

3D Geo-Visualisation

Concepts and Options

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Geo-Information Science
and Remote Sensing

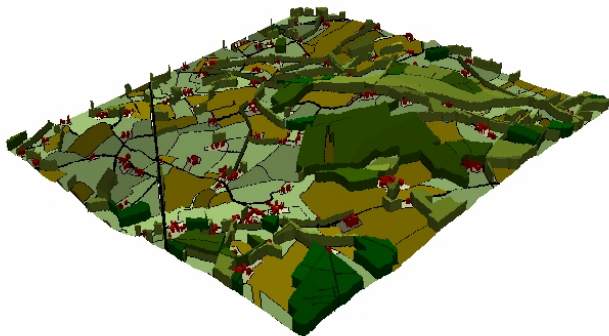
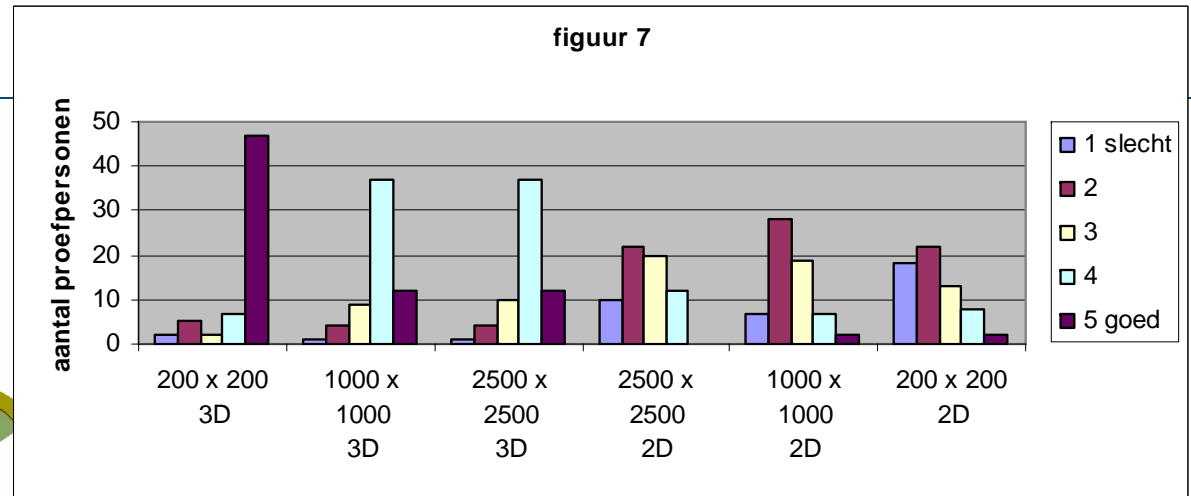
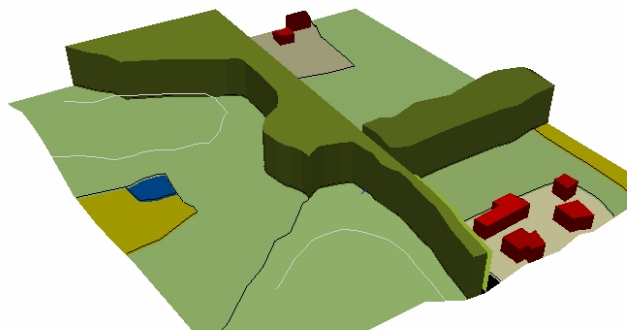
Centre for Geo-Information



Experiment



Perception oriented research



the impact of 2D versus 3D,
(1999)

- details / resolution
- layman versus peers
- distance, size, height



Expectations & Perspectives

may stimulate collaboration.

- a metaphor for a planning and case study environment

may provide support for dialogue

- essential to be able to communicate the complex environmental issues

- it supports formation of a joint perception and understanding

may support coordinated activity

may motivate, demonstrate, create and put into context for the domain of spatial planning and environmental studies



Fabritius' viewer



Peep box

Peep Box Components

Shoe Box

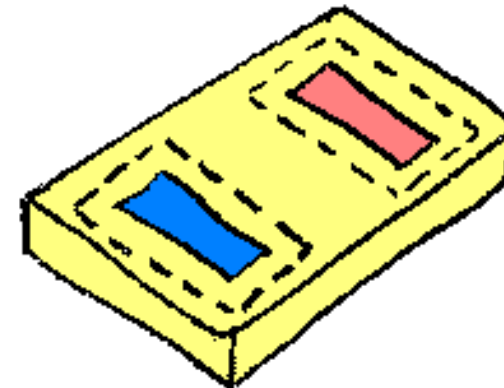
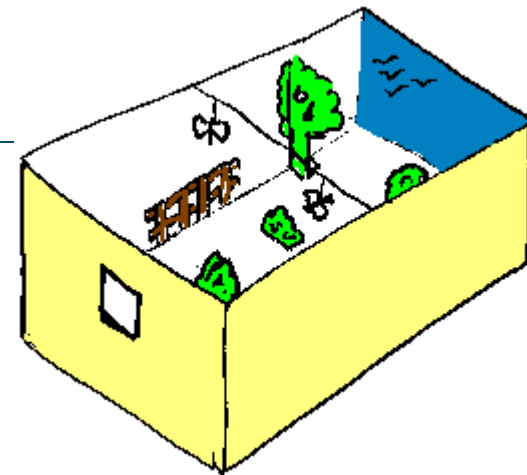
peep-hole

