The OpenTravel Initiative

An e-commerce strategy to enable the seamless exchange of travel information

White Paper

Abstract

OpenTravel, an initiative for the seamless exchange of travel – and especially trip-centric information – is a foundation strategy for taking advantage of the near universal access to the internet. The ultimate goal is to promote the free flow of travel services through multiple distribution channels.

Readership

Who will define the future of the travel industry? That's uncertain. Internet-related technologies are emerging that could significantly affect the way the travel industry operates throughout the global economy. Senior management responsible for product distribution must evaluate this situation to form an appropriate response and – possibly – rally the travel industry to take immediate action.

Background

This document has been prepared by Xou Technologies, Inc., with the encouragement of several influential travel suppliers. No charge has been made for this work. The encouragement and assistance of the many people in the travel and IT industries who have helped develop the concepts described in it is gratefully acknowledged.

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OVERVIEW

The travel industry needs a better strategy for the cost-effective communication of travel-related information. Currently, it is very difficult for suppliers, intermediaries and travelers to share and exchange information. This difficulty has thus far limited the variety of distribution channels available to travel suppliers.

As the industry's sales and marketing professionals are aware, current distribution methods make it very difficult to differentiate services, reach new categories of consumers, and create innovative offers. The channels themselves define the relationships between suppliers and customers.

Customers are limited in their ability to combine the services of suppliers, to select services that best match their needs, and to compare services from different sources. To do so, travelers must navigate a complex web of interrelationships, which they elect not to do in most cases.

The internet has been viewed by many as a way to overcome the limitations of traditional distribution channels. The travel industry has embraced this technology and become one of the largest participants in electronic commerce. In reality, however, the move to the internet has done little to alter the existing distribution model for travel. The problem remains the inability to communicate information without costly and time-consuming interventions.

Although the travel industry is unique, most industries are also constrained by the inability to communicate information easily over the internet. To resolve the problem, internet technologists have recommended developing industry dictionaries to define the meaning of data terms.

Each dictionary establishes a common vocabulary (called ***tags***) for a specific industry and facilitates the communication of information between suppliers and to customers. Because of the singular importance of the internet, it appears inevitable that tags will be implemented using the eXtensible Markup Language (XML) that is a new internet standard. Some industries, including automotive manufacturing and healthcare, are already working together to develop their own tag vocabularies.

Similarly, the travel industry must organize a steering committee at once to outline and drive forward a process for building a unique tag vocabulary.

Although it may appear that it is a technical process to create a tag vocabulary, it is only by the support of senior management responsible for product distribution that the effort to facilitate this process will be started and taken through to completion. And it is only through such an initiative that the benefits of multi-channel sales distribution will ever be realized.

The implications of this vocabulary of tags are so significant that it has been given the name OpenTravel, with the effort to create it called – the OpenTravel Initiative.

Subsequent sections of this white paper explain:

- How travelers define the travel industry and so the scope of OpenTravel;
- The historical origins of the travel industry's focus on a single channel;
- How this single channel focus has affected the adoption of the internet;
- The OpenTravel Initiative;
- A possible technology for the implementation of OpenTravel;
- How the OpenTravel Initiative should be supported.

THE WORLD'S LARGEST INDUSTRY

Each year hundreds of millions of people make billions of trips for business and pleasure. This phenomenon has reinforced the world's largest industry – travel.

The travel industry is diverse. Its ranks include airlines, hotels, car rental companies, global distribution systems, and travel agencies as well as many other businesses that provide products and services geared to the needs of travelers.

The travel industry is global and interconnected. This characteristic allows travelers to create complex trips encompassing multiple destinations located hundreds or thousands of miles apart.

Information makes it possible

The essential ingredient that makes modern travel possible is information. Information – whether communicated through a phone call, within an electronic message, or over an internet connection – allows travel-related businesses located on opposite sides of the world to operate in concert.

In many ways information is the travel industry's most valuable product. The industry derives revenue by tracking the status of seats on planes, berths on ships, and compartments on trains. It ensures customer satisfaction by knowing the availability of rooms in hotels, cars in rental fleets, lift tickets at ski resorts.

To manage information and meet the growing demands of its customers, the travel industry has routinely turned to new and innovative technologies. It was among the early adopters of computers and networking technology. (See ***The Evolution of Travel Distribution*** on page 7.) Similarly, the travel industry has embraced the internet. In just a few years travel-related sites have become one of the largest segments in electronic commerce.

Structure of the travel industry

Information and technology have helped build a public perception of the travel industry as cohesive, unified, and integrated. Yet, the industry is actually very fragmented.

