

ARMY POLYTECHNIC SCHOOL



DEPARTMENT OF LANGUAGES

APPLIED LINGUISTIC IN ENGLISH CAREER

DESIGN AND APPLICATION OF A DATAWAREHOUSE TO PROVIDE TOURISM INFORMATION OF ECUADOR FOR TRAVEL AGENCIES, DURING THE FIRST TERM OF 2009

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QUITO - ECUADOR

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CHAPTER I

RESEARCH PROBLEM

1.1 PROBLEM IDENTIFICATION

Nowadays, the update and easy access of any kind of data is really important in the development of all work area; that is the reason why almost all the years the automation of information is growing in multiples ways.

No all the companies or industries in Ecuador can supply software that help them in the information area because those are very expensive and also don't have the knowledge to manage the software.

This is one of the reasons of an unfair competence in a business relation, that produce problems when two or more companies are selling a product or a service to customers.

Between the new technologies, almost all the industries has to be in a continuous change, to get a good production, that is why Datawarehouse is one of the most important that offers solutions to any kind of information problems. And has no problems to be applied in many areas, in this case, it will be used to give solutions to Tourism Area.

1.2 PROBLEM SETTING

The Tourism area has been change years ago since the automation of information is useful to work in many components of a business.

As the world knows, the answer fastness is one of the principal tools in tourism, this mark the difference between in a biggest Tourism Agency to a begging Tourist Agency, no matter the human capacity of workers, or the equipment that is used.

The unfair competence can be so different between agencies that in spite of any effort or the money invest, if one of them don't have a new business technology, will be very difficult to equal another agency.

Business intelligence is the use of an organization's disparate data to provide meaningful information and analysis to employees, customers, suppliers, and partners for more effective decision making.

The core capabilities of business intelligence group information together, measure it, give end users access to it, and share information changes. These capabilities can be further broken down into three main components: enterprise performance management (EPM), information discovery and delivery (IDD), and enterprise information management (EIM).

So, the solution of these kind of problems, is to develop a free data warehouse of Tourism Information from the best places in Ecuador, that can accessible to any Agency and also that can be upgrade by the same personal from the Agencies.

This application not only shows information also, in addition the Datawarehouse:

- ❖ Provide specific data that will help the decision making.
- ❖ Provide an information of the main independent (Place, Tourist) and dependent (Revenues, Visits) variables. And the relationship between them.

- ❖ It will use a model of analysis, and its interface will be developed using Database tools
- ❖ The information will be upgrade all the time, without a extra cost
- ❖ For its manipulation, it will have a user manual that contains all the information about the system.

1.2.1 MAIN PROBLEM

- ❖ Almost all the tourism's companies or industries in Ecuador cannot supply software that helps them in the business information to take strategies decisions in their business.

1.2.2 SECONDARY PROBLEMS

- ❖ There is no update information about tourism places in Ecuador
- ❖ There is a lack of agent's training
- ❖ The actual systems are really expensive
- ❖ There is no an information tool that can be used like a formal tool to take business decisions, to improve the tourism market.

1.3 VARIABLES WORKING OUT

There are two variables to take in consideration for the research:

Independent Variable: Design and Application of a datawarehouse

Dependent Variable: To provide tourism information of Ecuador

Chart 1.1: Independent Variables

VARIABLE	DEFINITION	DIMENSIONS	SUBDIMENSION (INDICATORS)
DESIGN AND APPLICATION OF A DATAWAREHOUSE	A process to design an application with datawarehouse tools and information	<i>Application</i>	Easeful Methodology
		<i>Tools</i>	Easeful Cost Available

Source: Elaborated by Ma. Angeles Escobar

Chart 1.2: Dependent Variables

VARIABLE	DEFINITION	DIMENSIONS	SUBDIMENSION (INDICATORS)
TO PROVIDE TOURISM INFORMATION OF ECUADOR	Provide Ecuadorian Tourism Information to end-user	<i>Information</i>	Available Source
		<i>Users</i>	Kind

Source: Elaborated by Ma. Angeles Escobar

1.4 OBJECTIVES

1.4.1 GENERAL OBJECTIVES

- ❖ To design and apply datawarehouse application that can be use by Travel agencies to review the top tourist information in Ecuador.
- ❖ To organize, classified and digitalize the Ecuadorian tourism information obtain by Government Office.
- ❖ To socialize tourism information between travel agencies that can't obtain a paid software to work with update information.

1.4.2 SPECIFIC OBJECTIVES

- ❖ Find information sources of Ecuadorian Tourism information
- ❖ Organize and classified the best 100 tourist places in Ecuador
- ❖ Research information about statics of visitors to Ecuador
- ❖ Define de parameter to be used in this project
- ❖ Make statistics of research tourism information
- ❖ Sort the information through parameters set
- ❖ Get knowledge in the preferences of the national and international tourists
- ❖ Use platforms of free BD.
- ❖ Specify an outline of DW and their components
- ❖ Build the BD
- ❖ Implement an application to validate the use within an agency of Tourism

1.5 JUSTIFICATION

Gil and Berriel (1999)¹ assert that the tourism industry is experiencing a period of great changes that have been driven mainly by the following causes:

- ❖ The tastes of consumers have varied; there is a growing tendency on the part of customers to sue customized trips adapted to their preferences.
- ❖ The growing awareness that possess the customers given the greater ease of access to information sources available and a higher level of experience in travel.
- ❖ The increase of competition by the concurrence of other tourist destinations.
- ❖ The incidence of external factors such as the development of new technological systems of global reach.

Due to the factors above, is increasingly important for companies with reliable information from their clients, which is a valuable weapon for the decision making, definition of strategies and for the achievement of competitive advantages. In order better manage and exploit the information were created data warehouse, or data storage, which allow increasing the value of the data to account the company.

Given the increase of tourism in Ecuador, both internal and external, is essential to have a source of information organized, classified, useful and easy access to any tourist. That is why through this project the tourist using a subscription may plan their tourism

¹ Gil, A.M., y Berriel, R. (1998). Determinación y Evaluación de los Usos Potenciales de la TI/SI en el Sector Hotelero de la Isla de Gran Canaria.

activities without losing time to consult external sources, nor money or go to another place by not having enough information about this or their comforts.

CHAPTER II

THEORETICAL FRAME

2.1 INTRODUCTION

2.2 TOURISM INDUSTRY

Tourism is a travel for recreational or leisure purposes. The World Tourism Organization defines tourists as people who "travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited". Tourism has become a popular global leisure activity. In 2007, there were over 903 million international tourist arrivals, with a growth of 6.6% as compared to 2006. International tourist receipts were USD 856 billion in 2007.

Despite the uncertainties in the global economy, international tourist arrivals during the first four months of 2008 followed a similar growth trend than the same period in 2007. However, as a result of the economic crisis of 2008, international travel demand suffered a strong slowdown beginning in June 2008, with growth in international tourism arrivals worldwide falling to 2% during the boreal summer months, while growth from January to April 2008 had reached an average 5.7% compared to its 2007 level. Growth from 2006 to 2007 was only 3.7%, as total international tourism arrivals from January to August were 641 million tourists, up from 618 million in the same period in 2007.

Tourism is vital for many countries, such as the U.A.E, Egypt, Greece and Thailand, and many island nations, such as The Bahamas, Fiji, Maldives and the Seychelles, due to the large intake of money for businesses with their goods and services and the

opportunity for employment in the service industries associated with tourism. These service industries include transportation services, such as airlines, cruise ships and taxis, hospitality services, such as accommodations, including hotels and resorts, and entertainment venues, such as amusement parks, casinos, shopping malls, the various music venues and the theatre.

The Key to Understanding the Tourism Industry

Tourism is one of the most exciting and progressive industries around the world. Tourism is also big business. Tourism impacts on almost every industry. The total real output, including direct and indirect expenditure, was worth \$73 billion in 2003/04.

Tourism is now one of the largest industries accounting for 536,600 jobs. The tourism industry has a larger output than:

- ❖ Agriculture, Forestry and Fishing;
- ❖ Mining, Communication Service; and
- ❖ Electricity, Gas & Water Supply.

In 2000-01 tourism generated \$23.3 billion to the New South Wales state economy, of which \$6.4 billion was generated by international visitors. Tourism also employs 5.3 per cent of the state's workforce, or 182,000 people directly. In NSW², tourism is larger than the following industries: Agriculture, Forestry and Fishing; Mining; Communication services; Personal and Other Services; Electricity, Gas and Water

² Source: Dwyer et al (2003), NSW Tourism Satellite Account for 2000-01, University of NSW

Supply; Government Administration and Defense; and Cultural and Recreational Services.

The Product

Visitors can laze on a beach, hike in fresh mountain air and journey to the red outback, soothe their soul in one of the World Heritage national parks, take a leisurely drive through the State's lush farm regions or stop in the quirky towns and cosmopolitan centers. Along the way visitors will be amazed at what they find like fine food and wine trails, lively festivals, Aboriginal heritage tours, amazing landscapes and friendly locals.

As a result, tourism products come in all shapes and sizes from five-star hotels to boutique bed and breakfasts or trendy backpacker resorts. They also include iconic attractions such as horse-riding, sea kayaking and rainforest tours, not forgetting ski, surf or circus schools, museums and galleries, aquariums, wineries, zoos and lots, lots more.

One of the challenges facing the tourism industry (and in particular tourism operators) is to develop and package tourism products in a way that people want, maintaining position as a premier tourist destination, as well as ensuring a viable business for the operator.

In its broadest sense, the tourism industry is the total of all businesses that directly provide goods or services to facilitate business, pleasure and leisure activities away from the home environment. The chart below demonstrates the impact within our economy and community when someone goes on holiday.

TOURISM IS EVERYONE'S BUSINESS

Tourists...

Spend money on...

And the tourism industry pays

Which finally benefits everybody.



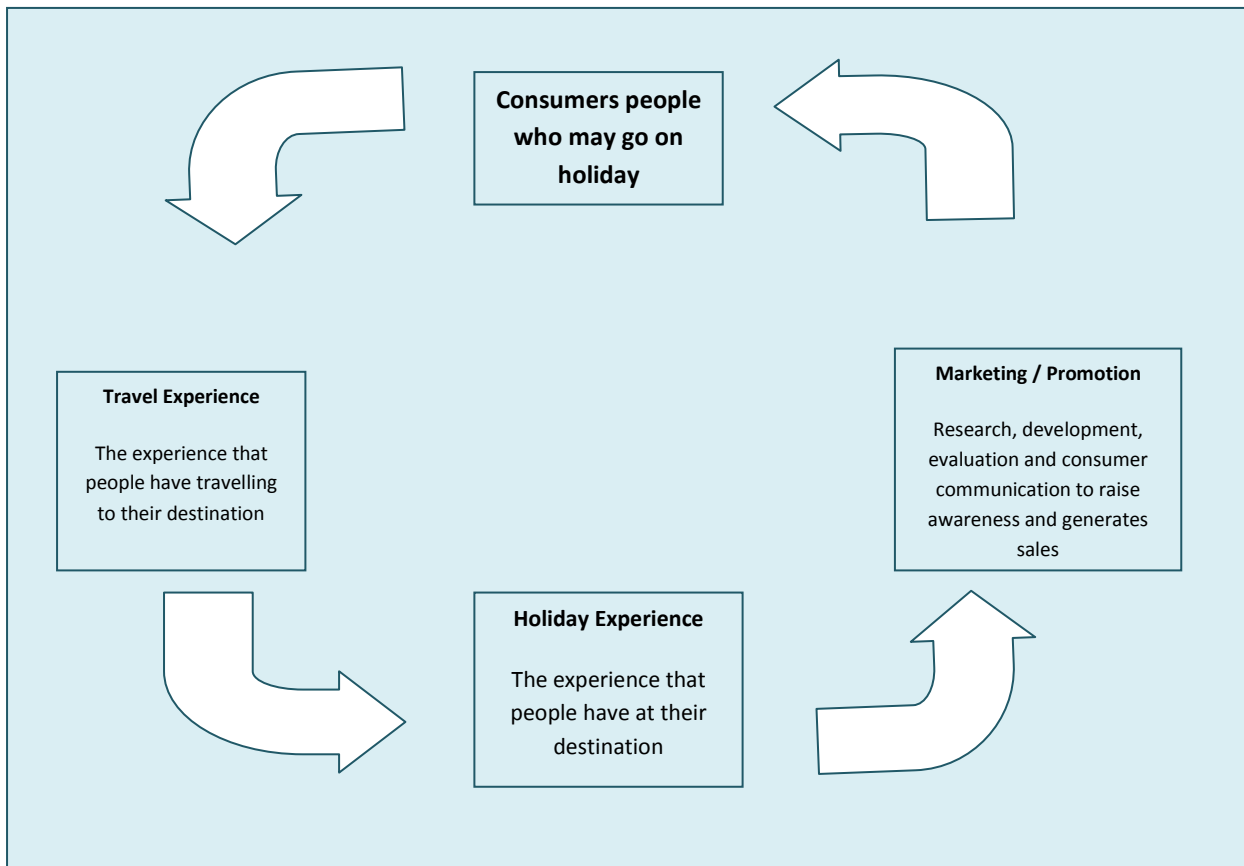
- Transport
- Meals
- Shopping
- Petrol
- Accommodation
- Entertainment
- Other

- Wages
- Transport
- Services (water, gas, electricity)
- Food & Beverage
- Store taxes
- Commissions to travel agents
- Entertainment
- Local government rates & charges
- Repairs and Maintenance
- Merchandise
- Administrative expenses
- Advertising & promotion
- Petrol
- Legal & professional services
- Rental of premises
- Capital assets replacements

- Restaurants & takeaway foods
- Petrol stations
- Farmers
- Retail outlets
- Bakers
- Travel agents
- Cultural organizations
- Chambers of commerce
- Manufacturers
- Company suppliers
- Gift shops
- Film developers
- Chemists
- Artist and entertainers
- Crafts people
- Real estate agents
- Shopping centers
- Bus & car companies
- Interpreters
- Accountants
- Trucking operators
- Administrators
- Postal workers
- Engineers
- Pilots
- Media & marketers
- Builders
- Plumbers
- Banks
- Mechanics
- Electricians
- Marine dealers & suppliers
- Market gardeners
- Architects
- Night clubs
- Waiters

The tourism system

Before developing a tourism product it is useful to understand how the tourism system operates. The following diagram shows the basic components involved:



The consumer

In the tourism system the consumer is the most important element as the consumer is the reason tourism products and services exist. Everyone working in tourism must ensure that the consumer is fundamental to all business and planning decisions.

Consumers have many choices about how to spend their money and leisure time. If they choose to spend their money on a holiday, they will then determine their budget, decide

how much time they have available and what types of activities they would like to do while away. Then they will begin to select a destination, decide how they will travel there and make reservations accordingly through a travel agent, wholesaler, over the Internet or directly from the tourism operator.

The travel experience

The travel experience relates to how the consumer travels to the destination and the experience they have along the way. The choices can include air, car, boat, coach, train, motorbike, hiking or a combination of the above. The mode of travel affects the type of experience, for example flying to a destination is a very different experience to driving. A destination can suffer if transport options, links and support services are limited or below standard. Issues such as the variety of attractions, facilities and accommodation available en route, the road quality, signage and frequency of transport services, can all affect the quality of the travel experience.

The holiday experience

When consumers decide to take a particular type of holiday they have expectations of the experience they will have. This could relate to the quality of accommodation, service and food, the range and cost of activities available, the length of time they have, the weather, etc. Their satisfaction will be based on how well the holiday met their initial expectations or exceeded them.

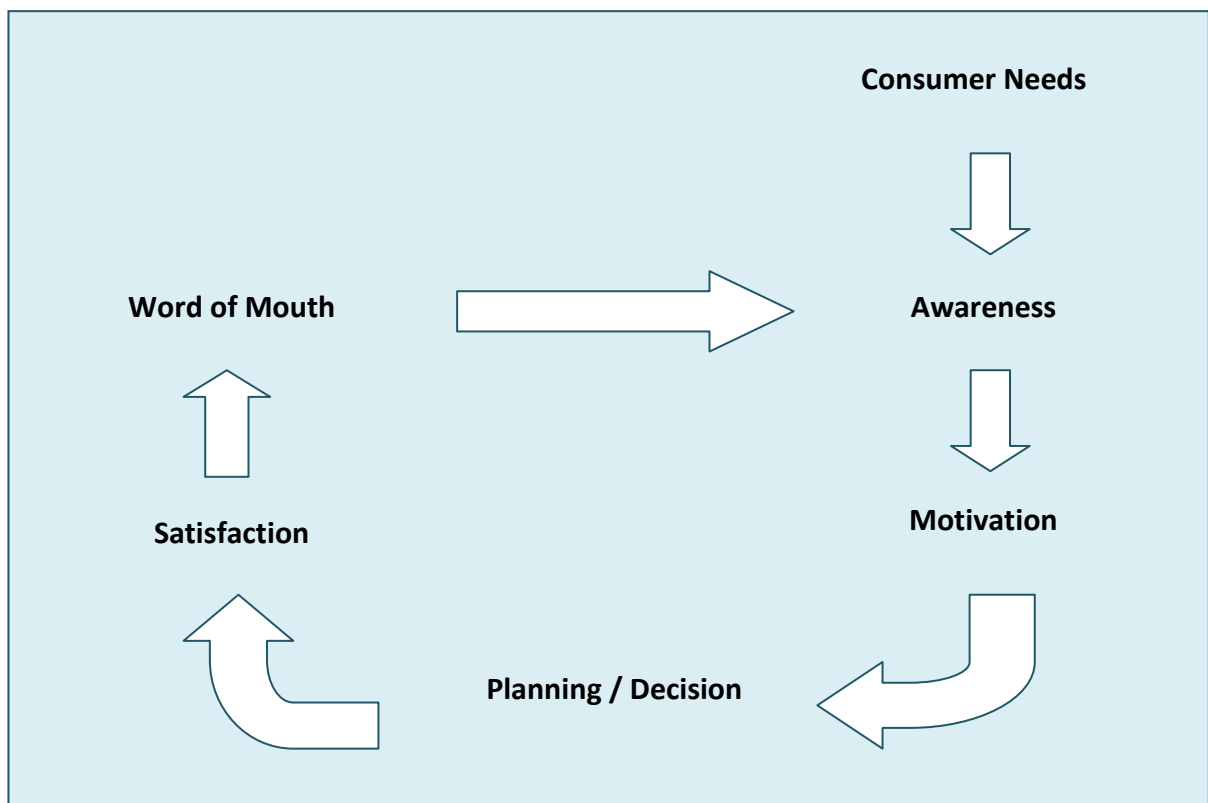
Marketing your business

Marketing refers to a multi-faceted, on-going process that any successful business is continually working through. It includes activities such as: researching the market, your

consumers and products; evaluating research data; developing your business and products; developing your own skills; and promoting, advertising or working with the media to raise awareness of your product and generate sales.

Marketing is often described as ‘the four Ps’: product, place, price and promotion. The product includes the physical attributes of the product, branding and packaging. Place is about distribution: the agencies, channels and institutions used to give consumers easy access to purchasing your product. Price must meet both the consumer’s and your needs. Promotion is explaining destinations, products and services to consumers to help them choose their holiday.

Promotion can use a range of media such as print (magazines, newspapers, brochures, posters displayed on billboards, bus stops, the sides of buses, trains etc), television, radio, direct mail, Internet, etc. Providing a holiday package as a prize for a competition or even staying in touch with customers provides promotion of your product.



Consumer Decision-making

The above diagram assists in understanding the process consumers work through in deciding about taking a holiday. It is important to understand this process because it influences all stages of the previously discussed model, especially the marketing/promotion element.

Needs – Going on a holiday allows people to take a break from their normal life, whether it's restful idleness in scenic spots or extreme sports in challenging terrain, on their own, with a partner or friends, or in a large group.

Awareness – Consumers may have a recognized or unrecognized need for a holiday. Promoting a holiday destination, product or service can help consumers recognize they need a holiday, and then raise their awareness of the choices available.

Motivation – If the consumer is positively aware of a destination, product or service they are more likely to be motivated to visit.

Planning/Decision – Promotional information helps the consumer decide how to get there, and what they want to do.

Satisfaction – If a product delivers what has been promoted, the consumer is likely to be satisfied and have a quality holiday experience, and vice versa.

Word of Mouth – Consumers share their holiday experiences with friends, family and colleagues. Their word of mouth raises awareness of the destination, product(s) and service(s) with potential future consumers.