scene

pictures

pellucid foils

objects



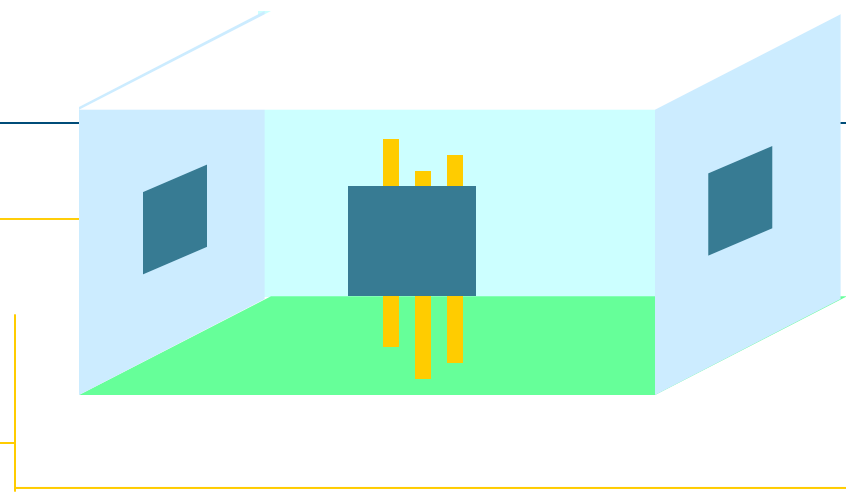
Virtual Reality: peep box metaphor

Components

Viewer



VR-scene



Geo-referenced

3D-object

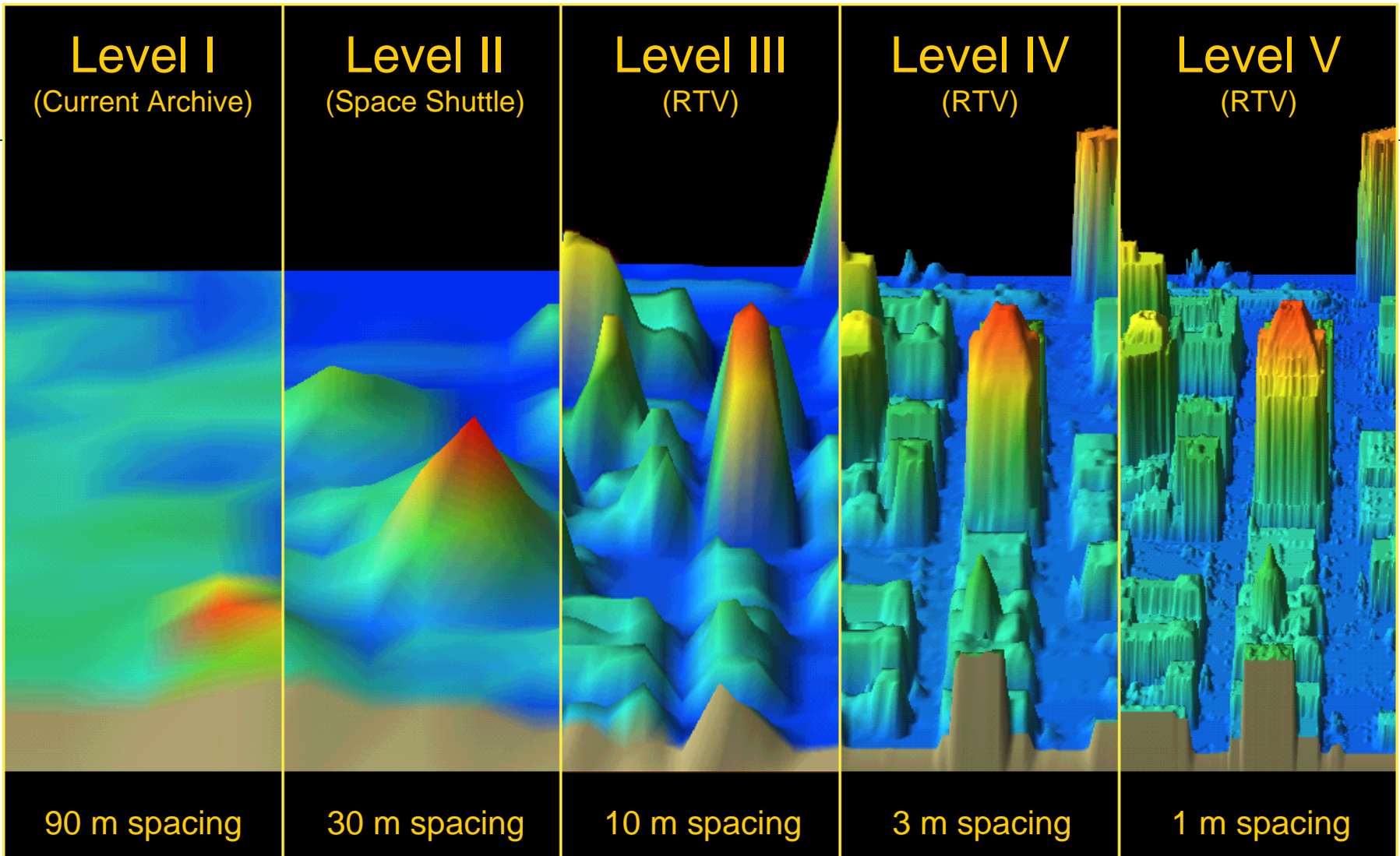
