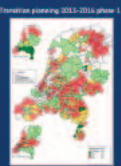
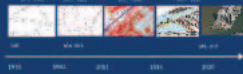


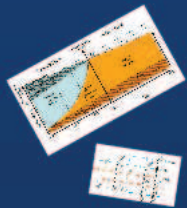
Transition proces  
GBKN -> IMGEO = 2D->3D Virtual NL



Thanks for your attention  
Questions?



We are there to come from like the future  
"Smart, Efficient and Effective at the lowest cost to society"



BGGT

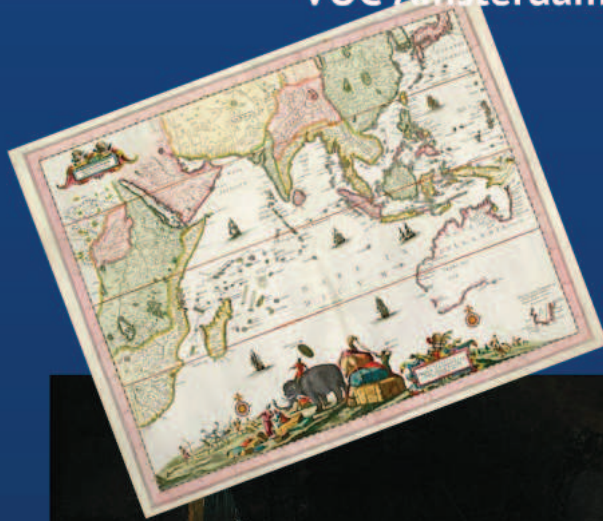


- Total population = 16.407.491 people
- Population density = 493 inhabitants/km<sup>2</sup>
- Highest of Europe / only > Taiwan and Bangladesh
- 418 Municipalities, 12 Provinces, 23 Waterboards
- Rhine Delta 50% of area < +1 m above sealevel
- Total area = 41.526 km<sup>2</sup>
- Urban 30%, Rural 70%
- MainPort of Europe – Rotterdam Harbour
- Largest Gasproducer in Europe - GasUnie

Transition process of the Large Scale Base Topography of the Netherlands  
in historical perspective The Past, Present and Future



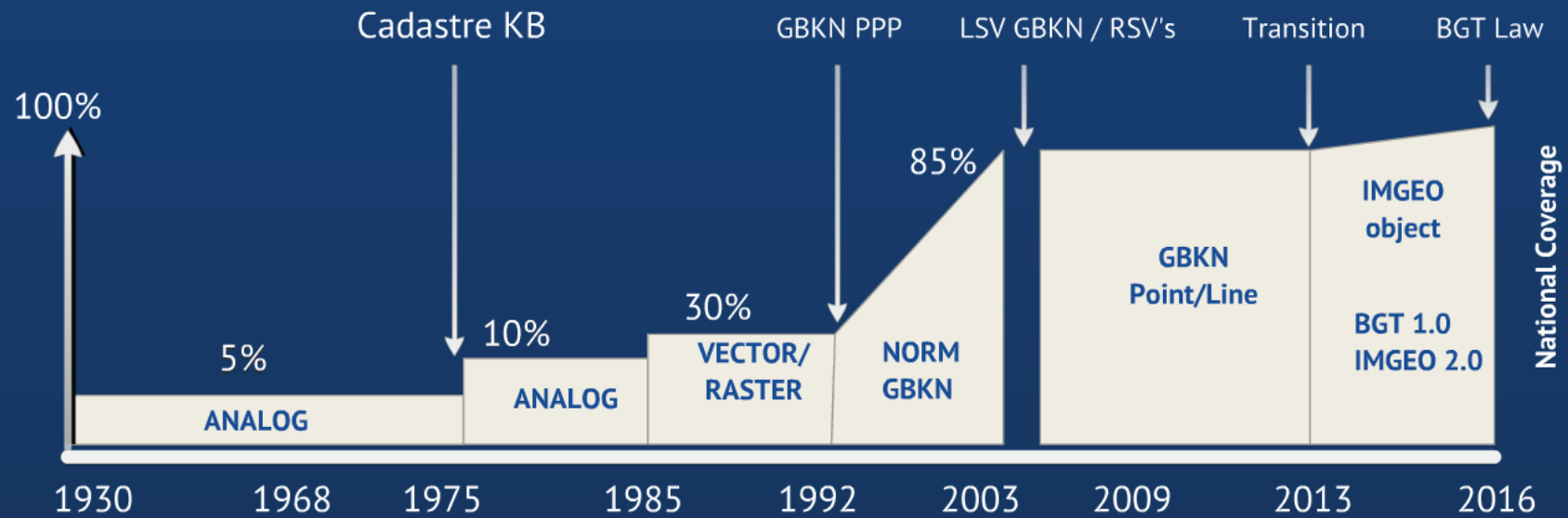
“Atlas Maior” by cartographer Joan Blaeu  
VOC Amsterdam 1662



“United we prosper, divided we pay”  
The Golden Age 1588-1702



Transition process of the Large Scale Base Topography of the Netherlands  
in historical perspective The Past, Present and Future



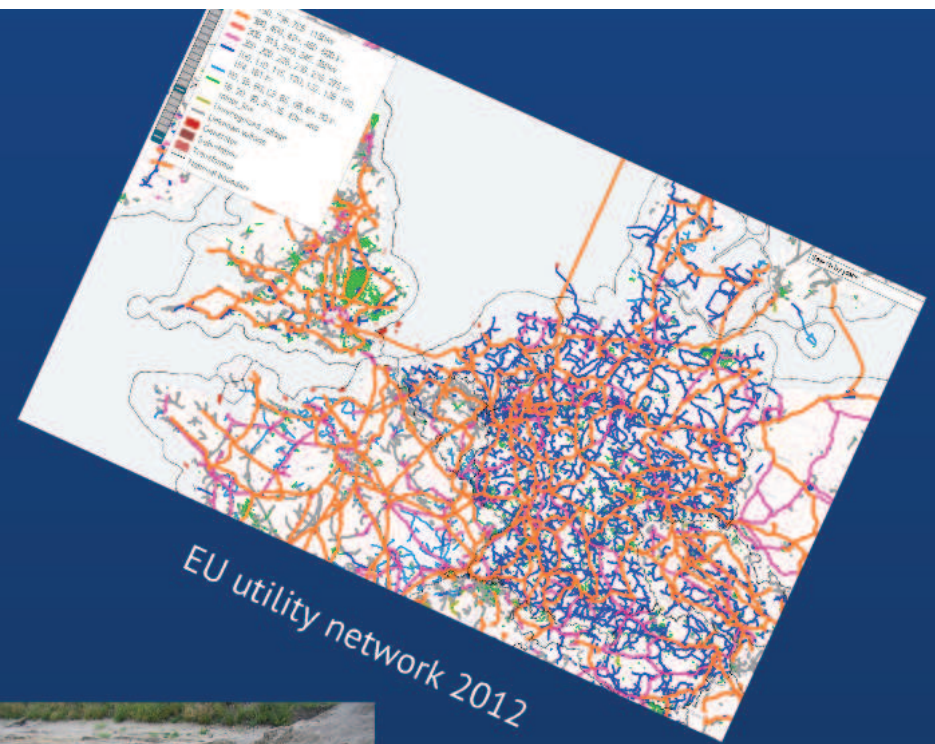
The onset of the Large Scale Base Topography of the Netherlands  
Early in the 30's



