RiskSpectrum PSA has Arrived!

“We have made a tool that surpassed our expectations, but the road was longer than expected”

SPECIAL EDITION
Read all about RiskSpectrum PSA – Fourth generation PSA tools from Relcon Scandpower

Meet the people behind
The best PSA Tool in the world!
A time of great expectations ...

In many of the countries where Christmas is celebrated, the tradition is to exchange presents. When I was a child and lived in Poland, I had to wait until Christmas day before I could enjoy my presents. In those days, I was very eager to go to bed, hoping that presents would be waiting for me below the Christmas tree when I woke up. Today, in Sweden, my family opens their presents on Christmas Eve. In some families, the children have to wait for Santa Claus to bring them their presents. This is a very big responsibility for many fathers who have to dress up in a red costume and put on a white beard to keep the young ones happy!

In the new year, one of Relcon Scandinpower presents to you is the release of the new version of the RiskSpectrum software. After many years of development involving both internal and external resources, followed by a period of very extensive testing and evaluation, this new version of the software was completed just before Christmas 2007.

We see it as a responsibility to our users because the RiskSpectrum PSA development project would not have been possible without the financial support from our licensees and as a consequence, all licensees who have paid for support during this development project will receive the upgrade to RiskSpectrum PSA at no cost.

The new version, called RiskSpectrum PSA, is the fourth generation PSA software released by our company. The project started in 2003 and is proof of our long term dedication to develop modern and user friendly software. RiskSpectrum PSA includes several new features and more will come in the future. Among already implemented features you can notice improved model QA-functions, new and improved editing functions, new information extract functions and many others. I’m sure that RiskSpectrum PSA will play a major role in safety assessments of new reactors which will be built in the coming years.

More detailed information about RiskSpectrum PSA is to be found in this issue of the RisSpectrum Magazine.

I hope that RiskSpectrum PSA meets all your expectations and I wish you all a happy and most prosperous 2008! •

Johan Sörman, President
jerzy.grynblat@relconscandpower.com
Reborn, RiskSpectrum PSA enlightens 2008!

Just in time for celebrating the beginning of 2008, Relcon Scandpower takes the opportunity to announce the release of RiskSpectrum PSA. This new software replaces our best-seller RiskSpectrum PSA Professional first released in 1998. RiskSpectrum PSA offers a modern user interface and database, and together with the highly acclaimed unique features of the earlier PSA Professional versions, we believe results in the best PSA tool in the world!

A few years ago, we reached the limit of RiskSpectrum PSA Professional capabilities. No more features could be added. So we decided that we would skip a few generations of development tools and go straight to the Microsoft .NET development environment and the programming language C# (read more about this in the May 2007 issue of the RiskSpectrum Magazine).

RiskSpectrum PSA is the fourth generation PSA software from Relcon Scandpower AB in Sweden.

RiskSpectrum PSA is the result of many years of accumulated PSA experience both at Relcon Scandpower and all RiskSpectrum licensees around the world. We are determined to keep leading the development of PSA tools and fault tree solution engines and we believe no-one has a better opportunity to do so than us. It would however not be so without the support and feedback from our many licensees around the globe.

We wish to thank all of you who have supported us during the RiskSpectrum PSA development project.

We are very excited about this release and look forward to using the new features in place in the first release. We have a long list of feature requests that we will implement in future releases. On pages 8-11 the new features of the first release are explained in detail.

Press F1 and you will find the way

The help manual has been re-written to give a description of all the features and functions in the software. It is designed primarily to be used as a look-up reference. When using RiskSpectrum PSA you can press F1 at anytime to launch the help file with the relevant section visible. There you will find answers to questions like “What is...?” and How do I use...?” In many sections we have also included examples.

Training

One of the requirements of RiskSpectrum PSA was that experienced user would not require further training. For those of you who wish to learn the basics, the regular 3-days training courses from May 2008 will be held using RiskSpectrum PSA version 1.0 and you are welcome to register now (sales@riskspectrum.com). There will also be a 2-days advanced training course for experienced licensees focusing on the new features and how to make the best of them.

