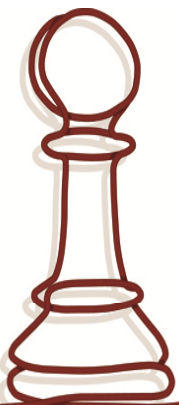




## IT Analytics

### Why an analytical approach succeeds

Put simply, IT Analytics provides the accurate, quantified insight organisations need to drive IT optimisation, improve business alignment and manage change - based on real data...





## Introduction

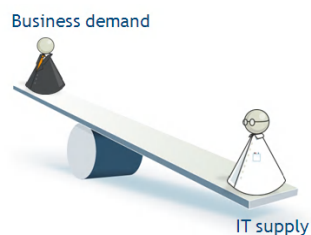
In today's fast-paced global business landscape, the smart application of IT plays an increasingly critical role in driving bottom-line revenue, improving productivity and gaining a competitive advantage. But given this strategic importance, it is surprising to find that many IT executives are missing the key information to drive targeted optimisation and alignment. In this introductory white paper, we explain how the advanced statistical modelling techniques offered by IT Analytics are helping a growing number of world leading organisations take a progressive leap to smarter, quantified IT management.

## The need for smarter IT decisions

As global economic turbulence continues today's businesses and their IT organisations are faced with an unprecedented set of challenges and market conditions. Many companies are undergoing a significant degree of operational flux, with budget cuts, resource constraints and consolidation activity being widespread. But over the past few years, globalisation, fuelled by the Internet, has heralded dramatic changes in the way business is now conducted. So much so that today's companies have never been more reliant on IT to meet their operating needs, drive innovation and maximise growth.

In the race to meet demand and stay competitive, IT systems have needed to grow and scale quickly - giving way to large-scale estates that have become increasingly fragmented. The result is that today's IT environments are immeasurably complex, and harder to understand and control than ever before. And with so many business processes being critically reliant on highly performant IT services to power them, IT has never been more accountable to the business' expectation of delivering value, being flexible to its ever changing priorities, and above all – supplying “always on” exemplary levels of performance.

Faced with these challenges, it's imperative for businesses and their IT organisations to understand the dynamics between IT supply and business demand. By doing so organisations can progress to a new level of competitive advantage, making incisive improvements to address inefficiencies and control costs, de-risk change and target investment and innovation where it's most needed. However, gaining reliable insight to fully understand the supply vs. demand picture is an area that many IT organisations have historically struggled with. The structure of today's IT environments and the information silos it creates fails to provide the joined up visibility needed to drive effective decision making. In addition, the much talked about disconnect between the language of IT and that of the business continues to inhibit many organisations attempts to gain improved alignment. In order to overcome these barriers and meet today's demands, a much more progressive approach is now needed.



## Why an analytical approach works

Although analytics as a branch discipline to business intelligence is advancing in its market maturity - with companies such as Google, Amazon and Tesco gaining competitive advantages, particularly in improving customer targeting - much less is appreciated about how its powerful capabilities can be applied to optimise IT. While many IT organisations will be tasked with implementing analytics solutions for senior business managers, far fewer will be taking advantage of its potential for use in their own day-to-day IT decision making and optimisation efforts. So why is this?

Surprisingly, within a typical enterprise-sized estate, only approximately 5-10% of systems data that is ever generated is actually analysed in any way. This leaves a vast 90-95% completely untapped. Making sense of the huge amounts of data generated by these systems would be impossible without taking an analytical approach. But taking this as a given, what value would such an approach actually deliver? Put simply, an analytical approach provides the accurate, quantified insight organisations need to drive optimisation, improve business alignment and manage change - based on real data. It enables organisations to answer questions which, although strategic to running IT for the business, traditionally go unanswered or, at best, are answered without the full facts, for example:

- *What business volumes can we currently support and what will the impact be of a change in transaction mix?*
- *How can we be sure changes to our infrastructure won't impact the end user experience?*
- *How do we know whether we are getting value for money from our outsourced communications service?*

## Why it is needed

Given the scale, change and complexity of today's IT environments, there are several key reasons why an analytical approach using statistical modelling and analysis techniques offers the only real solution to meet today's challenges:

### Cuts through complexity

An analytical approach delivers clear-cut understanding into large-scale IT environments and their interdependencies - cutting through the complexity with powerful modelling and analysis techniques that extract the real factors at play. The resulting insight reveals the underlying relationships and correlations between infrastructure components and business demand, giving unequivocal management visibility into the areas that need attention.

