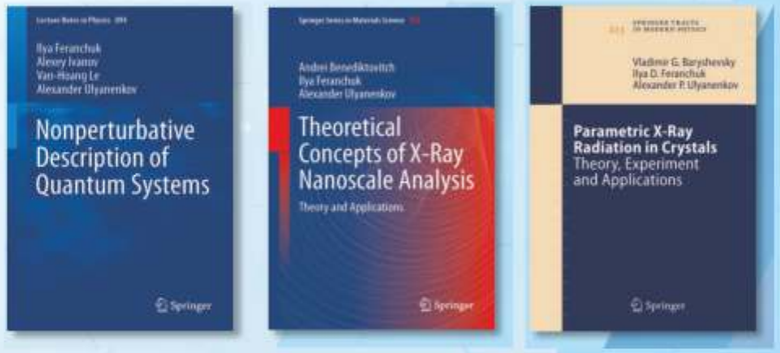
Scientific Experience. The analytical instrumentation business deals with high-technology industries and studies at the frontiers of science. Industrial users of analytical instruments include semiconductor companies dealing with modern nanostructures, biotechnology and pharmaceutical businesses investigating molecular and atomic properties of samples, companies exploring and designing modern materials such as graphene, and many others. Half of the instrument users are academic institutions and universities, which are involved in direct science. All of them obtain complex data from physical measurements, which often require a unique scientific approach for the interpretation of results. Working closely with partners and their customers for several decades, Atomicus members have published around three hundred articles in globally-recognized, top-rated journals, books and proceedings dedicated to scientific studies. Several employees of Atomicus deliver lectures in physics in European universities and regularly participate in international conferences, seminars and congresses to present the results of scientific studies performed in the company as a part of software development. There are also several books published by Springer, where the mathematical methods and physical theories for analytical techniques are presented.



Testimonials

Dr. Frank Burgäzy, President Bruker AXS Division (Germany): "The team of physicists and software engineers of Atomicus, which nowadays forms the Atomicus group companies, has been successfully cooperating with Bruker AXS since many years. The Atomicus team is working on software dedicated to complex analysis of X-ray data requiring profound know-how in physics and mathematics as well as programming skills. Atomicus demonstrates very professional approaches to the development of software products for high-tech analytical instrumentation and constantly is able to finish projects within the planned costs and time frame. Bruker AXS enjoys working with this competent and reliable company."

Dan Lenz, Director of Engineering, CAMECA Instruments, Inc (USA): "I would like to say thank you to all of the Atomicus team who have made the project a success to this point. You have consistently delivered high quality work and have done an impressive job of staying on schedule throughout the project. Your efforts are very much appreciated by Cameca…"

Prof. Richard Mayi, Albamy Nanotech (USA): "I am an experienced X-ray professional, and it is clear that within short LEPTOS has become the premiere software platform for thin film solutions. LEPTOS continues this new tradition – it has a combination of scientific capabilities and user options that will keep it as the only real option for professionals in this field for some time. I personally have never seen any commercially available scientific software that allows the user to directly assess and manipulate the underlying physics of the process being modeled. The ability of the program to handle a variety of scattering geometries is directly in accord with current X-ray practice of using several (rather than a single) experimental approach in order to solve a structural problem. Quite simply, with LEPTOS established a standard for excellence in X-ray data analysis that I cannot imagine can ever be surpassed by your competition."

Dr. Bob He, Director of Innovation & Business Development XRD2, Bruker AXS Inc. (USA): "We had many successful collaborations with Atomicus team in various R&D projects, among which, the LEPTOS project was one of the most successful one. The project was to develop a new software for thin film and stress evaluation with X-ray diffraction. I was very impressed by the strong scientific background of the Atomicus team members. The LEPTOS was released on schedule with complete documentation and user manual. The LEPTOS software is one of the most successful products and welcomed by our customers."

Dr. Scott Speakman, MIT (USA): "About half of the work that I am doing on the HRXRD instrument right now is for materials that do not fit into the classic examples of semiconductor thin films – ferroelectric oxides such as BeFeO3 and Sr(Ti,Fe,Co)O3, PCO (Pr-doped CeO2), MgO, Al2O3, and SrTiO3…Other programs do not even attempt to accommodate most oxide materials in their models, which makes LEPTOS an even more invaluable tool."

