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Introducing ICT into the Catalan Health Care System is one of the most relevant challenges that the Catalan Ministry of Health is facing. Our ICT governing model is built on a middle-out approach, running ICT introduction and deployment on a participative base. Information is a fundamental pillar of our system, so we think that only a collaborative governing strategy will allow us to make decisions based on reliable data, optimized information and expert knowledge.

Our goals go beyond than applying ICT within the system. The strategic objective we pursue is the transformation of the health care system using enabling technologies. The convergence of ICT, medical devices and clinical images makes essential their integration. We strongly believe that bringing into play global integrated systems will improve the quality and efficiency of our healthcare organizations.

Josep Maria Argimon
Chief Executive Officer of the Catalan Agency for Health Information, Assessment and Quality (CAHIAQ)
Ministry of Health of the Government of Catalonia

ICT are playing a key and challenging role for health systems. They are creating a new paradigm by placing the citizens at the core of the health system. Furthermore implementing ICT depends on the alignment of a large variety of stakeholders (health professionals, health managers, governments, technology companies, universities, etc.) who have to work with new governing models. In fact we are all working not only with new technologies but managing organizational changes.

Although we have different health care system models, the issues we all face are mainly the same, and fortunately there are no borders for worldwide research and innovation in new technologies.

Francesc Garcia-Cuyàs
Coordinator of Health ICT. Director of Foundation TicSalut

Joan Cornet i Prat
Executive president of the Foundation TicSalut
Keynotes about ICT and information systems in the Health system of Catalonia

- The ICT are key tools to improve the quality of healthcare and the health of the citizenship. They facilitate the task of the professionals and make that the health care centers more efficient.

- The efficiency of the ICT contributes to the economic sustainability of the health system of Catalonia.

- Telemedicine, teleassistance and telemonitoring provide a major accessibility of the citizenship to the healthcare -with more equity- and allocating the expert knowledge where it is needed at the right moment.

- Innovation, talent, dynamism, added value and qualified employment are concepts associated with the health sector in the most advanced countries.

- The health sector is an engine for the economics and, especially, at moments of economic difficulties.

- The Catalan Health Ministry leads the incorporation of the ICT into the Catalan Health System. It counts on several instruments such as the Strategic Plan SITIC, the Catalan Agency for Health Information, Assessment and Quality (CAHIAQ) and the Foundation TicSalut.

- The Foundation TicSalut offers advice to Catalan, Spanish and International companies and entrepreneurial interested in promoting projects on health ICT.

- The Shared Medical Record in Catalonia (HC3) becomes the main axis regarding the ICT tools. Electronic Prescribing System in Catalonia, the web site Canal Salut, the Personal Health Folder, the Plan for the Digitization of the Medical Image and the Telemedicine and Tele-Assistance are other relevant projects.

- The system of health of Catalonia integrates into a unique public network all the health resources, they are or not of public titularity. This fact has propitiated a model of governance middle-out in which the deployment of the ICT is made with the participation of multiple agents.

- The diversity and the decentralization of the Catalan health model requires of the interoperability and of the implantation of standards that guarantee the communication and the integration among the different information systems of the centers.

- The Catalan Health Care System face new challenges and demands derived from the sociodemographic, economic and technological changes. The ICT can help to giving answers and solutions to these problems.
• The great transforming potential of the ICT will bring deep changes into the health care model. The first and more important it is that the citizenship is allocated at the center of all processes.

• The citizenship is an owner of its health information. Every time it is more informed, more proactive and corresponsive of its own health.

• The health system will have to facilitate tools and mechanisms so that the citizenship can exercise its rights. It will be key in order to allow their active participation in decisions making processes that can affect their health status.

• The impact of the ICT will be made evident in the planning and the ordering of the healthcare. The way how people is working, the networking and the collaboration among the professionals and the health care centers will transform the current setting.

• The information systems and ICT will facilitate the whole cycle of the information. The availability of reliable and optimized information, added up to the expert knowledge, will facilitate to make more precise and effective decisions.

• Catalonia is a country of reference in the area of the health ICT. Their initiatives, as well as the implementation of its projects, makes Catalonia one of the most advanced countries in the eHealth.

