White Paper

liXto
THE WEB INTELLIGENCE COMPANY

Agile Web Process Management

**Mashing Up Information
For Improving Supply Chain Performance
in the Automotive Industry**

An Analysis of

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Contents

1 Summary

A decisive factor in gaining a competitive edge in the automotive industry is to establish effective management of all internal business processes as well as all external business processes linking a supplier to its OEMs. The challenge is improving the management of risk and product and service quality by maintaining a timely and comprehensive overview of process performance. Such a process orientation creates new opportunities to reduce costs and improve quality.

Agility and industrialization determine who wins or loses in the global market.

The success of a company in the automotive industry depends crucially on how it addresses processes within the company and along its supply chain in relation to two key factors:

• **industrialization:** standardization, automation and continuous improvement, also called 'operational excellence'; and

• **agility:** the flexibility to implement strategy changes quickly in order to track market developments and fulfill at any time the changing patterns of customer demand.

The internal processes of a supplier in this industry usually meet these requirements. However, improvements are often needed in the processes that go beyond the company to interact with its OEMs. Bringing greater agility and better industrialization to these processes promotes further quality and speed enhancements in production. This is achieved by fulfilling one fundamental process goal: to have the right information at the right time.

Each manufactured part must always be in compliance with the changing standards and requirements of the OEMs. This means suppliers have to collect current information from the OEMs, which is a process that can be automated. The information collected offers an early detection system for risk management. This can cut costs because it helps to reduce the substantial expenditure on warranties and recalls caused by having wrong information in the production process.

In contrast, poor quality, rejects and recalls have long-term and far-reaching impacts, including causing the supplier's ranking with their OEMs to fall. This can result in:

• fewer orders with reduced product margins;

• loss of reputation among the best customers; and, as a consequence,

• job cuts and threats to whole production sites.

A business can identify problems earlier and solve them more quickly if there is effective and transparent collaboration between the supplier and OEMs, controlled by automated information collection and early detection systems. Such is a system will produce a profitable payback on the investment involved in creating it.

A significant factor in the success of an automated process-oriented system is its synchronization of information provision and information demand. Only timely information can be used proactively to resolve

quality issues quickly, by ensuring that process monitoring and control take place in an industrialized and agile way. Employees should be able to track and understand the processes, giving decision makers and managers the ability to identify the current position and situation. Measures can then be implemented in time to avoid or minimize problems or risks. This reduces costs, builds product margins and maintains the company's ranking position in the market.

Such solutions for agile web process management are based on delivering flexible connectivity that allows access to all information sources in the company and to the web portals of OEMs. This needs to be done in an automated and standardized way that is flexible enough to deal efficiently with information and format changes.

An important feature of this type of solution is the **mashing-up process**. This merges, aggregates and consolidates information from various sources, including the portals to a company's OEMs results. The aim is to provide an up-to-date and comprehensive overview of process performance using scorecards. In addition to showing key internal performance indicators, this is used to build an accurate picture of how a company is viewed by its respective OEMs, together with a fact-based view on collaborative processes. The result is a demonstrably improved risk and quality management system that goes beyond the company's key performance indicators to promote a high supplier ranking, and consequently healthy product margins.

The purpose of this white paper on Lixto's agile web process management

Companies in the automotive industry need an effective risk and quality management strategy based on early detection systems if they want to reduce the number of warranty cases, cut costs, improve or at least maintain their ranking as suppliers and increase the quality of their products. This requires strict process optimization through agile web process management as a basis for process performance management. Companies interested in making better decisions in a more sustainable, reliable and revision-safe way need to choose which platform and components they want to use for the implementation of a web process management solution and its scorecards. One of the most important questions and tasks is to select a platform for performance management and connectivity on the Web that can be adapted individually, on any relevant workstation, without major training needs and which the employees not only accept but also use with ease and precision. Correct ergonomics, the right value for money, quick implementation and easily adaptable solutions made for agile suppliers are of particular importance. From an IT perspective, a high level of flexibility is needed, especially for the connectivity to the online information sources (i.e. the OEM portals). All this rests on mashing up of information, which offers the following benefits: transparent collaboration between a company and its OEMs even at times of increased business dynamics, enhanced quality and performance of supply chain processes and a basis for planning and analysis for early detection systems. This white paper aims to help companies looking at supporting decisions and implementing solutions in this area.