The travel industry is fragmented by mode of transportation (air, car, rail, ship), by type of service (hotel, travel agency, distribution system), and even by type of traveler (business or pleasure). A more realistic characterization of the travel industry is that it is an assortment of related, allied, sometimes interconnected, and occasionally competing supplier segments.

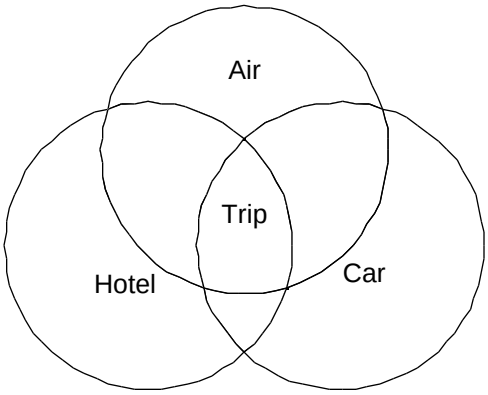

Figure 1. The traditional travel industry definition

As a result of fragmentation, most travel industry segments have evolved their own unique identities as well as separate rule-making bodies for formulating standards, processes, and procedures for reservations. Prominent examples include:

- Air Transport Association (ATA);
- American Hotel and Motel Association (AH&MA);
- Association of Car Rental Industry System Standards (ACRISS);
- Hospitality Industry Technology Integration Standards (HITIS) committee;
- Hotel Electronic Network Association (HEDNA);
- International Air Transport Association (IATA).

Travelers are trip-centric

For travelers, the “travel industry” has a simple definition – it encompasses anything that they come into contact with. In addition to airlines and hotels, for example, an individual might also factor in restaurants, local entertainment, mass transit, and even weather conditions at the destination.

This ***trip-centric*** definition of the industry is important for any initiative for exchanging travel data. It means that any standard must move beyond the traditional segments and, to be truly useful, provide a comprehensive, cost-effective solution.

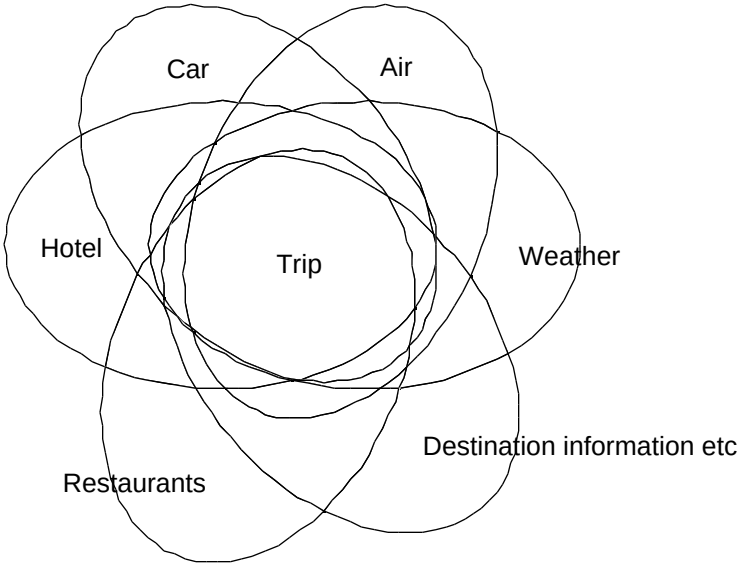

Figure 2. A complete solution requires a trip-centric travel industry definition

While the public has a trip-centric perception of travel, industry fragmentation means that a trip often includes only those products and services available through a single channel. Combining products and services from multiple sources can be difficult or impossible. The complexity of the process discourages buying outside the channel. This behavior in turn tends to commoditize channel offerings and undermine the opportunities for competition.

The internet could change this situation by creating a mechanism for meeting the needs of the trip-centric traveler. Technology is emerging to create universal shopping baskets that customers will carry to any web-enabled supplier. In the case of travel, this technology could transform the travel industry into one large supermarket of products and services.

Internet-planned trips call for a standard

Just as significantly, the industry could gain an infrastructure for multi-channel distribution. But so that the internet can easily be used alongside the established channels, making multi-channel distribution and trip-centric travel a reality, the industry needs a common standard for the communication of information.

What this White Paper is for

The OpenTravel Initiative seeks to produce a standard capable of exploiting the almost universal access to low-cost, fast communications infrastructure that has arrived with the internet. When implemented, the standard will, however, facilitate the exchange of trip-centric information between all industry participants, regardless of how they are connected.

Although developing a standard appears to be a technical issue, it actually requires the active participation of the industry's senior management responsible for product distribution. Typically, vice presidents of product distribution are charged with managing company brands and overall market segmentation. They determine price and are responsible for customer relationships as defined by the established channel. They are also responsible for developing new channels.