As early as in the 30' the Dutch politicians were concerned about damage to the cable and pipeline infrastructure. They stated:

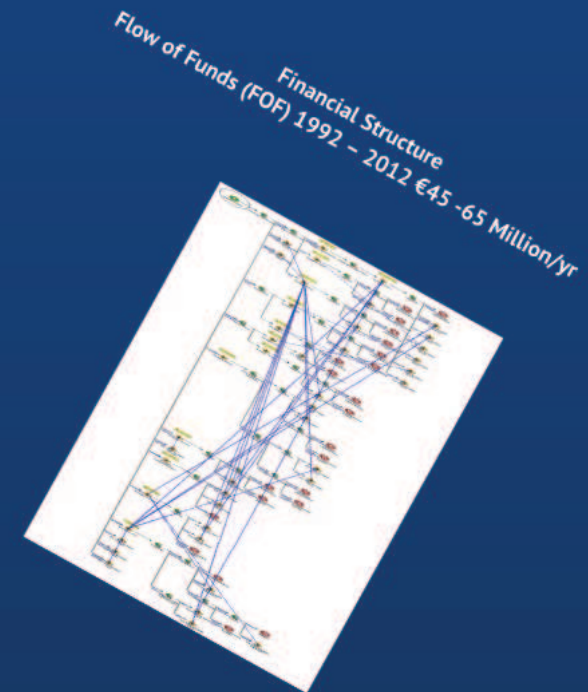
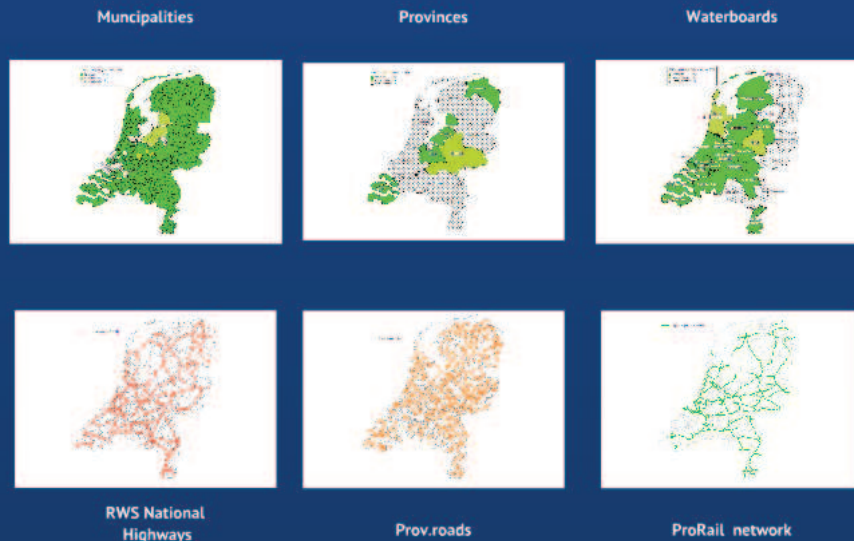
The cable and pipeline infrastructure  
is  
"the nervous system of modern society".

Member of parliament J. Glerum 1937

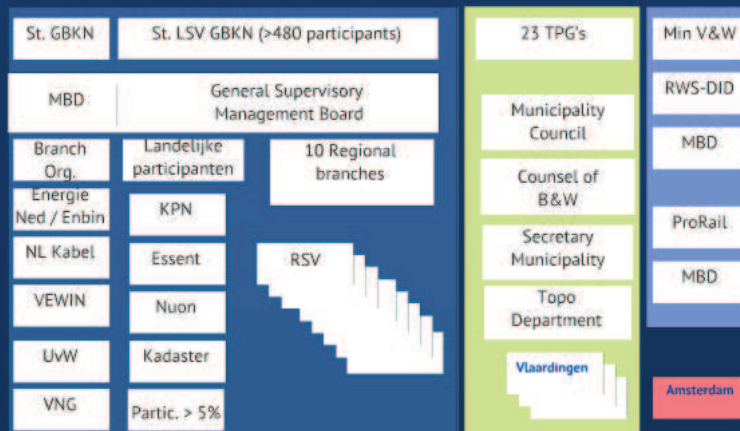


Early Production of GBKN  
"staples map" a base map for the utility networks





The governance landscape 1992 - 2012  
Management of the Large Scale Topographic Map  
in the Netherlands



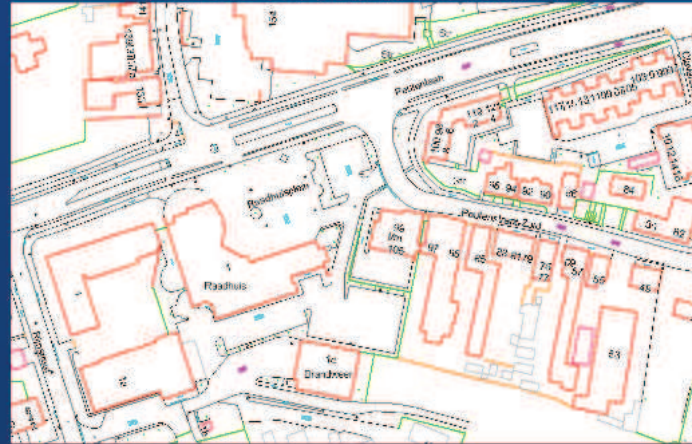
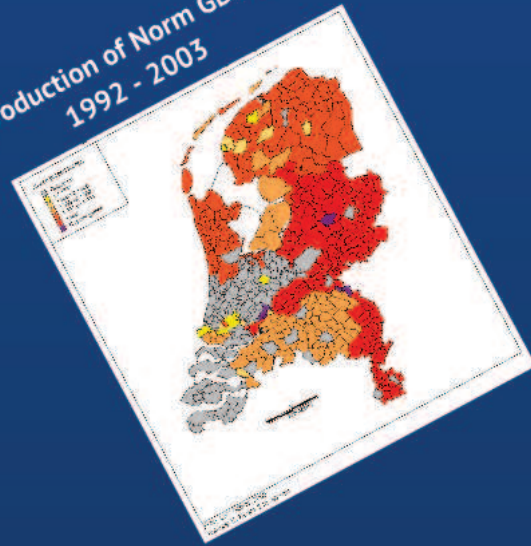
Agreed Technical content  
GBKN Product 1992 -2012

