

STRATEGY 2004-2007

■ In progress

# eHealth for Health-care Delivery

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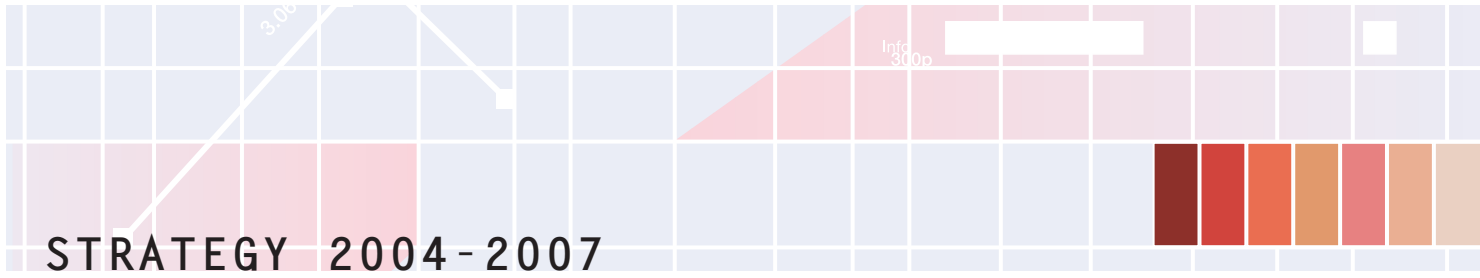
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eHealth 



World Health Organization





# eHealth for Health-care Delivery

eHealth 



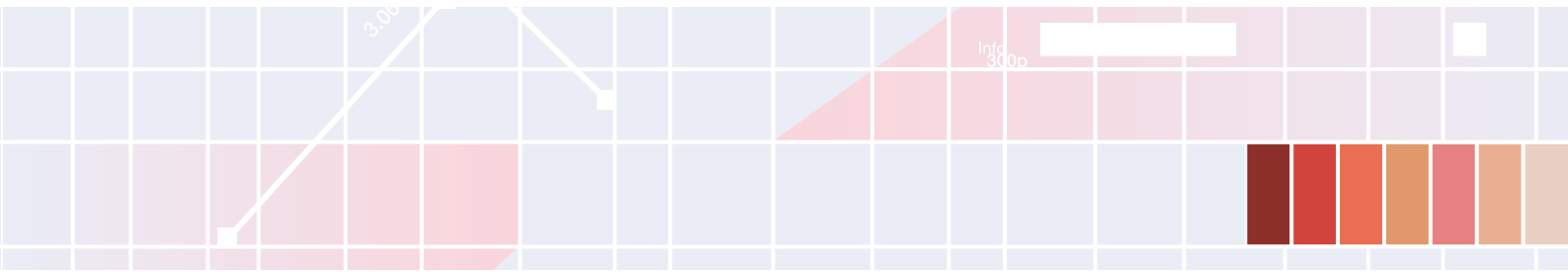


## EXECUTIVE SUMMARY

*The WHO programme on eHealth for health-care delivery (eHCD) encompasses eHealth applications that directly support prevention, patient diagnosis and patient management and care. These applications include tele-consultations, tele-referrals, forward-storage concepts (e.g. tele-radiology and tele-prescriptions), and electronic patient records (EPR).*

***“eHealth is the use, in the health sector, of digital data - transmitted, stored and retrieved electronically- in support of health care, both at the local site and at a distance.”***

*Through these applications, it is possible to take specialized care to primary health-care centres in remote areas and thereby broaden and improve the quality of the services they offer. By connecting primary health workers to primary health-care centres and connecting these centres electronically to departments and referral centres in hospitals for the exchange of data a significant improvement in access and cost-effectiveness may be effected. Primary health care is thus the main target of the eHCD programme.*



The objectives of the eHCD programme are to:

- strengthen the ability of Member States to address health problems through the use of eHealth applications for prevention, diagnosis and patient management (eHCD applications);
- assist Member States in establishing safe and reliable eHCD applications through the adoption of sets of basic requirements for services covering policy, quality and safety, access and use;
- develop norms, standards, guidelines, information and training material and foster research on eHCD applications in support of the establishment of effective eHCD supported health services by Member States.

*The eHCD programme conducts its activities under a country-focused approach in coordination with its Regional offices, and in collaboration with the European Space Agency (ESA), the European Commission (EC), International Telecommunications Union (ITU), the World Bank, the Inter-American Development Bank as well as with WHO Collaborating Centres and other partners.*



## BACKGROUND

### Health-care delivery supported by information technology

Over the last decade, the need to develop and organize new ways of providing efficient health-care services has been accompanied by major advances in information and communications technology (ICT). This has resulted in a dramatic increase in the use of ICT applications in health care, collectively known as eHealth. Today the integration and assimilation of eHealth into the everyday life of health-care workers is becoming a reality in developing as well as developed countries.

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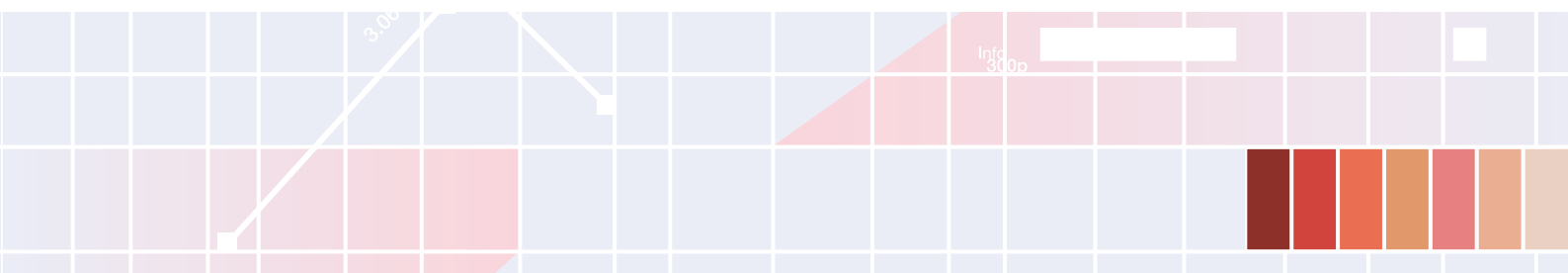
**eHealth is the use, in the health sector, of digital data -transmitted, stored and retrieved electronically- in support of health care both at the local site and at a distance.**

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### **eHealth IS AN IMPORTANT OPTION FOR DEVELOPING COUNTRIES**

For some years it was unclear whether the time had come for WHO to assume a leading role in eHealth. The question was whether activities in eHealth might divert precious resources away from programmes to meet basic needs in less affluent countries. Clearly this is an important issue that should not be neglected. But it is also a fact that the world is being digitalized. Many types of basic equipment that are fundamental to health care are now available only in digitalized form. When they make their way to developing Member States, these countries become digitalized.

While computers are not available in all primary health-care centres in developing countries, they are now in use in an increasing number of centres. What are perhaps not so widely available are the connections, the networks that make communication between the different pieces of equipment and health-care personnel possible. When they become established, however, they offer tremendous potential for taking teachers and training material effectively to rural districts in developing countries for example through e-learning solutions. They also provide the potential for taking clinical specialists to the primary health-care setting through, for example, tele-conferences.



The question is thus not whether eHealth should be a possibility for developing countries. It already is. The main challenge is ensure that these options are used optimally and in a coordinated manner to achieve the desired effects and avoid resources being diverted from meeting basic needs.

### **IDENTIFYING WHO ACTIVITIES IN eHealth**

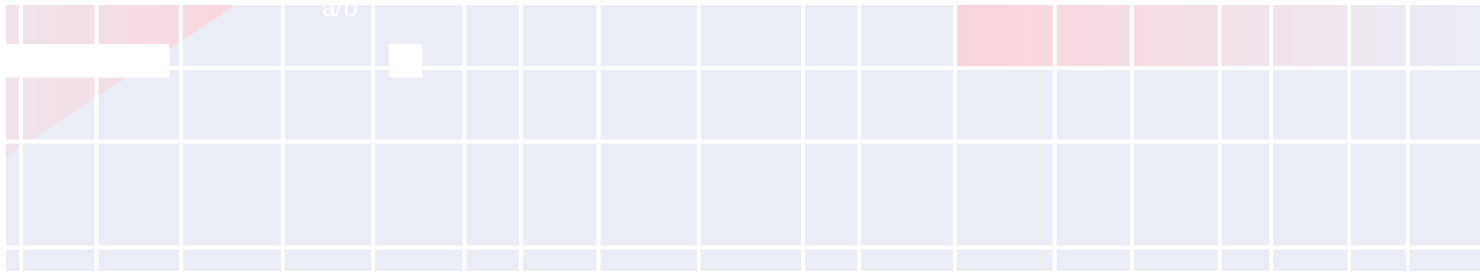
A global consultation meeting on eHealth for countries was held on 12-13 February 2004, at WHO headquarters in Geneva.

The meeting recommended that WHO should adopt eHealth activities that would support the following.

