UNITWIN/UNESCO Chairs Programme
Progress report 2005-2006

«If this has not yet been done, please forward your progress report before 31 May 2006» to the Director, Division of Higher Education .

Period of activity:

2005-2006

Title of the UNESCO Chair or Network:

UNESCO CHAIR TELEMEDICINE

Report established by:

Prof.Dr.O.Ferrer-Roca,

Function / Title:

responsible UNESCO Chair Telemedicine 1999-2006

Full Professor in Pathology. Responsible of the Telemedicine Training at the University of La Laguna. Canary Islands. Spain

To be sent by electronic mail to: unitwin@unesco.org

or to UNESCO, Division of Higher Education
7, place Fontenoy – 75352 Paris 07 SP
Fax: 33 1 45 68 56 26/27/28

Summary

I. Address

	Address of the Host Institution	Address of the Coordinator
Name	Prof. Dr. O. Ferrer-Roca	Prof. Dr. O. Ferrer-Roca
Function/Title	Chair of Pathology	Chair of Pathology
University/Institution	University of La Laguna	University of La Laguna
Faculty/Department/Centre	Faculty of Medicine	Faculty of Medicine
P.O.Box	La Cuesta	La Cuesta
Street	La Laguna	La Laguna
Postal Code	38071	38071
City	Santa Cruz de Tenerife	Santa Cruz de Tenerife
Province	Canary Islands	Canary Islands
Country	Spain	Spain
Phone	+34 922-319321	+34 922-319321
Fax	+34 922-641855	+34 922-641855
E-mail	catai@teide.net	catai@teide.net
Web Site	http://www.teide.net/catai	http://www.teide.net/catai

II. Available resources

Please specify for each item, when available, **total cost** and **funding sources**
(for guidelines see Annex 3)

1. Human resources

1. For the administration of the UNESCO Chair or Network

Partial time support Lawyer:	Margarita Suarez Delgado
Partial time support Secretary	Argimara Martel González
Partial time support Secretary	Elisabet Almenar Hernández
Partial time support Secretary	Tracy Capote Miles
Partial time support Secretary	Noemí Pinto Rodríguez
Partial time support Secretary	Luz Marina Lo Cascio García
Partial time support Secretary	Mª Guadalupe Sierra González

2. For the teaching/training/research activities
Please specify number of full professors , researchers, visiting professors, lecturers, others

Prof. Dr. O. Ferrer-Roca	
Informatics Engeeniering	Francisco Marcano Serrano
Computer Science	Pablo Pulido Lorenzo
Telecomunication Engeeniering	Álvaro Díaz-Cardama López
Naval Radioelectronic	Jesús Francisco Montañez Tomás
Informatics Engeeniering	Jefferson Gómez Padilla
Phisics Science	José Mª Castro Luis

Telecomunication Engeeniering Jesús de Lorenzo Brito

3. For the information and documentation activities:
   Secretary Deyanira Tabares Márquez
4. For other activities: The international courses brought to teaching and training a total of 40 professors coming from European, African and Ibero-American countries (Italy, Greece, France, Germany, Belgium, Switzerland, Spain, Uganda, United Kingdom, Argentina, Venezuela).

2. Material resources

1. For the administrative work: Computers fax machines, xerocopy machines, printer, and storage systems.
2. For the teaching/training/research activities: Videoconference, workstations, ultrasounds, video-edition, projector, Book edition, CD-edition, Proceedings editions, e-learning, Digital Fingerprint control systems.
3. For the information and documentation activities: Web site, Posters, brochures, Proceedings, Book editions, CD-edition
4. For other activities *(Please specify):* Videoconferencing, 3D-virtual reality, Distant control,

III. Activities

Please, provide information on items 1 to 7 for each activity, when available, and specify:

- *Target groups, in accordance with Annex 1*
- *Geographical coverage, in accordance with Annex 2*
- *Funding sources, in accordance with Annex 3.*

1. Education/Training/Research

- Title and expected results for each course, workshop,…

See joined memorandum and programs of the Winter Course of the CATAI

- Duration: 2weeks.
- Target groups: doctors, nurses, health-care providers, NGOs
- Partnership *(please specify the name of the Institution, city, country): Universities Trier-DE, Postdamm-DE, Humboldt Univ. Berlin-DE, Makerere-Uganda, Entre-Rios-Argentina, Mexico-Mexico, Zulia-Venezuela, Athens Univ. of Economics and Business-GR, University Milano, University Tor-Vergara Rome-IT, Univ Oxford-UK, Rovira y Virgili-Spain; Politecnica of Barcelona-Spain, University Perm-Russia, Univ Moscu-Russia, Univ, Beijing-China, New Delhi-India, Istambul-Turkey, El Cairo-Egipt, Queensland- Australia, Marrocco*
- Geographical coverage for partners and participants: Europe-Africa-South & North America.
- Funding sources: CATAI founding. Telefónica SL, Spanish agency of International cooperation AECI.
- Outputs: Please specify number of doctoral students: 150-200 students per year. For the publications, complete form of Annex 4, and Annex 5 for the multimedia material.

