2004-2005 REPORT

tsb Technologies for Health & Well-being

ITACA
THE INSTITUTE FOR THE APPLICATIONS OF ADVANCED INFORMATION AND COMMUNICATION TECHNOLOGIES

Message

2004 was a crucial year in the short history of the Area of Technologies for Health and Wellbeing (TSB) at the ITACA Institute. That year, several Research and Development projects, which had evolved throughout 2003, were launched. At that time, there was a great deal riding on the bid due to the significant personal and collective effort invested in it, both on the part of the people who integrate TSB and with regard to the financial resources laid out by the Institute in order to achieve a significant presence in the 6th Framework Programme of the European Union (EU). The results obtained allowed us to enjoy a certain degree of satisfaction, albeit tempered, and gave us an increasing sense of responsibility towards the perspectives open throughout this period 2004-2005.

Hence, we have launched 4 important Integrated Projects (IP), within the "e-Health" (2), "e-Inclusion" and "Micro & Nano Systems" strategic objectives, a Specific Targeted Research Project (STREP) project of lesser importance, and a Support Action (SA) in which we have assumed a leading position from their gestation. The joint budget of the projects amounts to more than 70 million Euros, of which the EU's contribution totals more than 37 million Euros and the average return on investment of the TSB is 8%. It has a turnover of more than 69 persons per year. At the end of 2004, TSB was the third organisation in terms of personnel hired at the European Union's e-Health Unit, after the Philips and Siemens enterprises. Together with the UPM-LST group, it received more than 50% of the Spanish return within this unit.

If 2004 was the year of launching and initiation, with a significant leaning towards strategic management, 2005 was the year in which the technologically-based research was consolidated. During this period, we organised our own units of technological competence in wireless communications, information systems and knowledge management. With regard to R&D, on a national scale, we have mainly focused on collaborating with enterprises in industrial development projects within the PROFIT programme.

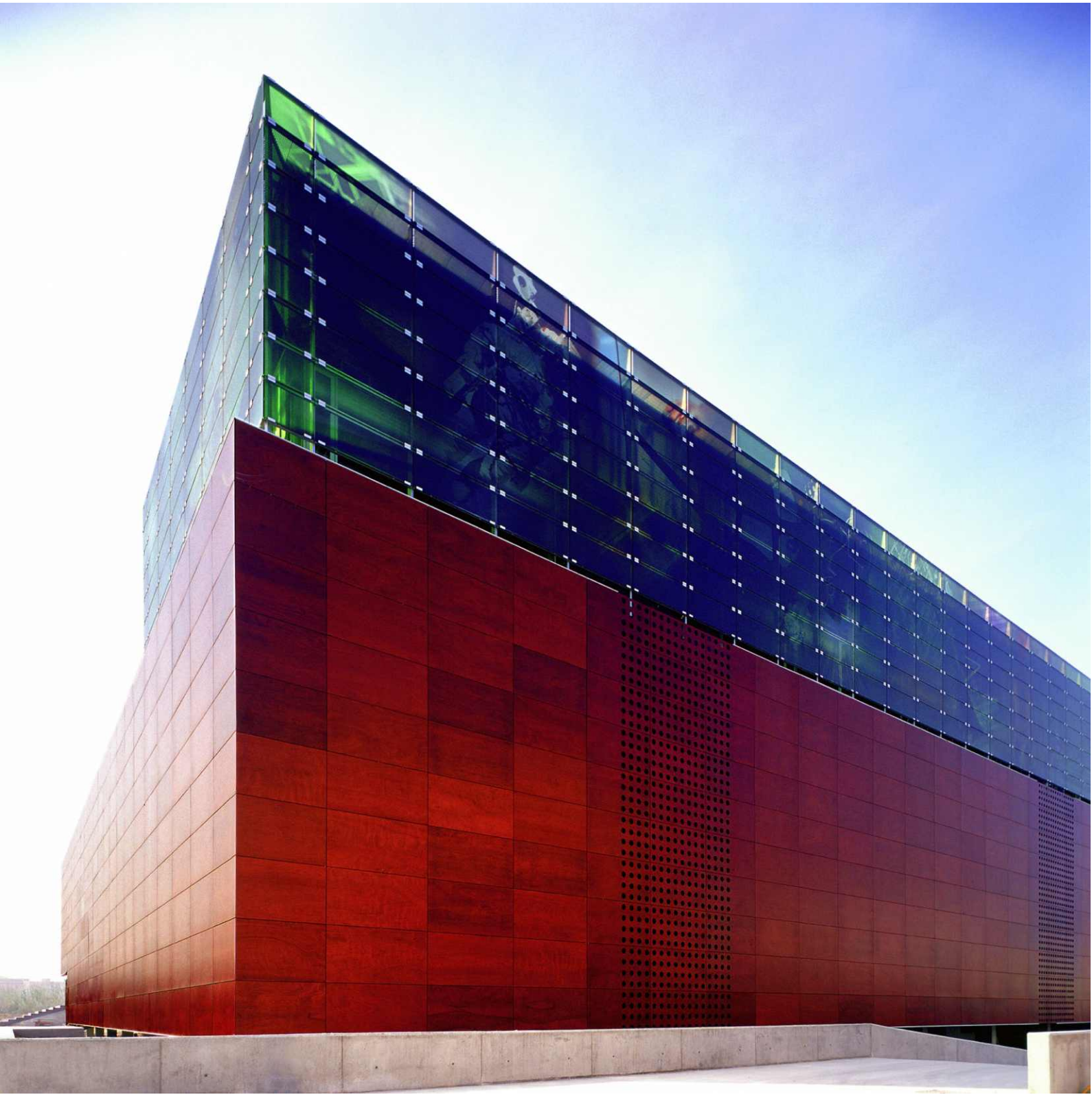
Additionally in 2005, we systematically developed transfer actions, resulting in agreements with enterprises and public regional bodies, such as the OVSI Foundation, the Department of Health of the Valencian Government, the Sociedad para el Desarrollo de Cantabria (SODERCAN) (the Society for the Development of Cantabria), and the University Hospital La Fe. We have also increased our collaborations with Vodafone, Siemens, Telefónica Móviles and other important enterprises belonging to this sector.

It is our intention to continue working in this direction in 2006, while progressively putting a greater input into new transfer projects. Our goal is to make 2007 the year of transfer, with the consolidation of strategic agreements with large enterprises and SMEs from the telecommunications, health technologies and services sectors. Part of the TSB's agenda focuses on the creation of at least one spin-off enterprise, and, of course, on the beginning of a new R&D&I initiative with the launching of the EU's 7th Framework Programme.

Finally, but of no less importance, is our internal organisation. Since 2003 we have worked to obtain our own equipment for the management of our job, as well as the human resources, knowledge and finances, which allow us to have a stable organisation, from which we can face the present and make future plans with reasonable guarantees of success.

I would like to take this opportunity to thank all those people who integrate TSB and the ITACA Institute for having made possible these achievements.

Sergio Guillén



Relevant Events

2004

Launching of the PIPS project January

Launching of the project "Personalised Information Platform for Health and Life Services (PIPS)". Integrated Project of the IST Programme of the Sixth Framework Programme of the European Commission.

Launching of the MY-HEART project January

Beginning of the project "Fighting cardio-vascular diseases by prevention and early diagnosis (MY HEART)". Integrated Project of the IST programme of the Sixth Framework Programme of the European Commission.

Initiation of the SENSATION project January

Initiation of the project "Advanced Sensor Development for Attention, Stress, Vigilance & Sleep/Wakefulness Monitoring (SENSATION)". Integrated Project of the IST programme of the Sixth Framework Programme of the European Commission.

2004 Vodafone Seminar, Madrid April

Participation in the 2004 Vodafone-UPM Seminar "3G: The Era of Environmental Intelligence".

Med-e-Tel 2004". Luxembourg April

Participation in the "International Conference and Trade Event for eHealth, Telemedicine and Health ICT".

Beginning of the CAREPATHS European Project June

Initiation of the project "An Intelligent Support Environment to Improve the Quality of Decision Processes in Health Communities (CAREPATHS)". STREP Project of the IST programme of the Sixth Framework Programme of the European Commission.