### Criticality of IT for the business

When millisecond delays in processing could make the difference between success or failure in today's high risk, high value environments, it's essential for IT teams to have accurate, quantified information to guide them. By using an analytical approach, organisations are armed with precision insight to make optimisation improvements that have been modelled against key business success criteria - ultimately enabling organisations to gain a performance advantage over competitors.





## De-risks and manages change

Whether it is overseas markets to tap, new products to launch, or simply everyday operational flux to keep up with – today's businesses never rest. Managing high levels of change effectively means managing risk. By using an analytical approach to scenario model change, teams can gain access to fast, accurate insight to understand and assess the impact of change before it happens, and rapidly address post-change outcomes.

## The benefits

Organisations who apply an analytical approach to IT optimisation and alignment can expect to derive an array of rewards from its use. The quantified, fact-based decision making supplied by an analytical approach enables teams across the IT organisation to apply its insight to proactive improvements, resulting in:



**Reduced costs** - through quantified business consumption, performance and capacity modelling, teams can understand areas that achieve the best ROI and eliminate waste within their IT estate to "sweat the assets".



**Reduced risk from change** - through precise modelling of IT services, the impact of risk from change can be quantified and effectively managed - pre, during, and post implementation.



**Improved performance** - through identifying the underlying causes of performance challenges, support and development is targeted and improvements proactively addressed.

## Collaborating with a specialist provider

Although IT organisations can attempt to undertake an analytical approach to IT optimisation and alignment in-house using various software tools, there are a number of skill, process and resource challenges that can often make it difficult to set-up and maintain on an ongoing basis. By collaborating with a specialist analytics service provider like Sumerian, organisations can take advantage of the dedicated skills, investment and expertise that has been built up across a broad range of clients and challenges.

## Sumerian IT Analytics service

Sumerian offers a unique range of IT Analytics subscription services that achieve IT optimisation through combining ground-breaking data-driven statistical modelling with human expertise. This approach supplies our clients with advanced reporting and deep "actionable insight" into the working dynamics of their critical IT platforms - helping teams to concentrate on taking positive, practical action to drive business advantage. Sumerian works with clients to identify the right mix of analytics to supply the insight they need – whether it be improving system performance and throughput, latency reduction, capacity planning, change management, cost reduction – right up to datacentre consolidation for mergers and acquisitions.

The Sumerian approach works by connecting and relating layers of granular systems and business data that exist within IT

environments - from low-level infrastructure components right up to business processes, transactions and end-users – to make the IT supply/business demand relationships tangible and quantifiable. Sumerian's proven methodology (see Fig.1) can be applied to virtually any infrastructure domain, service or business process:

1. We *capture* systems generated data from the domain, service or business process under examination.
2. We create a baseline *model* of the current performance, capacity, consumption and cost.
3. We apply cutting-edge analytical and scenario modelling techniques to *analyse* the modelled data.
4. We deliver impartial, repeatable analysis and reporting to *inform* decision making and optimise IT on an ongoing basis.

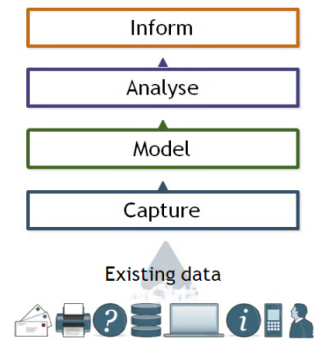


Fig. 1 – Sumerian methodology

Sumerian's services offer a number of benefits that complement and maximise the in-house expertise and resources today's IT teams commonly have:

### Managed service, with no upfront investment

Instigating an analytical approach can be difficult due to the initial outlay required for set up, however, with Sumerian's IT Analytics delivered as a subscription service, it supplies all the expertise and information to commence an analytical approach quickly and efficiently, and without any of the significant investment that would be required otherwise.

### Applied to any level of operational maturity

Sumerian's approach can be applied by all organisations regardless of their level of operational maturity. For example, Sumerian typically starts with one domain or application, proving results before proceeding to the next. This builds up an organisation's understanding of IT Analytics' capabilities gradually, extending coverage to further services as and when required.