- Topographic base map (vector format)
- Large scale (1:500 / 1000 / 2000)
- Detailed and accurate 10√2 cm
- Actuality 3 months (urban) / 12 months (rural)
- National standard with Regional variation
- Capital investments ca. € 250 million
- Annual maintenance costs ca. €45 million/yr
- Produced in ca. 25 years
- National distribution database for data transfer (GBKN Locket) and visualisation (BKOL)
- Centralised Mutation Reporting System (MMS)
- Over 600 participants/customers in 5 sectors



# Norm GBKN Product

Production of Norm GBKN  
1992 - 2003



ICT Infrastructure, mutation and production database  
Kadaster 6 juni 2008

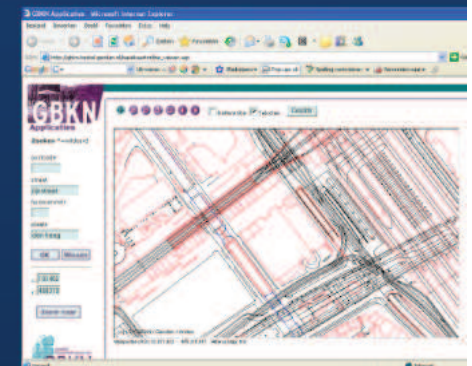
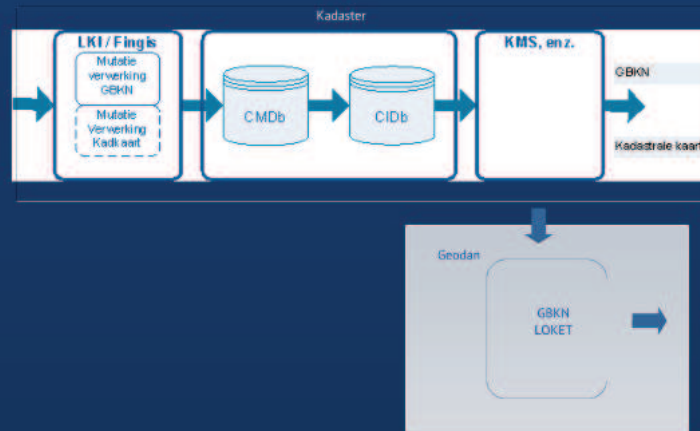
Annual maintenance costs of the GBKN  
effect of "economy of scale" National tenders



User statistics of the GBKN  
BKOL/GBKN online shop - number of transaction



Mutation Reporting System GBKN (MRS)  
number of reported & processed Mutations = avg. 61,000/yr



- GBKN Friesland
  - GBKN Friesland
  - GBKN Gelderland
  - GBKN Groningen/Drenthe
  - GBKN Noord-Holland
  - GBKN Overijssel
  - GBKN Utrecht
  - GBKN Zeeland
  - GBKN Zuid-Holland
  - GBKN Zuid
- TPG's (Topografie Producterende Gemeenten) en Amsterdam

# WHY CHANGE?



WK 2010



EK 2012

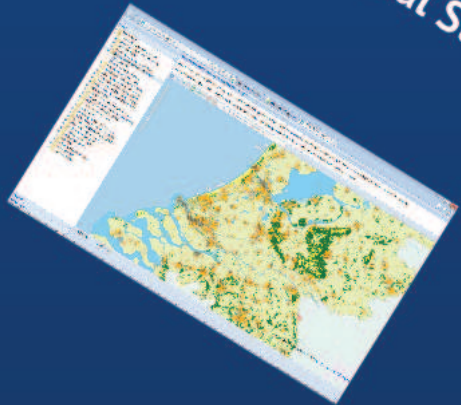
New Legislation



**e-OVERHEID**  
ROUW MEE AAN BETERE DIENSTVERLENING

**GIDEON ACT**

NSDI - Netherlands  
National Statutory key geo-registers Infrastructure



Public sector Asset management  
Producer / User



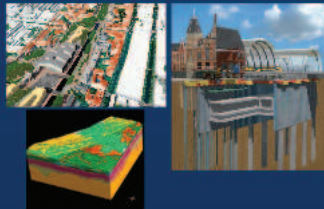
User  
Utility Companies Gas, Electricity, Water, Telecom, CAI



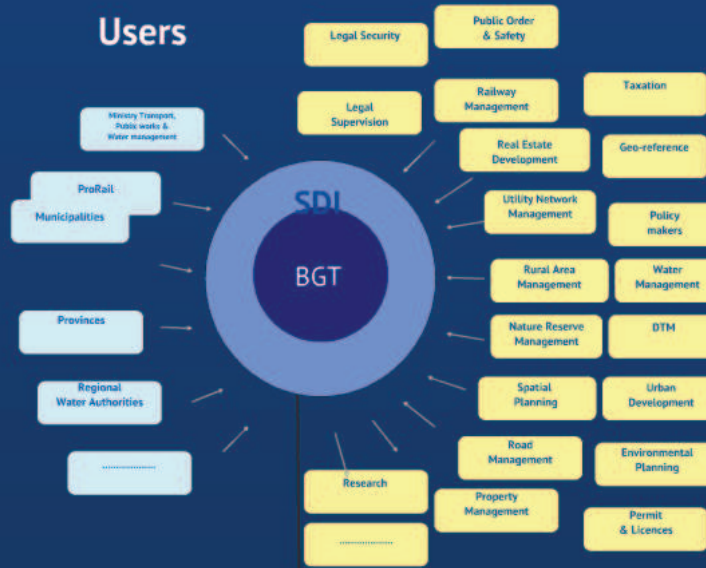
User  
Homeland Security – Crisis Management