General Assembly of the TSB, 2004 Morella Seminar June

On 14 and 15 June, the members of the TSB met in the city of Morella (Castellón) where the Annual General Assembly was held.

MEDICON 2004, Ischia August

Participation in the Congress "Mediterranean Conference on Medical and Biological Engineering".

CAMPUSALUD September

The signing of an agreement with Telefónica Foundation for the development of the Health portal on the Internet in the CAMPUSRED environment.

Launching of the European project ASK-IT Octubre

Initiation of the project "Ambient Intelligence System of Agents for Knowledge-based and Integrated Services for Mobility Impaired Users (ASK-IT)". Integrated Project of the IST programme of the Sixth Framework Programme of the European Commission.

1st Seminar of Mobile Applications in the Healthcare Sector November

On the 30th of November,the 9 d'Octubre NISA Hospital hosted the first Seminar on Mobile Applications in the Healthcare Sector, organised by the TSB with the collaboration of Telefónica Móviles.

CASEIB 2004 November

Participation in the XXII Annual Congress of the Spanish Society of Biomedical Engineering.

Agreement with the OVSI Foundation November

The signing of the agreement between the Oficina Valenciana para la Sociedad de la Información [Valencian Office for the Information Society] and ITACA for the development of the project "Preliminary Study, development of applications, system implementation and the pilot experience of telemedicine within the service provision - Alcoy Ciudad

IST Event 2004. The Hague Noviembre

Participation in the Event of the IST Programme of the European Commission, presenting the My Heart project.

2005

I CampusRed International Congress January

Presentation of the health portal CAMPUSALUD.COM developed for the Telefónica Foundation.

TIC Seminars in the Development of the National Health System of the Dominican Republic. Santo Domingo February
Invited lecture in these seminars organised by INDOTEL and FUNGLODE.

Agreement with PHONEVISION WIMAX S.L. March

Agreement for the development of a pilot project based on WIMAX technology.

e-Mobility. Brussels April

Participation in the inaugural meeting of the e-Mobility European Technology Platform.

Med-e-Tel 2005". Luxembourg April

Participation in the "International Conference and Trade Event for eHealth, Telemedicine and Health ICT".

Cooperation seminar between the TSB and LST Centres. Altea May

Members of the TSB and of the Life Supporting Technologies Group (LST) of the Polytechnic University of Madrid met on the 4th and 5th of May in the city of Altea.

Seminar on Technology Knowledge Intensive Based Services. Gijón May

Participation in this seminar by means of an invited lecture.

Initiation of the European project @HEALTH May

Initiation of the project "EU-LAM community to foster international cooperation on eHealth applications and Technologies (@HEALTH)". This is an initiative within the IST programme of the Sixth Framework Programme of the European Commission.

2nd Seminar of Mobile Applications in the Healthcare Sector June

On 28 June La Fe University Hospital in Valencia held the second Seminar on Mobile Applications in the healthcare sector, organised by the TSB in cooperation with this hospital and Telefónica Móviles.

Workshop on the Use of Space Technology for Human Health for the benefit of Latin American countries. Cordoba (Argentina). September

Participation in the Workshop organised by Argentina/ESA/United Nations for the benefit of Latin American Countries. The primary objective was to promote awareness about the use of spatial technology as applied to healthcare.

Intelligent Ambience and Well-Being. Tampere. September

Participation in the International Conference "INTELLIGENT AMBIENCE AND WELL-BEING".

IEEE Engineering in Medicine and Biology Society Annual Conference. Shanghai . September

Participation in the International Conference "The 27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society".

2005 Vodafone Seminar. Madrid October

Participation in the 2005 Vodafone-UPM Seminar "M-Ciudad: el mundo del futuro" (M-city: the world of the future).

EMBEC´05. Prague November

Participation in the International Conference "The 3rd European Medical and Biological Engineering and IFMBE Conference".

CASEIB 2005. Madrid November

Participation in the 23rd Annual Conference of the Spanish Society of Biomedical Engineering.

TeleMed and eHealth'05. London November

Participation in the Congress "TeleMed and eHealth'05"" of "The Royal Society of Medicine" United Kingdom.

DRT4ALL. Madrid November

Invited lecture in the International Congress on Domotics, Robotics and Tele-assistance.

SERPROMA 2005. Valencia November

Participation as exhibitors at the Professional Fair of Services and Products for the Elderly.

E-Mobility. Brussels November

Participation in the General Assembly of the e-Mobility European Technology Platform.

Agreement with the Fundación para la Investigación (Foundation for the Research) of the La Fe Hospital November

Signing of the joint cooperation agreement between ITACA and the La Fe Hospital Foundation in the area of information systems, for the improvement of patient care in the fields of home care and monitoring.

e-MOV. Madrid. December

Attendance at the General Assembly of the Plataforma Tecnológica Española de Comunicaciones Inalámbricas (Spanish Technology Platform for Wireless Communications).

Strategy

The strategy of the TSB is defined over three converging action lines to constantly adapt to the technological changes and the social demands of our time. These lines are: continuous improvement of our own technological skills, the learning and understanding of the problems and challenges our customers face, and the development of strategic alliances which facilitate the transfer to the market.

A key mission is to improve our technological skills. The training of our human resources and the consolidation of a stable and cohesive nucleus for interdisciplinary competence, which allows us to face present and future challenges, is the cornerstone of our strategy. From the outset, our approach has been pragmatic, since more than 70% of our resources in R&D projects is dedicated to the creation of knowledge in all the relevant areas of interest. We are integrated in an environment which is rich in the creation of technical and scientific knowledge, that being the Polytechnic University of Valencia. Thereby giving us access to an extraordinary educational provision and scientific infrastructures. As a counterpart, at the TSB, we offer excellent personal and professional development opportunities for students and graduates.

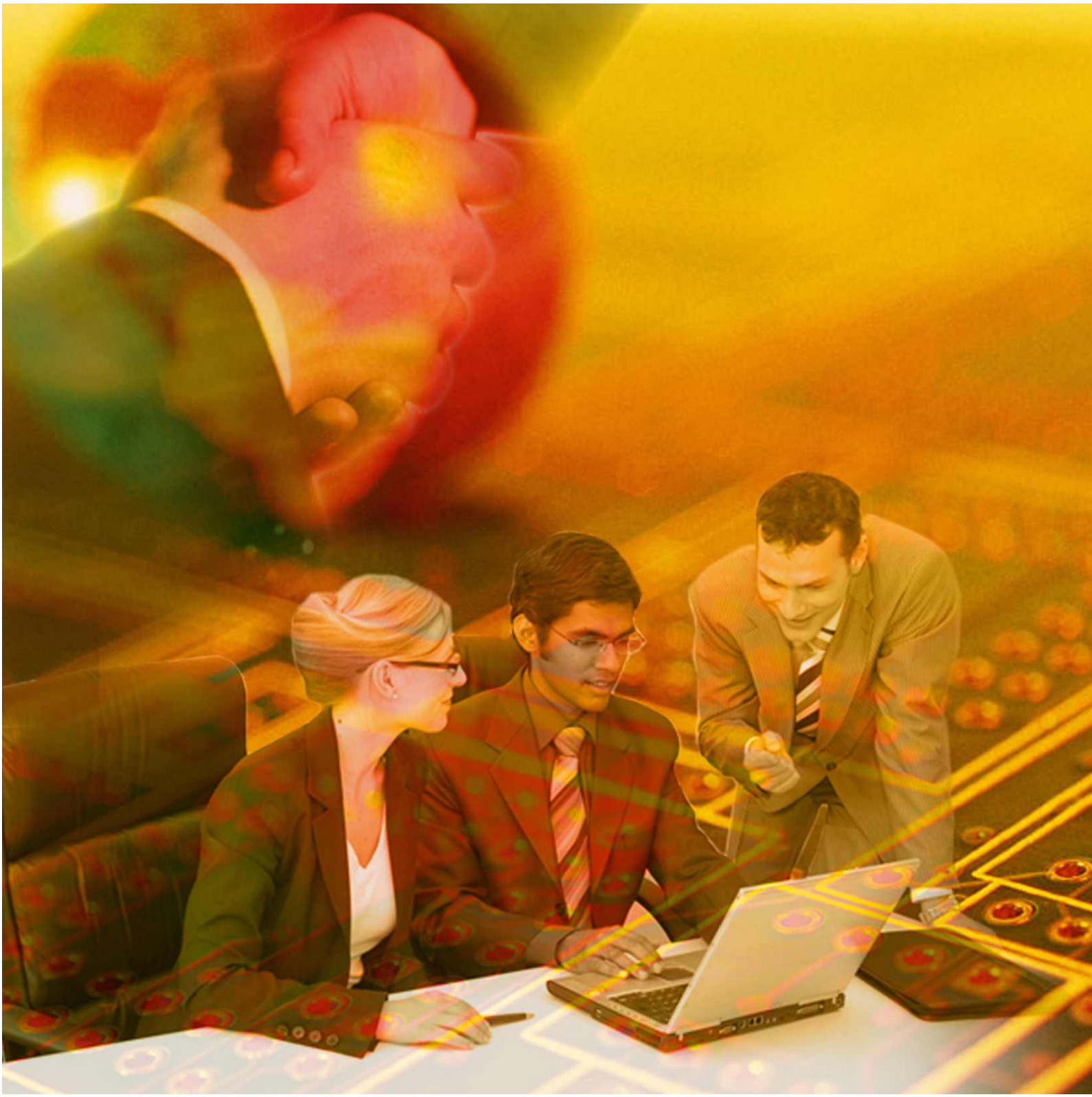
Our second strategic priority is to establish the needs of our customers. Immersed in the Information Society, there is a change in paradigm by which, customers are increasingly looking for solutions to complex problems rather than focus on technologies and components. In order to adapt to this change, we reorganised our internal structure in 2004. The core of our skills, as can be observed in the figure on the opposite page, can be found in Three R&D&I Strategic Programmes, and Five Areas of Technological Knowledge.

