

- *Quick issue* Each Tribute PC workstation has the capability to store up to 50 frequently used itineraries. Once stored, these template itineraries may be called up and used to shortcut the entire journey planning, reservations and ticketing process. Because each operator may have his/her own set of quick issue itineraries, the total scope for tailored processing is considerable.
- *Balance function* The user may request a status of the sales made to date and the amounts of moneys taken, at any time. This supports the control of telesales cash and sales processing functions.
- **Self-service** Self-service machines branded QUICKFARE are located on the concourse of 1,000 stations around the country. These machines issue tickets in exchange for cash, i.e. notes and coins. At present these machines do not accept plastic cards. The QUICKFARE machines are supplied from a Swiss company called Ascom Autelca and are extremely robust and reliable. In addition to QUICKFARE, some train operating companies have decided to use ATM style ticket issuing machines, which are marketed by a separate company called SHERE. There are now over 20 SHERE self-service ticketing machines installed in several stations. These machines issue ATB format rail tickets and accept plastic card payments from customers.

SEMA are working with Ascom Autelca to evaluate further enhancements to the QUICKFARE machines in the medium term. One option is to extend the current payment method from cash to include plastic cards. This will in turn require an on-line link to the major card authorization systems from each QUICKFARE machine. Although the QUICKFARE machines are high quality, robust and reliable, the fact that they must handle cash makes them an expensive proposition for widespread roll-out to more stations.

So, a more cost effective solution is being sought by SEMA. It is currently considering the development of its own self-service ticketing machine that would only support plastic card payments. This new machine would work in conjunction with the telesales centres. Customers could telephone a telesales centre to

discuss options and book their journeys. They would make arrangements with the operator to collect their tickets upon departure at the stations nearest to them using one of the new self-service machines. The insertion of the customer's card would enable the ticket details to be retrieved from the main-frame computer, printed locally and dispensed from the machine. This would of course require on-line telecommunications from the self-service machine to the Nottingham main-frame computer and the major card authorization systems.

- **Travel agents** Travel agents use a number of systems to obtain information on rail travel and issue tickets to their customers. Although some very large agencies use APTIS, as described above, for most travel agents the two most commonly used systems are: (i) the reservations functions available via the GDSs, and (ii) the agent ticketing system (ATS). I'll describe each in more detail:

- *TSG* ATOC has designated TSG as the travel agency system of the future for rail sales and servicing. Incidentally, the term 'TSG' is to be renamed soon and explaining its initials would only serve to confuse so, let's stick to TSG for the purposes of this explanation. Over 400 travel agents currently use TSG and the medium term target is to grow this to 2,000 or more. With TSG, travel agents are able to use their GDS PC terminals to link into the rail main-frame computer in Nottingham. This link is effected by means of a switching technology that is slightly different for each GDS (see Chapter 4 for a description of how each GDS implements non-air supplier access). So, TSG is a set of enabling technologies that distributes Nottingham's central main-frame functions, such as reservations, ticketing and servicing, to travel agents using their existing point-of-sale GDS PC terminals. In concept, this is similar to the way in which airlines distribute their sales functions via the GDSs. As such, it is *not* therefore a piece of software that runs in the agent's PC. TSG was originally developed by Eurostar to enable travel agents to gain access to their new channel tunnel train services via Galileo.

Using TSG, seats can be reserved on certain UK domestic rail journeys in both first class and standard coaches of all InterCity trains using GDS terminals installed in travel agencies. Reservations can also be made on most inter-urban rail services. First class single and standard twin berth sleeper compartments are reservable on all InterCity sleeper trains. The travel agent can choose certain reservations preferences for their customers such as, window or aisle seat, facing or back to the direction of travel, dining seat or non-dining, smoking or non-smoking seats.

Travel agents can use their existing GDS terminals to access the rail main-frame system using the 'BRL' entry. Agents without a GDS can use viewdata terminals using the Imminus or AT&T travel networks, again using 'BRL' as the access code (see Chapter 4). Agencies with the latest Galileo Focal Point UK terminals have the additional benefit of access to FACETS. This system runs on the rail main-frame computer and supports an integrated fares, timetable, availability and reservations facility that compares favourably in terms of functionality with most airline systems. At a certain point in time, a few hours before departure, the system prints reservations dockets for the departing train that a train operating company employee places in the appropriate headrest of each seat.

TSG can generate a rail machine interface record (MIR) for back-office accounting purposes. This main-frame created data record is therefore used to generate accounting transactions and is stored for future management information purposes (see Chapter 7 for more details on back-office or agency management systems). It remains the responsibility of the travel agent to ensure that their back-office system is capable of successfully processing the rail MIR.

ATB based ticketing is an important feature of TSG. This is supported by means of an ATB2 style ticket printer that is directly connected to the GDS PC. Incidentally, the ATB2 style ticket is the one with the mag-

netic strip on the reverse side (a plain old ATB ticket has no such magnetic strip). Only the ATB2 has the magnetic strip that can be read by devices at the ticket gate or *en route*. For continental travel, this will help speed the passenger through check-in formalities at the new Eurostar terminals instead of the old style travel document that will have to be exchanged for an ATB ticket before he/she can start his/her journeys. Shorter check-in times are of course especially essential to business customers who travel at peak times and usually pay full fares.

You may recall our earlier discussion of ATB type tickets and their associated printers in the section on airline reservation systems or GDSs. Well, the rail ATB (Fig. 3.7) complies with the IATA 722 encoding standards. This means that the data that are encoded on the magnetic strip on the reverse of the ATB, conform to a standard that has been set by IATA and used by all the airlines. The ATB printer is, however, different from most conventional printers in one important respect. In addition to printing an ATB and encoding it simultaneously, it can also read the magnetic strip on a previously printed ATB ticket. The potential is therefore in place for a travel agent to have just one ATB printer in the office that can print and process both air and rail tickets.

Clearly therefore, one of the long term objectives of ATOC is for travel agents to use a single printer for producing all UK rail tickets. This will enable a single ATB printer to be loaded with a set of airline ticket stock and a set of rail ticket stock. The GDS systems use special software to control contention between the various workstations that need to print a ticket. Contention occurs, for example, when Workstation 1 initiates an airline ticket printing command at the same time that Workstation 2 issues a rail ticket print command. This special contention handling software makes it possible to use just a single ATB printer at the point-of-sale. This is important because ATB printers can be quite costly. Looking even further ahead it may one day be possible

STD	STANDARD OPEN	OUTWARD	VALID FROM	27 NOVEMBER 1997
From	LONDON		VALID UNTIL	26 DECEMBER 1997
To	BIRMINGHAM INTERNATIONAL		Adult	ONE Child NIL
Route	ANY PERMITTED			
Journey details (for codes see over)			Coach seat N/S (Accom.)	
Issued at	6013 08 15000243 00066 27NOV97 14.53	CASH	£59.50	For conditions see over

SPECIMEN

Figure 3.7 A rail ATB

for a single stock to be used for both airline tickets and rail tickets. However, in order for this to happen, there will need to be a lot more work done in the standards area. Because this is all organized by committees from leading airlines, rail companies and other travel suppliers, it may well take some time to agree such standards.

The ticket printed by the TSG system is for a maximum of three legs or sectors of an itinerary. More sectors can of course be ticketed but these will require more than one ATB. So, for example, a five-leg journey would have Legs 1, 2 and 3 printed on the first ATB and Legs 4 and 5 on the second. Standards are a critical issue for industry systems as I am sure you will have gathered from the section in Chapter 1. ATOC has adhered to the international union of railways (UIC) and rail combined ticket (RCT) standards for European ticket issue. This means that tickets produced on UK rail systems will be acceptable on the continent and can be read and processed by other non-UK systems. Incidentally, the rail printer will also be capable of printing credit and charge card forms. These will comprise a portion for use by the card company and a tear-off slip for the customer. This will no doubt be a valuable time saver for most travel agents.

In terms of GDS connectivity, the rail system is accessed via a special partition within the GDS multi-access capability. There is a GDS language entry that a user must enter into the GDS terminal in order to request seat and sleeper reservations. This is converted by the GDS system into the appropriate rail system entry (the rail system uses an alternative format to the airline systems), and transmitted via telecommunication lines into the main-frame computer in Nottingham. The rail system response on this return half of the dialogue is not converted but instead appears in native mode on the travel agent's GDS system display.

- **ATS** ATS is a 'stand alone' PC software package that has been provided to travel agents since 1991. ATS produces train tickets on continuous stationery and supports automated settlement of ticket sales to RSP. It is primarily for travel agents who have rail ticket sales of up to £0.5 million per year. The software is currently used by around 150 travel agencies. To use ATS the travel agent needs to have a dot matrix printer attached to their PC. This printer is loaded with continuous rail ticket stock that is very similar to OPTAT airline ticket stock in size and format. The main difference is that this ticket stock comprises just three parts: (i) a travel copy, (ii) a copy for the travel agent,

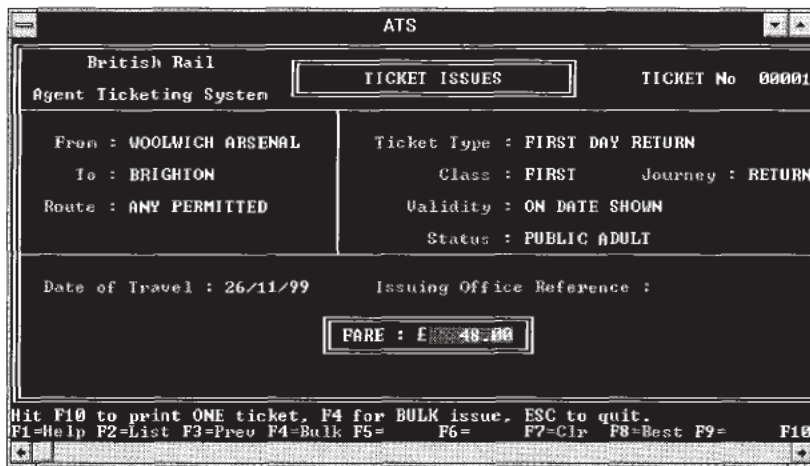


Figure 3.8 An ATS screen

and (iii) an audit or accounting coupon. The main menu offers the following set of functions: ticket issue, ticket cancellation, back-up sales data, daily sales report and best-seller input. There are also parameters that control ticket stock, accounting periods and VAT codes. The principal function is, however, the issue of rail tickets and this is therefore explained in more detail below.

The first question the ATS system (Fig. 3.8) asks the user, is to verify that the number of the next ticket to be printed tallies with the ATS PC stock records as displayed on the screen. Once this has been confirmed the ticket issuance process starts. The system works most effectively when it has been set up with details of the most frequently used itineraries. There may be up to 50 such itineraries and each is pre-set with: from city, to city, fare, class, etc. When a ticket is required from the best-seller list, the agent selects the route, adds the date and a reference and the ticket is printed automatically. If the journey is for a non-best-seller itinerary, the agent simply enters all the details that are required on the ticket, such as from city, to city, class, fare (from the rail tariff book), date and reference. Finally, when all data have been entered the ATS system may be instructed to print the ticket.

The details of all tickets issued for a day are added to a data base, which forms the basis

of the end-of-month rail sales return. Each month the system produces a floppy disk that is mailed to RSP along with a copy of all the audit coupons of the tickets issued for the month. This saves a great deal of manual effort and totally eliminates the need for a hand-written rail sales return. It is also possible to print consolidated daily and monthly sales reports for all tickets sold by the agency.

The ATS system also interfaces with Galileo's President Agency Management System (PAMS). This is achieved using a connection from the serial port of the ATS PC to the serial port of the PAMS PC. This connection allows a MIR to be transferred from ATS into PAMS for every ticket issued. A MIR contains all the information needed by the PAMS back-office system to process the sales ledger functions (including the automated printing of customers' invoices) and other accounting tasks associated with rail ticket sales. This makes it possible to capture some basic accounting data at the point just prior to the ticket actually being printed. Information such as client account number, cost centre, product code, method of payment, credit card type and card number. This saves the travel agent's back-office accounting staff from having to re-key the ticket information already keyed at the point-of-sale into PAMS and then having to add other customer account information.

Retail servicing points

There are many different places where information on train services are required by customers. For example, there are the telephone sales centres scattered around the country. There used to be 45 of these telesales centres although they are being rationalized at the direction of the rail regulator and eventually there will only be around four large telesales centres and six smaller units. Rationalization has resulted in a new consolidated NRES. This is accessible via the telephone using a single national number charged at local call rates. But there are other retail servicing points besides NRES, such as travel agents that do not necessarily sell rail tickets, small stations and rail shops. The main systems used to provide train operating information to these retail servicing points are:

- **Tribute** This is a PC-based software product. It performs certain rail related functions locally and also uses ISDN telecommunications to connect into the rail main-frame computers in Nottingham. This provides its retail servicing users with the power of a local PC system but with the enormous resources of a main-frame just a phone call away. An important IT architectural feature of Tribute is co-operative processing.

The term co-operative processing means that Tribute's system functions are provided by a team of computers working together and sharing the workload. Tribute uses co-operative processing techniques because it shares the total processing workload between its host PC and the remote rail main-frame computer. It therefore closely resembles an airline GDS. The screens that the user sees and interacts with are based on main-frame responses but these are enhanced locally by Tribute's special PC software. The resulting screens are extremely user friendly and are similar in appearance to the Microsoft Windows format that is by now so familiar to many PC users.

SEMA plan to migrate parts of the data base held on the Nottingham main-frame to the local Tribute PC hard disk. Processing and storage functions within Tribute would then be increasingly shared between the Nottingham main-frame and the local PC. The fares data

base, for example, will be split into two parts for storage and access purposes. Local fares will be stored on the user's PC and refreshed each night via the main-frame link, while all other fares will be stored only on the main-frame and accessed as needed. This should help take the load off the central main-frame and make Tribute more responsive. Another main-frame support functions accessed by Tribute include FACETS. FACETS combines the CPF fares system, the CATE timetable system and the British Rail CRS reservations system.

- **CATE and FACETS** These are the timetable and fares systems that run on the Nottingham main-frame. They are accessed from high volume rail servicing points by dedicated terminals connected by leased lines to Nottingham.
- **The customer information system (CIS)** This is located on station concourses. It shows departure details of trains leaving from a station within the next hour and in some cases also shows arrival information.
- **Rail planner** The rail train timetable has been computerized for some time. It is stored as a very large data base, comprising some 89 Mb of data storage, held on the main frame computer in Nottingham. Until 1992 this timetable was only available in the form of a large and somewhat complex book known as the *British Rail Great Britain Timetable*. The principal aim of Rail Planner is to simplify the planning of customers' journeys by providing local access to this timetable data base.

Rail Planner is another 'stand alone' PC based software product (Fig. 3.9) that allows users to plan their journeys simply by specifying their origin/destination requirements. This is achieved by providing the entire rail timetable on a PC data base, which is compressed so that it occupies only 1.8 Mb of PC hard disk space. This has been done by using special software and a user friendly man/machine dialogue. Rail Planner is available in two options: (i) Rail Planner software plus a timetable data base supplied twice each year, or (ii) Rail Planner software with a timetable data base that must be updated each month with changes. The core element of Rail Planner is the timetable data base that, with its monthly refresh

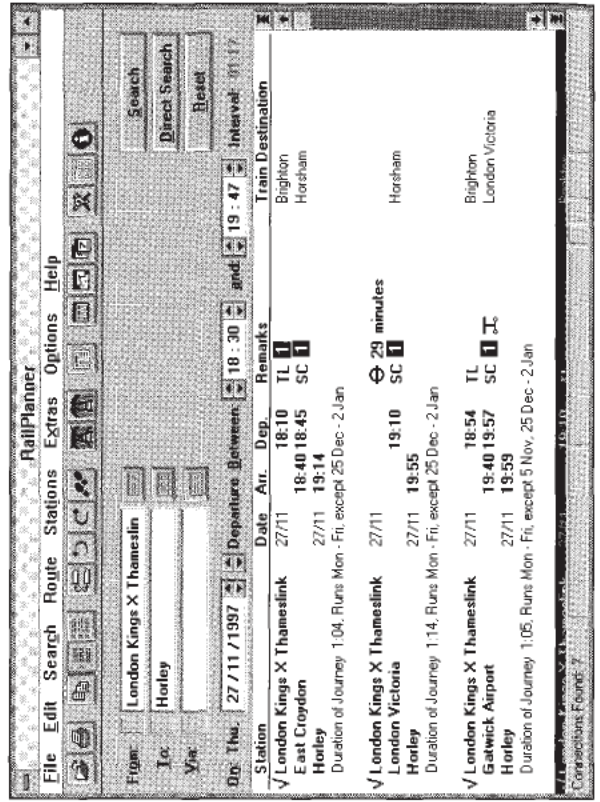
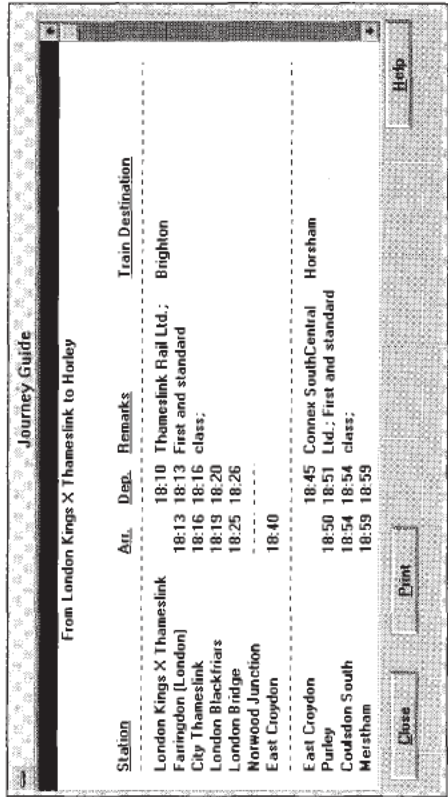
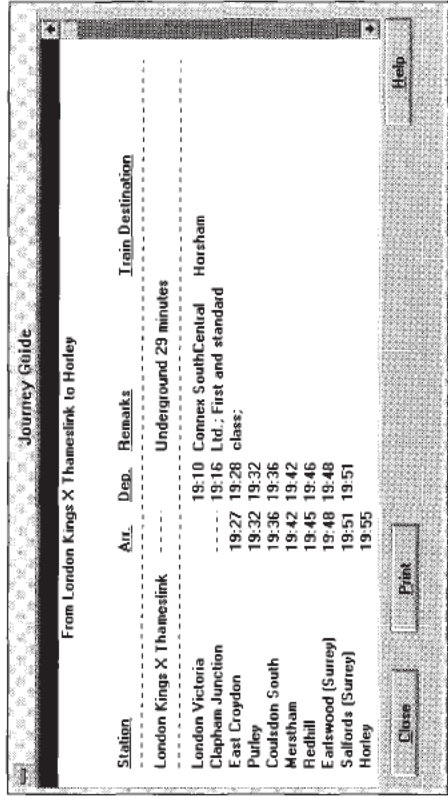


Figure 3.9 The Rail Planner screen

function, is close to being as accurate as the timetable data base stored on the main-frame.

Rail Planner is a Windows-based product and uses familiar GUI standards. The user simply enters the from and to cities, the date of travel and the approximate departure time. The system responds with a display of the itinerary showing the intermediate stops and train changes *en route*. Also displayed are several earlier and later options that may be of interest to the traveller. When the route has been finalized, a map option may be requested. This pictorially shows the chosen route with major stations and all interconnecting points. The map can be printed and handed to a traveller. Rail Planner has been available from British Rail since September 1992 (when it was branded Journey Planner). The software was originally supplied by a German company and has now been modified for use in the UK. The system is distributed on floppy disk and is mainly used by individual travellers and corporate travel planners.

Central accounting functions

One of the main functions of the RSP is to ensure that the revenue derived from rail ticket sales is distributed equitably between all the train operators and other third parties, e.g. the London Underground. The SEMA group undertakes this task on behalf of RSP using several large main-frame computer systems, the main one of which is called CAPRI. CAPRI is fed with ticket sales data from the various point-of-sale systems that I described above. However, the revenue allocation process is not as straightforward as you might think. Let's consider the logistics in a little more detail.

First of all, the details of the actual routes that the passengers travelled may not automatically be derived from the ticketed sales data generated from the points-of-sale. The UK rail network is sufficiently large and diverse to enable travellers to take alternative routes between their origin and destination points. So, it is not always possible for the revenue accounting system to calculate how a ticket's sales value should be split between two or more train operating companies on the basis of the route actually travelled. Instead, a set of rules

have been laid down for each ticketed route that allows certain assumptions to be made regarding the allocation of ticket sales revenue. As you can imagine, with over one-quarter of a billion tickets sold each year, this is a job that is only feasible to perform using a large and powerful computer.

Once the ticket sales transaction data have been analysed, the CAPRI system determines the share attributable to each train operating company and also calculates the commission due. It then determines the amounts payable to third parties such as the London Underground and ferry companies. The end result of this process is a set of entries that are passed into the books of account of each train operating company.

Rail sales distribution

An enormous volume of rail tickets is sold in the UK each year, i.e. over one-quarter of a billion tickets annually, but compared with other travel industry suppliers, only a small proportion are sold via travel agents. One reason for this is that travellers tend to buy their tickets from the station as they depart. Another possible reason is that from the travel agents' perspective the revenue on a British Rail ticket is usually perceived as being rather low for the average journey, especially when the rather laborious monthly manual settlement procedure is taken into account. In fact, the average commission rate on rail tickets is some 9 per cent, which is actually quite competitive with domestic air travel.

Once again, business travel is a little different and most business travel agents will offer their corporate customers British Rail tickets. The reason for this is twofold: (a) it provides an all round service and gives a better and more caring image to the customer if a comprehensive range of products can be provided, not just the profitable ones; (b) business travellers often travel first class and the journeys are usually long distance, all of which means that the revenue earning potential of these type of British Rail tickets is in fact quite attractive. For this reason therefore, some travel agents do carry a stock of British Rail tickets.

The sale of rail tickets that are sold via travel agents is, however, set to increase significantly in the not too distant future. In fact, it is expected

that the total volume of rail tickets booked through the UK travel trade will more than double by the end of this decade. This is primarily due to the channel tunnel, which opened in 1994, and the commencement of Eurostar and Le Shuttle, both of which provide new high speed surface links to the continent that challenge air and ferry services.

In summary, if travel agents are to be encouraged to sell UK domestic rail tickets and the new cross-channel products, it is imperative that they have access to efficient and cost effective sales and ticketing technology. Rail companies are therefore developing some very sophisticated supporting technology that should make the sale of most rail tickets highly profitable for travel agents and lower the cost of direct sales.

Information suppliers

Information is the raw material of the travel and tourism industries. There is an enormous number of travel suppliers and each one describes their products using a wealth of data; and besides travel suppliers there is a whole set of reference information that the industry and travellers themselves need if they are to travel the world safely and effectively. Unfortunately, these data and their assembly into useful information are scattered across many different companies and sources. Life would be a lot simpler if information on travel and tourism was stored in just a single place and easily accessible from anywhere in the world. This ideal is, however, unattainable at the present time, although the future holds the promise of new technologies that could rationalize data sources and standardize the way we access and use information. It is therefore essential that we explore companies that specialize in the accumulation, storage, distribution and provision of information to the travel and tourism industries. Probably the leading company in this field is the Reed Travel Group.

REED TRAVEL GROUP

Reed Travel Group is a member of the Reed Elsevier plc group, a world-leading publisher and information provider in the areas of scientific, pro-

fessional, business and consumer publishing. With its principal operations in North America and Europe, Reed Elsevier has annual sales in excess of £3 billion and employs more than 25,000 people worldwide. Reed Travel Group is the world's largest independent provider of travel information products and services to: (i) business travellers, travel planners and the global travel industry; and (ii) GDS and airlines. The Reed Travel Group mission statement is:

'To be the preferred supplier to the global travel community of: (a) comprehensive, impartial information; (b) essential news and opinions; and (c) effective solutions and knowledge. Our corporate culture will inspire and empower employees to provide our customers and associates with products and services of superior value and to deliver a fair return to our shareholders. We will be good corporate citizens with respect to the communities and environments in which we work.'

With more than 2,500 employees in more than 50 offices around the world, Reed Travel Group's businesses serve all the major global travel markets including air transportation, hotel, cruise, meetings, leisure, cargo, rail and other travel sectors. Although I won't be covering all of these products and services in this book, there are several that are very relevant to the effective use of IT in travel and tourism, which I will be exploring in a lot more detail in this and other chapters.

Reed Travel Group's leading business portfolio includes: OAG, *Travel Weekly*, *Meetings & Conventions*, *Hotel Travel Index*, TravelNet, Weissmann Travel Reports, ABC Corporate Services, Reed Travel Training and Utell International. The company's products are distributed globally and the business operates from centres in the UK, USA and Singapore. Reed Travel Group's products and services serve many different markets: (a) travel principals, such as airlines, airports and hotel/car companies; (b) the corporate market, including travellers, travel arrangers and buyers; (c) travel intermediaries, such as travel agents, CRS, GDS and freight forwarders/cargo agents; and finally (d) USA Government departments, including the Federal Aviation Administration and Government travellers. The complete range of products may be categorized as follows:

- **OAG** This encompasses the print and electronic travel information products and services that are offered to travellers, corporations and the travel industry. These publications supply the information needed to make effective travel decisions. OAG and its electronic products are described in more detail below. The specialist GDS fares and schedule distribution service (known, respectively, as OAG Genesis and OAG Direct) are described earlier in this chapter (see the Fares Distribution section above).
- **Utell International** This is the world's largest hotel marketing, sales and reservations service promoting 6,500 hotel members in more than 180 countries. This service is described separately in Chapter 4 – Distribution Systems.
- **Weissmann Travel Reports** This is a leading provider of global electronic and hard copy destination information to the travel industry. Its data base includes destination information on more than 10,000 cities throughout the world and is available by country profile, state/province profile, city profile and cruise port-of-call profile. It is particularly relevant to IT in travel and tourism because it is a source of information for many Internet sites, some of which are described in Chapter 5 – The Internet.
- **Travel Weekly** This is the leading travel trade newspaper in the USA. Published twice weekly, it provides late-breaking industry news, features and practical information for travel agents and the travel industry as a whole. Several other travel related publications also are included in the portfolio. I have not, however, covered this aspect of Reed Travel Group's business in any more detail in this book.
- **TravelNet** A leading real-time travel booking tool, with advanced data base software, that enables companies to manage and reduce travel expenses. TravelNet, simplifies the travel planning, booking and management process by providing a company's employees with the ability to book air, hotel and car rental reservations from their personal computer. This product is explored in more detail in Chapter 5 – The Internet.
- **Reed Travel Training** Courses are offered for travel agents, travel arrangers and administrative assistants. Reed Travel Training is endorsed by IATA and the Universal Federation of Travel Agents' Association UFTAA. I do not cover these training products in this book.
- **Hotel & Travel Index** This is a leading hotel directory providing up-to-date booking information on 45,000 hotels, resorts and inns world-wide. Published quarterly, *Hotel & Travel Index* contains all pertinent hotel information including rates, accommodation details, contact names, addresses, toll-free phone and fax numbers, representatives and commission policies and GDS access codes. These products are not covered in more detail in this book.
- **ABC Corporate Services** This is the original provider of quality corporate services for independent travel agencies. The company's primary products include: (i) *Premier Hotel Plan*, a comprehensive programme including negotiated rates, value added amenities and block space; (ii) *Business Breaks*, a meetings' facilities guide for corporate travel planners; (iii) the travellers' emergency service system (TESS), a 24-hour emergency hot-line; (iv) an international rate desk and (v) Global Connect, a global travel management network. These products are not covered in more detail within this book.
- **EasyRes** A leading viewdata-based reservations system for leisure travel agents in the UK, offering free and easy access to a wide choice of airlines and fares, last seat availability, hotels and car rental booking facilities. The EasyRes service is presented in more detail in Chapter 6 – Communication Networks.

As I have mentioned before, information is the raw material of travel and tourism. Insofar as Reed Travel Group is concerned, this raw material is a prime company asset. It is an asset that is represented, at its lowest level, by collections of individual data items. These data items are stored in a way that enables them to be combined in different representations and this is what we call information. The core data base, which forms the basis for so many of Reed Travel Group's information products, is stored on a main-frame computer using relational data base management software. One of the simplest ways in which this data base is used is in the production of the OAG reference

The OAG *World Airways Guide* also has different sections that describe the airports of the world and the cities and countries in which they are located. There are sections on all airlines and on travel by air in general. All in all, the OAG *World Airways Guide* is an essential reference source for a travel agent or traveller and, in fact, most agencies have at least one copy readily available. But the guide is used extensively also by business travel planners and by business travellers themselves. In fact, Reed Travel Group publish pocket editions of the OAG *World Airways Guide* that are known as the OAG *Pocket Flight Guide*. There are four pocket editions, which cover: (i) North America; (ii) Europe, Africa and the Middle East; (iii) Latin America and the Caribbean; and (iv) the Asia Pacific region. These guides have a total combined circulation of some 300,000 world-wide. There is also the *Africa Flight Guide*, which is published locally.

Historically, in the pre-CRS days, the OAG *World Airways Guide* was the first thing a travel agent used to arrange a customer's airline itinerary. The process went something like this: (a) the travel agent would take down details of where the customer wished to travel and the cities that needed to be included in the itinerary; (b) the OAG *World Airways Guide* would be consulted and the first city would be looked up to find the flights from that city to the next one on the customer's itinerary; (c) if there was no direct flight from that city to the customer's next city on the itinerary, then a combination of the atlas and the OAG *World Airways Guide* would be used to identify the next nearest city; (d) the process would be repeated until the flight details of each city pair had been ascertained and noted; and then finally (e) as far back as 1959, the agent had to give the details of all flights to the first airline on the itinerary, which would make all the reservations in the list. Quite a lengthy process as you will, I hope, by now appreciate.

So, when CRS terminals began to appear on travel agency desks, they changed the way in which the OAG *World Airways Guide* books were used. This is because the CRSs have most of the information built into their data bases and provide a 'look and book' facility. The OAG *World Airways Guide*, on the other hand, while not being able to offer this transactional facility, still has an

important role to play in a travel agent's operation. It does this by continuing to offer a unique, reliable and fully comprehensive source of unbiased world-wide scheduled flights and transfer connection information that is updated and published monthly in chronological order. There are also many other sister publications that are too numerous to cover in detail here. For example, there are the following, although please bear in mind that this is not a comprehensive list, but simply a list of particularly relevant publications:

- **OAG Guide to International Travel** A hard-copy directory containing destination information on visa, health, passport, customs, currency and local business hints. Also includes information about major airports, cities and general travel related information.
- **OAG Agents Gazetteer** A set of six hard-copy reference books for UK travel agents containing unbiased information and reports on accommodation properties, key leisure destinations and resorts world-wide.
- **OAG Air Travel Atlas** Provides an easy to use guide on routes for all domestic and international scheduled flights world-wide. It also contains full coding structures for airlines, airports and cities. This publication is updated twice each year.
- **OAG Rail Guide** A portable hard copy directory of UK rail services in London and the South East plus Eurostar services. First published in 1853, it is the only guide with timetables and fares combined.
- **OAG Travel Planner** A desk-top reference guide listing hotel information, destinations and transportation information. It includes city maps and airport diagrams and is published quarterly.
- **OAG Cruise & Ferry Guide** A hard-copy directory that provides essential information on cruise itineraries and ferry schedules world-wide, including ocean, river and waterways, as well as cruise ship and ferry profiles. Updated quarterly.
- **OAG Holiday Guides** A set of four hard-copy reference books for UK travel agents containing details of programmes featured by all bonded, commission-paying UK tour operators.

Table 3.3 OAG FlightDisk functions

Function	Description
Airline schedules	Around 650,000 world-wide flight schedules including direct and transfer flights for domestic and international routes
Itinerary planner	Comprehensive itinerary planning and storage
Print	A facility for printing selected travel information and personalized itineraries
Notepad	An electronic jotter for temporarily storing flight details while planning complicated itineraries
Directory	Additional information covering aspects of travelling abroad such as health, currency and destination details
Files	A private store for the travel planner's own information relevant to a company and its travellers
Help	Comprehensive on-screen help

However, even in the era of automated systems like GDSs, the OAG *World Airline Guide* still has a sometimes crucial part to play in arranging travel itineraries. Take the following example. A friend of mine was planning to spend some time in St Malo and during his stay there, wanted to fly to another town in France for a short business trip. He visited the local travel agency to enquire about possible flights. The travel agent first used the GDS to make an enquiry but this drew a blank. There were no direct flights or connecting flights shown in the GDS data base, from St Malo. So, the agent pulled down the OAG *World Airways Guide* and together with a rather dog-eared atlas, began to search for the nearest city to the desired destination and an appropriate airline and flight. Eventually, this was successful and my friend was sent on his way with an appropriate airline ticket. So, I hope you can see from this little example that the OAG *World Airways Guide* book still has an important role to play in a travel agent's operations.

OAG's electronic products

In November 1991 Reed Travel Group decided to re-position its electronic products by using new optical disk and PC LAN technology. A brand new set of products was launched, the core of which is derived from the renowned OAG *World Airways Guide*. The new electronic product range is based on compact disk read-only memory (CD-

ROM) technology; which has achieved substantial growth rates already, with increases forecast over the next few years. This technology was chosen by Reed Travel Group because the alternative – central storage and transmission of information – was considered too costly and time consuming. It would, for example, take a large number of floppy disks to store all of the OAG *World Airways Guide* data whereas just a single compact disk can store the same amount of information. CD technology, therefore, is characterized by the ability to store enormous volumes of data reliably that can be accessed quite quickly by relatively inexpensive PC devices. Nevertheless, if a user wishes to receive the product on diskette then this is also possible. The core electronic products are OAG FlightDisk and OAG HotelDisk.

Disk-based products

The disk-based products are designed for 'stand-alone' use and are implemented on a user's workstation or lap-top PC. To use either the FlightDisk or HotelDisk electronic products, users need a personal computer, i.e. 386SX or better, with a high resolution VGA colour monitor and a 3.5" diskette drive or a compact disk device. It is the software in conjunction with the information on the disk that provides the interactive air and hotel displays. The information on flights and hotels is recorded on a floppy disk or on a compact disk, which looks just like an audio CD. Information

Table 3.4 OAG FlightDisk and HotelDisk LAN version hardware and software requirements

IT requirements	OAG FlightDisk	OAG HotelDisk
File server	Hard disk space: 12 Mb Microsoft Windows 3.11 or higher 3.5" diskette drive or CD-ROM drive	Hard disk space: 12 Mb Europe 8 Mb Asia Pacific 20 Mb North America 40 Mb World-wide total Microsoft Windows 3.11 or higher 3.5" diskette drive or CD-ROM drive
Workstation	PC with 386SX processor or better VGA monitor Microsoft Windows 3.11 or higher 4 Mb RAM Printer (optional)	PC with 486SX processor or better VGA monitor Microsoft Windows 3.11 or higher 4 Mb RAM Printer (optional)

cannot be erased or re-recorded on these CDs, so, when a new version of the disk is needed, a replacement disk is distributed by OAG. More information on these two core electronic products is given below:

- **OAG FlightDisk** OAG FlightDisk is updated monthly in the UK and twice each month in the USA (for LAN versions only – see below). It provides information on scheduled airline flights and transfer connections plus additional reference data on all aspects of travelling abroad. It also contains information on airports and ground transport facilities, destination information on more than 200 countries, vaccination and visa requirements, public holidays, banking and business hours, general business hints and local etiquette. When putting together a trip around a series of meetings the user simply keys in the departure and destination airports, date of travel, preferred timings and airlines. Then, based on these criteria, it will display the appropriate information and highlight the most suitable flights. The OAG FlightDisk product uses the familiar Windows GUI. The facilities available are as shown in Table 3.3.
- **OAG HotelDisk** A sister product also is available for hotels, which is called OAG HotelDisk.

HotelDisk is updated quarterly and is aimed at travel arrangers within the corporate market. This works in a similar way to OAG FlightDisk but has the additional benefit of hotel maps that show hotel locations and enable users to see walking or driving distances at a glance. More than 46,000 hotels can be selected by name, location, quality rating, room rate or any combination of up to 30 different hotel amenities. All essential details that describe the hotel, its contact details and up to 30 amenities are shown on the HotelDisk display. Users can plot their homes and overseas offices on HotelDisk maps. This enables walking time and taxi distances between hotels and offices to be determined. Companies can store their negotiated hotel rates within HotelDisk. Although OAG FlightDisk and HotelDisk products are aimed principally at the corporate traveller, they could also be of great use to a travel agent.

LAN-based products

Both the OAG FlightDisk and OAG HotelDisk products are available in two basic versions: (i) a single-user version in CD-ROM and floppy disk formats, which is published each month and distributed to subscribers; and (ii) a LAN version, also published monthly, which allows a user with

many PC workstations to share a single source of OAG FlightDisk information on their servers. The first of these, i.e. the single-user CD-ROM/floppy disk-based product, is aimed mainly at corporate travel arrangers, who can access the disk from their desk-top or lap-top PC. This version has grown in popularity by 87 per cent since 1995. The second, i.e. the LAN version, is aimed mainly at the corporate buyer market, which comprises well organized companies with the following characteristics: (a) they have many travellers who need travel information for pre-trip planning purposes, and (b) they maintain a high level of control over their travel patterns. In order to use the OAG FlightDisk or OAG HotelDisk products, the user needs the hardware and software shown in Table 3.4.

The LAN version includes a Gateway option, which can be customized by the corporate user. This allows a company to design its own home page through which its employees access the OAG electronic products. The home page may contain company branding and shows a main menu that includes the following options: (i) flight information, (ii) hotel information, (iii) company travel policy, and (iv) latest travel news. This allows a company to record its travel policy on the corporate server for reference by travellers and travel arrangers. Other menu items, such as travel related news, can be added as needed by the company. The system also provides the ability for an itinerary to be stored as it is built up and then displayed and printed at the end of the session. In fact, any page may be printed at any time during the use of the system.

The market for electronic travel information

The OAG FlightDisk and OAG HotelDisk products are sold by subscription and are aimed at the business travel and corporate markets. They are PC based and are not priced on the frequency of access. These products have therefore been a commercial success over the longer term as both travel agents and companies migrate to PC technology as part of the general office automation movement.

