



exberry

White Paper

Exberry's Top Exchange Solutions at a Glance

An Inside Look at the Institutional-Grade Technology that Revolutionizes Exchange Infrastructure



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A lot has changed, but many things remain the same. When Exberry first launched, it was considered a game-changer in the capital markets ecosystem. So we sat down with Ronen Nachmias, Co-Founder, and CTO, to dive deep into everything we built at Exberry and why it is so relevant to the ecosystem and climate.

What Is Going on in the Industry, and What Are the Limitations You See?

When we designed Exberry, we always considered two perspectives: a market that requires ultra-low latency and millions of orders per second. The second case of a micro-market requires a fast time to market at a minimal upfront investment. We saw that customers had to choose between two non-optimal options that do not allow scale and will drive recurring investments over time. We wanted to help solve this issue. We wanted a technology that would enable us to scale on demand globally. And as a result, what we end up with is that micro-markets can now scale to become top-tier markets, and top-tier markets can innovate.

What Was the Industry Doing in the Past?

Innovative markets must be agile and iterative – start fast and scale fast, and time to market is critical. This purpose leads us to invest efforts to ensure our customers can deal with their business. We make sure we assist them in ramping up by providing the best-of-breed technology required at the heart of every market. We acknowledge cloud technology and SaaS as an accelerator and enablers for innovations.

Usually, such markets face the build vs. buy dilemma, and none was effective. Nothing stood in the middle of this spectrum. Up until Exberry was established, the situation was that technology specialized only in specific asset types. It was not agnostic enough to support the required diversity to meet the growing needs.



Furthermore, existing technological solutions are developed by market operator enterprises rather than by technology companies. This creates a conflict of interest between the technology they made in-house to support the primary business and the customer using the technology. Before Exberry, there weren't any independent technology providers focused on building core technology for exchanges and markets. And building in-house is not easy or cost-effective.

In past years, we have seen cryptocurrency rising in popularity and taking a mainstream role in global economics. Still, I believe it's only the first sign of something bigger. When Bitcoin came in and started to dominate, it proved the potential of issuing a decentralized token. Crypto changed one fundamental thing: the central control of big institutions over what can be owned and traded.

How Is Exberry Taking a Lead Here?

At Exberry, we wanted to build enterprise-grade technology that can support any business at any scale. And depending on the customer's needs, we fit the technology to serve its needs and meet the SLA required. Achieving this with the same technology. So it means that even the micro-market will get robust top-tier trading technology. Exberry has built a flexible technology that can adjust to each market's different sensitivities if it is cost-sensitive, performance-sensitive, or location-sensitive.

Exberry is cloud-first technology and works with perfect synergy on the cloud, on-prem, and in a hybrid model. We can adjust the service to run dedicated and shared models and control the level of data segregation both from physical and logical aspects. This flexibility opens up many new opportunities. We made sure we kept the flexibility here to serve any market.

The public clouds are a vibrant environment, and the amount of research



and development around them is incomparable. The potential of getting compute power on-demand boosts innovation. In that sense, Exberry is consolidating the markets around the world. I can visualize how Exberry opens an opportunity for markets to collaborate as a global exchange using our technology.

What Factors Make Exberry's Solutions So Scalable?

We should consider several factors to scalability from the different aspects of the system; scaling means efficiency in dealing with; geo-locations, cloud providers, feature expansion, architecture, high availability, disaster recovery, utilization, performance, continues-delivery, etc.

Breaking down each of these problems into its most minor pieces and finding innovative solutions to solve them separately is how we made the Exberry platform unique and scalable. In addition, we use distributed algorithms to solve complex problems of scale in practical and reliable ways.

We understand that solving these problems is fundamentally teamwork. We work together to innovate on every level and every day. In the end, it's all a matter of having the right culture that allows the nurturing of technology.

The main concepts that guide us while building Exberry's exchange technology:

Mechanical Sympathy

The first is that the core technology must be developed in a certain way to process and utilize the hardware it is deployed on to its maximum. We employed the Mechanical Sympathy approach to harmonize the software with the chosen hardware. With this approach, we can achieve ultra-low latency.



Scale Cube

Allows us to scale in 3 dimensions of the system, X-scaling means many duplications of the entire system, Y-scaling means scaling only a specific feature of the system, and Z-scaling means enabling shards of data. With this approach, we can scale the system in the most efficient way possible and maintain high levels of SLA.