2. Conferences/Congresses/Meetings

- Title and expected results for each conference, meeting…:
  Always in Telemedicine. Expected increase of knowledge and training of how to handle medicine at distance for people and areas underserved or with health care constrains availability.
- Dates and place: HEALTHGRID, Oxford-London(6-9 April 05); Tenerife (06-19th March 06); Telemedicine, Oporto, Portugal (05-08 October 05); Medicina Marítima, Madrid (2-3 November 05); Telemedicine, Santiago Compostela (22-23 April 05); La Palma (23 Feb 05), Adeje (16 July 05); Telemedicine, Perm-Russia (16-23 January 05); AMDO 2006, Palma Mallorca (11-17 July 06); FEHAD, Barcelona (13-17 June 06); UNESCO, Valencia (8-10 february 06); AIED, Amsterdam (18-21 July 05); GRID, Santiago Compostela (6-8 July 05).
- Partnership *(please specify: Name of the Institution, City, Country): see joined programs plus Mulago Hospital-Uganda; Roche Research Center, Univ Perm-Russia, Casablanca-Marrocco.*
- Participants *(number*): *100 up to 1000 depending of the type of meeting*
- Geographical coverage for participants and partners: Europe-Africa-South America-Asia
- Funding sources: CATAI funding. Telefonica SL.
- Outputs: Please complete Annex 1 for the publications and Annex 2 for the multimedia material.
- Actually ***"Telemedicine Master"*** at distance, and the ERASMUS MUNDUS with the Universities of Makere- Uganda, Beijing-China, New Delhi-India, Istambul-Turkey, El Cairo- Egipt, Queensland- Australia, Marrocco

3.Missions / Travels abroad

Destination: University La Laguna-UNESCO Chair Telemedicine.
From : Entre Rios-Argentina, México, Uganda and Venezuela

Purpose: Students training in telemedicine
Duration: from 1 to 2 month
Funding source: University of La Laguna/Telefónica SL / Catai fundings/ Spanish Agency of International Cooperation AECI.
Outputs: training of students to provide telemedicine in underserved areas.

4. Visiting professors / Fellowships

Number: (6)
Duration: 1-2 month
University of origin: U. Zulia-Venezuela (1), U. Entre-Ríos (3), U. Makerere (1), U. México (1).
Funding sources: University of La Laguna, CATAI fundings, Telefonica SL, PCI-Spanish Agency of International Cooperation-AECI.

5. Information and documentation activities

1. CATAI 2005, Editor: Prof.Dr.O.Ferrer-Roca. CATAI editions. Tenerife. ISBN 84-609-4000-4
2. European Master of Telemedicine and Bioengineering applied to Telemedicine. DVD. CATAI Editions. 2005. ISBN 84-609-2162-X
3. European Master of Telemedicine and Bioengineering applied to Telemedicine, Volume I. CATAI Editions 2005. ISBN84-609-2163-8
4. European Master of Telemedicine and Bioengineering applied to Telemedicine, Volume II. CATAI Editions 2005-06. ISBN 84-609-6488-4
5. CATAI Telemedicine CD, **CATAI Ediciones.** ISBN 84-923357-2-6 Dep.Leg. nº M-3337-1999; 1999-2006

6. Others

Written agreements with Universities

6.1 Preparing Written agreements with the Universities of Beijing-China, New Delhi-India, Istambul-Turkey, El Cairo- Egipt, Queensland- Australia, Marrocco for the ERASMUS MUNDUS.
6.2 Agreedments of the students interchange in the field of Telemedicine and for third cycle students with the Universities of Postdamm-DE (6 Students), Charite-Berlin-DE (6 Students) and Univ. Udine-IT (6-students) as Erasmus students, plus 1 or 2 professors from each University.

Training Books donations

6.3 Donations of the vol. I of the European Master of Telemedicine and Bioengineering applied to Telemedicine. to the Universities of Entre-Rios (25), Makerere (6), Zulia (10), Mexico (1), Greece (11).
6.4 Donations of the vol. II of the European Master of Telemedicine and Bioengineering applied to Telemedicine. to the Universities of Entre-Rios (5), Makerere (6), Zulia (5), Mexico (1), Greece (5).
6.5 Donation 150 European Telemedicine Glossary 5th Edition to the attendants of the XIV Winter Course of the CATAI. Tenerife. Spain.

Computer donations

Collecting the computers to be send to Makerere-Uganda.

IV. Impact

Please describe shortly (one page maximum) the impact of the mentioned activities on the human, social, economical and cultural development at national, regional or international level.

The relevance of the telemedicine in areas underserved or to people with limited access to health care do not require further comments.
One of the principle obstacles in the wide use of Telemedicine is the lack of specific training and qualifications in the health care environment (doctors, nurses, paramedics, managers, NGOs) as well as related areas from which they require support (computer science, telecommunications)
The Unesco chair of Telemedicine has become during the previous years of activity an International reference in the aspects of quality training in Telemedicine particularly to developing countries, giving furthermore support to implement local solutions or health care at distance whenever needed.
Furthermore their location in an archipelago territory, which is the bridge between Europe-America and Africa, also facilitate his tasks.

V. Forthcoming activities

1. XIII SUMMER COURSE OF THE CATAI – September 2006 – to be determined
2. XV WINTER COURSE OF THE CATAI – 5-18 March 2007 – Tenerife - Spain
3. STUDENTS EXCHANGE TO TENERIFE
4. STUDENTS TRAINING IN TENERIFE
5. UGANDA DOCTORS TRAINING IN EUROPE
6. SCHOLARSHIPS FOR IBEROAMERICAN BIOENGENEERS
7. EU to IBEROAMERICA INTERCHANGE FOR SUPPORT.
8. TELEMEDICINE MASTER FOR DEVELOPING COUNTRIES (ERASMUS MUNDUS)
9. European convergence inter-university master in Telemedicine and Bioengineering applied to telemedicine.
10. Presentation of the vol II of the DVD for distant training in Telemedicine.
11. First year of the La Laguna University own title in Telemedicine & Bioengineering applied to telemedicine.
12. Implementation of the telemetry and telecontrol sowftare in Iberoamerican countries.