1. Information for health promotion and awareness, medical education, health and biomedical research, evidence-based medicine and e-learning.
2. Information for health information systems (disease surveillance, health statistics, management information systems, financial, logistical, and geographic information systems), monitoring and evaluation.
3. Information for health-care delivery: diagnostics, treatment, consultation (telemedicine applications) and electronic patient records.

### **THE WHO PROGRAMME ON eHealth FOR HEALTH-CARE DELIVERY (EHCD)**

For a number of years, the Department of Essential Health Technologies (EHT) (formerly the Department of Blood Safety and Clinical Technology) has been assisting countries in initiating and establishing eHealth for health-care delivery under its own programme activities as well as in collaboration with other WHO departments. The role of EHT in support of eHCD activities in countries was recognized by Member States and other partners present at the Meeting of Interested Parties in 2003.



In order to strengthen these activities, a dedicated programme on **eHealth for health-care delivery (eHCD)** has been developed.

The eHCD programme encompasses applications that directly support:

- prevention of illness and disease
- patient diagnosis
- patient management and care.

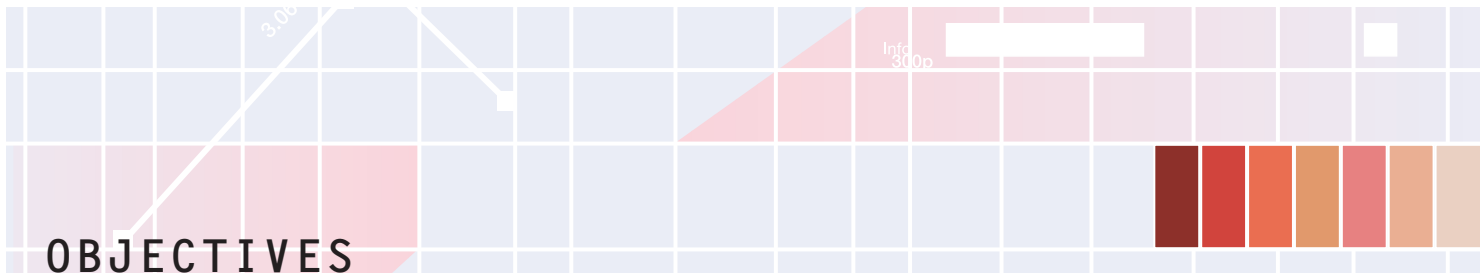
These applications include tele-consultations, tele-referrals, forward-storage concepts (e.g. tele-radiology and tele-prescriptions) and electronic patient records.

The key word associated with applications used in eHealth for health-care delivery is integration of these applications into existing health systems.

**eHealth technologies  
are essential  
when they:**

- **are integrated into health services that meet basic needs**
- **have been proven to be cost-efficient**
- **are evidence-based.**

**Health technologies are evidence-based when they meet well-defined specifications and have been validated through controlled clinical studies or rest on a widely accepted consensus by experts.**



## OBJECTIVES

### Focusing on country impact

The objectives of the eHCD programme are to:

- strengthen the ability of Member States to address health problems through the use of eHealth applications for prevention, diagnosis and patient management (eHCD applications);
- assist Member States in establishing safe and reliable eHCD applications through the adoption of sets of basic requirements for services covering policy, quality and safety, access and use;
- develop norms, standards, guidelines, information and training material and foster research on eHCD applications in support of the establishment of effective health services by Member States.

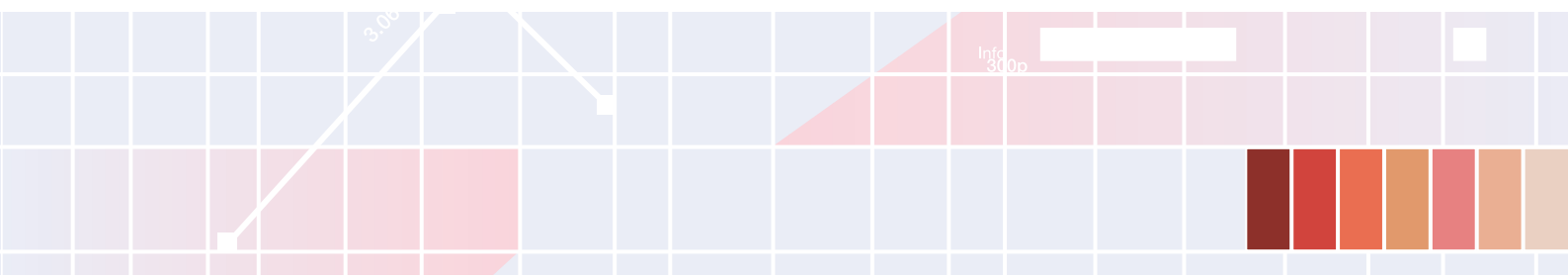


## BENEFITS OF eHealth FOR HEALTH-CARE DELIVERY

### Main focus is on primary health care

By connecting health workers to primary health-care centres and connecting these centres electronically to departments and referral centres in hospitals for the exchange of data, access and cost-effectiveness may be effected:

- Direct tele-consultation between the community health worker and a relevant hospital specialist can reduce professional isolation and provide opportunities for continuing education to the community health practitioner (e.g. *tele-cardiology* founded on the exchange of digitalized ECG, digitalized echocardiology or digitalized stethoscopy and *tele-radiology* based on the exchange of digitalized X-ray images). Tele-consultations take specialists to the primary health-care level.
- Tele-consultations may reduce the need for patients to attend hospitals, saving them both time and money. Hospitals can then focus their resources on patients who may benefit from treatment at the secondary level of health service.
- Similar advantages can be obtained through an eHealth-based hospital referral system founded on digitalized data obtained through applications of essential health technologies.
- eHealth can become a key driver for improved cost-effectiveness when applications such as electronic patient records, smart cards, physician order entry, medications systems and digitalized diagnostic equipment are available.
- Access to comprehensive, secure electronic health records has been shown to improve the quality of care and patient safety. Improved knowledge of the patient's history and previous medical interventions facilitates appropriate treatment.
- eHCD can strengthen systems to reduce medical errors through the provision of vital information, alerts and guidance on best practice.



- eHealth can also improve the cost-effectiveness of nursing, care and administrative work.
- e-Learning products targeting health-care professionals, patients and the general public may be effectively channelled through the primary health-care sector.

### **SECONDARY HEALTH CARE IS ALSO TARGETED BY eHCD**

Secondary health-care systems can also be strengthened through:

- shared tele-based services in disciplines such as pathological anatomy, enabling hospitals to read digitalized microscopic specimens together;
- tele-consultations with tertiary hospitals in such fields as tele-laryngoscopy and tele-laparoscopy.



## SUCCESS CRITERIA

### - and their recommended adoption

#### **SUCCESS CRITERIA FOR COUNTRIES**

##### **Potential constraints to the use of eHCD should be identified and addressed systematically**

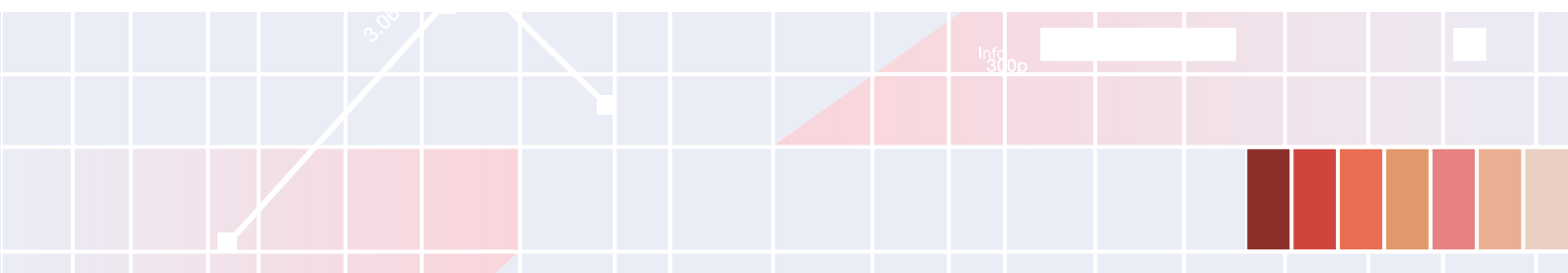
Many countries have embarked on eHealth activities with limited success because insufficient attention has been paid to identifying and tackling potential constraints, including:

- lack of proper needs assessment;
- lack of vision, strategy and national plans;
- lack of information and awareness about eHCD applications;
- computer illiteracy;
- insufficient resources to meet costs;
- limited expertise in medical informatics;
- weak information and telecommunications infrastructures;
- absence of legislative, ethical and constitutional frameworks.

#### **GOVERNMENT COMMITMENT IS NECESSARY**

Long-term government commitment, based on a strategic plan, is a prerequisite for the successful implementation of eHealth activities. This commitment, which should be secured and sustained during all stages of the life-cycle of a project, may be in the form of:

- a long-term plan that is binding on all parties at all times;
- sustainable finance;
- support for pilot schemes and their conversion to regular programmes as soon as they prove successful;
- involvement of health authorities at national, provincial and district levels.



