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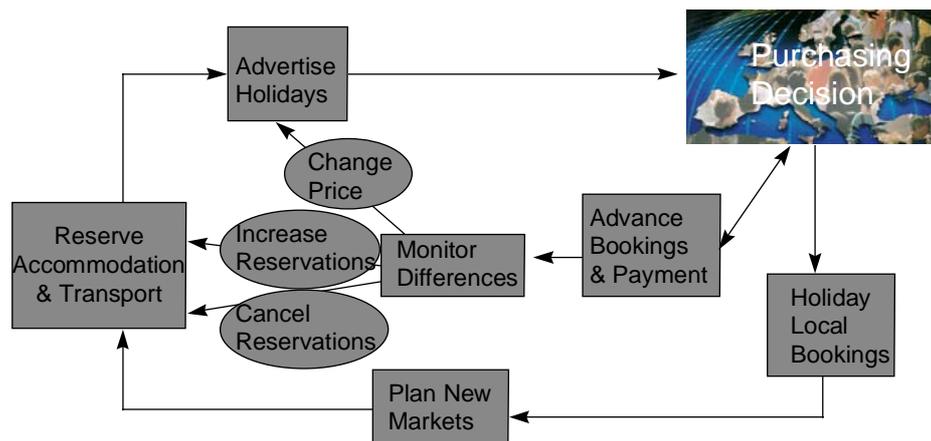## <u>IT to promote tourism between Europe and the Mediterranean countries</u>

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Introduction

This paper describes the actions that would be required to be funded by the EC in order to promote tourism between Europe and the Mediterranean countries. The background for the paper are three specific components in addition to the general ERCIM expertise in databases, networking, WWW, user interface design, and internationalisation. Firstly, the MIPS Esprit project which undertook analyses of the tasks involved in the tourism business in order to produce travel information systems now in use in Corfu tourist kiosks. Secondly, the TIM RACE project which developed common database data models for the tourism and travel industries in order to promote the interchange of information. Thirdly, a proposal submitted to the EC ORA Telematics programme in 1995 to stimulate Southern European Tourism which has been modified here to become an ERCIM proposal for the Mediterranean countries.

The Business Process of Tourism

Tourism is a business, and if IT research projects are going to promote tourism, they must reach the business goals of the existing actors. If existing tourist actors are required to contribute to the funding of projects then they need to be clear about their direct business benefits.

The general structure of the tourism business process model is as follows (for summer holidays). In October Tour Operators reserve accommodation in tourism destinations and travel to them. During the autumn they develop advertising for these holidays which they release after Christmas to the customer. The advertising includes not only descriptions of the holidays themselves, but supporting information including maps of the area, details of local facilities and entertainments etc. From January until September they take advance bookings and payments on holidays from the customer

who has decided to buy the holiday - made a purchasing decision. The method of sale may be through a travel agent, or through phone or postal sales. The more human involvement the greater the cost of the sale, but the objective is to close the sale and securely take the customer's money. From January until September the Tour Operator Monitors the difference between the holidays bought and projected sales. Their are two actions possible as a result of this monitoring : 1) Change the price of the holidays up or down to increase profit or stimulate the market; 2) increase or decrease the number of reservations if sales are very high or very low (given cash flow etc.). This monitoring operation is what Tour Operators do well, and where they make their profit margins. From May until September, customers go on holiday and when their make local bookings for entertainments, car hire, sports, etc. and buy locally produced goods. The Tour Operators encourage feedback from the customers which they use in order to plan he next year's holiday reservations in October. The cycle for non-summer holidays is the same with different dates. Another business model applies to conference business which can be a major part of a travel agents activities, where they create individual packages acting as Tour Operators.

The core of the process is the purchasing decision made by the customer. This decision has two components. The first is a set of Hygiene Factors which must be reached in order to consider purchasing the holiday such as available health care in case of emergency, local food, disease, local law (especially Muslim Law) and safety & security. The second are the motivations such as the cost of the holiday, and the activities available during the holiday. The purpose of the advertising produced by Tour Operators is to provide information to the customer to allow them to make the purchasing decision including these factors. Where the customer has prior knowledge of the location for many of these factors then the advertising can be brief. In contrast, where the customer has little knowledge of the location, information on all these factors must be provided in order to enable the purchasing decision.

