



Ministry of the Interior and  
Kingdom Relations

# Collaborative custodianship of the BAG

**Basisregistratie Adressen en Gebouwen in the Netherlands**  
**Base Register Addresses and Buildings in the Netherlands**

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Ministry of the Interior and  
Kingdom Relations - The Netherlands



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UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



International Cartographic Association  
Association Cartographique Internationale





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1. National SDI
2. What is the BAG?
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5. Future developments SDI and BAG
6. Questions?





# #1

## National SDI

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# Facts & Figures NL

- › Kingdom of the Netherlands 
- › 41.500 km<sup>2</sup> (Compare RSA: 1.221.000 km<sup>2</sup>) 
- › Population density 400/km<sup>2</sup>
- › Population 17.000.000+
- › 380 municipalities + 3 overseas
- › Western part with biggest cities below sealevel (until -6,5m)
- › Capital: Amsterdam, political centre: The Hague, harbour: Rotterdam
- › Economy: agriculture, knowledge, international trade

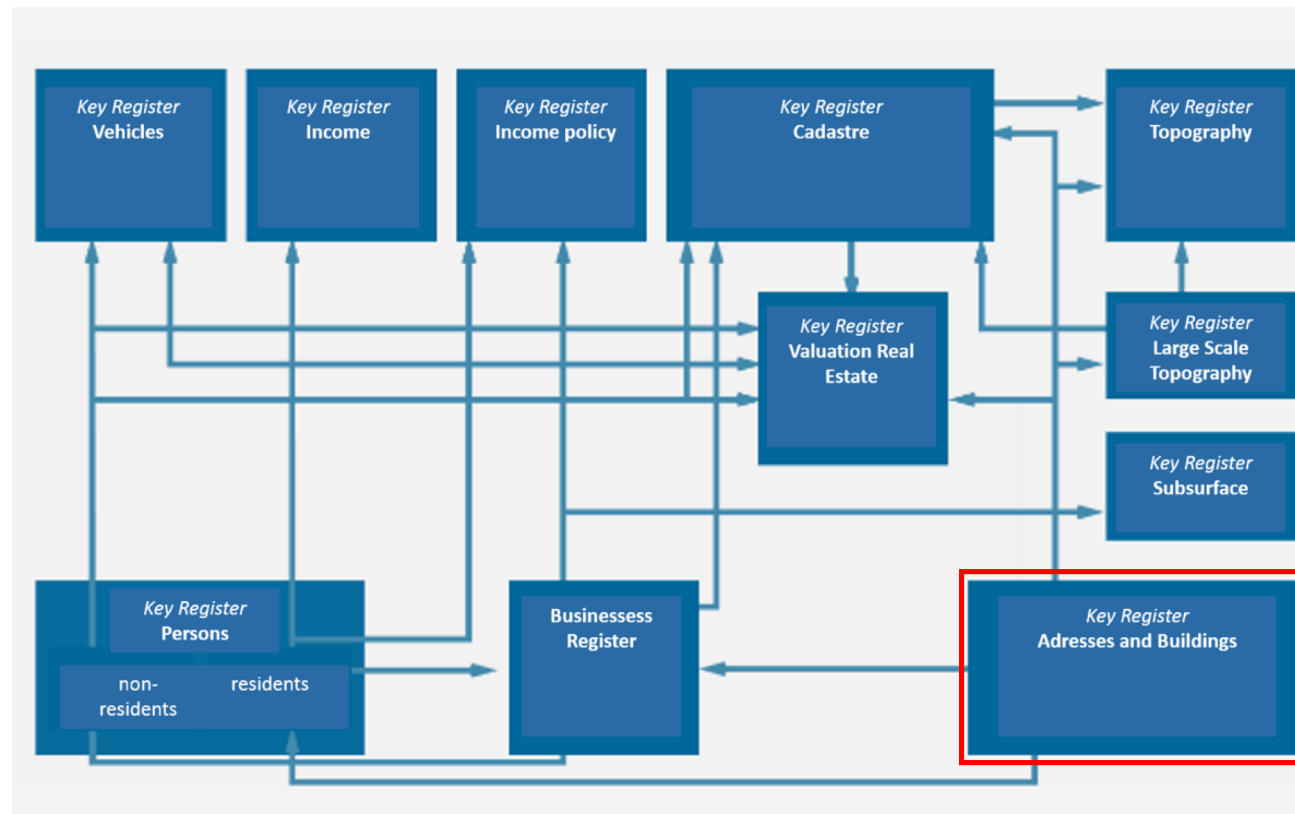
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# Dutch SDI: System of base (key) registers



SDI developments in the Netherlands are strongly related to the base registers of e-government policy (interrelated system)

Spatial Base Registers with Legal Acts for:

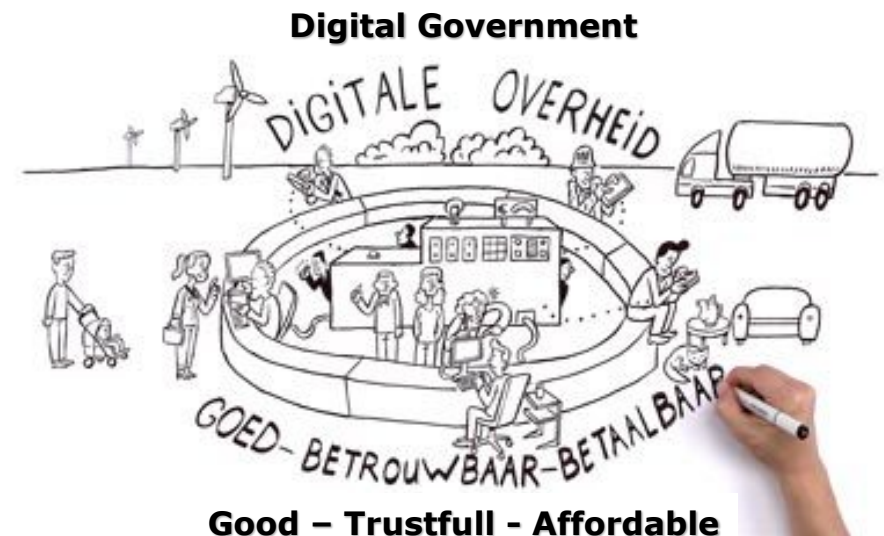
- BRK – Cadastre
- BRT – Topography
- BGT – Large scale Topography
- BAG – Addresses and Buildings
- BRO – Soil and Geology
- WOZ – Real estate value

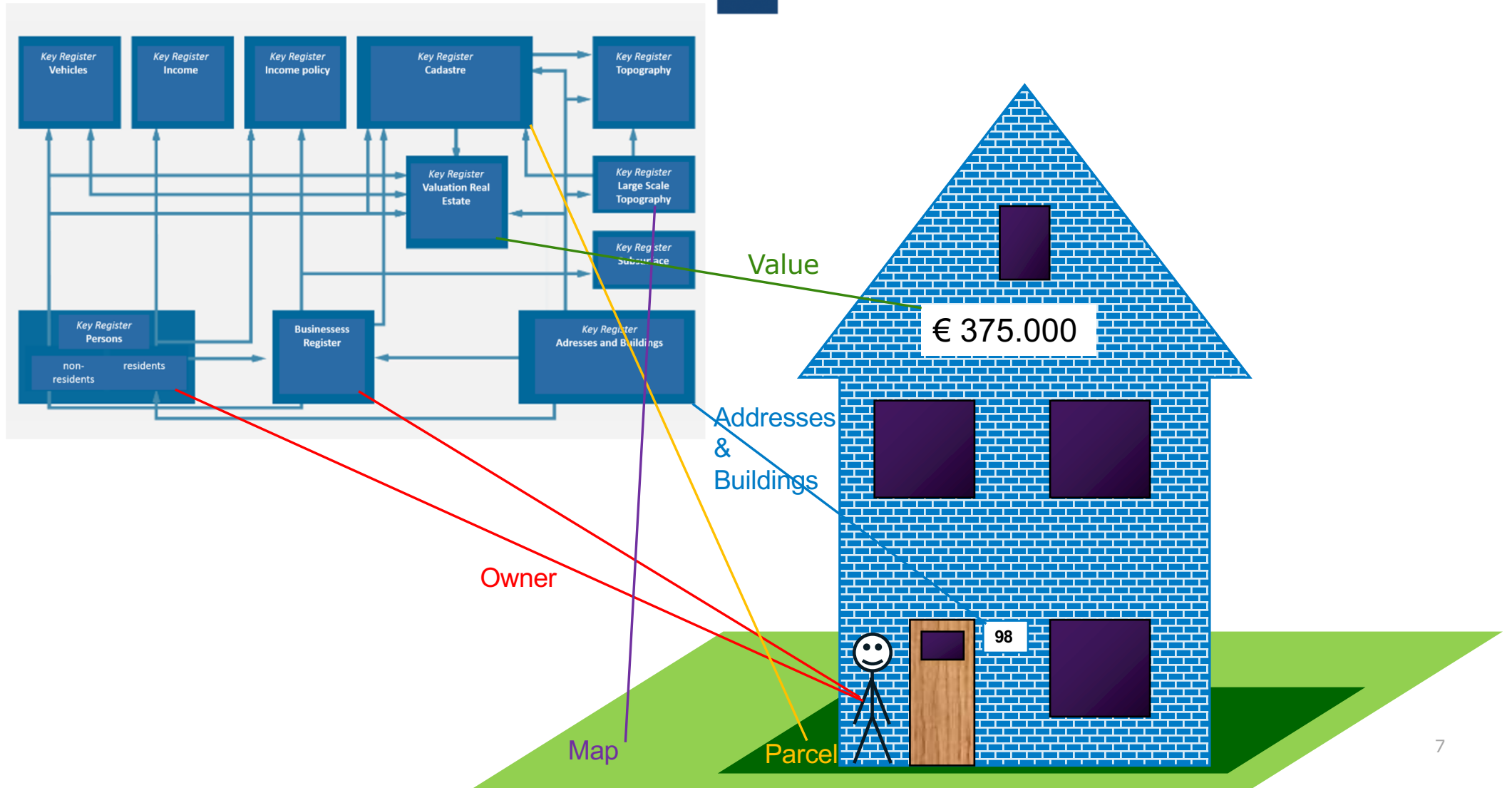
Non-spatial Base Registers, like population, trade register, car license plates, income



# The goal of the system of base registers

- A modern and dynamic government that:
  1. does not ask twice (relief of administrative burden)
  2. is demand driven and pro-active
  3. is not to be fooled around with (fraud fighting)
  4. is well informed about its targets (effective)
  5. Is properly organized and cost effective (efficient)









# #2

What is the BAG?