I hope you will find this version to be worth waiting for. If you have any questions don’t hesitate to drop an e-mail to support@riskspectrum.com.

RiskSpectrum PSA is released with an updated version of RiskSpectrum Analysis Tools (RSAT). This is the MCS engine.

We have now started shipping the software to all RiskSpectrum licensees with support agreements. All others will receive an offer to upgrade.

RiskSpectrum PSA tools have been produced since 1987:

1987 First generation: RELTREE (only fault trees)
1991 Second generation: RiskSpectrum PSA for DOS (linked fault trees and event trees)
1998 Third generation: RiskSpectrum PSA Professional (first Windows version)
In hindsight we can say that the project has had its ups and downs, but the development team has relentlessly kept working without losing sight of the goal: – To produce the best PSA tool in the world! It is up to the users now to give us their verdict, says NICLAS WENDEL, Software Technical Lead and manager of the RiskSpectrum PSA project.

All licensees who have paid for support during this development project will receive the upgrade to RiskSpectrum PSA at no cost.

– We see it as a long term commitment. Today, most licensees enter a support agreement with us, and with these in place Relcon Scandpower can make long term investments for research, development, training and support that best serves our licensees long term plans for PSA and PSA applications, says Niclas Wendel. He continues: – At the start of the project our feasibility study showed that the work to complete the project was more than we could do using only our in-house personnel. Therefore SPAN Systems was contracted to do a major chunk of the work. Outsourcing to an off-site company with no knowledge of PSA or PSA tools proved to be a major challenge. Communication between the two development teams had to be extensive. Implementing/Testing cycles sometimes took a bit more effort than expected; then again, sometimes it turned out better with new functionality in the first cycle.

In the end, the result is that we have made a tool that surpassed our expectations – even though the road there was longer than expected, says Niclas Wendel.

INTERFACE
DR. DANIEL YING, Software Developer has been working on the integration of RiskSpectrum PSA with the other products in the Relcon Scandpower toolbox. Daniel Ying explains: – RiskSpectrum PSA is a member of the RiskSpectrum software package and can be used as a stand alone application as well as exchanging data with the other...
components in the software family. At this moment, RiskSpectrum PSA is working properly with RSAT and the MCS Editor and the next in line to be updated to interface seamlessly with RiskSpectrum PSA are: RiskSpectrum RiskWatcher, RiskSpectrum FMEA, and RiskSpectrum Doc, says Daniel Ying.

**MULTILANGUAGE**

– RiskSpectrum PSA will be available in several different languages in the future. Which languages and when they will be available, has still to be decided, says Niclas Wendel.

– The reason why version 1.0 is only available in English is due to the urge to release the first version as soon as possible. The coming multi-language version of RiskSpectrum PSA will allow the user to change the appearance of the Graphical User Interface (GUI). Setting the language to Chinese for example, will change all menus, control captions, messages, etc. to Chinese. In the case a caption in another language than English would require more space, the control will automatically resize depending on the language that is currently set, says Niclas Wendel.

**DATABASE AND THE GUI**

**LARS LUNDSTEDT,** Senior Software Developer has been working with the database design and is specialised in graphical user interface design. Lars explains:

– RiskSpectrum PSA uses the more powerful database Microsoft SQL Server instead of the outdated Microsoft JET engine used in RiskSpectrum PSA Professional. SQL Server however is quite expensive so a free, lightweight version of SQL Server called Microsoft Data Engine (MSDE), is provided with the RiskSpectrum PSA software package. RiskSpectrum PSA is a very complex application. It is, for example, designed so that the user can open and edit almost any record from any other record without having to go back to the database project navigator and open the record in its own editor. This is a developer’s nightmare, but a users dream, says Lars Lundstedt.

