Why Should CIOs Consider Advanced Analytics?

Ahead of the annual Gartner Business Intelligence & Analytics Summits in [Sydney](#) (23-24 February), [London](#) (9-10 March) and [Las Vegas](#) (30 March-1 April), we asked Alexander Linden, research director at Gartner, to explain the opportunities that advanced analytics and data science technologies present to business executives.

Q: Why should CIOs consider advanced analytics and data science technologies?

A: The overall amount of data and analytics is growing in every industry. CIOs need data science* to extract nontrivial information. For example, it's mission-critical to determine how to acquire new customers, do more cross-selling and predict demand and failures. Normal business intelligence and descriptive analytics**, and even traditional software engineering, can't handle those situations.

Advanced analytics can surpass human capability in coping with significant volumes of data, and dealing with highly complex digital business settings. Digital businesses have to adopt data science methods in more use cases, by driving the availability of sensor data, expanding bandwidth and reducing storage costs.

Q: With a greater adoption of analytics, what changes (process, skills etc…) will a business need to make to incorporate advanced analytics?

A: Many of our clients assume that once they have mastered analytics, they can then progress to the next level with simply some learning and additional software tools. The reality is that advanced analytics isn't just a more complex form of normal analytics. "Normal" analytics mainly reports what has happened (descriptive analytics), whereas advanced analytics solves problems using predictive analytics and prescriptive analytics. Predictive analytics predicts future outcomes and behaviour, such as a customer's shopping behaviour or a machine's failure. Prescriptive analytics goes further, suggesting actions to take based on the predictions.

For example, predicting a machine breaks down after producing a certain number of parts, prescriptive analytics might suggest that the company conducts maintenance before that maximum number of parts is reached. This would prevent unscheduled and costly downtime.

It is also important to mention that the technologies for advanced analytics are different from those for analytics, and require different skills. These skills typically include a solid understanding of statistics, machine learning and operations research.

Q: One of Gartner's new predictions says that through 2017, the number of citizen data scientists will grow five times faster than the number of highly skilled data scientists. How will these citizen data scientists work with the chief data officer, and how will the data scientists fit in the business?

A: Extracting value out of data is not a trivial task, and one of the key elements of any such "making sense out of data" programme is the people, who must have the right skills. Data scientists are not traditional business analysts, they are professionals with the rare capability to derive mathematical models from data to reap clear and hard-hitting business benefits. They need to network well across different business units and work at the intersection of business goals, constraints, processes, available data and analytical possibilities.

Lots of our most advanced clients are experimenting with the notions of chief data officers (CDOs) or chief analytics officers (CAOs). Sometimes the CDO/CAO will directly command a

(virtual) data science lab. We think that those labs must be orchestrated virtually, with the (citizen) data scientists distributed throughout the organisation.

*Data science is the discipline of extracting nontrivial knowledge from often complex and voluminous data to improve decision making. It involves a variety of core steps, including business and data understanding and data modelling.

** Descriptive analytics tools answer the question, "What happened?" They do this by querying data and summarising key performance metrics, such as a report of annual sales by region.

Gartner analysts will further discuss analytics at the Gartner Business Intelligence & Analytics Summit 2015 in Sydney, London and Las Vegas. For more information on the Summits please visit www.gartner.com/events.