



## Overview and Insight

a practical approach to connect  
business, applications and  
technology with Archimate

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NL Tax and Customs Administration



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# Tax and Customs



**232 billion**  
€ tax revenues



**11.2 million**  
tax returns received



**9 million**  
citizens with  
benefits



**29 thousand**  
employees  
**3 thousand**  
IT



**12 million**  
containers in the  
port of Rotterdam





**high level of  
computerization**

**complex IT  
landscape**

**high costs and  
not flexible**

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# overview and insight



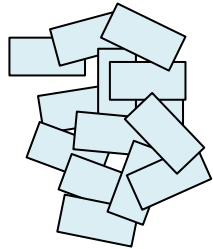
## overview

Overview of business products and business processes, the applications and data needed to support these business processes, and the technology and infrastructure to realize and operate these applications.

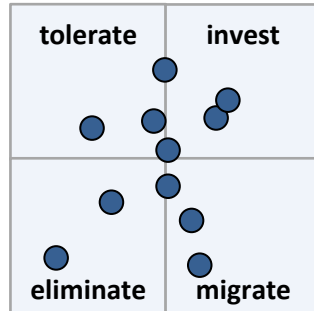
## insight

Insight in characteristics of applications and technology in order to determine an application strategy, make improvement plans, etc.

### BASELINE



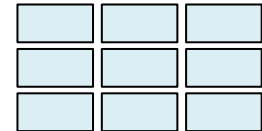
### ASSESSMENTS



### STRATEGY

- develop
- rebuild
- retire
- upgrade
- converge
- retain
- refactor
- rehost

### TARGET



# overview and insight



Overview and insight contributes to the following **drivers and goals**:

## **guarantee continuity**

- make overview and insight a permanent part of life cycle management
- refactor or rehost applications to ensure up-to-date-technology

## **accommodate change**

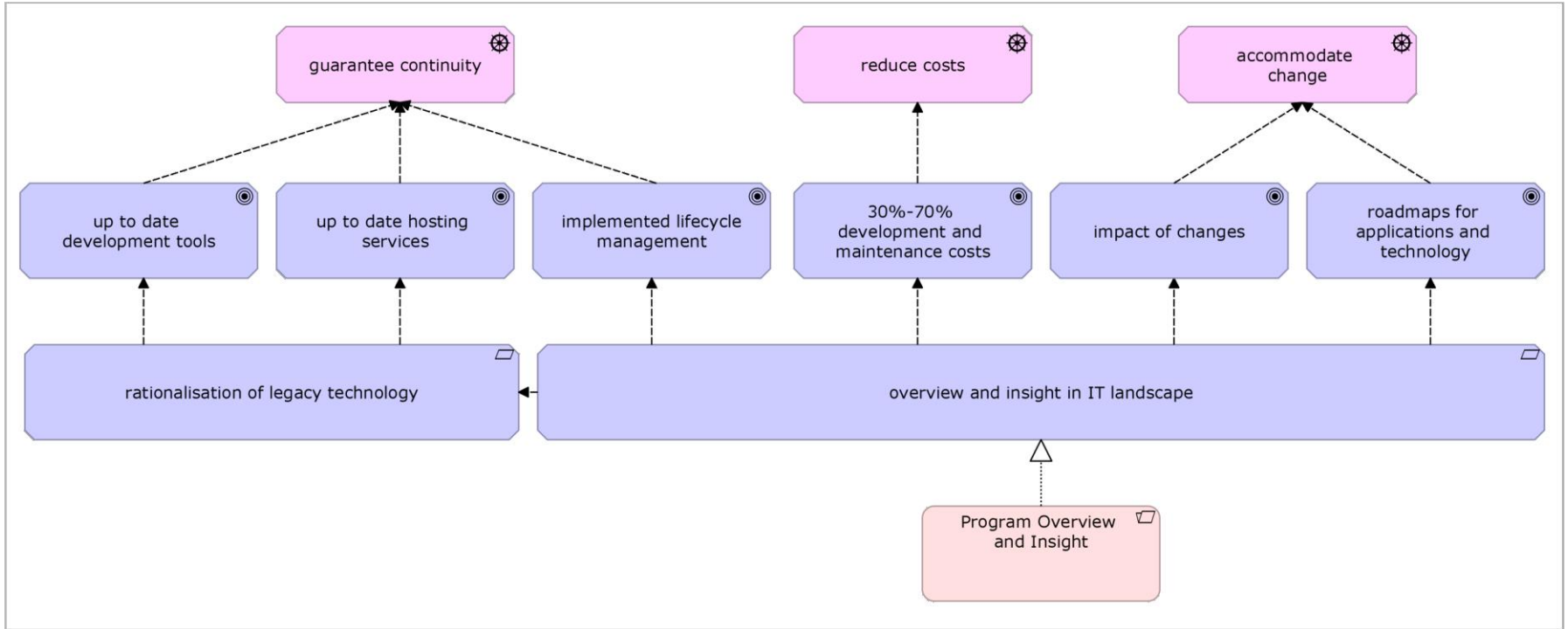
- define roadmaps based on consistent and coherent information across domains and layers
- determine the impact of change

## **reduce costs**

- spend less money on maintenance and use it for development and enhancements



# overview and insight



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incremental approach



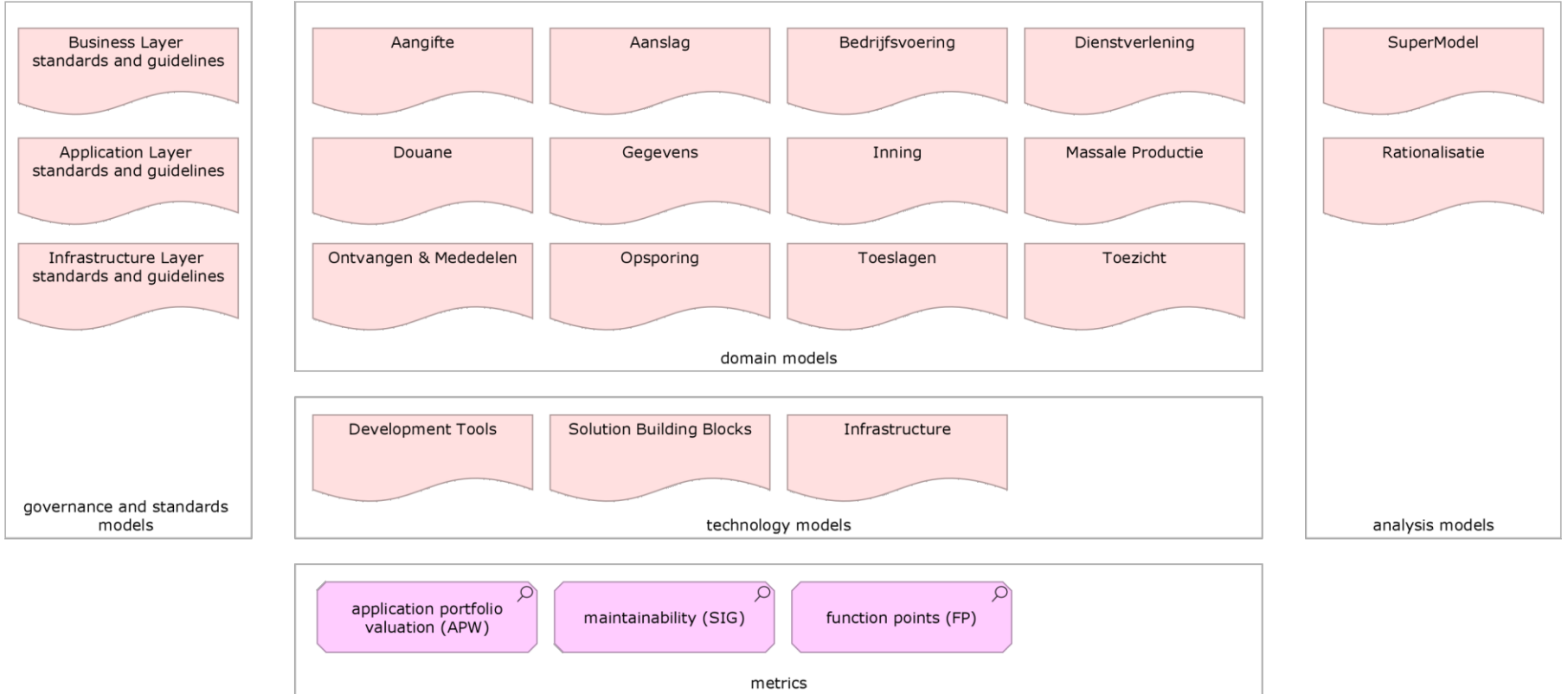
**a central repository**

**standardized information  
on business, application  
and technology**

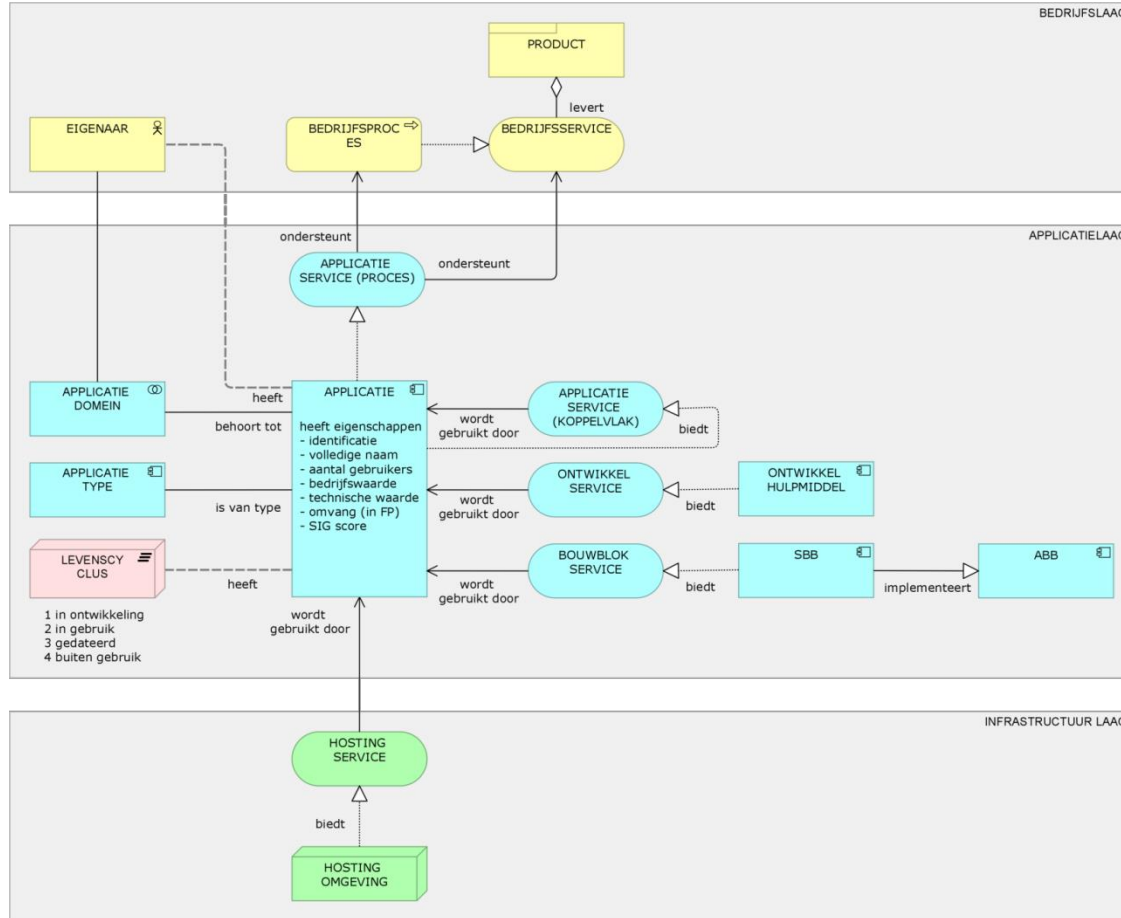
**integrated with application  
metrics and other sources**