The Strategy programmes are responsible for approaching customers and users in order to establish and learn about their innovation needs and the reality of the market . All our R&D projects lie within one of these programmes, due to the fact that they look for innovative technological solutions to complex problems. At this level the technological needs which are supplied by the Knowledge Areas are defined.

All the effort made to re-organise over the past two years can be justified if our final objective is transfer and innovation. As a consequence, we have also adapted our transfer strategy to the change in paradigm, by actively seeking not just customer-supplier relationships, but long lasting alliances with enterprises, R&D institutes and organisations in general, which participate in the global business of health and well-being.

In regards to this, we feel excited with the strategy agreement reached with the La Fe Hospital Foundation for the research and development of integrated management systems of welfare processes, their re-engineering and introduction. Other important agreements with enterprises and public institutions have been established during this period and will come into fruition in the form of specific actions during 2006 and 2007.

These three leading threads of our strategy have obvious implications for the culture of the TSB . The change is not easy and requires time. To achieve this, we have the involvement and enthusiasm of all those who integrate the area and the support of all those with whom we have already established collaborative links.



Transfer and innovation

La Fe University Hospital

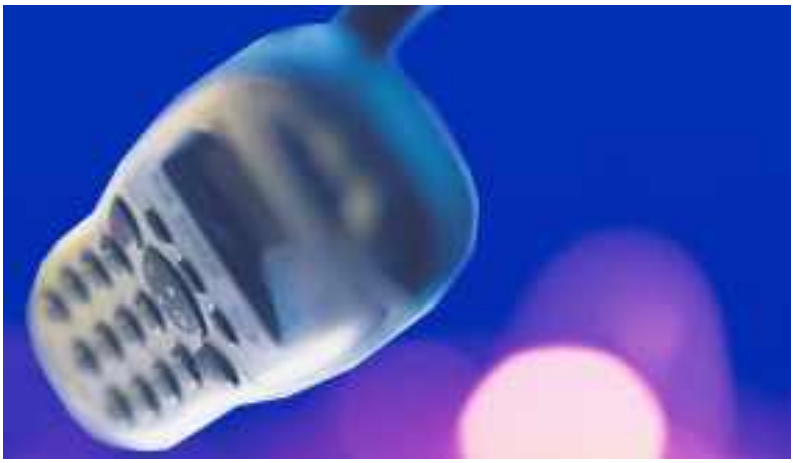
The beginning of cooperation and transfer activities with La Fe University Hospital date back to the year 2000 with different units within the Hospital, although it has been the Home Hospitalisation Unit which has participated in a more intense and fructiferous manner with TSB in different national R&D initiatives of, (GIPA), European initiatives (Ideas in e-Health and CAREPATHS and technological transfer initiatives (distributed integral management systems for Home Hospitalisation Units). These activities led to the signing of a Framework Cooperation Agreement between ITACA and the La Fe Hospital Foundation in 2004, creating a joint strategic alliance with the following objectives:

- to detect and solve socio-healthcare problems in home care through the use of the ICT;
- to promote the integral and integration management of welfare processes for patients with chronic conditions, involving primary care, specialised and hospital medical personnel;
- to design, define and introduce the clinical pathways, facilitating the design, definition and execution of these welfare plans, applied to patients with a specific pathology, presenting a predictable clinical course. This involves practising Evidence-Based Medicine always with the prime purpose of making the product and service transferable to the market.

R&D Vodafone Group

The end of 2003 saw the beginning of a long period of collaboration with the research unit known as the R&D Group of the Vodafone Corporation. Central to this collaboration was the design of a global strategy for products on m-Health (Mobile Health). The involved centres were the R&D Group units established in Germany, Spain, Holland and Italy, the Vodafone Foundation in Spain and the Life Supporting Technologies (LST) group of the UPM. The work carried out in 2004 resulted in the creation of the MANSANA (Managing health throughout your life) joint project, coordinated by Vodafone Germany. The objective being to develop a technological plan of applications, products and services in the e-health market, with the main focus on services for professionals, prevention services and services to support healthy lifestyles.

The project aims to analyse and find strategic guidelines throughout the value chain, from end-to-end solutions, to valid exploitation models for Europe in each of the chosen fields . This project is currently being conducted.



Telefónica Móviles

Within the Telefónica Group, Telefónica Móviles has been the group which has more clearly worked towards e-health and has from the beginning, promoted transfer activities together with the TSB.
Evidence of this has been the joint organisation by Telefónica Móviles and ITACA of the 1st and 2nd Seminars on Mobile Applications to the Healthcare Sector, held at the 9 d'Octubre NISA Hospital and La Fe University Hospital in 2004 and 2005 respectively.

In September 2005 a "Memorandum of Understanding" was signed by ITACA and the operator Telefónica Móviles España S.A.U. (TME), with the objective of working jointly on a technological alliance to create, exploit and promote new products for mobile telephony specifically in relation to the health sector.

In particular, the collaboration between the TSB and the Department of Vertical Applications for TME focused on the search for new mobile phones and/or the improvement of existing services directed at both patients and professionals within the field of e-health. This mainly involves home care, SMS reminders (medicines, appointments, etc.), campaigns for the promotion of health, post-operative follow-up, remote monitoring, emergency management, mobile tele-assistance and location.

Within the framework of this agreement, an application developed by the TSB has been identified for the home follow-up of dermatology patients, by means of sending pictures and questionnaires through a mobile phone. As such, we are working on product refinement and a business model for the launching of the product at the end of 2006.

Fundación Telefónica

During 2004 and 2005, the TSB improved and maintained the Content Site Campusalud, available at http://www.campusalud.com, integrated within the CAMPUSRED.NET programme of the Telefónica Foundation and directed towards the Latin-American University Community.

The aim is to inform, shape and entertain through quality contents and interactive services, designed to accustom people to healthy habits, to the prevention of the most prevalent illnesses, and all those aspects which, from the point of view of health, can be of interest to this group.
Both the TSB and the Telefónica Foundation are actively promoting this content portal, and the possibility of enlarging the portal in terms of contents and addressees is being analysed. To give some idea of its impact, it is at present one of the 10 most visited health portals written in Spanish.

OVSI Foundation

In the field of home hospitalisation, a transfer and innovation activity has also been carried out with the (OVSI) Oficina Valenciana para la Sociedad de la Información [Valencian Office for the Information Society].

Within the framework of Alcoy-Ciudad Digital, which is managed by the OVSI Foundation and funded by the Town Council of Alcoy, the Valencian Regional Government and the Ministry of Development, following a request for tenders, a contract has been signed. This is for the design, development, installation, and evaluation of a system for the integral management of the Home Hospitalisation Unit at the Virgen de los Lirios Hospital in Alcoy.

