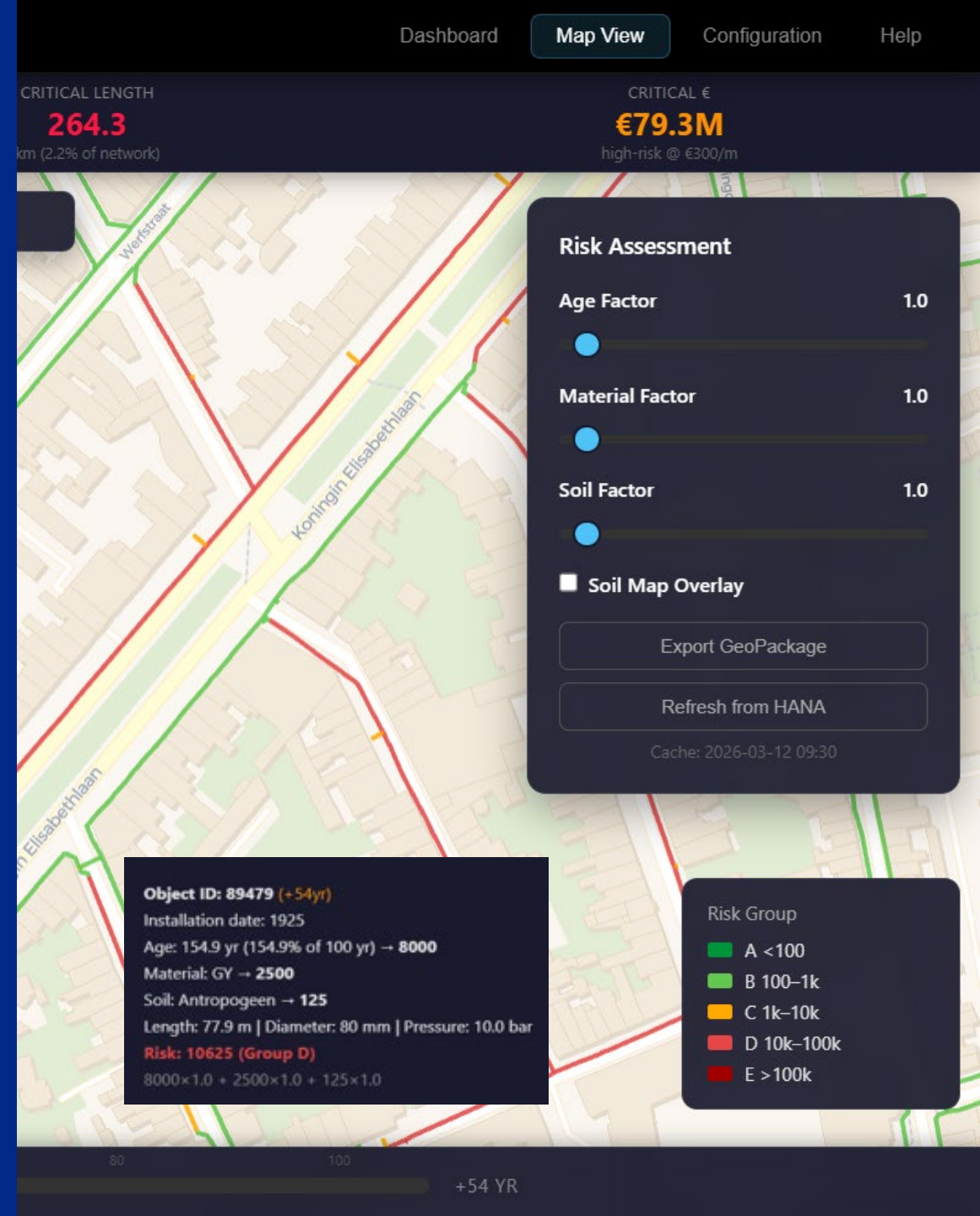




Dynamic water asset network risk analysis

BGIT Conference. Riga, June 2026

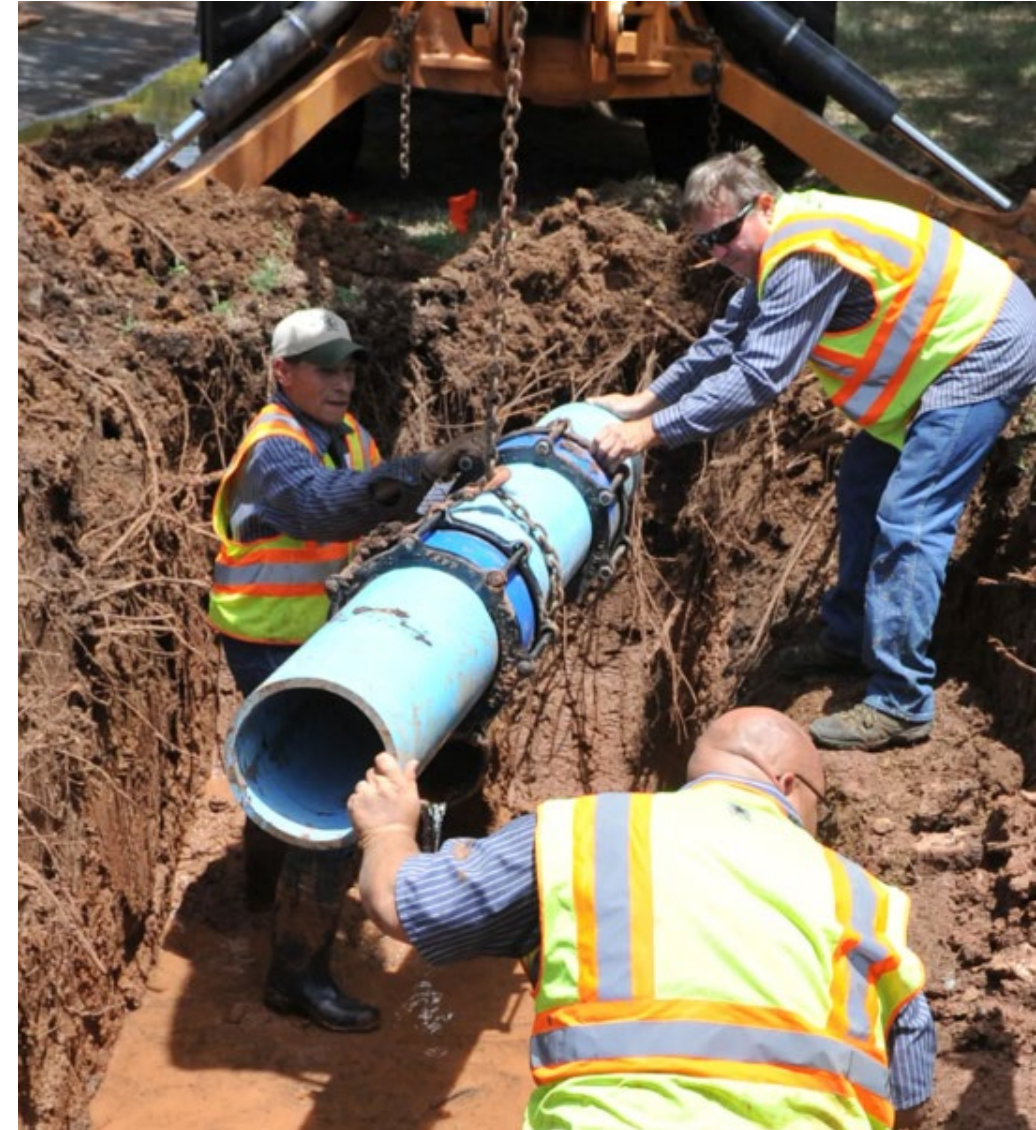
Miquel Carbó, Utilities Industry Business Unit



What is water network risk analysis and why is relevant

Water pipe renovation (rehabilitation or replacement) is essential for maintaining a safe, reliable, and efficient water supply system.

- Most water networks in developed countries were **built 40–100+ years ago**.
- **Pipes deteriorate over time** due to corrosion, ground movement, and material fatigue.:
