



Gearing Up for Next- Generation Utility Challenges with TIBCO Solutions

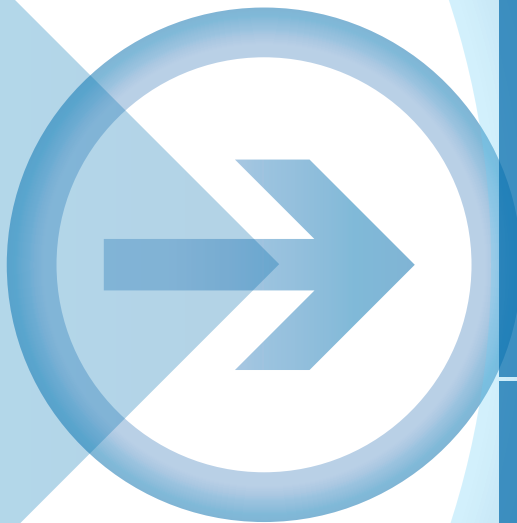


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Utility companies supply indispensable products and services including gas, electricity, and water. Since the 1990s governments have actively sought to privatize their utilities domains while maintaining reliability of supply, increasing efficiency in operations, and lowering prices to consumers. Achieving these goals has been a long term strategy which thus far has been implemented in accordance with the varying market model structures put in place across the globe.

The less competitive nature of utility companies in the past has consequently seen dramatic changes in the shift of business models. Lumbering bureaucracies have had to transform themselves into dynamic and agile businesses. The real-time nature of gas and electricity generation and distribution has demanded that technology is used as a key enabler of this change.

In the early phases of deregulation or liberalization, governments, in varying degrees, demanded that the supply of gas and power be separated from the transmission and distribution. The immediate reaction to this regulation was the break up of state controlled entities that existed in most countries. Suppliers now pay regulated charges to transmission companies and distributors in order to use these networks to deliver energy to customers. This separation created a new need for supply and demand balancing entities and mechanisms and, hence, electricity trading exchanges were born. Most notable were NETA in the United Kingdom and Nord Pool in Norway, Denmark, Sweden, and Finland. The Netherlands, Australia, and the United States did not lag behind, and markets across Europe and the United States have seen continued evolution and consolidation. Gas, because of its physical nature, fits neatly into existing commodity exchanges.

Beyond the decoupling or unbundling of networks from supply, the utility industry has also made significant strides in the retail consumer sector. The mandated separation of gas and electric metering from the retail and supply side created programs like Full Retail Contestability (FRC) in Australia and Customer Choice initiatives in Europe and the United States. These regulatory mandates created the need for “customer switching” solutions and a fundamental rethink of how CRM and billing systems interfaced between metering and distribution links and business-to-business participants.

The more successful players in the liberalized market have adopted specific IT strategies in order to improve existing processes and create greater customer intimacy. The creation of customer self-service portals, which can include automated services like bill presentment and payment, relocation services, and usage monitoring go a long way toward improving customer satisfaction. By

improving the customer onboarding, customer switching processes, and customer service levels in general, companies have been able to minimize customer attrition and improve their ability to cross-sell multiple products to customers.

Recently, new regulations are promoting incentives to invest in new technologies, such as smart grids that seek to balance demand more effectively and smart meters that discourage consumption at peak times and allow producers and consumers to equally participate in balancing the gas and electricity supply and demand equation.

The IT solutions and technologies that can meet these challenges are those that can assist the transmission and distribution operators in monitoring their network on a real-time basis in a sense and respond mode on the smart grids.

On the retail side, smart meter initiatives, which place requirements for Advanced Meter Infrastructure (AMI), have already taken off in the Netherlands and Italy. Much of the rest of Europe and the United States are experiencing a surge of activity around smart meter initiatives. Solutions that can integrate vast amounts of data collected in a seamless fashion from the smart meters and manage the processes to ensure that the customer bill correctly reflects consumption will be key enablers of the smart meter vision. Equally important is the ability to perform advanced manipulation of data in real time in order to gain greater insight into consumption patterns. Companies and agencies that are able to optimize their processes across traditional vertical and horizontal boundaries will be best positioned to meeting the challenges of reducing environmental impact and effectively managing demand.