Also there is no need for travel agents to be concerned by the availability of the OAG disk products to businesses. The chief benefit of this product from a travel agent's viewpoint is that it

has the potential to make the travel agent's life easier. In theory, a business customer would consult the OAG travel disk in order to help plan the trip. When a fairly detailed itinerary has been constructed in this way, the customer can telephone the travel agent with a request to book the required seats. This takes a great deal of the workload away from an agent. If only all bookings could be that simple!

Looking to the future, it is possible that developments in hand-held computers – known as 'palm-tops' – might make it feasible to have a portable OAG *World Airways Guide*. Either the data could be loaded directly into the palm-top's memory or, the data could be inserted on a high-capacity disk. We shall have to await developments in this new technology to know whether or not there is a demand for such a service.

Product distribution

It is technically possible for suppliers to distribute their products to travel agents directly. In the past this approach has been taken by some airlines, international hotel chains and car rental companies. They have provided selected travel agents and other high volume users with terminals connected by communication lines to their corporate main-frame reservation systems. Bearing in mind the expense of doing this, a direct connection approach is usually only provided to extremely high volume users, such as central reservations units operated by some of the major UK multiple travel agencies. However, if suppliers could provide travel agents or even consumers with direct access to their data bases, without any other system being 'in the way', then sales would arguably be maximized. However, providing agents with dedicated terminals connected to a single supplier system does have some drawbacks:

- **Single access** Only the largest of hotel chains and car rental companies provide direct access to their inventories as the airlines used to do. This is partly because the reservation systems used by hotels and car rental companies are not as heavily regulated as airline CRSs and GDSs and partly because their volume in rela-

tion to airline ticket sales are relatively low. So there have historically not been many common networks or distribution methods for these companies to use that can easily reach the travel agent, other than the airline CRSs and the more recent GDSs (although this is changing with the advent of the Internet). Consequently, at present you won't find many single company terminals used for airline, hotel or car rental reservations installed in travel agents. Most agencies now use GDSs. While GDSs are usually considered fine for general purpose supplier reservations from the agent's viewpoint, they are nevertheless, not so ideal from the supplier's perspective. This is because they show competitors' products and allow the buyer to compare prices and service levels easily. Ideally, suppliers would rather a potential consumer or agent communicated with them directly during the sales process. However, this is not so because the GDSs have, over the past ten years or so, stolen the high ground and now dominate the agency distribution channels at present. The Internet is changing this situation and this is explored in more detail in Chapter 5 – The Internet.

- **Focus on business travel** Air, hotel and car rental customers tend to be business travellers. The leisure traveller usually purchases a holiday package in which the hotel and possibly the car, have been obtained in bulk and factored into a package price. Business travellers on the other hand need to purchase these products on an *ad hoc* basis often at short notice. The problem from the supplier's viewpoint is how to reach the business travel agent or the corporate business traveller other than through a GDS. In the past there has been no real answer to this question. Only viewdata offered a potential alternative although there are substantial barriers, for example: (a) viewdata is principally a leisure travel technology, not ideally suited to business travel with its demand for high speed response; and (b) there are a lack of viewdata PCs in business travel agencies and companies. Once again, however, the Internet offers a very real alternative method for suppliers to establish a direct communications channel with their customers.

- **Relatively low revenue source for non-air products** Although hotel and car businesses are profitable, they are regarded by many agents as very much secondary to air sales. One reason for this is that it is difficult to track the commission due from hotel sales (although see Chapter 8 for a description of the commission tracking systems that overcome many of these problems). Each transaction is usually for a relatively small amount of revenue and the overhead involved in keeping tabs on which hotels owe what amounts for large numbers of bookings is a chore most busy travel agents can do without. A back-office system can help here but there really is not the same demand from agents for dedicated hotel and car system terminals, for this reason. In other words, it has not been economically feasible for suppliers to install their own dedicated reservations terminals in agencies. Instead, they have used the GDS route to travel agents.

The net result is that there are not many dedicated airline, hotel or car reservation terminals in travel agency locations. The bulk of the automated reservations come from the GDSs that co-host or connect to most of the major car and hotel systems. Nevertheless these travel supplier companies do market their own dedicated systems to a small niche within the travel agency population. The thrust of their marketing effort tends to be the very large business travel agents, the headquarters of some of the large travel agency multiples, some very large companies and the specialist hotel reservation centres whose sole business is making hotel reservations for agents, companies and the general public.

It is for these reasons that I shall not be covering dedicated airline, hotel or car systems in any detail in this book, i.e. single company terminal systems. In my view, most of what you need to know on this subject can be found in the GDS chapter and in the description of hotel distribution systems like Thisco and Utell. Finally, any opportunities for suppliers to distribute their products to travel agents, companies and consumers directly, although problematical in the past as described above, are now becoming realities with the advent of the Internet and Intranet technologies, which I address in Chapter 5.

4

Distribution systems

Introduction

In Chapter 3, I discussed how suppliers have used IT to run their businesses and support the sales process. The next step is to consider one of the ways in which these suppliers can distribute their products and services to consumers. GDSs are presently the leading distribution channels for most major travel suppliers. This is certainly true for airlines, hotels and car rental companies, all of which participate in GDSs. There has been a rapid rate of change within the GDS sector over the past few years and no doubt this will continue as new electronic distribution channels open up. But before we explore newer distribution channels like the Internet, it is very important to understand clearly how the established distribution systems work because they have been channelling the vast majority of travel products and services via travel agents to consumers in both business and leisure sectors of the market, for some years now. Incidentally, let me expand upon what I perceive as the difference between a CRS, a GDS and a HDS. These are important distinctions because the terms seem to be used interchangeably by many people in the industry.

- **CRS** A CRS is a travel supplier's own computerized reservation system. It is owned and operated by the travel supplier, although some CRSs may provide co-hosting services to other suppliers – rather like a kind of outsourcing arrangement for smaller travel companies. The term CRS is mainly used to describe an airline's own computer reservation system, usually a large main-frame computer. In order to connect

to a CRS, travel agents used to have a dedicated dumb terminal that was connected only to a single airline's CRS computer, or in a minority of cases, a dedicated hotel reservation system. All other communications with other airlines were done via the airline to which the travel agent was connected.

- **GDS** A GDS is a super switch connecting several CRSs. Each GDS is powered by a large main-frame computer that performs many of the end-user functions that are delivered to travel agents using PC-based terminals. GDSs use a co-operative processing architecture in which some functions are driven directly by the GDS computer and some are controlled by the airline CRS selected by the end user. Most GDS computers have their own large data bases which are used primarily for the indexing and control of booking records.
- **HDS** A HDS is rather like a GDS that has been designed exclusively for the hotel business. At its core is a large computer system that often comprises several super-servers. These large servers can provide certain operational functions to hotels that access the HDS via on-line terminals. In addition to this, the HDS is connected to other hotels that have their own in-house reservation systems and to the major GDSs. In summary then, HDSs distribute hotel systems to GDSs.

GDSs were formed from alliances of several CRSs, each of which had its own airline backer. So, their original formation was to some extent influenced by intra-airline relationships as well as the technical architecture of each airline's CRS. Once formed,

there was a period of some consolidation and shake-out, after which four main GDSs emerged: Amadeus, Galileo, Sabre and Worldspan. In addition to these four major GDSs there are also four CRSs or smaller regional CRSs, each of which has its own particular niche. We are still witnessing the next stage in the GDS's life cycle. This is the gradual distancing of the parent airline owners from the GDSs they originally created. The degree to which GDSs become truly independent of their airline creators remains to be seen. But let's take the first step in our exploration of GDSs and discuss in a little more detail, exactly what a GDS is and is not.

WHAT IS A GDS?

The term GDS is used primarily to describe the systems that travel agents use to book airline seats for their customers. Most of the world's major GDSs are therefore owned by airlines and most travel agents are connected to one of the four major systems (more on that later). But in fact, GDS technology is also used within the hotel industry to distribute accommodation services to travel agents and consumers. The common technological thread running through both types of GDS is the so called *switch*.

In this context a *switch* is simply a computer that is connected on the one side to many different supplier systems and on the other side to many different end users. The systems connected to the supplier side of a switch are generically known as *host systems*. The end-user side of a *switch* is more varied. End users of a *switch* comprise travel agents, consumers and other distribution networks that themselves make the supplier services available at the point-of-sale. So, it is possible for these *switches* to be inter-linked and in fact, many of them are: it is this inter-linking that makes the whole subject of *switches* and GDSs so complicated.

For historical reasons, the airline GDSs currently 'own' the travel agent distribution channel. The reasons for this are as follows. It was the individual airline CRSs that started offering their reservation terminals to travel agents, many years ago. At this time, the hotel industry was only just getting established in the field of marketing automation. In those early days of travel and tourism

technology, hotels were focusing on building computer systems to maintain and control their inventory of rooms and associated accommodation services. So, by the time hotels were sufficiently developed in the area of computerized room inventories and reservation systems, the airlines had already sewn up the market for terminals in travel agencies. Also, airline ticket sales have always been both: (a) high volume, and (b) high revenue earners for travel agents. So, it made sense for travel agents to invest in a technology that maximized their airline sales productivity.

Hotels therefore found themselves in the position of having to connect their reservation systems into the airline GDSs in order to reach the travel agent. But this threw up further challenges for the hotels. It meant that in order to reach a global spread of travel agencies, they were required to connect to several different GDS switches. The problem is that each GDS has different interconnection requirements. So, the cost incurred by a hotel in connecting its reservations system to multiple GDSs was quite significant. This is why hotels have banded together and created their own special type of GDS.

So, let's first start with a review of the airline GDSs. Although similar in concept, each one has its own individual characteristics. That is why I have included all four major GDSs in this section. A good understanding of each one of these is critical to several other distribution technologies that I cover in other sections of the book; then, once you have a good understanding of airline GDSs, we can go on to look at hotel distribution systems (HDSs), what their objectives are and how they work.

Airline GDSs

Airlines distribute their products, i.e. airline tickets, to customers via several channels. The cost of doing this represents one of the major portions of an airline's bottom line expenses and is therefore a major determinant of profitability levels. To illustrate this, airline distribution costs average around 18.2 per cent of an airline's total expenditure on international services (*source*: Pierre Jeannot, IATA Director General, 3-6 November 1996): a great proportion of these costs are directed at electronic

distribution systems or GDSs. An airline GDS is a *switch* that connects several airline CRSs to travel agents. However, the use of the term switch rather underplays the functions that are provided by airline GDSs. For a start they do a lot more than just switch message traffic between CRSs. Most GDSs also provide a great deal of functionality themselves, for instance, PNR consolidation, common language interfaces and the control of remote ticket printing; and the networks that some of the GDS switches use, are massive wide-area networks comprising thousands of telecommunication lines and dedicated switching computers that span the globe.

Historically, the principal GDS customer has always been the travel agent, with just a handful of large companies also using the system. However, with the advent of the Internet, the consumer has joined the ranks of the GDS customer base. What both sets of customers are looking for is access to supplier systems that provide travel products and services, and this is where the GDS world starts to become segmented. In the USA, 80 per cent of all travel bookings are accomplished perfectly satisfactorily using a GDS system. However, in Europe and other parts of the world, only 20 per cent of all bookings are done via a GDS. The reason? Well, in the USA, most people travel by air and sometimes stay in a hotel or rent a car. In Europe, people travel a lot more by other means, such as rail and ferry. Also, package holidays are far less important in the USA, whereas in Europe they are a large part of the travel market.

In the early days of CRSs the terminals were offered to travel agents by the airlines themselves. These were the bad old days of bias where airlines deliberately showed their own flights at the top of the list when an itinerary was being developed in a CRS by a travel agent. However, along with deregulation came a dictate that no CRS could bias its system either in favour of its own flights or indeed against those of its competitors on an identical itinerary. This took the sting out of the CRS as a principle marketing tool for the airline business itself.

Over the following years, airline systems became ever more sophisticated and more importantly, CRSs became almost indistinguishable in terms of the functions offered, i.e. the core airline booking functions, such as last seat availability. More

recently, airlines are beginning to devolve themselves of GDS ownership. This has occurred principally because trading block bodies such as the EC consider it unfair for large airlines to influence their sales to consumers unduly as a direct result of their size. For example, mega-carriers can invest substantial sums in GDSs and thereby enjoy an advantage over their smaller competitors who cannot compete on resource grounds alone. All this has been done in the interest of the consumer.

However, there are still some carriers who participate in GDSs but block some of the functions of their systems when accessed within their home market. This is usually when the airline distributes its own CRS within its home market. In such cases, this action tends to boost the usage of the CRS and hence the sales of the airline that distributes it. Because this occurs in only the minor markets of the world, it is not a significant point. What is significant is that generally speaking, airline reservations functionality is virtually a level playing field for all airlines. This is especially true in terms of the way in which airlines participate in GDSs.

So, all of these factors have changed the way in which both the airlines as suppliers and the travel agents as intermediaries view the GDSs of the world. It is for these reasons that GDSs now compete for travel agency users far more, using factors such as geographic distribution, richness of functions, access to non-air suppliers, reliability, customization and so on. Airlines focus on increasing revenues by improving their core service and GDSs focus on increasing revenues by attracting more users and generating higher booking volumes for which they derive a booking fee from the recipient airline.

The initial focus of GDSs was to provide travel agents with a single reservation system to support the sale of airline seats and related travel products, such as hotel and car hire, via a single computer terminal, usually a PC. GDSs require a massive investment because they are extremely large computer systems that link several airlines and travel principals into a complex network of PCs, telecommunications and large main-frame computers. There are therefore very few GDSs in the world today. Some say that eventually there will only be two or three GDSs in the next decade as more

Table 4.1 The world's major global distribution systems

GDS	Terminals	Locations	Countries	Airlines	Hotels chains	Properties	Cars
Amadeus	168,000	39,000	117	440	268	35,000	55
Galileo	128,000	33,000	66	500	208	37,000	47
Sabre	130,000	30,000	64	400	215*	35,000	50
Worldspan	39,101	15,000	45	414	182	26,000	40

*Sabre's hotel chains exclude chains within chains



Figure 4.1 The Amadeus logo

mergers take place and more strategic alliances are formed. Table 4.1 shows some statistics that characterize the world's major GDSs.

In the following sections you will find a presentation of all four major GDSs: Amadeus, Galileo, Sabre and Worldspan (plus a summary of Infini, a Far East GDS). They are presented in alphabetical sequence and hopefully in a completely unbiased way.

AMADEUS

Amadeus (Fig. 4.1) is now the largest of the world's four GDSs. Its 168,000 terminals are used in over 39,000 travel agency branches and 8,500 airline sales offices around the world. It serves 117 countries and employs a total of almost 43,000 staff. Amadeus is connected to 440 airlines (of which 102 are directly connected), 268 hotel chains (representing over 35,000 properties) and 55 car rental companies.

Amadeus Global Travel Distribution was formed in 1987 by Air France, Lufthansa and Iberia. In April 1995, Amadeus Global Travel Distribution acquired the System One CRS from Continental

Airlines of the USA. It is now a global GDS owned by its founders, with Lufthansa, Iberia and Air France each holding 29.2 per cent of the shares and Continental the remaining 12.4 per cent. In addition to these owners, Amadeus has over 32 partner airlines, each of which is directly connected to the Amadeus system. The company has a decentralized organizational structure, with its headquarters and marketing functions located in Madrid, Spain, its development activities in Sophia Antipolis, near Nice in France, and its operational centre in Erding, near Munich, Germany. National marketing companies (NMCs) are located in each major country. It is worthwhile exploring the components of this structure in a little more detail before we dive into the Amadeus system functions in more detail:

- **Amadeus Global Travel Distribution (Holdings)** Based in Madrid, this group supervises the group's activities and co-ordinates the subsidiary companies. It is responsible for the definition of corporate and financial strategy and goals as well as controlling the financial and legal obligations of the Amadeus group.
- **Amadeus Marketing** Responsible for all product marketing related functions, this group also co-ordinates the activities of all Amadeus NMCs in each country. It controls the flow and distribution of income between the service providers, the NMCs and Amadeus product marketing and management. Another set of key functions comprises the documentation, training and help-desk functions for NMCs, airline users and service providers.
- **Amadeus Development** This is the central systems development group and it is based in Sophia Antipolis. It designs, develops and tests

all Amadeus Central System software and provides a maintenance function for the group. Besides the central system, Amadeus Development is responsible for the AmadeusPro workstation products. In general, this group is charged with research and development activities for new Amadeus products.

- **Amadeus Data Processing** This group runs the Amadeus central computers and the global network (AMANET). It is located in Erding, just outside Munich in Germany and is home to a special purpose computer building that houses some of the world's largest main-frame computers and a whole host of smaller inter-linked machines, e.g. six IBM main-frames, two Amdahl main-frames, four Unisys main-frames with 68 processors and massive amounts of magnetic data storage. The operating system environment is in several parts: an IBM transaction processing facility (TPF) for reservations applications, an IBM virtual machine (VS) and IBM multiple virtual storage (MVS) for software development and support. The standard Unisys operating system OS 1100 is used to run the Fare Quote system. These computers have a maximum capacity of 900 end-user transactions per second, and the current workload of approximately 30 million transactions per day is therefore well within this ceiling.
- **NMCs** There is one Amadeus NMC located in virtually every major country. Each NMC is responsible for the marketing of Amadeus within its own geographical area. This includes functions such as local customer service, help-desk support for travel agency users and running the national distribution system (NDS) network. Most NMCs own their local NDSs through which subscribers gain access to non-air services including rail, ferries, tour operators, event ticketing and back-office systems.
- **Partner airlines** Many Amadeus partner airlines own a share-holding in their local NMC (through which Amadeus is provided to subscribers). These airlines also use Amadeus for their own internal purposes.

The acquisition of System One from Continental Airlines in April 1995 was a significant move for Amadeus, and it is therefore worthwhile examining

this in a little more detail. To be precise, the acquisition made by Amadeus was of all the CRS assets of Continental Airlines' System One subsidiary. As a by-product of this acquisition, Continental obtained a 12.4 per cent stake in Amadeus. Overnight, Amadeus became the largest single GDS in the world.

System One's travel agency customer base and information management software were transferred into a newly formed company called System One Information Management LLC. This new company is owned in equal parts by three stakeholders: Amadeus, Continental Airlines and Electronic Data Systems (EDSs). The resulting entity operates within the Amadeus organization as an NMC. It provides information management, marketing, distribution and customer support functions to travel agencies in the USA, Canada, Mexico, Central America, the Caribbean and markets in the Pacific area.

The System One Information Management LLC is the largest NMC in the Amadeus group with its products used by the top ten USA travel agency chains that themselves service a significant share of America's business travel market. This NMC has been charged by the parent company with the further development of the Amadeus product line, drawing on resources from EDS and Amadeus itself. The objective is to make all new products developed in this way available to all Amadeus subscribers around the world. This development programme has been assigned the name Operation Unison. This specifically includes the constant and gradual enhancement of System One functionality, culminating in the transition of all System One Information Management subscribers to the Amadeus Central System in the Erding data centre. In fact the first stages of this transition have already been completed with the linking of the two computer centres and the introduction of new functionality that enables subscribers to share bookings across both computers. The end-date for the complete transition was year-end 1997.

So, Amadeus operates its GDS through the decentralized organization described above. However, in addition to this, it also keeps close contacts with its primary subscribers through the Travel Agency Advisory Board (TAAB). This is a consultative group formed in 1989 with members from travel agencies in several different markets.

The prime objective of TAAB is to assist Amadeus in product planning and development activities.

The underlying IT architecture of Amadeus is subtly different from the other three major GDSs. In almost a kind of reflection of its organizational structure, Amadeus has adopted a more decentralized method of inter-connecting its systems components. At the core is the Amadeus Central System that controls access to the core supplier systems on a global scale, i.e. air, hotel and car rental. Then at the NMC and NDS level, i.e. the local market level, Amadeus provides interfaces to non-air suppliers, such as rail companies, ferry companies, tour operators and events providers. Finally, there is the AmadeusPro software, through which subscribers gain access to Amadeus and use it on a day-to-day basis. Let's take each of these components in turn.

The Amadeus Central System

The Amadeus Central System supports workstation access and host booking functions for global airlines, hotel chains and car rental companies. These central systems applications, which run on the Amadeus main-frames housed within the Erding data centre, fall into two main types: (i) host connectivity applications, and (ii) core end-user support functions. I'll cover each in a little more detail. First, the host connectivity applications for air, hotel and car.

Amadeus Air

The Amadeus Central System supports the flight schedules of more than 740 airlines of which 440 may be booked by subscribers. Of the 440 airlines, 220 participate with Amadeus in Standard Access, 140 in Direct Access, 150 in Amadeus Access and over 230 airlines show last seat availability displays. Incidentally, these individual figures do not add up to 440 because many airlines are connected to Amadeus so as to provide multiple levels of participation, i.e. they are counted more than once. So, it is important to understand the various levels of airline participation that Amadeus provides. The following are the main ones:

- **Amadeus Standard Access** This is the most basic level of participation. Flight schedules are loaded into the Amadeus data base from

magnetic tape provided by participating airlines. All information is then shown on Amadeus principal displays, but seat availability and subscriber reservations are made using teletype messages that flow between Amadeus and the host airline's CRS.

- **Amadeus Direct Access** This enables users to be connected to the participating airline's CRS and therefore their seat inventories, on what is known as a secondary carrier specific display. This means that all messages are presented to the user in standard Amadeus format and all information on seats, schedules, fares and flight details is right up-to-date. Seat sales are reported to the participating airline by teletype and once confirmed, are guaranteed.
- **Amadeus Access** This is the highest level of participation and is achieved by means of an on-line real-time link between the Amadeus GDS and the participating airline's CRS. Three functions are supported within Amadeus Access:
 - *Full Amadeus Access* Participants at this level enjoy both the Amadeus Update and Amadeus Sell functions described below.
 - *Amadeus Update* This enables end users to view real-time schedule information including, for instance, flight irregularities and last minute changes, on their principal displays. When the system shows nine seats available, this actually means that at least nine seats are available for sale. When the system shows a number less than nine, then this represents the actual number of seats left on the flight.
 - *Amadeus Sell* With this function, when a user sells one or more seats, the sale is immediately confirmed by the participating airline's CRS. The airline's own record locator is sent to Amadeus and stored in the PNR. This is achieved via a special function invoked by the user, called Record Return.
 - *Record Return* This is a function by which a participating airline's CRS acknowledges the receipt of a sale made in Amadeus by sending its own record locator for display to the user. This may be requested by the end user who makes an RL entry on an Amadeus PNR. Record Return is automatically integrated within Amadeus Sell but is optional for airlines participating in Amadeus Direct Access.

I have mentioned the term Principal Display several times, so it is about time I defined it. First of all, Amadeus's Principal Display conforms to the neutrality rules of the EC Code of Conduct for CRSs (see Chapter 1). This means that all flights shown on a Principal Display are shown in sequence by: (i) direct flights by the departure time closest to that specified by the end-user's availability request entry, and (ii) connections by total elapsed time of journey with shorter times at the top of the list. The Principal Display is the display shown by Amadeus of its participating airline CRSs. Amadeus considers this to be accurate and constantly up-to-date thus obviating the need to view secondary displays that are produced directly from participating airline CRSs themselves. Amadeus Principal Displays may be customized by the end user in several ways. This is an important feature of the GDS, which I will therefore illustrate by way of some frequently used examples as set out below:

- **Neutral schedules** This is the basic display that shows the schedules of flights according to EC ranking guidelines as described above. It includes the schedules of all participating airlines, including those that are full and supports bookings on all participating airlines. Neutral schedules may be modified by users to rank flights by elapsed time, departure time or arrival time. They may also be restricted to the flights, or combination of flights, of up to three airlines.
- **Neutral availability** This type of Principal Display shows only those flights that have seats free for booking purposes. Possible modifications of this type of Principal Display are to show flights by connecting point, connecting time, time of departure or a list of flights up to one week ahead.
- **Dual city pair** This shows flights between the city of origin, i.e. the departure city, and two different destinations on the same screen. Alternatively, the display may show the outward and return flights on the same screen.
- **Carrier preferred** This type of Principal Display is only available for those airlines that participate in Amadeus at the Amadeus Access level. This shows only flights of a chosen carrier

or other airlines that the chosen carrier wishes to display. All such flights are ranked by the carrier's chosen preference.

- **Direct access** This is identical to 'carrier preferred', as described above but with the added modification that displays may be ranked by the time of departure. Other modifications to the ranking are supported according to the participating airline's choice.
- **Timetable** Shows a timetable of all airline flights between a given city pair. The display may be ranked by date range or a specific day of the week.

The above Principal Display customization features are very important to a travel agent, or an airline sales office come to that. It enables the end user to tailor the GDS display to meet the needs of his/her own particular business or corporate customer: all this is provided by Amadeus under the umbrella of the EC Code of Conduct, which aims to limit the power of GDS systems to discriminate unfairly between airlines for commercial advantage.

A critical function of any GDS that is closely linked to flight availability is the fares that pertain to those flights. The Amadeus Fare Quote system supports this key function. It is a system based originally on the SITA and Air France fare quote systems. Amadeus Fare Quote now holds over 50 million specified fares and can build a virtually unlimited number of special fare combinations via its dynamic add-on processing capability. It obtains these fares from a number of sources, including SITA, ABC, ATPCO, IATA and approximately 90 airlines that maintain their fares on-line using the Amadeus Fare Quote system.

The Amadeus Fare Quote system can price up to 12 booked flight segments with 11 fare components. It can also support *Fare Driven Availability*, which allows the user to request a display of all flights on a specified itinerary that meet certain fare criteria. The *Best Buy* feature is also very useful in today's price sensitive markets. It automatically finds the lowest possible fare for an existing booking and allows the travel agent to re-book the itinerary using the lower fare. Finally, there is *Informative Pricing*, which allows an itinerary to be priced without having to create a PNR first.

Amadeus Cars

Amadeus has on-line links to most of the world's major car rental companies. This allows subscribers to book car rental services and either include them as part of an existing air PNR or to provide them as a separate stand-alone service. The computerized inventory control systems of car rental companies may be connected into Amadeus via two alternative methods:

- **Amadeus Standard Access** This method of participation is based on standard teletype messages that flow between the car rental company's computer and the Amadeus Central System computer. This allows booking messages to be sent to the car rental company, which responds by returning confirmations formatted as teletype messages.
- **Amadeus Complete Access** This is based on high speed telecommunications links between the car rental company's computer and the Amadeus Central System computer. When a booking is made, a booking request message is instantly sent from Amadeus to the car rental company's computer. This returns a message containing a confirmation number and other relevant data, within a period of between four and eight seconds.

Car rental displays fall into four main types: Car List, Car Inventory, Car Availability and Car Shopper's Guide. The Car List display shows all car rental offices and their proximity to local airports. Car Inventory shows car companies serving a specific location and displays the availability status of each car type, for each company. Car Availability provides availability and rates for a range of car types, including rate plans, rate categories and mileage charges. Finally, the Car Shopper's Guide is a multi-company display that searches for all car types and/or classes and gives an indication of the best car rental value in ascending order based on the period of rental and the location specified. All displays may be customized by the end users according to their own and their customers' preferences.

Amadeus Hotels

Over 35,000 properties around the world may be booked directly via the Amadeus Hotels facility:

and in addition to the standard set of hotel rates available via participating chains, a facility to allow travel agents to store their own specially negotiated hotel rates was introduced in 1995. The Amadeus Hotels function was developed alongside the car rental system previously described. The advantage of this to the user, is that a common approach is used for both products. The levels of participation, for example, are Amadeus Standard Access and Amadeus Complete Access, which are virtually the same as described for car rental above.

Even the hotel display formats are similar in concept. These are Hotel List, Hotel Inventory, Hotel Availability and Hotel Features. Hotel List shows a comprehensive list of hotels for a specified city or country including the location of the hotel in relation to the city centre and the recommended form of transport from the airport to the hotel. Hotel Inventory shows room availability by type of room, over a 48-day period. Hotel Availability, as the name implies, shows the availability and rates for a combination of room types, including property codes, area identifiers, currency codes and hotel feature indicators. Hotel Features gives detailed information on the features and facilities offered at each property as well as booking policies and negotiated rate booking procedures. As for car rental, each display may be customized by the end-user according to their mix of business and the needs of their corporate customers.

Core functions

The core functions that support the Amadeus GDS are grouped under the banner Amadeus Service. These functions are generic and support nearly all the major activities of end users. They fall into two main groups: (a) functions that improve the productivity of end users by automating repetitive tasks, and (b) information that is commonly needed to service customers of travel agencies and the sales offices of partner airlines. Here are just a few of the main ones:

- **Central profiles** This enables travel agents to store personal information about their business travel companies and frequent travellers. Examples of this kind of information are company name and address, department codes, travel policy, traveller dietary needs, individual seating

preferences, home address and contact telephone numbers. All of this information may be referenced during the booking process and certain fields may be automatically copied into the PNR. In fact a PNR can be created automatically from a Central Profile *and* a Central Profile can be automatically created from a PNR.

- **Card check and ticket check** This is a function that supports sales made by customers using credit and charge cards. It automatically verifies credit card sales by sending authorization messages to the computers of major card companies. The checks also extend to lost, stolen or black-listed airline tickets.
- **Ticketing** Amadeus supports all three ticketing methods used around the world. These are: (i) the conventional transitional automated ticket (TAT), (ii) the ATB, and (iii) the new ATB2 (see Chapter 3 for a more detailed discussion of ticketing methods). The support provided by Amadeus for these different ticket types varies with the deployment of each type, on a market-by-market basis.
- **Amadeus' information system (AIS)** This provides users with access to on-line information on Amadeus products and participating suppliers. An up-front news page gives highlights of new additions.
- **Amadeus' instant marketing (AIM)** This is an important feature that suppliers can use to market their products and services to travel agents around the world. It allows suppliers to target promotional and information messages to subscribers via AIS pages, sign-on messages, broadcast messages and display messages (see the special section later in this Chapter).
- **Calculator** A self-explanatory feature but one that has been enhanced also to provide currency conversion functions and encoding/decoding of city, airport and provider codes.
- **TIMATIC** On-line access to passport, visa and health information for all countries.
- **On-line help** An information source that helps subscribers solve problems related to their use of the Amadeus system. This is probably the first step that a user would take in attempting to resolve a problem. If this was unsuccessful, the local Amadeus help desk would need to be contacted by telephone.

- **Practise training** This simulates live use of the system but does not create any live bookings and does not allow any entries to affect the live Amadeus system. It is extremely useful for first time users who wish to try out their recently acquired knowledge of Amadeus without affecting live work.
- **Scholar/teach** This is a self-learning facility that subscribers can use at their own pace to gain a solid grounding in how to use Amadeus. However, it is nevertheless secondary to attending a purpose-designed classroom training course specifically designed to teach people how to use Amadeus.

Finally, one of the most important functions in any GDS is the way in which PNRs are processed. The Amadeus PNR contains all the information related to a customer's travel plans. A travel agency may create and access its own PNRs and it may optionally grant access to its PNRs, to other affiliated agencies, which may be located in other countries. In addition to this, a travel agent may also authorize any one of 102 participating airlines to access and change a traveller's PNR. This can be a valuable customer servicing feature once the traveller has departed on their journey.

The 24 information fields that comprise an Amadeus PNR may be created by the end user in any convenient sequence, at the same time. Amadeus automatically places all such entries into logical or alphabetic sequence. PNRs may be modified by reference to the line number that contains the data to be changed. Flight classes and dates may be re-booked in a single transaction, thus saving time and maximizing an end user's productivity. All such changes are recorded in a PNR history file, which can be very useful when a dispute arises between a customer and their travel agent. Amadeus PNRs may be retrieved by record locator, name of traveller, flight number, frequent flyer number and a variety of other key fields.

Amadeus also provides special PNR features for groups of travellers. Groups, in this context, are more than ten passengers who all share the same itinerary. A specialized feature called Non-homogeneous PNR enables groups to be linked, but for their individuals to each have their own PNR entries. With this feature, the group view

may nevertheless, still be displayed upon request. As mentioned above, a PNR can be automatically created from a Central Profile and a Central Profile can be automatically created from a PNR. Finally, the Replication facility allows a new PNR to be automatically generated from an existing one using a variety of rules, e.g. copy all segments but exclude elements not associated with the new PNR.

Local travel supplier systems

One of the keys to successfully connecting a number of non-air supplier systems to Amadeus at the local level is the back-bone telecommunications network, which is called AMANET. This is a high speed terrestrial network capable of transmitting 29 million bits per second via 14 data lines, each carrying 2 Mb/s. Incidentally, the word 'terrestrial' as used here, means that AMANET is based on a network of data lines rather than satellite links. The network comprises a total of 14 nodes located at strategic points around the world (in Europe, North America and Asia). In AMANET terms, a node is defined as a group of computers and modules that routes data in the proper direction; and data in this context can be anything from simple text messages to voice and video traffic.

Because Amadeus is totally dependent upon AMANET, Amadeus has taken many steps to protect the integrity and reliability of the network. All high speed main trunk lines, for example, are duplicated; and despite the fact that the core operational network is terrestrial, AMANET uses satellite communications technology to: (a) provide a back-up service in the event that land based lines become unavailable, and (b) transmit data to any point in Asia via its own satellite ground station. The network also has the capability to route messages via alternate paths to avoid areas of congestion or unavailability.

AmadeusPro

AmadeusPro is a PC-based travel agency management system that focuses on providing an easy to use Windows based GUI to the Amadeus Central System. The family of products that falls under the AmadeusPro banner is as follows:

- **AmadeusPro Res** A software product designed for operation on a standard PC running the IBM OS/2 operating system. This provides a mouse and icon based interface to the Amadeus Central System as well as an interface to locally connected suppliers. It also allows users to work with standard OS/2 based integrated office applications, such as spreadsheets and word processors.
- **AmadeusPro Tempo** This is almost identical to AmadeusPro Res but is based on a Microsoft Windows operating system environment. This product does not demand such a high level of PC specification, for the workstation platform.
- **AmadeusPro Base** This is an extended version of AmadeusPro Res that supports locally stored client profiles and other booking reference data. All data stored locally on the PC in this way are used during the booking process in an entirely interactive way.
- **AmadeusPro Sale** This is a mid-office product that provides support for the reservations functions, local client profiles, local storage of other data and integration with office productivity tools (see Chapter 7 for a definition of front-, mid- and back-office agency management systems).

These products all provide the user with three optional ways to use the software. The basic level is called the Guided Mode. It helps the inexperienced user through the booking process using preformatted screen and fill-in boxes. Speed Mode shows more native Amadeus Central System displays and supports special tool bars with colour coded push buttons that are activated by mouse clicks. Amadeus estimates that Speed Mode can reduce input effort by up to 68 per cent and thus help the user achieve significant productivity benefits. Finally, Expert Mode allows the user to work entirely with the native Amadeus Central System.

GALILEO

Galileo (Fig. 4.2) is one of the world's larger GDSs, with 27 per cent of the automated travel agency market. It required an initial investment of £200 million to set it up and was first introduced in 1991. Galileo International is the name of the



Figure 4.2 The Galileo logo

global distribution company that provides two core systems to countries around the world: Apollo in the USA and Galileo throughout the rest of the world. Within each country Galileo has a national distribution company (NDC) that is responsible for selling and supporting the Galileo service locally within that country. There are now 45 NDCs providing coverage across the Americas, Asia Pacific, Europe, Africa and the Middle East. In the UK the NDC is called Galileo UK, which is a part of Travel Automation Services – itself a wholly owned subsidiary of British Airways. But before we look at that, it is worth considering Galileo from a global perspective.

Galileo International

Probably the first major development in Galileo's history was the formation of the United Airlines Apollo system in 1971. In 1986 Apollo's owner was

re-branded Covia, which became an independent affiliate of United Airlines. Galileo International was founded in 1987 by British Airways, Swissair, KLM and Covia. Originally, the headquarters were located in Swindon in the UK. More recently it was decided to relocate the headquarters to Chicago in the USA. Other key sites are Denver (where United Airline's Apollo system is based), Miami, Swindon and Hong Kong. In 1992 the European and North American owners of Galileo and Covia combined the two companies to form a major GDS. The combined group now has over 2,000 staff. Galileo International is jointly owned by eleven of the world's major airlines as shown in Fig. 4.3.

Additionally, Galileo International has two associate airlines: Ansett and Australian Airlines. The prime function of Galileo International is to provide the core reservation services for all of the NDCs. It is responsible for the day-to-day operation of the computers, data bases and telecommunications facilities that distribute 500 participating airlines (200 of which are linked directly to Galileo), 37,000 hotel properties and 47 car rental company systems, to NDCs in countries around the world. Between them, these two systems support some 33,000 travel agency locations using 128,000 terminals in 66 countries. The main categories of supplier systems include airlines, hotels, car hire companies, rail operators, ferry companies, sporting

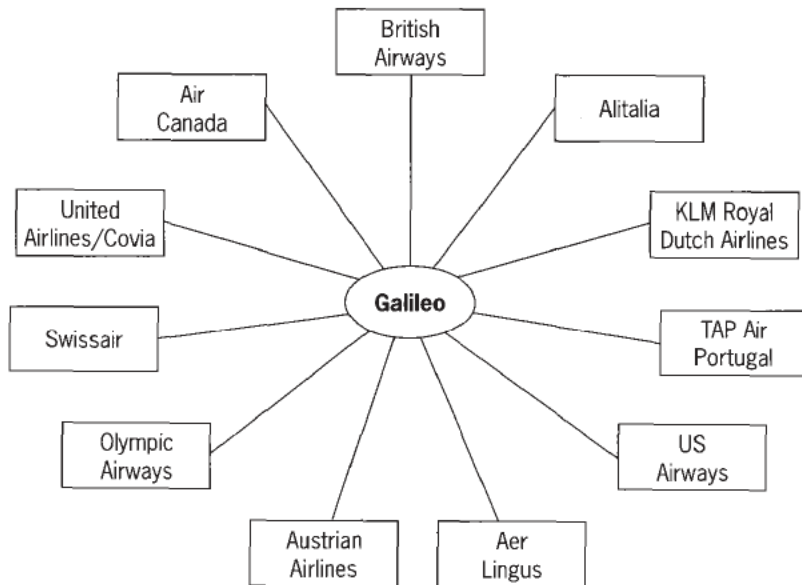


Figure 4.3 Galileo's owners

event promoters, theatre ticket agencies, general travel information providers and much more.

Before we evaluate the end-user aspects of Galileo, it is important to understand the core system. The core system used by areas of the world outside the USA is called the Galileo Central System (GCS). In fact, even USA users are gradually being migrated to this common core system.

