

**INFORMATION SOCIETY TECHNOLOGIES  
(IST)  
PROGRAMME**



**IS4ALL  
Information Society for All  
IST-1999-14101**

**Project Information**

## CA &amp; TN CPF Form – Form A1


 EN B 1 FP5CA/TN    
 


<b>Project Acronym</b> <sup>2</sup>	IS4ALL	<b>Proposal No</b> <sup>3</sup>	IST-1999-14101
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**A1.****Project Summary** <sup>21</sup>**Objectives (maximum 1000 characters)**

IS4ALL seeks to establish a wide, interdisciplinary and closely collaborating “network of experts” (Working Group) to provide the European Healthcare industry with a comprehensive information package detailing how to appropriate the benefits of Universal Design. The specific technological / scientific objectives to be attained by IS4ALL can be summarised as follows:

- Consolidate existing knowledge on Universal Access in the context of Information Society Technologies, which is currently dispersed across different international sites and actors, into a comprehensive code of design practice.
- Translate the consolidated wisdom to concrete recommendations for emerging technologies (e.g., emerging desktop and mobile platforms) in a critical application domain, which is Healthcare Telematics.
- Demonstrate the validity and applicability of the recommendations in the context of concrete scenarios drawn from an experimental regional Healthcare Telematics network.
- Promote the Universal Access principles and practice in Healthcare Telematics through a mix of outreach activities which include seminars and participation in major international conferences, concertation meetings, and project clustering events.

**Description of the work (maximum 2000 characters)**

At present, existing guidelines on Universal Access are of a high abstraction level. This renders them impractical or even unsuitable to be used by industry designers without major efforts. Neither the resources (regarding the number of personnel, and the amount of time and money involved) nor the expertise needed to apply these high level guidelines to the needs of individual sectors are available within companies. As a result, despite the fact that the basic wisdom about Universal Access in many cases may exist, the available guidelines remain unused. This gap has been identified as one of the main drawbacks that prevent European industries to apply the principles of Universal Access. IS4ALL aims to fill this gap by:

- Defining an appropriate set of instruments (Milestone 1) to elicit and document best practice and experience in the area of Universal Access (Milestone 2);
- Extracting and developing scenarios (from a regional Healthcare network) to demonstrate the validity and applicability of such a code of practice; these scenarios will be formulated around an agreed common theme, which is that of the electronic healthcare record (Milestone 3); the specifics of each scenario (Milestone 4) will be decided by the Working Group within the first three months of its life;
- Consolidating these findings into a code of Healthcare practice (Milestone 5);
- Developing a validation strategy (Milestone 6) for demonstrating the applicability of the recommendations by means of a collection of experimental prototypes (Milestone 7) which will embody the agreed design code for Universal Access;
- Disseminating the accumulated wisdom to the industrial, academic / research and standardisation communities through several outreach activities, including a Web site (Milestone 8) and seminars (Milestone 9), participation in international conferences (Milestone 10), and by submitting technical reports (Milestone 11) to on-going standardisation activities.

**Milestones and expected results (maximum 500 characters)**

First of all, IS4ALL will develop and validate a code of practice which will provide European industries with state of the art reference materials and support services on how to approach, internalise and exploit the benefits of Universal Design in the development of Healthcare Telematics products and services.

Secondly, IS4ALL will:

- organise six seminars, targeted to mainstream IT&T industry, to be held in different European countries; and
- participate in major international conferences aiming to disseminate its results as well as to raise awareness and consensus on the practice of Universal Access in Healthcare Telematics.