# Movie the BAG in 1,5 minute





# What is the BAG:

## Base register on addresses and buildings

### Timeline:

- ✓ Development / preparations: 2005 - 2009
- ✓ Law into force for registration: 2009 (completed 2011)
- ✓ Law into force for mandatory use government: 2011
- ✓ Start linking other base registers: 2011
- ✓ Evaluation: 2014
- ✓ Improved law: 2018

### Goals:

Contribute to effective and efficient government:

- ✓ Better service
- ✓ Better public order and safety
- ✓ Prevent and fight fraud
- ✓ Better policy preparations
- ✓ More efficient government processes
- ✓ Prevent government from doing things twice

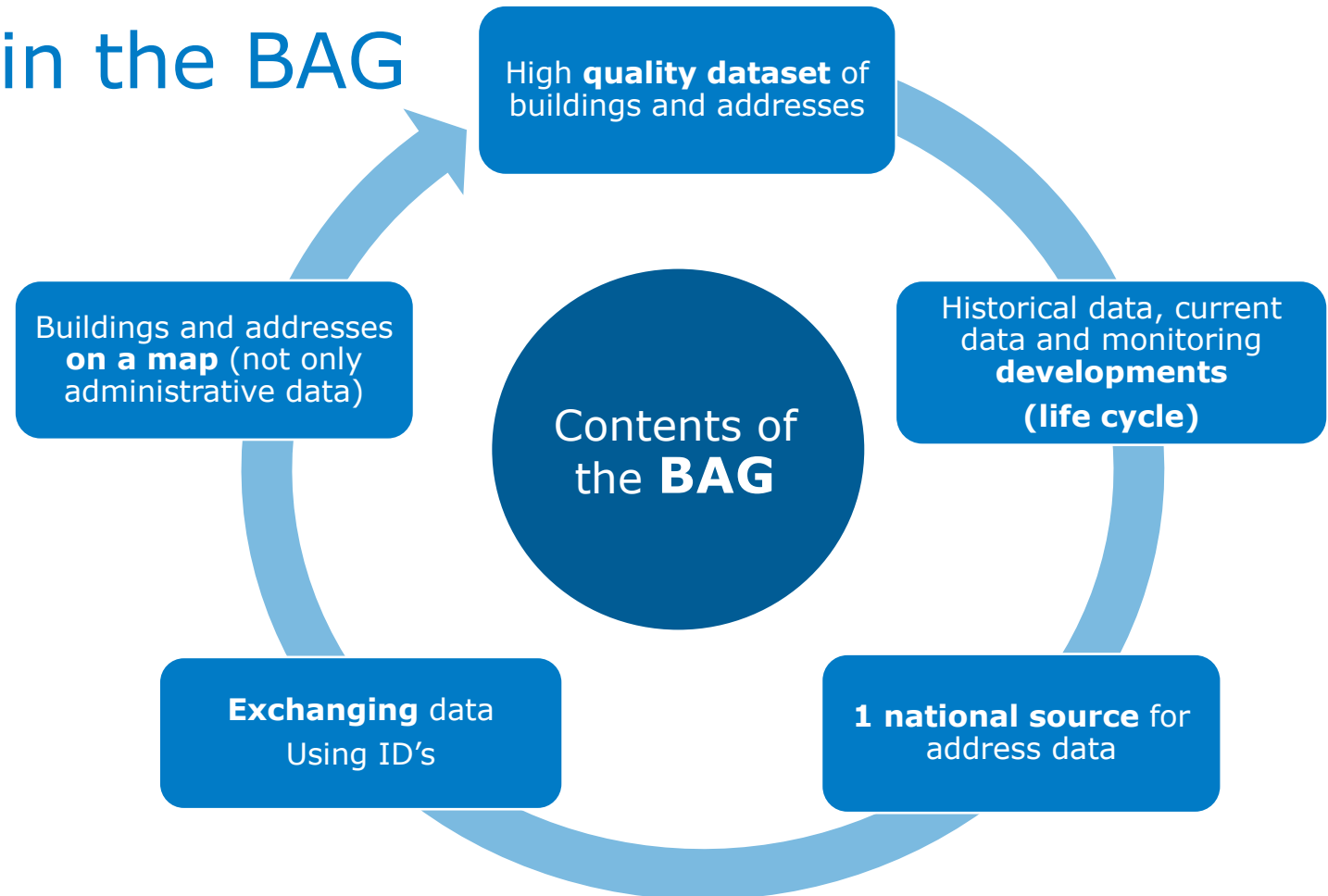
Open data: the BAG can be used by everybody!

Social benefits by use of the BAG!





# Information in the BAG





Webshop - uitleg | home - provisor | E-mail - martijnodijk@hotmail.nl | BAG-WOZ-afstemming... | BAG Viewer - rijstraat 8 den ...

https://bagviewer.kadaster.nl/vbag/bag-viewer/index.html#?searchQuery=rijstraat 8 den haag&resultOffset=0&objectId=0518200000479179&geometry.x=82067.46&geometry.y=455179.17&zoomlevel=6&detailsObjectId=0518200000479179

kadaster

## Basisregistraties Adressen en Gebouwen (BAG)

Opnieuw beginnen | Terugmelding | Gebruik viewer | Wat is BAG | PDF | Help

### Spatial information

Search results: 2

- Rijnstraat 8 's-Gravenhage
- Rijnstraat 8 's-Gravenhage

Uitgebreid zoeken

Filteren

### Administrative information

**Levenscyclus**

**Verblijfsobject**

ID	0518010000479182
Status	Verblijfsobject in gebruik
Gebruiksdoel	kantoorfunctie
Oppervlakte	67016 m2
Geconstateerd	Nee
In onderzoek	Nee
Begindatum	15-04-2014
Einddatum	
Documentdatum	15-04-2014
Mutatiedatum	22-04-2014
Documentnummer	VMG20140372
Gerelateerd hoofdadres	0518200000479179
	0518200001642258
Gerelateerd nevenadres	0518200000479181
	0518200000479180
Gerelateerd pand	0518100000274290
Locatie	x:82067.460, y:455179.170

**Resultaat**

**Rijnstraat 8 's-Gravenhage**

- Oranjevuitensingel 90 's-Gravenhage
- Rijnstraat 22 's-Gravenhage
- Schedeldoekshaven 592 's-Gravenhage

**Pand**

ID	0518100000274290
Bouwjaar	1993
Status	Pand in gebruik (niet ingemeten)

**Verblijfsobject**

ID	0518010000479182
Gebruiksdoel	kantoorfunctie
Oppervlakte	67016 m2
Status	Verblijfsobject in gebruik

**Nummeraanduiding**

ID	0518200000479179
Postcode	2515XP
Huisnummer	8
Huisletter	
Huisnummer	
toev.	
Status	Naamgeving uitgegeven

**Openbareruimte**

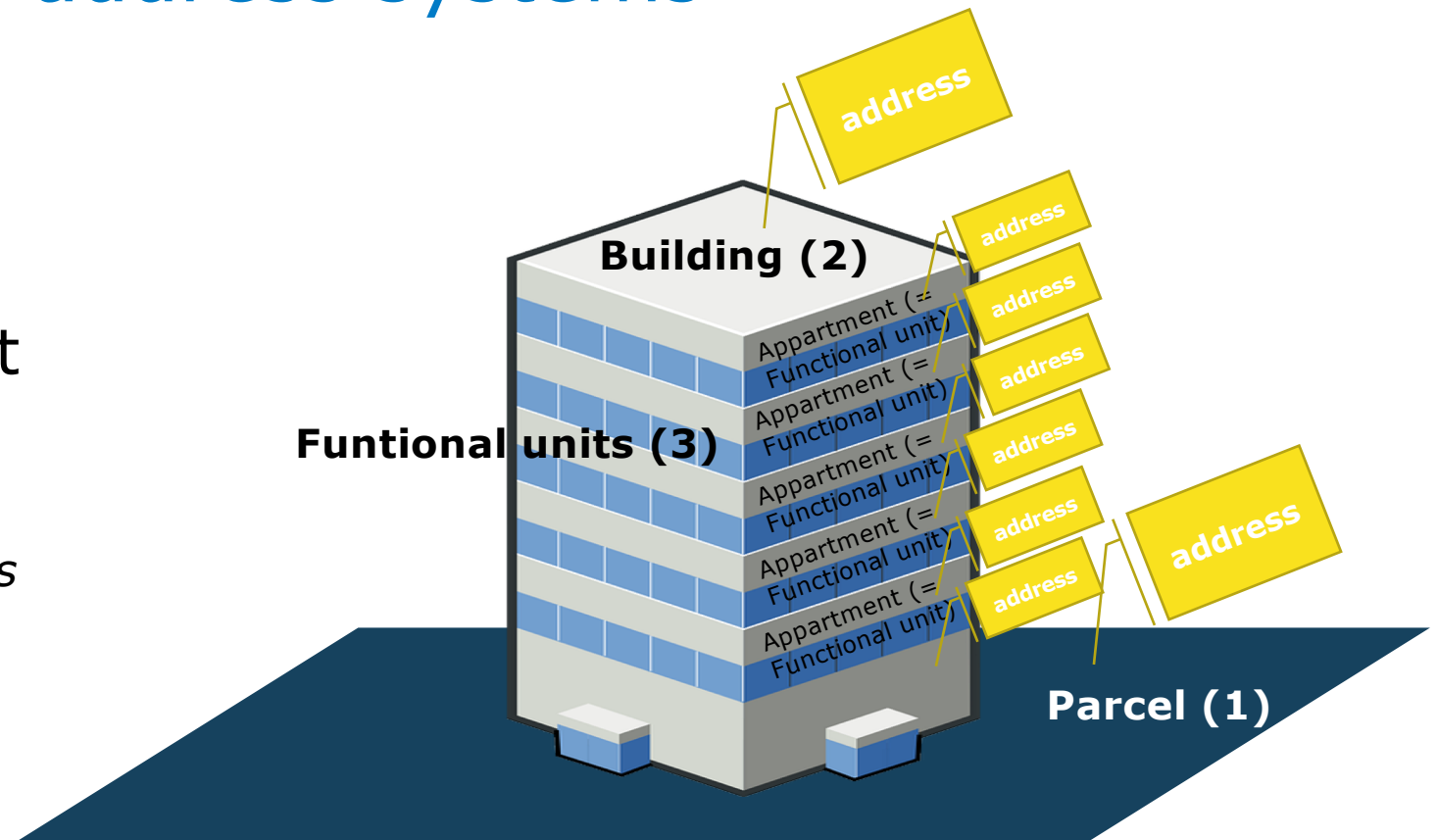
ID	0518300000201091
Naam	Rijnstraat
Status	Naamgeving uitgegeven



