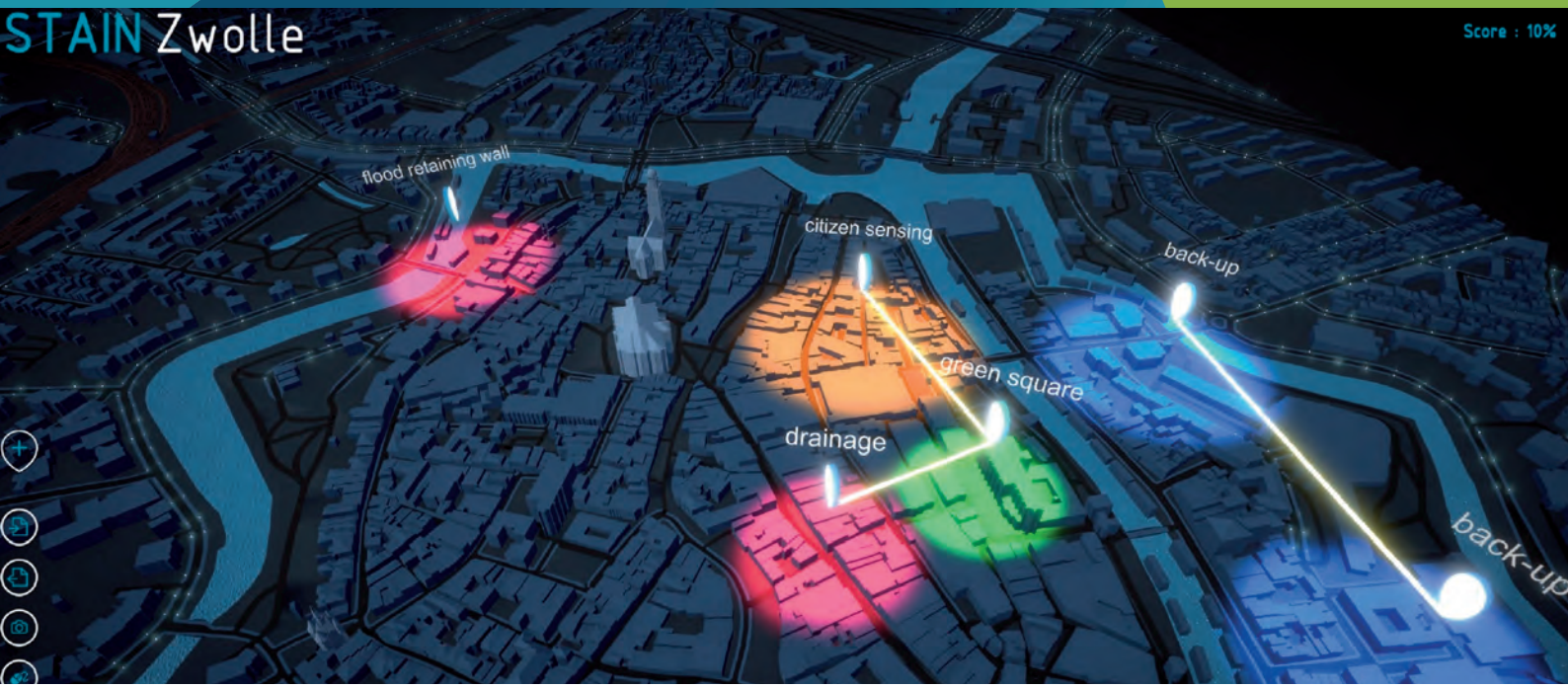
Royal HaskoningDHV
Enhancing Society Together

Innovate in climate resilience

to make the world a safer place



STAIN

STAIN is a digital service that aims to visualize how different climate adaptation measures contribute to the total climate resilience of assets. It encourages you to combine robust, flexible and integral measures to prevent, and/or quickly recover from, harmful events (be it extreme heat, drought, rainfall or flooding) with the least amount of disruption to residents and infrastructure.

The online service is designed for resilience officers responsible for developing the resilience strategies. The resilience officer indicates his/her set of climate resilience measures in STAIN, resulting in a resilience score, which is indicated with a coloured stain on the map.