Currently, the ideal of a multi-channel world (the right product to the right customer at the right price) is constrained by an inability to exchange information. Without the support of senior management this will never change. Only senior staff have the necessary industry-wide relationships and organizational decision-making authority to drive such a fundamental change in business strategy.

With this level of strategic support, the OpenTravel Initiative can start the technical process of defining a common vocabulary (called ***tags***) upon which the standard for the exchange of information can be based.

Participation from all industry segments is essential to ensure the free flow of travel services through multiple channels of distribution.

This OpenTravel Initiative White Paper is intended to launch the process of building a standard. It does so by (1) providing an assessment of the industry's current distribution model, (2) outlining the business rationale for moving to a more flexible multi-channel infrastructure, (3) creating awareness of new technologies that inevitably will affect the industry's relationship with customers, and (4) asking for industry participation in the Initiative.

THE EVOLUTION OF TRAVEL DISTRIBUTION

Travel was one of the first industries to use electronic distribution. A review of the history is relevant, as this both restricts how new technologies can be applied and sets the bar for what they must offer.

Airlines, hotels, car rental companies, and other suppliers of travel initially dealt directly with their customers. A traveler telephoned each supplier and made reservations. Travelers were expected to manage trip information themselves.

Figure 3: Initially, the traveler used the telephone to talk to each supplier.

Trips involving multiple suppliers were difficult to organize, leading to growth in the number of travel agencies. The customer had a single point of contact for a trip and so did each supplier. Suppliers paid agencies commissions on sales.

Figure 4: Travel agencies communicated with each supplier separately.

As the demand for air travel grew, airlines received an increasing number of phone calls from travel agencies. To improve efficiency, airlines computerized their telephone sales systems. Then, in addition to making reservations in-house, one airline placed terminals connected to a derivative of its reservation system in agencies.

Travel agents wanted to compare flights from different airlines on a single screen, so other airlines were included in the system. This created the first Computer Reservations System (CRS), or as it is more commonly known today, Global Distribution System (GDS).

Figure 5: A GDS centralizes, consolidates and delivers supplier information to travel agencies handling compound trips.

Creating a GDS was costly, so only a small number of competitors arose. Over time, they added travel content from other suppliers such as car rental and hotel companies.

Today, over 80% of airline reservations are routed through one of four primary GDSs – so this is the standard by which any new approach to travel distribution is measured – and any new channel must operate alongside the GDSs and cooperate with them.

GDS services

GDSs provide the following main functions:

- Reasonably secure and reliable access to a wide range of centrally managed content, such as airline and train schedules, seat availability, hotel descriptions and room availability, etc.;
- A compound Passenger Name Record (PNR) that compiles comprehensive information about the individual bookings for a trip (for example, a flight on airline A; a car from company B; a hotel from chain C; a connecting flight on airline D);
- Mechanisms for corporate travel policy enforcement to encourage the use of preferred suppliers and permitted levels of service;
- Lowest-fare searches – though only, of course, for fares published in the GDS;

- Fulfillment, such as printing and delivery of airline tickets, invoicing and the collection of funds (important tasks, despite the growth in electronic ticket usage, although supplier policy may well reduce their role);
- Delivery of data from the PNR to an agency, so the agency can provide management information for a customer;
- A ***single channel*** for product distribution from a supplier to multiple travel agents (and, in some cases, to internet-connected travelers, as discussed below).

THE IMPACT OF THE INTERNET

The travel industry is trying to exploit the rapid growth of the internet. Many suppliers, travel agencies and GDSs have established web sites.

Regardless of whether they are aimed at corporate or leisure travelers, these web sites can be divided into three categories:

- GDS-wired,
- Supplier-direct,
- Hybrid.

GDS-wired web sites

GDS-wired web sites access fares, rates, schedules and availability of suppliers through a GDS. Some GDS-wired web sites are operated by a GDS; others by independent ventures. Both groups typically:

- Enable the customer to shop and purchase online, limited only by the content available ***within*** the GDS;
- Can only differentiate their web sites by creating novel user interfaces supplemented with non-inventory content (such as maps, destination information, weather reports), since the inventory content is consistent amongst ***all*** web sites wired to the GDS;
- Depend upon agency commissions, directly or indirectly, as a significant source of revenue;
- Generate GDS transactions which result in supplier-paid booking fees;
- As yet, obtain relatively small revenues from other sources, e.g. advertising.

Figure 6: GDS-wired web site.

Examples of GDS-wired web sites offered by GDSs in the U.S. are:

- SABRE BTS (corporate travel),
- SABRE Travelocity (leisure travel),
- WORLDSPAN Trip Manager (corporate travel).