1. Delivering Proven Solutions to Utility Customers

In the past, TIBCO has played a vital role in helping utility companies resolve some of their most challenging business problems in the energy trading sector and in the distribution and retail sectors. In energy trading, solutions used to provide real-time information feeds to market participants and asynchronous integration of trading systems rely on TIBCO's powerful integration platform. In the distribution and retail sector, the integration of systems and consolidation of applications with an eye toward true service-oriented architectures (SOA) were created in TIBCO's integration platform. Many solutions for customer switching and smart meter

deployment already rely on TIBCO's proven SOA, business process management (BPM), and optimization solutions.

Today, the utilities market is evolving due to multiple factors including liberalization of the market, regulatory compliance, a greater focus on energy efficiency, a need to reduce carbon emissions, and a drive to use renewable sources of energy. TIBCO customers in the sector are deploying TIBCO solutions higher up the value chain, directly impacting core customer-facing business processes in areas such as electronic metering, customer selfserviceportals, where customers can review their consumption, and request electronic bills and core processes for delivering smart meter technology.

Technologies that ensure better utilization of the delivery infrastructure through account monitoring, control, and optimization are available today and are being deployed by TIBCO customers. The requirement to include personnel, remote devices, and automation in operations is facilitated by an SOA and industry specific technologies (master data management). An increased focus on making core business processes explicit and deploying them in an optimized fashion has driven TIBCO customers to harness the power of business process management (BPM).

Utilities with a retail focus are keenly interested in incorporating SOA and BPM technologies into their IT infrastructure. Transmission and distribution operators recognize the power of complex event processing (CEP) and are evaluating its use in smart grid solutions. These technologies will be instrumental in helping utilities achieve operational agility and transparency of business process.

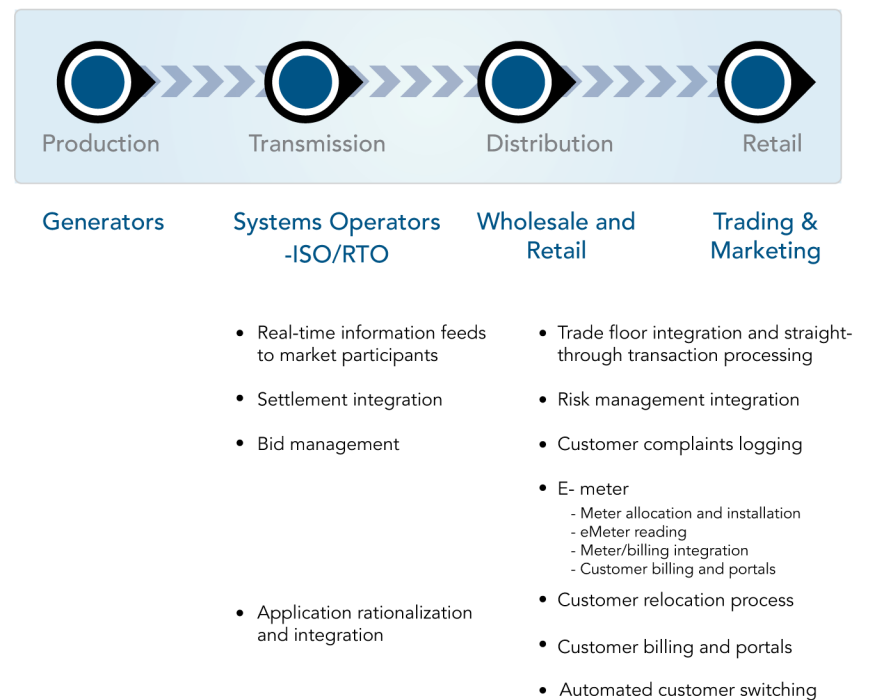
TIBCO provides enterprise software that helps companies build infrastructure applications for integration that exploit SOA, BPM, and CEP to provide effective business solutions.

This white paper demonstrates, through short customer case studies, how TIBCO solutions have been there along the way to assist utility companies in meeting their business and IT challenges while gaining a competitive advantage.

Figure 1. TIBCO customers in the power industry ecosystem.



Figure 2. TIBCO provides solutions that meet a range of business needs for utility industry customers.



TIBCO SOLUTIONS MEET PRESSING BUSINESS CHALLENGES FOR UTILITY COMPANIES

Liberalization, volatile markets, and evolving consumer demands are increasing competition and driving new business opportunities in all areas of the utilities industry, including generation, transmission and distribution, marketing, and trading. The following case studies demonstrate how TIBCO solutions are helping utility companies meet high-priority challenges, capitalize on new opportunities, and improve their competitive positioning.