– One of the key requisites we had when re-designing the interface was that the user should be familiar with the look and function from other Windows software. We hope that, with the new interface, we have created an application that will make the user even more productive than before, says Lars Lundstedt.

**TEST ACTIVITIES**

RiskSpectrum PSA has had to undergo truly extensive testing and this has been done in a systematic way over a period of 3 years. **ANNA HÄGGSTRÖM,** Test Project Manager explains.

– To assure a good quality of RiskSpectrum PSA version 1.0 comprehensive testing has been performed. More than 3,500 man hours have been spent testing the software with the aim to ensure that the software behaves as expected and to eliminate as many bugs as possible even in the first version, says Anna Häggström.

In total, 13 engineers and developers have been more or less involved in testing the new version. Nine of the testers use RiskSpectrum PSA Professional on a daily basis, while four are engaged in software development.

– The most important reason for involving so many testers is the complexity of the software. The same command or action can be done in a lot of different ways in RiskSpectrum PSA and while one user prefers doing it one way, someone else prefers doing it differently, says Anna Häggström.

The first tests were carried out in 2003 with the purpose to identify potential problems at an early stage. Final testing started in February 2007. The testing was based on a number of acceptance test criteria cases, carefully matched to the design documents. All these test cases had to be achieved or surpassed before the software could be approved for release. In addition to the

**Meet the project task manager.**

**Ola Bäckström,** Software Department Head

Ola joined Relcon Scandpower in 1994 and holds a Master of Science in Mechanical Engineering from the Royal Institute of Technology in Stockholm, Sweden. Ola has been involved in all PSAs for all Swedish Nuclear Power Plants. Beginning 2003 he has specialised in the development of the calculation engine RSAT. Ola enjoys solving technical problems and fine tuning the heating system in his house.

**Niclas Wendel,** Software Technical Lead

Niclas joined Relcon Scandpower in 2001 after having spent almost six years in Australia. He finished his Bachelor of Information Technology with majors in Computer Science and Artificial Intelligence at Griffith University of Brisbane, Australia in 1998. After another three years in Australia working as a Software Developer he returned home to Sweden in 2001. Niclas enjoys outdoor sports, travelling and buying expensive spare parts for his KTM Superduke. (It’s a motorbike!)

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**Best PSA Tool in the World!”**
The people behind ...

Anna Häggström, Software Support
After finalising her Master of Science in Mechanical Engineering at the Royal Institute of Technology in Stockholm, Sweden, Anna joined Relcon Scandpower in January 2004. Anna is involved in many of Relcon Scandpower’s ongoing PSA projects, but also finds time to help RiskSpectrum licensees when they run into problems. Anna enjoys travelling and working out.

Lars Lundstedt, Senior Software Developer
Lars joined Relcon Scandpower in 1996 after working as a software developer for the Swedish Post Office. He is working with the design and development of our software. In his spare time he makes strange music with his synthesizers and avoid sports.

Johan Sörman, Sales & Marketing
Johan finished his masters in Mechanical Engineering in 1991 at the Royal Institute of Technology in Stockholm, Sweden. He joined Relcon Scandpower in 1997 after working as a PSA engineer for 3 years. Johan is responsible for selling and marketing RiskSpectrum products. Johan spend most of his time with his family cruising in the Stockholm Archipelago.

Daniel Ying, Software Developer
Daniel finished his master degree in applied mathematics in 2001 and continued to do a PhD in Applied Mathematics at Linköping University. On completing his thesis he joined Relcon Scandpower in May 2007. Daniel is assisting Ola in the development of RSAT and is also involved in our other software projects. Daniel enjoys skiing, working out, hiking and he always makes sure to be the last to leave a party.

SOFTWARE PROTECTION
– We decided to also use hardware keys for RiskSpectrum PSA, says Niclas Wendel.