**central governance,  
local maintenance**

# repository structure



# application layer concepts



the Application Layer standards and guidelines model contains:

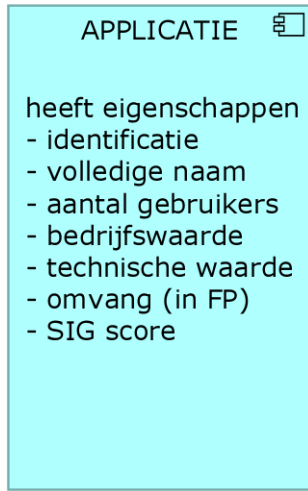
- concepts
- default views
- scripts

# application layer concepts



## **APPLICATION** with properties for

- identification and long name
- number of users
- metrics: business value and technical value (APW), size (FP) and maintainability score (SIG)



## **APPLICATION SERVICE**

- logical relationship between applications (no implementation details)

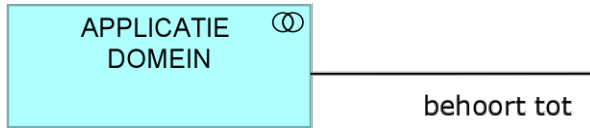


# application layer concepts



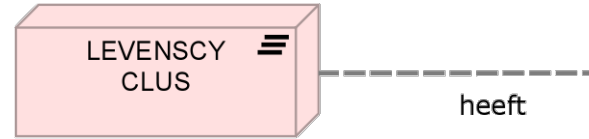
## APPLICATION DOMAIN

- coherent grouping of APPLICATIONS



## LIFE CYCLE

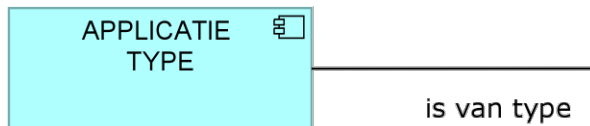
- life cycle stage of an APPLICATION



- 1 in ontwikkeling
- 2 in gebruik
- 3 gedateerd
- 4 buiten gebruik

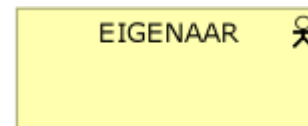
## APPLICATION TYPE

- classification of APPLICATIONS to distinguish between central / local / external applications



## OWNER

- relationship between APPLICATION and predefined set of OWNERS

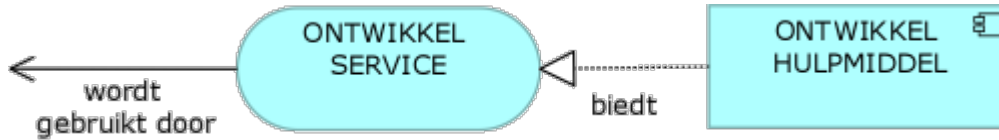


# application layer concepts



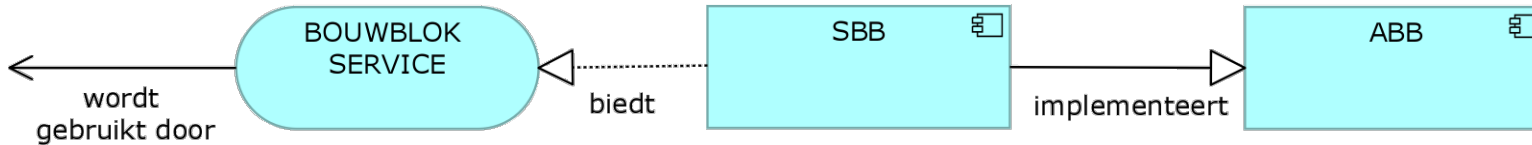
## DEVELOPMENT SERVICE

- relationship between APPLICATION and predefined tool sets used to design, code, test, integrate and deploy



## BUILDING BLOCK SERVICE

- relationship between APPLICATION and predefined SBB (Solution Building Block) for business process management, content management, rule management, etc.



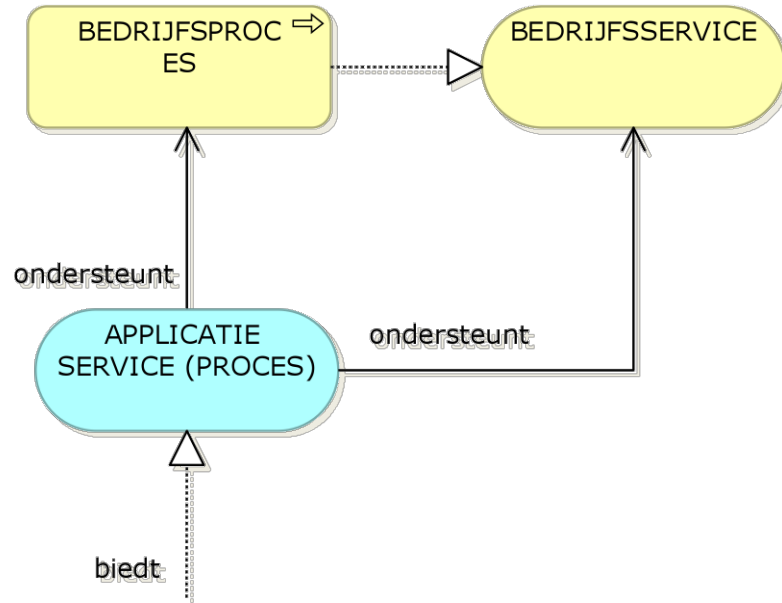


# application layer concepts



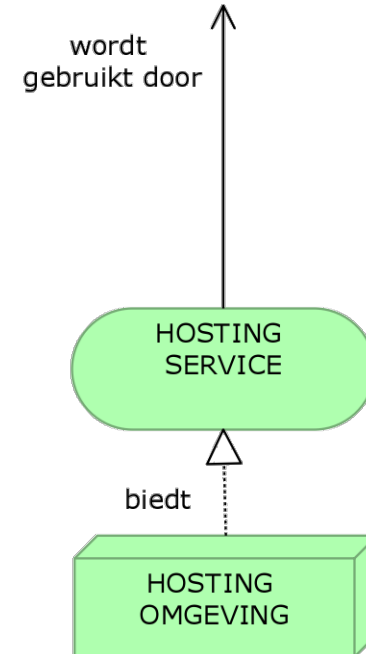
## APPLICATION SERVICE

- relationship between APPLICATION and BUSINESS process or service



## HOSTING SERVICE

- relationship between APPLICATION and predefined HOSTING environment(s)



# application layer concepts



Part of the Application Layer standards and guidelines model are **validation rules** to automatically check the quality of the domain models:

For example:

- an APPLICATION must have a unique IDENTIFICATION
- an APPLICATION must belong to one APPLICATION DOMAIN
- an APPLICATION with LIFECYCLE “in use” must have a BUSINESS VALUE
- an APPLICATION must have one or more DEVELOPMENT SERVICES
- an APPLICATION DOMAIN must have an APPLICATION LANDSCAPE view

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# results



- **guidelines** for business, application and infrastructure layer
- standardized views on application **landscape** and **context**, and domain **dashboards**
- scripts to facilitate the use of existing data and **metrics**
- automated **quality checks**
- self-service **publication** of all models on intranet
- a **supermodel** for analysis

The screenshot shows a web browser window displaying the CAO-Net intranet. The page title is 'Overzicht IV-landschap – Architectuur repository'. The navigation menu includes 'Home', 'Nieuws', 'Werkgebieden', 'Organisatie', 'Portfolio', 'Personeel', and 'Faciliteiten'. The main content area is titled 'Overzicht IV-landschap – Architectuur repository' and includes a search bar, a 'Laatste update: 08 januari 2016 14:09' timestamp, and a section titled 'Inhoud' with a bulleted list of links: 'Overzicht en inzicht IV-landschap', 'Views per domein en het supermodel', 'Vragenlijsten APW', 'Altijd beschikbaar', and 'Contact en feedback'. Below this is a section titled 'Over Overzicht en inzicht IV-landschap' with a paragraph of text explaining the purpose of the page and a list of bullet points: 'bedrijfslaag: architecten van de IM's', 'applicatielaag: architecten van BI/CAO', and 'infrastructurelaag: architecten van I/ITP'.

# added value



- **consistency** across different business domains and different layers
  - easier sharing and better understanding
- **information** is available for everyone
  - same information is used, less mismatches, less routine questions for architects
- strategic/tactical **analysis** to accommodate change
  - improved quality of decisions, less lead time, lower costs
- **architecture** products are more standardized
  - less time needed for baseline architecture products, improved quality, better start for development

