



VIND JE WEG DOOR DE EXCEL JUNGLE MET PYTHON EN R

Webinar woensdag 22 april 2020 | 10:00 – 10:30



TRIPLE A – DATA ANALYTICS



Scripting & machine learning



Hylke Niermeijer

Practice Lead Data Analytics



Visualisatie



Pieter Marres

Principal Data Analytics



Domeinkennis



HUISHOUDELIJKE MEDEDELINGEN



Microfoon op Mute



Vragen stellen via de chatfunctie



Veel plezier!



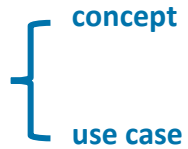
AGENDA



Waarom (geen) Excel?



Twee voorbeelden



Hoe ziet de weg naar succes er uit?

WAAROM EXCEL?

- 95% van de bedrijven gebruikt Excel voor haar financiële rapportage
- Excel heeft ca. 800 miljoen gebruikers
- Vaak de enige rekentool op standaard desktop omgevingen
- Iedereen denkt het te kunnen



WAAROM GÉÉN EXCEL?

- **Meer dan 90%*** van de spreadsheets bevat fouten
- **Slechts 13%** van sheets heeft een peer review of audit ondergaan
- **J.P. Morgan US\$ 6 miljard** door een kopieerfout in Excel



* <https://www.ft.com/content/0fdc6e62-2f23-11e5-91ac-a5e17d9b4cff>

VOOR ELKE KLUS DE JUISTE TOOL






OPLOSSINGEN

Rekenkern

Performance

Flexibiliteit

Onderhoud & development

	Ad hoc berekening of rapportage	Gestructureerd proces binnen afdeling	High performance rapportagestraat over afdelingen heen
	 spreadsheet	 scripting taal	 gecompileerde taal
	slow	medium	high
	high	medium	low
	individueel	binnen afdeling	IT of extern



VOORBEELD: EXCEL VS PYTHON/R



“Hoeveel provisie betaalden we afgelopen kwartaal aan onze agenten?”

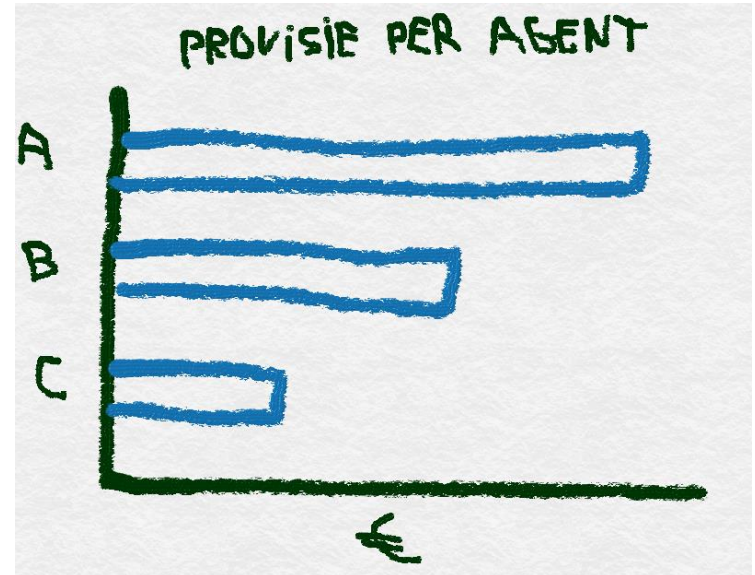


tabel met premieboekingen +
tabel met provisie% per agent



Gevraagd:

