

# THE Cruncher

## HRS web site

Our web site has been completely rebuilt, using technology from Enlighten Designs of Hamilton that enables all of our staff to maintain all our pages through easily-used web-based tools. This means that you should have easily-read, up to date web pages.

We have redesigned the layout of the site so that some things that were difficult to find are now obvious - for instance, the seminars, training and slide shows are now available from the home page. We have also set up pages for our major suppliers, so that if you are only interested in MATLAB, you can bookmark [www.hrs.co.nz/matlab](http://www.hrs.co.nz/matlab) to go to a page specific for that product family.

We have made extensive use of forms to capture data when you want access to resources on the site. To keep things simple

for you we only require you to fill in your data once per session. Please note that we take privacy seriously, and do not provide your data to others.

Because we have changed the site completely, none of your previous bookmarks will work, and we ask you to remove them and create new ones. If you don't see a site that looks like the new one shown in the screen shot shown below then you are using a cached copy of the site and should refresh your page.

Although we have tested the site ourselves, we know that there will be things that you will try that we have not tested. If you find anything that does not work, or which does not work the way you expect, we really would like to know. We want the site to be a valuable tool for our clients, and will adapt it to the feedback we receive.

## Mathematics in industry study groups (MISG).

This initiative is designed to assist industries to apply mathematical methods to tasks that will improve their performance. The process involves identifying many possible projects, and then selecting a few to be the focus of an intensive week-long workshop where people from industry work with mathematicians to come up with workable applications.

This has been done in Australia for several years, and is now in NZ. To participate or contribute, please contact Graeme Wake [g.c.wake@massey.ac.nz](mailto:g.c.wake@massey.ac.nz)

For more information go to <http://iims.massey.ac.nz/research/cmi/>.



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## Advanced data analysis tools from StatSoft

At HRS we have concentrated on telling people the virtues of the basic Statsoft statistical tools, because these will always be of direct use to more people than the enterprise-oriented tools. However, StatSoft have also developed a wide range of tools for the larger enterprise, and have fully integrated them with the rest of STATISTICA. They are not "add-ons" originally developed by other organisations. Some of the more important products are described below.

### STATISTICA Data Warehouse

This is a complete intelligent data storage and information delivery/distribution solution enabling you to customise the flow of information through your organisation. It will provide all authorised members of your organisation with flexible, secure, and rapid access to critical information and intelligent reporting.

The system is virtually platform independent and will fit into any existing database architecture and hardware environment. It will efficiently combine information from multiple database formats and sources.

The STATISTICA Data Warehouse is built on a database and database schema customized for your particular business. The solution can be installed either by using SQL Server or as a (virtual) database schema compatible with most industry standard databases

Because STATISTICA Data Warehouse does not depend on one particular database vendor or hardware platform, it is itself entirely platform-independent and can efficiently combine and pool information from multiple sources.

### STATISTICA Text Miner

This program is an extension of STATISTICA Data Miner, and is used to analyse text-based data, such as web pages, large document repositories or open-ended interview questions.

It first applies "stubbing and stemming" to the documents, to create a frequency count of all words. This information (possibly filtered and transformed) is the basis for all subsequent numerical analyses.

- Simple summary statistics may extract the common words in the documents.
- Dimensional maps of documents can be created, to evaluate the similarity of documents, etc.
- By mapping documents into dimensions based on original (transformed) word counts, simultaneous maps of documents and words can be created, hence reflecting on the "meaning" of documents.
- Clustering techniques (such as EM or k-Means) can be applied to identify clusters of similar documents.
- Predictive data mining techniques can be used to relate the numerical summaries of documents to other indicators of interest, such as fraudulent intent.

### WebSTATISTICA

WebSTATISTICA provides powerful, Web-based, knowledge-sharing tools that allow your colleagues, employees, and/or customers (with appropriate permissions) to log in and quickly and efficiently get access to the information they need. A browser-based interface allows you to access data within your Intranet or through the Internet.

#### Knowledge Portal (KP)

Users can review predefined reports. With WebSTATISTICA Knowledge Portal's tools, you can post up-to-date reports, charts, and tables on the Internet automatically, virtually in real-time, and without knowledge of HTML or Java programming languages. The reports can be generated interactively (directly from the Web-STATISTICA output, or produced automatically at specified intervals.

#### Interactive Knowledge Portal (IKP)

Users can define and request new reports, or run queries and custom analyses. There is an easy-to-use and intuitive facility to select subsets, and to drill down and up the data (to "slice and dice" them) by clicking on specific bars of the Explorer graph.

## Reporting of survey data

We heard a story of a market research firm that had a report ready to go, and then found important data errors. Since they were using SPSS, they had to manually redo all the tables and graphs. In SurveyPro the report would have automatically updated itself!

This illustrates a fundamental difference in the way that data presentation is performed in different kinds of software.

Most statistics programs, such as STATISTICA, SPSS, Minitab etc require you to specify the analysis or summary that you want by means of dialogue windows, and then produce an output based on the data present in the data file at that time.

