



51° 36' 30.542"
3° 41' 0.084"
OOSTERSCHELDE DAM
ZEELAND
THE NETHERLANDS

LAAGVLIEGROUTE
HELIKOPTERS EN
PROPELLORVLEGTUIGEN
OEFENGEBIED
VLIEGEROPLEIDING.
MINIMUM VLIEGHOOGTE
75 METER (250 FEET)
BOVEN HINDERNISSEN.

51° 35' 54.846"
3° 40' 41.082"
BANAARDSTRAND
4675 BB

Hoe Big Data de ingenieurswereld verandert

Joeri Prins



Antea® Group

Understanding today.
Improving tomorrow.



ONTWIKKELING VAN TECHNOLOGIE

Voor 2000

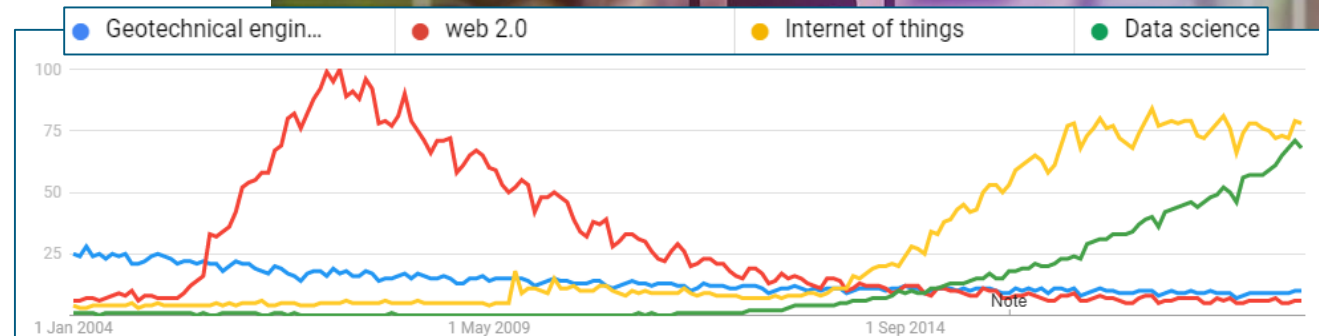
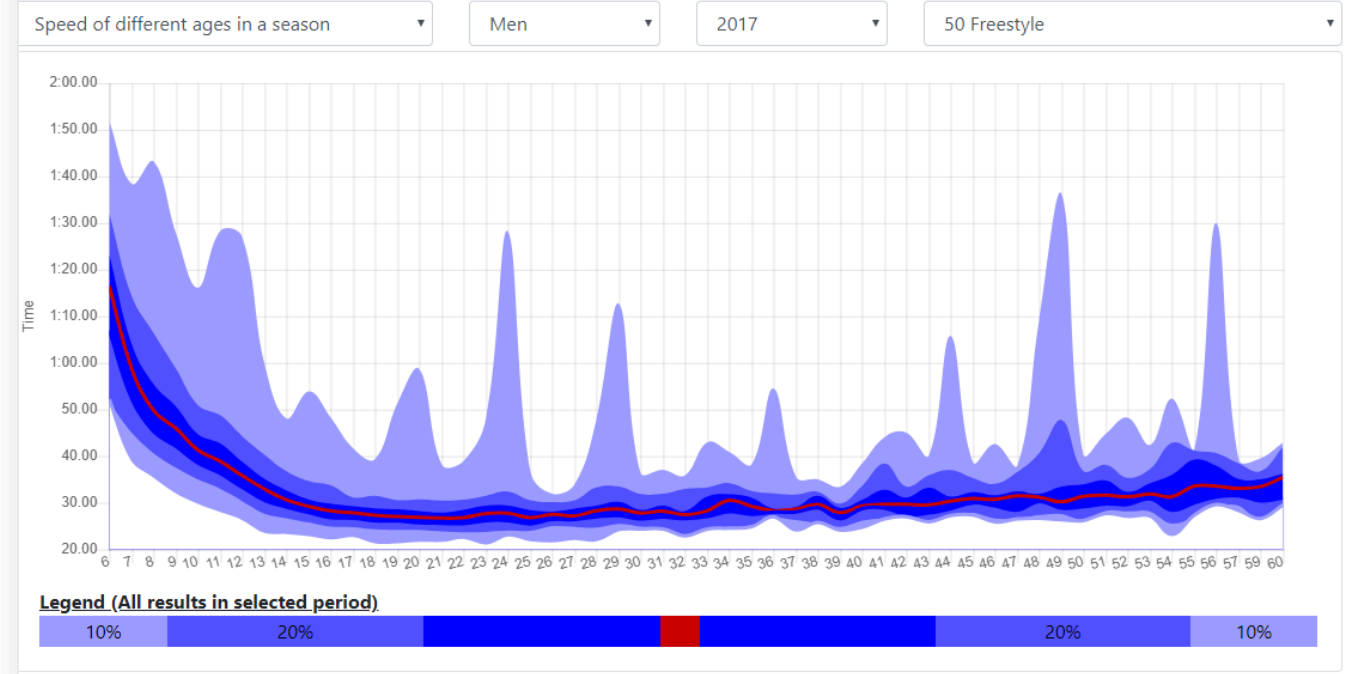
- Handwerk
- Beperkte mogelijkheden computergestuurd