2 The value of transparent collaboration between OEMs and suppliers

2.1 The benefits of agile web process management

Process orientation is crucial to strategic and operational success.

Agile and industrialized business processes are the result of successful **business process management** (BPM). BPM represents a closed-loop model that describes the life cycle of business processes, from the initial analysis and design, through implementation to ongoing execution, planning, monitoring and control.

To understand why processes are so important, let's look at how suppliers and OEMs are today working together:
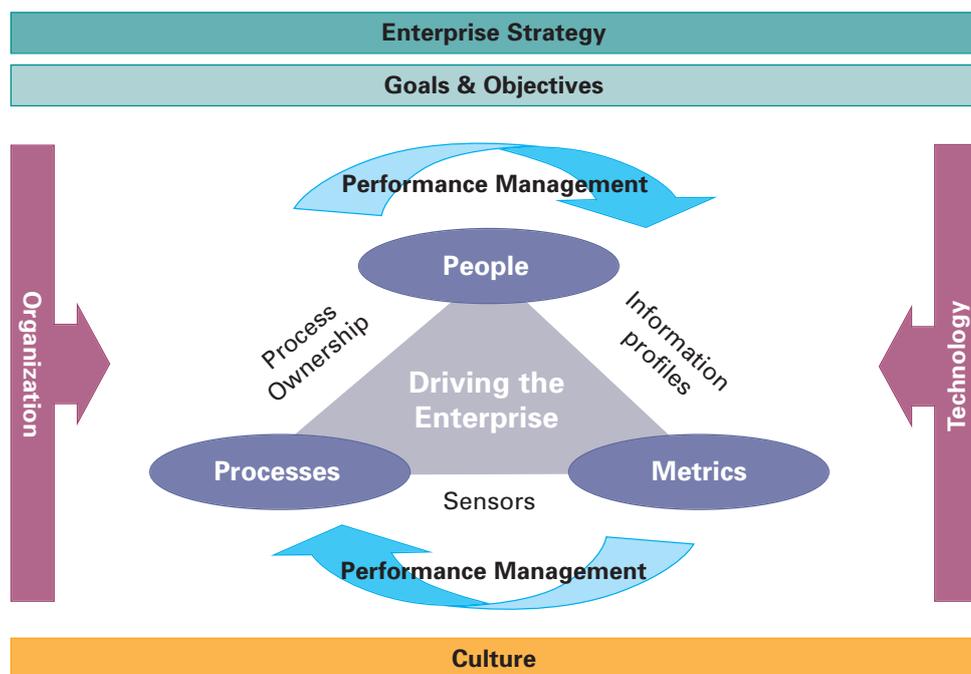
• **The achieved degree of process integration is usually insufficient.** Although the processes are modelled company-wide, they typically stop at the company's doors. They frequently do not even extend beyond the applications for purchase, production, logistics, etc. Under such conditions, collaboration with suppliers and OEMs is difficult. Information about changes in norms, standards or packaging provisions is communicated too late, or only by accident. As a consequence: company reactions are too slow; the ability to respond appropriately decreases; the number of returns increases; costs rise; and quality drops.

• **Frequently the achieved degree of process automation can be improved.** Data still often has to be transferred from one system to another by hand. Process quality remains low, while the number of mistakes and errors increases. Information about faulty production is received much too late. If production costs are to be reduced even further, every hour counts.

• **It takes too long to make strategy changes and process adaptations to match market dynamics.** Processes are firmly anchored within applications and therefore specific to that application. Changing a process requires changing not only the affected application, but also all other relevant connected applications in and outside of the company. Information technology not business strategy then determines a company's pace. As a result, the company becomes rigid and loses its flexibility, its OEMs' degree of satisfaction dwindles and evaluation of the company by its OEMs worsens. All this reduces margins.

• **Master data is spread redundantly over various applications.** Each application uses its own terminology. Product and order numbers of one application do not match those of others. Key performance indicators are inconsistent, making it hard to control processes proactively. Collaboration with suppliers and OEMs drives costs. Each time a new supplier, OEM or product is added, a new translation table has to be created or new term added to all translation tables, leading to time-consuming, error-prone and expensive changes. The satisfaction of OEMs decreases again, resulting in further poor evaluations. The margin's downfall continues.

