

THE USE OF EXISTING DATA TO DESIGN A SOIL INVESTIGATIONS PROGRAM

THE TYPICAL CYCLE OF FIELD DATA

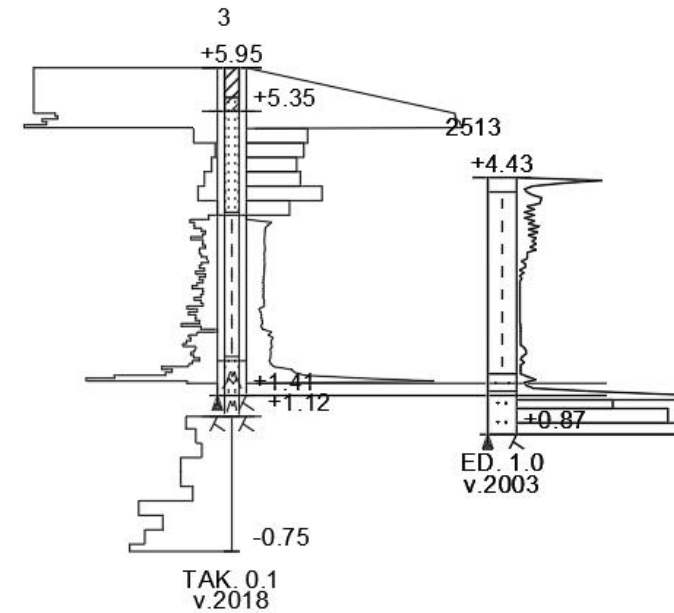


Should we leave record everything we can?

Microphone on the rods...? Seismic units on the rods?

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TY 41259 teboil
PK - - - -
TX 'Vuosaari 3' (1)
TT PO - 0 - -
XY 6679088.20 25509448.70 +5.95 140520
0.10 - Ta
HM asfaltti 0-0,10
0.60 -
HM murske
-1 JA
TT HP - 0 - -
XY 6679088.20 25509448.70 +5.95 140520
0.63 11.567 255 P Hk
0.67 11.587 225 P
0.71 11.662 222 P
0.75 11.835 243 P
0.79 11.904 237 P
0.83 12.016 268 P
0.84 0.454 35 P
1.04 17 33 H
1.24 16 3 H
1.44 14 8 H
1.64 15 18 H
1.84 21 27 H
2.04 12 0 H
2.10 0 12 H Sa
2.14 1.408 38 P
2.18 1.195 32 P
2.22 1.050 32 P
2.26 1.027 22 P
2.30 1.028 17 P
2.34 1.023 20 P
2.38 1.000 37 P
    
