



Management
& Technology
Consultants

CONVERGENCE LETTER

Customers cubed

*Complex event intelligence as a tool
for marketing services*



N°28

To get there. Together.

ABOUT BEARINGPOINT

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We deliver Business Consulting. We are an independent firm with European roots and a global reach. In today's world, we think that expertise is not enough. Driven by a strong entrepreneurial mindset and desire to create long term partnerships, our 3,200 consultants are committed to creating greater client value, from strategy through to implementation, delivering tangible results.

As our clients' trusted advisor for many years (60% of Eurostoxx 50' and major public organisations), we define where to go and how to get there...

To get there. Together.

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Most companies are struggling to exploit their existing information assets. These assets equate to all the information a company has on its customers, products, and partners that is stored away in siloed databases from which (no fear of Big Brother here), they seem incapable of extracting useful enough information for decision making. Moreover, companies are being flooded with new information which is doubling every 18 months resulting in reams of under-exploited data. This has become a critical challenge in economic sectors which are increasingly dependent on knowledge and recognition. Big Data is a technological challenge and constitutes an entire economic activity waiting to be developed. The phenomenon isn't recent given that the 1990s saw the setting up and structuring of large databases. In the 2000s reporting tools were then added to the equation along with dynamic data exchanging, business intelligence and advanced analytics. However detailed knowledge of what drives customer behaviour remains an enigma for decision makers due to a complete lack of tools and methodology.

■ Let's take a few examples in sectors where information and data are readily available.

Telecom operators have extremely precise data on their customers, their telecom network usage, and the calls they make to customer service etc. Yet, they still don't understand which customers leave them and why. The multitude of direct marketing tools related to customer behaviour was considered an operational

opportunity to find a response to this question and heavy investment naturally followed. However, operators are still unable to use this leverage correctly in relation to profiles and expectations.

In the insurance sector, there are two key rules well known to every insurance specialist: you need to find the best customers in terms of risk associated with the customers (profile based risks, insurance domain risk, risk of fraud); they should be offered several contracts (multi-equipment) because this will make them loyal customers. Direct marketing tools are extremely useful for this but can be costly if the right marketing channel is not used for the right person with the right contract. Insurance companies have several years of historical data on each of their customer's profiles, their contracts and the success or not of the marketing channel used, but all this data is still drastically underexploited.

■ **The limits of today's models lie in the methodology used.**

Client behaviour is analysed using statistical logic which builds a score that gives expected rates for certain behaviours. The statistical approach is often a black box for decision makers and gives overall results. However this method produces little or no analytical results which can help analysts make informed decisions. The data exists but there is no way to exploit all of it in a straightforward way. This is where technology based on complex event intelligence (expert systems learning) changes things somewhat.

■ **The idea consists of exploring data bases without prerequisites in as exhaustive a way as possible.**

Let's take an example: in order to find out which zone has the highest pollution rate on a given date, observations can be made from an airplane or via captors placed on the top of buildings. The statistical approach would be to climb aboard an aircraft and square off the space in order to try and isolate the zones with intense pollution. It would appear quite simply that only certain types of pollution are detected or described by this global approach.

In the HyperCube approach that BearingPoint has developed, every possible type of pollution can be accurately explained by intelligent captors. Using this approach, health authorities will be able to launch little explorers to go off and cover every single piece of terrain. As soon as a trace of pollution is detected, the explorer marks out the area and uploads the information for that particular space as well as the intensity of the pollution detected. The data is then analysed and results are crossed with that of other explorers in order to draw up a detailed and complete map of the areas of pollution. Returning to a general scenario, this example shows how these explorers are in fact intelligent agents or local computerised programmes that analyse databases. The algorithm is the roadmap for these agents and what is innovative is that it allows each intelligent agent to move infinitely more quickly in an entirely random fashion. It allows for an almost unli-

mitted number of intelligent agents and has the ability to extract their knowledge in a simple and factual form.