Many non-GDS organizations have used the same architecture and a similar business model to serve particular market segments. Some examples are:

Corporate Travel	**Small Business**	**Leisure**
American Express AXI	Biztravel.com	Microsoft Expedia
Internet Travel Network	TheTrip.com	Preview Travel
XTRA On-Line		

A few of the above organizations (both GDS and non-GDS) have created 'private-label' sites for others – particularly for suppliers. Airlines, for example, have used this approach to supplement their own web sites.

Supplier-direct web sites

These branded sites are usually an extension of the supplier's existing telephone sales operation and share with that the advantages of intimacy with customers.

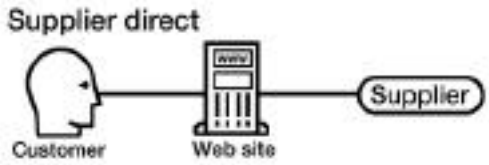

Figure 7: Supplier-direct web sites

While they all make it possible for customers to think they are booking travel directly, not all of them are directly linked to the supplier's own reservations system. Some are actually routed through a central switch or a GDS.

Supplier-direct web sites:

- Usually only represent a single supplier and its partners, requiring a customer to visit multiple web sites for most trips – which is complex, time-consuming and prone to errors;
- Are at odds with a customer's need for inter-related travel; adding links to other suppliers solves this problem, but detaches the other suppliers who no longer have a direct relationship with the customer;
- Are differentiated to encourage brand loyalty, mainly by their online frequent traveler program benefits and other marketing promotions;
- Cannot always satisfy the needs of even the most loyal traveler, when the product required is in a market the supplier does not serve;
- Are proving to be more cost effective than telephone reservations centers, illustrated by recent efforts to redirect traffic to the web site;
- Cannot provide mechanisms for corporate travel policy enforcement to encourage the use of preferred suppliers and permitted levels of service.

Hybrid web sites

Hybrid web sites combine a GDS connection with at least one direct connection to a supplier. They generally serve the corporate travel market where special negotiated rates may be conditional upon processing reservations via direct connections to suppliers. A GDS connection is used for other content.

Figure 8: Hybrid web site

One of the few active hybrids today is Andersen Consulting's ***via World Network***. However, other sites that are now purely GDS-wired are expected to add direct connections to certain suppliers and become hybrids. Hybrids may follow the GDS revenue model of charging suppliers transaction fees.

Most distribution is still through a single channel

The assumption underlying each GDS-wired and hybrid web site is that it is the only path needed to satisfy the traveler's requirements – with or without agency involvement. In part, this stems from the fact that travel is inter-related – the rental car needs to be picked up from the arrival airport, the traveler name is the same for both the flight and the car reservation, and so on. To manage this interrelationship, a GDS provides a PNR and a predefined path to suppliers.

Each site represents a ***single channel*** to the traveler, similar to the original proprietary online services such as America Online, CompuServe and Prodigy. Each of these offered centrally-managed content in a secure, controlled environment for its subscribers. Since a user would typically subscribe to just ***one*** service, there was no need for it to be easy to mix content between different online services.

Until recently, this was as unimportant for travel purchases as it was a few years ago for online services: each channel led to a GDS with broadly the same content and a predefined path to reach suppliers. With the proliferation of the internet and its supplier-direct sites, this now has severe implications.

Restriction to a single channel has created marketing challenges for travel suppliers:

- Unless a supplier is present on every site, its products may be left on the shelf. Large suppliers are usually present in every GDS and are therefore featured in all GDS-wired sites. But this is not always true. For example, one of the top 10 airlines in the United States is only available in one GDS and more than 50% of the world's hotels cannot be booked through ***any*** GDS.
- Brands are homogenized and service differentiation is more difficult***.*** The channel, not the supplier, defines the functions available to the customer – only the data comes from the supplier. This prevents a supplier from providing enhanced selling functions unless they are supported by the channel (and therefore inevitably by every other supplier). The result is commoditization of the supplier's data.

Travelers and travel agencies have also been challenged by current distribution channels:

- There is no easy way to use the rich content of the internet; the integration services that some web sites provide cover only a small sample of available travel content.
- Corporations trying to control travel budgets are limited by the prices available in a single channel. A corporation may have negotiated a hotel rate that is conditional upon the booking being made directly with the property, rather than through a GDS.
- Each travel agency location is encouraged to use a given GDS as the single channel. But across a travel agency chain, several GDSs may be used, causing problems with the integration of data between the channels.
- GDS search engines only search content published within the GDS. A GDS lowest fare search, for example, only covers fares published within the GDS. There may be better deals around, but unless they are published in the GDS, the search engine cannot find them.