Grafiek met uitgekeerde provisie per agent



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	agent	kanaal	product	premie										
2	C2B	Online	Bronze Plan	46.15										
3	C2B	Online	Bronze Plan	17.55										
4	C2B	Online	Bronze Plan	94.00										
5	C2B	Online	Silver Plan	294.75										
6	C2B	Online	Annual Silver Plan	389.00										
7	CWT	Online	Rental Vehicle Excess Insurance	9.90										
8	CWT	Online	Rental Vehicle Excess Insurance	9.90										
9	CWT	Online	Rental Vehicle Excess Insurance	69.30										
10	CWT	Online	Rental Vehicle Excess Insurance	19.80										
11	CWT	Online	Rental Vehicle Excess Insurance	29.70										
12	CWT	Online	Rental Vehicle Excess Insurance	89.10										
13	JWT	Online	Value Plan	50.00										
14	RAB	Online	Value Plan	15.00										
15	JZI	Online	Basic Plan	26.00										
16	JZI	Online	Basic Plan	30.00										
17	JZI	Online	Basic Plan	22.00										
18	JZI	Online	Basic Plan	18.00										
19	JZI	Online	Basic Plan	35.00										
20	JZI	Online	Basic Plan	44.00										
21	JZI	Online	Basic Plan	22.00										
22	JZI	Online	Basic Plan	22.00										
23	ART	Online	24 Protect	75.96										
24	ART	Online	24 Protect	12.50										
25	ART	Online	24 Protect	4.99										
26	C2B	Online	Bronze Plan	47.00										

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	agent	pct_commissie													
2	ART	32.8%													
3	C2B	24.3%													
4	CBH	30.1%													
5	CCR	32.3%													
6	CSR	33.0%													
7	CWT	47.9%													
8	JWT	39.2%													
9	JZI	34.0%													
10	KML	37.3%													
11	LWC	61.7%													
12	RAB	39.3%													
13	TST	34.2%													
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	agent	kanaal	product	premie	pct_commissie								
2	C2B	Online	Bronze Plan	46.15	=VLOOKUP(A2; commissie!\$A\$1:\$B\$13; 2; FALSE)								
3	C2B	Online	Bronze Plan	17.55									
4	C2B	Online	Bronze Plan	94.00									
5	C2B	Online	Silver Plan	294.75									
6	C2B	Online	Annual Silver Plan	389.00									
7	CWT	Online	Rental Vehicle Excess Insurance	9.90									
8	CWT	Online	Rental Vehicle Excess Insurance	9.90									
9	CWT	Online	Rental Vehicle Excess Insurance	69.30									
10	CWT	Online	Rental Vehicle Excess Insurance	19.80									
11	CWT	Online	Rental Vehicle Excess Insurance	29.70									
12	CWT	Online	Rental Vehicle Excess Insurance	89.10									
13	JWT	Online	Value Plan	50.00									
14	RAB	Online	Value Plan	15.00									
15	JZI	Online	Basic Plan	26.00									
16	JZI	Online	Basic Plan	30.00									
17	JZI	Online	Basic Plan	22.00									
18	JZI	Online	Basic Plan	18.00									
19	JZI	Online	Basic Plan	35.00									
20	JZI	Online	Basic Plan	44.00									
21	JZI	Online	Basic Plan	22.00									
22	JZI	Online	Basic Plan	22.00									
23	ART	Online	24 Protect	75.96									
24	ART	Online	24 Protect	12.50									
25	ART	Online	24 Protect	4.99									
26	C2B	Online	Bronze Plan	47.00									

E2 =VLOOKUP(A2; commissie!\$A\$1:\$B\$13; 2; FALSE)