2. Challenge: Improve Control of Operational Risk

Structural and regulatory changes in the utility industry over the past decade have forced participants to incorporate new kinds of regulatory and privatized entities and to adjust to market conditions similar to other commodity-based businesses. Successful companies have re-evaluated the technology infrastructure required to support this evolving business.

Industry expansion beyond traditional geographies in both a market and operational sense provides new sources of physical supply as well as new financial instruments for balancing supply and controlling risk. This expansion requires utility companies to connect to new trading partners, transaction hubs and exchanges, and end consumers.

CONSTELLATION ENERGY

Constellation Energy is an integrated United States-based energy company operating in all areas of the energy value chain. Through subsidiaries, Constellation Energy generates, transmits, and delivers energy. Constellation Energy is the largest wholesale power provider in North America and owns a diversified fleet of power plants located strategically throughout the United States.

Constellation Energy's regulated utilities, the Baltimore Gas and Electric Company (BGE) and Constellation New Energy (CNE) deliver retail services for electricity and natural gas to consumers and businesses throughout North America.

Business Issue

Retail utility transformation and rapid expansion of Constellation Energy's family of retail businesses has increased the need for a simplified applications infrastructure across the company's eight business regions. Like many companies with aggressive growth strategies, Constellation Energy's applications environment had become a collection of custom legacy systems with little or no integration and no ability to scale.

The existing applications and architecture were increasingly problematic considering the requirements to support new functionalities required in the deregulated environment.

TIBCO-Based Solutions

Constellation Energy embarked on an effort toward building a retail architecture solution. The retail architecture solution focused on selection of best of breed solutions for CRM, billing, usage management, and forecasting. TIBCO was vendor of choice for providing a scalable, extensible retail architecture solution to support market and customer growth aspirations.

Benefits

Through its new retail architecture solution, Constellation Energy benefits in key areas such as increased operating revenues, reduced operating costs, reduced technology costs, reduced operational and strategic risk. The focus on people, process, and technology will enable Constellation Energy to continue to be the industry leader, build a sustainable platform to support its growth, enhance the customer experience, and create more value for shareholders.

AREVA

AREVA Transmission & Distribution (T&D) is a division of France's nuclear energy AREVA Group. AREVA T&D Division works globally to develop products, solutions, and services to ensure safe, reliable, and efficient power distribution. They supply critical equipment, develop innovative technological grid solutions, as well as solutions for managing transactions in liberalized markets.

Business Issue

Tenders for large equipment bids are handled locally across each of AREVA's tending units. Information is typically shared by sending emails with spreadsheet attachments. Specific controls about the contents of a bid, authorized signatories, and evaluation of operational risk were defined within the organization but not rigorously enforced by an automated process. Thus, the

success or failure of bids was sporadically noted in a centralized database which was often inaccurate.

After a thorough analysis by external consultants, it was found that AREVA had little control over the bid process, and information about bid failure or success was often lost. It was also not unheard of for two tendering units to be bidding for the same contract.

TIBCO-Based Solutions

AREVA has implemented the Tender Process Management (TPM) system to harmonize the bid process worldwide and allow global visibility of all tenders. Information is orchestrated and shared across the lifecycle of the bid process using TIBCO's BPM suite. Not only does the solution track the bid process, it also permits meetings to be organized, automates first level decision-making for bid/no-bid decisions based on predefined criteria, analyzes the likely success of the bid, and automatically generates key process indicators (KPIs) and reports.

Benefits

AREVA's TPM system provides the tendering units with consistency of decisions and information gathered across the process. Documents submitted to customers are also harmonized across units. Tender preparation time and costs are significantly reduced by avoiding rework or duplicate tenders.

ATEL

Aare-Tessin Ltd. for Electricity goes by its short name of Atel and is the leading production-based energy service provider in Switzerland and operates at a pan-European level. Founded in 1894, Atel focuses on the two core businesses of production-based Energy Trading and Energy Services. The group of companies, domiciled in Olten, employs a staff of around 8000. Atel's main markets in the energy sector are Switzerland, Italy, Germany, and the Central and Eastern European countries. Atel's goods and services range from portfolio management and group energy supplies, to energy derivatives and option contracts, to establishing distribution concepts involving other partners. Trading and distribution are supported by a number of proprietary hydraulic and thermal power stations plus a broadly ramified transmission grid. With its Energy Services Division, Atel provides all technical services pertaining to energy (electricity, gas, oil, and biomass) and its uses as power, lighting, cooling and heating, communication, and security.

