HigherGround™

White Paper Document

intelligent
solutions
for contact centers

Discovering the
Business Intelligence
Hidden in Your Call Center

The building blocks and limitations of present-day

business intelligence and how you can find

true "telecom intelligence" in your call center.

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Executive Summary

Since their arrival in the mid 1990s, business intelligence (BI) solutions have promised increasingly fast and widespread access to information that drives better business decisions. But the better part of a decade later, BI's considerable benefits are still limited to a lucky few—and still draw from just a subset of the data available to an organization. In particular, if your organization has tried to apply mainstream BI solutions to extract intelligence from your seemingly infinite store of telecommunications data, you've probably realized a fraction of the potential payback.

This paper outlines the building blocks and limitations of present-day BI, and then introduces HigherGround's Report Commander, a telestatistics analysis and reporting system designed to put telecom-centric business intelligence at the fingertips of anyone who needs it.

A BI Primer

"The key to thriving in a competitive environment is staying ahead of the competition. Making sound business decisions based on accurate and current information takes more than intuition. Data analysis, reporting and query tools can help business users wade through a sea of data to synthesize valuable information from it—today these tools collectively fall into a category called "Business Intelligence."

— *Gartner Group, September, 1996.*

Gartner's definition of BI remains more or less accurate, even as different players in the young BI marketplace have tried to evolve and even brand the definition for their own purposes. Today BI still comprises a broad category of applications for gathering, storing, analyzing and delivering data, with the goal of *delivering the right information to the right people, at the right time and in the right format to support a given decision-making process.*

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A BI solution typically includes the following four applications:

1. **Online analytical processing (OLAP).** OLAP is a type of data processing that lets users quickly and easily extract and view live data in an almost unlimited variety of ways.

   The easiest way to understand OLAP is in comparison to its more widely used and understood relative, *OLTP*, or online transactional processing. OLTP is data processing optimized for capturing, storing and updating business transactions. It utilizes *relational database technology*, which is *not* optimized for retrieving, relating and summarizing large numbers of records. And therein lies its unsuitability for BI: In a BI environment, where analysis is conducted on huge volumes of data replicated in multiple dimensions required to produce multi-dimensional capability, even a seemingly simple relational query can result in hours of one-record-at-a-time processing. Additionally, attempts to replicate multidimensional capability within OLTP result in significant operational overhead due to the increase in the volume of tables and indexes.

   In contrast, OLAP is optimized for *analysis*. OLAP relies on *multidimensional database technology*, which can retrieve and summarize multiple *relationships* between data. This efficiency enables OLAP systems to process the equivalent of thousands of records per second. Queries that take hours in OLTP/RDBM (relational database management) systems take minutes or even seconds in OLAP.

2. **Data warehouse and/or data mart.** A data warehouse is an application that collects data from a company's disparate data sources and combines it into a unified, cleansed (non-redundant), real-time data store—thereby enabling interdepartmental or interdisciplinary queries. A data mart is a snapshot of the data warehouse, filtered and aggregated to answer a specific set of questions more quickly than they can be answered by querying the warehouse directly.

3. **Decision support.** Decision support is the BI "deliverable"—the querying and reporting tools that enable users to extract the data in the formats they need to support their decisions. Decision support also includes any integrated tools used to analyze the extracted data—applications for forecasting, resource balancing, scenario testing, and so on.

4. **Data mining** applications automatically comb through data to find patterns, sequences, groupings or associations for which people might not think to look, and which could uncover unseen opportunities or solutions. Put another way, data mining finds the result of queries users might not think to make.

"Information democracy" remains a challenge. While each of these application types has evolved usefully—and while BI is rewarding adopters with continuously improving decision support—most BI solutions still fall well short when it comes to making *all* of the right information accessible to *all* of the right people. Data warehouses and data marts, typically, are fine for delivering structured information, but are deficient in the delivery of unstructured data such as documents, recordings, screen captures, etc. Data marts, which necessarily become more common as the data warehouse expands, are also notoriously inflexible: If an answer to one question leads to another not covered in the data mart's "domain," a new mart must be created. Most frustrating, the complex querying and reporting languages required to extract and format intelligence from the system remain well out of the average worker's reach.

For business intelligence to truly pay off, it must:

1. Integrate data from all pertinent sources—no matter how disparate—into one, comprehensive and consistent data store that can yield a single "version of the truth."

