The World’s Most Comprehensive Materials Database

Ultimate all in one solution and the first choice of engineers worldwide

Total Materia
What’s Inside

More than 20 million property records for over 450,000 metallic and non-metallic materials presented in 26 languages

- Properties for 450,000+ Materials
- 3,000+ Sources for Advanced Data
- Metals, Polymers, Ceramics, Composites
- 150,000+ Stress-Strain Curves
- 74 Standard Development Organizations
- 35,000+ Materials with Cyclic Properties
- International Cross-Reference Tables
- Property Estimation and Interpolation
- Chemical Composition
- Data Export to CAE Software
- Mechanical and Physical Properties
- Identification of Unknown Materials
- Multiple Material Comparison Options
- Standard and Material Update Tracking
Total Metals is by far the world’s largest database for metallic material properties and sits at the core of the Total Materia product offering serving as the gateway for an unparalleled collection of datasets and modules which serve the global engineering community.
Total Materia is the world’s most comprehensive materials database providing lightning fast access to properties for over 450,000 metals, polymers, ceramics and composites.

- 20M property records
- 450K materials
- 74 countries/standards

- Properties for 450,000+ Materials
- 3,000+ Sources for Advanced Data
- Metals, Polymers, Ceramics, Composites
- 150,000+ Stress-Strain Curves
- 74 Standard Development Organizations
- 35,000+ Materials with Cyclic Properties
- International Cross-Reference Tables
- Property Estimation and Interpolation
- Chemical Composition
- Data Export to CAE Software
- Mechanical and Physical properties
- Identification of Unknown Materials
- Multiple Material Comparison Options
- Standard and Material Update Tracking

www.totalmateria.com
Total Materia offer a range of packages carefully created to provide an ideal solution for all possible material data needs.

**Components**

Full-featured Total Materia Database covers metal alloys properties from 74 countries/standards and includes More than 20,000,000 property records for over 450,000 alloys – steel, iron, aluminum, titanium, copper, magnesium, tin, zinc, lead, nickel, cobalt, and more.

**Product Packages**

Total Materia offer a range of packages carefully created to provide an ideal solution for all possible material data needs.
Total Metals is by far the world’s largest database for metallic material properties and sits at the core of the Total Materia product offering serving as the gateway for an unparalleled collection of datasets and modules.

**The Challenge**

- Finding equivalents to foreign materials and comparing alternatives side by side
- Searching for materials worldwide by specific chemical composition or mechanical properties
- Deciphering material specifications and finding the correct grade for a specific application
- Finding precise traceable and reliable mechanical, physical and other property data for various conditions and temperatures

**The Solution**

- The largest resource of metal properties available for basic and complex engineering activities
- International cross reference tables from 74 countries giving the ultimate assistance in identifying similar and equivalent materials
- Standard data complimented by thousands of proprietary materials and other sources providing the complete solution

**The Benefits**

- Outstanding time savings; increased accuracy and reliability
- Common platform for repeatable results throughout the organization

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Focused on providing standard metal properties data, Total Metals provides you with a staggering 15 million property records for over 350,000 materials from 74 countries/standards.

THE LARGEST, TOP-QUALITY DATABASE
From chemical compositions, cross-reference tables, mechanical and physical properties at room, elevated and subzero temperatures, to additional information such as heat treatment diagrams, metallography and machinability, Total Metals gives you the highest quality and reliability of the only certified database of its kind in the industry.

THE FASTEST AND MOST POWERFUL CROSS-REFERENCING
The most comprehensive cross-reference tables with more than 15 million records for equivalent materials worldwide are systemized using a proprietary classification of similarity. In addition, patented SmartCross² algorithm enables identification of unknown equivalents using similarity of composition, mechanical properties or their combination.

UNPARALLELED DEVELOPMENT & CUSTOMER SUPPORT
Total Metals materials and property information are updated every month, keeping you up-to-date with the newest standards developments, as well as upgraded with new datasets, new unique algorithms and new software features. All aspects of Total Materia are fully supported by a dedicated team of specialists with over 300 years of combined industrial experience that provides technical consulting support FREE of charge for all subscribers!
PolyPLUS is the non-metallic material properties dataset for thousands of plastics, ceramics, composites, fibers, cements, foams, honeycombs and wood.

