ARGOSS is a leading company in coastal mapping and marine information services for offshore and coastal engineering applications. With many years of experience in projects and in-house available global databases of observations and computations of wind, waves, sea level and currents, ARGOSS is well placed to respond to needs of clients worldwide.

In 1995, Han Wensink started ARGOSS, an advisory and research group on geo-observation systems and services. His goal was to provide an accurate database of environmental data from which joint probability distributions, histograms, graphs and extreme value statistics can be obtained by companies who daily need this information in their business dealings.

The first step in the process was purchasing environmental data from various organizations. Companies such as ESA, NOAA and others who have general information on environmental conditions agreed to continually sell ARGOSS large amounts of this type of raw data.

However, ARGOSS found that the data varied from their many sources and information for the same physical phenomenon was inconsistent. In order to make the data consistent, ARGOSS was in need of a quality and cross check system so that they could carry out further research projects and provide the most reliable data to their customers.

"The extreme value offered by the data visualization, computational speed and stability of PV-WAVE® is shown in the quality and robustness of our internet service."

– Han Wensink, Founder
ARGOSS

Quick Facts
Software developers at ARGOSS use PV-WAVE to create tools to analyze and present in-house environmental information. This service is used by subscribers who frequently need access to offshore and near-shore weather forecasts. The service accesses a database, performs on-the-fly statistical analysis of the data and visualizes the results as tables and plots.

The Problem
Weather affects business in a wide range of sectors. From oil companies to sea transportation; governmental sectors to coastal design centers or weather service providers themselves, it is imperative to have predictions of how upcoming weather, wind and wave conditions will influence daily business transactions.

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The Solution

Prior to starting the company, Han Wensink had become acquainted with the Visual Data Analysis (VDA) software, PV-WAVE® from Visual Numerics, Inc., to analyze data and make predictions within a different research organization. PV-WAVE is an array based programming language used to build and deploy VDA applications. These applications let users manipulate and visualize simple to extremely complex datasets to detect and display patterns, trends, anomalies and other vital information that would otherwise be overlooked in their data.

As ARGOSS began to investigate analysis tools capable of handling large amounts of environmental data, they found that not only could PV-WAVE perform advanced mathematical and statistical analysis, but the fourth generation programming language that PV-WAVE offered, would shorten development time and thus reduce their time to market.

Today at ARGOSS, PV-WAVE is an essential part of their services and offerings. Using their historical archive that holds global observations and model computations from over 20 years of data gathering, PV-WAVE makes it possible to handle this large amount of complex data. PV-WAVE allows them to process the data they have from varied sources so that it is reliable and normalized.

Their internet services are comprised of three main parts: waveclimate.com, tidal-info.com and routeclimate.com. These services supply users with information such as wind speed and direction, significant wave heights, the probability that a critical wind speed will exceed during a specific voyage, and most likely wave periods, etc. for any location on the globe. Subscribers to the service are able to directly access the database and retrieve all of the expert information they need through the Web.

These internet services are operational through implementation of: A graphical user interface (GUI), a server for database access, on-the-fly computations and visualizations and the Common Gateway Interface (CGI) program, which serves as an interface between the GUI and the server. PV-WAVE is used to implement the server and is also used for offline database validation and maintenance tools.

In addition, a near real-time wave and wind forecast system is run to deliver bulletins five days ahead for specific near-shore locations. A PV-WAVE module is called on to translate off-shore to near-shore wave conditions.

ARGOSS is now in the process of developing an additional internet service to assess workability time windows related to critical weather conditions for off-shore operations. Again, PV-WAVE will be used for the computations and database access. ARGOSS has found the XML toolkit in PV-WAVE to be a great benefit for this development.
Return On Investment
At ARGOSS, the developers are very satisfied with the performance of PV-WAVE. Wensink explains, “Without PV-WAVE we would run into unacceptable points of failure in our application.” The need for advanced mathematical and statistical functions has made PV-WAVE indispensable to their work.

“The extreme value offered by the data visualization, computational speed and stability of PV-WAVE is shown in the quality and robustness of our internet service. Our subscribers are able to plug into the database through the internet and retrieve joint probability distributions, histograms and Weibull curves or plot short time series with the environmental data provided,” says Wensink.

World Class Products, Services, and Support
Visual Numerics has provided technical software solutions for numerical analysis and visualization for over 30 years. The company’s software products help users understand complex data from a variety of sources and build business-critical applications. Visual Numerics offers two product lines: the IMSL™ Numerical Libraries for powerful mathematical and statistical analysis and the PV-WAVE® visual data analysis development environment. Visual Numerics also offers customized consulting services for applications that involve mathematical, statistical, or visual data analysis to meet today’s business analytical needs.

The IMSL Numerical Libraries - which include the IMSL C Library, IMSL Fortran Library and JMSL™ Library for Java™ applications - are the industry standard for numerical analysis. They deliver developers with the breadth and depth of core algorithms allowing for the rapid development of any application. Whether developing applications in C, Fortran, or Java, or on UNIX, Windows or Linux, the robust IMSL Libraries provide the reliable foundation and the building blocks developers need.

The PV-WAVE family of products - which includes PV-WAVE, TS-WAVE, and JWAVE - delivers engineers with the development tools to efficiently and accurately meet their data analysis needs. PV-WAVE solutions allow users to rapidly import, manipulate, analyze and visualize data. The PV-WAVE family also includes robust time series analysis software as well as the ability to share analysis results across the enterprise with a Java-based solution. And, unlike other products, PV-WAVE Advantage includes a sophisticated set of analysis routines based on the industry-standard IMSL Libraries.

In addition, Visual Numerics Consulting Services combine technical expertise, decades of hands-on experience and a combination of powerful products to create the highest quality solutions possible for your visual data analysis needs.

Visual Numerics unique combination of products and services rapidly enhance ROI by delivering the highest efficiency, greatest accuracy and maximum performance.