2. Provide true interactive data manipulation capabilities to allow the user to view information in the way that supports his/her decision making processes.

3. Offer multiple ways to view data—graphs, tables, standardized and ad-hoc report formats—to suit multiple purposes and audiences.

4. Allow the user to add, or to draw from, his or her own "intelligence" while using the system.

5. Be easy to use and intuitive, so that the tool does not get in the way.

6. Provide system management facilities, such as truly integrated security and permissioning, to ensure that the right information gets to the right people.

HigherGround™: Access Telecom Intelligence

HigherGround, Inc. (formerly Communication Advice & Design) began in 1973 as a telemanagement consultancy that helped some of the world's best-known organizations— Coca-Cola, Litton, Charles Schwab & Co., Exxon—save money by gathering telestatistics, analyzing them, and using the resulting information to route sales and service calls more efficiently.

Since then, HigherGround has evolved into a technology leader in telemanagement software that enables a company to capture call data—including voice and screen recordings of call agents—and to analyze that data to optimize use of all telecom resources at the company's disposal.

At the core of HigherGround's solution is the Report Commander, which delivers a BI solution focused on telecom data—a telecom intelligence solution whose power and usability are unmatched in the telemanagement software market. Report Commander's capabilities map almost directly to those of a classic BI system, but also include the comprehensive data integration, reporting performance, flexibility, and user accessibility typically missing from generic BI solutions.

Comprehensive telecom data warehousing. Report Commander gathers call data collected from the enterprise PBX system, then integrates it with virtually every pertinent telecommunications data resource, including:

- ACD and flex seating data.
- Customer database information—account numbers, names, companies, etc.
- Automatic call location (ALI) data.
- Call recordings.
- Internal databases—station numbers, employee names, departments, etc.
- Agent screen captures.
- Attachments, such as agent evaluation forms, notes and documents from desktop application programs.

HigherGround Data Connector and Processor capture, validate and process real-time data streaming from your PBX—or even multiple PBX's—then store the data in the master database.

High-volume data streams, such as voice recordings or screen captures, are throttled or scheduled to be moved to the central server during off-peak hours for optimal use of LAN/WAN bandwidth.

The Data Connector buffers the data to safeguard against data loss during temporary network failures. It also performs error checking and error reporting at each step in the data gathering and delivery process. Any sign of potential data loss triggers an alarm to HigherGround's technical staff. They diagnose and repair most problems remotely and help minimize the possibility of lost data.

Proprietary, multidimensional database management systems. Report Commander's database was designed and optimized specifically for quickly delivering complex query results from huge volumes of data—not just raw data, but data in indexes, recordings, screen captures, etc. The chief advantage is performance. Report Commander's proprietary database can match fields at speeds greater than 1000 records per second, a level of performance relational database systems can't match.

Report Commander's proprietary database eliminates the need for, and the limitations of, a data mart. By presenting a filtered and aggregated set of data, a data mart accelerates performance. But a data mart doesn't allow deeper querying into the numbers behind the aggregates, and must be rebuilt to answer any questions outside of the original parameters. In contrast, Report Commander's proprietary database delivers data-mart query performance over all the data in the warehouse, at all times.

In addition, the Report Commander's database is engineered for maximum uptime and continual delivery of data. It includes built-in redundancy to balance the transactional load and increase fault tolerance. It can be distributed over several servers. To prevent loss of data in the event of downtime, the system queues transactions in a buffer and then synchronizes them with the data, without user intervention.

Unequalled reporting capabilities put telecom intelligence at any user's fingertips. As noted above, highly accessible reporting is the key deliverable of any BI system. *Report Commander's reporting capabilities are designed to enable any user to answer virtually any telecom question in exactly the level of detail necessary to support a given business decision.* Specifically, Report Commander's reporting features include:

- *Simple, flexible, point-and-click querying.* Users create queries in a single screen by simply clicking on the desired data fields.

- *Live, automatically updated reports users can manipulate without designing a new query.* Unlike the static, "finished" reports resulting from relational queries, Report Commander reports are live, with live links to the tables used to generate the data. As a result, users can "drill down" to details behind a summary (or, conversely, summarize details), filter records in or out, resort by multiple keys—*all with one or two mouse clicks, and without designing another query.*

- *More than data.* Reports contain links to relevant call recordings, captured agent screens, and other "non-alphanumeric" information useful in supporting decisions. Users can listen to a recording, view a screen capture or pull up agent evaluation forms simply by clicking the appropriate reference in the report.