VI. Development prospects

The activities of the Chair started on 1999 has expanded during the period 2005-2006 to:

1. - Mediterranean Countries, particularly in the North of Africa (Argelia) and Turkey.
2. - Expansion to Asian countries particularly China, India.
3. - Expanded to Australia.
4. - Approach to Health-grid and M-learning to be exported into developing countries.

Annex 1

Target groups

Undergraduate students	YES
Graduate students	YES
Postgraduate students	YES
Academics	YES
Public administrators	YES
Employees from industry, or other private organizations *(please, specify)*	YES: NGO's
Teachers from primary education	NO
Teachers from secondary education	NO
Teachers from technical and vocational education	YES
Teachers from adult education	YES
Others groups *(Please specify)*	YES: VOLUNTIERS

Annex 2

Geographical Coverage

- **National**

Spain: Canary Islands (7 Islands)

- **Regional**

Please specify countries and regions

  - Africa: Nairobi-Kenya, Makere-Uganda, Marrocco, Argelia.
  - Arab States: Israel, Turkey-Istambul,
  - Asia/ Pacific: Kazakhstan, Tel-Aviv-Israel, New Delhi-India, China-Beijing-China
  - Eastern and Central Europe: Sofia-Bulgaria, Rumania, Russia-Perm & Moscow
  - Australia: Queensland University.
  - Western Europe and North America: Germany-Regensburg/Postdam/Berlin, Italy-Udine/Milan/Rome, Greece-Athens and Aegean islands, Austria-Tyrol, France-Strasbourg/Paris, Lachen-Switzerland, Oxford-UK.
  - Latin-America: Argentina-Entre_Rios, Venezuela-Maracaibo, Panamá, Cuba-La Habana, México.

- **Interregional**

Please specify regions

Annex 3

Funding sources

Funding source	Type of Organization / Institution	Period	Amount US$
UNESCO Contribution		2005/06	0
Other contributions: *Please specify, for each contribution:* *Institution, City, Country*	Host Institution	2005/06	10000
	Partner university/ institution	2005/06	15000
	Governmental body		
	Other public institution *Please specify*		
	UN Agencies		
	IGOs		
	NGOs: CATAI	2005/06	20000
	Industry		
	Other private sources *Telefónica SL -Spain*	2005/06	55000
TOTAL		2005/06	100000

Annex 4

Outputs

Form 1: Publication

Title of activity: Ambience Intelligence in Medicine. AmI@medicine. CATAI 2005

Title: CATAI 2005. ISBN 84-609-4000-4
Publisher(s): CATAI- Tenerife-Spain
Year: 2005
Number of pages: 171

Type of document/material:

- Book
- Periodical
- Others *(specify, please)* X Proceedings XIII Winter Course CATAI.

Teaching/learning material X

Language(s): English, Spanish

Main keywords (4 or 5): Telemedicine, Information Society, Health Care, Ambience Intelligence.

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

The proceedings of the XIII Winter Course of the CATAI and the XVIII Course of Image Analysis of the University of La Laguna. It include all the papers of the most knowledgeable people in the field of Ambience Intelligence AmI@medicine and related items necessary to practice Telemedicine. Topics cover include minimal requirements for a list of telemedicine applications, technological knowledge, Artificial Intelligence in the prevention and control of the disease, Legal and liability aspects. Quality control. E-learning and M-learning and pervasive medicine. Use of wireless technology to achieve those items.

Title of activity:_VIRTUAL PERSONALIZED MEDICINE (p-HEALTH). CATAI 2006_

Title: CATAI 2006. ISBN: 84-609-8648-9
Publisher(s): CATAI- Tenerife-Spain
Year: 2006
Number of pages: 254

Type of document/material:

- Book
- Periodical
- Others *(specify, please)* X Proceedings XIV Winter Course CATAI.

Teaching/learning material

Language(s): English

Main keywords (4 or 5): Virtual personalized Medicine, Telemedicine, Information Society, Health Care

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

El XIV Curso de Invierno del CATAI pretende tratar con rigor los aspectos de Medicina presencial virtual, es decir realizar a distancia la labor medica como si se estuviera en presencia fisica junto al enfermo con las garantias de calidad asistencial, eficiencia y reducción de costos e introduciendo los aspectos de inteligencia artificial. En este campo se necesita una gran informacion relacionada con los tipos de imágenes y la calidad de las mismas, asi como en el dimensionamiento de los distintos tipos de redes disponibles, incluidas las PAN (personal area network) y las BANs (Body Area network)

Ya nadie cuestiona el papel de la Telemedicina y el esfuerzo ha de realizarse en como entrenar a los facultativos para que la medicina que se ofrece a distancia tenga la misma o superior calidad. Para ello los individuos involucrados en la IHE (Empresa Sanitaria Integrada) han de formarse en el denominado "Cuerpo de Conocimiento de la Telemedicina" recogido en el unico libro de texto traducido en 3 idiomas y pendiente de traduccion en un cuarto idioma.