Each stain on the map shows the influence (colour) and intensity (size) of resilience, as indicated by the resilience officer. Different types of measures can be taken to make e.g your city more resilient. At the same time, the different types of measures can reinforce each other's effects.

Each type is represented by a colour:

- Red: visible measures (such as dykes, walls, reservoirs)
- Blue: backup systems (e.g. electricity generators)
- Orange: social solutions (education, stakeholder communication)
- Green: nature-based solutions (more space for rivers, green roofs)

Because of its visual character, STAIN will assist you in explaining to your stakeholders which measures are put in place where and why. You can connect with other resilience officers in the network and learn from their successful strategies.

With STAIN you can start the resilience strategy design process in an early phase and further develop it towards an adaptation plan.

Contact Micheline Hounjet to learn more.
Micheline.Hounjet@rhdhv.com
+31 88 34 831 79

Flash® Flood Forecaster

Flash® Flood Forecaster is the most inclusive flash flood forecast information service for water authorities worldwide. Flash® provides up to date forecasts for floods caused by rain and rainwater run-off, at any location and at any time. It uses real-time rainfall data, as well as radar or satellite data generated by high resolution rainfall prediction modelling.

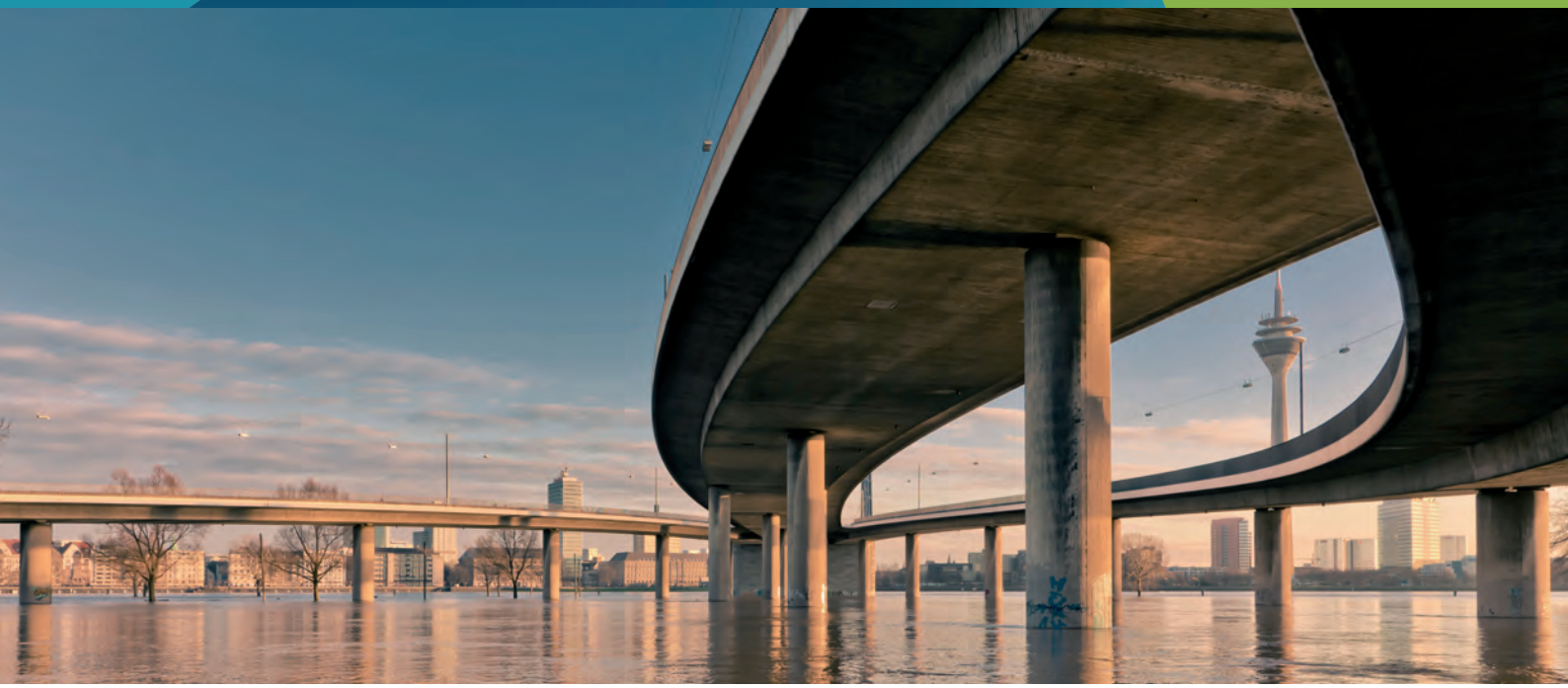
Provided by Royal HaskoningDHV and Nelen & Schuurmans, Flash® is a user-friendly and suitable service for all levels of government, businesses and residents in the area who want to protect their critical assets. A live dashboard function for emergency services warns the appropriate authorities in close to real time, enabling alert and intervention measures to be implemented up to 12 hours faster than before. As a smartphone application using GPS, Flash® sends warning messages to end users if trigger levels are activated. This extends the time needed to allow for preparation, protection of lives and assets, and/or evacuation.