The Challenge

- Finding precise traceable standard and proprietary material property data for polymers, composites, ceramics, fibers, cements, foams, honeycombs and wood
- Simultaneous comparison of different kinds of metallic and non-metallic materials and finding the best alternatives
- Sourcing rare advanced properties information for FEA/CAE calculations including stress-strain and fatigue data

The Solution

- Non-metallic material properties data for tens of thousands of plastic, ceramic, composites, fibers, cements, foams, honeycombs and wood
- Containing thousands of both standard and proprietary materials
- Effortless searching of advanced property data for non-metals including stress-strain curves and cyclic properties

The Benefits

- One stop resource for all material properties data needs
- New opportunities in design by comparing the performance of completely diversified materials

www.totalmateria.com
Integrated with the Total Metals database which contains over 350,000 metallic alloys, PolyPLUS allows Total Materia to be used as a truly one stop solution for your material needs.

Property data for thousands of non-metallic materials

ULTIMATE ONE STOP RESOURCE FOR ALL MATERIAL PROPERTY NEEDS
In combination with the world’s most comprehensive metals properties database, PolyPLUS provides all the benefits of the Total Metals database for non-metals including property information for thousands of plastics, ceramics, composites, fibers, cements, foams, honeycombs and wood materials and all available at the click of a button!

ADVANCED PROPERTY DATA FOR NON-METALS
As well as housing a unique collection of advanced property data for metallic materials, Extended Range also offers a comprehensive set of stress strain curves and fatigue data for non-metals.

UNPARALLELED DEVELOPMENTS AND UPGRADES
Through our dedicated PolyPLUS team, new data and functionality upgrades are added on a monthly basis meaning that our growing library of non-metals is fast becoming an indispensable resource for the engineering community.
Unparalleled material properties resource for advanced calculations

THE WORLD’S MOST COMPREHENSIVE MATERIALS DATABASE PRESENTS

Extended Range

Unparalleled material properties resource for advanced calculations

The Challenge
 Finding material data essential for advanced engineering calculations and computer aided engineering (CAE) and finite element analysis (FEA) simulations
 Obtaining stress-strain curves at various temperatures and at different strain rates
 Comparing fatigue properties of different origins for example American, European and Asian materials

The Solution
 Offers a unique collection of advanced property data for use in critical design activities
 Effortless efficiency in the extremely time consuming task of finding reliable material property information, for advanced calculations
 Proprietary data acquisition methodology for experimental data from over 3,000 references and documents

The Benefits
 Avoiding costly and potentially dangerous errors
 Opening new opportunities for more optimized and cost-effective design
 Enhancing accuracy and efficiency throughout the entire process chain

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Total Materia's Extended Range dataset provides an unparalleled material properties resource for advanced structural and thermal calculations and analysis including: stress-strain curves, formability diagrams, fatigue data and more.

**THOUSANDS OF STRESS-STRAIN CURVES**
Unique collection of more than 150,000 stress-strain curves for calculations in the plastic range covers more than 50,000 materials, with various heat treatments, working temperatures and strain rates, from quasistatic to over 1,000 1/s. Both true and engineering stress curves are given, with a possibility to interpolate curves for user-defined temperatures and strain rates.

**LARGEST COLLECTION OF CYCLIC PROPERTIES**
The largest database of strain-life and stress-life parameters for more than 35,000 materials, e-N and S-N diagrams, for various heat treatments and loading conditions. Monotonic properties are included for reference along with statistical fatigue parameters where applicable.

**PROPRIETARY METHODOLOGY FOR PROPERTIES ESTIMATION**
Based on Total Materia cross-reference tables and properties of equivalent materials, Extended Range provides estimates for stress-strain curves for additional 90,000 materials and cyclic properties for another 80,000. Although estimates cannot completely replace experimental data, they provide a valuable starting point for further research and calculations.

**MORE ADVANCED PROPERTIES FOR DESIGN AND SIMULATION**
Forming limit and high-strain curves at a range of temperatures, for simulating forging, drawing and other forming operations. Fracture mechanics K1C, KC, crack growth and Paris law parameters are presented, with the corresponding graph of crack growth. Creep data including yield stress and creep rupture strength at different temperatures with the calculation of Larsen-Miller parameter and remaining life of the component.
DataPLUS is a supplementary module providing data subsets covering joints information, lubricants and coolants, material dimensions, tribology, and coatings for thousands of metallic and non-metallic materials.

