



VORTECH

The machines in our factories, the highways we drive on and the air that we breathe: all of them are constantly monitored by sensors. Turning such sensor data into actionable insights is VORtech's expertise. We help you to make industry more efficient, the environment healthier and your life more comfortable.

Analyzing the world around us

Data Science for Engineering,
Industry and the Environment

scientific software engineers



Data analytics: From data to value

Sensors are getting ever more affordable. Collecting their data is easy as (wireless) networks have become ubiquitous. Thus, every installation, every building and all the world around us gets loaded with sensors. We can monitor everything that is going on.

But, in the end, it's not just monitoring that we want. It's control. Making installations run more efficiently, make offices comfortable and keep the air clean. Data analytics is a powerful set of techniques to turn sensor data into control actions.

An example: sensor readings will tell you that the condition of your machine is deteriorating but not how long it will last. With analytics you can predict when it will break down so that you can plan maintenance well in advance, at just the right moment. Can you imagine the savings if you can defer maintenance just a bit longer? Or if you can select your maintenance moment such that it will cost you the least?

Another example: when you are a water supplier, wouldn't it be wonderful if you could predict water demand better? Using historic supply data in combination with all sorts of public information like weather data, event data and holidays gives you much more insight into the dynamics of demand. And this will help you serve your customers better and reduce cost at the same time.

Companies that can harvest the power of data can save costs and deliver higher quality. They are tomorrow's winners.

VORtech's unique proposition

VORtech is special in the world of analytics with its focus on the physical world around us. Where many analytics firms concentrate on customer transaction data, we specialize in data from things you can touch.

For over 20 years VORtech has been working on modeling the world around us. Using a combination of mathematics and state-of-the-art software engineering, we've created powerful tools that help people make important decisions. Traditionally, these tools have relied heavily on a mathematical model of the system; however, as data is more readily available nowadays, our solutions depend more and more on data or are even fully data-driven. These tools make use of advanced statistical methods, machine learning techniques, and data assimilation.

Our experienced data scientists not only know how to handle data, they also know that there is much value in how the data is presented. We create transparent, user-friendly applications to make your life easier.



A knowledge center

For over 20 years VORtech has been leveraging top-level expertise in data analytics and mathematical modeling to address a wide range of challenges from many different sectors.

We hire the best mathematicians, computer scientists and physicists. We select them not only for their brains, but also for their ability to work comfortably with experts from other fields. They join us because they want to solve challenging, real-world problems using the powerful combination of mathematics and advanced software engineering. They join us because they want to make a difference.

We have business units for particular sectors (water and environment, utilities and process industry, oil and offshore, security and defense, finance). But we also take on projects beyond these categories: we love to learn and see what our specialized knowledge can do.

To guarantee the highest level of expertise, we maintain close ties with various Dutch universities. We keep in touch with the latest research and we will not hesitate to involve experts from academia to complement us and review our results.

Our workbench of free tools

We work exclusively with open-source tools. This means that you will not be paying license fees for solutions that we develop for you. All software that we create for you becomes your property. So you will be able to extend the solution yourself if you wish to do so.

The main tools in our workbench are well known applications like Rstudio (mostly for statistical challenges), scikit-learn (for machine learning applications) and Python/NumPy (for numerical mathematics). In addition, we also employ a number of lesser known but powerful open source tools like OpenDA (for integrating sensor readings with computer models) and Paragraph (for analyzing extremely large networks).

We are proud to say that we contribute to some of these open-source tools on a regular basis. For example, we are one of the founders of the OpenDA association and we hosted the lead developer of Paragraph.



How we help you with analytics

We know that data analytics challenges almost never come as neatly defined projects. Therefore, we offer you a free half-day brainstorm session with two of our experts. In such a workshop, we will help you identify how you can benefit from analytics. Also, we will assist you in defining business cases for analytics projects.

Obviously, we hope that you will let us help in executing projects. If you like, we can take full responsibility and provide a turn-key solution. But more often we work in close cooperation with your in-house experts as they probably have the deeper knowledge about your field. Over the course of the project we will help them fully understand the details of the data analytics techniques and tools used in the project.

Finally, we also offer “data science as a service”, where you pay an annual fee and we operate as your dedicated data science team.

Examples

There is nothing like a few good examples to show you what we can do for you.

Finding leaks in water distribution systems

VORtech has made the detection of leaks in water distribution systems much more accurate. By looking at trends from multiple regions, we can detect whether a high flow into the system is caused by high demand or by a leak. In this way, we can detect leaks early, so that they can be handled before they cause real trouble.

Detecting traffic incidents

The highway network is probably the largest monitored installation in the Netherlands. Every minute, thousands of sensor readings are collected to monitor the traffic. VORtech has been working on automatic detection of traffic incidents. Also, we've shown how anonymized location data from mobile phones can be used to replace the costly road side sensor systems.

Determine air quality on the North Sea

With a dominantly Western wind, the air quality in the Netherlands is influenced by the shipping emissions on the North Sea. But there are no air quality sensors there. Fortunately, there are satellites in the sky that send images from time to time. VORtech has turned these incidental, 2D images into continuous 3D information on the air quality over open sea.



Why VORtech?

In summary, the top six reasons to select VORtech as your partner are:

1. Our understanding of physics and other exact sciences;
2. Our 20 years of experience and our great team;
3. The fact that we select the right solution to your questions, not limited to analytics;
4. Close ties with the academic world;
5. The use of free open source software as the basis for our solutions;
6. Flexible contracts designed to match your business processes.

Interested?

You can reach us at info@vortech.nl or by calling 015-2850125. For more information you can visit our website www.vortech.nl.

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