The internet's potential has not been achieved

Penetration is minimal

Forrester Research reported that less than 1% of travel was sold through internet technology in 1997. Were it not for the substantial expenditure by suppliers to achieve this tiny market share, the failure to change the business model might be considered academic.

The business model is unchanged

Despite the promise, the internet has had very little effect on the underlying business model of travel distribution:

- Suppliers are still limited in their ability to differentiate their products.
- Suppliers continue to seek new ways to reduce their total cost of distribution.
- Customers still cannot mix, match and manage content between the proprietary online travel services.

The telephone remains the preferred channel

Despite the internet, most travelers still prefer to use the telephone. Some of this voice traffic may be automated by emerging voice recognition technology, but this will be very difficult with existing technology. Any comprehensive travel solution must take this into account.

Proprietary online travel services are exposed

GDS-wired and hybrid web sites are:

- Vulnerable to changes in the agency commission structure.
- Vulnerable to changes in the GDS fee structure; especially when the GDS is the exclusive source for inventory content.
- Of no value to suppliers which are not available in a GDS and are therefore of no value to their customers.

Supplier-direct web sites have potential

Suppliers are increasing the range of services available at their web sites. It is possible to link to the supplier's partners, view a frequent traveler account and even redeem frequent-flyer points for travel – useful services for travelers.

In terms of underlying innovation, these new services are probably more important to a supplier's business than product or price differentiation. But until there is an easy way to integrate a reservation made on a supplier-direct web site with products available from other web sites, they will mainly be used for ***looking*** rather than ***booking***.

For suppliers like car rental companies that get most of their leisure bookings by telephone, any move of these to a web site is welcome because the unit cost will be so much lower. Leisure travelers are, however, unlikely to move to the web unless they receive some benefit not available by phone.

The trade-off

Travel suppliers should be major beneficiaries of the internet. But travel is inter-related, unlike other popular internet commerce products. This leaves the customer to debate the trade-off between their loyalty to their favorite suppliers and the convenience of one-stop shopping.

Enter OpenTravel, an initiative to develop a standard for moving trip-centric information through multiple channels.

The OpenTravel Initiative seeks to create an industry-wide information standard, to be known as OpenTravel, that will allow suppliers, intermediaries and customers to fully exploit tomorrow's almost universal access to the internet.

The travel industry has relied on global electronic distribution for decades, but it has done this by developing several incompatible information standards. Because communicating information is an essential part of travel-based transactions, the absence of a common standard has fostered distribution through single channels. More recently the industry has tried to exploit the internet, but it cannot fully benefit from the economic potential of this emerging medium without a universally understood way to exchange information.

A multi-channel travel industry

OpenTravel facilitates multi-channel distribution. Unlike single channels, multiple channels provide unlimited opportunities to create unique offers for trip-centric markets and customers.

Conventional retailing provides an example of how an industry uses multiple channels to reach each customer. The retail industry employs many different strategies for serving customer needs, including:

- Full service department stores
- Category-killer stores
- Discount warehouses
- Specialty boutiques
- Convenience stores
- Mail-order companies
- Virtual stores.

Each of these channels offers a different mix of product, service, price, and convenience. Because retailers operate within a multi-channel infrastructure, they are constantly innovating to develop new channels for customers. Successful ventures provide tremendous opportunities for tapping new markets and generating revenues.

While travel suppliers now can come together in a single channel, implementing these interconnections is generally time-consuming and expensive. With a multi-channel infrastructure, all parties gain by having cost-effective access to each other.