Jhanis J. Gonzalez, PhD - Technical Director, Product R&D and Management, Applied Spectra, Inc. (USA): "...it has been a great learning experience working with Atomicus. I hope we will continue our productive collaboration because I am sure of the transformative impact that our interaction can have in our company. Thank you and your team so much for your hard work!"

Prof. Dr. Alexander Makarov, Director of Research Thermo Fisher Scientific GmbH (Bremen, Germany): We had a very positive experience working with Atomicus on analytical software development. The Atomicus team readily absorbs and generates innovative ideas both for analytical and physical parts of the project, and for UI/IX interfaces to improve quality and usability of software. The physicists of Atomicus demonstrated deep understanding of physics of mass spectrometers, whereas programmers secured high-quality implementation of the project on time and on budges as well as prompt response on all requests of our R&D team. The project demonstrated a great discipline and high organizational skills of the Atomicus team. We were a little bit skeptical about outsourcing of such highly specialized projects, however, Atomicus was able to change this perception and made the future cooperation with them highly attractive. I would like to recommend Atomicus as a reliable outsourcing software development supplier, especially for scientific and analytical projects with high physical and mathematical content.

European XFEL · CAMECA · BRUKER · STOE · ADANI · Rigaku · AMETEK MATERIALS ANALYSIS DIVISION · ThermoFisher SCIENTIFIC · APPLIED SPECTRA · EMBL European Molecular Biology Laboratory · analytikjena An Endress+Hauser Company

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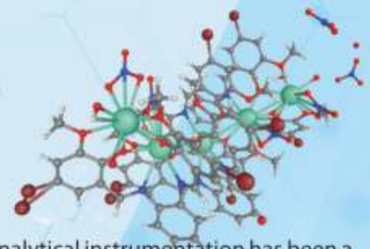
ATOMICUS®

Atomicus is a constantly-growing company focused on the development of high-technology software products. Since the end of the 90s, the Atomicus team has been involved in software development for world leaders in the manufacturing of analytical instrumentation. During this period, Atomicus has supported more than 60 major releases of several large-scale projects, delivered customer training, workshops and seminars, and contributed to essential marketing activity. The whole team at Atomicus is used to working in an international environment and in close cooperation with our partners.

Analytical Software. Is your company a manufacturer of analytical or medical instrumentation? The instruments definitely need a software interface for manipulation of the hardware, for data acquisition, pre-processing and analysis. We have been producing such software for almost two decades and can design and develop the whole concept to fit your instruments and customers' needs. Starting from firmware and communication interfaces, through instrument control modules to data collection and analysis, our programmers and physicists provide an appropriate approach for developing both a modern graphical user interface and fundamental analysis kernels. We can help you in the development of analysis software for various analytical methods, including but not limited to:

- NMR, EPR and MRI
- GC/MS, LC/MS and ICP/MS, general Mass Spectrometry
- AFM, optical, X-ray, SEM and TEM microscopy
- Atomic Probe Tomography (APT)
- Infra-red and NIR spectrometry
- Raman spectrometry
- MALDI and TOF
- Calorimetry and Thermal Analysis
- Laser-Induced Breakdown Spectroscopy (LIBS) and Laser Ablation (LA)



X-ray Software. The development of software for various branches of X-ray analytical instrumentation has been a keynote specialization of the Atomicus team since 1998. We have worked with several global players in this market to develop modern software products for X-ray data measurement, processing and analysis for thousands of instruments installed world-wide in different branches of industry and science. Among others, key directions of development are X-ray diffraction and spectroscopy, which are used in a broad range of applications in a wide spectrum of businesses: automotive, chemical, pharmaceutical, oil, mineralogy and geology, semiconductor, metals, life sciences, cement, polymers, and others. In particular, the following applications have been key subjects of work for almost two decades:

- X-ray Diffraction: HRXRD, GID, Powder XRD, Texture, Residual Stress, Single Crystal Diffraction and proteomics
- XRR, GISAXS, WAXS, SAXS and BioSAXS, PDF
- X-ray Fluorescence
- X-ray Imaging, Tomography, Topography, Coherent X-ray Diffraction

