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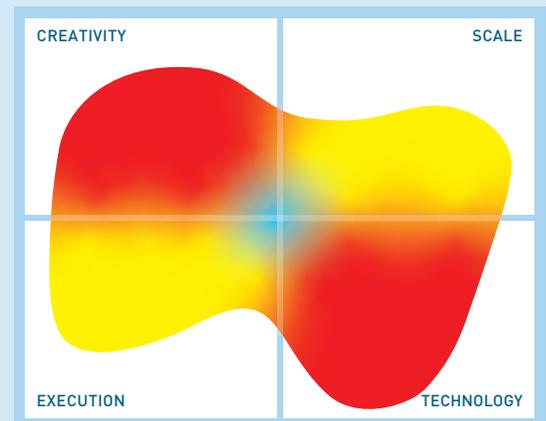
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N5 Technologies Rumi Streaming Analytics

The company

N5 Technologies, Inc. and its founders originated from the financial services sector. Drawing from that experience, its technology is designed to power mission critical, real-time risk management solutions, ultra-low latency equity trading systems, eCommerce, and other similarly demanding applications. The company is based in San Francisco, California, and is privately funded. Product pricing is data-driven and subscription based.

“1 million equity orders per second in under 10 microseconds client-market with zero loss.”
Leading NY hedge fund



The image in this Mutable Quadrant is derived from 13 high level metrics, the more the image covers a section the better. Execution metrics relate to the company, Technology to the product, Creativity to both technical and business innovation and Scale covers the potential business and market impact.

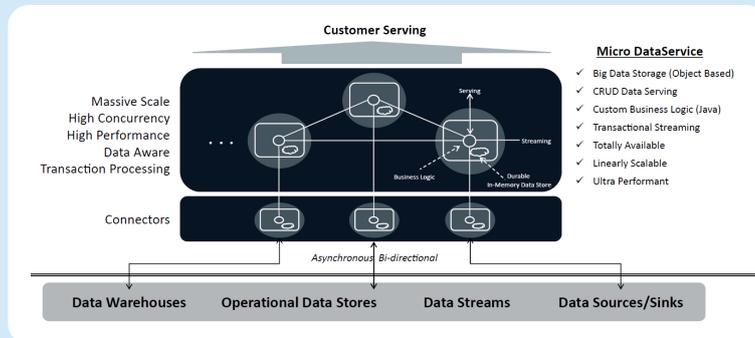


Figure 1 – Micro DataService architecture

What is it?

Rumi is a software platform that enables enterprises to embed rich, real-time analytical data processing directly into their transactional applications. Specifically, it allows you to develop and run custom developed analytics on and across large volumes and varieties of stored raw and/or pre-analysed data, together with live streaming data, in real-time. The results can then be presented in a contextually relevant manner. Not only does it do this in real-time with very low latency, it does so within predictable time limits. And finally, Rumi has been designed to support the sort of resiliency that enterprises require to support mission critical business process. In short, it addresses the need of modern enterprises to derive business insights in real-time from massive volumes of historical and live data while integrating this capability directly into their customer serving

transactional applications. Further, Rumi can be deployed in public and private clouds, on-premises data centres and edge data centres, and can be configured on virtualized or bare-metal infrastructure. It currently supports Java applications, with other language support on the roadmap.

What does it do?

Rumi’s architecture is based on a multi-node, massively scalable and resilient distributed processing system. Each node functions as a fault tolerant, highly available and elastically (and linearly) scalable Micro DataService (see **Figure 1**). Each service houses data with co-located business logic and publishes integrated telemetry for monitoring and diagnostics. A service is independently capable of big data storage, fast data streaming, CRUD and/or analytical data serving. In other words, it provides comprehensive, native, stream processing capabilities within each and every node.