If you have to update your data, then you have to recreate the output by going through the dialogue boxes again, an often tedious process.

Other kinds of software, in particular

SurveyPro and Remark Office OMR, work differently. You create a report interactively, in much the same way that you do in the above programs, but when you save and re-open the report each component is recreated from the data at that time.

You need to be careful, when you interpret the report, to be unambiguous about which version of the data you are using, but this approach can save a large amount of time when there is a need to update your data.

Another way that Survey Pro differs from statistics software is that you can apply a filter to the report after it is prepared, for instance to restrict it to those living in Wellington. Change the filter, and the whole report instantly updates. You can even print out the whole report for each separate value in a data field, with one command.

For instance, one section for Wellington,

one for Auckland, and combine the rest.

If you really do have to extract all the information in your survey data file, you need a statistics program such as STATISTICA or SPSS. Our experience is that most people will be more than satisfied with the level of reporting and the convenience of use provided in SurveyPro.

## Easy Surveys

SurveyPro lets you design survey forms and the associated databases. Remark Office OMR scans the forms to get data off paper into a database.

If you use both products, you can bypass the set-up stage in Remark, because SurveyPro can save a survey in a format directly readable by Remark. Just open the file in Remark, check it, and you are ready to scan completed forms.

## EDN Innovation Of The Year Award

The MathWorks Embedded Target for TI™ C6000 DSP was the winner of the EDN Innovation of the Year Award in the Embedded Development Tools category. This exclusive awards program is dedicated to honouring outstanding, state-of-the-art engineering products in the electronics industry.

The Embedded Target for C6000 DSP enables the rapid development of real-time software for Texas Instruments (TI) C67x floating-point and C62x fixed-point DSPs by generating efficient code for C6000 processors directly from Simulink® models using Real-Time Workshop®.

## MATLAB New products

### **MATLAB COM Builder**

In conjunction with the MATLAB Compiler, this automatically generates an independent COM object from your MATLAB application. You can call this from Visual Basic, C/C++, Microsoft Excel, or any other COM-compliant technology. You can reference your MATLAB based algorithms the same way as other COM objects. You can also share algorithms with your colleagues without their needing to learn complex object interfaces.

### **MATLAB Image acquisition toolbox**

MATLAB with the Image Acquisition Toolbox provides direct access to hardware video devices, as well as advanced and proven analysis routines for your scientific imaging applications.

The Image Acquisition Toolbox extends the MATLAB technical computing environment to include functions for acquiring video and images from PC-compatible frame-grabber cards and video devices. The toolbox lets you connect to and configure your hardware, preview your video, and stream images directly into MATLAB for analysis and visualisation.

### **Embedded targets**

Embedded Targets are now available for the Motorola HC12 and the OSEK/VDX real-time operating system environment. These allow you to do rapid prototyping or production deployment of embedded applications.

## Aulos Lite

AULOS is a locally-written program for hydraulic modelling of flow in streams, canals and drainpipes. The full program will handle any size of project and do more precise modelling than any similar program.

Feedback from clients has led to us producing AULOS Lite - a version that can allow you to set up models of any size and complexity, that will display the results of any model, but which will run only small models. It is envisioned that this will be useful for consulting engineers working on parts of urban drainage models, small irrigation projects and other tasks requiring only a few constraints on the flow. Contact Marc for details

## License compliance

We have recently come across situations where an organisation will upgrade a Mathcad and some staff will not realise that the upgraded copy should no longer be used. If you buy a copy new, and then upgrade it, you still have only one license.

If your organisation uses different versions of Mathcad it may be appropriate to do an audit. Ros ([admin@hrs.co.nz](mailto:admin@hrs.co.nz)) can tell you what licenses have been purchased and which ones are still usable.

## Meritec uses Mathcad

Mathcad is an essential part of a program called PCORP, developed by Meritec to determine the real time ratings for high voltage underground cable installations.

Power utility engineers can calculate the capacity of their own cable feeders. System operators can even determine the end-to-end transfer capacity of each circuit at any time, depending on the network loading pattern at that moment.

See [www.cablerating.com](http://www.cablerating.com) for more details.

## Mathcad at Auckland University

We reported in the last Cruncher that Canterbury U. had purchased a Mathcad site license. We can now announce that U of Auckland have purchased a Mathcad license for unlimited use in the whole Engineering school.

We are delighted that students and staff can now choose both Mathcad and MATLAB for their calculations, because both programs have quite different application areas.

## Maplesoft becomes business name

The names of the companies who make our software are often a source of confusion. For instance the mathematics program Maple is made by a company formally known as Waterloo Maple Inc. Recently the company introduced the trading name Maplesoft™ as its primary business name.

This makes it consistent with the domain name maplesoft. used for email and the web address. ([www.maplesoft.com](http://www.maplesoft.com))



## Maple 9

Maple 9 for Windows, Mac OS X and Linux will be available for shipping in late June 2003. Maple 9 for UNIX® will be available in late July 2003.

