



Sumerian IQ for Investment Banking

Quantified analytical insight to inform and optimise critical trading environments

In the increasingly complex, highly sensitive trading environments of today, speed is everything. When success is dependent on maintaining a competitive edge and out-performing the field, only the very highest levels of IT performance will do. It's no time for guesswork – you need quantified, analytical insight to guide you.

Your challenges

Whether you're infrastructure or application focussed, representing the buy or sell side, broker/dealer or an exchange venue, our IQ solutions for Investment Banking will enable you to fine tune your trading performance and align to your business objectives. From equities to fixed income, flow to risk analytics – our insight addresses your most testing challenges:

Reducing latency

In a business where every millisecond matters, under-performing IT is simply not acceptable. Although co-location and faster market data links might appear ideal solutions, they represent only a small piece in the latency puzzle. The causes of latency need to be quantified and understood holistically – across the entire trade lifecycle. Latency can't be managed by relying on average measurements either – it's about understanding the full distribution of ranges, so that the bottlenecks causing outlying, latency-impacted trades can be identified and eradicated.

Aligning capacity accurately

Exploding data volumes and unpredictable market forces make effective capacity planning an imperative. Intrinsicly linked with latency, accurately aligned capacity is fundamental for both managing trading performance and realising efficiencies. Understanding the utilisation profile of trading volumes is key to accurate headroom visibility and forecasting. To achieve this, a break away from siloed to joined-up visibility is required, democratising access to intelligence for accurate trading alignment.

Managing and de-risking change

The highly interconnected nature of trading applications means that the weakest link in the chain can have serious knock-on effects elsewhere in the environment. Change, therefore, must be accurately informed and de-risked, with a clear understanding of the impact on the business. In addition, quantifying the results of IT change in business terms acts as both a catalyst for future IT investment and in demonstrating tangible value back to the business.

Key benefits and value

- **Optimises trading performance and reduces latency** – by understanding the holistic picture for targeted, quantified improvements
- **Aligns capacity accurately to trading** – by understanding the available headroom and forecasting accurately to requirements
- **De-risks IT decisions and changes** – with upfront understanding on the implications for your business trading environment and overall infrastructure

Our services

Our Sumerian IQ solutions are a low risk high value way to optimise your trading performance, target investment and accurately align capacity across today's complex trading environments. Delivered as a flexible subscription service, our IQ solutions offer a unique combination of software-based analytics and human expertise, supplying today's IT leaders with the insight to make better, faster decisions and align IT accurately to drive greater trading performance.

Why working with us makes sense

We have a proven track record of helping some of the world's leading investment banks successfully de-risk their IT decision making – our insight is relied on to drive mission critical trading systems and achieves real, quantifiable results. Put simply, we're specialists in delivering the accurate, repeatable analysis senior executives need to gain clear insight into the complex optimisation factors across their IT and business landscape, on an ongoing basis.

A fresh approach

Our service takes a fresh approach by combining large volumes of your existing data with our advanced statistical modelling. Our approach connects and relates layers of systems data that exist within your environment - from low-level infrastructure components right up to trading processes, transactions (trades and quotes) and the end-user experience - to make the relationships between them tangible and quantifiable. By establishing these data relationships, we supply the necessary insight for achieving real, positive improvements:



Optimise trading performance - improve service quality by understanding end-to-end latency issues and bottlenecks through all types of trade flows, batch and analytics processing.



Align IT capacity with trading – accurately provision your environment's capacity to trade mix and volumes by understanding how different trade types consume IT and forecasting capacity headroom against demand.