GCS technology

The Galileo GDS is a global computer and telecommunications system that uses a central worldwide data base and high speed links to many airline CRSs. Users of Galileo interact with the system via a special airline oriented language that resembles a kind of special 'computer like' code. However, GUIs which run in Galileo's PC-based delivery systems are increasingly making this coded language easier to use for travel agents. This allows the central system to carry on using the highly efficient message format so ideal for computers but so disliked by human beings. Even with these coded message formats a considerable amount of processing power is needed just to run the network.

The central Apollo and Galileo systems are run on 15 IBM and Amdahl main-frame computers and other processors, all of which are housed in a large computer complex in Denver with a combined floor space of 21,924 m² (equivalent to 46 full-sized tennis courts). These computers have a processing power of 3,283 MIPS (million instructions per second) and handle over 66 million messages each day. The operating system environment is based on IBM architectures and uses a transaction processing facility (TPF), a virtual machine (VM) and a multiple virtual storage (MVS).

All computers on the global network are connected by a wide area network based on IBM's SNA protocol. Galileo distributes its systems around the world using a variety of telecommunications technologies. The company's sites in Denver and Swindon use a 'meshed' back-bone network to provide direct connections between participating supplier systems and travel agents. The term 'meshed' network means a system of leased high speed communication lines that are routed via alternative points. When viewed as a diagram, this appears to connect each location in a multitude of

point-to-point lines that resemble a mesh. Network architectures such as this provide a high degree of resilience in the event of failure of a single line or node point.

In addition to the meshed back-bone network, Galileo makes extensive use of independent international network service providers to increase its reach into the global market. Where it is justified, Galileo has incorporated network hubs from strategic network providers into the high speed switching and routing systems in order to provide a fault tolerant front-end to the reservations systems. This reduces response times, i.e. makes the system faster, increases reliability and improves the quality of the managed service afforded to the customer.

So, the Galileo Central System is distributed around the world using a kind of super-highway. But at the local level in each country, Galileo changes onto 'B' roads that are more suitable to local market conditions. It is for these reasons that the NDCs in each major market use their own communications networks to distribute Galileo on a local basis. The UK NDC, for example, uses an X25 communications network with widely dispersed local nodes. The European gateway for this local X25 hub is located in Swindon in the UK.

Finally, because Galileo's operations are dispersed widely around the world, it is critical to the efficient running of the company that a fast and reliable internal communications network is available. The Galileo corporate back-bone network provides such a function. It supports LAN and WAN technologies between major sites, such as Swindon, Denver and Chicago. This internal network supports voice, data and video traffic.

Travel Automation Services (TAS)

British Airways owns a subsidiary in the UK called Travel Automation Services (TAS). This company started 'life' way back in 1977 as Travicom (see Chapter 3 – for the history of airline reservation systems). In 1997 TAS was re-structured to form three separate business units: Galileo UK, Chameleon and Icanos. Each of these companies focuses on a specific area of the travel automation market:

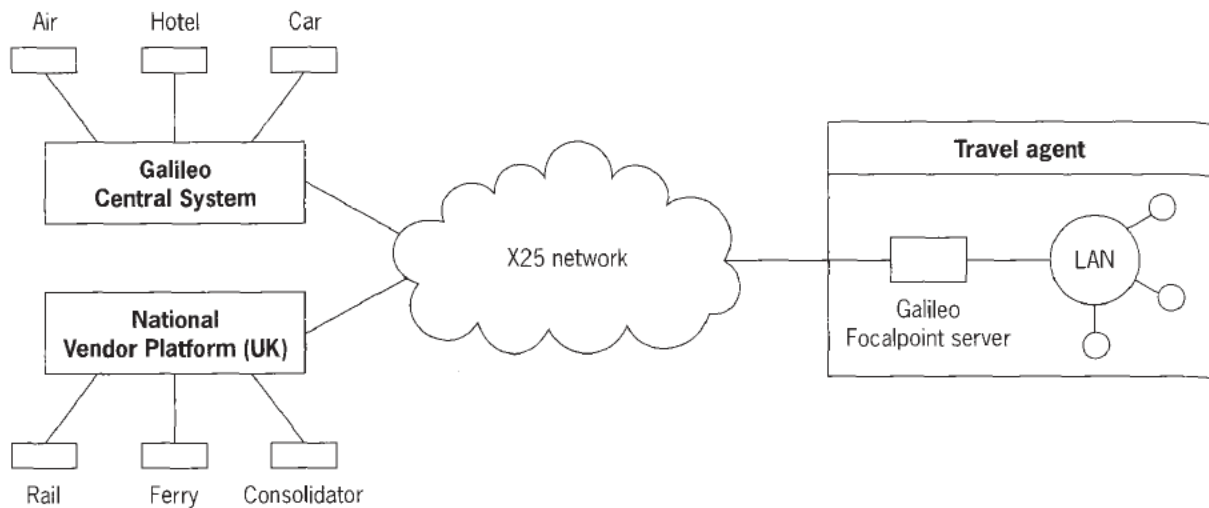


Figure 4.4 The Galileo GDS

- **Galileo UK** Galileo UK is the NDC that distributes Galileo International within the UK area. The Galileo system was first introduced to the UK in 1991 and from July of that year travel agents were gradually converted over from the old Travicom system to the new Galileo core. Galileo UK, as a business unit within TAS, is a wholly owned subsidiary of British Airways and has its headquarters in Maidenhead. Galileo UK currently has over 14,000 workstations installed (most of which are now PCs), in around 2,000 travel agents in the UK. This represents 68 per cent of the UK market.
- **Chameleon** This business focuses on training and consultancy. The Chameleon business was formed from the merger of both Speedwing and Galileo UK Training. Its primary role is to run courses for travel agents in how to use Galileo, its sister products and other GDSs.
- **Icanos** In its broadest sense, Icanos provides IT solutions to the travel industry. It will provide network services for individual customers, supply rail and ferry booking systems, market agency management systems and provide its customers with an IT development resource and centre of technical expertise.

Because this section of the book focuses on GDSs, it is the Galileo UK business that I am going to concentrate on here. I have tried to keep the description of Galileo's products as generic as

possible and not solely restricted this analysis to a description of what is available only in the UK. However, some UK bias does nevertheless remain. The UK National Vendor Platform (NVP) is one such example, although it is probably mirrored in other NDCs around the world.

The UK NVP

The UK NVP is the technology that Galileo UK uses to connect its subscribers to non-air supplier systems. Galileo's general approach is a distributed one and uses X25 packet switching as its core communications methodology (Fig. 4.4). This enables Galileo users to link into non-core supplier systems, i.e. those that exclude air, hotel and car hire, without affecting the host switching systems of Galileo International. Examples of NVP host systems include train operators, ferry companies and air seat consolidators. Travel agents may book inventory on behalf of their customers from all NVP supplier systems although these entries are not at present integrated with Galileo's booking file (see later paragraph for a more in-depth presentation of booking files).

The Galileo NVP uses Sun Sparc Station technology to provide an X25 switching service to non-core supplier systems. Travel agents request a connection to their desired supplier system by entering a three character code on their Focalpoint terminal, e.g. RLY for rail, GAL for Galileo, PAO for P&O Ferries, STE for Stena Lines and GBT for

Guild Air Fares. This entry causes the Focalpoint LAN server or other Galileo terminal equipment to set up a communications session or path with the chosen host system via the NVP. Such a path supports all of the functions that the supplier's host system chooses to make available to travel agents via the Galileo route.

A particularly powerful feature of Galileo's UK NVP, and one that holds significant future potential, is the rail link. At present, when a user selects RLY on their Focalpoint PC or other Galileo equipment, they are connected to Eurostar's tribute sales guide (TSG) system. This system controls the inventory of Eurostar cross channel tunnel train seats. The Eurostar reservation system is located in a computer centre in Lille, France, and supports several important functions: such as the provision of timetable information, reservations on certain trains and ATB2 ticketing for Eurostar trains.

However, its true potential is illustrated by the fact that the Eurostar computer facility is co-hosted with France's SNCF computer, i.e. the computer of the French national railways; and this computer facility is linked back to the TSG system and the UK's ATOC computer in Nottingham, UK. There are also plans to provide an NVP machine interface record (NVMIR) that could be used to feed back-office systems connected to Galileo. It is therefore possible that given the right authorities and technical interfaces, Galileo users can be provided with reservations access and ATB2 ticketing functions for at least three of Europe's main rail services within the not too distant future.

Galileo's delivery products

A delivery product is a terminal that connects the user to the GCS. These days most delivery products are PCs that run special GUI-based applications within a standard PC operating system such as Microsoft Windows 95. This enables users to have reservations functions that coexist with standard office productivity tools such as word-processors and spreadsheets. The Galileo delivery products are:

- **Focalpoint** This is Galileo's main GDS access product and provides the primary interface to the GCS. In the past the hardware platform was Olivetti PCs with an in-built LAN capability. In future these will be replaced by

Trigem PCs. The Galileo file server supports central storing of agency data, word processing, more sophisticated use of the PC's function keys, scripting and the connection of up to 24 workstations.

- **ET3000** This is the basic DOS-based Galileo airline reservations service for a small to medium sized travel agency, i.e. ET3000 is not Windows based. The ET3000 workstation (or travel agent terminal) is an Olivetti PC that is capable of running many of the packages available on the software market, such as word-processors, spreadsheets and data bases. The reservations services are described in more detail in the following section. ET3000 will gradually be replaced by Focalpoint products over the next few years.
- **Leisurelink** This provides a link to viewdata networks from a Galileo PC. It is designed for those travel agents who are principally in the air sales business but who need occasional access to tour operators and other principals that distribute their products via viewdata. The viewdata emulation is provided by the Travipad for ET sites and by the Galileo workstation file server (GWFS), for Focalpoint sites.

Besides these delivery system products, there are several agency management systems that are marketed principally in the UK by TAS's Icanos business unit (see above for a description of Icanos). One of these is Travel Manager and another is Travel Edge. Both are newer technologies that will no doubt gradually replace the President Agency Management System (PAMS). PAMS is Galileo's basic back-office system product that has by now been around for many years. All of these systems provide travel agency accounting and management information functions that are described in more detail in Agency Management Systems, Chapter 7.

Galileo's delivery systems technology

The above delivery system products describe what the user interacts with, in terms of functions and access methods. However, a great deal of co-operative processing now takes place on the end-user's workstation. Co-operative processing in this context means the sharing of processing between the GCS and the delivery system. The delivery

systems are now capable of performing some significant functions, in addition to just being GUIs to the GCS. It is therefore worthwhile spending a short time reviewing the technological platforms upon which these products are based.

- **The workstation** The latest Galileo workstations are based on Trigem PCs. For the Focalpoint product there are two models of PC, one for the central file server (GWFS) and the other for the workstation. The central file server is of course a key component of the Focalpoint product. This is a powerful Trigem 3560 PC known as the GWFS. It is a Pentium P100 processor with 32 Mb RAM, a 1.2 Gb hard disk, a 1.44 Mb 3.5" floppy, a VGA colour monitor and Ethernet interfaces. Each of the workstations is a Trigem P100 with 16 Mb RAM a 1.2 Gb hard disk, a 1.44 Mb 3.5" floppy, a VGA colour monitor and Ethernet interfaces. Travel agents can use their own PCs with Galileo Focalpoint Special Edition (but not with ET products). In such cases, Galileo stipulates that the minimum PC requirement is a 486/66 MHz with 16 Mb RAM.

The GCS can support up to five sessions at any one time, i.e. five work areas per agent sign-on. This is rather like having five separate terminals on your desk, with each one carrying on its own dialogue with the GCS. But using a Galileo PC, you don't need all five terminals because the combination of the GCS and the Windows operating system under which Galileo runs, supports several activities at once. This can be useful for carrying on a reservation for client A while also checking availability for client B. It is also possible to use this facility to construct several alternative itineraries for a client and to offer the client the option of which one to actually book. Galileo supports up to nine windows for displaying information simultaneously.

- **The Travipad** In order to work effectively the Galileo workstations must be connected to the Galileo core system via a communications controller called a 'Travipad'. This supports up to 48 workstations and handles all telecommunications tasks using X25 telecommunications technology. The Travipad is a black box

as far as the travel agent is concerned and is virtually never used except when something drastic goes wrong. In such cases the Travipad may be used to test the status of the data line connecting the travel agent to the Galileo communications node. In terms of physical location the Travipad therefore needs to be positioned as close as possible to the data line terminating point in the office.

- **The printers** There are several different types of printers used as part of the Galileo system. These comprise the ticket printer, the invoice/itinerary printer and a general purpose printer. It must, however, be noted that if back-office accounting functions are required, an agency management system will be needed by the travel agency (see Chapter 7). Also, if word processing is required then not only will a general purpose printer be needed but a word processing software package that runs on the Galileo PC must also be installed.

- The ticket printer may be either: (a) a dot matrix printer that is capable of using the OPTAT airline ticket stock available on continuous stationery from IATA, or (b) an ATB printer with several hoppers capable of supporting different ticket types. In some cases, this printer can also be used to print customer itineraries and invoices. In so far as dot matrix printers are concerned, to save continually changing the paper stock loaded in this printer it will usually be necessary to have at least two ticket printers of this type; one loaded with continuous airline ticket stock and the other loaded with pre-printed paper stock bearing the travel agent's logo, which can be used for invoices and itineraries.

- The hard copy printer is usually an inexpensive and low quality device used to produce a printed copy of a Galileo screen for archive purposes. It may also be used to print queue messages. Generally speaking, although a hard copy printer is a necessity in a travel agency, its regular use is to be discouraged. This is because paper clutters up the office and the booking files. The travel agent user, once fully confident with the reliability of the Galileo system, will find little need to

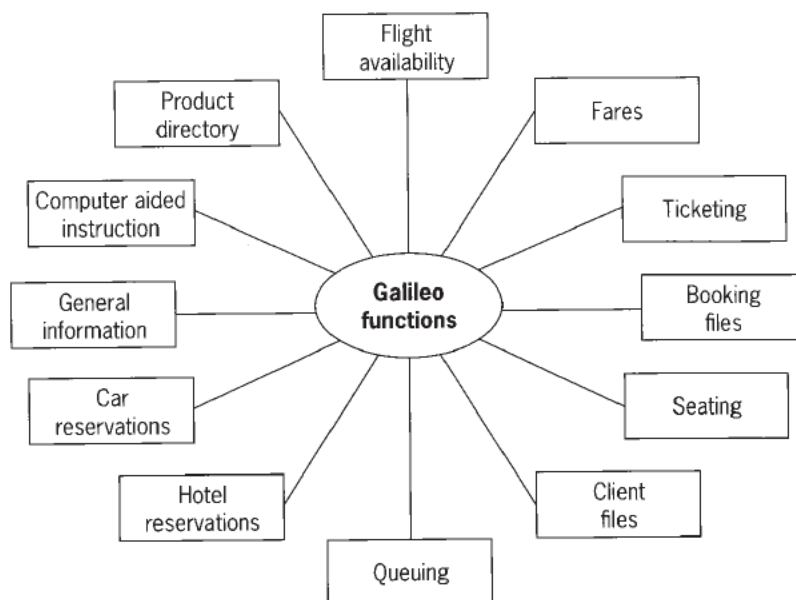


Figure 4.5 Galileo functions

print everything and will gradually regard a client file as an electronic image only.

- The general purpose printer may be either a dot matrix or a laser. A dot matrix is cheaper but the quality of the typeface is not considered particularly professional these days and it has the added disadvantage that it is noisy. The laser printer is expensive but produces an extremely high quality output and is virtually silent in operation. Both options are available from Galileo.
- **The software** The Galileo software is the critical ingredient that makes everything work. It exists in two places: (a) in the main-frame that runs the Galileo core system; and (b) in the Galileo workstation, which is a powerful PC. It is the workstation software that is of prime interest to the travel agent. The underlying operating system used to control this workstation is Microsoft Windows.

Besides using the Galileo workstation for the core business, the travel agent may elect to use the PC for other purposes when it is not being used for reservations. In order to do this the PC will need to have some additional software loaded. This software can be stored on the PC's hard disk until it is needed. Software such as spreadsheets, word processors and data base management systems can all be used.

Galileo's core functions

There are many functions provided by Galileo and it would be impossible to cover them all in detail in a book such as this. The only way of learning more about Galileo and of becoming proficient in using the system, is to attend one of the training courses run by Chameleon. The intention here is therefore to give you an overview of the main functions and to help you understand the structure of the system. The functions that Galileo provides and which I am going to describe in this section are as shown in Fig. 4.5.

Flight availability

This is one of the most frequently used functions in the Galileo system and represents the first step in making a booking. Before looking at an availability display, the agent will normally have discussed the customer's travel requirements and established the basic routing of the journey. As an integral part of doing this, the agent will usually access the timetable display within Galileo.

- **Timetable** This shows the connecting flights between any two airport cities in the world, for 28 days from the specified date of travel. This is far more efficient than using other paper-based sources and reference books. It shows the days of operation of each flight and the dates that

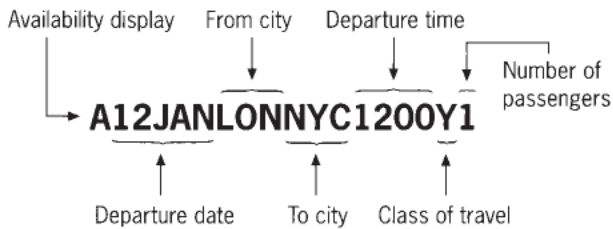


Figure 4.6 Galileo availability display

services start and finish. A range of qualifiers, such as specific times or actual airports, may be requested and particular carriers can be either included or excluded from the display.

- **Flight specific timetable** This is a more targeted and detailed display of flights that is constructed from the data base of Galileo's participating airlines. It shows total flying time, time spent on the ground, the classes of travel available, the terminal numbers and any stopovers involved. Other relevant information is also shown, such as non-smoking flights and code-share flight data.

Once the basic itinerary has been ascertained from the timetable function, the agent then enters the first sector of the itinerary as demanded by the customer's travel plans. This will usually comprise the departure date, a city pair between which travel is required, a preferred departure time, the class of travel and the number of seats required. An example of a Galileo availability display between London and New York on 12 January, leaving around 12.0 noon for one passenger in economy class is shown in Fig. 4.6.

The system will then respond with an unbiased display of the flight details that most closely match the customer's requirements, for up to seven days ahead. Up to 26 classes can be shown on the display and specific connection points and carriers may be included or excluded as required by the agent. The sequence in which flights are shown on the availability display is as follows:

1. The non-stop flights of participating airlines are shown in a sequence determined by how close the available flight's departure time is to the customer's preferred time of leaving.
2. Then, the flights that stop during the flight are shown. This may be for refuelling purposes or

to pick up other passengers from connecting flights along the way. In any event the passenger does not have to change flights and often does not have to leave his/her seat.

3. Finally, the flights that require the passenger to change aeroplanes are shown.

The agent may try various alternative displays until one is found that meets the customer's requirements. This whole process is repeated for each sector of the client's itinerary including the return leg. These availability displays allow the agent to build a proposed itinerary for the customer. The most basic display is known as a free-sale display and it can be used to sell seats from all of the airlines participating in Galileo. An acknowledgement of a free sale booking can sometimes take several hours to be received. So, if the agent wants to be sure that those seats are actually reserved for the customer then an on-line seat availability display is necessary. To do this, the agent enters a special code to request Galileo to send messages to the other airlines involved in the itinerary to request an up-to-the-second status of the seats requested. Each airline responds to Galileo, which displays the status codes on the availability screen. There are currently about 211 airlines in Galileo that respond on-line to availability requests like this. The various availability options are as follows:

- **Instant availability** The Galileo system dynamically constructs connections for any requested journeys that are not already stored in the system as city pairs. This means that for a given city pair, Galileo will first attempt to show the direct flights available. Then, if no direct flight is stored, it will find the best set of flight segments involving other cities, i.e. airports, that most effectively join the requested from and to cities specified.
- **Inside availability** Galileo retrieves the availability status from an airline's own system and integrates it into the Galileo availability display. This is done automatically by the system without the need for the user to make any further entries.
- **Carrier specific display** Users of Galileo can request an availability display direct from a preferred airline's own system. This provides a real-time direct link into an airline's own

database, which provides the very latest information available.

- **Last seat availability** Called numeric availability in Galileo, this display shows the exact number of seats left for sale on a particular flight, up to the quota sale level of the airline involved.

At this stage of the booking, the travel agent will have viewed the alternative flight options and discussed them with the customer. The next stage is to confirm the actual flights required by making a firm booking.

Booking files

A firm booking means that a file must be created within the Galileo core system so that the booking can be referenced in the future. The Galileo booking file is an integrated collection of all reservations made for a customer, whether it be for a number of different airlines, hotels, car rental companies or other special services. All such information about the booking is held in this booking file. So, the first step is to sell the seats desired by the customer. Invariably, these seats will be displayed on the screen as a result of the availability request described above. Seats may be sold directly, i.e. a feature known as Direct Booking, or from an availability display, in a number of different ways:

- **Secured sell (interactive)** This is the highest level of booking available in Galileo. The booking request is sent directly to the airline's own reservation system via a direct link and a seat is immediately reserved in the airline's own data base. At the end of the transaction the agent receives a positive acknowledgement record locator direct from the airline's system that is automatically stored in the customer's Galileo booking file. This guarantees that the seat is held for the customer.
- **Super guaranteed sell (positive acknowledgement)** The booking is processed through Galileo's constantly updated data base. At the end of the transaction Galileo instantly sends the airline a booking request message that causes a prompt response to be initiated and returned to Galileo for storing in the customer's booking file.

- **Guaranteed sell** At end transaction, a message is sent directly to the airline on whose flight a seat is required and a guarantee indicator is displayed in the booking file. Every flight booked from a numeric display in Galileo is guaranteed by the airline.
- **Standard sell** At end transaction, Galileo sends the sell request to the chosen airline, which promptly processes the booking. This method is available for each of Galileo's 500 participating airlines.

In order to create a complete booking file, several critical fields must be entered. One good way to remember which fields must be entered is to think of the word PRINT. After all, sooner or later a ticket will be required and this will need to be PRINTed. Each letter of the word PRINT can be associated with one of the key fields required for a booking file to be created that will eventually enable a ticket to be printed successfully. These are:

- **P**hone field, i.e. the telephone number of the travel agent.
- **R**eceived from, i.e. the identity of the agency making the booking.
- **I**terinary, which is the end result of the availability and reservation process.
- **N**ame of the passenger(s), an important entry that is difficult to change once entered.
- **T**icketing information, i.e. information required to print the ticket and any other supplementary information.

All of the PRINT fields must be entered in order to complete a booking. Having completed the booking entries in this way, the final step is to 'end transaction'. When this is done, Galileo responds with a booking locator that is supplemented by the initials of the agent making the booking. At this stage the booking has actually been made and is stored in the Galileo central system. Additionally, each of the other airlines providing sectors for the itinerary has also stored a record of the booking for their sector only, within their own CRS system.

To retrieve a booking all that is needed is the booking locator. It doesn't matter whether or not British Airways or any of the other Galileo partner airlines are included in the itinerary or not, the locator will always enable the Galileo core system

to retrieve the booking. Should the booking locator be lost or unavailable for some reason, it is possible for Galileo to be requested to display all passenger bookings with a specific surname. The appropriate one may then be selected from the list and the booking retrieved. For those airlines not supporting a locator, the agent must know the PNR and the host CRS before the booking can be retrieved.

Finally, there are the special services that customers often require as part of their trips. Examples include wheelchair requests and tickets that are to be collected at the airport terminal on departure. Each airline system requires slightly different commands to be entered in order to request these special services. Galileo provides a purpose-built function called enhanced booking file servicing (EBFS) that eliminates most of the complexities involved in this task. Galileo provides users with a standard command entry for special requests, which is the only one that a travel agent need learn. Galileo automatically translates this into the individual formats required by each airline system. All such details are stored in the customer's booking file.

Fares

Galileo can construct over two billion fares from its data base, which can be accessed by travel agency users. These fares are set by the world's airlines who keep each other updated on a regular and frequent basis. In fact Galileo's global fares data base is updated three times each day. This is a complex and fast changing aspect of the airline business, especially when you consider that there are, for example, over 30 different fares in force on the average transatlantic jumbo flight.

A fare quote is the automated construction of an airline fare for a booking that has been made. The fare quoted is guaranteed, provided that the agent produces an automated ticket within a period of seven days and has adhered to the rules associated with the fare. A useful facility is the ability to display all fares on a particular route for a specific date. This display shows the cheapest first, then the next cheapest and so on, up to the most expensive. Another useful facility is the ability to display a fare in local currency, i.e. pounds sterling. Because not all airlines quote their fares in pounds on their displays, this can be of great

help to the travel agent. The exchange rate used is also displayed.

Ticketing

Galileo supports the production of airline tickets via two broad approaches: (i) by means of a set of ticketing control and printing functions, which are integrated within the GCS; and (ii) by passing an MIR to a separate back-office system, e.g. PAMS, Travel Edge, etc. It is the former method that is presented here. Ticket production via back-office systems is covered in more detail in Chapter 7 (although the related Galileo MIR is explained later in this section).

The GCS produces tickets by combining information from various sources, which are primarily: the availability data base, the booking file, the data base of filed fares and the agency accounting table (AAT). Other ticket modifier parameters may be specified by the travel agent, such as specific carrier selection, form of payment, commission percentage and endorsement data. All of this information is consolidated and used by Galileo's ticket control program to produce the following types of airline ticket:

- **OPTAT and TAT tickets** Galileo supports the printing of airline tickets on continuous paper stock supplied by the local BSP. These may be OPTAT or TAT. Approved ticket printers include the Datasouth A3300, the Texas Instruments TI810 and the MT5200, which is also a multi-purpose printer.
- **ATB** Galileo's ATB ticketing system has been gradually rolled out within the UK since early 1994 (see Chapter 3 for a fuller description of ATB ticketing in general). This ticketing system is supported by a number of models of special purpose ticket printers including those manufactured by IER, Texas Instruments, the MT5200 and Unimark Mark1. These printers produce the required ATB copies, i.e. for flight coupons, audit coupons, agent coupons, credit card coupons and the passenger receipt, by printing each one individually. It does not take much longer to print these copies than it does to print one of the older style OPTAT tickets, i.e. 10–11 seconds. There is also the added advantage that each copy of an ATB ticket may

be printed at a different location. This supports satellite ticket printing in large corporate locations without the need to have trained staff on site to process the ticket copies as is the case with OPTAT.

- **Electronic ticketing** This method does not of course result in a printed ticket at all (see Chapter 3 for a more in-depth description of electronic ticketing). It can only be used in countries where the BSP has granted the necessary authority. Electronic ticketing is designated by the presence of an 'E' in the 'Sell Response' field, which is a part of the booking file. When a ticketing instruction is issued, the validating carrier's system authorizes the request and flags the booking file. As a by-product of this process, a facsimile of the ticket is stored in the validating carrier's ticket data base.

Galileo checks to ensure that all required data are present in the booking file and that the information is correct. If credit card details have been entered as the payment method, then Galileo first carries out a card authorization check. This check is performed via Galileo's link to SITA, which itself has connections to the credit card companies' computer systems. Once authorized, the ticket is then produced by one of the above methods. From this point onwards, the ticket information is available via the ticket invoice numbering (TIN) report. This report shows details of all tickets that have been issued or voided over the past 30 days. It is a valuable report for a travel agent because it allows a reconciliation to be made with the BSP billing analysis.

Seating

Galileo's advanced seat reservation function can display information on the computer screen that represents a seating plan of the flight being considered. This plan is known as a seat map. Seat maps show the actual position of every seat on the aircraft and whether it is near a window or an aisle. The seat map also denotes seats that are either smoking or non-smoking. Several different types of seat map displays are supported by Galileo:

- **General seat map** This function enables a seat map to be displayed for a particular flight, class and segment. The display shows all of

the important features within an aircraft, such as toilets, emergency exits, aisles and galleys.

- **Seat availability map** This display shows a seat map that includes only the available seats for a specified flight, class, date and segment. This can show the whole cabin or, by entering preferred seat characteristics or row number, it can show only those seats that match the customer's personal criteria.
- **Specific seat characteristic display** This allows the agent to determine the exact characteristics of a specified seat number in plain text. The seat to be shown is selected from a previously displayed general seat map or seat availability map.

A seat can be reserved in one of two ways: either (a) a specific seat can be requested for the customer by entering the seat number, or seat map co-ordinates, into the system; or (b) a seat type can be requested, such as aisle non-smoking. Once the entry is made, Galileo responds with a confirmation of the seat reserved or a message to indicate that the seat requested is unavailable.

Client files

This is a powerful customer servicing capability that is especially useful for business travel, where travel agents service a large number of frequent travellers. A client file stores information about a client that can be called up instantly on the screen and inserted into a booking file whenever necessary. So it not only enables a travel agent to give a more personal service by knowing customers individually, but it saves a lot of time and keying effort. There are three parts to a client file:

- **The agency file** This is the top level record, which contains details about the travel agency making the reservation. It is a part of the profile that does not often change.
- **The business file** This is the corporate profile, which contains information on a company for which the travel agent provides a business travel service. It might include, for example, some information on the company's travel policy, the departments involved and the account settlement details. In cases where an individual is a frequent traveller but does not work for a

company, this profile is used to store information about that individual.

- **The personal file** This record contains information about each of the individual travellers who work for the company as defined within the corporate profile. It contains information such as the traveller's name, phone number, address, department and personal preferences, e.g. smoker or non-smoker, window or aisle seat, etc.

In addition to these structured profiles there is another very useful function provided by Galileo called the frequently flown itinerary feature. This is designed for frequent travellers who often have the same or very similar itinerary details. A record of these can be set up in skeleton form and can then be copied into a booking file with only the date and number of seats needing to be added to make the booking complete. This is particularly useful to a travel agent for servicing employees of a company with say a head office in Paris where a lot of the itineraries will be virtually identical, i.e. flight London/Paris, standard business class, company corporate hotel, etc.

Queuing

The queuing facility is a powerful tool for controlling work flows and increasing productivity. Queuing is all about the passing of messages: (a) between travel agency staff within the office; (b) between offices using Galileo; and (c) with airlines, hotels and car rental companies. Not all bookings run like clockwork! There are usually complications of one sort or another that require communication between the various parties involved. For example, the airline changes the departure time of a flight after a booking has been made for a client. Or the hotel can only supply a room at the back of the hotel without the sea view requested. Or the travel agent in office A has made a reservation for a client that needs follow-up by an agent in office B. In these cases the airline, hotel, car rental company or agent from office A would send a message to the travel agent informing them of the changes to the client's itinerary details.

The message is placed in a special area of the system that is available for travel agent control purposes, known as a 'Q'. This special area is known as the Queue. It is called a queue because

there may be several messages for an agent and these messages are stacked up in the order in which they were sent, for the agent to read and process in sequence. The queue area is divided up into separate sections and each of these is identifiable as a different type of queue. There is usually a general queue area for the agency, a ticketing queue and a queue for each travel agency staff involved in the servicing of customers. You should note that the onus is on the agent to read the queues regularly. If the queues are not accessed and processed in a timely manner then vital itinerary information may be missed with dire consequences for the traveller.

Hotel reservations

Galileo provides its users with the ability to reserve a hotel room for their clients at over 37,000 hotel properties from over 200 hotel chains worldwide. The service is called 'RoomMaster' and it is used by a simple process of filling in an electronic form that is displayed on the Galileo screen. The ways in which hotels are connected to Galileo are very similar to the different ways in which airlines are connected. Some are connected indirectly and provide free-sale room reservations. Others are on-line and provide instant confirmations.

Indirectly connected hotels have a computer system, but it is one that is not capable of being connected directly to the Galileo computer and cannot therefore undertake a two way dialogue with the booking agent. This means that when a reservation is made, it is on a free-sale basis. In these cases the reservation message is passed by a communications network to the hotel's computer, which puts it in a kind of queue for subsequent processing. While this is happening the travel agent will note the reservations request and proceed with other business. At some future time the hotel will process the reservation request and send a message back to the travel agent either confirming that the booking has been made successfully or advising that the room requested is not available.

Directly connected hotels (of which there are 45 in Galileo at the time of writing), have a computer that is on-line to Galileo and can hold an intelligent two-way dialogue with the travel agent making the booking. Galileo often refers to these hotels as having 'inside links'. In these cases when

Table 4.2 Galileo RoomMaster entries

<i>Entry</i>	<i>Meaning</i>
HOA	Standard hotel availability display for a specific city, airport or reference point
HOC	Complete hotel availability, which displays additional room rates and/or room types for one property
HOI	Hotel index, which displays a list of properties for a specific city, airport or reference point
HOU	Hotel update for previous availability or index request
HOR	Hotel reference point list, which displays reference point list associated with a metropolitan area
HOD	Hotel description which displays a keyword menu to access chain or property policies/information
HOM	Hotel modification: modifies or deletes fields in a booked hotel segment

the booking screen is completed it is sent to the hotel computer, which immediately responds with either a confirmation or a 'not available' message. This allows the travel agent to advise the client of a confirmed booking while they are on the phone and saves the agent from having to call the client back as is the case with an indirectly connected hotel.

RoomMaster offers a wide range of functionality for travel agents who wish to book hotel rooms for their customers. The main entries that are outlined in Table 4.2 will, I hope, give you some idea of the range of functions available.

The Galileo Spectrum product (Fig. 4.7) runs within Focalpoint and is fully integrated with Room-Master. It is a CD-ROM-based hotel mapping system covering over 30,000 hotel properties (1,400 of which are mapped) and hundreds of world-wide, regional, metropolitan and city maps that enable users to zoom in and pin-point a hotel's precise location. The maps show places of interest, convention centres and other reference points and may be printed for passing on to customers as part of their travel documentation. Spectrum also allows users to customize the maps to show offices they intend to visit, the hotels where they will be staying and the nearest affiliated travel agency. Distances can also be calculated by Spectrum. So, if a customer has to walk from his/her hotel to a convention centre across town, Spectrum can calculate the exact walking distance.

Spectrum also contains a great deal of detailed information about each hotel, the facilities offered and the rates. Each participating hotel has six displays on which to show details such as amenities,

sports and recreation facilities, dining and entertainment, and business services. These details can be annotated with additional details entered by the travel agent. To ensure that the information is kept constantly up-to-date, an updated CD-ROM is sent to the travel agency user every three months.

Once a travel agent has viewed the information on Spectrum with a customer, the RoomMaster function within Galileo is then used to look at the chosen hotel's availability and room rate. Finally, RoomMaster is used to make a firm booking for the customer. Spectrum is a Windows-based product that runs on the whole range of Focalpoint 3.0 platforms, provided of course that the PC is connected to a CD-ROM drive.

Car reservations

Car rental reservations are handled by Galileo's CarMaster system. This operates in a very similar way to that described for hotels. There are currently 47 car hire companies available in CarMaster and most of these have a world-wide network of servicing locations that number over 15,000, where cars can be collected and dropped off. Bookings with vendors, such as Hertz, Avis, Budget, British Car Rental, Eurodollar, Alamo, Europcar and Thrifty, can all be made in Galileo and fully integrated with airline reservations in the booking file. The main entries for CarMaster are shown in Table 4.3.

A great deal of standardization has been accomplished in the car hire area. There is, for example, a common four character coding system that identifies whether the car is an economy or compact size, an estate car or saloon, automatic or manual

Table 4.3 Galileo CarMaster entries

Entry	Meaning
CAA	Standard car availability
CAL	Availability from low to high rates
CAQ	Availability qualified by vendor, car type, rate
CAI	Index of vendors for a specified city
CAU	Update previous information
CAM	Modify dates, car types after sale

gearbox and air-conditioned or non-air-conditioned. The actual codes are as shown in Table 4.4.

General information

The Galileo Information System (GIS) provides a number of information pages that may be regarded as an electronic book for travel agents to use. The information is structured into chapters and pages, which are indexed for easy reference. The following are the main headings of information that are provided by GIS:

- Airline information
- Consulate information
- Country information
- Customer services
- Galileo and its services
- Galileo's product directory
- Help information
- Product overviews

One useful facility is the TIMATIC information service. This is operated by a Swiss-based company that assembles and maintains a large data base of essential travel related information. This is available to Galileo users via an on-line computer interconnection with the GCS. TIMATIC provides travel information on countries throughout the world and covers a wide variety of topics that are all kept current. It is organized rather like a book with chapters on different subjects. The chapters of TIMATIC are: health, visa, airport taxes, passport, customs, news and country (geography, customs and currency).

Finally, GIS provides an on-line encode/decode function to translate automatically the various codes used throughout the Galileo GDS. There are a multitude of these codes, many of which cannot be carried in a person's head. The main codes are for airports, airlines, aircraft types, countries and cities. The user simply keys in the text and GIS translates this either into a code or, if a code was entered originally, into the full textual name.

Computer-aided instruction

There are several pages of text stored in Galileo that comprise a self-teach course for travel agents. These pages enable an untrained user to undertake a self-paced learning exercise that can give them a good overview and a basic grounding in how to use Galileo. However, computer-aided instruction is designed to complement and support a programme of classroom training. It is not intended

Table 4.4 Galileo CarMaster types

Car size		Car type		Transmission		Air-conditioned	
M	Mini	B	Two-door	M	Manual	N	No
E	Economy	C	Two- or four-door	A	Automatic	Y	Yes
C	Compact	D	Four-door				
I	Intermediate	S	Sport				
S	Standard	T	Convertible				
F	Full size	X	Special				
P	Premium	W	Estate				
L	Luxury	V	Van				
X	Special	F	Four-wheel drive				
*	All sizes	R	Recreation				

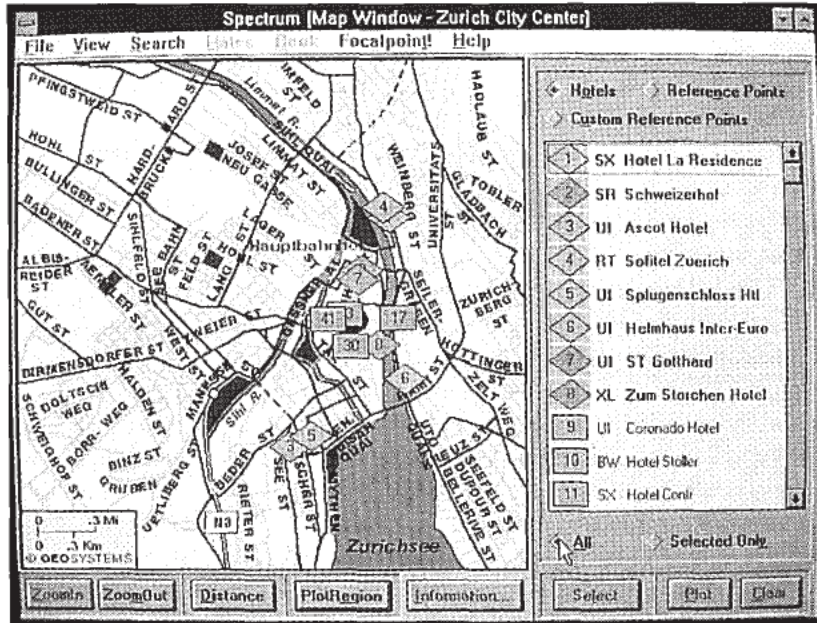


Figure 4.7 Galileo spectrum

to replace attendance at a course lead by a competent trainer who can impart many technical and non-technical aspects on how to use the Galileo GDS in a travel agency environment.