The improvements in Maple 9 focus on three areas: a more open and accessible infrastructure; a more versatile user interface; and innovation in mathematics education and analytical computation. We have not space to discuss all new features here, but here are a few:

- Code generation to MATLAB and Visual Basic.
- New Help system interface gives easier navigation and searching.
- Graphical interface for analyzing differential equations.
- Free-form sketch regions.
- New Student packages for learning Linear Algebra, Pre-calculus and Calculus.
- Calculation of error in scientific numeric calculations.

### **Quote from Mick Pender, Auckland U.**

*“The availability of Mathcad will enable the students to come to a good appreciation of the range of possibilities for the bread-and-butter work of day-to-day professional engineering calculations.*

*In my view, the major strength of Mathcad is the way in which the calculation process is laid out with clarity, so that colleagues and checkers can easily comprehend what has been done.”*

# Seminars and training

## MATLAB consultancy

Many people see the benefit to their organisation of using MATLAB for design calculations, but worry about the learning curve, or need very specialist knowledge to get started. We have now been able to address these issues because of the availability of two independent sources of consultancy services.

### Ceanet Ltd

Ceanet, the Australian distributor of MATLAB, have now built up their consultancy operation to a sufficient size to be able to offer services to everyone in Australia and New Zealand. This can range from project initiation, through application development to system simulation. We ask that you contact us initially, to help you define your needs, but the actual contract will be directly with Ceanet.

### Theta Systems

Paul Casey has worked with MATLAB for 12 years, with the NZ Defence Force and now with the consultants, Theta Systems.

His experience includes data analysis, signal processing, and development of stand-alone applications based on MATLAB GUI's. He has used Java and C/C++ in conjunction with MATLAB.

A major recent project involved developing an integrated suite of tools for retrieval, aggregation and display of data for electricity spot trading.

Please contact Marc to set up the contact, but you will then work directly with Paul.

## Quantitative Risk Analysis Training

A public training course on this topic is being held on 26-27 June, in Auckland. It is nearly full, but give us a call to see if you can get in.

The course will be similar to previous ones in the series and will give participants a good appreciation of how to use @RISK or similar Monte Carlo simulation tools for making business decisions.

See [www.hrs.co.nz/training](http://www.hrs.co.nz/training) for details.

## Mathcad Training

The next public Mathcad training is scheduled for 11 July in Auckland.

By attending this course you will be rapidly introduced to a wide range of techniques used within Mathcad to perform engineering or other calculations.

Email Marc now to reserve your place. See [www.hrs.co.nz/training](http://www.hrs.co.nz/training).

## MATLAB Training

We have scheduled an "Introduction to MATLAB" course on 27-28 November. It is a way off yet, and you may prefer to organise private training before then. Call Marc, or see [www.hrs.co.nz/training](http://www.hrs.co.nz/training).

## Seminars

This set of seminars will include 5 of the most popular seminars, and will be held in Dunedin, Christchurch, Wellington and Auckland between 21 and 31 July. We won't get back to Christchurch or Dunedin again this year, so make sure you tell your colleagues about this infrequently-repeating opportunity. If we can announce the seminars in your organisation's newsletter, please let us know.

### Titles of the seminars are:

- Turning data into information
- Make surveys a delight, not a drag
- Using spreadsheet add-ins for quantitative decision-making
- Mathematical documents that make sense
- Powerful, efficient mathematical programming.

To enrol, and to see details, please go to [www.hrs.co.nz/seminars](http://www.hrs.co.nz/seminars)

## Trade shows

In July we seem to have a plethora of technical society conferences that we will be attending and showing our products.

- NZ Statistics Association. Massey University, 2-4 July. Ray will be emphasising data mining software
- NZ Institute of Physics. Massey University, 9-11 July. Ray will show off Mathcad for teaching on 10 July.
- Maths Assn. Hamilton, 8-11 July Marc will show off Mathcad for teaching during the meeting.

## Staff Changes

### Sales

We were very sorry to lose Glen Irving recently, after 4 years on our staff. He will be missed by HRS and the many customers who appreciated his in-depth product knowledge.

We hope to have finalised the appointment of his replacement by the time you receive this newsletter, but people with the knowledge and commitment we need are hard to find.

### Support

Oli will be leaving us soon, to take up an exchange position in England. We wish him well. We have filled his position already, with David. Keep sending your requests to [support@hrs.co.nz](mailto:support@hrs.co.nz).

## Contacting us ...

We are based in Hamilton, but supply, support and demonstrate our products throughout New Zealand.

**Product information:**  
[www.hrs.co.nz](http://www.hrs.co.nz)

### Email Addresses

Ray	<a href="mailto:ray@hrs.co.nz">ray@hrs.co.nz</a>	Business / Statistics sales
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Ray	<a href="mailto:ray@hrs.co.nz">ray@hrs.co.nz</a>	Policy
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