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## 1. Project objectives

### 1.1 Background

The International Scientific Forum “Towards an Information Society for All” was launched in 1997, as an international ad hoc group of experts sharing common visions and objectives, namely the advancement of the principles of Universal Access in the emerging Information Society. The Forum held three workshops to establish interdisciplinary discussion, exchange of knowledge, dissemination, and international co-operation. The 1<sup>st</sup> workshop took place in San Francisco, USA, August 29, 1997, and was sponsored by IBM. The 2<sup>nd</sup> took place in Crete, Greece, June 15-16, 1998. The 3<sup>rd</sup> workshop took place in Munich, Germany, August 22-23, 1999. The latter two events were partially funded by the European Commission. The Forum has produced two White Papers<sup>1,2</sup>, while a third one is in preparation. These papers report on an evolving international R&D agenda focusing on the development of an Information Society acceptable to *all* citizens, based on the principle of *designing for all*<sup>3</sup>. The proposed agenda addresses technological and user-oriented issues, application domains, and support measures. The Forum has also elaborated on the proposed agenda by identifying challenges in the field of human-computer interaction, and clusters of concrete recommendations for international collaborative R&D activities. Moreover, the Forum has addressed the concept of *accessibility* beyond the traditional fields of inquiry (e.g., assistive technologies, housing, etc), in the context of selected mainstream Information Society Technologies, and important application domains with significant impact on society as a whole (e.g., Healthcare).

### 1.2 Goal

Based on the success of its initial activities, the Forum has proposed to advance the principles and practice of Universal Access towards the wider Information Society Technologies (IST) community, by addressing Healthcare Telematics, a critical application domain, along with the emerging technologies shaping the nature and contents of this domain. IS4ALL is, therefore, seeking to establish on a more formal basis a wider, interdisciplinary and closely collaborating “network of experts” (Working Group) to provide the European Healthcare industry with a comprehensive information package detailing how to appropriate the benefits of Universal Design.

#### 1.2.1 Scientific and technological quality and innovation

*Universal Design* postulates the design of products or services that are accessible, usable and, therefore, acceptable by potentially everyone, everywhere and at any time. While it is favourably received and well-established in engineering disciplines such as architecture, interior and landscape design, it remains a loosely understood notion when it comes to Information Society Technologies. In the past, the vast majority of the work dedicated to promoting Universal Access to the Information Society has been carried out through isolated activities and project work. Although the results of these efforts are slowly finding their way into industrial practices (e.g., certain mobile telephones, point-of-sale terminals, public kiosks, user interface development toolkits), a common platform for researchers and practitioners in Europe to collaborate and arrive at applicable solutions is missing. Furthermore, these examples have not sufficed to create the necessary critical mass to widely promote the principles of Universal Access. As a consequence, collaborative efforts are needed to collect, consolidate and validate the distributed wisdom at the European as well as the international level, and apply it in an application area of critical importance (i.e., Healthcare Telematics).

IS4ALL sets out to accomplish the above innovative goals and advance the practice of Universal Design in Healthcare Telematics. The primary focus of the proposed activities of IS4ALL is on the impact of advanced desktop and mobile interaction technologies on emerging Healthcare products and services. The choice of the Healthcare domain can be justified on the grounds of it being a critical service sector,

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<sup>1</sup> Stephanidis, C., Salvendy, G., et al., (1998). Toward an Information Society for All: An International R&D Agenda, *International Journal of Human-Computer Interaction*, Vol. 10(2), pp. 107-134.

<sup>2</sup> Stephanidis, C., Salvendy, G., et al., (1999). Toward an Information Society for All: HCI challenges and R&D recommendations, *International Journal of Human-Computer Interaction*, Vol. 11(1), pp. 1-28.

<sup>3</sup> The terms “Universal Design” and “Design for All” are used interchangeably in this document.

catering for the population at large, and at the same time involving a variety of diverse target user groups (e.g., doctors, nurses, administrators, patients). Thus, Healthcare provides an ideal “testbed” for exemplifying the principles of Universal Access and assessing both the challenges and the opportunities in the context of an emerging Information Society. On the other hand, by emerging interaction platforms we mean primarily advanced desktop-oriented environments (e.g., GUIs, 3D graphical toolkits, visualisers), and mobile platforms (e.g., palmtop devices) enabling ubiquitous access to electronic data from anywhere, and at anytime. Such technologies are expected to bring about radical improvements in the type and range of Healthcare services. Accounting for the accessibility, usability and acceptability of these technologies at an early stage of their development is likely to improve their market impact as well as the actual usefulness of the end products.