The major variable in the tourism business is between mass market holidays, and elite holidays. Mass market holidays offer sun, sand and sea at a low cost selling them through the cost rather than facilities motivation in the purchasing decision. Consequently, they are high volume but with very low profit margins, with the results that there is very little variation in the product between one tourist and another. Given the low profit margin there is very little capital available at this end of the industry for further investment either in IT or in the local economy to improve the facilities. A major consequence of this for the local economy is that little money is spent locally on entertainments and local products, very little money is invested in the local economy except to provide the most basic facilities in the form of large concrete hotels on the coast without sufficient investment in local support infrastructure of transport, or utilities (power, water, sewage etc.). The mass market is ecologically destructive to the tourist destination.

In contrast the elite market promotes local culture, art, entertainments and cuisine in order to attract customers on the activities motivating factor in the purchasing decision. Since this information is richer than the price alone, more resources must be spent on advertising and information provision than for the mass market. The resulting holidays have a high cost, with low volumes, high profit margins, and considerable variability between in the activities undertaken by individuals. These tailored holidays allow for more investment in IT and the local infrastructure as a result of the higher profit margins and the increased importance of local activities in the purchasing decision. This form of sustainable tourism provides more rewards for the local economy, and is ecologically supportive.

The countries of the Mediterranean countries vary in the way that they are positioning themselves in these markets. Israel and Egypt have traditionally positioned themselves at the elite market by exploiting their cultural heritage, whereas Malta has positioned itself in the past at the mass market and is now changing its strategy to focus on the elite market. Cyprus has tried to address both markets for several years, while Tunisia is clearly positioning itself at the mass market. Morocco, Algeria, Jordan, Lebanon and Syria do not have significant positions in the European tourism market at present, although Jordan has one significant site in the cruise based elite market in Petra.

The major growth market in 1990's tourism is in cruising which imposes low local demands for infrastructure, but can allow for support of the local economy through the purchasing of local cultural

activities and local goods. Cruising overcomes most of the hygiene factors in the purchasing decision since these are supplied on the ship rather than locally, yet the local site can provide the activity motivations in the purchasing decision. Cruising is a very suitable step in developing an elite market tourist industry and would be appropriate for promotion for the Mediterranean countries which cannot currently overcome the hygiene factors in the purchasing decision.

Actions to Support Tourism

From this analysis of the tourism business there are five areas where IT support would improve the business for the Tour Operator, and result in benefits to the economy of the tourist destination:

1) To provide background information to overcome obstacles to purchasing decision.

To enter either market it is necessary to overcome the hygiene factors by providing sufficient information about available health care in case of emergency, local food, disease, local law (especially Muslim Law) and safety & security. Familiarity with an areas geography history and culture will also promote familiarity and increase the likelihood of finding a destination acceptable.

Information on these topics is easily and cheaply provided, although targeting the distribution of paper based media can be expensive. Network based distribution overcomes these distribution costs easily.
However, a high quality of delivery will improve the image of the destination and this high quality is not normally available for video's and large images to the home over the Internet. Therefore although net
based distribution has advantages, CD-ROM based distribution of information may also be useful. CD-ROM and WWW sites can be produced on a national or regional basis to meet this need.

The Israeli Tourist Agency has a WWW site of information already, Tunisia tourist agency currently has a single WWW page, and the other countries have no web presence. CD-ROM information on no target country was available in the UK at the time of writing. The establishment of Web sites and the simultaneous presentation of the same content on CD-ROM which can be distributed in Europe would address these problems.

Apart from technology transfer from Europe to the Mediterranean countries, the research issues for Europe would include the internationalisation of both WWW sites and CD-ROM's, and the quality of service requirements of both distribution methods as part of the engineering process of generating the products, and in contractual terms.

2) To upgrade target markets from Mass Market to Elite

In order to enter the Elite market the background information distributed must not only overcome the hygiene factors but also contain sufficient background information on Culture, History, Cuisine, Geography, Activities, Entertainments to motivate visitors to choose a site in competition with others.