2.2.1 Ecuadorian Tourism Industry



Ecuador is a country with endless natural riches. The geographic and climatic diversity of its four regions have given rise to thousands of unique species of flora and fauna. All in all, Ecuador is home to at least 4,500

species of butterfly, 345 reptile species, 358 species of amphibians, and 258 mammal species, among others, many of which are protected by the State's 26 protected areas. Teeming with so much life, it is no wonder that Ecuador is one of the planet's top 17 most biodiversity nations. Moreover, Ecuador is not only diverse with respect to its wildlife. The nation is also home to dozens of indigenous groups that still maintain their traditional cultures and lifestyles.

The nation is also home to 13 indigenous nationalities, each of which maintains their traditional customs, way of life, and world vision. The Eastern Quichua, Huaorani, Achuar, Shuar, Cofan, Siona-Secoya, Shiwiar, and Zaparo all live in the Amazon region. In the Andes, live the highland Quichua such as the Cañaris and the Saraguros.



The Coastal region is home to the AWA, Chachis, Cayapas, Tsachilas, and Huancavilcas. The urban areas are inhabited mainly by mestizos (mixed race), whites, and Afro-Ecuadorians.

Ecuador's official language is Spanish, but a variety of indigenous languages, such as Quichua, Awapit, Cha'palachi, Tsafiqui, Paicoca, A'ingae, Huatirio, Shuar-chichan, and

Zaparo are still spoken widely in rural areas. Using the area's natural resources to produce some of the world's finest artisan crafts, Ecuador's indigenous groups handcraft hats, woven goods, wood carvings, and much more. In addition to providing income to these marginalized groups, the production of these crafts help the groups that make them maintain their culture, life, religion, myths, and fantasies while sharing their beauty with the world. The Ecuadorian Andes region is famous worldwide for its prolific production of fine leather products. In the Austro of the southern highlands, fine silver and gold works abound. In the coastal and Amazon regions, pottery-making and straw-weaving are part of everyday life. Throughout Ecuador, men and women alike are skilled at giving shape to clay and vegetable fibers.

Ecuador's strategic location has brought many twenty-first century investors and businessmen to the country. Located in the middle of the world, it opens its doors to commercial and cultural exchanges, alike. Ecuador is the world's largest



banana producer and one of its main flower exporters. Tourism is the country's fourth largest income-earner, with oil being its number one revenue generating industry. Shrimp and cocoa are also of great importance to the nation's economy, which now has the U.S. dollar as its official currency. With well-developed tourist infrastructures, Ecuador's major cities offer all types of services from fine dining to lodging in the world's most luxurious hotel chains. Quito is the political heart of the nation, Guayaquil is the country's economic pulse, Manta is an important port and tourist destination, and Cuenca is the cultural center of Ecuador.

Ecuador Ministry of Tourism



The Ministry of Information and Tourism was created on August 10, 1992, at the onset of Sixto Duran Ballen's presidential term. Sixto saw tourism as a fundamental activity for the economic and social development of the provinces. In June 1994, following the growth of the tourist sector, it was decided that tourism should be separated from the dissemination of information in order to be able to focus entirely on stimulating and strengthening the tourism industry.

2.3 Tourism in Internet

2.3.1 Use of Internet applied to Tourism

The Internet has opened the door for small businesses with little capital to reach a worldwide market. Open access results in lower entry barriers so that virtually anyone can both access and provide content to the Internet. Travel retailing is one of the sectors in the economy that requires very little initial capital investment. The Net also redefines economies of scale, allowing small firms to achieve low unit costs for products and services in markets (such as tour operating) dominated by large companies. In the hospitality sector, small firms could also have more cost-effective marketing through the destination's web-site than the printed tourist directory. In essence, the Web "levels the playing field"³. For this reason, Inkpen⁴ goes so far as to praise the Internet as a

³ Hoffman and Novak 1996

⁴ Inkpen (1998:178)

marketer's "dream" because it enables companies of different sizes to compete on more equal terms. This analysis also applies to tourism destinations (as resorts, regions or nations). For example, a strong web presence may substantially increase the exposure of many small and developing destinations in the Western market where the high cost of mass media advertising made such exposure practically impossible in the past. Nevertheless, it must be noted that although it costs little to achieve a web exposure, the development of a fully functional marketing and sales site and especially the promotion of the site to increase visitor numbers require huge investment. Therefore, the Internet provides a level playing field for all sizes of companies only at the point of entry - that is, to establish a web presence.

2.4 Tourist Marketing

Travel and tourism products are ideal for marketing on the Internet. This is because tourism is an information-intensive industry and the Internet is the most effective and efficient means in information exchange worldwide. The Net can greatly facilitate the promotion and distribution of tourist products and potentially enable tourism destinations and enterprises to compete on a level playing field.

Tourism Is an Information-Intensive Industry

Tourism is very information-intensive and information is often dubbed the "life-blood" or "cement" of the industry which holds together the different producers within the travel industry - airlines, tour operators, travel agencies, attractions, car rental, cruise lines, and other supplies. "In few other areas of activity are the generation, gathering, processing, application and communication of information as important for day-to-day operations as they are for the travel and tourism industry" (Poon 1993:154). The perishability of tourism products and the often erratic tourist demand make the task of

balancing tourism supply and demand far more significant than any other sector. That is probably why tourism became one of the first industries to widely apply IT and conduct electronic commerce from the 1960s in the form of computer (ised) reservation systems (CRSs) and then global distribution Systems (GDSs).

Tourist Products and Services Are Difficult to Evaluate

As a service industry, most tourist products are intangible services, they are experienced and cannot be touched, tasted, smelt or seen and therefore difficult for tourists to grasp and evaluate. Furthermore, the spatial fixity of tourist attractions and amenities means that a tourist cannot really assess their quality until he arrives at the destination. Tourists have, for a long time, relied on limited information from holiday brochures and other literature to evaluate tours and destinations. Comprehensive, relevant, timely and accurate information is essential in tourists' holiday decision making process. But they were not readily available to tourists until the emergence of the Internet, especially the wide use of the Web.

With the Internet, virtually unlimited amount of information can be stored at a web site and an unlimited number of users can retrieve it at anytime from anywhere in the world. The Web can not only provide more information but also provide it from a much wider range of sources; while in the past, tourists are almost exclusively dependent upon representations and descriptions by the travel trade. The Web can also deliver the information in a greater variety of formats, from text to photos, graphs, audio and video clips, whereas in the past, tourists primarily relied on the printed brochures as the limited copies of videos of a limited number of tourism destinations or holidays were only available to the major travel agents. The web-based electronic brochure can also facilitate the complex process of choosing among the hundreds of holidays using browser-generated selections from back-end databases linked to web servers whereas

the printed brochures are usually arranged and indexed by one way, often by destination. Through Internet video telephony, tourists can also "test drive" a prospective holiday by viewing real-time scenes through cameras placed in hotels, clubs, restaurants, scenic spots and other sites in the destination and transmitted via the Internet. Video clips can also show episodes and scenes of festivals, art performances and service delivery to facilitate tourists in the comparison and evaluation of intangible services, the quality of which is otherwise difficult to assess in advance.

Tourism Distribution Has Physically Nothing but Travel Tickets to Deliver

Since in tourism, it is the tourists who travel to the destination, rather than the tourist product is transported to the market. When a tourist books an airline seat, a hotel room, or a package holiday, he acquires the right to use that seat, room or holiday in the specified time period. After the tourist completed his journey or holiday, he takes nothing home but experiences (though often together with some photos and souvenirs). In the whole process, from the booking, through the out journey to the return journey, the only things being transported are travel tickets and the tourist himself. This unique characteristic offers tourism a great advantage in Internet marketing as the only cost of online sale will be the transaction processing expense plus a little postage cost; in contrast, for manufactured goods, the delivery cost is often substantial.

'With the increasing popularity of electronic-ticketing (e-ticketing) or ticketless-travel, especially among airlines, online tourism distribution over the Web may one day have no physical goods (not even a ticket) to deliver at all. Ticket-less travel means that check-in is achieved by proof of identity and a booking reference number. This saves the cost of ticketing for the airline which would usually include stationery, printing and

postage and speeds up the check-in process at airports by enabling passengers to self check-in at check-in machines with a credit card. Worldwide, there are more than 30 airlines offer e-ticketing in at least some routes

The Internet has opened the door for small businesses with little capital to reach a worldwide market. Open access results in lower entry barriers so that virtually anyone can both access and provide content to the Internet. Travel retailing is one of the sectors in the economy that requires very little initial capital investment. The Net also re-defines economies of scale, allowing small firms to achieve low unit costs for products and services in markets (such as tour operating) dominated by large companies. In the hospitality sector, small firms could also have more cost-effective marketing through the destination's web-site than the printed tourist directory. In essence, the Web "levels the playing field"⁵. For this reason, Inkpen (1998:178) goes so far as to praise the Internet as a marketer's "dream" because it enables companies of different sizes to compete on more equal terms. This analysis also applies to tourism destinations (as resorts, regions or nations). For example, a strong web presence may substantially increase the exposure of many small and developing destinations in the Western market where the high cost of mass media advertising made such exposure practically impossible in the past. Nevertheless, it must be noted that although it costs little to achieve a web exposure, the development of a fully functional marketing and sales site and especially the promotion of the site to increase visitor numbers require huge investment. Therefore, the Internet provides a level playing field for all sizes of companies only at the point of entry - that is, to establish a web presence.

⁵ Hoffman and Novak 1996

2.4.1 Application on the Internet in tourism marketing

The Internet as a marketing media can be of great benefit to virtual all areas of marketing, from marketing research, through market segmentation, targeting and positioning, to the effective use of the marketing mix, and marketing organization and control. The following discussion does not attempt to provide an exhaustive list of the Net's use in tourism; rather, it simply intends to exemplify its common applications in and main implications for tourism marketing.

Marketing Research

The Internet does more than automating online business transaction, it can "informate" in that it provides a vast amount of information which was previously unavailable. Marketing is essentially an information-processing activity which links an organization to the external environment in which it operates. The Internet is an invaluable source of low cost but up-to-date marketing intelligence which can be sourced through a company's own site (for details of its customers) and other web sites (for information on competition situations, market conditions and the general environment). The Internet is extremely useful in build a customer information database.

Market Targeting

An important feature of the Web as a medium is that it is the consumer who is actively searching for information about products or brands in which they are interested. In effect the consumer is "pre-screened" and shows both interest and involvement in visiting the web site. While on the Web, the consumer can also provide instantaneous feedback to the marketer (Stern, 1995). All the feedback, and indeed, every "click" or "hit" the user makes can be memorized by the web server. Through the application of

the IT data mining technique, companies can find patterns within their internal customer data and make sense of data or turn data into meaningful marketing information. For instance, the visitation record of an online brochure may show the total number of hits, the distribution of the hits among the pages and across time, the order of the pages been accessed. The user's visitation data can be easily combined with user profile information from user registrations through online visit cards or questionnaires and used to uncover the consumers' interest and the patterns of demand and buying behavior. This in turn leads to identification of likely target segments, often niches based on specific benefit sought. Armed with such information, organizations can refine their targets and develop specific means to achieve true one - to- one marketing (Pitta 1998).

The appropriate use of user profile and surfing behavior data can improve the effectiveness and efficiency of market segmentation and targeting. This is because the traditional approach to market segmentation is often based simplistically on geographical, demographic and economic variables while the psycho, behavioral or lifestyle data is costly to collect and difficult to measure and compare. In Internet marketing, it is easier to collect these data from potentially each and every user of the company web site, though tangible rewards such as free prize draws and free membership are often needed to attract users to fill in web forms. It is even a great deal simpler and more effective in market targeting as the email messages and even tailor-made web-pages can reach the intended receiver with little cost. It is possible to set up "virtual" or cyber - communities for each target market niche in the form of news-groups through which consumers with similar interest and behavior patterns can be sent with relevant product offering and other information from the marketer. Members of such Internet communities can regularly exchange information between them and strengthen a sense of belonging.

Product

One of the major advantages of the Internet in marketing is that the tourist can here be a value creator for tourism companies through redefining the labor division between the marketer and the tourist in providing tourist experiences (Dellaert 1999). This is because, on the one hand, tourists can provide individual preferences for or specifications of holiday packages through feedback in the forms of web forms, email messages or simply the 'clicking' patterns, which the tourism marketer can use to development new products or tailor-make existing products to suit the needs of particular consumer(s). In this sense, the Internet has accelerated a shift in the nature of products from mass produced and tangible to customize and information based.

On the other hand, the self-servicing tourist can not only conduct transactions online and reduce costs of sales for the supplier but also actively participate in the production process itself. Provided with choices, a tourist can now assemble his own product according to the specifications desired. This is especially useful in the production and marketing of package holidays. Tour operators, for example, can offer modular products or services, such as flights, rooms, tours, car hire and performances on their web sites, and allow the user to participate in the development of the specific holiday packages using a menu of options, ie., 'pick and mix" his own package. Internet technologies can also contribute to the improvement of current products on offer or development of new products and services that redefine the company's strategic position. For instance, Boeing announced on 27 April 2000 plans for a network which will allow passengers to use the internet, watch TV and receive other data while flying. Called Connexion by Boeing, it will use satellite technology to provide broadband services to aircraft, which could greatly improve passengers' flight experiences. The introduction of electronic ticketing (e-ticketing) and flight information exchange through mobile phones by

many airlines in recent years also improve customer services. The Internet also give tourist attractions such as museums and galleries wider format options for electronic presentation and show web collections which are physically impossible to construct (Taylor and Ran 1995). Zoos and aquariums can improve its product offering through "live" camera links using web sites like whale-watching to show views of animals not in captivity (Benhow 1997).

Pricing

The role of the Internet in pricing is based on its ability in processing and exchanging large amount of data instantaneously with a great number of people. This information processing capacity enables a company to analyze relevant pricing data effectively and quickly. The information exchange capacity enables firms to set and change prices in real time and also facilitates online bidding and flexible pricing. Both of these qualities of the Net are extremely useful in tourism marketing.

In Internet marketing, the potential for price discrimination is diminished given the enhanced capability of consumers to identify the least expensive source, regardless of supplier or location. The skilled consumer could have the "perfect knowledge" of market prices, which could facilitate the realization, to certain extent, of "perfect competition" at the national and global markets. This will lead to the increasing standardization of prices across companies or even borders, especially for the undifferentiated products such as airline seats, beach holidays and city breaks. Other applications of pricing on the Web including bidding and flexible pricing - many web-based businesses allow customers to bid for products on their sites. Customers commit to the sale if the price is agreed upon. The bidding locks in customers to the sale and the committed price. This is a flexible pricing strategy where the buying capacity of the customer reflects in the eventual price. Companies such as Ebay.com and Bid.com have

developed a model where other vendors can place products up for bids (De and Mathew 1999). Airlines could sell seats on over-demanded flights or routes through online bidding to the highest bidders to generate extra revenue. Tour operators may use online bidding in a different manner to market special holidays the demand for which may be extremely difficult to estimate in advance. For example, a tour operator can put on its web site the details of a package holiday to the moon and the total cost (including profit margins) for a group, say 50 travelers, the more people bid the lower the price for each traveler. This way of pricing could well enhance the operator's image and profitability, as it is both an innovative marketing and sound financial approach.

Place

The uniqueness of the Internet as a means of distribution is based on the fact that it exists in "cyberspace" thus physical phenomena such as location and distance are less significant or even irrelevant. For the producer, the Web enables it to have direct links with consumers at a low cost therefore provides it with the opportunity of "disintermediation". For the retailer, the Web threatens its livelihood and changes its critical success factor from location, location, location to access, access, access. For the wholesaler, web-based business means it can bypass retailers while at the same time risk being bypassed by the producers.

The foremost role of the Web in tourism distribution is the direct electronic reservation and transactions between tourism product supplier and consumers. Aldridge et al (1997) argues that direct marketing is the name of the game on the Internet, offering both consumers and marketers greater control and lower potential costs of access due to the conveniences of the Net. Because direct channels may be producer-direct or intermediary-direct, the potential for channel conflict will be magnified. In order to assuage channel conflict and price competition between direct-sellers and retailers, both

producers and intermediaries will have to develop augmented product features and unique benefits. For example, direct online booking of airline tickets often carries special benefits not available from travel agents, such as extra frequent-flyer miles; while purchasing an airline ticket from an online travel agency may also benefit from such services as hotel reservations and travel insurance.

Airlines are among the first industry to invest in and develop CRSs and GDSs to exploit the potentials of IT. The Web offers the airlines even greater opportunities in streamlining and shortening the distribution channel. The no-frills or low-cost airlines emerged in the last few years are already heavily relying on the Web to distribute flight tickets directly to customers. The major global airlines have also started to believe that the Internet offers a unique opportunity to drive down costs and restore profitability to the sector which is troubled with financial losses across the globe (e.g., the 266 IATA member airlines as a whole made an accumulated loss of US \$800 million during the first 8 years of the 1990s) (IATA 2000). It is also preparing to operate via mobile phones and interactive television. Major airlines have also started to use the Internet to manage the supply channel and reduce procurement costs. For instance American Airlines, Air France, British Airways, Continental Airlines, Delta Airlines and United Airlines have agreed to jointly create and operate a web site that will handle supply purchases with US\$32 billion a year (CNET News 2000).

The biggest change to tourism distribution brought by the Web could, in the next 5 to 10 years, be the noticeable shrinking of the travel agent sector. Agents are squeezed by both a decreasing market as more and more consumers go online and book directly from airlines and operators and by airlines' declining commission levels. The Association of British Travel Agents (ABTA) believes that the Internet will not cut out the middleman, but it will certainly put their added value under scrutiny. It warns that High

Street travel agents that do not excel in what they do may not survive the competition. Nevertheless, the travel agent sector will not be doomed to extinction. How far and how soon the role of travel agent will diminish in the future is dependent upon how flexible and innovative the travel agents can be and how fast the Web can dominate both business and everyday life (Liu and Jones 1995). The Travel agency will have to reinvent itself to suit the new Internet era by transforming from a travel ticket seller to a travel information manager.

For tour operators, the potential disintermediation has a dual effect. On the one hand, they can be bypassed by the producer as airlines and hotels that directly sell their products to the travel agencies and consumers; on the other, tour operators could benefit from its own direct sell operation by eliminating the travel retailers. It is hard to estimate the full impacts of the two. But one thing is sure to say that the tour operators, more than travel agencies, have a future in the Internet era. This is based on the understanding that tour operators are not purely intermediaries as they do perform some production function in assembling the various parts of tourism products into a marketable package. Through this value-creating activities, tour operators can provide convenience and better value for consumers, by passing on to them some cost savings gained through bulk buying the separate components of the package, than they would otherwise get from the individual tourist product providers. The major tour operators (in the UK) are also "backward" integrated and have their own charter airlines thus major schedule airlines' direct selling is not much as a threat to them as to travel agents.

Promotion

Arguably, the component of the marketing mix being most quickly transformed as a result of Internet usage is promotion. The Internet provides a labor-efficient and cost-effective way of distributing information almost instantaneously to millions of potential

clients in the global markets. Internet promotion combines mass media's reach with the personalization inherent in two-way dialogue -previously only possible in personal selling. It can be used for corporate visibility, brand name recognition, advertising, public relations, corporate sponsorship, direct sales, sales promotion, customer support and technical assistance. There are three main issues in the application of the Internet to tourism promotion.

First, present the promotional information on the company's web site. The Web enables more information to be transmitted to (potentially) more people cheaply, instantly and with multimedia effect. The key to achieve these benefits is a well-designed and maintained web site which is attractive, informative and interactive. Through its multimedia capability, a good web site can and should incorporate information as accurate and detailed as brochures or timetables, photos and graphs as glossy as magazine ads, and videos as entertaining as TV commercials. The site can and supply as much promotional information as possible as there is virtually no capacity constraints or advertising space limits on the Web. By hyper-'inking pages together in an appropriate fashion, the Web marketer can create an ultra-comprehensive brochure to include everything a user wishes to know. For instance, a tourism destination web site may become a 'information mall" which provides the users with all the basic information about it such as the exchange rates, local traditions, weather, what to buy, etc. and, through the hyperlinks to the sites of tourism firms, details of flight schedules, tour prices, park opening times, late offers, and so on. A company web site with email links or even telephone numbers and address will enable users to contact it for further and often more personalized information.

Second, promote the web site itself to increase its exposure and visitation since a company's web site has to compete in the clutter of thousands of other web sites selling

similar products and services. This can be achieved through a number of ways. A memorable Internet address to help user locate it on the Web, usually the company or brand name or a catchy word or phrase. Links "from" other web sites, by registering with search engines and online directories and paying relevant sites for click-through links or banners ads, are particularly important if the company's site is not well known. Links "to" other sites, such as those offer news or entertainment services and those offer complementary products can also make the site more interesting as well as providing more relevant and up-to-date information for the users. Promoting the web site through the traditional media is also important, especially when it was first set up. For example, expedia.co.uk launched a £4 million promotion campaign on British TV and Press recently. The company's web address should also be included on all its media messages "to drive consumers to the Web"⁶.