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	agent	kanaal	product	premie	pct_commissie								
2	C2B	Online	Bronze Plan	46.15	24.3%								
3	C2B	Online	Bronze Plan	17.55	24.3%								
4	C2B	Online	Bronze Plan	94.00	24.3%								
5	C2B	Online	Silver Plan	294.75	24.3%								
6	C2B	Online	Annual Silver Plan	389.00	24.3%								
7	CWT	Online	Rental Vehicle Excess Insurance	9.90	47.9%								
8	CWT	Online	Rental Vehicle Excess Insurance	9.90	47.9%								
9	CWT	Online	Rental Vehicle Excess Insurance	69.30	47.9%								
10	CWT	Online	Rental Vehicle Excess Insurance	19.80	47.9%								
11	CWT	Online	Rental Vehicle Excess Insurance	29.70	47.9%								
12	CWT	Online	Rental Vehicle Excess Insurance	89.10	47.9%								
13	JWT	Online	Value Plan	50.00	39.2%								
14	RAB	Online	Value Plan	15.00	39.3%								
15	JZI	Online	Basic Plan	26.00	34.0%								
16	JZI	Online	Basic Plan	30.00	34.0%								
17	JZI	Online	Basic Plan	22.00	34.0%								
18	JZI	Online	Basic Plan	18.00	34.0%								
19	JZI	Online	Basic Plan	35.00	34.0%								
20	JZI	Online	Basic Plan	44.00	34.0%								
21	JZI	Online	Basic Plan	22.00	34.0%								
22	JZI	Online	Basic Plan	22.00	34.0%								
23	ART	Online	24 Protect	75.96	32.8%								
24	ART	Online	24 Protect	12.50	32.8%								
25	ART	Online	24 Protect	4.99	32.8%								
26	C2B	Online	Bronze Plan	47.00	24.3%								

premie commissie

E2 =D2 * E2

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	agent	kanaal	product	premie	pct commissie	commissie							
2	C2B	Online	Bronze Plan	46.15	24.3%	=D2 * E2							
3	C2B	Online	Bronze Plan	17.55	24.3%								
4	C2B	Online	Bronze Plan	94.00	24.3%								
5	C2B	Online	Silver Plan	294.75	24.3%								
6	C2B	Online	Annual Silver Plan	389.00	24.3%								
7	CWT	Online	Rental Vehicle Excess Insurance	9.90	47.9%								
8	CWT	Online	Rental Vehicle Excess Insurance	9.90	47.9%								
9	CWT	Online	Rental Vehicle Excess Insurance	69.30	47.9%								
10	CWT	Online	Rental Vehicle Excess Insurance	19.80	47.9%								
11	CWT	Online	Rental Vehicle Excess Insurance	29.70	47.9%								
12	CWT	Online	Rental Vehicle Excess Insurance	89.10	47.9%								
13	JWT	Online	Value Plan	50.00	39.2%								
14	RAB	Online	Value Plan	15.00	39.3%								
15	JZI	Online	Basic Plan	26.00	34.0%								
16	JZI	Online	Basic Plan	30.00	34.0%								
17	JZI	Online	Basic Plan	22.00	34.0%								
18	JZI	Online	Basic Plan	18.00	34.0%								
19	JZI	Online	Basic Plan	35.00	34.0%								
20	JZI	Online	Basic Plan	44.00	34.0%								
21	JZI	Online	Basic Plan	22.00	34.0%								
22	JZI	Online	Basic Plan	22.00	34.0%								
23	ART	Online	24 Protect	75.96	32.8%								
24	ART	Online	24 Protect	12.50	32.8%								
25	ART	Online	24 Protect	4.99	32.8%								
26	C2B	Online	Bronze Plan	47.00	24.3%								