The stream processing and analytical data serving logic is implemented by the service’s business logic. This logic is then activated by stream messages published by upstream nodes and service requests issued by the service’s clients. The system is horizontally scaled by sharding Micro DataServices and by deploying multiple concurrently executing Micro DataServices interconnected via fire-and-forget message passing provided natively by Rumi, or over

Analytics and modelling	★★★★★
Development	★★★★★
Architecture	★★★★★
Deployment	★★★★★

Connectivity	★★★★☆
Integration	★★★★★
Self-service	★★★★★
Non-analytics streaming functionality	★★★★☆

“\$50M in cost reduction in year-1. This included hardware, network and software savings, along with reduced support cost and trading risk related cost.”
Global Fortune 500 investment bank

commodity messaging. The overall system of interconnected services is configured and managed as a single distributed deployment. Such a system of interconnected services is called the Micro DataService Fabric (MDF), as shown in **Figure 2**. Note also that this kind of system can be implemented incrementally using microservices.

Why should you care?

There is an increasing demand for hybrid application environments. Example use cases include hyper-personalization of offers for e-commerce systems, dynamic pricing, ad bidding, real-time payment processing, credit card fraud detection and prevention, real-time data curation for inference data for ML/AI models, processing of fast data streams for risk and order management for high volume equity trading, real-time social media data curation based on user preferences, eGaming real-time personalisation, and several industrial automation, IoT and 5G enabled applications. Rumi enables you to support all of these from within a single development and deployment environment. Competitive offerings tend to require the use of multiple products, which potentially means significant extra costs and, in many cases, reduced business capability and agility.

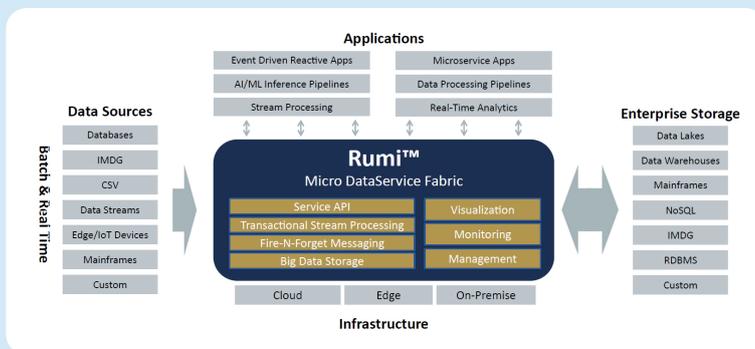


Figure 2 – Micro DataService Fabric architecture

The MDF is the key innovation for Rumi, on which the application and data are deployed together for execution. It combines in-memory distributed data storage, data streaming, real-time business logic execution and analytical data serving with a microservices based application architecture. This optimises the platform to enable highly concurrent and scalable big and fast data processing with predictable (and ultra-low) latency performance. NoSQL-based data modelling is used to make it flexible and efficient to support hybrid application access patterns.

Rumi has been designed to process massive volumes and varieties of data in real-time and scale such processing as data volumes grow. Exactly-once processing is built-in. Furthermore, by co-residing application and data together for execution, Rumi provides high performing analytical data processing and serving. It also enables enterprises to rapidly develop and deploy applications that embed analytics with transactional processes. The MDF allows developers to focus on the application’s business logic, as complex as needed, whether transactional or analytic or a combination of the two, while the fabric manages all non-functional application details. Moreover, by co-residing application and data together for execution, Rumi provides a single processing environment with a single code base. You can also integrate with AI/ML execution platforms if required.

Further to this point, Rumi natively provides a highly available, fault-tolerant and massively scalable environment to support your hybrid applications, so it offers the sort of resiliency that enterprises will require. Moreover, it simplifies application design and development complexity, by depending on the platform to provide and manage enterprise level capabilities. As a result, the development and deployment of applications should be easier and more agile than would otherwise be the case.

Finally, Rumi’s architecture has been designed to support high throughput performance combined with (ultra-)low latency. It is more than capable of processing large quantities of streaming data at very high speeds, in large part because it is able to distribute both data and compute responsibilities intelligently across its architecture. This, in conjunction with the other benefits mentioned, should have a net positive effect on total cost of ownership.

The Bottom Line

Rumi offers the benefits of a new approach, designed and developed from the ground up specifically to support hybrid transactional/analytic application development and execution within a single product/ environment. The results certainly seem potent, both for the streaming space and in general.

“N5 provided high availability with performance that we could not get anywhere else.”
Global Fortune 500 investment bank

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