Third, use the company's web site as a platform for advertising sites or products of other businesses. Through "banners" and banner linked web pages, a company's web site can also generate revenues by becoming an advertising medium for other organizations. Indeed, the effectiveness of the Web as a medium for advertising has already made online advertising a boom business itself.

2.5 Information Technologies in Tourism

2.5.1 E-Tourism

The Internet has provided a new economic environment in which to conduct business. E-commerce is a growing sector and many tourism businesses are involved in developing their internet services including traditional travel agents, tour operators,

⁶ Pardun and Lamb 1999

national tourist offices, airlines, hotels and other accommodation providers and car hire firms. This means of doing business is known as 'etourism', or 'tourism e-business'. The key differences from traditional markets are the speed at which information can be communicated, global accessibility and the minimal costs of establishing a business online.

Some of the suggested benefits of tourism e-business are:

- That it is the most **cost effective** way of communicating with target markets and disseminating information
- It is a **quick and easy** way for the customer to buy travel products
- It offers opportunities for **improvements in customer service** and retention through meeting and promoting individual preferences
- It reduces costs through **increased efficiency** in internal operations and purchasing processes
- It **encourages greater co-operation** amongst traditional competitors through the provision of hypertext links. Links are a cheap, quick way of raising the profile of a new site and getting round the difficulty of up-dating information in house.
- The inclusion of links on tourism websites offers benefits to both the user and the service provider. The service provider can offer a greater range of information on related tourism products without having to enter into contracts with the service providers and the user has access to immediate information and online shopping opportunities.

Possible disadvantages have also been identified. These include:

- Tensions between growing demands for personalized services tailored to the individual's needs and interests and reluctance amongst consumers to release such information over the Internet in case it is misused.
- The preference of many customers to conduct complicated transactions in a face-to-face environment (e.g. high street travel agents).
- Existing travel agent business being superseded, with resultant job losses
- Growing inequality and increased social exclusion for those customers and businesses without access to necessary technology

The development of E-Tourism

E-tourism has only become possible through the spread of information and communication technologies (ICT) and the Internet, which has changed the distribution of tourism sales and information. An Internet-based tourism services sector is developing based on networks that link producers and users. This has resulted in a shift away from traditional supply chains and communication channels (e.g. high street travel agents).

Such technologies have been developing over a number of years. In the 1970s, a travel marketing and distribution system known as **Computer Reservation Systems (CRS)** was introduced. This was an airline database that managed and distributed reservations electronically to remote sales offices and external partners. This allowed customers (travel agents) to make and confirm reservations and allowed all travel businesses to operate flexibly. It offered travel agents increased productivity and competitive advantage as thereafter they were able to offer the consumer quick access to the most

up-to-date information and indeed access to CRS is of continuing importance to online travel agents. In the 1980s, geographical coverage was expanded via **Global Distribution Services**.

This has been developed since the **Internet**, offering consumers access to easily comparable information. All three systems operate both independently and jointly.

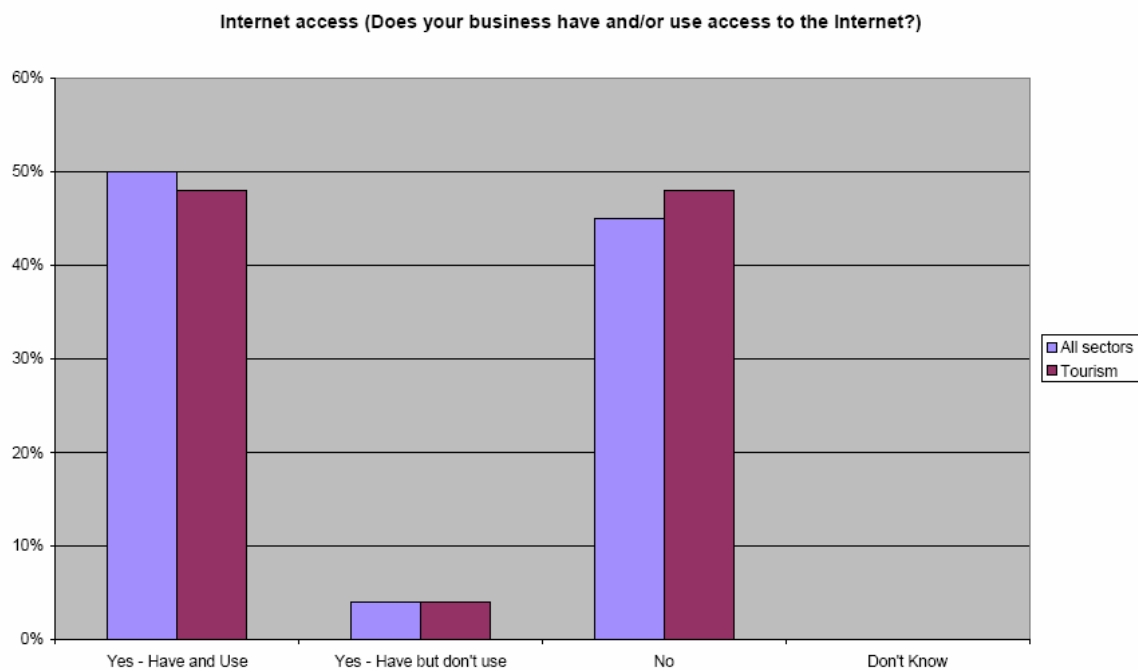
Impact of E-Tourism

It has been argued that the challenges and issues faced by the industry include:

- Low / varied level of ICT literacy amongst some micro businesses and SMEs
- Degree of access amongst SMEs to technology
- Extent to which SMEs feel Government should be responsible for providing a national website with links to information about their business
- Level of responsibility each SME should have for their own marketing and the development of their own website
- Opportunities / disadvantages of Broadband – possibility of paying for use of broadband to reduce Internet congestion.
- Collapse of dot coms in 1999-2000 led to significant losses for venture capitalists.

As a consequence investors are more cautious of business plans based on costly marketing campaigns aimed at quickly raising the company's global profile. Instead it has been suggested that the future of many dot. Coms lies in the development of 'clicks and mortar'/'bricks and clicks' businesses, which benefit from the advantage of both internet and traditional business.

The following tables show internet access and related issues, e.g. access to ICT and training problems.



2.6 Tourism Systems

A computer reservations system (CRS) is a computerized system used to store and retrieve information and conduct transactions related to air travel. Originally designed and operated by airlines, CRSes were later extended for the use of travel agents; major CRS operations that book and sell tickets for multiple airlines are known as global distribution systems (GDS). Airlines have divested most of their direct holdings to dedicated GDS companies, who make their systems accessible to consumers through Internet gateways. Modern GDSes typically allow users to book hotel rooms and rental cars as well as airline tickets.

Major systems

Name	Created by	Also used by	US Market share*
Amadeus	<ul style="list-style-type: none"> • Air France • Iberia • Lufthansa • SAS 	<ul style="list-style-type: none"> • Online travel agencies including <ul style="list-style-type: none"> ○ ebookers ○ Expedia ○ Opodo ○ Flights • Over 500 individual airlines • Over 120 individual airline websites • Over 90,000 travel agencies • Over 76,000 hotels 	9.2%
SABRE	<ul style="list-style-type: none"> • American Airlines • All Nippon Airways • Cathay Pacific Airways • China Airlines • Singapore Airlines 	<ul style="list-style-type: none"> • Expedia • Travelocity • Godard • Over 20 individual airlines 	44.7%
Galileo	<ul style="list-style-type: none"> • Aer Lingus • Air Canada • Alitalia • Swissair 	<ul style="list-style-type: none"> • CheapTickets • ebookers 	19.7%

	<ul style="list-style-type: none"> • TAP • United Airlines 		
Worldspan	<ul style="list-style-type: none"> • Delta • Northwest 	<ul style="list-style-type: none"> • Orbitz • Hotwire • Priceline 	26.5%
Patheo	<ul style="list-style-type: none"> • KLM • Finnair • Lufthansa • VA 	<ul style="list-style-type: none"> • Online Travel agencies including <ul style="list-style-type: none"> ○ Flights ○ Kayak ○ American Express 	
Abacus	<ul style="list-style-type: none"> • SABRE • All Nippon Airways • Cathay Pacific Airways • China Airlines • EVA Airways • Garuda Indonesia • Dragonair • Philippine Airlines • Malaysia Airlines • Royal Brunei 	<ul style="list-style-type: none"> • Online travel agencies including • Over 450 individual airlines • Over 25 countries in Asia Pacific • Over 80,000 hotels 	

	Airlines <ul style="list-style-type: none"> • SilkAir • Singapore Airlines 		
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2.6.1 Classification

Global Distribution Systems in Present Times



October 2002 - The travel marketplace is a global arena where millions of buyers (travel agents and the public) and sellers (hotels, airlines, car rental companies, etc.) work together to exchange travel services. Among the “shelves” on which buyers search for travel services are world’s global distribution systems and the Internet distribution systems. These systems have become electronic supermarkets linking buyers to sellers and allowing reservations to be made quickly and easily. Nowadays, more travel is sold over the Internet than any other consumer product. The Internet is a perfect medium for selling travel as it brings a vast network of suppliers and a widely dispersed customer pool together into a centralized market place. Nearly 37 million of America’s more than 162-million active Internet users have already purchased travel online. Online travel bookings exceeded \$23 billion in 2001, and are expected to reach \$63 billion by 2005.

However, any discussion of the Internet as a distribution channel for travel needs to start with an understanding of the existing electronic distribution infrastructure, the Global Distribution System (GDS). The airline industry created the first GDS in the 1960s as a way to keep track of flight schedules, availability, and prices. Although accused of being “dinosaurs” due to their use of legacy system technology, the GDSs were actually among the first e-commerce companies in the world facilitating B-2-B electronic commerce as early as the mid 1970s, when SABRE (owned by American Airline) and Apollo (United) began installing their propriety internal reservations systems in travel agencies. Prior to this, travel agents spent an inordinate amount of time manually entering reservations. The airlines realized that by automating the reservation process for travel agents, they could make the travel agents more productive and essentially turn into an extension of the airline’s sales force. It is these original, legacy GDSs that today provide the backbone to the Internet travel distribution system.

There are currently four major GDS systems:

1. Amadeus
2. Galileo
3. Sabre
4. Worldspan

In addition, there are several smaller or regional GDSs, including SITA’s Sahara, Infi (Japan), Axess (Japan), Tapas (Korea), Fantasia (South Pacific), and Abacus (Asia/Pacific) that serve interests or specific regions or countries. In this article, we will provide a closer look at the four major GDSs.

Amadeus



Founded in 1987 by Air France, Iberia, Lufthansa, and SAS,

Amadeus is the youngest of the four GDS companies.

Amadeus is a leading global distribution system and technology provider serving the marketing, sales, and distribution needs of the world's travel and tourism industries. Its comprehensive data network and database, among the largest of their kind in Europe, serve more than 57,000 travel agency locations and more than 10,500 airline sales offices in some 200 markets worldwide. The system can also provide access to approximately 58,000 hotels and 50 car rental companies serving some 24,000 locations, as well as other provider groups, including ferry, rail, cruise, insurance, and tour operators.

Upon its inception, Air France, Iberia, Lufthansa and SAS held equal shares of Amadeus Global Travel Distribution S.A. Shortly after the formation of the company, however, SAS sold its shares to Amadeus Data Processing. The three founder airline shareholders currently hold 59.92% of the company: Air France (23.36%), Iberia (18.28%), and Lufthansa (18.28%). Remaining shares are held publicly.

As the youngest of the four GDS companies, Amadeus has done remarkably well during its short tenure. Yet, in many ways, the company remains an anomaly. Amadeus has the greatest number of travel agency locations with the highest productivity per terminal in the world, yet its booking share is Number 3, and its revenues are dwarfed by Sabre and, to a lesser degree, by Galileo. While the company is Number 1 in locations worldwide, serving the greatest number of countries, it provides the fewest U.S. destinations of the top four GDSs. As with its competitors, the future for Amadeus will continue to be linked to the technological and structural changes that are revolutionizing

the travel industry. Amadeus appears to be adapting well (albeit cautiously) to the shift of business to the Internet. Having acquired e-Travel, Inc. from Oracle Corporation in July of 2001, Amadeus now has a new business unit dedicated to delivering solutions to e-commerce players worldwide. The e-Travel solutions integrate all components of a managed travel program into a single Internet-based service that enables travelers to book air, car, hotel, and rail services, all within corporate guidelines. With its strong company infrastructure worldwide, impressive product set, and growing customer base, Amadeus is one of the most significant players in shaping the future of the GDS.

Galileo International



Galileo International was founded in 1993 by 11 major North American and European airlines: Aer Lingus, Air Canada, Alitalia, Austrian Airlines, British Airways, KLM Royal Dutch Airlines, Olympic Airlines, Swissair, TAP Air Portugal, United Airlines, and US Airways. It is a major player in the GDS business throughout the world: North America, Europe, the Middle East, Africa, and the Asia/Pacific region. Galileo International is a diversified, global technology leader. Its core business is providing electronic global distribution services for the travel industry through its computerized reservation systems, leading-edge products and innovative Internet-based solutions. Galileo is a value-added distributor of travel inventory dedicated to supporting its travel agency and corporate customers and, through them, expanding traveler choice.

In 1997, Galileo International became a publicly traded company, listed on the New York and Chicago Stock Exchanges. In October of 2001, Cendant Corporation acquired Galileo International for approximately \$1.8 billion in common stock and cash.

Currently, the company is represented in 116 countries, and serves travel agencies at approximately 45,000 locations. Other travel suppliers include 500 airlines, 227 hotel companies, 33 car rental companies, and 368 tour operators.

Galileo's competitive strengths include market share, well-balanced and global presence, relationships with diverse groups of travel vendors, technologically advanced information systems, highly skilled personnel, and a stable product line. Compared to other GDS companies, Galileo is a cautious follower when it comes to technology. However, in response to the growing demand of web-based travel, the company has established successful relationships with entities such as Go, UK's best low-cost airline; subsidiaries such as Highwire, Inc., providing Internet-based tools and services to the corporate travel market; and Sheperd Systems, an industry leader in the provision of sales and marketing intelligence systems and services within the travel industry. Additionally, Galileo has sponsored membership to the THOR Worldwide Negotiated Hotel Rates Program, and has a state-of-the-art development center supplying information and systems support to travel agencies operating more than 178,000 computer terminals, all of which are linked to the Galileo's Data Center. Galileo's primary weakness, its singular focus on the distribution side of the business, is also its perceived strength. Based on its competitive strengths, Galileo is pursuing a strategy that includes expanding its global distribution, strengthening customer loyalty, leveraging technology, and capitalizing on opportunities created by increasing Internet use. Galileo sees the GDS industry as having the ability and potential to provide electronic distribution and many components of e-commerce to other industries, and is utilizing its strengths to provide expanding services to its growing customer base.

Sabre



For more than 40 years, Sabre has been developing innovations and transforming the business of travel.

From the original Sabre computer reservations system in the 1960s, to advanced airline yield management systems in the 1980s, to leading travel web sites today, Sabre technology has traveled through time, around the world, and has touched all points of the travel industry. In July of 1996, Sabre became a separate legal entity of AMR (parent company of American Airlines), followed by a successful initial public offering in October in which AMR released approximately 18% of its shares to be publicly traded. Sabre, represented in 45 countries, is a leading provider of technology for the travel industry and provides innovative products that enable travel commerce and services, and enhance airline/supplier operations.

Headquartered in Southlake, Texas, Sabre connects more than 60,000 travel agency locations around the world, providing content from approximately 400 airlines, 55,000 hotel properties, 52 car rental companies, 9 cruise lines, 33 railroads, and 229 tour operators. In addition to being one of the leading GDS companies, Sabre also provides a broad range of products and services that enhance travel agency operations and their ability to serve the traveler.

Sabre-connected travel agencies use Sabre web-based technologies and low-fare finding solutions to create new sales opportunities, drive operational efficiencies, and improve customer service. Among the company's recent innovations is Sabre Virtually There, a personalized web site service that automatically gives travelers up-to-the-minute details about itineraries, while also providing a wealth of information about their destinations. Sabre owns Travelocity.com, the industry's leading online consumer

travel web site. In 2001, Travelocity.com's 32 million members used the site, generating more than \$300 million in revenues. Travelocity.com offers innovative technologies that help consumers find the best air, car, hotel, and vacation reservations. Sabre also owns Get There, a provider of web-based corporate travel procurement, including the purchase of air, hotel, car, and meeting planning services. Customers include more than 800 leading corporations.

Sabre's competitive strengths include market position, global reach, stable product line, diversification of revenue streams, and intellectual capital. The Sabre business model is a strong one, and continues to make significant progress in advancing both its electronic travel distribution and its information technology solutions businesses. Revenues have been growing steadily, and the company has embarked on a strategy that fully embraces diversification of its customer base and revenue streams. Sabre is considered to be one of the most significant and competitive GDSs due to the fact that it anticipates and takes advantage of the changes in the information economy and develop innovative practices, leveraging both human resources and technology systems.

Worldspan



Founded February 7, 1990, Worldspan was originally owned by affiliates of Delta Air Lines, Inc., Northwest Airlines, and Trans World Airlines, Inc. It is currently owned by affiliates of Delta Air Lines, Inc. (40%), Northwest Airlines (34%), and American Airlines, Inc. (26%). Since its 1995 advance into the world of Internet technology for the travel industry, Worldspan has successfully developed the strategies, solutions, and services to ensure the company's long-term success in the new web-based world of travel distribution. Worldspan provides worldwide electronic distribution of travel

information, Internet products and connectivity, and e-commerce capabilities for travel agencies, travel service providers, and corporations. Worldspan currently serves 20,021 travel agencies in nearly 90 countries and territories. Headquartered in Atlanta, Georgia, Worldspan connects approximately 421 airlines, 210 hotel companies, 40 car rental companies, 39 tour and vacation operators, and 44 special travel service suppliers.

To escalate the delivery of web-based technologies and services to its customers; Worldspan has forged a number of new partnerships and equity agreements with leading travel technology companies. Resulting technologies, joint developments, and an expanded realm of solutions and Internet travel products are enabling the company and its customers to participate in a spectrum of e-business opportunities. Some of the successful partnerships have been with companies such as Datalex, a leading provider of e-business infrastructure and solutions for the global travel industry; Digital Travel, a global online tour provider; Kinetics, Inc., developer of technology and solutions for the airline industry; OpenTable.com, an Internet-enabled restaurant management tools system; and Viator, a major provider of Internet-based content, technology, and distribution services, including data management, hosting, and e-commerce. Additionally, in 2001, Orbitz LLC was launched on the Internet, using Worldspan as its Internet Booking Engine, and in 2002, the launch of Worldspan ePricingSM made Worldspan the first GDS to introduce a revolutionary new multi-server-based technology, offering an unprecedented selection of pricing options to all of Worldspan's customers.

Worldspan has a legacy of industry firsts that are not well known. The company therefore has an opportunity to raise the industry's awareness of its accomplishments and more importantly, its future strategy. Worldspan continues to look at benefits of

creating its own consumer brand and has been partnering with different companies to expand the services that it can provide to its customer base. Worldspan believes in focusing on its core competencies, and is determined to be perceived as a distribution facilitator across all channels. It is increasingly getting a clearer sense of its capabilities and building its appetite for technical and commercial challenges. Through the company's revolutionary e-world ideas, offerings, and services, along with its agility and eagerness in meeting the needs of the travel distribution market on a global scale, Worldspan and its customers are transforming the way travel is distributed, bought, and sold.

2.7 Impact of the use on technological tools in Tourism Industry

2.7.1 World

Tourism, as other economic sectors, cannot remain unaware to the revolution that the development of Information and Communication Technologies (TIC's) is causing. The advantages that these technologies offer regarding the increment of the competitiveness and functionality are unquestionable in the tourist sector.

- They significantly intensify the competitive margin 79%
- They perfect the information 77%
- They improve the external communications 65%
- They improve the expectations of administration computers 63%
- They perfect the process of decisions making 61%

Impact of the New Information and Communication Technologies on Tourism

Source: WTO, 1998.

The first organization in developing the technology and tourism topic was the World Tourism Organization (WTO), in 1988, with the book titled "Guidelines for the transfer of new technologies in the tourism sector", which is about the tourist development and the new technologies; their effects in the countries in development and the politics and strategic options for the correct acquisition of new technologies in the field of the tourism.

CHAPTER III

THEORETICAL FRAME

3.1 DEFINITION

3.1.1 Objectives Approach

Before to develop a Datawarehouse, is very important to create a strategy that can be applied to the needs of the users.

All this information will be necessary to plan all the objectives that will develop.

