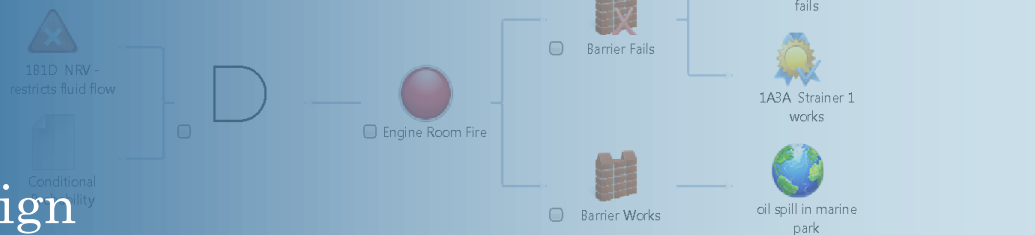


Capability By Design



Reliability & Risk Profiler

The Integrated Management of Asset Technical Integrity

Risk & Reliability Profiler (the Profiler) is a software tool for the asset management specialist from Capability By Design (CBD).

CBD has successfully researched methodologies and developed quality tools to support asset management planning since the 1990's.

The Profiler is the culmination of a long-term project that:

- focused on improving the understanding and management of the technical integrity of complex, high energy, high risk plant as exists in the resources and defence sectors
- brings together the major asset management methodologies into an integrated approach
- is consistent with current Risk Management standards
- is able to link into a corporate Risk Management Framework.

The result is a tool that implements a consistent and integrated approach enabling an informed response to issues such as:

- the production and safety impact of maintenance backlogs
- the business impact of non-completed safety critical maintenance
- the ramifications of deferred shutdowns

- the outcomes from Risk Based Inspections
- the effectiveness of existing maintenance plans
- the impact on safety of changing production schedules
- the impact on production and safety of deferred or cancelled maintenance
- the business impact of equipment breakdown.

The Profiler also helps you examine options for dealing with these issues by:

- developing and continuously updating Safety Cases
- playing “what if” games and assessing the effects of modifying production and maintenance schedules.

All this is achieved by integrating the techniques of:

- Reliability Block Diagrams
- Reliability Centred Maintenance
- Fault and Event Trees (Bow Tie)
- Risk Based Inspections
- Production planning and maintenance scheduling

to enable you to understand the complex inter-relationships between production, maintenance, risk and cost in ways not possible using the techniques individually.

And all in a single, modular tool.

an *integrated*

approach to managing

technical integrity

and its effect on

production, safety

and the *environment*

in the real world of

maintenance *backlogs*,

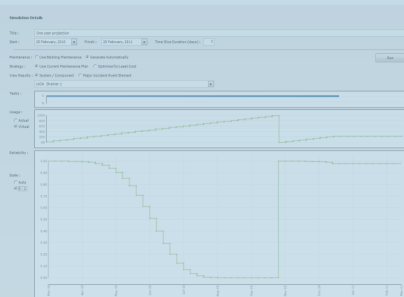
deferred *shutdowns*,

breakdowns, changing

production

requirements and reduced

budgets



Technical Summary

Importing Data

Data may be imported into the Profiler in XML format. Integration with existing ERP or CMM systems requires the export of data from those systems into XML documents consistent with a defined schema.

This approach is intended to readily accommodate interfaces to conventional database systems and also those systems that are ISO 15926[§] compliant.

Forecasting system usage and maintenance activity

System activity forecasting uses:

- a scenario with a defined duration broken up into virtual time-slices
- a plant capability output model with output transform functions
- projected operating schedule for the duration of the scenario
- plant condition at the beginning of the scenario
- current maintenance plans or an existing maintenance schedule.

The Profiler allows you to define and move operating and shutdown periods. You can also move or cancel specific maintenance tasks within those periods or change frequencies.

System usage calculations employ usage transform functions which enable the calculation of a component's usage, given the system's usage.

[§] ISO 15926 - *Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities*

Reliability Profiling

The Profiler calculates reliability at the end of each time slice using:

- the reliability of components for which failure characteristics have been defined
- the structure of the plant reliability model

This reliability profile shows how reliability varies with time throughout the scenario. It takes into account the negative effects of usage, and the positive effects of conducting repair and condition monitoring tasks. It shows how reliability changes with time, production and maintenance.

Significant events

The Profiler enables you to construct Fault Trees and Event Trees using:

- systems and components from the reliability profile
- other factors that contribute to significant events
- barriers and events that determine exposure to significant consequences.

Linkage to the reliability profile enables you to examine how production and maintenance affects the likelihood of major incidents.

Risk Profiling

You can assess the change in risk over time by loading the definitions of risk, severity and event likelihood from your Risk Management Framework. The failure rates from the Reliability Profile and severity assessments are then mapped onto your risk definitions to show how risk varies with time, production and maintenance.

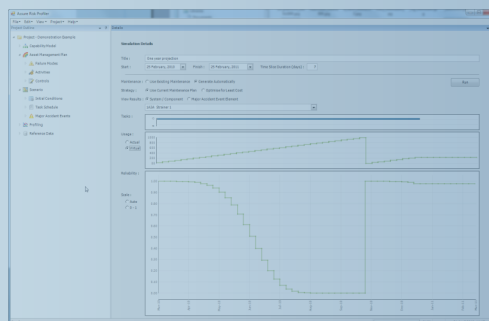
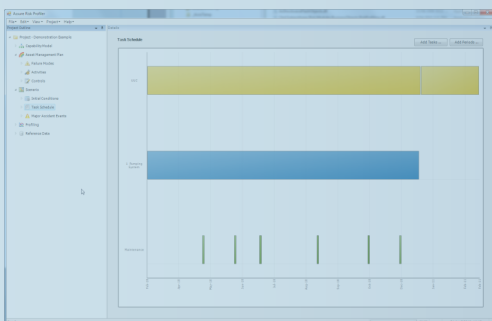
System Requirements

Reliability & Risk Profiler is a workstation application with the following requirements:

- PC running Windows XP / Vista / 7 or a server running Windows Server 2003 / 2008
- 2GB + memory
- .NET Framework 3.5 or later

The Profiler manages its own data using XML technology, so it has no database system requirements.

Demonstration versions are available with sample projects. Contact CBD for details.



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