

# Trends in Travel Agency Point-of-Sale Technology

Sponsored by:



By Norman L. Rose



**Author: Norman L. Rose**

**Editor: Colie Hoffman**

**Norman L. Rose**  
**Senior Corporate and Technology Analyst**  
**PhoCusWright, Inc.**

Mr. Rose is a 26-year travel industry veteran with an extensive background in both the corporate and leisure travel markets. As an analyst and consultant for the past 13 years, Norm's focus has been on emerging technologies and how they impact business practices in the travel industry. From 1982-1988, he held sales and marketing management positions at United Airlines and from 1989 to 1995, Norm was corporate travel manager for Sun Microsystems. At Sun, he worked with a number of third-party developers creating client/server software for the business travel market. This included early prototypes of self-booking tools and expense management systems. In September 1995, Norm founded Travel Tech Consulting, a firm that specializes in developing e-commerce and procurement strategies for travel and technology companies. Norm has been an analyst with PhoCusWright since 1999 and is the author of numerous publications and articles including Corporate Travel Technologies: Today and Tomorrow (September 2007) and Selling Complex Leisure Travel Online: Focus on Dynamic Packaging Technology (December 2004).

**Philip C. Wolf**

President and CEO

**Carol Hutzelman**

Senior Vice President

**Christine Lent**

Vice President, Finance  
and Administration

**Bruce Rosard**

Vice President, Sales  
and Marketing

**Lorraine Sileo**

Vice President, Research

All PhoCusWright Inc. publications are protected by copyright. It is illegal under U.S. federal law (17USC101 et seq.) to copy, fax or electronically distribute copyrighted material beyond the parameters of the License or outside of your organization without explicit permission.

## Table of Contents

Contents		List of Figures	
<b>Description</b>	<b>4</b>	<b>Figure 1</b>	<b>7</b>
		The Evolution of Travel Agent Point-of-Sale	
<b>Executive Summary</b>	<b>5</b>		
<b>Introduction</b>	<b>6</b>	<b>Figure 2</b>	<b>8</b>
		Standardisation vs. Customisation	
<b>The Evolution of the Travel Agent Point-of-Sale</b>	<b>7</b>		
<b>Non-GDS Content</b>	<b>9</b>	<b>Figure 3</b>	<b>10</b>
		Factors to Consider when Integrating Content	
<b>POS – The Key to Integrating Multiple Services in a Single Place</b>	<b>12</b>	<b>Figure 4</b>	<b>13</b>
		Balancing Efficiency with Customer Service	
<b>Internal Development</b>	<b>15</b>		
<b>Challenges in Third-Party Solutions</b>	<b>17</b>	<b>Figure 5</b>	<b>19</b>
		A Guide for Comparing Internal Development, Third-Party Tools and GDS Tools	
<b>Summary</b>	<b>18</b>		
<b>Glossary of Terms</b>	<b>20</b>		

## Description

Point-of-sale (POS) technology is an important part of a modern travel agency's automation strategy. As the online market evolves, travel management companies (TMCs) need to integrate Web and GDS content together in a seamless environment. The need to drive agency productivity and control point-of-sale errors is equally important as multi-source integration. This paper reviews trends in agency POS technology, comparing internal development, third-party tools and global distribution system (GDS) POS solutions. It also provides a clear set of recommendations on how large TMCs should approach a POS re-engineering effort.

## Executive Summary

### **The role of agent POS technology**

The call centre interface plays a critical role in driving efficiency and standards across agency locations. TMCs need to both drive standardisation across global locations and customise the interface to meet corporate clients' specific requirements.

### **Managing Web content**

The reality of today's Web environment is that some inventory or ancillary content will continue to exist outside the standard GDS platform. Therefore, extraction tools must be constantly maintained and updated to reflect changes in the Web site structure. Integrating Web content with standard GDS inventory must be seamless and provide corporate customers with a single integrated itinerary.

### **Optimizing agent workflow**

The POS solution must optimise agent workflow while ensuring that all required information is entered into the PNR. It should also provide standardisation and customisation of the agent POS and optimise customer service.