The questions that we have to use are:

How is the auditory?

The auditory that will use this DW mainly are the Account Agents of a Tourism Agency or a tourist in general.

Which is the scope?

The tourist client will review and manipulate all the information (geography, weather, services, activities, and category) about 100 tourist places in Ecuador.

Between the main objectives of this DW are:

- Order the tourist information, in forms that can be used by any Travel Agency or Tourist.
- Create information cubes, divided by the data that is used by each one.
- Define the business model for this application

- Create the DW using the tool DISCOVERER ADMINISTRATOR
- Develop functionality test of the DW using DISCOVERER DESKTOP

It necessary to clarify that this Datawarehouse use Oracle 10g tools and their Discoverer applications. Therefore this platform and components like Dada base, Rolap model and OLTP can be used and migrate to another tools; but the cube cannot be use in another tools because Oracle is proprietor of this component. In case of need this component is necessary to use another tools from the beginning of the development of this DW that allow using all the components in similar programs or licensing.

3.2 TOOLS DESCRIPTION

3.2.1 Oracle 10g

Oracle Database 10g is the first database designed for grid computing, the most flexible and cost-effective way to manage enterprise information. It cuts costs of management while providing the highest possible quality of service.

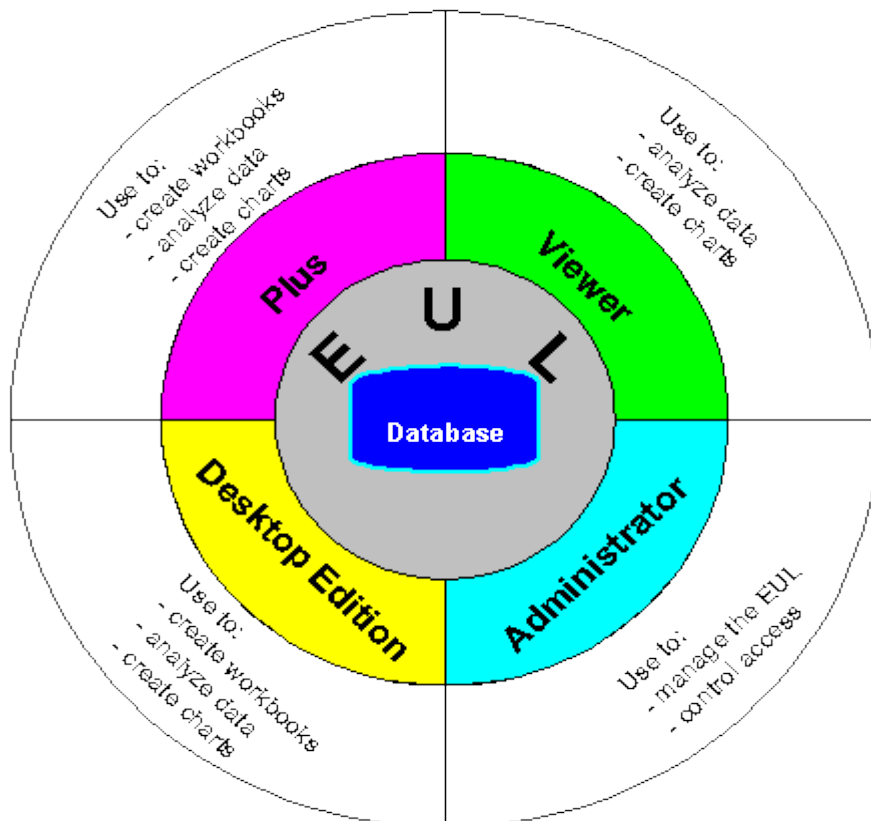
In addition to providing numerous quality and performance enhancements, Oracle Database 10g significantly reduces the costs of managing the IT environment, with a simplified install, greatly reduced configuration and management requirements, and automatic performance diagnosis and SQL tuning

3.2.2 Oracle Discoverer

OracleAS Discoverer is a business intelligence tool for analyzing data and is a key component of Oracle Application Server (OracleAS). Discoverer provides an integrated business intelligence solution comprising intuitive ad-hoc query, reporting, analysis, and Web-publishing functionality. These tools enable non-technical users to gain immediate access to information from data marts, data warehouses, and online transaction processing systems. OracleAS Discoverer integrates seamlessly with OracleAS Portal, enabling rapid deployment of Discoverer workbooks and worksheets to Web portals.

Oracle Discoverer is a business intelligence toolset that comprises:

- Oracle9i Discoverer Administrator
- Oracle9iAS Discoverer Plus
- Oracle9iAS Discoverer Viewer
- Oracle Discoverer Desktop



3.2.2.1 Discoverer Components

Before design and implement a Discoverer system, it is necessary to become familiar with some fundamental Discoverer concepts.

End User Layer

The End User Layer (EUL) insulates Discoverer end users from the complexity and physical structure of the database. The EUL provides an intuitive, business-focused view of the database that you can tailor to suit each Discoverer end user or user group. The EUL enables Discoverer end users to focus on business issues instead of data access issues. It helps Discoverer end users produce queries by generating SQL and provides a rich set of default settings to aid report building.

The metalayer structure of the EUL preserves the data integrity of the database. Whatever the Discoverer manager or the Discoverer end user does with Discoverer, it affects only the metadata in the EUL and not the database.

The EUL is a collection of approximately 50 tables in the database. These are the only tables that can be modified through Discoverer Administrator. Business areas are defined in Discoverer Administrator using the EUL database tables. Discoverer provides read-only access to the application database.

Business areas

Typically, no single user (or group of users) is interested in all the information in the database. The users are much more likely to be interested in a subset of the information that is connected in some way to the job that they do. Using Discoverer Administrator, can create one or more business areas as containers of related information.

Having created a business area, then load the database tables containing the related information into that business area.

Folders and Items

The tables and views that are load into a business area are presented to Discoverer end users as folders. The columns within a table or view are presented as items.

Often the database tables and columns have names that users will not find meaningful. Using Discoverer Administrator, it is possible to make the names of folders and items more helpful than the names of the tables and columns on which they are based.

The folders in a business area do not have to be based directly on database tables or views. It can be create complex folders that contain items based on columns from multiple tables or views. And also create custom folders based on SQL statements

Similarly, the items in a business area do not have to be based directly on columns. It can create calculated items that perform calculations on several columns, or that make use of the analytic functions available within the Oracle database.

Workbooks and Worksheets

Oracle Discoverer end users analyze information by including items in worksheets and using Discoverer's data analysis and charting wizards to find the information they are interested in. Discoverer worksheets are grouped into workbooks. A workbook can be stored on the file system or in the database.

In some cases, it will want to restrict Discoverer end users to analyzing information in worksheets that have been created for them. In other situations, it will be more appropriate to allow end users to create their own worksheets. Discoverer Administrator

enables to user to decide which end users can create their own workbooks, and which end users can only use workbooks that have been created for them.

Hierarchies and Drills

Hierarchies are logical relationships between items that enable users to drill up and down to view information in more or less detail. To analyze information effectively, Discoverer end users will want to:

- drill down to see more detail about a particular piece of information (e.g. if the sales total for a specific region is disappointing, an end user will typically want to drill into the region's sales total figure to see which cities within that region have under-performed)
- drill up to see how the detail data contributes to information at a higher level (e.g. when looking at the sales figure for a particular city, an end user will typically want to drill up to see the total sales figure for the region)

When the user load tables into a business area, Discoverer automatically creates default date hierarchies for date items. Often the user will want to create your own hierarchies for other items as well.

Summary Folders

Summary folders are a representation of queried data that has been saved for reuse.

User creates summary folders with Discoverer Administrator to improve query response time for end users. The response time of a query is improved because the query accesses pre-aggregated and pre-joined data rather than accessing the database tables. User can also direct Discoverer to use summary folders based on tables containing summary data

that have been created by another application. These tables are known as external summary tables.

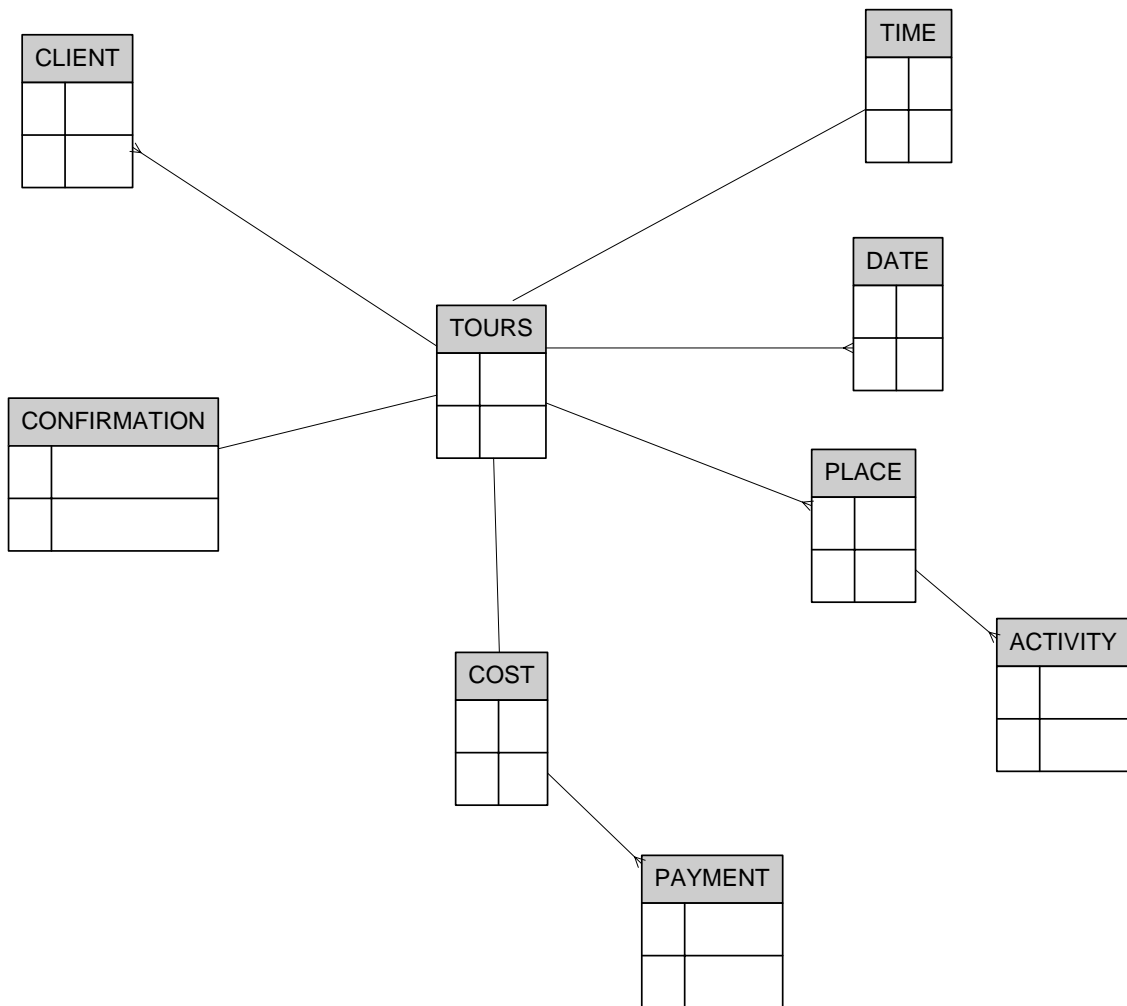
3.3 MODELING

3.3.1 Development of Architecture functional prototype

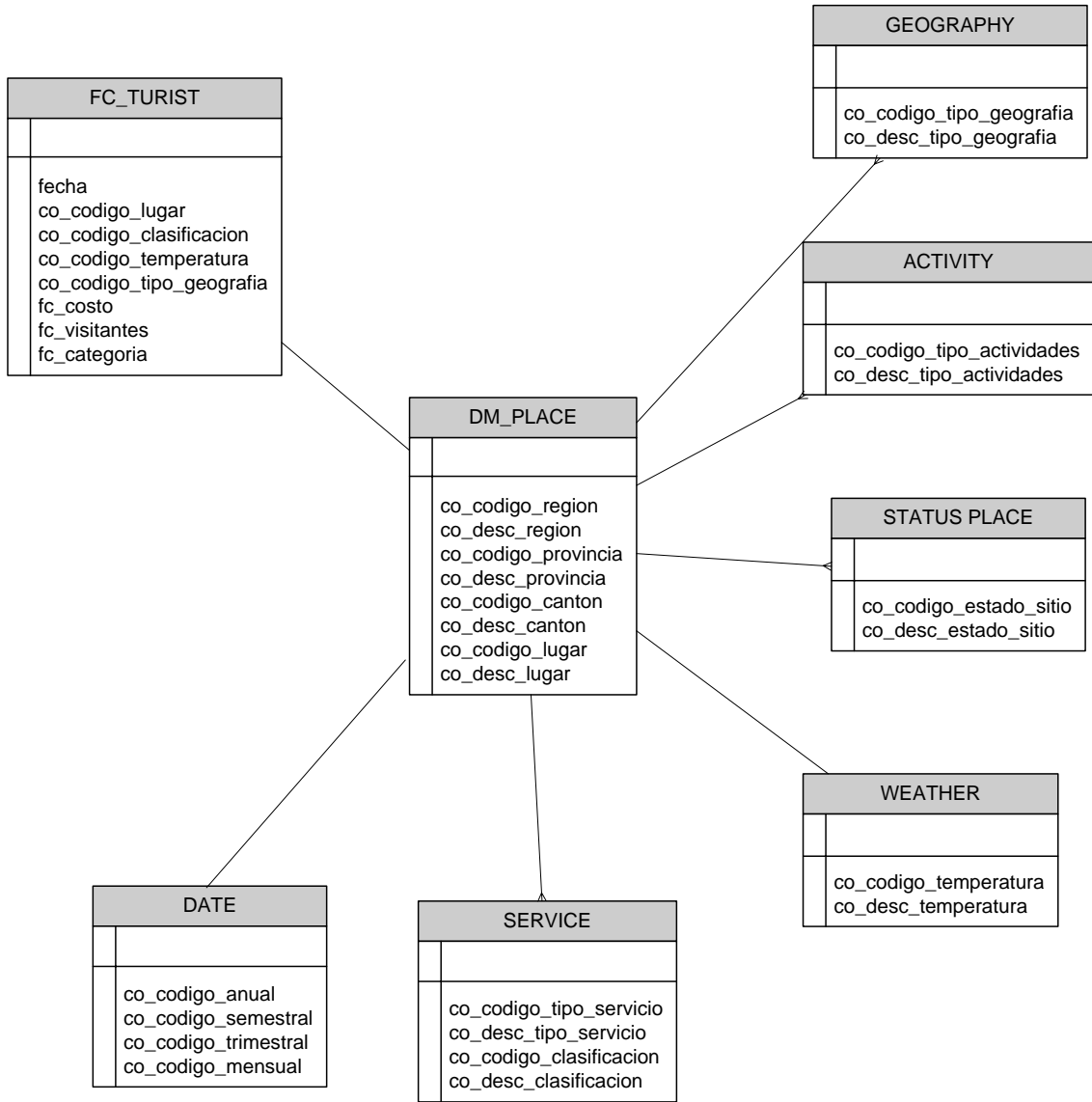
TOURIST MODEL						
TOURIST ANALYSIS						
Place	Service	Activities	Weather	Geography	Date	
Region	Service Type	Type	Temperature	Geography Type	Anual	cost
Province	Clasiffication				Semestral	Visitantes
Area					Trimestral	Category
Place					Monthly	

3.3.2 OLTP Model

Fig. 3.9: Entity-Relation Model



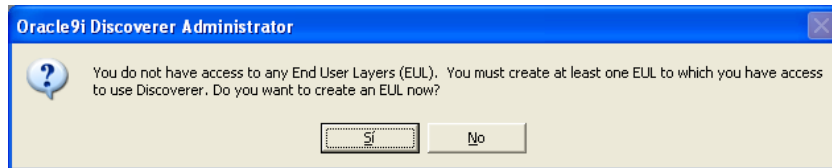
3.3.3 ROLAP Model



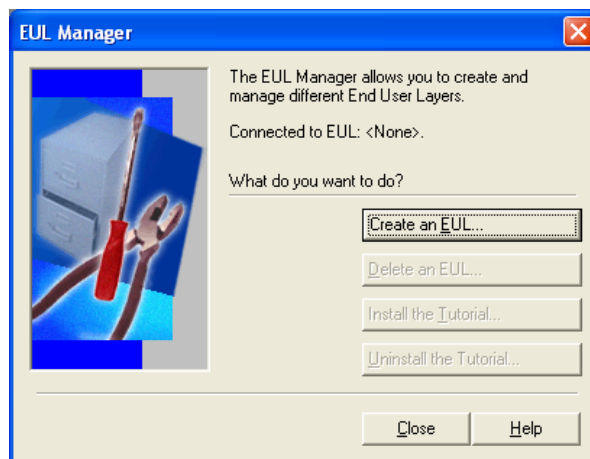
3.4 Components Creation

3.4.1 Creation Procedures in Discoverer Administrator

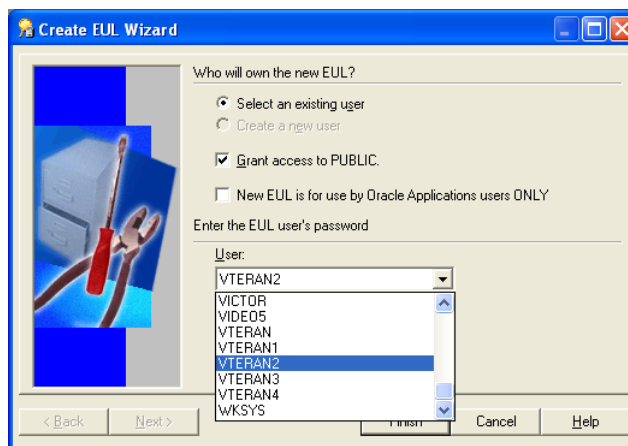
EUL Creation



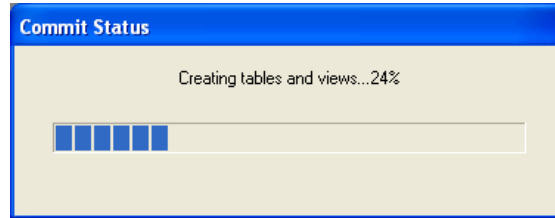
Show the confirmation in case that the EUL is not created.



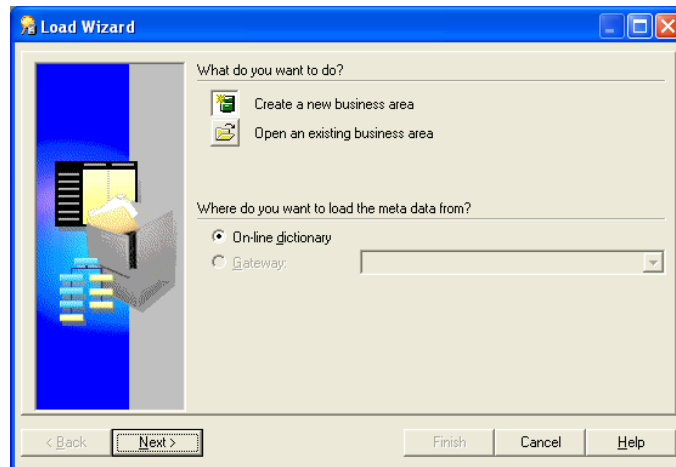
Active the wizard to create a EUL



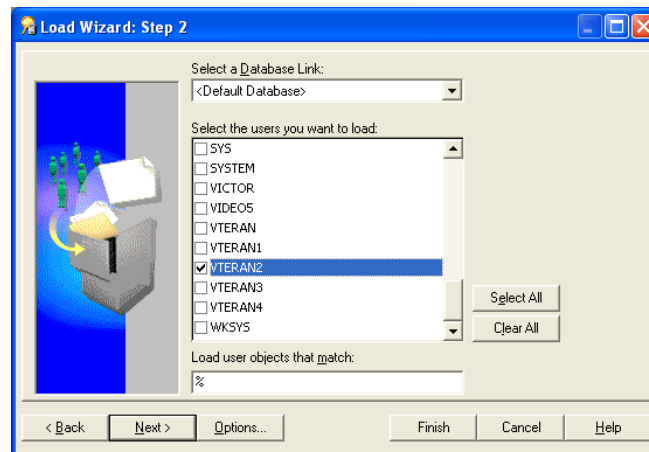
By default the wizard allow choosing a user in existence in DBMS or it is possible to create one with password options.