This system, named "LYRA" is based on our experience and joint developments with La Fe University Hospital . From the very outset, the implementation project has had the support of the Department of Health of the Valencian Government, which has been involved in order to ensure that LYRA is extended to the rest of the Home Hospitalisation Units within the public hospitals of the Autonomous Communities.

NISA Hospitals

NISA is the most important private hospital group in the Valencian Community and the TSB has cooperated with it since its creation in 1998.

In the last years, two tele-assistance services developed by the TSB have been made available through NISA hospitals.

The first, offered by the NISA 9 d'Octubre Hospital, is a tele-gynaecology service for pregnant women who face the possibility of miscarrying or the risk of premature labour. This service uses a scanner and a computer at home with wideband networks.

The second service, which is offered by the NISA Valencia al Mar Hospital, is a tele-dermatology service for the continuous control and care of patients under the Dermatology Service. These patients display medium-term or long-term pathologies, and the service introduced for their care is based on the use of mobile phones, which allows a continuous interactive relationship between patient and doctor to be established throughout the therapeutic process.

ONO

Since 2000, several transfer and innovation activities have been developed with the cable operator - ONO,, in which there was a joint initiative for the development of e-health applications which presented major bandwidth requirements.

In 2004 and 2005 we were engaged with ONO in:

- maintaining the tele-gynaecology services which were offered through NISA Hospitals;
- analysing the transfer opportunities in the development of new services related to the America's Cup event ;
- validating, from a commercial standpoint, the tele-medicine services with their employees;
- studying the possibilities presented by Digital Terrestrial Television (DTT) for the development of a new set of services capable of improving the health and wellbeing of citizens.

Dr. Pesset University Hospital

Since 2002 we have been cooperating with the Dr. Pesset University Hospital in the application of CIT for problem-solving. The most obvious examples of technological transfer designated to cover the needs of the hospital is Mobile CMA, an application of m-health which improves the post-operative follow-up of patients in Outpatient Surgery Units through the exchange of multimedia information between patient and doctor. Using GPRS/UMTS networks, and making use of the capabilities of the new mobile terminals, the service permits continuity of care between hospital and home without the loss of quality and with an 30% improvement in the efficacy, according to clinical tests carried out.

The Hospital, Telefónica Móviles and TSB agreed to organise the 3rd Seminar of Mobile Applications in the Healthcare Sector, which will be held in this hospital in June 2006.

Centenary Group

In March 2005 an agreement was signed with Phonevision, an enterprise member of the Centenary Group Inc., to carry out a pilot study in Valencia, in order to validate the capabilities of the WiMax technology to support wireless data and voice services in metropolitan and rural environments. WiMax technology permits high speed wireless connections, covering a radius of up to 20 kilometres, avoiding the loss of connection at any time, using bandwidths of more than 10 Mbps.

The pilot test was launched in September of this year, at a base station located at the ITACA headquarters at the UPV, and was carried out over a period of eight months, following a protocol established between both parties. Two agreements were simultaneously reached; one with the German challenger - United Internet Team Germany participating in the 2007 America's Cup. The second agreement was made with Sagunto Town Council to extend the pilot test to the area hosting the regattas of this competition and to an urban area, respectively. These will be developed in 2006 and 2007.

Research and Development

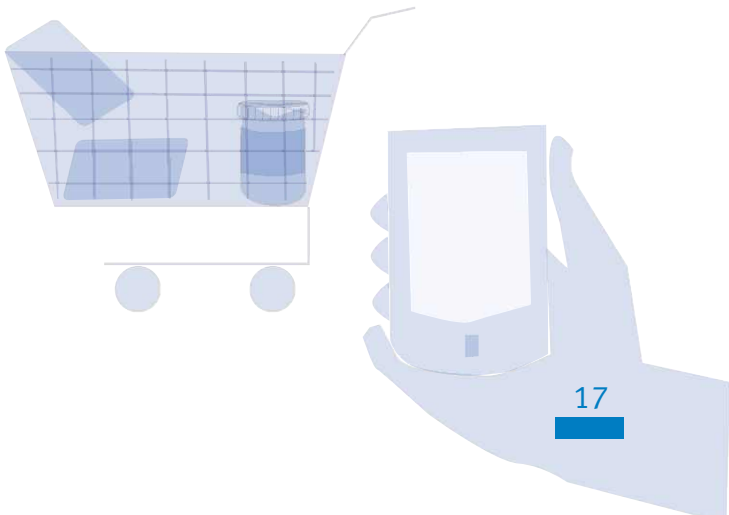
PIPS

"Personalized Information Platform for Life and Health Services (PIPS)" is a project integrated within the 6th Research and Development Framework Programme of the European Commission, in the Information Society and Health Technologies (e-Health), with a lifespan of 4 years from January 1st 2004.

The main objective of PIPS is to use the most advanced information and communication technologies in order to encourage people to make increasingly healthier personal choices about their daily lives. This is possible by making available to the user the precise information for improving their personal wellbeing and their quality of life, for preventing or managing conditions and for continuous care regarding treatment after discharge from hospital and also for patients with chronic conditions.

The project develops a "virtual assistant" which can be connected to the Internet using any device (PC, television, mobile phone, etc.). Thus enabling the person to receive the necessary support to put into practice the recommendations and therapies to enjoy a healthy lifestyle and improve the state of health of the patient when out of hospital. The PIPS systems, by means of a technological platform, offers a wide range of innovative services, taking into account the needs and preferences defined in the personal profile for each individual. Thereby ensuring that the systems can supply information and advice about alimentation and medicine consumption. They also allow health conditions to be monitored, supply access to information and specific health services and even perform shopping. PIPS precisely compares our personal information with the information of the world around us, thus helping us to solve different situations in our daily life with the utmost security.

The project has a consortium comprising of 16 international partners. Among these, the Milan San Raffaelle Hospital, the Joint Research Centre of the European Commission, the Atos Origin, Astra Zeneca, GlaxoSmithKline and MARSH enterprises, the Polytechnic University of Madrid, the Polytechnic University of Gdansk (Poland) and the University of Liverpool (United Kingdom) should be mentioned. TSB mainly participates in the definition of the project, its pilot studies and its business strategy. It also coordinates the development of services on a mobile platform and the activities of the group of experts, external consultants and collaborates in the development of different software and knowledge management services.



MY HEART

"Fighting Cardiovascular Diseases by Preventive Lifestyle and Early Diagnosis (MY HEART)" is an integrated project of the 6th Research and Development Framework Programme of the European Commission, within the area of the Information Society and Health Technologies (e-Health). It runs for 45 months and began in January 2004.

The main objective of the project is to enable the citizen to take greater control over his or her health condition. This facilitates the fight against cardiovascular diseases (CVD) by means of prevention and early diagnosis using services which combine the most advanced technology in such fields as intelligent textiles, signal processing electronic systems integrated into clothes, advanced devices for interaction between the user and the professional and communication systems.

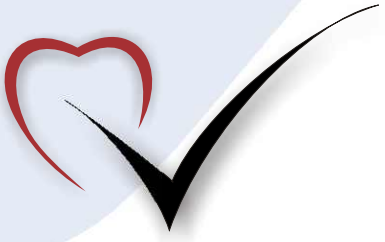
Five working areas which correspond to each of the main risk factors associated with cardiovascular diseases have been established: CardioActive, to fight a sedentary lifestyle, CardioSleep, to improve the quality of sleep, CardioRelax, to fight stress, CardioBalance, to fight obesity, and CardioSafe, to fight morbidity through early diagnosis. Within these areas, sixteen different concepts have been designed, developed and evaluated in the first phase of the project, of which four have been selected for their development as a product in the following phases

TSB participates in the development of the project "Activity Coach" in the CardioActive area, which consists of a personal training service aimed at encouraging and promoting people of all ages to carry out physical activity and exercise at any convenient time and place for them. This can be done through personalised training programmes and dynamic guidance, based on the intelligent monitoring of biomedical signals and on real time feedback during exercise, all this in an immersive environment with high motivation and one rich in comforting experiences.