Como se presenta a los asistentes al curso mucho han avanzado la mayoria de las comunidades autonomas españolas en la integracion de la telemedicina y las herramientas de la sociedad de la informacion pero todavia que numerosos avances en telemedicina no integrados y sobretodo criterios de control de calidad y legalidad no asumidos por las autonomias.

Los estudiantes se enfrentan a los nuevos retos realizando practicas de laboratorio con la totalidad de los aspectos que cubren teoricamente.

Title of activity:__Televirtual sonography_____

Title: **"Tele-Virtual Sonography"**

Publisher(s): Journal of Perinatal Medicine, (2006), 34 (2): PP.: 123-129

http://www.atypon-link.com/WDG/doi/pdfplus/10.1515/JPM.2006.022

Year: 2006

Number of pages: 123-129

Type of document/material:

- Book
- Periodical X
- Others *(specify, please)*

Teaching/learning material

Language(s): English

Main keywords (4 or 5): Virtual Sonography, Telemedicine, 3D-Ultrasounds, Obstetrics, Virtual Patient.

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

Objectives: The 3D-Ultrasound reconstruction, available as a routine exploration since 1994, has brought new technical capabilities such as virtual sonography that can be tele-consulted and which experience is summarized in the present paper.

Methods: During one year 73 3D-US volumetric images coming from 34 patients of the Obstetrics and Gynaecology department were acquired and 68 were consulted at distance. Acquisitions were carried out through an existing 2D device adding a magnetic tracking system on the US-probe. Probe positioning and video output was introduced into a PC running software that allows the generation of 2D-orthogonal and 3D volume images, as well as tele-consultation. Several image analysis techniques for 3D-reconstruction were evaluated.

Results: Final volumes were small (1.5Mb) and required about 4 minutes, with a SD of 2 minutes, to be transmitted over one ISDN channel (64Kbs). Good correlation (k=0.7) was found between local and distant diagnosis. In 30%, images were considered of low quality and in 29% of good quality; diagnosis could be done with confidence in all except 7 cases. Virtual sonography, by means of oblique cuts in all space directions, improved distant diagnostic confidence. Limitations were linked to: incomplete sampling due to the short acquisition time periods (26 seconds) and difficulties on hand-free probe movement. 3D reconstructions were time consuming (20 min- 4 hours) and of limited indication.

Conclusions: 3D reconstruction could reduce multiple explorations due image constrains such as sub optimal foetal positioning, among others. Virtual sonography was

important to reach confidence on distant diagnosis; it was also considered a tool for off- line local review of non-trained sonographer acquisitions.

Title of activity: TM ontology

Title: **"Telemedicine Intelligent Learning. Ontology for Agent Technology"**
Publisher(s): The IPSI BgD Transactions on Advanced Research, Vol. 1, (2), 2005, pp.: 47-55. ISSN: 1820-4511.
Year: 2005
Number of pages: 47-55

Type of document/material:

- Book
- Periodical X
- Others *(specify, please)*

Teaching/learning material

Language(s): English

Main keywords (4 or 5): E-Learning, Ontologies, Standardization, Telemedicine

SHORT ABSTRACT
(Brief description of the content in English, French or Spanish)

Telemedicine (TM) is an ever-evolving multidisciplinary subject where knowledge is acquired by continuous training rather than as part of a curriculum. The current challenge is to create an intelligent tool that delivers personalized training to professionals with different backgrounds, making use of scientific innovations from any source, even the Internet.

We present an innovative metadata packaging and rule-building tool to achieve an adaptive retrieval system that may draw on all available resources. For this purpose we used vocabulary and ontologies founded on the telemedicine body of knowledge (TM-BoK) hierarchy and Medical Sub-headings (MeSH).

The packaging tool creates a modified XML-manifest that contains a Navigable Knowledge Map and a separate Rule-extension executed by Agents during the process of navigation. Agent systems also handle personalization, selecting packages by reading metadata tags. The result is an adaptive and adaptable TM knowledge delivery tool used by the students to reduce the time on searching information

Title of activity: ONTOLOGÍAS PARA SALUD-e Y SANIDAD-p

Title: **ONTOLOGÍAS PARA SALUD-e Y SANIDAD-p**
Publisher(s): CATAI Ed. ISBN 84-609-8648-9 Canary Islands.
Year: 2006
Number of pages: 79-84

Type of document/material:

- Book
- Periodical X
- Others *(specify, please)*

Teaching/learning material

Language(s): English & Spanish.

Main keywords (4 or 5): ontology, semantic web, formal languages, telemedicie, e-health, p-health, TM-BoK.

SHORT ABSTRACT
(Brief description of the content in English, French or Spanish)

Ontology plays a basic role in semantic web, allowing applications processing, sharing and reusing medical and health knowledge that is accessed electronically. This paper show basic concepts, languages, tools and ontology examples related to e-health and p-health, among which the TM-BoK is described.

Title of activity:__ ETIQUETAS DE CALIDAD Y CONFORMIDAD

Title: ETIQUETAS DE CALIDAD Y CONFORMIDAD
Publisher(s): CATAI Ed. ISBN 84-609-8648-9
Year: 2006
Number of pages: 202-210
Type of document/material:

- Book
- Periodical X
- Others *(specify, please)*

Teaching/learning material

Language(s): English & Spanish.