Product directory

Galileo's product directory is an ordered set of information concerning other non-air travel products. Some examples of services available in the product directory are theatre tickets, citicorp bank drafts, limousine services, UK chauffeured parking services and Columbus Insurance. The product information is entered and maintained by each participating supplier using a dedicate maintenance terminal supplied by Galileo. These services are available by entering 'PD' into any Galileo screen.

Once in the product directory, information is processed in a fashion that is very similar to a viewdata system (although the product directory is not a viewdata system itself). The product directory main menu is a directory that offers choices of: (a) a list of participating suppliers, (b) a list of suppliers by product category, and (c) a list of participants offering products in a particular city. Descriptions of the different products are stored in logically arranged sections that are accessed using sub-menus. Pages of information can be viewed and

other pages requested for display. To book one of the products displayed, an electronic form is completed that is printed out at Galileo's operations headquarters. The printed copy of the electronic booking form is then sent to the supplier by facsimile transmission. From that point onwards the dialogue between the supplier and the travel agent may be either via the Galileo system or, as is often the case, handled off the system, usually by telephone or mail.

Other Galileo productivity functions

In addition to the core reservations functions described above, Galileo offers its travel agency customers some additional productivity enhancing tools. These fall into two main areas: (i) functions available on the Galileo Central System, and (ii) functions that are designed to run on the Focalpoint PCs that deliver Galileo's Central System functions to the user.

GCS productivity functions

A set of optional functions is available on the GCS that enables users to maximize their productivity. These functions are computer applications that actually run on the Galileo host computer system and are therefore available on a global basis:

- **Galileo's past date quick (PDQ)** This provides travel agents with access to booking files which may be up to 13 months old. The requested historical information is provided within a response time determined by the age of the file. Booking files that are from one to 60 days old are displayed immediately. Items that are more than 60 days old are displayed within 24 hours. The information retrieved may be displayed, put in a queue or printed. Search and selection criteria are also available to streamline the process.
- **Galileo's MIR** A Galileo MIR is a special message that contains all information about a booking. It is passed from Galileo into an agent's back-office system where it can be used for a variety of purposes, such as ticket printing, itinerary printing, accounting and management information reporting. Each Galileo MIR comprises over 700 data elements preformatted as an ASCII flat file, which may be transmitted securely to the back-office system in real-time. MIRs may be sent to a variety of locations, depending upon the needs of the individual agency. They may, for example, be sent into the back-office system in the office where the reservation was made or they may be sent to a central computer in cases where the agent operates a central group accounting and MIS system. The choice is the agent's. The MIR specification is available to any software company wishing to develop an interface to Galileo. At present there are over 300 software houses and travel agents currently working with Galileo International and its NDCs to integrate accounting solutions with the Galileo system for MIR data acquisition.
- **Galileo's selective access** Galileo allows travel agents to share customer information across different locations, sometimes across different countries of the world. Groups of agents known as affiliates may be formed and selective access partnerships established between them. These affiliations may be formed from within a travel agency's multi-branch network or between separate agencies that have formed a strategic partnership. The information that may be shared includes booking files, client files, documentation and queues. Access may be controlled at

several pre-determined levels thus allowing only certain staff within an agency to access shared information about their customers.

Focalpoint productivity functions

Galileo has developed a number of applications that run within the Focalpoint PC system. These are in most cases applications that run in what I have described earlier as a co-operative processing environment. In other words, the applications use data from the GCS and add local processing functions to deliver enhanced services to users via a simple Windows based GUI. These functions are as follows:

- **Galileo's relay productivity tools** This is a set of tools that combines the features of Focalpoint with the flexibility of Microsoft Windows to bring productivity support to a travel agency user. It is available on any Focalpoint Version 3.0 or higher product and comprises the following functions:
 - *Queue Manager* Supports the handling of queues according to pre-determined agency rules. This allows booking files to be scheduled for action automatically at different times of the day and by different staff within the agency.
 - *Booking File to Client File* This allows a client file to be created automatically from a booking file, according to pre-determined rules set within the travel agency. The client files created in this way will all conform to a format determined by the agency and saves the repetitive entry of data.
 - *Response Capture* This is an advanced 'cut and paste' feature that allows information to be copied onto a clipboard from one or more of Galileo's windows and pasted into any other application such as, for example, Microsoft Word or Excel.
- **Focalpoint's Scriptwriter Plus** This is a Windows based Focalpoint product that allows a travel agent to automate the entries used by his/her staff to make a booking. A set of commands similar to a program code, called scripts, are used to define exactly how a booking is to be transacted. Each of these scripted functions is stored within the PC and represented on the screen as an icon. When a user clicks

on the icon, the script is executed and the user is prompted for certain entries. Scripts can be written to detect and store certain responses received from the GCS and to exchange data with applications using dynamic data exchange (DDE). This is a powerful way for a user to carry out automatically a complex booking transaction very quickly and with the minimum of key-strokes. It also is a way of reducing errors by using quality control checks on data before they are sent to Galileo.

There are three sub-products that comprise Scriptwriter Plus: (i) Scriptwriter Plus Build – which is used to create customized scripts for users, (ii) Scriptwriter Plus Run – an execution utility that enables scripts to be initiated from icons or the tool bar, and (iii) Scriptwriter Plus Convert – a conversion utility that allows scripts to be upgraded from one version to another. Scripts are fully configurable on installation thus allowing, for example, scripts to be written by head office and used by branches that do not have the authority to modify them.

- **Galileo's Premier** This is a Microsoft Windows based product designed for Focalpoint that allows travel agents to search and book hotels and car rental services. It is fully integrated with the RoomMaster and CarMaster central system functions. There are three major components:
 - *Itinerary View* the current booking file is retrieved from the GCS and re-formatted into an easy-to-read style. To book additional hotel or car products the user points and clicks on icons and the tool bar instead of entering more complex airline type commands.
 - *Premier Cars* an easy-to-use interface to CarMaster. This function retrieves previously stored information, such as the customer's corporate policy on car rental, frequent traveller details, licence requirements and insurance. Search criteria are automatically constructed from the itinerary information and CarMaster is used to find the services required.
 - *Premier Hotels* similar in concept to Premier Cars, this function provides a simple GUI to RoomMaster. This allows users to access specially negotiated room rates stored on their local Focalpoint systems and embed these into the reservations and booking process.

Galileo is developing an enhancement to its Premier product that will extend its use to support airline bookings also. This will work in a similar way to the above – it will act as a GUI to the GCS and allow infrequent users to quickly master the system for all airline booking functions.

- **Galileo Travelpoint** This is a software product that is used by a travel agent's business house customers, who are usually sophisticated and frequent travellers. It provides travellers with access to Galileo via a simplified Windows-based GUI, but channels all reservation and ticket requests via the travel agent. It can be a useful tool for frequent travellers and can be implemented on their lap-top computers while allowing the travel agent to retain control of ticketing, MIS and quality control.

SABRE'S TRAVEL INFORMATION NETWORK

Sabre (Fig. 4.8) now represents the largest privately owned computer system in the world (the largest being the US Government's SAGE defence system). Sabre is one of the world's leading GDSs and is used in over 29,000 travel agency locations around

Figure 4.8 Sabre Europe logo



the globe. It is a system that enables its subscribers to check the availability and make reservations for seats on airline flights, hotel rooms, rental cars and many other travel-related products.

The Sabre system drives over 147,000 computer terminals of which 122,000 are located in travel agencies. The migration away from dumb terminals to PCs is well under way and at present over 90 per cent of the terminals used in these agency locations are now PCs. Most of these travel agency workstations are distributed throughout 64 countries in North America, Europe, South America, the Caribbean, Australia, Africa, the Middle East and Asia. In the UK there are over 750 locations using more than 4,000 Sabre terminals.

The history of Sabre

American Airlines' first automation program started in the 1930s with the 'request and reply' system. A travel agent would telephone a regional American Airlines central control point where inventory was maintained, to enquire about space available on a flight. A response would be returned via teletype. Through the mid-1940s, reservations were recorded manually using a pencil to mark up different coloured index cards known as 'Tiffany cards'. These cards were named after the famous lamps with the attractive coloured glass shades. These cards were arranged in a 'Lazy Susan', and flights were controlled by half a dozen employees sitting around a table spinning the 'Lazy Susan' for index cards that would correspond to particular flights. By counting the pencil marks on each card a clerk at the reservations centre could give a 'yes' or 'no' to a request for a seat.

In the larger reservations centres a wall-sized status board was installed to display seat space available on each flight. The board summarized much of the information on the index cards in the 'Lazy Susan'. As new reservations came in, workers at the table passed the information to 'board workers' who removed seats from a particular flight's inventory status until no seats remained. Using the Tiffany system to complete a booking for a round-trip reservation from New York City to Buffalo required 12 different people performing more than a dozen separate steps during a three hour period – longer than the flight itself took!

In 1946 American Airlines developed the Availability Reservisor, the industry's first electrical/mechanical device for controlling seat inventory. The Reservisor applied basic computer file technology to the task of keeping track of American's seats and flights. Even though it could not sell the seat or cancel a reservation, the system represented a milestone in adapting electronics to airline reservations.

By 1952 the airline had introduced basic magnetic storage technology – a random access memory drum and arithmetic capabilities – to the Reservisor. With the Magnetric Reservisor a reservations agent could check seat availability and automatically sell or cancel seats on the electronic drum. As advanced as the Magnetric Reservisor was for its time, the reservations process was still intensely manual. All passenger information was handwritten onto record cards and was kept separate from the seat inventory and reservations information. Clearly, the airline needed a better method for handling reservations and managing its inventory.

In 1953, a chance meeting of two Mr Smiths on the same American Airlines flight from Los Angeles to New York sparked off a series of technological innovations that eventually led to the development of Sabre, as we know it today. The first step along this evolutionary path was the development of a data processing system that would create a complete passenger record and make all the data available to any location throughout American's system. The end result of the conversation between C. R. Smith, American's president, and R. Blair-Smith, a senior sales representative for IBM, was an announcement on 5 November 1959 of a semi-automated business research environment, i.e. Sabre (Fig. 4.9).

Sabre enabled American for the first time to link (in a single electronic unit), a passenger name to a specific seat sold on an aeroplane. Sabre also made possible a link to passenger inventories in other CRSs thus laying the groundwork for the way airlines handle interline reservations today. In 1960 the initial computer centre was installed in Briarcliff Manor, New York, and Hartford became the first American Airlines office to use Sabre in 1963.

In its first year of operation Sabre could process 85,000 phone calls each day, 30,000 requests for fare quotations, 40,000 confirmed passenger



Figure 4.9 An early American Airlines reservations terminal

reservations, 30,000 queries to and from other airlines regarding seat space and 20,000 ticket sales. American's initial investment in the research, development and installation of Sabre was almost US\$40 million – the price of four Boeing 707s at the time! By 1964 the USA telecommunications network of the Sabre system expanded from the east coast to the west coast and from Canada in the north to Mexico in the south. At that time, it was the largest real-time data processing system in the world.

Ten years later in 1974, American initiated a joint carrier feasibility study to explore the prospects for a CRS that could be owned and run by a joint venture of several leading USA airlines. This project received antitrust immunity from the Civil Aeronautics Board and included several other airlines. In 1975 a study group deemed the system economically practical but United Airlines withdrew from the project and announced its intention to provide travel agents with its own CRS. Because this system had schedule displays and connections biased in favour of United Airlines, the installation of United's CRS terminals posed a competitive threat to other airlines. Consequently

American announced its intention to market its own reservation system. In May 1976 American Airlines installed its first Sabre unit in a travel agency. Such has been the success of the system that there are now more than 110,000 Sabre terminals installed in over 25,000 locations throughout 64 countries.

American Airlines' commitment to new technology extends well beyond the flight reservation systems. The systems operations centre (SOC) in Dallas is a prime example of the innovative use of technology. The SOC is home to a unique blend of human skills and IT systems that together enable the world's largest airline to operate all its flights smoothly and efficiently. The SOC is the nerve centre from which every single American Airlines flight is controlled. From the pre-flight planning of crew, food and fuel, through the load and balance calculations for take-off, to the weather charting and flight planning process. All this is undertaken by skilled and experienced airline and meteorological staff supported by an array of sophisticated technologies.

These technologies include over 400 Apple Macintosh workstations each with between 4 and 16 Mb or RAM with 100 Mb of hard disk connected into a fault tolerant Ethernet LAN with ten servers. Each of these workstations can display several windows showing weather maps and other graphical information as well as providing access to the flight operations system (FOS) that runs on a large main-frame computer. Knowledge-based systems are used in the Automated Load and Balance routines and the Hub Slashing application. This uses artificial intelligence to assist with decisions on which flights to cancel in complex situations arising from things as diverse as weather bound airports to defective equipment. Unfortunately it is outside the scope of this book to delve any more deeply into this fascinating side of airline flight operations and control. What we need to concentrate on, is that part of Sabre's technology that is of prime interest to travel and tourism practitioners; and this is the Sabre GDS.

Sabre

Sabre's corporate entity has undergone a substantial restructuring over the past few years in

order to: (a) position it to compete effectively on a global scale; and (b) distance itself from its founding parent, American Airlines, which is a separate business in its own right. The Sabre Group is therefore now a separate legal entity, listed on the New York stock exchange. It devolved from the AMR Corporation, the owner of American Airlines and its original founder, over the period 1992 to 1995. Following the flotation, the AMR Corporation retained a majority stake in The Sabre Group. This devolution to an independent publicly owned corporation gives The Sabre Group several significant strategic advantages including: (i) the flexibility to grow under its own control, (ii) the ability to explore a wider range of marketing opportunities, and (iii) access to a source of investment capital for growth and development. The Sabre Group itself comprises several operating divisions. These are:

- **The Sabre Travel Information Network (STIN)** This is the marketing arm of Sabre which sells the system to travel agents and travel suppliers around the world. More than 25,000 subscribers in over 64 countries world-wide access travel information through Sabre. STIN includes Sabre Europe, a subsidiary that controls several distribution companies in Europe, the Middle East and Africa. STIN employs 2,200 staff.
- **Sabre Interactive** This division encompasses emerging technologies. It provides a full range of information management services including: systems development, network design and management, telemarketing, reservations services and systems, data management and technical training. It employs some 5,000 staff.
- **Sabre Decision Technologies** This is a software business aimed mainly at supporting other airlines. It includes: (a) software applications development and project management; (b) application marketing of products, like flight scheduling software and yield management; and (c) decision support technologies that, for example, simulate airport terminal passenger movements for planning and evaluation purposes. This organization is also responsible for the development and application of Sabre functions. It employs 2,000 staff.

- **Sabre Computer Services (SCS)** This is the part of the business that actually runs the Sabre main-frame computers and is responsible for the co-hosting of over 40 airlines that use the Sabre system. It is also the data processing activity that develops and maintains Sabre. SCS is responsible for the assembly, custody, administration and protection of corporate telecommunications and computer-based information resources. It employs around 2,000 people.

Like most of the other three GDSs, gone are the days when the CRS was a sales tool for the airline business. Legislation has done away with all that. Nowadays, GDSs must be so unbiased that they are no longer regarded as a key part of the airline's sales and marketing function. Sabre's primary mission is therefore to increase the sales of its automation products. Hence it is important to emphasize that following the corporate restructuring exercise described above, Sabre's activities are no longer driven by the need to support the sales of American Airlines' seats. In fact only a few years ago, when airlines were experiencing one of the industry's worst recessions, Sabre regularly generated more profit than the American Airlines business itself.

Decentralized processing

In the early days of IT, back in the 1960s and 1970s, Sabre was accessed by travel agents who predominantly used dumb terminals for everyday access to Sabre. These terminals were connected to an office based communications controller that itself was connected via a dedicated communications line to the Sabre host main-frame computer. Terminals such as these possessed no inherent processing power of their own and relied solely on the Sabre main-frame system for all functions initiated by the user. In fact, there are still quite a few such agents around the world who use these devices for their day-to-day reservations purposes. However, for most travel agents, the new PC-based Sabre products are more productive, more user-friendly and are richer in functionality than the 'old' dumb terminal approach. Before we dive into an analysis of Sabre's new products, it is worth considering how this shift in GDS IT evolved.

One of the clear trends in IT over the past ten or even 20 years has been the decentralization of

computer processing power. The major reasons for this are as follows: (i) the power of processor chips has increased exponentially, (ii) the price of these chips has fallen in almost an inverse price/performance curve, and (iii) the physical size of circuitry and chips has shrunk to microscopic proportions. Evidence of these factors has been the widespread use of the ubiquitous PC. All of this has meant that more processing can be carried out closer to the end user, usually on their local PC.

So, the legacy main-frame computers on which the core airline reservation systems run, have seen some of their processing functions distributed to outlying PCs via global telecommunications networks. This phenomenon is called co-operative processing and it uses distributed PCs to make it work. Even if the main-frame systems do not shed any functionality, the distributed processors can do a lot more local checking and validating of users' entries long before transactions actually hit the host system. This local validation processing generates several important benefits, such as: (i) lower transaction volumes because many erroneous entries are trapped locally and not even sent to the main-frame; (ii) reduced processing load on the main-frame because much of the validation checks and error detection/reporting/correction functions are undertaken locally on the PC; and (iii) faster response times for the user because data entry and validation transactions do not have to be transmitted across a network and are instead performed locally, which supports an almost instantaneous response.

Then there are the added user interface benefits. Local PC processors allow the unfriendly face of the main-frame to be replaced by a GUI. The problem with a lot of legacy main-frame systems is that they are usually very user un-friendly. They often require complex entries to be made by users, which often bear a remarkable resemblance to computer programming instructions. These coded entries are difficult for users to remember, are susceptible to mis-keying errors and require lengthy training courses. However, local PCs can act as interpreters for the main-frame and therefore offer the user many benefits including: (i) a far easier interface that is quicker to use and generates fewer mis-keying entries, (ii) the automatic generation of certain fields that historically had to be laboriously

keyed by the user, and (iii) less training before the user can become a proficient operator.

So, the trend is clearly away from dumb terminals and towards a co-operative processing architecture that uses a combination of legacy main-frame systems and local PCs. Evidence of this trend can be clearly seen in virtually any travel agent's office. Although dumb terminals were the norm right up to the 1980s, in the 1990s travel agents gradually replaced them with PCs linked to GDSs. Nevertheless, the Sabre central system is a massive computer facility. The main site is based in Tulsa, Oklahoma, and a major portion of this facility has been designed to withstand both natural and man-made catastrophes. It uses 17 main-frame computers to deliver 4,000 MIPS of processing power with 15.3 Tb of storage. These computers are housed in a high security data centre with 11 km² of floor space. The networking capabilities are equally impressive with 180 communications processors and numerous mid-range UNIX-based computers. Over 200,000 PCs are managed and a voice network comprising over 45,000 telephone numbers and 10,000 voice mail boxes generate over 115 million calls each year.

Now, it is time to consider the range of products offered by Sabre to its subscribers around the world. There are several products that I describe here and all of them use a combination of: (a) PCs as the primary travel agent's workstation, and (b) functions provided by the Sabre main-frame core system. But before we can begin to understand Sabre's end-user products, it is essential first to understand something about the core reservation engine that drives the Sabre GDS. Understanding Sabre's core functionality provides a solid foundation for exploring the many front-end products marketed to the travel industry by this major GDS.

Sabre functionality

The Sabre core system runs on an extremely large main-frame computer that is situated in an underground bunker in Tulsa, Oklahoma. This system has two types of functions. First there are the back-end functions that are concerned with Sabre's connections to other airline reservation systems. Then there are the front-end functions that provide access to the Sabre system by travel agents

and other users, such as regional American Airlines reservation offices. Let's review the back-end functions first.

Sabre's back-end functions

Sabre is connected to a large number of other CRSs via direct computer-to-computer links. Each link is supported by a set of complex computer functions that themselves have various degrees of sophistication. The degree of sophistication depends upon several factors, such as: (a) the functional capabilities of the participating CRS, (b) the price that the participating airline wishes to pay Sabre for participating in their GDS, and (c) the communications network used to connect into Sabre. The terminology that covers this aspect of Sabre's intra-CRS connections goes under the banner of 'levels of participation'. The reason it is so important to understand the various levels of Sabre's CRS participation, is because it is the dominant factor affecting the displays and functions that subscribers experience when they use Sabre.

Sabre therefore provides its airline customers with several options regarding the precise way in which they participate in the Sabre system. The most basic level is the basic booking request (BBR), which is a relatively new service designed for smaller airlines requiring only the simplest of booking functions at a low cost. It uses on-line two-way communications for reservation request messages, but the timing of responses is not immediate. The standard level of participation is called Full Availability and this is the service used by the majority of airlines connected to Sabre. In addition to this there is a set of optional services, which falls under the umbrella of what Sabre calls Total Access. Total Access therefore comprises several different sub-levels of participation, which are described as follows:

- **Direct Access** With Direct Access, Sabre communicates directly with the other airline CRSs and 'takes' the required seat(s) from the airlines' inventories. This provides last seat availability.
- **Multi-Access** This is a form of participation that is similar in many ways to Direct Access. The difference here is that the user must bypass Sabre and use the airline system that is

being accessed. Although the Sabre common language can be used for outbound entries, the inbound displays received from the multi-access host will be displayed in native format, i.e. non-Sabre format. Multi-Access provides last seat availability.

- **Answer Back** This is a kind of enhanced messaging system. In this case, the participating airline sends a two-character answer-back code to Sabre via a teletype message, i.e. something like a telex message, confirming that the reservation has been successfully made within its own system. Sabre updates its PNR with this answer-back code. This gives the travel-agency user (not to mention the traveller), a degree of comfort that the reservation has actually been made in the other airline's system. However, it is possible for a reservation to be withdrawn even after confirmation and so Answer Back is not the optimum level of participation.
- **Direct Connect** This is the premier level of participation and is sometimes known as 'Seamless Connectivity'. Instead of the participating airline sending just a two-character confirmation code, it actually sends its PNR locator reference. This is automatically added to the Sabre PNR. With the other airline's locator embedded within the Sabre PNR, the booking is not only as secure as it could ever be, but there is a speedy reference point into the other airline's system should enquiries ever need to be made, or a ticket needs to be collected on departure. With Direct Connect it is possible to sell a seat from an availability display that actually shows zero seats available. This is because although the availability display sent from the participating airline shows no seats available, Sabre can 'go into' the airline's system and if there is a seat left, it will take it.
- **Direct Connect Availability** Otherwise known as Seamless Availability, this is the ultimate level of participation that another airline may have with Sabre. It provides the user with a real-time availability display using information obtained directly from the participating airline's reservation system.

When a reservation is made in Sabre, a PNR is created and this is given a PNR locator code. This

may be used to retrieve the PNR on subsequent occasions, although the PNR may also be retrieved on entry of the travellers name. A Sabre PNR generally contains details of all products booked via Sabre, even though some of them may in fact be non-air segments delivered by non-Sabre host systems, e.g. hotel reservations, rail reservations and car bookings. That brings us nicely on to non-air host systems that are connected to Sabre.

Non-air hosts

The term 'Sabre central hosting' summarizes the architectural principle that is the cornerstone of Sabre's non-air host development program. This principle is based upon connecting all non-air supplier computer systems, no matter where they are located, directly to the Sabre host computer in Tulsa. Centralizing these connections allows Sabre to distribute all non-air host systems to its population of users located around the world. Consequently, Sabre has developed a range of new non-air products for each marketing region of the world. In Europe, for example, the project name is European local vendor access (ELVA). The objective of this product is to make Sabre more of an attractive utility to travel agents who book a fair amount of leisure travel business.

Some GDSs connect local non-air systems to their nearest national node. While this is fine for local access from within a country, it is not always suitable for global access. Take the following hypothetical situation. Say that a French non-air supplier's booking system needed to be connected to Sabre. One might think that this could be done via Sabre's node in Paris. Such a solution would seem at first glance to be perfectly satisfactory because it would appear to provide access for all Sabre users within France. But this is not how Sabre works. If, for example, access were required to the supplier's system from Sabre users in say Italy, then the switching technology required in France would be complex and costly for Sabre to implement. So, the Sabre national node in France does not have a switching capability and instead the French supplier's system would be directly connected to Sabre's GDS central switch in the USA. This illustrates the arguments that Sabre uses for its policy of central hosting for non-air suppliers.

It is for reasons such as these, that Sabre has adopted a policy of central hosting for all non-air suppliers. This means that non-air supplier booking computers are always connected to Sabre's central switch in the USA. An architecture such as this allows any Sabre user, no matter where they are located, to have access to the central non-air host system, provided of course that they have the appropriate authorizations and access privileges to allow this.

In the USA, travel agents are highly focused on three core travel products: airline seats, hotel accommodation and car rental; with cruise lines a close fourth. Sabre has, for many years, had a range of these non-air suppliers connected to its central system. However, in Europe, the travel pattern is different and many travel agents also require access to additional travel suppliers. Examples include: rail companies, tour operators and ferry companies. The ELVA project has now widened the span of Sabre in Europe by adding many new non-air suppliers including, for instance, SNCF, the French rail operator (and thereby the Eurostar cross-channel service), tour operators and ferry companies. New suppliers are being added to Sabre all the time. For example, there are one or two leading ferry operators who have already agreed to connect their systems to Sabre under the banner of Sabre Navigator, e.g. P&O Ferries. Also, several leading European tour operators will be joining the list of Sabre leisure travel host systems under the banner of Sabre TourGuide. There are even plans afoot to connect other rail services into Sabre.

Non-air suppliers are invariably connected into Sabre using the Multi-Access level of participation. Just to refresh your memory, this means that the user 'talks' to the non-air supplier in the native host 'language' of their booking computer system. In other words, Sabre does not undertake any translation in an attempt to communicate with the user in a common 'Sabre type' language. This has the benefit of allowing the user access to the full range of functions and commands that are available in the non-air host system. However, Sabre does apply some intelligence to the booking process by combining and integrating all booking segments into a single PNR for the passenger. So, if the passenger's trip involved a flight, a car rental,

a train journey and a ferry crossing then all of these services would be stored in a single PNR for the trip. In the future it should also be possible to request availability between two cities, say London and Paris, and see a Sabre display showing rail and channel tunnel services alongside airline flights.

More recently, Sabre has launched a new booking service called Direct Request for Hotels, aimed principally at the smaller hotel and bed and breakfast establishments (SMEs). These properties do not usually have on-line reservation systems of their own. So, Sabre has adapted straightforward fax technology to communicate with these SMEs. This opens up sales opportunities from over 29,000 travel agencies around the world that are Sabre subscribers. Sabre includes participating SMEs in its hotel availability displays. Then, when a booking is made by a Sabre subscriber, the central host system automatically generates a fax message that is sent directly to the SME. Once received, the SME fills in the appropriate fields and faxes the fax back to Sabre. The Sabre system then electronically reads the incoming fax using optical character recognition (OCR) technology. The decoded information is then used to update the PNR booking record, which may be viewed and acted upon by the originating travel agent.

Finally, there is a wealth of information stored within Sabre that is available to its users. The following are just some of the topics available via Sabre: (a) theatre information and seat bookings, (b) tourist information on countries and regions, and (c) information on national governments and health/visa requirements of their countries.

Well, that completes our brief review of Sabre's back-end functionality. Now let's see how these host systems, including the vast information resource stored on Sabre's central data base, are distributed to subscribers around the world. Distribution of Sabre is effected by several inter-linked front-end systems, each with its own set of associated products.

Sabre's front-end functions

Sabre's front-end core functions are the driving force for its many travel industry products. Only by understanding these functions can we expect to appreciate these new 'look and feel' products in detail. It is therefore necessary first of all to

examine the basic reservation functions at Sabre's core, so that we can understand how it is that they can be made to look so simple within a distributed processing environment.

In many ways, the front-end core system doesn't need to know what kind of workstation is hanging on the other end of the line. It may be a dumb terminal or a PC running any one of Sabre's new products, such as Sabre For Windows, Turbo Sabre, Planet Sabre or Travelocity (Sabre's Internet product - see Chapter 5). As far as the front-end core system is concerned, the entries and the responses it processes are identical. The functions that comprise this front-end core system go under the banner of Professional Sabre. It doesn't matter what front-end product you are using, it is Professional Sabre (or a sub-set thereof), that you will actually be interacting with on the Sabre host main-frame. This is the reason why I have chosen to use a review of Professional Sabre as our springboard for understanding Sabre and its full range of GDS products.

Professional Sabre

Professional Sabre has the most comprehensive set of functions available to non-AMR users who are of course in the main, travel agents. Let's start by considering the use of Professional Sabre as accessed from a dumb computer terminal. If we can grasp how these core functions are performed at this level then it will be far easier to understand how the more sophisticated products work. Most of the basic system functions in Sabre are initiated by depressing a number on the keyboard. Each number has a certain function and these are described in more detail as follows:

- **1 Availability** This is probably the most frequently used function of all. As the name implies it allows a user to enquire about the availability of a specific flight or to review the various services between two cities. Participating Total Access hosts allow last seat availability and guaranteed bookings. All that is needed for a minimum availability request entry is the date of travel and the city pairs. The system responds with a list of flights in the sequence recommended by the ECAC CRS Code of Conduct (see Chapter 1), i.e.

- *First*: Direct flights in departure time order.
 - *Second*: Flights with stops but same flight numbers.
 - *Third*: Connecting flights in sequence by the most direct route.
 - **2 FliFlo** This entry is used to obtain flight information for participating carriers. The information is presented in real-time, which means that it is up-to-date. It shows such information as the latest estimated (and actual) arrival and departure times, the flying time between two cities, the weather *en route* and so on.
 - **3 GFAX** Otherwise known as other service information (OSI) and/or special service request (SSR). OSI messages do not require a response, whereas SSR entries do. This is how you request special services that are needed on a non-American Airlines flight by your customer. Services such as special meals, seat requests, meet and assist, and so on. Incidentally American Airlines offers over 30 different types of meals that if ordered 24 hours in advance can be served on the flight, from low lactose meals to an all-American burger!
 - **4 AFAX** This entry is made when a response from American Airlines is needed. AFAX is used to request SSRs from American Airlines or send OSI information. Replies to GFAX SSRs are sent to AFAX. When the reply is received, Sabre stores it as part of the PNR. It may subsequently be recalled and displayed by the AFAX entry.
 - **5 Remarks** Besides the obvious use for this entry, coded remarks are supported. This means that the user need only enter a shorthand code in order to make a special remark appear on a PNR, a ticket, an itinerary or an invoice. Examples of some common entries are the passenger's address and the form of payment.
 - **6 Received field** Each time the PNR is accessed and changed by the travel agent, an entry is made in the history file. The Received field is used to store data that are added to indicate who authorized the booking, or who requested a change, etc. It is a mandatory field for the original booking and also for certain changes. This is useful when a passenger says 'I never asked for that service to be provided'. With a PNR history, the travel agent can always display the precise sequence of events that led to the current status of the booking. In fact a '6' field must be entered before a PNR can be finalized, e.g. an 'E' after the '6' field entry, ends the transaction.
 - **7 Ticketing field** This field contains ticket instructions that must be entered prior to ticketing, and after ticketing has taken place it is updated to contain certain ticket-related data. Besides the basic reservations information held in the PNR, there are certain key fields that are needed for ticketing and these are: the airline code that designates the ticketed carrier, the commission rate (per cent), the form of payment and the baggage allowance. The ticketing field is a sophisticated function that is impossible to cover fully in just a short section of this book. Suffice it to say that Sabre maintains a diary of ticketing actions and updates this part of the PNR automatically.
 - **8 Ticketing time limit field** This field is used to record a time limit beyond which the PNR is cancelled if a ticket has not been printed. When ticketing does occur, the ticket field (see above) is updated to reflect the new status and this ticketing time limit field is eliminated.
 - **9 Phone/contact field** This field contains details of how the traveller may be contacted. It may be entered automatically by the Sabre host main-frame system from some previously recorded customer profile information held in a storage area called special traveller account record (STAR), which I will be covering in more detail later. Alternatively it may be entered at the time of booking by the travel agent.
 - **0 Sell or reserve a product** Finally, the field that allows a travel agent actually to sell an airline seat or other product. The field entries are simply the class of travel and the line number of the availability display that contains the details of the flight (or other product).
- There are a few other keys that have special significance and I will cover these briefly here. First, to cancel a segment the character 'X' is used, followed by the segment that is to be cancelled. So, for example, entering X3 would cause the third

segment of the itinerary to be cancelled; and entering XI would cause the entire itinerary to be cancelled. A '/', i.e. a slash, allows a segment to be inserted into the itinerary; a '.', i.e. a full stop, changes the segment's status; and a ',', i.e. a comma, allows a new number of passengers to be entered, e.g. four were originally booked, one is to drop out and so the new number of passengers is three but the itinerary details remain the same.

This sounds quite complicated and one may ask why is it necessary to use all these peculiar combinations of characters to mean so many different things. The reason is partly historical and partly practical. For historical reasons, the original Sabre system was designed to use a single character to denote a specific function and from a practical view, the use of a single character is fast. It just takes a bit of getting used to really. But there are more functions available via the keyboard:

- **Programmable function keys (PF keys)** PF keys are a powerful productivity tool. PF keys are the set of keys on a keyboard that are usually located across the very top of the keyboard. There are 12 PF keys on most modern keyboards, which together with the shift key enable 24 PF keys to be available to workstation users. These keys are available to be used by the application that happens to be running in the terminal controller at the time. Each PF key may be used to store a set of functions equivalent to several key depressions. Each PF key may be programmed a different way by its user. So, for example, a travel agent sales person may decide to set their PF keys up one way, whereas a colleague in the same agency may set their PF keys up another way. It is, however, usually the case that a standard is decided upon in an agency of any size, so that people can move from one workstation to another without having to re-designate the PF keys.
- **Special traveller account record system (STARS)** STARS is known in other systems by the term *profiles*. Sabre's STARS is widely regarded in the travel agency industry as one of the most powerful features of the system. Each STARS record supports the storage of up to 200 lines of information. By using the STARS facility

wisely, a travel agent can gain substantial productivity advantages and greatly enhance the level of personal service provided to customers. In essence STARS is lines of information that may be moved automatically into a traveller's PNR by the travel agent making the reservation. The data are maintained under the complete control of the travel agent. STARS is usually used to keep a file of reference information on each company and frequent flyers, with whom a fair amount of repeat business is transacted. This allows information to be copied into PNRs effortlessly and for the agent to demonstrate effectively to the customer that they really do know a lot about them. There are three levels of STARS:

- **Level 0: The travel agent profile** This contains the basic static information that describes the travel agency. Items of information such as the agency's name, address, telephone number and other items of reference information. There is therefore only one Level 0 STAR for each travel agency location.
 - **Level 1: Company STAR** This is a collection of information that describes a business travel account customer. It would normally contain details about the head office of the company to which the travel agent provided business travel services; name, address, telephone, etc. This Level 1 STAR may also be used to store the details of an individual who is a frequent customer of the travel agency but who does not work for a particular company.
 - **Level 2: Individual traveller STAR** All the employees of a company have a single STAR record each. This is associated with the Level 1 STAR for their company and describes the traveller in detail. Identification information is stored along with the preferences of the individual concerned. Examples of individual preferences include: vegan, smoker, aisle sitter and window gazer. Other STAR fields are the form of payment and the traveller's department code.
- **Sabre Scribe** Another powerful facility to tailor Sabre for an individual user or a travel agency is the script facility. This allows a 'fill in the blanks' format to be defined for a

particular job. An example of when this would be useful is for capturing a number of repetitions of a similar transaction. Or for capturing a standard set of management information fields for a specific company booking. A script can be set up so that when recalled, a kind of electronic form is presented on the screen to the user. The cursor is positioned next to the field to be entered and when this has been input, it moves on to the next field and so on until all data have been entered. Nine pre-programmed scripts are provided with the basic Sabre Scribe product; others can be set up to meet specific user requirements.

- **User defined interface data (UDID)** Also available as an important tool to help tailor Sabre for a travel agent's own particular needs is the UDID facility. A UDID is a special kind of remarks field in Sabre. It can, however, be interpreted by a back-office computer system that is programmed to recognize certain UDID fields. A UDID entry can be used to record special information within Sabre and format a record or part of a record that will automatically be fed into a back-office system. Each UDID is assigned a label that, when entered, allows the data that follows to be associated with that UDID for later processing.

A good example of UDID usage in practice, is the entry of a corporate customer's travel requisition request number as part of a booking. A travel requisition incidentally, is a form used by many companies to enable a traveller to obtain the necessary in-house approvals from management, in order to make the trip. This is usually a paper-based form although with the increasing popularity of e-mail, this is fast becoming an electronic 'document'. When the reservation is made, the traveller specifies the travel requisition number that is entered by the agent, for example, as the UDID entry '5.U1.-AT1476'. This causes the travel requisition code AT1476 to be stored in the PNR. At ticketing time, the ticket interface record is transmitted into the back-office system which is programmed to search each incoming record for a field identifier of 'U1'. When it finds this, it knows that the following data is the travel requisition number. This number can then be

extracted from the ticketing record and stored on the back-office system's MIS data base for later reporting.

It is also possible to get even more sophisticated and combine Sabre Scribe with the UDID facility. This enables the UDID field to be edited by Sabre at the time of entry. In our example above, the UDID entry could be checked by Sabre Scribe to ensure that it was six characters long and that the last four characters were numeric only. Using this approach Sabre can be virtually pre-programmed to capture the precise information needed by the travel agent's business travel customers. This illustrates the labour saving and customization facilities that Sabre's UDID and script features provide a travel agent.