• **Information management turns into a problem.** On-time availability and access to information remains an expensive luxury. Important information about OEMs is communicated to production too late or not at all. There is much concern about the state of information technology. Although production is running efficiently, it is not effective as it cannot keep in step with demand when changes are made to OEMs' requirements.

These findings raise a core question: How can a traditional collaborative supply-chain approach be transformed into an innovative process-oriented model?

Agile web process management is one answer: the synchronization and integration of all collaborative processes with suppliers and OEMs over a web front-end to enable continuous and comprehensive planning, monitoring and control of collaborative processes.

This means the performance of business processes must be not only made measurable internally, but also, the evaluations and requirements of OEMs need to be identified to help monitor and control production in a proactive way. Active business processes need to be continuously adapted to the changes and requirements of OEMs. This requires the identification of problems early enough to enable the effective implementation of counter measures. Such processes must be „intelligent", i.e. to be controlled proactively, using the principle of process performance management illustrated in fig. 1. This entails each process being allocated certain metrics (sensors). These allow a company to determine both whether the targets have been reached and to identify in sufficient time if the targets of a running process are realistic or need adjustment. Early detection systems are employed for this purpose (fig. 1).

Fig. 1: Process Performance Management is a business model enabling a company to continuously align and maintain its business targets and business processes. Performance Management comprises the planning, monitoring and controlling of processes. Measurable targets are deduced from the business strategy. Based on the strategy and the targets, processes and metrics for an efficient business management and continuous optimization are defined. The metrics are embedded in the processes as sensors. Based on the metrics' results, decisions are made either manually or automatically depending on the preference of the customer. The process ownership model describes the responsibilities of the person (role and business unit) when managing and running processes. This results in information profiles determining the content of a scorecard. As such employees and managers are allocated the metrics they need for managing the processes they have responsibility for. Synchronization between measuring and running the processes is critical; the speed of the measuring process must match the speed of the business process.

Depending on the results of metrics, the employees responsible for processes or automatic decision systems can decide and initiate appropriate actions. These can either improve tactical and operational process management (e.g. by changes in the control of processes or process steps) or they can be adapted to a better strategic management plan (e.g. by adjusting strategies and targets to the actual conditions being measured).

> *Example:* Assume that „delivery reliability" is one of the business targets. A strategic business metric can be established for this process by stating, for example: "90 percent of all deliveries must take place within two days". The current inventory compared to a fixed minimum inventory in a warehouse could be used as an operational business metric. If the inventory falls below the minimum amount, reordering is initiated automatically. Thus, the results of the Inventory metric trigger a decision which, in turn, starts an activity in response. The metric works proactively because the resulting actions prevent the occurrence of the problem that would be created if the item becomes „sold out".

This example shows that metrics not only fulfill diagnostic purposes but can also be used to create better future performance by responding in a proactive and corrective manner. Difficulties and risks are identified early and can be solved before potentially damaging problems arise. It also illustrates how processes at the operational level can be monitored and controlled with relevant information, including in a fully automatic way without the intervention of product managers. To make such a BPM approach successful, it is important to synchronize the speed of a process (information demand) with the measuring activity (information delivery). This is a fundamental requirement for decisions when the time involved becomes a critical factor because it is needed in real time.

"Information mash-ups" are valuable as aids to achieving high levels of data and service quality in an integrated process-oriented model. Receiving all relevant information in an acceptable quality is a fundamental prerequisite. This calls for a comprehensive data quality management process complemented by ensuring the „right" data is available on time for proactive process controls. Internal key performance indicators help to control processes but are not sufficient for early detection systems, for instance because OEMs change their conditions (e.g. standards, packaging regulations and delivery addresses). In the past, collaboration between a company and its OEMs depended on such information being collected manually by the supplier from the portals of the respective OEMs.

The agile web process management approach highlighted in this paper means that this information is obtained automatically, on time and in a reliable way by mashing up information from all OEM sources, in an integrated way that supports effective early detection systems. This kind of robust access to external data sources is particularly important because information structures on the OEMs' portals tend to be changed continually. These changes must be identified and tracked automatically, or at least a notification concerning such changes needs to be issued.

> **Conclusion:** Agile web process management using information mash-ups offers effective synchronization of information and process work flows to allow business processes to keep up-to-date with production and logistics developments among suppliers and OEMs. This enables more intelligent planning, better forecasting and production and real collaboration between suppliers and OEMs. Warranty costs can be reduced and even avoided, OEM ranking and quality can be improved and product margins can be increased.

