

RiskWaves System Capability Assessment
Based on RIMS ERM Technology Solutions Executive Report

	Aligned
	Aligned with Improvement Opportunities
	Not Supported in Current Version

Repository of Information	100%	
Act as a central data repository		Relational DBMS with Row Locking and Enforced Integrity. Can store up to 50,000 records (more if migrated to MsSS). Forward migration path to MSS if more stores required.
Contain embedded risk taxonomy (definitions, classifications, categories and data linkages)		Extensive taxonomy based on ISO Guidelines with definitions in the User Guide. Taxonomy reference data is user defined.
Link to existing data for Objectives, Organization, Processes, other information to obviate data reentry		Risk Management Objectives and Controls can be imported en masse directly from a spreadsheet preformatted and installed for you with RiskWaves when you download it.
Store interdependency information for combinational risks		Combinational risks can be treated as many exposures to the same risk, or across entities using a common risk source. Related risks are highlighted in Risk Profile reports which summarize exposures to risk by risk source. In addition, exposures to risk can have multiple analysis records which form the basis for treatment, and each analysis can have multiple treatments. For events, RiskWaves provides parent events to link related events across treatments for enhanced visibility to results. Parent events include financial summaries of benefits and costs; and costs are allocated to events automatically based on the treatments.
ERM Data model to support enhanced reporting capabilities		Extensive linked data model that has been rigorously tested for integrity.
Capture Risk description and degree of quantification or qualification of each risk		Risk Module captures Risk Quality (qualitative or quantitative; transferability; controllability); Priority; Magnitude. Priority and Magnitude are user defined. Each exposure to risk has corresponding analysis records, and risk profiles capture all applicable likelihood and consequence probabilities and calculate exposure ranges and risk criteria for the user with totals by exposure, risk, and risk source for any subset of entities and time periods desired.
Accommodate multiple sets of qualifications based on organizational complexity		Clients can select one, all or multiple entities for each risk priority and risk magnitude attribute to enforce consistency or accommodate custom classifications. Each attribute can have one of five color codes.
Risk severity ranking		Risk Magnitude is a user defined attribute and can be tailored to specify priority and likelihood in the definition.

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Risk likelihood ranking		Risk likelihood rating is captured in RiskWaves via the Risk Priority, and for each related exposure analysis, likelihood is explicitly calculated where applicable, recorded, tracked and reported.
Criticality of the business process at risk (and integration with process criticality system of record).		RiskWaves places the criticality on the controls themselves (since controls can cover multiple entities, functions and processes as well as geographic units. Each control carries a priority indicator.
Push risk data out to other users		Pivots and Raw Data Exports exist for all Core Modules which can support interfaces to other systems.
Ability to mitigate or exploit risks		Treatment Module can target either end of an exposure at the consequence or total risk level. RiskWaves can treat, for example, the risk of lower than planned average sales prices for the same exposure, treat the opportunity to increase average sales prices.
Capture and track plans to mitigate risks with timetables, milestones, budgets, and owners		Project Module captures three level project plans with planned and estimated cost and completion data as well as owners, status and other information.
Exception reporting		A variety of clickable Exception reports for core modules that can be emailed from the Report. Clickable exception reports include links that open the related record. RiskWaves also provides the SysAdmin with global calendar reporting to track incomplete assignments.
Workflow automation kick-off processes		RiskWaves includes a Projects module for creating Project Plans with secondary and tertiary steps and tasks, capturing planned start dates, completion dates and costs, and estimated completion dates and costs, owners, status, descriptions, and references. Any project can be duplicated, with a new start date for easily kicking off RM plans.
Workflow automation reminders		RiskWaves includes extensive workflow automation reminders including task scheduling, clickable calendar reporting, global SysAdmin calendar reporting, Risk Watch update reminders; clickable exception reports, pending follow-ups reporting, and 30 day automatic alert metric updates to name some. In addition, when risk records are duplicated, users are prompted to approve automatic duplication of the related risk exposures.

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Workflow automation triggers		Each module includes controls to move records forward automatically. Calendar items can reference core module records (with instructions, optional reviewers, due dates) with clickable access.
Workflow automation notifications		Email integration for Risk Watch Alerts (System must be open); Open Calendar Item reports specific to User; Global SysAdmin calendar reporting; Exception reporting.
Review and approval processes		Review and approval is required in the treatment module using Status codes. The ability to move Treatments forward in status is a SysAdmin granted privilege. SysAdmin's can undo status changes for Treatments and Follow Up. All Treatments require Owners for the Treatment and the Follow Up. Exception reporting for Follow Ups due.
Dashboards of tasks and notifications		Alerts are presented on the main menu; also, each user has calendar reporting for items assigned for completion as well as items assigned for review. Exception reporting includes Owners.
Manipulate and export stored data		All reports can be emailed, saved as pdf, exported to Excel. Numerous pivots allow for rich user driven analysis. Raw data for exposure analysis can be quickly imported, stored, statistically analyzed, duplicated and expanded.