### Recurring analysis capability

Complexity, skills and resource constraints make accurate, repeatable analysis difficult to maintain. However, this capability is key to maintaining ongoing control and optimisation improvements. Sumerian's recurring service delivers the ability to refresh and repeat analysis at whatever frequency is required.

### Fully independent insight, based on real data

Because Sumerian's IT Analytics are fully independent and impartial, there's no hidden agenda to promote products and services. Instead, Sumerian's recommendations are driven purely from an organisation's data, its challenges and objectives, ensuring the best interests of the business are kept paramount.





## The maturing levels of IT Analytics

The Innovation Value Institute (IVI) is an industry consortium of leading industry professional and academic organisations, of which Sumerian is a member. The IVI researches and develops unifying frameworks and best practice for IT and business executives to create more value from IT and better deliver IT enabled innovation. One of these frameworks - Service Analytics and Intelligence (see Fig. 2) describes how IT organisations can use analytics to improve visibility into IT and understand how it contributes to the business, thereby providing the transparency needed to optimise the alignment of IT to meet business needs.

Starting from the lowest level of maturity where there is no IT-business performance visibility, there are 4 progressive levels: Discrete Component Visibility, Service Analytics, Business Process Analytics and Enterprise Analytics. Each level of maturity yields a more sophisticated level of insight than the last, culminating in the highest level, Enterprise Analytics. Wherever you believe your own organisation is on the curve, the framework provides a strong basis for understanding and developing how you use analytics in line with your overall level of operational maturity. Further information on the Innovation Value Institute can be found at their web site: [ivi.nuim.ie](http://ivi.nuim.ie).



Fig. 3 - Service Analytics and Intelligence Maturity Curve

## Applying IT Analytics

Whatever level of operational maturity your organisation currently operates at, IT Analytics can add value and get you on a firm footing to advance your IT optimisation and alignment. To demonstrate how its techniques can be applied, this section examines its practical adoption, using real world examples from our client base.

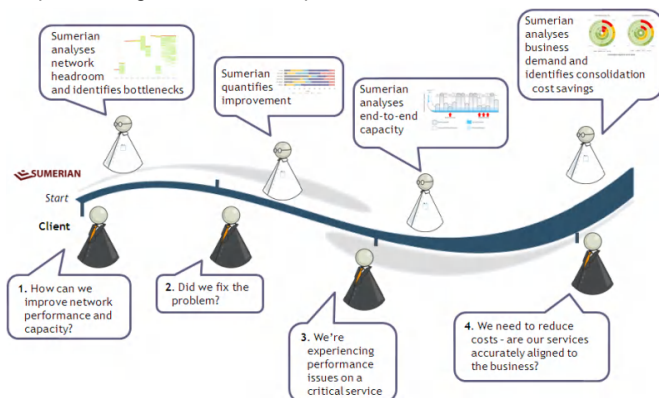


Fig. 3 – Typical client journey: How IT Analytics flexibility supports the changing needs of IT teams

Starting first with a basic domain area such as the network, then moving along its scope of capabilities, we illustrate how IT Analytics coverage can be expanded to quantify progress and proactively optimise and align services; finally, we then show how it can be

used to identify cost savings and deliver strategic insight for board-level innovation and change programmes.

## 1. How can we improve the network's performance and capacity?

At a basic domain level such as the network, IT Analytics delivers actionable insight that builds upon the discrete monitoring tools many organisations typically have installed. Although toolsets provide real-time performance monitoring they don't provide the ability to connect findings into a business-centric, holistic view that enables effective capacity planning and performance optimisation. Addressing this, the IT Analytics approach captures utilisation data (see Fig. 4) for each link within the network, and uses this to build a baseline of the network's current performance and capacity, enabling Sumerian to analyse the data and answer multiple pertinent questions around the network, such as:

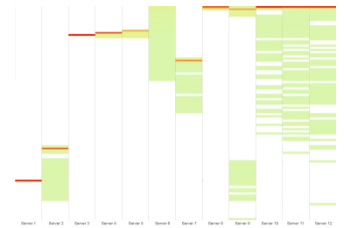


Fig. 4 – Sumerian Distribution Intensity Map for network utilisation

- What is the current usage across links in the network?
- What is the Kbps throughput on each link?
- How does this vary over time - hourly, daily, monthly?