2.2 Obtaining advantage through information mash-ups

Time is money. As mentioned above, effective early detection and risk management systems require the right information to be communicated to the right decision maker at the right time. Process orientation is a prerequisite in realizing that ambition. This demands performance management methods that efficiently and accurately synchronize information and process flows to make information available on time. What counts is the punctual availability of information. Important tools in achieving this are comprehensive scorecards to monitor and control processes (see fig. 2), but these are only useful if information on processes in all plants, regions and for all OEMs is available on time.

• **Early detection systems** will save money if the right data is available to be used in the next shift. Quality issues that arise in one shift can then be eliminated in the following shift. If days pass before quality issues are noticed, many rejects will have been produced and some delivery quantities or times may have been missed. The satisfaction of OEMs, their evaluation of the supplier and the company's product margins will decrease. That is why time is money.

• **Collaborative scorecards** link company data with OEM data. The company can then see how it is viewed by its OEMs. This, in turn, offers an opportunity to monitor and control production processes in a targeted way in all plants, regions and divisions, over time and with respect to customers and customer evaluations. The resulting transparency assists in preventing risks (see fig. 2 as an example).
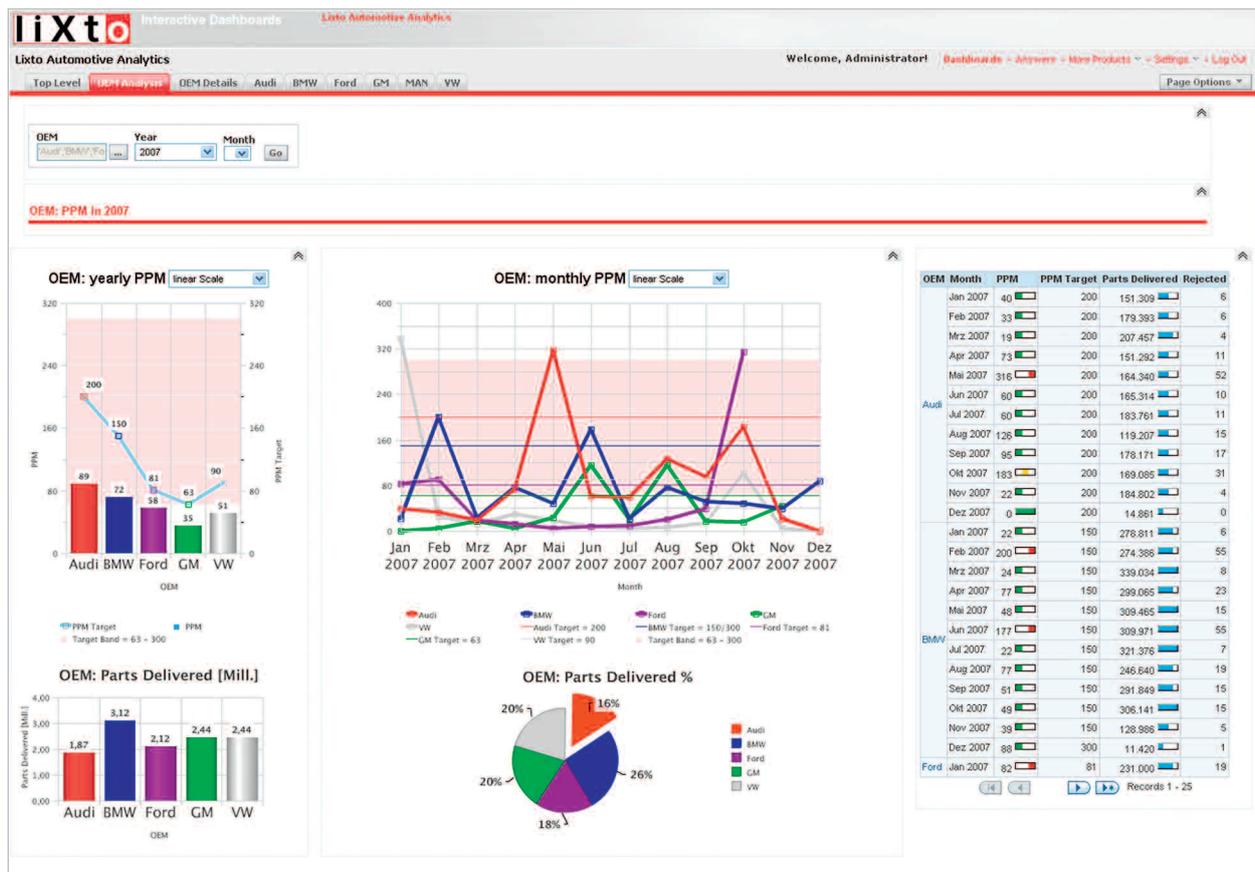