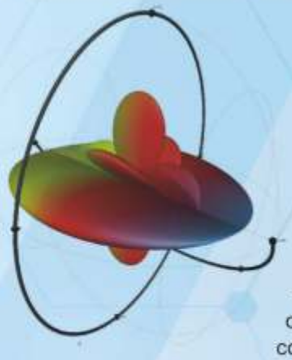
Medical Applications. Atomicus has the competences in the analysis software for medical applications related to CT and MRI. The radiological software requires a deep knowledge and experience of both physical methods including X-ray imaging and nuclear magnetic resonance as well as modern programming technologies involving big data visualization, GPU computing, Artificial Intelligence and Machine Learning. All these pre-requisites are available in Atomicus team, which guarantees the success in the projects for medical interpretation and analysis software.

Artificial Intelligence and Machine Learning. Atomicus intensively uses and implements the technologies of AI and ML in the software developed in company. We have a proved record of publications, conference presentations and software projects with implemented algorithms and technologies of artificial intelligence: Bayesian method, Fisher information, Genetic Algorithms and others. AI-powered and ML-driven technologies nowadays essentially help in fast and robust data analysis including Big Data.

Outsourcing and Custom Applications. The developers within Atomicus have a deep knowledge of general processing of massive volumes of data, mathematical methods of optimization, 3D graphics, and many other techniques supplementing modern analytical tools. The valuable experience accumulated by Atomicus team over decades in the business and science of X-ray analysis can be extended and applied effectively to other areas of analytical instrumentation requiring fundamental physical methodology and knowledge.

Atomicus supports outsourced software development based on both specifications provided and dialog between customer and developer to establish design and functionality. The development team is highly qualified and able to understand the needs and wishes of the customer and, if necessary, to guide the partner through the process of establishing the user requirement specification, including design and functionality as well as R&D or NRE procedures. Atomicus staff speak English fluently and have long experience of face-to-face meetings with customers dedicated to the specification, development, testing and international release of products. Our company is flexible in the selection of models for outsourced development, including offsite and onsite development, combined models or models customized to the partner's required partnership relationships.

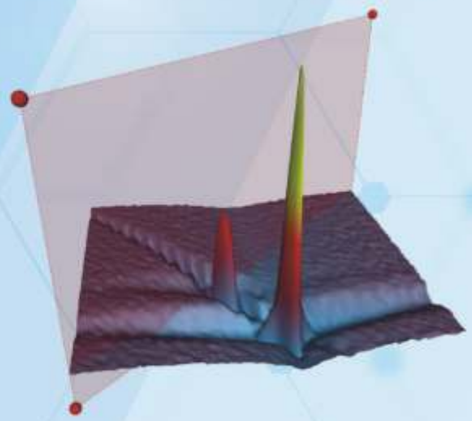
There are situations where the customer knows very well the market demand for a certain product, but, is not aware how to realize this software product. Atomicus has established procedures for a comprehensive product development cycle based on market demands, with a product release and rollout plan following. The development cycle is split into clear phases: consolidation of market requirements, NRE analysis, design and functional specification, agreeing workflow and milestones, control and feedback of coding, quality assurance and preparation for release. All stages are performed in close cooperation with the customer. As a result, the customer obtains a software product perfectly fitting the needs of the market and the customer's products line-up.



Tools and Methodology. Atomicus programmers and physicists are experienced to use a broad variety of programming languages, tools and software for development of the products:

- .NET, C#, C++/C - for programming of physical kernels and business logic
- WPF, DevExpress, Blazor, ASP NET, WinForms - for user interface
- Direct3D, OpenGL, WebGL for fast and crisp data presentation of multidimensional data
- Databases: MS SQL, MySQL, SQLite
- CUDA, OpenCL, DirectCompute for high performance GPU computations
- gRPC, OpenCV, FPGA. MathNet and numerous mathematical libraries for effective code execution as well as WolframAlpha Mathematica and other analytical media for supplementary physical and mathematical investigations. Atomicus has an experience of software development in SCRUM and AGILE methodologies. A special graphical component AtomicusChart (www.atomicuschart.com) developed in company provides very effective and fast 1D/2D/3D/4D data visualization including Big Data.