### **Up-front and ongoing costs**

Internal development can be very costly and result in a solution that does not fully integrate with core GDS functionality. In particular, the cost of maintenance and enhancements can quickly sour return on investment of an internally developed solution.

### **The value of GDS tools**

There is a reason why over 83% of worldwide travel agents use the GDS. For years, GDS companies have focused on building the most efficient, productive distribution platform available to travel agents.

These tools have (and continue to) evolve, addressing new business needs and emerging technology trends (e.g., rich media, social networking, flexible integration standards, unbundled services, telephone/email POS interaction, etc.).

### **Integration with point-of-sale extensions**

With a vast number of travellers expecting seamless service across platforms (e.g., mobile, online/offline symmetry), it is imperative that the point-of-sale integrate with multiple touch points.

### **Flexibility of platform for all types of users**

The point-of-sale solution must be able to accommodate new agents as well as experienced agents who productively utilize the native GDS formats.

### **Creating a cost-benefit analysis of POS options**

TMCs must do a thorough cost-benefit analysis when considering internally developed or third-party tools to ensure the investment matches the end results; the travel landscape is littered with the remains of unsuccessful attempts to develop POS applications internally and failed third-party solutions. GDS tools provide the best environment for the customisation and standardisation that ensure record accuracy and optimum customer service.

## Introduction

Despite the trend towards self-booking, TMC call centre agents still handle the majority of travel reservations on a global basis. With the growth of low-cost carriers (LCCs) and unique Web content, travel agents must access multiple sources of inventory. Agent productivity continues to be a top priority for TMCs, particularly with the downward pressure on service fees. Should TMCs develop their own POS solutions to meet this multi-source challenge? Are third-party solutions the answer? What do the GDSs offer to handle this new environment? This white paper will address current trends in point-of-sale technology and review various options available for TMCs.

## The Evolution of the Travel Agent Point-of-Sale

### The Evolution of Travel Agent Point-of-Sale



Figure 1

The GDSs were built in the late 1960s, when broadband as we know it today did not exist. As a result, a special operating system was developed by IBM for the GDS, which broke the transaction into small bits to accommodate this narrow bandwidth. The interface to these systems required knowledge of specific, native GDS formats, and a corporate travel agent's performance often was measured by his speed and knowledge of native GDS commands. This presented a challenge for agency management, who needed to balance agent productivity with customer service needs. Scripting soon emerged as an important productivity tool by combining multiple commands into single entries. With the growth of the Web in the late 1990s, GDSs changed their network infrastructure from dedicated leased telephone lines to Internet-based protocols. This change created a more open platform, allowing agents to access the Web as well as native GDS formats.

The growth of the Internet also presented a new challenge as suppliers began to use the Web for more direct distribution. Fragmentation of supplier content, partially due to the growth of LCCs, required travel agents to efficiently shop, book, and service content from both the GDS and Web sources. However, a harmonious marriage between two fundamentally distinct content sources requires more than just a universal desktop application that displays content from both sources in one graphical screen.

#### Third-party desktop tools

During the 1990s and early 2000s, a number of third-party tools were introduced to provide an alternative point-of-sale for

the corporate travel agent. Independent software providers found the market for travel agent POS tools to be both a great opportunity and a tremendous challenge. In some cases, these software providers even had the backing of mega-TMCs. But with the mergers and acquisitions that occurred in the late 1990s and early 2000s, some providers lost their original TMC sponsors, derailing their efforts and preventing successful implementation. As native GDS formats changed, third-party solutions found it challenging to keep up with these modifications.

For one thing, agents trained in (and accustomed to using) GDS native formats were more productive in these older formats than when using the new graphical user interfaces (GUIs), which were unfamiliar. As Web content sources changed or emerged, these third-party tools could not keep up with the rate of change or provide the comparable response times and system stability that agents had come to expect from the GDS-provided points-of-sale. Some of the larger TMCs developed their own POS tools, but these internal projects were costly, often requiring millions of dollars of investment and implementation cycles that took years to deploy.