### **NEEDS ASSESSMENT SHOULD BE CONDUCTED**

The most successful eHealth projects are those that respond to a genuine need for ICT support in enhancing the efficiency and effectiveness of a country's health services. Countries should therefore conduct an appropriate needs assessment for eHealth applications. eHCD projects should not simply replicate projects developed in other countries or be established in response to donor/commercial interests (see also: Success criteria for WHO: needs assessment: p. 16).

### **AWARENESS OF THE BENEFITS OF eHCD IS NEEDED AS ARE TAILORED NATIONAL SOLUTIONS**

The availability of reliable, consistent and timely data is a prerequisite for an effective needs assessment and to assist countries in developing systems for the management of data on diseases, resources, the health situation and trends. ICT should be fully utilized in a needs assessment as it is the starting point for any other eHealth application.

Countries should make use of the experience of other countries without simply adopting the same model. A blanket, "one-size-fits-all" solution is not recommended because of the great variations in needs, infrastructure and resources within regions and countries.

### **AVAILABILITY OF HUMAN RESOURCES SHOULD BE SECURED**

The availability of skilled human resources is a prerequisite for the success of an eHealth project. It is recommended that countries:

- develop and integrate a plan for human resource development in the overall plan of the eHealth project. eHCD is not simply about equipment and telecommunications. It is people who make the difference;

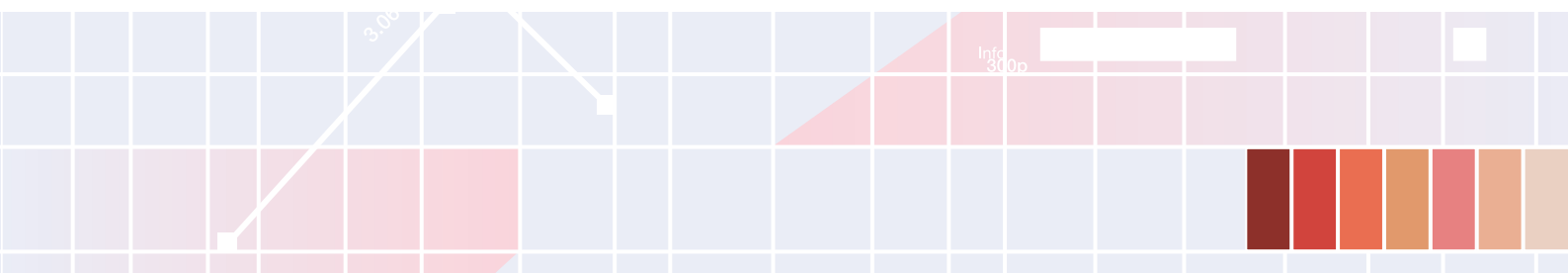


- conduct and provide training at all stages and levels of operation. Training is vital to ensure the correct, optimal use of equipment and to foster self-sufficiency;
- create a multidisciplinary eHCD team. The team should consist of health-care professionals, information technology and communications professionals and professionals bridging the gap between them, such as biomedical engineers. Members of the team may be drawn from the ministry of health, ministry of information and communication, medical colleges, etc.

### **FOCUS ON SKILLS IS CRUCIAL**

Lack of information technology skills and the low penetration rate of ICT in health-care institutions are limiting factors in the implementation of eHealth. Countries should develop plans and include ICT in their list of priorities to ensure that:

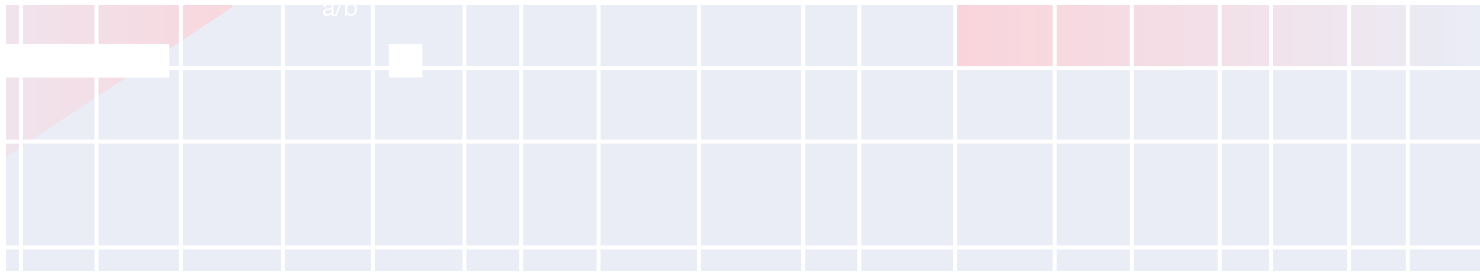
- all health-care professionals (including general practitioners, nurses and technicians) have access to computer systems and networks to facilitate their everyday work. Priority should be given to primary health-care centres since connections between doctors and major hospitals are important, especially in rural areas;
- all health-care professionals have access to basic ICT training facilities to improve their skills and foster positive attitudes towards information technology;
- simple computer-based health applications are gradually introduced in health-care facilities, such as patient registry, case counting, drug listing and personnel administration.



### INFRASTRUCTURE NEEDS SPECIAL ATTENTION

The information technology and telecommunications infrastructures are key factors in the effective implementation of eHCD activities. Countries should make a systematic assessment of the available options in order to identify and select the most appropriate solution for each project. The following issues should be taken into consideration:

- Remote areas require stronger support. If this is not provided, they may be forced to withdraw from a project because the basic infrastructure or local ICT support are not in place.
- Although equipment and devices may be available (whether purchased or provided by companies), other essential components may be lacking, such as access to a reliable telecommunications system or power supply. This often necessitates a return to the use of basic equipment.
- Incidents involving unsafe equipment may occur because of fluctuations in the electrical current and power supply, resulting in danger to patients and damage to equipment.
- Technology should be appropriate to the setting in which it will be used, both in terms of its level of sophistication and cultural sensitivities. Often, very simple technology suffices and use can be made of less sophisticated equipment.
- Real time transfer of data is not always vital, except in emergencies.
- Satellite is often the cheapest option and free access can sometimes be negotiated between governments and telecommunications companies. In large countries, where no suitable infrastructure exists, satellite facilities should be the option.
- Commercial vendors of equipment may apply pressure to adopt specific eHealth solutions.
- Equipment should comply with international standards and meet interoperability requirements.

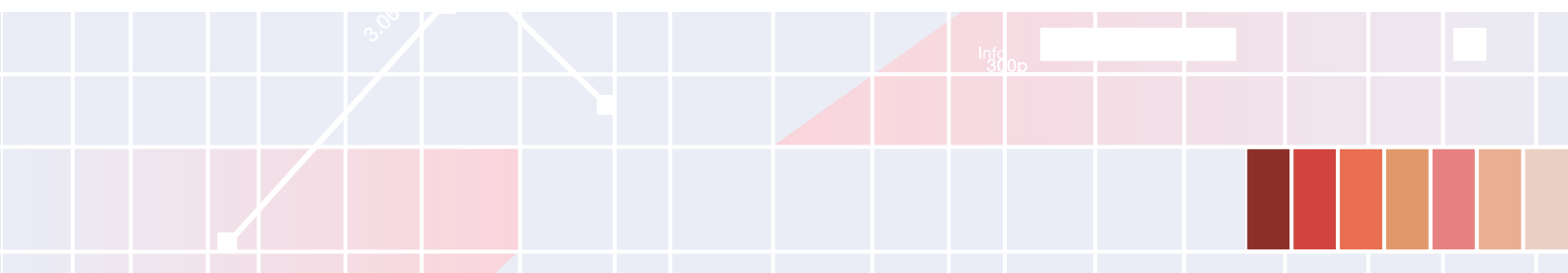


## SUCCESS CRITERIA FOR WHO

### Build on lessons learnt

Extensive work has been undertaken by WHO and Member States on eHCD activities at regional and country levels. This experience indicates that the WHO eHCD programme should:

- define a set of priority activities to be supported and promoted at global, regional and national levels;
- reflect previous experience gained by WHO through consultations, meetings, documents, pilot projects and technical support missions;
- initiate and support country-level pilot projects based on needs assessment and a proactive outreach approach;
- play a broker and catalyst role to ensure that suitable projects with adequate funding are being put in place in collaboration with the private sector and other key players;
- provide support in the evaluation of technology including cost-effective alternatives;
- establish an eHCD information clearing-house for the systematic collection of information on on-going and completed projects and share it with interested countries.



