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BEYOND DATA

By Bob Gleichauf

Beyond data there is information, then knowledge, and ultimately the wisdom to make the right decisions.

Advanced Analytics and Big Data are two of the most active areas of innovation in the Tech sector right now. But from an analyst's point of view the products and technology coming out of these sectors demand a level of technical expertise that is sometimes a barrier to adoption. What's more, successful deployment frequently requires adjustments to resources and organizational structures that are not always clearly understood. If we are to maximize our return on investment we can't just upgrade our hardware and software. We also need to make adjustments to our "wetware" — the people, their skillsets, corporate policies, and the organizational structures that define our analytic communities.

As Apple has shown us, the hallmark of a good product is one that is immediately usable by even the most technically challenged consumers. While the latest advanced analytical tools are very powerful, they still require a fair amount of technical sophistication and have a long way to go before they match the ease of use of an iPhone or an iPad. We cannot afford to wait for our analytic tools to catch up to Apple. We need to find ways to reduce the usability gap and further empower analysts.

A good first step is to help analysts automate their more burdensome and repetitive tasks so they have

more time to develop new capabilities. Unfortunately, automating tasks is hard to do and requires its own unique skills. At a minimum, an analyst needs to be able to describe inputs-outputs, what to filter, data transforms, and so on — in effect creating a storyboard. More complex analyses frequently turn into a programming exercise. While the effort is non trivial, there are clear benefits to be had. For example, codifying workflows in this manner promotes reuse. It also makes it easier to pick out "meta" patterns in what an analyst, or a group of analysts is doing. This makes it easier to spot hidden trends that can serve as a foundation for development of system intelligence such as the recommendation services offered by Amazon and Netflix. But even when the right processes have been put in place, it is unclear whether analysts have the time or the wherewithal to properly describe what they do on a day-to-day basis.

One way to bridge the skills gap is to provide analysts with access to technical experts who know how to cross the chasm. This can be accomplished in any number of ways: access to professional services, creating virtual teams, embedding experts within those teams, and so on. What works best depends on the unique demands of each directorate or analyst community. For example, the military has a long

track record of successfully embedding experts, such as a medic or a signals corpsman, into squads and platoons. Similar benefits may be realized when a tools expert is “embedded” with a group of analysts. This of course would also require a clear career path for a skill set that heretofore has not always been explicitly recognized.

Another challenge with Advanced Analytics and Big Data is the fact that legacy infrastructures and government policies are increasingly at odds with the realities of the analytic landscape. There are good reasons why some of these restrictions exist; protecting the privacy of U.S. citizens is a cornerstone of our society. This is also the law. Our adversaries do not operate under the same constraints, however, and they are becoming more creative and nimble by the day. As a consequence, we risk putting ourselves at a distinct disadvantage unless we become more creative in how we operate within our own constraints.

Connecting the dots — whether to understand the latest regional trends, proactively predict a threat, or find a proverbial needle in a haystack — more often than not requires access to multiple data sources. The challenge here is that over the years the collection and curation of data has created its own fiefdoms that are at odds with this data-sharing requirement. The rules of analytic engagement are further complicated by both security and privacy requirements, which mandate that sensitive data be obscured. This often translates into encrypted data that precludes some forms of analysis. As a result, analysts may miss important pieces of the puzzle and be unaware that vital facts even exist.

While significant advances have been made in identifying patterns in encrypted and obscured data, the fact remains that certain forms of analysis are no longer possible within an encrypted environment. Rules

that require data to be encrypted, both while in transit and at rest, also introduce performance penalties that make it difficult if not impossible to process large data sets in an acceptable timeframe. As the volume of data increases we may be reaching a tipping point where the rate of effectiveness actually starts to decrease because of this processing overhead. In situations such as this we should be willing to entertain alternative approaches that remain compliant with policies but do not introduce these operational impediments. For example, what if we obscured query results (the “output”) rather than the data the queries operate on (the “input”)? While sensitive data within a result set still remains obscured, the analyst gets back a result set that otherwise might not be generated. It also may be more accurate. From there an analyst may have justification to request a deeper analysis by authorized staff. Such an approach would require data to be stored in an unencrypted form within a virtual data vault that provides one-way access (a data “diode”). While there are many technical and political issues that would need to be worked out, this type of novel data management could dramatically improve the impact of the latest and greatest products and technology.

The challenge of course is not just beyond data, it also is beyond products and technology. Ultimately our success is tied to how good a job we do managing the risk of innovation, while at the same time operating within the constraints of our IT, regulatory, and organizational environments. By virtue of its unique mix of commercial and government experience, IQT is well positioned to help both our customers and portfolio companies strike this balance. IQT has most recently demonstrated this through investments in companies such as Digital Reasoning, Recorded Future, and SitScape. Going forward we are looking to do even more through experimentation and prototyping in close cooperation with our IC customers. **Q**

Bob Gleichauf serves as IQT’s Executive Vice President of Technology Transfer and Chief Scientist and oversees the transfer of innovative technology solutions to the U.S. Intelligence Community. In this role, he supports technology advancement programs and IQT’s rapid prototyping capability, and is responsible for increasing customer awareness of IQT portfolio company capabilities. Bob joined IQT from Cisco Systems, where he spent more than a decade working on the development of secure network infrastructures across a variety of the company’s products as the Chief Technology Officer for the Wireless and Security Technology Group. He is respected globally for his work in information security and has more than a dozen patents in network security.