 - Prevent system failures and service disruptions
 - Reduce water losses and improve efficiency
 - Protect public health and water quality
 - Control long-term costs and avoid emergency spending
 - Meet environmental and regulatory requirements
 - Adapt systems to modern demand and climate pressures
- **About ~30–40% of CAPEX** of water companies is yearly spent in network-related maintenance (including new pipes).
- This is an **average of the 15–25% of any water utility's overall annual budget**



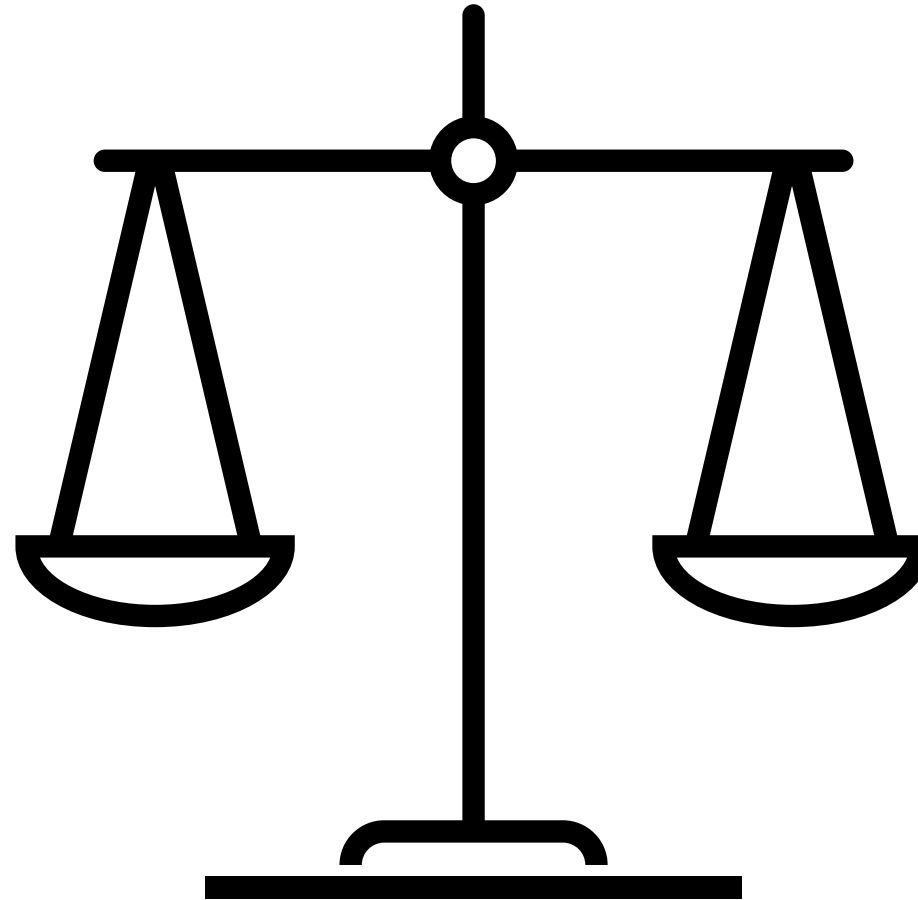
The investment budget challenge

How can IT enable this process?

