Web Intelligence

Mashing Up Information For Increased Market Transparency in the Tourism Industry
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1 Summary

Transparent prices are one of the greatest challenges in the tourism industry and critical for gaining a competitive advantage.

Price transparency is possible as all competitor prices are available on the Internet. However, they first need to be collected and analyzed. Transparency concerning prices in the tourism industry offers the following benefits:

• optimum implementation of the pricing strategy to increase demand and earnings;

• continuous analytic comparison of proprietary product portfolios with those of the competition;

• effective identification of market events and opportunities to enable better decisions;

• strict execution of pricing strategy thanks to better monitoring of all distribution channels,

• ability to have a precise market picture allowing the exact comparison of pricing and products in all relevant online channels.

But how is it possible to retrieve all relevant prices from the Internet in a timely, reliable, automated and thus cost-efficient way? Before any data can be analyzed and before any action can be taken, the information must first be collected. This needs to be done using a Web Intelligence solution based on flexible connectivity [1]. The method employed by Web Intelligence to do this is called a “Mashup” [2] and means to merge, aggregate and consolidate information taken from various online sources.

All information sources on competitor web portals and booking reservation engine systems can be accessed in an automated, and standardized and robust manner: and any information or format changes on the relevant web pages can be dealt with, enabling the continuous collection of any relevant data available on the Internet. The resulting information is up to date and comparable and can be used to improve pricing policies as well as to monitor and control contract partners such as hotels or suppliers from any other product segment. Thus, product, pricing and revenue managers as well as executives can determine the current price position, understand the market situation and apply counter-measures in near-time as problems or risks occur. This approach also increases profits and delivers a fact-based market picture of the current pricing policy allowing for improved price management and hence better use of market opportunities.

But Web Intelligence has even more advantages. As Web Intelligence creates market transparency the best market offer available can be identified using metasearch functionality. Metasearch is an ideal tool for tourism authorities and consumers. The best tourism product available on the Internet is just one mouse click away. Again, flexible connectivity and mashing-up make it possible to use various Internet sources while keeping complexity and expenses for the collection of data to a minimum. With metasearch functionality the entire Internet structure, including all relevant product characteristics, can be used. For example, when searching for a hotel, available query criteria include hotel name, star ranking, meal plans, room and rate type, arrival date, length of stay, price, service fees and taxes, reservation and cancellation policies. Hence, the consumer or the consumer’s travel agent finds exactly what the customer is looking for.

[1] Connectivity: All interfaces (including the architecture) of a system or a solution to databases, middleware or applications.

Metasearch functionality is an innovative service in the tourism industry offering previously unknown levels of flexibility and creation of competitive advantages for business users. In an industry characterized by low margins this is a valuable asset.

**The purpose of this white paper is to examine Lixto’s Web Intelligence solution for the tourism industry**

Companies operating in the tourism sector that consider market transparency and, in particular, price transparency as critical for their competitive position, can now gain a competitive edge through Web Intelligence solutions. It is first necessary to choose a solution that provides reliable and correct price transparency and that will also help product managers (B2B sector) or consumers (B2C sector) to find the best product available. One of the most important tasks is to select a platform for mashing up 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 can also use with ease and precision. Correct ergonomics, the right value for money, quick implementation and flexibility are of significant importance in the travel sector if these kinds of solutions are to work properly. From an IT perspective a high level of flexibility is needed, especially for connectivity to online information sources, portals and competitive booking engines systems. This leads to the transparency that management, sales distribution, marketing, controlling and consumers demand, and brings about competition advantages for sustainable added value. This document aims to help companies looking at implementing solutions in this area.
2 Market transparency in the tourism industry

The Internet has become one of the most important sales channels to business. In 2006, for example, Germany already had 28.6 million online buyers, compared to 2005 that is an increase of 6%. The share of travel products within this figure is relatively high; 2006 saw 8.7 million online buyers for airline tickets, 11.1 million for overnight stays, 6.7 million for package tours, 10.8 million for railway tickets, 2.1 million for rental cars and 21.7 million for entertainment tickets. Apart from that the tourism sector features another noteworthy trend when it comes to using the Internet; before making a transaction consumers search for information online. This is especially true for users looking for travel products. In the case of airline tickets and overnight stays, 70% of buyers look for information online. Package tours follow suit with a value of 61%. So what Internet data is of most interest? It appears that the most interesting is price comparison information, 22 million online buyers in Germany for instance compare prices on the Internet at least occasionally [3].