Within the CardioSafe area, the TSB is also participating in the development of the product "Heart Failure Management". This system is aimed at improving the mortality and morbidity rates of patients with cardiac insufficiency permitting recovery at home in an independent but controlled manner following a cardiac event, thus avoiding possible re-hospitalisations and maintaining a higher quality of life . It is based on supplying support and assistance during long-term recuperation, helping patients to carry out certain physical activities in the form of periodic walks, with risk monitoring and professional help. It also provides the tools to continuously monitor the heart once the patient has left the hospital, evaluating his or her functional capacity during the walks and assessing the possible risk of suffering a cardiac event such as arrhythmias or coronary heart disease.

The concept will permit the medical professional to follow up the patient's condition of will provide the patient with the necessary information to maintain the feeling of support and security during his or her recovery and afterwards during the normal course of his or her life.

The project, led by Philips Research Laboratories of Aachen (Germany), has a consortium integrated by 33 partners. Among these organisations such as Medtronic, the Swiss Centre for Electronics and Microtechnology, the University of Pisa, the Polytechnic University of Madrid, the San Carlos Clinical Hospital of Madrid, the University Hospital of Coimbra, and the Vodafone Foundation in Spain should be mentioned.

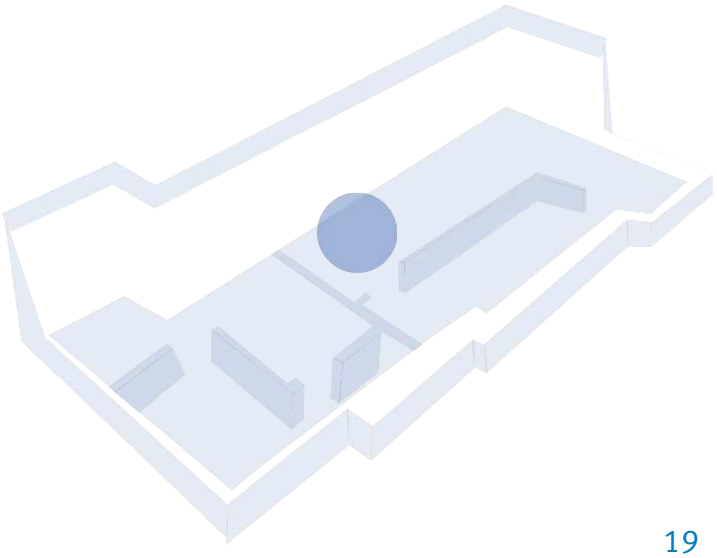


OPTIMA

"Optimisation of Time and Use of Equipment for a Hospital in the Surgical Area by means of a Real Time Localisation System (OPTIMA)" is an R&D project co-funded by the Ministry of Science and Technology conducted between November 2002 and October 2005. It was based on the development of a platform for localisation and information exchange based on Bluetooth low cost wireless technology.

The platform is modular and open, which permits the development of different applications requiring the use of the localisation and exchange of information tools. One of the application fields, in which the OPTIMA project was focused, is the management of health centres. Here an application for recording the periods which patients spend in the different areas of the of a hospital's surgical section, which allows the measurement of performance efficiency in the mentioned area, was also developed. The definition and validation of this application were carried out in cooperation with the La Ribera Hospital (Alzira, Valencia).

Other applications for this system are the location of portable materials, such as wheelchairs, portable monitoring devices, etc., as well as an anti-robbery alarm for the mentioned materials, or the real-time location of healthcare personnel and patients.



SENSATION

"Advanced Sensor Development for Attention, Stress, Vigilance & Sleep/Wakefulness Monitoring (SENSATION)" **)"** is a project integrated within the Sixth Framework Programme for Research and Development of the European Commission, in the Microsensors and Nanosensors field of the programme of Technologies for the Information Society. The length of the project is four years starting from 1 January 2004.

The objective of the project is to research the state of sleep and its connections with the conscious state, in addition to stress and other emotions, in order to develop technologies for safety, health and comfort. Thus, SENSATION seeks to promote the health, safety and quality of life of people as well as the protection of the environment, by reducing sleep and fatigue related accidents . The core of the project consists of research on microsensor and nanosensor technologies in order to monitor, detect and predict the human physiological condition in relation to the state of wakefulness, fatigue and stress at each moment, in each location and for each person. Thus, the different states of the human brain will be defined, and monitored with the development of 17 microsensors and 2 nanosensors (sensors for brain monitoring, bracelets, for the follow-up of pupil movement, motility, etc.), all of which will be integrated within wireless BAN, LAN and WAN networks.

The project has a consortium formed by more than 40 international partners among which the Hellenic Institute of Transport, Fraunhofer and VTT, the Siemens VDO Automotive, DaimlerChrysler AG and Atmel enterprises and the Polytechnic University of Madrid, the University of Barcelona and the University of Surrey should be pointed out.

TSB mainly participates in the development of a communications platform to connect the developed sensors with the applications using them. This communications platform is divided into three levels: Body Area Network (BAN) which permits the wireless reception of all data obtained by the sensors, and their wireless transmission to the other two levels of the communications platform, Local Area Network (LAN) and Wide Area Network (WAN).

CAREPATHS

"An intelligent support environment to improve the quality of decision processes in health communities(CAREPATHS)"is a STREP project of the Sixth Framework Programme for Research and Development of the European Commission, within the Information Society and Health Technologies (e-Health) area.

The project lifespan is 30 months, and began in October 2004. Its objective is the creation of an operational environment, which permits effective decision making in healthcare processes. In order to carry out this process, the project implements the concept of a clinical pathway. Clinical Pathways are welfare plans which are applied to patients with a specific pathology and who present a predictable clinical course defining when, how, and in which sequence the care or welfare should be applied and by whom. In addition, the objectives for each phase are also defined.

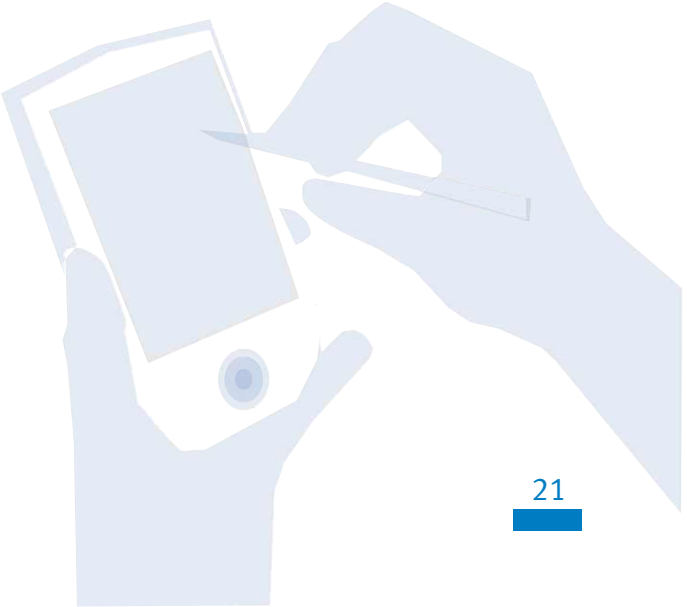
10 enterprises and institutions belonging to five different countries: France, Greece, Italy, Great Britain and Spain are participating in the project. The project will be validated by two important hospitals: La Azienda Ospedaliera of Parma and La Fe University Hospital of Valencia.
Clinical pathways are a relatively new concept in today's world of medicine and it is precisely for this reason that there are no computer tools capable of facilitating their correct application.

Through the use of adequate information systems it is possible to design, establish and evaluate the clinical pathways, thereby improving the welfare quality, coordination and cooperation among professionals, and overall efficiency. Subsequently, obtaining an improvement in patient satisfaction . All this under the premise of reducing variability in clinical practice, since a certain standardisation of the welfare processes is achieved.

The resulting system is divided into several functional modules: the clinical pathways management module, the module of connection with the hospital systems, the variation management module, the module of automatic documents search, the clinical pathway designer, the cost analysis and advanced report module and the user management module.

The TSB participates in the project contributing its knowledge of the establishment of welfare processes and support systems for t decision-making. In particular, it is in charge of the development of the cost analysis module and variation analysis module. For this, it uses techniques based on artificial intelligence and pattern recognition in order to develop algorithms which permit the evaluation and comparison of the execution of different pathways for patients.