Analysis	94%
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Sort risks by qualifications, quantifications, business unit, elements of mitigation plans, cost, risk features, and risk qualifications		Main Menu provides one click access to any record in core modules based on user selected Time Period and Entity. Each core module also has a browser with key fields for filtering, sorting, and accessing activity records. Calendar items, Events, and Array data can also be viewed sorted and filtered.
Track reductions in risk		Reductions in risk are tracked in the Treatment module and related reporting. Actual reductions are tracked in the Follow Up Module. RiskWaves provides reporting showing cost and benefit for treatments at the Counterparty, Parent Treatment (i.e., policy) and Parent Event (i.e., user specified groups of events) level. In addition, RiskWaves includes offset pools to match exposures that are negatively correlated and report offset balances at the treatment and follow up stage. The Main Menu includes a dashboard showing total exposure, treatment impacts, residual risks, and treatment costs in present values.

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Categorize treatments by qualifications		All treatments include the Target, Type, and Treatment details. Treatment reports provide treatments by type and status. Pivot tables provide a wealth of analytical options for treatments and results.
Monte Carlo simulations		RiskWaves includes a simulation feature that allows users to run their designed treatments from 1 to 2,000 times using random likelihood and consequence units (within predefined probabilistic ranges) to determine the average benefit. Simulation details can be downloaded to excel, and results are stored in the RiskWaves database for future use in aggregate sensitivity analysis. The user has the option to store the average benefit with the Treatment record for enhanced reporting utility.
Simple regression analysis		RiskWaves allows users to copy trended data directly from spreadsheets into the system. The system will generate a variety of regressions using various slope functions for predicting exposures in a matter of seconds. RiskWaves allows the user to visualize their data in the Exposure Analysis module. Templates can be launched from Exposure Analysis to ensure the trended data adheres to the proper format.
<i>Polynomial regression analysis</i>		Users can create and store customized polynomial formulas and modify slope and independent values for generating repeatable estimates. Each formula can be named and results can be automatically copied to Exposure Analysis fields at the user prompt.
Confidence intervals or tolerance levels		RiskWaves provides the user with the ability to generate confidence and prediction levels at the 99.5%, 99%, 95%, 90%, 80%, and 70% levels.
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Operating cash-flow risk quantification		Nominal and present value cash impacts pre and post treatment with cost. RiskWaves also provides Present Value P&L reporting for any subset of entities and time periods the user chooses, with total risk impact and cost at the bottom. Finally, alerts can be established based on residual risk or total treatment costs.

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Market analysis		Market risks analyzed using user provided summary statistics. Also, the user can upload their market data into data arrays for regression analysis. These estimates do not have to be in the reporting currency.
Credit monitoring		See above - limited only by the user's penchant for modeling.
Highlight intra- and inter-dependencies affecting the organization		Intra-dependencies are linked by exposures to the same risk, or across entities using a common risk source. Related risks are highlighted in Risk Profile reports which summarize exposures to risk by risk source. In addition, exposures to risk can have multiple analysis records which form the basis for treatment, and each analysis can have multiple treatments. For events, RiskWaves provides parent events link related events across treatments for enhanced visibility to related risks. Offsets can also be used to highlight exposures that are related. Where necessary, project plans can be used to further link specific actions.
Link retained risk to financial data		Risks are linked to Financial Statement Items, but financial statement values are not uploaded into system due to storage requirements. Many modules have linked fields (e.g., Risk Watch, Exposure Analysis, Treatment) which can be integrated with RSS Feeds or linked to Servers to import specific fields from other databases, but this is custom. Also, Treatments contains two Accounting Fields for integration with books and records (posting costs).
Automated alerts if retained risk rises above thresholds		Risk Watches can be configured to automatically perform this function. It can manually be implemented without customization.
Generate risk adjusted financial information		RiskWaves makes extensive use of discounted values using user defined cost of capital by entity.
Facilitate cost-benefit analysis of treatments		RiskWaves provides extensive tools for analyzing planned and actual risk treatment results including a dashboard of discounted total exposure, treatment impact, residual risk and treatment costs. Reporting provides potential and actual payback and ROI at the treatment level. This can be further analyzed by treatment specifics in the pivot tables.
Awareness	100%	
Alert users of high priority risks and mitigation efforts		Users can quickly create reports based on any risk attribute using pivots. Risk Profiles also capture each risk attribute.