The Flash® Flood Forecaster uses cutting edge technology:

- Nowcast and numerical weather model mixing;
- Mathematical highly accurate and cloud-based engine (3DI);
- Automated integration of data sources (meteo, DEM, hydrological data) on an API platform.

Besides the flood forecasting capabilities, the system provides a sophisticated tool for urban planning, allowing authorities to plan for and implement flood resilient measures that improve the ability of communities to deal with increased flooding.

Contact Herman de Jonge to learn more.
herman.de.jonge@rhdhv.com
+31 88 348 9748



BlueLabel

BlueLabel provides insight into flood risks at your fingertips by offering the first digital water vulnerability scan in the world that gives detailed information into rain induced flooding down to the square metre. This translates into a risk label on individual buildings, streets and infrastructure. The ultimate aim is to encourage and be proactive in preventing disasters.

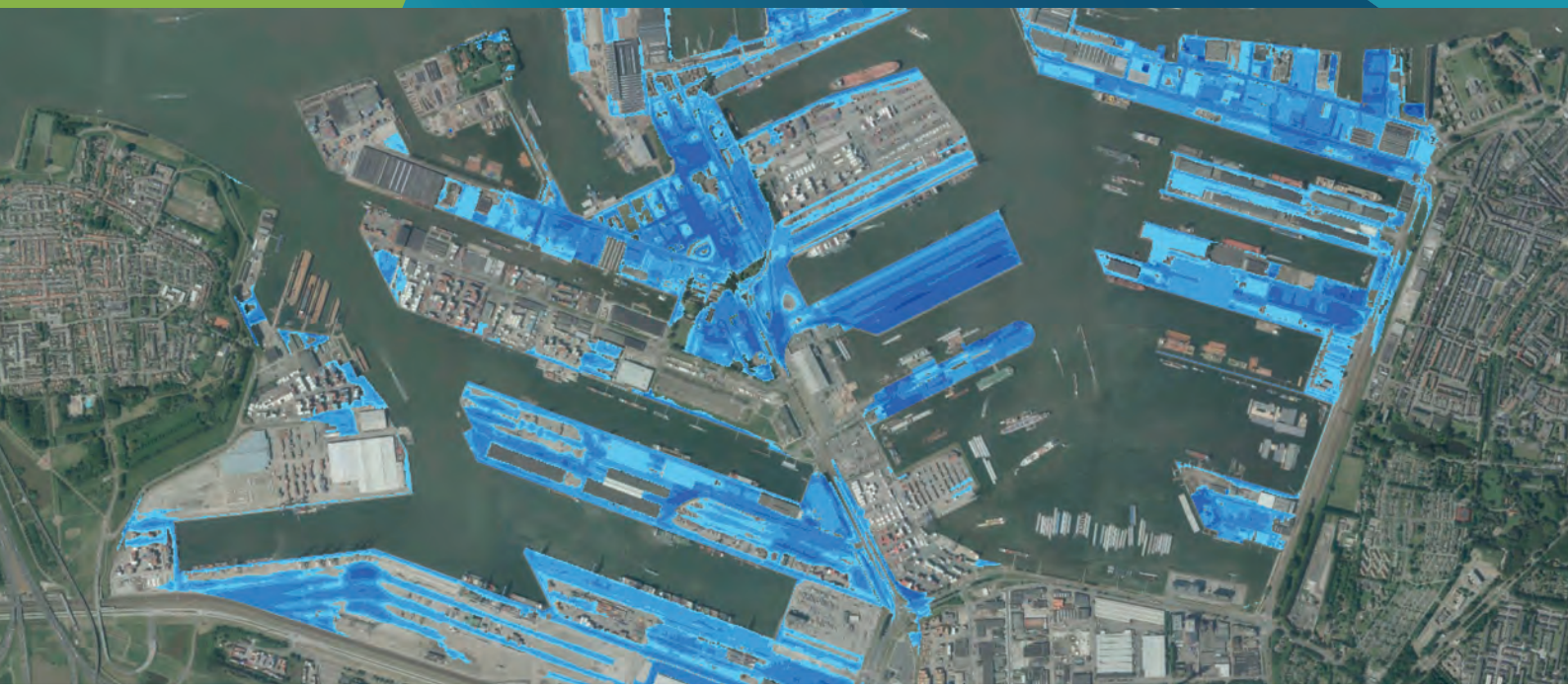
To determine the BlueLabel ranking of a land parcel, structure or road, reliable information is needed about the depth of water on and around the plot in case of flooding due to extreme rainfall. BlueLabel uses innovative smart technology to translate this information into an easily understandable ranking on our BlueMaps, which is depicted visually for each property, street and infrastructure object – allowing people to understand risk at a glance. Label A means a very small chance of flooding while E means that those chances are very high.