  HigherGround's call recording and screen capture solutions can store recent recordings and captures online, making access to recordings and captures instantaneous. HigherGround can also archive call recordings, grades and screen captures to removable, portable storage for instant, near-line access.

- *Analytical tools.* Report Commander includes an *Erlang calculator* for optimizing existing resources and forecasting future system needs; *overflow analysis* for balancing your call load among carriers and vendors; *exception reporting* that flags met/unmet conditions you specify; *zone categorization* for quickly reporting on categories of calls (in-state, long-distance, etc); *compress duplicates*, a powerful feature for sorting, subtotaling, and otherwise summarizing same-category data within a report; *alarms* that can be triggered by calls matching or not matching a set of criteria; and *charting* for visualizing trends and comparisons.

- *Multiple output formats.* The system can generate reports in HTML format, and automatically post them to a Web site for customer/partner/employee viewing; it can also export reports to text, CSV, or graphic formats.

- *Alert notification.* In addition to letting users schedule reports to run at specified times or time intervals, Report Commander can be set to generate alerts in response to an especially urgent condition—e.g., activity on a trunk appears to have stopped, a user

dials a forbidden number, etc. The system can page users when a report is done, or send an email message with a link to the appropriate report.

- *Scheduled and automated reports.* Report Commander can be set up to run or print reports automatically at specified times or time intervals. Reports can even be emailed, allowing, for example, for department usage reports to be automatically emailed to the appropriate department heads or managers weekly or monthly, for unattended and paperless distribution.

- *Automated data merges.* Administrators can schedule automatic, unattended data imports from a company's other databases, ensuring that the Report Commander has access to the latest information on account numbers, clients, vendors, customers, etc. The system automatically matches phone numbers to other company information so that users can query based on name or account, and so that administrators can quickly spot non-business related calls.

- *Browser-based access.* Remote users can access the Report Commander client via their Web browser and generate queries and manipulate reports over an Internet connection—giving them access to telecom intelligence from wherever they happen to be.

- *Centralized administration and control.* HigherGround's management system, Control Tower, lets administrators control each user's access to data—deciding what data each user sees and what they can do with that information. This enables the enterprise to grant each user the BI capabilities he or she needs, while still maintaining desired confidentiality and control over system access.

Freedom to explore and discover new intelligence. Because of the unprecedented ease, speed and flexibility with which it allows users to query and manipulate data, Report Commander allows remarkably productive and revelatory *manual mining* of telecommunications data. Without complex query syntax or report design tools, users can point and click to instantly generate, regenerate, and manipulate reports, drill down into numbers behind the report, start another report based on those findings, and so on. With this kind of fluidity, users can spot relationships, explore them, and reveal unseen relationships, questions, and answers.

Telecom Intelligence in Action: Scenarios

The following fictitious scenarios illustrate just a few of the bottom-line benefits Report Commander's telecom intelligence can provide.

Scenario 1:

Damage control.

A Senior VP at Company Z learns that a key account has had a bad telephone experience with one of Company Z's call agents. The VP asks the call center manager to determine whether the call agent has mishandled any other customers at key accounts, so that Company Z can move quickly to repair any damage done to these relationships.

Traditional challenge: incomplete, time-consuming access to call recordings. If Company Z's call center uses a traditional call recording solution, it cannot provide the information the VP needs in time to control the damage. Typically these call recording solutions 1) record to tape, 2) index calls by date and time only, and 3) record only periodically, not continually. Even if the system was lucky enough to record lots of calls made to or by this particular agent, it might take weeks to find them.

The HigherGround solution: continuous call recording and instant access to any call. HigherGround's call recording solution can be set to record continuously and can archive upwards of one million hours of call recordings on site, and—most important for this example—indexes every call recording by all PBX and call station data (including caller's number, number dialed, station ID and flex seating data). Using the Report Commander, within minutes the call center manager can quickly generate a report listing every call made to or by key accounts with the problem call agent, *including hyperlinks to .WAV format recordings of each call.* The call center manager can then email the report to the VP, who can listen to each recording at his or her desktop, and determine which key accounts need to be contacted.

Additional opportunities. To enact an extra measure of prevention, the call center manager can use Report Commander to generate a list of call center agents who have scored similarly to the problem agent in recent evaluations, and listen to recordings of their interactions with customers, and if necessary, flag these agents as risks for dealing with key accounts.