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Improve the enterprise-wide reporting capability of ERM through a data model		RiskWaves is a relational database with an extensive data model based in ISO 31000 with rich standard and custom reporting features.
Flexibility to generate management reports that appear as other reports in the organization		RiskWaves users can customize the background color themes and font colors of system forms and reports. Each user can apply their own color scheme based on their preference. Logo images can be changed so that client logos appear on menus, forms and report views. Additional customization can be performed by RCA.
Generate risk maps, dashboards, charts, color coded heat maps or other common ERM displays		Financial Dashboard and Heatmap on Main Menu both tailored to the specific subsets of entities and time periods selected by the user. Additional Charting, Dashboards and Maps can easily be created in Pivots. Also, RiskWaves provides 5 color codes for user defined Risk Magnitudes and RiskPriorities. Customized formatting based on exposure estimates can be developed.
Information on control assessments		Control Module includes Name and Description, Entities, Regions and Locations as well as Type, Priority, External and Internal Testing Frequency and Effectiveness scoring. Controls can be selected in the Risk Module for each risk. During Treatment, users have one button access to applicable controls, and for controllable risk types, Treatments will apply the users control gap estimate to the treatment impact.
Open Issues		Open issues are defined and captured in the Exception Reports and Projects (for Treatments with project plans). For analysis and treatment, the module tracks record state and prevents finalizing treatments when record states include issues. Users can click help for specific issues with analysis and treatment. Project reports can be launched from within the project module. Projects can be launched from the main menu, or from within Treatments.
Loss Data		RiskWaves captures extensive loss data and makes it available through a variety of standard reports (Event Reporting, Follow Up Reporting) as well as the After Action Review Pivot Tables.
Compliance Issues		Can be handled in Risk Watches, Projects, or as individual Risk Exposures.

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Viewing and authoring rights and other security measures		Out of box restrictions are limited to the SysAdmin granted treatment status change privilege. User profiles contain multiple additional placeholder fields for customized restrictions based on user requirements. RiskWaves would configure this as an integration service.
Facilitate knowledge sharing		Search keywords can be applied to After Action Reviews. The user can then search After Action Review effectiveness ratings and lessons learned by keyword.
Quick access to similar risks		Risk Profiles reporting and risk pivots for customized analysis.
Fit within a strong data warehousing policy		RiskWaves is designed using the star-schema to enable end to end analysis of risk management activities. RiskWaves includes controls and error handling to prevent corruption of data and relationships.

Monitoring	86%	
ERM Process monitoring		Exception reporting and ability to measure gaps in treatment design and start. Dashboard for risk results by Treatment Status. SysAdmin required to monitor global calendar for overdue items.
Treatment monitoring		Treatments are monitored by status and there is standard reporting for Treatments by Status Code and Start Date to ensure late treatments are addressed. Actual results are incorporated into Follow Up Records during After Action Reviews. After Action Reviews are scheduled during the Treatment creation, and reporting provides visibility into open Follow Ups and After Action Reviews due.
Ability to automatically accept ERM activities within a prescribed norm		Purposefully excluded - In our system, Treatments are approved via status changes. The SysAdmin controls who can assign which status codes to treatments, to ensure there is control over whether treatments can move through the process, but these are currently not based on an internal schedule of authorizations.

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Highlight abnormal ERM activities		Each treatment has metrics to report "potential payback" which can be used as a benchmark for evaluating proposed treatments. The ability to move treatments forward in status is restricted to ensure due diligence. Counterparty, Treatment Type, and Parent Treatment reporting provides visibility to financially ineffective treatments. RiskWaves also includes an RM Policy sub-module that can be integrated to enforce rules for Analysis and restrict the type of treatments available based on various risk attributes. Also, when an analysis has multiple treatments targeting the same end (e.g., High) then the Treatment warns the user.
Calendar functions to track milestones in the monitoring process and treatment plans		RiskWaves includes a calendar function with due dates (and optional times for meetings), optional required reviewers, status codes, module and record references for one click access to records, and instructions. Includes prompts to email notify owners.
Email reminders using an escalation protocol for escalation delays		All reports can be emailed from within the report. Risk Watch records include email alerts that will prompt the user to approve an automated email to Risk Watch owners when a recorded value falls outside the alert corridor. SysAdmin monitors global calendar for delays in assigned activities, which can be filtered by status, user, and sorted by dates.
Monitor portfolio risk exposures and corresponding risk appetites		Financial dashboard reports pre and post treatment exposures and treatment costs by user defined reporting units. RiskWatches alert users of risk levels and treatment costs outside of tolerance levels.

Measurement	100%	
Develop and track measures for the timeliness and effectiveness of ERM processes and Risk Optimization		Calendar function with Global SysAdm reporting; Payback and ROI metrics; Exception Reports; Customers can also address more specifically using pivot table data.
Track share price, or earnings and match it against ERM efforts		This can be performed in Risk Watches using the dashboard alert.

Total Alignment **97%**