The production of CD-ROM's and simultaneous WWW sites on a national or regional basis would meet this need. CD-ROM's are best targeted at Cruises initially where passengers have chosen to purchase a package including one or more stop about which they are uncertain. The CD can be used to encourage them to go ashore at a port, and purchase local goods.

No virtual tourist information of cultural information of this class was available for the target countries, although some European libraries and museums are starting to put together presentations on culture alone. CD-ROM's have been produced for Albania as part of the Chameleon Esprit IV project in order to stimulate sustainable tourism there, which include not only culture and sites in Albania, but also details of local craft skills and products which can be purchased in order to stimulate potential markets.

3) To advertise holidays

WWW sites can be established by Tour Operators to advertise exactly which holidays they have for sale. These would be universally available to travel agents and for home use in choosing a holiday with up to date costs and minimal distribution costs. These can be linked to supporting information provided by national or regional tourist authorities, by Museums and Libraries in Europe and elsewhere and even to film and other sites where locations have been featured.

4) To monitor the differences between reservations and bookings.

At the height of the tourist season tour operators may want to fill every available bed in hotels and every seat on transport. Therefore they need to know accurately exactly where there is spare capacity in accommodation or transport. This is currently hard to obtain in most tourist resorts and would increase the profit margins of tour operators and the number of tourists supporting the local economy if it were available.

Local WWW sites which provide access to databases of hotel use kept up to date by tourist authority staff would provide this function. Such sites could be extended with transaction management to allow bookings to be made to them from Europe. Client machines would have to be installed in European Tour Operators

Research issues here include not only internationalisation and quality of service but also the establishment of standard data models for tourism, extending the work of the TIM RACE project.

5) To move all bookings to advance.

Local excursions, theatre, concert and other entertainment tickets are all made once the destination is reached unless the mass market model is used and all tourists are presented with the same products. Other local facilities or activities may also be booked locally. This makes the prediction of cash flow, and the uptake of these entertainments difficult. If details of these activities could be made available and booked from the Tour Operator then three benefits would follow: firstly, customers would be more confident about the activities available to them and have their holidays more tailored to their needs, supporting the elite market model of sustainable tourism; secondly, the capacity required for these activities could be planned in more detail therefore allowing for greater profits; and thirdly, these activities could be paid for earlier allowing this money to be used by the local economy for longer, therefore further stimulating growth.

Local tourist authorities could provide databases not only of hotels, but also of other activities, which could be accessible over the network to tour operators.

The research issues here would be the same as those for monitoring reservations, except these activities may require closer links to the multimedia information used to provide background information and upgrade the market to the elite model in order to explain the activities. This use databases and of multimedia information requires clear models of dialogue, task, decision making, user interface design and business modelling, all of which are relevant research topics.