■ **So HyperCube enables us to exploit all the data available and not simply tidy, completed and quantitative data.**

To be more concrete, a HyperCube analysis actually considers each line of data by customer, each column is an indication about a customer: what they are (address, revenue, profession, sex, age, etc.); what they use (the type of contract they have, its duration, evolution, voice, text and data usage, subsidies, type of terminal used, etc.); their relations with the telecoms operator (previous direct marketing campaigns, calls to customer service, calls from customer service, emails, etc.); the exit variable or the question the client asked (did the client churn or not for example). The algorithm at first compares each dimension (or column) with another. This represents a two dimensional matrix with clients positioned along each axis. The algorithm isolates the areas of greatest concentration of pertinent cases (unfaithful clients for example). Then the operation is repeated for three and then four dimensions and so on... until every angle has been explored. The space outlined by this exercise is a shape with two parallel sides that meet at a right angle. Two dimensionally it is called a rectangle, in 3D it is a parallelepiped and in (n) dimensions a hypercube.

■ **This approach changes things when it comes to marketing analysis.**

On average, only 20% of database information can be taken into account with the traditional approach. BearingPoint's HyperCube enables all available information to be worked on. Thereafter the challenge is to understand the causes or potential leverage of client behaviour. A statistical approach means, for example, that Mr. Smith might have a 72% chance of leaving operator Alpha for operator Beta. And taking this further, what specific actions will need to be undertaken to retain him. With the HyperCube, Mr. Smith will fall under a rule that describes clients at a risk of leaving: [aged between 26 and 32]; [region = Southern]; [plan = fixed rate T1]. The rule gives a detailed description of the characteristics of customers who have in fact changed telephone operator. Certain criteria are descriptive: the operator has no influence on length of service, age, or place of residence. However, an operator can have an immediate influence on the telephone plan which appears in the rules describing the customer and intervene in order to avoid the customer leaving. In one case, we are looking at a risk retroactively without being able to do anything about it, and in the other case, we are describing the risk and identifying the course of action to take in order to avoid it.

■ Here we are going to look at two concrete examples.

A telecom operator used both the traditional statistical approach and the HyperCube approach in order to isolate potential churners and better target its marketing efforts. The HyperCube analysis was able to determine 67% more high risk clients than the statistical approach (departure rate > 8%, that is twice as much as the client base average). It was the exhaustive analysis that enabled the company to delineate in detail the profiles of the biggest churners and not the average churner profile. This meant they could concentrate on high risk clients, that is to say 50% fewer targeted clients than those identified by statistical rules (departure risk of “only” 4%). From a budgetary perspective, the operator concentrated on these clients. The analysis was coupled with an analysis of relevant channels of contact in order to refine non intuitive rules that described real cases of customer behaviour. For example “a married women living in this region and using that plan is twice as faithful when she receives a type 1 email and then a type C telephone call”.

■ Another interesting example is: a Utilities operator wanted to understand its high value clients' profiles (high value = greatest consumption billed).

The HyperCube analysis allowed it to concentrate on the cases where the revenue risk was the highest and on cases that had not previously been identified. Simple rules were analysed: num-

ber of installations, profession and length of relationship with the customer, and occasionally results were counter intuitive, or some rules much more complex. In this way, three particular cases, which did not match any marketing rule used before by this operator, were identified. For example, the analysis showed that according to the nature of the contract, the residential zone and the volatility in the amount of their bill, certain customers were four more times as likely to leave their supplier as others. What was even more interesting was that the volume of customers was sufficiently large to impact overall customer loyalty.

■ **These two examples illustrate the power of the HyperCube approach in a particular and very specific area (customer loyalty).**

What is interesting in this method is that it can be used in different ways to address very diverse issues within a company, over and above marketing. For service operators, this could include fraud, terminal stock management or sales forecasting.

Over and above the technological advances this approach embodies, the HyperCube approach also heralds large scale changes. It gives easy access to elements for decision making and the people in charge will gradually become less dependent on data specialists. Simulation games can also be developed to test one hypothesis or another according to the challenges ahead (number of customers to retain, budgetary impact, anticipated costs

of conserving a park, etc.). Marketing managers will then double their strength: they will not only be able to use the entire wealth of data they have on customers but they will be able to make informed decisions based on an analysis of the actual behaviour of these customers.

This method is not an absolute crystal ball but is a real tool for proper decision making. Marketing has now become a more exact “science” than it was because it is now based on a refined understanding of the key object being studied: the consumer. Not consumers the way the marketing department imagines they are or not even consumers as they themselves imagine they are, but consumers as they actually are!

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