Technical risks

Stakeholder priorities

Synergy opportunities



Available budget

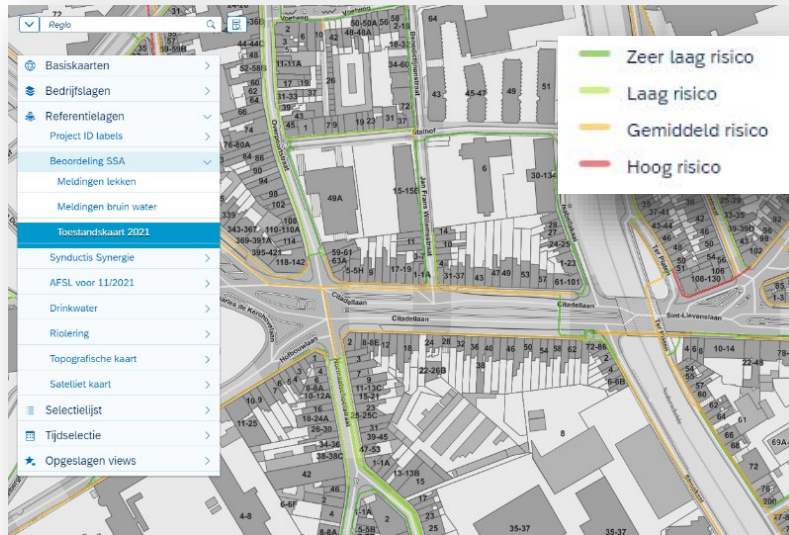
Available resources

Business priorities

Sustainability,
environmental,
social goals

The investment budget challenge

How to turn this from a static, offline exercise into a dynamic, transparent, data-driven process?



Static, export-driven **data on yearly basis**

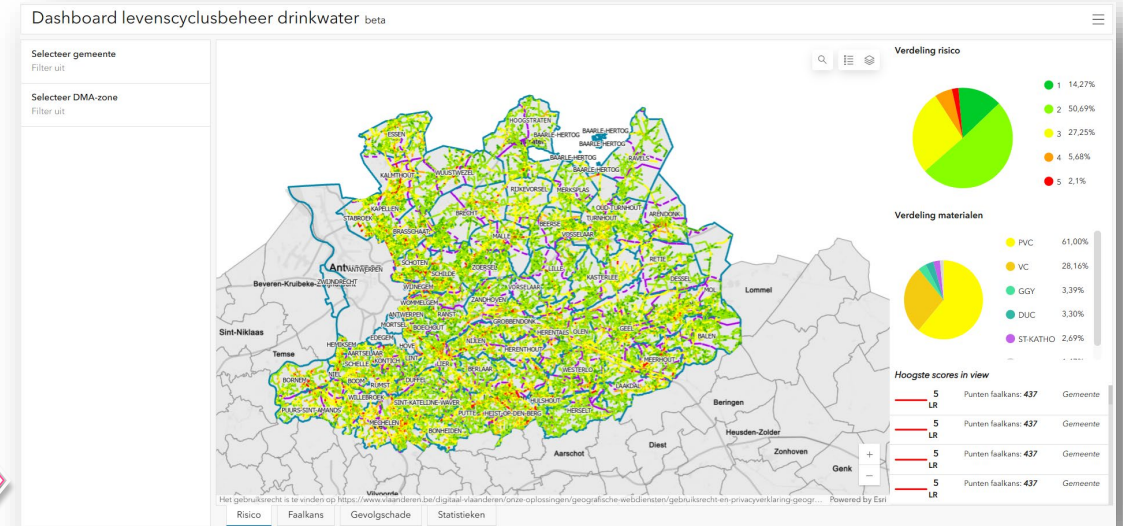
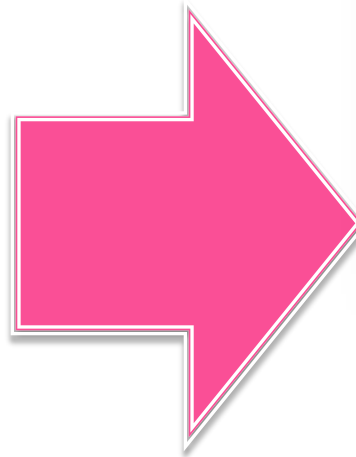