# overall IT landscape

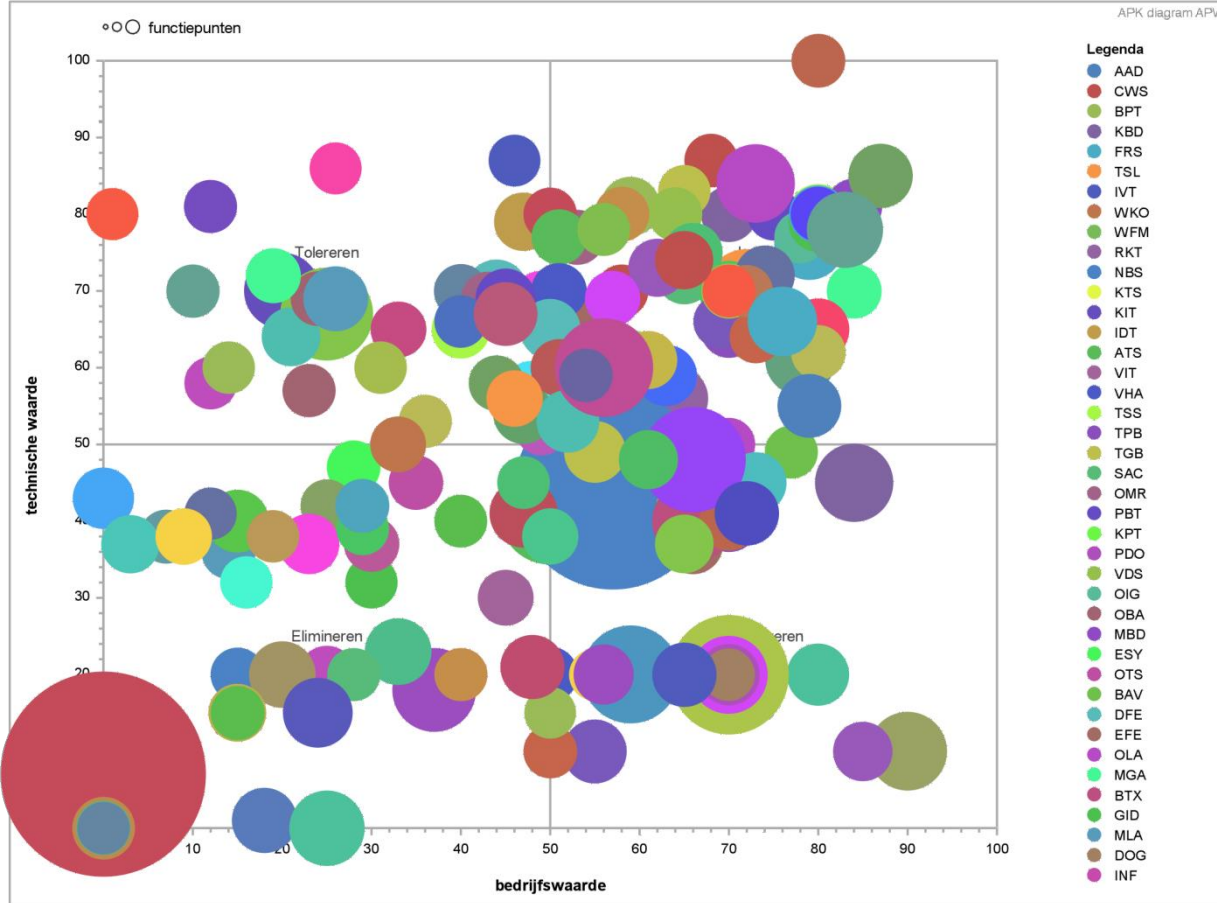


a top level view of business units and application domains

# portfolio valuation



Bellendiagram

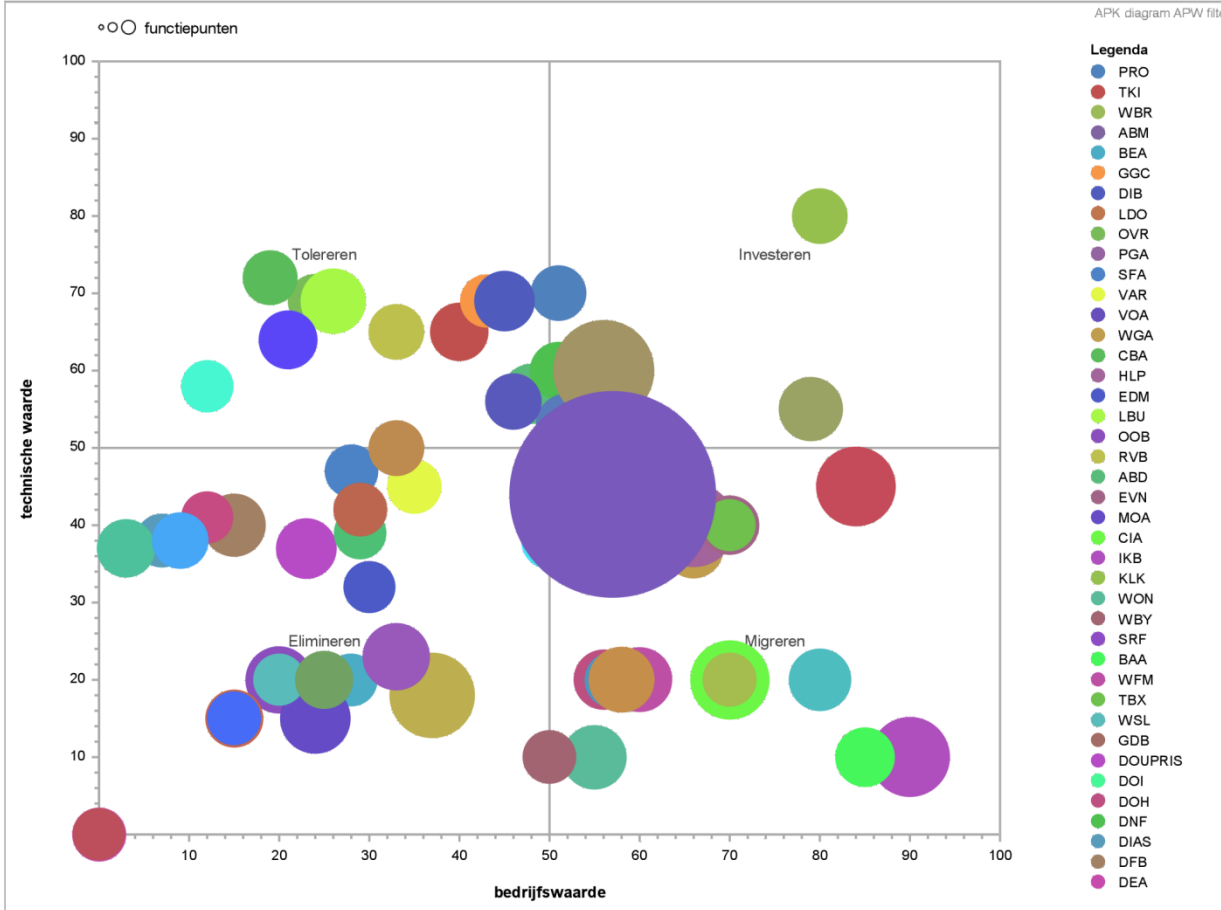


visualization of the business value and technical value of all applications using the Gartner TIME method

# portfolio valuation



Bellendiagram



a subset with all applications based on end-of-life development tools

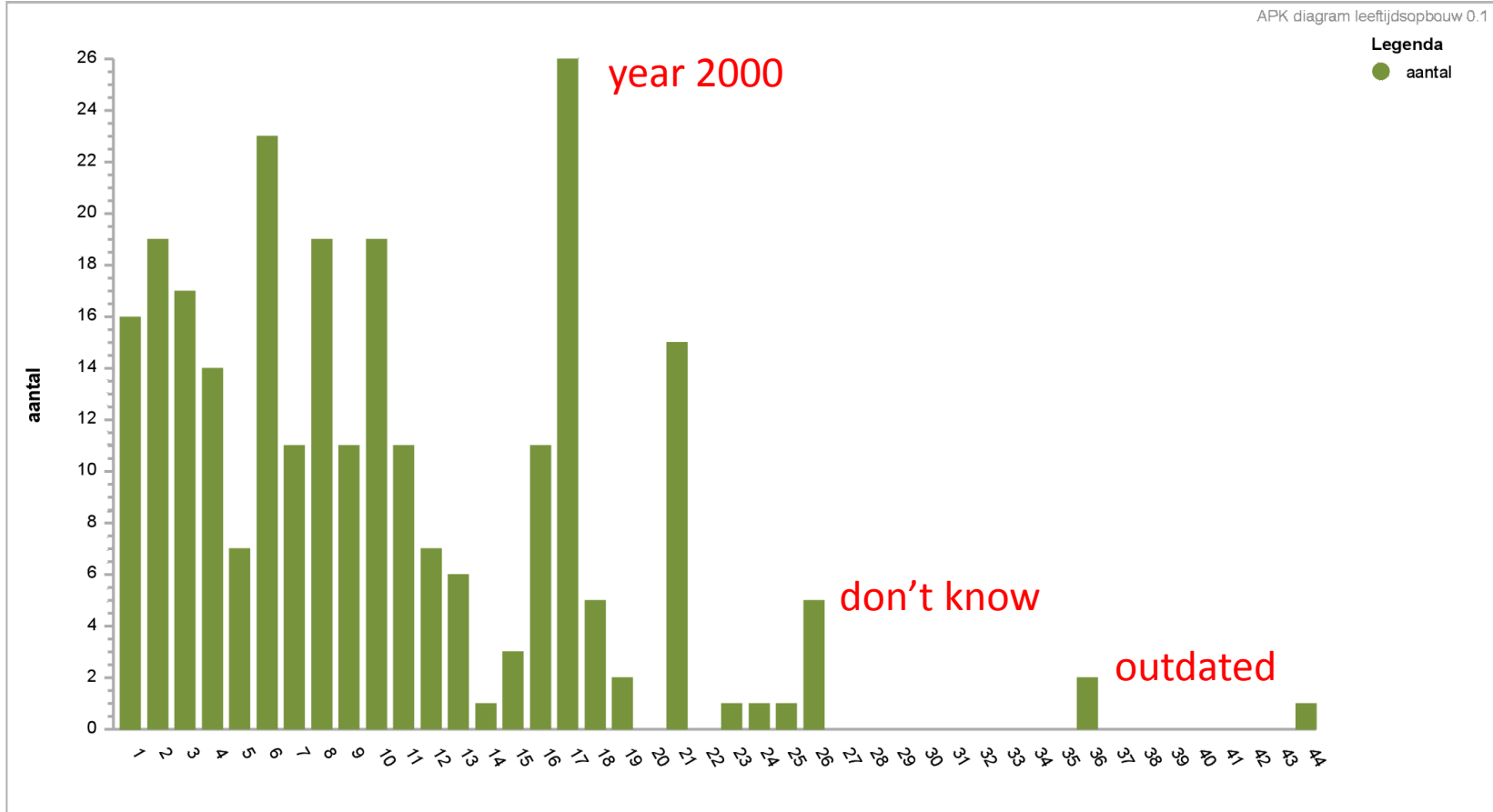
this can be used to prioritize retire, rebuild, refactor or rehost activities for applications



# age



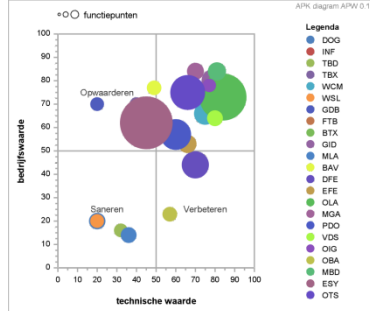
Staafdiagram



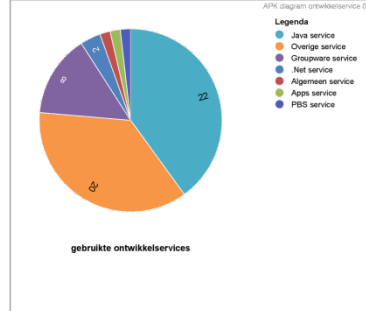
# dashboards



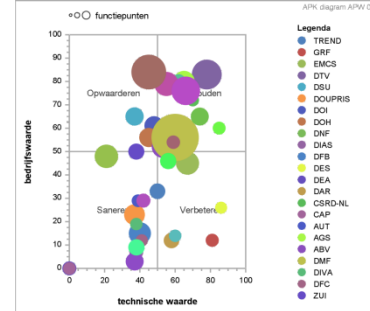
APK diagram APW 0.1



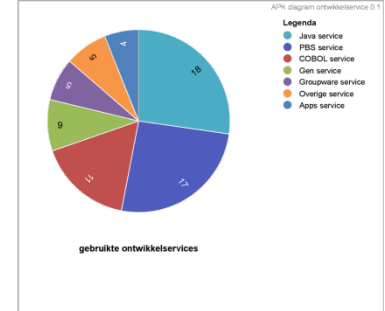
APK diagram ontwikkelservice 0.1



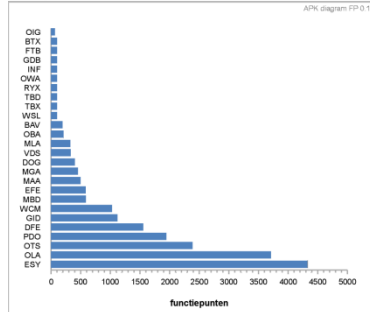
Belendigram



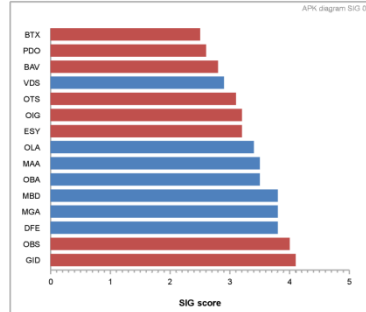
Taartdiagram



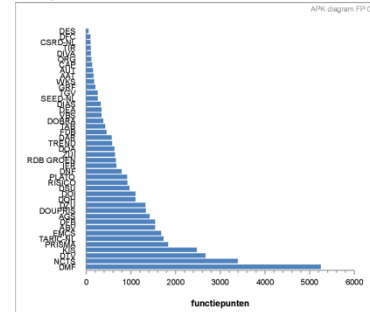
APK diagram FP 0.1



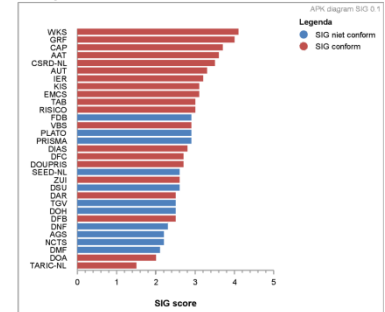
APK diagram SIG 0.1



Staaftiagram



Staaftiagram



# insights



Tabel

Object	concept	aantal
object	APPLICATIE	392
object	APPLICATIE SERVICE (PROCES)	268
object	APPLICATIE SERVICE (KOPPELVLAK)	451
object	ONTWIKKEL SERVICE	9
object	HOSTING SERVICE	16
object	BOUWBLOK SERVICE	5
object	EIGENAAR	7
object	APPLICATIE DOMEIN	11

451 application services published

the most-connected application has connections with 106 other applications

5% of all applications is involved with 80% of all connections

175 application services are not used (or not defined yet)