## PLAN PROJECT IMPLEMENTATION CAREFULLY

The multidimensional nature of eHealth, with shared inputs and responsibilities by various parties, requires a special and dedicated effort to ensure the success of eHCD activities. To meet this challenge, the WHO eHCD programme should undertake the following activities:

1. Prepare a draft list of factors to be considered in the planning and implementation of successful and sustainable eHCD activities. The list may include:
  - clear definition of the goals, aims and objectives of the project;
  - cost-benefit analysis based on expected results and all cost elements involved;
  - integration of eHealth activities in the overall health infrastructure in the country;
  - pilot projects to test out approaches and technologies;
  - contact with other more experienced institutions and individual experts for advice on project planning and implementation;
  - ongoing, timely and objective monitoring and evaluation;
  - development and implementation of policies on licensing and reimbursement, compensation, liability, confidentiality and responsibility for citizens;
  - adherence to technology standards.
2. Revise existing studies, guidelines and checklists for the introduction of eHealth in a country.

The work of WHO and its collaborating centres, academic institutions and certain commercial vendors should be reviewed with a view to generating guidelines for best practice and standard procedures.

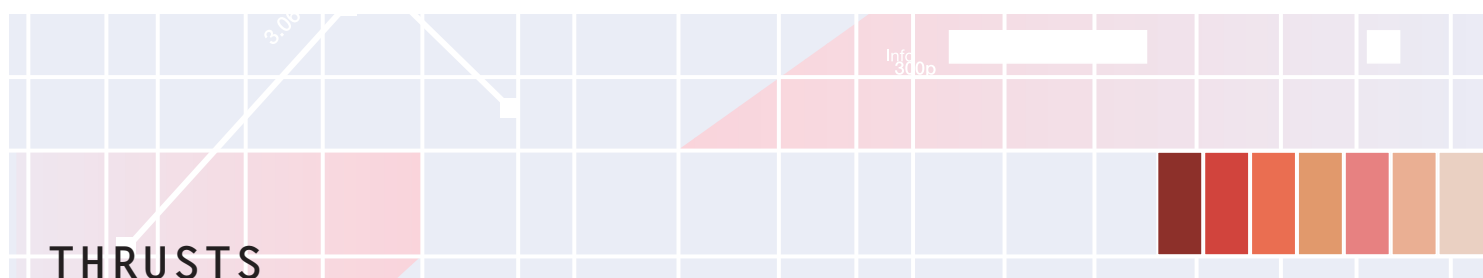


## PERFORM A NEEDS ASSESSMENT

eHCD projects start and grow in different forms and for different purposes with different driving forces behind them. Many projects begin with the purchase of equipment and establishment of connectivity without prior assessment of the purpose the project would serve and how it will meet identified needs.

In order to meet this challenge, the WHO eHCD programme will provide technical support for needs assessment at country level to ensure the responsiveness of technology to identified needs (see also: Success criteria for countries: needs assessment: p. 11). A needs assessment should cover:

- development of a protocol for needs assessment to promote the standardization of procedures and comparison of situations;
- definition of the goals, aims and objectives of the project; (Before an eHCD project is initiated, answers should be sought to such questions as: What is the purpose? What are the deliverables? Who are the beneficiaries? What are the alternatives?)
- assessment of e-readiness in order to determine the availability and suitability of information and communication resources at the institution hosting eHealth activities; (e-Readiness refers to hardware, software, telecommunications facilities and human resources.)



## THRUSTS

### Targeting applications at a realistic level

The main thrust of activities under the WHO eHCD programme will be to assist Member States in establishing and optimizing the use of eHealth applications in the context of the following four areas.

#### 1. POLICY

- 1.1 National coordination of eHealth services
- 1.2 eHealth for emergencies
- 1.3 Adequate resources

#### 2. QUALITY AND SAFETY

- 2.1 Standards for Patient Care Information Systems (PCIS)
- 2.2 Standards for telematics services

#### 3. ACCESS

- 3.1 Connectivity
- 3.2 Software and hardware standards

#### 4. USE

- 4.1 Appropriate technical use of eHealth services
- 4.2 Store and forward image exchange
- 4.3 Tele-consultation
- 4.4 e-Learning



In order to achieve this aim, the eHCD programme will:

- support countries in benchmarking, assessing, planning, implementing and evaluating national policies and plans for the area of work;
- contribute to the establishment of comprehensive systems to ensure the quality and safety of products and services;
- develop mechanisms to promote universal and equitable access to health technologies;
- formulate guidance on the rational, appropriate and cost-effective use of health technologies;
- provide advice on possible sources of financial support;
- develop relevant support products in the form of norms, standards, specifications, guidelines and training material.

The targeting of each of these fields poses separate challenges and the WHO eHCD programme has selected a number of distinctive priorities and activities.



# PRIORITIES AND ACTIVITIES

## What the WHO eHCD programme can offer to fill the gaps

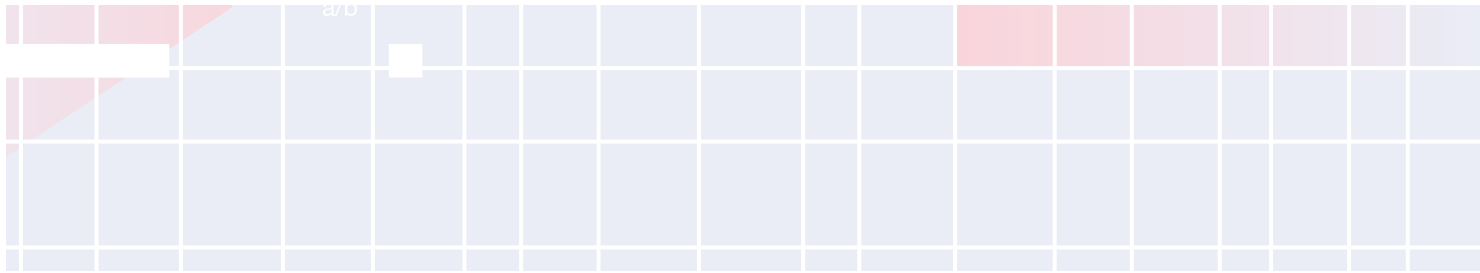
### POLICY

In order to assist countries in creating an infrastructure for the integration of eHCD applications into health systems, the WHO eHCD programme will support countries in the development of policies, strategies and national plans to ensure consistency in eHCD activities. These should be developed as an integrated component of national information and telecommunications plans and should be based on national health policies. Countries should introduce legislation, regulations and codes of conduct to support eHCD activities. These should address such issues as personal data collection, access rights, privacy and confidentiality.

The WHO eHCD programme offers to assist countries in establishing coherent policies for eHCD applications through the development of the elements listed in Table 1.

**Table 1.**  
Elements of basic policy requirements for eHCD

<b>1.1 National coordination of eHealth services</b>	
1.1.1	National eHealth policy
1.1.2	National eHealth plan
1.1.3	Legislative framework for the protection and transfer of patient data
1.1.4	National eHealth committee
1.1.5	Education programmes
1.1.6	Inventory of applications
<b>1.2 eHealth for emergencies</b>	
1.2.1	Integration of eHCD applications into emergency response plan
<b>1.3 Adequate resources</b>	
1.3.1	Financial
1.3.1a	Fiscal allocation
1.3.1b	Cost recovery
1.3.2	Technical resources
1.3.2a	Adequate functioning equipment
1.3.3	Adequate number of trained staff



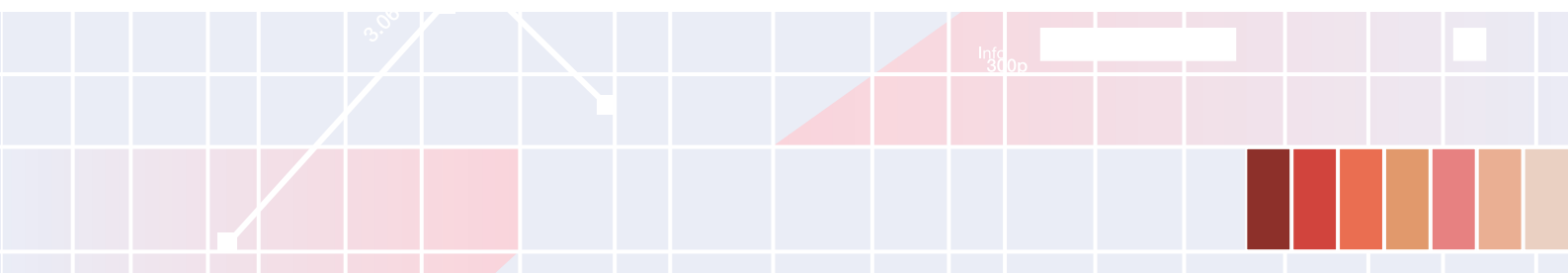
### QUALITY AND SAFETY

The security of eHealth systems must be assured, using modern technologies. This requires the assessment, development and maintenance of the credibility, accountability, quality, safety, confidentiality, integrity, availability and privacy of services, information and resources.

In order for countries to establish coherent quality and safety measures for eHCD applications, the eHCD programme offers to assist countries in the development of the elements contained in Table 2.