The reasons for this decision are two-fold:
1. Hardware keys are still the best protection system available.
2. Software protection systems requires computer specific installation whilst hardware key protection systems offer a more flexible setup where you can install the software on as many computers as you wish and simply plug in your key when you want to use the software. In addition, you can acquire keys that are programmed for a number of simultaneous users on a network of computers.

For RiskSpectrum PSA we decided to switch supplier from Sentinel (SafeNet Inc.) to HASP keys (Aladdin Knowledge Systems Ltd.).

A user can use the same key for several different applications, i.e. only one key is needed. If a user decides to purchase other applications, the key can be updated to gain access to the new applications.

In the case of an application having optional modules, these modules can be turned on/off depending on the keys. If a user wants to upgrade an application to include more modules, it is just a matter of updating the key to unlock those modules.

acceptance test cases extensive testing was performed without following test instructions, for example creating small but complete PSA models.

Release candidates (RC) were compiled for testing purposes. If any discrepancy between the test criteria and the software behaviour was found in an RC, the problem was reported by the tester in the ‘Bugtracker’ database and also noted in the test case document. When a fix was available this was noted by the developer in the Bugtracker database together with information concerning which RC the fix was included.

– The tester was responsible for performing a retest of the new RC to verify the fix. Each problem reported was retested until approved. For the final test round 19 RCs were compiled, says Anna Häggström.

Special Thanks
Apart from the tests defined and carried out in the project, beta testers (not employed by Relcon Scandpower) were engaged to run some tests. The Project team wishes to thank the following people for their valuable beta test feedback:

Dr. Zdenko Simic, University of Zagreb, Croatia.
Mrs. Devi Kompella, RelTech Consulting, Mumbai, India.
Dr. Ivan Vrbanic, APoSS d.o.o. Croatia.
Mr. Jasbir Sidhu, Corporate Risk Associates, UK.
Mr. Mohamed Hibti, EDF - Division Recherche et Développement, France.
Mr. Jon Milne, AMEC NNC Limited, UK.
Mr. Martin Davidson, Ringhals NPP, Sweden.
Dr. Peter Röss, RWE Power AG, Germany.
Mr. Hartmut Schmaltz, AREVA NP GmbH, Germany.
Dr. Peter Wendel, Ringhals NPP, Sweden.
Mr. Martin Milne, SaabTech Systems AB, Sweden.
The .NET Framework is a development and execution environment that allows different programming languages and libraries to work together seamlessly to create Windows, Web, Mobile, or Office applications that are easier to build, manage, deploy, and integrate with other networked systems or as standalone applications.

The .NET Framework consists of:

- The Common Language Runtime (CLR), a language-neutral development & execution environment that provides services to help "manage" application execution.
- The Framework Class Libraries (FCL), a consistent, object-oriented library of prepackaged functionality.

Visual Studio is the Integrated Development Environment (IDE) that developers work inside when creating programs in one of many languages, including Visual C#, for the .NET Framework.

C# (pronounced C Sharp) is a new programming language designed for building a wide range of enterprise applications that run on the .NET Framework. An evolution of Microsoft C and Microsoft C++, C# is simple, modern, type safe, and object-oriented. C# code is compiled as a managed code, which means it benefits from the services of the common language runtime. These services include language interoperability, garbage collection, enhanced security, and improved version support.

Source: Microsoft Corporation www.microsoft.com

What is the .NET Framework, Visual Studio and C#?

Conclusions and Lessons Learned

Project Management

Niclas Wendel, Software Technical Lead and RiskSpectrum PSA Project Manager explains:

– Initially we had defined the set of features for the first release to exactly match those of the previous 16 bit version. However, as the project proceeded, we decided to add some new features and redesigned the GUI (Graphical User Interface). We wanted to give the users something that would feel new.

When choosing new features to add, it was important that only features that would not take too much effort to implement were included. Even so, a few features proved to be a little bit more time consuming to get working than initially expected, says Niclas Wendel.