Comparing prices creates market transparency – not only for consumers. Travel suppliers integrating price comparisons in their sales distribution and marketing processes workflows are a step ahead on the market. Likewise, intermediaries giving their agents and customers an efficient tool to find the best offers on the Internet gain a competitive edge. According to research, that is what the customer wants.

2.1 Price comparison through Web Intelligence

Those who know the market will find the best price. Best pricing is one key factor for increasing profitability in the tourism market with its low margins. Market transparency is a prerequisite as competitor prices are needed to determine the best price. Because today virtually everything is published on the Internet and consumers make frequent use of this information, particularly in tourism, price comparisons based on prices found on the Internet are common. **Web Intelligence** is one of the methods and technology used for that.

Web intelligence provides sales distribution, marketing and controlling, pricing, product and revenue management experts in travel companies with the tools and solutions to carry out price comparisons based on data published on competitor online portals, booking engines systems and other information sources. (Fig. 1) However, every expert knows that just as apples and oranges cannot be compared, one price cannot simply be compared with another price in every case.

**Example:** Comparison of hotel prices: Before prices can be compared to each other, a number of common problems need to be resolved.

- quality and incompleteness of price data; significant rate components such as breakfast, taxes and cancellation policies must be taken into account;

- high processing costs caused by manual processes and consequent error-prone processing of price data; manual price comparisons are often not up to date, especially in the hotel sector where prices can change at least on a daily basis;

- poor service; requests are often delayed for several days and receive insufficient answers; new competitors are integrated into price comparison systems with a delay of weeks to months.

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Apart from meeting these demands, a professional price comparison system, such as Lixto’s Web Intelligence solution, (Fig. 2) must ensure that all collected data is of suitable quality. Moreover, Web Intelligence must comprise the automatic collection of data from all competitor and partner sources in a reliable and timely manner and the ability to use this information in a price comparison system. Robust access to external data sources is of particular importance because information structures on the portals and websites change regularly and many websites are becoming more and more dynamic. These changes must be identified and tracked automatically, or at least a notification concerning these changes needs to be issued. The result of this task of information processing, also called “mashing up” is improved data and service quality. By using Lixto’s solution pricing managers can:

• identify critical market events such as competitor discounts, or lack of product availability, or excess supply;

• turn available information into concrete actions, i.e. prioritize specific market events and issue notifications when prices exceed a pre-defined range;

• enjoy full flexibility when determining control groups and controlling the information taken from the online sources;

• run current price analysis based on automated and targeted data analysis and automated email notifications in case of warnings or other events;
• reduce process costs through smooth workflows and automated and standardized email communication;
• create comprehensive and intuitive custom online reports;
• improve service by integrating new competitors and distribution channels within only 2 to 3 weeks;
• maintain reliable and trusted services thanks to fully configurable processes,
• offer best service quality and support through providers.

**Lixto Solution Components**

**Fig. 2:** Lixto’s Web Intelligence solution is based on mashing up information from all relevant online sources needed for price comparisons and pricing. Lixto’s technology turns every Internet source into readable data so that current and reliable information can be collected from the web and transferred to the product model automatically. Data analysis is easily adjustable depending on the requirements of price management which is then given a robust stable platform.