The project will finish in the last quarter of 2006 with two phases of piloting and validations at the hospitals over a 5 month period.



GIPA

"GIPA (Integral Management of Welfare Processes for Chronic Conditions)" is a PROFIT project co-funded by the Ministry of Industry, Trade and Tourism. The main objective of this project is to design, develop and evaluate a system which, making use of the ICT, permits an integral and integrative management of the welfare systems related to home care within the framework of the Spanish Health system involving primary care, specialised and hospital medical personnel. With this, the aim is:

- to support and facilitate the adoption of a new model for the attention and care of chronic conditions, reinforcing the role of primary care and including the patient and his or her environment as active agents; y
- to quantify the expected improvement in welfare processes by means of the development of a pre-commercial prototype and its piloting in a controlled real environment.

The project is carried out by ITACA and Department 7 of the Department of Health of the Valencian Community, involving the Home Hospitalisation Unit of La Fe University Hospital and specialised and primary care centres dependent on this Hospital.

Department 7 will be responsible for the evaluation, whereas the TSB is in charge of the system development, which will be compatible with and integrated with the existing information systems. This system will be formed by PC, Tablet PCs, PDAs and telemonitoring equipment for their use by medical personnel in hospital and out-of-hospital environments, as well as by patients at home.

GIPA facilitates the solution to the problem of chronic conditions focusing on the patient and the integration of the entire healthcare service chain with the support of the ICT, altering functional healthcare processes, however in line with medical personnel guidelines. The main elements incorporating the GIPA system, are the clinical pathway development module and care plans, the activities and resources management module, the user support module and an IP Response Medical Centre. This is a call centre which, automatically and asynchronously gathers the monitoring of all the patients and is managed by the hospital personnel.

Hence ensuring that all the data are received at the same point. Furthermore, the actions become much easier and can be managed more efficiently, particularly when dealing with any alarm derived from monitoring using values obtained from outside the previously stated range.

ASK-IT

"Ambient Intelligence System of Agents for Knowledge-based and Integrated Services for Mobility Impaired users (ASK-IT)" is an integrated project of the Sixth Framework Programme for Research and Development of the European Commission, within the area of e-Inclusion of the programme of Technologies for the information society. The duration of the project is 4 years, and it was launched during the summer of 2004.

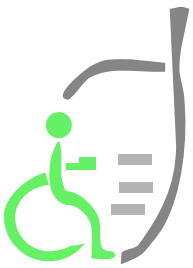
The complete title describes the main objective of the project: to create a platform based on Environmental Intelligence which, in an integrated manner, provides services for people with some sort of limitation to their mobility.

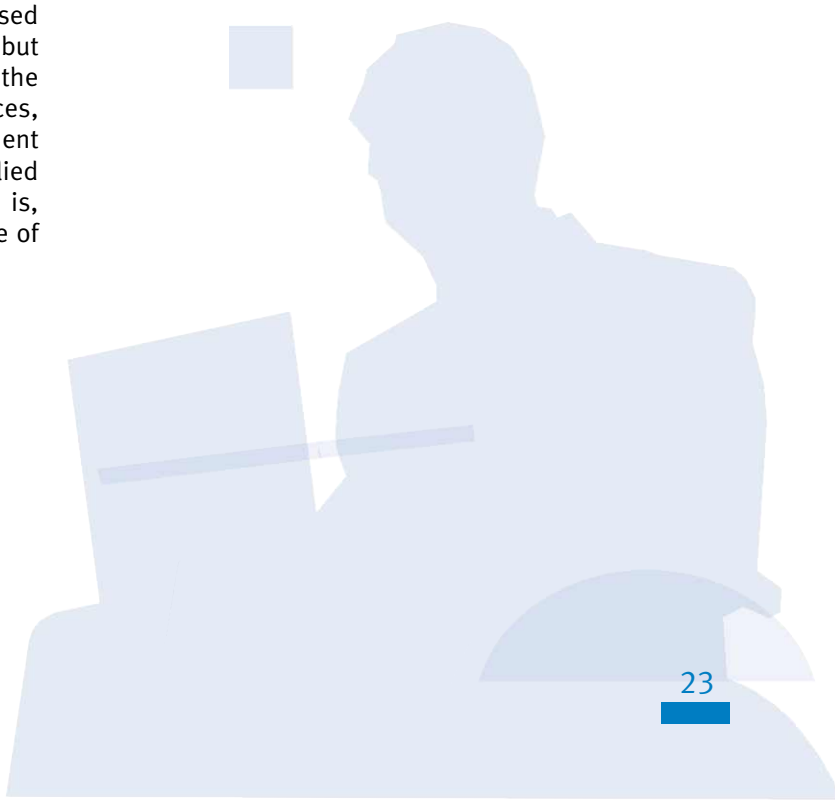
According to recent studies, of the 344 million inhabitants of European, it is estimated that approximately 80 million European citizens have some type of problem related to mobility and that about 50 million have some limitation in terms of the activities they can carry out.

In this context, the ASK-IT project is developing a service platform for this group of people in several environments, mainly when outside their homes, during a trip or when commuting to the work place. These services are supplied in a personalised, self-configurable, intuitive manner, related to use and situation context. Thus, ASK-IT is mainly focused on personalised transportation and tourism services, but without ignoring aspects related to the domotic control of the environment, -automatic payment and trade services, navigation and location, health and emergency management and assistive technologies. All these services are supplied under the concept of seamless connectivity, that is, independent of the environment, user location and type of user.

To build this platform, the consortium has chosen the most advanced technologies in the corresponding contexts. By doing so, the personalisation of services can be achieved through employing intelligent agents, ontology, advanced communications and specific developments for each area or service.

TSB participates in the project as the technology supplier for the in movement health service, putting its experience in monitoring devices and e-health and telemedicine solutions at the disposal of the consortium. In addition, it participates in the development of the Environmental Intelligence platform with its experience in intelligent agents, knowledge management and body area and personal area networks.





AID-VIDA

The *"**Advanced System of Integral Assistance for Independent Life (AID-VIDA)**"* project aims to create a new generation of tele-assistance systems.

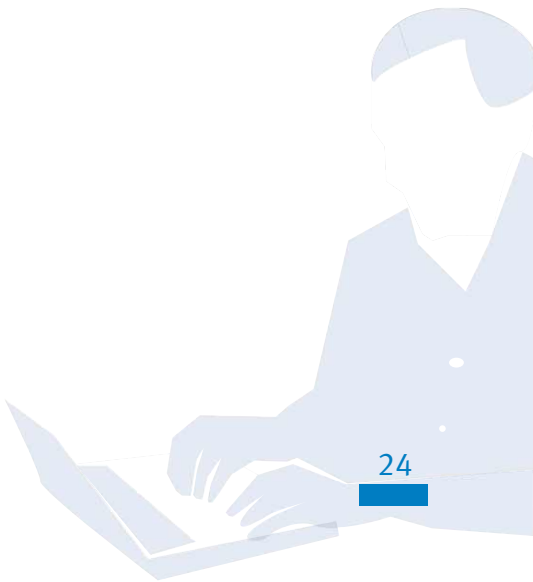
The tele-assistance services are used by elderly or dependent people. These are people who live alone or spend a great part of their day alone at home. They are based on alarm emissions which are transmitted to a receptor base which then retransmits the call by telephone to an emergency centre. In order for the system to work, the user must press the emitter, usually a pendant or watch. This presents the greatest problem, since, in the case of a fall or a fainting episode, the person could be rendered unable to carry out this action. The project aims to overcome this shortcoming by designing a device capable of monitoring user activity in a non-intrusive way, thus emitting emergency alarms in possible risk situations.

The device is equipped with intelligent algorithms for activity monitoring, which register the main habits of the person and develop a profile capable of distinguishing between activity which is within the normal parameters, and the activity present when something anomalous occurs. For instance a fall in the bath, an excessive resting period in the bedroom or living room of the house, etc.

The system is designed to be compatible with the existing systems and is integrated by a residential gangway connected to the television. In addition, this connection facilitates the making of videoconferences with the emergency centre or with the closest relatives.