Na 2000

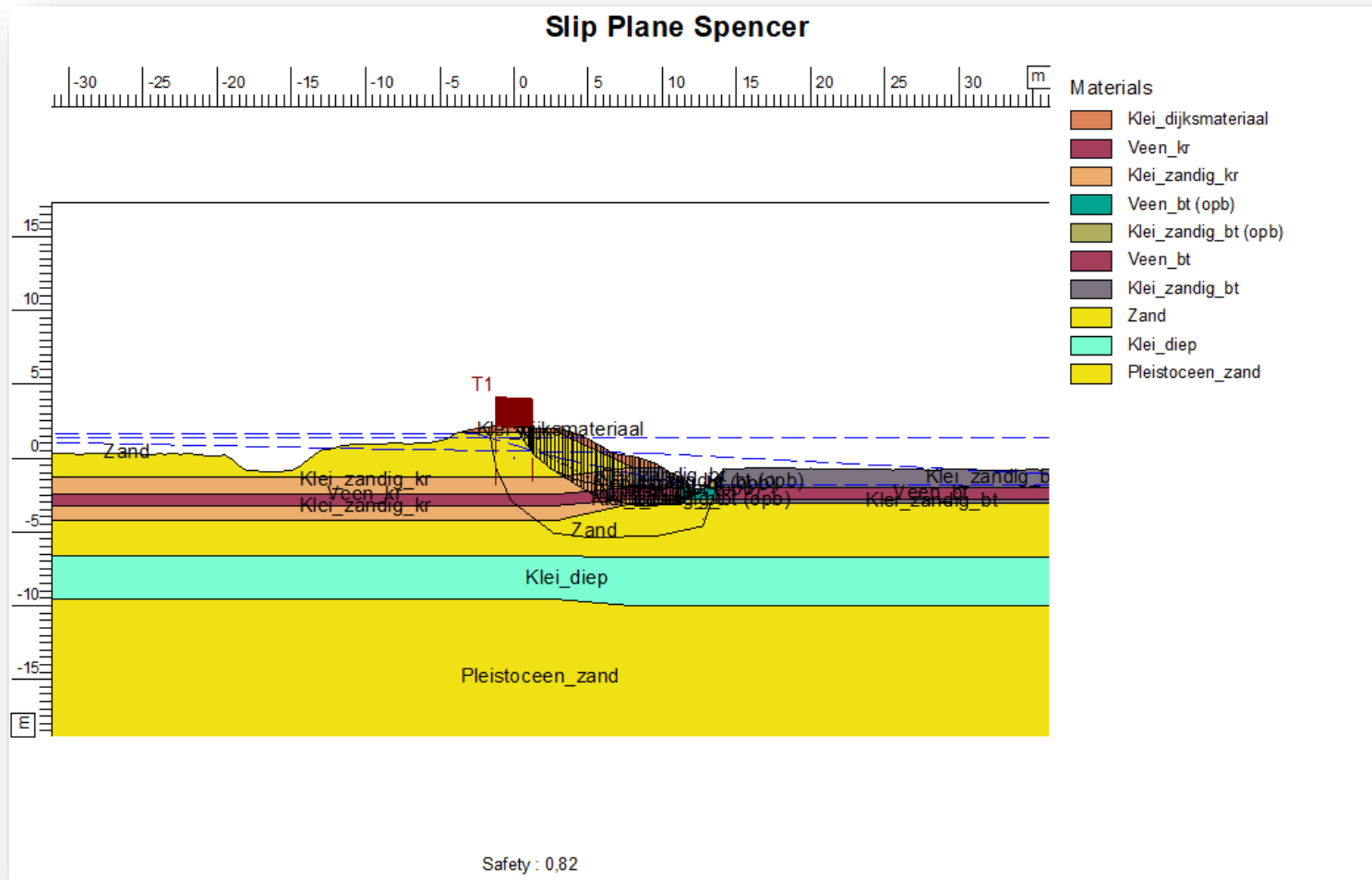
- Web 2.0
 - Statisch naar Dynamisch
- Geospatial standards
- IoT
- Data science