**Conclusion:** Professional price comparison systems using pricing information available on the Internet are based on Web Intelligence methods and technologies. The ability to mash up information is critical in order to collect comparable high-quality data from all potential online information sources and make it available to the executives management, salesdistribution, marketing or controlling departments and pricing, product and revenue management to allow for intelligent pricing and resource controlling. Better prices and hence better margins can then be achieved.
2.2 Metasearch: Finding the best offer on the Internet

Over 70% of all consumers shopping for travel products research the Internet before making a purchase. To locate the data they want, consumers up to now have had to browse the web using search engines. Despite all the advantages offered by search engines such as Google, it is often very difficult to find the best offer. Users certainly find booking engines systems, online marketplaces and offers published by the associated partners but this is where the search with Google ends. A targeted search for travel offers requires multiple several parameters, for example hotel category, number of guests, room type, length of stay, departure airport etc. As search engines cannot deal with so many search criteria, the results are rather disappointing. Consumers need a tool that enables them to easily locate the best offer on the Internet.

**Example:** Let’s assume the following: A family of two adults and one child is looking for a smoke-free double room with extra bed in a centrally located three-star hotel for five nights. The search engine should be able to include and process all these criteria (if possible even more). It browses the hotel offers of the relevant hotel websites and online portals. All hotels meeting the search criteria above are then displayed in a list where our family can select a hotel and book a room immediately.

Search engines working this way are called “metasearch engines”. Let’s look at such a search engine in detail. **Lixto Hotel Metasearch** has been developed specifically for the tourism industry. Lixto Hotel Metasearch can be adapted to the requirements of national and regional tourism organizations and hotel intermediary platforms to search only for relevant offers from selected sources within a certain target area. The search results can be sorted by all criteria, i.e. price, location, provider or star rating. With Lixto, tourism organizations and operators of hotel intermediary platforms are able to display the best offers for their travel destination. Moreover, customer-oriented additional features like (metasearch functionality etc.) increase customer loyalty increasing the propensity of visitors to recommend the website to their friends thereby enhances the site’s visibility.

Again, Web Intelligence is the basis for these metasearch engines and mashing up a critical factor. Step one is to select the relevant web sources and ensure that they can be accessed in a robust way. This matches the first solution component shown in figure 2. In the next step a product model needs to be set up. The third step consists of displaying the search results and selecting the desired hotel. In step four the user is routed to the relevant website to complete the booking. Lixto’s Metasearch engine features the following significant elements: integration of the search mask on the website of the tourism authority or hotel intermediary platform and a consumer-oriented user interface with intuitive selection options. (Fig. 3)
Conclussion: Based on the technology of mashing up information, Lixto has developed a metasearch engine that enables consumers to find the best hotel offer meeting their individual search criteria. Thus, operators of tourism websites are given a functionality that offers a high level of added value and enhances customer loyalty.
3 Case study from the hotel sector
Online market monitoring at hotel.de AG

About the company
Hotel.de AG, owner of the international brand TravelRes, operates a free hotel reservation service for companies and private customers under the following Internet addresses: http://www.hotel.de, http://www.travelres.com, http://www.travelres.fr, http://www.travelres.es, http://www.hotel.at and http://www.hotel.ch. The company has about 210,000 hotels listed for electronic booking worldwide. In January 2007 hotel.de extended its product portfolio to include all-inclusive conference hotel packages. Compared to other booking methods hotel.de offers significant price benefits (up to 40% cost savings for business customers). Because all available room rates (such as promotion, business and weekend rates) are always displayed, customers can make use of the best-buy principle and select the most affordable or suitable price.

About the solution
Hotel.de uses Lixto Online Market Intelligence to obtain a transparent overview of the hotel rates of its contract partners. Lixto’s solution is used for strategic reasons: To detect rate parity violations among the 17,000 partner hotels of hotel.de, the solution also collects the prices of competitor hotel intermediary websites.

Lixto’s flexible solution collects current market data on the Internet, processes the information for the purpose of rate controlling and helps to increase revenue.

One of the key competition criteria for an online hotel intermediary is to ensure that the conditions negotiated with the hotels are at least as appealing as – if not better than – the offer of competing hotel intermediaries.