- **Ticketing** The control over Sabre ticketing is provided by the host main-frame computer. In a dumb terminal environment, such as the one we are considering here, the ticket printer is connected to the Sabre communications controller installed in the travel agency. At the time a ticket is printed the user can also request an invoice and/or an itinerary to be printed. The ticket printed by Sabre in this environment is called the Phase 3 continuous stationery ticket.
- **Back-office interface** Whenever a transaction is invoiced or a ticket is printed by Sabre, the data can be stored for transmission into a back-office system. The repository for this information is called DWLIST. This is really a special kind of file that is stored on the Sabre host and that can be downloaded into the back-office system via the agency gateway on the file server. In fact this download process can either be interactive, i.e. it is done as soon as a ticket is printed, or it can be done in batch at certain times of the day. Sabre can interface to a wide variety of industry back-office systems including, for example, Galileo's PAMS!
- **Leisure travel support** The Sabretext product supports access to leisure travel supplier's reservation systems that are based on videotex technology, from a Sabre PC workstation. This is effected via the X25 link from the travel agency to the Sabre gateway that controls the type of access. The access from the Sabre gateway may be either direct into Sabre or in the case

Table 4.5 A summary of Sabre products

<i>Market segment</i>	<i>Segment classification</i>	<i>Sabre product</i>
Travel agents	Agents with an average mix of leisure and business travel bookings	Professional Sabre Dial Sabre Sabre With Windows Sabre For Windows 95 Planet Sabre
	Agents with a large volume of business travel bookings	Turbo Sabre
	Agents with their own in-house booking systems	Sabre EDI Gateway
Corporates	–	Commercial Sabre (USA only) Business Travel Solutions SabreExpress SabreExpress Fax SabreExpress Mail
Consumers	–	EasySabre (USA only) Travelocity (USA only)

of Sabretext, directly into the Istel network. AT&T Istel supports a number of viewdata leisure travel reservation systems that are connected to it. In Sabretext mode, the workstation acts just like a viewdata terminal.

- **Concierge** This is Sabre's general information system. It is supplied from a variety of sources, as well as Sabre itself. A virtual travel related encyclopaedia of useful facts can be accessed on a wide range of subjects including, for instance, health, visa, weather, geography and tourist information.

Sabre's front-end products

As mentioned earlier, the core Sabre front-end system is capable of being accessed in a number of different ways by different types of users; and the profile of the average travel-agency user is changing quite radically. It used to be the case that the focus of required skills needed to make a good travel sales person (or travel counsellor as they are sometimes known), were largely technically oriented. For example, many advertisements for travel sales positions stated the need for applicants to be skilled in a particular GDS system. This is not quite as important a requirement as it used to be, chiefly because: (a) systems have become, or

at least are becoming, far easier to use; (b) the time required for training a new user has decreased substantially with the newer GUI and intuitive systems now widely used in travel agencies; and (c) there is a more pressing need for travel sales staff to be experts in the field of travel itself (or at least to know where to look for travel information), rather than computer experts. In fact it is widely assumed that, as a result of today's modern education, young recruits are anyway sufficiently computer literate. However, the users of Sabre are not restricted to travel agents.

Following some in-depth market research, Sabre has segmented its users into three main types: (i) travel agents; (ii) companies, otherwise known as corporates in Sabre terminology; and (iii) individual consumers. A complete range of products has been developed for each of these market segments. This product segmentation is usually achieved by means of: (a) local processing carried out in the user's Sabre PC, and (b) 'filters' that have been built into Sabre's front-end system. As a result of this, there are therefore several Sabre reservation products, each of which has its own brand name and is aimed at a particular section of the market. Some of these products have been around for several years while others are only just

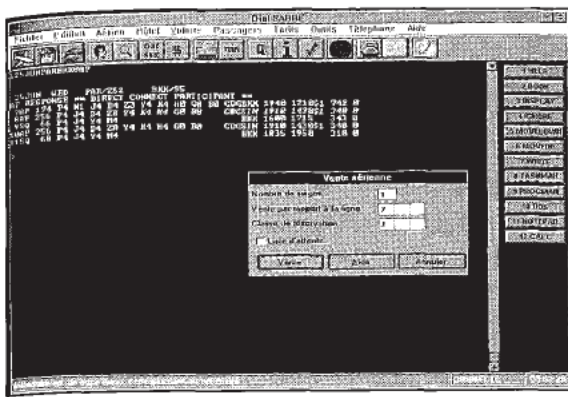


Figure 4.10 Dial Sabre

being introduced. However, Sabre has a policy of supporting all established products for the foreseeable future, i.e. in IT terms. The main Sabre reservation products are summarized in Table 4.5.

The reason for the growth in new and innovative Sabre front-end products is the benefits that PC GUIs bring to end users. The core Professional Sabre commands are concise and efficient in terms of system resource usage, but at the same time they are complex, difficult to remember and error prone from the user's viewpoint. Also, some hotel commands entered via Sabre can be over 40 characters in length; and with each character having a specific meaning, this represents a source of errors, mis-understandings and repetitive training needs. As a result, most users only remember the formats of between 30 and 40 per cent of Sabre's available functions. The other less frequently used but nevertheless very useful functions, are just not memorized. So, Sabre has introduced a series of evolutionary GUI-based products that are summarised in the above figure and that are presented below in a little more detail.

Travel agents

Sabre has designed a set of products especially for its main subscriber base, which is the travel agents of the world. There is virtually a customized product for each of the main types of agency (see Chapter 7). These products range from those providing simple, easy to use features that can be slower to use, up to the faster versions that require more training to use effectively. The travel agency products are:

- **Professional Sabre** This is the name of the product that is used by travel agents who do not have PCs. Professional Sabre is covered in the preceding section in greater detail. The functionality of this core system is, however, enhanced by co-operative PC processing that allows the following products to be supported.
- **Dial Sabre** This product is designed for the infrequent Sabre user, often smaller travel agencies, who cannot justify a dedicated reservation terminal. As such it is designed mainly for small independent travel agents, especially those concentrating on the leisure market. It supports only a limited set of the entire range of Sabre functions (Fig. 4.10).
- **Sabre for DOS** The advent of cheap and widely available PC technology has provided Sabre with an ideal opportunity to make its reservations product even easier to use and more sophisticated than was possible using dumb terminals. Sabre for DOS has been in use for several years now although it has recently been superseded by the Microsoft Windows family of operating systems. The product is more precisely identified as Sabre System 5.0 Enhanced Software for DOS Version 3.3 or higher (in actual fact, Sabre Revision 5.1 is now available). Any IBM compatible PC may be used to run Sabre for DOS and the product may also be used on a LAN. The screen is subdivided into several parts, which are generally as follows:
 - *Memo area* This is a coloured rectangular area (usually blue) located at the very top of the screen, which is a kind of electronic memo pad. Its purpose is to allow the travel-agency user to display a message on the screen. This can be useful when the workstation is unattended for a period of time and the operator needs to leave a message for a colleague.
 - *Function key labels* Function keys provide some powerful pre-programmed functions that may be specified by the workstation user. Whenever these functions need to be performed, a single key depression will execute them. A tall thin rectangular area on the right-hand side of the screen is reserved for a display of the function keys and their meaning.

- *Work area* This is a large almost square area in the middle of the screen, which is the main work area. This is the area where the user keys the Sabre entries and sees the displays that are sent from the host system.
- *Mode* There is a small block at the bottom of the screen that shows which mode is being used to access Sabre. This could show, for example, Professional Sabre, Sabre Scribe, etc.
- *Clock and date* These two useful reference fields are displayed in the bottom right-hand corner of the screen and are self-explanatory. Additionally, the depression of certain keys causes a calendar and a calculator to be displayed. The calendar is a very useful feature because it is automatically updated by the PC's internal clock powered by a small long-life battery that is continuously running. The calculator displays an image of what a typical calculator looks like with buttons for numbers and the common arithmetic functions. These buttons are 'pressed' by selecting them on the keyboard.
- **Sabre With Windows** This is a product that was launched world-wide in April 1993. It was rolled out in the UK and the rest of Europe by mid-1993. Sabre With Windows really does make the PC more than just a dumb terminal emulator. Besides providing an extremely user-friendly front-end to the Sabre host system, the PC can run any Microsoft Windows Version 3.1 compatible software at the same time. Any PC that is IBM compatible can run Microsoft Windows Version 3.1 or higher as supplied by Sabre. An industry standard version of Microsoft Windows is provided as part of the Sabre With Windows product. The plain vanilla version of Windows 3.1 has been enhanced as the result of a joint effort between Sabre and Microsoft. This has produced a version of Windows that enables the user to get the most out of Sabre and yet be able to run industry standard Windows 3.1 compatible software without any special modification. Sabre is simply just another software product that can be loaded and accessed via standard Windows.

A common question often asked by travel agents is: What benefits do I get from Sabre With Windows? This is a good question but

there is an equally good answer to it – a lot of extra functionality that can generate a higher level of productivity! The following are just some of the advantages of using a Windows environment:

- *Multi-tasking* First, there is the multi-tasking capability. Multi-tasking means that you can run several programs at one time. It is possible, for example, to have Sabre available in one window, a client file from your back-office system in another window and a word processor in a third window. Your PC might be printing a report as you are accessing Sabre. The overall reason you might want to take advantage of multi-tasking, for example, is so that you can build a personalized itinerary for a customer and produce a quotation for them.

Multi-tasking allows you to add 'boilerplate' text to the document and put a few finishing touches to it before storing and printing it. With Windows, you just start the printer off and then you are free to do something else. The Windows multi-tasking software takes care of controlling the physical printing while you get on with another customer proposal or make another reservation.

- *Clipboard* This is where the second powerful Windows facility comes into its own; the Clipboard. The clipboard is a standard feature of Microsoft Windows and it allows you to select and copy information from one window and insert or paste it into another. So, you could, for example use the Sabre window to build an itinerary for the customer using the availability displays and other features that I have described above. Then you could copy the relevant pieces of the itinerary, swap into the word processing window and paste the itinerary into a document. Then you could activate the back-office system window and display the relevant client file that contains all the static information about your customer. Once again you could copy the appropriate information on say name, address, telephone number and special preferences, swap windows back to the word-processor and paste the information into the document you are building.

The Microsoft Windows Program Manager is the front screen for Windows. Besides the standard Microsoft windows containing various general program functions, there is a Sabre window. This shows several icons, each of which when double clicked with the mouse, offers some important services to the user. It would be impossible to cover the richness and depth of these functions in this book. It must therefore be borne in mind that the following description covers these areas in very general terms only:

- *Sabre utilities* The first of these utilities is network security, an often overlooked yet very important subject. Sabre network security is provided by Novell LAN software. This controls which groups of functions are accessible by the user of the workstation, the rights granted to users in terms of whether they can read or write to certain sensitive files and a directory of users. LAN diagnostics are also presented pictorially. An actual image of the LAN in the agency is shown, which is a powerful tool for use by the supervisor within the agency.
- *Sabre applications* A calculator and a calendar, just like with Sabre for DOS as described above. The only difference here is that the user is free to use a mouse instead of (or in addition to), the keyboard.
- *Gateway to Sabre With Windows* Besides providing a gateway to the core Sabre system as described in the main body of this section, several other peripheral functions are offered in this window. A revision history of the Sabre software used by the travel agent is available. This is especially useful in ensuring that the travel agent is using the latest version and has loaded the latest set of updates. It is surprising how often this is overlooked and it can cause some horrendous problems if not done properly. User information is provided that shows who is logged in and what peripheral devices, such as printers, are doing – a sort of ‘big brother is watching you’, kind of a function that is so loved by the agency supervisor! Then there are the Sabre With Windows tutorials and help functions: (i) About Sabre With Windows – a general introduction and overview of the pro-

duct and the functions available at a general level; (ii) Getting Started – an overview of the basic entries that are, for instance, needed to obtain an availability display and make a simple reservation; and (iii) Practising Sabre With Windows – an extremely useful facility that enables a new user to practise most of the Sabre entries without any danger of impacting the live system.

- *Sabre Help* This, as the name implies, provides information on certain subjects that are needed to accomplish a task that the user is unsure about or needs a quick refresher. It is a powerful support facility that can be accessed in a number of ways. First, it is like a book in that there are certain headings and sub-headings that can be accessed via a kind of table of contents. Then there is context sensitive help, which is probably one of the product’s strongest benefits. When a user gets to a point in the transaction at which further information is needed to complete it, the depression of the ‘Ctrl’ and ‘H’ keys initiates Sabre’s context sensitive help function. The system looks at the current entries and extracts what it considers to be the most relevant section of the help text that is most likely to address the user’s problem. A diskette is periodically distributed by Sabre with updated help information recorded on it. This is loaded into the system and is then available to users.

The Windows approach enables Sabre to provide not just an easy to use interface but also one that can be tailored to each country of the world in which it operates. This functionality is one of the in-built functions of Microsoft Windows. So, although the core Sabre host system is the same, no matter where it is accessed, the PC running Windows can be set up to display standard workstation responses in the national language, e.g. Help Tutorials, Windows Help, Sabre With Windows Help and Sabre Help; and this includes Japanese Kanji symbols too. It is probably fair to say that Sabre With Windows is a strategic product that will be around for many years to come and will continue to be enhanced and refined.

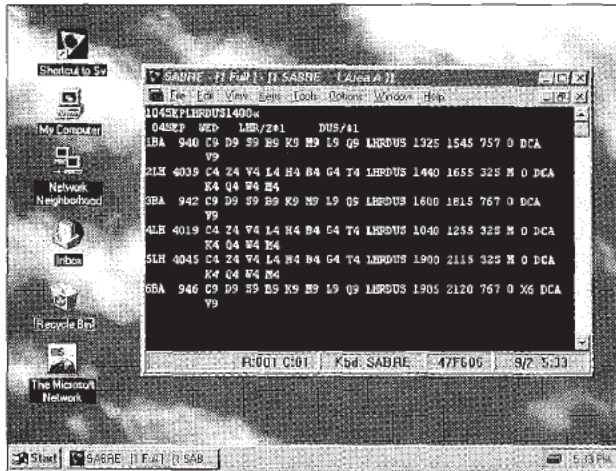


Figure 4.11 Sabre for Windows 95



Figure 4.12 Planet Sabre (logo)

- **Sabre For Windows 95** As the name implies, this is a version that runs under the Microsoft Windows 95 PC operating system. It is, however, generally the same as Sabre With Windows from a functional viewpoint.

One of the important optional features with this product is graphical ticketing. Graphical ticketing addresses the minefield of complexities surrounding the automatic printing of travel tickets for customers, whether they be for air, rail or ferry. Instead of the old set of one character commands required by Professional Sabre to drive out a ticket successfully, graphical ticketing presents the user with a virtual image of the actual ticket as it will be printed. The image is constructed from the information already keyed by the user, following the reservations process. The supporting software is also a lot more intelligent and works out for itself the likely contents of various fields that are to appear on the ticket. The travel-agency user can then view the ticket image on the screen, make any necessary adjustments and when it looks OK, release it for ticket printing. Because humans are more adept at understanding and manipulating images rather than text and numbers, graphical ticketing can reduce errors and accelerate booking procedures. With the increasing complexity of ticketing rules and procedures, graphical ticketing is therefore an extremely useful and productive feature of Sabre For Windows 95 (Fig. 4.11).

- **Planet Sabre** This product, which was launched in the USA during 1996, replaces Sabre With Windows, i.e. Microsoft Windows Version 3, and also Sabre For Windows 95. It is characterized by an attractive welcome page showing the 'travel planet', which also serves as a top level menu of functions (Fig. 4.12). Simply clicking on the appropriate image shown of the travel planet will link the user to the associated set of Sabre functions. Planet Sabre was launched in Europe in two phases during 1997:

- *Phase 1* This focused on two key areas: (a) formatting all non-air commands using a new GUI, and (b) incorporating the graphical ticketing sub-system. The reason for the emphasis on these two areas for Phase 1 was that they represent the areas where most errors are made by users. These are the kind of errors that arise from the occasional use of complex functions *vis-à-vis* commonly used simple 'bread and butter' functions, e.g. airline availability and reservations.
- *Phase 2* This includes the automatic formatting of air booking functions. In essence, this replaces the use of a single character code with selectable menu options for all booking functions.

Planet Sabre uses a full-screen GUI within a Windows 95 operating environment. It has a toolbar situated at the top of the screen that scrolls horizontally. The body of the screen

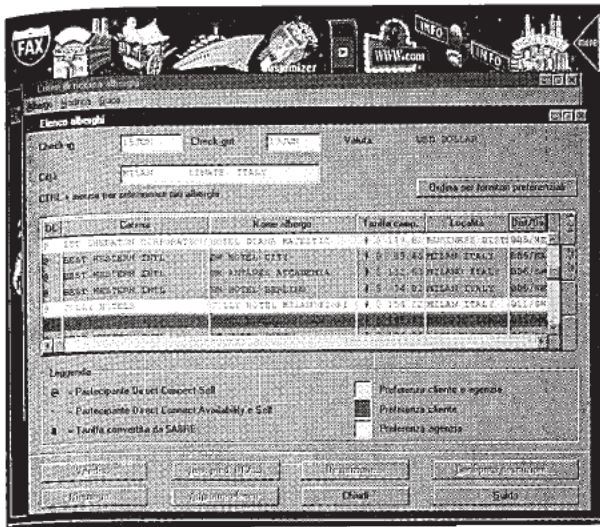


Figure 4.13 Planet Sabre (screen 1)

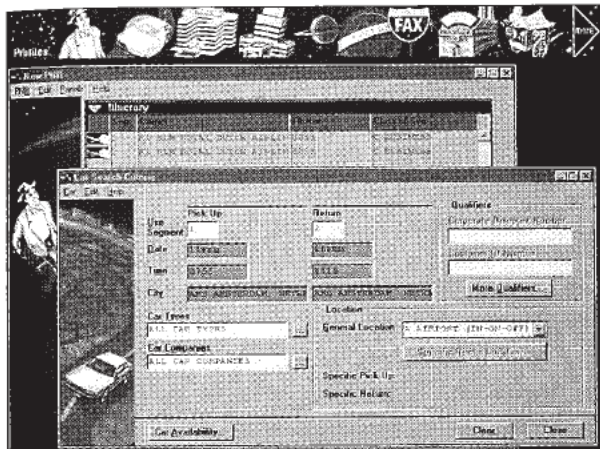


Figure 4.14 Planet Sabre (screen 2)

(Fig. 4.13) shows Sabre options and drop-down menus, all of which are selected by point and click commands using the PC mouse. All user initiated entries are cross-referenced and checked for validity prior to being sent to the Sabre host. Many entries are automatically generated using intelligent retrieval of contextual information, e.g. by using STARS, by using previously entered data and by populating hotel booking fields from basic air data already entered. Finally, Planet Sabre includes an improved version of graphical ticketing as a standard feature of the product (for a fuller description of graphical ticketing, see under Sabre for Windows above).

Besides all this, Internet access is fully supported along with a web browser (see Chapter 5 for more details of Sabre's Internet site – Travelocity). Planet Sabre requires a PC with a Pentium processor chip, a CD-ROM device and Windows 95.

- **Turbo Sabre** This is a Microsoft Windows product, which was launched in early 1996 and designed specifically for the high volume business travel agency. Its focus is on travel agent sales staff who need to achieve high levels of productivity in all business travel products. Thus, the design of Turbo Sabre is based on providing functions that maximize the speed of booking.

It comprises a window that is sub-divided into four mini Sabre displays. The lower right-hand quarter contains 16 Windows push buttons that represent the 16 most commonly used Sabre commands. Each push button is associated with a key on the keyboard. The keys are arranged so that the ones that are easiest to hit are the ones associated with the most frequently used commands. When a key is depressed, the window in the lower right-hand quarter shows the next lowest level of commands. This process may be repeated until eventually, once the lowest level is reached, the screen shows either: (a) the actual booking data that must be keyed, or (b) the relevant display as requested in one of the other free quarters of the screen.

The main advantages of Turbo Sabre are: (i) the speed of operation; (ii) the reduced amount of training time required for a user to become proficient; and (iii) the display of a large amount of information on a single screen, e.g. an availability display in the top right-hand quarter, a customer's STARS display in the top left quarter and a hotel availability display in the lower left quarter. Using Turbo Sabre, training time can be reduced from the one week required for most Windows products to just two days. However, users nevertheless still need basic training in the airline business.

Newer and faster versions of Turbo Sabre continue to be released. The latest version supports the re-display of the last 20 entries

and provides more sophisticated customization features. This means that users are almost totally insulated from the cryptic CRS formats that are so difficult to learn and remember. This has been found to reduce the number of keystrokes required to create a PNR by 50 per cent thus reducing overall booking time by 25 per cent. It simultaneously reduces errors by between 20 and 50 per cent, while increasing preferred vendor sales by 20 per cent.

- **Sabre EDI Gateway** This product has been designed for those very large travel agents who have developed their own sophisticated in-house computer systems and branch network. Such agencies already have their own dedicated links to certain supplier systems that they then distribute from their head-office computer centre to their own terminal devices used in remote branches by means of a proprietary telecommunications network. Rather than have a variety of different interface programs (one for each large travel agency), Sabre has instead chosen to make its interface available using the world-wide standard known as Electronic Data Interchange (EDI). This approach has several benefits: (a) it is a computer-to-computer standard that is supported globally, (b) it means that Sabre need only maintain and support a single interface program for all such travel agency links, and (c) travel agents wishing to interconnect in this way can become readily familiar with the interconnection method. An example of one such large travel agency group that has connected its central system to Sabre is Club Med.
- **Commercial Sabre** This is designed for use by corporate customers themselves. It is a product that has been around for at least four years, but has only a limited future because it will soon be replaced by Business Travel Solutions (BTS, see below). Despite its direct use by customers, it doesn't cut the travel agent out of the action at all. The way it works is generally as follows. The corporate customer (or business house account), uses a PC to access a sub-set of Sabre, i.e. a restricted set of Sabre's functions. The PC is connected to Sabre via a publicly available dial-up computer network called 'Compuserve'. The users of Commercial Sabre can request an availability display and select seats on flights that they wish to be booked. The bookings are then routed to the travel agent by the Sabre main-frame. The travel agent uses a dedicated reservations processor PC installed in the agency and supplied by Sabre to: (a) perform a quality control check on the bookings, (b) enter the more technical details into the PNRs, (c) make the necessary entries for ticketing, (d) check with the customers' established travel policies, and finally (e) confirm the bookings. Once the travel agent has confirmed the bookings, copies of the itineraries are sent to the customers' administrative offices and tickets are printed for the travellers. It is even possible to use Satellite Ticket Printing actually to print the ticket in the corporate customers' own offices, all under the control of the travel agent.
- **SabreExpress Fax** This is a product available under DOS or Windows and is now incorporated within BTS (see below). Roll-out started in 1993 on a global basis and was available to anyone who wished to have an airline reservations capability of their own. Like EasySabre, the corporate traveller completes a simple screen on their PC that specifies the booking required. The difference with SabreExpress Fax is that the booking is sent to a local travel agent via a fax board installed in the PC. (A fax board is a printed circuit board that contains a fax modem and is installed in one of the PC's expansion slots inside the case; it usually has some special communications software associated with it that runs in the PC itself.)

Corporates

Sabre has developed a set of end-user products that are specifically designed for large companies that have a high number of staff who fall into the category of frequent business travellers. This sector of the travel market, i.e. business travel, has its own particular requirements. For instance: (a) the travellers are usually individuals who are very knowledgeable in the field of travel, and (b) the companies usually have well defined travel policies that are carefully monitored by dedicated staff. Sabre has developed some relatively new and sophisticated products for this niche market:

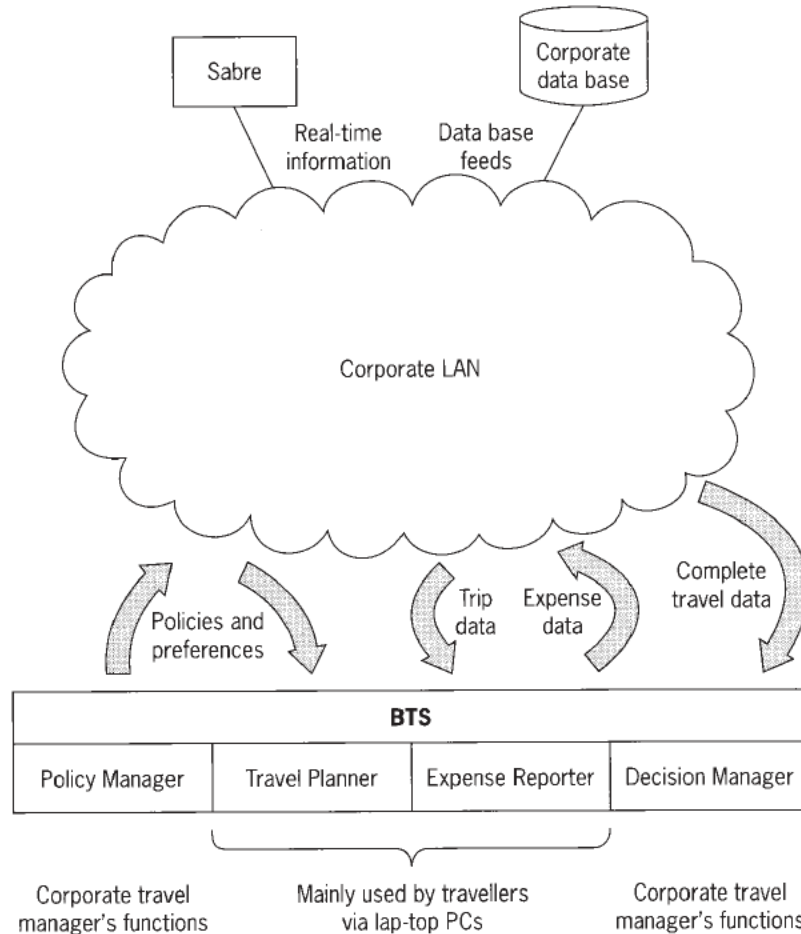


Figure 4.15 Sabre BTS

The travel agent receives the fax message and checks the booking adding any necessary fields before confirmation and ticketing.

- **SabreExpress Mail** Again this is a product available under DOS or Windows and its functions are now incorporated within BTS (see below). It is identical to SabreExpress Fax except that instead of using the fax service, an electronic mail service is used to deliver the booking request to the travel agent.
- **Business Travel Solutions (BTS)** This is one of Sabre's new products that is still in the development stage (the product was in Beta testing during 1997). It replaces SabreExpress and is designed for the corporate travel environment. BTS (Fig. 4.15) is a family of PC software packages that supports: (i) travel planning, (ii) expense management, and (iii) travel management functions. It is a product that is generally

sold to large companies by Sabre itself as well as travel agents and other airlines who have an established business relationship with one of their large business travel customers.

BTS is used principally by corporate travellers who often implement the software on their lap-tops and take it with them when they travel on business. It is also implemented on the company's own network of PCs, which are invariably linked by a LAN. The products are as follows:

- **Travel Planner** This software provides access to Sabre for real-time bookings and the BTS core for administration. It runs on the traveller's own lap-top computer and accesses the Sabre network via a dial-up telecommunications link. It allows the traveller to view the availability of all travel products and services supported by the system.

Travellers can book airline seats and other products according to their own pre-set preferences and within the context of their company's travel policies. Frequent trips can be stored as a template, which is then used to create a new trip of the same type. This accelerates the booking process considerably. Travel Planner also incorporates other easy-to-use features such as 'drag and book' – the appropriate icon is simply dragged across the screen and placed on the correct date in the graphical calendar.

- *Policy Manager* The company's travel policy is pre-programmed into the Travel Planning module. In this context, the policy is expressed as a set of rules governing such options as the class of travel, suppliers to be used, routes flown for certain destinations, category of room, type of car to be rented and other major factors that influence the cost of travel. Although the software can detect bookings that contravene the company's travel policy, it nevertheless allows the traveller to override the warning and make a booking outside policy. However, such bookings are flagged for eventual reporting to the corporate travel manager on an exception basis.
- *Expense Reporter* As expenses are incurred by the traveller they are logged and categorized by BTS. Some expense items are recorded automatically as a by-product of the booking process. Others are keyed by the traveller as they are incurred during a trip. At any point in time, the traveller may use their lap-top to view the expenses recorded to-date. Once the trip has been completed, the Expense Management sub-system provides the traveller with an electronic trip expense exhibit as a screen image that can be viewed, amended and eventually finalized before being electronically submitted for approval by a corporate executive. Although physical documentary supports, i.e. receipts, are required for some categories of expense, BTS comes as close as possible to a paper free expense management system – something most business travellers dream about!
- *Decision Manager* This is the software used at the company's headquarters to centrally

monitor actual and planned travel expenses for all employees. As previously mentioned it produces exception reports highlighting instances where the company's travel policy has been contravened and keeps records of travel expenditure by various categories. An important function provided by this feature of BTS is management information. This is available not simply via voluminous reports but by report generator software and enquiry tools that feature a user-friendly GUI. Decision Manager can help lower costs by improving negotiated rates, enhancing pre-trip authorizations and stream-lining policy compliance.

Consumers

For many years, Sabre has recognized the importance of supporting its customers directly, while at the same time protecting its main distribution channel – the travel agent. This is not as much of a balancing act as it might at first appear. While it is all well and good to provide customers with information that helps them to plan their itineraries, making a reservation firm and printing a ticket require specialized skills that only a travel agent can provide. The following products have all been designed to support consumers, yet maintain the travel agent's key role in the loop:

- **EasySabre** This is a product that has been available in the USA since 1985, although it is not marketed in Europe at present. It is a version of Sabre that runs on a consumer's own PC. A modem is required to access Sabre via on-line services such as the Compuserve network and a simple 'fill in the blanks' screen is used to capture the travel requirements. Once this is captured by Sabre, the reservation is channelled via a local travel agency for ticketing and follow-up action. The user does not need to be familiar with the Sabre reservations language.
- **Travelocity** This is Sabre's Internet product offering and it is described in more detail in Chapter 5 – The Internet.

Finally, Sabre supports electronic ticketing (see Chapter 3 for a fuller description of electronic ticketing). This is currently in widespread use by

Sabre users throughout the USA and is planned for release in Europe during 1997.

Sabre pricing

Sabre pricing, like many GDSs, comprises two main elements: (i) equipment rental and service charges, and (ii) volume related credits. A separate pricing schedule is agreed with each user, which is designed to encourage bookings made via Sabre. There are two inter-linking components. First, there is the cost of the equipment and associated network usage; second, there is the booking fee credits that Sabre rebates to the subscriber via a productivity based agreement (PBA). These components are described in more detail as follows:

- **Costs** The equipment rental and service charges vary according to several factors such as: the number of computer terminals or PCs required by the user, the operating system running in the user's PC, the number of remote locations that require access to Sabre, the type of ticketing used, the level of functionality required, the storage space within Sabre allocated to the user, the software products implemented and the amount of training needed. These factors are all taken into account and a monthly fee calculated.
- **PBA** Against this monthly fee is set the PBA. This is a booking target that is set by Sabre in conjunction with the subscriber and is reviewed every three months. The PBA is the vehicle used to share the booking fee income derived by Sabre from other airlines, for bookings originating in Sabre. The greater the number of segments booked of all products, i.e. air, hotel, car, etc., the greater is the credit given by Sabre to the subscriber. There are, as one would expect, a few ground rules that the subscriber is expected to observe. A good example is the non-allowance of passive segment. Subscribers may not create a booking in an airline system using some other form of communication, e.g. telephone or other GDS, and then duplicate the booking in Sabre. Such passive segments will not count towards the PBA target. Nevertheless, it is quite possible for the cost of the entire system to be off-set completely by the PBA credits.

Sabre's integration technology

Sabre runs within a surprisingly varied number of different technical environments. The software is available, not only in the IBM and IBM-compatible world, but also in the Apple Mac world. Sabre has a technical team whose job it is to make the system work in whatever environment the customer wants (within reason of course!). In Spain, for example, there is a customer who accesses Sabre via an in-house DEC VAX minicomputer using two different terminal networks: (i) dumb DEC terminals, and (ii) Sabre PC terminals. In this configuration, each type of terminal has access to both the DEC minicomputer and also the Sabre system.

In the straightforward IBM-compatible world, Sabre runs in an environment with a file server and one or more workstations. The type of PC needed to run Sabre will vary with the product used. Sabre for DOS is less demanding on the workstation, which can be a 286 or higher. Sabre for Windows requires a 386 or 486 workstation PC with at least 4 Mb of RAM and a mouse. The server in each case needs to be a 386 or 486 with at least 4 Mb of RAM and a minimum of 80 Mb of hard disk space running under Novell Netware Version 2.15.

Sabre Europe has introduced Pentium PCs as the primary hardware platform for Windows 95 users. The hardware is assembled and provided by the Dell Computer Corporation. A range of models is available from the minimum – a Pentium P100 processor with 8 Mb RAM, 1.2 Gb hard disk, quad speed CD-ROM and PCI video with 1 Mb of RAM, to the maximum – Pentium P133 processor with 32 Mb RAM and other devices.

WORLDSPAN

This leading GDS (Fig. 4.16) has its origins in two of the world's most important CRSs, namely Delta Airline's Datas II and TWA/Northwest's PARS. These two reservation systems combined their resources and skills in 1990 to form Worldspan Global Travel Information Services. The resulting company is now owned jointly by Delta Air Lines, Northwest Airlines, Trans World Airlines and ABACUS Distribution Systems PTE Ltd. Incidentally, ABACUS is one of the largest GDSs



Figure 4.16 Worldspan logo

in the Far East and its owners include Singapore Airlines, Cathay Pacific and Dragon Air. ABACUS and Worldspan each have a cross share-holding in each other's companies. Worldspan's world headquarters and host computer are both co-located in Atlanta, USA. This computer handles 1.2 billion messages globally in a peak month (an average of 1,377/s), stores an average of 7.8 million international PNRs and has a data base of over 85 million fares. The organization has two systems development centres in Kansas City and Fort Lauderdale.

With operations in 45 countries, more than 15,000 sites around the world, 8,000 of which are in the international arena, Worldspan is truly a global GDS. Its Europe/Middle-East/Africa (EMEA) region alone comprises 33 countries and is home to 29 independent Worldspan offices. The central market development activities, along with other support activities, such as finance, sales and marketing, the region's central help desk and technical support functions, are located in the international division at London's Heathrow airport. Over 6,600 travel agencies in the EMEA area can book from a total of 414 airlines, 40 car rental companies, 165 hotel chains, 29,000 hotels and 38 special travel service suppliers including cruise lines, railways, ferries and tour operators, all of which are available via Worldspan.

Since its inception in 1990, Worldspan has grown by over 550 per cent. This is especially significant, bearing in mind the company's niche marketing strategy. This strategy may be summarized as comprising two major elements: (i) the provision of customized systems, rather than fixed products; and (ii) an emphasis on the mixed leisure/business travel agency market, rather than, for example, having a primarily business travel focus as do many other GDSs.

Worldspan has always focused on providing its customers with bespoke systems, tailored to individual and specific business needs. This has resulted in the development of over 83 unique customer systems, outside of the central host GDS applica-

tion. Now that Worldspan is firmly established as one of the world's leading GDSs and the niche marketing programmes of the past few years have been successfully completed, other new distribution channels are being considered. Prime examples include the corporate market and on-line services. Worldspan is in a strong position to consolidate product offerings and exploit the emerging technologies of these new distribution channels, mainly because of: (a) its wide exposure to so many different customer requirements within the global travel business; (b) the unique customer solutions that have been successfully developed and delivered; and (c) its global network, which supports many different communication protocols including the Internet (see Chapter 5).

So, there is an opportunity for Worldspan to pick some of the common functions that run through all of its bespoke customer developments and construct key generic products that have a wide appeal to the travel and tourism market. In the short term, therefore, Worldspan remains a substantial transaction processor; however, in the medium to longer term, the company's strategic focus is likely to shift so that it becomes even more of a technical partner for its customers. As a technical partner, Worldspan is in a strong position to provide consultancy and expertise in areas such as: helping customers to choose the best PC for their in-house departments, setting up an Internet site, distributing head office functions throughout an enterprise or establishing a strategic direction for a customer's technical environment.

Supplier connectivity

A good starting point for a walk-through of any GDS functionality is to consider the way in which suppliers are connected into their global network. This really breaks down into two main areas: (i) there are the suppliers that have been connected to the central host system for many years and provide the global dimension to the Worldspan service, and then (ii) there are the local suppliers that are connected in their countries of origin. Because both types of supplier are key to Worldspan's utility within several key user markets, it is important that you understand the supplier side of this major GDS before we consider the end-user functions.

Central supplier systems

In terms of central host connectivity, it is widely recognized that all the four main GDSs provide virtually the same levels of connectivity. Although some differences remain, generally speaking, all of the four major GDSs offer similar supplier interface functions. Some of the smaller airlines favour the particular GDS with which they are formally associated and deny some marginal functionality to other GDSs. However, airlines are becoming much more clearly focused on their core products and key competencies, which are the provision of airline seats to a globally distributed customer base. Airlines, and consequently their associated CRSs, are becoming much more relaxed about providing full functionality to any major system that can sell more seats on their aircrafts, thereby maximizing group revenues.

This levelling of the GDS playing field also extends into the area of host participation. Besides the basic level of participation entitled AccessPlus, which provides last seat availability on over 134 airlines, Worldspan offers its host airline CRSs the following levels of participation:

- **Airline Source** This is the highest level of participation that is available to airline customers. It features a real-time communications link between the participating airline's CRS and the Worldspan host computer. Each time a user, e.g. a travel agent, requests an availability display that involves a segment from the participating airline, an interactive on-line dialogue takes place. In such cases Worldspan provides the user with a transparent response from the participating airline's CRS. This enables the user to view availability as though they were connected directly to the participating airline.
- **Direct Sell** This allows Worldspan users to access a participating airline's CRS directly and hence its inventory. It therefore allows users to view inventory status interactively in real-time, just as though they were themselves connected to the carrier's CRS. This means that they may directly decrement the airline's seat inventory prior to ending the transaction. The participating CRS generates an acknowledgement record including the PNR locator, which

is stored within the Worldspan PNR. This is known as Positive Acknowledgement.

- **Direct Access** This is a real-time link between Worldspan and the participating airline's CRS, which is slightly more sophisticated than Direct Response. This provides the end user with true last seat availability.
- **Direct Response** This is the most basic level of participation and provides the other airline system with the ability to return an acknowledgement message, including a PNR locator. This message may be generated either: (a) from a manual teletype entry, or (b) from an automated computer response. When the locator reference is received, it is placed into the Worldspan PNR.

If you compare these levels and types of participation with other GDSs included in this chapter, you should see that they are all very similar. This illustrates the comment I made earlier emphasizing the increasing levels of co-operation among airline CRSs.