**The Challenge**
- Material and consumables selection for successful welding operations
- A unified view of both material property and dimensional data
- Finding coatings and their properties related to materials in one unified platform
- Communicating between engineering and purchasing avoiding potential errors

**The Solution**
- DataPLUS covers a wide range of information within its five data sub-sets acting as a critical additional resource for the process of material selection
- Completely integrated, DataPLUS connects seamlessly to other key information such as chemical composition, tables of equivalent materials, mechanical and physical properties, which means viewing the bigger picture is effortless

**The Benefits**
- Drives more accurate material selection
- Helps justify material placement according to application
- Common tool for both engineering and purchasing helping to get it right first time
In synergy with the primary materials databases, Total Metals and PolyPLUS, DataPLUS supports and supplements key industrial application decisions by helping make accurate and considered choices relating to material selection and usage.

Welding information for global materials and consumables
Find critical welding information such as mechanical properties at joint, information for thousands of material combinations, base material property data, consumable characteristics and references to related welding methodologies.

Lubricant materials and tribological data
Make key decisions about suitable lubricants to reduce cost by ensuring optimized part life. In combination with tribological data for thousands of materials, a complete picture of surface interaction can be discovered. Find tribological data to understand the friction and subsequent wear potential for thousands of international materials and to help avoid unnecessary power loss and part degradation through the correct lubricant and coolant selection.

Find dimension and tolerance information in seconds
A must have to bridge the gap between engineering and purchasing, the dimensions and tolerances dataset allows you to find information relating to specific material measurements, their permissible variations along with useful information about packaging formats.

Search for coatings information to understand performance
Hundreds of coating designations available with multiple properties and test data to help drive accurate decisions relating to coating selection and performance. Using the simple search interface, find properties such as coefficient of friction, maximum working temperature, micro hardness and much more.
Enviro is an additional data module providing corrosion data, irradiation, weathering and aging information for thousands of metallic and non-metallic materials.

The Challenge

- Risks and potential catastrophic failures in exploitation
- Predicting product life under a range of influences deriving from external effects
- Ever increasing quality and performance challenges during product useful life
- Supporting innovation by aiding complete and thorough material selection decisions

The Solution

- Enviro focusses on four complimentary datasets which provide even more breadth and depth to the information provided within the fully integrated platform of Total Materia
- Covering corrosion, weatherability, irradiation and different types of aging effects, Enviro provides a key source of information to design, manufacture and sell products of greater quality and longevity in to the market place

The Benefits

- Reducing risks and increasing safety in exploitation
- Higher prevention rate of material failure during product life
- More knowledge for key design and material selection decisions
In synergy with the primary material databases, Total Metals and PolyPLUS, Enviro aids material application decisions by providing a comprehensive understanding of material behavior under the influence of a range of diversified impactful effects.

**Complimentary data module providing corrosion data, irradiation, weathering and aging information**

In synergy with the primary material databases, Total Metals and PolyPLUS, Enviro aids material application decisions by providing a comprehensive understanding of material behavior under the influence of a range of diversified impactful effects.

**Corrosion**
- Thousands of media
- Temp related data
- PREN, pitting, resistance

**Weatherability**
- Solar radiation
- Pollutant exposure
- Moisture presence

**Aging**
- Time-temperature (t-T)
- Fluid degradation
- UV ageing effects

**Irradiation**
- Exposure times
- Radiation dosage
- Swelling, creep, embrittlement

**Corrosion data for thousands of materials**
Find information about material corrosion rates and corrosion resistance in acid and aqueous environments and at a range of temperature conditions. Find direct information for a specific material using an intuitive filter to select the most suitable condition for you including media, temperature, exposure time, and corrosion type.

**Weatherability and environmental exposure information**
Typically associated with polymers, weatherability information provides important exposure information for solar, moisture, heat, pollutants, saline water and even microbial attack for thousands of materials. Helps tackle key material integrity issues by avoiding chemical process changes, weakening of material properties, and aesthetic issues such as coloration.

**Aging effects and related properties data**
Delivering a range of aging (time) information in a combination of one or more additional factors, which cause a general degradation of material integrity and can therefore have a serious impact on the long-term application of the materials. Covered additional factors in combination with time include thermal, chemical, and weathering effects.