• The Barcelona eHealth Week 2010, which joined a High Level Summit of the European Union on eHealth, and the World of Health IT, meant the the assistance of 3,100 representatives and 95 companies of the sector.
The Catalan Health Ministry of the Generalitat of Catalonia (Autonomous Government) is the institution that runs health policies in the Catalan Health System.

Consequently, the Catalan Health Ministry leads the incorporation and the deployment of ICT and information systems into the Catalan Health System. This point is considered such a strategic priority.

For achieving these goals, the Catalan Health Ministry has the support of different instruments such as:

- The 2nd SITIC strategic Plan 2012-2015
- The Catalan Agency for Health Information, Assessment and Quality (CAHIAQ)
- The Foundation TicSalut

The strategic SITIC Plan 2012-2015 is a key tool to identify the goals and to design the strategies that have guided the development of the information systems and the ICT during these years. The SITIC Plan contemplates 3 main strategic lines and 13 action plans.

The Catalan Agency for Health Information, Assessment and Quality (CAHIAQ) is a public company of the Catalan Health Ministry, linked to the Catalan Health Service (CatSalut), the public and universal health care insurance organization, and created in 2010. Among other functions, it has the mission of describing, promoting and implementing the policies of the Catalan Health Ministry in the area of the ICT, especially those ones portrayed in the Strategic Plan SITIC.

The CAHIAQ has a Center of Services TicSalut that, through the web Platform Anella TicSalut, gives an infrastructure of services, telecommunications and interoperability to those institutions that are involved in the projects of health ICT for the public health are centers.
Besides, the background of the CAHIAQ in health technology assessment supposes a useful tool for adapting these methodologies to the evaluation of the impact of the ICT.

The **Foundation TicSalut** is a public foundation promoted by the Catalan Health Ministry that, since year 2006, works in the line of encouraging the ICT and the networking in the healthcare area. For achieving its goals the Foundation TicSalut has displayed the following lines of performance:

**Observatory:** With the elaboration of a map of new trends to be followed and applied to the Health System.

**Innovation:** The Foundation TicSalut develops the Plan of Telemedicine and Telecare with the advice to the agents of the sector, the follow-up of emergent initiatives, the development of technical projects and of research, the state and international projection of Catalonia like a reference country in ICT and health, and to foster training activities and publications and the organization of events, that suppose a meeting point of the ICT world into the Catalan health system.

**Normalization:** The Foundation TicSalut counts also with the Office of Standards and Interoperability, which works to attain the interoperability of the systems and the agents of health in Catalonia, focusing on the development and the deployment of standards of ICT for health in order to guarantee a correct exchange of information in a fast and safe way.
The Strategic Projects of the SITIC Plan

- Shared Medical Record in Catalonia (HC3)
- Electronic prescribing system in Catalonia (Rec@t)
- Web site Canal Salut & the Personal Health Folder
- Plan for the Digitization of the Medical Image in Catalonia (PIMed)
- Plan of Telemedicine and Medical Tele-care

Key ICT Projects – Governing characteristics

[Image of puzzle pieces with labels: Telemedicine, Medical Image Digitization Plan, Personal Health Folder, Electronic Prescribing, Catalan Shared Medical Record, Networking Model, Resources Sharing, Interoperability, Co-responsibility, Collaboration Model]
The Shared Medical Record in Catalonia (HC3) (Història Clínica Compartida a Catalunya)

The Shared Medical Record in Catalonia (HC3) aggregates the set of documents that contain data, information about the situation and the evolution of a patient along its medical assistance and always under suitable parameters of security and confidentiality.

The HC3 follows decentralized and interconnected model through systems of interoperability and standards.