Light

2D - geodata
+ elevation

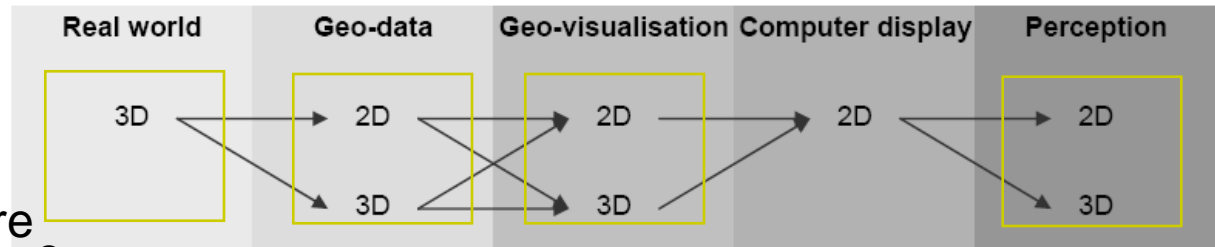
Background/
Panorama



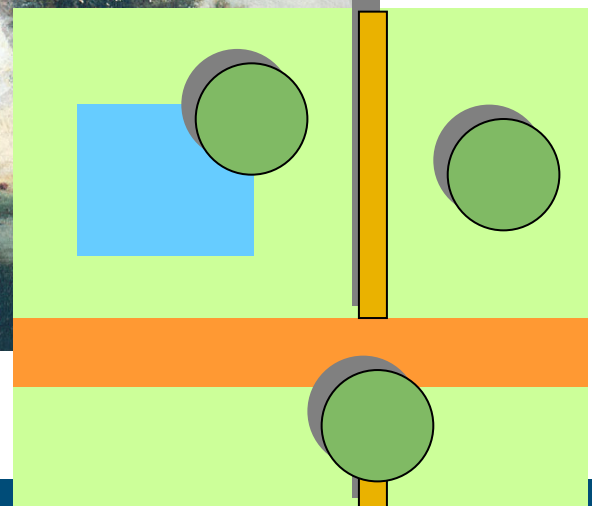
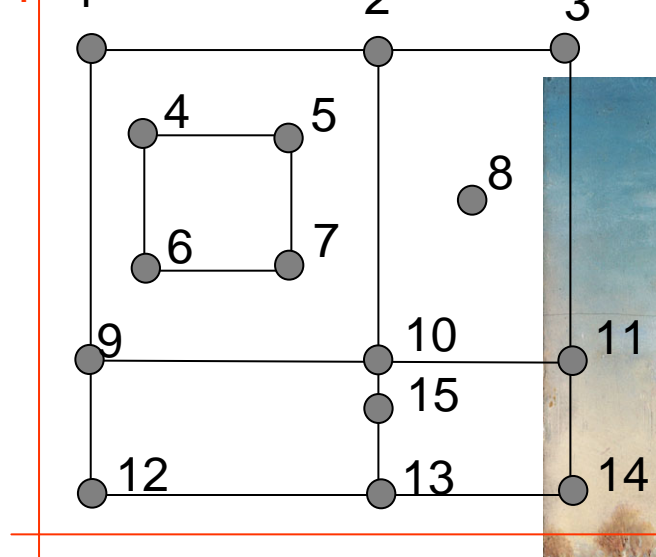
2D geodata – 3D visualisation ?