	A	B	C	D	E	F	G	H	I	J	K	L	M
F2						=D2 * E2							
1	agent	kanaal	product	premie	pct_commissie	commissie							
2	C2B	Online	Bronze Plan	46.15	24.3%	11.21							
3	C2B	Online	Bronze Plan	17.55	24.3%	4.26							
4	C2B	Online	Bronze Plan	94.00	24.3%	22.84							
5	C2B	Online	Silver Plan	294.75	24.3%	71.62							
6	C2B	Online	Annual Silver Plan	389.00	24.3%	94.53							
7	CWT	Online	Rental Vehicle Excess Insurance	9.90	47.9%	4.75							
8	CWT	Online	Rental Vehicle Excess Insurance	9.90	47.9%	4.75							
9	CWT	Online	Rental Vehicle Excess Insurance	69.30	47.9%	33.22							
10	CWT	Online	Rental Vehicle Excess Insurance	19.80	47.9%	9.49							
11	CWT	Online	Rental Vehicle Excess Insurance	29.70	47.9%	14.24							
12	CWT	Online	Rental Vehicle Excess Insurance	89.10	47.9%	42.71							
13	JWT	Online	Value Plan	50.00	39.2%	19.60							
14	RAB	Online	Value Plan	15.00	39.3%	5.90							
15	JZI	Online	Basic Plan	26.00	34.0%	8.83							
16	JZI	Online	Basic Plan	30.00	34.0%	10.19							
17	JZI	Online	Basic Plan	22.00	34.0%	7.48							
18	JZI	Online	Basic Plan	18.00	34.0%	6.12							
19	JZI	Online	Basic Plan	35.00	34.0%	11.89							
20	JZI	Online	Basic Plan	44.00	34.0%	14.95							
21	JZI	Online	Basic Plan	22.00	34.0%	7.48							
22	JZI	Online	Basic Plan	22.00	34.0%	7.48							
23	ART	Online	24 Protect	75.96	32.8%	24.90							
24	ART	Online	24 Protect	12.50	32.8%	4.10							
25	ART	Online	24 Protect	4.99	32.8%	1.64							
26	C2B	Online	Bronze Plan	47.00	24.3%	11.42							

premie commissie

	A	B	C	D	E	F	G	H	I	J	K	L	M
A1													
1	agent	kanaal	product	premie	pct_commissie	commissie							
2	C2B	Online	Bronze Plan	46.15	24.3%	11.21							
3	C2B	Online	Bronze Plan	17.55	24.3%	4.26							
4	C2B	Online	Bronze Plan	94.00	24.3%	22.84							
5	C2B	Online	Silver Plan	294.75	24.3%	71.62							
6	C2B	Online	Annual Silver Plan										
7	CWT	Online	Rental Vehicle Excess Insur										
8	CWT	Online	Rental Vehicle Excess Insur										
9	CWT	Online	Rental Vehicle Excess Insur										
10	CWT	Online	Rental Vehicle Excess Insur										
11	CWT	Online	Rental Vehicle Excess Insur										
12	CWT	Online	Rental Vehicle Excess Insur										
13	JWT	Online	Value Plan										
14	RAB	Online	Value Plan										
15	JZI	Online	Basic Plan										
16	JZI	Online	Basic Plan										
17	JZI	Online	Basic Plan										
18	JZI	Online	Basic Plan										
19	JZI	Online	Basic Plan	35.00	34.0%	11.89							
20	JZI	Online	Basic Plan	44.00	34.0%	14.95							
21	JZI	Online	Basic Plan	22.00	34.0%	7.48							
22	JZI	Online	Basic Plan	22.00	34.0%	7.48							
23	ART	Online	24 Protect	75.96	32.8%	24.90							
24	ART	Online	24 Protect	12.50	32.8%	4.10							
25	ART	Online	24 Protect	4.99	32.8%	1.64							
26	C2B	Online	Bronze Plan	47.00	24.3%	11.42							

Create PivotTable

Choose the data that you want to analyze

Select a table or range

Table/Range:

Use an external data source

Connection name:

Use this workbook's Data Model

Choose where you want the PivotTable report to be placed

New Worksheet

Existing Worksheet

Location:

Choose whether you want to analyze multiple tables

Add this data to the Data Model

	A	B	C	D	E	F	G	H	I	J
1	kanaal	Online								
2										
3	Row Labels	Sum of commissie								
4	ART	3121								
5	RAB	5088								
6	KML	8185								
7	JWT	15693								
8	LWC	47575								
9	JZI	69951								
10	C2B	159946								
11	CWT	187407								
12	Grand Total	496964								
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										

PivotTable Fields

Choose fields to add to report:

Search

- agent
- kanaal
- product
- premie
- pct_commissie
- commissie

MORE TABLES...