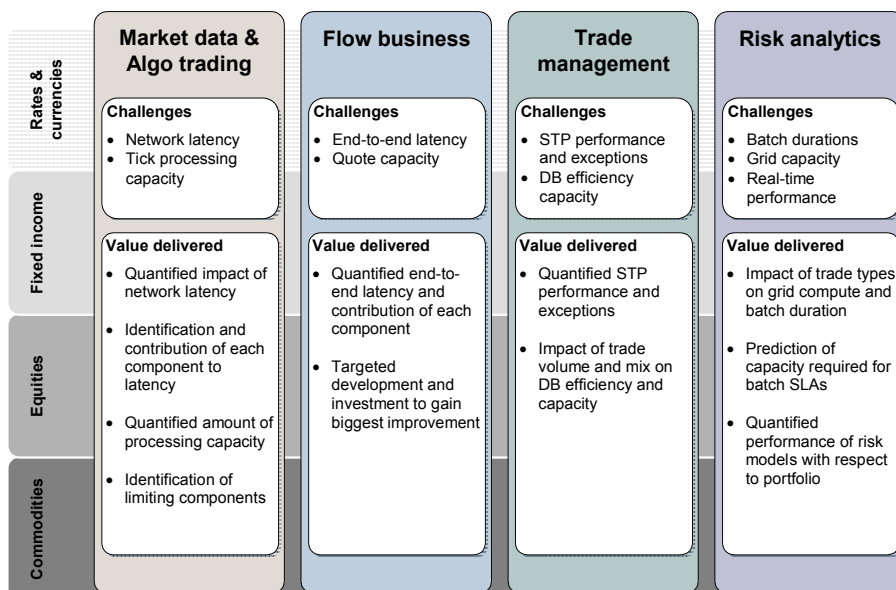


De-risk and understand the impact of change – respond rapidly to change with impact modelling to understand the full implications to your infrastructure and the business.

The mix that's right for you

Within our IQ solution framework we have a broad range of capabilities that can be applied to a number of complex trading challenges.

Whatever your level of IT operational maturity or business focus, we work with you to identify the right mix of analytics to solve your particular objectives. And as your challenges change, we adapt our analytics mix.



Optimising trading performance

Our performance and latency analytics provides advanced visibility to identify the root causes of under-performing services, reduce latency, and quantify where targeted investment or reconfiguration will deliver the most value. The types of questions we can answer include:



- *Where is latency most prevalent, what's causing it and where should we target attention?*
- *How can we improve performance to meet batch processing SLAs?*
- *What percentage of trades become STP exceptions and how can we reduce this?*

The value delivered by performance and latency analytics includes:

Gaining holistic latency visibility for targeted improvements – we use an explicitly statistical approach to our latency analysis, determining the round trip latency of every single quote or trade, and what percentage of business transactions fall within any given latency band. By building up a picture based on data from each application component, we identify the relative and absolute contributions of each link in the processing chain, enabling you to target improvements.

Predicting and modelling the impact of growth - by combining infrastructure data with trading volumes, we can predict, for example, the impact of increasing trade volumes on latency, real-time risk modelling, and duration times for batch processing. In effect, this approach enables the certification of latency and batch duration performance within specified trading volume bounds, enabling you to plan and forecast effectively.

Quantifying STP performance and exceptions – our powerful models enable a deep understanding into STP exceptions by identifying the volume of exceptions and associating them with trade types. This quantified evidence enables teams to effectively reduce the time and effort spent dealing with exceptions and helps eliminate the causes.

Case study – Sumerian helps US investment bank to optimise capacity and reduce latency by over 75% for critical FX services targeting new market launch

The challenge

The investment arm of large US bank wished to grow its FX flow business to target a new market opportunity. However, the bank was concerned about how the service's capacity and latency might be impacted by the growth in business volumes.

What we did

We captured, modelled and analysed data from underlying FX services components, measuring latency across all flows. This enabled us to establish the footprint of trading on each platform and quantify the existing operating capacity in terms of trades per minute.

The value delivered

We identified where capacity bottlenecks would appear with increased demand and where to re-balance load, resulting in headroom growth for the bank from 11% to 30% without any further investment. Furthermore, we pinpointed the limiting component for optimising trading latency – resulting in a dramatic latency reduction of over 75%.



Aligning and managing capacity

Today's exploding trade volumes, sensitive trading environments and volatile market conditions demand accurate capacity management. Addressing this need, our capacity analytics radically improves visibility into your trading environment and its available headroom against trading volumes. The types of questions we can answer include:



- *What trading volumes can we currently support, and how will growth targets impact our infrastructure?*
- *What will be the impact of a change in trade mix on available capacity?*
- *How much capacity do we need to have to complete the overnight batch run in time?*

The value delivered by capacity analytics includes:

Aligning capacity to trading activity - by modelling the trading environment and populating this model with granular utilisation data, we build a quantified baseline model of your trading platforms, calculating the current available headroom and exposing the relationship between individual trade types and infrastructure utilisation across all components of the processing flow. This capacity analysis can be applied to all areas of the IT environment – from grid capacity, to algorithmic trading and risk analytics platforms.