As a result, by the time the new platforms were completed, the pace of technological change often made them obsolete. For example, a Microsoft Windows front-end was developed by one major TMC and by the time the application was completed, the technology had already shifted: Web-based front-ends had become the preferred development platform for enterprise applications, and this TMC was behind the times.

### The emergence of GDS POS tools

To respond to this changing market, GDS tools emerged that took advantage of the new Internet-based backbone by allowing customisable platforms that used both native GDS formats and a GUI interface. During the renegotiations of airline agreements, the GDSs successfully persuaded mainstream airlines to provide full inventory in their systems. As a result, despite lots of media hype around global distribution new entrants that reached a fever pitch back in 2005, today in 2009, traditional GDSs have retained the lion's share of travel transactions.

### Striking a balance between standardisation and customisation

The ongoing challenge to balance customisation and standardisation remains. Standardization is an important need in today's global competitive environment – multinational companies require consistent deployment of global policies.

With the GDS passenger name record (PNR) still at the centre of the travel reservation process, TMCs must control the POS to ensure that all required fields are contained in the PNR regardless of where in the world the reservation was booked. Customisation is also important, as different corporations or regions of the world often require different booking flows (see Figure 2).

## Standardisation vs. Customisation

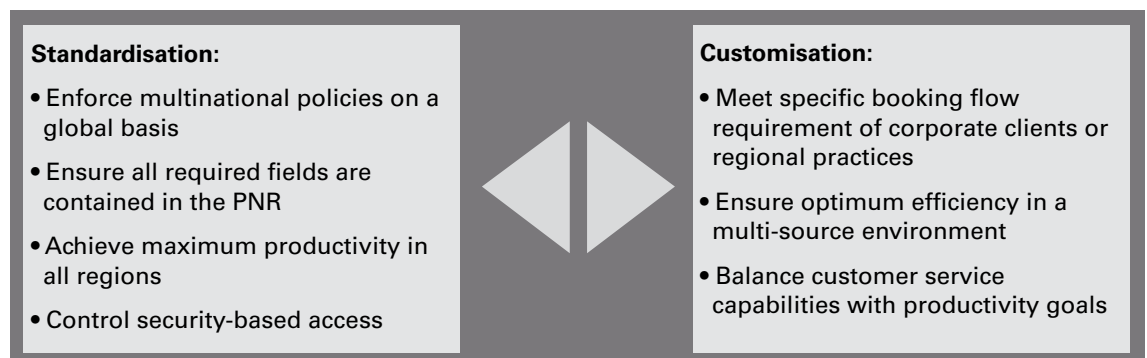


Figure 2



## Non-GDS Content

By its very nature, the Internet is an open environment. As a result, there is potentially an endless amount of Web-based travel content, and business travel may have specific requirements depending on the journey. For example, alternate travel options such as rail or ferry services are common modes of transportation for business travel in specific global regions, and ancillary services such as limousine or shuttle transfers can be common parts of the business travel process. The key decision is determining what Web content is critical, and how the point-of-sale best supports the integration of such data. The pursuit of a ground-up universal desktop is an expensive and most often fruitless avocation. In general, it often makes more sense to pursue solutions like Sabre NetCheck®, where Web content is brought in when required and is integrated into the GDS core. More importantly, these tools provide the benefit of making the booking in the GDS whenever possible, thus helping to preserve the agency's efficiency, incentives and customer service.

### **Integrating non-GDS content into a GDS environment**

There are three main points of integration to consider when bringing non-GDS content into the GDS environment: GDS point-of-sale integration (e.g., GDS native screen interaction), post-booking integration (e.g., via automated quality control mechanisms) and enterprise content integration (e.g., through a TMC or GDS content gateway). Integration at any of the above points (POS, post-booking, enterprise content gateway) usually boils down to a critical and common-sense trade-off decision that must be understood at the outset. The table below illustrates the challenges and compromises to consider when evaluating the level of integration to pursue with non-GDS content:

## Factors to Consider when Integrating Content

<b>Degree of Integration Need</b>	Integration of a small number (1-2) non-GDS content sources, or a small amount (3-5) TMC / Corporation specific processes	Integration of repeatable content or process checks (e.g. low fare SLA compliance checks, QC checks, etc.)	Integration of critical non-GDS content from multiple suppliers, integrated within agent workflow and seamless with overall TMC operations
<b>Deployment Scope</b>	Deployed to a few number of agency locations desktops in one geographic location	Deployed to multiple locations, multiple regions in a few geographic locations	Deployed to numerous agent desktops, possibly across multiple geographic locations
<b>Cost, Time and Skills Consideration</b>	<p>Low up-front cost, fast time to market (1-2 months)</p> <p>Low required proficiency of developers</p> <p>Mainly a tactical investment. Low willingness to continually invest for maintenance and enhancements</p>	<p>Medium up-front cost, quick time to market (2-3 months)</p> <p>Medium level of proficiency required by developers</p> <p>Continual investments are acceptable for quick to market enhancements only</p> <p>Tactical or strategic investment</p>	<p>Robust solution with longer time to market (3-9 months)</p> <p>High proficiency developers required</p> <p>Continual investments are viewed as strategic</p>
<b>Best Point of Integration</b>	<p><b>Integration at the Point-of-Sale</b> For Content - Integrate at the POS. (e.g. FareWatcher alerts for non-GDS content from 1 or 2 suppliers)</p> <p>For Processes - Use scripts or point-of-sale APIs</p>	<p><b>Integration Post-Booking</b> Integration of this type is best accomplished through centralized automation that applies repeatable processes with minimal human intervention</p>	<p><b>Enterprise Content Gateway</b> Through a GDS or TMC developed enterprise content gateway (e.g. Sabre NetCheck uses Sabre Web Services via a content gateway from over 80 non-GDS suppliers directly to agent desktops across the globe)</p>
<b>Other Considerations</b>	<ul style="list-style-type: none"> <li>• Bandwidth</li> <li>• Desktop hardware requirements</li> <li>• Browser compatibility</li> <li>• Firewall issues</li> <li>• Deploying the solution to all desktops</li> <li>• Security</li> <li>• Maintenance and enhancements</li> </ul>	<ul style="list-style-type: none"> <li>• Testing of QC / Mid-office tool to ensure all scenarios are covered</li> <li>• Exception handling often requires some agent re-touch of PNRs</li> <li>• Easy to enhance</li> </ul>	<p>Global security and deployment</p> <p>Customer service and support for non-GDS bookings</p>

Figure 3

As with any technology investment, this decision essentially involves a trade-off between speed, quality, and cost.

### **Integration at the POS**

Comparatively, integration at the point-of-sale has a faster time to market, is not seamless and has a cheaper up-front cost, but it requires more investment in ongoing support and maintenance.

### **Integration post-booking**

Post-booking integration is slower to get to market and more seamless. It is not as cheap as POS integration, as it typically involves transactional third-party costs.

### **Enterprise content gateways**

This kind of integration increases the time to market, but it is the most seamless. It is also expensive – a strategic investment with high up-front and operational costs, best delivered by global travel technology companies capable of handling complex projects.

### **Additional considerations when integrating Web content at the POS**

Another important consideration for the multi-source environment is the consistent enforcement of a company's travel policy. This is particularly important during economic downturns, when corporations seek to reduce travel expenses. For example, during difficult economic times, many companies shift from business class to economy for international travel.

Companies may opt for nonrefundable rather than higher, unrestricted fares. These policy changes must be uniformly enforced at all global locations.

Of equal importance is data quality. The GDS PNR contains specific fields that correspond to departmental expense allocation. In addition, certain corporate clients may require specific UDIDs (User Definable Interface Data), lines in the PNR that contain specific pieces of information used for reporting purposes. Despite the hype about the need for a "super PNR" that exists outside the GDS, the reality of today's marketplace is that the GDS PNR is still the foundation for the majority of travel reservations. As a result, TMCs must integrate Web content with the GDS platform to maintain control of the reservation while capturing all elements of the business trip. To accomplish this, the POS solution must contain a business rules layer to control access to non-GDS content. Even in an ideal environment, most non-GDS content requires the traveller (or travel arranger) to manage support services if the reservation is booked directly on the Web. For example, an LCC booking would require the traveller to contact the airline for changes after ticketing.