# International address systems

1. Lot, parcel
2. Building
3. Functional unit (premises)

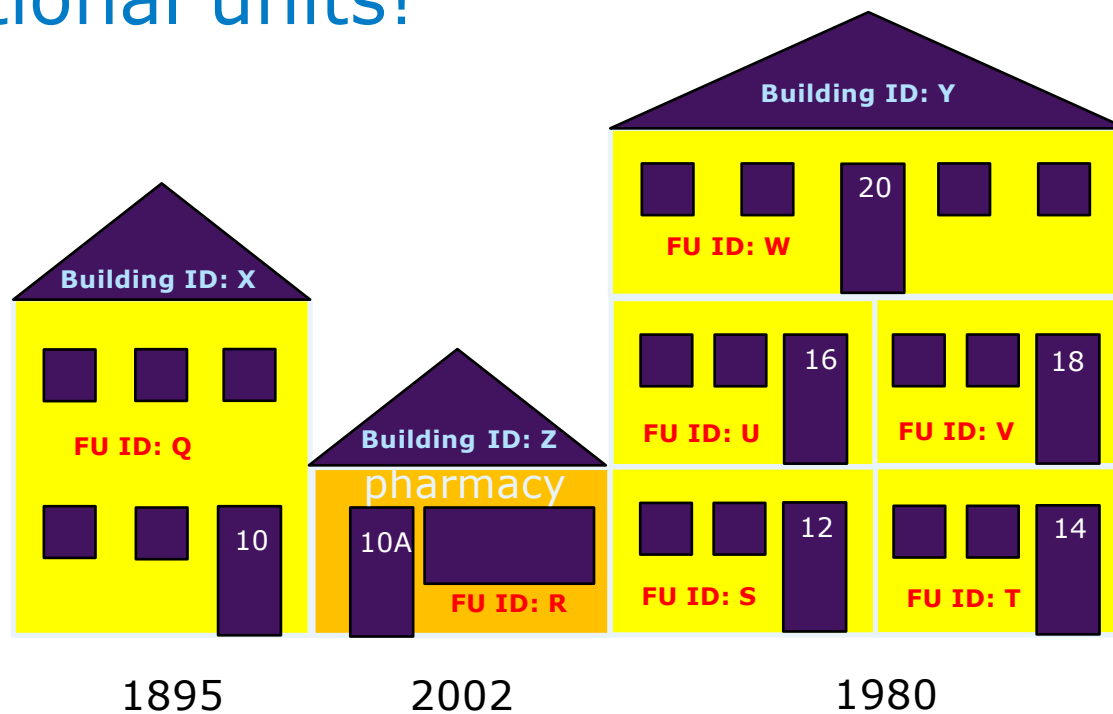
*for instance:  
the Netherlands*





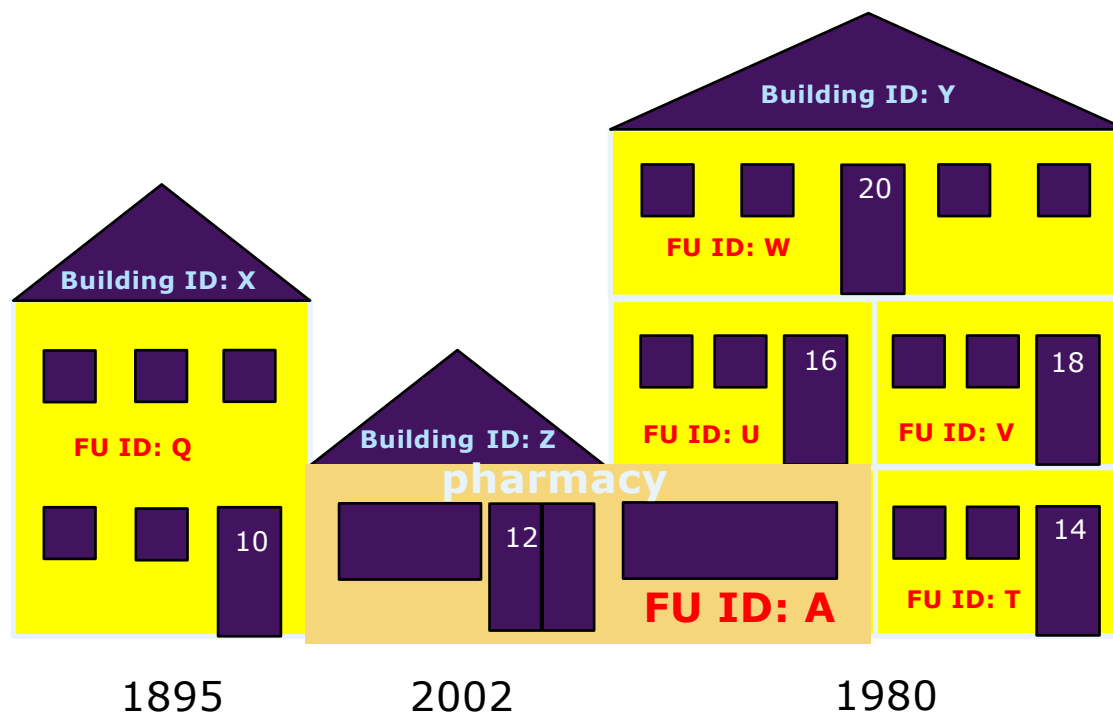


## BAG is not primarily about addresses: ID's functional units!





## Case when two units are merged: bigger pharmacy



New object: new FU-ID!  
Old objects (with ID's): stay in BAG  
Same housenumber possible (label)



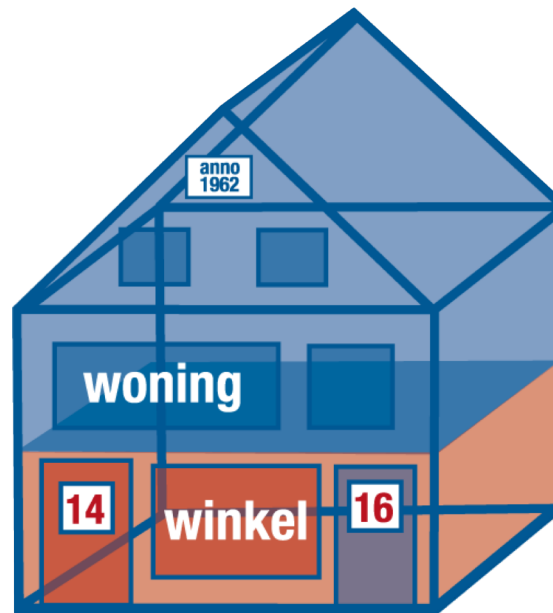
# Data in the BAG: objects and attributes

## Building (= object)

- Building ID
- Year
- Geometry (polygon)
- Status

## Functional units / premises (= object)

- FU-ID
- Coordinate (x, y)
- Purpose of use
- Surface (m2)
- Address
- Status



kerkstraat

Woning = house  
Winkel = shop

## Address (= attribute)

- Town
- Name public space/ street name
- House number
- House letter
- Number addition
- Postal code

## Public space

- Name of the public space

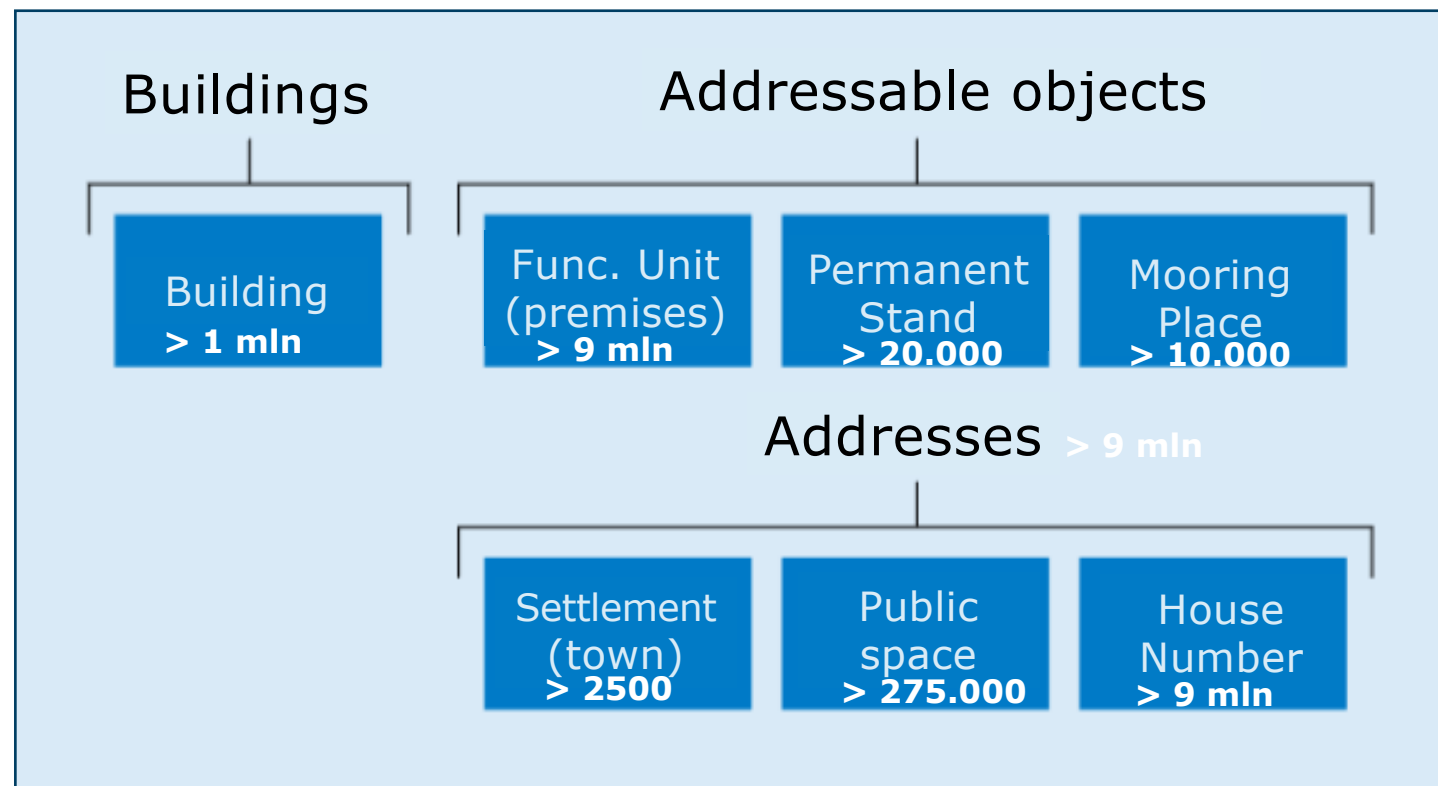
## Community

- Name community
- Geometry





## Data in the BAG: object types



Yearly mutations:  
2017: > 1.7 mln



# #3

## The use of the BAG

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# Direct and indirect users BAG (= open data)

- ❑ Base Register Personal Records
- ❑ Trade Register
- ❑ TAX-office
- ❑ Land/houses owners registry
- ❑ Student register
- ❑ Police, Fire Brigade, Ambulance
- ❑ Child/family allowance
- ❑ Pension funds
- ❑ Insurance companies
- ❑ Car navigation





# Quiz:

How many times is the BAG  
(= open data) being used in  
the society in 2017?





