Data abundance

– how to make intelligent use of it

Telecom companies **grapple with huge amounts of call data** and other information. Generic business intelligence solutions generally fail to meet the specific needs of telecom. Thinking "real-time" can deliver **new returns on data investments**.

A CORNUCOPIA OF rising new technologies drives the IT industry today; for instance, operational data stores; data warehousing (DW); business intelligence (BI); enterprise portals; "extract, transform and load" (ETL) tools; enterprise application integration (EAI); web services; and service-oriented architecture (SOA). In order for telecom to take full advantage of these developments, operators must converge the technologies so they function symbiotically – gathering critical information from across an organization and delivering it through a single access point to provide a collaborative environment for decision making.

Achieving this symbiosis is a great challenge, exacerbated by the growing importance of providing subscribers with detailed online information to help them better analyze and manage telecom expenses. Such solutions already exist in the banking industry, where details of a range of financial transactions are presented on the subscriber's web page as soon as they are available.

Telecom operators can follow banking's example by providing subscribers with relevant data and simple analysis tools embedded in their portals. Moreover, operators can charge a premium to customers who want to perform more complex analyses of their data directly from the enterprise portal.

Many telecom companies are investing heavily in new technologies that will enable them to collect and make sense of the overabundance of data in their organizations, thus turning that data into usable information.

There's a wrench in the works, however. Over the past decade, many software vendors have touted their products as all-inclusive solutions to DW/BI problems. As a result, many organizations have sunk copious amounts of money into these panaceas, building specialized data warehouses, operational data stores, data marts, and business intelligence applications on top of these data stores or legacy systems. I call it "data mart anarchy."

Most of us who work in IT have come to understand that no combination of products, tool suites, and technologies can completely solve thorny business or technological issues, especially when we don't have a road map to our ultimate destination.

Some of the pieces – DW, BI tools, enterprise portals, ETL, and EAI – are already in place at many organizations. The key is to integrate those pieces, and do so quickly if telecom companies hope to thrive once again.

To complicate matters further, recent accounting scandals have led to tighter legislation in many markets, especially the US following the Sarbanes-Oxley Act. Companies now must set up new, more-stringent business governance systems, as well as policies and processes for collecting, certifying, and disclosing financial information.

Data warehousing and telecom

The wide range of new services in wireline and mobile telecom, including the internet with its ever-increasing demands for higher quality, add to the complexity of the situation. Deregulation has opened up competition even in such traditional areas as local phone and cable services, prompting a series of mergers and acquisitions among both small firms and the industry giants.

All that leads to a data management nightmare. Large, long-established companies have legacy data on mainframes that may need to be integrated with data stored somewhere else on a series of new products. Worse yet, data from a small company bought to provide a new product may need to be combined with that legacy data. Newer, smaller firms have a simpler integration task but face limitations in resources. Yet the mandate to "know the customer" means that no matter how challenging, integration must be achieved or the company will not survive.

A key trend in the industry is to put the customer at the center of the business. The best way to do this is through data warehousing. Telecom, like other industries, needs to integrate customer input from numerous channels, including call centers and online transactions, so that each service representative can see a full history of the customer's interactions with the firm. New transactions need to be fed back into the database. But unlike other industries, telecom must handle a staggering amount of data.

Data mart anarchy

Some switches produce millions of records per hour. This translates into major storage requirements – two years of call detail records (CDRS), for example, can require 100 terabytes. Such volume makes data inaccessible to decision makers if it is not properly managed.

Customer retention, cross-selling, and upselling can be supported by viable data warehouse and analytical tools, such as online analytical processing (OLAP). For example, telecom operators can examine the CDRS for calling patterns that might indicate interest in an additional service. Customer satisfaction is at the heart of such efforts. Because of this, many operators are looking for the best ways to analyze data at the client level. Therefore, it is crucial to design a system that can adapt to the fast-paced communications world and to allocate sufficient resources to maintaining the data warehouse.

Combining customer sales data with external data can lead to sophisticated marketing strategies. Some US operators analyze where customers were born vis-à-vis their present location, then target people living away from their birthplace for a long-distance plan. Companies can also target their high-profit customers for retention efforts, and use customer data to develop a profile for identifying high-probability new customers. Well managed data reduces the cost of acquiring new customers, particularly if the data is quickly made available to all the departments that need it, regardless of the channel through which it was acquired.

Warehouse data and analysis tools allow companies to anticipate problems and respond proactively. For example, dropped calls represent not only an obstacle to customer satisfaction, but may also indicate a need to expand the network. Knowing customer location relative to network resources can help determine where capital investments should be made.

Some data-management strategies apply to any industry managing a large volume of information. One strategy is to populate the warehouse only with the detailed data needed for key analyses. In other cases, summary data is sufficient. Another option is to have all the data in a warehouse but set up data marts for focused applications. Each approach involves trade-offs of speed and availability, and each requires careful planning to ensure that the system accomplishes the desired goals.