Integrated Spatial Planning  
above and below the surface



### Users



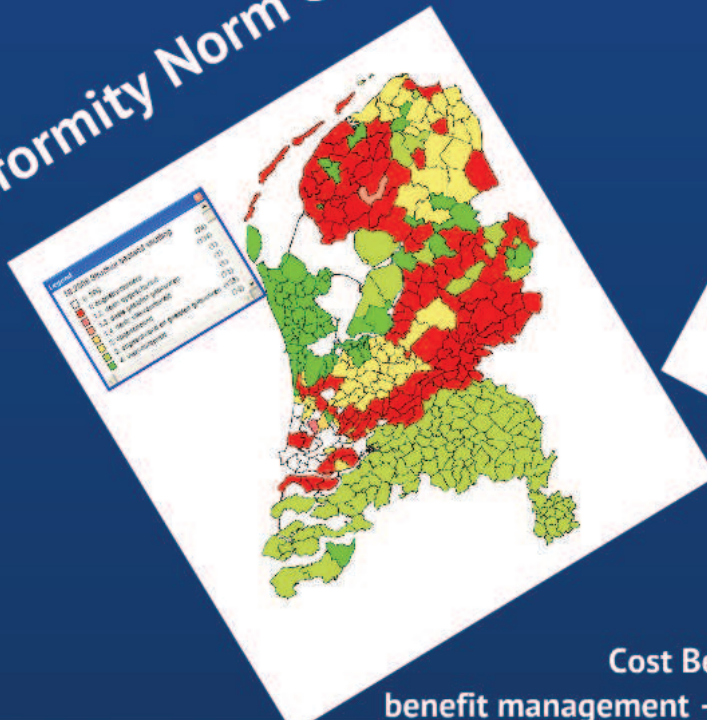
Energy Transition  
Gas Production Induced Subsidence & Earthquakes



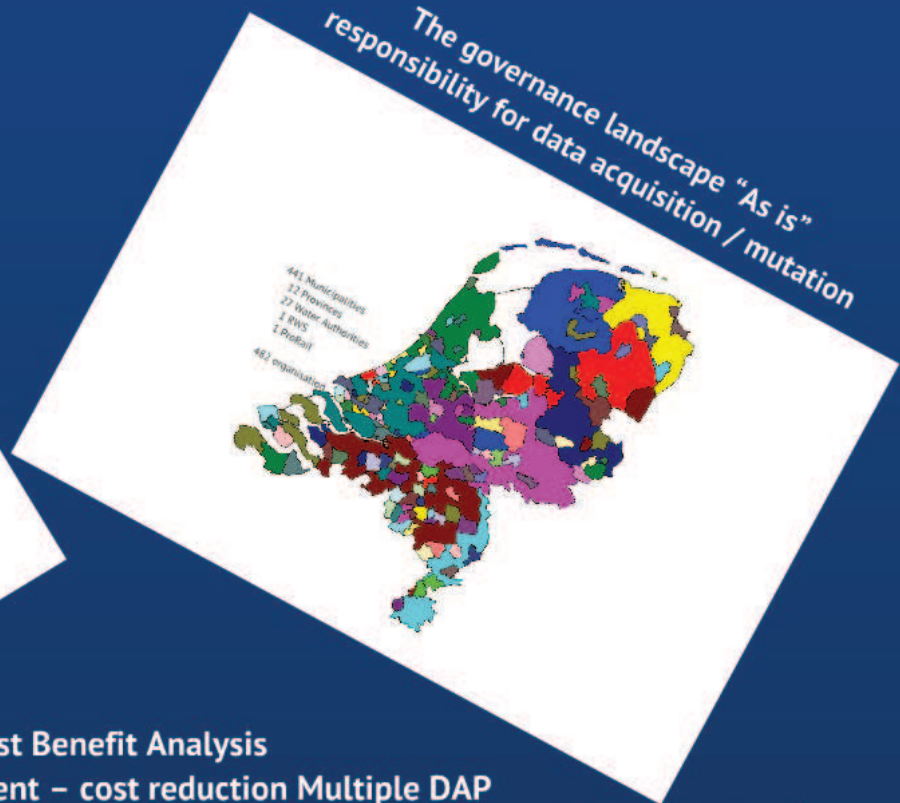
Energy Transition  
Shale Gas Production