- A. 0 – 1 mln hits
- B. 1 mln – 100 mln hits
- C. 100 mln – 1 bln hits
- D. > 1 bln hits



# ANSWER 2017:

D:

**1,6 bln** (direct use)  
**> 5 bln** (indirect use)

# Are the users satisfied?



Ministerie van Binnenlandse Zaken en  
Koninkrijksrelaties

## RESULTATEN AFNEMERSONDERZOEK BAG 2018

### 1 DOELSTELLINGEN

#### Inzicht verkrijgen in:

- Tevredenheid van gebruikers;
- Het gebruik en de doeltreffendheid van de BAG in de praktijk;
- De toetsing en voortgang van de plannen en activiteiten voortvloeiend uit de wettelijke evaluatie.



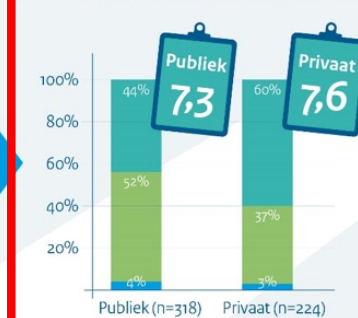
### 3

- 8 of hoger
- 6 tot 7
- Lager dan 6

#### Rapportcijfer totaal



#### Rapportcijfer publiek/privaat per sector



#### Wist je dat...

...de BAG jaarlijks  
ruim 1,6 miljard  
keer wordt afgenomen  
van het kadaster?

...de BAG ook heel vaak wordt  
**doorgeleverd  
aan derden?**

Dit indirecte gebruik is nog veel  
groter dan het directe gebruik!

### 2 DOELGROEP & RESPONS

Doelgroep:  
Gebruikers van de BAG

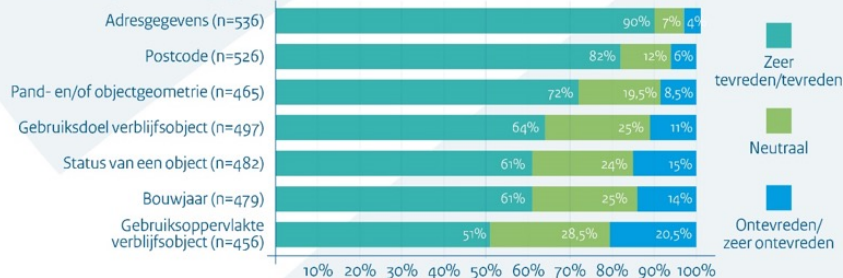


Uitgenodigd via:  
E-mail/popup BAG-viewer/koepelorganisaties

Aantal  
respondenten:



#### Beoordeling kwaliteit gegevens



#### Top 3 meest genoemde voordelen van de BAG

- 1 Betere dienstverlening naar de klant/burger
- 2 Efficiënter werken
- 3 Eenduidige communicatie met andere partijen

#### Quotes verbetersuggesties

“Het kan nog veel beter, maar van een afstand bekeken is het erg goed.”

“Betere overeenstemming tussen BAG en WOZ. Er zijn nu nog teveel verschillen. Ook tussen de in 2022 verplichtte gebruiksoppervlakte in de BAG en in de WOZ”

“Het zou fijn zijn als de geometrie van gebouwen enigszins duidelijk is. Vooral in de hoogte.”



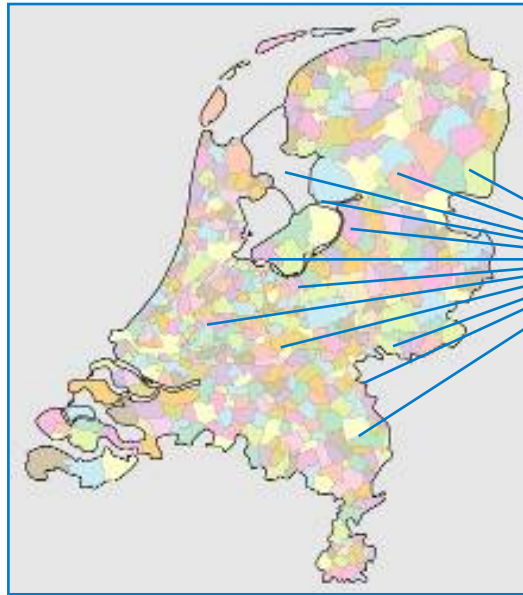
# #4

Collaborative  
custodianship:

Building up and  
Maintaining the BAG



# Collaboration through central facilities



Registration: Municipalities  
Local BAG (= source)



Management Central  
Facility (LV BAG = copy):  
Cadastre by order of  
Ministry of the Interior



Supply to Users  
(by LV BAG in  
different products)





# Governance: roles and responsibilities

Role	Organisation
Policies & legislation	Ministry of the Interior and Kingdom Relations
Supervision & control	Ministry of the Interior and Kingdom Relations
Quality management (Dashboard, account management)	Kadaster
Support	Kadaster
Steering & advice to the minister	BAG BAO (board with municipalities and users) & Agenda committee
Custodians (operations and data entry)	Municipalities (2018: 380)
Functional management & IT LV BAG	Kadaster
Local BAG software	Suppliers (market)





# Governance and user influence

- > Minister of the Interior: political responsible for the BAG
- > 3 levels of user involvement:
  - 1. BAG BAO BAG Custodians and Users Committee (2 times/year):**
    - Strategic steering committee
    - Advice to the minister
    - Board of municipalities / custodians (big and small!) and obligatory users (public parties), incl ministry and Kadaster
  - 2. Agendaoverleg BAG BAO (3 a 4 times/year)**
    - Tactical steering committee
    - Preparation of the BAG BAO
    - Same parties as BAG BAO, members have roles like information-managers
  - 3. BAG User Council (3 a 4 times/year)**
    - Operational feedback and advise between registrants and users, may lead to advise/requests to BAG BAO
    - All parties, including private parties that are operationally involved in the BAG

**BAG BAO**  
Bronhouders Afnemers Overleg



# Governance and stakeholder influence

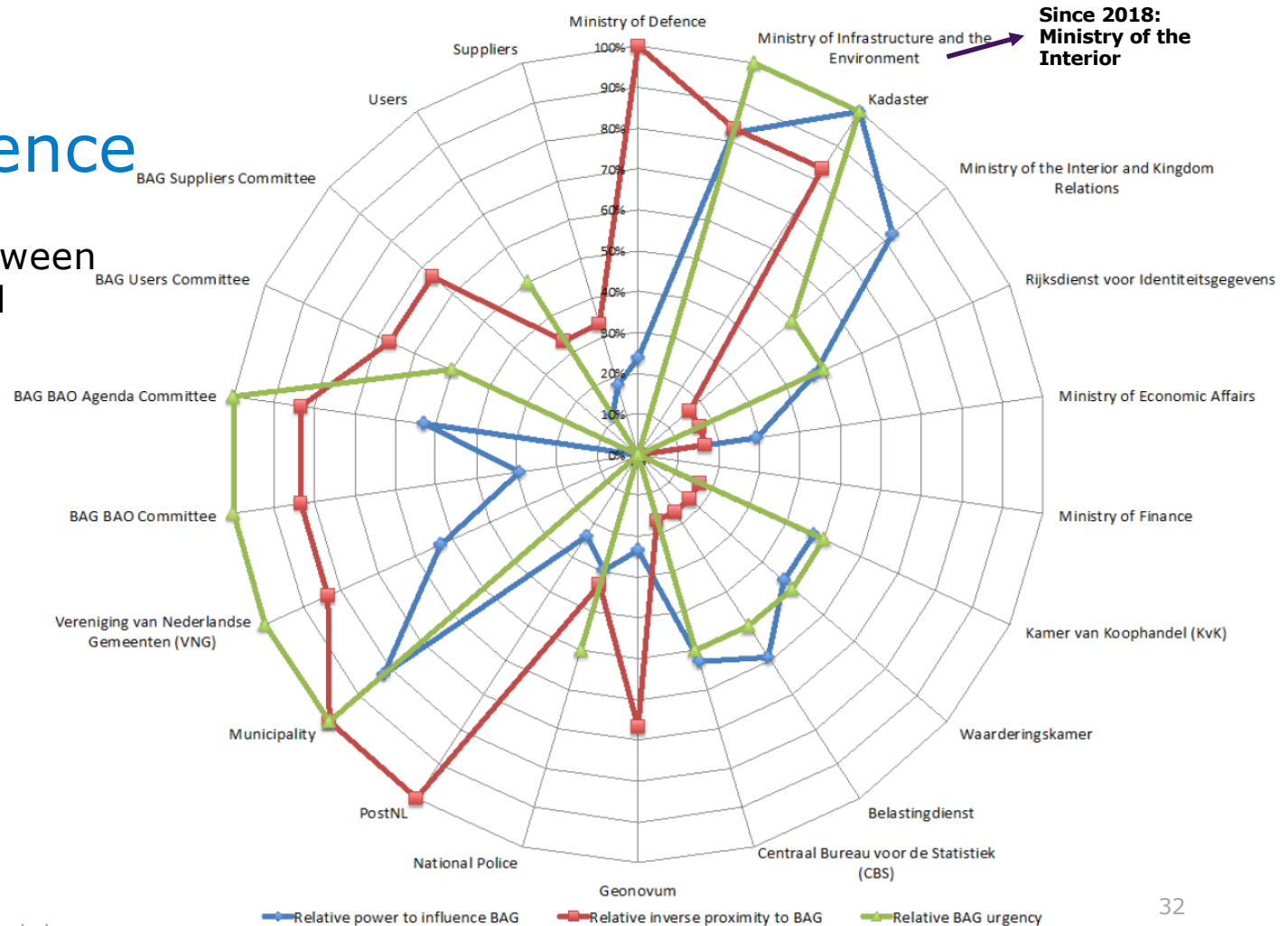
New article on the relation between local SDI and national SDI and user influence of the BAG