Transform

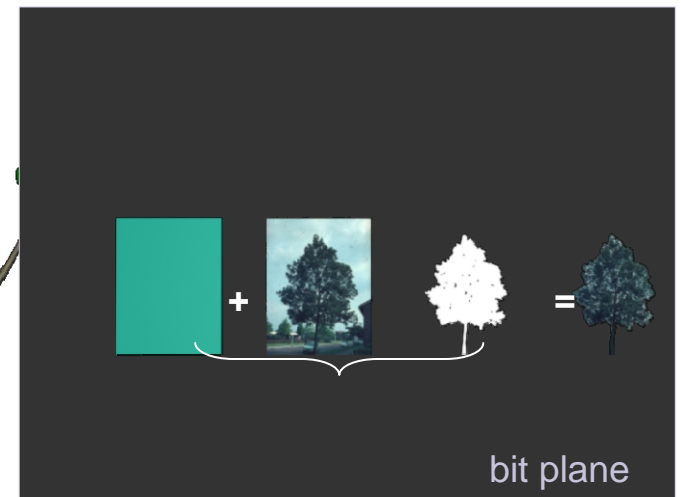
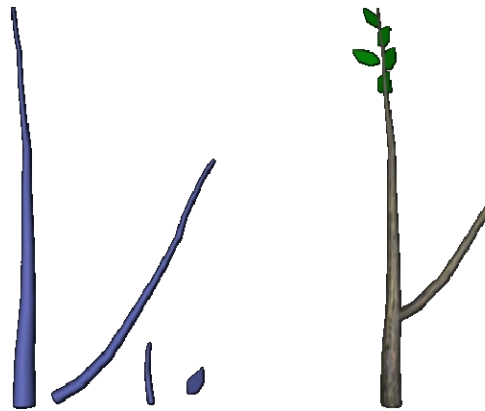
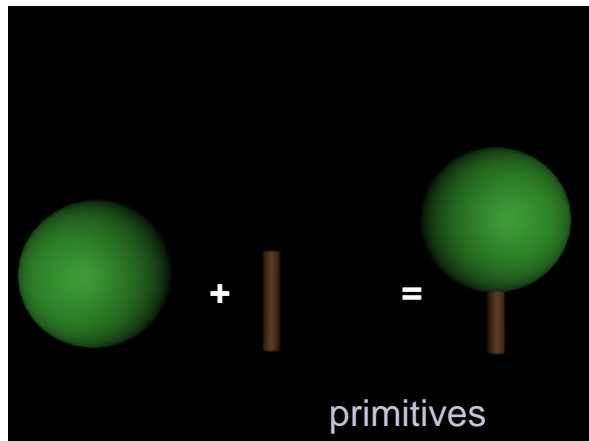
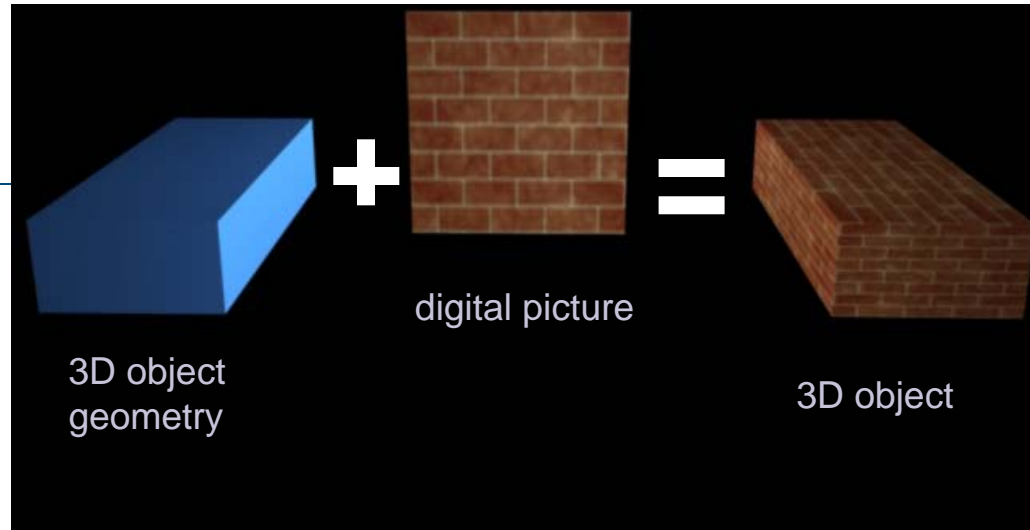