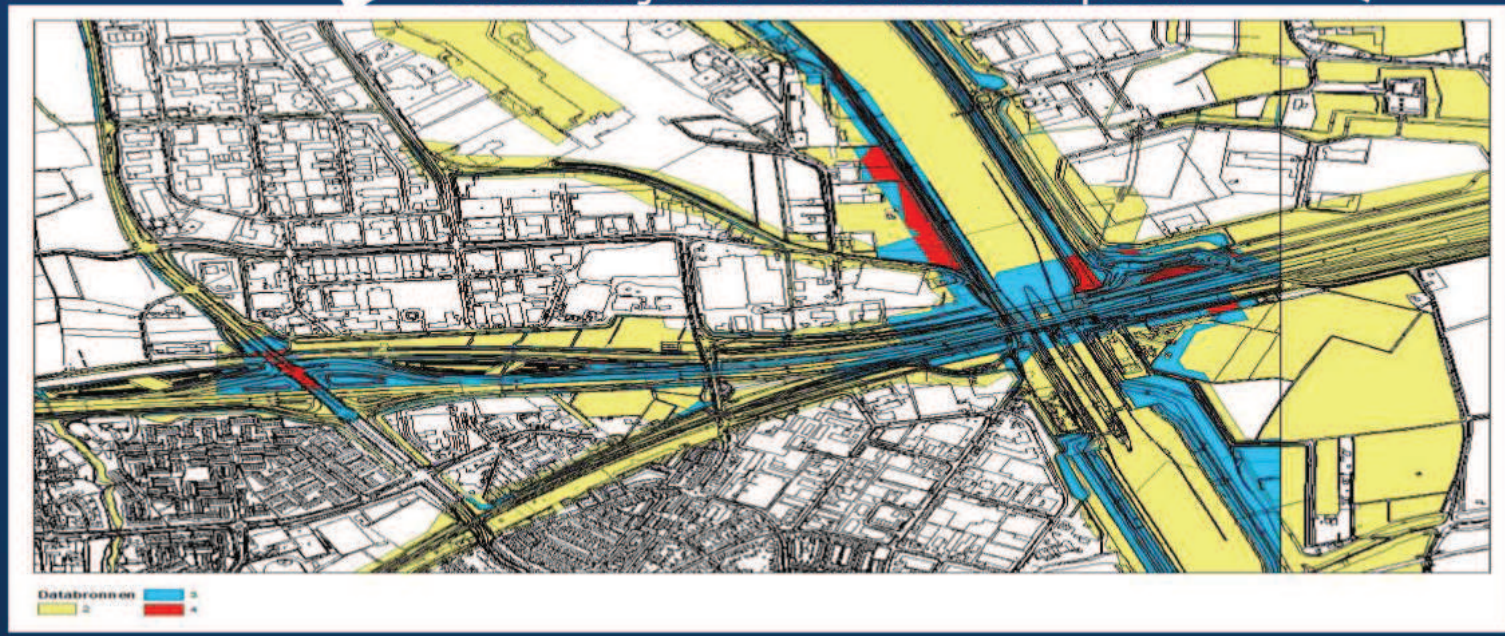
# Uniformity Norm GBKN



# The governance landscape "As is" responsibility for data acquisition / mutation



## Cost Benefit Analysis benefit management – cost reduction Multiple DAP

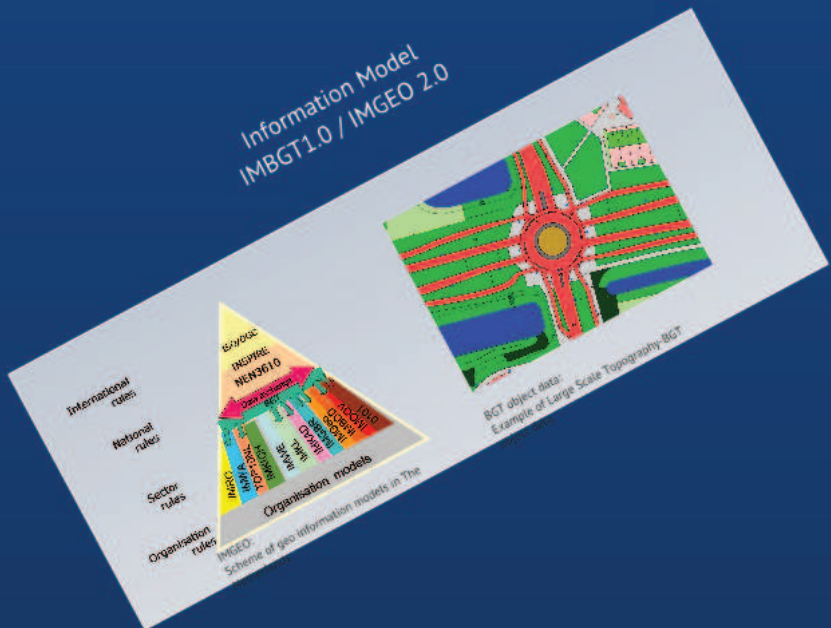


# BGT Transition proces-Phase 1

## Policy-preparation 2008 -2012

- Technology (agree new common data model)
- Improve Supply Chain Management (SCM)
  - More with Less
- Implement new legislation (BGT Law)
- Societal Cost Benefit Analises (SCBA)
- Governance structure
- Financial structure & flow of Funds (FOF)
- Change culture public sector:  
“every agency for herself God for us all” ☒ “United we Prosper”

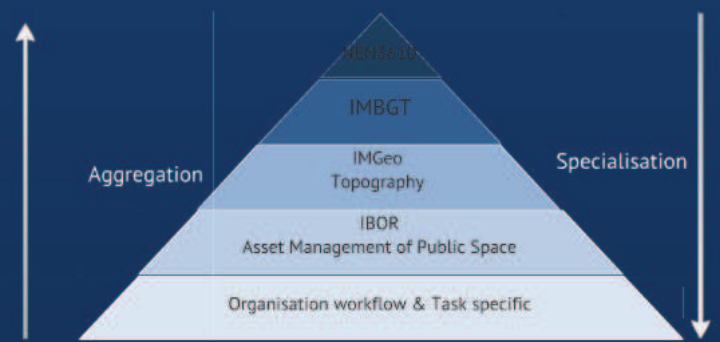
# Information Model IMBGT1.0 / IMGeo 2.0



Agree a New Common National Topographic  
Standards IMGeo



## Positioning IMGeo and IMBGT



# Supply Chain Management (SCM) information integration in spatial planning & building permit process



IMGEO LOD0



IMGEO LOD1



IMGEO LOD2

## Sanquin Building Amsterdam



BIM design



Aggregation proces  
IMGEO  $\times$  TOP10NL

IMGEO 1:1000



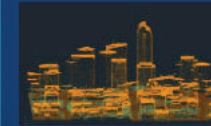
TOP10NL 1:10.000



# Smart Map Production Integrated Capture Process & New Technology



Satellite



Laser Altimetry



Stereo photos

Aerial

Aerial  
photos



Landsurvey



1930

1968

1975

1985

1992

2003

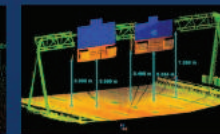
2009

2013

2016



terrestrisch



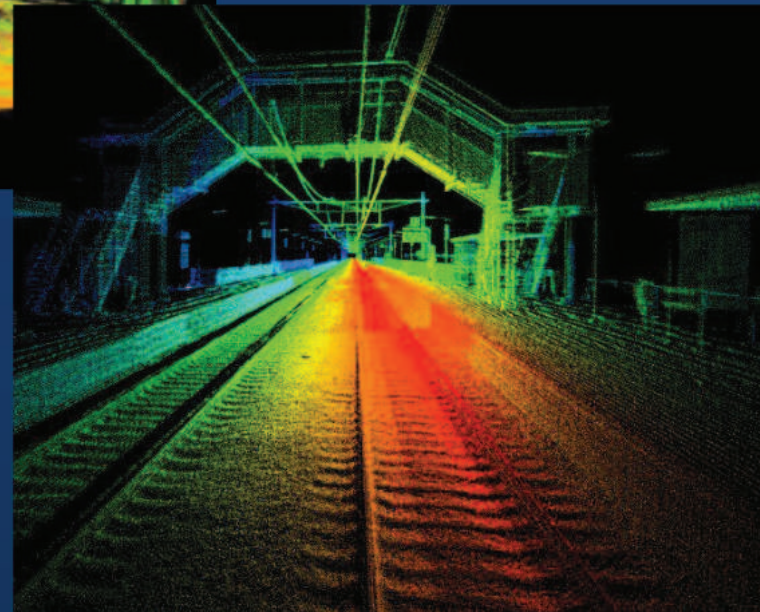
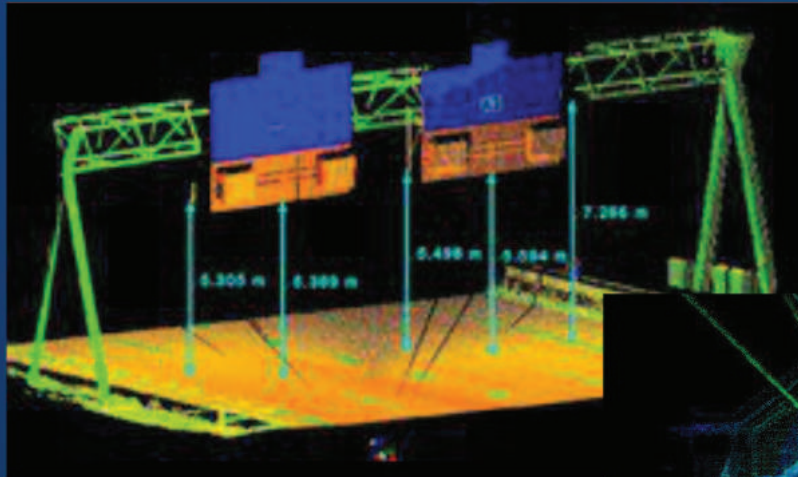
Laser scanning



