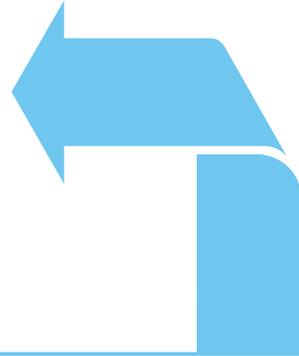




SERVICES & SUPPORT



PROCESSES & INITIATIVES

Relex®

SOFTWARE PRODUCTS

INDUSTRY SOLUTIONS



Fully Integrated Reliability Solutions
Enterprise-Class Reliability Management

Relex

The fully integrated solution for designing safe, reliable products



Essential product performance and safety measures must be considered during product planning, designed in during early system development, and tested for during the prototype phase of the product lifecycle. But that's not where reliability management ends. Ensuring these important dimensions of consumer confidence and product success are realized in the marketplace requires manufacturing process control and monitoring, as well as incident tracking throughout the fielded use of products and systems. And when product failures do occur, companies require a system to log returns or repairs, report issues, verify root cause analysis, and integrate corrective actions into next-generation products or services.

A New Approach to Reliability Management

Many companies use homegrown solutions for reliability analysis. Department-specific spreadsheets and other custom-configured analysis methods can lead to redundant and error-prone data entry, hinder the flow of information throughout the company, and limit management visibility into the holistic problem of product reliability and safety. The time and effort required to analyze product reliability using these methods can slow the development process, impeding innovation.

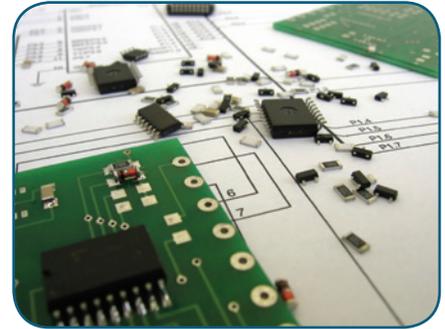
Relex can help you optimize:

- › Customer Service and Satisfaction
- › Safety and Risk Control Measures
- › Product Design and Development
- › Closed Loop Field Performance Feedback
- › Collaborative Reliability Analysis
- › Regulatory Compliance



Integrated. Intuitive. Comprehensive.

Reliability management requires an integrated approach to optimizing performance and safety throughout the product development lifecycle. With the wide range of requirements set for risk and reliability—including government and industry standards, customer contract specifications, and internal quality initiatives—gaining insight into reliability and safety metrics can require vastly different analysis techniques across the product development lifecycle. This can lead to individualized, department-specific solutions that actually slow innovation. But large, enterprise-wide resource planning systems frequently lack the rigorous analytical capabilities necessary to evaluate product reliability and reduce product risks.



Relex offers companies the benefits of both approaches, without the drawbacks. An enterprise-wide, single-database platform capable of executing sophisticated risk and reliability analysis techniques, Relex facilitates cross-departmental collaboration and promotes management visibility into the system performance metrics necessary for informed product development decisions.



Integrated

Integrate analysis types and cross-functional teams for more robust reliability management.

With its single database platform, Relex facilitates data-sharing across analytical tools, eliminating the error-prone process of redundant data entry. And, with flexible workflow configurations, analysis results can be automatically shared with colleagues, across teams or across the world. Even globally dispersed teams can work together on critical reliability and safety analyses, providing management visibility into the vital system metrics needed for decisions that significantly impact product development.



Intuitive

Access a single, easy-to-use tool to leverage multiple analyses.

The science of reliability engineering is built into the Relex solution, offering powerful calculations within an intuitive software framework. A single, streamlined user interface across multiple analysis types promotes familiarity and ease-of-use while supporting broad analytical capabilities. Search, filtering, and data management tools, combined with quickly configurable graphs and reports, provide key information and metrics efficiently and effectively.



Comprehensive

Leverage powerful analytical capabilities across the product development lifecycle.

Relex facilitates and integrates all aspects of a comprehensive reliability management program across the product development lifecycle. From setting vital reliability and safety targets during product planning, to requirements validation during testing and manufacture, to analyzing user feedback to ensure a fielded product meets the reliability goals set for it, Relex offers a comprehensive solution that ties all parts of the product lifecycle together and enriches collaboration between stakeholders at various phases in product design and development.

Effectively Manage Product Reliability with Relx

Customer Service and Satisfaction

Build or Strengthen a Great Company Reputation.