These processes (integration, rule enforcement, and reporting) become infinitely more complex in proportion to the number of Web content sources integrated with the desktop.

## POS – The Key to Integrating Multiple Services in a Single Place

It is critical that the agent point-of-sale interface contain essential information about the trip for a variety of reasons. These include:

- **Trip notification and schedule changes**

Airlines frequently change schedules and flight numbers. To ensure that the record is accurate, the POS must interact with these updates to reflect changes.

- **CRM and travel advisories**

To meet frequent travellers' expectations, customer preferences must be applied to all elements of the reservation. Travel advisories about specific destinations have to be applied to all elements of the traveller's itinerary as well.

- **Itinerary aggregation**

Business travellers expect all components of their itinerary to be available in a single place, and agency POS tools must be able to capture all reservation information.

- **Invoicing**

For proper billing purposes, the invoice must reflect all elements of the business travel itinerary.

- **Capturing accurate data for corporate reporting**

Inaccurate and incomplete information in corporate reporting can often be traced directly to agent input errors. The travel agent's POS platform must prevent these errors from occurring so they are not ultimately reflected in corporate reporting.

- **Comparing all supplier options**

One of the most important elements of any travel agent POS platform is the ability to aggregate and offer all supplier options to the business traveller. This is at the heart of the need for a multi-source platform, and is particularly relevant now that transparent pricing is the norm in today's Web environment. Travel options should also take into account agency-preferred suppliers, corporate travel policies and/or traveller preferences during the shopping process through business intelligence embedded within the point-of-sale.

- **Tracking unused tickets**

Residual value often remains when tickets are refunded or exchanged. Tracking unused tickets and applying credit against new itineraries is an important feature needed in an agency POS solution. When using the residual value of the ticket, the POS system must accommodate all rules and be in compliance with local BSP processes.

- **Agent productivity**

At the heart of any POS solution is the impact on agent productivity. Three major areas need to be considered:

- **Training issues of unique GUIs**

Any new interface requires training, and if the GUI is unique to the TMC, the cost of training is a major factor to consider. Third-party or internally developed POS applications often require unique training as well.

- **Accommodating older agents trained on native GDS**

Traditional agents who have mastered native GDS formats often are far more productive than agents using a GUI. Any POS solution must accommodate these agents by blending native GDS capabilities with multi-source content.

- **GDS customisation available at agent's POS**

Scripting has become a standard process for the majority of travel management firms. If the TMC is considering an internally developed or third-party solution, the value of existing scripts may be lost.

Overall, the goal of any POS implementation is to balance agent efficiency with customer service (see Figure 4).

### Workflow integration

- **Quality control (QC) at the point-of-sale**

A major trend in quality control systems is the ability to manage errors that happen at the agent POS. QC systems are generally provided by either third parties or the GDS. As a result, a TMC's ability to implement a standard QC system at the POS may be impacted if the POS environment is internally developed or provided by a third party.

- **Adapting workflow to maximise agent's roles**

TMC productivity is often improved by designating specific agents for specific tasks. Any POS solution must enable the efficient management of tasks based on an agent's skill set or specific corporate account requirements.