Y Geometrical structure

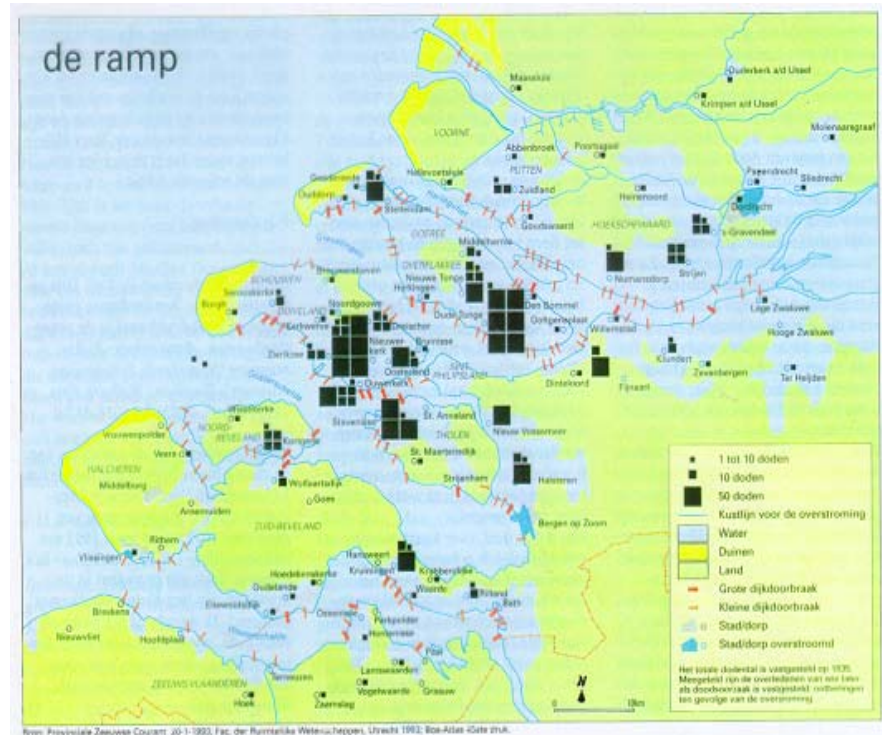


Geometrical and Graphical

3D-object construction

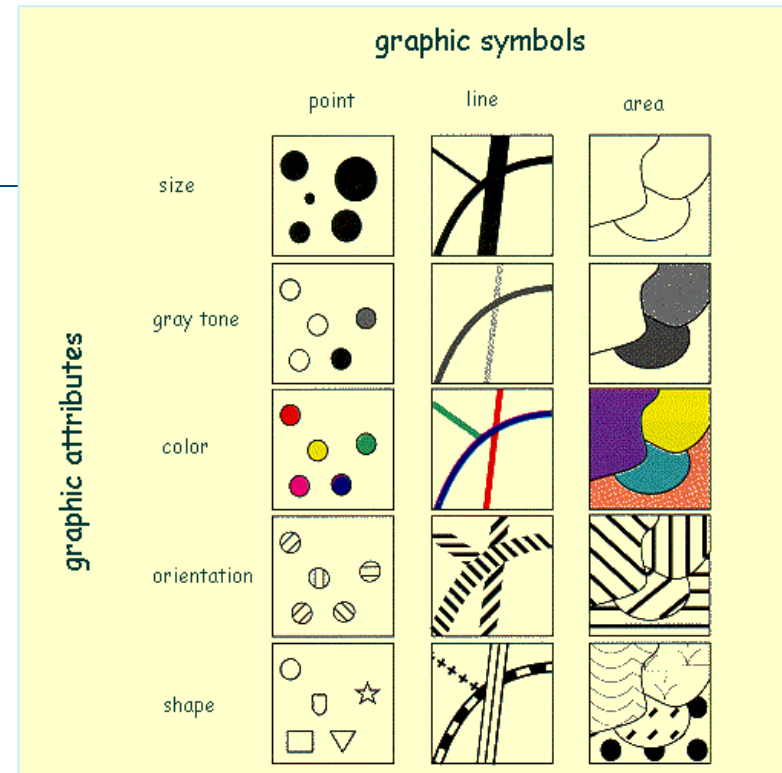


What a disaster !!