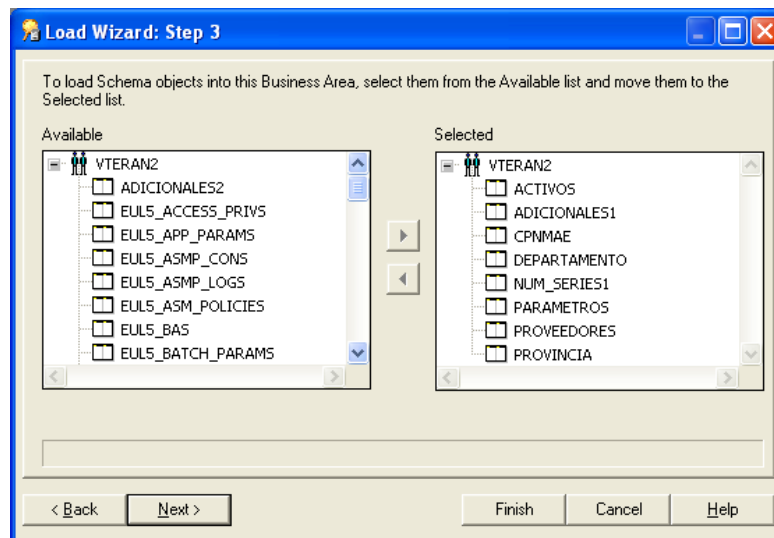
Business Area Creation



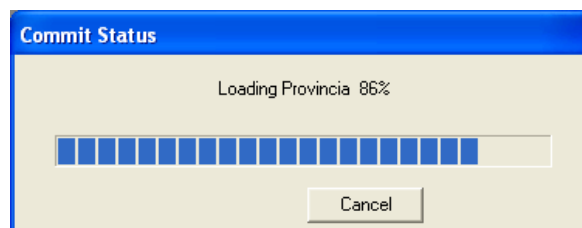
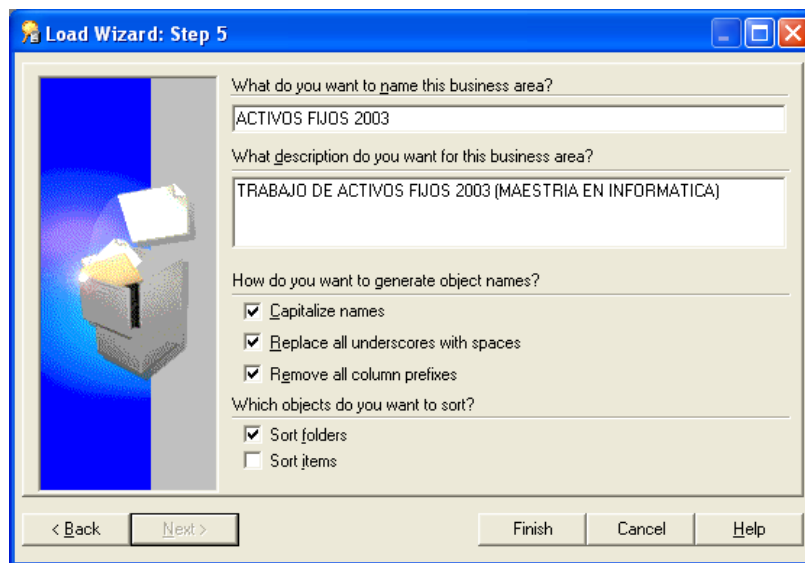
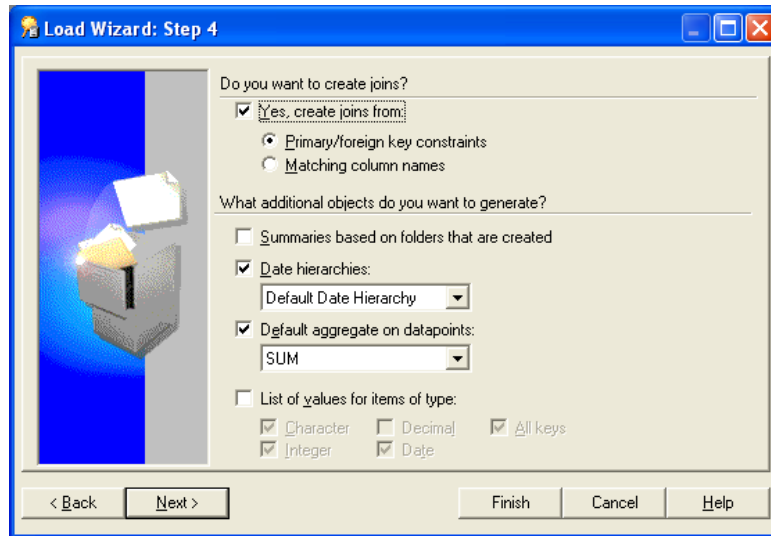
In this step, the user choose the objects that are going to be use in the EUL, to administrate de Business area, it is necessary to get the access permissions to choose the tables or objects



The user of the EUL creates the folders that contain the tables that will be use.



It is necessary to get a name to Area Business

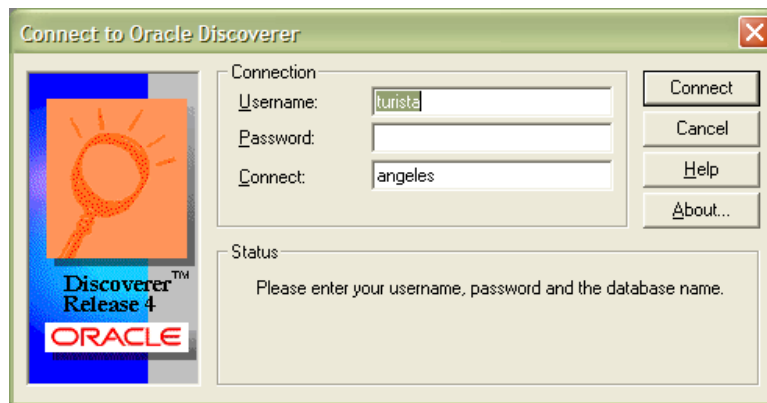


And the wizard finishes saving the entire configuration.

3.4.2 Creation Procedures in Discoverer Desktop

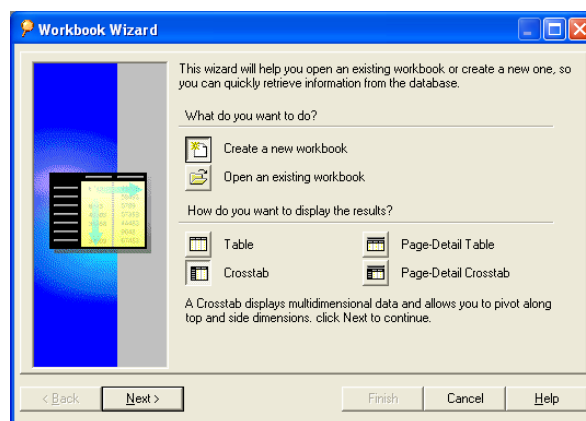
Workbooks y Worksheets Creation

First at all is necessary to establish a connection between databases and the previous EUL created. In this case the user is turista and the EUL is angeles

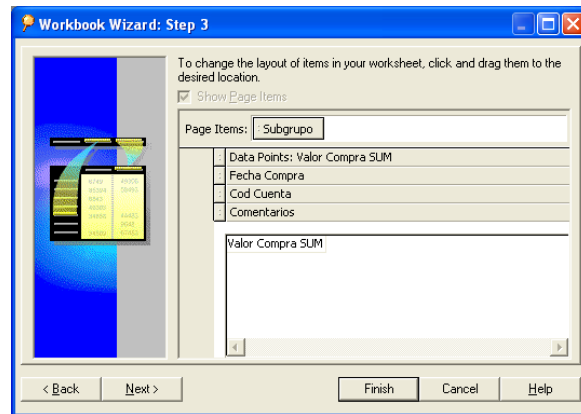
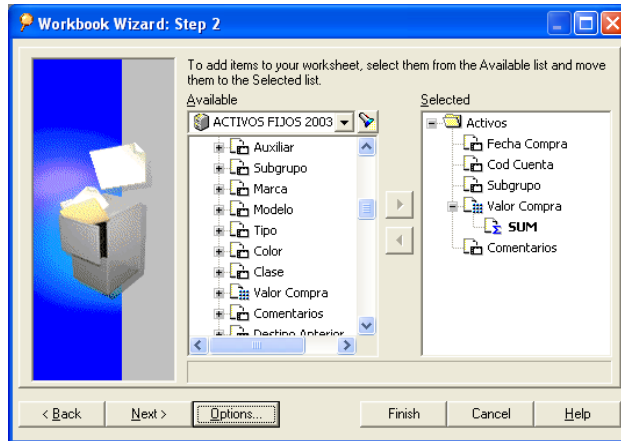


The wizard allow to create or to open a workbook

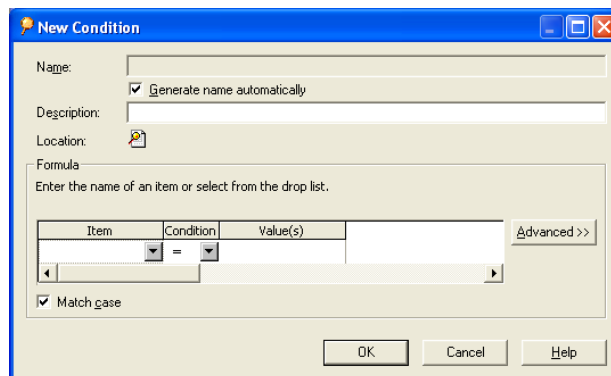
Workbook Creation



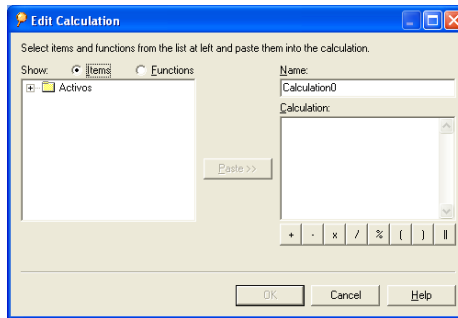
The next step is to choose the business area components created with Discoverer Administrator.



Also by the wizard the user can configure the conditions that allow to order in a better way the information that will be used.

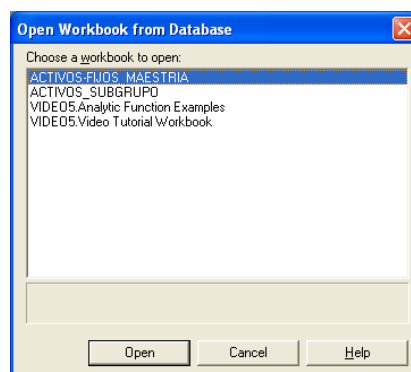
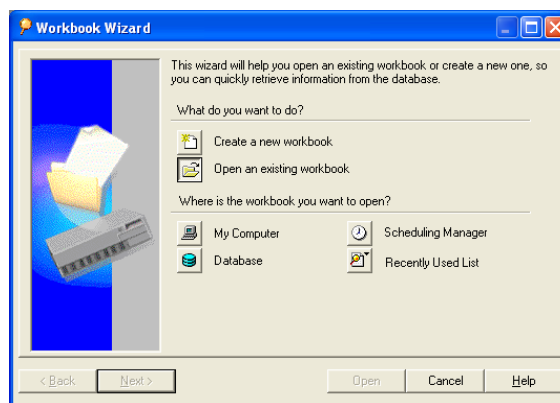


If is necessary to calculate information, the wizard allow to incorporate Oracle functions



Open an existing workbook

It allows opening from a EUL table or from an existing archive saved in the same computer



3.4.3 Scripts Creation

All the creation of the components is by SQL script that is described below

User Creation

The DW will use 2 users:

- *DW*: User in which will be save all the DW components inside the Angeles Base

```
Create user dw identified by dw default tablespace user temporary tablespace temp;
```

- *TURISTA*: User that will administrate the tourist information.

```
Create user turista identified by turista default tablespace user temporary tablespace temp;
```

Tablespace Creation:

By administration, there are 2 tablespaces:

- *T_DATOS*: It saves all the dimension data with the respective information.
- *T_INDICES*: It saves the index data created in each object of DW

Dimension Creation:

Dimensión (*ett_dimension2.sql*): in this dimension is save all the information from the Tourist User y the tables like: place, service, activity, weather and geography

```

create table dm_lugar
(
co_codigo_region          varchar2(10)          not null,
co_desc_region            varchar2(100)         not null,
co_codigo_provincia       varchar2(10)          not null,
co_desc_provincia         varchar2(100)         not null,
co_codigo_canton          varchar2(10)          not null,
co_desc_canton            varchar2(100)         not null,
co_codigo_lugar           varchar2(10)          not null,
co_desc_lugar             varchar2(100)         not null
)
tablespace t_datos
/

create table servicio
(
co_codigo_tipo_servicio   varchar2(10)          not null,
co_desc_tipo_servicio     varchar2(100)         not null,
co_codigo_clasificacion   varchar2(10)          not null,
co_desc_clasificacion     varchar2(100)         not null
)
tablespace t_datos
/

create table actividades
(
co_codigo_tipo_actividades varchar2(10)          not null,
co_desc_tipo_actividades   varchar2(100)         not null
)

```

Fact table Creation:

For this application there is one Fact Fc_turista:

```
create table fc_turista
(
fecha                date                not null,
co_codigo_lugar      varchar2(10)        not null,
co_codigo_clasificacion  varchar2(10)        not null,
co_codigo_tipo_actividad  varchar2(10)        not null,
co_codigo_nacionalidad  varchar2(10)        not null,
```

Synonyms Creation:

```
create public synonym DM_SITIOTURISTICO for dw.DM_SITIOTURISTICO;
create public synonym DM_ESTADOSITIO for dw.DM_ESTADOSITIO;
create public synonym FC_ADMTURISMO for dw.FC_ADMTURISMO;
create public synonym DM_LUGAR for dw.DM_LUGAR;
create public synonym DM_SERVICIO for dw.DM_SERVICIO;
create public synonym DM_ACTIVIDADES for dw.DM_ACTIVIDADES;
```

Index Creation :

```

create index i_sitioturistico_sitio on dm_sitioturistico
(co_codigo_sitio) tablespace t_indices;

create index i_sitioturistico_tiposervicio on dm_sitioturistico
(co_codigo_tipo_servicio) tablespace t_indices;

create index i_sitioturistico_servicio on dm_sitioturistico
(co_codigo_servicio) tablespace t_indices;

create index i_sitioturistico_categoria on dm_sitioturistico
(co_codigo_categoria) tablespace t_indices;

create index i_estadositio_estado_sitio on dm_estadositio
(co_codigo_estado_sitio) tablespace t_indices;

create index i_lugar_region on dm_lugar(co_codigo_region)
tablespace t_indices;

create index i_lugar_provincia on dm_lugar(co_codigo_provincia)
tablespace t_indices;

create index i_lugar_canton on dm_lugar(co_codigo_canton)
tablespace t_indices;

create index i_servicio_tipo_servicio on dm_servicio
(co_codigo_tipo_servicio) tablespace t_indices;

create index i_servicio_clasificacion on dm_servicio
(co_codigo_clasificacion) tablespace t_indices;

create index i_actividades_tipo_actividades on dm_actividades
(co_codigo_tipo_actividades) tablespace t_indices;

create index i_nacionalidad_continente on dm_nacionalidad
(co_codigo_continente) tablespace t_indices;

create index i_nacionalidad_pais on dm_nacionalidad
(co_codigo_pais) tablespace t_indices;

create index i_nacionalidad_nacionalidad on dm_nacionalidad
(co_codigo_nacionalidad) tablespace t_indices;

create index i_clima_temperatura on dm_clima
(co_codigo_temperatura) tablespace t_indices;

create index i_geografia_tipo_geografia on dm_geografia
(co_codigo_tipo_geografia) tablespace t_indices;

create unique index i_fc_admturismo_categoria on fc_admturismo
(fecha,co_codigo_categoria,co_codigo_lugar,co_codigo_motivo,co_codigo_estado_sitio) tablespace t_indices;

create unique index i_fc_turista_lugar on fc_turista
(fecha,co_codigo_lugar,co_codigo_clasificacion,co_codigo_tipo_actividad,co_codigo_nacionalidad,co_codigo_temperatura,co_codigo_tipo_geografia)
tablespace t_indices;
commit;

```

Grants Permission Creation:

```
grant all on DM_SITIOTURISTICO to public;  
  
grant all on DM_ESTADOSITIO to public;  
  
grant all on DM_LUGAR to public;  
  
grant all on DM_SERVICIO to public;  
  
grant all on DM_ACTIVIDADES to public;
```

3.5 Implementation

3.5.1 Initial Information Load and validations

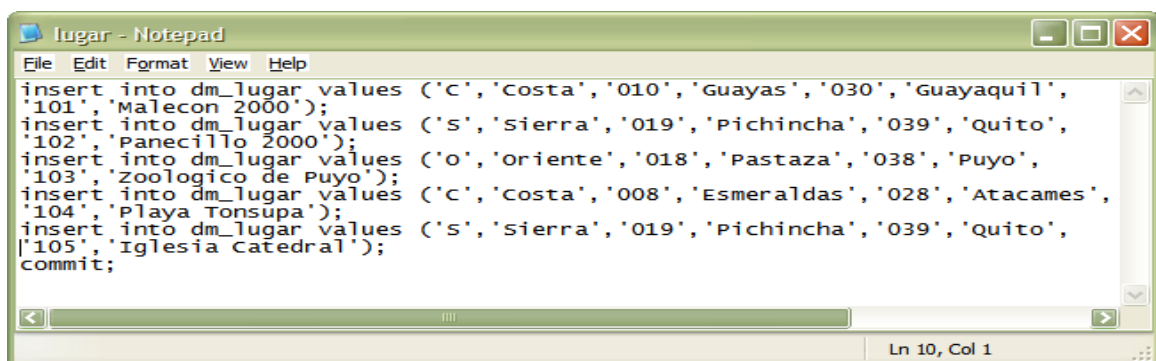
The information was load by SQL sentences, written in a text file con .sql extension

Using all the information get from de interview of the 100 best tourist places from Ecuador

Each file can be update after a period by the text file

Below an example of each archive. Because there too much to show all of them

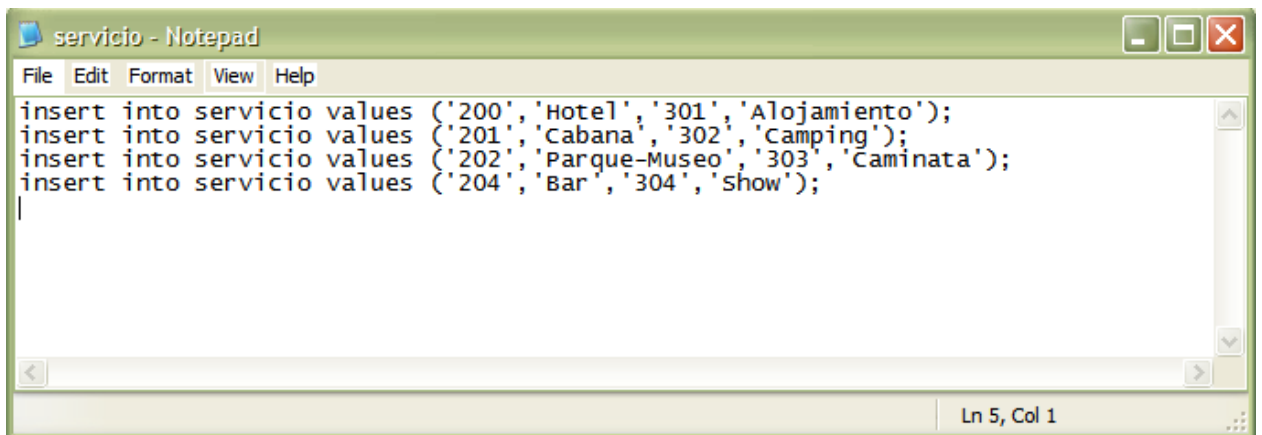
Place



```
lugar - Notepad  
File Edit Format View Help  
insert into dm_lugar values ('C','Costa','010','Guayas','030','Guayaquil',  
'101','Malecon 2000');  
insert into dm_lugar values ('S','Sierra','019','Pichincha','039','Quito',  
'102','Panecillo 2000');  
insert into dm_lugar values ('O','Oriente','018','Pastaza','038','Puyo',  
'103','Zoologico de Puyo');  
insert into dm_lugar values ('C','Costa','008','Esmeraldas','028','Atacames',  
'104','Playa Tonsupa');  
insert into dm_lugar values ('S','Sierra','019','Pichincha','039','Quito',  
'105','Iglesia Catedral');  
commit;
```