Fig. 2: *Example of a PPM scorecard for an automobile supplier.*

- **Managing warranties** is a best practice in risk management. Collaborative scorecards allow production performance data to be compared with current evaluations of the company by its OEMs. This helps to manage warranties correctly through the use by companies and OEMs of the same data basis, which can open common insights into justified and unjustified warranty claims. Such valuable transparency is still rare.

- **Remaining the preferred supplier of one's OEMs** is seen as the best foundation for a company's future. For OEMs, this demands quality deliveries in compliance with constantly changing demands, standards and regulations. Collaborative scorecards are the best practice for common and transparent monitoring and the control of production and logistics processes. Negotiation positions improve and product margins increase.

Mashing up information is the best method to win the main business prize promised by an innovative process oriented model: punctual and transparent information. Decisions can then be based on facts, making for better decisions that lead to total quality management, continuous improvement and the agility that is needed for successful collaboration with OEMs.

Following this approach will bring you the advantages offered when information is used well to deliver answers to key business questions:

- You will know how far your OEMs depend on your company to achieve their production targets. You will also know what consequences your delivery problems would have on the production of your OEMs and how long their production would be interrupted as a result.

- You will also know your company's proportion of the purchasing budget of your OEMs. Using this information, you can strengthen your negotiation position and increase your product margins.

- You will know which OEMs bring you the most profit. Then you can deliver unrivaled service to these OEMs to win and keep their loyalty. You will be able to sell more to your OEMs at the right points in time (e.g. up-selling/cross-selling).

- Above all, you will know how much money this means for your company, and how to obtain and keep these funds.

Conclusion: Information provided at the right time in the context of collaborative business processes can lead to substantial financial advantages. What counts most is establishing effective process synchronization and the consolidation of proprietary information with information from OEMs, using information mashing in an agile web process management system.

3 Case study

Automated extraction of delivery data from customer portals at VOSS Automotive

About the company

VOSS Automotive is a medium-sized company which acts as a system partner for the international automotive industry. It develops and produces line and connection technology for all air, fuel, hydraulic oil and other liquids used in vehicles. Its customers include most international commercial vehicle manufacturers. VOSS distributes and manufactures its products through its own subsidiaries and/or international companies in the most important markets in Europe, North and South America and Asia.

About the solution

With Lixto's web process integration, VOSS Automotive is able to connect easily, efficiently and reliably with the portals of its customers (commercial vehicle manufacturers and automotive suppliers). The solution took only two months to develop and implement. It has been operating successfully since August 2007.

Customer's comment

"Lixto helped us to establish an integrated end-to-end process allowing us to transfer data from customers' web portals directly into our SAP system. With Lixto's solutions, we could significantly improve process reliability and the processing speed of portal-based delivery requests."

Walter Funke, Head of Application Management at Voss Automotive

VOSS Automotive uses Lixto to integrate the web-based logistics data of its customers

As a development partner for the automotive industry, VOSS Automotive has established a number of market standards for commercial vehicle and car line and connection technologies. For example, about half the commercial vehicles in Europe use VOSS air brake systems and almost all European cars with air suspension contain components made by VOSS. A company like VOSS must be able to respond to customer demands in a quick and cost-efficient way if it is to maintain its strong market position.

Agile web process management is a crucial factor in successfully meeting this kind of challenge. Lixto's solution enables VOSS to collect and prepare logistics data from its customers' portals automatically and to seamlessly process this information further in its proprietary SAP system. Tasks that previously had to be done manually have been replaced with Lixto's standard solution. VOSS can now retrieve delivery data from the web portals of its customers faster, more cost-efficiently and more reliably, for example to speed up production planning.