Geodata - visualisation

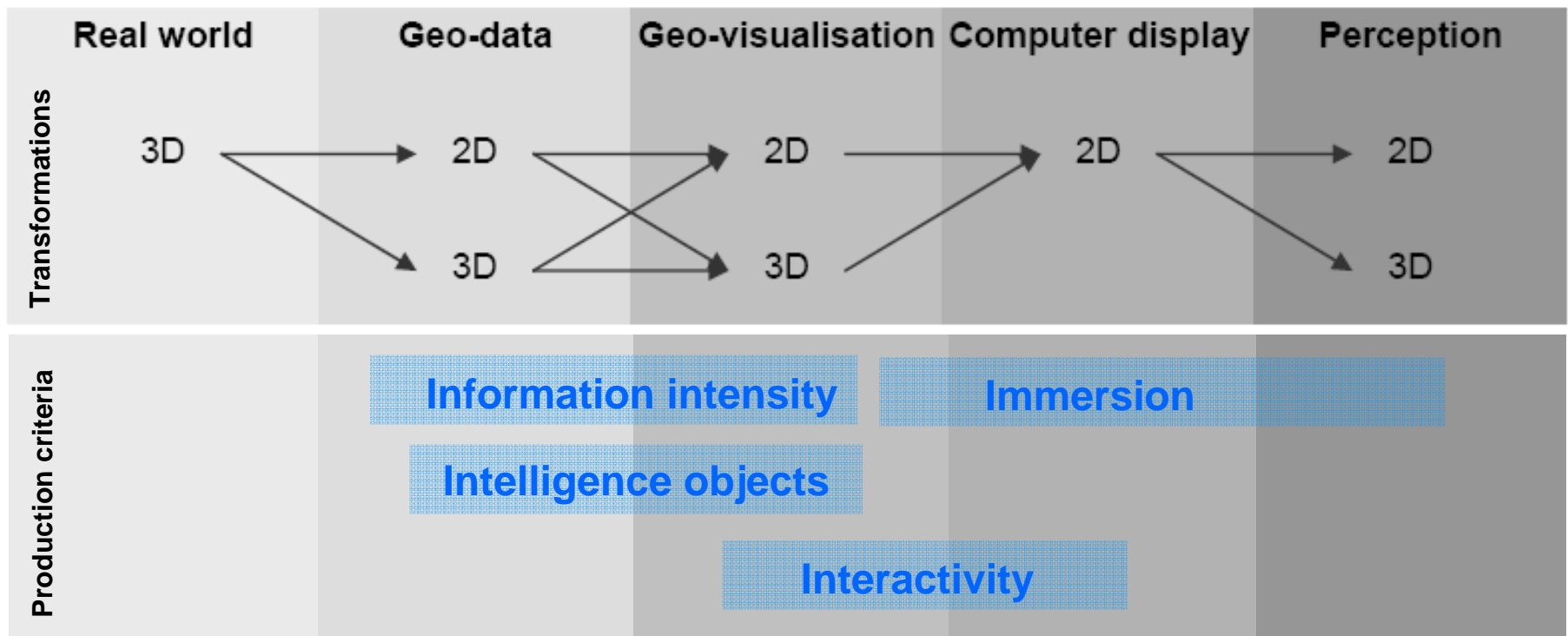
Cartography - Bertin



Data types	ratio				
	interval				
	ordinal				
	nominal				
Perception properties		difference	order	distance	number
Graphical attributes					size
					(grey) value
					grain / texture
					colour / hue
					orientation
					shape

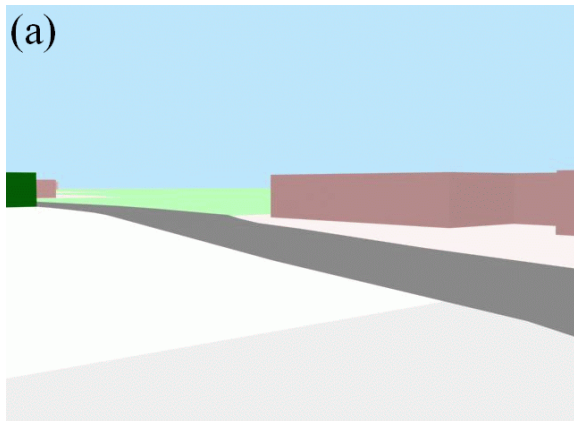
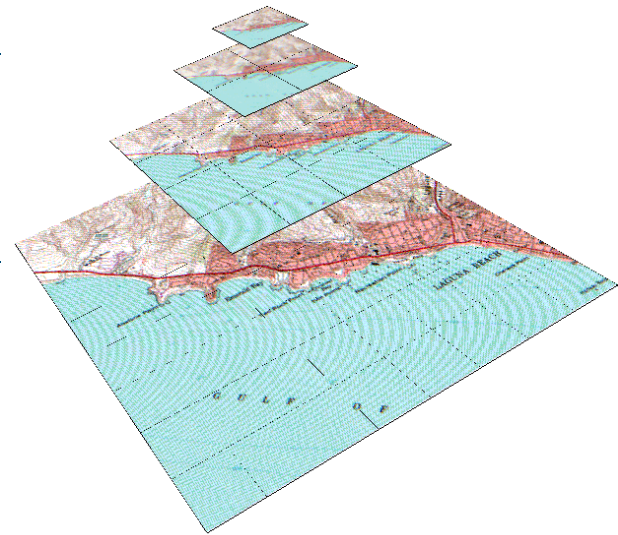
relation	
	Weak
	strong