To be published in IJDE



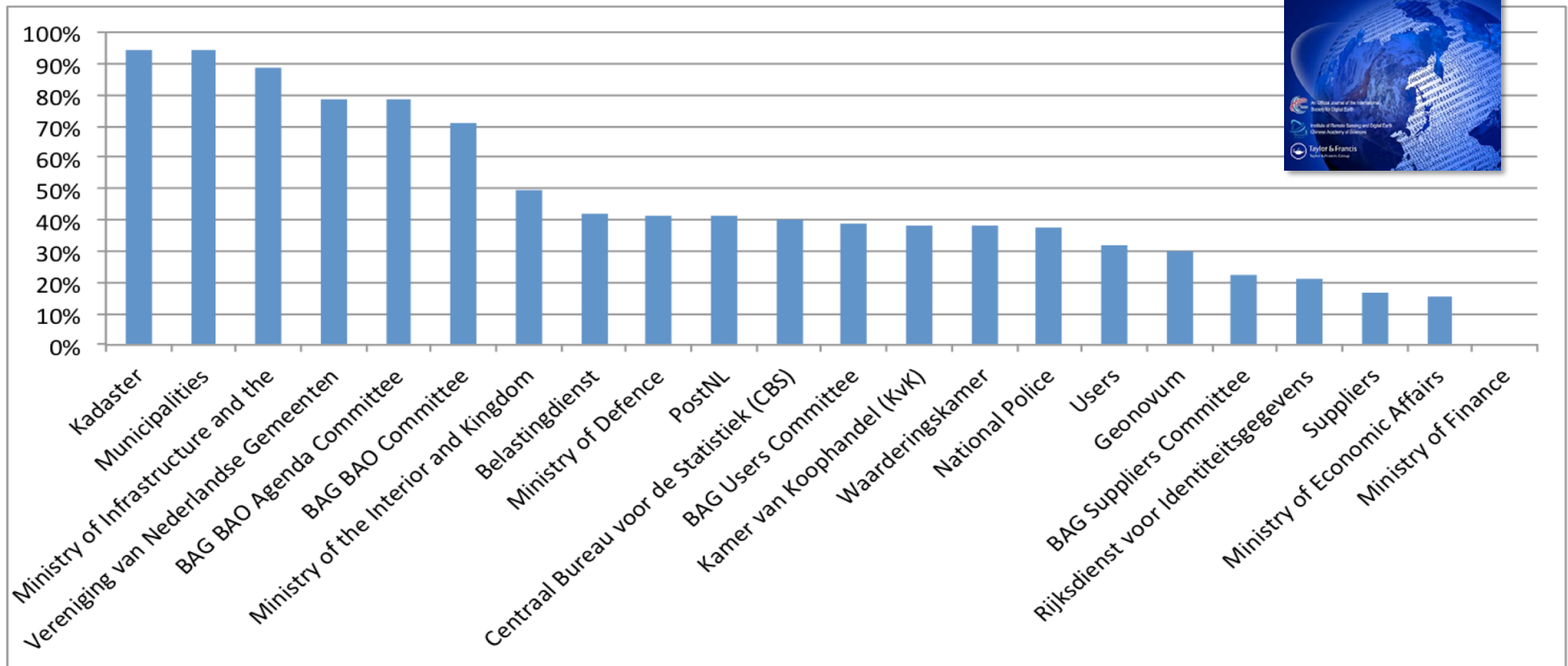
Article by Serena Coetzee, Martijn Odijk, Jantien Stoter, Bastiaan van Loenen, and Janette Storm

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# Governance and stakeholder influence





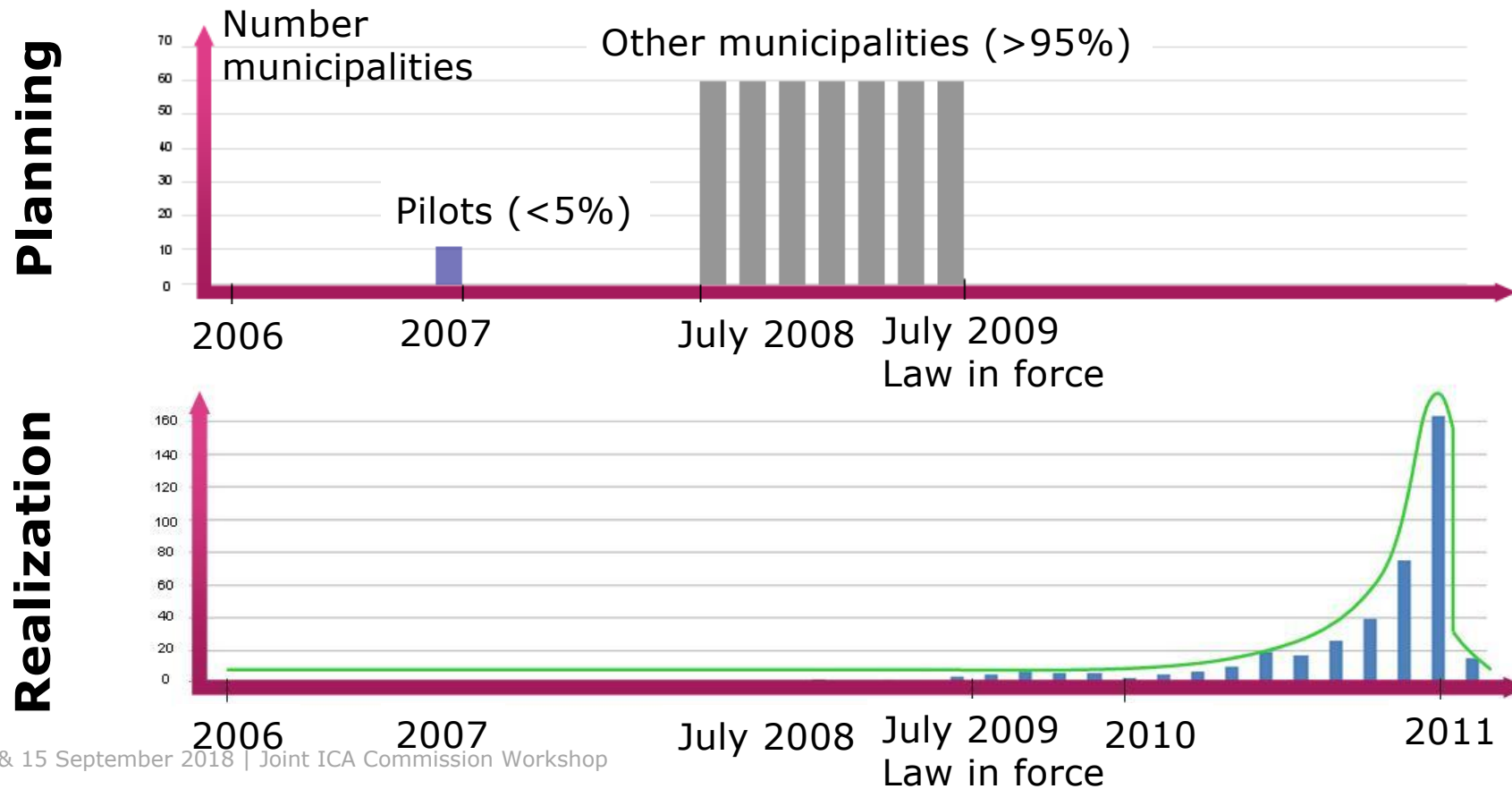
## Original approach building up the BAG 2007-2011

*How do you realise 1 national dataset with 400+ suppliers?*

- ✓ Supply of information (started in 2006)
- ✓ Working with pilots (5% municipalities)
- ✓ Other municipalities follow (95% own planning)
- ✓ Deadline: 1st july 2009 (law in force)



## Approach building up: "BAG Project 2007 - 2011"





## Approach building up: “BAG Project 2007 - 2011”

- ✓ On deadline (july 2009, law in force) only 10 municipalities were ready
- ✓ Without different approach it would take years to finish
- ✓ For national users (like tax office) only a complete filled dataset is usefull
- ✓ In 2009 a different approach was chosen: **4 stages model**





Approach building up: “BAG Project 2007 - 2011”

**4 stages model by the BAG Project: “carrot and stick”**

1. Information, communication, creating commitment
2. Helping, facilitation
3. Monitoring, planning
4. Make arrangements, and... enforce





# Approach building up: “BAG Project 2007 - 2011”

## Stage 1: information

- ✓ Campaigning: personal meetings, accountmanagement, communication, flyers, website (and repeating it all)
- ✓ Segmentational approach: communication and information per segment
- ✓ What is in it for the municipality itself (not only for higher goals)?





## Approach building up: “BAG Project 2007 - 2011”

### Stage 2: facilitation and helping

- ✓ Guidelines, implementation approaches, helping hand advisors, pilots
- ✓ Clear and realistic agreements about planning





## Approach building up: “BAG Project 2007 - 2011”

### Stage 3: monitoring

- ✓ Check on progress and milestones
- ✓ Check on agreements (custom solutions, f.e. temporary quality demands)
- ✓ Detailed monitoringsdatabase







## Approach building up: “BAG Project 2007 - 2011”

### **Stage 4: arrangements (management) and enforcing**

- ✓ Necessary part of the approach
- ✓ Naming and shaming (in case of failure)
- ✓ Formal letters and meetings (management)
- ✓ Naming and praising (in case of successes)
- ✓ Financial penalties (project costs)





## Approach building up: “BAG Project 2007 - 2011”

### > **Failure factors:**

- High focus on the operation, low focus on management
- Non binding planning
- No enforcement, managerial pressure
- High believe in legislation (“it is written in the law, so..”)