Main keywords (4 or 5): Quality labels, ISO 9001:2000, ISO 13485:2000

SHORT ABSTRACT
(Brief description of the content in English, French or Spanish)

The introduction of the medicine in the Information Society (e-health, telemedicine, virtual medicine) make the WHO to be aware of the importance of the quality of services in aspects such as intrusisme, training and licensure, bad practice, fraud and abuse, provider contract, maintenance of the standards in medical practice. Together with those limited by law 15/1999 related to the sensitive data protection, confidentiality, informed consents and accessibility.
To reach user confidence not only patients but also health professionals, quality labels coming from international and national organizations are proliferating. This includes not only labels to demonstrate conformance with standards or legal requirements but also codes of conduct.
A list of conformance labels relevant for distant medicine is discussed.

Title of activity:__ ONTOLOGY

Title: Telemedicine Ontology for AIEDS
Publisher(s): http://wwwis.win.tue.nl/~acristea/AAAEH05/papers/10-new-AIED2005_OFRmodrev--.pdf
http://hcs.science.uva.nl/AIED2005/W9proc.pdf
Year: 2005. A3H: 3rd International workshop on Adaptive and adaptable Authoring
Number of pages: 80-89
Type of document/material:

- Book
- Periodical X
- Others *(specify, please)*

Teaching/learning material

Language(s): English & Spanish.

Main keywords (4 or 5): Quality labels, ISO 9001:2000, ISO 13485:2000

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

The introduction of the medicine in the Information Society (e-health, telemedicine, virtual medicine) make the WHO to be aware of the importance of the quality of services in aspects such as intrusisme, training and licensure, bad practice, fraud and abuse, provider contract, maintenance of the standards in medical practice. Together with those limited by law 15/1999 related to the sensitive data protection, confidentiality, informed consents and accessibility.

To reach user confidence not only patients but also health professionals, quality labels coming from international and national organizations are proliferating. This includes not only labels to demonstrate conformance with standards or legal requirements but also codes of conduct.

A list of conformance labels relevant for distant medicine is discussed.

http://wwwis.win.tue.nl/~acristea/AAAEH05/papers/10-new-AIED2005_OFRmodrev--.pdf

Annex 5

Outputs

Form 2: Multimedia material

Title of activity:_____TELEMEDICINE-CD___

Title: CATAI Telemedicine-CD. ISBN 84-923357-2-6

Producer and/or distributor *(with address)*: CATAI
Year: 1999-2006
Teaching/learning material X

Type of material:

- Video
- CD ROM X with videos
- Visioconference:
- Other type of material
  *(Please specify):*_____

Duration: 643 MB
Format: Word, Html, /*ppt, /mpeg*
Language(s): English- Italian-Spanish
Main keywords (4 or 5): Telemedicine

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

According to one of the numerous definitions of Telemedicine "providing medicine at a distance", any doctor being trained in the use of some telematic devices could effort that practice. The reality is far from this because to assure a safe practice, people have to learn and bear a minimum understanding of a wide range of topics: from economics to telecommunications and from medicine to legal aspects. Technology learning is not limited to technology itself but linked to its social practical consequences in all their aspects. To guarantee that none of the aspects related with Telemedicine are missed, this minimum knowledge has to be fixed, organised and in some way standardized. The main purpose of this book is to structure the basic knowledge linked to teaching to provide or to practise telemedicine, as well as an overview of the technology developments linked to this new discipline. As expressed in the title (Handbook of Telemedicine), the book is precisely structured as a "handbook" whose main value is the joint opinion of all the participating authors of what are the learning requirements for anyone that would like to practice Telemedicine. It is not a full treatise nor a complete collection of all telemedicine applications or telemedicine basics. It was built with the aim of creating awareness to the academic aspects (technology development, telecommunications approach, law and regulations, medical practice) as well as to the minimum knowledge requirements to guarantee safe and appropiate medical practice. Nowadays this fact is enhanced by the evidence that welfare expenses cannot be endlessly increased, whilst an efficient health provision system in the context of the information society, will mark a new trend to configure health care practice in the next century. If training and teaching schemes are to cope with the demands of society it seems obvious that those carers and professions should consider structured and sufficient training in Telemedicine.

AIMS OF THE MULTIMEDIA CD-ROM

The present CD-ROM contains the Handbook of Telemedicine as a whole, internally structured in 12 Chapters and 13 Annexes (file *HANDBOOK.DOC*). Some of them are complemented with diverse multimedia material for training and teaching purposes. The handbook is presented in Word and Html formats (directory /*html*), while the multimedia material is located in the directories */ppt* and */mpeg*. The former are PowerPoint 97 presentations and the latter are video-clips on Mpeg format.

Title of activity: EU-MASTER OF TELEMEDICINE DVD

Title: EU-Master of Telemedicine and Bioengineering applied to Telemedicine
Producer and/or distributor *(with address)*: CATAI Ed. ISBN 84-609-2162-X
Year: 2004-06
Teaching/learning material X

Type of material:

- Video DVD with text & multimedia X
- CD ROM
- Visioconference:
- Other type of material Other multimedia material
  *(Please specify):*_____

Duration: 2 GB
Format: RM (real media)
Language(s): English-Spanish
Main keywords (4 or 5): Telemedicine

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

Generic name of the list of DVDs with multimedia material produced to train at distance on Telemedicine and Bioingeneering applied to telemedicine any people interested. No requirements needed except a DVD reader in the computer.

Title of activity: EU-MASTER OF TELEMEDICINE DVD-vol 1

Title: EU-Master of Telemedicine and Bioengineering applied to Telemedicine. Volume I.