Nowadayas the HC3 offers the following advantages:

- becoming a tool of consultation for the doctors, independently of its geographical location and its level of care, to access to the information of their patients.
- improving the coordination among different levels of care like, for instance, the primary health care and the specialized care.
- allowing to access and displaying the radiological images so that they can be shared for the health care. This functionality is working in some centers since July of 2010.
- contributing to reducing the number of errors and the duplication of unnecessary diagnostic tests.
- adopting a model of reference interoperability for the Spanish Health Care System (e.g. Project of digital Medical Record for the Spanish National System of Health) and the International area (e.g. international EPSOS project).
<table>
<thead>
<tr>
<th>Shared Medical Record in Catalonia (HC3)</th>
<th>(November 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizens recorded in the HC3</td>
<td>More than 7 milions</td>
</tr>
<tr>
<td>Citizens with published data into the HC3</td>
<td>More than 5.7 milions</td>
</tr>
</tbody>
</table>
| Centres of the integral health system of public utilization of Catalonia (SISCAT) connected to the HC3 | 57 hospitals (83%)  
359 basic areas of primary health (100%)  
32 centers of specialized care (80%)  
24 centers of mental health (49%)  
50 health and social caresociohealth centers (50%) |
The Electronic Prescribing System in Catalonia (Rec@t) - (Recepta Electrònica a Catalunya)

The Electronic Prescribing System in Catalonia (Rec@t) is a system that, through the ICT and the networking, integrates the processes of prescribing and dispensing pharmaceutical products as well as establishes mechanisms that favor the rational use for drugs.

The Rec@t offers the following advantages:

- improving the healthcare quality and offering an more personalized care for all the citizenship in one about integral and integrated health system that facilitates the continuity of healthcare.
- providing a **plan of medication** for the patient -a sheet that contain all the necessary information such as the drug, the dose and the frequency of the administration among other data.
- increasing the accessibility of the patients to the pharmaceutical products and reducing the number of routinely visits to the centers of health, avoiding those ones which has the only purpose of renewing the prescription of drugs in cases such as chronic disases.
- releasing the professionals from the most routine tasks linked to the prescription for being able to dedicate more time for the care of other patients.
- favoring the rational use of the drugs.
- integrating the processes for prescribing and dispensing drugs, while facilitating the information and the coordination among different health professionals (physicians and pharmacists) who can access to the information in real time.
- Monitoring and controlling the processes of prescription its incidences.
- collecting qualitative and quantitative information about the use of drugs.
- promoting the efficiency of the processes and favoring the saving of economic resources.
- incorporating mechanisms (protocols, alerts, etc) for achieving that the pharmaceutical prescribing system can be a more "intelligent" system.
- becoming a collaborative model of reference for other autonomous communities.

The implantation starts in 2007 and only in three years allows that all primary health care centers can prescribe drugs electronically and all the pharmacies of the Catalan territory are ready for dispensing. Nowadays, we continue working for its inclusion into the specialized care.
The Electronic Prescription System in Catalonia (Rec@t) is a project led by the Catalan Health Service (CatSalut), with the support of the Catalan Agency for Health Information, Assessment and Quality (CAHIAQ).

In October 2011 it was estimated that the Rec@t has reduced about 5,100,000 visits of patients to the health care centers for renewing their ordinary prescriptions.

Likewise, the implantation of the electronic prescription in Catalonia has supposed a saving of more than 3 million euros in paper.

<table>
<thead>
<tr>
<th>Electronic Prescribing System in Catalonia (Rec@t)</th>
<th>(From the start up to September 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispensed prescriptions</td>
<td>&gt;269 millions</td>
</tr>
<tr>
<td>Electronic prescriptions</td>
<td>&gt;69 millions</td>
</tr>
<tr>
<td>Basic productive units that prescribe it</td>
<td>1,515</td>
</tr>
<tr>
<td>Pharmacies for dispensing</td>
<td>All (more than 3,110)</td>
</tr>
<tr>
<td>Physicians who can prescribe it</td>
<td>12,309 physicians are currently working with the electronic prescription system</td>
</tr>
<tr>
<td>Patients who have been e-prescribed</td>
<td>&gt;4.7</td>
</tr>
<tr>
<td>Daily dispensing</td>
<td>350,000 e-dispensing for 120,000 patients</td>
</tr>
<tr>
<td>Daily prescription</td>
<td>125,000 e-dispensing</td>
</tr>
</tbody>
</table>
The web site **Canal Salut** & the Personal Health Folder

The Catalan Health Ministry is aware of the social and technological changes that are being produced. Thus it works to establish mechanisms and functionalities to facilitate information and services to take care of its health and to orientate the access of the citizenship.