Hard-coded model parameters with zero flexibility



No support for impact, forecasting or predictive analytics

Static analytics



a continuously updated Single Layer of Truth,



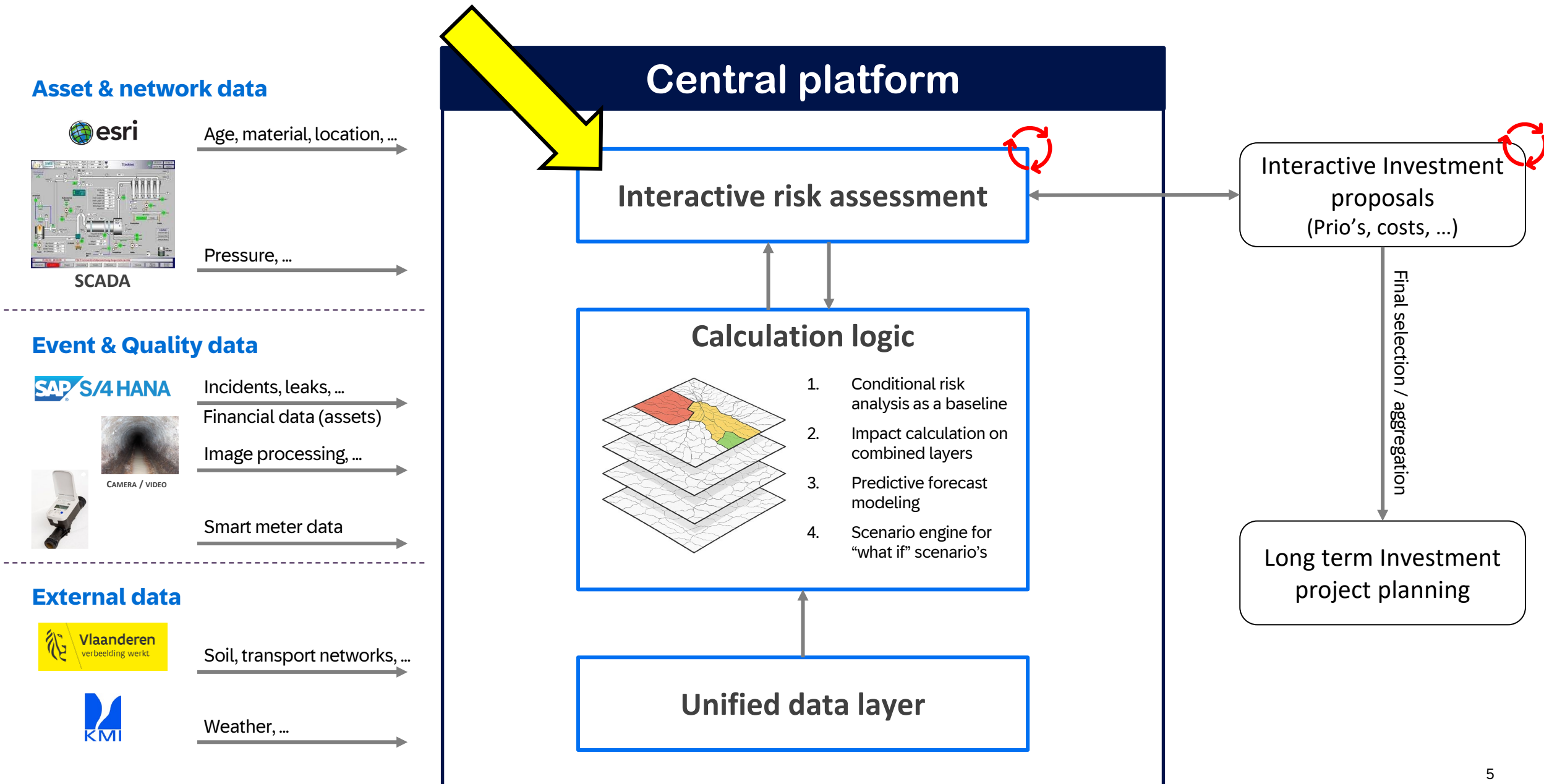
risk model configurable by storing weights, material curves, soil factors, thresholds, and rules as metadata and semantic models