Producer and/or distributor *(with address)*: CATAI Ed. ISBN 84-609-2163-8
Year: 2004-06
Teaching/learning material X

Type of material:

- Video DVD with text & multimedia X
- CD ROM
- Visioconference:
- Other type of material Other multimedia material
  *(Please specify):*_____

Duration: 2 GB
Format: RM (real media); PDF; HTML
Language(s): English-Spanish
Main keywords (4 or 5): Telemedicine

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

Volume I of the multimedia material to train the people in Quality control and security in e-health. It include text, presentations and videos given by the more representatives professionals in the world in the topics of Minima requirements, Technical knowledge, Teleworking and teleteaching, Principal technical innovations, Telemetry, Nanotechnology, Quality control and assessment, Legal requirements, Security, Internet, Standards , Electronical Health Record.

Title of activity: EU-MASTER OF TELEMEDICINE DVD-vol 2

Title: EU-Master of Telemedicine and Bioengineering applied to Telemedicine. Volume II.

Producer and/or distributor *(with address)*: CATAI Ed. ISBN 84-609-6488-4.
Year: 2005-07
Teaching/learning material X

Type of material:

- Video DVD with text & multimedia X
- CD ROM
- Visioconference:
- Other type of material Other multimedia material
  *(Please specify):*_____

Duration: 2 GB
Format: RM (real media); PDF; HTML
Language(s): English-Spanish
Main keywords (4 or 5): Telemedicine

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

Volume 2 of the multimedia material produced for distant training containing text, presentation and videos. Topics covered in this editions include Telemedicine applications, Minimal technical knowledge, Nanotechnology and new materials, Mobile and electronic learning, Digital signature, Security for health-care, Legal and liability issues, Artificial intelligent in the control of diseases, robotic surgery, ambience intelligence and virtual environment for disease control and treatment, telepresence.

Title of activity:__WEB OF THE TELEMEDICINE GROUP___

Title: www.teide.net/catai

Producer and/or distributor *(with address)*: CATAI
Year: 1997-2006

Teaching/learning material X
Type of material:

- Video
- CD ROM
- Visioconference:
- Other type of material X
  *(Please specify):*_____ Web page; Videostreaming training

Duration:
Format: Html; RM (real media)
Language(s): English- Spanish
Main keywords (4 or 5): Telemedicine

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

The CATAI web has as main objective the spread of the Telemedicine in Spain and in developing countries. The non-for profit association fo the CATAI (Center of Advanced Technology in Image Analysis) support Telemedicine activities and studies in the field of:

Image Analysis at distance
Data transmission
Videoconsultation and videoconferences
On Line training
Distant telequantitation.

The Summer and Winter Courses of the CATAI can also be followed on line during its production by means of the Helix Videoserver providing Real Media output that contain the Power Point presentation together with the video image of the speaker.

Title of activity:__WEB & SMS Server for Diabetes control at distance__

Title: http://193.145.112.231/CHS/
Producer and/or distributor *(with address)*: CATAI
Year: 2002-2006
Teaching/learning material
Type of material:

- Video
- CD ROM
- Visioconference:

- Other type of material X
  *(Please specify):*_____ Support of diabetic people at distance

Duration:

Format: Html;
Language(s): English- Spanish
Main keywords (4 or 5): Telemedicine, Diabetes, SMS

SHORT ABSTRACT
(Brief description of the content in English, French or Spanish)

Web Server available for groups of medical people in English and in Spanish to be able to test Diabetes control at distance. It is accessible by Internet and also using mobile phone SMS.

Title of activity:__WEB & SMS Server for anticoagulant treatment control at distance__

Title: http://193.145.112.231/INR/

Producer and/or distributor *(with address)*: CATAI

Year: 2002-2006

Teaching/learning material

Type of material:
- Video
- CD ROM
- Visioconference:
- Other type of material X
  *(Please specify):*_____ Support of people treated with an anticoagulant treatment.

Duration:

Format: Html;
Language(s): English- Spanish
Main keywords (4 or 5): Telemedicine, INR, telemetry, anticoagulation, SMS

SHORT ABSTRACT
(Brief description of the content in English, French or Spanish)

This web site is available for any patient or doctor that either can be controlled at distance o want to control de patient at distance. Include a Decision Support System (DSS) to advise the user on the type of treatment that should be implement plus the capability of give messages from doctor to patients and viceversa.

Title of activity:_____Distant teaching._____

Title: http://alexandros.ccslab.aueb.gr/~ctc

Producer and/or distributor *(with address)*: CATAI
Year: 2000-2006
Teaching/learning material X
Type of material:
- Video
- CD ROM
- Visioconference:

- Other type of material X
  *(Please specify):*_____ Web page

Duration:

Format: Html

Language(s): English-Spanish

Main keywords (4 or 5): Telemedicine distance training

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

The present activity carries out the diffusion of the structured training skills in the field of TELEMEDICINE. It introduces an innovative professional training by assuming new Information Society skills not only in the Health Care provision but also in the teaching methodology. The co-operation inside of the present CTC consortium will provide and update the contents of those rapidly moving technologies, and will bring innovative approaches in the teaching done at distance with experience of the ODL of APOLLO project as well as the experience on surgical virtual reality simulators provided by the new partners. The training is directed towards trainers to update their knowledge and skills, it means health care professionals (including directors and responsible people) in the European Union. This requires the updating of the Information Society training applied to health care.