As a digital information service, BlueLabel aims to empower governments, cities, industries, organisations and individuals to take targeted measures that focus on mitigating risk with insight and can be used to effectively plan interventions towards greater flood resilience.

BlueLabel is a joint initiative between insurer Achmea, engineering firm Royal HaskoningDHV, and consulting firm Nelen & Schuurmans.

Mitigating risk starts with knowing your risk.

Find out how Blue Label can assist to climate proof your municipality or business by contacting
Hanneke Schuurmans
info@bluelabel.net
www.bluelabel.net.



Global Flood Risk Tool

The Global Flood Risk Tool (GFRT) is a cloud-based platform that delivers accurate and comprehensible flood risk analysis and recommends investment proposals to reduce risk on loosing lives and economic damages. The tool enables informed decision-making for increasing flood resilience of an urban area or industrial site.

GFRT conducts a thorough flood risk assessment and delivers a set of customized solutions if the identified flood risk is considered significant. The output is generated instantly and the tool is set up in such a way that it can easily connect to, integrate or exchange with other services, tools and models such as BlueLabel or STAIN. The tool comprises five steps:

1. Calculation and visualization flood hazard, providing flood maps for multiple return periods based on existing hydraulic models, or series of water levels
2. Calculation and visualization of economic damage, providing economic damage maps per return period and damage graph
3. Calculation and visualization of flood risk, providing risk maps and risk graphs with net present value of the risk
4. Drawing conceptual flood measures, information on investment costs for various safety levels
5. Present business case, provide overview of optimum investment with subsequent safety level

These five steps operate independently from each other, making the tool applicable for a wider audience and facilitating the use of external data such as, detailed hydraulic models results, costs data bases, various scenarios for development and measures.

The online user interface is interactive, visually attractive and understandable for non-experts to stimulate stakeholder dialogue. The tool is currently being used by several port authorities, private industrial clients, international financial institutes and governments.

Contact Matthijs Bos to learn more
matthijs.bos@rhdhv.com
+31 88 348 9438 / +316 54 91 3369

Royal HaskoningDHV is an independent, international engineering consultancy delivering services for the entire living environment.

Floods and extreme weather pose a threat to human life, critical infrastructure and business operations with complex supply and distribution chains, especially in high-density, urban environments. Our flood resilient solutions cover the whole spectrum from adaptation to prevention and include early warning systems using smart, interactive tools and analyses, and flood protection schemes to safeguard people and valuable assets. From assessment through to solution, we draw on a network of deep 'smarts' specialised in an understanding of the physics, social environment and stakeholders involved, translating this into the real world with an eye on prevention of loss of lives, preventing societal disruption and safeguarding economic growth.

facebook.com/royalhaskoningdhv

twitter.com/RHDHV

linkedin.com/company/royal-haskoningdhv

royalhaskoningdhv.com

Royal HaskoningDHV
Enhancing Society Together