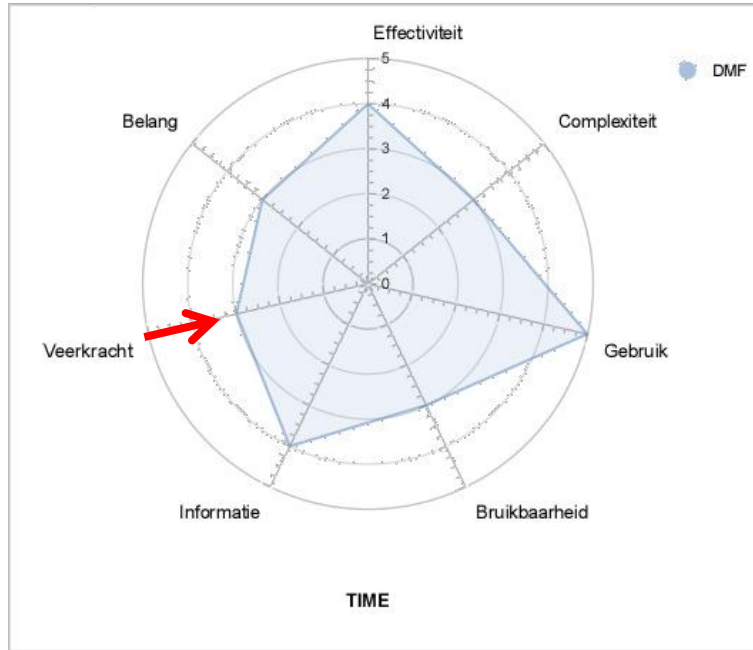
16 hosting services, but 41 unique combinations of hosting services

# insights

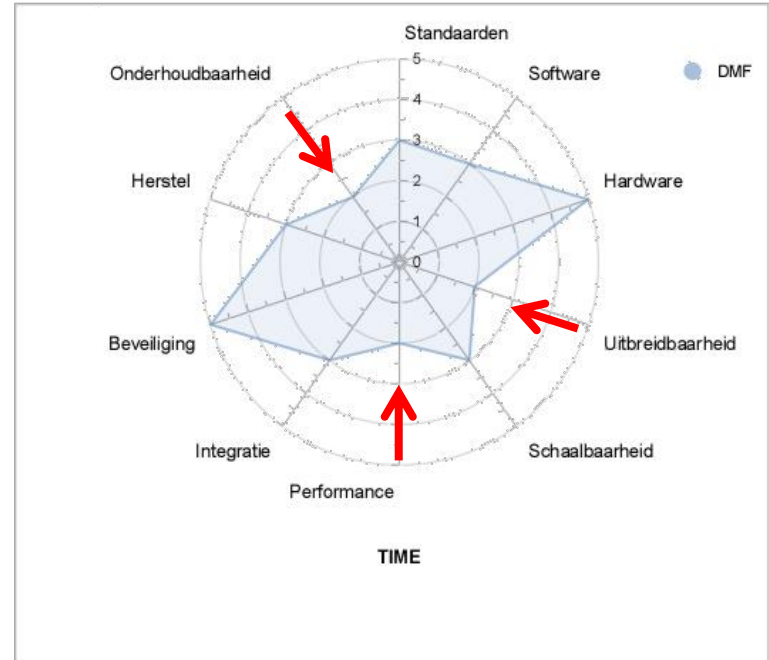


radar diagrams for business value (left) and technical value (right) can be used to see on what aspects an application should be improved

APW diagram TIME



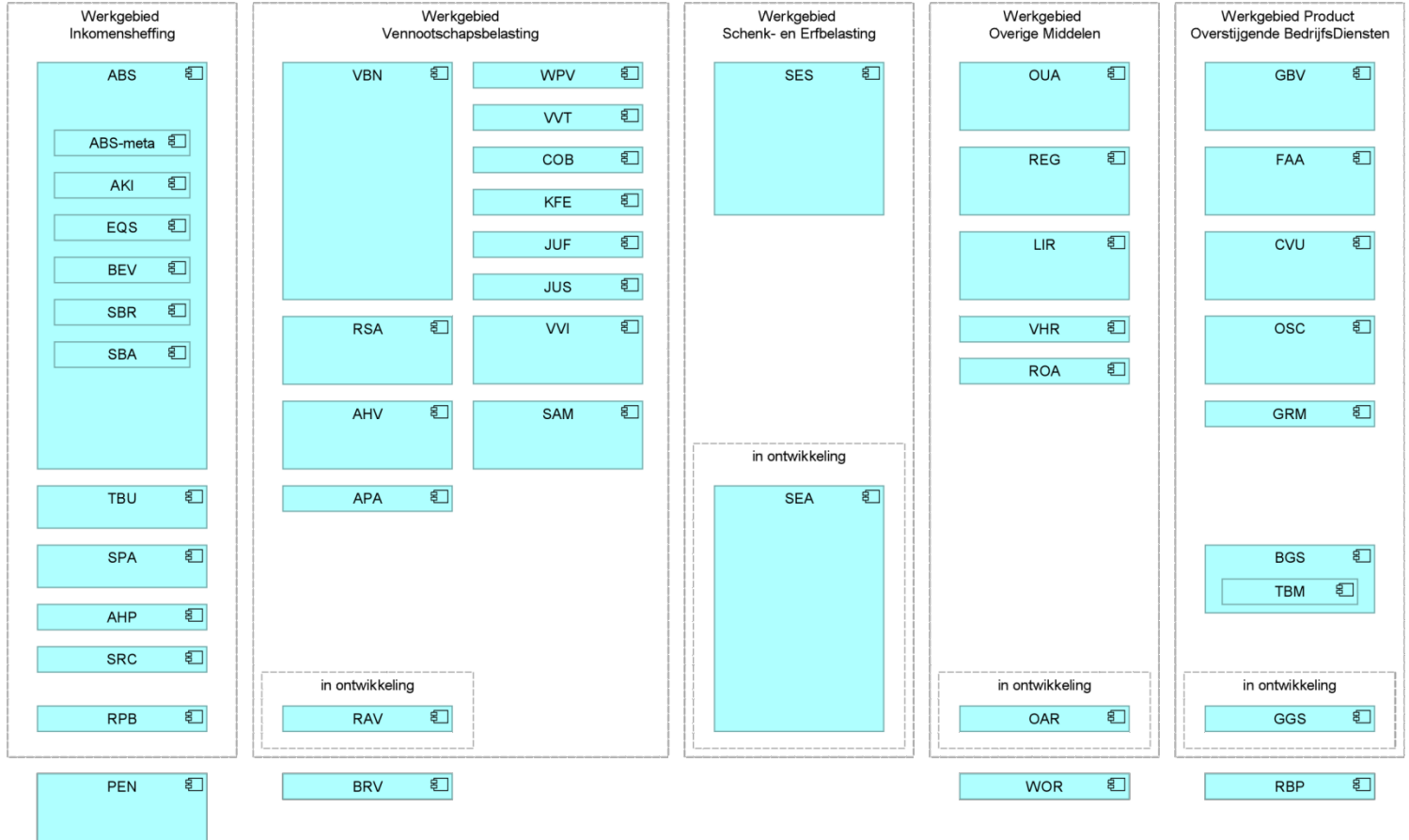
APW diagram TIME



# application landscape



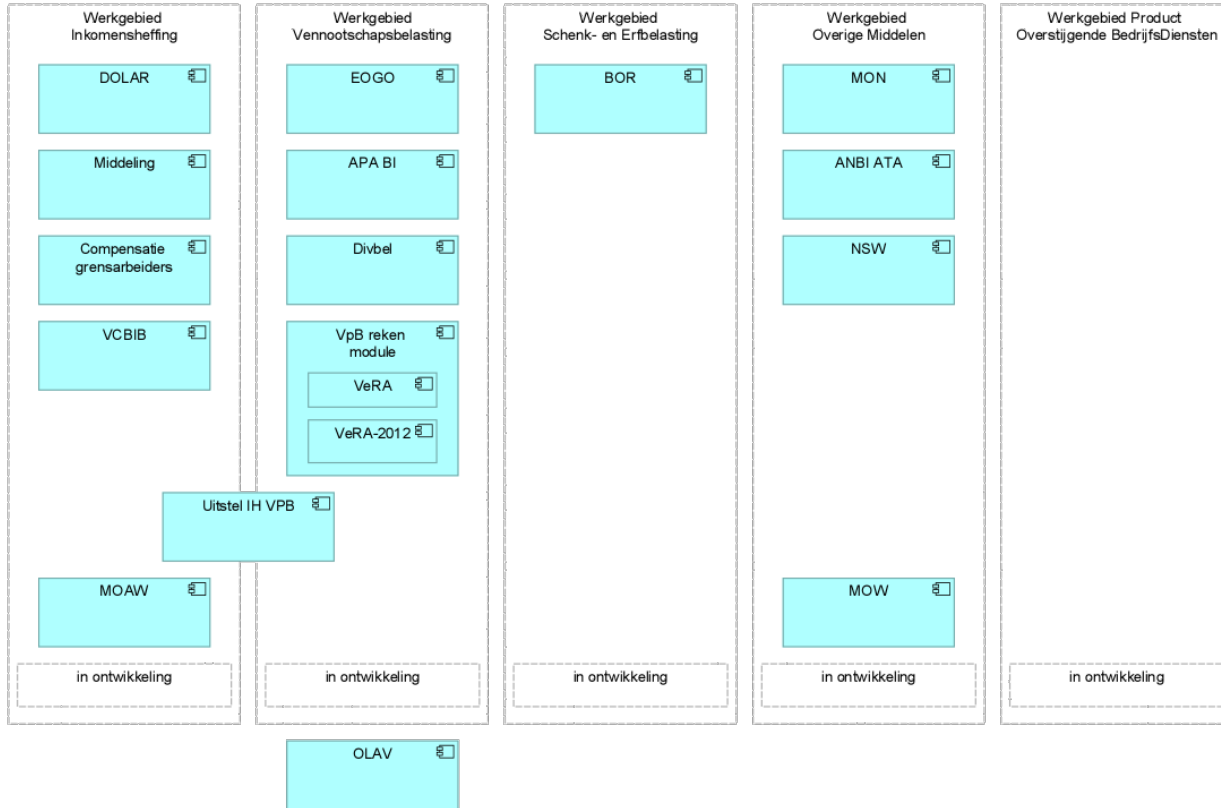
# domain taxes



# application landscape (LOA)



# domain taxes



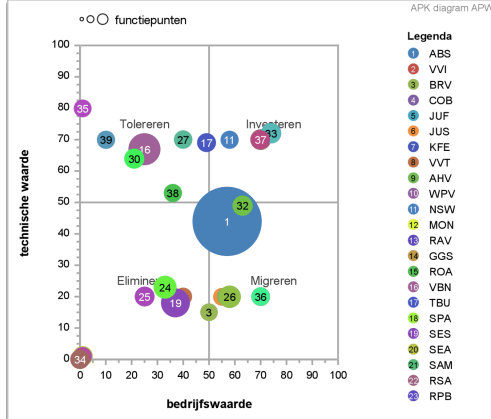
a similar **landscape map** of all **locally developed applications** in the taxes domain