The **Canal Salut** (http://canalsalut.gencat.cat) is an information web site that intends to be a referent of health in Internet, with useful, quality and interesting information addressed to the citizenship and the professionals.

The goal of this web portal will be to promote the communication among the citizens, the professionals and the system of health, and to enable the first so that they are coresponsibles of its health.

The web site **Canal Salut** includes a corporative web site and multiple subject channels (up to now, special channels on cancer, compulsive gambling, blood donation, organ donation and transplantation, drugs and surveillance of nosocomial infections have been created).

Moreover, the practical approach does not limit itself to the creation of resources and mechanisms that do not go static beyond simple information repositories. The goal is that these initiatives become sites for the relationship with the citizenship, either through services of application forms such as those coming from Catalan Administration and also the virtual communities and of other tools and applications being associated with Web 2.0 or Social Web.
In short term, the Canal Salut has to establish an agile and relational communication between patients and professionals, without neglecting the informative communication, and reflecting the best practices of the system.

The next future will allow to broaden the subject matter of the disposable information, and is being worked at present so that there is connection with tools 2.0 and social networks, even that it is capable of connecting with the Personal Health Folder and with the Virtual Citizen Care Office of the Catalan Administration.

The Personal Health Folder

The Personal Health Folder (PHF) is a digital space of consultation that allows the citizenship to access and to use its personal health information in a safe and confidential way, in addition with the utilization of electronic formalities.

The PHF offers access to the citizenship to the data and the most relevant information that contains the Shared Medical Record in Catalonia (HC3) about its health.

The PHF has the goal to favor the corresponsibility and the participation of the citizens in the prevention and care of its own health.

Access will only be allowed by mechanisms of digital official certification of its identity such as the Catalan certificate idCAT or Spanish electronic DNI- and across Internet or other technological devices.

The PHF offers the following advantages:

- accessing to health personal information in a simple, intuitive, safe and confidential way, while guaranteeing the rights of the citizenship.
- having the clinical personal information, orderly and classified into a digital space without the need to have to keep reports and documents at home.
- having always the information accessible from any place at any moment, through a web page.
- being able to facilitate this information to other health professionals who have to visit a patient.
- favoring the corresponsibility and the participation in the prevention and the care of the health on the part of the citizenship.
- carrying out digital formalities with the system of health.
The PHF will be incorporating, in a progressive way, much more functionalities and information such as:

- health data contained into the HC3.
- the plan of medication and the prescribed and dispensed drugs and vaccines.
- medical reports (diagnoses, emergencies, admissions), the results of the tests and complementary medical explorations generated in the medical care and available in different services of the centers which are part of the integral health system of public utilization of Catalonia (SISCAT).
- the access in a personalized form to make formalities across the Virtual Citizen Care Office of the Generalitat of Catalonia.

It is also expected that other information keep on being added to it and other documents or images like the radiological explorations, the report of anticipated last wills, and so on can be found.

In the future other fields of information and functionality of the health of the citizens as well as new e-services (asking for visit with the doctor through Internet, changing data of the Individual Identification Health Card, follow-up of the state of claims or request of certificates of health, the informative bill, and so on) will be being incorporated. Even the possibility to interoperate with the social networks and the tools of Web 2.0 or Social Web.

In short term, the PHF as to be a space where the citizens interact every time more with the Catalan Health Ministry, its organizations and the supplier entities, across Internet or other mobile devices (hospitals, primary health care).

In July of 2010 the Catalan Health Ministry pioneered a first phase of deployment in the territory with the participation of the town of Calella. New villages have incorporated more recently. Even a selected group of blood donors have been included. Nowadays 1.6 milions of Catalan citizens can use the PHF.

This first phase has to be useful for insuring that the PHF it can make itself extensive to all the citizens of Catalonia.