Risk prediction and degradation modelling are provided

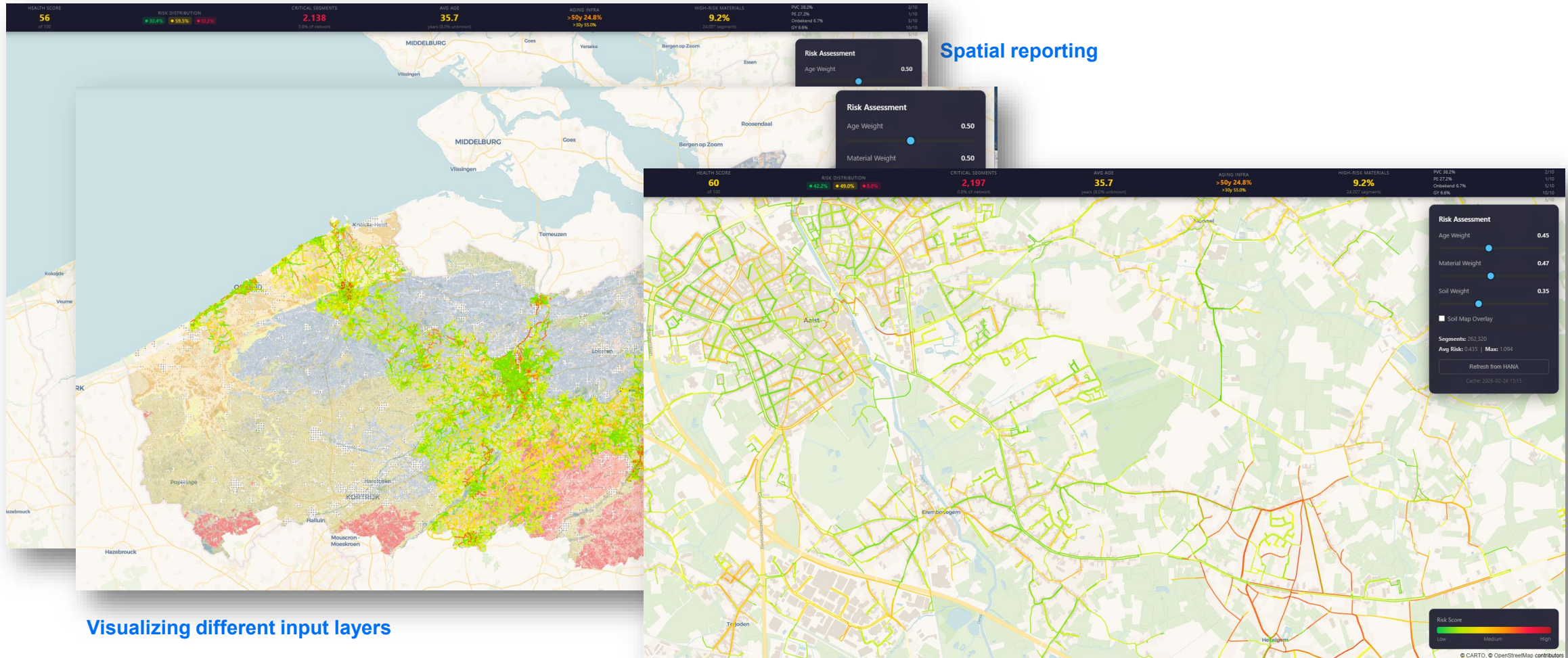
Interactive analytics

Functional solution architecture

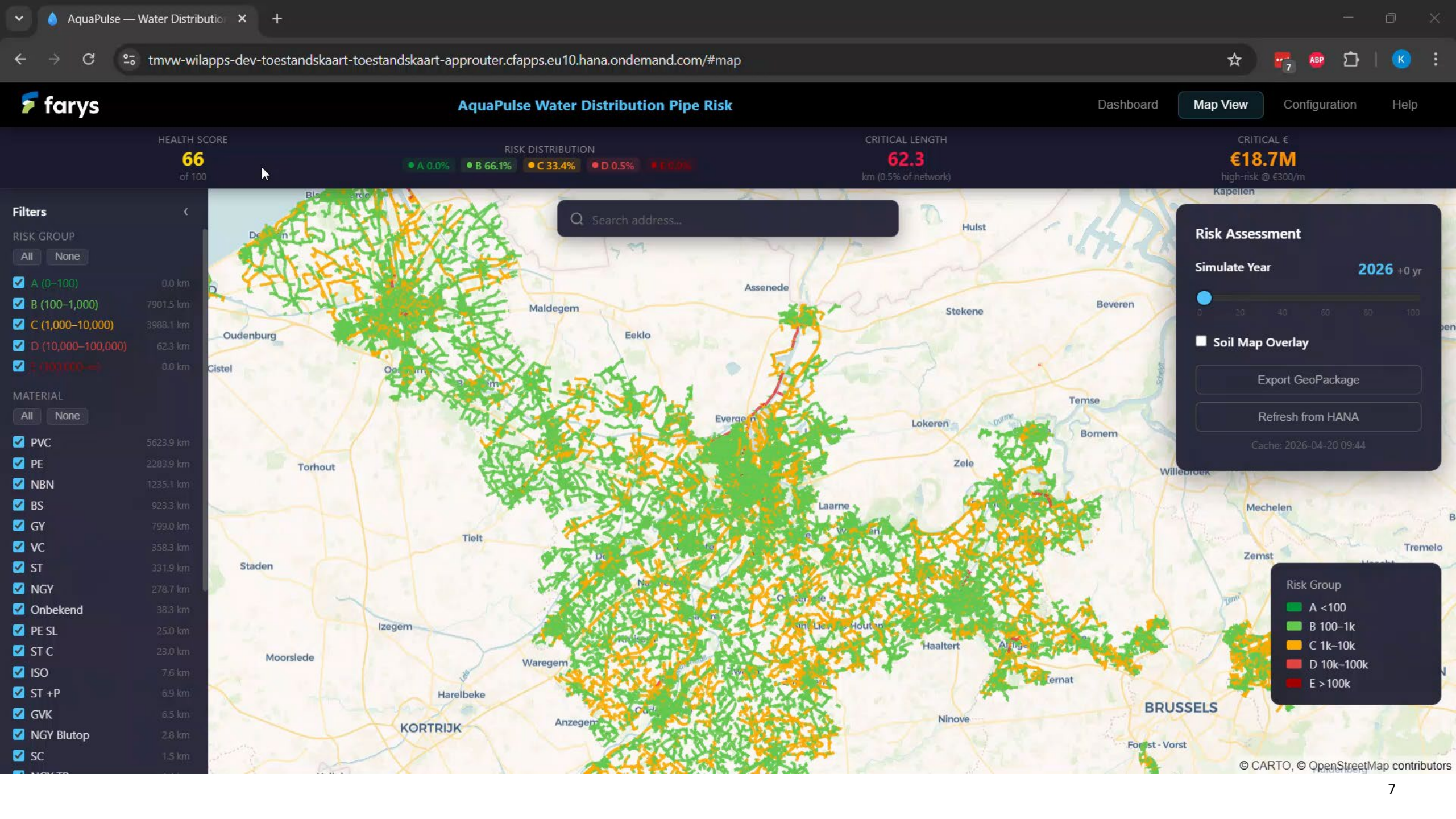