Cyclorama

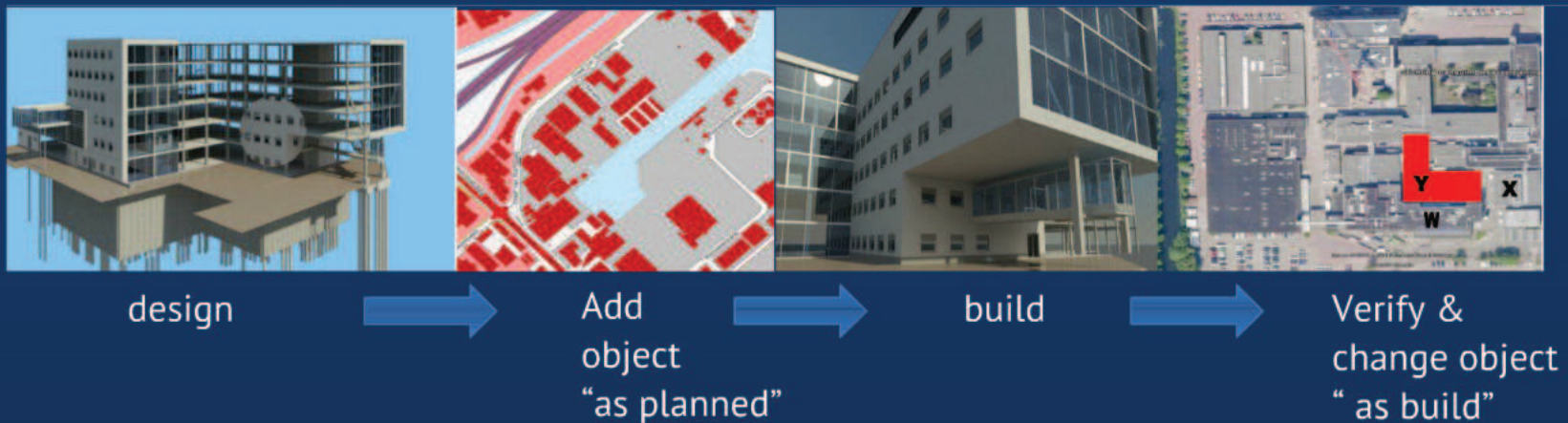


Aquarama



# Smart Mapping – chain reversal

## Design & Build $\boxtimes$ Topography “The architect as map producer”



### Financial Changes Flow of Funds (FOF)



### Organizational Changes statutory task

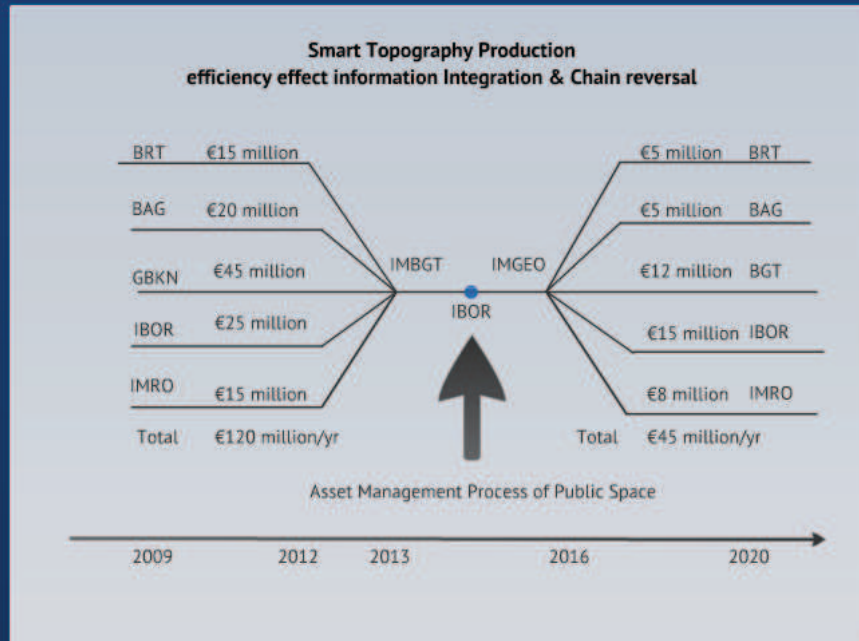
MinienM	
Source holders	National Registry
Municipalities	Kadaster
Provinces	
Waterboards	
MinELenI	
MinDef	
ProRail	
RWS	

### Added Value To Society

- Improved cooperation between government agencies through integration of geospatial and administrative data and information of various policy fields.
- Better smarter & integrated policy & decision making
- Open data policy for transparency and to stimulate our knowledge economy
- Cost reduction and quality improvements in the supply and user chain and stimulate the economy of scale of DAP
- Delivery of more and better services to the private sector and for citizens.

### Societal Cost Benefit Analysis (SCBA) Statutory Key Registry Large Scale Base Topography

- Investment cost transition GBKN to BGT -€45 million
- Longterm Benefits BGT/IMGEO relative to current GBKN:
  - BGT - €45 million
  - IMGEO - €125 million
- High upside potential BOR (Asset Management Public sector)
  - Stimulates innovation use in private sector, enables added value services
  - improves efficiency, services and decision making Public sector
  - increases Safety, prevention of damage to utilities
  - Better integrated policy & decision making