Once made the evaluation of the deployment, the PHF will be spreading for all the Catalan territory.
The Plan for the Digitization of the Medical Image in Catalonia (PIMed)

Having the diagnostic tests in digital format, as well as of its copies and file in repositories, it is fundamental to be able to achieve that all the centers of the system of health of Catalonia can consult them and share them, through the Shared Medical Record in Catalonia (HC3) or of the Personal Health Folder.

Likewise, the promotion of the services of telemedicine and tele-assistance also requires from digital images and a good connectivity of the health centers so that they can be visualized remotely through the networks.

For answering this challenge, the Catalan Health Ministry created the Plan for the Digitization of the Medical Image of Catalonia (PIMed) in year 2008.

The PIMed has the following goals:

- digitizing the radiological images (conventional radiology, magnetic resonances, mammographies and echographies, etc) that are carried out in the health centers of the system of health of Catalonia.
- establishing the bases of the digitization of the rest of non radiological medical images.

The medical images in digital format offer the following advantages:

- having a Repository or digital archive of the medical images to be easily stored, classified and consulted, independently of the place of its generation and/or consultation.
- facilitating immediate accessibility to the information and to the images on the part of the professionals a través de la HC3, independently of the place or of the center where they have been generated.
- improving the coordination among the different welfare areas to achieve that the hospitals, centers of attention primary and other health centers they share the medical images.
- reducing the repetition of tests and explorations avoiding troubles, radiations, waste of time and unnecessary displacements to the patients.
- promoting the networking and the services of telemedicine and tele-assistance.
- eliminating the printing of plates and other supports like the recording in CD/DVD.
- making the processes more efficient and sustainable.

In the category of images called “non radiological” we can find: the fixed photography (pathological anatomy, dermatology, ophthalmology, etc), the video (any type of scopy), or the medical records (electrocardiograms, ICU monitors, spirometries, audiometers, etc).

Source: http://spaceresearch.nasa.gov/general_info/05feb_superconductor.html
This file is in the public domain because it was created by NASA. Policy states that copyright NASA "Material NASA unless noted copyright is not protected by"
In year 2008, Catalonia had only 30% of the medical images in digital format. In year 2010 we got that 100% of the radiological medical images were available in digital.

### Plan for the Digitization of the Medical Image of Catalonia (PIMed). Evolution

- 100% of the disposable radiological images in digital format.
- The health centers of the SISCAT generate annually 7.5 million evidence tests of diagnosis for the image.
- **2011.** The Catalan Institute of Health (ICS) completes the digitization of all its diagnostic medical images generated by its hospitals and primary care centres.
- **2011.** The hospitals of the Catalan Institute of Health, and the hospitals of Calella, Blanes and publish the digitized images that can be displayed for other health centers through the HC3, of the hospitable area as well as of the primary care centers.
- **2011.** Definition of a new standard for the digitization of the spirometry tests forced for facilitating the interoperability and integration with any hospitable system of information and making possible the execution of services of data exploitation directed at the research. Likewise, two pilot programs start together with the Plan of Respiratory Diseases (PDMAR) of the Catalan Health Ministry.
- **2011.** Call for the digitization of the electrocardiograms of the health centers of the SISCAT, through the provision of electrocardiographs based on the protocol of communication standards DICOM. As a result, 20 health care institutions of the public network of health care centres will have digital electrocardiographs which will submit copies to the Central Repository of Medical Image in Catalonia.
- **2010.** Study, with the collaboration of the Hospital Clínic of Barcelona, the Xarxa Sanitària de Santa Tecla and the Catalan Institute of Health (ICS), in what the state of the situation of the non radiological medical image has been analyzed in the area hospitable and of the attention primary and restricted to Catalonia, to indicate the strategies of digitization of these medical devices.
- **2010.** The hospitals of the Corporation of Health of el Maresme i la Selva (Blanes and Calella), since July, publish the images in digital format that can be visualized for other health centers.
- **2010.** Agreement between the Catalan Health Ministry and the Catalan Ministry of Government and Public Administrations to connect the hospitals of the public net to the net of optical fibre of the Generalitat of Catalonia for making circular medical images digitized in one senior speed, with the consequent benefit for the HC3 or the services related with the telemedicine and the tele-assistance.
- **2009.** Starting of the Central Repository of the Medical Image in Catalonia.
- **2008-2010.** Agreement among the Catalan Health Ministry and the entity Red.es (Plan Avanza) for the provision of the necessary equipment -monitors and servers of data- and that has supposed a benefit for 12 projects, 24 hospitals and 39 centers of primary health care.
- **2008.** Agreement between the Catalan Health Ministry and the company UDIAT Diagnostic Center of the Park Taulí de Sabadell to facilitate the digitization of the medical image of the Catalan public health sector, with the goal that the centers of the SISCAT can order freely of the computer software of visualization and files of the medical images (RAIM).