In terms of hotel and car systems, Worldspan also provides the kinds of linkages and connectivity one would expect of a global GDS. The Worldspan host computer is both: (a) connected directly to the computer systems of the major hotel chains; and (b) connected to hotel industry switches, such as Thisco and Sahara. This web of inter-connectivity is masked from the end user by the Worldspan back-end system. This decides the optimum routing for reservation messages and also standardizes the responses from each of the different supplier systems used.

All the user does, for example, is to select a hotel property from a list of those available on the system and enter a service request, e.g. an availability display for a particular room type. The back-end system then decides whether to: (a) route this message via a direct connection to the hotel system, or (b) route the message via the relevant hotel switch. Once a response is received it is displayed to the user in a standard format.

Local supplier systems

What really differentiates one GDS from another are two critical success factors: (i) the range of local supplier systems available to customers, and

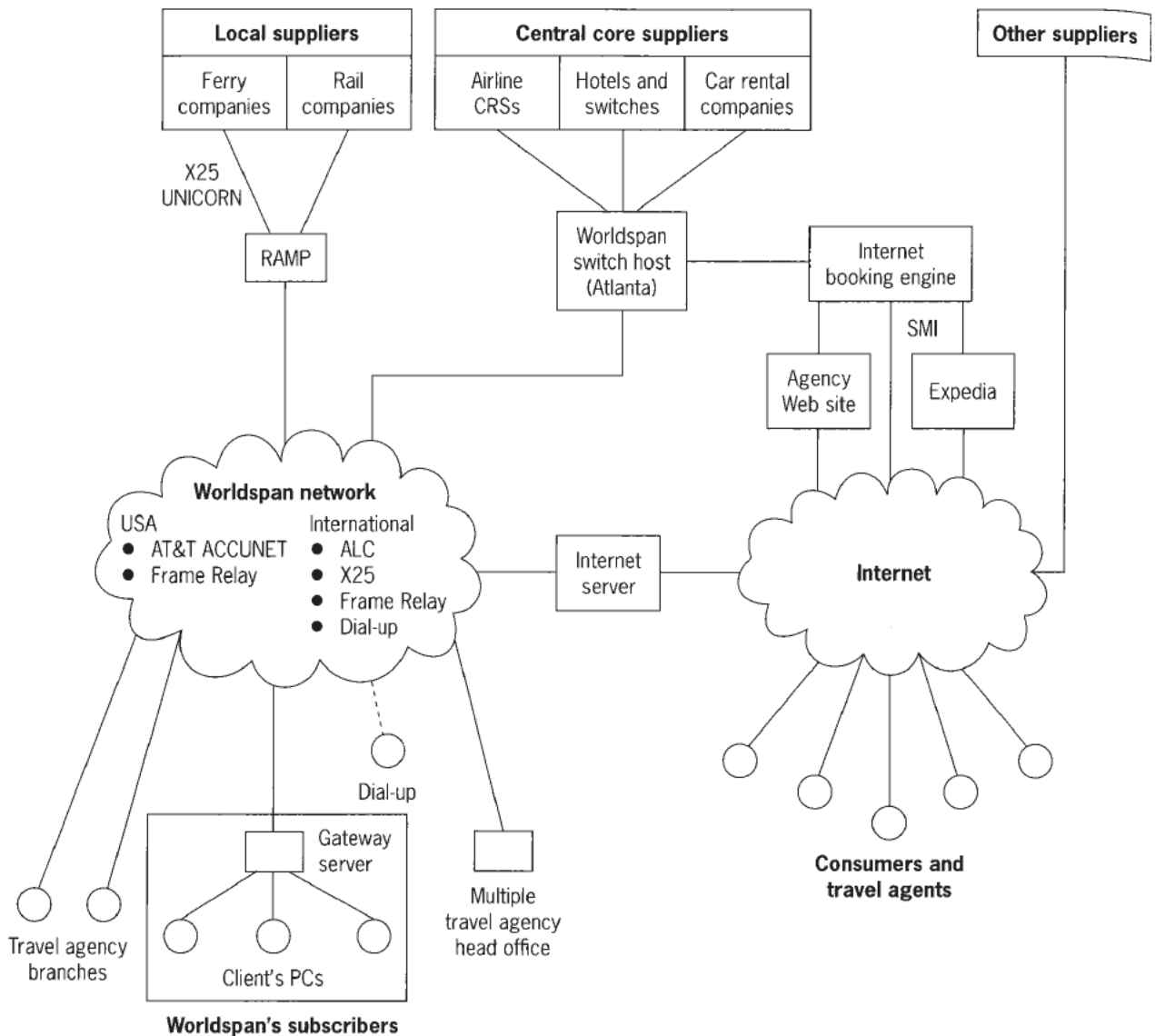


Figure 4.17 The Worldspan GDS network

(ii) the distribution network that the GDS uses to reach its customers. It is these two areas that have been the principal focus of Worldspan's attention over the past six or seven years. Let's take a closer look at the first of these two critical success factors – the way in which Worldspan connects into what are often called non-core local supplier systems.

As previously mentioned above, the core supplier systems are those that provide Worldspan users with access to airline bookings, hotel reservations and car rental services. All of which are connected into the main host computer located in Atlanta. This large and powerful main-frame

computer provides end users around the world with all of the functions normally provided by a GDS and is described above in the section on central supplier systems.

Worldspan's approach to connecting into non-core supplier systems is a decentralized one. This means that non-core suppliers are connected into the Worldspan network (Fig. 4.17) in the countries in which their systems are located. End users may then access these supplier systems via the Worldspan communications network without having to be routed via the host computer in Atlanta. The two principal areas where many

non-core supplier systems have been interconnected into Worldspan are ferries and rail companies. Worldspan's relevant GDS product for each is as follows:

- **Ferry Source** Ferries are a good example of locally connected supplier systems. Most leading ferry company systems are connected into Worldspan's X25 network. Worldspan's ferry booking function provides users with direct access to the leading ferry companies' own host systems. Ferry Source is available to any Worldspan DOS Alliance customer on the X25 network who is also an account holder with the ferry company accessed.

These ferry systems use the UNICORN standard for information and booking messages to communicate with Worldspan (see TTI in Chapter 1 for more information on UNICORN). This means that travel agents may use their PCs to connect into any one of the ferry systems available using a common language, i.e. a common GUI. Participants include Stena Line, P&O European Ferries, Hoverspeed, Brittany Ferries, P&O North Sea Ferries and Moby Lines.

- **Rail Access** Worldspan has several links to rail service computers around the world. In many cases access is limited to users within the country in which the rail company operates. However, increasing use of overseas rail services is being planned and developed by Worldspan. Rail host connections are therefore effected in two ways: (i) a direct connection to the Worldspan host main-frame computer in Atlanta, or (ii) a local connection into the Worldspan network in the country of origin. Centrally connected rail suppliers support the integration of non-air reservations into a single Worldspan PNR, along with other air segments that may be part of the same booking. However, bookings made via locally connected non-air hosts must be filed separately from airline PNRs within Worldspan.

Because access to rail systems is core to Worldspan's business in Europe, discussions are being held with most major rail operators throughout the area. The current situation, as at early 1997, is as follows:

- *Belgium* For the past two years, Worldspan has been providing access to Societe Nationale des Chemins de Fer Belges SNCB – Belgian railways, for Belgian users only. This enables agents to check timetables, book rail journeys and issue rail tickets.
- *France* Subscribers will soon be able to access Societe Nationale de Chemins de Fer Francais (SNCF) and enjoy similar functionality to that available in Belgium.
- *USA* All Worldspan users have access to Amtrak, the USA national rail network, which is directly connected to the Worldspan host system in Atlanta. Worldspan is currently the only approved GDS in the UK that can issue Amtrak BSP tickets. Amtrak tickets sold by IATA licensed travel agents in the UK may therefore be settled via the UK's BSP process (see Chapter 7 for more information on BSP).
- *Canada* Also connected to the Worldspan host computer in Atlanta, is Canada's Via Rail network. Reservations are effected using standard airline entries that can also support Via ticketing.
- *Germany* The Fly Rail service (a German domestic service), is available to German users of Worldspan only.
- *UK* In the UK, users may access the European passenger service (EPS) Tribute system for trains that use the channel tunnel for travel to Paris, Brussels and other European destinations. The link to EPS is effected via a special terminal connected to the Worldspan network (although this is planned for upgrade in 1997). Access to the UK's domestic train services is available via Worldspan's link to the FACETS computer in Nottingham (see Rail in Chapter 3 for more information).

Looking to the future, Worldspan is investing substantial resources in enhancing its ability to interconnect with even more local suppliers. The vehicle for this strategy is a general purpose communications interface system that has been developed by Worldspan under the code name of 'Project RAMP', i.e. the Regional Applications and Messaging Platform. RAMP is an important new development that forms the infrastructure for

Worldspan's future supplier distribution strategy. It does the same kind of job as Sabre's ELVA, Galileo's NVP and Amadeus's START/SMART/Estoril products. However, RAMP has one very important feature – it is based on the Internet's communications protocols. This is one of the key reasons why Microsoft decided to use Worldspan as the booking engine for its Expedia web site. RAMP is discussed in more detail in Chapter 5, which also includes an in-depth discussion of Microsoft's Expedia.

Worldspan's host functions

The Worldspan GDS provides its users with a rich set of information and booking functions. These are distributed by a global network that links travel agents' PCs with the Worldspan host computer and other supplier systems. However, before we consider the distribution network, it is critical that you gain a sound understanding of Worldspan's end-user functions. After all, it is these core functions that are distributed across the various end-user networks:

- **World File (client profiles)** A client profile consists of those details that describe a travel agent's customer in terms of flight preferences, personal contact details and corporate information. The storage of these client profiles may be either at the local workstation level or on the Worldspan host main-frame. The advantage of the host option is that the profile is available from any authorized user around the world. World File profiles may be used by travel agents to create and populate PNR fields automatically that can save a great deal of time during the customer booking process.
- **Airline schedules and availability** This shows flights for all participating airlines in an unbiased display that conforms to the regulations set by the UK's Department of Trade and the European ECAC (see Chapter 1). The flights are shown in the order of 'best trip', i.e. least flying time first.
- **Airline fares** Worldspan's international fares data base comprises 85 million fares of which 50 million are for the European area alone. Each day Worldspan processes an average of 750,000 fare changes. Also shown for each

fare is the text describing each rule and its associated routings that have been filed with the authorities in each case. The Worldspan fare products that are available on the system are:

- *MoneySaver* This product automatically displays fares in low to high sequence.
- *Low Fare Finder* Identifies and books the lowest fare applicable to a booked itinerary.
- *Ultimate Fare Search* Instantly displays fares for the travel dates specified.
- *Power Quote* With this tool, the travel agent does not need to have prepared an itinerary as part of a PNR. With simply the from/to city pairs specified, the system will find the lowest fare.
- *Power Pricing* A key component of Power Quote is known as Power Pricing – Worldspan's low fare finder. Given an itinerary, created as part of a PNR for a passenger, it will find three alternative lower priced options.
- *SecuRate Air* This is a product that offers participating carriers and subscribing travel agents an electronic means of creating, managing and distributing a wide range of negotiated fares. These fares are proprietary to a specific travel agent and may not be viewed by others.
- **Hotels** Worldspan provides its users with access to large and sophisticated hotel information and booking systems. This is supported by high speed links to hotel switches and hotel computer systems themselves. Because of its interdependence with the hotel industry, Worldspan is a member of HEDNA (see Chapter 1 for more information on HEDNA). The relevant Worldspan hotel-related GDS products are:
 - *Worldspan Hotel Select* This feature allows the travel agent to view detailed rate information, availability displays, amenities information and confirmed bookings for over 182 hotel chains and 26,000 properties. Access Plus links users directly into the reservation systems of 67 hotel companies, thus allowing instant confirmation numbers to be obtained. Other features include: (i) the hotel default record – this allows each travel agency user to tailor his/her own hotel reservation screen so that certain pre-set defaults are always shown at the outset of a booking (examples

of defaults are the number of nights, distance from airport and the rate plan code); (ii) Worldpoint – a geo-locating product that provides accurate distance and direction parameters to and from hotels and reference points such as airports, railway stations and local attractions (the locators are based on longitude and latitude grid references); (iii) Electronic Rate Update – allows hotel associates electronically to update hotel property rates dynamically, thus ensuring the accuracy and availability of all rates offered by the hotel associate, within the Hotel Select product; and (iv) Negotiated/SecuRate – special hotel rates negotiated by travel agents can be entered into the Hotel Select display by the hotel concerned. This information is of course agent specific and saves additional phone calls by the agent that would normally be required to confirm rates for certain customers during the booking process.

- *Worldspan Hotel Source* This provides an interactive, real-time seamless connection to the databases of participating hotel associates. The display shows up to the minute room and rate availability, rate rules, reservation displays, services and other information. This enables the travel agent to make hotel bookings directly in the system that is used to maintain the property's inventory of rooms.
- **Cars** The Worldspan main-frame host computer also links directly into 40 of the world's major car rental company systems. The services offered are:
 - *Worldspan Car Select* This feature supports user-friendly fill-in masks that facilitate the entry of fields, such as vehicle code options, rate variation, rate categories, car selection by hire company, price or vehicle type and the MoneySaver function. Access Plus provides last car availability for reservations with more than 40 leading car companies world-wide, i.e. 90 per cent of the car rental market, including the Association of Car Rental Industry Systems Standards (ACRISS) members. ACRISS recently elected Worldspan an honorary member. Access Plus provides a direct link into the internal reservation

systems of the participating car rental companies, thus supporting rate verification and instant confirmation numbers.

- *Car Point-Of-Sale* This feature enables car companies to load rates according to agent identity or geographic location. Rates are tailored according to the identity or physical location of the subscriber, thereby preventing the offer of un-saleable rates, i.e. rates that are available in the USA but not in, say, Holland.
- **Airline reservations** Single entries made by the agent at the Worldspan terminal PC allow up to 12 air segments to be booked. Seats that have already been booked may be cancelled as necessary and subsequently re-reserved. Air, non-air and combined air/non-air PNRs can be booked. PNRs may be retrieved by passenger name, PNR file address, flight, departure airport name or departure time.
- **Queues** Users may access Worldspan's automated queue control system to schedule time dependent actions that need to be carried out on customer PNRs. The Queue Record Search facility, for example, allows all PNRs for a specific airline, date, flight or other determinant, to be accessed using a single entry.
- **Tickets and travel documents** Tickets, boarding passes, complete itineraries and invoices may all be produced using the Worldspan system. These are requested by specific client name or flight segment and can be customized with, for example, specific PNR data and important remarks to clients. Additionally, the following are also supported:
 - *ATB2* Worldspan has recently completed Beta testing of its automated support for the printing of ATB2 tickets, i.e. a combined airline ticket and boarding pass. This will be rolled out in the UK and other markets as required. The ATB2 control software, usually known as a driver, will support two print hoppers and therefore two types of ticket: (i) an airline ATB, or (ii) a rail or ferry ticket.
 - *Electronic ticketing* Worldspan has been supporting e-ticketing for some time in the USA. This makes it straightforward for e-ticketing to be implemented in international

markets on an 'as needed' basis, i.e. as needed by the airlines in each market. Worldspan simply records those segments within a PNR that are available for e-ticketing. However, although a physical ticket is not printed in advance for the customer, a pass is produced at the airport check-in that allows the traveller to go through security and customs. That just leaves the issue of how to provide the traveller with the 'conditions of carriage' as agreed by the world's airlines at the Warsaw Convention held several years ago. An issue that has yet to be resolved satisfactorily.

- *Satellite ticket printing (STP) and WorldSTP* This allows reservations made in one location, e.g. a travel agency, to be queued for ticketing at another, e.g. the customer's own office. In fact this can be done across international geographical boundaries, which in Europe is particularly important. At the remote location, e.g. the customer's office, the only actions required are to: (a) dial into the Worldspan network, and (b) enter a couple of command entries to verify the IATA licence number. No in-depth knowledge of how to use Worldspan is required at the ticketing location. The ticket printers used are the TI810 or TI830.
- **Other information systems** There are many other information related functions supported by the Worldspan GDS. Examples include HELP, which covers Worldspan entries, functions and current formats. The INFO topic provides users with explanations of Worldspan functions in a clear and easy to understand language. Finally, there is the Global Reference System (GRS), which provides a virtual encyclopaedia of information topics, including:
 - *Worldspan Travel Suppliers (WTS)* This provides product information and educational services related to the travel industry. Examples include theatre tickets, travel insurance, rail information, cruises and tours.
 - *Vacation Source by Travel File* This allows users to interrogate the Worldspan data base using simple fill-in screen templates and thereby retrieve information on a variety of subjects.

- *TIMATIC* Worldspan's electronic version of the renowned travel information manual providing details on subjects ranging from health to visas as well as many other important facts essential to international travel.
- *Travel Guides* This provides the user with tourist information on specific countries.
- *Taxes* A complete list of taxes that are applicable to airline travel may be retrieved and displayed by country.
- *Computer-Based Instruction (CBI)* A comprehensive self-tutorial program for all Worldspan functionality.
- *Worldspan Indexing* An indexing system that allows users to access any topic in the Worldspan system rapidly, e.g. GET-SHOW provides the user with details of theatre services world-wide.

Worldspan's client functions

The users of Worldspan are invariably travel agents. They use their workstations (Fig. 4.18), usually called client PCs, to connect into the Worldspan network by means of several different gateway protocols. But, more on the gateway later. Let's first of all consider the client PCs, each of which is connected into the Worldspan distribution network by several gateway software products. These client PCs run on a variety of platforms, i.e. different operating systems, and use special Worldspan control software to deliver customized end-user functions.

The first and most basic of these platforms was Microsoft DOS. Whereas the functions discussed in the previous section are supported on plain old dumb terminals connected to the Worldspan host main-frame computer, with DOS, clients functions could begin to be decentralized. Some functions were therefore added to the Worldspan DOS client when the PC began to replace dumb terminals in travel agencies. For example, there is the FareDeal capability. With FareDeal, fares negotiated by the travel agent may be stored within the Worldspan PC as a separate data base under direct user control. When a fare is highlighted, it may be converted easily into a booking by FareDeal with just a few key strokes required of the user. The booking is then ready for processing



Figure 4.18 A Worldspan workstation

by the Worldspan host system, which can then create a PNR. Worldspan FareDeal is, however, solely a DOS application.

It wasn't long before Microsoft Windows began to replace DOS as the most common GUI used by travel agents and other PC users around the world. Worldspan therefore developed a family of product enhancements that capitalized on Windows technology. The all embracing title for this suite of software is Worldspan for Windows and it operates within the Microsoft Windows 95 environment.

- **Worldspan for Windows** This version of the Worldspan software is fully compliant with all Microsoft standards and, for example, allows up to ten reservation screens to be accessible at any one time on a workstation. Worldspan for Windows also supports:
 - *An open application program interface (API)* This allows other companies' software products to interface with the Worldspan main-frame.

Examples include robotic programs that perform routine quality assurance checks, automatic low fare scanning systems, applications that make a set of different GDS screens look identical and interfaces to corporate computers.

- *ScriptPro* This is virtually a programming language that may be used to develop customized applications for end-user travel agents. The use of scripting to automate repetitive functions and keyboard entries can reduce errors and increase the speed of service. Travel agents can: (i) write the scripts themselves, (ii) receive consultancy advice from Worldspan on how to write scripts, or (iii) instruct Worldspan to develop customized scripts especially for them. A library of commonly used scripts now exists within Worldspan and users can adapt many of these for their own purposes.
- *Optional functions* Several added-value products are also available within the Worldspan for Windows 95 environment. The following are just a few examples of some optional applications: (i) E-mail – Worldspan for Windows includes licensed copies of Microsoft Mail (MS Mail) or intra-office e-mail (this, together with the scripting facility, makes a powerful tool-set for creating customized applications); and (ii) Compass – this is a management information function (Fig. 4.19) that provides travel agency executives with productivity statistics, charts and diagrams reflecting their business profiles on an immediate daily basis. Data can be viewed on screen, printed locally or exported to another software package for further analysis.

The PC that supports Worldspan for Windows can make use of several additional program function keys, known as Ready Keys. Once set up, the use of these keys can avoid repetitive entries and can invoke pre-defined scripts.

The client hardware that runs the Worldspan user application software, is supplied by IBM and comprises a Pentium 133 MHz processor with 16 Mb of RAM, a 1.2 Gb hard disk and a 1.44 Mb 3.5" floppy diskette drive. Other devices, such as CD-ROM drives and multimedia components, may be obtained as optional

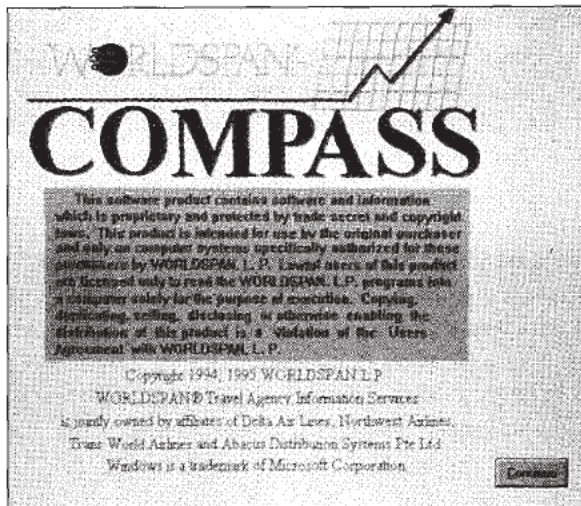


Figure 4.19 Worldspan Compass

extras. Worldspan recognizes that it needs to allow its users to keep pace with the rapid rate of technological developments. The specification of the Worldspan client workstations will therefore evolve as appropriate, so as to take full advantage of cost/performance developments in the world's future hardware and software markets.

Viewed from a regional perspective, there are over 17 different screen presentations that form part of the Worldspan for Windows client interface. However, many of these screen formats are customized for a particular market or country. This is a good illustration of the way in which Worldspan has customized its product offering to meet specific customer needs. Other additional products that are available for the Worldspan client environment are:

- **Commercial World** This is a product that has been around for some time and is aimed solely at corporate customers that have a relationship with a Worldspan travel agent. It provides corporate travellers who have their own lap-top computers with a user-friendly interface, albeit with limited functionality, to the Worldspan system. All bookings are queued to the travel agent who must then check the bookings and create the entries necessary to drive out tickets and related documentation.

- **ETravel** Worldspan is considering launching a new product in the UK called ETravel, which again is aimed at the corporate travel market. This product, which will replace Commercial World, comprises a set of software that runs on a business traveller's own lap-top computer. This can then be used by the traveller to dial-into the Worldspan network and make direct bookings. ETravel automatically ensures that these bookings comply with the company's travel policy and quality control requirements. The bookings, which automatically include all ticketing and related operational information, are then queued to a travel agent for processing. The significant difference with ETravel, however, is that virtually all the data entries and booking creation work have already been done by ETravel. Etravel may well also incorporate an expense management system for use by companies. This is a new product enhancement that is currently under consideration, i.e. as at the second quarter of 1997.
- **Quality Assurance** ScriptPro provides a high level programming capability that allows a travel agent to carry out quality assurance checks automatically on customer bookings. The quality control checks are developed using ScriptPro's high level scripting language, which is similar to Visual Basic and supports an open API. In this way, the travel agent's particular needs may be programmed into their Worldspan PC workstation. This product is also e-mail enabled; which means that when certain trigger events occur, an e-mail message may be generated automatically to alert the agent or customer to an unusual event requiring human intervention.

Worldspan's distribution network

As a result of several years of strategic growth, Worldspan now has a far reaching network that supports many leading communications protocols and is therefore able to support many different supplier systems. It is therefore important to review the Worldspan global telecommunications network in some detail because it is fundamental to so many of its current and future products. Figure 4.17 shows an overview of the Worldspan network,

which I will explain in terms of its constituent parts, reserving any discussion of the Internet related features for Chapter 5:

- **Branch network access** Many of Worldspan's customers operate their own LANs. In such cases, the LAN will use a PC, designated as the Worldspan gateway server, which connects into Worldspan's global telecommunications network using a variety of communication protocols. This server may connect into several Worldspan networks, each of which is specific to a certain type of application. Most major server operating systems are supported including DOS, Windows 3.11, Windows 95, Unix, Apple's MAC and AS/400's OS:
 - *Gateway Plus* The Worldspan Gateway software spans a very wide range of telecommunications interfaces, which allows the agent's server PC to talk to systems using protocols such as X25, IBM3270, IBM5250, VT100, Tandem and the Internet. Protocols that themselves include E-mail, Intranet, access to the World Wide Web and FTP. Also supported are videotex (see Chapter 6) and Ferry Source, a ferry information and reservations function.
 - *DialLink* For smaller users, who are ABTA and/or IATA travel agents, yet who cannot justify a leased data line, Worldspan offers the World DialLink service. This provides virtually all the major functions of Worldspan but without some of the more costly telecommunications overheads that are required for a high volume, fast response on-line system. All that is required is a PC and a suitable modem. Two modes of operation are available: (a) a user-friendly interface that can be used without prior specialized training; or (b) by-pass, which is faster but requires the user to have a higher level of knowledge of Worldspan command entries. Finally, a ticketing version of World DialLink is available to IATA licensed agents. This requires a dot-matrix ticket printer connected to the travel agent's PC.
- **Customer head-quarter services** Worldspan has been particularly successful in signing up several large multiple travel agencies in most

major markets. These multiples often have a requirement for their branch outlets to talk, not just to the GDS for booking services, but also to the company's in-house host computer at headquarters. This is particularly important for multiples that operate several branches across geographical boundaries. Worldspan's products for customers of this type are:

- *World Solutions* Under the banner World Solutions, Worldspan provides a pre-sales consultancy service to its customers. Some customers, particularly multiples and specialist non-air suppliers, often require secure links to many different types of host systems and branch networks. Such capabilities allow head offices to communicate with branches and non-air suppliers to connect into travel distribution companies. This has resulted in many unique solutions including Worldspan links to IBM 3090 main-frames, Amdahl, IBM RS/6000, IBM System 36/38 IBM AS/400 minicomputers, Apple Macintosh, Bull, Data General, Digital, Hitachi, NCR, Texas Instruments, Unisys, Zenith and open platforms running the Unix operating system. In many cases, the end results of these consultancy assignments are standard products that can be re-used by other Worldspan customers.
- *Worldspan Alliance* This allows a DOS PC using any one of several different communications protocols, to be supported over Worldspan's various networks. These include: the old airline telecommunications protocol (ALC), X25 (packet switching), IBM 3270, Frame Relay, Videotex and the ubiquitous dial-up. All protocols provide full access to the Worldspan host computer. In the USA, travel agents are connected into Worldspan via the AT&T ACCUNET service, which uses the high speed Frame Relay technology.

Each of these local networks connects into the Worldspan host system in Atlanta via high speed links provided by the world's major telecommunications companies. Worldspan uses AT&T, SITA, CompuServe and IBM to connect its international networks into the Atlanta host computer.

THE INFINI GDS

INFINI is the leading distribution system in the Japanese market. It is branded a CRS; but, theoretically, because it provides access to more than one airline system, it may be regarded as a GDS. It was established in 1990 as a joint venture between All Nippon Airways, which holds 60 per cent of the joint company, and the Singapore-based ABACUS distribution system, with 40 per cent. The resulting company is called INFINI Travel Information Inc. and it has almost 9,300 users in 6,300 agency locations. It was set up to provide the Japanese travel industry with an impartial, user-friendly computerized reservation system to link airlines with travel agents and the wider world of travel.

HDSs

The primary purpose of most HDS companies is to provide reservations and information services to travel agents via the 500,000 airline GDS terminals used in travel agencies throughout the world. However, this situation is changing rapidly at the present time, particularly as a result of the Internet. I'll discuss the Internet in more detail in Chapter 5 but for the moment, it is vital that first you understand the hotel distribution systems, the way in which they relate to the airline GDSs and how they work.

HDSs may be categorized as follows: (i) computer switches connecting a hotel's own in-house reservation system with the major GDSs for distribution purposes – a prime example of this type of industry switch is The Hotel Industry Switch Company (Thisco), and (ii) service companies providing smaller hotels with an outsourced marketing, reservations and distribution service, also with connections to airline GDSs – examples include Utell and Sahara. Both types of HDSs work closely with the world's GDSs to provide the hotel industry with automated sales and booking services. Each of these is explained in more detail below, starting with one of the leading hotel industry switches that is marketed by Pegasus Systems of the USA.

PEGASUS SYSTEMS

Pegasus Systems Inc. was created in 1995 as the parent of three important high-tech companies all of which are heavily involved in the world's hotel industry. The three companies are: (i) THISCO, (ii) the Hotel Clearing Corporation (HCC), and (iii) TravelWeb Inc. The parent company, which is located in Dallas, Texas, and which has an international head office in London, is owned by 15 of the world's largest hotel and travel companies (Fig. 4.20). In 1996 Pegasus sold US\$7.5 million in stock to an investment company called Trident Capital whose largest investor is Dun & Bradstreet. The proceeds from this private placement will be used to build and enhance the TravelWeb interactive travel reservations web site, develop new travel industry product lines/software and continue growing the Thisco and HCC businesses. All these companies have experienced a compound annual growth rate of 52 per cent. Not bad for a company with only 100 employees! It is therefore important that we consider the main products and services of Pegasus Systems, because they play such a key role in today's international travel industry. First of all, let's take what is perhaps the core business – Thisco.

Thisco

The principle aim of Thisco is to provide its hotel customers with a single and standardized interface to the world's GDSs. More specifically, the objectives of Thisco are to reduce the operating costs and increase the efficiency of the hotel reservations business, which is distributed via airline GDSs to travel agents and to consumers via TravelWeb – Thisco's Internet site (see TravelWeb in Chapter 5). But before we dive into a more detailed analysis of Thisco, it is worth reviewing the background to this leading global hotel distribution company.

Before the formation of Thisco, hotels that distributed their products to travel agents were required to connect their hotel inventory systems to each airline CRS (GDSs came much later). Most of the major hotel chains were connected to more than one of the world's leading CRSs (usually to at least four). This meant that the same messages containing the status of hotel rooms and other reservations information had to be formatted

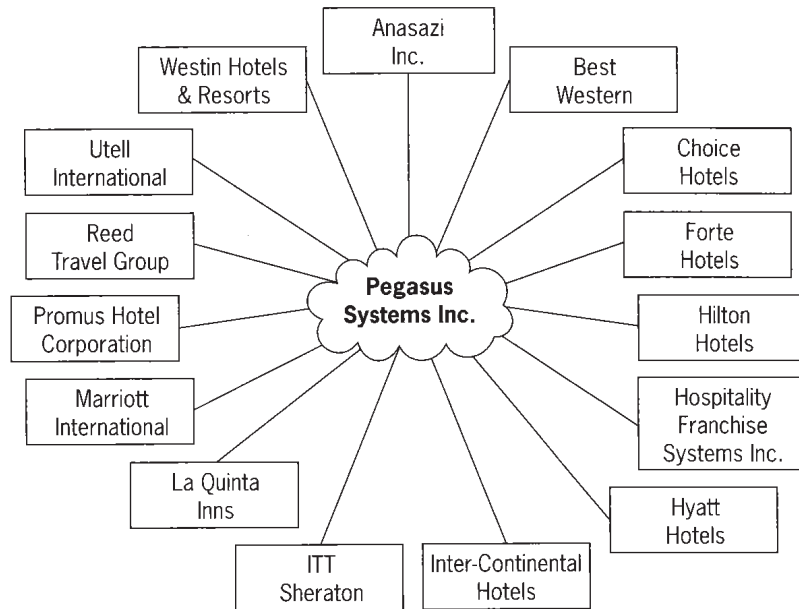


Figure 4.20 Shareholders of Pegasus Systems Inc. (as at 1997)

separately and sent to every CRS to which they were connected. Now because each CRS generally used a slightly different format for its computer interface, the hotels were having to convert their messages into the format used by each and every CRS to which they were connected, prior to transmission. This placed a heavy burden on the hotels' systems, both from a development and an ongoing operational viewpoint.

It also gave rise to inefficiencies in the booking process. At this early stage in the hotel distribution story, there were only two types of hotel to CRS connections: Type A and Type B. With the older Type B connections, booking messages were queued by CRSs before being delivered to travel agents. This meant that reservations could not be confirmed for several hours and this gave rise to multiple bookings for the same passenger followed by a high number of cancelled bookings. When Type A connections were developed, they helped the situation somewhat by using a more streamlined process that resulted in confirmations being received within 7 seconds. Although this went a long way to solving the early problems, it was not until much later when Seamless Connectivity was developed, that the hotel reservation process via the GDSs became a truly workable and efficient distribution method. Seamless connectivity provides the travel agent with a virtual direct channel to

the hotel's own reservation system computer. This enables the travel agent to use the hotel's computerized reservation system just as though the agent was connected to it by one of the hotel system's terminals. With seamless connectivity, the other switching systems, e.g. the airline CRSs or GDSs, are simply transparent communications channels that serve only to support the dialogue between the travel agent and the hotel's computer system.

In the late 1980s, many of the world's largest hotel companies in the USA realized that they needed to use advanced IT to provide accurate and rapid information on room availability, rates and confirmation numbers. In 1988 several leading hotel chains joined forces to form the Hotel and Booking Research Association. The association's first objective was to evaluate possible solutions to electronic hotel distribution opportunities. The outcome of this review was agreement that a common need existed among members for a communications switch that would link each hotel company's inventory control computer to point-of-sale distribution systems of the world. The required solution would support the development of a single interface linking each hotel system to the common switch. On the distribution side of the switch, a standard GDS link would be developed that could be shared by all hotel participants. Thisco was formed in 1988 when 15 major hotel companies,

including Utell International, Hyatt, Forte, Marriott, as well as most of the other leading hotel companies in the USA together with Murdoch Electronic Publishing (which later became the Reed Travel Group), agreed to invest in a hotel industry switching company.

The newly formed Thisco developed a computerized switch called Ultraswitch. The way this switch works is very much like a transparent link between the travel agent and the participating hotel. The switch has a supply and demand side. On the supply side, it connects to hotel inventory systems and translates their messages and commands into a standard Thisco format that is used for all processing within Ultraswitch. On the demand side, the Thisco switch communicates with all major GDSs using the proprietary message format of each one. In many ways the Ultraswitch computer acts as a sort of super-translator between the various hotel systems and the major GDSs. It provides full support for all GDS hotel functionality, including bookings, status messages, rate updates and seamless availability.

Ultraswitch now enables 70 hotel chains and 25,000 hotel properties to distribute their lodging products to more than 350,000 point-of-sale reservations screens in travel agencies throughout the world. Over the period 1990 to 1994 the volume of GDS bookings handled by Ultraswitch grew from one million to over eight million and by 1996 had reached 14 million. The switch now handles 40 million messages each month and the rate of growth is a compound 29 per cent. The system that makes all this possible is located in Phoenix, Arizona. Ultraswitch uses technology based on a scalable client/server computer running the UNIX operating system and a relational data base management system (RDMS). It uses high speed digital data circuits carrying between 56 and 64 kb/s of data and supports many different telecommunications protocols including SNA, X25, SLC and TCP/IP. Ultraswitch offers its users several products:

- **Ultraconnect** This is the basic reservations product that makes hotel reservations functions available to travel agents 24 hours a day, seven days per week. Ultraconnect uses Type A connection technology (see above), to link the

travel agency user with the hotel computer via the GDS and Ultraswitch networks. It enables a travel agent to complete a hotel booking via a GDS screen in less than 7 s. With Ultraconnect travel agents may book, cancel or modify reservations and obtain immediate confirmation and cancellation numbers direct from a hotel reservations system.

- *Stage 1* Travel agents make reservations via Ultraconnect in two stages. The first stage entails viewing static information screens that are displayed from information stored within the GDS used by the travel agent. This information is in fact created and loaded into the GDS by the hotel and then updated periodically to reflect changes. It includes data such as available properties, general information, available rooms and rates [see also Hotel Systems Support Services (HSSS) Limited later in this chapter].
- *Stage 2* Once the travel agent has selected a property for a customer, stage two commences. This involves the creation of a booking request entry by the travel agent, using the GDS terminal. The resulting reservations message is transmitted from the GDS, via the Ultraswitch to the hotel system. When the reservation message is received by the hotel system, it checks the required availability and sends a response back to the travel agent via the Ultraswitch and the GDS. This two-way message flow continues until either a booking is made or the travel agent signs-off, i.e. the transaction is ended. In those cases where a booking is made, the hotel system sends the travel agent a confirmation number that may be used to guarantee the room for his/her customer.

To connect to Ultraswitch a hotel must of course have its own in-house room inventory system. This must be able to support both on-line and teletype messages as well as being able to generate reservation responses automatically to GDS messages. The connection to Ultraswitch is made via one or more high speed telecommunication lines and a customized hotel interface that is developed by Thisco to run on its computer system.

- **UltraSelect** This provides travel agents with seamless connectivity to a hotel's own reservations computer, just as though the agent was connected directly to it. This is a critical differentiating factor from the approach used by Ultraconnect. With Ultraconnect, the dialogue is formatted by the GDS, which simply translates the hotel system's responses into its own on-screen display. These displays are constrained by the GDS's airline oriented technology. With UltraSelect, however, the GDS and Ultraswitch act simply as a communications channel connecting the travel agent directly to the hotel's own system. The display that the agent sees on his/her GDS screen is therefore exactly that which is formatted by the hotel system. In essence, UltraSelect replaces Stage 1, as described above.
 - *Stage 1* So, instead of the travel agent searching the GDS information for a desired hotel property, room type and rate, the agent searches the UltraSelect data base that is stored within the Ultraswitch. This property information data base, which is maintained by the hotel systems in real-time, contains details on 70 chains with 25,000 properties and 2.3 million rooms. Information is recorded in two categories: (i) static, and (ii) status. Static information changes infrequently and includes the hotel's name, address, number of rooms, amenities, public facilities, transportation to/from the nearest airport and geographical referencing co-ordinates that pin-point the hotel on any map. Status information includes rates for the coming year and the availability of each rate during different periods.
 - *Stage 2* Stage 2 involves the travel agent connecting to the hotel's system to make a reservation. The travel agent selects a hotel property in Ultraswitch and then directly accesses the hotel's computer system to obtain even more detailed information. For authorized travel agents, this includes access to specially negotiated rates that are stored within the hotel's own computer system. Finally, a booking can be made by the travel agent when a property, room and rate are found that match the customer's requirements.