**Irradiation influences on material behavior**
A key dataset for the nuclear industry, irradiation data provides a clear relationship between exposure time, radiation dosage and the subsequent effects on the material properties. Irradiation of materials can cause potentially catastrophic failures relating to swelling, creep and general embrittlement of the exposed materials.
The Compliance module provides a single source of information about global regulations for materials and substances.

The Challenge

- Costly penalties and exclusion from the market resulting from noncompliance
- Deciphering complex and diversified rules in different countries and even regions
- Staying up-to-date with ever changing rules and regulations
- Huge time and effort needed to gather information and apply it to the product line

The Solution

- The Compliance module offers a global view of up-to-date regulations for both materials and substances, allowing businesses to keep pace with the ever increasing pressure for companies to meet their legal obligations related to their products, components and the materials they use
- Compliance helps in a variety of complex tasks such as the design and launch of a new product, converting an existing portfolio to meet regulatory guidelines, approving vendors, controlling materials and more

The Benefits

- Safeguarding the business by reducing the risk of noncompliance
- Add new dimension to the processes of material selection
- Huge time savings in compliance analysis and due diligence

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Comprising inventory lists, hazard identification, transport information and much more for thousands of materials, Compliance includes international regulations, such as REACH and RoHS, national, from the US to Japan, China and Russia, as well as specialized regulations such as food industry, water and sanitation, all integrated and searchable with material properties information.

Quick assessment of material suitability for international supply chain
Owing to its coverage of international and national regulations, Compliance provides a possibility to quickly assess a globally created product, that can for example be designed in the US, with componentry from Japan, manufactured in China using local raw materials and substances, which will be eventually exported to the EU.

Company-wide centralized, up-to-date compliance information resource
Whether the objective is to assess new materials in conceptual design, to revise bills of materials for existing products, to test a new component in the laboratory, to compile due diligence documents, or to assess a new supplier, the Compliance module provides quick and simple access to centralized, unified and up-to-date information, thus eliminating errors throughout the workflow.

New level of integrability
In combination with a vast resource of basic and advanced material properties, compliance information, compliance of substances and all related international regulations can be readily exported to the company’s IT systems such as Product Lifecycle Management and Enterprise Resource Planning, which allows huge savings and enhances information flow.
SmartComp, the add on module from Total Materia allows intelligent metal identification by chemical composition obtained from spectrometer or other analytical sources.

**STEP 1**
Take a chemical composition of an unknown material
As you get it from the measurement instrument, test results or documentation

**STEP 2**
Get the results instantly
Total Materia’s proprietary algorithm finds suitable matches in seconds!

**STEP 3**
Review materials, properties and more
View and compare materials and data harnessing the full power of Total Metals

Tremendous time and cost savings through high speed material identification; strengthening business quality functions, from vendor assurance to material testing; expert reasoning helps to make the right decisions, and quickly!
Using a patented algorithm, SmartComp can eliminate a huge amount of working time dedicated to research and increases efficiency by allowing fast, multi-criteria material identification.

**EXPERT REASONING THROUGH PATENTED TECHNOLOGY**
Designed to “think” like an expert, SmartComp carries out what would be extremely time consuming manual research work in a matter of seconds. Using a patented algorithm SmartComp ensures that problematic trap elements, impurities and oligoelements do not bog the identification process down and focuses the search on the most important elements to the user.

**POWERED BY THE LARGEST METALS DATABASE**
Even the best expert cannot do a lot without a large data library for lookup and comparison. SmartComp is therefore integrated with the Total Materia Database, setting up the possibility to compare the entered chemical analysis with composition data from over 350,000 materials, thus ensuring finding material matches is a hassle free process.

**ADVANCED IDENTIFICATION OPTIONS**
In addition to Standard identification mode, advanced Expert mode offers a possibility to set the relative importance to each alloying element individually, thus obtaining matching alloys that may be more appropriate for the specific problem. Reference Materials is another module, which facilitates finding materials for calibrating spectrometers.