Ongoing capacity management and forecasting – we continually monitor your trading services on a frequency that works for you, highlighting changes in consumption and providing recommendations on architectural and configuration improvements. We can supply forecasts 3, 6, 12 months ahead depending on your requirements. By applying scenario modelling based on your predicted trade volumes, we accurately determine the necessary levels of capacity required to meet growth.

Managing and de-risking change

The highly-interconnected nature and continuous degree of change in today's trading environments makes effective change management vital. Change can be driven by external forces (new ECNs, new market data sources) or internal (new architectures or changes to trading volumes) – and it is often impossible to test the impact of these changes in a realistic pre-production environment. Answering these challenges, our sophisticated change analytics capability helps you to understand and de-risk the impact of change through the application of powerful scenario modelling, answering questions such as:



- *What are the implications of introducing a change to our intra-day batch processing?*
- *Will our trading be affected by latency issues if we migrate applications to a new datacentre?*
- *How has a reconfiguration to our database capacity improved trading performance?*

The value delivered by change analytics includes:

Targeting change and de-risking rollouts - because our models are accurately correlated to your trading volumes and mix, providing a holistic view of capacity and performance, decisions around where best to target improvements can be reliably informed and be based on real business objectives. Understanding the impact of change enables you to respond to business demands and priorities quickly, so you can deliver quantified business value, and be sure that decisions are de-risked before being taken.

Quantify the value delivered post-change – we help you to understand the impact of change post implementation by accurately measuring and assessing the performance of your IT against your rollout objects, enabling you to take rapid action as required and target further improvements if needed. And because our analysis is correlates IT performance to your trading activity, we enable you to understand and communicate the value it has delivered in terms the business will understand.

Case study – Sumerian helps investment arm of UK bank to align capacity to trading types and “sweat the assets”

The challenge

The investment arm of large UK bank with complex trading applications across multiple asset classes was undergoing a large-scale merger and needed to understand the impact of increasing business volumes on its IT infrastructure.

What we did

We captured utilisation data for key platforms: application servers, databases, batch and storage, along with business volume data from trading databases. We then correlated the incoming business volumes with utilisation data to create a footprint model for each type of transaction on all infrastructure components.

The value delivered

We established the capacity limitations of the service across all components, enabling the bank to provision resources accurately and “sweat the assets”. These improvements meant that a 100% increase in trade volumes could be supported, backed up by quantifying the minimum investment required.

Case study – Sumerian helps European investment bank identify optimal investment strategy and de-risk change

The challenge

A European investment bank with highly complex trading environment (2000 nodes/3 grids) was seeking to increase its market share by doubling the volume of trade portfolios processed.

What we did

We captured utilisation data from existing platforms and determined the aggregated compute demand. We then created a queuing model for portfolio flows to determine the relationship between flow rate, task duration and resource usage. By applying change analytics scenario modelling, we could then quantify the impact of change on these factors.

The value delivered

We identified improvements to increase processing capacity by 40% with no additional hardware investment. In addition, we recommended the optimal investment strategy to further increase capacity to 80% above current levels.