Statistics



GEOTECHNIEK DOOR DE JAREN HEEN

Geotechnische analyses



Mod.subgrade reaction : [kN/m ³]	Nr	Top	Bottom
	K[1]	2000.00	2000.00

Soil layer properties : klei/veen

Unit weight unsat. :	12.00 [kN/m ³]	Ka	: 0.52
Unit weight saturated :	14.00 [kN/m ³]	Ko	: 0.74
Cohesion :	5.00 [kN/m ²]	φp	: 2.10
Shaft friction delta :	10.00 [degrees]		
Phi :	15.00 [degrees]		

Mod.subgrade reaction : [kN/m ³]	Nr	Top	Bottom
	K[1]	1250.00	1250.00

Soil layer properties : sandlosa

Unit weight unsat. :	16.00 [kN/m ³]	Ka	: 0.21
Unit weight saturated :	17.00 [kN/m ³]	Ko	: 0.54
Cohesion :	0.00 [kN/m ²]	φp	: 4.65
Shaft friction delta :	15.00 [degrees]		
Phi :	27.50 [degrees]		

Mod.subgrade reaction : [kN/m ³]	Nr	Top	Bottom
	K[1]	2000.00	2000.00

Soil layer properties : sandvasta

Unit weight unsat. :	15.00 [kN/m ³]	Ka	: 0.25
Unit weight saturated :	20.00 [kN/m ³]	Ko	: 0.50
Cohesion :	0.00 [kN/m ²]	φp	: 5.74
Shaft friction delta :	20.00 [degrees]		
Phi :	30.00 [degrees]		

Mod.subgrade reaction : [kN/m ³]	Nr	Top	Bottom
	K[1]	12000.00	12000.00

Soil layer properties : sandloosd

Unit weight unsat. :	15.00 [kN/m ³]	Ka	: 0.21
Unit weight saturated :	20.00 [kN/m ³]	Ko	: 0.54
Cohesion :	0.00 [kN/m ²]	φp	: 4.65
Shaft friction delta :	15.00 [degrees]		
Phi :	27.50 [degrees]		

----- C O N S T R U C T I O N S T A G E 1 -----

Echo of the stage data

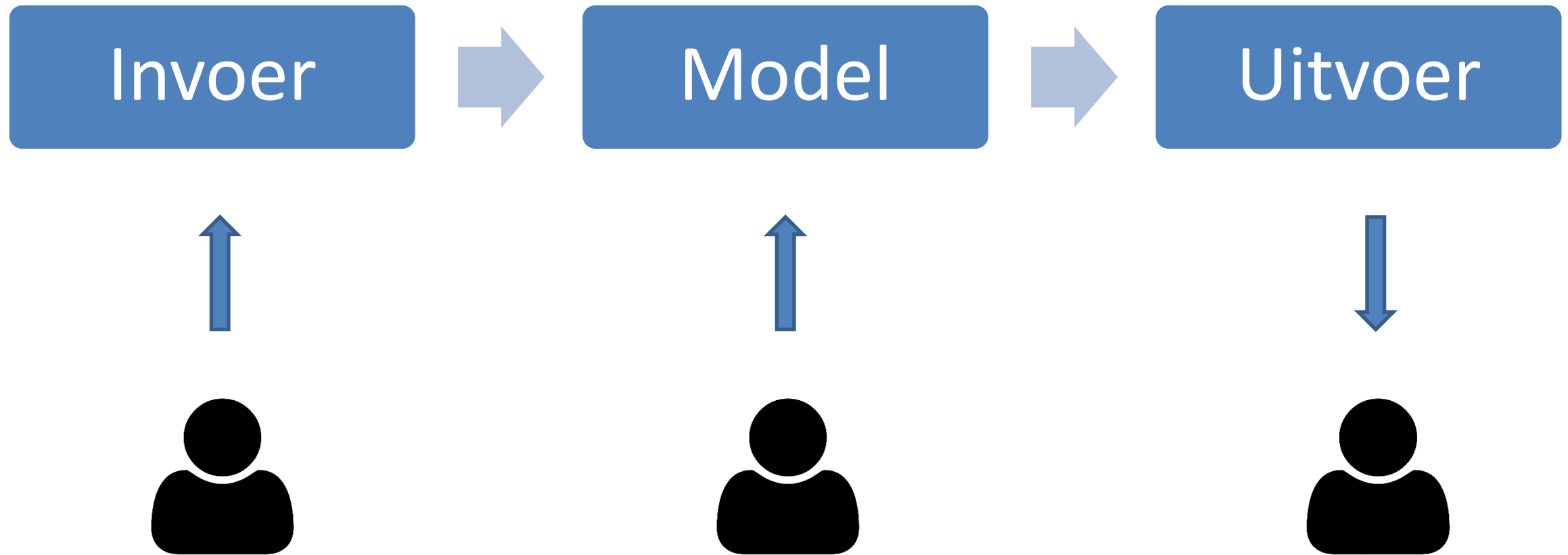
Surface LEFT : (Surface no. 1)			Surface RIGHT : (Surface no. 4)		
Point no.	X-coordinate [m] from FILE	Y-coordinate [m] from level	Point no.	X-coordinate [m] from FILE	Y-coordinate [m] from level
1	0.00	1.00	1	0.00	-1.00
2	7.50	2.50			
3	20.00	2.50			