Interactive risk assessment analytics - Examples

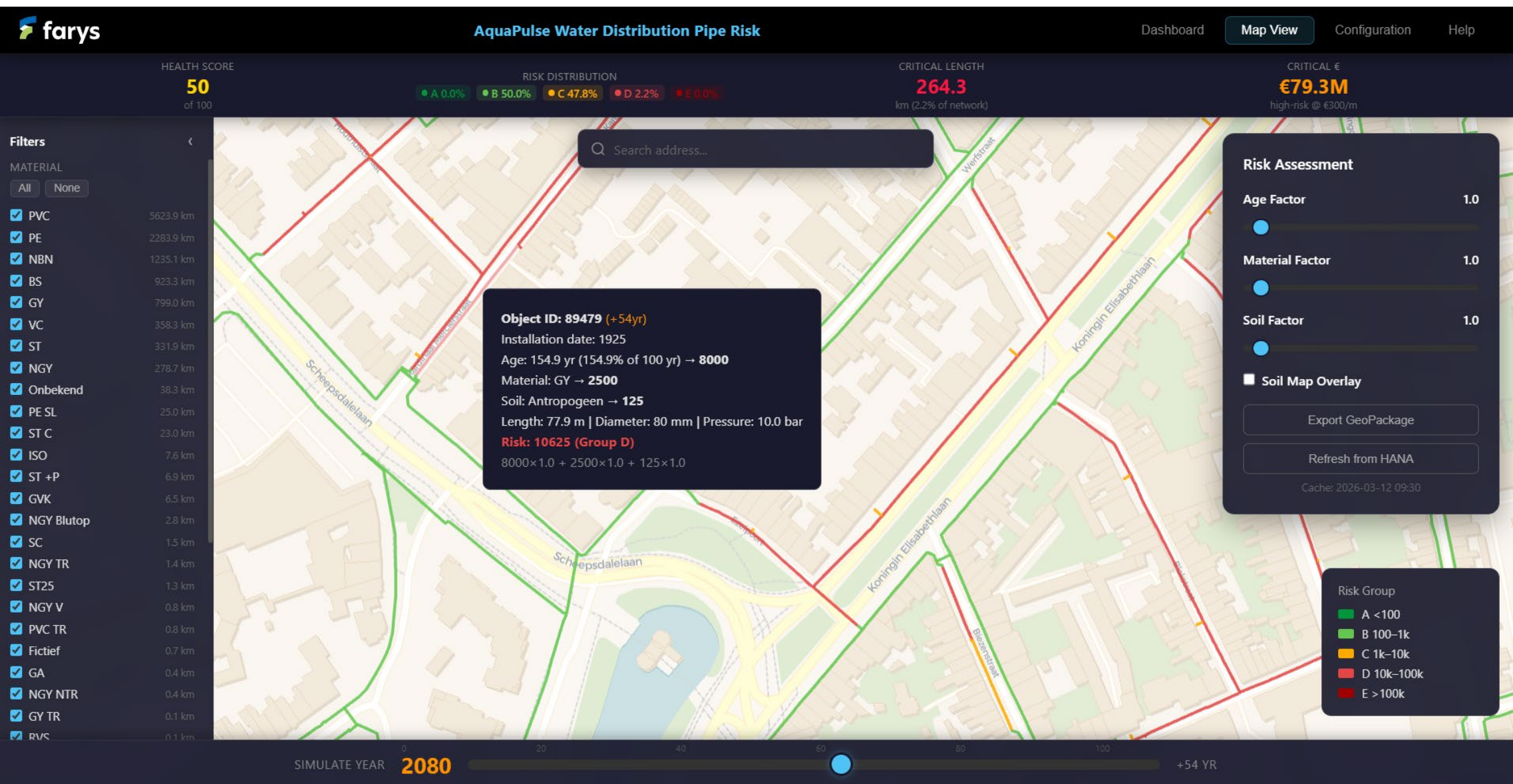
Multi-source data collection and processing, advanced geo-analytics and calculations, data visualization and what-if scenario