### The Central Repository of Medical Image in Catalonia

The Central Repository of Medical Image is working from November 2009, with the mission of storing the copies of the images sent by the health care centers of the public network so that afterwards they can be distributed and consulted through the Shared Medical Record in Catalonia (HC3) for all the centers of the SISCAT (public network o health care centres).

The hospitals of the Corporation of Health of the Maresme and the Selva (Local Hospital of Calella and Local Hospital of Blanes) and the hospitals of the Catalan Institute Verge de la Cinta of Tortosa, Dr. Trueta of Girona and Joan XXIII of Tarragona they already publish and share the digitized medical images with the health centers of their zone. During the next months the rest of centers of the ICS will be being added to it.
Central Repository of the Medical Image in Catalonia (October 2012)

| 13 hospitals and 37 primary care centers supply regularly medical images to the Repository in digital format | 50 |
| Explorations published for being consulted through the HC3 | 3.5 million |
| Monthly number of explorations indexed into the Repository | 240,000 |

The Plan of Telemedicine and Medical Tele-care

The telemedicine supposes the exchange of information among health professionals about the diagnosis, the treatment or the care of the patients, at a distance and across the ICT.

The telemedicine also allows that the patients can contact the professionals directly.

The tele-assistance, for his part, is the attention remote and personalized for a person who is at home and that requires from some type of help or follow-up, which can be facilitated thanks to the ICT.

The telemedicine and the tele-assistance offer the following advantages:

- improving the accessibility of the citizenship to specialized health care services that concentrates determinated specialties.
- guaranteeing the equity in the assistance on allowing that the citizens can receive the best care with independence of the place where they live.
- avoiding the displacements and the unnecessary transfers from the patients.
- facilitating the comfort of patients, especially in the case of the chronic diseases, in being able to make the follow-up without the need for routine displacements.
- giving support to the health administration for power to carry out a better planning and resorting of the healthcare that, guaranteeing the citizenship the accessibility and the equity in the rendering of services health, contributes to the efficiency and the economical sustainability of the system of health.

Catalonia is a leading territory in the implantation of the telemedicine and the tele-assistance as it can be consulted to the Map of Innovation and Health of the Foundation TicSalut.

In this field, one of the proposals displayed more relevant and of success of the Plan of Telemedicine and Medical Tele-Assistance is the Tele-Ictus (Telestroke) network to pay attention to an stroke in an urgent way to persons who suffer.
The TeleStroke project, since it started in year 2007, has finished already the first phase of its implantation in the territory with the connection of several hospitals of the Sistema Health integral d'utilització pública de Catalunya (SISCAT).

The operating units of TeleStroke have unfolded in 7 local hospitals that act as centers emitting or peripheral. The General Hospital of Vic was pioneering in 2008. Later the General hospitals of Granollers, Palamós, Figueres and Mataró were added up to it. Very recently those of Igualada and Alt Penedès of Vilafranca have been added to it. These hospitals connect with 4 centers of reference with neurologists on guard (Vall d’Hebron from Barcelona, Dr. Josep Trueta from Girona, Germans Trias i Pujol from Badalona and Hospital of Bellvitge from l'Hospitalet de Llobregat).

The second phase of the project will display in 4 local centers more and will serve, the one that attention is named tertiary, for paying attention to patients with a higher complexity.

