iBTM gives Customer perspective on company services offered to the market through business processes execution monitoring. Solution improves customer centric orientation through more effective company operations in environment where business processes are executed across many different applications and various internal or external organizational units.

iBTM displays connection between end-users, business process and applications with linkage through service level agreement monitoring. Solution adds graphical view of process execution by correlating individual technical transaction into single End 2 End business process view.

Monitoring of critical business processes is important for operation and business support systems (OSS/BSS), account provisioning and activation, insurance claims processing and in situation where process execution overreaches company boundaries (e.g. B2B). Additionally solution is suitable for any industry that utilizes multiple systems in process execution.

**iBTM overview:**

**Business Transaction Visibility**
Graphical display of business transaction execution through series of drill down enabled graphs with tree display of technical transaction hierarchy.

**Transaction Analysis**
Business-oriented search with business or technical attributes for ad-hoc analysis.

**Transaction Hierarchy**
Multi-level hierarchy of technical transaction with bridge functionality that connects transactions from different applications that have no explicit hierarchy connection.

**Business and Technical Context**
Transaction attributes and business rule enforcement on data from business or technical context.

**Business Rules Validation**
Rules application via inspection of transaction data; missing or incompatible values, parameter comparison or data analysis through custom business logic.

**Exception Management**
Quick identification of erroneous components within process execution with functionality of pre-configured actions execution for recurring errors.

**Service Level Agreement**
Different performance targets and escalation criteria depending on transaction attributes with ability to engage different recipients based on business or technology context.

**Business Transaction Discovery**
Calculation of monitoring configuration (hops of a transaction in topology) from process execution with documentation of monitored business processes.

**Transaction Performance**
Aggregated metrics gives insight into process execution performance with data trends refreshed in near real time.
Over the last decades enterprise landscape has been transformed from monolithic systems into integrated best of the breed technologies with monolithic systems being broken down into components and services. Merger and acquisition has additionally complicated landscape into array of duplicated and silos based systems. In order to offer competitive service to the market enterprises have been engaged in long lasting consolidation programs, cloud introduction and automation of existing enterprise processes to achieve operational efficiency.

Existing enterprise business processes are distributed through and beyond company organization, using different applications, technologies and integration concepts. Customers are serviced by different business and service organizations with multiple backend system (CRMs, ERPs, DMSs, Billings …) that have different data models and processes which have to be presented and executed in uniform manner (e.g. convergent ordering). Processes are executed mostly using existing application orchestration because organizations are rarely in the position to rewrite everything to a single, common standard. Such situation represents additional burden on internal application operations and maintenance organizations.

Customer Centricity has become main paradigm of enterprise operations and one of the results is customers connected directly into this number of systems and applications from the client’s web and mobile devices. Enterprise must now operate in real-time mode with large number of complex processes exposed and thus becoming mission-critical. Business process execution result in business transaction that consists of number of orchestrated technical transactions and service calls. Despite the complexity of orchestrated technical transactions, business processes must behave as single, seamless transactions to business users. In order to sustain customer centricity approach it is necessity to introduce monitoring of technical transactions from business perspective.
In a world of monolithic systems it used to be relatively simple to manage data centers with usage of monitoring tools at the different layers like networks, servers, applications, ESBs, databases etc. However, common misassumption can be that the root of transaction failures lays in some inadequate key resource (e.g., network bandwidth, memory, disk, or CPU). Often the root cause can be situation where transactions did what it was programmed to do instead of intended business outcome. Sometimes this is due to a data quality issues, wrong configuration/setup, temporarily unavailability of certain resources etc. Some business transactions may be long running or asynchronous, involving human interaction and thus making even harder to notice execution irregularities.

Old concept of application monitoring is still present today, business transaction management at component or technology level is no longer enough. Without business transaction visibility, fixing issue quickly becomes a long lasting and expensive organizational task. Monitoring of individual pieces of technology on different layers does not give answer about only important perspective of service execution. Customer perspective.

