

BestNet

The value of optimal and accountable decision making

A substantial part of the capital expenditure of a drinking water utility is spent on the rehabilitation of underground assets. In most drinking water networks, the average age of the pipes is increasing, while the technical lifetime of pipes does not seem to increase, despite suppliers' claims. If the average age is increasing while the lifetime of pipes is not, we're wearing out our infrastructure and while doing so, putting pressure on the investments future generations will have to make in centralised waste-water treatment and drinking water supply.

The least we can do is make wise and accountable decisions about the optimal investment in the infrastructure, objectively, transparently, and based upon undisputed data. For that reason, forward-thinking utilities apply pipe rehabilitation models.

Spatial Insight

Dutch data science consultancy Spatial Insight is a data science consultancy focusing on the management of underground assets. We combine GIS expertise, with data science and asset management. The 10 staff team represents a century of experience in the Dutch water sector and holds a strong passion to solve the needs of utilities with data driven solutions. Spatial Insight can be considered to be a leading consultancy on the Dutch home market.

BestNet

When applying different pipe rehabilitation models at our Dutch clients we wondered how certain models should be preferred over others. Current models of a utility have a head-start over alternatives, because they're already running. But every model has its characteristics, focus, but limitations and shortcomings at the same time.

Do we really have to choose between models? Or can we combine them? That question lead to the development of BestNet, the crown on the different pipe rehabilitation models we apply for clients. Combined models give more robust results, especially when combined in ratios aligned with the utility's asset management strategy, see Figure 1. Combined, weighted results of different rehab models will help you stop the increase of average infrastructure age or to reduce the non-revenue water ratio all the while keeping Capex constant.

'Combiner' 'Scenario Builder' and 'Project Builder'

BestNet runs three modules in series: Combiner, Scenario Builder and Project Builder. After Combiner, where the results of different rehab models are uniformed and merged, Scenario Builder allows assessing the impact of increasing or decreasing annual replacement ratios. For the chosen optimal replacement ratio (typically 0,5 – 1,5 % per year), a table or map is generated by Project Builder, exporting the pipes that need to be replaced first. Within BestNet it is possible to include our cluster analysis that will create groups of pipes to be replaced, thus optimising the leverage of mobilisation costs.

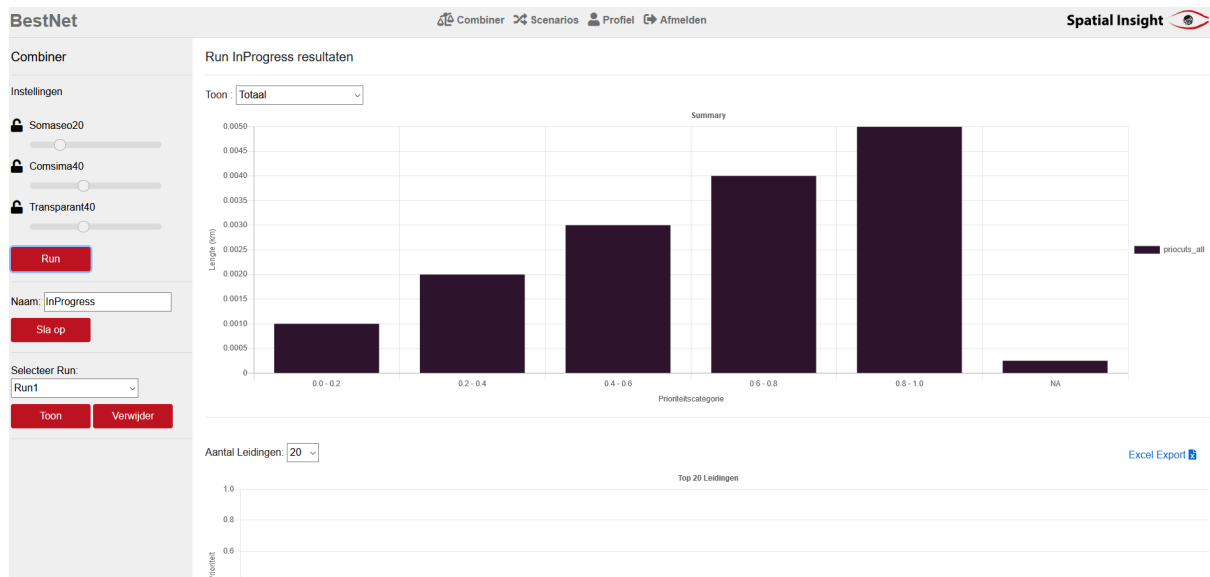


Figure 1. The user interface of BestNet's 'Combiner' shows the sliders (left hand) to adjust ratios between different pipe rehabilitation models and the summary of 5 classes of replacement priority for pipes.

Requirements

Although BestNet can be applied in situations with limited amounts of data and with one single model, to get the best out of BestNet representative asset data must be available, and at least a few years of failure data, preferably well related to the impacted asset(s). With two or more pipe rehabilitation models, the combining of models can be executed. We are well equipped to prepare data and existing models for use in BestNet. We run BestNet on the utility's cloud server domain, or on our own, or on local servers. We are aware of strict data policies and have extensive experience in compliance with those policies.

Limitation of carbon footprint

Spatial Insight intends to limit the carbon footprint of its operations, and therefore we want to limit our travel movements. We can deliver the majority of our work from distance, and we prefer to work with a local supplier or consultant. We propose only to fly in to build trust, which is hard -if not impossible- to do online.

Next step

We hope and trust BestNet will contribute to the demands of asset owners and managers for optimal, accountable, data driven asset management. We are pleased to explore how we can define a proof-of-concept (PoC) project around BestNet at any site.