**Table 2.**  
Elements of basic requirements for quality and safety measures for eHCD

<b>2.1 Standards for patient care information systems (PCIS)</b>	
2.1.1	Hospital information systems (HIS)
2.1.2	Electronic patient records (EPR)
2.1.3	Patient information systems (PIS)
2.1.4	Physician order entry (POE)
2.1.5	Decision-support technique (DST)
2.1.6	Medication system
2.1.7	General practitioner information systems (GPIS)
2.1.8	Data warehouse
2.1.9	Training of all staff
2.1.10	Quality assessment system
2.1.11	Documentation system for all processes
2.1.12	Security
<b>2.2 Standards for telematics services</b>	
2.2.1	National strategy for telematics services
2.2.2	Feasibility study on telemedicine
2.2.3	Telemedicine, tele-education, telematics for health research and health services management
2.2.4	Working description of the techniques
2.2.5	Health technology assessment
2.2.6	Support for safe and appropriate use of blood
2.2.7	Good telemedicine practice

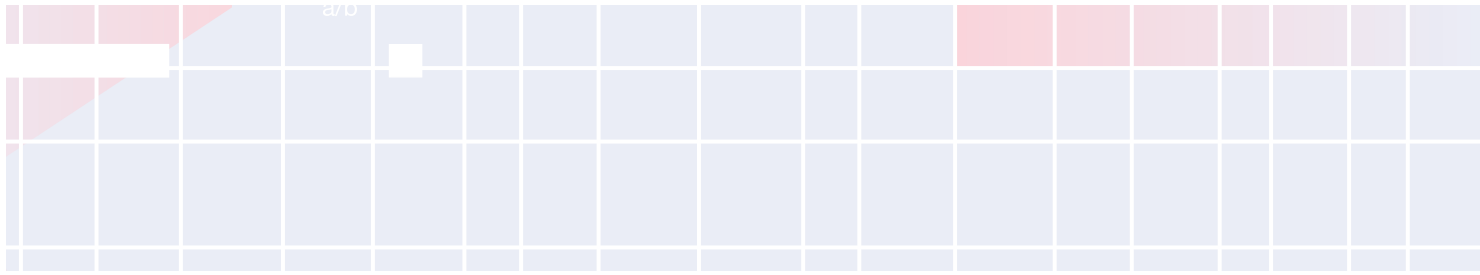


## ACCESS

In order to increase access to eHCD applications, the eHCD programme offers to assist countries in the development of the elements contained in Table 3.

**Table 3.**  
Elements of basic requirements for access to eHCD applications

3.1 Connectivity	
3.1.1	Computers
3.1.2	E-mail
3.1.3	Internet
3.1.4	Connections
3.1.5	Video equipment
3.1.6	Smart cards
3.1.7	Specific hardware for PCIS
3.1.8	Distance learning for trained professionals and health workers
3.2 Software and hardware standards	
3.2.1	Assessment of e-readiness
3.2.2	Basic standards for technology readiness
3.2.3	Guidelines on adherence to technology standards
3.2.4	Protocols for evaluation, procurement, validation of hardware
3.2.5	Protocols for evaluation, procurement, validation of software
3.2.6	Standards and guidelines on open sources software
3.2.7	Benchmarking and comparative studies
3.2.8	Technology transfer and investment protocols
3.2.9	Computing manufacturing
3.2.10	Development and production of component chips
3.2.11	Encryption
3.2.12	Public software style standards
3.2.13	Guidelines on policies for licensing and reimbursement

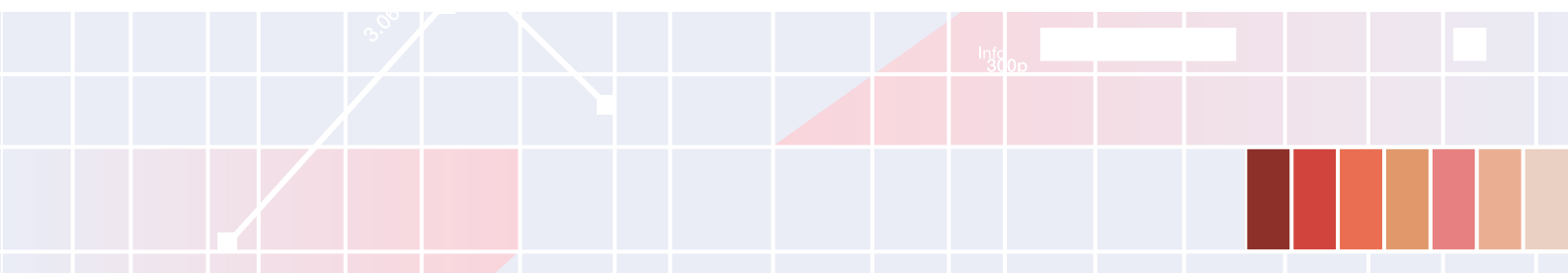


## USE

In order for countries to introduce and optimize the use of eHCD applications the eHCD programme offers to assist countries in the development of the elements contained in Table 4.

**Table 4.**  
Elements of basic requirements for the effective use of eHCD applications

<b>4.1. Appropriate technical use of eHealth services</b>	
4.1.1	Working description of the techniques
4.1.2	Training of health-care workers involved in eHealth
4.1.3	e-based patient tracking and recording
4.1.4	Patient demographics
4.1.5	Registry of technology-related adverse events
4.1.6	Diagnosis
4.1.7	Radiological images and laboratory results
4.1.8	e-Referral
<b>4.2 Store and forward image exchange</b>	
4.2.1	Tele-radiology
4.2.2	Tele-ultrasound
4.2.3	Tele-clinical physiology
4.2.4	Tele-pathology
4.2.5	Tele-laboratories
<b>4.3 Tele-consultation</b>	
4.3.1	Dermatology
4.3.2	Paediatrics
4.3.3	Densitometry
4.3.4	Psychiatry
4.3.5	Surgery, including laparoscopy
4.3.6	Cardiology
4.3.7	Decision trees for patient self-management of chronic diseases
4.3.8	Tele-conferencing
<b>4.4 e-Learning</b>	
4.4.1	Laboratory
4.4.2	Diagnostic imaging
4.4.3	Blood safety
4.4.4	Injection safety
4.4.5	Clinical procedures
4.4.6	Medical devices



## FUNDING

Funding for eHCD projects may be made available through different mechanisms and sources. Insufficient funding will have detrimental effects and may result in projects being abandoned. Countries should aim at securing multiple sources of funding to ensure the commitment of partners and ensure the sustainability of projects. The eHCD programme helps countries take the following issues into consideration in project planning (see also Table 1, item 1.3):

- Collaboration and the sharing of financial resources is useful to avoid duplication of effort and ensure sustainability.
- Universities and academic institutes, in particular, should be encouraged to share funds.
- Funding difficulties may be alleviated by the division of costs or the implementation of cheaper solutions to ensure survival.
- Accurate costing procedures are required to identify funding requirements.
- The capital costs of equipment should be differentiated from the operational costs of service provision, which may be funded from different sources.
- Approaches to cost-sharing, cost-reduction and cost-containment should be identified. These may include the use of multi-targeted facilities to maximize the utilization of existing resources, especially the telecommunications infrastructure, training facilities and human resources.



## THE COUNTRY FOCUS OF THE eHCD PROGRAMME

### Towards an achievable level of self-reliance

#### BASIC OPERATIONAL FRAMEWORK

The eHCD programme is committed to supporting countries in attaining a safe and reliable level of health service through eHealth solutions that are realistically achievable, even in economies that are developing or in transition. To this end, it has adopted the EHT concept of basic operational frameworks which define the key requirements for achieving this level of service.

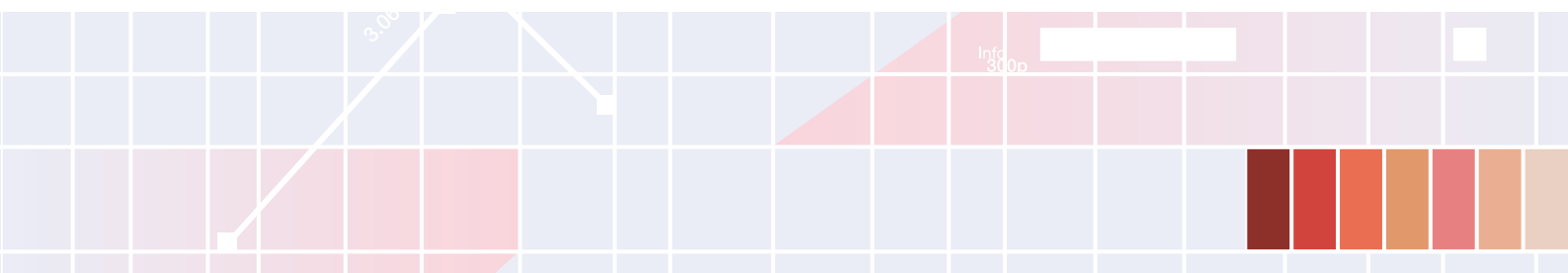
#### The basic operational framework for eHCD

**The basic operational framework is a list of operational elements that collectively define the requirements for a basic level of health service, thus proposing to each Member State:**

- a level to be reached;
- guidance on how to identify requirements that are not yet in place;
- a list of WHO products and services that countries can use in meeting these requirements.