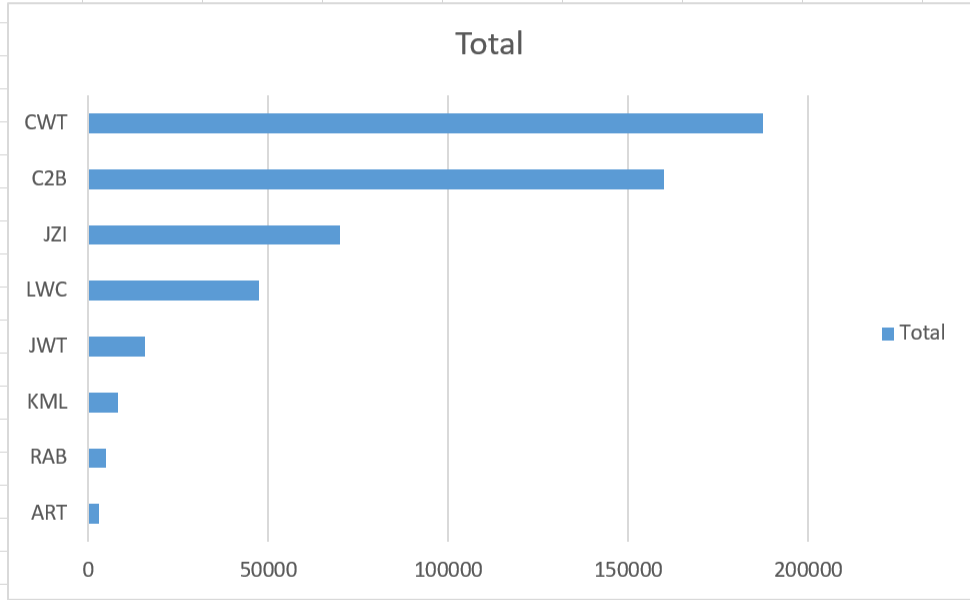
Drag fields between areas below:

FILTERS	COLUMNS
kanaal	
ROWS	VALUES
agent	Sum of commissie

Defer Layout Update UPDATE

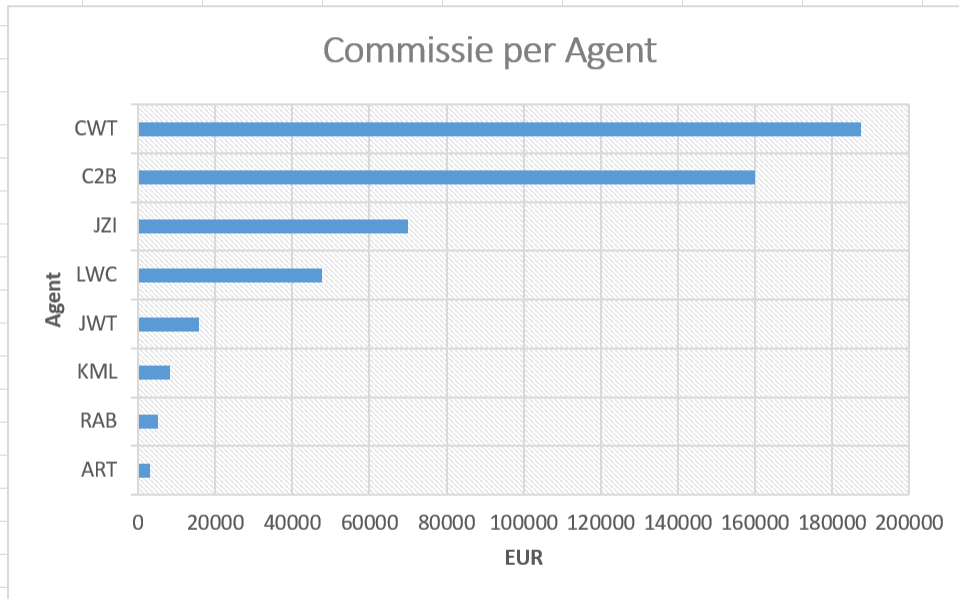
N24

	A	B
1	kanaal	Online
2		
3	Row Labels	Sum of commissie
4	ART	3121
5	RAB	5088
6	KML	8185
7	JWT	15693
8	LWC	47575
9	JZI	69951
10	C2B	159946
11	CWT	187407
12	Grand Total	496964