Building a great reputation as a provider of safe, high-quality products starts with the use of efficient, convenient, and intuitive tools to build safety and reliability into all products and systems. Designing in product reliability, safety, and maintainability from the early stages of product development onward helps ensure dependable performance and safety, reduce costly fixes later, and secure customer satisfaction for years to come. And, with the ability to calculate necessary repair, inspection, or preventive maintenance activities, manufacturers can guarantee system uptime and ensure more dependable customer service. When it is time to consider design changes, connecting system engineers with critical field performance data helps to improve next-generation products and services.



- Make early design decisions to select the most reliable system components for the money, based on product performance goals
- Identify, analyze, and evaluate system risks and hazards using globally accepted top-down or bottom-up analysis methods
- Collect, document, and trace field performance data, ensuring each incident is addressed for root cause analysis and corrective action
- Predict inspection, preventive maintenance, and repair intervals while balancing resource requirements such as cost and personnel
- Access data entry, system analysis, and reporting capabilities remotely via a secure, web-based login



Realizable Benefits

- Ensure performance and safety at reduced costs by designing in reliability and maintainability early in the product development process
- Obtain comprehensive insight into performance issues throughout development, manufacture, and operation
- Reduce the need for recalls and save on warranty costs by predicting performance and reducing or eliminating risks before production
- Protect against liability by ensuring all reliability management and risk controls are fully documented and traceable

Safety and Risk Control Measures

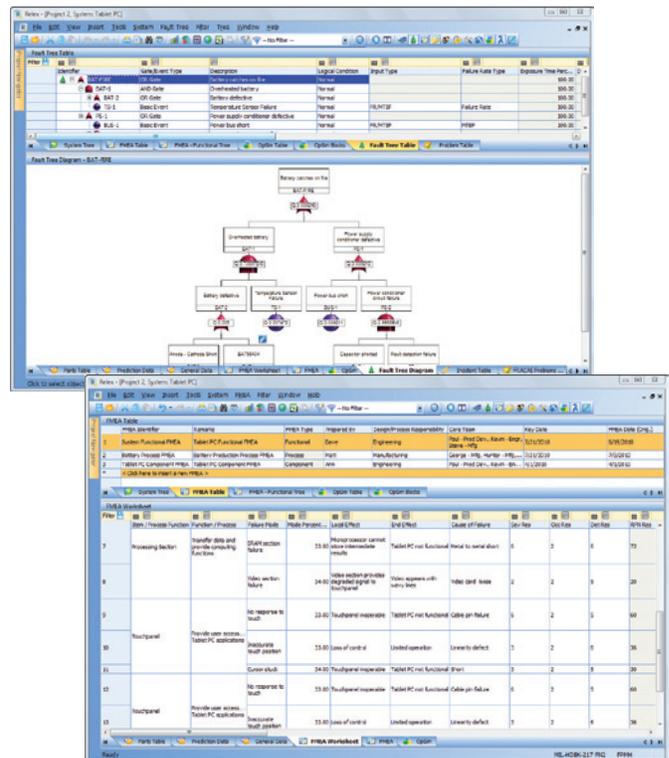
Identify Potential Risks and Eliminate or Mitigate their Effects.

Proven techniques for risk analysis and risk control offer powerful, easy-to-use solutions for identifying, analyzing, and controlling or eliminating potential risks in products or processes. Together with an enterprise-wide solution supporting the collaborative efforts of multiple teams to eliminate product risks, Relx offers the significant benefit of integrating the work of several different risk analysis tools.

- Relx FMEA (Failure Mode and Effects Analysis) automates a proven method to analyze potential sources of risk for products or processes
- Relx Fault Tree offers an intuitive, graphical interface for diagramming potential system failures and their causes
- Powerful integration capabilities allow risk control tools to be used together to enhance and enrich system analyses

Realizable Benefits

- Identify all factors contributing to safety-critical issues or failures
- Implement risk control measures and quantify safety improvements
- Document risk management activities to protect against liability
- Reduce product recalls and strengthen company reputation
- Ensure consumer safety and improve customer satisfaction



Product Design and Development

Quantify Product Reliability Earlier.

Assessing reliability early during the planning, design, and development of products and systems can help manufacturers avoid costly design changes later in the product lifecycle. Model even the most complex systems, including those with various operating profiles, redundancy, dependency, and parallel structure.

- Relx Reliability Prediction supplies extensive, built-in parts libraries based on widely accepted standards for quality and performance
- Perform derating analyses to quantify system reliability under various operating conditions
- Compare the reliability of alternate system designs using trade-off studies
- Model complex systems in Relx OpSim using reliability block diagram (RBD) technology to account for sophisticated configurations
- Quickly perform advanced statistical calculations to identify optimal repair, maintenance, and inspection parameters

Realizable Benefits

- Save money by accurately predicting system reliability during product design
- Identify components or assemblies having the greatest impact on system reliability
- Compare performance and reliability of a system using various component configurations, without the need for expensive field tests
- Optimize personnel, spares, costs, and other resources by calculating ideal repair and maintenance intervals
- Proactively mitigate risks to system reliability and safety before they emerge in the finished product

Closed Loop Field Performance Feedback

Validate and Improve Product Performance.