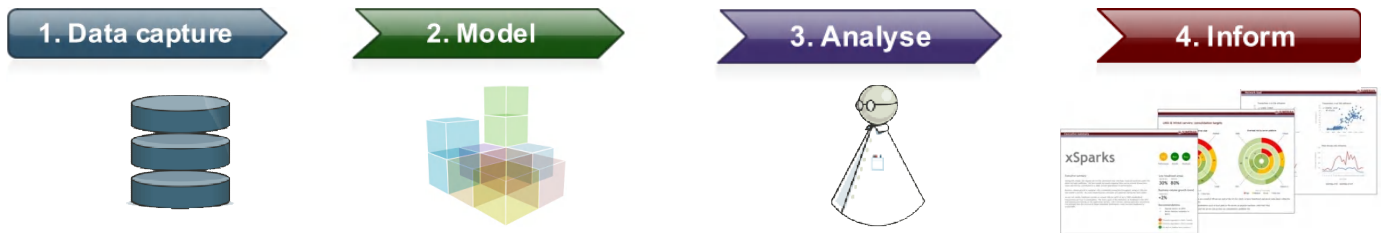
How our service works

Sumerian IQ for Investment Banking is delivered as a monthly subscription service – meaning we get you answers fast and continuously with no large upfront investment or deployment impact. Central to our services is responsiveness and flexibility – we tailor our service around your needs, adapting the mix of analytics to your changing objectives. We have invested over 8 years in developing a powerful analytical platform and unique blend of tools and techniques. Our expert team uses these to deliver fast, accurate and repeatable analysis and reporting.

- **Light touch, low risk, with fast results** – there's no lengthy integration or software to install. Instead we seamlessly plug into your environment, scaling as and when your needs change. Our low touch deployment ensures we deliver tangible results fast – in as little as 6 weeks.
- **Always relevant, never out of date** – our services are very flexible and easy to re-align, we keep pace with your changing environment and business needs.
- **On-demand answers** – accurate, repeatable analysis and expert recommendations at your fingertips, delivered in a format and frequency that fits your needs.

Included in our subscription service	
Data management	<ul style="list-style-type: none"> ✓ Secure hosting and maintenance of data ✓ Data capture and cleansing ✓ Data validation and checks ✓ Ongoing data integration of any new data sources of value
Modelling	<ul style="list-style-type: none"> ✓ Ongoing maintenance and calibration of models ✓ Ongoing data modelling
Analysis	<ul style="list-style-type: none"> ✓ Expert analysis of your data
Reporting	<ul style="list-style-type: none"> ✓ Production and publication of analysis reports and recommendations
Web portal	<ul style="list-style-type: none"> ✓ Web portal content refresh (in sync with the agreed reporting cycle) ✓ Web portal maintenance and upgrades
Governance	<ul style="list-style-type: none"> ✓ Regular governance sessions covering: <ul style="list-style-type: none"> ✓ Service configuration ✓ Service operation ✓ Any data management issues ✓ Planned changes ✓ Analysis review and recommendations ✓ Additional analysis and reporting requirements
Change Management	<ul style="list-style-type: none"> ✓ Management and implementation of all agreed change requests

How we deliver our service:



We continually capture data from across your IT environment and trading landscape – maintaining a dynamic, up-to-date representation of your trading environment. We generally capture between 2-6 data sources per services, usually via the use of our Data Collector installed within your environment. The data is then transferred securely to our data warehouse for modelling and analysis. Our pragmatic approach means we capture data in whatever format you have it in, so there's no need to deploy new probes or agents.

We create a model of your trading environment and populate it with the data collected continuously from your organisation, to create a baseline from which to apply our analytics capabilities: performance/latency, capacity and the impact of change. These data-driven models form the foundation for all of our analysis and are compiled using state-of-the-art OLAP and data mining techniques.

We analyse your trading environment intelligently, using ground breaking automated analysers and expert analyst interpretation, running multiple "what if?" scenarios to inform the decision making process. We employ a diverse range of analysts, statisticians, mathematical modellers and economists, all of whom bring a fresh perspective to our insight.

We deliver our analysis findings and recommendations in a format and frequency that works for you. Our insight is delivered using a variety of innovative reporting methods, including a tailored Web portal featuring cutting-edge visualisations to direct dialogue with our analysts.

Tangible results, real value

Sumerian IQ for Investment Banking will enable your organisation to significantly advance its trading optimisation objectives – ensuring you deliver continually high levels of trading performance, align capacity and de-risk change.

- **Optimise trading performance and reduce latency** – by understanding the holistic picture for targeted, quantified improvements.
- **Align capacity accurately to trading** – by understanding the available headroom and forecasted requirements.
- **De-risk IT decisions and changes** – by understanding the trading environment (and overall infrastructure) with business and IT impact understanding.

More information

For further information on Sumerian or to arrange a demonstration of our services, contact us on 0141 229 7580, e-mail us at info@sumerian.com or visit our Web site at www.sumerian.com