Business transaction failure can directly result in lost customers, lost revenue, brand erosion, much slower mean time to repair and a corresponding increase in employee costs. Web shopping carts are abandoned, accounts fail to be provisioned completely, packages are delivered with time delay and often first knowledge of transaction issues usually comes through customers call. The problem could be anywhere, so it is a major undertaking to pinpoint the root cause. Having the visibility of transaction execution to determine what is the problem in customer order is absolute paramount for today real-time enterprise. While IT teams may be aware of some components, they do not have business transaction visibility as same as customer has. From the customer’s point, their order have failed and they don’t care why, what only matters is that order is fixed before customer decide to choose competition.
iBTM Solution

Business Transaction Monitoring solution iBTM can give insight into business transaction execution by providing visibility of business and composing technical transaction across distributed environments. iBTM maps technical transactions hierarchy with their performance parameters and compares it to business requirements on execution. It enables application support personnel to search transactions based on message content and context, such as time of arrival, message type or client data etc. Such concept enables enterprise to have up to date process execution status without the need to query various organizational units and systems. iBTM is providing visibility, error detection, alerting, and handling of various types of unexpected business or technical conditions. This includes transaction status tracking, performance monitoring, SLA introduction and transaction errors management.

iBTM provides enterprise with near real time visibility into business critical process and measures key business metrics that are updated from collected events. The near real-time monitoring of operational processes is the key benefit of iBTM against conventional business intelligence approach. The main benefit of iBTM is its ability to identify where transactions are delayed within application landscape and enables proactive problem prevention. This expands the value of iBTM by being able to quickly find what happened and link it to why it happened. Being able to find root cause is critical as this information can be used to improve enterprise operations and reduce time to resolution.
Introduction of iBTM solution can have additional beneficiary effect on IT/business communication by giving IT organization business perspective of their day-to-day operations. With business context of their performance IT organization can shift focus from component to a business (customer) focus. iBTM enables managing of IT from a customer perspective and connects business and IT understanding of enterprise processes. Additionally IT gets ability to leave firefighting operations mode and shifts toward position where it is possible to catch a problem before it becomes one and when a problem does arise, be able to pinpoint it and fix it quickly. As business units usually rate the effectiveness of any IT organization, iBTM can effectively help IT organizations to improve its company rating. This enables IT as strategic partner with business in driving transformation of enterprise organization.

Monitoring of critical business processes is important for operation and business support systems (OSS/BSS), account provisioning and activation, insurance claims processing and in situation where process execution overreaches company boundaries (e.g. B2B). Additionally solution is suitable for any industry that utilizes multiple systems in process execution.

- Problem isolation: Identification and isolation of specific issues
- Transaction Visibility: Tracking individual transactions and visibility in to the business context of each transaction and the business payload
- Performance & SLA Management: Monitoring, alerting and reporting on performance characteristics of end-to-end transactions in real-time
- Exception Management: Monitoring failures, and root-case analysis to locate performance bottlenecks, errors and incomplete transactions

iBTM solutions captures transaction data from production landscape and information is used for monitoring as well as for analysis and planning.
Implementing vertical monitoring strategy, from infrastructure through application and integration layer toward business monitoring, is at first glance right one. Having connection between disks I/O, CPU load, network element throughput, state of application server heap, health of integration interface and business transaction execution is holistic approach indeed. Most often such approach fails due to sheer complexities of such projects on enterprise scale. Many companies starts with physical infrastructure monitoring projects and never manage to go further, having component based monitoring per system, database and application with custom jobs and scripts without possibility to achieve business transactions view.

Approach to utilize instrumentation in application servers is not always possible, or at least not possible in entire scope of business transaction, due to variety of legacy applications and technologies used for application develop and integration (Java, C#, C++, C, PL/SQL …). Additionally concept of instrumentation has performance drawback and large number of application internal method that makes mapping them into technical and business transactions context very difficult. Additionally most frequently changes are done in internal code structure and with new application versions additional mapping is required.

Multicom iBTM is envisioned as easy to implement solution with idea of existing enterprise landscape embrace strategy with goal of minimum performance degradation of systems being monitored. iBTM offers introduction of customer perspective on business transaction execution based on application data written into database or file logs. With this concept iBTM monitoring system fetches data without complexity of numerous application technologies, integration protocols with:

- Monitored system adapters that sends data (like table changes) toward iBTM service
- iBTM data fetching from monitored systems via various standard database JDBC drivers

Not having to tackle number of available application technologies opens possibility for immediate discussion on data meaning in technical and business transaction context. Companies do not have source code of theirs packaged applications or will to change others due to BTM project but enterprise is always owner of application data with easy access. Data can be fetched in their original format (e.g. table row where status update happened) while configuration driven iBTM engine transforms those data into business and technical transaction context. Additionally database data structure have smaller frequency of change compared to application code itself.