N25

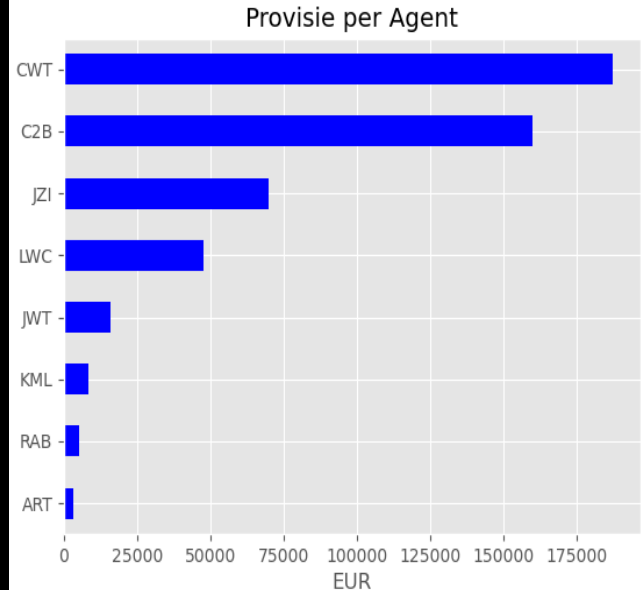
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	kanaal	Online												
2														
3	Row Labels	Sum of commissie												
4	ART	3121												
5	RAB	5088												
6	KML	8185												
7	JWT	15693												
8	LWC	47575												
9	JZI	69951												
10	C2B	159946												
11	CWT	187407												
12	Grand Total	496964												
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														



DATAFLOW VERTAALT ZICH 1-OP-1 NAAR DE CODE



```
premie.query("kanaal=='Online'")  
    .merge(commissie)  
    .assign(commissie=comm)  
    .groupby('agent')  
    .apply(np.sum)  
    .sort_values('commissie')  
    .plot(y='commissie', kind='barh')
```

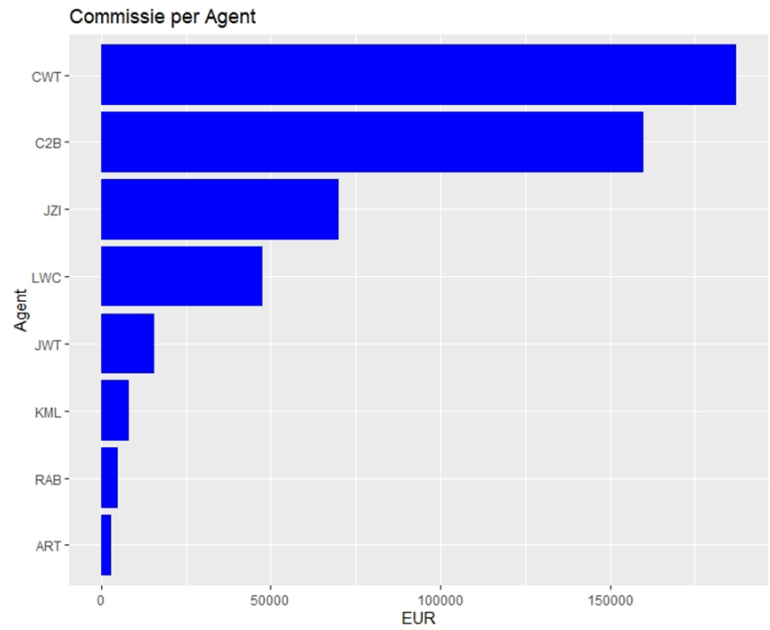


comm = lambda x: x.pct_commissie * x.premie

DATAFLOW VERTAALT ZICH 1-OP-1 NAAR DE CODE



```
premie %>% filter(kanaal=="online") %>%  
merge(commissie) %>%  
mutate(commissie = pct_commissie * premie) %>%  
group_by(agent) %>%  
summarise(commissie=sum(commissie)) %>%  
arrange(commissie)
```



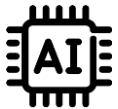
EN WAT LEVERT HET OP?