# Future 2016 -2021



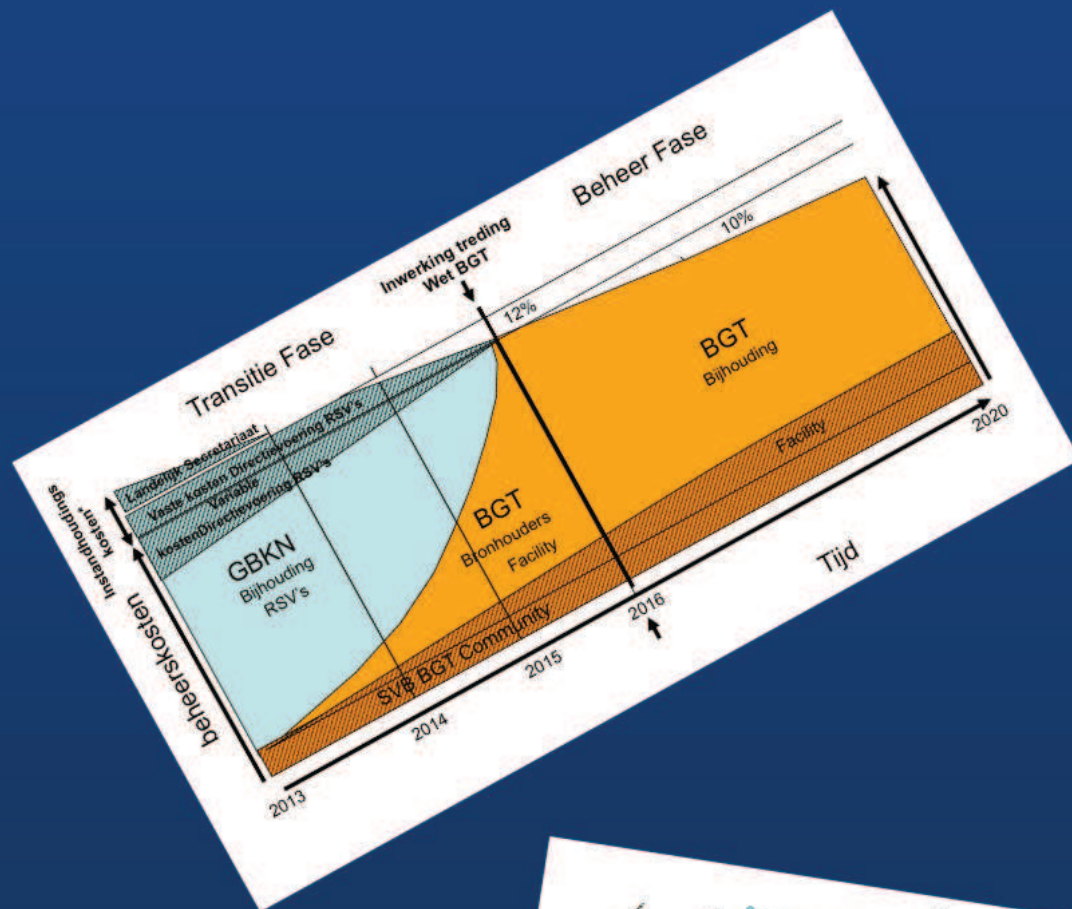
# Transition 2012 - 2016



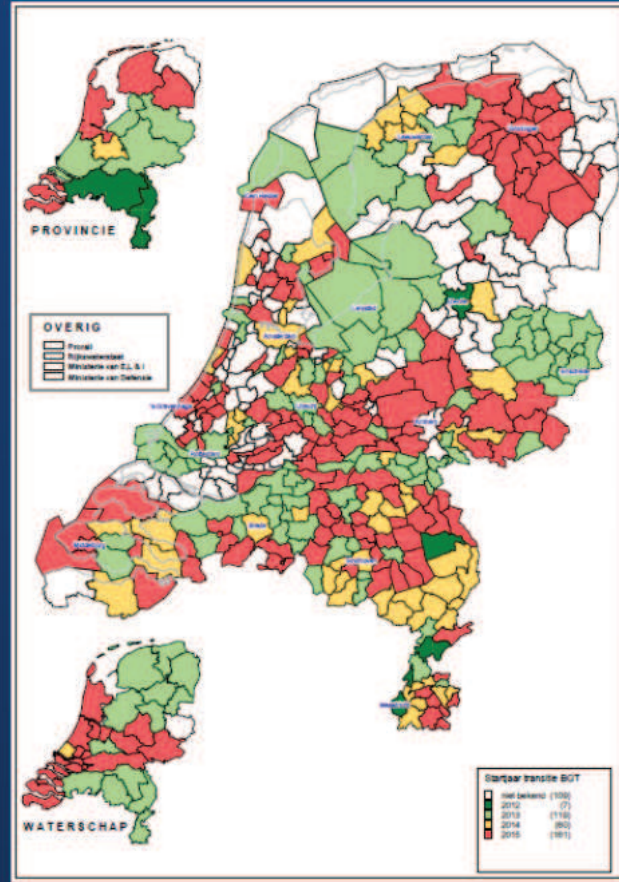
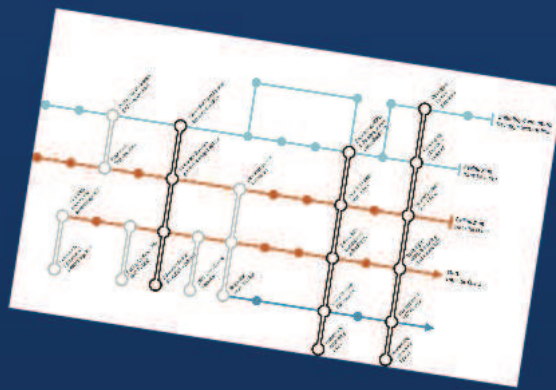
GBKN 2012