One of the main advantages of UltraSelect, from a hotel's viewpoint, is that it gives the hotel direct control over the independent electronic marketing of its products. For instance, besides being able to display customized sales and marketing information about their properties and rooms, the hotels can also differentiate their products by means of full textual narrative instead of non-descriptive GDS codes. More complicated marketing opportunities are also possible, such as the selling of 'denials'. This involves a hotel system selling another hotel's rooms if the customer has denied the initial offering.

- **UltraRate** This product enables hotel reservation systems to deliver room rate information to GDSs electronically via the Ultraswitch. Prior to this product being available, staff within the hotel company manually entered rate changes directly into GDSs using computer terminals. This is a labour intensive task often requiring a dedicated member of staff whose only job it is to key this information into each and every GDS. Using UltraRate eliminates this manual effort, speeds up the entry of information and therefore increases the accuracy of hotel room rates shown by GDSs.
- **EasyView** This product is similar in concept to UltraRate. However, whereas UltraRate addresses the problem of updating room rate information, EasyView addresses the static information problem. Thisco's participating hotels must update their static information, which is repetitively stored in several GDSs, on a periodic basis. This information is in many cases manually keyed by hotel staff directly into each GDS. With EasyView the hotel can use its own Windows-based PC to update static information on all GDSs. The hotel's PC stores the static information in a standard format on a local data base. EasyView allows the hotel to interface to each GDS and to then re-format the static data as required.
- **UltraRes** This is a product that supports the processing of large blocks of rooms for hotels. Conventions, visitors bureaus and wholesale tour operators traditionally communicate their bookings to hotels via fax, mail or telephone.

This can often lead to inaccurate and delayed information being received by the hotel. With UltraRes the booking source can transmit block booking requests to the hotel via special entries made using a GDS.

Thisco provides a complete service to its hotel participants. This includes project management during the interconnection stages of a hotel becoming connected to the Ultraswitch and ongoing account management. Thisco also continually reviews alternative distribution systems for its hotel customers. One good example of such an alternative is the Internet. Thisco's tailor-made product for this purpose is called TravelWeb and this is described in more detail in Chapter 5. Another is the commission administration system called HCC, which is included under the heading of Financial Services in Chapter 7.

UTELL

Utell's services are aimed primarily at hotels that do not have their own large sales and marketing organizations or an internal central reservations computer. So, while a hotel may have its own PMS for internal operational purposes, this may not be sufficiently large or sophisticated enough to link directly into the Thisco switch (see above). These types of hotels need the support of a company that can market their services to travel agents and other sellers around the world while also providing an automated booking function. In effect, a company to which they can outsource their marketing and booking functions. Utell provides these hotels with just such a service.

Utell therefore provides smaller hotel chains and hotels with reservations facilities using Utell computers. This can be a great advantage to a small 50 room hotel in a resort area, especially when one considers that the Utell screen displays are all neutral. The sequence of the hotels displayed in response to an availability enquiry is purely rate-descending order within a city; and via the GDSs, the sequence of display is entirely random so as to eliminate any possible bias. A small hotel is therefore competing on a level playing field along with the giants of the industry.

Utell is now the world's largest hotel marketing and reservations company. It represents more than 6,500 hotels offering 1.25 million rooms in more than 180 countries. It also represents a wide range of hotels of many types, including for instance: budget properties, deluxe resorts, city centre locations, hotels in holiday areas, major international brands and independent hotels. It handled 3.5 million hotel reservations in 1996, which generated over US\$1.4 billion in room reservations revenue. Utell's strategic objective is to grow this level of business to 22 million reservations by the year 2000. In order to achieve this high rate of growth, Utell will rely heavily on enhancing the company's underlying customer servicing infrastructure. This means delivering improved technology, encouraging marketing innovation, developing new systems and introducing new products. Quite a challenge. So, let's take a closer look at the company, the technology it currently uses and the future developments it plans to initiate. First of all, it is important to know something about the origins of the company and how it is structured.

Utell's origins and company structure

Utell International is a part of the Reed Travel Group and a member of the Reed Elsevier plc group. However, the company has its origins back in 1930 when Henry Utell, a travel journalist living in the USA, formed the company. Through his experience of international travel, Henry Utell soon became aware of the need for a global hotel sales and reservations service. In order to help fellow travellers, Henry created Utell International in 1930 with just two hotels. The business thrived and grew.

Utell Inc., as it was known by 1972, was bought out by Grand Metropolitan Hotels and in 1974 Utell International (UK) Ltd was formed. In 1976 a computerized reservations system was developed and implemented. The company rapidly expanded to represent 1,800 hotels in 1978. Then in October 1982 five directors of Utell International acquired the whole of the issued share capital from Grand Metropolitan plc making Utell International a private company again after having been a wholly owned subsidiary of Grand

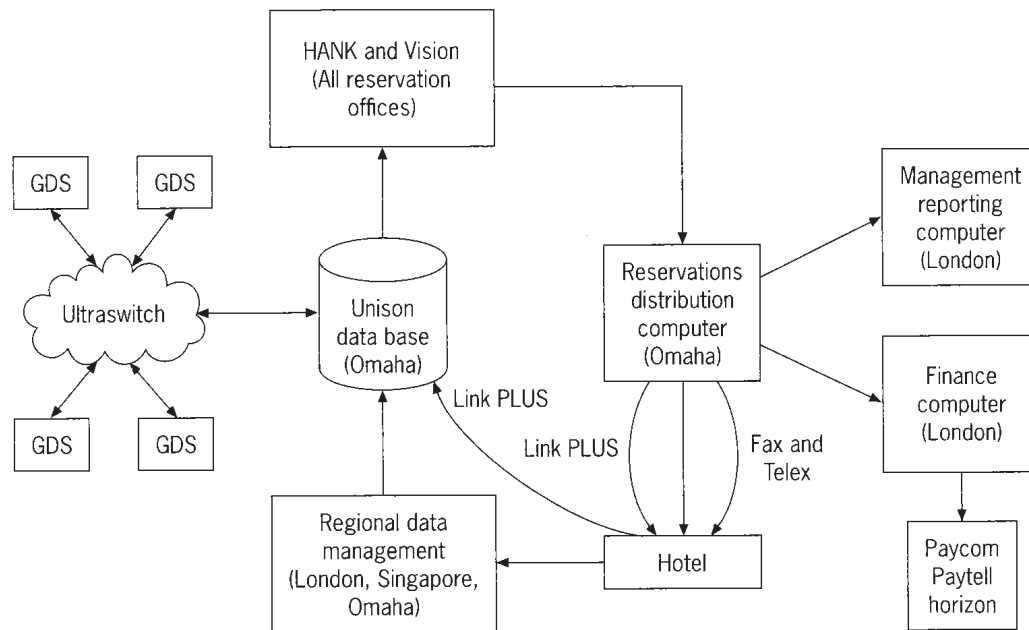


Figure 4.21 The pre-April 1997 Utell network

Metropolitan for ten years. The company continued to expand and besides enhancing its computer system still further, in April 1986 it opened a new US\$3 million reservations centre in Omaha, Nebraska. Then in April 1987, Murdoch Magazines, a subsidiary of News America Inc. bought Utell International. Finally, in June 1989, Reed International (now renamed Reed Elsevier), the UK's largest publishing and information company, acquired Utell International.

Today, Utell International (Fig. 4.21) is an integrated part of the Reed Travel Group, which also owns OAG and ABC Corporate Services. Utell International has its corporate headquarters in London and is organized into three regional divisions: (i) North and Latin America, with a regional headquarters in Omaha; (ii) Europe, the Middle East and Africa, with a regional headquarters in London; and (iii) Asia Pacific with a regional office in Singapore. These divisions look after all aspects of Utell International's business in each region, which in total comprises 6,500 member hotels in over 180 countries.

It can clearly be seen that over the last 31 years Utell has been building a strong relationship with both hoteliers and travel agents. The company has increased reservations for member hotels steadily

and has worked towards providing a reliable and comprehensive service to travel agents throughout the world. It has a strategic business plan that encompasses challenging growth objective, as already stated. The success of this growth will depend to a large extent upon the technology used by Utell to operate and distribute hotel marketing and booking services to sellers around the world.

Utell's current core system

The Utell reservations system has been developed over a number of years. It comprises an IT architecture that uses a central data base called Unison, a network of reservations offices supported by the Hotels Automated Network Know-how (HANK) system and a telecommunications network linking Unison to hotels, the Thisco switch and all four of the world's major GDSs. Let's take each one of these components in turn.

Unison – the central data base

This is the hub of Utell's reservation system. It is a large computer data base facility located in Omaha, Nebraska. It stores all property information on member hotels and is constantly updated

by regional computers in London and Singapore. Between them, these computers support all 52 Utell reservations centres around the world.

The Unison system supports two main functions: (a) hotel bookings and international yield management, and (b) full management information allowing hotels to control and direct their sales efforts. The system also incorporates features such as multi-level availability and rates, information and availability on packages, ability to sell different rates in different countries (or different GDSs) and to different travel agents, full management information (including full analysis on actual business, plus business denied for whatever reason).

The Unison system is connected to three types of users: (i) participating hotel customers, (ii) Utell International reservations offices around the world, and (iii) each of the world's four major airline backed GDSs. Let's explore each of these players in a little more detail:

- **Participating hotel customers** In order to provide fast and accurate hotel reservation system functions to the hotel industry, good clean data are essential. When new hotels join Utell, they need to provide information on their precise location, classification, size, facilities, rooms, rates and availability. This data is supplied to the nearest Utell regional computer centre by participating hotels via either manual or automatic methods. Once received and checked, the data are used to update the central Unison data base that resides in Omaha (see above). Many participating hotels use computer terminals with direct access to Utell in order to enter their update data themselves. This facility is known as LinkPLUS.

Utell LinkPLUS was launched in 1986 to provide direct access between participating hoteliers and Utell's computer network. The link allows hoteliers to control their own rates and availability from their own front offices or central head office. Hotels can update availability and rates information directly and receive reservation messages direct from Utell electronically. It comprises two parts:

1. Hotel PC and special software – the PC is installed within the hotel, e.g. either on the front desk of the hotel or, in the case

of multiple property chains, in the chain's head office. This PC is linked to Unison by a data line that allows it to support two-way communications. It can, for example, download reservations messages and other e-mail from Unison and upload hotel rates and availability status responses to Utell from the hotel.

2. Utell interface program – This is a piece of specially developed software that runs on each regional computer. Its primary purpose is to support the link to the hotel's LinkPLUS PC and allow it to update the Unison data base.

In the absence of a PMS, LinkPLUS can provide a hotel with an enhanced degree of integrity over reservation messages while also enhancing the degree of control over its inventory as recorded in Utell's central Unison data base.

In order to participate in the Utell system, hotels must first supply a great deal of detailed information about their properties, services, amenities, rates and capacity. In addition to supplying this information to Utell, a hotel wishing also to participate in the GDS distribution service must additionally build a presence within each GDS. This is a somewhat lengthy process although it is co-ordinated fully by Utell, and only needs to be done once during initial set-up.

- **Reservations offices** Utell International operates a network of reservations offices that has been created with the sole purpose of receiving hotel bookings via the telephone. Reservations operators in each of the 52 world-wide offices use a computer system called HANK, to support voice reservations functions and link to the central Unison system. While HANK handles the front-end incoming reservations functions, the link to Unison provides full access to the central data base of hotel information. Because the HANK system is, however, limited in the information that it can display, an enhancement called UtellVision is available to participating hotels:

– *UtellVision* This product was launched in 1988 and provided additional support for Utell's reservations staff incorporating enhanced electronic colour pictures, mapping

and search criteria. Its aim is to increase the product knowledge of Utell reservations agents. Each reservations operator uses two VDU screens as part of the reservations process. The top screen displays television quality pictures showing detailed city maps, and the bottom screen provides on-line hotel data and booking facilities.

When an operator selects a particular hotel during the booking process, they use the bottom screen to access the Unison data base via HANK. When the hotel's details have been retrieved from Unison, HANK transmits a command to the PC controlling the upper terminal. This enables the UtellVision PC to retrieve graphical data automatically on the requested hotel. These images are stored on laser disks and are updated once each quarter. Participation in UtellVision is an optional extra cost for hotels although the selling opportunities are significant.

- **Airline backed GDSs** The Utell system is distributed to travel agents using GDS terminals via the THISCO Ultraswitch (see above for more information on Ultraswitch), in which Utell has a share-holding. Utell International connects 3,500 of its hotel members to GDSs that distribute their products to a total of 500,000 travel agency terminals world-wide. Utell is available via Amadeus (System One), Galileo (Apollo), Sabre and Worldspan. Travel agents use these GDSs primarily to book hotel accommodation for their business travel customers.

The Utell International hotel reservations system is also connected directly into every other major national airline and third-party hotel reservation system, including JAL Axess and Transnet in Japan, BookHotel in Scandinavia, HRS in Germany, HotelSpace in the UK and Sita Sahara throughout the rest of the world. Additionally, Utell is the only non-hotel operator to be a member of Ultraswitch, which is located in the USA (see Thisco above).

Some of these GDSs have their own branded name for their hotel reservations service. Take Galileo for example, into which Utell is itself connected as a host system. Galileo's own RoomMaster hotel reservation capability offers

users some of the larger hotel chains as directly connected hosts. This means that a travel agent can opt to use a specific hotel chain's computer reservation system to make a booking. Now some of these hotels are also included in the Utell data base. To avoid confusion, those hotels that have a direct connection from their reservations computer directly into Galileo are not accessible via the Utell gateway on Galileo (this used to be known as the Utell partition within the old Travicom system, which has now been superseded by Galileo UK). A hotel can therefore only be accessed on Galileo UK through a single channel only. This explains why it is that Utell on Galileo offers just over 4,000 hotels out of the global total of 6,500. It is because the other 2,500 are available on Galileo UK as directly connected host systems. A similar situation exists on Sabre, which has its own SHAARP PLUS hotel reservation capability that is comparable to Galileo UK's RoomMaster as outlined above. However, it must be stressed that HotelSpace on Galileo UK is purely a UK product.

The GDS language that travel agents need to use to access Utell's HotelSpace tends to be somewhat complex. Now a GDS language is not the most user-friendly dialogue at the best of times, so you might wonder why it is made more difficult for hotel reservation purposes. The reason is that GDSs were designed initially for airlines and are beginning to run out of codes for non-airline systems. Most of the easy to remember codes have been used up in the core airline reservation language of the GDS. So, the codes left over to use for hotel reservations are limited and result in entries that are only just a bit better than Egyptian hieroglyphics. Still, they are quick to use once committed to memory.

Other Utell International services

The preceding section provides an overview of the core technology that is used to provide Utell International's services to customers and users around the world. The full range of these services is too great for inclusion in this book in detail. However, there are certain services and functions

that are worth exploring in a little more depth because they have a direct bearing on the subject of IT in travel and tourism.

Private Label

What is not quite so well known is that Utell also provides hotel booking services to hotels under the hotels own name. This is called the Private Label service. Take, for example, Thistle Hotels. Utell International provides a reservations service that is badged or branded Thistle Hotels. The service covers voice support for reservations as well as distribution via CRSs and other systems. When the travel agent calls the Thistle Hotels' telephone number, they hear something like 'Hello, Thistle Hotels, how may I help?' In terms of connections to CRS systems, there will be a dedicated Thistle Hotels' data line that will in fact come from the nearest Utell network node. In other words the service appears just as though it was being run by Thistle Hotels itself. This is becoming more and more attractive to hotel groups as they strive to concentrate on their core business, which is after all running a profitable hotel business and not operating complex booking computers and manning reservation centres at all hours. There are many other similar examples, including the Private Label Voice service operated on behalf of Summit International Hotels.

GDS participation

Utell's interface with Thicso means that all bookings are transferred automatically from the airline systems directly into Utell's Unison database for immediate distribution to hotels 24 hours a day 365 days a year. This not only virtually eliminates any chance of human error but also contributes to the speed of distribution between Utell and its member hotels.

Utell handles reservations on a kind of sophisticated sell and report basis. The way it works is something like this. A travel agent uses the Utell system via one of its many distribution networks, be it via a GDS, videotex or voice. A reservation is made in the Utell system and a booking record is created. Then within 7 seconds, the travel-agent user will be provided with a confirmation of the reservation and a confirmation number, just like an airline PNR locator. As a result of this, the Utell

system sends a message to the hotel concerned. In the case of hotel reservations, the communication of the reservation message from Utell to the hotel is sent by one of several methods, which may be either: (a) telex or fax, (b) directly into a PMS without human intervention, or (c) via LinkPLUS directly into a hotel's PC. Because the delivery of this message is so critical, let me explain each of these methods in more detail.

- **Telex or fax** These methods are well known but suffer from the vagaries of human intervention in the form of a person who must take a piece of paper and ensure the hotel records are aware of the booking. Inevitably, some of these pieces of paper are mislaid and the old 'no reservation on arrival' problem rears its ugly head. This is not a problem with Utell. This is because in order to participate in the Utell system, the hotel is required contractually to honour every Utell reservation, even if fully booked. So, provided the hotel has not previously sent a 'full up' message to Utell, then a reservation made via the system must be honoured. If the hotel does not have the room, it is responsible for finding a hotel of a comparable standard that can accommodate the customer.
- **PMS link** The reservations messages are sent via a communications link between Utell's nearest regional computer and the participating hotel. With this kind of direct link there is little room for messages to go astray and it is by far the best method that a hotel can use to communicate with Utell. However, not all hotels have a PMS and even if they do, they are not always capable of connecting to an external system such as Utell.
- **LinkPLUS** This is a dedicated system to system link, which is explained in more detail above under the topic of Unison's participating hotels and their interconnection methods.

Utell monitors the participating hotels very tightly. First, it has the means to trace and prove delivery of a reservation message to a hotel; and second, it keeps a record of all such misdemeanours made by a hotel and can thus formulate a list of repeat offenders. These delinquents are penalized at first, but if they continue to abuse the system then they are asked to cease using the service by Utell (in

other words they are forcibly removed from the Utell system).

Marketing support programmes

There are many other services that are provided to participating hotels by Utell International. Besides reservations and training services, several important GDS marketing products are available to Utell hotel subscribers. These include products like: (a) Sign-ins – this allows a hotel's promotional message to be displayed on the travel agent's GDS terminal when it is activated; (b) Point-of-Sale Message – these messages appear on a travel agent's GDS terminal when a transaction relevant to a certain pre-set destination information is entered, e.g. when an agent books a flight to Paris the GDS screen will show a promotional message on Paris hotels; and (c) Electronic Mailshot – a message of up to 18 lines that may be sent to Amadeus terminal users whenever a queue is accessed.

Financial services

One of the historical problems experienced by travel agents has been the collection of commissions on hotel bookings. In the past this has been a major deterrent that has suppressed hotel sales by travel agents. However, Utell International has a solution to this problem in the form of two products: Paytell and Paycom. These services are described in more detail in Chapter 7 in the section on financial services.

Travel agency services

If one considers all hotel bookings made from all sources around the globe, only between 28 and 30 per cent are generated by travel agents. The remainder come from direct bookings from consumers and companies. Of all reservations handled by Utell, 98 per cent are generated by travel agents. The remaining 2 per cent come from customers directly, although Utell has not solicited business actively from end-user customers to-date. In the UK, 40 per cent of all bookings are obtained from automated systems. This is considered quite a high level in comparison with other countries, excluding the USA, which has a far higher volume of automated hotel bookings than most other countries. Automated systems in this context include videotex systems as well as the GDSs.

We can draw two conclusions from these statistics: (a) there is a significant opportunity for the travel agency sector to increase the volume of their hotel bookings and the associated revenue stream significantly, and (b) there is an untapped opportunity for Utell to market its hotel services direct to consumers via the Internet or some other direct marketing channel. Well, I discuss the Internet in more detail in Chapter 5. So, for the moment, let's focus on the opportunities for travel agents to increase their volume of automated hotel bookings via Utell International.

First, an important point; the Utell hotel reservations service is provided free of charge to travel agents. Utell International is able to do this because it is paid by member hotels to represent and market them world-wide. This payment is made as both a fixed cost membership charge and a volume related transaction fee that is similar to the way GDSs derive their revenue. The hotels are quite happy with this arrangement because for them to do all their own distribution and operate their own reservations departments would cost them a lot of money. Of course travel agents are pleased to have access to such a sophisticated hotel booking facility at no cost to themselves.

- **Travel agent terminals** As a general rule, Utell does not support the direct connection of individual travel agents to its own reservations computer. In other words, individual travel agents cannot approach Utell and ask for one of their terminals to be installed in their travel agency. The reason for this is that Utell does not wish to have the overhead and the ongoing support functions that go hand in hand with running a large network of directly connected travel agency terminals. Far better to use existing terminal networks, such as the airline GDSs. Also, from the travel agent's viewpoint, desk space is a premium. So if yet another terminal was installed in the travel agency alongside the GDS and videotex ones already in place, the agent would begin to run out of counter area. So, instead of running its own network, Utell International is distributed via other travel industry distribution channels. These include airline CRSs, videotex networks, the Internet, other national airline systems and third-party reservations systems world-wide.

- **Central reservations units (CRUs)** However, despite the above, Utell is nevertheless also connected into many of the high volume major travel companies' own automated systems, i.e. third-party business. These third-party companies comprise several multiple travel agencies and some hotel booking specialists. For example, many of the larger multiple travel agents in Europe and Asia Pacific have created their own specialized internal hotel units called central reservations units (CRUs). These units handle hotel reservations on behalf of their branch network centrally on a service basis. Utell allows these CRUs to have dedicated terminals installed for direct access to Unison.
- **Rates** Utell supports the many different types of rates that travel agents need to access. Preferred and negotiated rates are assigned by a hotel either: (a) to a large multiple travel agency chain, or (b) to a specific company whose business travel is handled by a certain travel agent. This company or travel agent may access a specially segregated part of the Unison data base that contains the customer's preferred hotel rates. Similar rates may be held for government departments and other categories of customer.

This rather sophisticated capability is called Defined Viewership (also known as Multi-Rate Access). It provides personalized views of hotel rates for each travel-agency user. With Defined Viewership travel agents have access to the preferred and negotiated rates specified by the agent. So, when a particular hotel is being viewed for reservation purposes by a travel agent and the rates are requested to be displayed, they will show the negotiated or preferred rates. Other travel agents would not, however, be able to view these rates. They are held on Unison in something like a closed user group (CUG). The only type of rate not displayed is a net/net rate for which no commission is payable.

The hotel reservation services provided by Utell International and the related products that are designed for travel agents are sophisticated tools that if used properly can significantly increase revenues. There is a substantial untapped source

of extra revenue for travel agents in the area of hotel bookings for their customers.

Utell International's new systems

Utell International has experienced a growth of more than 100 per cent in reservations volume over the past four years. Looking to the future, its strategic plan calls for the generation of over US\$2 billion in annual revenues for its hotel members by the year 2000. It is for these primary reasons that Utell has recently decided to invest over US\$24 million in enhancing and upgrading its IT infrastructure. As part of this overhaul, in October 1996 Utell International signed a software licensing and enhancement agreement with Anasazi Inc. This enables Utell to build a new state-of-the-art 'GDS-like' reservations and support system for its hotel customers. The basis for this is the Anasazi lodging enterprise system architecture (ALESA) product line. ALESA offers hotel companies a fully integrated technology solution including such functions as PMSs, guest history and recognition programmes, i.e. support for loyalty schemes, revenue management and an Internet capability. The resulting new systems will be implemented in two phases:

- **Phase 1** The creation of a new highly structured hotel information data base providing enhanced management of rates and availability information. This new information structure will be enhanced further by a new LinkPLUS system with improved functionality for hotel users. Also included in Phase 1 is the implementation of more flexible and efficient connections to GDSs. Migration of existing hotel customers to this new systems environment commenced in 1997.
- **Phase 2** The replacement of HANK with a new voice reservations processing system, including a new integrated version of UtellVision. This will be a Windows-based application that will be installed in all 52 reservations offices around the world. The new LinkPLUS system will be made available via the Internet. Further enhancements to Utell's GDS links will be made, which will feature a seamless availability function and better management information reporting via data warehousing techniques.

The new software will be capable of handling the complex data involved in marketing hotels in an increasingly competitive environment and providing far greater flexibility and responsiveness to customers. This ambitious IT programme will involve Utell upgrading many of its computer systems around the world. Communications network resources will also be upgraded and expanded to cope with new technology and higher transaction volumes. Utell is well aware of the potential for disruption during this major IT enhancement project. A progressive and phased implementation plan is therefore being carefully followed in every region.

Marketing on the GDSs

Much of what I am going to discuss here relates to the 200 or so hotel chains that use the GDSs to market their properties to travel agents. The GDSs are very powerful marketing vehicles because they reach one of the most underdeveloped areas for hotel sales. Yes, I am talking about travel agents. Travel agents generate less than 30 per cent of all hotel bookings and most of these are channelled via the GDSs; and because the GDSs distribute their terminals to these very same travel agents all around the world, any marketing opportunities supported by them offer great potential for increased hotel sales. By the way, most of these remarks also apply to car rental companies, which can also use the GDSs to market their products effectively to travel agents.

There are two important factors to understand within the GDS marketing world: (a) promotional or marketing messages can be sent by hotels to the point-of-sale screens of GDS users who are nearly all travel agents, and (b) hotels can use GDSs to aim their promotional efforts at a highly targeted section of the world's travel agency population. These are very attractive capabilities, which a hotel's marketing team can use to great effect. However, it is by no means a simple task. Each GDS stores its own set of its marketing information fields, which may be used in many different ways. The two most important of these are: (i) distributing static information that describes the hotel chain, its leading properties and features; and (ii) pushing dynamic information out to selected travel agency groups.

STATIC INFORMATION

The first of these, distributing static information, i.e. information which does not change very often, is a simple but effective means for hotels to communicate with travel agents at the point-of-sale. It involves storing information about the chain and its hotels in one or more GDSs:

- **Chain descriptions** This information can be quite descriptive because a number of pages may be used, depending upon how many pages the hotel wishes to rent from the GDS (each GDS makes a different number of pages available). Travel-agency GDS users may then access these pages by entering the appropriate hotel code. Most GDSs do not charge a fee to hotels that use this service, provided the number of pages used is reasonable.
- **Hotel descriptions** A limited number of lines of descriptive information may be created by the hotel in the GDS and stored in the data base under an index that uniquely identifies the hotel or its chain. As there is only a finite number of lines and a limited degree of flexibility, it is important that the hotel uses this facility carefully and wisely if it is to maximize its marketing exposure.

Most GDSs provide 'super indexes' which assist travel agents in finding the appropriate keyword used to identify the hotel. Very often the only way in which a hotel can publicize its static pages in a GDS is by direct mail, and other paper-based communications with the travel agent and by the judicious use of dynamic methods, as follows.

DYNAMIC INFORMATION

Distributing dynamic information is a more sophisticated technique. It capitalizes on the GDS's ability to profile its travel-agency users. This may be done by parameters that include whether the agency is part of a group, the geographical location of the agency and the type of booking that the agency makes. Consequently, there are a number of different ways in which dynamic marketing information can be communicated direct to selected travel agents:

- **Sign-on messages** Whenever specified groups of travel agents sign on to the GDS, they automatically receive a kind of 'welcome' screen. This welcome screen can display a marketing message that the hotel constructs. This is a useful facility but it only allows the hotel to get its marketing message across once or twice each day, depending upon how often the travel agent uses their GDS terminal. (The more technologically sophisticated travel agents do not, however, always see the GDS sign-on messages because their log-on functions are often automatically processed by front-end computer systems and communications networks.)
- **Bulletin boards** The hotel can create its own bulletin boards within the GDS for communication with travel agents. The hotel can post items on the board that may be current for the week. Travel agents may peruse the information on the hotel's bulletin board; which may, for example, include details of special offers at certain properties.
- **Headlines** This is the most sophisticated of the dynamic GDS marketing techniques. Whenever selected groups of travel agents enter a certain pre-determined city pair or a certain destination city, e.g. London/Paris, the GDS will automatically display a hotel's special promotion for the destination city. The travel agent can then book straight from the headline marketing message, which links the agent into the hotel's reservations function on the GDS. This can be a powerful way for a hotel to segment its market and aim products at specific sectors of its potential customer base.
- **Broadcast** With a broadcast message, the hotel has the opportunity to send a message to virtually every GDS terminal around the world during a fixed 15 minute time slot. This is particularly effective for creating an impact with travel agents in relation to a special announcement or the start of a major marketing campaign. This is akin to TV advertising when a specific time slot can be purchased by the hotel or car rental company. The message appears on every GDS terminal screen, whenever it is refreshed from the host GDS computer, which is usually every few seconds, as entries are made by users.

Dynamic information has been used to great effect by hotels and car rental companies that participate in the GDSs. It is particularly suitable for marketing purposes because: (a) the facility can be used over certain time periods that tie into promotional campaigns, and (b) the message gets straight through to the point-of-sale. Space is rented on the GDS data base for a fee that is usually time based, i.e. a cost per week, and also relates to the distribution coverage and size of message. Table 4.6 summarizes some of the main types of information display options (unless otherwise indicated, there are no additional costs for these entries).

There is no doubt that marketing via the GDSs is an excellent way for hotels and car rental companies to increase the sales of their products. Historically, there have been very few alternative distribution systems that allow a travel company's marketing message to be sent directly to the point-of-sale in travel agencies all around the world: the potential is there for a large increase in sales from travel agents. After all, if less than 30 per cent of hotel bookings originate from travel agents at present, it is highly likely that this could be grown to around the 80 per cent level. These are some of the reasons why GDS marketing is a relatively new and growing medium for the travel industry.

Hotel chains that participate in GDSs do, however, need to commit to keeping their information up-to-date. This commitment can involve a substantial amount of ongoing effort on the part of hotels. This is especially true if the chain has decided to participate in more than one GDS or even all four (individual hotels are not allowed by the GDSs to participate unless they are represented as part of a corporate group or brand). Each GDS must be updated with information such as property description, rates and promotions for every hotel property in the chain. Table 4.6 shows the kinds of marketing information that each of the four main GDSs allow hotels to store and distribute to travel agents; it is important to realize that this information is formatted in quite different ways by each GDS. While some of the larger hotel chains have on-line links between their CRSs and the GDS hotel data base, this is not always the case. It is not therefore surprising that some hotels and their chain parents, choose to outsource their GDS

Table 4.6 GDS marketing data summary

<i>Amadeus</i>	<i>Galileo</i>	<i>Sabre</i>	<i>Worldspan</i>
<p>Sign-in message Up to two lines of 60 characters each. Ordered by day. Chargeable (statistics available)</p> <p>Broadcast messages Up to 18 lines of 60 characters each. Ordered daily. Queued to terminal in one city, one country or a particular travel agency chain in one city or country. Chargeable (targeted receipt)</p> <p>Display messages Up to two lines of 60 characters tied to airport pairs of hotel's choice. Chargeable (statistics available)</p> <p>AIS pages Unlimited pages, each of 999 lines in free format (statistics available)</p>	<p>TD/News Page Introductory line of 32 characters then five lines of 55 characters. Displays for one week, Monday to Sunday. Agent has to request a TD/News Display (no statistics)</p> <p>Front page sign-in Up to three lines of 55 characters each then either direct to GIS page which can be up to 999 lines or to a HOD page. Ordered by day. Chargeable (statistics available)</p> <p>Brochure line in chain display Up to 63 characters. Displays each time a chain HOD requested (no statistics available)</p> <p>Chain information pages Many pages of 99 lines each available (no statistics available)</p> <p>Hotel information pages Many pages of 99 lines each available (no statistics available)</p> <p>Apollo headlines A new promotional opportunity where a hotel chain can purchase a two-line display that is brought up on any given day any time an agent requests an airline display for a certain city pairing, e.g. JFK-LHR</p>	<p>System Hot Up to three lines each of 56 characters. Displays for three days. Agent has to request SYSHOT display (no statistics provided)</p> <p>Sign-in advertising Up to two lines of 56 characters. Ordered daily. Chargeable (no statistics provided)</p> <p>Sabre DRS pages Up to 99 pages each with 99 lines of free format text (statistics available)</p>	<p>Associate Market Place Comprises three lines of 58 characters plus one extra line for page reference. Displays one to five days on request and is published Monday through Friday. The agent must request a GAMP display</p> <p>Associate of the week A week long promotion reserved on a first come first served basis. Receives top billing in AMP pages. One complimentary Prime SINE guaranteed</p> <p>Prime Sign Maximum of two lines of 60 characters. Accessed by agents when they sign-in. Chargeable</p> <p>GRS pages Up to 250 lines per page, each of 60 characters. Unlimited number of pages set up by Worldspan on an as-needed basis following usage of initial allocation</p>

data maintenance functions to third-party service companies.

HOTEL SYSTEMS SUPPORT SERVICES LIMITED (HSSS)

One such company is Hotel Systems Support Services Limited based in Wokingham. HSSS provides technology consultancy services to the hospitality industry and an ongoing GDS maintenance service for hotel chains, i.e. HSSS does not have any direct contact with individual hotel properties. Although similar services are offered by some hotel representation companies, these usually involve the hotel outsourcing both its reservations and data base management functions. However, HSSS provides hotels with a greater degree of flexibility. A hotel chain can, for example, outsource just those GDS data base management functions that involve the updating of hotel and chain description pages and the maintenance of rate information. Or a hotel can use HSSS on an *ad hoc* basis as and when the need arises, for example, to make a large scale update to its GDS data base.

Hotel chains send their GDS data base updates to HSSS in Wokingham from around the globe, usually by fax but increasingly by electronic mail via internal e-mail systems. Each GDS requires its descriptive information to be presented in a slightly different format and there are even some fields that are peculiar to specific GDS systems. HSSS provides hotels with a ten page generic data collection form that is then used by operators in the Wokingham office to update each GDS data base. These forms are nearly always used to create information for a new hotel but they may also be used for regular update purposes.

HSSS employs a number of staff, each of whom is expert in the way in which GDSs store and use hotel related information. The HSSS operator logs onto the first GDS and signs into the data maintenance function within the hotel data base area, using a password. Then the operator updates the GDS data base with the information provided by the hotel. This is an onerous task because the GDSs use only simple character based update and editing techniques that require each data line to be

changed individually. Once this has been done, the operator signs-on to the next GDS in which the hotel participates and repeats the data base update process. There can be dozens of rate changes for a hotel each day. HSSS has access to each of the four main GDSs and regularly maintains the data for 2,000 hotel/GDS combinations. However, many of HSSS's hotel customers use its services on a one-off or *ad hoc* basis. The *ad hoc* maintenance work can include such tasks as: (i) updating hotel descriptions when the accuracy has deteriorated over time; (ii) adding information when a GDS upgrades its system to allow more data fields to be stored; or (iii) loading new negotiated rates for use by travel agents and companies, which usually occurs at the end of each year, ready for access by GDS users the following year.

As already mentioned, information on rates and room types can be sent from the hotel to HSSS by fax or e-mail. However, it is now common practise to download this data direct from the hotel chain's CRS. These systems usually store the complete range of hotel rates on a central data base. Downloading them electronically via a dialled telecommunications link enables HSSS to carry out quality control checks on the updates prior to keying them into the GDSs. It allows HSSS to check that it is interpreting the updates in a way that is consistent with the chain's CRS. The same can apply to conversion tables for fields such as Room Types. A conversion table allows a hotel's room type code to be mapped to the GDS's room type code. For example, a hotel may designate a double room using the two letter code DB, whereas a GDS may use the code A1D to mean the same thing. HSSS can use these conversion tables to simplify the GDS update process.

The HSSS service can substantially reduce the amount of routine administrative functions that hotels face if they are to market and sell their products via the GDSs. This is especially true when you consider that the GDSs are enhancing their systems and adding new fields to their data bases almost continuously. Just to keep abreast of these format and field changes can be quite an administrative chore – certainly not one that should be at the heart of the hotel's core business.

The Internet

Introduction

This chapter deals with the Internet – possibly one of the most exciting developments in travel and tourism since the industry was invented. The omission of the Internet from the previous edition of this book illustrates how quickly it has become a major factor in travel. Only two or three years ago it was a fledgling technology used by a few scientists and some USA students for very specialized applications. Now, not only is it widely used within the travel and tourism fields to reach consumers, but more importantly it is perceived as one of the major influences affecting the travel industry of the future. Recent studies, for example, predict that 20 per cent of total bookings will be via the Internet within five years (*source*: Jose Tazon, Amadeus – at the Association of Corporate Travel Executives conference in Madrid). From a more general perspective, the US Government estimates that 20 per cent of all consumption will be transacted on the Internet within 20 years. There are currently over 50 million Internet users world-wide, over half of which are in the USA. The statistics for Europe are shown in Table 5.1.

I'm afraid that I do not include here any description of the Internet or the technologies that make it work. This would be an entire subject in itself and one that I could not possibly hope to even skim in this book. I therefore assume that you, the reader, understand the basic terminology and that you already know what an Intranet is, what a hyper-text mark-up language (HTML) is, what browsers are and basically how Internet telecommunications work. My analysis of the Internet

Table 5.1 Internet registrations in Europe (millions)

European Country	Actual 1996	Forecast 2000
Britain	2.40	10.00
Germany	2.00	6.90
France	0.30	1.20
Italy	0.20	1.00
Netherlands	0.20	1.10
Sweden	0.16	1.10
Denmark	0.08	0.80
Norway	0.10	0.40
Finland	0.14	0.40
Belgium	0.30	0.40

(Source: IHBRP, Inteco Corp, 1997)

in this chapter is very much viewed from the perspective of how it is *used* within the field of travel and tourism. I therefore do not explore the more esoteric technological aspects in any detail at all. After all, it's how the Internet is used that I think is most germane to this book's audience.

The chapter starts off with an analysis of the marketing aspects of the Internet. Then goes on to discuss one of the biggest single issues facing the industry at present – disintermediation. Following this, I analyse the various ways that some companies are using the Internet at present. Included here are descriptions of several leading Internet sites that have already established themselves in the global travel and tourism industries. Finally, I have included several examples of some particularly interesting Internet pages within each section. But please note that these pages are in

fact 'screen shots' and that they do not show a complete Internet page. Most Internet pages are in fact too large to fit on a single screen and rely on vertical scrolling functions supported by most browser software. Nevertheless, I hope they give you a flavour of what functions and information are available on travel and tourism via the World Wide Web.