Business Issue

Driven by deregulation in Europe and the advent of Energy Exchanges, Atel needed to build a trading infrastructure that could not only support the introduction of market data from the European power exchanges, but also provide automated deal confirmations back to their partners.

Atel's existing system interfaces were either non-existent or hard coded point-to-point which required ongoing and costly maintenance when changes needed to be made.

TIBCO-Based Solutions

In 2005, Atel chose TIBCO to provide standardized interfaces to their energy trading systems, market data, and financial settlement systems in order to achieve straight-through processing of trade transactions. One year later, Atel established a TIBCO Competency Center whose work was initially aimed at achieving common methods and policies for interfacing systems and will extend to building an SOA infrastructure for trading in the years to come.

Benefits

By connecting market data, trade transactions and confirmations, and financial systems in real time, Atel is able to capitalize on market opportunities and manage risk more effectively. The straight through processing of transactions has also had the benefit of reduced data entry errors.

In establishing things like standard data dictionaries, methods of data transport, and commonality among interfaces, Atel has been able to lower their cost of development and maintenance through "configure not code" implementation and re-usability of interfaces.

CITY OF DETROIT WATER AND SEWERAGE DEPARTMENT

The Detroit Water and Sewerage Department (DWSD), a branch of the City of Detroit, is the largest water treatment plant in the United States, serving the city of Detroit and its surrounding suburbs. The DWSD's five water plants pump an average of 675 million gallons per day to provide water to approximately one million people in Detroit and three million people in neighboring southeastern Michigan communities.

Business Issue

The DWSD had to resolve the challenge of consolidating information derived from multiple sources in order to effectively manage operations. Plant operators

relied on the “Six Hour Report,” a paper created six hours into every eight hour shift to track equipment operating status, fluid levels, trouble spots, and general operating status. The report was generated manually and passed on to the next shift manager, who would generate his own updated status report and file away the previous report at the end of the shift. Managers needed to log into three or four different systems to initiate approvals for requisitions and purchase orders because of unconnected data silos.

TIBCO-Based Solutions

The DWSD partnered with TIBCO to develop a solution that integrates legacy systems with off-the-shelf applications and standardizes data management systems. Redundant applications have been eliminated and a common platform for waste water management reporting has been created. The solution, based on a web portal that provides employees with personalized access to operational data, provides real-time information about plant operations at the click of a mouse and the means to access archived data.

Benefits

The solution provides plant managers with real-time status information about plant operations. The availability of historical data through the portal increases business agility by enabling employees to analyze trends and anticipate future needs. Using TIBCO’s web ticker, the electronic visual management systems (eVMS) can alert managers when operating conditions exceed preset thresholds, giving them the ability to take action in a timely fashion.

3. Challenge: Compete in a Liberalized Market, Improve Customer Service and Create Customer Self-Service Capabilities

Cost pressure and competitive retail environments have forced utility companies to become more efficient and innovative in how they manage their customers. The ability for customers to switch providers, whether they are wholesale consumers or retail consumers, initiated the trend toward improved customer service and customer self-service capabilities. We have seen tremendous growth in web-based account services such as bill payment, eBill (electronic) signup, view payment history, and view energy usage and utility companies are looking to introduce more online services such as outage checking and reporting.

Provision of customer self-service capabilities also provides benefits for the provider in terms of reduced administrative costs.

Online services cater to customer demands and at the same time lower the cost of customer interactions, but “While utilities have made great strides in improving their online services, few organizations reap the benefits of fully automated processes. Most utilities still require back-end processing on many of their services.”¹

TIBCO has helped companies like Essent Energie and EnergyAustralia meet their customer service demands and improve customer satisfaction rates and customer retention.

ESSENT ENERGIE

Essent is a Dutch energy company that specializes in the generation, transport, trade, and supply of gas and electricity. While the Netherlands is the primary market, with over 2.6 million consumer and business customers, Essent also operates in Germany and Belgium and are the leaders for energy in the northwest European market.

Business Issue

The 1997 European Electricity Directive set a binding timetable for the liberalization of electricity generation, distribution, and supply across Europe. The Netherlands soon adopted the directive and Dutch utilities undertook one of the most ambitious and far reaching liberalization programs in Europe.