Fundamentally, the EHT modality of basic operational frameworks is a list of requirements that, if implemented collectively, will confer a safe and reliable level for health policy, quality and safety, access and use of the technology or service that is covered by the relevant framework. The elements that are listed in Tables 1-4 form the requirements contained in the basic operational framework for eHCD.

The support provided to countries by the eHCD programme in meeting the requirements contained in the basic operational framework relates directly to the normative work of setting standards and providing guidelines, training material and other products that the programme is expected to undertake under the WHO Constitution. The products listed in Table 6 (p. 36-39) are examples of products included in the basic operational framework for eHCD.



This statutory work will progressively be further refocused to strengthen those products and services generated under the programme to provide more tailored support to countries aspiring to establish the level of health service that is defined by the basic operational framework.

### **PROCEDURES FOR THE SUPPORT OF COUNTRY PROJECTS**

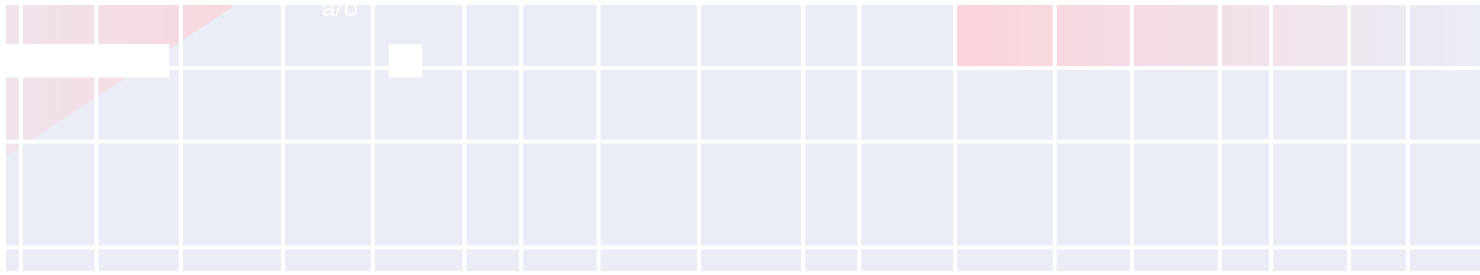
In the eHCD programme's interaction with countries, the concrete use of the basic operational framework consists of four main elements:

- Identification of gaps in services (established requirements) in Member States.
- Call for project proposals from Member States to fill identified gaps.
- Selection of proposals to be included in the eHCD programme.
- Implementation of the selected projects.

When implementing these elements the following procedures will be applied.

First, Member States, together with WHO Representatives and staff from WHO regional offices, will be invited to use the basic operational frameworks to identify gaps in their health services and to prepare a short summary of their observations.

Next, Member States (ministries of health, in collaboration with relevant national authorities and professionals) will prepare project proposals requesting WHO support in closing identified gaps in the frameworks and send the proposals, through WHO country offices, to regional offices. A template for project proposals can be downloaded from the eHCD homepage (<http://www.who.int/eh/ehealthHCD/>). In preparing their proposals, countries will set priorities regarding the identified gaps they wish to close first and focus their proposals on those needs.



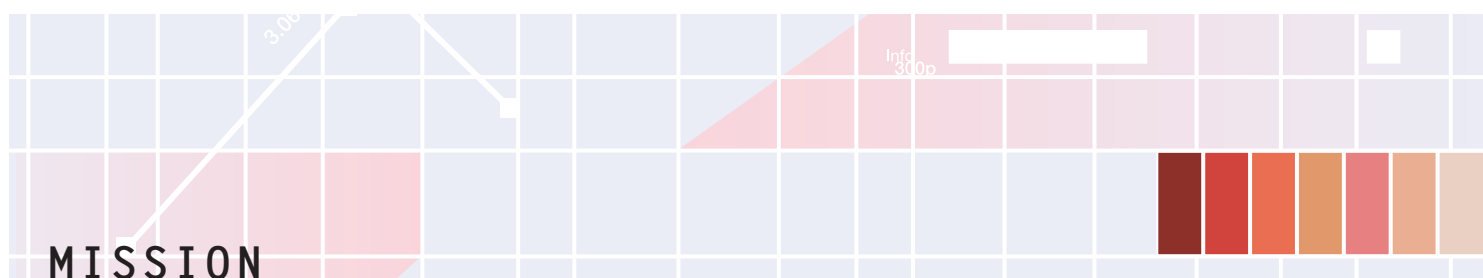
WHO regional offices and headquarters will jointly appraise received proposals and select projects that can be financed from WHO resources. Priority will be given to project proposals that demonstrate high levels of government commitment and direct end-user benefits.

Funding for high quality project proposals that WHO is not in a position to finance will be sought through dedicated applications to external donors and partners.

#### **DEVELOPING THE WORK OF eHCD IN RESPONSE TO COUNTRY NEEDS**

As countries increasingly benefit from WHO assistance in bridging gaps in the basic operational framework for eHCD, WHO headquarters, in collaboration with regional and country offices, will identify gaps in the eHCD portfolio of products that must similarly be filled to provide effective support for each element of the framework; these include norms, standards, guidelines, procedures and training materials. The identified gaps will form the central criteria for the selection of support products and services to be developed by eHCD in 2004-2007.

Guided by the framework, eHCD will also refocus its network and database activities as well as its agreements with WHO collaborating centres and collaboration with other partners.



## What eHCD does

WHO's programme on eHealth for health-care delivery supports countries in their aspiration to improve health-care delivery and performance through the use of information and communications technologies, by:

- developing and maintaining lists of requirements contained in a basic operational framework to support countries in establishing safe and reliable health services and technologies;
- assisting Member States in completing the basic operational frameworks through country-prepared project proposals;
- developing norms, standards, guidelines and training materials to support countries in meeting the requirements contained in the basic operational framework.

### IMPLEMENTATION OF THE COUNTRY FOCUS

eHCD aims:

- by early 2004, to have started reviewing its work with Member States to identify gaps in their health services that can be filled through dedicated projects in pilot countries;
- by mid-2004, to have received at least three project proposals from Member States so that project implementation can start in early 2005 in selected countries and by mid-2005 on a broader basis in a larger number of countries;
- annually, from 2005 to 2007, to implement an increasing number of projects proposed by Member States, targeting at least five per year by the end of 2007;
- by the end of each year, to have produced a solid number of norms, standards, guidelines and training material in support of the basic operational framework;
- by 2007, through annual review of the basic operational framework with Member States, to be able to demonstrate that expected outcomes have been achieved.



## COORDINATION OF WORK

As the number of country-prepared project proposals gradually grows, the eHCD programme will increasingly focus on those project proposals that can be supported.

Regional offices, in collaboration with headquarters and country offices, will coordinate the implementation of the projects that are included in the programme. Delivery mechanisms include training courses and workshops, expert missions, fellowships and the provision of equipment.

Headquarters, in collaboration with regional offices, will as in previous years continue to develop and update the norms, standards, guidelines and training material that have been selected for inclusion in the programme.

Likewise, headquarters and regional offices will continue to coordinate the networks and agreements with WHO collaborating centres and the development and maintenance of databases and other information material.

In order to further strengthen collaboration with partners, the eHCD programme will establish a task force with representatives from all parts of WHO to support a strategy for implementing eHealth for health-care delivery. The task force may include representatives from all interested parties with specific terms of reference to:

- guide WHO's effort in support of eHCD;
- act as a think-tank on eHCD policies and priorities;
- develop standards, guidelines and protocols for best practice;
- assist in project selection and evaluation;
- streamline and seek funding options for eHCD projects;
- promote eHealth and increase awareness among decision-makers and senior officials;
- organize regular global events, conferences, meetings and exhibitions on eHCD;
- promote and ensure the proactive role of WHO in eHCD.



## COLLABORATING PARTIES

Collaboration between the public sector, private sector, local authorities, the donor community, nongovernmental organizations and academic institutions provide better opportunities for eHealth projects to become sustainable. WHO as well as countries should encourage and seek the right combination of partnerships at all times.

The role of EHT in support of eHCD activities in countries was recognized by Member States and other partners present at the Meeting of Interested Parties in 2003.

In order to strengthen the synergies from partnerships, the eHCD programme will:

- develop the capacity and mechanisms for partnership and coordination of efforts of other interested parties for eHealth projects in Member States;
- ensure that partnerships with other agencies, organizations and institutions are in place. These partnerships are an essential component of effective programmes and all key players, both at national and international levels, should be included to avoid overlap and duplication. Partnerships at international level will be established between WHO, the ITU and the European Commission. Partnerships at national level will bring together various government ministries and the public sector, the private sector, WHO regional and country offices and WHO collaborating centres (see more information pages 30 - 31);
- ensure that effective mechanisms for resource mobilization and funding are in place to support capacity building at country level. Cost sharing and the definition of responsibilities should be clear from the start;
- ensure that policies and procedures are in place to help countries develop strategies and plans for integrated eHealth services.