Scenario 2:

Optimizing use of multiple remote call centers.

Company Y, a firm with call centers in multiple U.S. locations, wants to improve profitability by shifting call traffic to the centers with the best cost performance. They need to know which call centers generate the most revenue per dollar spent on phone costs and operational overhead.

Traditional challenge: consolidating data from different locations. Without a way to integrate the call data from various call center locations, Company Y would have to manually consolidate reports from each call center into a single spreadsheet (or write a custom macro to do the job)—a tough process that yields questionable results. Because each call center likely developed its reporting system at a different time and without a company-wide standard, some sort of pre-consolidation routine would have to be created to eliminate redundancies and inconsistencies between the reports. This extra handling would, in turn, expose the data to corruption. Also, mishandling of different time zones might result in comparisons based on different times, instead of a true same-time snap-shot taken across call centers. Perhaps worst of all, the time required to unify and consolidate the data would result in an out-of-date report, based on data generated days or even weeks earlier—far from the type of intelligence Company Y needs to support so crucial a decision.

The HigherGround solution: world-wide, real-time call data integration and consolidation. Report Commander integrates call, customer, and enterprise data from multiple locations—even international locations—and generates live reports based on that data. Using Report Commander, a senior manager at Company Y can combine fields from *each call center's* PBX (caller's number, number dialed, call length), call costing systems, and enterprise sales data-bases (cost of sales, phone revenues) to create a single report that calculates and compares the cost performance of each center over time. Report Commander also automatically handles time differences, ensuring that the results represent a true same-time comparison of the data. Based on the results, Company Y can quickly and confidently take actions (such as forwarding incoming 800 calls to better-performing call centers) that will improve profitability.

Additional opportunities. Company Y could use the same cross-location capabilities to analyze the performance of outbound telemarketing from its many call centers. It could also combine and report on data from international locations, to evaluate the profitability of shifting more incoming or outgoing sales traffic to foreign call centers given international calling costs.

Scenario 3:

Analyzing and improving advertising performance in real time.

Company X needs to know which geographic markets, media, and demographics are yielding the highest revenue for a particular ad campaign.

Traditional challenge: integrating all available data to support the campaign. If the company had a CDR (call detail record) reporting option on its PBX, it could capture, for each call, the DNIS (dialed number identification service) digits that would identify which of their inbound numbers was dialed and the phone number from which the party was calling. The company would then require a separate call accounting package to match up the numbers with locations, but most of these packages match based on the first three digits only, limiting the precision with which a call source can be located. Matching up incoming call data with a customer database would require custom programming or manual matching.

The HigherGround solution: automatic integration of all pertinent and available data. The HigherGround Processor automatically captures the DNIS number of every incoming call and the number from which it was dialed. It then matches the "dialed from" digits to its own database of countries, regions, states, cities, and even neighborhood "central offices"— automatically and in real time. (HigherGround's support service updates this database as necessary to ensure its accuracy.) It can also combine this data with other data in the company's order-entry or contact management database, including customer name, age, salary range, etc. As a result, Company X can easily create reports showing revenue by particular ad, media, market, age, or any other pertinent and available criteria. Plus the company can update the reports frequently—daily or even hourly—and can automatically output them to HTML and post them to an extranet, where management can track the campaign's performance in real time.

Additional opportunities. To add value or to offer a premium service, Company X could create reports combining PBX and ad data with more qualitative information gathered in its contact management system, such as complaints, objections, or misunderstandings reported by the target market. For example, if a number of respondents from a particular region of the country voiced disapproval with the ad's wording, the company could modify the ad for media reaching that region.

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Conclusion

To again quote Gartner, true Business Intelligence enables a decision-maker to "wade through a sea of data" and extract exactly the information he or she needs to make the best business decision at the time. The best business intelligence systems are those that impose the fewest limits on the waders and the sea—that is, those that allow the widest range of users to ask the widest range of questions from the most current data, as quickly as possible.

Measured against this ideal definition, HigherGround's Report Commander is the ultimate business intelligence solution for contact center managers, and for any organization whose success depends on the phones. By automatically integrating phone data, enterprise data, call recordings and more—and by allowing authorized users of any skill level to query and manipulate that data in any way and in real time—Report Commander gives companies the complete, timely intelligence they need to make decisions that optimize resources, build profits and preserve customer relationships.

For more information on Report Commander and all of HigherGround's products, call 818.591.3133, or visit our Web site at www.highergroundinc.com.