Geo-visualization Construction



Multi-resolution

Information intensity, Level of Detail

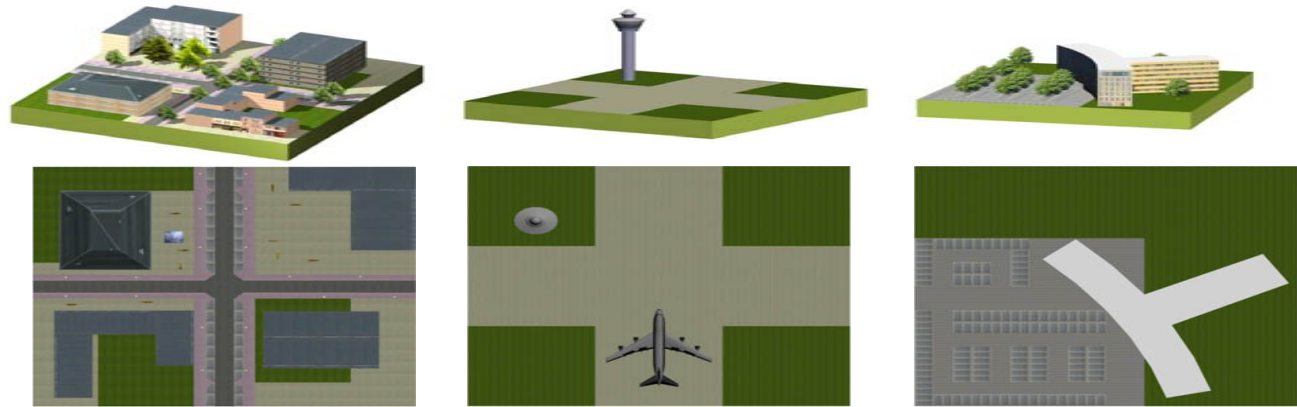


demo scene construction



VisualScan

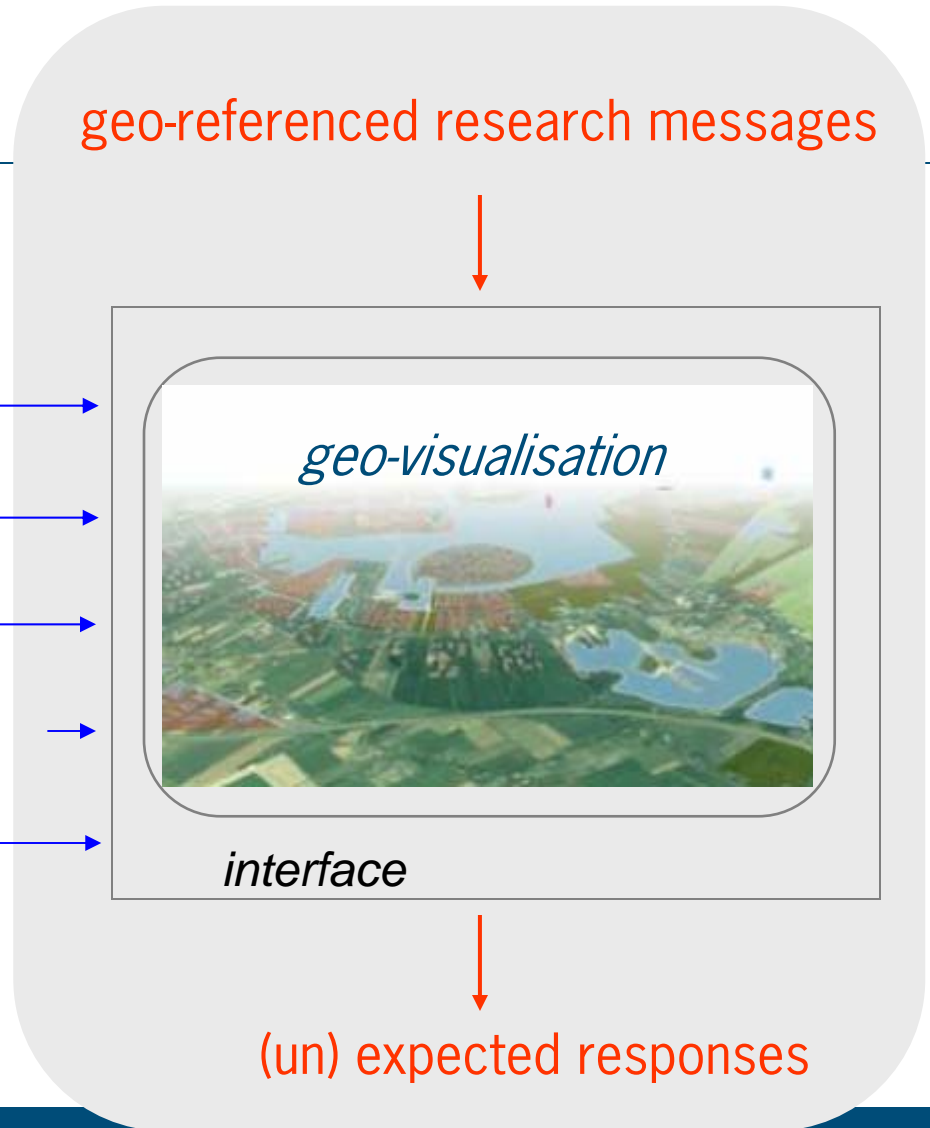
land use icons



Geo-visualization Components

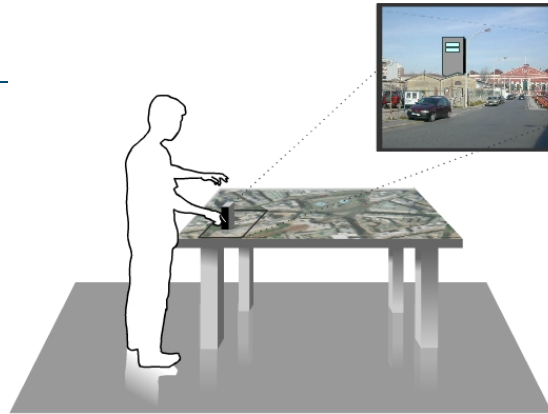
- Actors
- Research procedure
- Cooperation level
- Communication protocol