Essent needed to prepare to compete effectively for customers in this new market. Their current customer care handling was already inefficient. Detailed customer information was not recorded, meter data was missing or of bad quality, and billing information was often incorrect. Essent had a requirement to collect metering data from multiple sources to effectively monitor and manage power consumption.

TIBCO-Based Solutions

Essent needed to put in place a system to enable its retail operation to expand and provide access to information both internally and to partners. Over a three

¹ Chartwell, Web-based Customer Service in the Utility Industry 2008.

year period, Essent rationalized their applications environment and integrated multiple applications to create a real-time infrastructure based on TIBCO.

TIBCO's business integration solution integrates accounting, sales, billing, and metering systems and enables real-time data sharing and straight-through processing of transactions. By the close of 2003, Essent's customers had access to their customer self-service portal for managing billing and payments.

Benefits

Benefitting from the greater agility provided by TIBCO solutions, Essent became the first Dutch energy utility to manage billing and issue invoices by the deregulation deadline. Essent reduced invoicing errors by linking transaction systems to customer service, metering, and billing systems. The customer self-service environment enhances customer loyalty and decreases operational costs. At the infrastructure level, Essent was able to reduce the number of applications by 37% and the number of interfaces by 32%.

At Essent, call center agents supporting customer queries using the CRM screens directly, which were very complex, and processing a new customer location took an average of 15 minutes. Leveraging the integration capabilities of TIBCO's integration platform, they were able to significantly reduce this time, thus improving the quality of the customer interaction.

NETHERLANDS-BASED UTILITY COMPANY

A forward thinking Dutch energy company formed in 1995 focuses on providing sustainable energy supply to its customers either in the form of electricity, gas, or heating. With a history in energy generation, it seeks to implement a program of sustainable energy supply to 2020. This includes wind, biomass, and clean gas-fired power plants. The company is active in all links of the supply chain from generation to distribution.

Business Issue

In the early period of deregulation, the company's process for allocating and installing meters was in chaos. Spreadsheets "controlled" the meter allocation process and consequently, installed meters went unnoticed, faulty meters were never detected, and customer invoicing was not profitable.

TIBCO-Based Solutions

The company solved the issue of meter allocation by detailing the business process at all levels from initiating a work order through to billing. TIBCO's BPM

suite was implemented to track both the automated and manual parts of the process and give visibility into the processes across organizations. When an installer was assigned a work order, the meter was picked up from the warehouse by the installer and tracked through to installation and testing. Further remote auditing is performed for faulty meters and meter readings are now fed directly to billing systems.

Benefits

The benefits of automating the e-meter allocation are more than just financial. The company now has visibility into a process that was previously unpredictable. Work orders can now be assigned to installers in a more equitable fashion avoiding work overload. The proper function or malfunction of meters is continually monitored and customer service has improved dramatically.

ENERGYAUSTRALIA

EnergyAustralia is one of the largest energy suppliers in Australia. With over 1.5 million business and residential customers, EnergyAustralia operates an electricity network of around 22,275 square kilometers. Their operations include purchasing and supplying energy, electrical contracting, customer connections, emergency restoration and local repairs, and major capital works. Customer service has always been EnergyAustralia's priority.

When the Australian utilities market was liberalized in the 1990s, EnergyAustralia chose TIBCO to meet their long term requirements to transform their enterprise application environment and business processes for greater business agility.

Business Issue

EnergyAustralia, like many utility companies, has a large deployment of SAP, primarily used in finance, human resources, purchasing, and their retail line of business. Little integration existed between these applications resulting in re-keying data and manual rework. In order to become an active participant in the new National Electricity Market, EnergyAustralia needed to connect to these new systems. With the need to support 1.5 million customers on the retail side of the business, turnover of households from service order to connect/ disconnect was a labor intensive process and fraught with errors.

TIBCO-Based Solutions

EnergyAustralia met these challenges by integrating their SAP domains with their other critical applications. Over 150 SAP interfaces were implemented using TIBCO. Many of these interfaces provided business critical connections such as

feeding data about consumption from the metering system to billing which is captured in SAP.

TIBCO also was used to integrate internal systems to the National Energy Market systems allowing EnergyAustralia to be an active participant in buying and selling of power.

Finally, TIBCO BPM was implemented to automate the manual process of managing service orders and connecting and disconnecting customers as they relocate.

Benefits

EnergyAustralia has been able to increase its service agility by automating processes, thus allowing it to be more responsive to the market. In addition, by developing core TIBCO components in-house, they are able to re-use these components from project to project. This saves time and money.