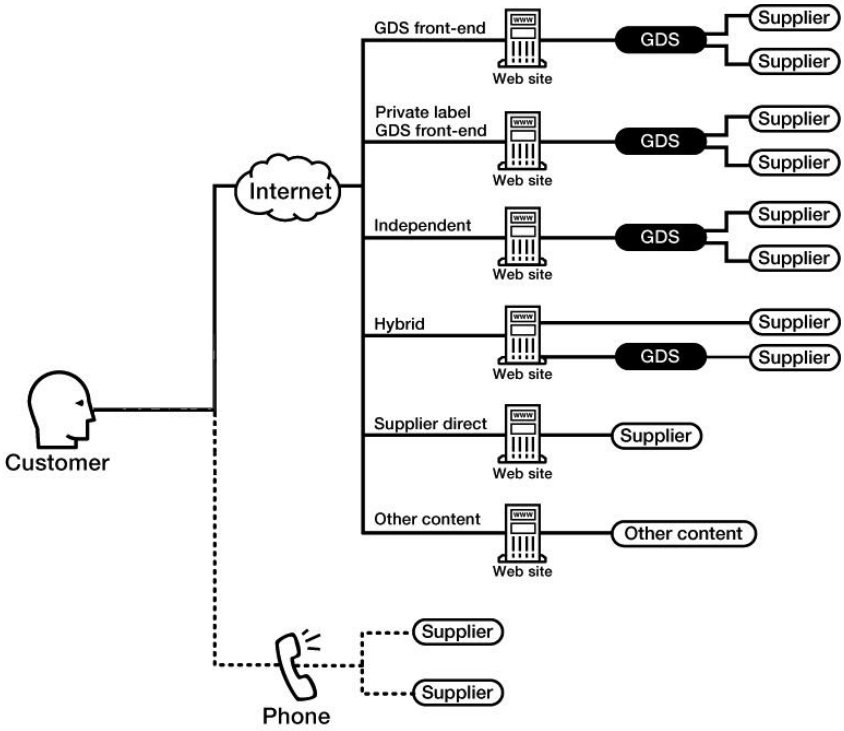

Figure 9: True internet-based multi-channel travel distribution allows the traveler access to ***all*** of the internet's content, seamlessly mixing and matching products from different web sites.

Whereas the single channel makes it difficult to differentiate travel based on products or customers, multi-channel distribution embracing the internet creates a natural environment for such competitive strategies. Further, multiple channels allow the industry to adapt its selling practices as customer needs and market conditions change over time.

Existing industry standards

Multi-channel travel requires ubiquitous exchange of data between different parties. Unfortunately, existing standards were designed before the internet began to change the way information is moved from point to point.

Pre-internet standards

The current approach to standards evolved at a time when mainframe computing dominated the travel industry and developing new applications was a particularly laborious and costly process. Cheap, flexible applications with updateable message sets and ubiquitous connectivity had yet to evolve.

The limitations of existing message standards are understandable given the circumstances under which they were created. Standards developers were required to anticipate business requirements years into the future. This was an impossible task even under the best of circumstances, made even more difficult by the necessarily slow-moving standards committee machinery in days before the internet.

Because the travel industry follows multiple standards, most suppliers cannot easily exchange information even when they share common business needs and interests. Even when standards are similar, subtle differences in the way requests are formed or common data elements are defined create immense obstacles to communication.

Traditional programming can bridge incompatible standards, but these efforts are time-consuming, complex, and expensive. And the larger issue of relying on difficult-to-update message sets remains.

Messages in most systems are fixed in format

Current standards rely on fixed messages that limit the ability of suppliers to exchange information electronically. Individual, locally-defined standards, such as those used by each of the GDSs, generally represent the underlying data differently. Even the structure and usage of the Passenger Name Record (the way names, dates, and numbers are handled) varies between GDSs.

Where a rule-making body has been active, current standards generally only apply to a particular segment of the travel industry. Standards from different groups are not necessarily expected to work together and may have been put in place so early that they conflict with the rapidly-evolving cross-industry family of TCP/IP, HTTP, HTML, XML, etc.

Most existing travel industry standards, including use of the more-general United Nations rules for Electronic Data Interchange For Administration, Commerce, and Transport (UN/EDIFACT), define a number of fixed-format messages for communicating trip-centric information.

Messages and elements

Messages formulated under existing standards are constructed from sets of data elements. A message requesting flight availability might include the following elements:

- Departure airport
- Arrival airport
- Departure date
- Departure time

If a supplier sends this message, a reply message provides appropriate information. While this communication strategy provides predictable results, it is inflexible.

Current standards list all the messages that are available (flight availability request, flight availability response, and so on) as well as the elements contained in each message. The elements are comparable to words within a sentence, but these ***words*** are locked in position. They cannot easily be rearranged to create new messages. This means, for example, that adding ***On time performance*** as a qualifier in a flight availability request message would require industry-wide effort, reducing the feasibility of using it as a competitive sales differentiator.

A different approach

The standard envisioned by the OpenTravel Initiative is not constrained by the trade-offs required when computer communications and processing were costly. The standard represents a different approach to exchanging data messages and elements. At its simplest, this approach – called tagging – provides each data element (or ***tag***) with a unique identity.

Because of industry fragmentation, little travel terminology is standard throughout the industry (a simple example is ***departure date*** vs. ***pickup date***). OpenTravel addresses this problem by providing a vocabulary and grammar for communicating travel-related information as tags across all travel industry segments. In addition to defining the meaning of tags, it also suggests ways in which tags may be assembled to form messages – without restricting how this is done.

Tags developed according to the common standard would offer many benefits, by being:

- Simple - Any word or phrase can be a tag so long as the meaning is clear. For example, <APPLE> could serve as a tag as long as its meaning was meant to convey a piece of fruit.
- Flexible - Data with existing tags can be used to create new messages. This means existing tags can be combined in new ways to reflect changing market conditions or objectives.
- Intuitive - Any tag can be defined in plain language so it is easy to understand. For example, <CABLE TV> could serve as a tag. A coded terminology also could be used but is not required.
- Updateable - New tags can be added as industry needs change. For example, the standard would accommodate any new tags required to support a high-speed rail network using magnetic levitation.