Advantages offered by Lixto solutions
Thanks to Lixto, hotel.de can take into account all factors that have an influence on the price. After all, prices can only be compared if it is clear in how far individual benefits and services or conditions are included or not. Common price-influencing factors are sales taxes and benefits such as breakfast or cancellation policies. Lixto’s solution enables the user to create custom reports displaying those hotels with significant price differences. As the solution retrieves and processes hotel prices automatically, no manual intervention by the rate controlling staff is needed before the analysis takes place. The saved labor time can be invested into more important tasks like checking rate parity violations (including the determination of counter measures) and managing the hotel partners.

Price control in real time with Web Intelligence
Each detected price difference in the system of hotel.de triggers an automatic notification process. The Lixto Email Notification Tool contacts the responsible rate controlling manager. As soon as a price difference is detected at hotel.de, the system generates a standard email addressed to the hotel operator, indicating the detected price difference (in Euro and/or percent) and the relevant date.

Benefits
• transparent information on specific market segments;
• time savings and productivity increase within the entire process chain;
• reduction of overall operative cost through automation of the workflow;
• increase of booking volume by complying with rate parity agreements

Altogether, this simply leads to more profit.

Future plans and developments
Further extension of the solution in the context of hotel.de’s European market expansion to include additional hotels and competitors.

Customer’s comment
“The fully-automatic real-time query function saves hotel.de a lot of time. We see exactly what price a competitor has set for a certain hotel. Based on this information we can then check if our contract partners comply with our agreements.”

Reinhard Wick, Chairman sales and Purchasing, hotel.de AG

Lixto – Web Intelligence
4 Market transparency with Web Intelligence from Lixto

Lixto is a dynamic Austrian company founded in 2001 as a spin-off of the Vienna University of Technology. Lixto has one subsidiary in Germany. Expansion into the UK is already under way and expansion into the US is planned for 2009. The company’s patent-pending technologies are used for various Web Intelligence solutions in a number of industries.

This white paper has described the ready-to-use solutions Lixto Online Market Intelligence and Lixto Hotel Metasearch for market transparency in the tourism industry. Together with its partners Lixto ensures a short period between planning and implementation of the solution to support the daily tasks carried out by management and on the executive level of sales distribution, marketing and controlling in companies of the tourism sector. Tedious IT projects will become a thing of the past and problems are quickly solved. With Lixto’s service model, solutions made by Lixto can be used directly and without any complex implementation phases or internal IT projects. Solutions from Lixto are also provided on a hosted basis without the need for internal IT resources at the customer end.

**Concept of Lixto Mashup Solutions**

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**Lixto Value Proposition.** Lixto empowers better decisions by searching and aggregating information in real time and delivering end-to-end connectivity solutions.
At Mashup Camp Europe 2007, applications using Lixto technology won two prizes in the categories of searching and aggregating of information in real time (first prize as “Best of Conference Mashup Enabler” and third prize as “Best Conference Mashup”). 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 any programming skills can easily create the tools they need. 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 makes for 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:** For companies operating in the tourism industry Lixto offers market transparency through Web Intelligence based on an innovative, patent-pending software infrastructure that provides a complete overview of the market, prices, partners and competitors by mashing up information from portals, online market places, other highly dynamic online sources and proprietary business data. The particular advantage of Lixto’s software infrastructure is its reliability and robustness stability towards structural changes in external source systems. This allows for semi-automated operation of Lixto’s solutions, ensuring that the data extracted from the Internet always meets the required quality level. IT technicians only have to intervene if the system issues a notification or additional online sources are to be included.

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 for the provision of agile web intelligence process management solutions but needs to strengthen its position as an aspiring company on the international market, including the promotion of strategic partnerships like the ones that have already been initiated with IBM and SAP.
Appendix

Related reading


These White Papers can be downloaded for free on www.wolfgang-martin-team.net

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 Software GmbH was founded in 2001 as a spin-off of the Vienna Technical University. Its customers are international companies in the automotive, travel, e-commerce and IT industry such as SAP, ZF Friedrichshafen, ThyssenKrupp Presta, Voss Automotive, shopping.com, the German National Tourist Board (DTZ), energy provider Verbund and T-Mobile.

Learn more on www.lixto.com
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Dr. Wolfgang Martin is a leading European authority on:

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