Water level left / right : 0.50 / -0.75 [m]

Soil properties LEFT & RIGHT : (Soil profile links)

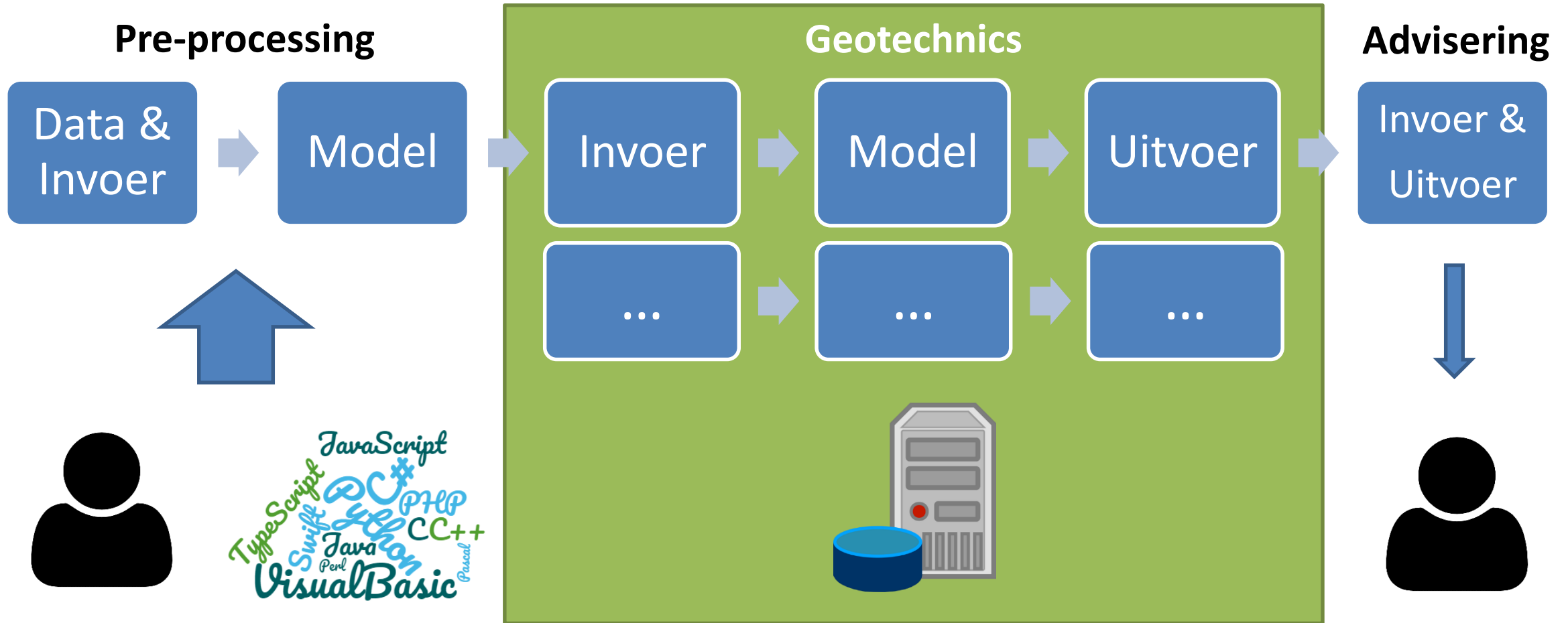
Layer no	Soil layer Name	Level top side soil layer [m]	Wosp-T [kN/m ²]	Wosp-B [kN/m ²]
1	klei/veen	2.50	0.00	0.00
2	klei/veen	0.00	0.00	-12.50
3	sandlosa	-2.25	-12.50	-12.50
4	sandvasta	-2.75	-12.50	-12.50
5	sandloosd	-7.00	-12.50	-12.50

Wat is het proces?