**BEYOND IDENTIFICATION**
Identifying matching materials may only be one part of the story. Total Materia allows direct access from the material match list to material properties, thus providing a possibility for a more detailed comparison of candidate materials and their properties, including side-by-side comparison option, and combining comparison of chemical composition and mechanical properties using cross-reference tables and SmartCross² module.
eXporter is the add on module which primarily helps bridge the gap between data source and computer aided engineering (CAE) software.

The Challenge

- Finding advanced property data for linear and non-linear CAE calculations in a ready to use solver format
- Importing data from source into CAE software without the need for additional data processing, copying, pasting and retyping
- Obtaining reliable inputs for material properties thus avoiding dangerous and costly errors
- Carrying out multiple and repeatable design tasks in the most efficient way possible

The Solution

- eXport a wealth of data for use in multiple design activities, from mechanical properties to stress-strain curves
- Simple 3 step process for selection, checking and importing data into a wide range of top CAE solver formats
- Fast and accurate transfer of data without the need for data processing or retyping

The Benefits

- Tremendous time savings, whilst relieving you from tedious retyping
- Increasing accuracy through elimination of data editing errors
- Streamlining and systemizing data acquisition workflow

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Bridge the gap between data source and CAE software

Whether you want to move data from Total Materia directly to CAE software or simply export in excel or .xml, eXporter provides all the functionality you need. In a form of a simple 3-step wizard, it provides multiple-format data exports in mere seconds.

**Mechanical Properties**
- Total Metals
  - Mechanical Properties
  - Physical Properties
- Extended Range
  - Stress-Strain Diagrams
  - Fatigue Data
- Polymers Plus
  - Mechanical Properties
  - Physical Properties

Please Note: A maximum of 100 data set exports allowable per concurrent license for the duration of the subscription. All previous exports are available at any time and re-usable an unlimited number of times for the duration of the subscription.

**EXPORT FROM THE ULTIMATE RESOURCE**
Total Materia offers the world’s largest material properties resource and it is now possible to select data from a collection of over 450,000 materials and 20 million property records, and then export ready for use in the next step of the design process.

**COMPREHENSIVE CHOICE OF CAE SOFTWARE FORMATS**
eXporter can be used to export critical material data for advanced calculations such as mechanical, physical, stress strain and cyclic data in a number of CAE software compatible formats. From bespoke xml., to simple xls. eXporter makes the transit of data from source to software quick and easy.

**SEAMLESS INTEGRATION OF TOTAL MATERIA MODULES**
Maximizing the potential of eXporter, the entire Total Metals and Extended Range data sets can be used to find the properties of interest. With full access to the largest international cross-reference tables and comparison functionalities, the full power of Total Materia can be utilized to ensure the selection of data for export is backed up by informed and traceable decisions.
In today's ever increasing pace of changing international standards, and producer specifications, Tracker is the Total Materia answer to your critical material traceability needs.

The Challenge
- Ensuring the most up to date information available is being used for the job
- Providing reliable, accurate and traceable information to other areas of the business
- Staying up to date with material, standard and specification changes
- Contributing to company best practices relating to information usage, configuration management and overall process quality

The Solution
- Making sure that the data being used is the most up to date and therefore most reliable information available
- See exactly what has changed within the database and when from standard version updates to property data changes
- Track the favourite materials and their changes according to specific engineering needs

The Benefits
- Confidence that accurate and up-to-date information is used
- Avoiding unnecessary costs for standards acquisition
- Driving business excellence through an optimized information usage workflow

Providing a bulletin style monthly notification service, Tracker allows, not only important standard and material updates to be monitored but even gives information on exactly what has changed within the material, whether it be updates to important properties data, addition of completely new datasets, or a simple update to version details.
The Suppliers module in synergy with the Total Materia module gives you precise connections between material specifications and suppliers from all over the world.

**The Challenge**

- Checking for suitable suppliers quickly according to a range of selected materials
- Coping with price volatility and meeting tight deadlines for material delivery by searching for alternatives in lower cost countries
- Finding material suppliers in other countries to help coordinate global purchasing activities
- Improving communication between engineering, purchasing and manufacturing

**The Solution**

- Invaluable communication tool between engineering, procurement and manufacturing
- Allows a global approach to purchasing and material sourcing in synergy with international cross reference tables
- Find alternative suppliers at the click of a button through seamless integration with all Total Materia packages

**The Benefits**

- Opens new opportunities for cost saving in material sourcing
- Brings engineering and procurement together
- Linking materials with suppliers helping avoiding costly errors in the decision making process

Allowing a direct link between materials of interest and finding suppliers across the globe, Suppliers allows for maximized communication and a critical starting point for the purchasing process.
Total Materia Integrator is a new software for creating a private company database of material information, whether it be internal standards and regulations, test data or external data sources.