The project is partially funded by the Ministry of Industry within the PROFIT programme (National Programme for IS Services and Technologies (12th strategy action: e-inclusion and e-assistance)). It has an approximate budget of 1,200,000€ divided between the four participating organisations: CEPRES Asistencia Sanitaria, TELEHEALTH, UPM-LST and the ITACA Institute.

TSB contributes its knowledge of intelligent algorithms for behaviour modelling and its experience in the development of wireless communications solutions to the project.



GTS

The ***GTS*** national project is part of the Programme for the Promotion of Technical Research (PROFIT) within the Thematic Area of Information Society Technologies in their 2005 edict from the State Secretariat for Telecommunications and for the Information Society of the Ministry of Industry, Trade and Tourism. The stated length of this project is 2 years, to be started in January 2005.

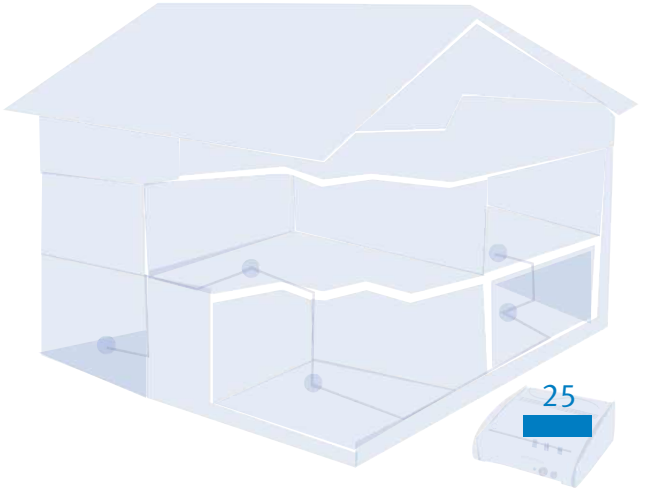
The main scientific-technological objective of the project is the design and development of a technological platform for advanced service supplies and home hospitalisation services.

The technological platform includes the development of a specific device called home gateway of tele-assistance, responsible for managing the services at home. It also includes the development of a user-friendly videoconference module, the development of the communications networks at home, the integration of home domotics technology with the gateway, which integrates the services and also the design and development of the interaction mechanisms accessible between user and platform.

In contrast, the development of the management system for a services operator which hosts the Coordination Centre is being contemplated. For the final year, the project has planned a five month pilot phase with the final users.

The project has a consortium integrated by 7 partners: SIEMENS Spain, IS2, Polytechnic University of Madrid, Public University of Navarre, Rioja Salud Foundation, Riojan Health Service and ITACA.

The TSB mainly participates in the definition of a model for users and services, and the development of a home communication networks based on standard protocols, in order to ensure integration between the gateway and the devices used to monitor selected vital signs. It is also involved in the development of a module based on web technology to enable the control of the patient's vital signs from the service coordination centre.

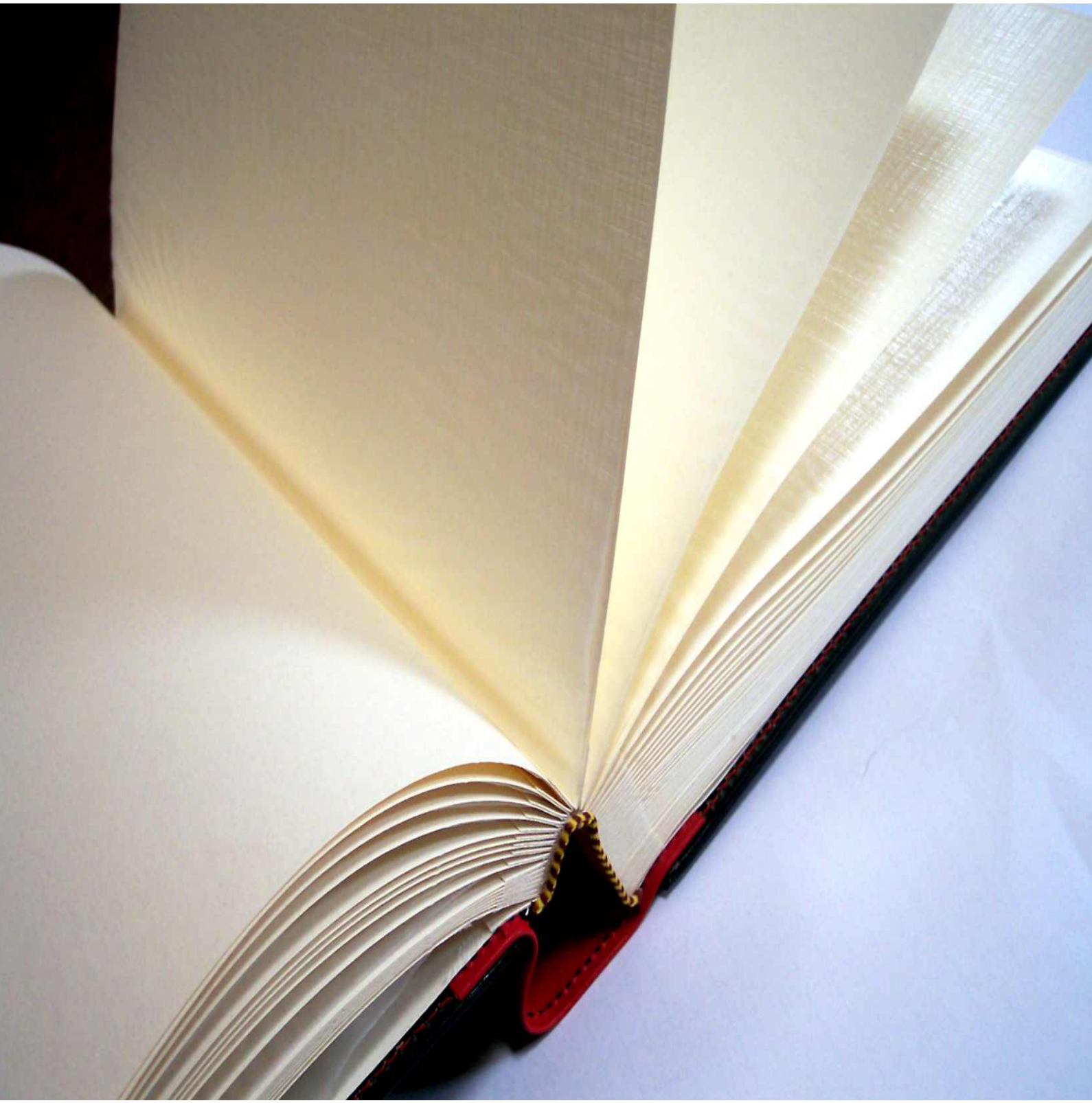


@HEALTH

"EU-LAM community to foster international cooperation on eHealth applications and Technologies (@HEALTH)" a co-funded project by the Information Society and Health Technology (e-Health) areas of the Sixth Framework Programme for Research and Development of the European Commission, aims to create a European and Latin American Community of researchers, industries, medical associations and other relevant agents working in the e-Health field, to promote cooperation, technology transfer and the joint completion of research and development projects by means of specific funding programmes and tools. It started in May 2005, and runs for 2 years.

The work is being developed by a consortium integrated by 8 European and Latin American organisations: CIAOTECH (project coordinator), ITACA, Danish Centre for Health Telematics, AIRIAL, the Polytechnic University of Madrid, the Telemedicine Centre of Colombia, the National Centre of Information Technologies of Venezuela and the Pan-American Federation of Associations of Medical Faculties and Schools.

The TSB mainly participates in the design, development and maintenance of the telematic platform of the Virtual Community, available at http://www.ithealth.org, having led to the identification process of both European and Latin American organisations and of projects and good practices within the sector of e-Health. At present, there are more than 1700 identified organisations and more than 400 e-Health projects have also been identified.