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NovaPoint Soundings

RAMBOLL Työ 1576041259

PORAKONEKAIRAUS - KAIRAUSPÖYTÄKIRJA

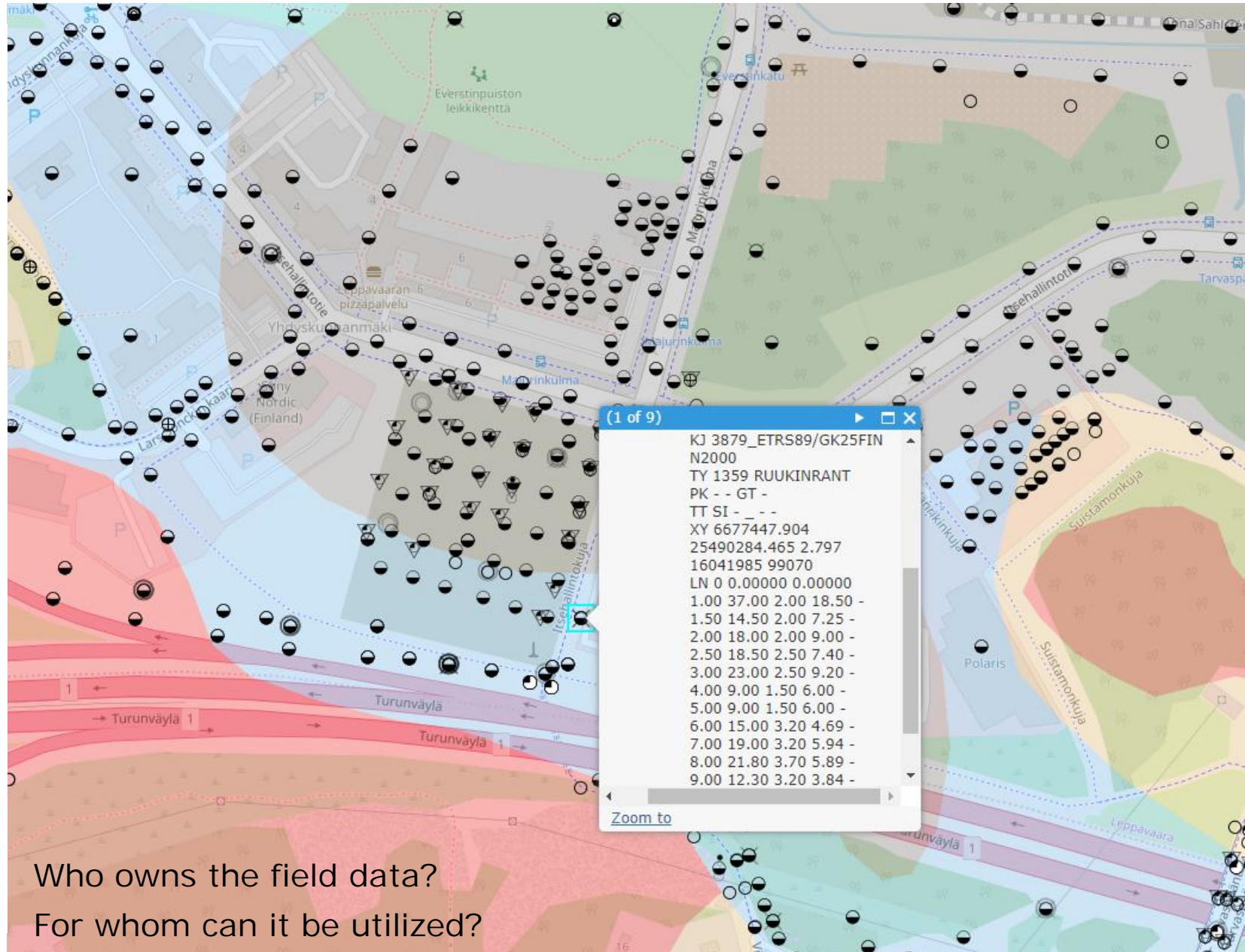
PISTE N:o 03 PI _____

Mp / Vp _____ SUOJAP. ø mm _____ / ILMAN SUOJAP.

KRUUNU ø mm 64

MAAKAIRAUS			KALLIOKAIRAUS		
SYV. VÄLI	AIKA	MAALAJI	SYV. VÄLI	AIKA	HUOM!
0-0.1		ASF.			
0.1-0.4		MURSKES			
0.4-2.0		ku			
2.0-4.1		Sg			
4.1-4.83		KKUR			
4.83		Kapinla			
					pinna silloisesta

- Kallioma, maanpeite enintään 1 m (yleensä moreenia) (Ka)
- Rapakallio (RpKa)
- Rakka (RaKa)
- Lohkareita (Lo)
- Kiviä (Ki)
- Hiekkamoreeni (Mr), Soramoreeni (SrMr)
- Hienoainemoreeni (HMr)
- Sora (Sr)
- Hiekka (HK)
- liejuinen Hiekka, humuspitoisuus 2-6 % (LjHK)
- karkea Hieta (KHT)
- liejuinen Hieta (karkea), humuspitoisuus 2-6 % (LjHT)
- hieno Hieta (HHT)
- liejuinen hieno Hieta, humuspitoisuus 2-6 % (LjHHT)
- Hiesu (Hs)
- Liejuhiesu, humuspitoisuus 2-6 % (LjHs)
- Savi (Sa)
- Liejusavi, humuspitoisuus 2-6 % (LjSa)
- Lieju, humuspitoisuus yli 6 % (Lj)
- Rahkaturve (St)
- Saraturve (Ct)
- Turvetuotantoalue (Tu)



(1 of 9)

KJ 3879_ETRS89/GK25FIN
 N2000
 TY 1359 RUUKINRANT
 PK - - GT -
 TT SI - - -
 XY 6677447.904
 25490284.465 2.797
 16041985 99070
 LN 0 0.00000 0.00000
 1.00 37.00 2.00 18.50 -
 1.50 14.50 2.00 7.25 -
 2.00 18.00 2.00 9.00 -
 2.50 18.50 2.50 7.40 -
 3.00 23.00 2.50 9.20 -
 4.00 9.00 1.50 6.00 -
 5.00 9.00 1.50 6.00 -
 6.00 15.00 3.20 4.69 -
 7.00 19.00 3.20 5.94 -
 8.00 21.80 3.70 5.89 -
 9.00 12.30 3.20 3.84 -

Zoom to

Who owns the field data?
 For whom can it be utilized?

COMPUTER AIDED DESIGN FOR SOIL INVESTIGATIONS PROGRAM

Step 1

1. User defines logical rules for soundings
2. User defines route and soil maps
3. User defines which old soundings are accepted as replacements of new ones

Step 2

4. Program calculates sampling scheme based on the rules
5. Output to design program

Step 3

6. User inspects the results
7. If needed user refines results

Example:

- Rules for Clay:
 - Max 30 m distance between static-dynamic penetration soundings (or different type)
 - At least 1 sounding for each soil area
 - Soil samples and shear vane tests for each 200 m - same points as other soundings
 - Use 10 meter buffer at the edge of soil area
- Rules for Sand:
 - ...