The Challenge

- Managing multiple disorganized and scattered data sources
- Making accurate material information readily available throughout the organization
- Maintaining traceability and ensuring information is accurate and up-to-date
- Keeping up with the ever increasing pace of change of standards for materials

The Solution

- Simple, lite and easy to use, yet powerful web application for inserting and managing materials, properties and related information
- Complete traceability by tracking all changes made
- Flexibility to add a range of user defined properties, datasets and documents
- Advanced property searches, comparing materials and datasets, exporting data and much more in mere seconds

The Benefits

- **Simple**: Flexible package configuration, available online or installed
- **Fast**: Immediately ready off-the-shelf access can be granted in a matter of hours
- **Up to Date**: New functionalities and data upgrades every single month
- **Easy to use**: Standard Total Materia interface making finding information a pain free experience
- **Powerful**: Combined with Total Materia data, provides an invaluable data management tool
- **Affordable**: Price is a fraction of comparative solutions on the market

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In synergy with the Total Materia database, Integrator provides a solid, yet easy to deploy foundation for better engineering decisions, time savings and increased reliability.

**ULTIMATE PRICE-PERFORMANCE RATIO**
Integrator combines simplicity and an easy to use interface with flexibility to add multiple properties, diagrams and curves for private materials, along with a range of user defined datasets and documents. Unprecedented swiftness for deployment, huge instantaneous gains in productivity and accuracy, together with world class support, altogether, represents exceptional value for money.

**THE POWER OF INTEGRATION WITH THE WORLD’S LARGEST DATABASE**
Through coupling with the Total Materia database, Integrator provides the complete scope of more than 450,000 materials, as well as the full functionality of Total Materia, such as advanced property searches, intuitive comparison tools for materials and datasets, exporting data in various formats including the leading CAE solvers and much more in a matter of seconds.

Add Integrator to your current package immediately!
Contact us to arrange a demo or for more info
Multi-user Solutions

Multi-user web licensing with Total Materia is the most convenient and cost-effective solution for groups small and large, offices and enterprises.

Multi-user Licensing: Network and Corporate Edition

Distribute the informational power and knowledge of the Total Materia Databases with access incorporated into your intranet. You and all your colleagues can access the database on an “as needed” basis any time, directly within your corporate network.

Multi-user solutions provide unprecedented flexibility. Select the licensing option that best fits your needs:

**Network**: A range of server-based license options, providing password free convenience and distributed access for mid-sized and larger organizations.

**Corporate**: Server-based license, with unlimited access for the entire organization. Perfect price/performance ratio for large companies and centralized resource centers.

Benefits of Multi-user Solutions

**Turn-key solution, maintenance-free**: No need to install, download, and maintain any software on your server and computers.

**Always up-to-date**: Your users will always be working with the most recent and up-to-date version of the Database.

**Fast and easy access to the database and content**: Users do not need to hassle with logins and passwords.

**Exceptional economy**: This is the most cost-effective solution if you have several individuals who need access to material properties information. Many people can have access to the database information whenever they need it.

Pricing

Multi-user pricing is based on the number of named users and locations which require access to Total Materia with a cost effective solution for all eventualities.
About us

Key to Metals AG is a privately owned Swiss company dedicated to developing and powering the Total Materia range of databases and related software applications, customized projects and OEM solutions.

MISSION

Be the global leaders in providing the ultimate one-stop place for material properties information, thus helping engineers, professionals and companies worldwide to improve efficiency, effectiveness and reliability.

VISION

Remain at position #1 by providing continually improving unique multi-dimensional, highly intuitive informational platforms for all material properties and be the universal choice in resolving diversified present and future technological challenges.

OUR MAIN PRINCIPLES ARE

- Building trust and reducing uncertainty by providing data reliability and integrity to the highest possible level
- Dedication to our customers with unparalleled support, localization and presence worldwide
- Leadership through innovation with relentless investment into development of products and services