### > **Success factors:**

- Commitment on planning, management expectations
- Predictive monitoring and building up pressure
- Support and backing from the management
- Account management in different roles (communication, helping, planner, pressure)
- Working together and show trust
- Administrative focus within the municipalities
- Risk based approach
- Supplier management



# Investments in building up the BAG

## > **Costs:**

- Building up (& using) the BAG:
  - 48 mln euros national government (2006 – 2011)
  - 84 mln euros local government (municipalities, 2008-2011)
- Maintenance:
  - 3 to 4 mln euros a year national government
  - 50 mln euros a year local government (municipalities)

## > **Benefits:**

- 2014: costs and benefits for local governments in balance
- But: enormous benefits in society (> 10 mln hits a day)
- Challenge: managing the cost of use... (central facilities)





## Approach using the BAG: 2010 - 2013

- The use of the BAG (by governments and in society) is essential for the success and return of investments
- Legislation (mandatory use) not enough, good examples of the benefits of use are important
- Credo: “**Use the BAG**, not because you **have** to, but because you **need** it”
- Segmentational approach:
  - Municipalities
  - National government bodies
  - System of base registers
  - Private parties





# Approach using the BAG: 2010 - 2013

- › Multiplier approach:
  - Indirect use
  - System of base registers (BRP, HR)
  - Resellers
- › BAG = open data (no or low costs depending on product)
- › Multi channel approach in products:
  - Database dump
  - Mutation subscriptions
  - Webservices (administration and geo)
  - Online viewing
  - Linked Data (API's) (since 2017)







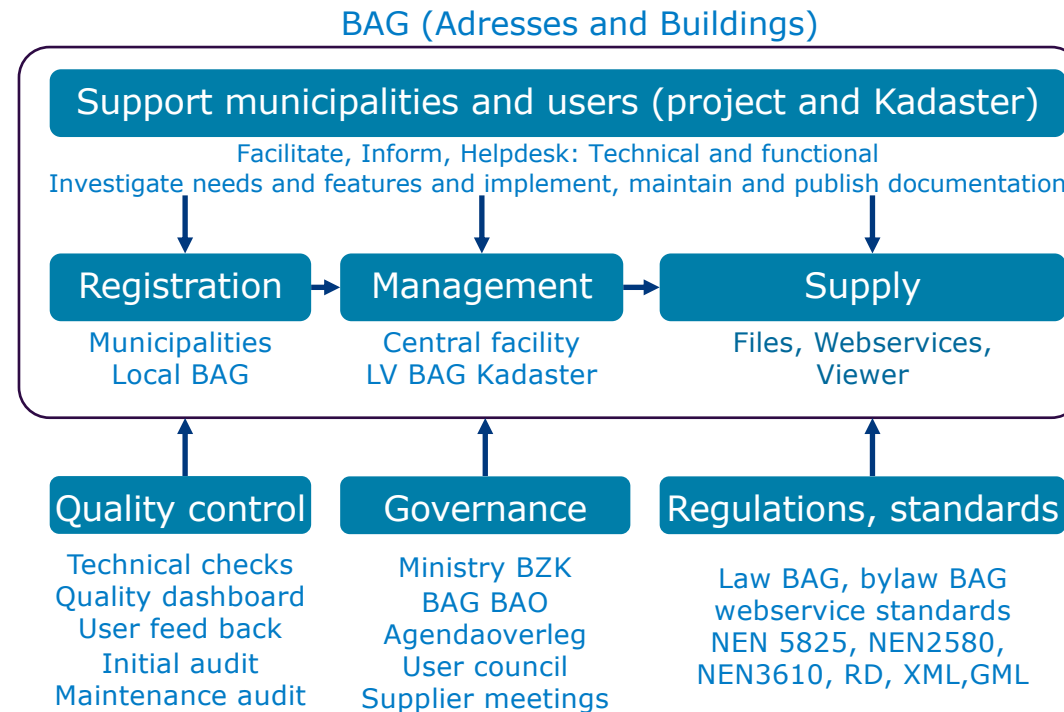
## Approach maintainance of the BAG: instruments for multiple custodians

- › Legislation (ministry)
- › Standards (Geonovum, Cadastre) for registration and exchanging data
- › Documentation (Cadastre)
- › Quality assurance (local and central checks)
- › Governance (BAG BAO)





# Approach maintenance of the BAG: Central organization of the maintenance instruments





# Maintainance BAG: Legislation, standards and documentation

Law	Law BAG			
Bylaws	Bylaw BAG:			
	<p>Catalogus Basisregistratie Adressen en Gebouwen 2018</p>	<p>Koppelvlakbeschrijving Landelijke Voorziening - Bronhouders BAG 2018</p>	<p>Kwaliteitskader Basisregistratie Adressen en Gebouwen 2018</p>	
Other (not formal)	<p><b>Catalogus:</b>  <ul style="list-style-type: none"> <li>✓ Definitions</li> <li>✓ Information model</li> <li>✓ Standards</li> <li>✓ Quality demands</li> </ul> </p>	<p><b>Description Coupling Local BAG – LV-BAG</b></p>	<p><b>Quality Regulations</b></p>	





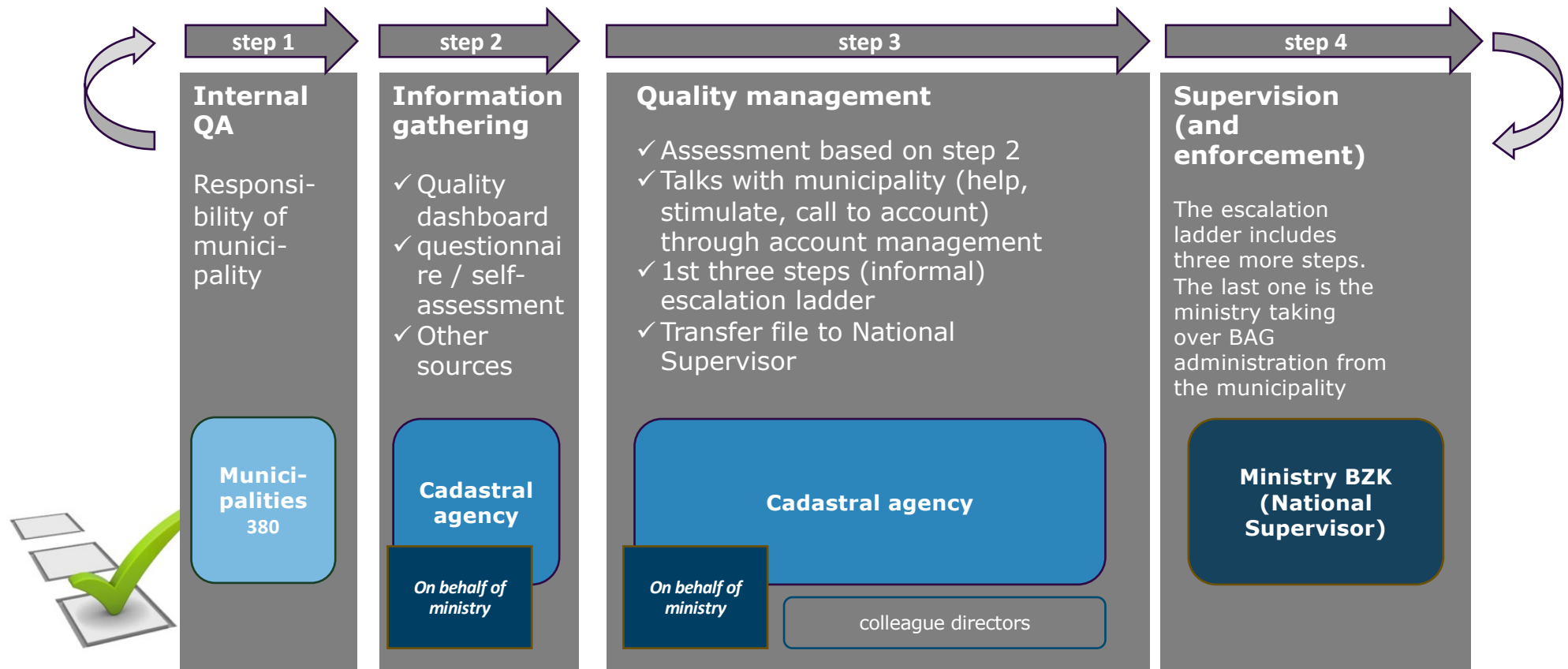
# Maintenance BAG: Quality assurance

- 2009 – 2016: **audits**
  - Audit companies
  - Supervision by ministry
- Governmental users report back
- Since 2016: **new quality approach**
  - Internal quality assurance communities
  - Quality monitoring and dashboards
  - Quality management and peer pressure
  - Supervision and control
- Users and crowd report back





