

RIAS

Risk Information and Assessment System

Good management is defined not so much by the things that go right but by the things you prevent from going wrong ...

... and preventing things from going wrong is called risk management.

Managing risk requires reliable, objective information at your fingertips:

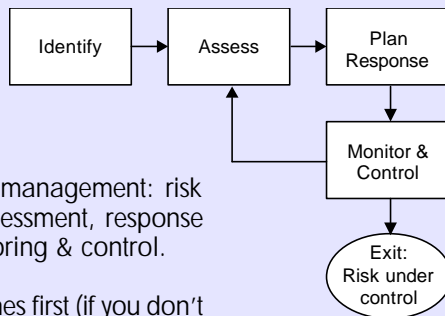
- how significant is this risk?
- what will the bottom-line effects be if it occurs?
- what are we doing about it?
- are the response actions having the desired effect?

This can be difficult enough to manage with only one or two risks - but what if you have dozens or even hundreds of risks?

RIAS gives you the capabilities you need!

THE RISK MANAGEMENT PROCESS

Risk management is the process of controlling the things that might prevent you from achieving your objectives.



There are four major processes within risk management: risk identification, risk assessment, response planning, and monitoring & control.

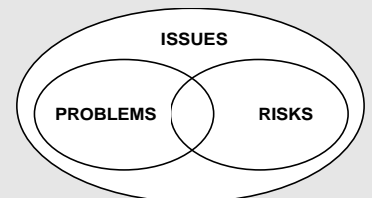
Risk identification comes first (if you don't know what the risks are, you can't control them). Risk assessment is the process of determining the level of severity of a risk. Response planning means deciding what to do about a risk, and finally monitoring & control is the management process of putting these plans into effect and ensuring that they are working.

ISSUES AND RISKS

RIAS lets you track both issues and risks in a project or program.

An *issue* is anything that demands management attention. Issues are generally concerned with either problems or risks:

- a *problem* is a harmful event or condition that has either happened or certainly will happen.
- a *risk* is an event or condition that *may* happen in the future.



Problems are things you must deal with now. Risks are events or conditions that you must plan to prevent or control.

RIAS maintains separate issue and risk databases within each datafile. You can enter a risk directly, or you can enter it initially as an issue and later promote it to a risk if it proves to be of long-term consequence.

RISK IDENTIFICATION

Before you can manage risks you must know what they are.

Every business or industry has its own characteristic set of risks. RIAS allows you to set up lists of risks which will apply to most situations you deal with.

RIAS allows you to record, for each risk:

- identifying names, numbers, and managerial responsibilities;
- risk definitions and a log of historical events;
- effects on the project (cost, schedule, etc.) if the risk were to occur;
- risk assessment data, defining the level of severity of the risk;
- risk response actions and associated data;
- organization-specific information.

RESPONSE PLANNING

The purpose of risk management is to take actions to control risks.

RIAS allows you to set up multiple response actions for each issue and each risk. Each action has an associated actionee and a due date or status. Action item reports can be generated in many different formats.

The RIAS Action Items Report is a fully customizable report which can show any definable subset of actions together with any definable set of supporting data. Every time you open a RIAS datafile you can display the actions due that day, that week or that month.

Risk Assessment

RISK ASSESSMENT MODEL

RIAS uses a risk assessment model based on the Project Management Institute's publication *A Guide to the Project Management Body of Knowledge*, 2000 edition. Details of the RIAS implementation can be found in "Qualitative Risk Assessment", *PM Network*, Oct 2000, pp. 61-66.

The RIAS risk assessment process begins with the selection of risk effect areas, i.e. organizational objectives which could be impacted by the occurrence of a risk. Assessment scales are set up for these areas so that predicted risk effects can be assigned numerical impact ratings for each risk effect area.

Overall impact is determined by combining the individual impacts in each area. Weighting can be applied if some areas are considered to have greater significance than others.

Likelihood is determined both by the probability of a risk occurring if no action is taken to deal with it, and intervention difficulty, i.e. the level of difficulty that would be experienced in attempting to prevent the risk occurring. However, for compatibility with some older conventions you can elect to use probability only.

LIKELIHOOD

The likelihood of a risk occurring often depends not only on blind statistical chance, but also on human intervention. A common way of expressing this would be: "I know this is highly likely to happen if we do nothing, but then we aren't going to do nothing."

For this reason, RIAS divides likelihood into two components: probability of occurrence (the probability that the risk events will occur if no action is taken), and intervention difficulty (the level of difficulty that would be experienced in trying to prevent the risk event from occurring).

To see how these two components work together, consider the risk involved in standing on a railway track. If you stand there long enough, a train will hit you. The *probability* of that occurrence depends on how often trains use the track. However, the *likelihood* of being hit also depends on how easy it is to get off the track. If the track is on flat, open land, so that you can easily step off when a train approaches (low intervention difficulty), then the likelihood of being hit is effectively independent of the frequency of trains. But if you are in the middle of a long tunnel, then you may not be able to get off the track in time (high intervention difficulty), so the likelihood of being hit depends in this case on how often trains use the track.