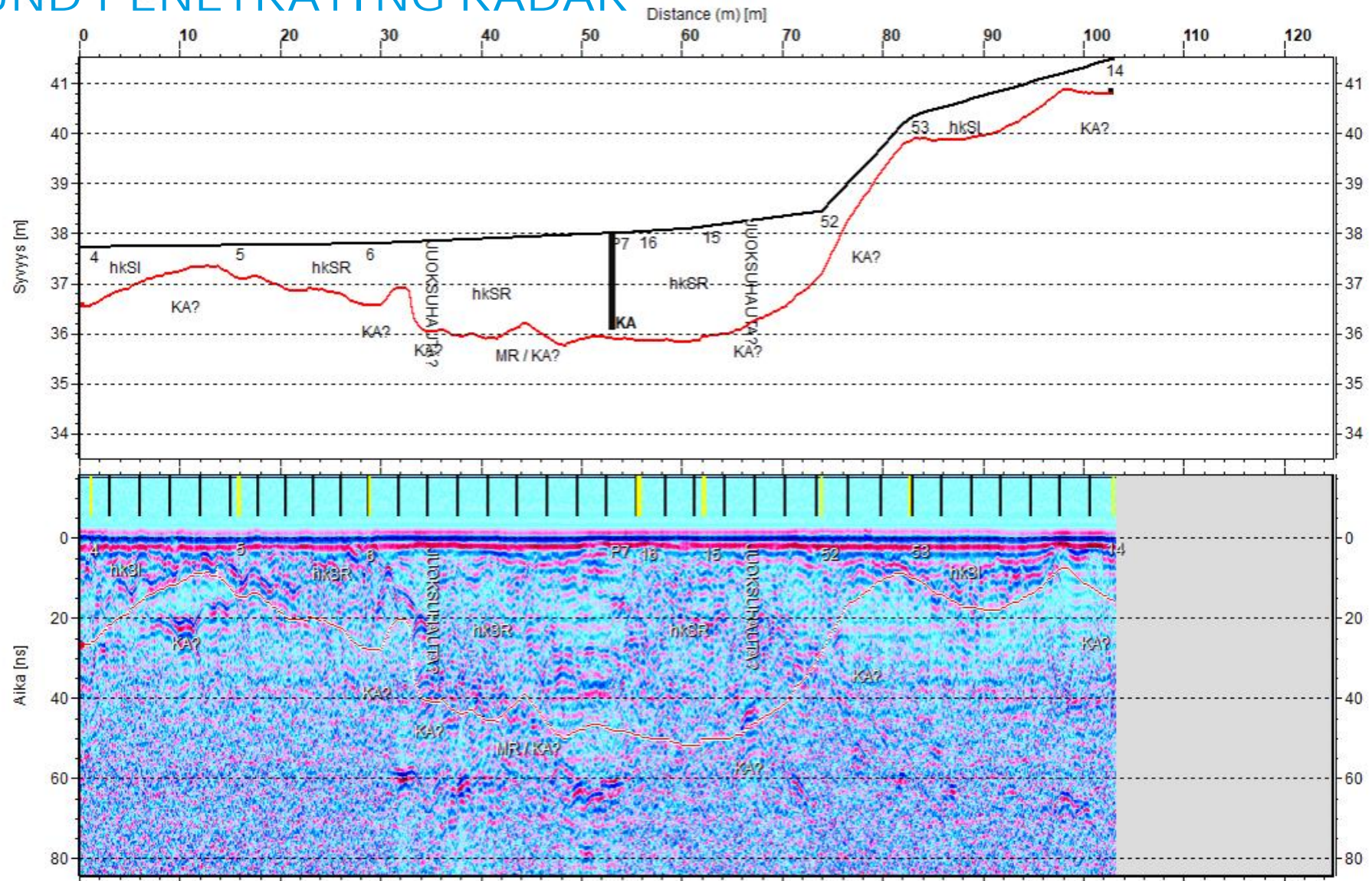
Type of soil for the program is now taken from soil maps, but will be extended to automatically take into account the results of old soundings



THE SMALL THINGS WE CAN START TOMORROW ... IF WE WANT TO

- Design the field measurements to back-up and improve quality of drone measurements.
- Collect and analyse all of the data (clustering, neural networks, statistics, ...) - the computers computing capacity has developed exponentially since invention of weight sounding ... The so called "big-data" in field measurements is peanuts.
- Develop the programs to aid simple tasks (pareto principle) – leave time for creative work and solve the difficult half ... engineer is human – let it do the human work.
- Designers, collect accurate spatial field data (ArcGis collector)
- Urban planning – do in advance more accurate soil investigations (soundings, sampling, geophysics) to support sustainable and resource wise design and construction. With statistical analysis every point has a meaning even though it is not used for the current project ... and for 100 % certain it will be used in near future when urbanisation will catch up the area

GROUND PENETRATING RADAR



THANK YOU