Telecommunications companies have a unique advantage in the modern marketplace: by controlling the communications infrastructure, they have more data than any other industry on where their customers are, how they interact, and how they transact business. But leveraging that customer information requires telcos to transform a 19th-century business model into one that meets today’s demand for real-time business and consumer insight.

**Big Data Challenges for Today’s Telecommunications Provider**

Telcos have been moving multiple terabytes of data around their networks for years. What’s changed? The volume, variety, and complexity of that data.

- **Volume.** With the advent of LTE/4G mobile networks, the volume of operational data generated with every call or session is increasing tenfold. The expanded use of GPS, location-based services, and social media is adding to the torrent of data. Finally, the advent of IPv6 will create as many IP addresses as there are grains of sand on Earth, allowing the number of Internet-connected devices to grow exponentially. This volume of data requires new real-time operational capabilities for functions such as real-time charging and event-based marketing—and that in turn demands increased data storage for compliance and potential future uses as well as new tools for mediating, managing, and archiving data within available time frames.

- **Variety.** Social media, mobile devices, and sensors that monitor everything from utility use to medical compliance are flooding telco infrastructures with data in myriad formats. Telcos must enrich their CDR data with location-based services, financial information, and other unstructured data, then standardize it for business intelligence platforms before they can analyze it for greater subscriber insight and new business opportunities.

- **Complexity.** Telcos must integrate legacy operational and business systems that still contain years of useful life with new environments. They must support batch to real-time data to enable applications such as real-time CRM while also delivering their own cloud based services and support from other vendors. They also need complex event processing systems that can handle data volumes too large and complex for human response. And all this must be done while ensuring data quality and accessibility across multiple solutions for regulatory compliance.

**Unlocking Big Data’s True Potential**

Current data systems were built for batch processing and based on traditional relational technology; they weren’t designed with the idea that they might someday need to process big data in real time. Developing and maintaining them to meet that unanticipated demand has become prohibitively costly and difficult—particularly with proprietary systems where vendors control (and charge premium fees for) functionality and upgrades.

Telcos need a clear evolutionary path to new data management solutions that combine traditional relational databases and ETL with big data technologies on a single platform. This combination gives them the opportunity to transform their customer data into consumer insight—and monetize that data by providing timely, integrated, enriched intelligence to other businesses, all without compromising data privacy, quality, and control.
Maximizing the Telco Industry’s Return on Big Data

In order to capitalize fully on their unique position as creator, consumer, and conduit of big data, telco companies must minimize the cost of processing and managing their data while maximizing the value they can derive from it.

To do so, they need to integrate new data sources with current systems. They need to glean insight from unstructured data, including Web, social, and machine device data. Finally, they need to monetize all of these data assets by leveraging them to enable fundamental business change. Informatica addresses these needs with a proven end-to-end solution composed of best-of-breed commercial products, with the ability to accommodate other technologies.

Handle Large Volumes of Data

Telcos require technology that transforms, parses, and integrates the vast amounts of data generated by 4G networks, CDRs, clickstreams, IPv6 devices, location sensors, and machine-to-machine monitors in a single format information platform. The technology must integrate data in near real time, scale cost-effectively and integrate with legacy systems and technologies, and shrink batch windows for high performance.

The Informatica® Platform manages, replicates, and integrates data at any volume and latency. In addition to supporting real-time grid computing, the platform can also utilize Hadoop for processing massive amounts of data efficiently. For example, the Platform has been used to transform 1 terabyte of CDR records within an hour on a 72-node Hadoop cluster.

“Mobile data revenue...now represents around 30 percent of mobile operator service revenue on average.”

– Ericsson Traffic and Market Data Report
November 2011

Mobile data traffic is expected to grow by approximately 60 percent year over year through 2016, driven mainly by video. (Source: Ericsson Traffic and Market Data Report, November 2011.)
Mobile data surpassed voice in Q4 2009 and was double that of voice for the first time in Q1 2011. Data traffic grew by 100 percent between Q2 2010 and Q2 2011. (Source: Ericsson Traffic and Market Data Report, November 2011.)

Utilize the Variety of Data
Telcos must be able to transform and parse data from multiple sources and formats—including unstructured mobile, Web, social, and machine monitor device data—and provide easy, consistent access to all types of interaction data.

Informatica provides solutions that enrich customer master data with big data insights and allow users to access any and all types of data at any latency. For instance, Informatica technology has been measured to process 1.6 million messages per second from device to database, making data available for a query in as few as 1.8 seconds.

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Manage the Complexity of Data
Telcos need to optimize data processing across platforms, integrating big data with legacy systems at the data level both on-premise and in the cloud. At the same time, they must prove that they are identifying, masking, and managing sensitive data for regulatory compliance.

Informatica technology lets organizations optimize the entire data processing pipeline, including data privacy and masking, with easier provisioning and processing in a hybrid IT environment for big data analytics that includes Hadoop.

Monetize Data Assets for Business Transformation
Telcos can only maximize the value of their vast data stores by uncoupling source data from operational and business systems and integrating all subscriber transaction, interaction, reaction, and location data. Aggregating more data in more ways gives the telco industry deeper insight into their subscribers.

Informatica helps telcos share this valuable consumer data with business partners, creating flexible new business models and innovative opportunities without losing control of customers’ information or compromising their privacy.

“Mobile data traffic is predicted to grow tenfold by 2016.”
— Ericsson Traffic and Market Data Report
November 2011

Mobile data surpassed voice in Q4 2009 and was double that of voice for the first time in Q1 2011. Data traffic grew by 100 percent between Q2 2010 and Q2 2011. (Source: Ericsson Traffic and Market Data Report, November 2011.)
Transforming the Business from Communication Services to True Information Services

Technology now available or coming soon is pushing the telecommunications industry’s expected and managed data growth projections to the limit. To deliver the level of service that customers have come to expect—24/7 access with minimal latency—and enable the industry to turn subscriber data into up-to-the-second consumer insight, telcos need to develop their data enrichment, integration, and management capabilities.

The Informatica Platform's core capabilities for integrating, moving, and managing data across the extended enterprise include best-in-class technologies:

- **Enterprise data integration** unites all the data managed within the enterprise, including unstructured data.
- **Cloud data integration** helps you retain control over off-premise data managed in the cloud.
- **B2B data exchange** enables you to share and manage data with partners.
- **Ultra messaging capabilities** support situations where extremely low-latency, high-throughput delivery and dissemination of data is critical.
- **Data masking** enables the secure management of complex, sensitive user data for compliance purposes.
- **And to address all the growing volumes of data, Information Lifecycle Management** handles that data cost-effectively and securely.

**OSS-related products:**

- ETL platform supporting EDW, grid, and Hadoop
- Data transformation engine for custom, unstructured, and ASN.1 data sources
- Low latency messaging for collecting real-time data from network elements
- Data Exchange for collecting batch data from network elements and partner data integration

**BSS-related products:**

- Master Data Management for reconciling identities across multiple data sources
- Data Quality for data profiling and governance
- Data Masking tools to enable the secure management of complex, sensitive user data for data privacy and compliance purposes
- Lifecycle data management for moving inactive data to cost-effective storage
- Complex event processing for business applications such as event-based marketing

The Informatica Platform provides all the capabilities that telcos need to ensure they can integrate and manage the ever-growing volume of data while unleashing its true value.