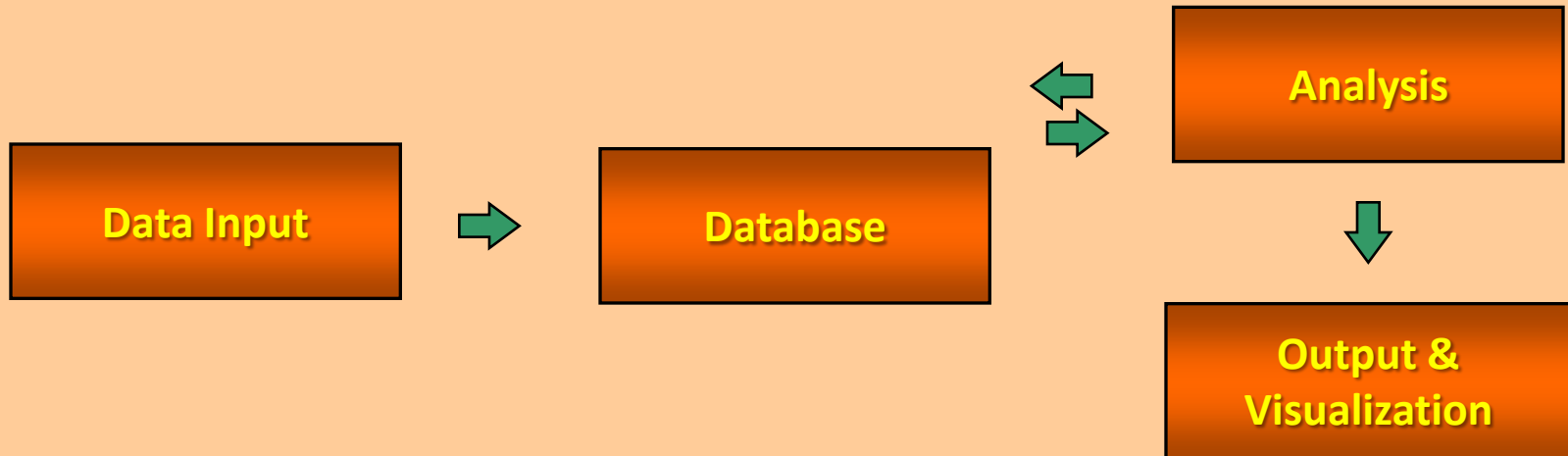




Geographic Information Science

Management und Infrastructure

GIS and Decision Support Systems

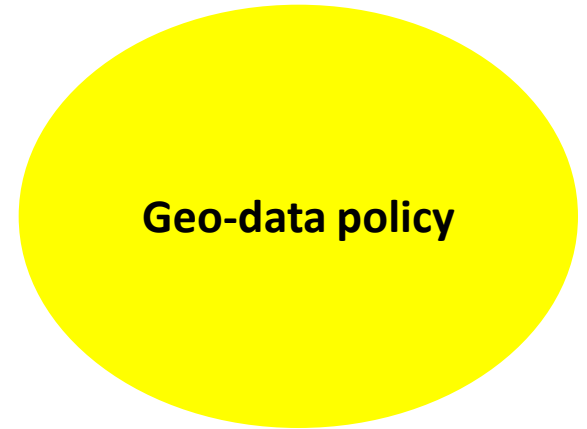
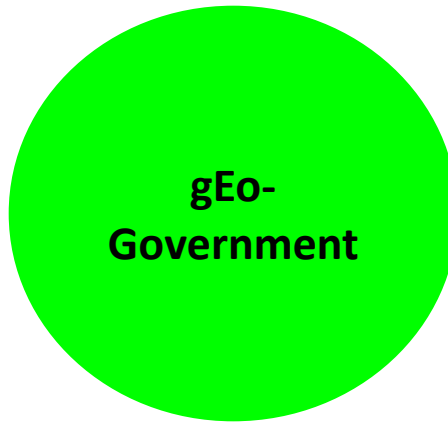
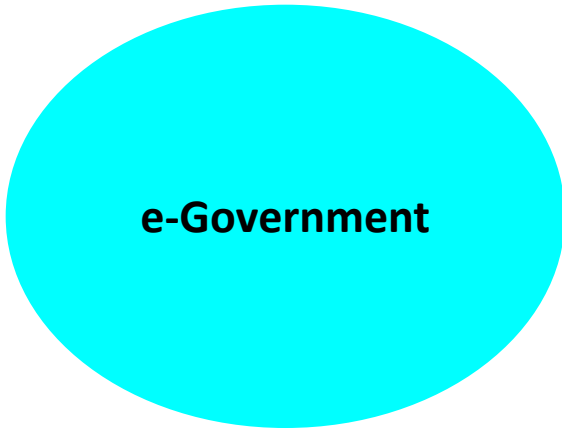


- Geographic Information Science
- Full integration of vector and raster data
- Full integration of attribute and geometry data in geo-databases

gEo-Government



gEo-Government



Goal of gEoGovernment

- To successfully and effectively establish and provide (geo-)information services.
- Build geo-information infrastructures





Outlook

Current Situation

- GIS tools sufficiently well developed
- GIS servers (the network is the system)
- Location based services (LBS)
- Volunteered geographic information (VGI)

Dangers

- Uncritical use of geo-data and geo-information technology
 - Navigation systems
 - Web-maps
- “Digital Divide” between the Haves and Have-nots

... and Potential

- Societal penetration
 - Ubiquitous GIS
 - Education and training
- Tool for early warning and emergency management
- Contribution to tackling global (environmental) issues

Quality Issues

Open Street Map



Reference Map



Modularization of GIS

- Function components on the Web
- Open systems and interfaces
- Function brokers (in analogy to metadata clearinghouses)
- Thin GIS clients with thick functionality

“Natural” GIS

- Full consideration of uncertainty in representation and analysis of spatial phenomena

because...

- We do not live in a binary (black und white) world, and uncertainty is rather the rule than the exception



Finally

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如果你有 GIS

“Without leaving home, you can
know the whole world” —
if you have a GIS.

Thank you