- Practical requirements



3D scene: interaction

- Explanation
- Orientation
- Navigation
- Selection
- Manipulation
- Querying
- Analysing



demo DEM tactile



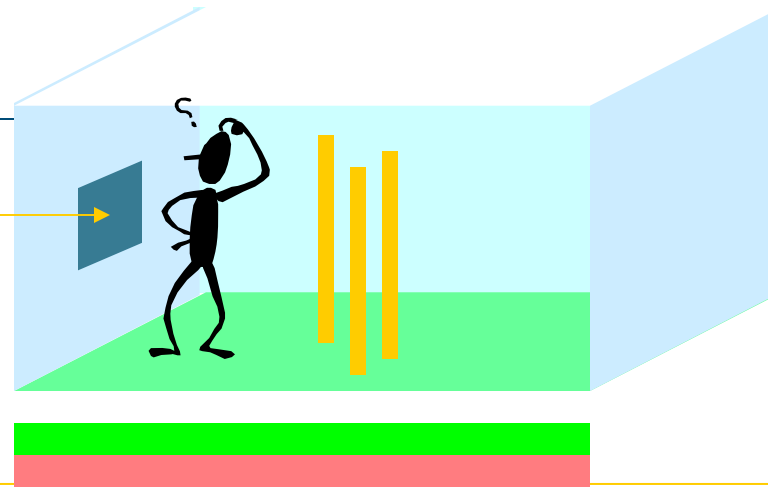
the peep box responds

Viewer

VR-scene

Geo-reference

Web-links



3D-object
behaviour

analysis

Light

2D - geodata
+ elevation
behaviour

analysis

Background/
Panorama

demo salix

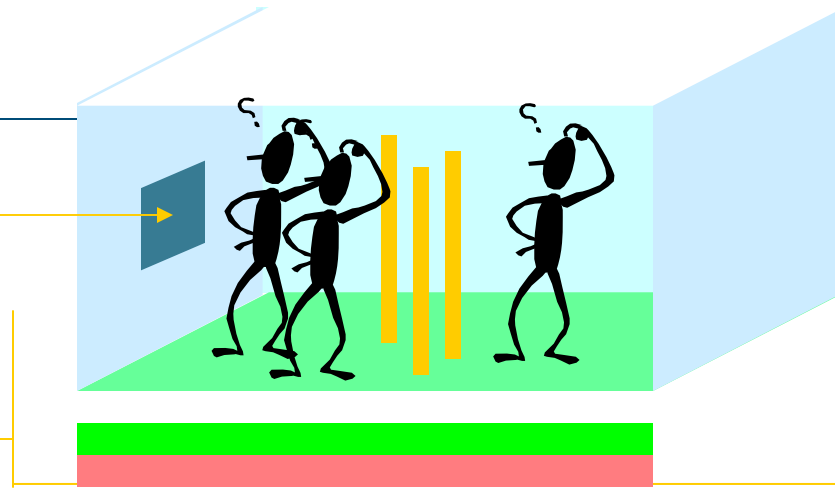


meet and greet peep-box

Multi-user Scene

Viewer

VR-scene



Geo-reference

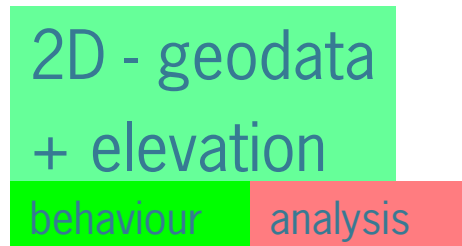
Web-links

Simulation

Feedback



Light



Background/
Panorama



virtual worlds and avatars

ESS <http://secondlife.com/>



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JOIN NOW

MEMBERSHIP IS FREE

SECOND LIFE IS A 3D
ONLINE DIGITAL WORLD
IMAGINED, CREATED, & OWNED
BY ITS RESIDENTS.

BUY & SELL LINDEN DOLLARS

OWN VIRTUAL LAND

REFER FRIENDS

VIEW
INTERACTIVE
MAP

UNDER 18? CHECK OUT TEEN SL

Headlines [read more n](#)

Investors.com

Last Updated: Monday, April 7, 2008

Reflects data through midnight, April 6.

Population

Residents Logged-In During Last 7 Days	269,061
Residents Logged-In During Last 14 Days	420,785
Residents Logged-In During Last 30 Days	693,598
Residents Logged-In During Last 60 Days	1,104,334
Total Residents ¹	13,173,410

Total Residents:	4,346,570
Logged In Last 60 Days:	1,549,396
Online Now:	25,607
US\$ Spent Last 24h:	\$1,515,880
LindeX Activity Last 24h:	\$222,983



Many conclusions

IIII Heim (1998)

- freedom of visualization via content, lay-out and perspective
- man-computer-man interaction
- 3D (!) scenes as research and design environment
- web enabled portable services
- new graphic and pictorial vocabulary
- 3D (!) visual interface for simulation models
- integration of simulation models
- process-control and users advisory by agent technology
- multi-user environments

An outlook on parallel worlds



Our lessons - your interest match

- Catalyst in joint - cooperative research
 - Catalyst in multi / inter / transdisciplinary research
-
- Division between geo data and geo visualization
 - Geo-visualization refers also to interfaces
 - Visualization of data
 - Visualization in relation to tools [to analyse, to simulate, to sketch]
 - Geo-visualization as dialogue tool :
 - Mental Mapped
 - Researchers and Research population
 - Amongst researchers
 - Researchers and society (incl policy makers)
 - Geo-visualization: doesn't the cure research 'illness'



Results



3D Geo-Visualisation

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demo google earth