# application dashboard

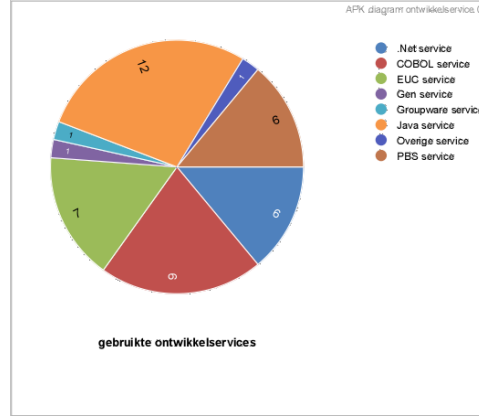


# domain taxes

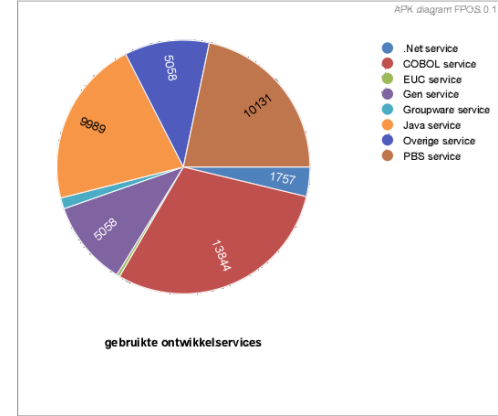
Belendigram



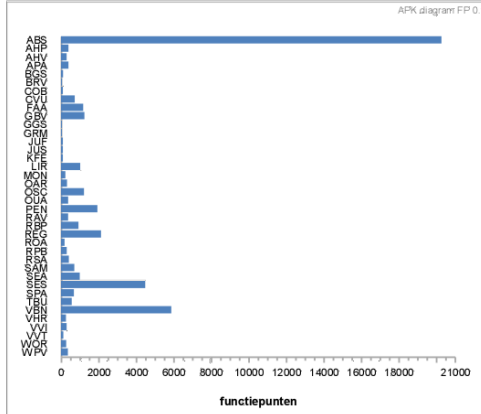
APK diagram ontwikkelservice 0.1



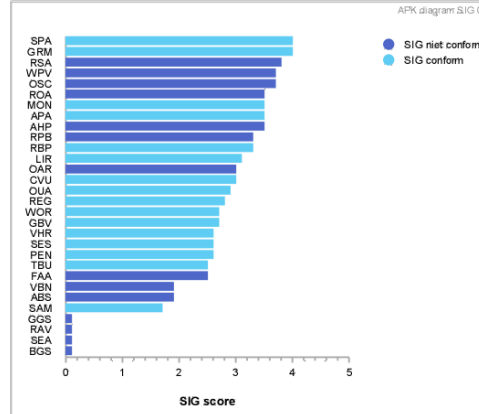
APK diagram FPOS 0.1



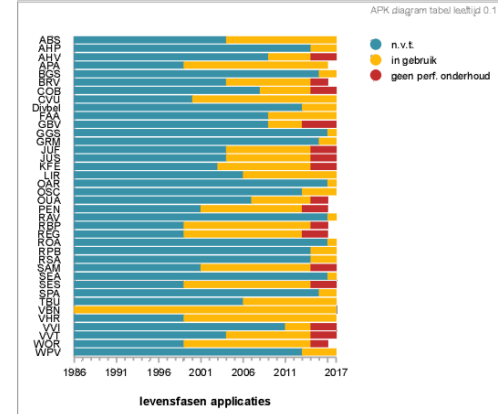
APK diagram FP 0.1



APK diagram SIG 0.1



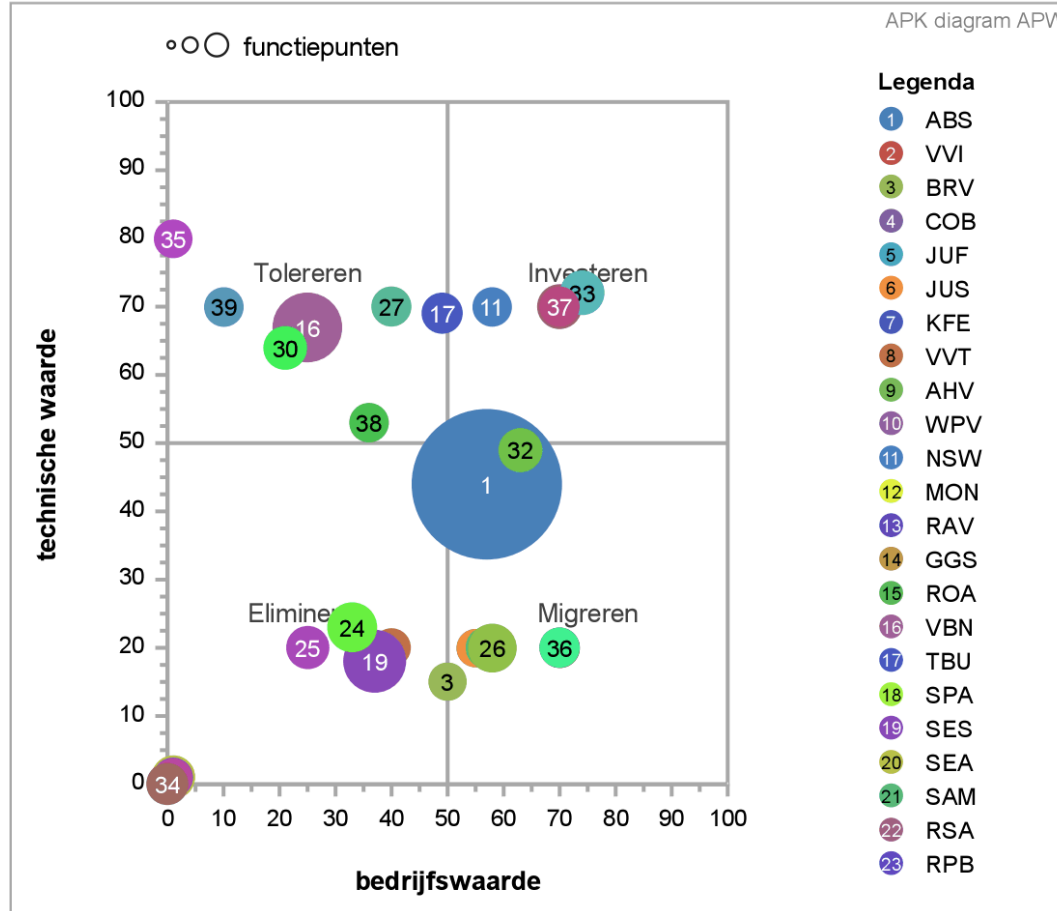
APK diagram tabel leeftijd 0.1



# application dashboard



Bellendiagram



# domain taxes

visualization of the **business value** and **technical value** of all applications in the taxes domain taxes using the Gartner TIME method



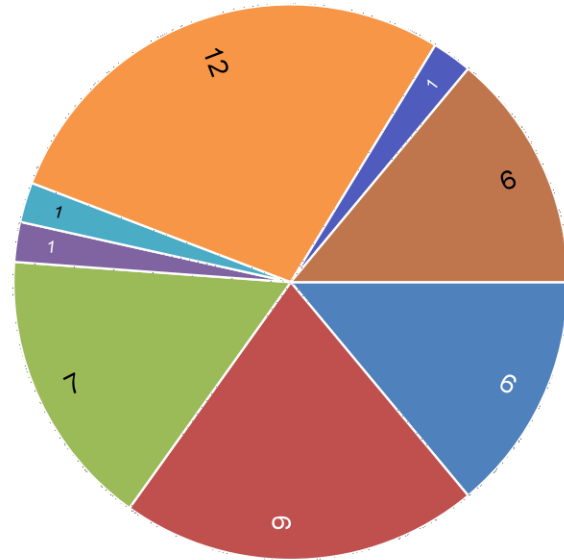
# application dashboard



# domain taxes

APK diagram ontwikkelservice 0.1

APK diagram ontwikkelservice 0.1



- .Net service
- COBOL service
- EUC service
- Gen service
- Groupware service
- Java service
- Overige service
- PBS service

gebruikte ontwikkelservices

the **number** of applications that have been built with a **development service**

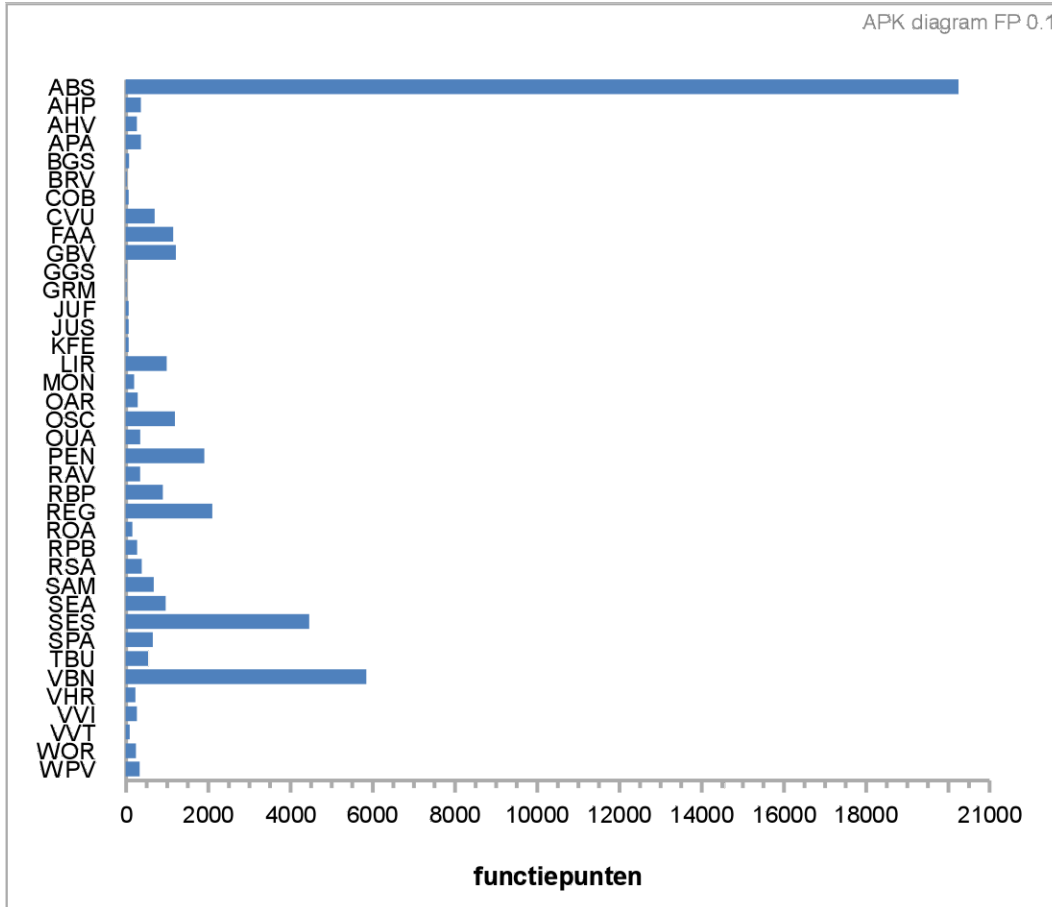
most applications in this domain are Java (12), followed by COBOL (9) and EUC (7)

Groupware (1), Gen (1) and PBS (6) are development services that will retire in 1 or 2 years, so a rebuild, refactor or retire of these applications is needed