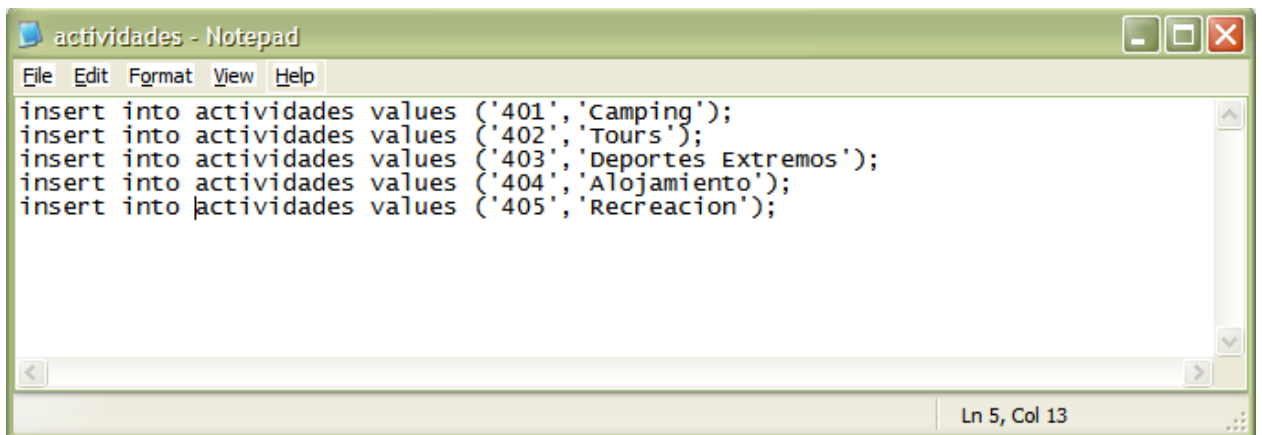
Ln 10, Col 1

Service



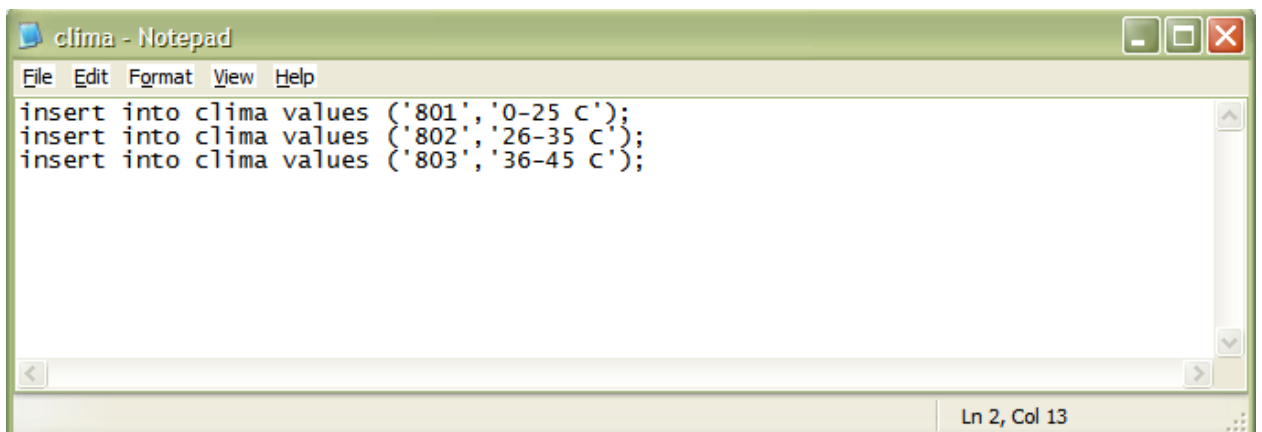
```
servicio - Notepad
File Edit Format View Help
insert into servicio values ('200','Hotel','301','Alojamiento');
insert into servicio values ('201','Cabana','302','Camping');
insert into servicio values ('202','Parque-Museo','303','Caminata');
insert into servicio values ('204','Bar','304','Show');
Ln 5, Col 1
```

Activities



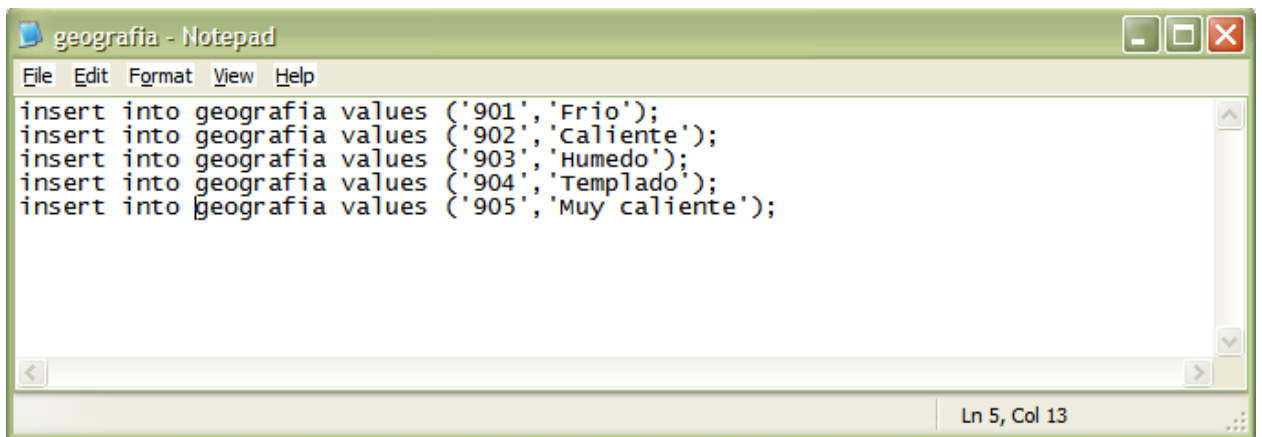
```
actividades - Notepad
File Edit Format View Help
insert into actividades values ('401','Camping');
insert into actividades values ('402','Tours');
insert into actividades values ('403','Deportes Extremos');
insert into actividades values ('404','Alojamiento');
insert into actividades values ('405','Recreacion');
Ln 5, Col 13
```

Weather



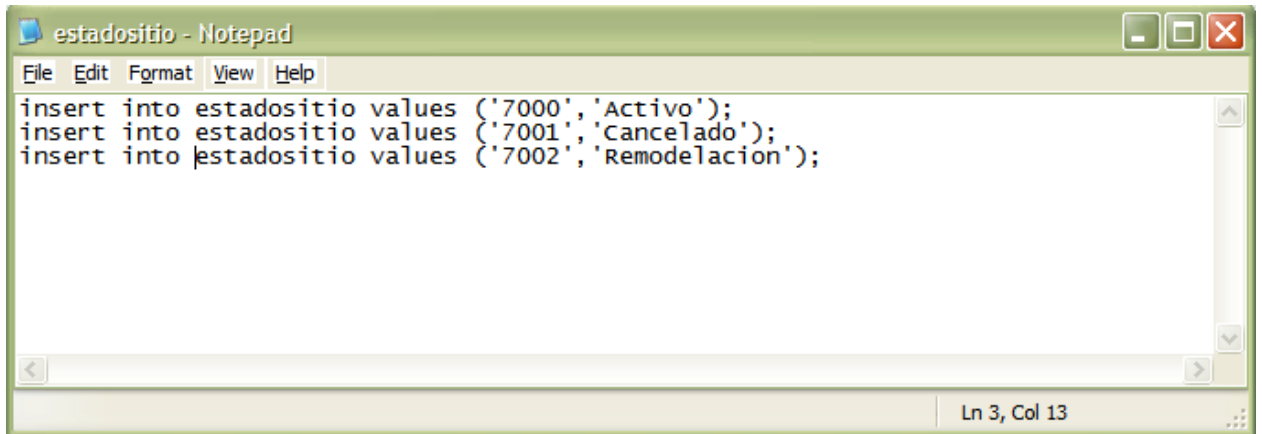
```
clima - Notepad
File Edit Format View Help
insert into clima values ('801','0-25 C');
insert into clima values ('802','26-35 C');
insert into clima values ('803','36-45 C');
Ln 2, Col 13
```

Geography



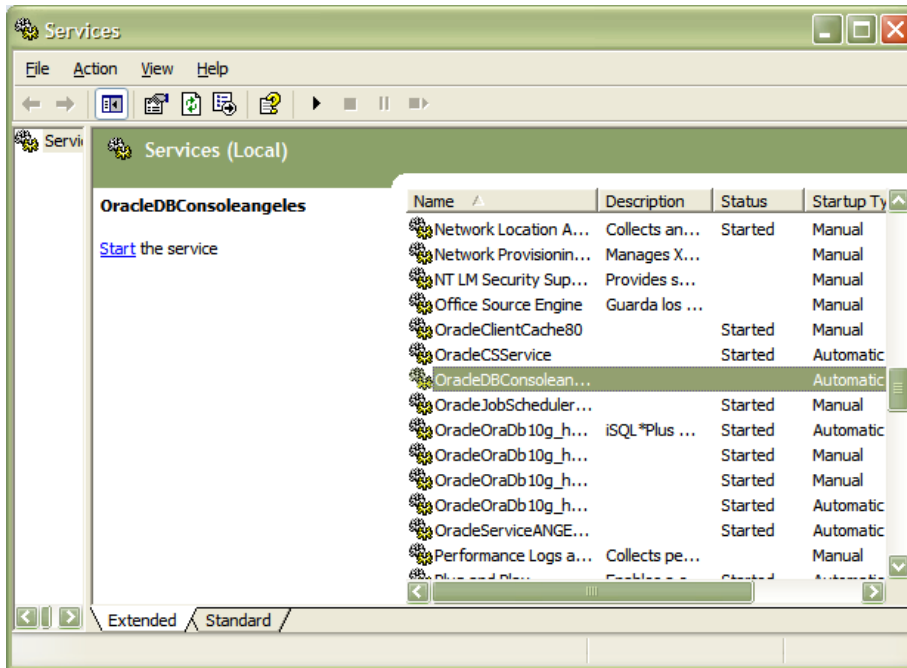
```
geografia - Notepad
File Edit Format View Help
insert into geografia values ('901','Frio');
insert into geografia values ('902','Caliente');
insert into geografia values ('903','Humedo');
insert into geografia values ('904','Templado');
insert into geografia values ('905','Muy caliente');
Ln 5, Col 13
```

Status Place

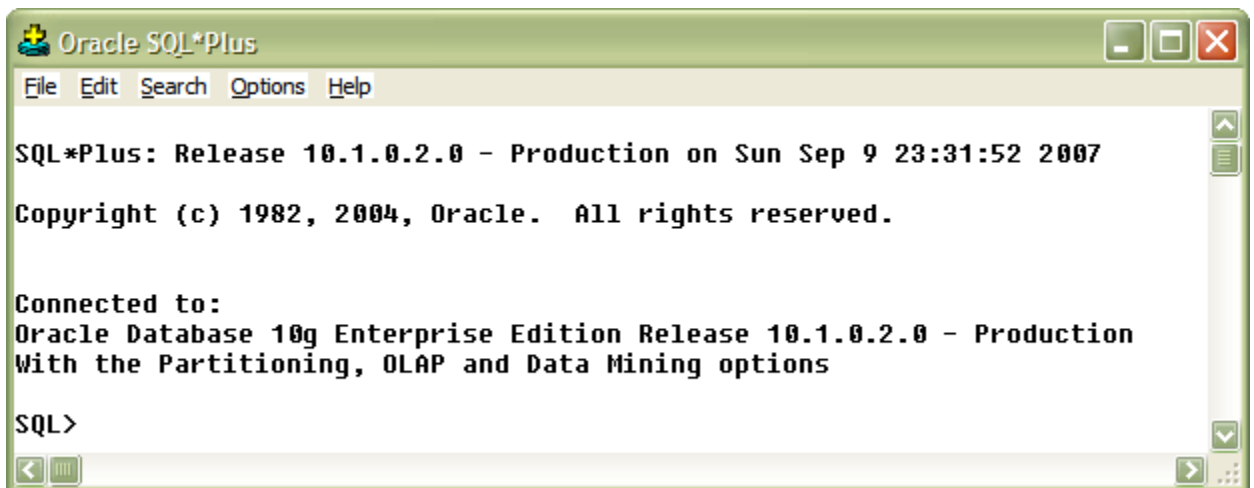
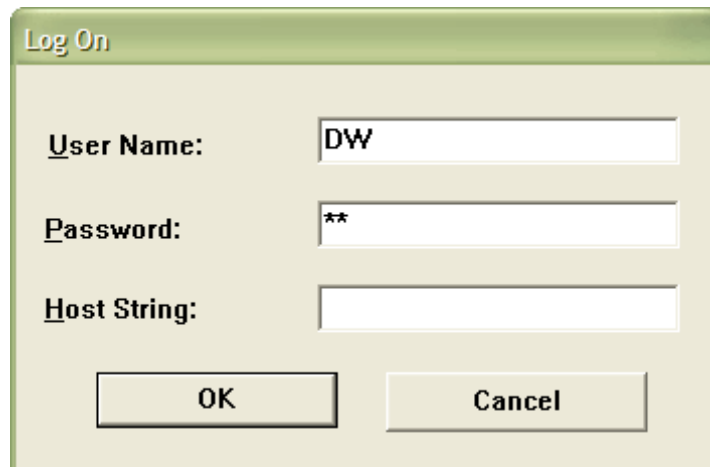


```
estadositio - Notepad
File Edit Format View Help
insert into estadositio values ('7000','Activo');
insert into estadositio values ('7001','Cancelado');
insert into estadositio values ('7002','Remodelacion');
Ln 3, Col 13
```

3.5.2 Oracle 10G Service Activation



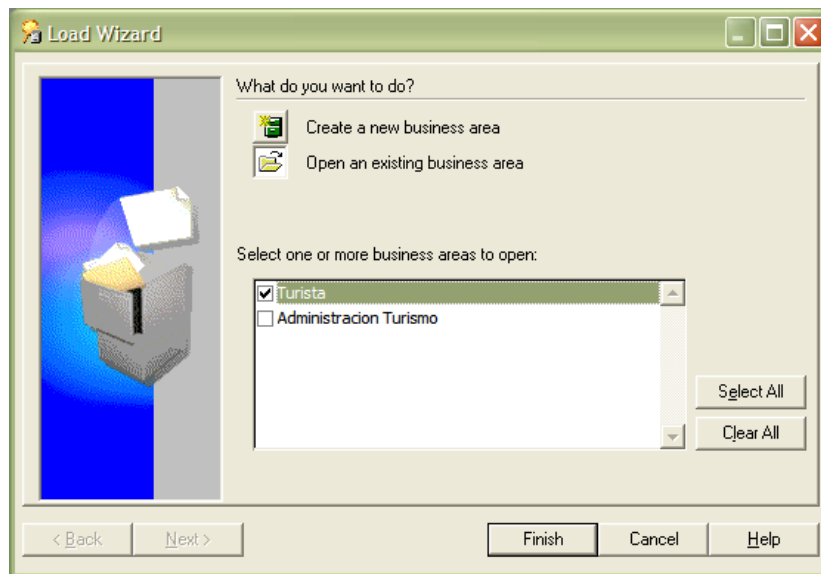
3.5.3 DataBase Conexion



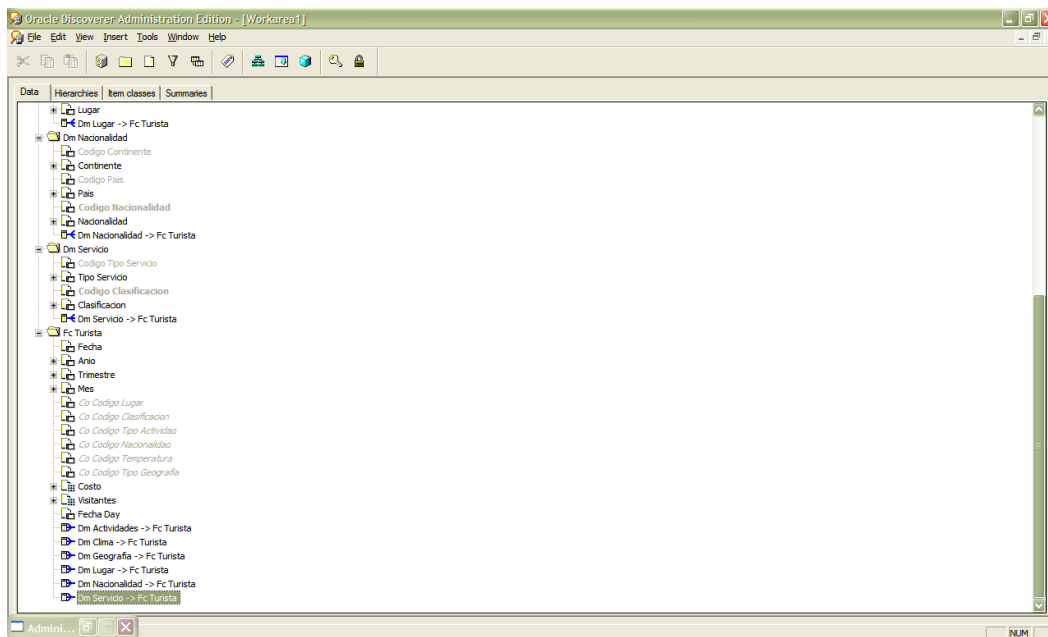
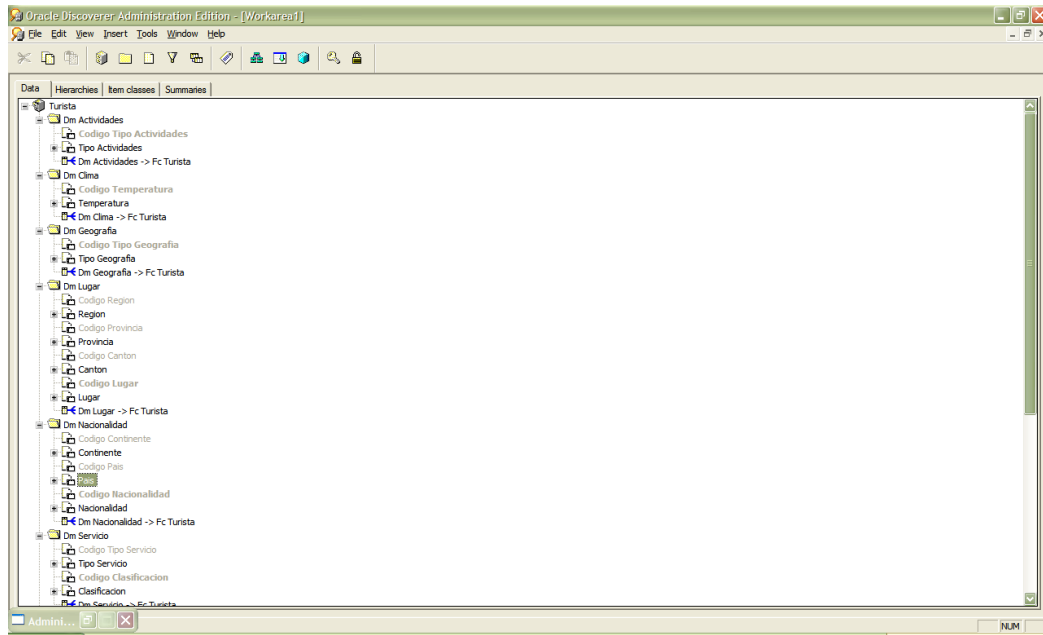
3.5.4 Discoverer Administrator connection with Database