### **1.2.2 Community added value and contribution to EC policies and objectives**

IS4ALL seeks to collate and expand the existing “bundled” competence on Universal Access to strengthen competitiveness of the Healthcare industry in Europe. As an accompanying measure, IS4ALL brings several benefits to the European Healthcare Telematics industrial community, including end users. First of all, the Healthcare Telematics industry will benefit from a new insight towards effective and personalised service management, resulting from the basic promises of Universal Access and Design for All. In particular, European Healthcare Telematics community will obtain access to a code of practice, which will enable innovation by differentiated products and services targeted to the broadest possible client base. The benefits will come from the appropriation of the engineering code of practice, which IS4ALL will develop, validate and disseminate as widely as possible. Such a code of practice will extend the current state of the art in Healthcare Telematics and facilitate process improvements in the direction of equitable access and higher quality services for the widest possible end user population.

To achieve this, IS4ALL will bring together communities, which were previously separate, and thereby strengthen multi-disciplinarity in Healthcare Telematics. This is expected to provide a stronger insight into what constitutes diversity in the context of Healthcare Telematics, and how it can be effectively served throughout the development life cycle.

Finally, IS4ALL will bring added value to end users as far as personal healthcare management is concerned. Specifically, end users, irrespectively of their location or access terminals, will be able to access personal healthcare information, inquire on Healthcare related aspects and, in general, benefit from the principle of “anyone, anytime, anywhere access” in the context of the target application area.

### **1.3 Specific objectives**

The specific technological / scientific objectives to be attained by IS4ALL can be summarised as follows:

- Consolidate existing knowledge on Universal Access in the context of Information Society Technologies, which is currently dispersed across different international sites and actors, into a comprehensive code of design practice.
- Translate the consolidated wisdom to concrete recommendations for emerging technologies (e.g., emerging desktop and mobile platforms) in a critical application domain, which is Healthcare Telematics.
- Demonstrate the validity and applicability of the recommendations in the context of concrete scenarios drawn from an experimental regional Healthcare Telematics network.
- Promote the Universal Access principles and practice in Healthcare Telematics through a mix of outreach activities, including 6 seminars and participation in several international conferences.

### **1.4 Operational goals**

By the end of the project, IS4ALL will have accomplished several operational goals:

First of all, IS4ALL will have developed a code of practice which will provide European industries with state of the art reference material and support services on how to approach, internalise and exploit the benefits of Universal Design in the development of Healthcare Telematics products and services.

Secondly, IS4ALL will have organised six seminars, targeted to mainstream IT&T industry, to be held in different European countries. These seminars will help IS4ALL to reach a wide community of potential participants and make them aware of the principles and practice of Universal Access in Healthcare Telematics. Additionally, IS4ALL will have participated in several international conferences to promote the project's results. Some of these conferences are already known in advance, while others will be decided upon during the project's lifetime in close collaboration with the European Commission. It should be noted that participation in these conferences might take various forms, including submitting and presenting papers, but also organising workshops, tutorials and special panel sessions.

Finally, IS4ALL will target relevant international standardising organisations to facilitate updates in draft international standards or the introduction of new work items, which accommodate the project's results. This activity will be realised by preparing and submitting technical reports and subsequently presenting them during the scheduled meetings of the respective bodies. Of primary importance will be standardisation at an international (i.e. ISO) level and, in particular, the new Work Item on Accessibility under ISO 9241 / SC 4 / WG 5.

### **1.5 Baseline data against which the project will measure its progress**

IS4ALL seeks to collect data by:

- defining an appropriate set of instruments (Milestone 1) to elicit and document best practice and experience in the area of Universal Access (Milestone 2); some of these instruments may be reference case studies on how Universal Access is being practised, subcontracts to experts to provide state of the art reports on technologies, and application areas, as well as on site visits, interviews, etc.;
- extracting and developing scenarios (relevant to a regional Healthcare Telematics network as well as the industrial participants) to demonstrate the validity and applicability of such a code of practice; these scenarios will be formulated around an agreed common theme, namely electronic healthcare records (Milestone 3); the specifics of each scenario (Milestone 4) will be decided by the Working Group within the first three months of its life.

In subsequent phases, and based on the above data, the project will:

- consolidate these findings into a code of Healthcare Telematics practice (Milestone 5);
- develop a validation strategy (Milestone 6) for demonstrating the applicability of the recommendations by means of a collection of experimental prototypes (Milestone 7) which will embody the agreed Universal Access design code;
- disseminate the accumulated wisdom to the industrial, academic / research and standardisation communities through several outreach activities, including a Web site (Milestone 8) and seminars (Milestone 9), participation in major international conferences (Milestone 10), and by submitting technical reports (Milestone 11) to on-going standardisation activities.