Minder fouten, efficiënter proces



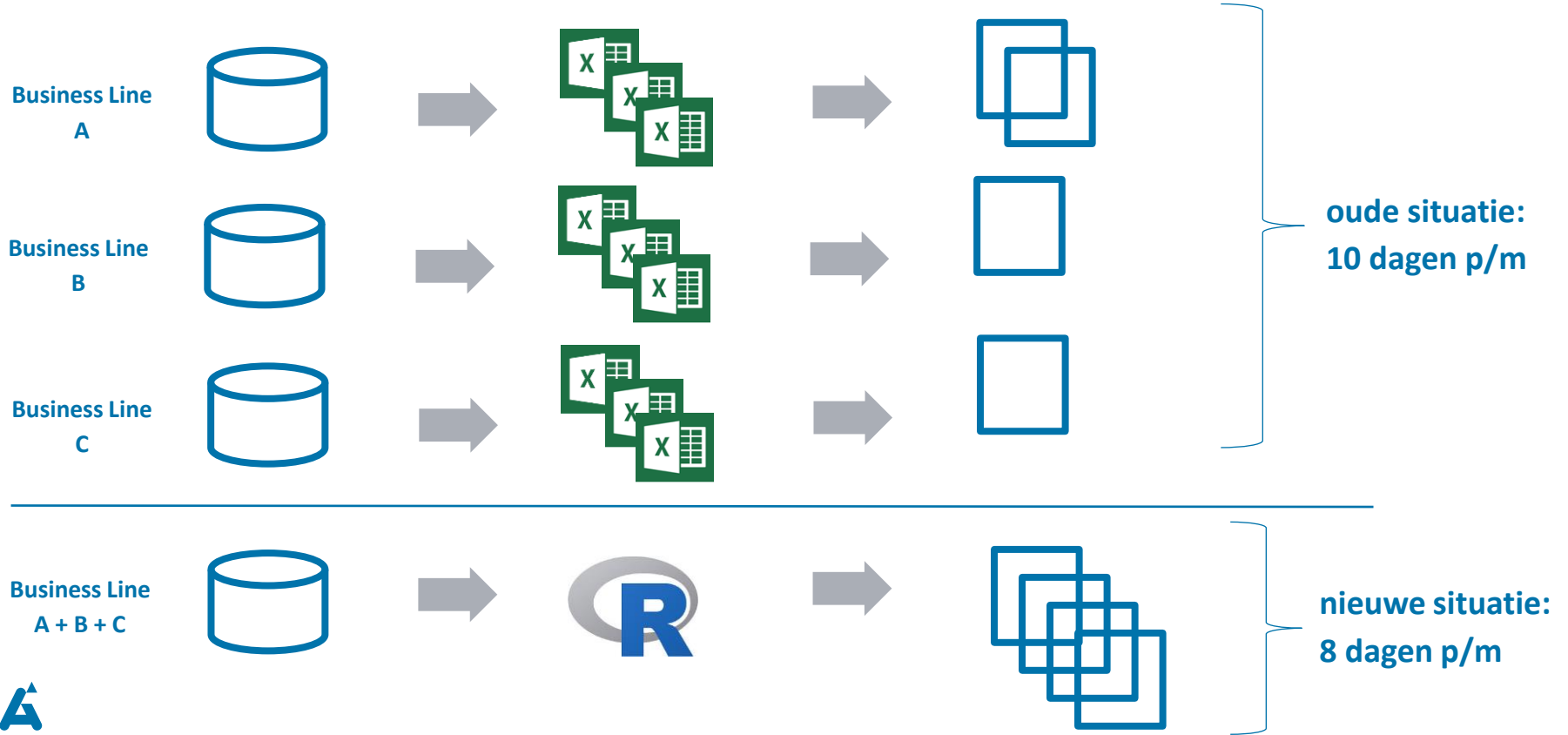
Generiek aanpasbaar aan nieuwe data



Data staan klaar voor ML toepassingen

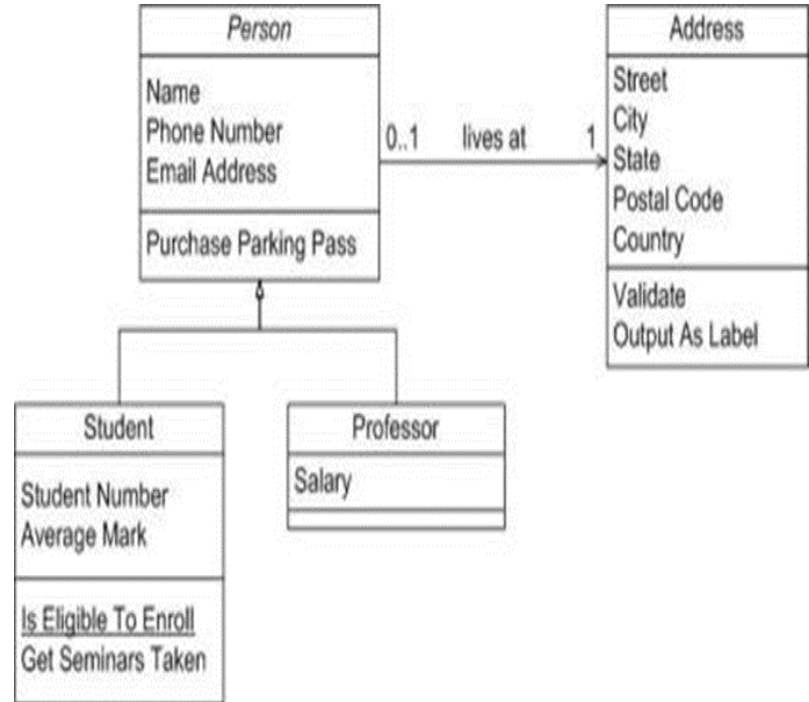


PROCES (RE)DESIGN



NORMALISEER DE DATA EERST!

- Elke tabel heeft een duidelijke verantwoordelijkheid.
- Elk datapunt is op precies 1 plek opgeslagen.
- Alleen opslaan wat dat nodig is, afgeleide gegevens niet opslaan.
- De records binnen een tabel zijn uniek identificeerbaar aan de hand van 1 kolom of een combinatie van kolommen. Hierdoor zijn tabellen eenvoudig koppelbaar.



EN WAT LEVERT HET OP?



Minder fouten, efficiënter proces



Generiek aanpasbaar aan nieuwe data



20% - 30% verlaging doorlooptijd



DE WEG NAAR SUCCES



1. Beschrijf eerst het proces dat je wilt verbeteren



2. Beleg de (data-)rollen



3. Kies passende scripting taal



4. Zet workflow (goed) op



5. Itereer naar succes!



KORTOM...



Scripting tools (zoals Python en R) helpen om processen reproduceerbaar, efficiënt, betrouwbaar en aantoonbaar goed werkend te automatiseren:

rekenprocessen

rapportageprocessen

data cleaning

data extractie processen

upload processen

data scraping



Beschrijf vandaag het proces dat u morgen wilt verbeteren. Het resultaat volgt daarna (bijna) vanzelf!





Triple A – Risk Finance B.V.

Hoogoorddreef 54 M

1101 BE Amsterdam Zuidoost

Hylke Niermeijer

Practice Lead Data Analytics

Hylke.niermeijer@aaa-riskfinance.nl

Tel +31 (0) 6 20 50 55 03

Pieter Marres

Principal Data Analytics

Pieter.marres@aaa-riskfinance.nl

Tel +31 (0) 6 83 49 27 10