## Balancing Efficiency with Customer Service

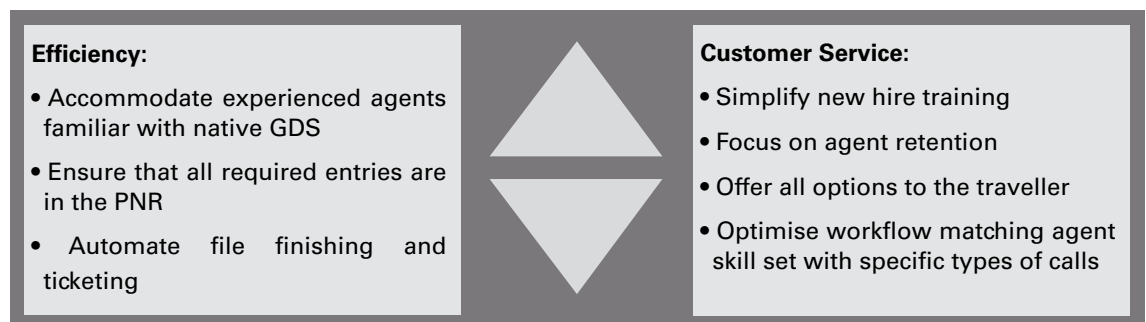


Figure 4

- **Symmetry with online reservations**

With the growth of corporate booking tools (CBTs), TMCs must balance online and call centre operational efficiency. CBTs and agent POS solutions must provide consistent service:

- **Adapting to the hybrid reservation environment (booked online and supported offline)**

Business travel often involves frequent changes to the reservation, sometimes resulting in a hybrid reservation that was begun online but then completed by a call centre agent. The same set of procedures needs to be implemented at all customer reservation touch points to ensure proper policy compliance and PNR quality control.

- **Ensuring consistency in PNR quality**

No matter where the reservation begins, TMCs must ensure that the PNR is complete and conforms to the corporate client's specific processes.

- **Ensuring corporate compliance**

All reservations, whether self-booked or through an agent call centre, must comply with the corporate client's travel policy.

- **Delivering superior customer service**

At the end of the day, corporate travel is still about delivering superior customer service. Ineffective POS tools that disrupt the optimum agent workflow may result in lower productivity and less satisfied customers.

## Internal Development

### **The Challenge of Developing a POS Using Internal Resources**

Should POS applications be developed internally? Though this option may be appealing, few if any TMCs have competence in software development. Before embarking upon an internal development effort, these issues need to be considered:

- **The cost of internal development**

Software development is a costly process. Beyond the obvious cost of maintaining the necessary IT staff, there are significant costs for deployment, support and maintenance. Travel management is essentially a service, not an IT, industry.

And while internal IT staffs are important, burdening them with custom development can tap resources needed for support of existing tools and is beyond the scope of most TMCs' core business.

- **Managing changes in underlying GDS formats and technologies**

GDSs are in a constant state of enhancement. Any POS development must interact with the underlying native commands of the GDS. If not monitored closely, the internally developed application may fail when an underlying GDS command is altered.

Since the agent POS is a mission-critical application, internally developed solutions are subject to crashes and inaccuracies, which could cause significant damage to agency operations and client relationships.

- **Managing changes in overall technology**

Internally developed solutions must keep up with changes in overall technology development. For example, the Web 2.0 phenomenon that brought new interactive capabilities to the Web using technologies such as Ajax. In addition, with the advent of rich client platforms, companies like Sabre are making significant investments to enable flexibilities in the POS never before possible until today (e.g., user-defined deployment options, release management schedules, previous version support levels, desktop personalization, third-party application integration, etc.).

- **Integrating non-GDS content can be a daunting task**

Extracting Web content is also a risky endeavour. Most applications use screen scraping techniques to do so. At a very basic level, screen scraping is the least reliable and slowest-performing automated content aggregation mechanism in the industry. When the Web site in question changes, these screen scraping tools often break down. Maintaining Web extraction tools is a full-time effort and if the component being extracted is a critical part of the reservation, the POS application may produce errors, causing inefficiency and customer service problems. Additionally, response times in excess of 20 seconds drive up shopping and booking times. These problems can be overcome through the implementation of sophisticated data-streaming techniques, but they require increased investment and maintenance.

While shopping and booking appears to be the primary integration focus for Web content, this is only the beginning of the integration challenge. Web content sources do not easily support all of the functions that TMCs provide and travellers expect, such as customer service for Web/LCC content related to LCC cancellations, baggage transfers, or modifying ancillary services. These challenges go well beyond the scope of a point-of-sale application as they are part of the airline's distribution and alliance marketing strategy. The end result: a continuing downward spiral of costs for TMCs and corporations.

