

Visual Integration of Business Intelligence

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Information Overload

Every day, every business enterprise generates dozens of seemingly unrelated threads of information. Businessmen and women struggle to manage, understand, and apply this data to their business.



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Management draws conclusions from threads containing marketing studies, point of sales reports, inventory trends, customer counts and an unending stream of data from automated systems that have been designed to relieve the stress that this information overload brings. While the majority of these threads are interconnected, most of the systems that produce this data are designed to stand alone and all are lacking a common interface that provides an integrated view of the correlated data.

When viewed together, these threads of business data may produce a totally different conclusion about their meaning. Perhaps more important than a common interface or viewpoint, much of this data lacks the critical component of verification. Assumptions are made that the data collected and presented are valid and mean exactly what they imply. Often this is not the case and the ability to visually verify the data will enhance its value to the business and its strategic decision making.

The Power of Video

System integration is a concept that has been bandied about for years in the security industry under many titles. Yesterday's integration is today's convergence. In fact, some progress on this front has been made and the results are promising. These are not revolutionary ideas; the concept of panning a camera around to a door to verify an access control transaction is a common occurrence. While this is a rudimentary example of video verified data, it is accurate in that a thread of information is generated by the access control system which is then verified systematically and used to trigger a separate event in a totally unrelated system. When the access control transaction is viewed by a security officer, either in real-time or forensically, the data generated by the access control system is visually verified by the recorded image from the camera.

To better understand the nature of this interconnected data, consider the case of a retail clothing store. The nature of this business dictates that merchandise is displayed; customers browse the displays; sales and return transactions occur at one or more central locations; and customers are funneled into and out of the store through pre-defined ingress and egress points. The marketing department is keenly interested in the social and economic makeup of the store patrons as well as their habits and behaviors while in the store. Along those same lines, the loss prevention staff is interested in many of these same data points. People who trend towards dishonest activity will often exhibit behaviors that can be observed and that will accurately predict this activity.

Merchandising and marketing departments often struggle to design and deploy an effective merchandise display and promotional campaign. Once launched, they depend on point of sale (POS) data to determine how effective the display is. In the best-case scenario, they can only discern that whatever they did to produce the display either had a positive or negative effect on sales of that merchandise.

It is left to pure conjecture why or why not the display is effective. What if through video analytics, the merchandiser could determine what percentage of shoppers actually approached the display? Further, this same system might produce information about how long the shopper stayed at the display, whether they removed an item from the display to try on for example, and if indeed they took an item away from the display. What can we infer from this type of information?

- The percentage of customers approaching the display may indicate how effectively the display is deployed and / or how attractive the display is.
- The dwell time (how long the shopper stayed at the display) could infer how attractive the items on the display are or if the items are priced appropriately and competitively.
- A shopper who removes an item from the display but does not purchase the item might indicate some issue with the look and feel of the item (or perhaps a shoplifting event).

With this type of data, marketers can effectively step into the buying decision with the customer and understand more of their behavior. Adding visual verification (live and recorded video) to the POS data analysis validates or reinforces the conclusions reached by correlating the analytic software results with the data points from the POS and inventory/sales systems.

Take this type of analysis into the convenience store business, for example, and many more data points reach out for correlation.

- Automatic verification of the cashier ID in real time during the sale through RFID technology.
- Notification of an abnormal energy event such as a cooler or freezer door being left open.
- Automatic escalation of longer than desired queue lengths.
- Automatic notification and visual verification of abnormal transactions such as voids, no-sales, out of character debit/credit card transactions.
- Evaluation of merchandising effectiveness as in the clothing retailer case above.

Add visual verification to this (recorded and live video and audio) and the value of the data is greatly enhanced. Integrate all these data points and the visual verification of the data into a common viewpoint and a valuable tool begins to emerge. Management of these data points from a single interface is critical to the prevention of data overload and selectively presenting only relevant data will streamline the analysis of the data collected.

If we extend this concept to facilities with exterior traffic patterns such as drive in restaurants, many more inter-related data points appear. Conversion rates in retail stores are an excellent evaluation tool for marketing and advertising efforts. Drive-in restaurants might be interested in how effective their exterior signage is when used to encourage casual turn-in business, for example. Fast food restaurants are always interested in how quickly their servers move customers through and want to be constantly aware of growing queue lengths. Visual verification through people and car counting can be a key factor in evaluating all these data points. Present all this additional data along with the other data points in a common viewpoint that management can remotely evaluate and you effectively allow the decision makers to be in every facility every day without leaving their office.

The Next Step

The keys to the development of a successful analytics platform that will bring these seemingly disassociated data points into a common interface are:

- A flexible data collection platform that can speak to the many data sensors and sources present in the enterprise.
- A common viewing interface that can locally and remotely access these data collection platforms and retrieve the data in both real and forensic time frames.
- An analytic engine that can compare and contrast the data points and present the results that the user has defined as relevant along with direct video verification links to the events behind the data points. This video verification should support the conclusions reached by the analytic engine.
- A notification engine that can quickly and effectively alert management to situations requiring corrective action or immediate resolution.

The good news is that most of the components required to create this environment already exist. The missing components have been the data gathering / analytic engine and the common viewpoint GUI. In fact, DIGIOP has been developing these components and the resulting products are very attractive to retailers who have been starved for ways to add to top line revenue numbers, reduce shrinkage, and mitigate risk without significant capital expenditures.

Give these markets the ability to join the buyer in the buying decision through data evaluation and you provide the missing keys to successful marketing. And when loss prevention is included as an intrinsic part of that system, the solution becomes irresistible.