Across the world, intelligence agencies are facing dynamic new threats that constantly change and evolve. Whether they are tackling organised crime or lone wolf terrorist threats, the need to continually adapt counter measures continues. For the intelligence professionals charged with countering these threats, the challenges they face are made tougher still by growing financial constraints enforced by spending cuts resulting from an inhospitable global economic climate.

In dealing with these seemingly intractable problems, agencies need to find more efficient ways of carrying out their activities and, like all government agencies, find ways of doing more with less. One key area that can greatly assist them with this is the very data they generate and hold. From intelligence records to number plate recognition systems and from closed circuit television to HR and training records, the wealth of data agencies hold has the potential to be their greatest asset.

The Age of Big Data

Today, we are living in an age of big data. In other words, the volume, velocity and variety of data agencies have access to, can often exceed their ability to store, process and analyse it for accurate and timely decision-making.

In the past, most agencies were working with the data that they held internally within their organisation and the intelligence they were generating themselves in the form of intelligence reports, or information gathered from the investigations they were carrying out. In this tightly controlled environment, data growth was largely manageable.

Over the past twenty years, this situation has changed radically as data volumes have increased in all elements of our lives. The same applies to agencies that now have data available to them that is increasingly outside of their own organisation. In the Internet age, to gain a truly holistic view of activity, social media, telcos, finance, as well as more traditional intelligence, all have a role to play in agency life.

So, today, data volumes are increasing exponentially. Agencies are constantly looking to gather situational awareness. They need to pull on all the information available to them and assess it to get a clear picture of how a situation is evolving over time, and that is increasingly difficult in an environment where criminals and terrorists are making growing use of the Internet, social media networks or other digital channels.

At the same time, much of the data being generated no longer takes the form of easy-to-manage structured data saved in tabular format within relational databases. Instead, a significant proportion of it is unstructured in the form of word documents, transcripts, witness statements or Internet content, presenting another key big data challenge.
An inability to access the entire big data store in a timely manner and identify useful and relevant data is inevitably leading to missed opportunities and potentially poor intelligence. Skilled analyst time is often taken up with data management tasks rather than time spent gaining insight from that data. The intelligence professional can often struggle to gain the holistic view needed to gain the situational awareness they need.

**Technology Challenges**

In dealing with the problems presented by big data, agencies are having to manage a broad range of technological challenges. Overwhelmed by the scale and complexity of the data now being generated, most agencies’ legacy databases simply cannot cope. There is a growing acceptance that siloed systems are ‘a thing of the past’, that prevent them from seeing ‘the bigger picture’ that their data could potentially reveal.

Agencies are beginning to realise the need to implement the latest big data technologies to ensure they are making sense of the data they collect and using it to combat the escalating threats to public security that they are facing today.

To achieve the above, agencies must start to use the very latest data storage and processing technology, like Hadoop, for example, that uses lower-cost commodity hardware to reliably store large quantities of data. Using this approach, agencies can easily store unstructured data without any pre-processing of data before storing it. The parallel processing power the technique provides is key for agencies in that it enables them to process really large volumes of data very quickly, a critical benefit for public security agencies who need answers in fast time.

Building on the capability to process vast volumes of data quickly and efficiently, intelligence agencies can start to build in big data or high performance analytics (HPA) to uncover hidden patterns, anomalies and other useful information that can be used to make better decisions.

HPA has the potential to enable law enforcement or national security agencies to integrate and analyse huge volumes and varieties of data, structured and unstructured, to tackle and anticipate criminal activity. Analysts often have to review huge volumes of information, looking for that golden nugget of relevant information that could bring an investigation to a positive conclusion. HPA offers the potential of helping agencies to quickly access and analyse every bit of relevant data and thereby to move from a ‘pay and chase’ approach, where agencies put in place technology to react to events that have already happened, to a more proactive ‘predict and prevent’ environment.

**Finding the Answer**

The real ‘value add’ of applying HPA to big data, however, is that agencies don’t need to know what they are looking for before they start. They don’t have to wade through the haystack looking for the needle.

Instead, the analytical techniques will model the data and push information of interest back to them, drawing attention to relevant content, effectively pushing the needle from the haystack. This can then be processed through standard analysis and investigation processes to determine if it is viable intelligence, effectively converting big data into actionable intelligence.
Without the right tools, pinpointing relevant data in big data that might potentially be of use would be resource intensive and unaffordable. With the right solutions, irrelevant information can be sifted out and areas of interest highlighted.

Now the latest analytics technology enables faster, better decision-making by improving analysis of the vast and growing volumes of data. The ability to scour “big data” through “big data analytics” and data management will be crucial in enabling Intelligence professionals to reveal hidden insights and produce better decisions.

In recent times, agencies have become increasingly clear about the value of big data in preventing and solving crime and threats to security. We have seen an ongoing shift in mindset. Data is increasingly seen as an opportunity rather than a problem and the latest technologies are available now to enable agencies to start taking advantage of that opportunity.

National Security and Intelligence Solution in the Middle East

Information was stored on different unlinked systems with limited search capabilities, meaning that finding information was very labour intensive and time consuming.

SAS provided an intelligence solution that migrated several national systems into one centralised security information warehouse. This provided a single unified view of information from different agencies including:

- Immigration data: 25 million records per year
- Policing: 9 million records per year
- Traffic, driver and vehicle details: 20 million records per year
- Hotel reservations: 3 million records per year.

This system proved particularly successful in identifying and tracking down suspects based on their hotel booking history.

They now have a unified view of information from all agencies, reduction in time taken to find information, improved response rate to threats, reduction in training costs and the ability to take in more information from further agencies in future.
SAS facts

• SAS intelligence management solutions are used by more than 170 public security clients on six continents

• SAS has more than 38 years of experience supplying public security solutions

• SAS invests approximately 23 percent of its revenues in new research and development