In parallel to the TeleStroke, the Catalan Health Ministry is promoting other projects in the field of the telemedicine such as tele-ophthalmology, telediabetes and telemonitoring of patients with heart failure, as well as the beginning of a pilo program of Telemedicine in Prisons; always following the guidelines and priorities of the Director Plans of the General Direction of Regulation, Planning and Health Resources of the Catalan Health Ministry of the Generalitat of Catalonia.
Other projects in ICT and health in Catalonia

The previous initiatives are the main projects linked to the development of the strategic Plan SITIC.

Complementarily, other initiatives they are also unfolding to facilitate than the citizens also they order of tools that allow them evolution central actors and participadors of the different processes.

In this way the following projects can be highlighted, among other:

**CatSalut Respon (Health call Center Service of the Catalan Health Ministry)**

CatSalut Respon is another service that, for its nature of orientation to give the citizen an attention in order to be able to advise it and orientate those that they can affect to its health it in different aspects concerning the health system of Catalonia or in all, it has also a big margin of expansion of the web services and the ICT.

CatSalutRespon has a reactive line that offers information about the health system, formality of administrative formalities, previous appointment, service of linguistic translation for professionals and health institutions in the health professional, health information.

CatSalut Respon is available 24 hours of the day, the 365 days of the year, through a platform multichannel (telephonic, web page, SMS, electronic mail, fax) served by staff of tele-operation and nurses that they can solve the consultation, establish a follow-up with the citizens and/or transfer into the proper service more suitable in each case.

**2.0 initiatives 2.0 and social networks**

The same nature of the social web page or web site 2.0 is also propitiating that several projects are promoted directly by groups of professionals, the that a dynamic, entrepreneurial and activist spirit brings to light.

The Service of Primary Health Care Badalona-Sant Adrià and in the Metropolitan area North of the Catalan Institute of Health (ICS) has arranged several initiatives with presence in the social networks and to use the tools of web page 2.0 so that, the professionals as well as the citizens, can access to information and interact.

These emergent projects represent the first step to display functionality through applications and technologies that already have a great penetration between the citizenship and the professionals.

The Catalan Health Ministry, through the Catalan Agency for Health Information, Assessment and Quality (CAHI AQ) and the Foundation TicSalut, it has the will of acting as observatory to know them, to make the follow-up, to give support and to evaluate them for bringing up the integration in the strategy in ICT and health into Catalonia.
The Catalan Institute of Health (ICS) enters into the social networks

In a corporative bet to be part of this new stage of connectivity, participation and shared knowledge, the ICS is present to the two social networks with more supporters in all the world: Facebook (www.facebook.com/icscat) and Twitter (www.twitter.com/icscat).

The incorporation of the ICS to Facebook i Twitter intends to open a new agile and direct channel of communication with the citizenship and the professionals.

In few months the ICS profile in Facebook is followed by more than 2000 persons. The ICS Twitter profile, @icscat, in progress since ends of January, adds up more of 1600 supporters (November 2011). The immediate future goes through starting off the corporative channel of Youtube and a blog.

The appointment service of the Catalan Institute of Health (ICS)

The appointment service of the Catalan Institute of Health (ICS) for requesting through Internet medical appointment continues registering an increasing number of users.

From its starting in year 2002 this service is consolidated like an agile, fast and effective tool to ask for hour in the centers of health and is supposing a change of trend in the uses of the services on the part of the citizenship.

Since two years ago, the system offers the possibility to program the visit for any of the services that offer themselves to the primary health care center: family medicine, pediatrics, nursing, dentistry, and social work.

Virtual consulting for Internet of the Catalan Institute of Health (ICS)

Another formula, promoted from the centers of the ICS in the city of Barcelona, is the experience of virtual consultation that some 17,000 users of 13 health care centers.

From this initiative, the users will be able to solve doubts of health across Internet, without being visited at the center.
The ARGOS Project (ICS)
The hospitals of the ICS also incorporate new contributions for facilitating the accessibility. Thanks to the implantation of the new system of information management, the ARGOS project, new opportunities of communication are opened with the user. One of them is the sending of SMS to the persons who have visit to the external consultations.