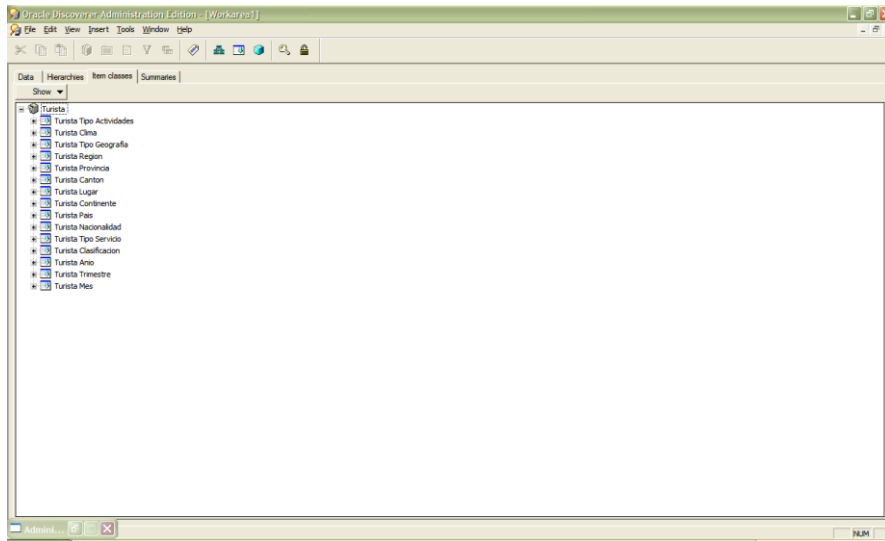
Area Business Administration



Dimensions List



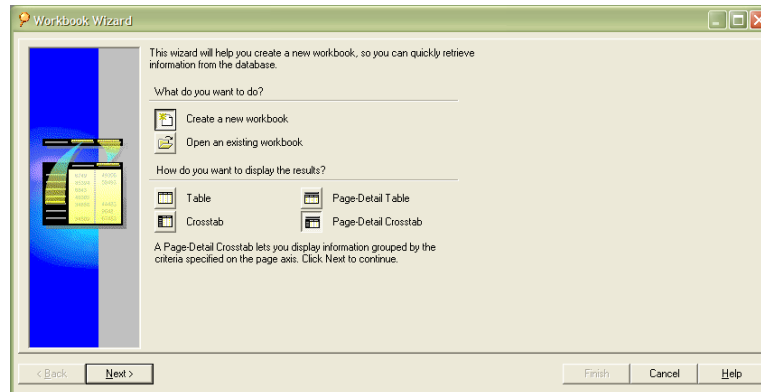
Class List



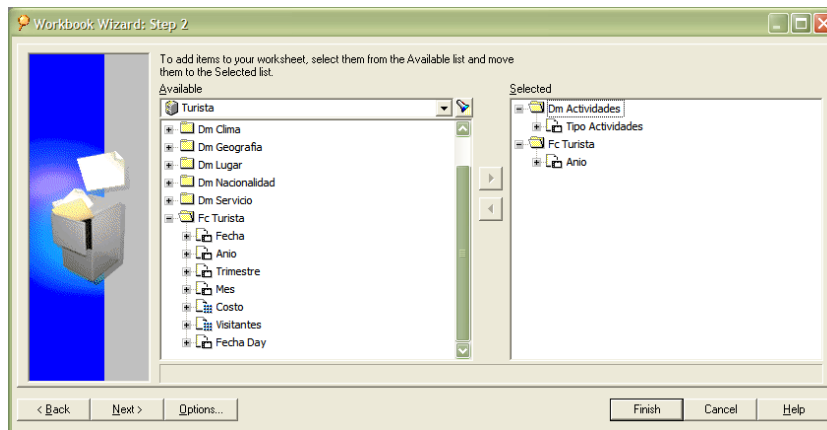
3.5.5 Connection with Discoverer Desktop



Workbook creation



Parameter's selection



Results View

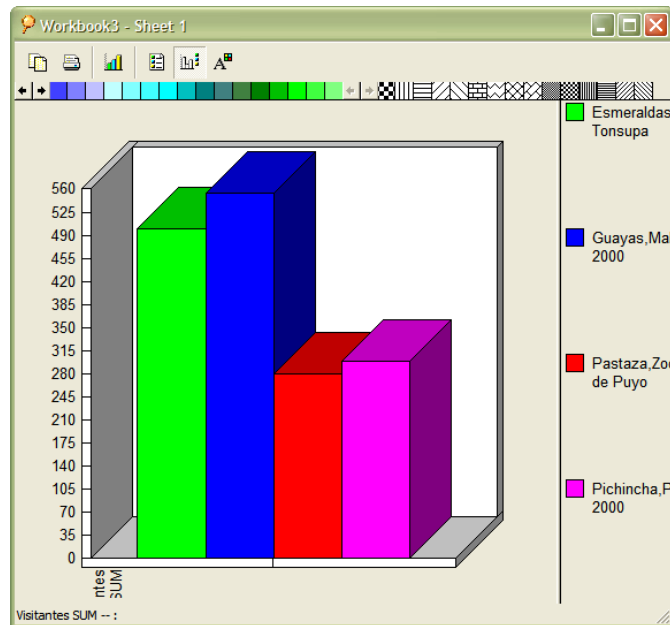
Oracle Discoverer - [Workbook3]

File Edit View Sheet Format Tools Graph Window Help

Trial Arial 10 B U

	Esmeraldas	Guayas	Pastaza	Pichincha
	Playa Tonsupa	Malecon 2000	Zoologico de Puyo	Panecillo 2000
Visitantes SUM	500.00	554.00	280.00	300.00

Graphic View



3.5.6 Implementation Plan

There are some steps in order to run this system, to be followed without exception to that works to perfection, and these are:

1. *Analysis of Information*

The information is needed in order to load the database should be previously studied to verify that it complies with all the requirements, for this is necessary to revise that all data are comprehensive and truthful.

For this analysis is necessary to carry out a Plan that must be executed by the Developer, and its main purpose is match the data from the Agency with the data must exist in the database.

In the event to exist problems with the information must be carried out the following actions:

a. Incomplete Data

Option A: Get the information and fill in the fields of the tables of the database. The information should be delivered by the Travel Agency

Option B: Define the importance of these fields within the Database and in the case not be indispensable, could not complete information.

b. No match data

Option A: Make a thorough study of data that may or may not be used within the database. And to establish which will be used

Option B: Get the necessary information, in case of failure to obtain information should be arming a new database for that can be used within the system using the data have at the time. It should be emphasized that this option will be an extra cost.

Selection of Hardware on which will be installed the server.

The minimum specifications are:

- Pentium IV Processor
- Ram Memory 512 MB
- Hard Disk de 40 Gb
- Monitor, Mouse
- CD ROM
- Network connection
- LAN network

2. Software Installation

The software installation should be done in the established order so that there is no incompatibility

- Oracle 10g
- Discoverer Administrator

- Discoverer Desktop

3. *Information Fill*

To fill the information to Database, it's necessary to use SQL sentences, because while this program language can be used in any platform that support SQL

4. *Etl Creation*

Once if the database is fill with the data, the next step is to create the ETL to generate the information that the Agency needs to know

5. *Discoverer Administrator Connection*

Once created the ETL, there have to be a connexion from Discoverer Administrator to database, and the business area will create automatically. Here is necessary to apply restriction and specific rules.

6. *Discoverer Desktop Installation in users*

Before user works with information, it is necessary to install Discoverer Desktop in each User PC, and testing the network

To test the functionality it can create the first workbook, if the data is show the user can start to work with the application

If the information doesn't show, these items must have to be review:

- Discoverer Administrator Configuration
- Data Base connection
- Network connection
- Discoverer Desktop Configuration

3.5.7 Data Update

The data update will be each 6 months, the tourist information is in continuous change, so it's mandatory that the application has update data.

The technique Support will be done by the developer of the application each 6 months, having the update data provide by the Travel Agency, it's necessary to reminder that the information will be provide by the Agency previously.

3.5.8 Implementation Cost

The next items are including in the Application cost:

- Information Analysis
- Data edition
- Data migration
- ETT creation for agency
- Program Installation (Oracle 10g, Discoverer Administrator y Desktop in development license)
- Functionality tests
- User test

Not Include:

- Data Update each 6 months
- Specific extra development
- Extra Data base creation
- Technical support by bad handle of the server
- Network Administration
- New requirements by Agency

3.6 Conclusions and Recommendations

3.6.1 Conclusions

- The Datawarehouse implemented for a travel agency allows a quick and accurate information avoiding waste of time and resources. It generates graphical information.
- The development of this system was originally directed to be used in travel agencies, in management level, but because of the results obtained in the application, it will be useful to apply at the Ministry of Tourism.
- The system provides an implementation plan, with minimum requirements that can be applied in any tourist agencies or institutions which manage their own information.
- In general, the factor that affects the need of implementing a DW is the excessive complexity of relational models that support operational systems, which makes it, extremely difficult to extract information for conducting business-management tasks.

3.6.2 Recommendations

- Such systems should be updated every 6 months, so its information can be accurate and useful; due to tourist information is changing in continuous periods of time.
- Before developing the application to Tourist Agencies, an analysis should be done to choose the correct software and hardware tools, based in price and availability

- The Ecuadorian Ministry of Tourism, which manages the tourist information of Ecuador, should have an updated system of data management, to make decisions based on current data, and use advanced technologies, benefiting the entire national tourism system, promoting the use of this applications around the country
- Emphasizing the importance of the use of a Datawarehouse in any kind of business, for decision making process.
- It is recommended that travel agencies implement a Datawarehouse system with the features offered by this system as:
 - Application Flexibility
 - Management Facility Upgrade
 - Easy Support to load the data in the Database scalability
 - Availability of new tools.
 - Type of information to be used by users
 - Reliable in the integrity and accuracy of the data or display of results in numerical and graphical
 - Export results to other file formats.

CHAPTER IV

PROPOSAL

“THE USE OF FREE DEVELOPMENT TOOLS IN TOURISM BUSINESS”

4.1 Description

Free and open source software gives the user the freedom to use, copy, distribute, examine, change and improve the software. These rights are stipulated in licenses. Development takes place within the form of projects, and those who participate are mostly professional software developers who either take part on paid time with the permission of their employer, or on their own time. Many large suppliers (IBM, HP, Sun, etc) use free and open source software in their own products and solutions and also contribute with their own resources in the various projects.

Free and open source software entails a new kind of competition, separated from that of traditional business in that the product generally is not owned by any single company and therefore cannot be purchased of the market. Furthermore, the software itself is not constricted by any cost or fee. It can be obtained free of charge on the Internet.

The purpose of this proposal is to provide a new knowledge to Ecuadorian developers to use free software and be in a continuous learning process to be update in this tools that are use by many world business without paying for software.

4.2 Objectives

The objectives of use Free Software are the following ones:

- Disseminate and promote the concept of Free Software as defined by the FSF (Latin America Free Software Foundation).
- Participate and influence the processes of making policy decisions that affect or are affected by Free Software, in order to reach conclusions that support his philosophy and principles.
- Defending the rights of users and Free Software developers, offering education and legal support regarding the use, development, dissemination and advocacy of free software, especially software distributed under the FSF's own licenses.
- Auxiliary enterprises, public or private, whether business, cooperative, individual or collective, which seek to consolidate new business models or management based on Free Software.
- Encouraging active participation from developers and users of Free Software in Latin America in the development, improvement and adaptation of free software. Dialogue with governments in the region to encourage them to adopt Free Software in terms of public policy, and help them give an adequate legal framework for this policy.
- Encourage tourism institutions to use exclusively Free Software in all instances in which users use computers.

4.3 Feasibility

In the background are among other things the fact that the market for IT software in Ecuador is dominated by a small number of players and also the fact that there are inadequacies in market competition. One result is high costs for customers in tourism business. In many cases, suppliers have created various supplier-specific functions in

the software, and the possibility – at least in a short term – for a customer to change to an alternative product, is thereby made difficult.

Competing products, available with similar conditions, do not suffice to break this supplier dependency. Instead there is a need for other ways of attacking the problem.

One such way is to promote products, which are built on open standards and formats along with open source software. In this way we can create conditions for a greater freedom of choice.

4.4 Impact

The use of free software in tourism business may be considered in some important aspects like:

- The availability of open formats to develop applications
- Standards and open source code that can be used by any Travel Agency
- Portability
- The ability to be able to use products on different platforms

4.5 Budget

The Travel Agency will assume the cost for the training to application users. The total budget for the proposal is \$250.

4.6 Participants and Beneficiaries

- Application Users
- Travel Agency Manager

4.7 Proposal Structure

4.7.1 History

In the 1950s, 1960s, and 1970s, it was normal for computer users to have the freedoms that are provided by free software. Software was commonly shared by individuals who used computers and by hardware manufacturers who were glad that people were making software that made their hardware useful. Organizations of users and suppliers were formed to facilitate the exchange of software, see, for example, SHARE. By the late 1960s change was inevitable: software costs were dramatically increasing, a growing software industry was competing with the hardware manufacturer's bundled software products (free in that the cost was included in the hardware cost), leased machines required software support while providing no revenue for software, and some customers able to better meet their own needs did not want the costs of "free" software bundled with hardware product costs. In *United States vs. IBM*, filed January 17, 1969, the government charged that bundled software was anticompetitive. While some software might always be free, there would be a growing amount of software that was for sale only. In the 1970s and early 1980s, the software industry began using technical measures (such as only distributing binary copies of computer programs) to prevent computer users from being able to study and modify software. In 1980 copyright law was extended to computer programs.



In 1983, Richard Stallman, longtime member of the hacker community at the MIT Artificial Intelligence Laboratory, announced the GNU project, saying that he had become frustrated with the

effects of the change in culture of the computer industry and its users. Software development for the GNU operating system began in January 1984, and the Free Software Foundation (FSF) was founded in October 1985. He developed a free software definition and the concept of "copyleft", designed to ensure software freedom for all.

The economic viability of free software has been recognized by large corporations such as IBM, Red Hat, and Sun Microsystems. Many companies whose core business is not in the IT sector choose free software for their Internet information and sales sites, due to the lower initial capital investment and ability to freely customize the application packages. Also, some non-software industries are beginning to use techniques similar to those used in free software development for their research and development process; scientists, for example, are looking towards more open development processes, and hardware such as microchips are beginning to be developed with specifications released under copyleft licenses (see the OpenCores project, for instance). Creative Commons and the free culture movement have also been largely influenced by the free software movement.

Naming

The FSF recommends using the term "free software" rather than "open source software" because, they state in a paper on Free Software philosophy, the latter term and the associated marketing campaign focuses on the technical issues of software development, avoiding the issue of user freedoms. "Libre" is used to avoid the ambiguity of the word "free".

4.7.2 Definition

The first formal definition of free software was published by FSF in February 1986. That definition, written by Richard Stallman, is still maintained today and states that software is free software if people who receive a copy of the software have the following four freedoms:

- *Freedom 0*: The freedom to run the program for any purpose.
- *Freedom 1*: The freedom to study how the program works, and change it to make it do what you wish.
- *Freedom 2*: The freedom to redistribute copies so you can help your neighbor.
- *Freedom 3*: The freedom to improve the program, and release your improvements (and modified versions in general) to the public, so that the whole community benefits.

Freedoms 1 and 3 require source code to be available because studying and modifying software without its source code is highly impractical.

Thus, free software means that computer users have the freedom to cooperate with whom they choose, and to control the software they use. To summarize this into a remark distinguishing *libre* (freedom) software from *gratis* (zero price) software, Richard Stallman said: "Free software is a matter of liberty, not price. To understand the concept, you should think of 'free' as in 'free speech', not as in 'free beer'".

In the late 90s, other groups published their own definitions which describe an almost identical set of software. The most notable are Debian Free Software Guidelines published in 1997, and the Open Source Definition, published in 1998.

They generally advocate permissive free software licenses, which allow others to make software based on their source code, and then release the modified result as proprietary software. Their view is that this permissive approach is more free. The Kerberos, X.org, and Apache software licenses are substantially similar in intent and implementation. All of these software packages originated in academic institutions interested in wide technology transfer (University of California, MIT, and UIUC).

4.7.3 Examples of free software

The Free Software Directory maintains a large database of free software packages. Some of the best-known examples include the Linux Kernel, the BSD and GNU/Linux operating systems, the GNU Compiler Collection and C library; the MySQL relational database; the Apache web server; and the Sendmail mail transport agent. Other influential examples include the emacs text editor; the GIMP raster drawing and image editor; the X Window System graphical-display system; the OpenOffice.org office suite; and the TeX and LaTeX typesetting systems.

4.7.4 Free software licenses

All free software licenses must grant people all the freedoms discussed above. However, unless the applications' licenses are compatible, combining programs by mixing source code or directly linking binaries is problematic, because of license technicalities. Programs indirectly connected together may avoid this problem.

The majority of free software uses a small set of licenses. The most popular of these licenses are:

- the GNU General Public License
- the GNU Lesser General Public License
- the BSD License
- the Mozilla Public License
- the MIT License
- the Apache License

The Free Software Foundation and the Open Source Initiative both publish lists of licenses that they find to comply with their own definitions of free software and open-source software respectively.

- List of FSF approved software licenses
- List of OSI approved software licenses

The FSF list is not prescriptive: free licensees can exist which the FSF has not heard about, or considered important enough to write about. So it's possible for a license to be free and not in the FSF list. However, the OSI list is prescriptive: they only list licenses that have been submitted, considered and approved. This formal process of approval is what defines a license as Open Source. Thus, it's not possible for a license to be Open Source and not on the OSI approved list.

Permissive and copyleft licenses

The FSF categorizes licenses in the following ways:

- Public domain software – the copyright has expired, the work was not copyrighted or the author has released the software onto the public domain.

Since public-domain software lacks copyright protection, it may be freely incorporated into any work, whether proprietary or free.

- Permissive licenses, also called BSD-style because they are applied to much of the software distributed with the BSD operating systems. The author retains copyright solely to disclaim warranty and require proper attribution of modified works, and permits redistribution and **any** modification, even proprietary ones.
- Copyleft licenses, the GNU General Public License being the most prominent. The author retains copyright and permits redistribution and modification provided all such redistribution is licensed under the same license. Additions and modifications by others must also be licensed under the same "copyleft" license whenever they are distributed with part of the original licensed product.

4.7.5 Security and reliability

There is debate over the security of free software in comparison to proprietary software, with a major issue being security through obscurity. A popular quantitative test in computer security is to use relative counting of known unpatched security flaws. Generally, users of this method advise avoiding products which lack fixes for known security flaws, at least until a fix is available.

Free software advocates say that this method is biased by counting more vulnerabilities for the free software, since its source code is accessible and its community is more forthcoming about what problems exist, and proprietary software can have undisclosed flaws discoverable by or known to malicious users. As users can analyze and trace the source code, many more people with no commercial constraints can inspect the code

and find bugs and loopholes than a corporation would find practicable. User access to the source code makes deploying free software with undesirable hidden spyware functionality far more difficult than for proprietary software.

4.7.6 Tourism commercial vitality and adoption

Free software played a part in the development of the Internet, the World Wide Web and the infrastructure of dot-com companies. Free software allows users to cooperate in enhancing and refining the programs they use; free software is a pure public good rather than a private good. Companies that contribute to free software can increase commercial innovation amidst the void of patent cross licensing lawsuits. (See mpeg2 patent holders.)

Under the free software business model, free software vendors may charge a fee for distribution and offer pay support and software customization services. Proprietary software uses a different business model, where a customer of the proprietary software pays a fee for a license to use the software. This license may grant the customer the ability to configure some or no parts of the software themselves. Often some level of support is included in the purchase of proprietary software, but additional support services (especially for enterprise applications) are usually available for an additional fee. Some proprietary software vendors will also customize software for a fee.

Free software is generally available at no cost and can result in permanently lower costs compared to proprietary software. With free software, businesses can fit software to their specific needs by changing the software themselves or by hiring programmers to modify it for them. Free software often has no warranty, and more importantly,

generally does not assign legal liability to anyone. However, warranties are permitted between any two parties upon the condition of the software and its usage. Such an agreement is made separately from the free software license.

A report by Standish Group says that adoption of open source has caused a drop in revenue to the proprietary software industry by about \$60 billion per year.

Open standards and formats along with free and open source software are important factors in order to be able to arrive at:

- Increased competitively
- Improved interoperability
- Reduced costs

For administration in tourist business

Free and open source software is not any makeshift phenomenon, but instead a fully adequate and dependable competitor to existing proprietary products and solutions.

ANNEX A


USER MANUAL

DISCOVERER DESKTOP



*Thank you very much for purchasing this product through this document,
the user can find all necessary steps to handle the program in which
Discoverer Desktop may make reports of the Tourist Information Travel
Agency.*

1. - CONNECTION AND LOGIN

To open the program on the desktop of your computer, you will find the following icon  double-clicking icon.

Otherwise you can enter through:

Start Menu



Programs



Oracle Discoverer



Desktop Edition

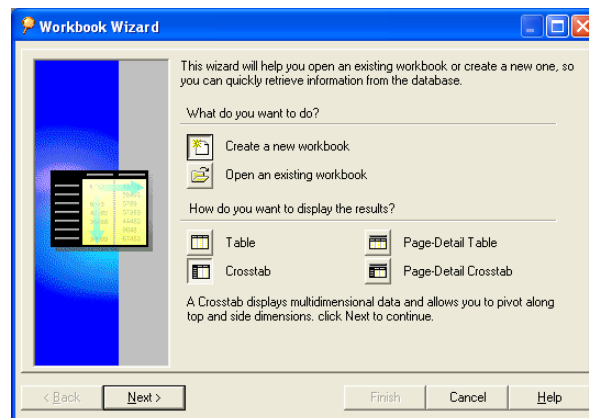
After opening the program a screen of Connection will appear, in which you must enter user name and password that your administrator inform you before.