Several actions have been mentioned in the analysis of the tourism business which have not been listed here as suitable areas for IT support. The general reason is that they impose contractual requirements on the IT for quality of service which would be hard to meet. For example, the actual selling of holidays has not been mentioned, although the Internet can support sales and various forms of e-cash or credit card transactions are possible. If one where to provide Internet sales, then a security mechanism for the transaction would be required, and checks to ensure the availability of the limited supply product would be required, as well as changes to the contracts issued by many travel organisations. Equally, the present sales mechanisms are often funded indirectly though the sale of travel insurance rather than the holidays themselves. Therefore, it would require considerable regulatory, and market changes to support the mass use of Internet sales. Such issues could be included in a project if actors wanted to support them, and there are research issues associated with quality of service which could be undertaken if such components were included in projects. However, such components cannot be expected as necessary to projects.
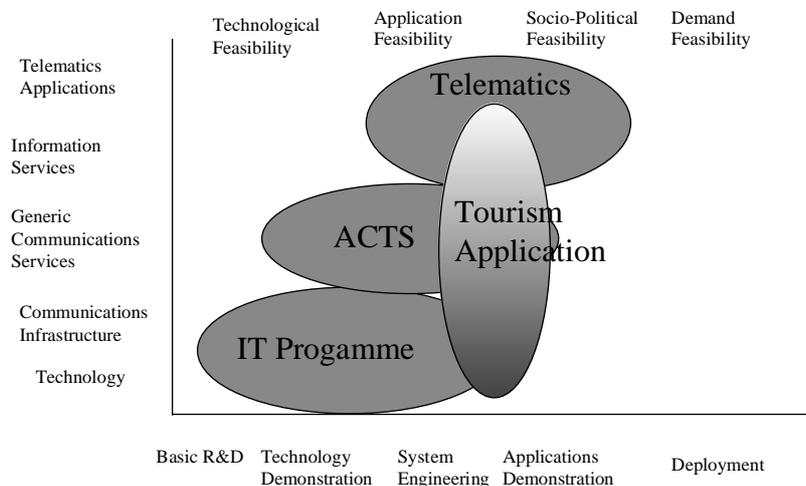
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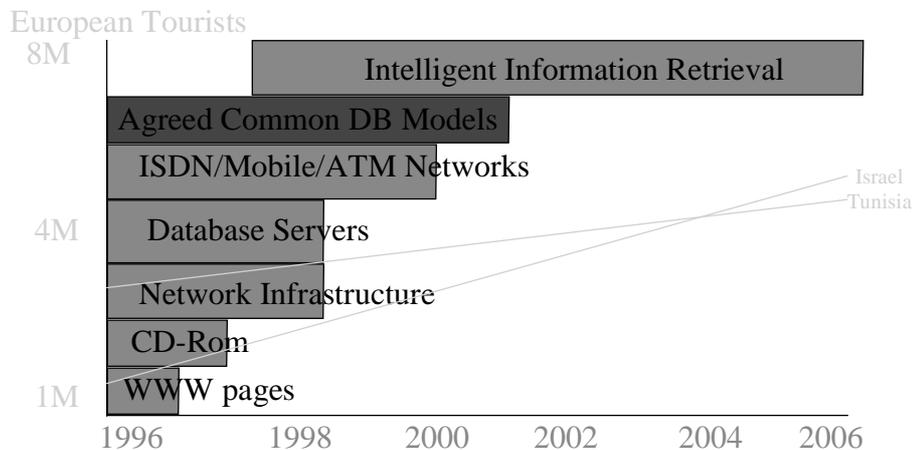
The research issues raised so far include:

internationalisation of CD-ROM and WWW sites;
quality of service for delivering information over both media;
the establishment of networks;
the development of database servers;
the agreement of common data models for tourism;
business process modelling;
tailorable user interface design;

all of which can be viewed at different levels. For example these could be considered purely at the level of socio-political feasibility by applying existing technologies and applications but resolving the international co-operation required. In that case the proposed project would equate with the Telematics programme of DG XIII in the language of the Bangemann Report. Alternatively, one could develop novel applications at the client or server end to address internationalisation and other issues of tailoring which would make the project address applications feasibility at the same level as the IT programme (or the old Esprit Programme) of DG III. Indeed this trend could be extended further to address risks of technological feasibility too so that basic research were included to investigate intelligent information interfaces to retrieve information from sets of servers and customise it for the user on their ubiquitous computing station.

EC RDT Framework

Whether the risks addressed by the project should only include the socio-political ones required to establish the information network, or also application risks and even technology ones required to advance IT itself depends on the level at which the EU wishes to promote the programme of support for relations between the EU and Mediterranean countries. This proposal can be focused on any of these risks as required.

European Tourists
8M — Intelligent Information Retrieval
Agreed Common DB Models
ISDN/Mobile/ATM Networks
Israel
Tunisia
4M — Database Servers
Network Infrastructure
CD-Rom
1M — WWW pages
1996   1998   2000   2002   2004   2006