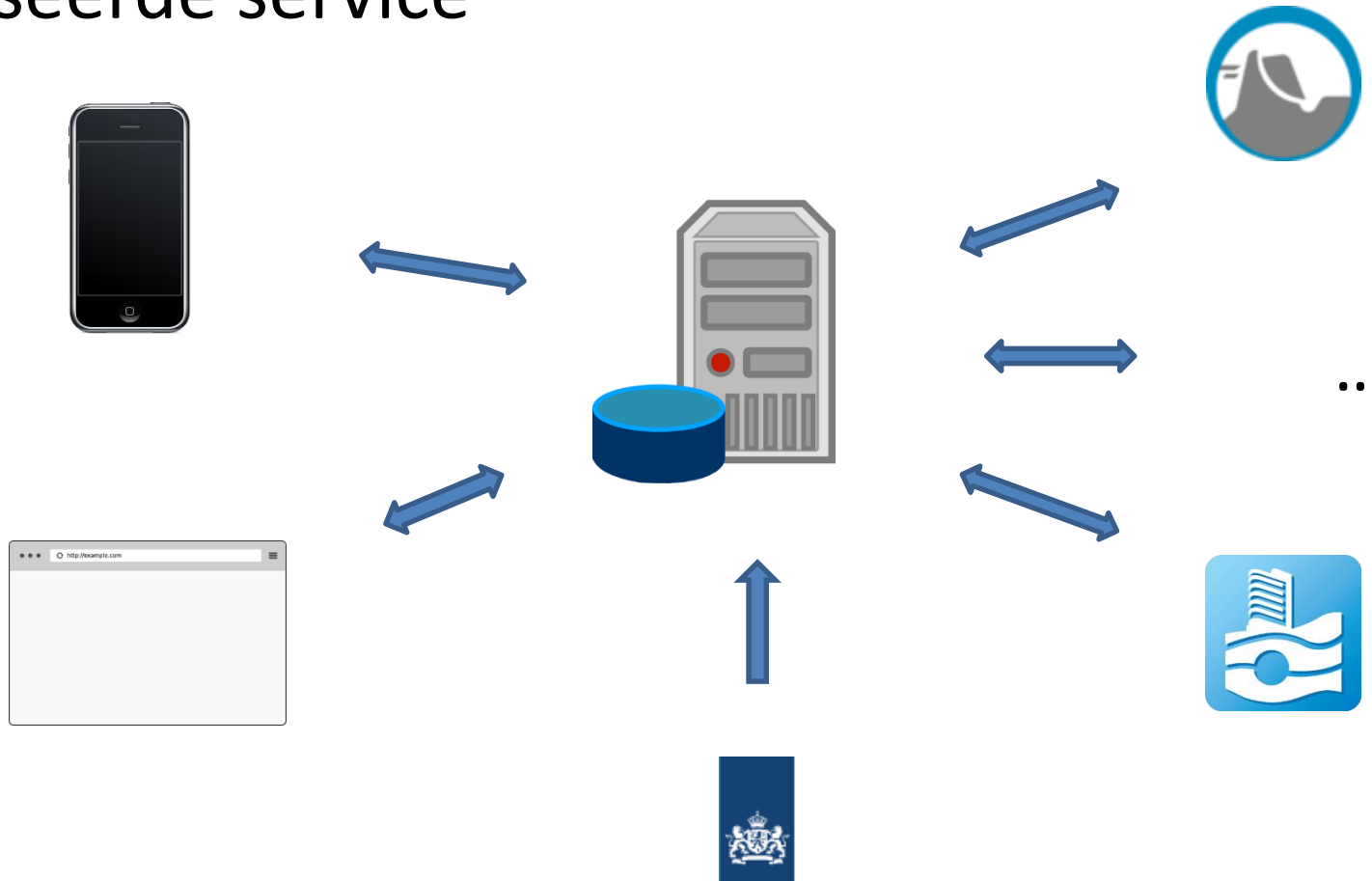
GEOTECHNIEK DOOR DATA GESTUURD

Wat is ons proces?