Exchange of knowledge

All in all the project members have gained some valuable knowledge during this project. Below they choose to pass-on three of the lessons learnt:

First: Do not underestimate! Even if you double the first estimation to do a task, you are likely to underestimate. This is especially the case when working with new technologies.

Second: If several departments are involved in some tasks, make sure to allow for some extra time to coordinate these tasks. The other departments might not have the same priorities as your department.

Third: In case of outsourcing to an off-site contractor, consider having someone with the appropriate business knowledge stationed at the contractor’s site for immediate support.

What’s Next?

Immediately after the release, the maintenance phase commences.

– We will now start gathering user inputs regarding bugs and feature requests. There is already a stack of feature requests that we will start incorporating into coming releases.

– Another step will be to start working on the releases of the RiskSpectrum FTA, RiskSpectrum PSA Trial, and RiskSpectrum PSA Viewer applications.
Our expectations exceeded…

The initial idea for the first release of RiskSpectrum PSA was to exactly match the requirements of the previous 16 bit version. However we wanted to give the users something that would feel new, says Niclas Wendel, manager of the RiskSpectrum PSA project.

Below we briefly present those and some of the other new prominent features of the program.

In the new version RiskSpectrum PSA we have improved the graphical presentation as well as added several new features. You will find the user interface of RiskSpectrum PSA more user friendly than that of its predecessors. It makes use of floating and docking toolbars and the work area can be set-up to each user’s preferences.

We also have introduced two major improvements in the calculation engine RiskSpectrum Analysis Tools (RSAT). The first is the ability to inherit Boundary Conditions between event trees. Second, the setting “Logical and Simple Quantitative” can now also be used for consequence analysis. This now provides a simplified way of estimating the quantitative contribution of success branches in event trees.

There are no restrictions regarding application memory. This means that new functionality can easily be added. Another big improvement is that due to its structured object oriented design, the new version is easier to maintain. Problems and bugs can readily be isolated and fixed with less effort.

One of the most appreciated functions in RiskSpectrum PSA predecessors was the possibility to Tag and Filter records. These functions are very useful for finding relations between records, assigning, removing duplicating and replacing records or references between records, importing and exporting data between projects and when sorting and filtering records.

Upon request, we have added value to the Tag abilities in RiskSpectrum PSA by adding a global tag by date command, see Figure 2. With this command you can Tag all records in the whole database that have been changed after a specific date.

Just below the “Tag by date…” command you can also find another new command: “Propagate Tag”. Propagate Tag can be used to visualize what records are related to a tagged record.

For example: When selecting the “Propagate Tag” command with a few tagged basic event, the following records will also be tagged:

- Fault Tree pages where a tagged basic event is present.
- CCf Groups where a tagged basic event is used.

Quality Assurance made simple

To simplify quality assurance of a PSA model, functions were designed to meet the demands of our users. We are happy to announce that RiskSpectrum PSA include such functions, similar to those already in place in RiskSpectrum FMEA.

All records in a project can be set to the status levels; edit, reviewed or approved and the Users in a project can set the status level after being assigned user rights by the project Administrator.

- “Edit” is the default status for a record until a user with “Review” rights set the record status to “Reviewed”.

- Once a record is set to “Reviewed”, the record status can be set to “Approved” by a user with “Approve” rights.

- A record that is set to “Reviewed” or “Approved” will be reset to “Edit”, if changed.

- A record is changed when:
  - Any data, description etc, that is part of the record is changed.
  - A relation to another record is changed.

- A special case is fault trees and gates. For example, Fault Tree page status is changed when a gate in the fault tree is changed.

With this new feature you can easily manage the status of your PSA project as well as track changes made.
**Improved Graphical Display in Fault Trees**

Basic events with exchange events are displayed graphically, which makes the fault trees easier to understand and review, see Figure 3.

Also, an event that is both tagged and is set to True or False is indicated in the graphical display, see Figure 3.