Reactive System

We believe that a coherent approach to systems architecture is needed. The system should inherently and by design be fault-tolerant and react more gracefully to failures and extremes. We want systems that are Responsive, Resilient, Elastic, and Async.

I believe the software itself should solve this. As a first citizen of the architecture, Reactive Systems are more flexible, loosely coupled, and scalable. This makes them easier to develop and amenable to change. They are significantly more tolerant when a failure occurs and resilient if it meets extremes; it deals with them with elegance rather than a disaster. Reactive Systems are highly responsive. For example, the built-in flow control and back-pressure support allow the system to slow down a consumer from overwhelming the system with too many requests that can put the system at risk and guarantee a level of SLA.

Multi-Tenancy

Allows Exberry to deploy every product and service in multi-tenant modes in controlled data segregation levels. Resources and data can be fully dedicated to serving specific tenants or shared across several tenets, including replicating the entire Exberry sites and point-of-presence or even segregating inside a single point of presence.

Flexibility in cost allows us to tailor flexible business models to fit our technology to actual market needs. One of the unique options we give is that we also enable our clients to change and scale these models when required to avoid upfront costs and have the peace of mind to focus on what they use and need throughout their business life cycle.



It also gives them more flexibility when setting up many environments as needed on a single physical hardware or deployment and still logically segregated from one another.

Bare Metal

Exberry service supports bare-metal deployments, and this is important for traditional markets that are still considering the cloud but are not yet ready to commit to moving to the cloud entirely.

Bare metal has benefits beyond the cloud as it provides much more control and fine-tuning of the hardware you want. Exberry can customize it for specific needs.

Why be concerned about this question cloud or not? Why not both? Since Exberry is agnostic to these concerns, you can scale and migrate from bare metal to the cloud or bare metal without worrying about replacing the system's heart and having complicated, expensive projects.

In that sense, with Exberry, you are future-proof as your needs will change in the future. You know that at least this aspect is covered.

Cloud Agnosticism

We understand that different markets can benefit from each cloud provider's additional benefits. There are differences between the various clouds, including private clouds.

Exberry offers a flexible deployment model and is agnostic to the cloud infrastructure, so it can deliver the service anywhere and automatically launch a site or a tenant in shared or dedicated models globally, scale independently, and fine-tune to the underlying infrastructure.



Who Were You Targeting When You Built Exberry?

Thanks to the team's years of experience in the capital markets, we have observed all the limitations of existing solutions. Our key focus has been empowering institutional-grade exchanges to expand into new markets and non-traditional asset classes quickly and without compromising on performance and resiliency.

For me, it's exciting to see Exberry serving as a significant enabler and disrupting an industry that has been mostly operating in a traditional space.

Of course, we saw many existing use cases already happening in the market, such as digital assets, capital markets, commodities markets, energy markets, gaming, etc. But we're always thinking about these new markets that did not emerge yet.

It falls into what we were planning when we built Exberry, and to see it happening proves our assumptions and meets our vision.

To support all these use cases is a challenging mission from an architectural point of view as they are very different in their business requirements and life-cycle. Still, over time we learned from our customers, and together with we were able to build Exberry.

Why Is Low Latency Key To Many Exchanges Or Marketplaces?

When we speak about latency, we mean consistent latency. It refers to the responsiveness of the system to perform a specific task if we send it to the system 1M orders, we wish to see that all orders are handled in a predictable response time.



We wish to meet the supply and demand at a specific price point, so the system's responsiveness is essential. Suppose I want to meet the supply or demand at that price point. The system must respond on time. This allows closing a deal at that price.

Furthermore, latency also represents how effective the system is, what level of quality of service it has, and also what limits it can meet in certain situations.

Not all markets are sensitive to latency, but for those who are sensitive to latency, it's due to the business nature of the market that has to deal with large volumes of traffic and many trading parties or even algorithms or AI machines that try to benefit from even the slightest market fluctuations.

What Are the Biggest Pain Points and Issues of Legacy Technology, and How Are You Solving Them?

Undoubtedly, legacy systems have played a critical role in resolving various challenges over an extended period, and we have gained valuable insights from this time-tested technology. However, with changing times, new technologies have emerged, offering us opportunities to advance and expand. Moreover, I find parallel business domains to be fertile ground for exploring how modern architecture can be applied to a traditional world and how innovation can benefit from proven traditional markets, which is fascinating.