4. Challenge: Electric Service Reliability

The competitive pressures building on the electric industry are particularly acute in the generation, transmission, and distribution areas of the business where service reliability is the primary mission. We have seen in both Europe and North America major power outages and rolling blackouts indicating the stress of economic growth on an aging infrastructure.

Today's power grid technology is more than 100 years old and has its control systems embedded in the generating plants, transmission lines, and substations. Information flows in one direction from the users (demand) back to the utilities. Utilities attempt to predict demand and generation requirements through sophisticated forecasting techniques, but in order to be prepared for the "margin of error," it is typical to have as much as 10% of generating capacity on standby. This is inherently expensive and inefficient.

Business Issue

Moving the transmission and distribution of electricity to a demand/response, two way flow of information is what the industry now calls Smart Grid. The full Smart Grid allows generators and loads (users) to interact in real time, using modern information and communications technology. Managing demand to eliminate the peak fraction of demand eliminates the cost of generators, cuts

the wear and extends the life of equipment, and allows users to get more value from the system by putting their most important needs first. Implementing a true Smart Grid is a long way off, but steps toward this vision are already being taken today.

TIBCO-Based Solutions

TIBCO is working with one of the world's major grid operators to implement solutions aimed at tackling the promise of the Smart Grid. Starting with Generation Dispatch, we are working with our client to transform the process from a reactive to a proactive mode.

Our recognized leadership in high-throughput messaging makes TIBCO a natural fit for processing the large volume of real-time data produced by generation systems, market feeds, and advanced metering systems. Processing this data and turning it into real-time intelligence is where our complex events processing (CEP) technology is utilized for using rule-based, event-decision methods. Intelligence about events as, and when, they occur reduces operational errors which impact equipment performance and responsiveness to demand.

Benefits

The primary benefits of the Generation Dispatch project are to increase efficiency in dispatch operations by reducing operational errors impacting performance or demand/response scenarios. This leads to lower overall production costs. Other realized benefits include compliance with increasing governmental regulations in deploying those systems geared towards threat detection and therefore minimizing blackouts, brownouts, and equipment failures. An additional benefit is the reduction in training time and associated costs for new dispatch personnel thanks to the capture of business rules and procedures in a rules engine.

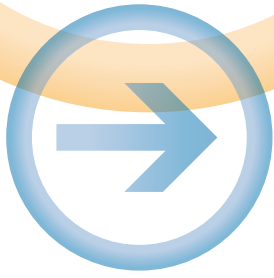
5. TIBCO Solutions for the Utility Industry – Delivering a Competitive Edge

Driven by deregulation, volatile markets, and service reliability, utilities are implementing IT solutions that can meet the performance and scalability demands required by real-time environments. The most successful of these companies recognize that the role of EAI and SOA are a fundamental piece of enterprise applications infrastructure and the foundation in their ability to manage the high volumes of real-time information that the industry is increasingly required to process. Insightful companies are complementing this infrastructure with BPM and CEP solutions as the demands of “Smart” initiatives become a reality.

In head-to-head competition, few vendors can match the performance and scalability of TIBCO solutions. TIBCO has been meeting the needs of demanding environments since the beginning of electricity trading exchanges to the introduction of smart metering initiatives, and that is why utility customers are choosing our solutions. Not only do TIBCO solutions provide high performance and scalable infrastructures, but they also enable organizations to build an integrated platform to integrate disparate, business-critical systems.

In an industry with an aging, but valuable, workforce, utilities face the loss of knowledge of business procedures. In many situations this workforce has traditionally maintained these business procedures either in their heads or in algorithms. TIBCO BPM solutions assist in automating these manual tasks and capture essential knowledge of business procedures in the form of business rules. Our CEP technology captures then applies the power of event processing to automatically alert on anomalies.

TIBCO is the industry’s best choice, and provides solutions that can grow and adapt to meet the demands of your business today and tomorrow.



6. About TIBCO

TIBCO Software Inc. (NASDAQ: TIBX) is a provider of infrastructure software for companies to use on-premise or as part of cloud computing environments. Whether it's optimizing claims, processing trades, cross-selling products based on real-time customer behavior, or averting a crisis before it happens, TIBCO provides companies the two-second advantage™ – the ability to capture the right information at the right time and act on it preemptively for a competitive advantage. More than 4,000 customers worldwide rely on TIBCO to manage information, decisions, processes and applications in real time. Learn more at www.tibco.com



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