# Maintainance BAG: Quality assurance - 4 steps





# Maintenance BAG: Quality assurance: dashboard



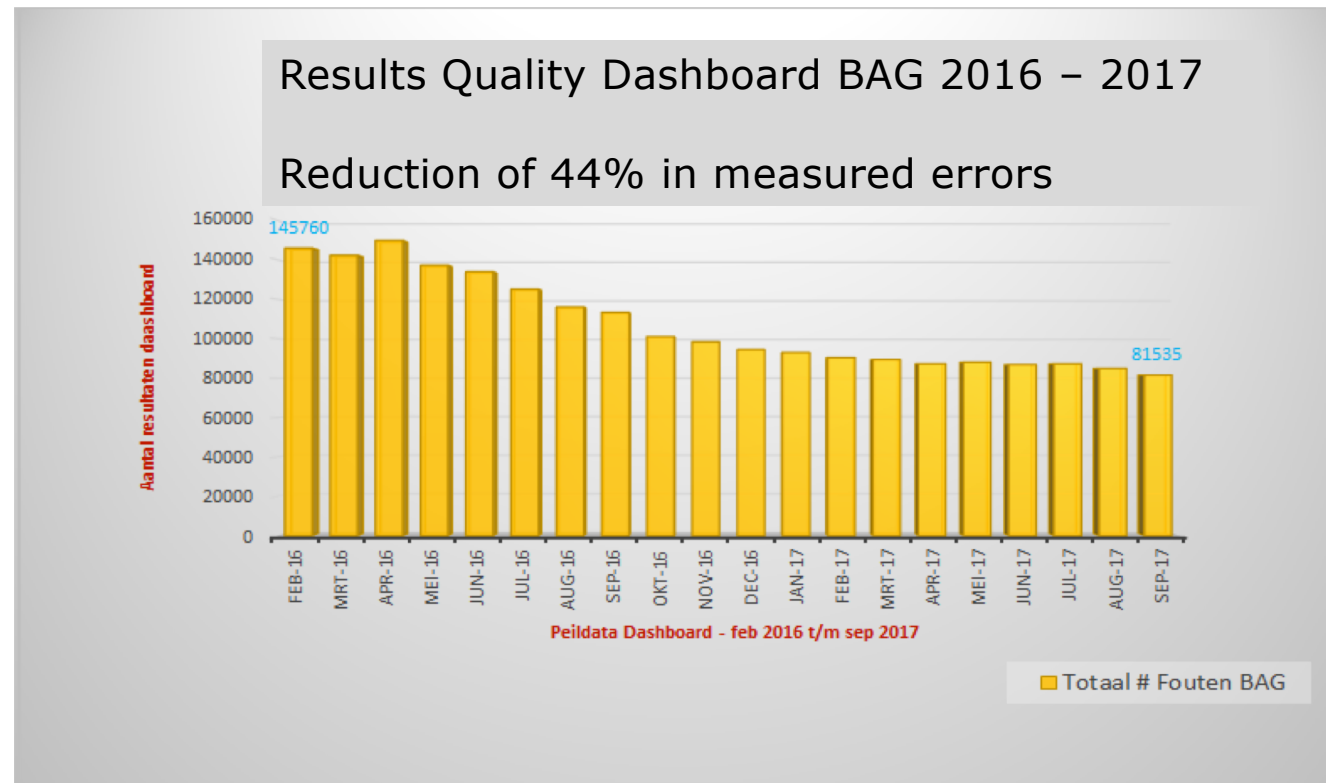
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# Maintenance BAG: Results Quality Dashboard





## Maintainance BAG: Quality assurance Using the crowd

- Users exchange information on the quality of the data:
  - ✓ Any doubt about correctness: report back to data owner
  - ✓ Data owner looks into it and decides within 2 days whether or not to change the data
  - ✓ If decision can't be made within that period, data owner puts the data "in examination"
  - ✓ Within 6 months data "in examination" need to be examined and a decision needs to be made





## Maintenance BAG: Quality assurance Using the crowd

- › It is compulsory for government users of Base Registers to provide feedback on errors and changes in the data or maps
- › But now anyone can give feedback at
  1. [www.verbeterdekaart.nl](http://www.verbeterdekaart.nl) (BRT and BGT) or
  2. [bagviewer.kadaster.nl](http://bagviewer.kadaster.nl) (BAG)





# Maintenance BAG: Quality assurance Using the crowd



Opnieuw beginnen Terugmelding Gebruik viewer

**Zoeken** ?  
zoeken

**Uitgebreid zoeken** ?

**Filteren** ?

**Terugmelden** ×

Kies hieronder waarop u terug wilt melden.

Pand: 0363100012178469

<input type="checkbox"/>	Status	Pand in gebruik
<input type="checkbox"/>	Bouwjaar	1300
<input type="checkbox"/>	Geometrie	Zie kaart

Annuleren Volgende

**Resultaat (2 huidige adressen)** ?  
[Oudekerksplein 15 Amsterdam](#)  
[Oudekerksplein 25 Amsterdam](#)

**Pand** ?  
ID [0363100012178469](#)  
Bouwjaar 1300  
Status Pand in gebruik

**Verblijfsobject** ?  
ID [0363010000767344](#)  
Gebruiksdoel woonfunctie  
Oppervlakte 42 m2  
Status Verblijfsobject in gebruik

**Nummeraanduiding** ?  
ID [0363200000227554](#)  
Postcode 1012GX  
Huisnummer 25  
Huisletter  
Huisnummer toev.  
Status Naamgeving uitgegeven

**Openbareruimte** ?  
ID [0363300000004771](#)  
Naam Oudekerksplein  
Status Naamgeving uitgegeven

**Woonplaats** ?  
ID [3594](#)  
Naam Amsterdam  
Status Woonplaats aangewezen

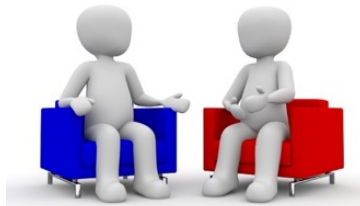
**Bronhouder**  
ID 0363



# Collaborative custodianship of the BAG:

## > Opportunities

- Local knowledge needed for good registration
- Local custodians have more possibilities for keeping the dataset accurate and current
- Efficient proces – collective effort
- Registration and using on a local scale
- But also using local information on a national scale
- Shared responsibilities over the country
- Large benefits in society (for citizens, companies and government)



## > Challenges

- Uniformity: all parties should use same rules and standards (but there is always interpretation of regulations)
- Keeping quality equal all over the country: balance between 'carrot and stick'
- Good governance is needed: balance in user demands and efforts municipalities (small and big)
- Knowledge level and capacity in small municipalities
- National developments to fast for smaller municipalities
- National developments to slow for large municipalities (f.e. 3D)
- Usage by mandatory users
- Costs and benefits on different places