Taking this up a level, we can start to add more data inputs (dimensions) into the model - such as the number of users at each location, the current cost of the network, and a description of the architecture - enabling an even higher level of sophistication to the questions that can be answered, such as:

- What is the busy hour of the network in a typical week?
- What are the ranges of usage across the network as a whole?
- Which links in the network are starting to reach capacity limits?
- How many more users can we add to the network and what are the associated costs?
- What will be the impact on network performance if we upgrade our WAN links?

The recommendations arising from Sumerian's analysis of the network are then relayed to teams to action the optimisation improvements identified.

### Case study - Sumerian analyses communications network and saves UK bank £6 million

- Supplier network communications billing required investigation.
- Sumerian analysis transformed network utilisation data into intelligence.
- Our analysis uncovered £6.3 million pound discrepancies which the bank could then recover.
- In addition, the bank gained visibility into voice and data service for improved ongoing management and contract negotiation.





## 2. How do we know that the issue is fixed?

After the necessary period of reconfiguration and redevelopment, the original analysis can then be repeated to quantify the actual outcome of the changes taken. This enables teams to categorically understand whether the adjustments made have been successful, and if not, undertake further action to correct. Unlike rudimentary methods of tracking such progress, IT Analytics' ability to quantify the results and their relative impact for the business is especially powerful for demonstrating value and garnering future investment focus.

The capability of the analytics can then be built upon further by expanding its scope and coverage; for example, modelling further dimensions such as latency and technology options, or expanding its coverage across more of the IT estate. Moreover, organisations will almost certainly have unexpected twists and turns in the business priorities and change they are faced with, and so switch their focus of attention. The ability for IT Analytics to respond flexibly to these demands is one of its key strengths. In our next example, we demonstrate how the network analysis has in turn revealed a capacity bottleneck within a critical IT service that cannot be solved purely by the network reconfiguration alone – instead, an investigation into the end-to-end capacity of the service is now the focus of attention.

## 3. How can we identify the cause of a service performance/capacity bottleneck?

IT Analytics' ability in capturing and modelling granular levels of data from across the estate enables a deep understanding into the overall end-to-end capacity and performance of a service. In the case of capacity management it provides organisations with the ability to provision resources proactively and understand the available headroom across all components that form the service – for example, Web farm, network, application(s), storage, database, and so on. By modelling the service architecture across all platforms and populating the model with relevant utilisation data, an accurate capacity load profile for the service can be quickly established. By then applying correlation and linear regression techniques, IT Analytics can answer a number of questions that would normally be difficult to answer using conventional methods of performance and capacity monitoring, such as:

- How is each component within the service behaving on an hour by hour, day to day, week by week basis?
- Where are component bottlenecks restricting the service?
- What is the rate of change and growth on the service over time and when will capacity reach its limits?

### Adding business transactions into the mix

To provide even greater insight, granular business transactions captured for the same time period can also be added into the models. This provides an even deeper level of intelligence and is especially useful for building advanced alignment between IT and the business. For example, with this new data added into the mix we can examine if there are any correlations between the

processing of a business transaction and the way service components behave, for example:

- How efficiently are business transactions being processed by the current infrastructure?
- Are there any component bottlenecks limiting the processing of transactions?
- How much headroom do we have available if business volumes increase by 30%?

If a strong correlation is found, it produces a quantified relationship that can be used to determine and predict the component or metric's behaviour under different variances. Understanding how these individual metrics relate to changes on business load requires a method that looks not only at metrics on an individual basis, but also looks at the way in which similar metrics are impacted. By qualifying the incoming business demand, IT Analytics identifies the maximum achievable flow rate at each technology tier and in conjunction highlights areas with lowest headroom (see Fig. 5). If any areas are breaching system component limits, the direct correlations formed between infrastructure components and business transactions will determine what impact this is currently having on business demand and the backlog it is generating.

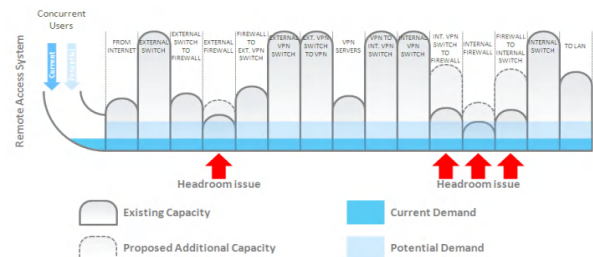


Fig.5 – example of Sumerian end-to-end service capacity headroom visualisation

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

- Sumerian captured, modelled and analysed data from underlying FX service components, measuring latency across all flows.
- Identified the footprint of trade on each platform and quantified existing operating capacity in terms of trades per minute.
- Located capacity bottlenecks, enabling implementation of change programme to horizontally scale existing application; resulted in headroom growth from 11% to 30% without any further investment.
- Identified limiting component for end-to-end latency and relationship between volume and latency – significantly reducing latency by over 75%.
- The bank put in place recurring Sumerian service to repeat analysis on a monthly/quarterly basis. Now expanding to seven additional applications.