# application dashboard



APK diagram FP 0.1



# domain taxes

the **size** of each application

function points are used as a measure for the size of an application

ABS is by far the biggest application, followed by SES en VBN

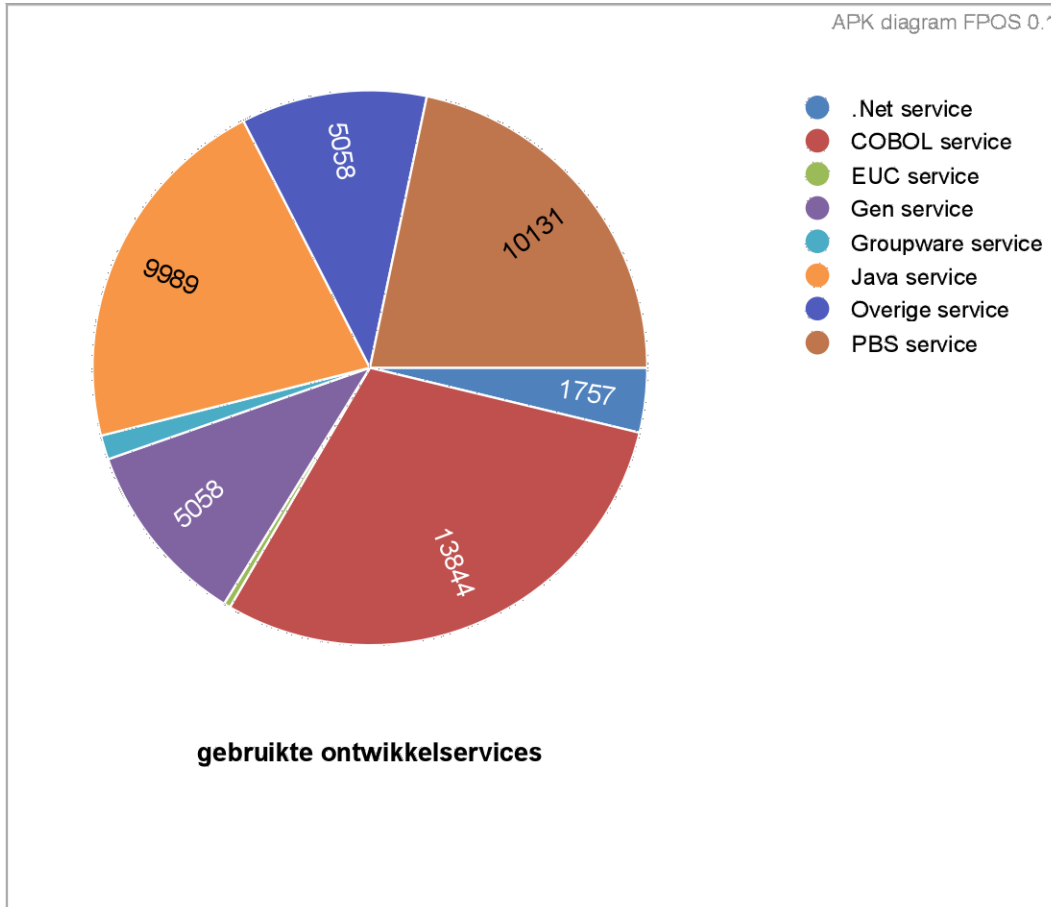
but this domain also has many small applications

# application dashboard

APK diagram FPOS 0.1



# domain taxes



the **total size** of applications for each **development service**

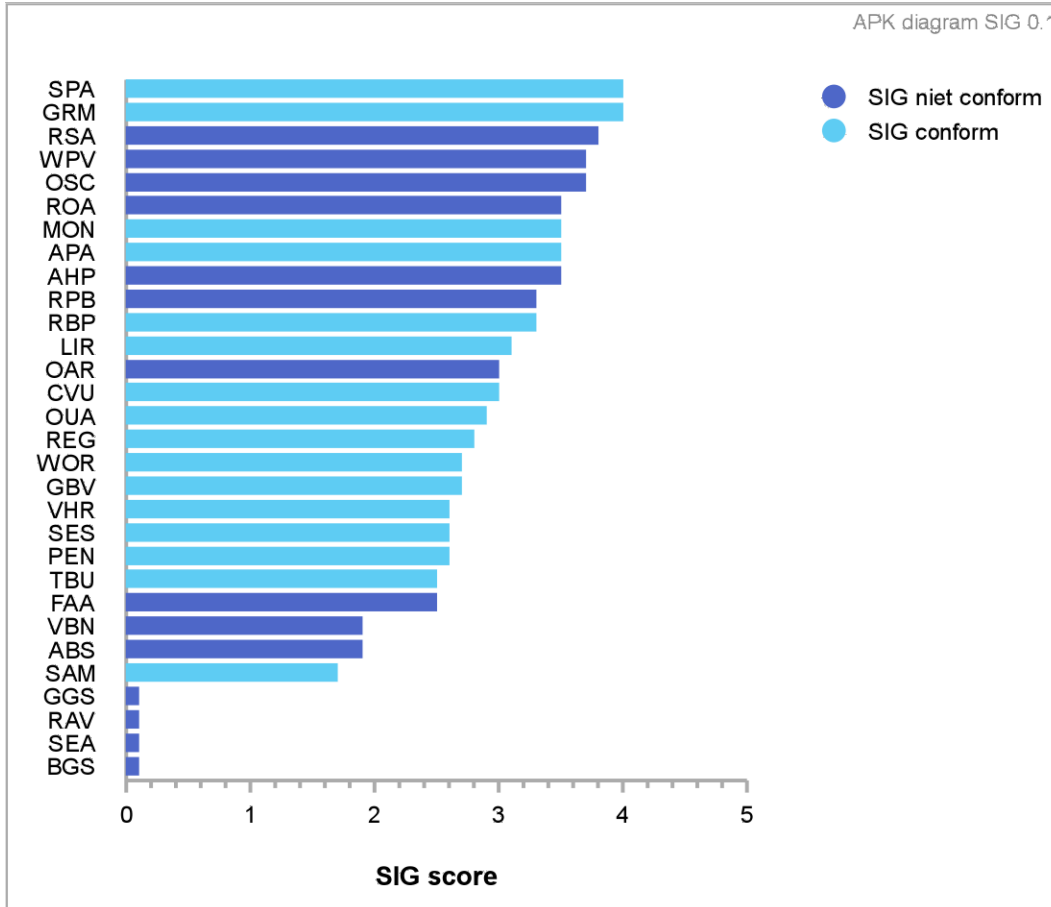
in function points COBOL is the most important development service

PBS is also a big part of this domain, so there is a lot of work to do rebuild, refactor or retire before this development service can retire

# application dashboard



APK diagram SIG 0.1



# domain taxes

the **maintainability score** for each application

there are different norms depending on the lifecycle of the application and the development service used

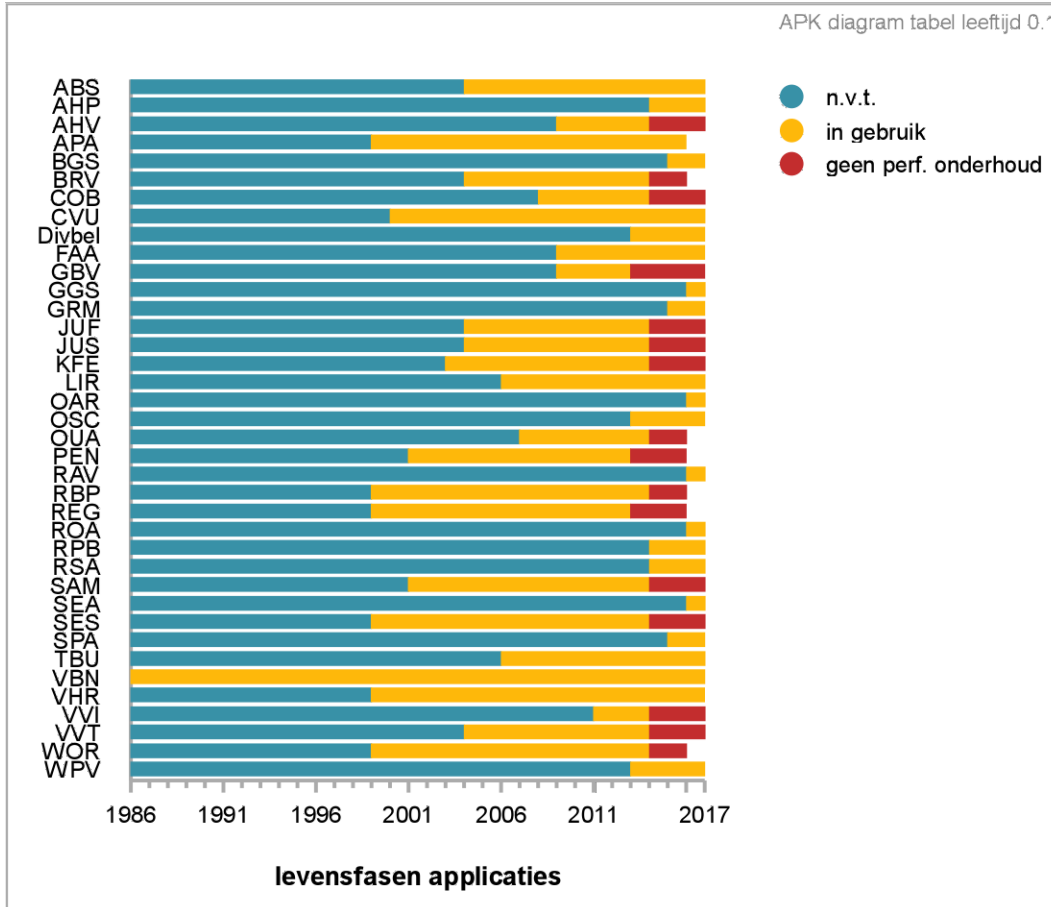
this overview can be used to plan improvements

# application dashboard



# domain taxes

APK diagram tabel leeftijd 0.1



the **life cycle** of each application

the oldest application in this domain is 30 years old (VBN)

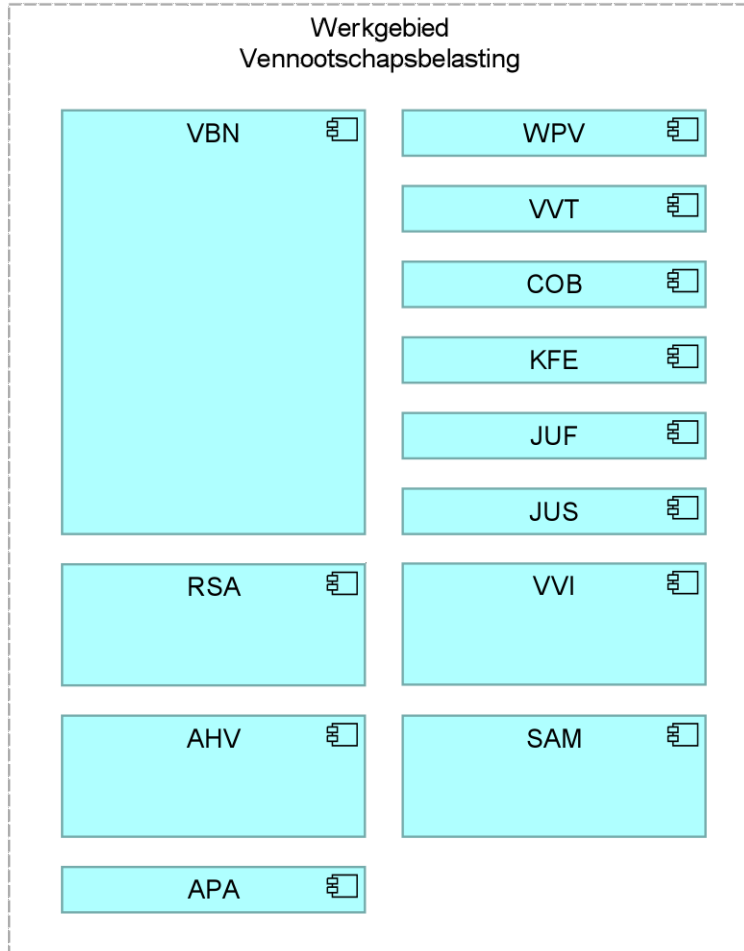
a lot of applications will be retired or replaced in the next two years

for most applications there is no end-of-life known

# application landscape



# corporate tax



a part of the **application landscape** of the taxes domain, i.e. all applications involved with corporate taxes

20 applications are maintained within this domain

30 more applications from 8 other domains are needed to support the whole (not shown)



Applicatieportfoliokenmerken

naam	Eigenaar	identificatie	volledige naam	aantal gebruikers	bedrijfswaarde (0-100%)	technische waarde (0-100%)	omvang (in FP)	SIG score
APA	B/Belastingen	APA	Advanced Pricing Agreements	50	70	20	348	3.500
RSA	B/Belastingen	RSA	Risico Selectie Aangifte	0	70	20	368	3.800
SAM	B/Belastingen	SAM	Systeem Afdrachten Mijnbouwwet	25	57	20	660	1.700
VBN	B/Belastingen	VBN	Vennootschapsbelasting Nieuw	1400	55	65	5830	1.900
WPV	B/Belastingen	WPV	Woonplaatsverklaring	0	70	70	317	3.700
JUF	B/Belastingen	JUF	Juridische Fusies	25	20	20	50	0.000
KFE	B/Belastingen	KFE	Kennisboom Fiscale Eenheden	500	70	20	50	0.000
VVI	B/Belastingen	VVV-IBR	Vrijstelling, Verrekening, Verliescompensatie Internationaal BelastingRecht	250	70	20	250	0.000
COB	B/Belastingen	Cobez	Code Bezwaar	100	70	20	50	0.000
JUS	B/Belastingen	JUS	Juridische Splitsingen	25	20	20	50	0.000
BRV	B/Belastingen	BRV	Beperking renteaftrek	25	20	20	5	0.000
VVT	B/Belastingen	Art 20a VpB	Artikel 20a Wet VpB 1969	100	40	20	75	0.000
AHV	B/Belastingen	AH VpB	Ambtshalve Aanslagen Vennootschapsbelasting	10	70	20	250	0.000
RAV	B/Belastingen	RAV	Rechtstoepassing Afspraken Vastleggen	40	1	1	329	0.100

Levenscyclus

naam	1 in ontwikkeling	2 in gebruik	3 gedateerd	4 buiten gebruik
APA	1999	1999	2016	2016
RSA	2013	2014		
SAM	2001	2001	2014	
VBN	1985	1986		
WPV	2013	2013		
JUF	2004	2004	2014	
KFE	2003	2003	2014	
VVI	2011	2011	2014	
COB	2008	2008	2014	
JUS	2004	2004	2014	
BRV	2004	2004	2014	2016
VVT	2004	2004	2014	
AHV	2008	2009	2014	
RAV	2015	2016		

### In ontwikkeling

Het jaartal waarin gestart is met de ontwikkeling van de applicatie. (De applicatie hoeft niet in datzelfde jaar in productie te zijn genomen.)