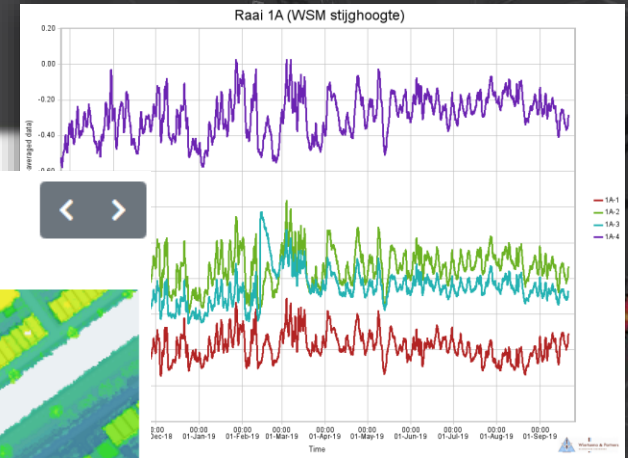
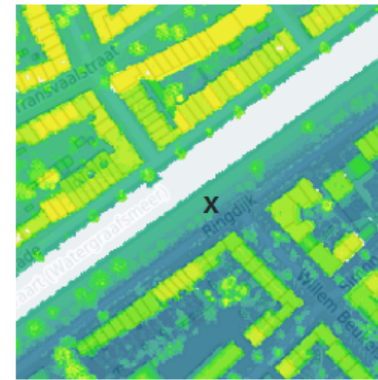
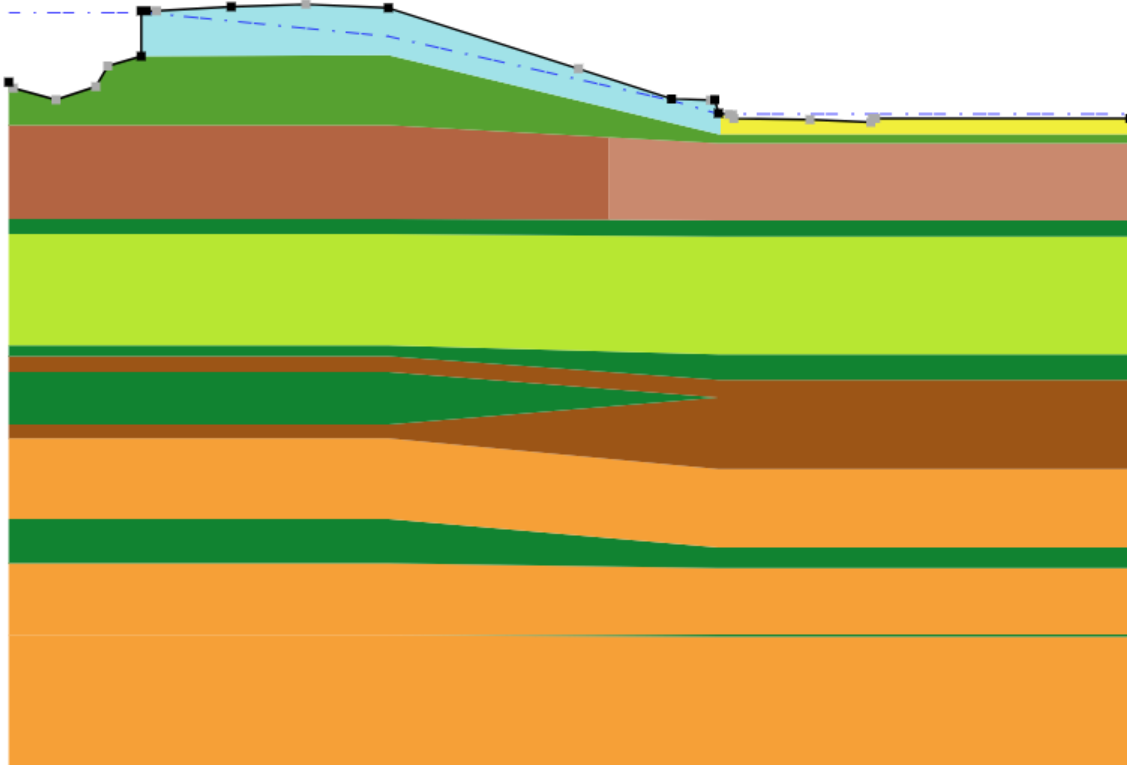
Geotechnics - Platform

