

October 16, 2018

# Sewer inspection manual

## - Upgrade project in Finland

No-Dig Conference, Cape Town, 8.10.2018

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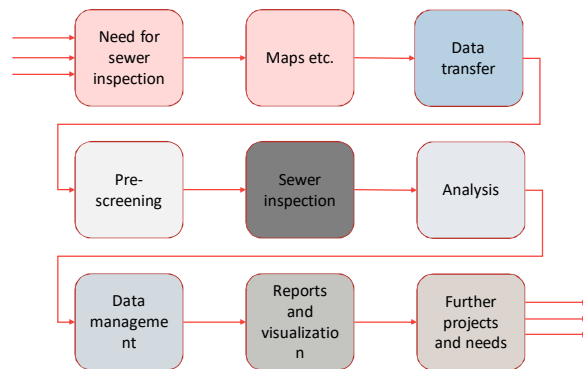
Tiira Lampola, Senior Specialist, Water Engineering

## Sewer inspection in Finland

- Most of the inspection projects done with a CCTV
- Less than 4 % of sewers' length inspected annually
  - *In Finland approx. 50,000 km, in Sweden approx. 60,000 km*
- In general, up to around 60 % of inspected pipes are in good condition
  - *No actual need to use the most precise methods in all pipes*
- Process needs further development
  - *Possibilities to automate some parts*
  - *Pre-defined "must-haves" and other elements*
  - *Automated data transfer*
  - *Etc.*

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## Process for sewer inspection methods



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## Upgrade project of sewer inspections in Finland


- Finnish Water Association (FIWA), water utilities, contractors and consultancies
  - *Active project ended Sept. 30 2018; now only minor changes to be done*
- The main goal is to increase water utilities' interests and knowledge on the subject
  - *Pre-screening methods*
  - *Different camera options*
  - *Laser scanning*
  - *Acoustic techniques*
  - *Electrical and magnetic techniques*
  - *Both for pressure lines and gravitational lines*
  - *Tunnels*
  - *Manholes*

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### Automated analysis of sewer inspections

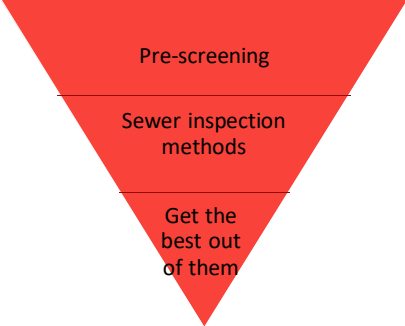
- Digital images (DigiSewer®)
- Same methods that are in use in industrial processes
- In Helsinki area (HSY) were made two poc's
  - *Continuous work after the poc with one company*
- International interests in the subject are found
  - *Several project in many countries*
  - *Different images and or methods*



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### Sewer inspection process

#### How the process should be driven



- Possibility to inspect 100 % of the network
- Currently less than 4 % annually
- The more is inspected the better results and knowledge for management

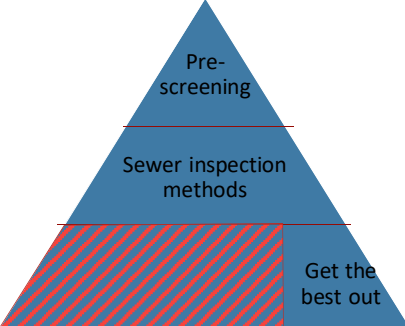
- Criticality assessment
- Other data-analyses
- Zoom-inspections
  - CCTV
- Laser scanning etc.
- Acoustic methods
- Electrical methods
- All interested parties
  - Data transfer
  - Software
  - Open source



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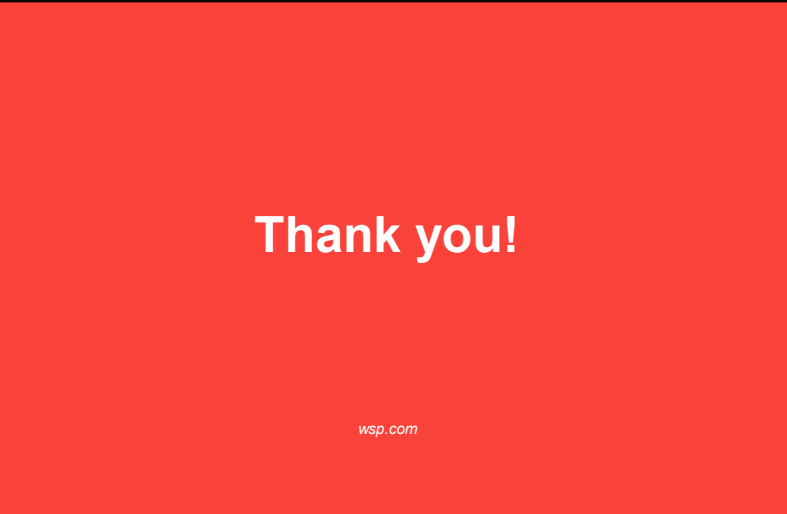
### Sewer inspection process

#### How the process is done in most cases



- This is done very seldom
- Most of the current practices are too detailed for all the pipes -> the amount of inspection is too low
- Inspection process is not standardized/verified/validated

- Must be increased -> more results
- Must be more precisely chosen -> according to pre-screening data
- Must be focused on -> better results of more pipes

Thank you!

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