Advantages offered by Lixto solutions

VOSS Automotive chose Lixto because its system uses modern and powerful technology that keeps the company prepared for future challenges posed by Business-to-Business (B2B) internet applications. For instance, Lixto is the only tool that can process and integrate data from highly dynamic Web 2.0 pages. Its visual development environment enables quick and easy configuring of the web processes to be automated. Good value for money and the uncompromising reliability of the Lixto team were also crucial in VOSS Automotive's decision to apply the Lixto solution to key business requirements.

Result: Shorter response times while cutting costs

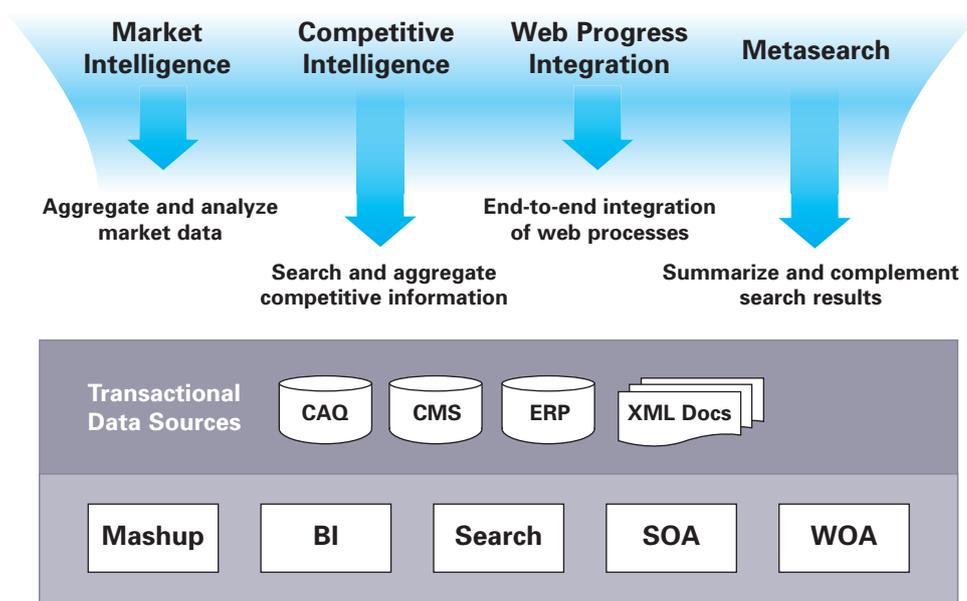Lixto's solution has enabled VOSS Logistics to automate further the receipt of customer purchase orders, complementing traditional electronic data exchange. Employees who formerly had to track purchase orders manually can now use that time for more valuable tasks. VOSS believes such electronic business processing through web portals has developed to the point that it is becoming a valued industry standard.

4 Gaining transparent collaboration using Lixto's web intelligence solution

Lixto is a young and dynamic Austrian company, founded in 2001 as a spin-off of the Vienna University of Technology. It has one subsidiary in Germany and others are being established in the UK and the US. The company's patent-pending technologies are used for various web intelligence solutions in a number of industries.

This white paper presents Lixto's turnkey solutions for agile web process management, which are based on its software infrastructure in the automotive industry. Together with its partners, Lixto ensures there is a short period between the planning phase and the implementation of a solution. The resulting system will support the daily tasks carried out by management and activities at the executive level in the distribution department, in the plants and during the quality management of suppliers. Tedious IT projects become a thing of the past and problems are quickly resolved. The service model solutions created by Lixto can be used directly and without complex introduction phases or internal IT projects. Lixto also offers solutions on a hosted basis, without the need for internal IT resources.

Concept of Lixto Mashup Solutions

Market Intelligence — Aggregate and analyze market data

Competitive Intelligence — Search and aggregate competitive information

Web Progress Integration — End-to-end integration of web processes

Metasearch — Summarize and complement search results

Transactional Data Sources: CAQ, CMS, ERP, XML Docs

Mashup | BI | Search | SOA | WOA

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Fig. 3: Concept of Lixto Mashup solutions
(BI = business intelligence; SOA = service oriented architecture; WOA = web oriented architecture)

Lixto Value Proposition
Lixto empowers better decisions by searching and aggregating information in real time and delivering end-to-end connectivity solutions.