Marketing on the Internet

In my view, the Internet is an almost pure manifestation of marketing principles and practices. It is a marketing person's dream because: (a) it levels the playing fields, (b) it enables companies of different sizes to compete on more equal terms, and (c) it allows a company to open up a direct channel of communication with its customers. What's more, the success of an Internet site is not always directly proportional to the amount of money spent on designing it. We are all no doubt aware that the success of an advertising or promotional campaign depends very much on the amount of money spent on media advertising. This is because the company must broadcast its message to everyone, or at least a very large proportion of the population, in order to reach its desired target market. The amounts spent by large companies on television advertising, bill boards and the press are enormous. By contrast, smaller companies cannot afford such massive exposure and consequently their products do not become so well known.

However, with the Internet this is not necessarily the case. Companies of all sizes are much more equal in their competition for the consumer's attention. The main reason for this is that the pages that comprise one company's Internet site can be available to the same population of consumers as another company's site, yet without any significant additional amounts of expenditure. It is not quite so easy for a large company to throw money at their Internet site and as a result, expect it to be visited by vastly increased numbers of consumers. What is happening in the new electronic marketing world of the Internet is much more subtle. A whole new approach to sales and marketing is

evolving. It remains to be seen precisely how this will crystallize into a tried and proven methodology, because the technology is so young and consumer reactions have yet to be measured accurately. So, everyone is learning the hard way – lots of experimentation mixed with liberal amounts of trial and error.

But first of all, let's get the relative size and importance of this new channel into perspective. Because the Internet is the focus of my marketing analysis, let's first of all consider what types of people use it and what its potential is. The current profile of a typical Internet user is remarkably consistent with that of a profitable potential travel customer. They tend to have a high level of disposable income and are in the 25–35 age group. Research shows that many Internet users are affluent and experienced travellers and this sounds just like the target market of many travel agents and suppliers. At the moment, over three million European homes have Internet access or subscriptions to on-line services, e.g. Compuserve and America On-Line (AOL). This figure is estimated to double over the next two years. Forrester Research believes that Web generated global sales will rise from US\$2 billion in 1996 to US\$61 billion in the year 2000. Forrester also predicts that the top three sectors for on-line shopping will be: (i) computer products, (ii) travel, and (iii) entertainment. (Forrester Research is a major research and consultancy organization that has carried out extensive Internet analyses).

Clearly, therefore, the Internet represents a significant new opportunity for a company to distribute its products and services direct to consumers. But in order to do this well, a good marketing campaign will be needed. The question is: 'How should a company's products and services be marketed to consumers via the Internet?' The problem is, there appears to be a lack of any established methodologies for successful Internet marketing. But despite this, it does seem that a set of critical success factors are beginning to be distilled. They are probably best described in terms of an evolutionary approach that several companies have taken towards the development of their marketing strategy for the Internet. The first of these, not surprisingly, is to establish a corporate presence on the World Wide Web.

WEB SITE PRESENCE

The first and most basic commitment that a company can make to the Internet is the establishment of its own Web site. Although many companies have taken this first step, it can be more complex than it seems at first glance. To start with, there are some fundamental issues to be resolved, such as: should the site be created and maintained in-house using the company's own computer or should it be outsourced to a local computer service bureau? Companies sometimes start by establishing a Web presence on a bureau basis and then, depending upon its success, move the Web site operation in-house. Having said this, there are a lot of companies that are perfectly happy with an outsourced solution to their Web presence. After all, unless the company has a cost effective in-house IT department, the expense of creating a Web site and coping with ever-changing Internet technology can be significant.

Another important decision is the establishment of a memorable name for the site. Site names are important because they need to be memorized easily by the consumer and they obviously need to represent a natural link to the name of the supplier company. Once established, they cannot be easily copied, or for that matter changed. Having established a site name or unique reference locator (URL), the next step is to design a home page. Again, this is no simple task. A home page needs to be attractive and must provide links to other parts of the site and to other related sites. Incidentally, it is quite possible that advertising fee income can be generated if a company's Web site incorporates links to other sites. It usually incorporates some form of main menu, but not in the sense of the old classical computer application. An Internet main menu is much more intuitive and user-friendly. It often involves graphics, sound and animation, as well as text. The problem is: 'How should a home page be designed so that it supports today's site visits, yet allows the remainder of the site and its other pages to grow and develop over time?' Well, the answer is that of course the remainder of the site must be designed at least in concept before the home page can be completed. However, this is easier said than done, especially when the site is expected to

evolve and therefore change over the short term as more content and new sections are added.

Design is a critical aspect of any Web site; and design is not just about information content and layout. It is very much about the visual effect of Web site pages as they appear on computer screens. The Internet Web site design process is certainly not confined to computer programmers. It is a new skill that is best undertaken by graphic designers and creative artists who work in the advertising, publishing, marketing and corporate communications businesses. After all, if the pages are to be effective and have impact they need to be produced by the kind of people who design brochures, magazines, logos and advertisements. This is a specialist field and is not one in which either travel companies, tourism organizations or IT departments are known to excel. To get the best Web site design, an outside agency is probably the best approach. There are now many companies that provide these services, including the Internet providers themselves, and the only issue is how to decide the best and most appropriate one.

An important feature of the home page is the site owner's e-mail address. This is vital in order to begin the development of a rapport with the consumers that comprise the company's target market. It is here that the company will need to make its second major commitment to the Internet. If it is to publish its e-mail address then it must expect to answer incoming e-mail from site visitors. Again, this is easier said than done. As the Internet is a global medium, e-mail can be expected from virtually anywhere in the world; and they will come from a very wide range of people too. Students, casual browsers and serious customers are all potential sources of e-mail. The challenge is to weed out the serious customers yet maintain a reputation for all round good customer service. So, to develop a site successfully, it is very important that all e-mail is filtered and answered within a certain period of time. This is often implemented via a quality control measure that companies with successful Web sites embed within their employee work practices. This brings us to one of the golden rules of Internet marketing; develop a good communications channel that establishes a dialogue between your company and its consumers. The next steps are: (a) increase the

number of site visitors, and (b) turn site visitors into buyers of the company's products and services; in other words, increase sales.

An essential way of increasing Web site visitors is to advertise the site. This can of course be accomplished by means of standard paper-based advertising and promotion, e.g. specialist Internet magazines and 'Whats On' publications. But there is an alternative electronic way to achieve the same thing. This is by establishing hyper-links from other Web sites to your own. Again, its all pure marketing. The company needs to research other companies that have a Web site and select those with whom a strategic relationship exists. In fact, no such relationship might exist at present because the other company is in an entirely different field of business. However, new relationships can be established by finding new inter-relationships between a company's products and those offered by other companies. Establishing hyper-links from other successful sites to your own is absolutely essential if your site visits are to be maximized.

Another way to increase site visitors and attract new customers is to make use of the Internet Newsgroup functions. There are many prime examples of individuals and companies who have used the Newsgroup facility to create new businesses. They establish a Newsgroup on a particular subject. Then they post open letters into the Newsgroup that describe a particular business opportunity, a new product or an innovative service. Internet users can log onto the Newsgroup index and if they are interested, pick the company's Newsgroup item. From here they can post open-electronic-news items of their own within the Newsgroup that other participants can also see. Using this kind of open communications channel, a company can build up a pretty good base of interested potential customers. All the company has to do is ensure that somehow or another it captures the Newsgroup user's e-mail address. The company can venture into the world of direct e-mailing. This whole area is a subject in itself and there are many books that specifically address the topic. All I have attempted to do here is make the reader aware that these electronic marketing opportunities exist.

Another approach to turning a Web site presence into actual sales is by providing site visitors

with access to a booking engine. This can be via a supplier's own booking engine interface to its corporate computer or by linking from the supplier's site to another site that provides a booking service. Let's examine this in a little more detail.

BOOKING ENGINE

Once a company has established a Web site, the next thing that it will need to consider is selling its product directly to consumers. This is a significant step for any company and one that is obviously not taken lightly. To sell products and services direct to consumers via the Internet, companies really need some form of computerized inventory system. Most companies will already have such a system that they use to control stock positions and support the sales process. Airlines have their CRSs, hotels have their room inventory systems, tour companies have their booking systems and so on. At present many of these companies use their booking systems as platforms from which to distribute their products via existing channels such as the GDSs and videotex. To distribute products via the Internet, a new interface is required. This interface will allow the company to make an Internet booking engine available to its site visitors.

Even with an in-house computerized inventory control system, developing an Internet booking engine is a non-trivial task. However, it need not be a major obstacle for a company. This is because there are specialist IT service companies that have already sprung up to support just this type of Internet application. In fact I have given an example of one such company in the section below entitled 'Interfacing supplier systems to the Internet'. These companies have developed the technical infrastructure that enables an existing booking system to be interfaced to the Internet. This infrastructure makes the interfacing task relatively simple and straightforward. It allows all kinds of systems to be adapted for the Internet. Even old legacy main-frame computer systems can be presented to consumers as dynamic new Web sites using this approach.

Companies that have established their own Web sites and have complemented these with booking engines are in powerful positions to generate

significant additional revenues from the Internet. This is especially true for companies that can: (a) sell their products or services to consumers all around the world; (b) sell their products or services without needing to deliver paper documents, e.g. an air ticket; and (c) accept payments from consumers via plastic card mechanisms. For these reasons, hotels are in a particularly strong position to exploit the Internet, and there are many instances that illustrate that hotels are in fact doing just that. The examples I have given in the following section include THISCO's TravelWeb, Utell's HotelBook and Marriott's own site. So, a Web site linked to a booking engine would appear to be the ultimate position for a company to strive for in the world of the Internet. But it really is just the beginning. It is at this point that highly targeted relationship marketing becomes a possibility.

TARGETED MARKETING

Companies with established Web sites and booking engines are in a position to undertake some highly productive marketing activities that have not been practical with older technologies. These all revolve around a customer data base and an activity known as 'push marketing'. First of all, let me explain this terminology. There are two types of marketing campaigns which are known in the industry as *push* and *pull*, respectively:

- **Push marketing** Push marketing is where a company's products are advertised widely to many people. The audience that is targeted may be very large and it is probably the case that only a small percentage of the audience will be attracted to buy the company's products or even simply to enquire about them. However, without the ability to know each one of their prospective customers individually, companies are faced with having to push the product at them in a kind of shotgun approach. The ultimate hope is that sufficient numbers will buy the product and thereby justify the high cost of the associated advertising campaign. Push marketing is what we are all used to and it will no doubt continue for many years, if not, forever. However, 'pull' marketing can be

more cost effective and highly productive. It also happens to be a marketing technique that is ideally supported by the Internet.

- **Pull marketing** Pull marketing is much more consumer specific than push marketing. It relies on establishing a relationship with a customer or consumer. The best kind of relationship is that which flows from a customer's purchase of the company's products or services. When this happens, the company is in an ideal position to learn a great deal about its customer. If customer information such as this can be categorized, indexed and stored on a data base then it can form the platform for highly effective 'pull' marketing campaigns. A pull marketing campaign is one where specific products are aimed at precisely those consumers that have either made prior purchases or whose profiles exactly match the product being promoted. The concept is to pull these specific customers towards the company and encourage them into purchasing those products or services that are of particular interest to them.

Successful 'pull' marketing campaigns are highly dependent upon IT for their effectiveness. However, pull marketing is not a new concept. There are many cases, for example, where a single site hotel can afford to keep a handwritten card file on all their guests. Each guest's card would show their personal preferences and the kinds of services they have enjoyed on previous visits. Then, when the hotel decides to hold a particular event, it scans the card file for previous guests whose profiles would seem likely to fit that of the planned event. Those guests selected would receive personalized letters from the manager reminding them of the previous event and introducing them to the planned new one. The problem is that this approach is not really feasible on a national scale and is totally impractical globally without some degree of automation. This is where the new and emerging technologies can play a vital part in travel-related marketing programmes.

It is now possible to use a similar approach to the old card file system across entire multi-national corporations that have customer bases of several hundred thousand people. With new IT it is perfectly feasible to process millions of electronic 'card

files' within a matter of seconds. In fact this capability is a combination of two new technologies: (a) the Internet, which provides the communications channel with the consumer and acts as a front-end for data collection; and (b) a good relational data base management system, which can index and organize the information gathered. Together, these two technologies enable companies to develop highly effective pull marketing campaigns. However, to be successful, a company needs to be highly disciplined in the way it deploys its IT on a global basis. Consider for a moment the key principals that a successful Internet-based pull marketing campaign should embody:

- **Internet Web site** If a company is to establish an interactive communications channel with its customers, it will almost certainly need to have a Web site of its own. To be effective, this needs to be highly interactive and responsive. It will probably use e-mail to exchange messages with existing or prospective customers. Ideally, the site should incorporate a booking engine and be capable of receiving post-booking feedback from the customer.
- **Customer data base** This is the core of any marketing effort. But for pull marketing to be effective, a customer needs to be identified individually. This is not so much a technical challenge as it is a logistical one. A method must be found that encourages a person to identify themselves to the Web site whenever they visit it. One commonly used approach is to request the user to enter their own user name and password whenever they visit the company's site. Once the consumer is registered other more detailed profile information, including their e-mail address, may be captured and stored within the data base.
- **Transaction history** While the presence of an individual's profile on the customer data base is critical, so are the transactions which that customer undertakes with the company. It is essential that all relevant details of each and every transaction is captured and stored so that it is linked to the profile recorded in the customer data base. The trick is to link what appear to be separate transactions, to a single individual on the customer data base.
- **Query tools** As the data base of profiles and transactions grows, so it becomes ever more important for the company's marketing team to be able to analyse the data and try to identify trends and patterns. This is the first step that a company can take towards understanding its customers. Only by doing this well can new products, services and special promotions be designed in the knowledge that a market exists for them.
- **Selection tools** Sometimes called profiling, this is a technique for selecting all customers from a data base that meet certain pre-defined criteria. For example, a hotel may select all customers who stayed in a certain room type as part of a weekend break anywhere in Western Europe over a particular holiday weekend (and who also booked using the Internet). Selection tools can be quite sophisticated and can specify very detailed parameters indeed.
- **Direct e-mailing** As more consumers use the Internet, so the number with registered e-mail addresses will grow. Because this is almost certain to be one of the data elements recorded within the customer profile, it can be used to communicate with those customers that have been selected. This is very similar to classical paper-based direct mail but with some important differences: (i) the degree of targeting is extremely high; (ii) the cost of an e-mail is virtually zero; and (iii) people are more inclined to reply to an e-mail than a letter, chiefly because it is hassle-free.

These are all very challenging principals for a company to implement successfully. More significantly, they all involve substantial amounts of expenditure in terms of both cash and people's time. However, there is clear evidence that most, if not all of these pull marketing principals are in fact being implemented by many companies right now. This, to a large extent, illustrates the faith that these companies are placing in today's fledgling Internet. So, as the world-wide population of Internet users grows in volume and Internet commerce grows with it, I think pull marketing will become a critical success factor for many businesses, particularly those in the field of travel and tourism. Companies that have started to experiment with

electronic marketing in the early days will be well positioned and sufficiently experienced to capitalize on these critical business survival skills in the future.

INTERNET MARKETING RELATED ISSUES

The Internet is such a new distribution channel that there are many issues that both suppliers and intermediaries are faced with. In this section I am going to focus on some of the major issues that influence the way in which companies market their products and services on the Internet. Each of these issues is explored only briefly because they nearly all could consume chapters in themselves. However, the following encapsulation of these issues should provide fertile ground for further debate.

Search engines

When consumers first start surfing the net in search for holiday planning and booking sites, they often start by using a search engine, e.g. Yahoo. There are several popular search engines and they each work in similar ways although there are important differences in the way in which they catalogue and find sites for users of the Internet. Web site owners register their sites with the major search engines and provide them with a great deal of information about the site and its contents. Besides providing Web site search functions, the search engine companies also award their own prizes to what they consider to be the best sites of the week or month; and they obtain much of their income from advertising other companies' products and services on their Web search page.

Now, the issue is: 'How is the sequence of a search engine's Web Sites Found display determined?' Let's say the consumer enters search criteria keywords of 'air travel booking'. The search engine will identify several Web sites that provide air travel bookings, but how will the sequence in which they are displayed be determined? Often, this is on the basis of the number of site hits recorded, but the criteria vary. Isn't this rather like the old CRS biased display situation that was judged as unfair and discriminatory by various regulatory bodies in the USA and the EC a few

years ago? Couldn't the big airlines, for example, pay vast sums in advertising revenues to the search engines to ensure their sites always came at the top of the list? If they did so, would this be judged to be unfair competition? It's an interesting issue, which to my mind has not yet been sufficiently debated within the industry.

The legal issue

This issue relates to the contractual position between the consumer and the supplier when a travel product is booked through an Internet site. If the Internet site is a GDS, for example, then a contract will exist for the provision of travel products from the supplier company to a travel agent. However, what is the legal position when a dispute arises between the consumer and the supplier? No such contract exists. Would it be possible for the travel supplier to claim that they did not formally approve the distribution of their products direct to consumers? In which case they might argue that because the consumer purchased the product directly from the GDS, then it is the GDS that should accept responsibility. After all, if a travel agent had been involved then the advice given might have been correct and no problem would have arisen. This issue is complicated further in situations where a product is purchased via the Internet by a consumer in a country in which the supplier and possibly also the GDS are not represented.

Booking fees

At present it is unclear how booking fees and commissions will be apportioned for travel sales made via Internet sites. Take, for example, one of the so-called supermarket sites (probably better described as one of the new intermediaries). Many of these new intermediary sites use a link to a GDS as their booking engines for air, hotel and car rental products. When a travel agent makes a booking via the Internet, what commissions must be paid by the supplier? Table 5.2 shows the various possibilities.

Assume for the moment that the supplier is a hotel. Should the hotel pay a GDS booking fee – after all the hotel's system is connected into the GDS and the hotel would normally expect to pay a booking fee if the travel agent booked via

Table 5.2 Booking fee possibilities

<i>Booking fee analysis</i>		<i>Supplier pays booking fees or commission to:</i>		
<i>Booked by:</i>	<i>Booked via:</i>	<i>Travel agent</i>	<i>GDS</i>	<i>New intermediary</i>
Consumer	Supplier's own Web site	No	No	No
	New intermediary and link to supplier's own system	No	No	Possibly (see note)
	New intermediary and link via GDS to supplier's system	No	Yes	Possibly (see note)
Travel agent	Supplier's own Web site	Yes	No	No
	New intermediary and link to supplier's own system	Yes	No	Possibly (see note)
	New intermediary and link via GDS to supplier's system	Yes	Yes	Possibly (see note)

Note: New intermediaries may collect a commission if they are, for example, registered travel agents as are Expedia. However, this is not always the case and many new intermediaries do not collect a booking fee from all suppliers, e.g. TravelWeb is not paid a fee for airline bookings that it handles for its customers.

their GDS terminal? If so, should the hotel also pay a travel agency commission as well as an intermediary booking fee? These new intermediaries will also need to keep their booking fees competitive with the GDSs. They must make sure it is cheaper for a supplier to sell a product to a consumer via the Internet than via the GDS/travel agent route. There are many related issues here – certainly sufficient to keep a class discussion going for quite some time.

Supplier interconnection strategies

With the expansion of new electronic distribution channels, suppliers without their own booking engines are now faced with a new problem: 'Which GDSs and Web sites should they connect to?' It would appear at first glance that a supplier should connect to as many GDSs and sites as possible in order to obtain the widest exposure. However, for a supplier without its own internal booking engine, there is a substantial overhead involved in connecting to a large number of third-party systems. Like so many issues within the area of IT in travel and tourism, the root of many of these problems is a lack of standardization. The problem is that for each system a supplier connects to, the supplier must support the following: (i) a channel

through which it can receive reservation requests; (ii) a method of providing confirmations of reservations; (iii) a method for updating the inventory and product details held within the site's computer; and (iv) a translation of its internally used data standards into the format and standards used by the distribution system, whether it be a GDS or a Web site. The short answer to this problem is for a supplier to obtain its own on-line booking engine. However, this is expensive and not economically feasible for all but the largest of companies. Most small to medium sized suppliers will instead look carefully at the alternative distribution systems and make a value judgment on just one or two that are most relevant to their businesses.

Advertising policy

The publishers of newspapers and magazines know only too well that there are rules and regulations that govern how they take advertisements from other companies for inclusion in their publication. It would, for example, be regarded as unfair competition if one newspaper refused to take an advertisement for one of its rival publications. The issue is: 'Does this apply to the Internet?' Could, for example, a site owner refuse to advertise a competitor's Web site on its own, all other things

being equal, e.g. space was available, other companies were advertised, etc. Would such refusal be regarded as unfair exploitation of the Internet as a public media and if so, which body could bring a prosecution and in which country?

Hotel Intranets

Internet technology allows hotel 'brochures' to be created electronically, complete with pictures, diagrams and a full set of room rates. What's more, individual versions of these electronic brochures can be created especially for corporate customers of hotels. These tailor-made versions can only be accessed by the client company via a special password and are not accessible by other general Internet users. These domains of private customer information that can exist within a hotel's Web site, are called Intranets. While most Intranets involve private networks owned by companies, hotels can distribute theirs via the World Wide Web. However, if a large hotel customer were to have their own networking capability, they could access the hotel Intranet via more secure means, e.g. via private leased lines or secure dial-up via ISDN services, both of which could use their own firewall for security and protection against unauthorized access. Once this begins to happen on a wider scale, hotels will have established a very powerful customer relationship that can be used to each organization's overall benefit. The hotels can then achieve increased sales with higher levels of profitability while the corporate customer can enjoy lower rates and provide a better service to their employees in terms of information availability and accommodation services.

Some of these issues begin to raise the question of what role intermediaries will play in the future world of the Internet and other electronic distribution channels. This topic has become known as 'disintermediation', which is a term I personally do not favour, particularly because it appears to be a misuse of the word. However, it is the term that is used throughout the industry to mean the possible stripping away of travel and tourism intermediaries. So, let's put the syntax to one side for the moment and consider exactly what the future role of travel and tourism intermediaries will be in the future.

Disintermediation

I thought this Internet chapter might be an appropriate place for a discussion on the future role of intermediaries in travel and tourism. After all, the Internet is one of the prime forces that could bring about disintermediation. The driving force for this is the cost incurred by suppliers in receiving a customer booking. It has been estimated, for example, that the cost of obtaining a booking via a telephone service centre is around US\$10, to receive a booking via a GDS costs around US\$3.50, but to capture that same booking via the Internet costs only 25 cents. These are broad brush figures but the message is nevertheless clear – intermediaries represent a substantial element of supplier distribution costs. It is not surprising therefore that disintermediation has already started and the only really interesting issue is the extent to which it will progress as time goes by. I hope the following preliminary discussion of the issues surrounding disintermediation will set the scene for the remaining sections of this chapter, which describe some of the more interesting travel and tourism Web sites that existed as at mid-1997. I just hope they are as relevant to you at the time you are reading this book as they were when I wrote it!

Travel intermediaries cover a wide range of organizations. Although travel agents are usually singled out as the primary intermediaries, there are many others that we need to consider. For example, the GDSs are intermediaries, principally between the airlines and travel agents. Then there are tourist offices, which are intermediaries between tourist organizations and consumers or tourists.

TRAVEL AGENTS

Let's take travel agents first. Travel agents are intermediaries between travel suppliers and consumers. They sell suppliers' products and services to their customers and derive a commission for doing so. A travel agent's added value to the customer is their expertise in travel and their knowledge of the relative strengths and weaknesses of various travel suppliers. A travel agent's added value to a supplier is their customer servicing role,

one which is time consuming and costly for suppliers to handle themselves. These are pretty compelling reasons for the existence of travel agents as intermediaries. However, things are changing. But, what are the fundamental reasons for this change? There are three catalysts for change: (i) the spread of automation from suppliers via distribution systems to agents and consumers; (ii) the supplier's rising cost of distribution, much of which is paid to intermediaries such as travel agents and GDSs; and (iii) the customers' impatience with the slow pace of change among travel agents, who they often perceive as adding very little additional value to their transactions. Let's examine each in a little more detail:

- **Automation** It used to be said that travel agents were the custodians of four key abilities: (1) they had the ability to print airline tickets, (2) they understood the complex airline reservations and booking language used by the GDSs of the world, (3) they were licensed to print airline tickets, and (4) they had the expertise to know how to arrange travel for their customers. But how much of this is still true now that: (a) the Internet is distributing travel related information and booking functions around the world using simple GUIs, which can be used by people who are not trained in IT or travel; and (b) airlines are introducing electronic ticketing, which does away with the need for airline tickets and related ticket stock licensing issues? It could therefore be argued that many other organizations and individuals now have access to at least three of the above four key abilities. If travel agents do not focus on changing their core competencies to the proactive provision of added value travel management expertise, then they may well find that their traditional reactive services are no longer in sufficient demand to support their businesses.
- **Suppliers' distribution costs** With deregulation and increased competition, suppliers are increasingly focusing their attention on overheads. One of the most significant overhead items is distribution costs. These are the costs borne by suppliers in selling their products to customers through distribution channels.

Historically, the primary distribution channels for most suppliers has been the travel agency network; and it probably will continue to be for some time. However, there is no doubt that this situation is changing with the spread of new technology. In any event, at present travel agents sell the vast majority of suppliers' output. This is a double-edged sword from the suppliers' perspective. On the one hand it removes the overheads of dealing with customers from the suppliers. They do not need to worry quite so much about the time-consuming and often non-productive tasks that are an important part of the selling process. Tasks such as pre-trip planning, giving advice on areas of the world, helping to decide the best time for the trip, advising on health and visa requirements and much more. All this is handled for them by the travel agent. The suppliers can therefore devote as much attention as possible to marketing their products and operating them. On the other hand, paying travel agents commission is a costly exercise. One that represents a large chunk of the suppliers' distribution costs.

- **Travel agents' added value** Many customers, particularly in the corporate environment, feel that travel agents are simply reactive and not sufficiently proactive. Agents react reasonably well to customer requests for bookings but they are perceived as not proactively offering customers added-value information that either reduces their costs or improves their service levels. While agents are striving to address this issue by appointing dedicated account managers to business travel customers, those very same customers are being constantly exposed to technological tools that allow them to add value without the overheads of an intermediary.

So, suppliers are constantly searching for ways to leverage their investment in automated systems and thereby reduce their distribution costs. Travel agency commissions are therefore being constantly squeezed. There are many examples of this including 'commission capping', which is commonplace in the USA. Airlines stipulate that for certain types of air ticket, usually the ones on common point-to-point routes, they will only pay commission up

to a certain fixed amount, regardless of the value of the ticket and the percentage commission that is usually paid. Then there is electronic-ticketing. The industry is rife with talk of the airlines restricting the commission paid on flights that are ticketed electronically. The argument being that travel agents have far less work to do for these sales and should therefore receive a lower level of commission. Finally, there are the smaller airlines that cannot afford the overheads of what they regard as a costly distribution channel serviced by travel agents. There are examples of airlines who are turning to direct sales to consumers and this had caused a backlash from travel agents who in some cases have refused to sell those airlines' tickets. Nevertheless, it is a strategy that appears to be working for certain airlines. So, what are the alternative distribution methods for suppliers wishing to sell their products to consumers? Here are some of the main ones:

- **Tele-sales centres** Suppliers can re-engineer their telephone customer service offices into fully fledged tele-sales centres based on new telecommunications.
- **The Internet** The Internet offers suppliers an opportunity to sell direct to consumers without having to pay sales commission to intermediaries. Also, Internet technology allows much of the travel advice and pre-trip consultancy to be given to consumers electronically.
- **Interactive television** This is a technology that is in its infancy and is way behind the Internet at present. However, it offers substantial potential for direct sales to consumers because nearly everyone has a television set, even if not that many currently have access to the Internet.
- **Self-service kiosks** These are intelligent ATM-style machines that are activated by consumers. They have links to suppliers' electronic distribution systems and sometimes include voice links and even video-conferencing.

I'll be examining each of these new distribution methods in more detail in a moment. But first, let's examine a key question: Why not use this new technology to by-pass travel agents and sell directly to consumers? This is really the heart of the disintermediation debate. However, there is no easy answer to this question. The push for

suppliers to sell direct to consumers is driven by a powerful force – increased profitability. However, this is partially offset at present by some substantial barriers to change, even though they may be of a transitory nature; and as we all know, change is one of the most challenging issues for management to tackle. Let's consider some of the key barriers to change:

- **The threat to sales** Suppliers are in the position of being highly dependent upon travel agents for the vast majority of their sales. Most airlines, for example, derive around 80 per cent of their ticketed sales revenue from travel agents. Travel agents are therefore their primary distribution channel. So, although there may be new ways for suppliers to circumvent travel agents as their primary distribution channel and substitute them for something less costly, in the short term this is dangerous. It is obviously a dangerous course of action for suppliers to attempt to bypass a distribution channel that delivers the vast majority of their sales volume. The danger is that if they start pushing an alternative channel that threatens travel agents, then travel agents will retaliate by switching sales to other competitors. So, deadlock. Suppliers would like to change to a less costly and more direct channel but they do not wish to upset the apple-cart and disenfranchise their primary distribution channel and thus jeopardize sales.
- **Ticketing** At present, consumers who book directly with suppliers need to collect their tickets before they depart on their journeys. The only practical ways to deliver tickets to customers right now are:
 - *Ticket delivery using mail and courier services* This is perfectly practical but poses some problems. First of all there is the time taken to deliver tickets by mail. For someone departing soon after making a reservation there is always the danger that the tickets may get delayed and not reach the customer before they have to leave on their journey. Then there is the security issue. Tickets can get lost in the post or even stolen during transit, which can cause serious problems for both the customer and the supplier.

- *Ticket on departure* Customers can collect their travel documentation at the airport, immediately prior to departure. Again though, there are potential problems. First of all, customers have to queue at the airport at a service desk to collect their tickets. This can be a problem if insufficient time is left for this task and the ticket desk is busy with long queues.

In so far as the airlines are concerned, electronic ticketing holds the long term answer to the ticketing problem (see Chapter 3 for a description of electronic ticketing). The clear trend is for air travellers to use electronic ticketing increasingly. Whether they buy their tickets from a travel agent or directly, they will in the future use electronic tickets. So, if consumers book their travel via one of the new electronic channels, they will not need to receive printed tickets at all. They will simply receive boarding passes from a self-service ATM-type machine when they arrive at the airport.

- **Payment** Receiving payment from customers remotely always introduces some degree of risk. While consumers feel safer giving their card number to a customer service representative over the telephone when contacting a tele-sales centre, they feel less inclined to do so over the Internet. Although the issue of commerce on the Internet is being addressed at present, it has yet to be resolved finally. Consumers therefore still feel disinclined to enter their card information into an Internet page, no matter what guarantees are given by suppliers. However, this situation is changing and if the USA is anything to go by, consumers are becoming more comfortable with paying over the Internet using secure encryption technologies.

I think that despite these obstacles there is a clear trend for suppliers to sell an increasing volume of their products to consumers using some form of direct channel that bypasses travel agents. One only has to review some of the travel Web sites that I have reviewed in the next section of this chapter to see that this is true. The question is: 'How quickly will this direct selling channel expand and to what extent will it grow?' Clearly,

the rate of expansion won't be any kind of a big bang but instead will be a more gradual process that will build its momentum over time. To explore how quickly and to what extent it will happen, let's take a look at the spectrum of travellers and the kinds of journeys they undertake:

- **Frequent travellers with simple itineraries** On one side of the spectrum are those frequent travellers who regularly travel between just a few destinations. These are relatively sophisticated travellers who know their destinations quite well and who are familiar with the alternative types of travel and competitive suppliers on their routes. Often, they are business travellers who work for smaller to medium size companies, but not exclusively so. People who have friends and family overseas also fall into this category. Such people make several trips each year to the same destination, which they get to know very well. This class of traveller derives little added value from a travel agent. All they really want is the lowest price ticket at a level of service for which they are willing to pay. There is little reason why they should not use a direct channel to obtain their travel products and services.
- **Independent travellers** These people do not buy pre-packaged tours and instead like to construct their own personalized itinerary. They include people who either know many areas of the world and simply wish to make their own arrangements to get there, or people who want to go exploring to more exotic locations. They usually find that the average travel agent will not know a lot about the kind of trip they wish to take because it is so specialized. What they want is to select the best air transportation, often the cheapest, add a car rental option, perhaps book the occasional hotel but usually make their own arrangements for accommodation when they are travelling. Again, these types of consumers often enjoy the process of researching their intended trip, reviewing alternative supplier options and building their own itineraries. Again, these types of consumers could well be attracted to a direct Internet channel, especially one that is rich in information content on far-flung destinations.

- **Packaged holiday-makers** A growing proportion of holiday-makers know their preferred destinations and are looking for simple packages at the lowest possible cost to one of the popular holiday resort areas. Good example of products in this category are fly-drive holidays to the USA, and either flight-only or flight plus accommodation packages to the beach resorts of southern Europe. There is clear evidence that many of these holiday-makers use television-based teletext information to research and book a suitable package. Once again, if these types of consumers have the opportunity, there is no reason why they could not book directly with a tour operator or consolidator via a direct channel.
- **Business travellers with complex itineraries** Many business travellers make extensive trips to a number of destinations on behalf of their companies. They tend to use a number of different airlines, hotels and car rental companies to meet their more complex travel requirements, which are often quite demanding in terms of travel time and pre-determined dates. Such trips really do require the services of a knowledgeable travel consultancy that specializes in route deals, corporate rates and can provide a high level of customer service. It is unlikely that these types of travellers will be inclined to make their own travel arrangements via a direct channel. So, this is an area where business travel agencies could develop their skills to offer a more specialized and proactive consultancy service to their customers.
- **Infrequent travellers** This category of travellers is relatively unsophisticated in terms of their knowledge of the world's travel destinations and need face-to-face contact in order to discuss their travel requirements. They would probably not feel sufficiently confident to choose a supplier or a destination without first having received some consultancy advice from a travel agent. They are therefore unlikely to simply book a package with an operator directly or arrange their own transport with a single supplier.

This brings us onto the issue of whether these consumers, who are eligible for direct sales, have

the opportunity or the propensity to do so. I identified the main direct sale channels at the beginning of this section as being the Internet, supplier hosted tele-sales centres, the interactive television and customer activated self-service kiosks. However, I am going to concentrate my analysis of disintermediation on the Internet. But before I elaborate on this, I feel I should really say why I am not going to pursue the other direct sales channels in more detail:

- **Tele-sales** Take tele-sales centres – there is no doubt that supplier tele-sales centres have significant potential for handling a far greater volume of direct sales. The principal technologies that will enable them to accomplish this are: (a) third-party offerings that enable call answering tele-sales activities to be outsourced to companies in the telephone service business, and (b) re-engineered in-house supplier systems that support tele-sales operators. However, the issues governing the rate of change in this area are not as complex as those in other areas such as the Internet.
- **Self-service kiosks** Self-service kiosks that are activated by consumers will no doubt grow, but are unlikely to replace any of the other direct distribution methods that I have outlined. These kiosks will I think provide more of a customer servicing function. In terms of direct selling, they may well allow consumers to browse travel alternatives and obtain information for trip planning purposes. However, when it comes to booking, the approach being used by many of the current schemes is to put the consumer into contact with a remote sales assistant either by telephone or in the more sophisticated implementations, by video-conferencing methods. So, while the use of these kiosks will no doubt grow, they are unlikely to cause a paradigm shift in consumer buying patterns across the industry.
- **Interactive television** Interactive television is a different matter – this is a technology that really does offer some significant potential for direct sales of travel products and services. The issue here is the mechanism that will be used to support the interactive dialogue with the home television consumer. On the one hand

this could be a new technology and a new network that allows television users to connect into different supplier systems and information sources. But is this likely to be something entirely separate from the Internet? Televisions are already being manufactured with Internet access capabilities. Despite the fact that there are technical difficulties to be overcome, it seems unlikely to me that with the investment many companies are making in the Internet that a completely separate technical infrastructure will be built just to support interactive television. So, my argument is that while I believe that interactive television will no doubt grow and become widespread, the interactive part of it will be based on the Internet.

It is the Internet that I propose to focus on for the remainder of this section. My reasons for this are the projections of Internet growth that I quoted in the introduction to the marketing section at the beginning of this chapter and also some other very relevant market research. First of all, the growth rate in numbers of people who are able to access the Internet is very high. It doubled in 1995 to 26 million and almost doubled again in 1996 to 50 million. It seems that this rate of growth is set to continue or even increase as new technologies, such as interactive Web-enabled televisions, arrive on the consumer home market. This end-user growth has a related impact on the number of Web-originated travel bookings. Analysts predict, for example, that travel bookings on the World Wide Web, which currently stand at some US\$400 million per year, will rise to US\$4 billion by the year 2000 (source: Jupiter Communications, New York). Despite the hype surrounding electronic commerce, the estimated fraud rate involving Internet transactions is low, at around US\$1 for every US\$1,000 billed. This compares, for instance, with US\$19.83 for every US\$1,000 billed using cellular telephones (source: Forester Research 8/96).

Having analysed the issues that are most likely to affect disintermediation, the bottom line question is: What will be the likely impact of new distribution channels, such as the Internet, on travel agents? Well, I hope from the preceding discussion you will have gathered that, in my opinion, it is

likely to be significant. That's not to say that it will be the end of travel agents. Far from it. Certain types of travel agents will thrive. But to do so they will need to change:

- They will need to focus on developing their true added value so that they can begin to offer quality advice, both to travellers and to corporate administrators. This should include the development of expertise on how people can travel most efficiently to different areas of the world with optimum use of supplier deals. It is difficult to see how any currently available electronic method can beat the all-round expertise of a travel expert in a one-to-one discussion. This is especially true for complex itineraries involving many countries and demanding travel schedules.
- Many of the simple straightforward transactions will be handled directly using new technology, such as the Internet. These represent the vast majority of business travel transactions that are often point-to-point return air tickets, possibly with a hotel.
- They will need to have access to some sophisticated business travel support technologies that will help them compete with suppliers, especially the airlines and GDSs. Many GDSs have developed business travel support systems that enable travellers to take care of their own travel arrangements, but consolidate information and control at the companies head offices. Although these systems currently keep the travel agent firmly in the loop, there is no practical reason why this should continue, especially with the advent of electronic ticketing. Unless travel agents have their own capability to do this, they could well lose their business travel accounts to either the airlines or the GDSs.

Now, to help illustrate some of the points that I have made above, let's take a peek into this future world in order to explore a few of the issues in more depth. Take a hypothetical company whose management employees travel a fair amount as part of its business. Assume that this company has decided to use a travel management software package that performs all the functions that the company needs to run its own travel arrangements. Such packages are available right now in any event.