### **1.6 Assessment and evaluation**

In IS4ALL, assessment and evaluation will be the prime task of a dedicated workpackage. Specifically, the results of the project, and, in particular, the core outcomes intended for wide dissemination (e.g., Universal Design guidelines for Healthcare Telematics products and services), will be subject to internal and external assessment and evaluation. *Internal* evaluation will be carried out by Working Group members. For this purpose, IS4ALL will develop a project internal Quality Assurance Process (see Workpackage 1), which will provide the common reference point and a project internal quality standard. Additionally, independent professional evaluators will perform *external* assessment and evaluation. To this end, the project will select a panel of independent evaluators (see Workpackage 5). The assignment of evaluators to each particular deliverable will depend on their specific expertise and availability. Deliverables will be sent at the same time to the Commission and to the selected evaluators. The evaluators' results will be submitted at a later stage to the Commission and will be added as a confidential Appendix to the Deliverables. The costs of this type of evaluation will be covered by the project.

## 2. Co-ordinator and initial members

<b>Participant Role</b>	<b>Participant number</b>	<b>Participant name</b>	<b>Participant short name</b>	<b>Country</b>	<b>Status*</b>	<b>Date enter project</b>	<b>Date exit project</b>
CO	1	Foundation for Research and Technology – Hellas	FORTH-ICS	EL	C	01/10/00	30/09/03

The following organisations will be the members of the IS4ALL Working Group.

<b>Role</b>	<b>Full name</b>	<b>Short name</b>
MB2	Microsoft Healthcare Users Group Europe	MS-HUGe
MB3	European Health Telematics Association	EHTEL
MB4	Consiglio Nazionale delle Ricerche – Istituto di Ricerca sulle Onde Elettromagnetiche	CNR-IROE
MB5	GMD - Forschungszentrum Informationstechnik GmbH	GMD
MB6	Institut National de Recherche en Informatique et Automatique – Laboratoire lorrain de recherche en informatique et ses applications	INRIA
MB7	Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V. - Institut für Arbeitswirtschaft und Organisation	FhG-IAO

### **3. Community added value and contribution to EU policies**

#### **3.1 *The problem at a European level***

Existing guidelines on Universal Access are of a high abstraction level. This renders them impractical or even unsuitable to be used by industry designers without major efforts. Neither the resources (regarding personnel, time, money) nor the expertise needed to apply these high level guidelines to the needs of individual industry sectors are available within companies. As a result, despite the fact that the basic wisdom about Universal Access exists, the resulting guidelines remain unused. This gap has been identified as one of the main drawbacks that prevent European industries to apply the principles of Universal Access. IS4ALL aims to fill this gap by creating a stimulating environment for the leading European and international actors in the field of Universal Access to provide concrete recommendations in a critical sector of the industry, namely Healthcare Telematics.

#### **3.2 *Contribution to EC policies***

As an accompanying measure IS4ALL will indirectly support EC policies in a multitude of aspects. In accordance with European policies to preserve and strengthen cultures, languages, histories and traditions of Europe, IS4ALL will create applicable recommendations that support European industries in designing products that consider and address differences in their users. For instance, Healthcare Telematics products and services that (by following Universal Access guidelines) are easily adaptable to the needs of minorities, are both supportive to EU policies and improve the likelihood of being accepted by diverse customers. Other customer characteristics, which are increasingly becoming important are different levels of language skills and of computer literacy, but also diverse life experiences that need to be addressed. Furthermore, an ageing society poses new demands for product or service design, which can be addressed by the principles of Universal Access. Products and services targeted towards the widest possible user community need to be designed and developed taking these characteristics into consideration. Focusing on the Healthcare Telematics sector, every citizen should have universal, equitable and affordable access to coherent Healthcare information infrastructures and resources. This necessitates taking steps to ensure that relevant information and Healthcare Telematics applications for the public are developed to be accessible to *all* citizens, irrespective of their geographic location, income, language, (dis)ability, gender, age, cultural background or level of (conventional or digital) literacy. IS4ALL will contribute to the EC policies by producing usable recommendations that will facilitate and guide the application of Universal Access principles in relevant domains, such as the healthcare sector. Furthermore, the project's expected input to standardisation activities will help to establish the required minimum technological and socio-economic thresholds in all European member states.