Legacy systems present significant challenges in terms of scalability, flexibility, time-to-market, and Total Cost of Ownership (TCO).

I refer both to business scalability and technical scalability. For example, how can you use traditional capital markets engines to meet and expand your business to digital securities and NFTs and do it cost-effectively? This



is something I don't see legacy engines doing. So usually, the operations end up with multiple providers, one per use case.

Legacy technology will face significant challenges in the years ahead, despite efforts to refactor, improve, and adapt. They simply cannot keep up with the rapid pace of technological change, making them inherently non-scalable. The question is, how can businesses transition to modern technology effectively without hindering operations or imposing technical limitations that inhibit their growth? From a technical standpoint, scalability is essential for achieving efficiency and harnessing the benefits of emerging cutting-edge technologies.

We wish to see how we can answer any asset class regarding flexibility. We want to respond to its needs quickly and accurately and adjust to changing market needs. We want technology that allows us to minimize risk and allow us to innovate. Exberry's technology addresses these issues with a modular architecture that allows us to release new products and features quickly without affecting what is already running and working and maximizing our reuse of ongoing investments that accelerate us and encourage us to try and experiment.

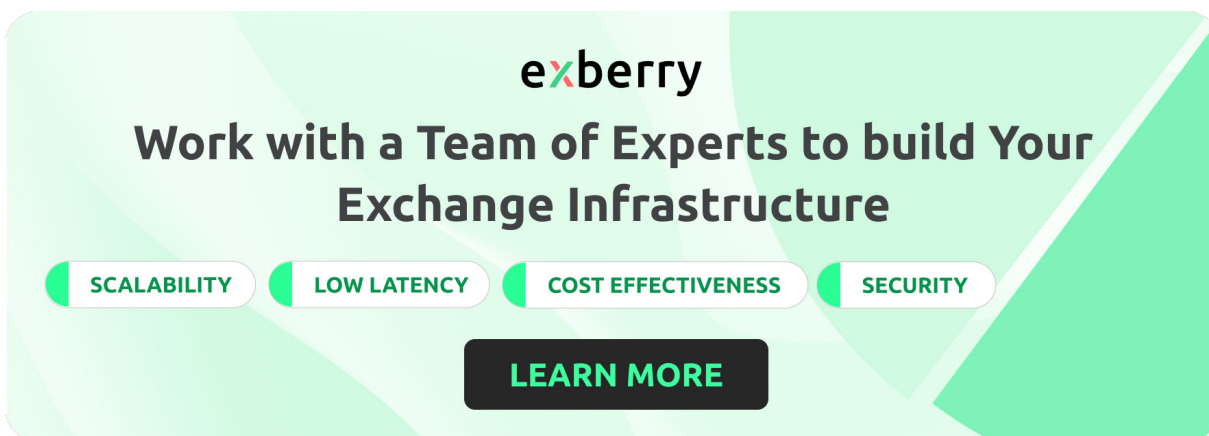
Legacy systems have numerous limitations that impact time to market and Total Cost of Ownership (TCO), beginning with the business model. Licensing software can result in lengthy training and support requirements, as well as complex integration projects that hinder organizational operations. These factors present significant barriers to entry for emerging markets. Exberry has addressed these issues through its SaaS model, allowing markets to concentrate on building their operations without the need to manage and operate the technology or train staff. Instead, they can immediately access SLAs and hit the ground running.



Exberry has invested significantly in accelerating and automating the way exchanges launch new markets, while also offering a sandbox environment where customers can connect and begin working immediately.

Final Thoughts

The capital market industry is just now starting to recognize the potential of decentralized ownership. I believe its true value extends beyond blockchain technology itself. It is about creating a democratized market that enables more individuals to own a diversified global asset portfolio. While the idea of a world where all of our assets and holdings are listed and traded digitally may seem like a distant reality, it is a realistic vision that can be achieved with the right technology. Exberry aims to play a crucial role in this journey by supporting the ecosystem and making it accessible to everyone.



exberry

Work with a Team of Experts to build Your Exchange Infrastructure

SCALABILITY LOW LATENCY COST EFFECTIVENESS SECURITY

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The banner features a light green background with a darker green diagonal stripe. It includes the Exberry logo, a main headline, four benefit tags in rounded rectangles, and a prominent 'LEARN MORE' button. A small circular icon with an upward arrow is located on the right side.