RIAS allows you to specify both probability of occurrence and intervention difficulty, and then calculates likelihood from these quantities. However, you may optionally use probability only.

ORGANIZATIONAL OBJECTIVES

A risk is defined and assessed relative to the effects it will have on your objectives if it occurs.

In any program or project we can usually identify several distinct objectives. Cost or schedule or both will be objectives if we are trying to do things within a budget or by a given date. Besides these we can identify objectives concerned with what we are trying to achieve (scope or functionality), and how well we do it. Typical objectives in the latter category include health & safety, reliability, user-friendliness, and so on.

RIAS allows you to assess risk effects relative to cost and schedule and also relative to user-defined objectives.

OBJECTIVES HIERARCHIES

Some objectives on a program or project are usually more important than others. In a market-oriented business, for example, the most important objective might be meeting delivery deadlines. In the construction industry it might be avoiding accidents.

RIAS allows you to set up an objectives hierarchy which defines the relative importance of each objective. This is used to calculate the overall impact of a risk when the risk affects several different objectives.

POSITIVE AND NEGATIVE RISKS

Risks can either be threats to achieving your objectives (negative risks) or opportunities to exceed your objectives (positive risks). For example, a negative risk may result in a cost *increase* of \$50,000, whereas a positive risk may result in a cost *saving* of \$50,000.

If you are using multiple time periods in RIAS to track costs, you can allow for the possibility that a risk will be negative (cost increases) in some periods but positive (cost savings) in others. You can use this to show the overall effect of a risk across the entire program or project life span.

TRACKING DATA QUALITY

RIAS risk assessments include a measure of the level of precision of the assessment. For example, if a risk has been assessed as being of only moderate severity but the information used to arrive at that assessment was very approximate, then the risk could be more serious than you think. Of course, the converse is true: it may be less serious than you think. Nevertheless, you should always be aware of the limits of your knowledge.

Monitoring & Control

RISK TRACKING AND REPORTING

Monitoring & control is where the rubber hits the road. Risk management doesn't do much for you unless you have a comprehensive and flexible reporting system to tell everyone concerned what is happening now, and what the predictions for the future are. This is why we say that the three most important things in risk management are communication, communication and communication.

RIAS provides you with a wide range of reports on individual risks and issues, on groups of issues and risks, and on groups of datafiles. The content and layout of most of these reports can be controlled via user-friendly report designer forms. Report definitions can be stored and later recalled to generate reports in the required configuration.

Tracking risks is made easier if you have a numbering system that reflects your priorities. RIAS allows you to set up your own risk and issue numbering systems, based on a risk or issue characteristic that you select.

REPORT FORMATS

The format of most RIAS reports is user-definable, so the number of different types of report that can be produced is almost unlimited.

Tabular reports such as the risk register and cost summary can display any definable set of risks and can include any available fields in any order.

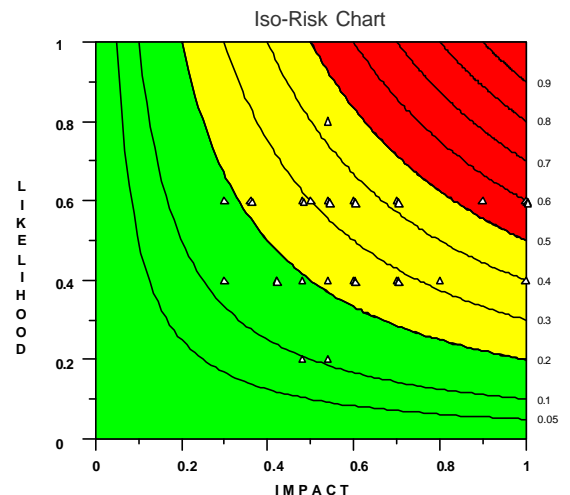
Graphical reports such as the risk matrix and iso-risk chart are fully configurable. The risk matrix, for example, has user-definable red/yellow/green zones and can display any definable set of risks with any set of data fields associated with each risk.

Reports on individual data records, such as the risk report and the risk assessment report, can be generated for a single risk or as a group of reports for a series of risks.

RISK AND ISSUE REPORTS

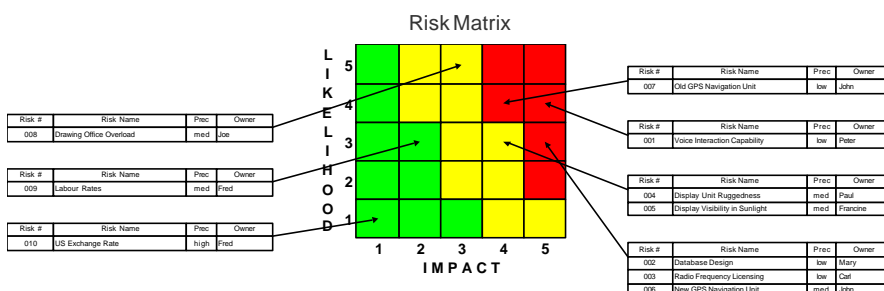
RIAS provides a wide variety of reports on both risks and issues. These include summary reports on individual risks and issues, risk assessment information, risk, issue, and action register reports, and various cost analysis reports:

- Risk Report
- Issue Report
- Risk Assessment Report
- Risk Assessment Scale
- Risk Register Report
- Issue Register Report
- Risk Matrix
- Iso-Risk Chart
- Action Items Report
- Cost Summary Report
- Multi-File Cost Summary
- Data Statistics
- Raw Data Record



DISPLAYING OVERALL RISK STATUS

RIAS provides two distinct methods of displaying the overall risk status of a project or program: risk matrix and iso-risk chart. The risk matrix is based on a 5x5 impact/likelihood table, while the iso-risk chart is based on lines of constant risk (iso-risk contours). Which you use is a matter of choice. However, since they are not exactly equivalent, it is recommended that you use one or the other for reporting purposes but not both.



Cost Tracking

TRACKING COST EFFECTS

RIAS provides an in-depth capability for tracking cost increases or cost savings associated with risks. Costs are tracked in terms of a base estimate, which can be positive or negative, and a variance around that estimate. (*When you expect a cost increase of \$50,000, do you mean exactly \$50,000, or just somewhere roughly in that vicinity?*)

Cost effects can be tracked without reference to time, or can be tracked as a variable over multiple time periods. RIAS allows you to define up to 16 separate cost reporting periods, which can be calendar periods or user-definable periods such as Phase 1, Phase 2, etc. Costs and cost variances can be defined individually for each risk in each period.

Risks can represent opportunities as well as threats. (*If we do this now it will increase costs in the short term but will bring savings in the long term.*) The multiple cost periods facility allows you to track cost savings as well as cost increases over time, together with the uncertainties associated with them.

COST CONFIDENCE LEVELS

Risk assessments and cost analyses are only as good as your input data. If you have little confidence in the input data, you cannot expect to have a high confidence level in any resulting analyses. For this reason, RIAS allows you to record and track cost variances in terms of best case and worst case values, and to show the aggregate effect of these variances in your analyses.

You can specify variances in absolute terms or as percentages. In addition, the RIAS AutoVariance facility enables you to specify variances in terms of your perceived confidence in the data. You can specify, for example, a data confidence level of *medium low*, and RIAS will then automatically insert appropriate best case/worst case values for you.

WEIGHTED COSTS

If you try to estimate the total cost impact of a series of risks by simply adding up the cost effect of each risk, the result is likely to be a gross overestimate because not every risk will necessarily occur.

The probability that any risk will occur is related to its likelihood: the lower the likelihood, the lower the probability it will occur. If the cost effect of each risk is multiplied ('weighted') by this probability and the results are summed, you will have a statistical approximation to the most likely additional costs which the project or program will face.

The RIAS *Cost Summary Report* shows weighted costs for any or all of the risks in a datafile. You can display weighted costs for each individual risk, or as rolled up costs for groups of risks.

MONTE CARLO SIMULATION

Monte Carlo simulation is a method of predicting overall costs, taking into account the uncertainty that may be associated with the individual cost estimates. It does this by looking at a randomly selected sample of possible cost outcomes, using a description, or model, of the uncertainty associated with each cost element. But herein lies the problem: how do you know what is an appropriate uncertainty model, and how do you apply it?

RIAS solves this problem for you by phrasing questions in simple descriptive terms, and converting your answers to Monte Carlo models (you tell RIAS what to do and RIAS does the math). Both open and closed models are available. (Ref. "Open and Closed: The Monte Carlo Model", *PM Network*, pp. 48-52, Dec 2001)

@RISK FRONT END

RIAS provides a user-friendly front end to Palisade Corporation's *@Risk for Excel* Monte Carlo engine, by automatically generating *@Risk* formulas.

Monte Carlo simulation is a powerful tool for budget analysis, providing answers such as the probability of overrunning a budget, or the amount of contingency needed for a given probability of completing the work within budget, or the probable effect on your budget of a poorly-defined task. *@Risk* is an excellent tool for this purpose. However, it requires special formulas to be generated and inserted into budget spreadsheets, which can demand considerable statistical and mathematical knowledge.

The RIAS Monte Carlo module provides this know-how for you, automatically generating and inserting the required formulas. (Some of these formulas are almost impossible to generate without RIAS.) With RIAS you can set up and perform expert-level simulations on risk cost data and on standard budget data.

MULTI-FILE SUMMARIES

RIAS allows you to combine the weighted costs from several different datafiles into a single multi-file summary. A summary can show the cost data in each datafile as a single line item or it can break the data down into specified risk groups.

Windows 98/NT/2000/XP compatible
Requires Microsoft Excel 2000 or later

Davion Systems Ltd
Ottawa, Ontario
phone 1-888-420-4559
or 613-258-6090
fax 613-258-7884

www.davion.com

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