This activity is linked with the initiative of the UNESCO Chair of Telemedicine to apply the consortium experience towards the urgent demand of Telemedicine in developing countries to improve their limited health care system efficiency and accessibility. The International teaching activities are arranged in intensive Winter and Summer Courses particularly to update trainers knowledge and teaching material. This activity also takes into consideration the fact that a complete training is not possible in each individual country due to the irregular Health Care technology developments throughout the European Union

Title of activity: TELEMEDICINE DISTANT COACHING-TRAINING (BREEZE)

Title: http://www.cataibreeze.ull.es/
Producer and/or distributor *(with address)*: CATAI
Year: 2006-2007
Teaching/learning material X
Type of material:

- Video X
- CD ROM
- Videoconference: X
- Other type of material X
  *(Please specify):*_____ Multimedia material and on-line session to train at distance in Telemedicine, including the official master students.

Duration: Always updated. Up to now 3 months material

Format: Macromedia Breeze (server-presenter); Macromedia Flash
Language(s): English- Spanish
Main keywords (4 or 5): Telemedicine training

SHORT ABSTRACT

(Brief description of the content in English, French or Spanish)

Web Server available for training and coaching students on line and at distance. Top multimedia material and test as well as on line conferences are included for study an review of the students .

Title of activity: PILATES TECHNIQUE DIABETES CONTROL BY MOBILE PHONE

Title: Windows mobile platform for guiding diabetes people
Producer and/or distributor *(with address)*: CATAI
Year: 2006-2007
Teaching/learning material
Type of material:

- Video
- CD ROM
- Videoconference:
- Other type of material X
  *(Please specify):*_____ Program in Windows-mobile to guide insulin dosage according 3 parameters (diet//activity//illness).

Duration: no limitation

Format: Windows mobile
Language(s): English- Spanish
Main keywords (4 or 5): Diabetes control. Artificial Intelligence.

SHORT ABSTRACT
(Brief description of the content in English, French or Spanish)
The programming tool to be used in mobile phones with windows mobile to advise the insulin dose in diabetic people according to diet/activity and illness.

COURSE PROGRAMMS

XIV Winter Course of the CATAI
XIX Image Analysis Course of the ULL

6th -19th March 2006
PERSONALIZED VIRTUAL MEDICINE (*p*-Health)
La Laguna. Tenerife. Islas Canarias. España
Course recognized by the ESACP (European Society for Analytical Cellular Pathology), the ISDQP (International Society of Diagnostic Quantitative Pathology) and the ISCO (International Society of Cellular Oncology).
http://www.qub.ac.uk/cm/pat/isdqp/
Course recognized by the EFMI (European Federation of Medical Informatics)
http://www.efmi.org/
160 Teaching hours

Monday 6th March, 2006

16-20h. Welcome to the course, **Prof. Dr. M.Tejedor** Chancellor of Industrial Development and Technological Innovation. **Prof. Dr. Á Gutiérrez** and **Prof. Dr. C. Évora** Rector and Vice-rector of Research, University of La Laguna (ULL), Tenerife.

Experiences in Spain: EHR and standards in the SACYL (Health Care of Castilla y La Mancha), **Mr. JA. Arranz Velasco**, CINNTES (Technology Innovation Center Castilla-La Mancha).http://www.sacyl.es/. http://www.cinntes.es/; *Health Card, Telemedicine and Digital Signature in the IANUS unified health record.* **Lda. M. Pereira**, SERGAS. Galicia. http://www.sergas.es *European Norm EN-13606 for the Electronic Clinical Record. Spanish implementation*. **Eng. A. Muñoz.**. Clinica Puerta del Hierro. Madrid. htpp://redtelemedicina.retics.net/

Tuesday 7th March, 2006

16-20h •*IHE (Integrated Health Enterprise) in Spain*. **Ing. JF Lopez Muñoz**. JARA and medical informatics in SES (Extremadura Health Service). http://www.juntaex.es/consejerias/syc/ses/jara/jara.html. *DSS (decision support system) in EHR.*. **Dr. J. de León & M. Estupiñan**, DG of Primary care. SCS. Canary Islands. *Non-invasive tele-paediatric ophthalmology for low-weight newborns*, **Ing. A.Castilla Bombin**, Grupo Bloss, http://www.blossgroup.com.

Wednesday 8th March, 2006

16-20h • *Integrated Telemedicine systems.* **Prof. Dr. Ch. Meinel,** Hasso-Plattner-Institute, University of Potsdam, Germany, http://www.hpi.uni-potsdam.de/. *Standard DICOM and JPEG2000*. **Prof.Dr. A.Horsch.** Technical Univ. Munich. Germany. http://www.efmi-wg-mip.net/ . *Wavelets compression in medical imaging. From JPEG2000 to MPEG*. **Prof. Dr. Ing. P. García Tahoces**. Dpto Electronics & Computation. Univ.Santiago Compostela. Spain. http://www.usc.es/labir

Thursday 9th March, 2006

16-20h •. *Telecontrol in neumology*. **Dr. C. Zamarrón Sanz**. Dpt. Neumology. Santiago Compostela Hospital. SERGAS. Spain. *Vision of the medicine and society in 2010.* **Ing Fdo Martin Sanchez**. Dep. Bioinformatics Public Healthcare. Inst. Carlos III. Madrid. http://biotic.isciii.es/index.htm. *Network dimensioning for QoS in Telemedicine*. **Mr. CA. Couros Frias**. Telefonica S.A. Spain http://www.telefonica.es

Friday 10th March, 2006

16-20h •*Ontologies for e-health and p-health management.* **Ing. F. Marcano**. Faculty of Medicine. ULL. www.teide.net/catai. *SCORM open-sources*. **Prof. Dr. A. Kastania**, Dept. Informatics, University of Economics & Business, Athens, http://www.aueb.gr/users/kastania/reserachank.htm *Immersive virtual techniques and ambience intelligence in medicine*. **Dr. G. Riva**, Catholic Univ. Milan, Italy. http://www.cybertherapy.info/; http://www.cybertherapy.info/p-health_files/frame.htm.