#### **Internal resources needed**

Internal development requires programmers whose skill set may not include an understanding of agent requirements. There is a difference between general programming knowledge and subject matter expertise as it relates to the travel reservation process. Without proper requirements gathering, internally developed POS software development may not meet the overall agency objectives for efficiency and customer service.

- **Reaching consensus on user interface (UI) design is a constant battle**

Reaching consensus on the UI design is not only difficult, but often results in an inferior product, as developers often embrace the least common denominator – rather than the best solution – just to accommodate conflicting agent views. For example, one particular third-party tool initially captured past reservations to allow the agent to better understand the customer's travel patterns and history. But when the tool was rolled out, this feature was eliminated based on a specific agent's beliefs that it cluttered the POS interface.

Rather than trying to maintain this feature, the developer simply dropped it due to conflicting agent input.

- **Avoiding poor UI design**

Creating an efficient UI design is not a simple task. The developer must have a deep knowledge of both current POS standards and the latest in technology tools. The developer must also constantly seek feedback from users. Effective UI development must include usability testing to insure that user requirements are met. For example, the UI design must maximise efficiency and prevent errors from occurring at the POS.

- **Managing releases**

Internally developed software must manage the release of new versions. These new releases require usability testing and must be deployed in a logical manner. The skill set for deployment is different than that for development, and thus requires the TMC to hire the appropriate employees with the right skill set.

- **Deploying a global solution**

Deploying a common internally developed POS solution on a global basis is a daunting task. In fact, the existing internally developed POS tools created by some of the mega-TMCs have never been rolled out on a global basis, as the UI design could not meet local business practices. And in some regions of the world TMCs work with affiliates, further complicating internally developed POS solutions, as partners may be unwilling to adopt POS tools that potentially could disrupt their agents' productivity.



## Challenges in Third-Party Solutions

Over the last 15 years, there have been many attempts to create viable third-party POS solutions for TMCs. When some of these efforts failed, the vendors went out of business – so this scenario is a real concern. Apart from the stability and viability of the companies, these additional issues also need to be considered:

- **Managing releases**

Software needs to be constantly updated. As new releases come to the market, TMCs that opt for third-party POS solutions face the challenge of releasing the update while the TMC conducts normal business. These software updates may alter booking flows and cause service issues.

- **Ongoing maintenance issues**

Software needs to be maintained. And providing the right level of ongoing maintenance may be beyond the capacity of the third-party organization, which often adopts a second-level support philosophy, pushing first-level support to the internal TMC's IT staff.

In addition, maintenance may be impacted by the automatic updates in the operating system (e.g., Microsoft XP) on each agent's desktop.

- **The true cost of third-party solutions**

It is crucial that any evaluation of third-party POS tools be considered under the basic technology purchasing theory of total cost of ownership (TCO). This takes into account not only the licensing fees imposed by the third-party developer, but also the ongoing cost of maintenance, support and overall impact on agent productivity. Any drop in agent productivity can have a devastating impact on the TMC's bottom line.

## Summary

### **Developing a cost-benefit analysis of POS options**

A cost-benefit analysis should be a core process associated with the decision to build instead of buy, and it needs to evaluate the total cost of internal or third-party solutions against GDS tools. The advantage of GDS-provided applications is their tight integration with the core Sabre system and the fact that they are available to Sabre agents worldwide.

In today's competitive environment, TMCs can no longer expend valuable profits on in-house-developed or third-party POS solutions that are subject to breakage due to their lack of integration with the core GDS system.

GDS tools allow TMCs to customise and standardise the agent booking platform to both differentiate services and improve overall efficiency. GDS tools can help position the TMC to compete today and in the future. As technology evolves, GDS tools allow a TMC to both take advantage of next-generation technology and maintain focus on customisation by hiring subject matter experts in agency operations, not in software development. In this way, GDS tools provide the optimum balance between standardisation and customisation.