Lixto Mashup Solutions: A Detailed View on the Technology
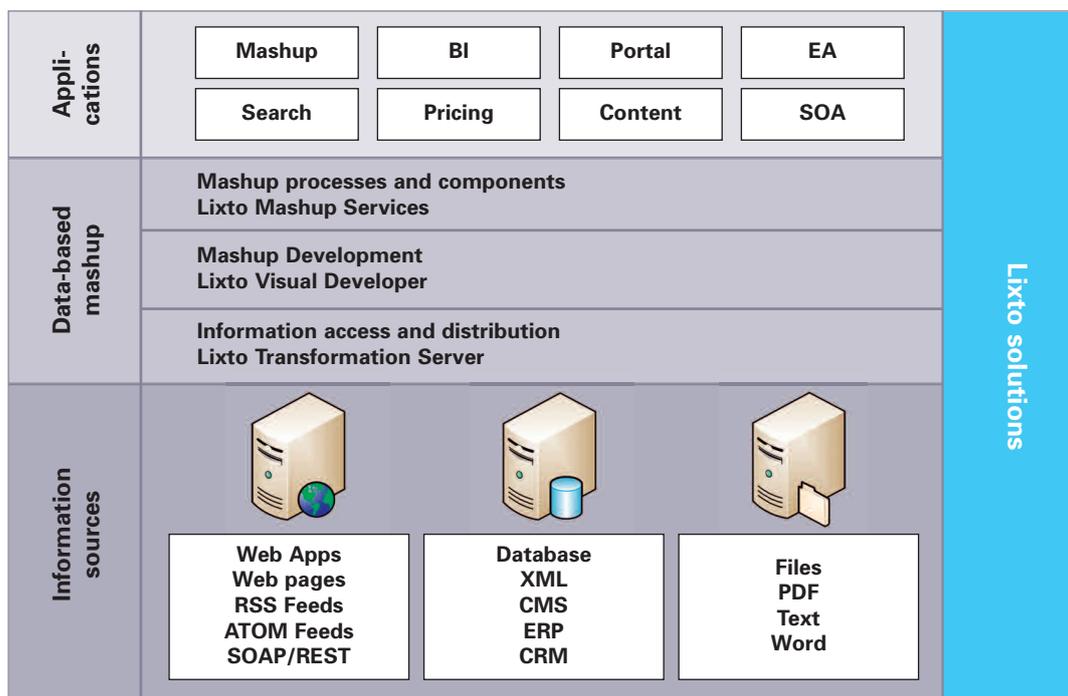
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Fig. 4: *Lixto Mashup Solutions: A Detailed View on the Technology*
(BI = business intelligence; EA = enterprise application; SOA = service oriented architecture)

Mashups are ready-to-use web applications that combine content from various sources to create a new software application, also called a „composite application". Mashups represent a new and innovative approach to the web-based design of applications because even end users without programming skills can easily create the tools they need. At Mashup Camp Europe 2007, applications using Lixto technology won two prizes in the categories of searching and aggregating information in real time (first prize as „Best of Conference Mashup Enabler" and third prize as „Best Conference Mashup").

Since mashups follow the concept of the consumer becoming a producer, they can be regarded as Web 2.0 technologies. Lixto's solution complements the applications offered by mashup assemblers like IBM QEDWiki by providing a simple solution for the collection, extraction and distribution of web content. Such web connectivity promotes the technological benefits of solutions based on Lixto's software infrastructure. This extracts both structured and unstructured data from highly dynamic web sources to run current applications on different mashup platforms, as well as within various turnkey solutions. Lixto's unique selling points are:

• Reliable, traceable and audit compliant end-to-end integration from source to target systems. The target system can be a person (management dashboards and reports) or a system (web service).

• Source and target system agnostic XML-based data flows. Source systems include web sources (HTML/Ajax, REST, XML, RSS, ATOM, JSON, web services, SOAP) and all traditional data sources (various database formats, SAP Connector, Excel/Word, PDF, CSV).

- Transparent, patent-pending technology for flexible data access even to continuously changing source systems and dynamic web pages (e.g. Web 2.0 portals and Ajax applications). This turns static web pages into web services. The embedded Mozilla web browser guarantees high functionality and supports the latest web standards.

- The processes employed for extraction, transformation and loading of the target systems are modeled and implemented visually and interactively with the Eclipse-based Lixto Visual Developer. Visual debugging supports the required transparency, leading to high production rates and quick and flexible changes.