Saturday 11 th March, 2006

16-20h • *Data Protection Laws. Autonomous community regulations.* **Lcd. E. Aced,** Ass. Director Local Data protection Agency, Madrid, https://www.madrid.org/apdcm. *Digital zooming in medical images*, **Prof. Dr. O. Ferrer Roca**. UNESCO Chair Telemedicine. ULL. http://www.teide.net/catai. *Semantic web*. **Prof.Dr. V. DellaMea**. Univ. Udine. Italy.

Sunday 12th March 2006

16-20h • *MedSky-OpenSky applications of EUTELSAT*, **Prof. Dr. Y. Matsakis**, Telemedicine Technologies, Boulogne, France, http://www.tentelemed.com. *Clinical trials by Telematic means* **Dr. O. Castón**. Medical Forensic Institute

Monday 13th March 2006

16-20h • *Virtual Hospital and Health-grid*, **Prof. Dr. G. Graschew,** Univ. Clinic Charité University, Berlin, http://www.rrk-berlin.de/op2000. ESA-European Space Agency, ESTEC- European Space & Research Technology Centre, Noordwijk, Netherlands, http://www.esa.int/. *Telemedicine in the navy. Connection with the "Esperanza del Mar" boat.* **Mr. P. de las Heras.** Telemedicine Dpt Ministry of Labour and Social Security. COMITAS Communications. Madrid. http://www.comitas.es.

Tuesday 14th March, 2006

16-20h • *Evidence based telemedicine: Images at distance (US-Derma-Ophtalm-Endosc)*. **Mr. P. de las Heras**. COMITAS Communications. Madrid. http://www.comitas.es . *Virtual autopsy*. **Dr. M. Thali.** Inst. of Forensic Medicine. Univ. Berna. Switzerland. http://www.virtopsy.com/

Wednesday 15th March, 2006

16-20h. *Standards on M-learning.* **Mr J.M. Rivas**, Fynet Business & Training. La Coruña. www.fynet.net. *Standards on E-Learning.* **Eng. Fdo Izquierdo.** MediaWebPlatform. Barcelona. http://www.mediawebplatform.com *Digital Video Broadcast. DVB-T, DVB-S and DVB-H standards* **Ing. A. Lopez-Gonzalez**. CeTVD.U Ramon-Llull. http://web.salleurl.edu/Eng/elsDTA/elsVideo/cetvd/esp/index.html

Thursday 16th March, 2006

16-20h *Non-invasive sensors*. **Prof. Dr. JL Gonzalez-Mora**. Bioengineering group. Faculty of Medicine. ULL. *New materials for non-invasive sensors*, **Mr. F. Balducci,** University of Entre Rios,

Bioengineering Faculty, Argentina, http://www.edumedica.com.ar. *Standard MPEG, from MPEG4 to MPEG7.* **Prof. Dr. G. Fernandez.** U. Ramon Llull. http://www.salleurl.edu/Eng/elsDTA/elsVideo/webts/index.htm

Friday 17th March 2006

16-20h. *Tools and Methodology for the Risk factor Analysis*, **Mr. F. Lopez Crespo,** Telematic Department of Public Administration, http://www.map.es/csi/. *Quality & Conformance Labels in Telemedicine*, **Eng. A. Diaz Cardama,** CATAI, http://www.teide.net/catai . *Microscopic Images in DICOM standards. Virtual slides*. **Dr. D.M. Rojas**. Cuidad Real http://www.conganat.org/; http://www.seram.es/IHE; http://medical.nema.org/DICOM/minutes/WG-26

Saturday 18th March, 2006

16-20h. *Spanish law and Telemedicine*, **Prof. Dr. E. Sola**, Faculty of Laws, ULL. *Ethics in Telemedicine.* **Prof . Dr. E. Sanz.** Dpt. Farmacology. Faculty Medicine. ULL.

Sunday 19th March, 2006

16-20h • *Internet and Info-ethics*, **Dr. P. Wilson,** Health Care Informatics of the European Commission, Brussels, Belgium. *Telemedicine in Uganda*. **Dr. R. Biangima**. Univ. Makerere. Uganda.

Workshops: Everyday from 8 to 16 h.

1. Card personalization; 2. Tele-pathology systems; 3. Flash programming; 4. Security in Internet; 5.Telemetry with electronic stethoscopes, weights, ECG, vital sign control; 6. HTML; 7. Portable ultrasonography; 8. Digital signature. Certification Authorities and Certification emission; 9. SMS management control; 10. Web control of diabetes; 11. SMIL programming; 12. Wearable computers; 13. Semantic web with Protégé. 14. Non invasive teleophthalmology.

Venue : Main hall of the Faculty of Medicine. University of La Laguna