- Web gebaseerde service

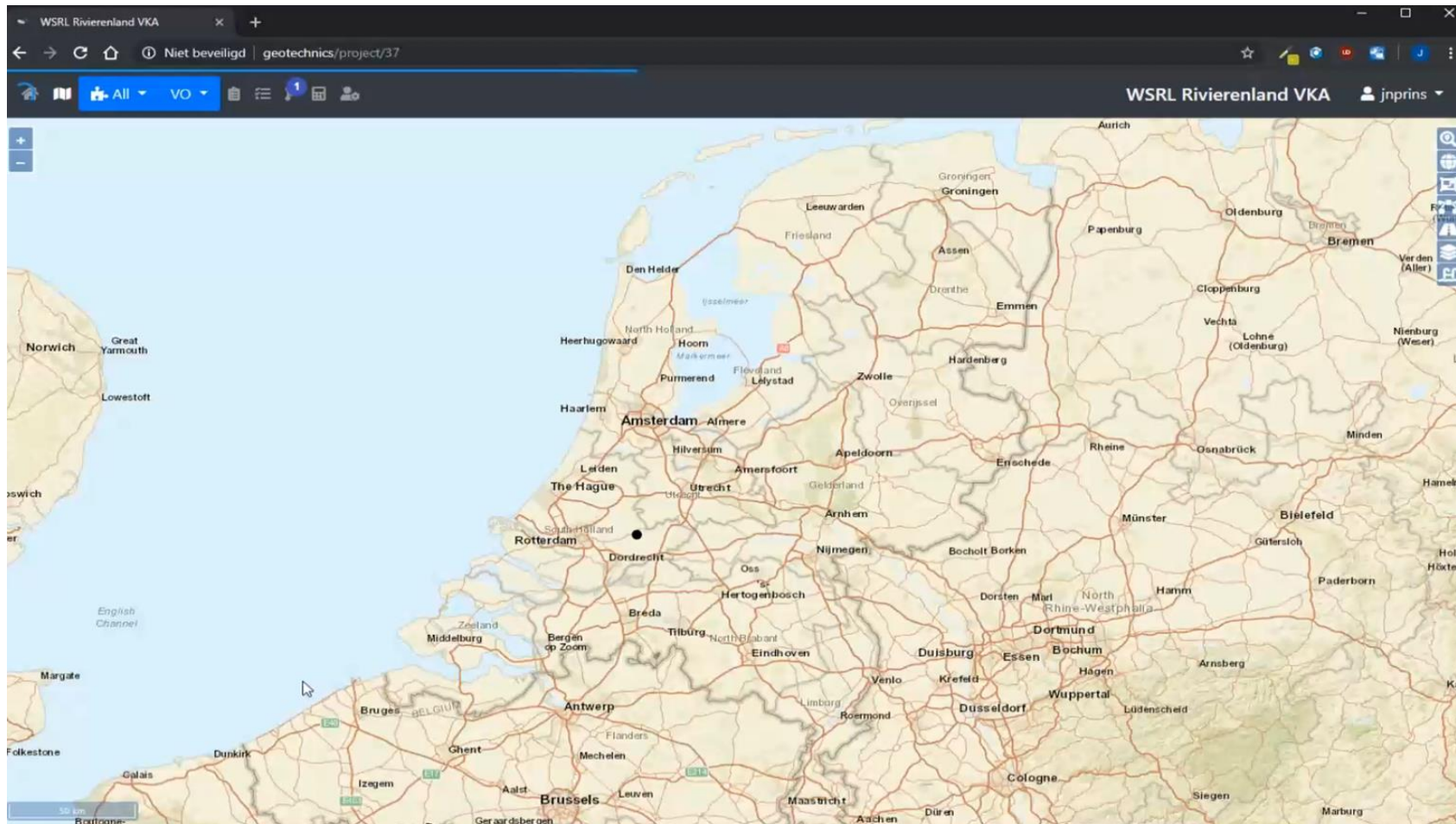


Geotechnics – Digital Twin

A117 / DWP 800

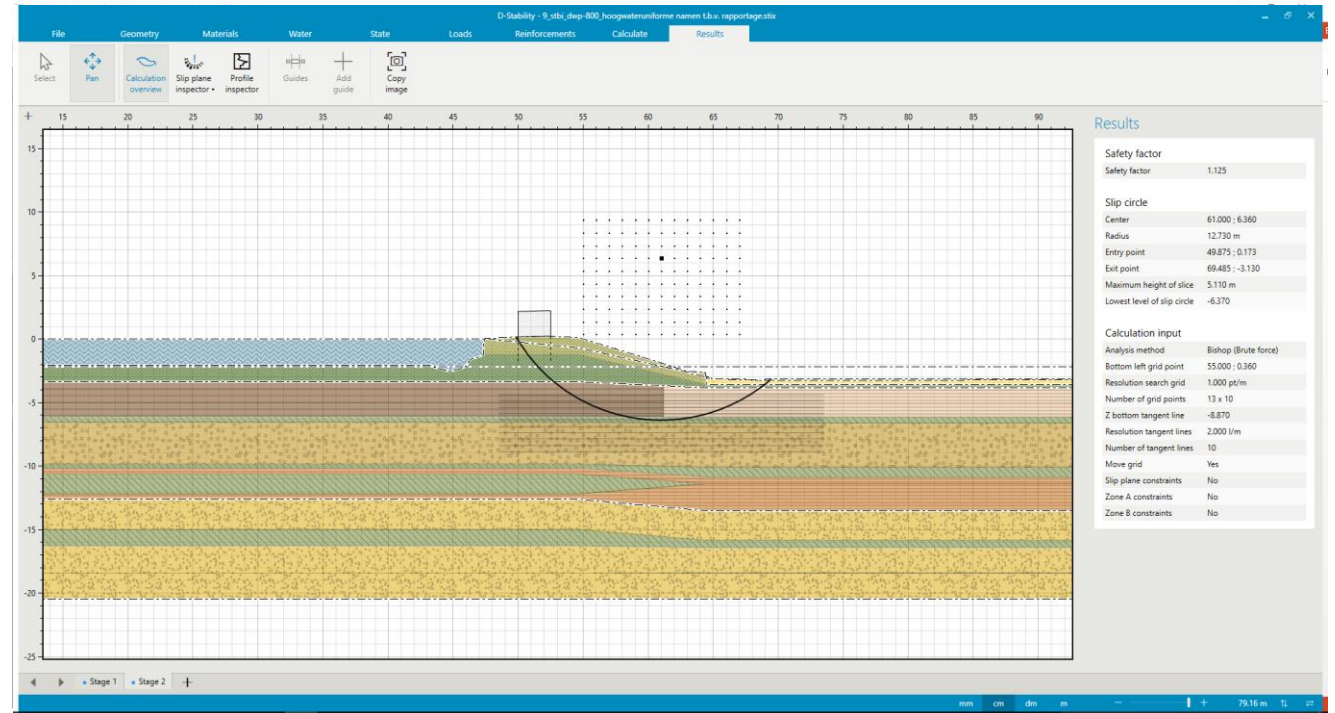


Geotechnics



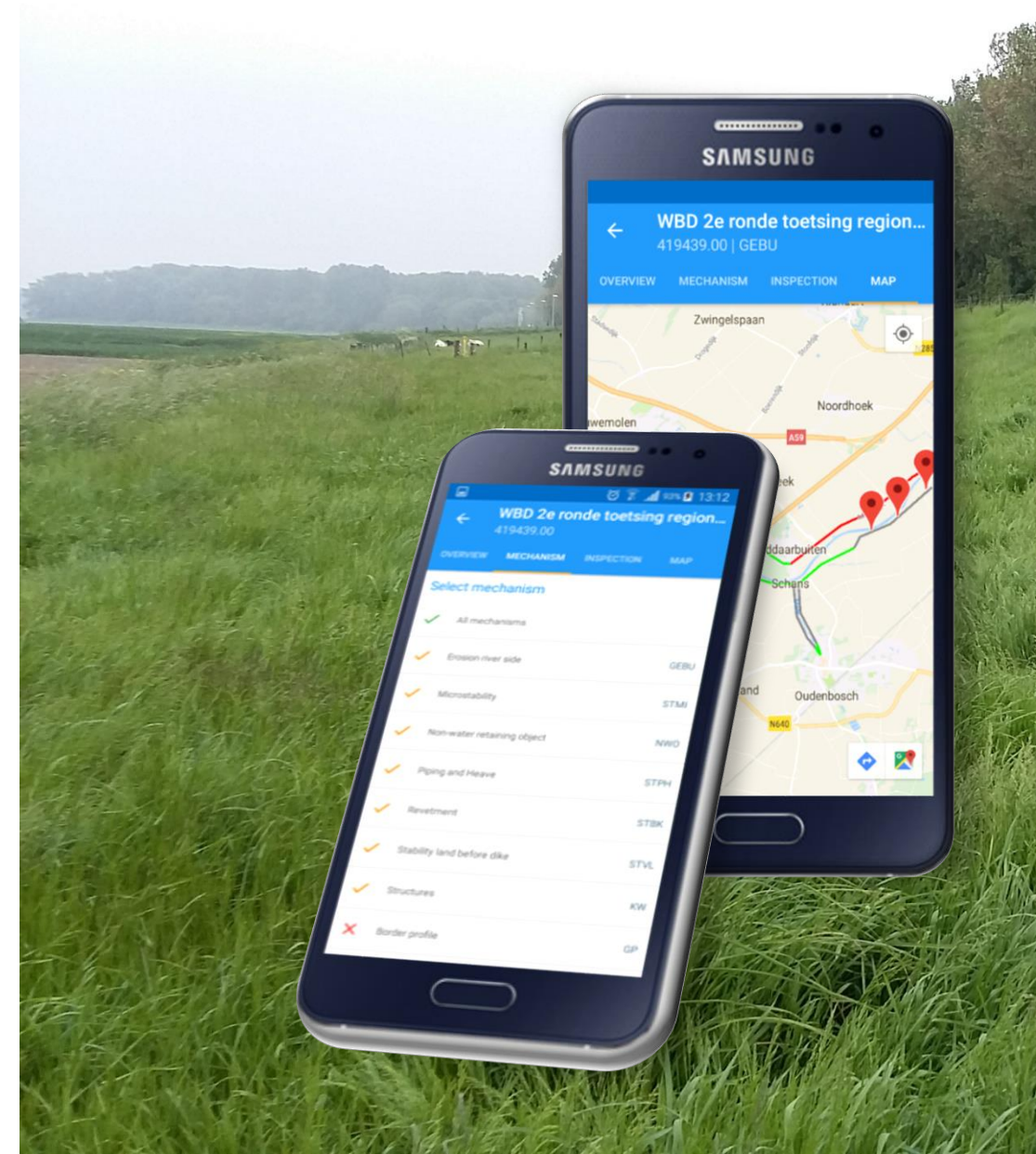
Geotechnics - Export

- D-Geo Stability
- Plaxis 2D
- Plaxis 3D
- D-Sheet Piling
- D-Stability
- Etc...



Geotechnics - Mobiel

- Monitoren
- Werkzaamheden in het veld
 - Veldwerkapp



Conclusie

- Ingenieurswerkzaamheden verschuiven langzaam
- Voldoende beschikbare data kan werk versimpelen
- Bewaken van kwaliteit is extra belangrijk
- Meer tijd beschikbaar voor maatwerk



antea[®]group

Joeri Prins

E: joeri.prins@anteagroup.com

[in](https://www.linkedin.com/in/joeriprins) : [linkedin.com/in/joeriprins](https://www.linkedin.com/in/joeriprins)