When failures within a product or system occur, organizations need a clear, systematic approach to identifying the cause, developing a plan to correct it, and ensuring these efforts positively affect the performance of future products or systems. Nearly every company has a system for recording field failures, but ensuring that each reported failure is successfully analyzed and corrected in a closed loop fashion to improve future products requires the streamlined business processes, robust analytical tools, and seamless workflow integration provided by Relx.

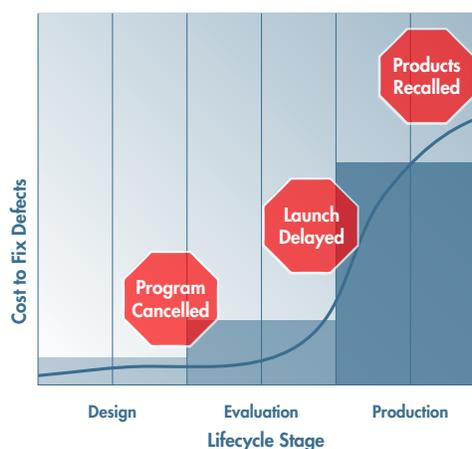
- Relx FRACAS offers a systematic approach to collecting, quantifying, and controlling a large number of incident reports
- Measure system performance, spot trends, and prioritize corrective actions based on quantitative analyses
- Track improvements made to the product or system as a result of corrective action processes
- Fully integrated tools allow recorded incidents to be output directly into Relx Weibull for advanced analysis of performance trends
- Output results to Relx FMEA for follow-up risk analysis

Realizable Benefits

- Ensure that every incident recorded in the field is advanced to evaluation and root cause analysis processes to “close the loop”
- Enhance collaboration with configurable workflow tools and an automated notifications and alerts system
- Access from anywhere using an easy, intuitive, web-based interface
- Enable field incidents to inform next-generation design decisions to improve product quality and customer satisfaction

Proactive Risk and Reliability Management

Manufacturers report significant cost savings when reliability and risk issues are addressed early in the product development lifecycle.



Collaborative Reliability Analysis

Connect Key Personnel with the Analysis Information They Need.

In today's competitive global economy, manufacturers must be equipped to support geographically dispersed teams, unite the work of design engineers with that of field technicians, and offer supervising managers access to key system metrics anytime, anywhere. Relex offers enterprise-class features supporting a full range of activities, from data entry to root cause analysis to system reporting. What's more, data security and integrity are protected using web-based login tools, administrator controls, and group or individual permissions.

- Available zero-client, web-based interface provides for data entry and analysis anytime, anywhere
- Convenient web-based Dashboard offers access to data and key system metrics for management review
- Configurable workflow tools advance electronic notifications and email alerts to key personnel when predefined thresholds are met
- Database integration supports Microsoft® SQL Server 2008, Oracle®, Microsoft SQL Server Express, and Microsoft Jet Engine

Realizable Benefits

- Obtain or contribute necessary information remotely
- Unite the work of personnel in geographically widespread locations
- Protect the security and integrity of data while keeping it widely accessible
- Track all changes made by contributing team members using audit trail capabilities

Regulatory Compliance

Meet Exacting Government and Industry Standards for Quality.

Government standards for the quality and reliability of products are imposed across many industries, including Medical Device equipment and Aerospace & Defense manufacturers, due to the sophisticated nature of these technologies and the significant impact they have on human lives. Even industries without externally mandated standards—like Automotive, Industrial, and Electronics and High Tech—maintain strict quality and reliability requirements for products and services, dictating minimum levels of safety, performance, and maintainability not only for manufacturers, but also for vendors, third-party OEMs, and other suppliers and contractors.

- Relex FRACAS supports government standards for FRACAS processes mandated for Aerospace and Defense manufacturers
- Built-in standards in Relex Reliability Prediction and Relex Maintainability Prediction offer a full range of globally accepted calculations
- Relex FMEA supports all major industries' risk analysis methods
- Supplied failure modes libraries in Relex FMEA support a wide range of industry standards
- Relex FMEA analysis outputs conform to MIL-STD-1388 2B (LSAR) standards

Realizable Benefits

- Leverage supplied government standards and libraries to ensure compliance
- Document conformance using available audit trail functionality to track system design changes
- Create analysis output in formats compatible with a wide range of commonly used desktop tools



Realize the Most Value from Relex

Through Services Delivered by PTC and Our Partners

Realize More Value, Faster

With 20 years of product development consulting, implementation, and training expertise, Relex Consulting Services helps leading companies of all sizes realize the full value of Relex. We offer a comprehensive range of process consulting, system implementation services, innovative education solutions, and value management that ensures customers have the right processes in place to fully leverage our technology. We also ensure that customers have the right education program in place to drive successful adoption.