## SOME EXEMPLES OF COLLABORATION



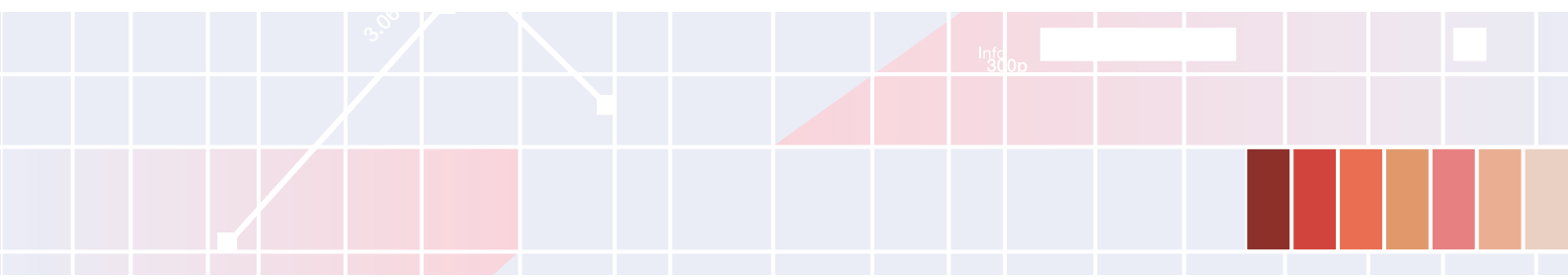
### EUROPEAN SPACE AGENCY (ESA)

Actively cooperate with the ESA programme on eHealth and telemedicine via satellite to shape the preparation, execution and evaluation of joint projects dedicated to develop and validate sustainable solutions for the delivery of eHealth in response to real needs through the utilisation of satellite communications.



### WORLD BANK'S GLOBAL DEVELOPMENT LEARNING NETWORK (GDLN)

A partnership with the World Bank's Global Development Learning Network (GDLN) will be realized. The GDLN (<http://www.gdln.org/>) is an existing, global partnership of affiliates (Distance Learning Centers) in more than seventy countries who utilize information technology (notably video-conferencing and internet-based e-learning) to facilitate interactive, cost-effective learning and knowledge-sharing for sustainable development and poverty reduction. The GDLN has identified the health sector as a priority area for its work and within this framework has undertaken a number of initiatives, events and courses addressing priority topics in the health sector focusing on sharing of best practices and promoting dialogue among stakeholders. The GDLN can contribute to the overall strategy in the following ways:



- Mobilize its existing network of affiliates and program partners to develop and deliver content in-line with the needs assessments developed under the strategy
- Host video-conference-based dialogues between stakeholders on topics of interest, both in context of workshops and conferences and as standalone events
- Host virtual meetings between course development teams and those working on strategies, work programs, guidelines and standards. Develop and strengthen virtual communities of practice.
- Empower local Distance Learning Centers as agents of the eHealth initiative, including facilitation of discussions with local stakeholders concerning needs and resource mobilization.
- Ensure integration of eHealth activities in the work of the World Bank's Health program in each country
- Assist in increasing the reach of eHealth offerings into provincial and rural areas within partner countries through mobilization of domestic and partner networks
- Utilize existing capacity to assist in the quality control and instructional design aspects of eHealth content offerings
- Help raise awareness of eHealth activities through GDLN in MDG priority areas



## WHAT WILL THE eHCD PROGRAMME HAVE ACHIEVED BY 2007?

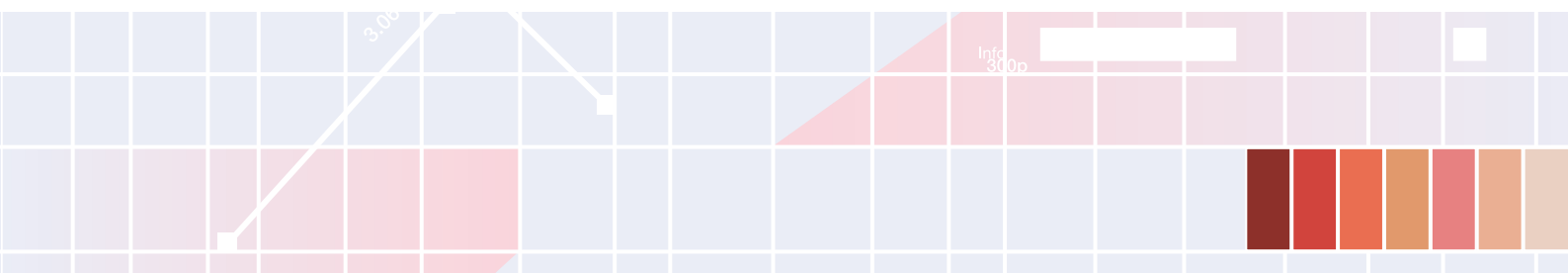
### - the eHCD vision

Today there is a fairly low and unarticulated perception in many Member States of the role that health technologies can play in prevention, health care and the establishment of cost-effective health systems.

By 2007, the eHCD programme expects to have assisted Member States to reach or partly reach a safe and reliable level of health service, as defined in the eHCD basic operational framework, and to set and achieve clear, concrete goals and milestones for those of their health services that fall under the eHCD programme.

Important outcomes of eHCD programme activities will be that countries will have closed a substantial number of gaps in their health-care services. Key indicators of these outcomes include:

- At least one country in each WHO region will have piloted the WHO eHCD basic operational framework.
- At least 10 more countries will have developed national plans for the integration of eHCD applications in their health systems.
- At least 10% of the countries in each WHO region will have strengthened their technical capacity and improved the quality and safety of, and access to, appropriate eHCD services and applications for primary health care.
- At least one eHealth task force for improving eHealth services will be operational in each WHO region.
- At least one country in each WHO region will have completed a comprehensive assessment of e-readiness.
- At least two countries in each WHO region will be using eHCD training materials and tools to improve the technical skills of health personnel in the safe use of essential emergency procedures and equipment at first referral level.



- A package of WHO products and services to ensure policy quality and safety, proper Access and use of eHealth services would be available to Members States.
- A WHO-led eHCD network of experts will have been established to support technical capacity building in Member States and for the sharing of information and experience.

As a result of the way in which the eHCD programme will be operating:

- **There will be a progressive reallocation of resources in support of country-prepared project proposals, aimed at achieving this level**
- **The eHCD programme will evolve as a needs-driven, project-based unit in the sense that most of its activities will emanate from proposals generated in Member States.**

#### TOWARDS THE 2007 VISION: YEAR-BY-YEAR eHCD MILESTONES AND INDICATORS

Pending the concrete submission of project proposals by Member States and projected activities for the development of support products, specific annual eHCD milestones (targeted outputs) and indicators of the adoption of these outputs by Member States (indicators of outcomes) are shown in Table 5.

The support products that the eHCD programme will develop during this period are specified in Table 6.



# TABLE 5. MILESTONES AND INDICATORS

2004



## POLICY

Milestones

Workplan developed in conjunction with WHO regions

Indicators

End 2004, first draft of workplan agreed by WHO regions



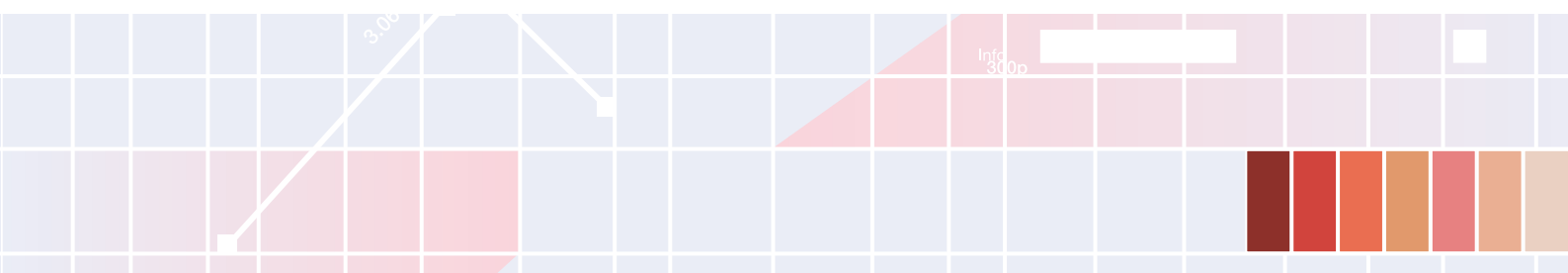
## QUALITY AND SAFETY

Milestones

Launch of eHCD survey in each WHO region to identify current status of eHCD services and applications for primary health care

Indicators

End 2004, survey conducted in WHO regions and initial findings available



## 2005

## 2006

## 2007

Launch of eHCD initiative with selected countries in each region

First run with regions to review ongoing process within countries

Final review and report from regions

Selection of countries finalized and official agreements from countries presented by WHO regions