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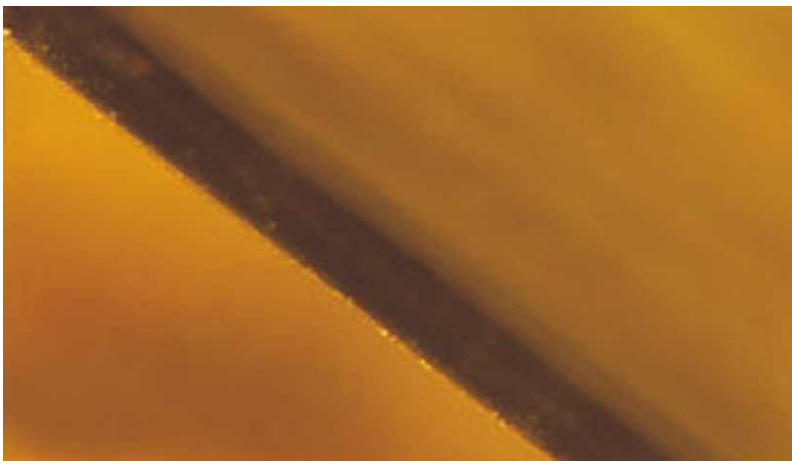

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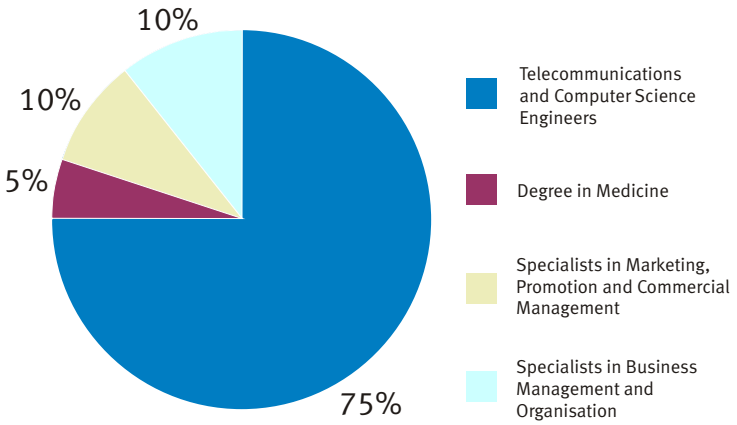
Human Resources and Relations

At the end of 2005, 42 people were in full time employment at the TSB. Of these, 9 were women and 33 men. This proportion is slightly above that of the graduates from the Telecommunication or Computer Science Engineering Degrees of the Polytechnic University of Valencia in previous years. The staff team is multidisciplinary, as can be observed in the figure.



Most human resources dedicated to R&D&I consist of Telecommunications or Computer Science Engineers, although the centre also has some personnel specialised in management and marketing.

The TSB combines consolidated personnel in the field of technological research and innovation with newly graduated engineers, who are included in the labour market. The human resources management of the centre is based on continuous staff training, the progressive assumption of technical and organisational responsibilities and a flexible and supportive approach to working conditions with regards to the reconciliation of work with family life. This is combined with a shared involvement in the common project, of which the TSB is a key agent, for technological transfer within the field of personal health and wellbeing .

All our members have the possibility to develop their professional career within the TSB. This is defined in the Quality Manual, a document in which the different posts are described according to their attributions, skills and responsibilities as well as the stages involved in the level of training and the professional experience required to apply for a specific post.



Training

Due to the innovation aim of the TSB, it maintains a continuous need to update knowledge and technology related to the research lines. For this reason, the continuous training of personnel is promoted, acknowledging that this, as a repository of knowledge and experience, is the main activity of the TSB.

In December 2005, 12 members of the TSB developed pre-doctoral studies related to the centre's research activities . During 2004 to 2005, a Doctoral Thesis and 9 Final Year Projects were presented, developed by the personnel of the TSB. Of these, it should be pointed out that one was awarded the Prize for the Best Final Year Project of Valencian Telecommunications in 2005 and another with the Bancaja Prize for the best Final Year Project of 2004.

In accordance with the supportive policy with regards training of its human resources, the TSB funds its members to attend specialised courses in matters of interest for their professional activity, and makes English language courses available for them, which are taught in our facilities by native teachers. Between 2004 and 2005, two stays abroad were completed, with a lifespan of between 3 and 5 months, as an exchange of knowledge with other R&D entities.

In order to share knowledge from an internal perspective, each week one of the members of the TSB gives a seminar for his or her partners on a subject from his or her area of expertise.

Annual Assembly

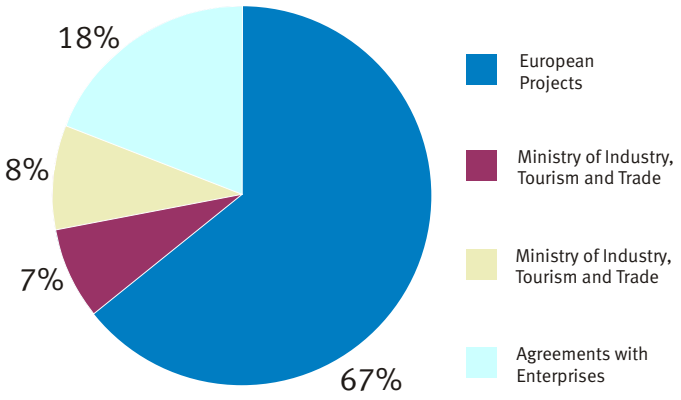
Each year all the members of the TSB meet for several days outside of their usual working environment to analyse the general situation of the centre both at the production level and at the level concerning strategic positioning within society. These seminars are also carried out with the aim of supporting the relationships between members and different work teams in a rural environment outside the ITACA facilities.

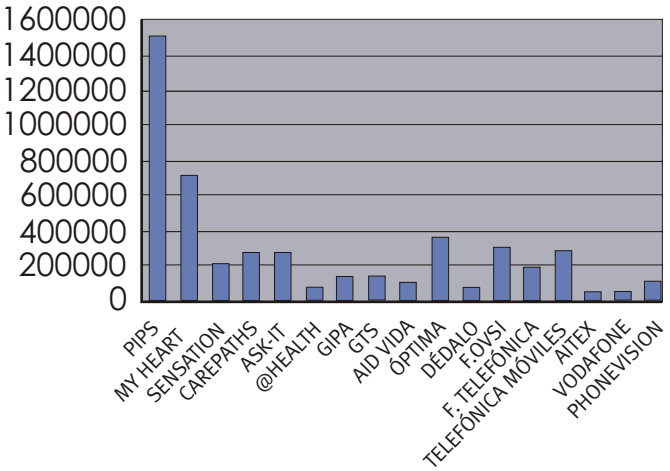
Finances

The 2004-2005 period has been a period of consolidation for the TSB as a profitable project from the strategic and financial viewpoints, capable of facing challenges and projects of increasing dimensions, which imply the need for constant growth in terms of membership and investment.

The budget of the projects in place during this period amounts to more than 4.5 millions Euros, of which 67% comes from European funding and around 20% from agreements with enterprises. The remainder of income is a result of grants awarded by national administrations for R&D initiatives.

TYPE OF PROJECT	€
EUROPEAN PROJECTS	2.975.740,00 €
MINISTRY OF INDUSTRY, TOURISM AND TRADE	335.930,00 €
MINISTRY OF EDUCATION AND SCIENCE	368.300,00 €
AGREEMENTS WITH ENTERPRISES	822.589,00 €
	4.502.559,00 €



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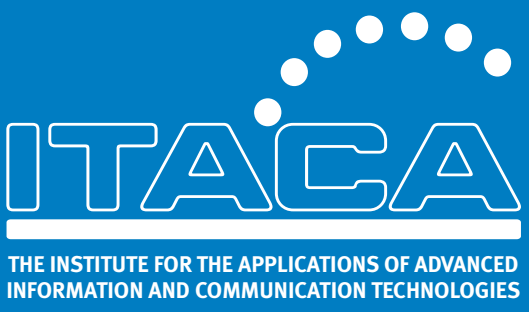
Organisation Chart


e-HEALTH
DIRECTOR
Vicente Traver
QUALITY OF LIFE
DIRECTOR
Teresa Meneu
TRANSFER AND
INNOVATION
DIRECTOR
Juan M. Dapcich
WIRELESS
COMMUNICATIONS
AREA COORDINATOR
Eduardo Montón
KNOWLEDGE
MANAGEMENT AREA
COORDINATOR
David Domínguez
HEALTH
INFORMATION
AREA COORDINATOR
Ignacio Basagoiti



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