#### **3.3 *European dimension***

Universal Access postulates the design of products or services that are usable and acceptable by potentially everyone, everywhere and at any time. Thus, in compliance with its inherent intention, it is not geographically bound to any particular region or country in Europe. Additionally, isolated activities of major actors within the field of Universal Access to widely promote its principles have largely failed. Although there exist some descriptions of products and services designed with Universal Access principles in mind (e.g., certain mobile telephones, point-of-sale terminals, public kiosks, user interface development toolkits), a common platform for researchers and practitioners in Europe to collaborate and arrive at applicable solutions is missing. Furthermore, these examples have not sufficed to create the necessary critical mass to widely promote Universal Access principles. As a consequence, collaborative efforts are necessary that will expand beyond any individual organisation's competence base and will collect and consolidate the scattered wisdom both at the European and international levels. This competence will be promoted within IS4ALL through a range of dissemination activities, including submission of results to standardisation bodies, to strengthen competitiveness of industries across Europe.



## 4. Economic development and Science & Technology prospects

IS4ALL seeks to develop recommendations of relevance, applicability and practical impact that will ensure that Healthcare Telematics products and services are designed to be inclusive for *all* potential customers and within a wide variety of contexts of use, by integrating accessibility into design solutions from their early conception to their final implementations. The next sections provide a brief insight into the expected impact, economic development and technological prospects that IS4ALL seeks to achieve.

### 4.1 Dissemination channels

Some of the reasons that have prohibited Universal Access from reaching mainstream industry in the past include lack of “visibility” (i.e., missing information resources on universal accessibility) and lack of experts within companies to address the issue of accessibility. IS4ALL is expected to have a stronger impact than isolated activities, as it will bring together the main actors in the field of Universal Access, and will deliver results that will be disseminated by the project’s consortium as a whole. These results will consist of a common vocabulary and a comprehensive frame of reference for Universal Access in Healthcare Telematics. The process of developing and consolidating Universal Access recommendations through collaboration, discussion and exchange of experience and practice among these experts will also impact their future research and consulting activities and will promote the *Design for All* principles into industry.

Additional dissemination activities will aim to inform third parties about the project’s results. A number of seminars are scheduled in different European countries to provide interested parties with the relevant knowledge on Universal Access. To reach industry, but also research and academia, on a larger scale, participation in a range of international conferences will be scheduled. Some of these conferences are already known and there are plans for IS4ALL to become actively involved, either through papers, tutorials, or workshops.

In addition to the above, IS4ALL is prepared to attend other conferences or events (i.e., clustering or concertation meetings) which will be suggested by the European Commission.

Finally, supporting dissemination strategies are envisioned that include the creation of a dedicated Web-Server, as well as printed material to widely disseminate the results of IS4ALL.

### 4.2 Economic developments and technological progress

One of the obstacles that Universal Access encountered in the past has been its connotation with design for people with disabilities. This connotation still persists in industry, although research has established for quite a few years now a broader view by defining it as design for anyone, anywhere and at anytime (e.g., by focusing on global markets). This obstacle is considered responsible for the lack of sound empirical data about whether Universal Access is economically feasible and efficient, as industry is hesitant to apply the available design guidelines.

IS4ALL aims to attract a ‘critical mass’ of Universal Access experts and industrial partners in the Healthcare Telematics domain, that is necessary to consolidate and apply the dispersed knowledge in the field. For example, co-operation with EHTEL and the Microsoft Healthcare Users Group Europe will significantly contribute to receive in-depth knowledge about domain-specific requirements in a large scale. At the same time, the consortium and user group members also constitute a suitable test-bed for the recommendations to be developed in IS4ALL.

In this initial phase, financial EU support will be necessary to create a stimulating environment for experts and industrial partners within the Working Group to develop usable recommendations within selected application domains of general interest (in the case of IS4ALL, Healthcare Telematics), and to initiate wide dissemination activities. The foreseen impact concerns both participating industries and recipients of dissemination activities (e.g., seminar participants).