Quality, Maintenance and IP Protection. Working for many years in the analytical instrumentation business, Atomicus is used to following the high quality standards of this industry. A high accuracy of measurements, and the requirements for evaluation and servicing of X-ray instruments along with strong regulations regarding radiation protection, make essential demands on the reliability of software. These standards are well known to Atomicus from long-term work with our partners in the X-ray business from Germany, Japan and the USA. The X-ray solutions provided by manufacturers assume high standards of after-sales support and maintenance, which are also applied to the software developed by Atomicus. Atomicus team has also experience in multiple regulations used in semiconductor, pharmaceutical and other industries, for example, 21 CFR Part 11, etc.



High-technology business assumes a very concentrated investment in intellectual property: methods, design, algorithms and theories. Therefore, the protection of the IP rights of customers over their products is one of the key issues in development and product roll-out. Atomicus strictly segregates the development processes for different customers on all levels: separate assigned server space, information access, employees responsible for projects, communication channels, source code control in case of possible overlaps, and many other "firewalls" between projects. As the highest protection tool, we consider patenting the most significant ideas together with our customers, which guarantees legal protection of intellectual property.

Industry Applications for AtomicusChart®

AtomicusChart® is a customizable, state-of-the-art data visualization tool for the most demanding industries, from science to medical analysis and reporting. The chart provides unmatched performance in real-time data acquisition and visualization, using its high-speed professional software for scientific renderings.

Some of the top industries that use AtomicusChart® include:

- **Financial, Stock, & Trading:**

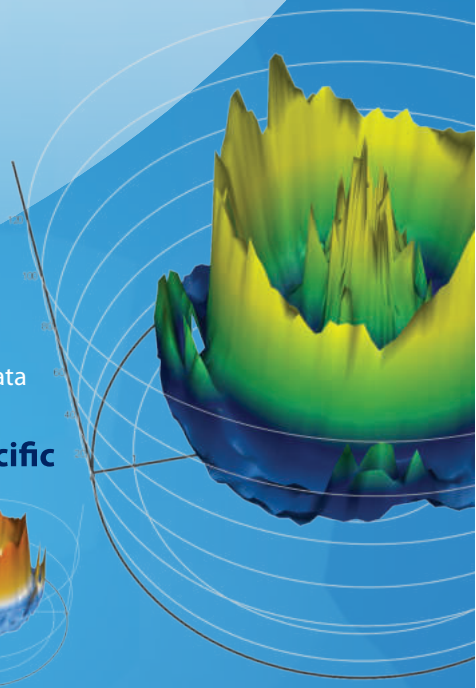
AtomicusChart® has a proven record of performance in charting, ensuring smooth function and speedy renderings – even with millions of data points.

- **Medical & Scientific:**

AtomicusChart® is commonly used in medical and scientific applications, where millions of data points must be reviewed simultaneously.

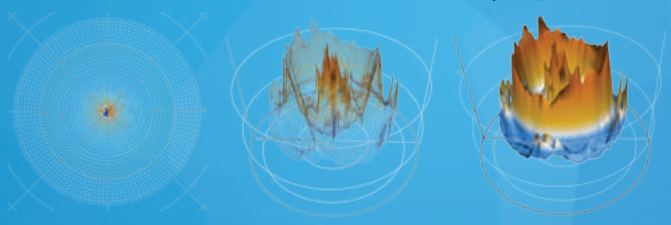
- **Engineering & Design:**

With 3D and 4D rendering capabilities, AtomicusChart® is the premier platform for high-end data visualization in engineering and design applications



AtomicusChart® also supports data visualization with industry-specific features such as:

- **Volumetric rendering**
- **Scientific data scales**
- **Order-independent transparency**



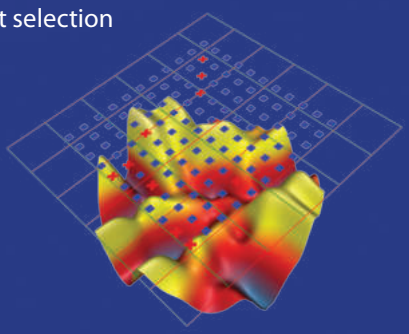
Competitive Advantage:

AtomicusChart® also provides reliable and accurate processing of large data sets – as many as 40 million data points – for video adapters with mid-range video cards without reducing the data prior to processing like the competition often does.