In RiskSpectrum PSA you can also drag and drop events between fault trees. You can, as was also possible on the predecessor, have two fault tree editors side-by-side, but the difference now is that you can select an event or a branch and drag and drop it into another fault tree page. Holding the Shift or Ctrl button while dropping you can move or copy respectively.

**Other New Features**

- In RiskSpectrum PSA you can now include a BC Set within a BC Set. If you are proficient using BC Sets you will appreciate this feature. Typically you can define a basic set of boundary conditions in one BC Set which you want to apply in many places. But for some BC Sets you might also wish to add some other boundary conditions. Instead of having to list all basic boundary conditions plus the ones unique for your sequence, initiating event or analysis case in a new BC Set, you can now simply select the BC set with the basic set of boundary conditions and add the unique ones on new rows in the new BC Set, see Figure 5.

  Making use of this unique new feature will facilitate making changes as well as reviewing the changes. In combination with the new development of inheriting BC Sets between event trees (see paragraph about new features in the RiskSpectrum Analysis Tools on page 11) you will also be able to reduce the number of event trees and analysis cases in your model.

- It is now possible to undo your last action, see Figure 6. This does not however apply for mass operations (for example replace, remove references etc), where it is not possible to use undo.

- We have also introduced a “Quick Filter”. This function makes it possible to “quick filter” all record lists on the ID column directly in the editor without opening any dialog window, see Figure 7. You will find the command to display the Quick Filter row on the Record Menu (shortcut: Shift+F8). In RiskSpectrum PSA version 1.0 the Quick Filter only works on the ID field in record lists. The Quick Filter is planned to also be available for other fields in future releases.

**Improved software and model protection**

Hardware keys are used to protect the software from unlawful use in RiskSpectrum PSA. In addition, there is a server key solution available, which means that the program can detect a key on any computer in a network. For example one key programmed for X number of simultaneous users can keep track of the users on your company LAN.

For security reasons, the project files are password protected. So, without the correct password, a user will not be able to open a project.

It is also possible to lock a project. Once a project has been locked, no changes can be made in the project until it has been unlocked, see Figure 4.

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Figure 3. Graphical display of a tagged basic event set to TRUE state and with an exchange event.

Figure 4. The Lock/Unlock Project command on the Tools menu

Figure 5. A BC Set can be included within another BC Set.

Figure 6. You can Undo your last action.

Figure 7. Shift+F8 is the shortcut key to display the quick filter row.
Other New Features

- It is now also possible to define basic events as either an initiator or an enabler. This is done in the basic event record table or in the basic event dialog under the heading “Enabler type”, see Figure 8. This is useful when doing reliability analyses calculating the unconditional failure intensity “W”. A basic event defined as an initiator is only included with its failure frequency and an enabler is only included with its failure probability when calculating “W”. Note that this function is only active for basic events with reliability models repairable, non-repairable and periodically tested.

- In RiskSpectrum PSA predecessors, users complained that it was cumbersome to add a consequence to sequences. For this reason we have added the capability to add a consequence to a sequence directly in the event tree editor, without having to open the event sequence dialogue window. This can be done using the Record list (see below) or via “Add Consequence...” in the Record menu, see Figure 9.

- In the new version there are more options for customising the interface and the way the software behaves. For example, you can have the “Confirm” dialog turned off when adding new basic events in fault trees, see Figure 10.

- Another great new feature is that the Result files now are displayed together with the Analysis Case they were generated from. You simply click the Result Tab at the lower part of the Analysis Case view. Since you can e.g. “Tile” Analysis Case Windows, this also means that you can now view more than one MCS list at a time, see Figure 11.

- The record list has been improved. It includes many more records to choose from. It also includes buttons for showing selected record, filter the records and copy a record. There is also a quick filter function available as shown in Figure 12.

Figure 8. You can define a basic event as an Initiator, Enabler or Both.