### **4.2.1 Participating industries**

Industrial participation in IS4ALL is both explicit and implicit. Explicit participation is facilitated through membership in the consortium with an allocated budget, or through subcontracting (e.g., MA Systems and Control Ltd.). Implicit participation is to be realised through the members EHTEL and MS-HUGe.

Participating industries will play a decisive role in IS4ALL. Their in-depth knowledge about requirements in the specific domain of Healthcare Telematics is strongly needed to apply principles of Universal Access. To achieve this, teams comprising Universal Access experts and industry representatives will develop detailed recommendations that are applicable to the selected domain, and are of practical value to these companies. As a result, the companies will receive recommendations tailored to their specific domain. These recommendations will also contribute to widening the available knowledge base. In those cases where participating companies will have applied the recommendations within the lifetime of the project, IS4ALL will monitor the outcomes and use them as feedback in further activities and in widening its knowledge base, creating a collection of best-practice cases.

It is expected that successful application of recommendations and resulting developments will be sustained in the companies and become a mandatory part of prevailing design 'culture'. 'Successful' in this context refers to the company's perception of their internal project's outcomes. These outcomes need not necessarily be measured in financial means. Recent business models (e.g., Total Quality Management) also emphasise the importance of non-financial business measures, e.g., customer satisfaction. The individual importance of these measures is a management decision and may differ between companies. If the application of the developed recommendations contributes to the improvement of some of these measures, then a permanent change in the business processes (in this case, design processes) is likely to take place. Moreover, IS4ALL recommendations could then find their way into design processes of other departments or branches of the same company, thus becoming a corporate resource. Consequently, recommendations of IS4ALL could have a major impact on business processes, such as design and development, customer relations, or marketing. Advantageous for SMEs is their capacity to rapidly introduce and establish changes in business processes to adapt to the new recommendations.

### **4.2.2 Recipients of dissemination activities**

In parallel, dissemination activities within the project will spread the state of the art on Universal Access and its practical application in the healthcare sector to a wider circle of interested parties. A knowledge base with consolidated information on Universal Access will be continuously expanded within IS4ALL. The broader the scope of the base will be, the more likely it will be for interested parties to find examples of best practice that match their situation and needs.

Still, concerted dissemination activities within a project are necessarily limited in their scope (e.g., maximum number of participants in seminars, regional focus of activities). Thus, established channels for wider dissemination will be employed within IS4ALL, namely publications (paper-based and electronic) and standardisation bodies. Publications will serve requests of interested parties with consolidated information about Universal Access. Standardisation will be used as a means to codify the wisdom gathered in IS4ALL and to widely distribute it to an international audience.

It is anticipated that the changed business processes will not only improve the quality of products or services (in terms of Universal Access), but also create new market opportunities and improve competitiveness. At that stage, the concept of Universal Access will move into a phase where the technical progress stimulated by IS4ALL becomes self-sustained, grounding on the proof of its economic impact, and raising the technical threshold of the target domain.

## 5. Work plan

### 5.1 General description

To ensure that the project will reach its intended results, IS4ALL will concentrate on specific thematic areas and build upon a sound methodological frame of reference. The thematic focus will provide the overall context for the inquiries, while the methodological frame of reference will assure relevance and practicality of the results.

#### 5.1.1 Thematic areas

The main thematic focus of IS4ALL is in the application of Universal Design principles in the context of Healthcare Telematics and, in particular, the new possibilities offered by advanced desktop and mobile technologies. The scope of the proposed inquiries, therefore, is to establish a dialogue between these two fields with the intention to take general principles from the Universal Access community and translate them into meaningful recommendations for building universally accessible Healthcare Telematics applications. The anticipated benefits of this dialogue will be mutual to both communities. On the one hand, Healthcare Telematics will benefit from a body of knowledge, which is slowly but continuously building up and has now reached a point of maturity. On the other hand, the Universal Access field will find a suitable IST application for demonstrating the viability of an alternative design code, which is all-inclusive and enabling.