At least 5% of countries in each region will have initiated the establishment of eHCD applications in their health care systems

At least 10% of countries in each WHO region will have established eHCD applications in health-care systems, based on national plans

Based on the basic operational framework for eHCD, required services and applications for primary health care will be identified by selected countries in each region

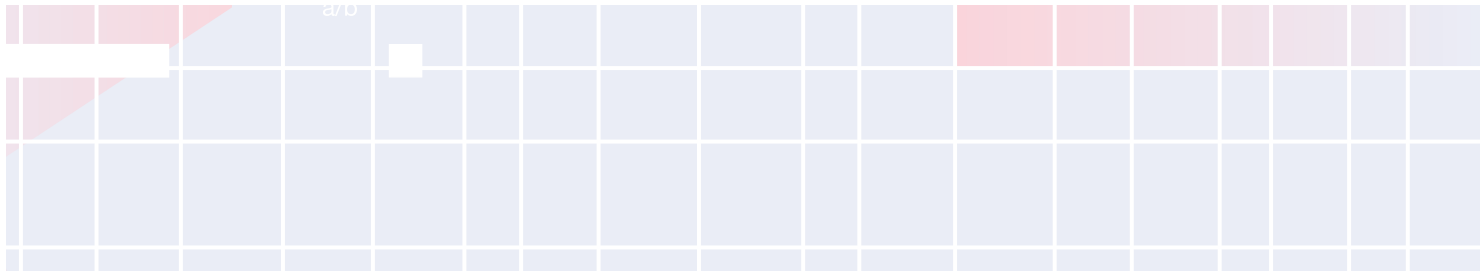
Report developed by eHCD and WHO regions with recommendations and guidelines to improve quality and safety, and access to appropriate eHCD services and applications for primary healthcare

At least 10% of countries in each WHO region will have strengthened their technical capacity and improved the quality and safety of, and access to, appropriate eHCD services and applications for primary health care

Database developed and accessible from WHO regions to demonstrate the result from the ongoing process of the survey

First draft of recommendations from survey available to WHO regions

Internal publication of report with survey findings



## 2004

### ACCESS

#### Milestones

End 2004, launch of development of WHO products and accessible through the eHCD Internet site and web-board

#### Indicators

First draft of workplan developed

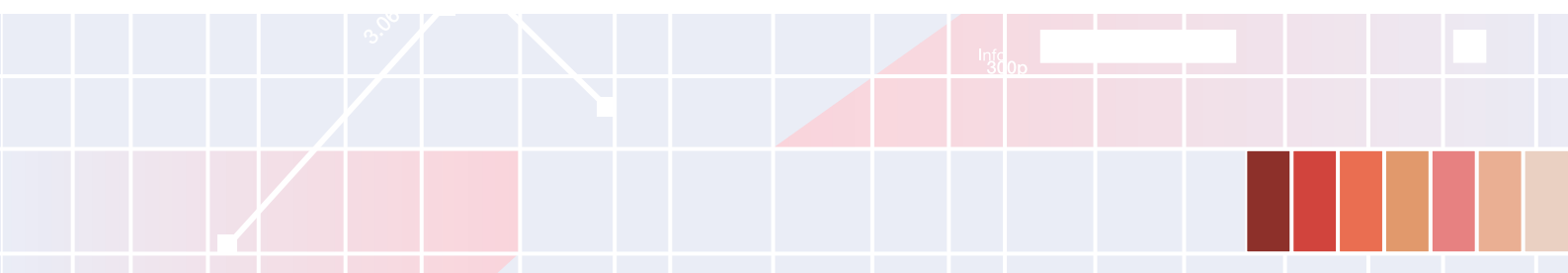
### USE

#### Milestones

WHO eHCD development of communications strategy and workplan

#### Indicators

eHCD internet site developed  
eHCD web-board available for WHO regions



## 2005

## 2006

## 2007

End 2005, first group of products launched for field testing in selected countries

End of 2006, report on review of ongoing process

Package of WHO products and services addressing policy, quality and safety, access and use of eHealth services available to Member States

Data collection using eHCD basic operational framework to identify products for development or updating

Database on WHO products available to Member States

Full package of WHO products and services available on eHCD Internet site

Launch of eHCD network

Review and publication of report on ongoing activities

WHO eHCD network to support technical capacity-building in Member States and for sharing of information and experience

First eHCD network meeting

First report of ongoing eHCD activities

First Annual Publication of the eHCD Activities Report



## TABLE 6. NORMS, STANDARDS, SPECIFICATIONS, FOR eHCD TO BE DEVELOPED 2004 - 2007

### Requirements Support products

#### POLICY

■ National coordination of eHealth services      Aide-Mémoire: eHealth for health-care delivery

Guidelines: Minimum requirements for eHealth services

Guidelines: Developing a legislative framework for protection and transfer of patient data

■ eHealth for emergencies      Guidelines: Minimum requirements for integration of eHCD into emergency response plans

#### QUALITY AND SAFETY

■ Standards for Patient Care Information Systems (PCIS)      Report on review of existing standardisation efforts in EU/World, for HIS

#### ACCESS

Open Source Reference; Implementation plus tooling of an electronic health record (EHR), based on international open standards

Smart Cards. Guidelines on developing and implementing a smart cards system

Quality aspects of eHealth (Patient safety and Information security)

# GUIDELINES AND TRAINING MATERIALS

2004

2005

2006

2007

Completed

Completed

Ongoing process

Completed

Ongoing process

Completed

Ongoing process

Completed

Ongoing process

Testing

Completed

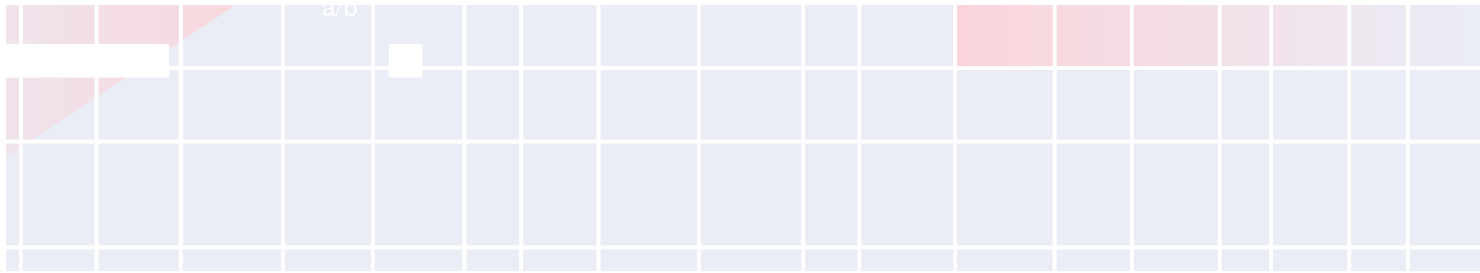
Ongoing process

Testing

Completed

Ongoing process

Completed



## Requirements Support products

### ACCESS

- Standards for Telematics services

Guidelines: Basic steps in telemedicine

Country feasibility study on eHealth

Study report; Decision trees for patient self-management of chronic diseases

Guidelines on e-referral

Guidelines on training material on problem-solving

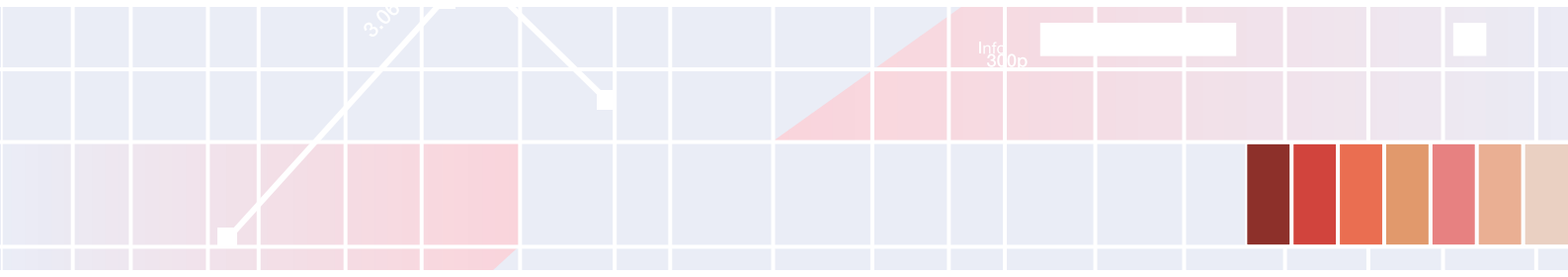
### USE

- Tele-consultation

Guidelines on Tele-consultation

- e-Learning

<http://www.who.int/eht/ehealth>



2004

2005

2006

2007

Ongoing process

Completed

Ongoing process

Completed

Ongoing process

Testing

Completed

Ongoing process

Testing

Completed

Ongoing process

Testing

Completed

Ongoing process

Completed

Launch of eHCD  
resource Centre

Updated process

Updated process

Updated process