The standard for a multi-channel world

Industry standards are sometimes criticized for being long in gestation, inflexible and backward-looking. These are legitimate concerns, and the OpenTravel Initiative must avoid them. The OpenTravel standard – as defined by supporters of the Initiative – will provide a process for creating, changing, removing, and publishing the industry's vocabulary of tags, probably using the style and process so successfully pioneered by the World-Wide Web Consortium (W3C). This approach offers many advantages, including:

- Rapid development and implementation - OpenTravel guidelines and policies can be modeled after efforts already underway for other industries. While the industry has to accommodate its own unique needs, this groundwork will serve to expedite the development of the new standard.
- Flexibility that allows the standard to evolve - The technology likely to underpin OpenTravel is well suited for change, so the standard can keep pace as the industry evolves. Updates to the standard will not adversely affect existing channels. In fact, OpenTravel updates will create opportunities for new travel offers and higher levels of service.
- Easy deployment - Because the OpenTravel standard will probably be managed on the internet, updates to the industry's vocabulary will be universal and nearly instantaneous.
- New internet-based applications and tools - OpenTravel will spur development of new categories of application software. This investment will enable online travel distribution to grow rapidly beyond the present market penetration of only 1%.

With implementation of the OpenTravel standard, exchanging trip-centric information for corporate or individual use will become simple. As multiple channels replace single channels, the travel market will become more efficient and dynamic.

The OpenTravel Initiative seeks to produce a standard. The internet technology that will most likely make the standard a reality is the XML (eXtensible Markup Language) meta-language. (This issue must be further investigated by the working group of industry decision-makers to be formed under the OpenTravel Initiative.)

XML is similar to a programming language and was created under W3C auspices. It represents a common framework for creating internet-compatible messages. As XML becomes widely adopted, it will be used to create customized markup vocabularies for many industries, for use both on the internet and elsewhere.

XML and the internet

XML is derived from SGML (Standard Generalized Markup Language) and related to HTML (Hypertext Markup Language).

XML is part of a growing family of specifications that include Extensible Linking Language (XLL), Extensible Style Language (XSL), Metadata Interchange Format (XMI), and XML-Data. (XMI and XML-Data are currently under review by W3C). Although some of these specifications are only in an early state, they are proving valuable ways of publishing information.

- XML creates unique elements and structures data;
- XSL defines the presentation of XML documents; that is, how documents look in a browser, etc.;
- XLL defines the links between XML documents; unlike HTML hypertext links, XLL establishes robust bi-directional connections;
- XMI provides a standardized method of sharing data stored in databases or streamed across the internet;
- XML-Data allows a XML document to carry a complete data schema that describes the characteristics of the document elements; for example, XML-Data controls whether ***12 June*** is handled as a date or just a string of characters.

When the XML family of standards is completed, it will be a very powerful tool for reshaping the way information is transmitted and presented. Other industries are already benefiting from XML; the OpenTravel Initiative seeks to capture the benefits of XML for the travel industry. (As noted above, the use of XML is not a foregone conclusion, but there is currently no other candidate for the task.)

OpenTravel and an XML namespace

XML appears likely to replace HTML as the standard for publishing information on the internet. When it is put into widespread use, many different customized markup vocabularies will evolve, for many industries. Each customized markup vocabulary will be represented by a ***namespace***, with XML providing the syntax for that vocabulary.

As part of the OpenTravel Initiative, the working group would need to define a travel industry namespace. Other industries (such as automotive manufacturing and healthcare) are already developing namespaces.

Each namespace is unique and contains data tags, as discussed earlier in this document. A travel namespace, perhaps called OpenTravel, would represent a vocabulary of tags for the travel industry. Each tag in the OpenTravel namespace would have an explicit name (for example, <Departure airport>). Some tags might be mandatory and some perhaps optional (for example, <Departure airport code>).

```
<customer-details>
        <name>Xou Technologies</name>
        <address>
                <street>1000 Mansell Exchange West, Suite 250</street>
                <city>Alpharetta</city>
                <state>Georgia</state>
                <zip>30022</zip>
        </address>
</customer-details>
<journey>
        <departure airport>Atlanta</departure airport>
        <departure airport code>ATL</departure airport code>
        <arrival airport>Chicago O'Hare</arrival airport>
        <arrival airport code>ORD</arrival airport code>
</journey>
```

Figure 10. OpenTravel uses matching start and end tags, such as <departure airport> and </departure airport> to mark up information. Its simple syntax is easy to process by machine while remaining understandable to people.