### In gebruik

Het jaartal waarin de applicatie operationeel is gegaan in productie.

### Gedateerd

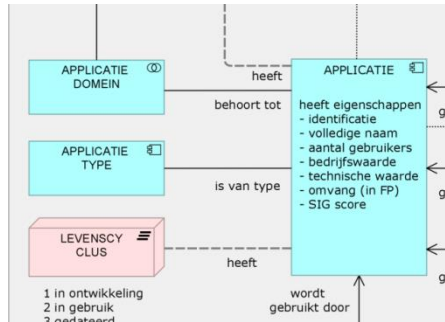
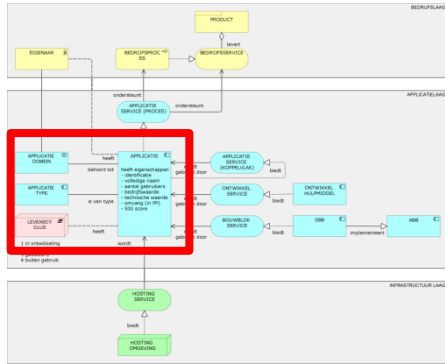
Het jaartal vanaf wanneer er geen perfectief onderhoud wordt uitgevoerd op de applicatie.

### Buiten gebruik

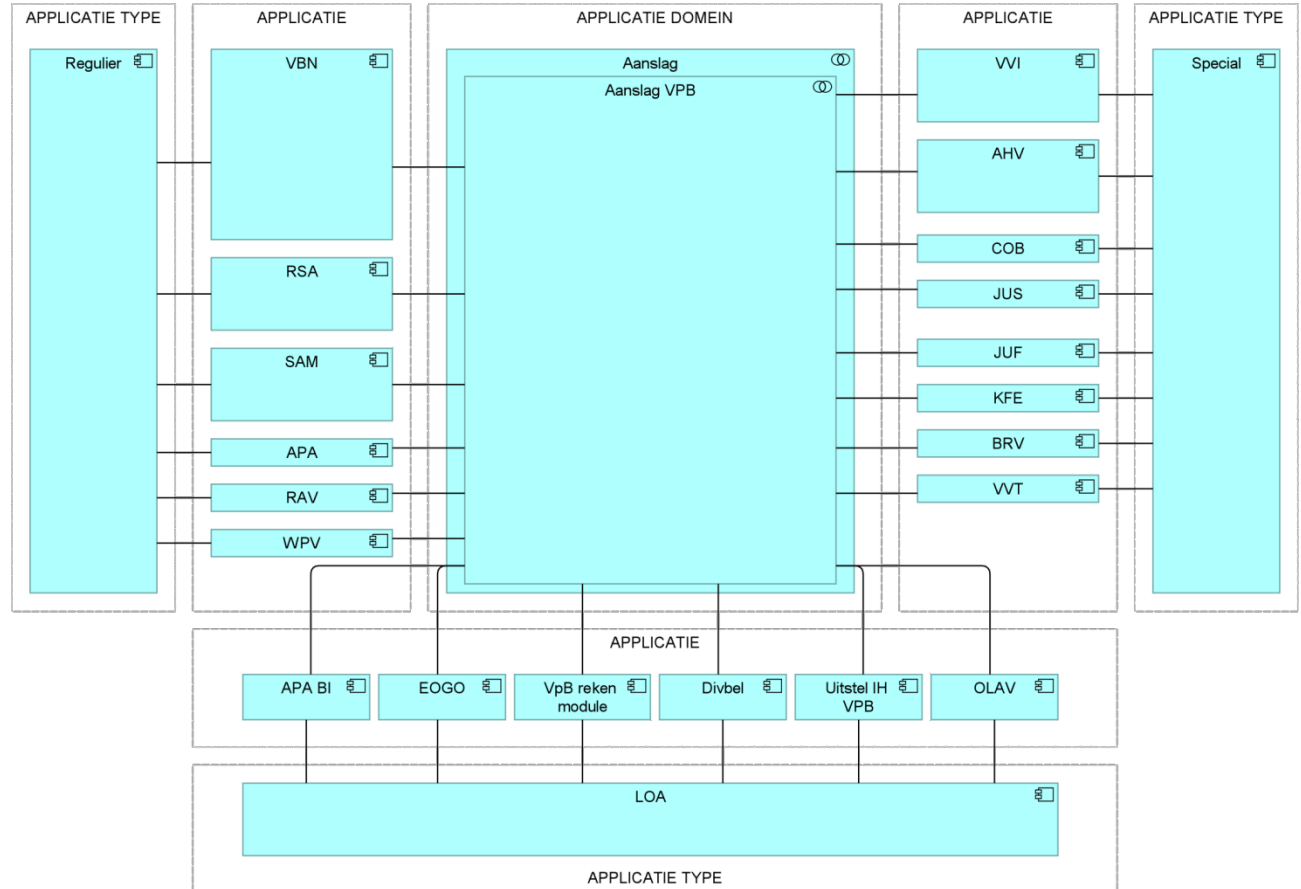
Het jaartal vanaf wanneer de applicatie is uitgefaseerd.

these tables show similar information as the previous diagrams

# application landscape

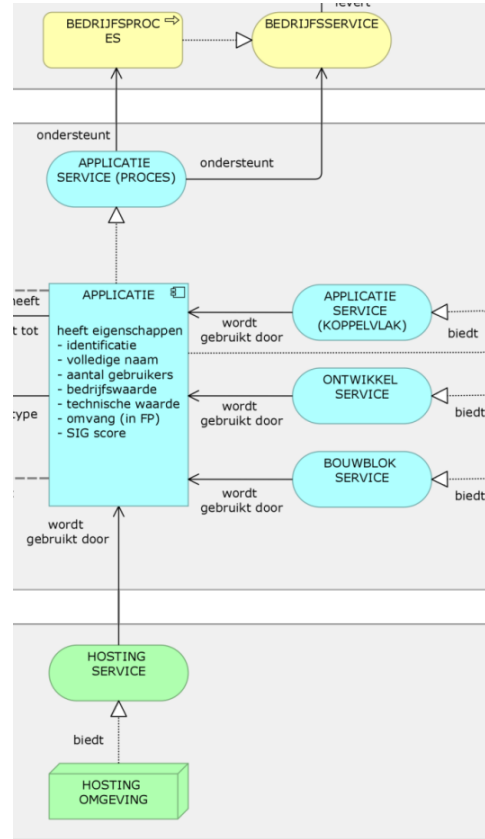
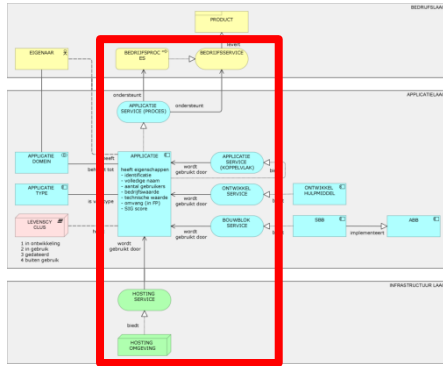


# corporate tax

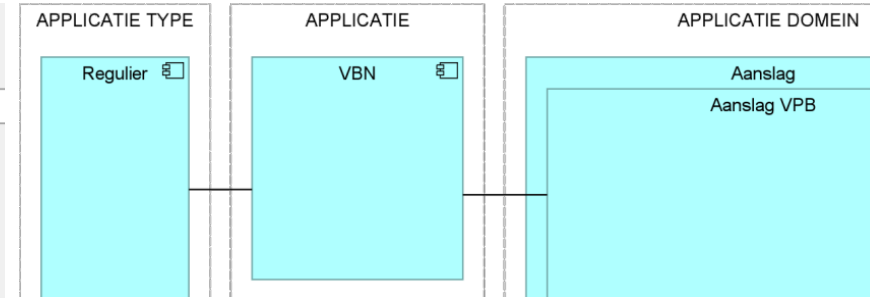




# application context



# corporate tax system (VBN)



corporate tax, the business:

- 700.000 companies
- 14 billion euro revenues in 2015
- first VBN-release in 1985
- > 3 releases each year with law changes, process improvements and maintenance activities



**Since 1985**

**it's old ... it's big ... it's complex ... it's never finished  
- our legacy -**

corporate tax, the application:

- VBN
- first released in 1985
- supporting 25 business processes
- 1.400 end users in 2016
- COBOL, JCL and CICS/DB2 technology
- 5.830 function points
- 1.713.931 lines of code in 2008
- 1,9 maintainability score
- 1.500 function point changes per year
- > 22 connections with other applications