Technological Differences between Mediterranean Countries
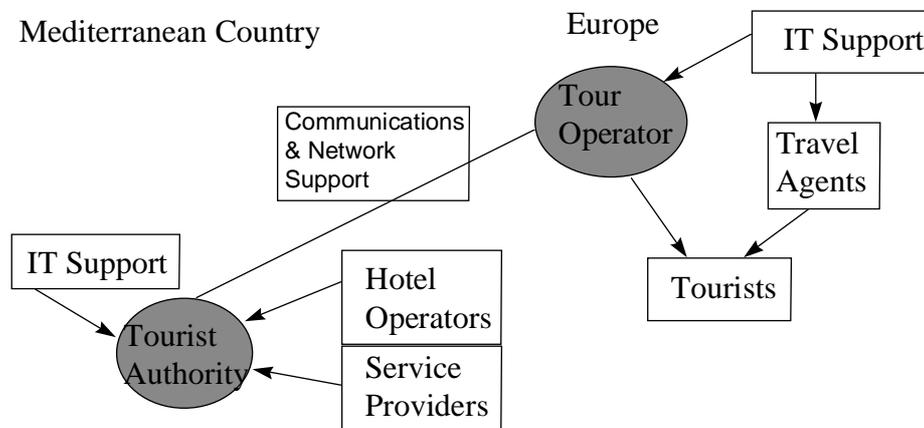
All Mediterranean countries are not currently at the same level of development, and cannot be
expected to proceed at the same pace. A common measure of technology development is the number
of telephone lines per 100 inhabitants. On this measure, Israel, Cyprus and Malta are comparable with
Europe with about 40 lines per 100 inhabitants. In contrast, Morocco, Algeria, Tunisia, Egypt,
Jordan, Lebanon and Syria have only about 12 lines per 100 inhabitants showing that they are not as
developed (figures from the CIA, 1994). This distinction will cause significant differences in the time
required to develop communications infrastructure to support networks to local tourist authority sites.
In the extreme case, the waiting list for installing a telephone line in a house in Mauritania is
currently 50 years (well beyond the expected life of a research project). The easiest way for these
countries to all be involved in a tourism research project and yet proceed at different paces is to
address different parts of the programme.

All countries can produce the multimedia content required to overcome hygiene factors and encourage
sustainable cultural tourism. This content can be delivered on CD-ROM and from a single national
WWW site in all countries. Such content could be pointed at by European Tour Operator servers for
all countries. However, the development of servers in local tourist authorities to provide information
on hotels or local activities may only be introduced in the countries with more developed
communications infrastructure.

Project Structure

The structure of the project would centre around users - Tour Operators in Europe and Tourist
Authorities in the Mediterranean countries. Each user would have an accompanying IT support
partner in the form of an ERCIM research institute in Europe and either an institute or company in
the Mediterranean countries.

Project Structure

Mediterranean Country   Europe

IT Support

Tour Operator

Communications & Network Support

Travel Agents

IT Support

Tourist Authority

Hotel Operators

Service Providers

Tourists

The project will agree standards for database data models for tourist databases. It will agree standards for internationalisation, user interfaces, WWW page and site design etc. at the project level.

Servers will be established one per country or province and populated with content from that province according to the project standards, following the participation of user and IT support organisations. This content will be made available on CD-ROM for distribution to travel agents, and cruise ships.

Servers will be established in the Tourist Authority by the IT Support organisation. Databases on the server will be populated by content from hotel operators and local tourist activity providers.

Servers will be connected to networks which will be supported by project partners.

Client machines will be established in European Tour Operators to access the Tourist Authority servers.
Server machines will be established in Tour Operators which will be populated by them with local IT support in order to advertise holidays. These servers may have to mirror country or province servers depending on network performance.

End user holidaymakers will have access to the three sets of severs - at country or province level promoting cultural information, at tourist authority sites promoting local activities, and at tour operators promoting individual holidays for sale.

Conclusion

ERCIM has already established the infrastructure in Europe with contacts in tour operators, network providers and IT support companies for most of the organisations required in this project. However, the participation of IT support organisations, local Tourist Authorities and cultural content providers in Mediterranean countries is required.

If the EU accept that a project such as this should be partially funded by them, and partially by industrial partners, it has been argued that the business benefits exist for the industrial partners to make such an investment.

It has also been argued that such a tourism project would encourage the development of network communication and computing infrastructure in the Mediterranean countries with short term economic benefits to the local area.

If such a project were proposed by the EU and funded with ERCIM involvement it would be expected to yield the following benefits :

Tourist activity provider - more goods sold
Local Craft traders - more goods sold
Local Hotel Operators - No empty rooms
Tourist Authorities - increased sustainable tourism
Mediterranean IT support - improved skills
Telecoms and Network Providers - improved infrastructure
Tour Operators - Higher Profit Margins and new markets
Travel Agents - More holidays sold
European IT support - Establish new markets
System Architects - Consultancy and Research Papers published
European Tourist - Happy holidays !