Services and Training Solutions for Relex Customers:

ASQ-Certified Reliability Engineers

Certified Reliability Engineer (CRE) is a title conferred by the American Society for Quality (ASQ). Relex CREs are equipped with a broad range of mathematical tools and management techniques used in the highly specialized field of reliability engineering.

Implementations

Achieve reliability objectives through the effective deployment of one or more modules of Relex. Each implementation includes a blend of process consulting, technology deployment, education, and value management services.

Education

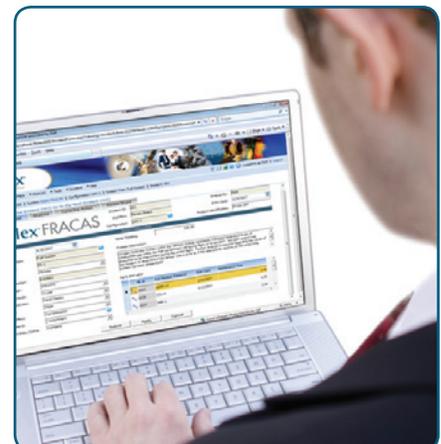
Learn from the experts. PTC University offers the largest variety of Relex training courses in the world. Each year, over 100,000 people turn to PTC University for their PTC technology training needs. Training is available in over 100 PTC University Training Centers around the globe, or online through our eLearning libraries. Plus, for larger Relex customers, we offer personalized, corporate learning programs that maximize user productivity, while minimizing training downtime. Visit www.ptc.com/training for information about Relex training options.

Expansion

A structured methodology to build on an existing PTC technology investment, whether it be upgrading technology, maturing a process, or delivering additional training.

The Right Team, Tools, and Technology— PTC's comprehensive Maintenance Support program delivers additional productivity benefits:

- A carefully coordinated system that helps your organization reach its full potential, reduce downtime and ensure maximum ROI from its PTC software investment
- Software releases that can include new features, as well as architecture, performance, and infrastructure enhancements
- Access to 240+ ISO-certified technical experts in our worldwide call centers who are all connected to a single database, available 24 hours every business day, with multiple language support
- Award-winning, online, self-service support tools with access to more than 45,000 documents that are updated regularly and can be sent automatically by email based on your preferences



The Power of PTC

PTC provides leading Product Lifecycle Management (PLM) solutions to more than 50,000 customers worldwide.

Software Products

- Broadest integral suite of solutions that enable companies to:
 - Create product information
 - Collaborate in a globally distributed environment
 - Control product development processes
 - Configure product content
 - Communicate product information to multiple systems and audiences
- Rigorous testing to ensure that products work together—and work for you
- Designed for incremental deployment to ensure successful adoption

Product Development Processes and Initiatives

- Unique process-oriented approach to product development to deliver maximum value
- Technology-enabled process optimization to advance defined customer business initiatives
- Product Development System supports end-to-end processes to accelerate deployment time and reduce cost

Industry Solutions

- Extensive expertise across a broad range of industries
- Demonstrated customer success in providing tailored solutions for specific industry needs
- Solutions support industry-specific business processes both within the enterprise and across the supply chain

Services & Support

- Product development consulting to define and develop best-in-class processes
- Assessments and implementation services to deploy technology with minimum disruption
- Education curricula to accelerate adoption and boost productivity
- Global maintenance support that delivers the right team, tools and technology—available anytime, anywhere you need them for product development success

To learn how Relex helps create value for some of the world's most innovative manufacturers, please visit our website at:

www.PTC.com

Complete Product Development System

PTC's integral Product Development System delivers the key capabilities manufacturers need to realize more value from product development. And our proven, incremental implementation approach can help companies of any size accelerate adoption, minimize risk, and speed time-to-value.



Pro/ENGINEER®

Integrated 3D CAD/CAM/CAE Software

Windchill®

Product Lifecycle Management (PLM) Software

Arbortext®

Dynamic Information Delivery Software

Mathcad®

Engineering Calculation Software

ProductView®

Visual Collaboration Software

CoCreate®

Explicit CAD, PDM & Collaboration Software

Relex®

Comprehensive Reliability Solutions