## Building cathedrales

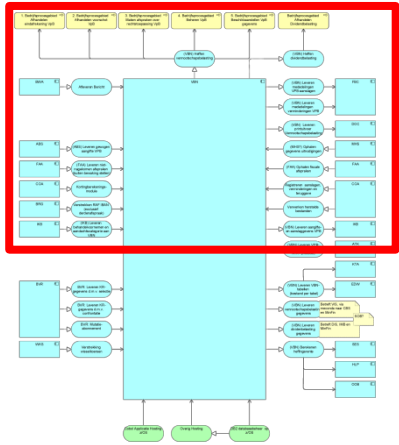


**it's old ... it's big ... it's complex ... it's never finished  
- our legacy -**

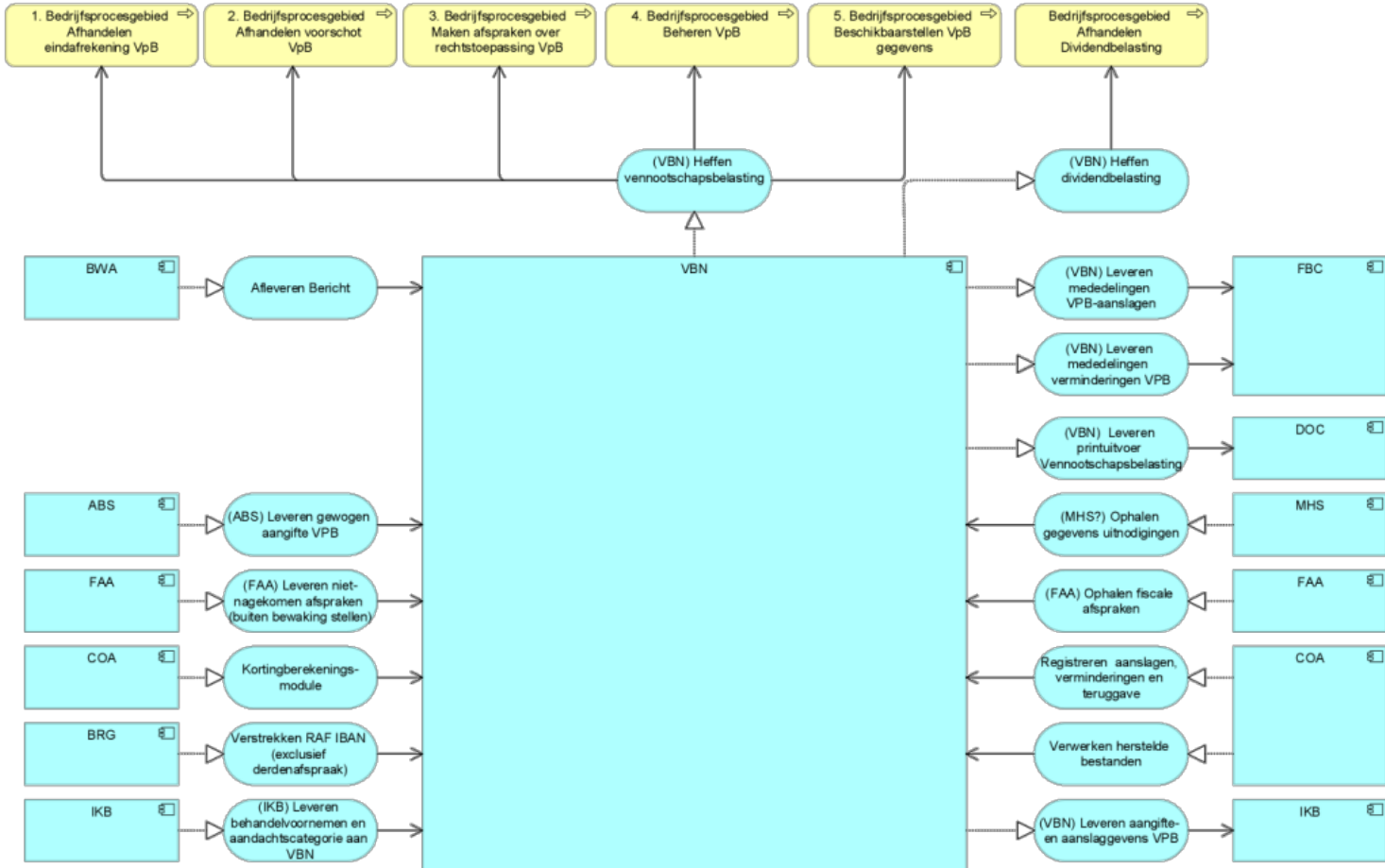
## VBN, the application

- supporting 25 business processes
- 1.400 end users in 2016
- COBOL, JCL and CICS/DB2 technology
- 1.713.931 lines of code in 2008
- **1.113.917 lines of code in 2015**
- 1,9 maintainability score
- 5.830 function points
- 1.500 function point changes per year
- > 22 connections
- **productivity < 12 h per fp**

# application context



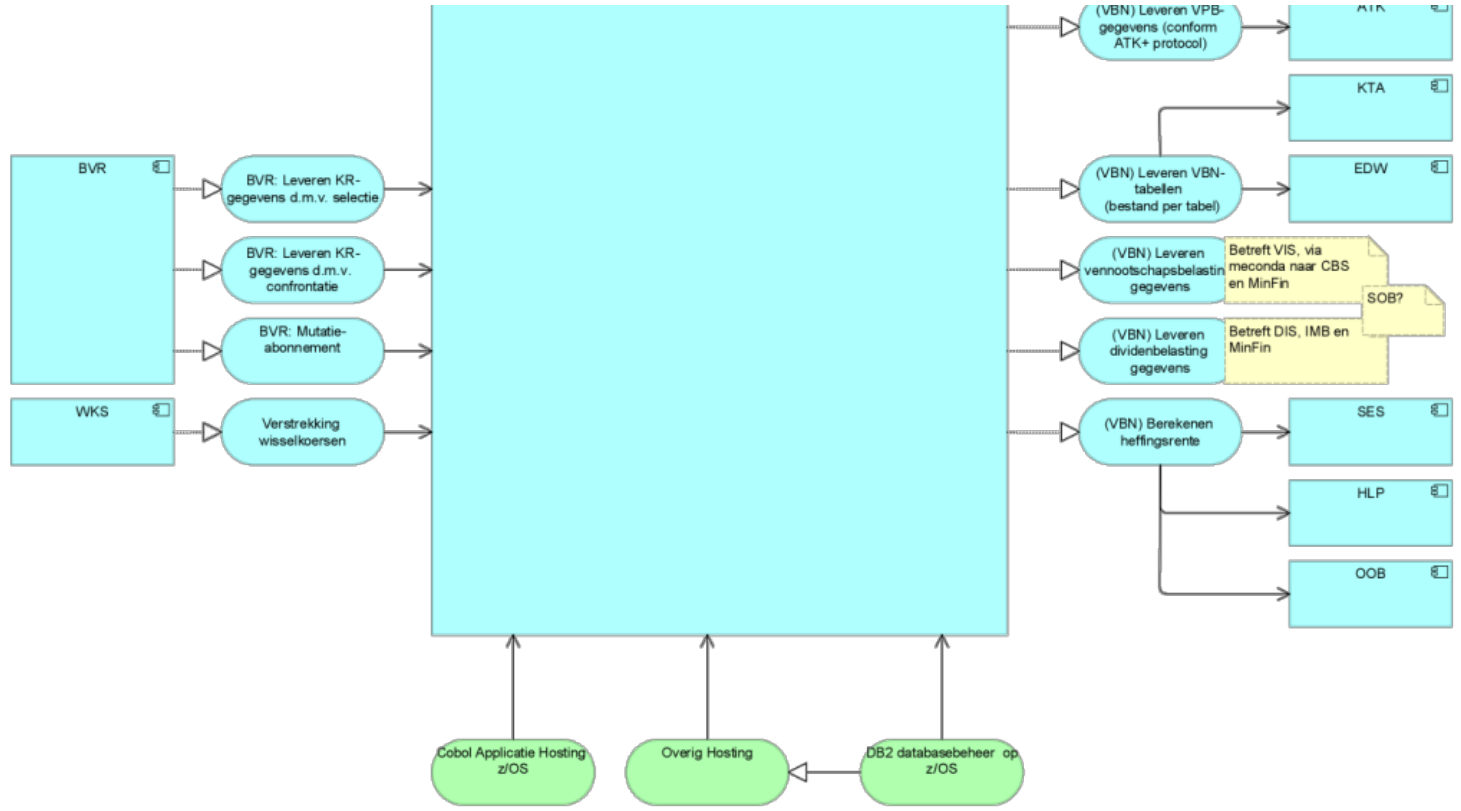
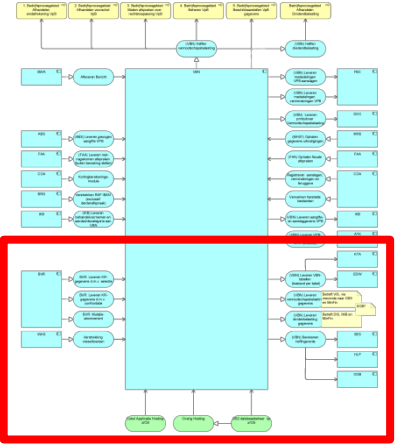
# corporate tax system (VBN)



# application context



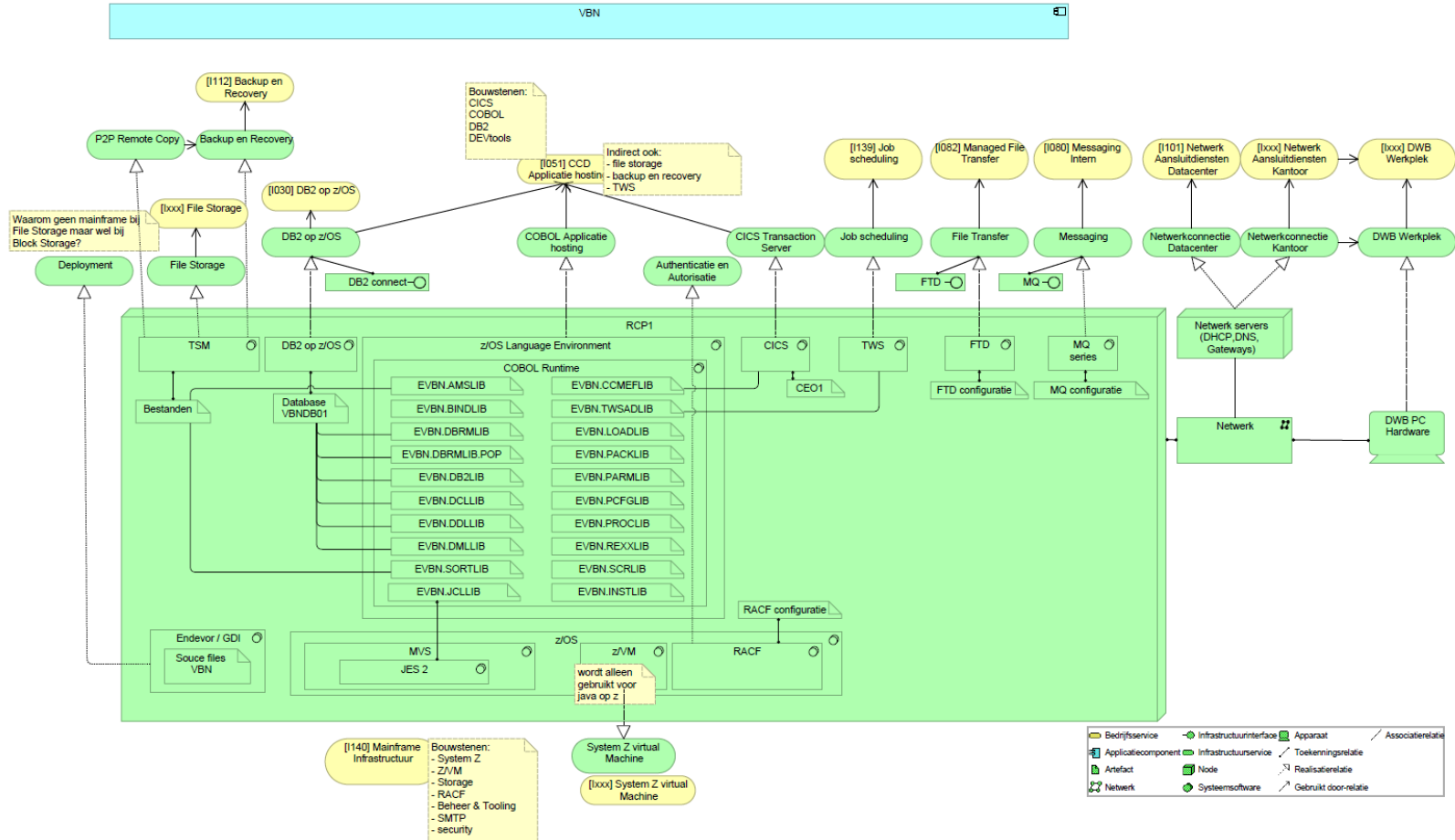
# corporate tax system (VBN)



# exploitation



# corporate tax system (VBN)



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## next steps



- add standards and guidelines for architecture at **project/system level**
- **combine meta models** for business, application and infrastructure into one
- extend the meta models with concepts for **information and data**
- add perspectives for **target architecture**
- ...



# challenges



- modeling of **scope** and **time**-aspects for baseline, transformation and target views
- **track changes** and progress in our models
- deal with **different levels of details** of architecture
  - enterprise level, domain (segment) level, project (system) level
- define and keep track of different **versions** of (technology) concepts
- support for **stereotypes, properties, validation rules** and **consistency checks**
- use of **repository** in a large scale IT environment
  - with 700+ model packages and 500+ architects and designers

# lessons learned



- iterate in small steps
- use a standardized meta model
- reuse existing data / metrics
- automate quality checks
- centralize standards, guidelines and support
- decentralize domain models
- visualize and publish
- have a sponsor (CIO)

# contact information



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