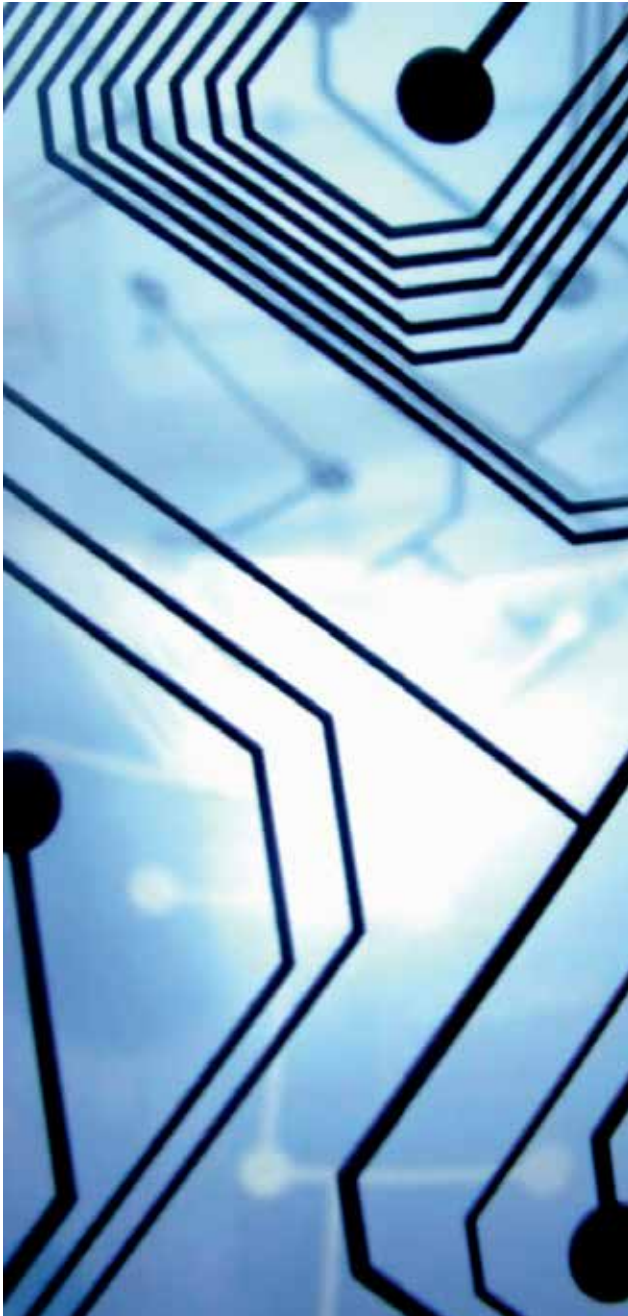# VORtech

Over the years, VORtech has seen many different technical scientific programs. Our vast experience makes it possible for us to quickly pinpoint major problems and define what significant improvements can be made.

Modelscan

A clear insight into your scientific software

scientific software engineers

For which models?

The Modelscan enables us to offer you a clear and autonomous insight into your modeling software. We can apply the scan to either custom-made software or your own extensions to a standard program. We deal with software that wields technical dimensions and uses them to perform calculations. The scan can be applied in many different technical areas such as civil engineering, mechanical engineering, traffic science, chemistry, et cetera. As mathematical engineers, we especially enjoy contributing to parts of the software that have to do with mathematical methodology, algorithms and software implementation.

How does the Modelscan work?

We start with an intake, to find out what your wishes and expectations are. Amongst other things, we will agree upon issues of confidentiality. We will then follow up with an interview, using an extensive questionnaire. Subsequently we will analyze your source code and the associated documentation. Occasionally we will ask for clarification of parts of the program. We will write up our findings in a comprehensive report. Finally, the report is presented to you, and together we will discuss our recommendations.

What does the Modelscan entail?

The following aspects of your programs are covered in our Modelscan:

- Main purpose of the model, applications.
- Mathematical modeling concept, types of equations, consistency, documentation.
- Solution algorithms, computational cores, data structures, mathematical complexity.
- Visual user interface, user-friendliness, robustness, documentation.

- Development methodology, code standards, version control.
- Helpdesk, sales and support.

After consultation, certain aspects can be accentuated or ignored. For example, if you have a certain request regarding a problem with your software that might come first and foremost. We could also focus on the application of new technologies such as parallelization of software, connecting models to one another, or using data assimilation and calibration techniques to improve a model using measured values.

The outcome

The outcome of the VORtech Modelscan is a comprehensive report that tells you what can be improved in your software and how to do it. You can use the report as a guideline to improving your model.

Here are some examples of conclusions we have drawn in the past:

- This model has some numerical sensitivities that can over-influence the outcome if the input is varied only slightly. This sensitivity can be reduced by securing the following: ….
- This program uses the BFGS algorithm for optimization. It is possible the number of model evaluations can be reduced by 30% through improvement of the line-search procedure within the program.
- The visual interface is not in accordance with Windows standards. This will inhibit the use of the program, increases the chance of mistakes and increases the time it takes to train new users. To improve the GUI, we would advise you to….

Our customers have always found the results of our Modelscan thought-provoking. The scan has a low cost and a relatively high yield. Should it appear the VORtech can do nothing to improve your software, you will at least have confirmation that you are on the right track.

More informatie

For more information on the VORtech Modelscan or for
a tender for your application, please get in touch with:

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