# #5

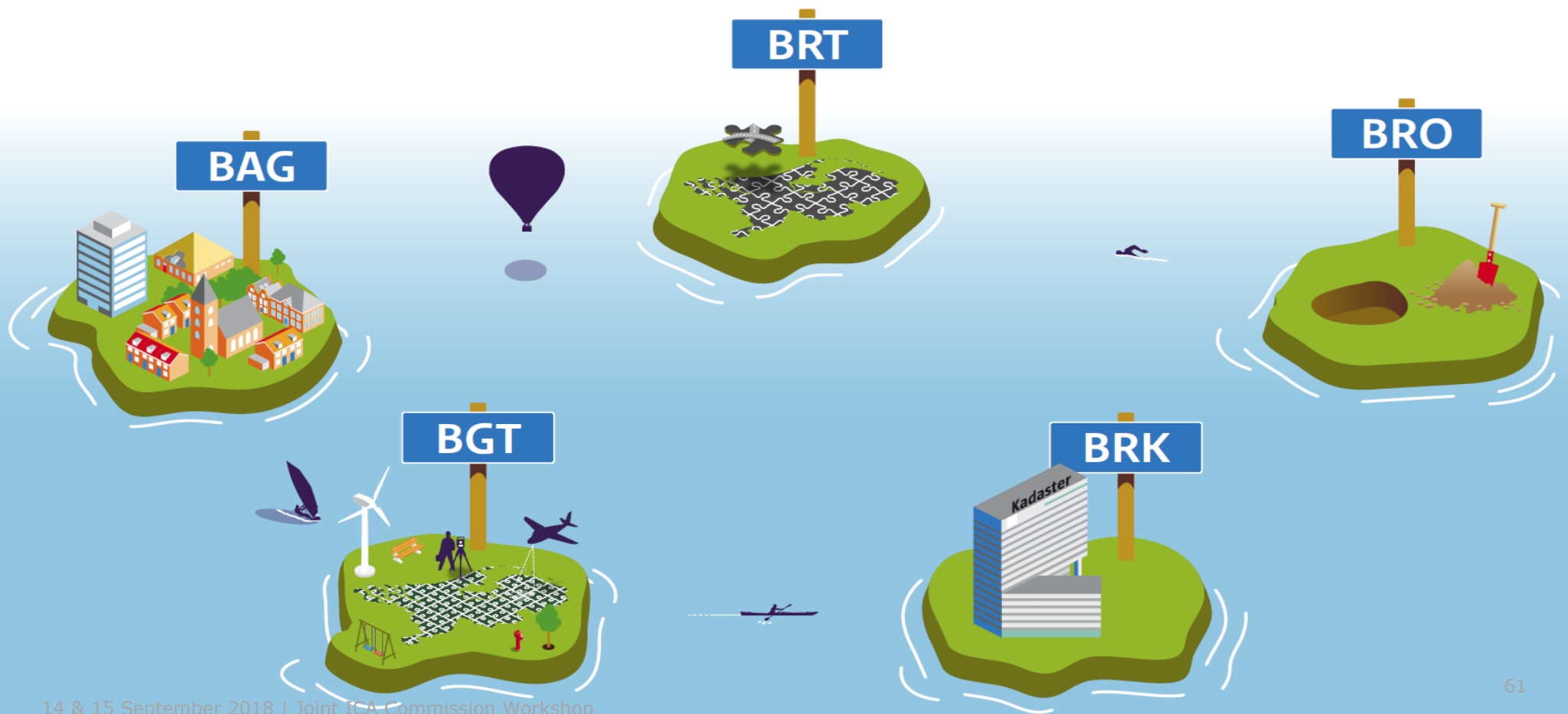
## Future developments

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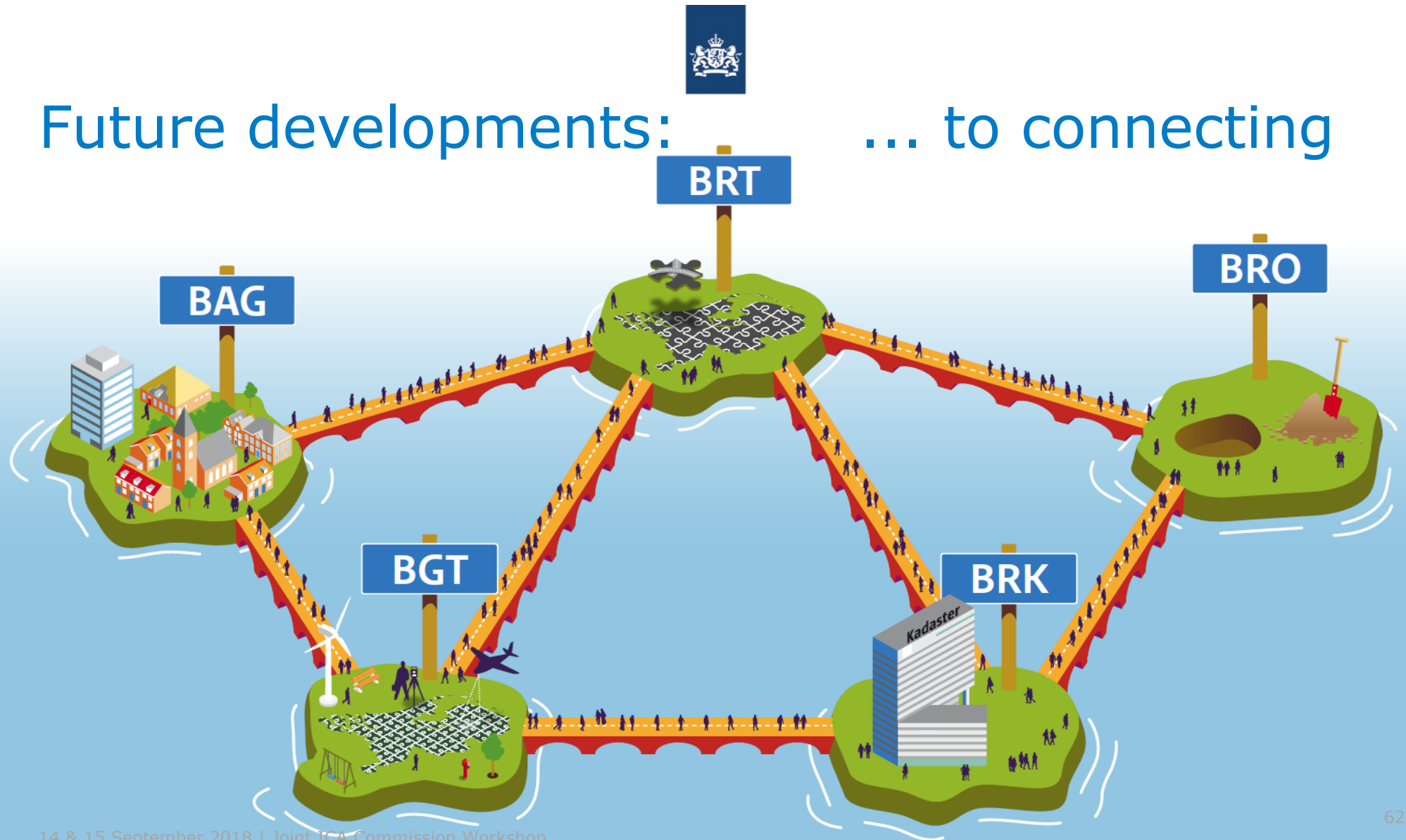




# Future developments: from single islands



Future developments: ... to connecting



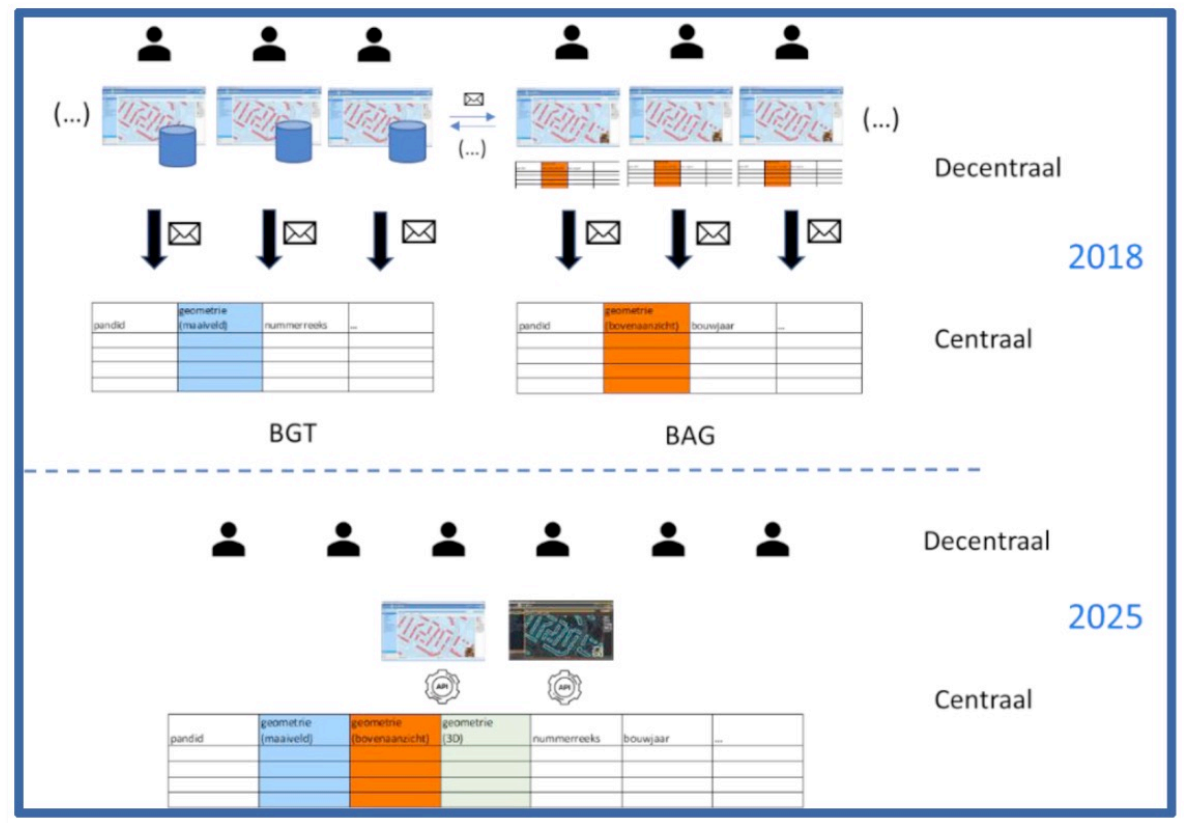


# Future developments: ... to integration





# Future developments: Integrated registration of objects





# Future developments: 3D

- › Integrated development demands 3D
- › Starting with 3D registration of buildings (and functional units / premises)
- › Pilots in Rotterdam:  
[www.3DRotterdam.nl](http://www.3DRotterdam.nl)

2 oktober 2018 | Voettekst

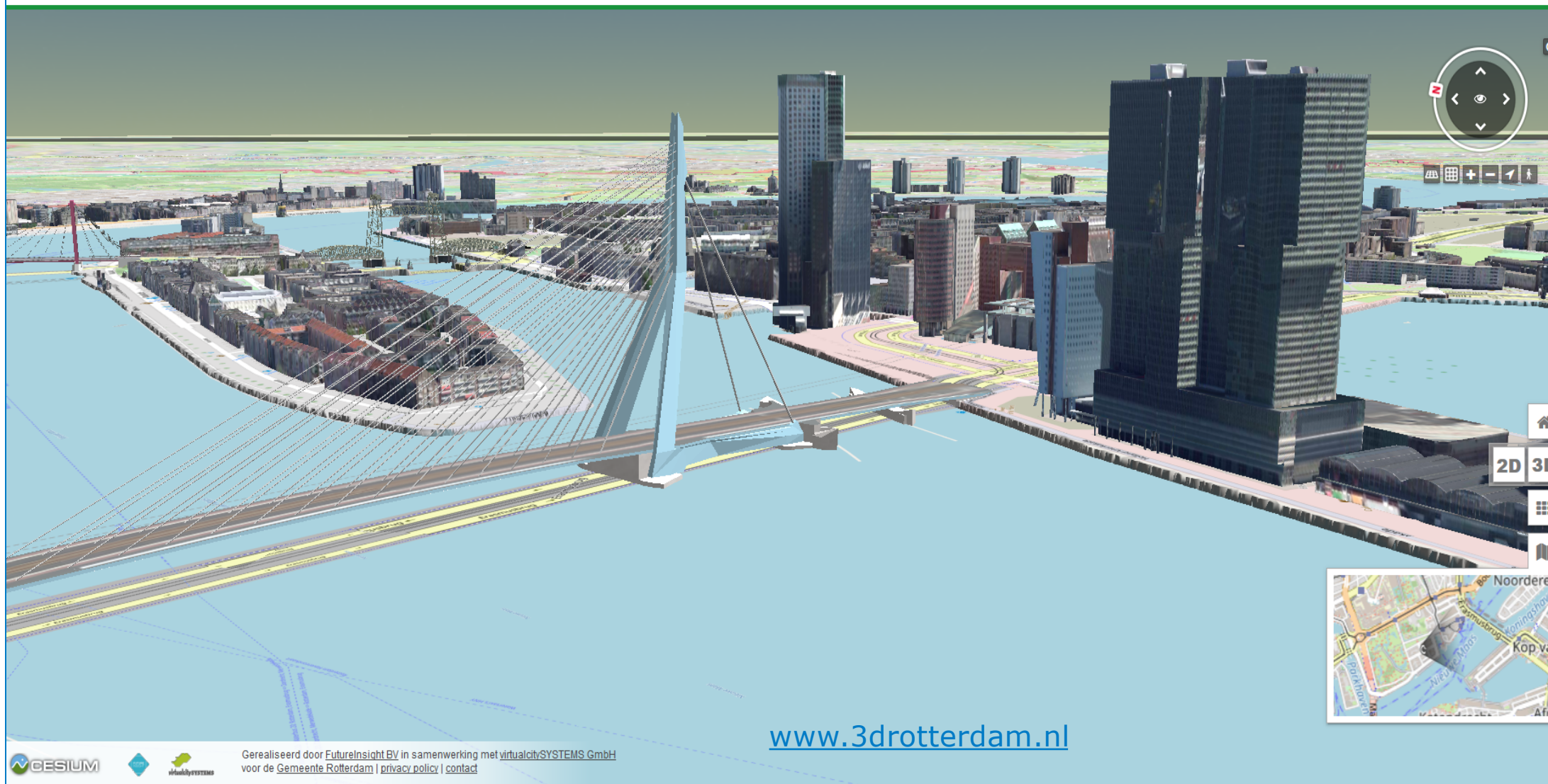






## Rotterdam 3D

Zoeken Inhoud Instellingen



Gerealiseerd door FutureInsight BV in samenwerking met virtualcitySYSTEMS GmbH  
voor de Gemeente Rotterdam | [privacy policy](#) | [contact](#)

[www.3drotterdam.nl](http://www.3drotterdam.nl)





# #6

Questions?



A photograph of a row of colorful wooden houses built on stilts over a body of water. The houses are in various colors including orange, yellow, blue, and grey, all with red-tiled roofs. On the right side of the row, there is a taller grey structure with a tower-like top, resembling a lighthouse, with a small red flag on its roof. Several small boats are docked in front of the houses. The water is calm, reflecting the houses and the sky. The sky is a clear, bright blue with a few wispy clouds.

# Questions?



# Thank you for your attention. Contact?



[www.geobasisregistraties.nl](http://www.geobasisregistraties.nl)



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