## Building on the foundations

Business behaviour and demand will fluctuate over time, and even with the most accurate capacity forecasts to hand, there will be unforeseen changes that can't be predicted. Therefore, keeping a running view of each service's performance against business demand is extremely beneficial in maintaining progress and exploiting optimisation opportunities. With Sumerian's repeatable analysis and ongoing tracking of the baselines, domains/service areas can be constantly measured against key business criteria and KPIs, with trends and changes in business demand and behaviour being proactively identified for action. Using IT Analytics on a continual basis supports both the IT organisation and the business with an impartial gauge from which to identify areas to target development and investment, all the while ensuring risk and costs are kept firmly in check.

## 4. How can we reduce and control IT costs?

In this our final example, we explore how IT Analytics' scenario modelling techniques can be used to gain even more powerful insight into the strategic decision making areas of IT, such as reducing costs, forecasting growth requirements and understanding the risk of architecture changes under consideration. Unlike rudimentary approaches to cost reduction that only provide simplified cost comparisons, IT Analytics provides the necessary multi-dimensional analysis of all key considerations (cost, risk and impact) that are required to ensure initiatives successfully realise their savings without compromising service quality.

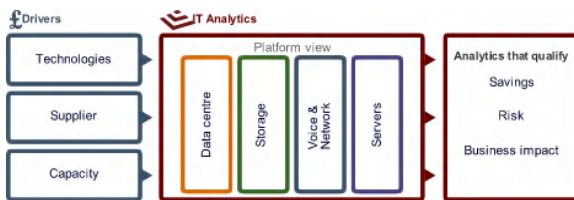


Fig.6 – Modelling multiple dimensions to qualify most beneficial cost saving targets

By capturing and combining data from across the IT estate, business objectives and running costs, IT Analytics establishes a model (see Fig. 6) of the current working environment, exposing the hidden correlations that indicate where change will bring about the most benefit from a cost savings, risk and business impact perspective.

The advantage of scenario modelling is that it can safely answer any number of “what if?” questions and assess the business impact of such change – essentially providing a “pre-sandbox” environment in which to test out ideas before they're green-lighted in reality, such as:

- *We're considering a switch to virtualisation – what are the achievable cost savings?*
- *What will be the impact on the business if we move our applications to a new datacentre location?*
- *How can we be sure our online banking service can accommodate our new post merger customer base without impacting performance and user experience?*

As with all IT Analytics analysis, modelled scenarios can be quantified against any important business related criteria – enabling initiatives to be effectively assessed against the business' specific requirements. Once initiatives have been put into action, IT Analytics can track their relative progress against the desired outcome, enabling interventions to be made where necessary and ensuring targeted ROI is achieved.

### Case study – Sumerian helps Swiss retail bank improve IT visibility and identify 10% annual savings in outsourcing

- *Sumerian established baselines of current demand for IT services, comparing these against supplier cost model.*
- *Identified 10% annual savings by reducing allocated resource through consolidation to match measured baselines and demand forecasts.*
- *Provided the bank with quantified visibility into the reasons for high costs, for example, end of month development increasing mainframe MIPS costs, and very low utilisation across certain server clusters.*

## Optimising IT to build growth

The recent economic upheaval coupled with today's highly complex IT environments have resulted in an unprecedented set of conditions for IT organisations. Gaining visibility into the IT supply vs. business demand dynamic is vital for effectively managing the complex relationships and interdependencies resident in large-scale IT environments. By using IT Analytics data-driven insight to inform decision making and optimisation, organisations can ensure that services are continually aligned and cost-effectively provisioned to serve the best interests of the business - supporting sustained growth and competitive advantage now and for the future.

### 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](mailto:info@sumerian.com) or visit our Web site at [www.sumerian.com](http://www.sumerian.com)