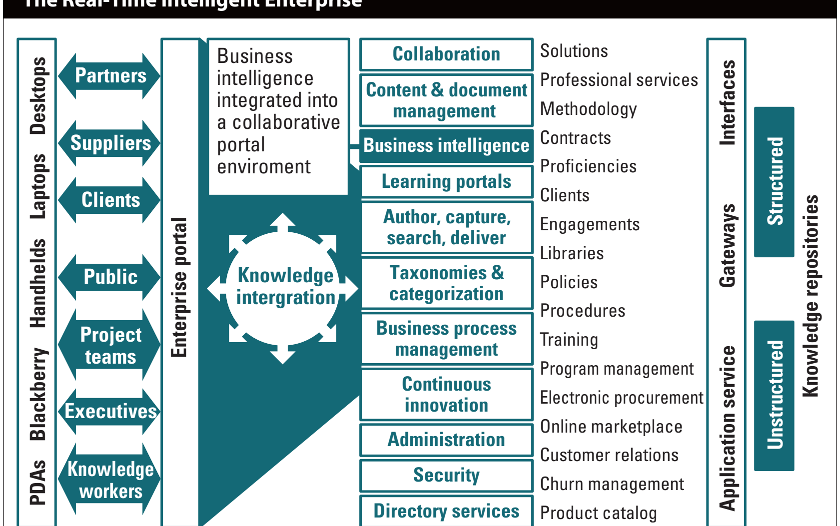
Some operators are beginning to "push" analyses carried out on their own systems to the customer. This allows customers to understand their own businesses better and provides a value-added service. We can expect similar extensions of data warehousing and OLAP as their use becomes more widespread. In today's competitive market, telecommunications providers want any edge they can get.

Business intelligence in a new light

Most businesses don't use information to their best advantage. In many cases, static data is analyzed, because originally it was only thought necessary to create a data warehouse or a data mart for static data, such as the number of customers and orders, and what products have been sold and in what location.

However, new competitive pressures and government regulations like Sarbanes-Oxley are moving us toward a real-time environment. Information needs have changed from collecting static data only to collecting business events. Today businesses must reduce the time between learning about a problem and acting on it. In marketing the trend seems to be one-

The Real-Time Intelligent Enterprise



Integration is the key. Today's telcos are plagued by information and process "silos" – self-contained units of information ***or expertise with a narrow focus*** and little idea of what's happening outside the unit.

to-one marketing – reaching each customer, creating a micro-market, in real time.

Consider the scenario in which a customer slams down the phone in anger at the service. In the past this might be classified as a simple call interruption, and monthly statistic reports were provided to call center managers so they could figure out how to improve the statistics. Now a customer slamming down the phone is reported as a business event, captured, and fed back to the analysis engines within minutes. If the customer is contacted immediately, then there is a chance to rectify the situation and retain the customer.

Real-time is the answer

The solution to telecom's problems is a Real-Time Intelligent Enterprise (RTIE), which combines powerful database and data warehouse solutions with EAI or ETL technology, enterprise portals, and BI capabilities to deliver tremendous value in the form of a complete, customized desktop environment. The system includes access to integrated data, knowledge management systems, content and document management systems, learning systems, collaboration tools, and business process management systems – or, as we once called them, workflow systems. It enables organizations to solve business problems and delivers returns on investment.

BI engines and delivery methods – such as executive dashboards – play a major role in the RTIE by providing proactive alerts and insight into issues that must be investigated, analyzed, and researched. Meanwhile, data-mining engines can detect patterns of fraud, churn, or risk that activate the alerts. After the EAI and ETL tools have done their work, BI engines provide the last layer of integration, the desktop environment. For example, if a pricing anomaly is exposed by the real-time BI engine, the system can send an alert to the appropriate manager's smartphone so the manager can review the contract in question – which is, of course, available at his/her fingertips via the document management system in the enterprise information portal.

BI integration is the market trend

Although the BI market has seen ups and downs over the past decade, its growth vector remains strong. According to Forrester Research, the aggregate revenues should exceed USD 12 billion by 2014. Gartner Group has forecast that BI platform revenue will grow at a compound annual rate of 8.1 percent through 2012.

New categories continue to emerge and be absorbed into core BI, which currently covers, among other things, business performance solutions, text analytics, predictive analytics and data mining, and complex-event processing. For the benefit of the end user, some organizations have an industry-specific analytic application delivered via Software as a Service (SaaS) as a standard component of their BI implementation.

Integration is the key. Today's telcos are plagued by information and process "silos" – self-contained units of information or expertise with a narrow focus and little idea of what's happening outside their unit. BI can break down those walls with a combination of business systems analysis and links between the various processes so there are no gaps between sales and provisioning, or between marketing and IT.

It takes a shift in thinking to make integration work. Telcos have come to see the data traversing their networks as a commodity. Each CDR has a value, and success lies in realizing the greatest return on the transmission of that commodity from one paying party to another. The BI approach does not negate this – rather, it adds a second layer of value to the data: the information contained within it. This shift in thinking allows telcos to realize the potential of a higher-order system that considers both the information value and commodity value of their data. ●

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Customizing business intelligence for telecom needs

What to consider:

- Ability to visualize potential applications of BI to an operator; for instance churn and fraud management, network capacity planning, and subscriber usage pattern discovery.
- Technical expertise to extract information from complex data structures, such as call detail records and billing and routing policies, for making informed business decisions.
- Clear understanding of the operator's working environment and the nature and volume of data existing in the organization.
- Custom data integration connectors to access data from different sources, such as billing and customer-relations management systems.
- Data warehousing designs tuned for performance to handle complex, resource-intensive analyses.
- Traceability to analytic results to facilitate fraud management and regulatory compliance.
- Algorithms for quality control, subscriber behavior pattern discovery, and predictive analysis.
- Specialized visualization techniques for analysis of data from data sources.
- Prepared reports and dashboards to evaluate results, trends, and patterns.