It is necessary to verify that the name of the database is correctly written.

2. - ACCESS TO MENU

Once connected to the database can see the main screen on which Discoverer Desktop are the main menus.



These include:

What do you want?

- Create a new Task Book
- Open an existing Task Book

■ **How do you want to see results?**

- Table Mode
- Table with Page Mode Details
- Table Mode Crusade
- Table Mode Crusade with details

After choosing the option with which you want to work are given Click Next

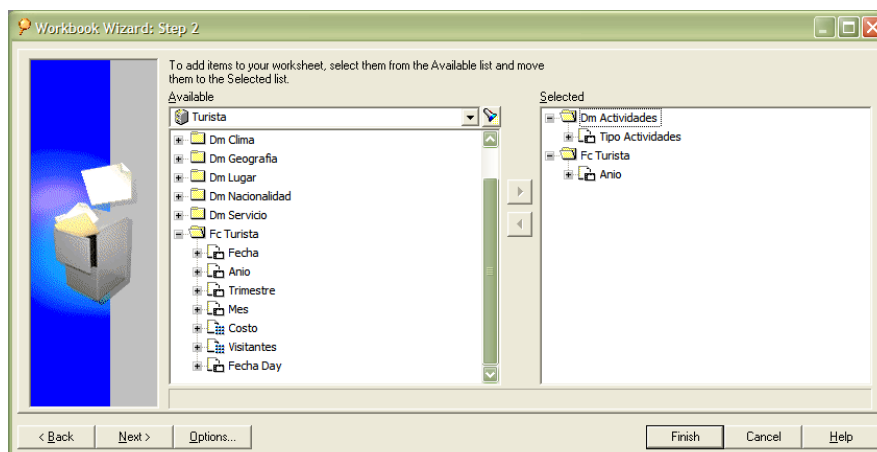
3. - DOCUMENTS CREATION

Create workbooks and worksheets

■ **Creating Workbook**

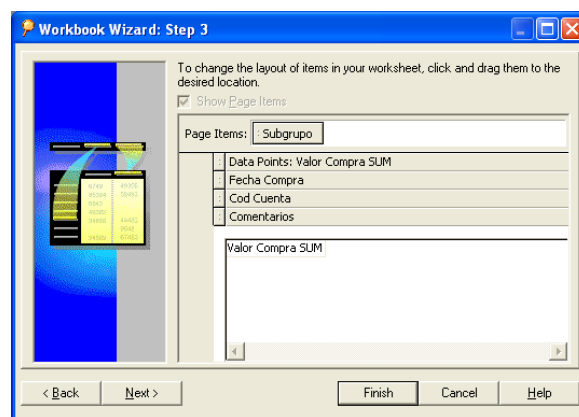
If the option chosen was to create a New Workbook these will be the next steps.

A screen on which you can see the components of business areas created by the Discoverer manager and there chooses which data is going to work in this Task Book

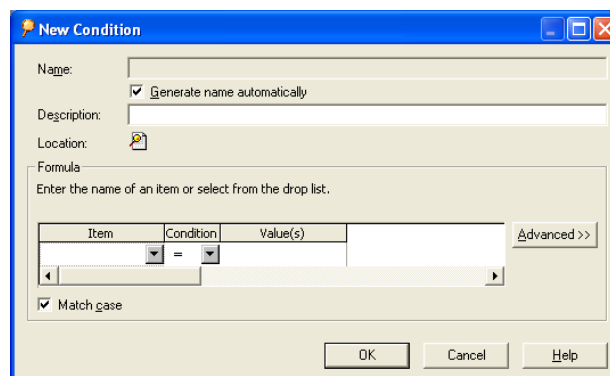


It is also necessary to choose an indicator to perform calculations or statistics of the desired information.

It click on Next and you can select the new screen as we want to present the information (by dragging items) in this way is organized presentation of information.

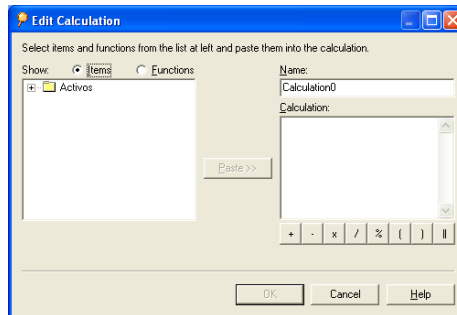


Also through the wizard you can configure conditions to better organize the information needed to manage the end user.



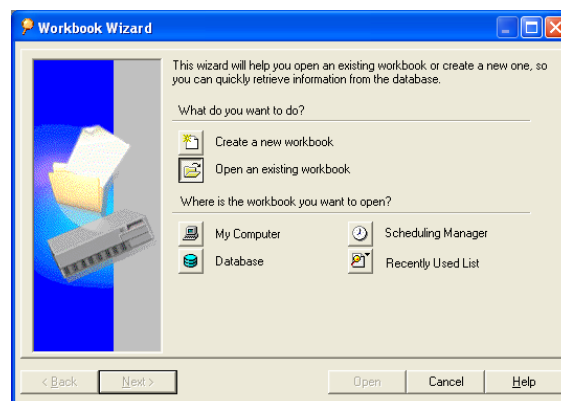
If you want to add calculated fields or in addition, the wizard allows you to incorporate functions of Oracle.

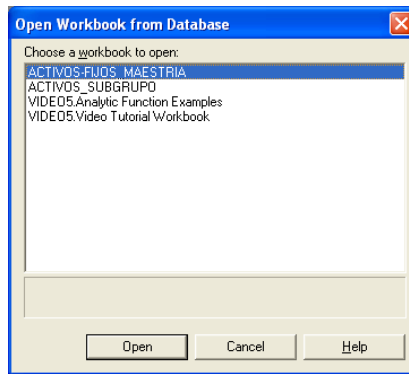
In this screen, choose the items to be calculated and the respective operations.



Open an existing workbook

You are allowed to open from the database (tables of EUL) or from a file stored on the computer.



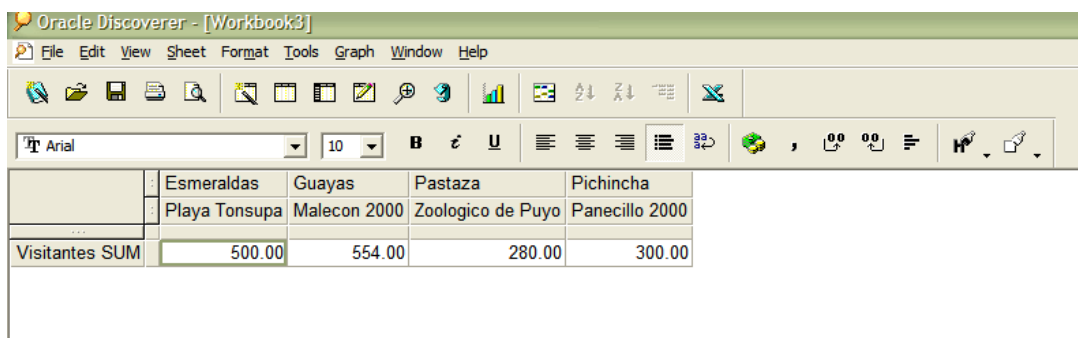


4.- DATA VISUALIZATION

When all the steps in the wizard, open the final screen with the results in numerical form. This is where you can make graphics.

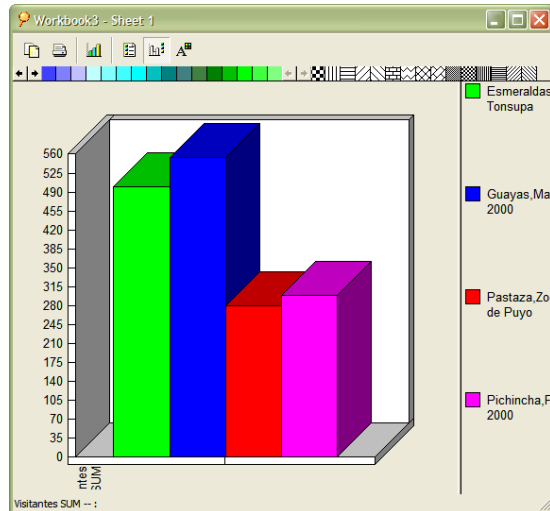
It is advisable that generated documents are kept in one directory so that they may be found in a single direction. Viewing the results Graphic display of results

Data Screen



	Esmeraldas	Guayas	Pastaza	Pichincha
	Playa Tonsupa	Malecon 2000	Zoologico de Puyo	Panecillo 2000
Visitantes SUM	500.00	554.00	280.00	300.00

Graph Screen



5.- POSSIBLE PROBLEMS

Below is a list of possible problems with their solutions.

PROBLEM	SOLUTION
<i>It doesn't connects to database</i>	<ul style="list-style-type: none"> • Check the network connection • Check that the username and password are correct
<i>Data are not displayed correctly</i>	<ul style="list-style-type: none"> • Check if the data are selected and also the indicator of the operation

The data is wrong

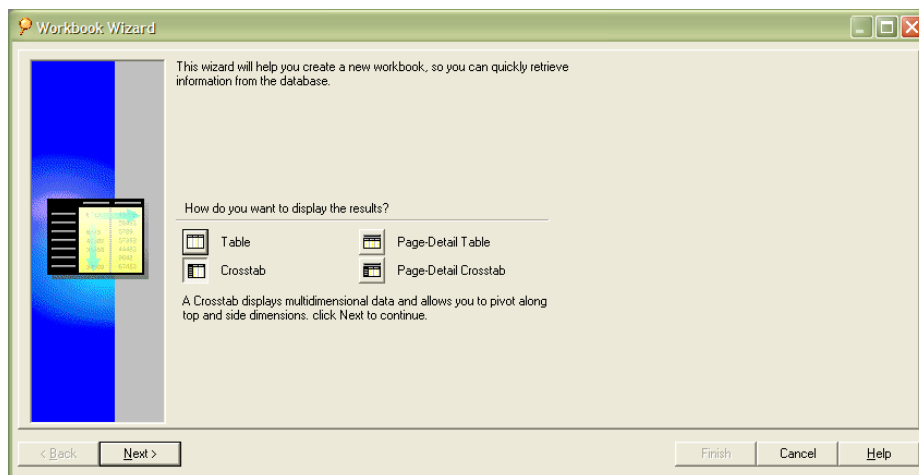
- Review the second step of the wizard that the chosen data corresponding to the Base Agency data.

If there is a problem despite following all the steps please contact the System Administrator to perform the necessary inspections.

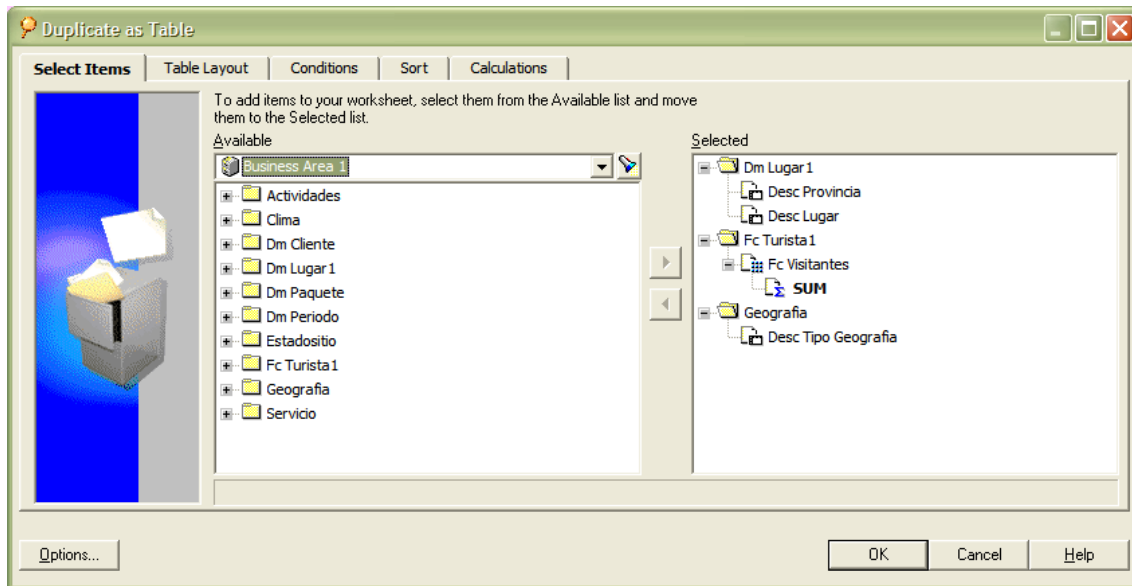
6.- PRACTICE EXAMPLE

You want to know the region and province that has more visitors in the period of one month (month vacation in the Sierra-July).

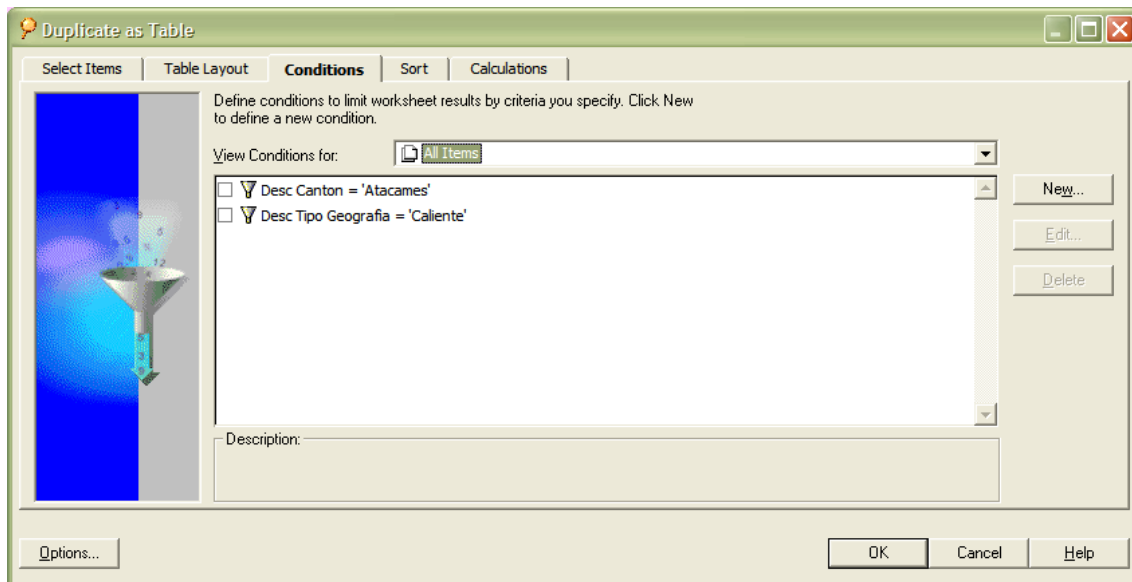
1. Access to Main Menu



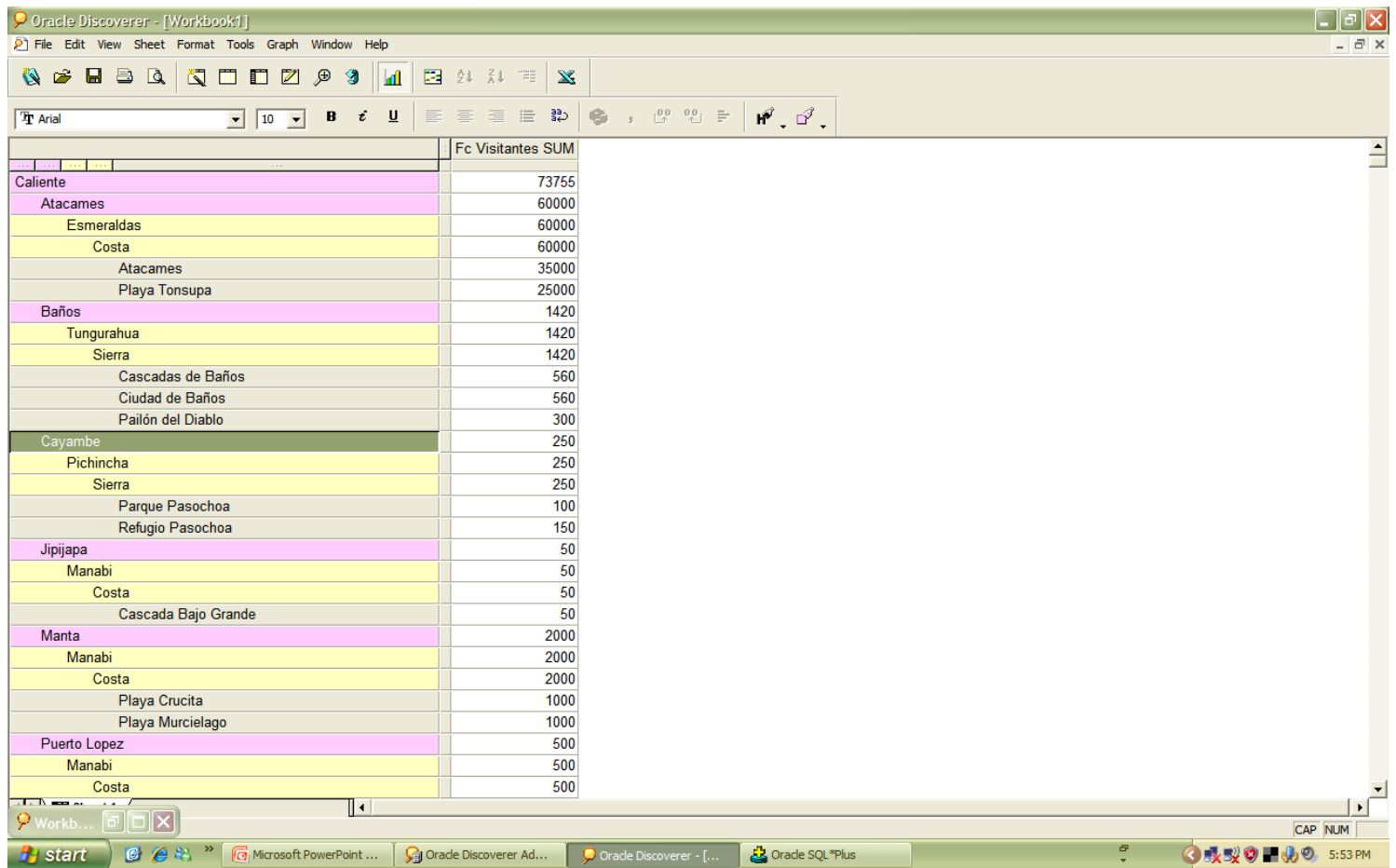
2. Select the items used in this report



3. Creating Conditions for Filtering



4. Viewing Results



The screenshot shows the Oracle Discoverer interface with a table titled 'Fc Visitantes SUM'. The table lists various provinces and their corresponding visitor counts. The provinces are color-coded: pink for major provinces (Caliente, Atacames, Esmeraldas, Baños, Jipijapa, Manta, Puerto Lopez) and yellow for others. The table is sorted by the 'Fc Visitantes SUM' column in descending order.

	Fc Visitantes SUM
Caliente	73755
Atacames	60000
Esmeraldas	60000
Costa	60000
Atacames	35000
Playa Tonsupa	25000
Baños	1420
Tungurahua	1420
Sierra	1420
Cascadas de Baños	560
Ciudad de Baños	560
Pailón del Diablo	300
Cayambe	250
Pichincha	250
Sierra	250
Parque Pasochoa	100
Refugio Pasochoa	150
Jipijapa	50
Manabi	50
Costa	50
Cascada Bajo Grande	50
Manta	2000
Manabi	2000
Costa	2000
Playa Crucita	1000
Playa Murcielago	1000
Puerto Lopez	500
Manabi	500
Costa	500

Conclusion from the example:

- The hot weather has the greatest number of hits per month.
(Holiday or Vacation)
- The province of Esmeraldas is the most visited. (National Tourism.) □Holidays)
- The main attraction is the beach.

Decisions made based on results:

- Perform promotion packages to Esmeraldas
- Encourage trade within the Province
- To provide recreation and entertainment services as an extra packet
- Promotion offered by advertising of the Tourist Agency in Esmeraldas.

Main icon on the toolbar display results

Creating Drill

To run a Drill we right click on the field you wish to select, then choose the options:

- Create a new worksheet with the drill fields
- Made in the same leaf.

Formatting fields

In the toolbar at the top of the results screen we can choose the Format icons are:

- Coloring source
- Give the background color of the field
- Source Selection
- Font Size

This is done to have better results if you want to specify any of the information.

Importing a Microsoft Excel file

When click on the Excel file icon can be made to import the data into a Microsoft Excel file.

For any query operation is feasible Tool downloaded from the Internet free user manual from the page www.oracle.com