XML tags defined according to the travel industry's standard will be associated only with the OpenTravel namespace.

The use of clearly interpretable tags in a standard manner will also make it much easier for search engines to locate information. With today's HTML-based web pages, someone searching for "flights" will get a list with thousands of matches. In addition to airline flights, most HTML search engines will locate flight instructors,

flight dispatchers, flight training, and even flights of angels, stairs and fancy (a stupid, mechanized train of thought that hardly leads to the transport of delight which is what the searcher was seeking).

With XML-based web pages, a person will be able to create a multi-channel search for a planned trip between Europe and the United States. The search criteria can include all the requirements for the flight (departure and arrival time and place, cost, class, and so on). An XML-based client application could actually select the appropriate flights and complete a comparative analysis before displaying the search results. This ability to identify data precisely represents a significant advantage for XML over HTML and has dramatic implications for the travel industry.

Enhancing OpenTravel

Competitive issues and technological innovation are enabling most industries to evolve at a fast pace. The travel industry, with its reliance on single-channel distribution and incompatible standards for communicating information, is not well positioned to take advantage of these opportunities, which are therefore regarded as problems.

The appropriate solution may be an internet-based technology that is inherently easy to update and deploy, such as XML. Through provisions in the industry standard, the industry namespace of vocabulary tags could be updated as circumstances require. For example, some hotels are offering in-room internet access. To describe this, a new tag, e.g. <IN-ROOM INTERNET ACCESS> must be added to the OpenTravel namespace. Note that such clarity need no longer be considered impossibly verbose, because the improved technical infrastructure can handle it – removing the constraint which was responsible for the telegram-like style that still pervades the travel industry.

The approach envisioned allows organizations to retain the option of implementing new tags between updates by placing them in their own private namespaces. These private namespaces can allow restricted bilateral use until an equivalent tag is included in the public namespace. Further, there is no reason why one organization should not use the tag proposed by another. If the elements that are tagged are at a sufficiently low level, it will be possible to translate the tags and their data on a one-to-one basis – but if the tag is intelligible, why bother to invent a new one? The W3C-type style of the OpenTravel Initiative makes this kind of expansion easy, so things will happen fast.

Regardless of whether tags are in public or private namespaces, only those organizations requiring the tags need use them. An airline need have no knowledge of the <IN-ROOM INTERNET ACCESS> tag. This is important as it means that new tags can be added quickly and need be supported only where it makes competitive sense.

SUMMARY

OpenTravel must be industry defined

Distribution through multiple channels offers significant benefits. The real question is, “Who will define the standard that drives this process?” As explained above, it matters little who defines the standard or exactly what it looks like: it only matters that travel gets a well-defined XML namespace, soon.

An XML namespace could be defined by a single company, an industry segment, or even industry outsiders. These options do not seem in the best interest of the industry as a whole, so it is suggested that the industry and its existing bodies – particularly including ACRISS, ACTE, AH&MA, ATA, HEDNA, HITIS, IATA, and NBTA – should collectively contribute towards the standard. Only the industry’s main participants possess the skills to create a broad standard that addresses the complex needs of trip-centric travel – but coordination is needed.

Who will create OpenTravel?

Organizations that already represent the industry, along with key suppliers from all travel segments, should take ownership of OpenTravel. A steering committee should be formed to establish working groups, outline a development process, and coordinate resources and information.

As an initial objective, the committee’s working groups should define tags and elementary compound tag structures to convey the information requirements of trip-centric travel. (Preliminary work by Xou Technologies will be made available to facilitate this process.) After a period of review and comment, the committee could publish OpenTravel 1.0.

Many organizations contributed to the development of the concepts discussed in this White Paper. One of them, Lanyon, had the foresight to recognize the need for something like OpenTravel and register the name OpenTravel as a ‘placeholder’. Lanyon has stated that it will cede all rights to this name to whatever body emerges as responsible for the standard should that body want to use the name for this purpose. It is hoped that others in the industry will likewise contribute resources to help the initiative achieve its objectives rapidly.

Conclusion and recommended action

An OpenTravel namespace can serve as a universal language for travel-related terminology and a mechanism for promoting the seamless exchange of information across all travel industry segments. If implemented, it can remove the barriers of single-channel distribution while:

- Embracing the common carrier provided by TCP/IP on the internet and elsewhere;
- Including UN and proprietary Electronic Data Interchange (EDI) travel message sets;
- Extending to new uses as needed.

OpenTravel, XML, and the internet provide an opportunity for the travel industry to become truly multi-channel. Senior management responsible for product distribution are invited to lead this change by offering their organization's support for and involvement in the OpenTravel Initiative.