The focus on advanced desktop and mobile systems is justified as follows. First of all, desktop platforms constitute the prime host environment for the vast majority of existing applications and services. Consequently, the issue of their accessibility by different user groups is critical as a short to medium term target. On the other hand, mobile platforms are an emerging technology likely to penetrate a broad range of application services in the medium to long term. In Healthcare Telematics, they can provide novel contexts of use for carrying out a wide range of healthcare activities. For example, handheld tablets can assist clinical staff in depositing, retrieving and updating patient data; PDAs can provide doctors with full access to historical patient information on the spot; network-attachable devices can enable citizens to retrieve medical information from geographically dispersed locations, etc. It follows, therefore, that mobile technology can play a catalytic role in the way in which future healthcare services are engineered, introduced and deployed into actual practice.

#### 5.1.2 Methodology

The Working Group will attempt to meet its objectives by developing reference scenarios around an agreed common theme, namely the electronic healthcare record. These scenarios will act both as design resources and validation test-beds. In other words, they will provide both the concrete reference points for collecting data and developing recommendations and prototypes, and the context for validating the recommendations.

The specifics of each scenario will be detailed within the first three months of the Working Group's life. There can be different dimensions for shaping scenarios. These dimensions may be distinguished according to their focus (e.g., on artefacts or processes), intended context of use or preferred technological platforms.

Thus, for instance, a particular scenario may focus on an artefact (e.g., electronic healthcare records, used by healthcare professionals in a clinic while visiting patients and updating their medical file records). All scenarios will relate to an existing Regional Healthcare Telematics Network, namely HYGEIANet<sup>4,5</sup>, which is being developed in the region of Crete with the active involvement of the co-ordinating contractor. This is desirable, as HYGEIANet is a representative of a cluster of regional Healthcare Telematics Networks being developed throughout Europe. At the same time, it constitutes a stable,

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<sup>4</sup> Tsiknakis, M., Chronaki, C., Kapidakis, S., Nikolaou, C., Orphanoudakis, S. (1997). An integrated architecture for the provision of healthcare telematic services based on digital library technologies, *International Journal on Digital Libraries*, 1, 257-277.

<sup>5</sup> <http://www.hygeianet.gr/>

relatively mature and well-formulated effort, which can provide rich data and a real-life context for field inquiries.

Scenarios will be detailed in collaboration with the Working Group participants so that they depict industrial relevance for the participating organisations. Their scope will intentionally cover a broad cluster of issues, ranging from infrastructure, interaction platforms and domain-specific healthcare services. In all cases, Universal Access will be the common denominator across all scenarios. This implies that the chosen scenarios will have to comply with certain criteria or guidelines in order to be relevant. A tentative set of guidelines for this purpose is indicated below.

1. Each scenario should explicitly define its focus; this may be on an artefact (e.g., virtual electronic healthcare records) or a process (e.g., collecting, depositing, and indexing medical data)
2. The chosen focus should be relevant to different user groups (e.g., a doctor, a nurse or an end user may need to access different parts of the same virtual electronic healthcare record).
3. Each scenario should specify the target technologies to be used by different people. Thus, a doctor may access the electronic healthcare record via the office PC, while the nurse may update the record using a mobile terminal such as palmtop device or a tablet.

The above three guidelines guarantee a sufficient level of diversity in accessing a collection of digital medical contents, and constitute the pre-requisites for demonstrating added value of Universal Access principles.

These guidelines are to be followed by participants of the Working Group when specifying the scenarios. Once this is done and accepted, there will be several modalities for collecting the required data. The primary techniques to be used for this purpose can be classified in two broad categories, namely techniques intended to document existing practice and experience, and techniques intended to collect requirements and new insights. Each scenario will be explored and analysed using a range of methods that are deemed as appropriate. These may range from short visits, technical reports, subcontracts to experts, focused thematic meetings, or even prototyping to elicit requirements (in case such requirements are not known).

## 5.2 Workpackages

### 5.2.1 Workpackage breakdown

The work program comprises a total of five workpackages. The first workpackage is devoted to management. The remaining four are technical workpackages. Figure 1 depicts the interrelationships between the workpackages.