## A Guide for Comparing Internal Development, Third-Party Tools and GDS Tools

Issue	Internal Development	Third-Party Solutions	GDS Solutions
Managing trip notification and schedule changes	Must integrate with the core GDS system and reflect any changes to GDS formats and information storage	Must constantly keep up with changes in the underlying GDS and modify their application on a real-time basis in order to avoid crashes	Notification is a core feature of GDS solutions and thus schedule changes and updates are automatically provided
CRM and travel advisories	Synchronizing an independent profile database and ensuring all travel advisories are seamlessly communicated can be an expensive and complicated development challenge	Third-party providers must be on constant vigil to ensure their systems adapt to changes in the underlying GDS	With new GDS profile tools, agencies no longer need to spend internal resources or pay third-party developers to get a more flexible profile management solution; travel advisories are automatically integrated into the GDS offering
Itinerary aggregation and obtaining Web content	With constant changes to Web site structure, internally developed Web scraping technology often breaks, causing lower productivity and requiring TMC staff to constantly monitor the link	Third-party tools also are subject to breaks due to Web site structural changes	Integrated solutions such as NetCheck allow the third-party application to be seamlessly integrated into the PNR creation and management
Invoicing	TMCs must invoice the complete itinerary so all elements must be priced and documented, a costly endeavour for internally developed solutions	Third-party tools must integrate all prices into a single invoice to ensure proper billing	GDS tools automatically take all content booked from the core system or from NetCheck and integrate the results into a single invoice
Tracking unused tickets	Unused tickets must be seamlessly integrated into an internally developed POS	Third-party developers need to extract unused tickets from the native GDS to include them into their customised POS	Unused tickets are automatically included when using GDS customizing tools to ensure that the residual value is always offered to the customer, with standard POS alerts of unused e-tickets available off the shelf
Capturing accurate data for corporate reporting	POS tools developed internally must ensure that all necessary remarks and UDIDs are entered for accurate corporate reporting; errors in internally developed POS platforms can lead to corporate account loss	Third-party tools must keep up with the ever-changing core GDS system; errors in data capture can have a devastating impact on corporate account retention	GDS tools such as the Qik Developer platform can ensure that all reservations, regardless of source, are complete and accurate at the POS, preventing the expense of capturing these errors after the PNR has been booked

Figure 5

## Glossary of Terms

- **Ajax (Asynchronous JavaScript and XML)** – A method of building interactive applications for the Web that process user requests immediately.
- **API (Application Programming Interface)** – A set of routines, protocols, and tools for building software applications.
- **CBT (Corporate Booking Tool)** – Applications that automate online business travel bookings and automatically enforce corporate travel policies at the point-of-sale.
- **Customisation** – The ability to modify a process to meet specific client or regional workflows.
- **Cost-benefit analysis** – The process of comparing the cost of an investment against the benefit achieved from that investment.
- **GUI (Graphical User Interface)** – An operating system interface between the user and the computer based on graphics. GUIs typically use a mouse or other tracking device and icons.
- **GDS (Global Distribution System)** – The primary platforms for travel reservations. GDSs aggregate travel content from multiple sources and power online and offline bookings.
- **PNR (Passenger Name Record)** – The basic reservation record containing predetermined parameters such as name, itinerary, telephone contact and reservation.
- **POS (Point-of-Sale)** – The desktop of the travel agent used in traditional or virtual call centres.
- **QC (Quality Control)** – The process by which reservations are checked for accuracy and completeness.
- **Relational Database** – A database that groups data using common attributes found in the data set. The resulting “clumps” of organized data are much easier for people to understand.
- **Standardisation** – Creating a common process across locations to ensure uniform implementation of desired actions.
- **TMC (Travel Management Company)** – Travel agencies that specialize in corporate travel management.
- **TCO (Total Cost of Ownership)** – A measure of the value of a product or service that factors in all costs, both direct and indirect, associated with the product or service.
- **UI (User Interface)** – UI refers to everything designed into an information device with which a human being may interact.
- **UDID (User Definable Interface Data)** – Lines in the PNR that contain specific pieces of information used for reporting purposes.