The goal is to avoid the absenteeism that is produced in this type of equipment and with this system of reminder it has been demonstrated that it brings down the number of persons who do not present.

Telematic cashiers in the hospitable centers of the ICS
Every day the 70 telematic cashiers that gives a ticket to the user. They are distributed through the hospitals, which facilitate the access to the consultation of the doctor without passing through the counter. The functionality of this device is based on avoiding the traditional queues that are educated to external consultations to ask the place and the visiting time.

Drojnet 2
The Drojnet2 is an European project. The Catalan Health Ministry participates also with other Spanish and French regions. Drojnet2 (http://drojnet2.eu/droj-project) aims to use new information and communication technology (SMS and MMS messages, websites and virtual social networks) as a system to get young people to take part and involve themselves in the elaboration and dissemination of messages aimed at preventing and reducing the risks associated with consumption of alcohol, tobacco and other drugs among young people.
PRESENCE IN SPANISH AND INTERNATIONAL PROJECTS

The goal to foster the innovation and to increase the expertise attained in the area of the ICT diligent to the health, they have originated that Catalonia is implied in important organizations and state and international projects.

This participation in this projects is being carried out through organizations of the Catalan Health Ministry, like the CAHIAQ agency and the Foundation TicSalut, that or they participate in important projects that represent the first steps of emergent technologies with a promising future, or they configure the union of efforts to create international bonds, while forming part of nets of knowledge toes in the field of the ICT and the health.

The epSOS (European Patients Smart Open Services) (www.epsos.eu) is a project in which people work together with 47 organizations of 23 countries members of the EU and 3 non members to create the health information of the patient ICT to access in a safe way a frame of electronic health and a structure. The final goal is to share date on electronic clinical records and prescriptions. The interoperability and the use of standards are key to be successful.

The Catalan experience to make compatible the different health care systems through health care centers in a public system with public and private centers working for the health care public sector is being very relevant for the future Digital Clinical Record of the Spanish National System.

The project Renewing Health Program in telemedicine (www.renewinghealth.eu), a programme addressed to chronic patients and older people, or the Regional Forums of Telemedicine are the most significant projects in this specialty. The Home Sweet Home is another international project to test new assistance services and support for the aged people at home. It is based on the ICT with the goal of increasing their capacity of living independently.

All of them are a result of the constant efforts to develop bonds that drive to the excellence of the Catalan Health System.
More information

- Health Overview of Catalonia (Catalan Health System in figures)

- Catalan Health Ministry of the Generalitat of Catalonia
  www.gencat.cat/salut

- Foundation TicSalut
  www.ticsalut.cat

- Office of Standards and Interoperability

- Catalan Agency for Health Information, Assessment and Quality (CAHIAQ)
  www.aatrm.net

- The sector of the health in Catalonia

- The strategic SITIC Plan 2008-2011

- Video strategic Projects SITIC of the Catalan Health Ministry
  http://www.gencat.cat/especial/esalut/cat/tic.htm

- Special eHealth in Catalonia
  www.gencat.cat/especial/esalut/eng/index.htm

- Papers in ICT and health in Catalonia in the supplement: "Health Information and ICT" in Medicina Clínica (Barc) (year 2010, Vol.134 No.upl.1)
  www.elsevier.es/es/revista/2161864/2154476/tipo/suplemento


- Map of Innovations in ICT and Health in Catalonia

- Shared Medical Record in Catalonia (HC3)

- Electronic prescribing System in Catalonia (Rec@t)
  www10.gencat.net/catsalut/cat/recepta_electronica.htm

- Seminar video "The health in hands of the citizens: folder and personal records of health"
  http://vimeo.com/16424882

- Video TeleIctus (Telestroke) in Catalonia
  http://vimeo.com/4705328

- epSOS  Project (European Patients Smart Open Services)
  www.epsos.eu

- Renewing Health, R EgioNs of Europe WorkINg toGether for Health
  www.renewinghealth.eu

- Acció10. Generalitat of Catalonia. iProductivitat, the ICT to increase the performance of the Guide persons of Innovation and Internationalization. November 2010