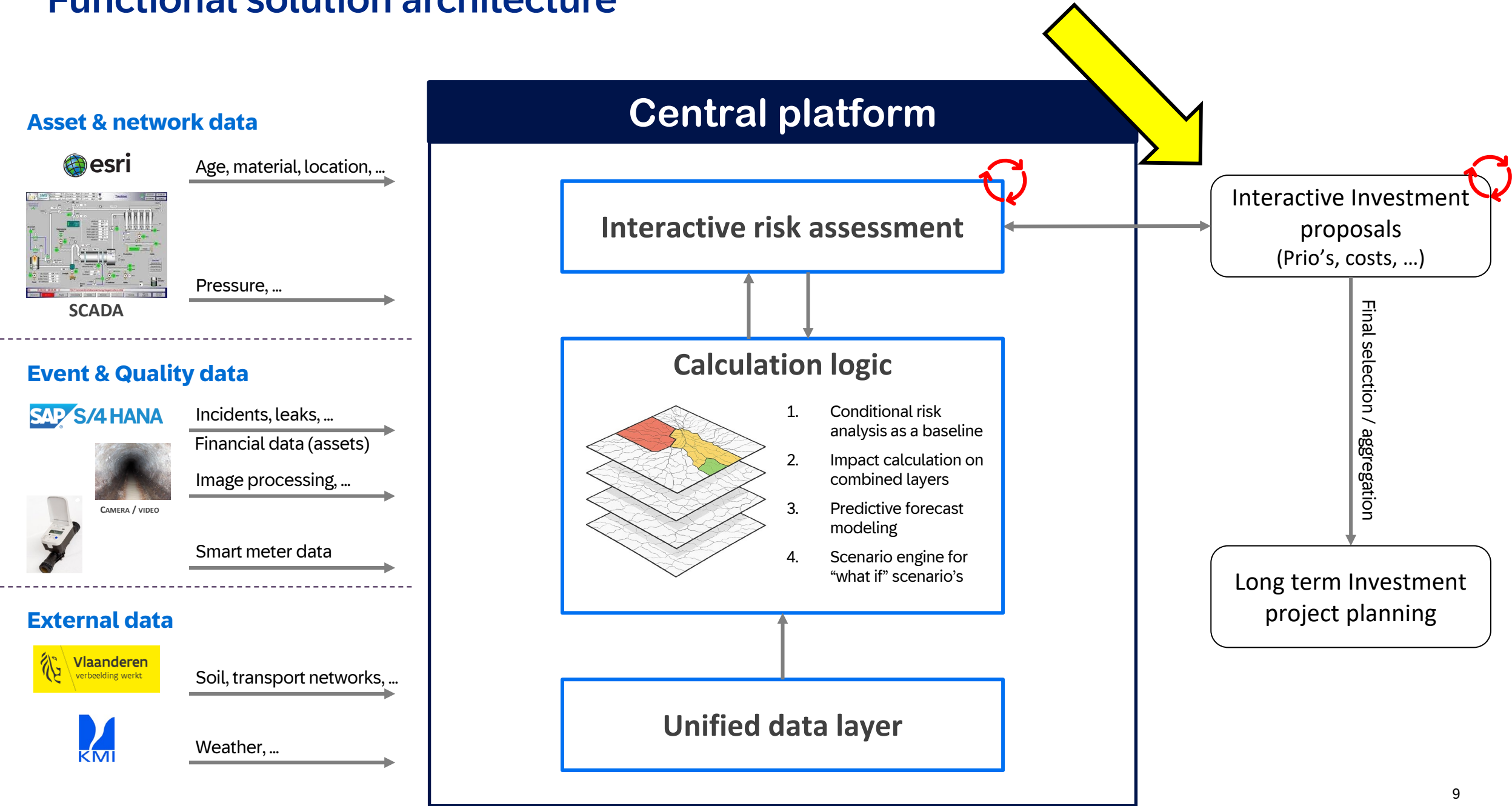
Street level details



Identification of the pipe segment and creation of the project proposal

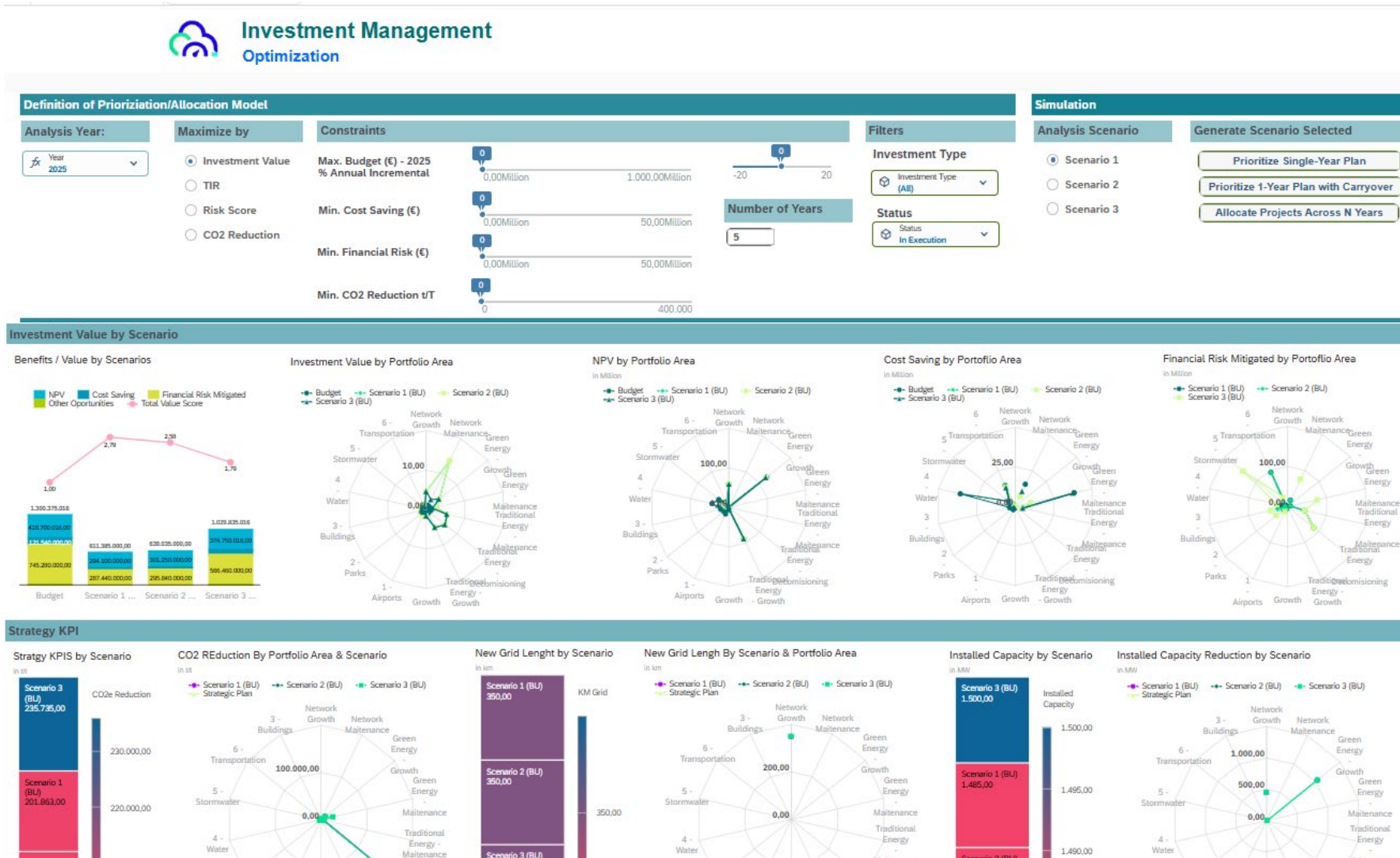


Functional solution architecture



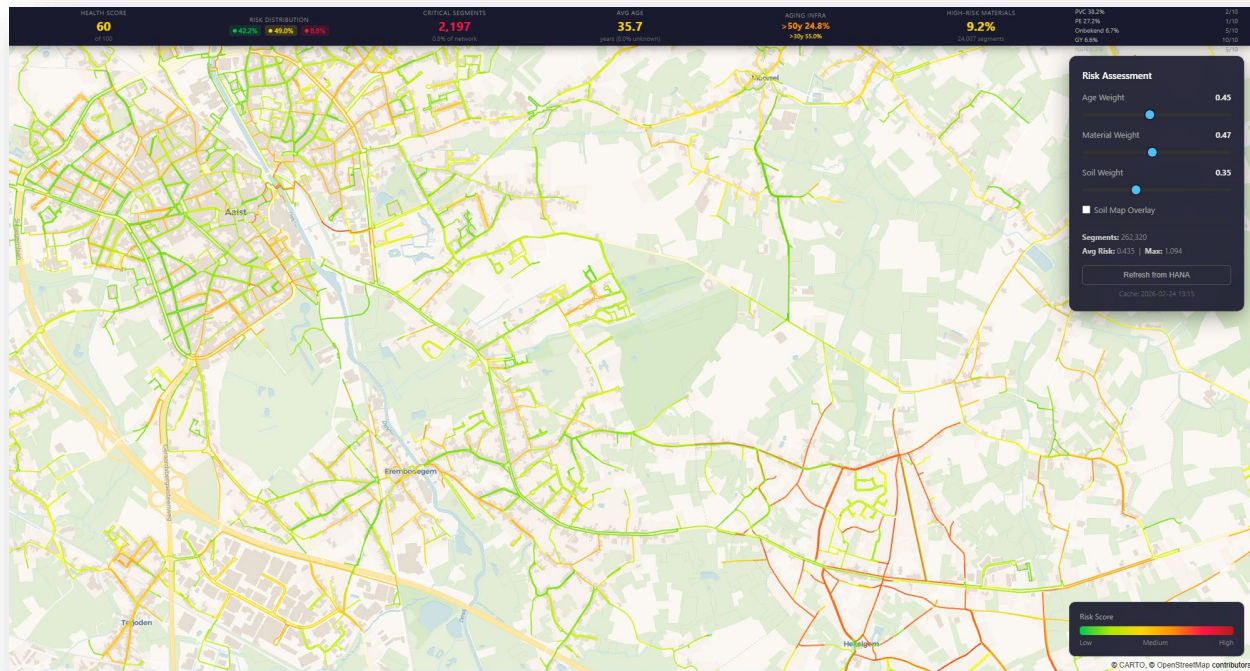
Optimization / Annual Budget

Strategic investment prioritization within the economic framework of the plan based on value framework



Summary: asset lifecycle management and capital planning

Business question: Which pipes and pumps should we replace in the next 5-year capital programme?



1. Aggregate asset register: age, material, diameter, soil type
2. Join with failure history, repair costs, and location risk
3. Model remaining useful life by spatial cluster
4. Overlay consequence: proximity to hospitals, schools, roads
5. Optimise investment: maximum risk reduction per unit spend

KPIs

- Unplanned failures reduced by 20-35%
- Capital efficiency: right asset, right time
- Service interruptions minimised
- Regulatory asset health scores improved

Data: asset register, CCTV surveys, failure logs, soil/geology maps, consequence layers, cost models

Why partnering with SAP



Relevant portfolio for the water and water services industry



Gain operational efficiency



Become data driven organization



Future proof solutions

Executive Value Network for Water & Wastewater

October 21-22, 2026
Canal de Isabel II, Madrid, Spain

[Register now!](#)



Join us at the Executive Value Network for Water & Wastewater

The **Executive Value Network (EVN) for Water & Wastewater** is an international knowledge sharing oriented forum for those interested in digital transformation best practices of **Water and Wastewater** companies. This event will highlight success stories of digital transformation and recent innovations in water technology. It promises lots of new information, interesting conversations and, above all, it will facilitate catching up with business partners, to grow your network and meet some old peers.

Thank you for the close collaboration with:



- **“Run efficiently”**: Delivering streamlined and cost-effective processes.
- **“Plan fairly”**: Approaching resource management with equity and foresight.
- **“Resilience Proofing”**: Ensuring robust systems that can adapt to challenges and disruption

Thank you

Contact information:

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“Alone we can do
so little; together we
can do so much.”

Helen Keller

SAP Bring out your best.