BGT 2016



## Transition planning 2013-2016 phase 1





# Transition proces

## GBKN ->IMGEO = 2D->3D Virtual NL

Nuts GBKN  
1975 - 1992

Norm GBKN  
1992 - 2012

IMGEO LOD0  
2012 - 2016

IMGEO LOD2  
2017 - 2021



DUF

NEN 1878

GML-StUF

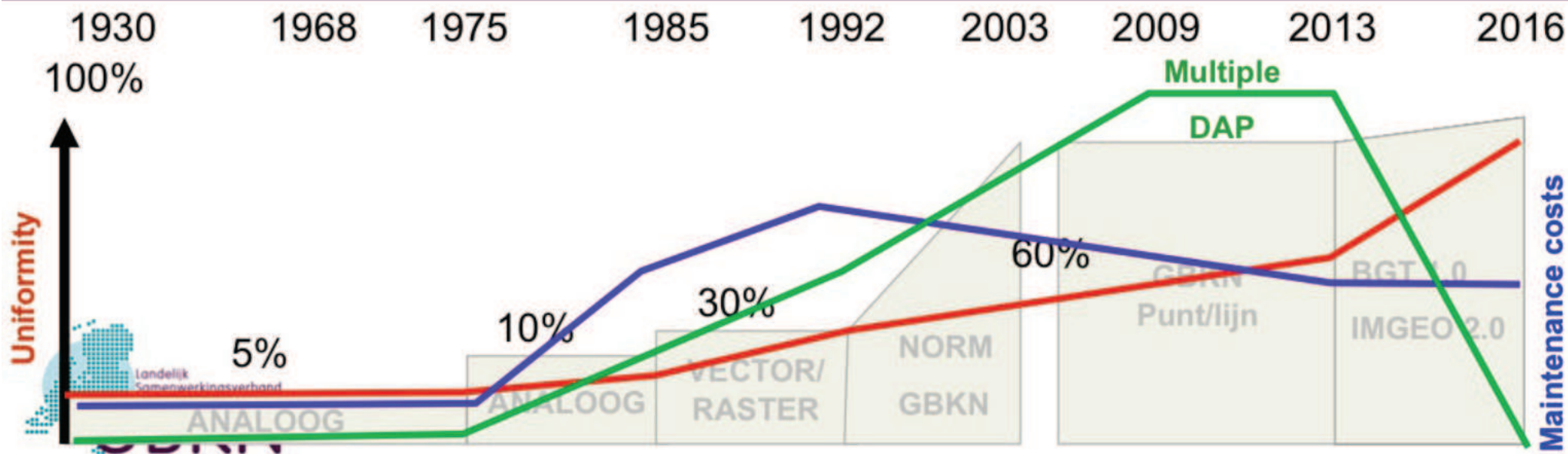
1930

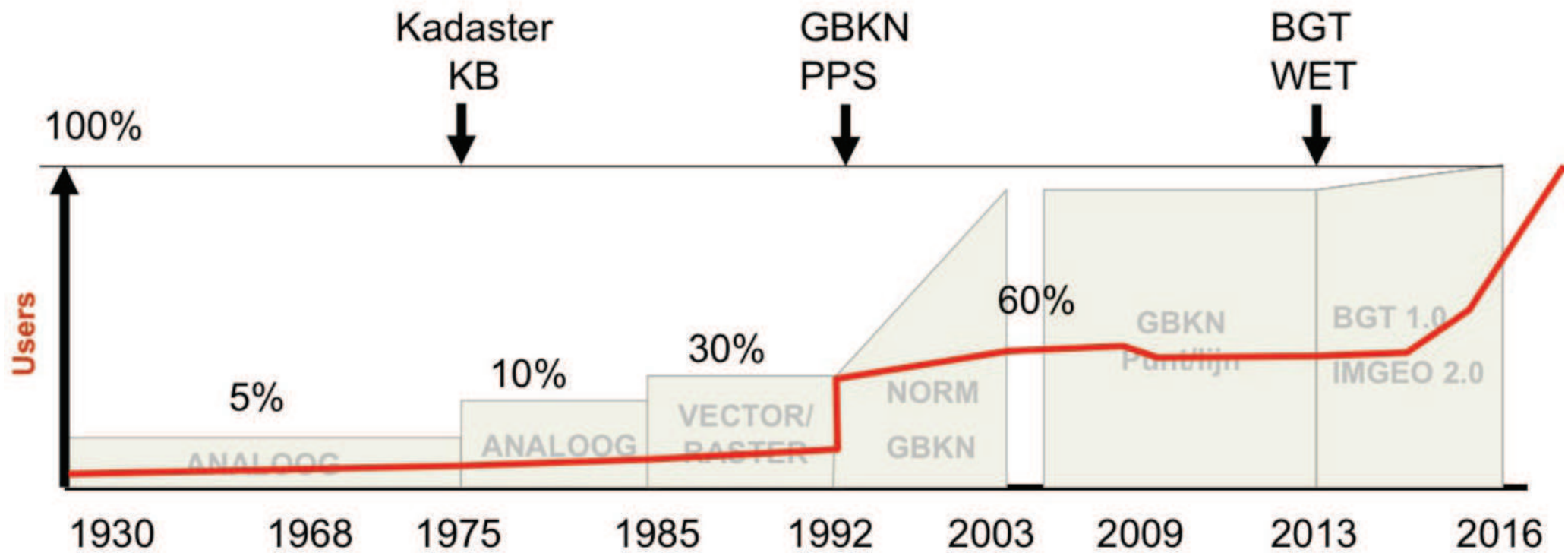
1992

2012

2016

2020





IMGEO 2.0



Virtual NL 2020



Thanks for your attention  
Questions?



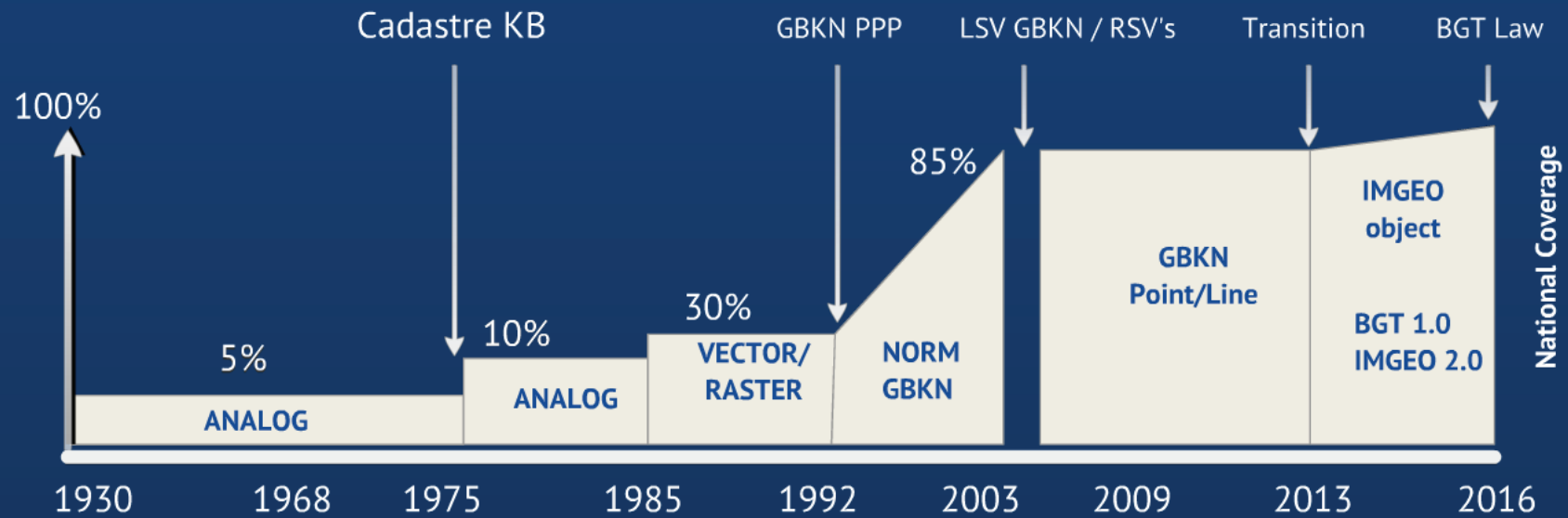


We are there to serve them into the future

“Smart, Efficient and Effective at the lowest cost to society”



Transition process of the Large Scale Base Topography of the Netherlands  
in historical perspective The Past, Present and Future



BGGT