- Deep web interactions can be captured and reproduced in VCR-type style. For navigation purposes certain functions such as browser options, authentication, dynamic changes, multiple browser windows and parameterization of option fields are supported. Apart from that, conditions, verification warnings and iteration concepts as well as the support of file downloads provide the necessary tools to cover all options of web portals.

- The extraction of data is based on a Lixto-proprietary declarative language. Data extractions can be displayed visually and data can be shown in defined XML data models. For this purpose standards such as XPath 2 are used.

- Lixto processes ensure solid stability of the underlying web portals when there are structural changes. Smaller changes on web portals do not require adaptation, while more significant changes result in a warning being sent immediately to the service manager.

- Lixto processes include fail-safe and load balancing functions, which are embedded in its system management capabilities. Additional highlights include full reporting capabilities and a sophisticated role concept.

Conclusion: Lixto offers agile web process management for transparent collaboration between OEMs and suppliers based on an innovative, patent-pending software infrastructure that provides a complete overview of all processes a supplier shares with its OEMs. It does this by mashing up information from OEM portals, online market places, other highly dynamic web sources and proprietary business data. The particular advantage of Lixto's software infrastructure is its reliability and stability towards structural changes in external source systems. This can establish early detection systems to prevent warranty problems and callbacks, as well as improving the quality management of production processes. Better supplier ratings and the healthier product margins that follow can also be achieved.

Lixto is a market leader in technologies for reliable and efficient data extraction and transformation from highly dynamic web sources. The company has the necessary skills and expertise to deliver and support agile web process management solutions. It is now strengthening its position as an ambitious company on the international market, including the promotion of strategic partnerships to complement those already initiated with IBM and SAP.

5 Appendix

Glossary

Dashboard (or instrument panel): A process performance management tool that defines, provides and displays metrics related to the role of a business unit.

Business process management: A feedback "closed-loop" model used to: model processes (analysis, model creation, simulation, testing); run processes independently of applications; and monitor and control processes via process performance management.

Connectivity: All of a system's interfaces (including the architecture) to databases, middleware or applications.

Mashup: Creation of new content by a seamless combination and recombination of existing contents.

Metrics: Measurements and criteria used to describe the management of a process and its performance. Consists of a measurable quantity and a scale for the evaluation of the quantity's value. Obtained through the identification and quantification of process targets.

Process performance management: A business model enabling a company to continuously align and maintain its targets and business processes. Process performance management comprises the planning, monitoring and control of processes.

Web process management: The capability to make the performance of business processes measurable internally, as well as identifying the evaluations and requirements of OEMs in order to monitor and control production in a proactive way.

Related Reading

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About Lixto

Lixto Software GmbH empowers better decisions by searching and aggregating information in real-time and delivering end-to-end connectivity solutions. The company's solutions and services are used in metasearch, online market intelligence and web process integration, thus allowing companies and end users to achieve better and more structured results for their queries.

Lixto also helps companies by automating their web-based business processes. Facts and figures about markets, suppliers, customers and competitors can be found more quickly, more accurately and are less expensive to access.

Lixto's customers are international companies in the automotive, travel, e-commerce and IT industries such as ZF Friedrichshafen, ThyssenKrupp Presta, Voss Automotive, shopping.com, the Austrian National Tourist Office, energy provider Verbund and SAP.

About the Author

Dr. Wolfgang Martin

Designated one of the top 10 most influential IT consultants
in Europe (by Info Economist magazine),

Wolfgang Martin is a leading European authority on

• **BI/CPM** (Business Intelligence/Corporate Performance Management).
• **BPM** (Business Process Management, Enterprise Information Management),
• **SOA** (Service Oriented Architecture),
• **CRM** (Customer Relationship Management),

After 5½ years with META Group, latterly as Senior Vice President International Application Delivery Strategies, Mr. Martin established the Wolfgang Martin Team in 2001. Here he continues to focus on technological innovations that drive business, examining their impact on organization, enterprise culture, business architecture and business processes. In the topic of BI/CPM, he partners with Ventana Research as a Ventana Research Advisor, and he is a Research Advisor at the Institute of Business Intelligence at the Steinbeis Hochschule, Berlin. He is also co-founder and partner of iBonD Ltd (www.iBonD.net).

Mr. Martin is a notable commentator on conference platforms and in TV appearances across Europe. His analytic skills are sought by many of Europe's leading companies in consulting engagements. A frequent contributor of articles for IT journals and trade papers, he is also an editor of technical literature.

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