Figure 9. It is now easier to add a consequence to a sequence

Figure 10. You can rid yourself of confirm dialogs

Figure 11. Tiled MCS-lists for better view

Figure 12. The Record List showing all basic events with ID starting with “AC”.

The Record List is very powerful to use when adding relations to other records and adding events in fault trees and event trees.
RSAT 3.00 for smaller models and improved accuracy

There are two major improvements in RSAT 3.00 included in the RiskSpectrum PSA package. Now you can transfer Boundary Conditions between linked event trees and reduce conservatisms in consequence analyses.

Upon request and co-sponsored by Mitsubishi Heavy Industries, Japan and Kernkraftwerk Leibstadt AG (KKL) in Switzerland we have introduced two major improvements in the MCS generating engine RSAT version 3.00.

These two major improvements that can, if you choose to use them, make your PSA model smaller, more efficient and easier to use.

1) The ability to inherit BC Sets (Boundary Condition Sets) between event trees. The implemented functionality includes that BC-sets specified in one event tree are transferred to sequences in linked event trees.

RSAT version 3.00 treats all event tree sequences, from the last event tree to the first as separate sequences. Figuratively speaking, this means that one large event tree is built and then the sequences are defined. When the design of the master event tree is done like this, it is possible to apply the BC-sets from the previous event tree also for the sequences in following event trees.

It shall be noted that there is a potential risk, if the coupled sequences are many, that the calculation time may increase.

The benefits of the possibility to transfer BC Sets from one event tree to another are obvious. The number of event trees and/or analysis cases in a PSA can be reduced, for example, when linking PSA Level 1 event trees to Containment Event Trees (CET) in PSA Level 2. With the new capability you don’t have to create separate CETs for each group of sequences with the same BC Sets. You can also reduce the number of analysis cases with different BC Sets running the same consequence analysis.

2) The setting “Logical and Simple Quantitative” can now also be used for consequence analysis. In RSAT version 2.00.11, the setting Logical and Simple Quantitative only applied to sequence analyses. The explanation of Logical and Simple Quantitative is presented in the theory manual, but briefly it means a simplified quantitative consideration of the success of the function event. With “simple” it is understood that the treatment is not 100% mathematically correct, but that the calculation of the success event probability is conservative.

Using RSAT 3.00 it is possible to perform Logical and Simple Quantitative also for consequence analyses, with the same result as if the analysis were performed using sequence analyses with merged results. Successful function events will be included in consequence analyses when Logical and Simple Quantitative is used in both the consequence analysis case and for the relevant function events. The implementation included improving code in RSAT for the generation and minimisation of MCS to make the minimisation process to consider that several “success” gates may occur in the same MCS list.

It can be noted that the Logical and Simple Quantitative also will consider success in previous event trees (if specified in the previous event tree).

This new functionality is by default not used by RSAT, but you can easily activate it. This is done by editing the file RSAPPS.INI. This file is placed in your computer’s C:\Windows directory when installing RiskSpectrum PSA. The default setting in RSAT 3.00 is that Boundary Condition Sets are not inherited between event trees. But you can easily add a setting in the RSAPPS.INI file in the RSAT section:

- SeqBCMethd=2

To activate the possibility to run Logical and Simple Quantitative also in consequence analysis you add the following setting to the RSAPPS.INI in section RSAT:

- SimpleQinConseq = 1

To ensure a correct minimisation process when Logical and Simple Quantitative is used for consequence analysis, make sure to add:

- ForceMinim = 1

The ForceMinim will perform a reminimisation based on the MCS list, which may be needed when several success events are included in the same MCS list.
PSAM 9 in Hong Kong – The biggest event this year!

Relcon Scandpower will, as usual, have a stand in the exhibition area at PSAM 9 (www.psam9.org) and there will also be a special RiskSpectrum Magazine issue produced for the occasion. A number of papers from Relcon Scandpower have also been accepted for the conference. See you in Hong Kong!