Principal Features of WPF AtomicusChart ®

AtomicusChart® has an array of high-end features for WPF/WebGL Charts, some of which are only available with our integrated technology. With AtomicusChart®, you'll be able to generate arrays, charts, and visualizations.

- High performance and optimization for big data sets
- 40,000,000+ point clouds and 1,000,000 point curves
- 16 Mp structured grid 3D maps, 512x512x512 volumetric data, and 150 Mp+ raster data rendered with 30+ frames per second on average discrete video adapters
- GPU-based order-independent transparency
- High-resolution image and movie exporting for reports and printing
- Ambient/diffuse/specular light model and lit sphere support for materials emulation
- Axis coloring, tick count and adjustable density, and font selection
- Customizable series color, width, markers, and style
- NaN / infinity / out of range handling
- Cartesian, cylindrical, and spherical coordinate systems
- Linear, logarithmic, and SQRT data scaling
- Fast data picking and integrated item interaction
- Built-in contours search



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ATOMICUS
CHART

Atomicus is a constantly growing company focused on the development of analytical instrumentation for high-technology software products. Since the late 90s, our team has been providing reliable and professional project-based outsourcing of software development for any business area requiring both modern graphical user interfaces and fundamental physical and mathematical kernels, including many world leaders in analytical instrumentation manufacturing.

During this period, Atomicus has supported more than 80 major releases of multiple large-scale projects; delivered customer training, workshops, and seminars; and contributed to essential marketing activity. We have decades of experience in the development of software for high-end analytical instrumentation for materials research, proteomics and biological samples, semiconductor structures, and many other industrial and academic applications.

Atomicus provides the full life cycle for software products, including marketing and service support. In addition to our outsourced analytical software products, our services include consulting and training, research and development, and custom applications.

AtomicusChart®: a WPF Chart From Atomicus

AtomicusChart® is a WPF and WebGL Chart from Atomicus that's intended for analytical applications. It can be reused and integrated into any software that requires high-speed graphics for large volumes of data, including large data.

As a collection of libraries and modules, AtomicusChart® is capable of:

- Visualizing 1D, 2D, 3D, and 4D data with numerous options for representation
- Handling large data volumes and high-speed data processing.

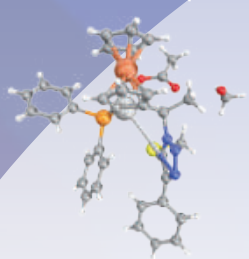
AtomicusChart® is a DirectX 11-based 1D/2D/3D/4D graphical .NET control. WebGL version is a WebGL-based TypeScript control. It was designed and optimized for the needs of analytical software in high-tech scientific, industrial, and commercial applications. **AtomicusChart®** is a best-in-class software for data visualization, and is best for any application that requires fast, real-time, or large data display charts.

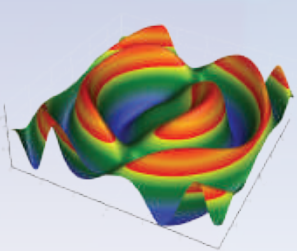
The solution was designed as a versatile data visualization tool for high technologies, complete with 4D representation, 3D rendering and interaction, and substantial capabilities for 2D plotting. **AtomicusChart®** is the

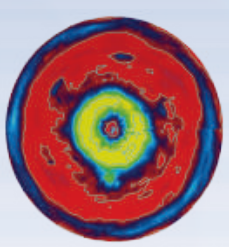
How It Works

AtomicusChart® fully stores data in its video memory, and data processing is accomplished using a GPU shader program. Operations such as switching linear/SQRT/LOG scale or changing the ColorMap are nearly instantaneous.

Data rendering is extremely fast with **AtomicusChart®**, pulling together millions of data points into a variety of different chart types and visualization options. **AtomicusChart®** also provides a highly responsive and intuitive user experience.







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