Intention of iBTM solution is not to replace all traditional monitoring and performance tools that may be in place, but to complement them and give value by creating linkage so orders are assured and customers receive their service in desired timeframe.
iBTM Features

Business Transaction Visibility

Graphical display of business transaction execution through series of drillable graphs with nodes representing business transaction in various states in business process flow. Nodes represent applications with their state, particular state of transaction in application or any other calculated information that represents transaction indicator. Displayed nodes can have additional business sub-processes that are accessible through drill down capability. Additional tree control contains technical transaction hierarchy with drill down capabilities to every single transaction instance. Such display enables real time monitoring of transaction follow progress with overall business and individual technical transaction status displayed through traffic lights. Additionally business transaction are marked if any of technical transaction has violated configured business rule during its execution.

Transaction Analysis

Business transactions are stored inside of database and are accessible for ad-hoc analysts via business-oriented search. Transaction are indexed with their unique ID - business or technical transaction identification (e.g. customer order id) or any customer or operational data including:

- Transaction time range
- Transaction fields (e.g. order id, customer id etc.)
- Error characteristics (e.g. transaction status)
**Transaction Hierarchy**

iBTM supports multi-level hierarchy of technical transactions that are part of business transaction. Rules can be applied on every hierarchy level to what types of technical subtransactions can exist in regular business transaction execution. iBTM additionally have bridge functionality that connects transactions from different applications that have no explicit hierarchy connection (e.g. transaction in one application does not have information what other application transaction started it – no parent child relationship) with timeframe, configuration and involved objects.

**Business and Technical Context**

iBTM has ability to store additional technical and business relevant information that is used for business rule enforcement and for giving IT and business teams business and technical context of every transaction. Those contexts enables resolving business and IT issues with ongoing business transactions.

**Business rules validation**

iBTM can validate various rules on business transaction on composing technical transaction including data errors like missing or incompatible values, parameter comparison or business context data analysis through custom code. Rule validations are displayed separate from business (or technical) transaction status because transaction can be successfully executed while specific business rules are broken. This can happen due to various reasons like manual intervention, data quality or bug in executing application.

**Exception Management**

Business processes are executed over distributed applications with number of technical transactions that are prone to errors and exceptions. Some may be glitches that in the end result in the failure of part or entire business transactions. Usually operation teams must collect information from widely range of log tables and files in order to get info about customer transaction problems. iBTM collects and correlates error messages from all applications (within the business transactions) and thus application operation personnel is enabled to quickly locate problematic component with needed information for problem fixing. Additionally operation teams can execute pre-configured actions as response to commonly recurring errors (e.g. restart technical transaction – execution failure due to temporary network unavailability of provisioning interface).
Service Level Agreements

With insight into business and technical transaction data, iBTM can establish different performance /escalation targets for same business transaction depending on particular transaction parameters/context (e.g. service must be activated before contracted period). SLA escalation can have different recipients based on business or technological context of particular business or underlying technical transactions. SLA events and metrics is configuration based on different warning levels, early warnings can be generated to prevent SLA violations, some warnings can be suppressed and cumulative warnings can be configured after threshold count is passed.

Business Transaction Discovery

To be in position to effectively monitor business transaction iBTM system has to be configured to control business transaction execution flow. In scenarios with complex transactional hierarchy and large number of transaction states (e.g. Workflow based systems) it is configuration intensive effort. After initial configuration of monitored data meaning (e.g. what field in record is transaction-id, what is transaction status etc.), iBTM has capability to map hops of a transaction in transaction topology. Based on that topology iBTM monitoring configuration can be produced and manually improved afterword’s. Iterative strategy can be deployed where monitoring configuration is updated with additional configuration of based on transaction executions in certain time period. With this approach, iBTM can produce base line monitoring configuration and any discrepancies from that configuration can be considered as irregularity and can be reported through SLA mechanism.

Transaction Performance

With transaction performance information, aggregated metrics can be produced for business and application operations insight into business transaction execution statistics. It contains graphs and dashboards that are refreshed in near real time. This aggregated information can give performance or current health of monitored business processes with indication about future behavior (trends) of involved applications (e.g. bottleneck is developing on certain application in landscape). Dashboards have drill down capabilities toward individual transactions in their current state (e.g. pending transactions) for in depth inspection and analysis.