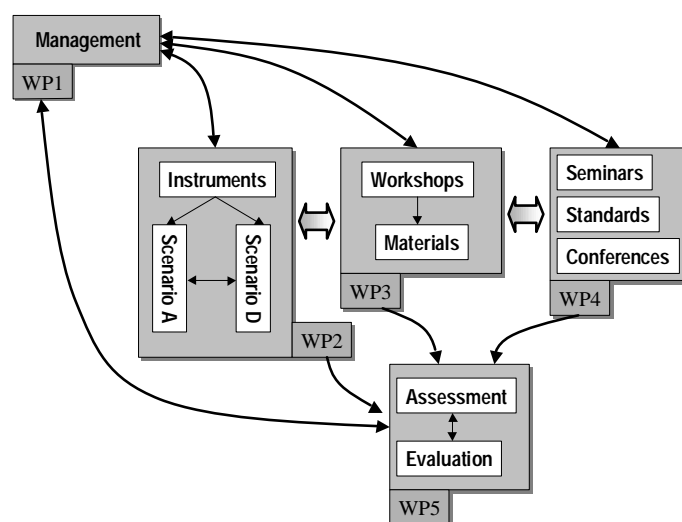


Figure 1: Interrelation between the workpackages

### 5.2.2 Workpackage list

Workpackage list							
Work-package No	Workpackage title	Lead contractor No	Person-months	Start month	End month	Phase	Deliverable No
WP 1	Management	CO1	6	1	36		D1.1 - D1.15
WP 2	Data collection	MB4	12,5	1	30		D2.1- D2.2
WP 3	Consolidation	CO1	12	7	36		D3.1.1 - D3.1.3, D3.2 - D3.3
WP 4	Outreach	MB2	14,5	7	36		D4.1.1- D4.1.6, D4.2 - D4.3
WP 5	Assessment & evaluation	CO1	11	1	36		D5.1- D5.3
	TOTAL		56				

### 5.2.3 Workpackage descriptions

<b>Workpackage number:</b>	<b>WP 1: MANAGEMENT</b>
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#### **Objectives**

To lead the consortium (Working Group), to co-ordinate the project, to liaise with the European Commission, to interface with other consortia, organisations, industries, international bodies, etc., as well as to monitor progress and arrange for management meetings and reviews.

#### **Description of work**

The adopted management scheme in the project is distributed, including responsibilities at the level of the workpackages and tasks. Each task manager is appointed as responsible for the day-to-day running, timely delivery of results and technical developments of the task. The task manager reports to the workpackage managers who are responsible for the overall management of the work-package. This simple and effective management scheme, that has proved particularly successful in the past (in other consortia involving some of the IS4ALL members), requires that management resources are allocated to the partners involved with some management responsibility.

#### *Quality Assurance Process*

The Co-ordinating Contractor will perform a quality control function through operational techniques and activities that are used to fulfil the project's objectives. The Co-ordinator will ensure the quality of the management process by continuously monitoring the project progress, measured against milestones and intermediate yardsticks (e.g., defined in subcontracts and in the project contract's Technical Annex). In case the regular assessments indicate that yardsticks or milestones will not be reached in time by a certain participant, the Co-ordinator will propose suitable measures (e.g., resource re-allocation, task force creation, etc.) to solve the problem.

IS4ALL will also strive for highest quality of the project outcomes. In this respect, certain mechanisms will allow and improve the quality of deliverables (as the main project outcomes). First, IS4ALL will perform a self-assessment of those deliverables, that have the form of reports, by establishing an internal peer-review process. Therefore, draft deliverables will be submitted in advance to the Advisory Board, which selects two reviewers out of the board. Their evaluation reports will be sent to the editor of (i.e., overall responsible for) the deliverable, who will implement the suggested changes and submit the result, the evaluation reports and a statement regarding the implemented changes to the Co-ordinator. IS4ALL will also deliver seminars. The feedback of seminar participants (via questionnaires) will be essential to continuously improve the quality of content, presentation and organisation for the subsequent seminars. Finally, the Working Group will participate with own contributions in peer-reviewed conferences as to facilitate an external assessment of the scientific and / or innovative quality of the results.

**Workpackage number: WP 2: DATA COLLECTION****Objectives**

This workpackage will undertake to: (i) define specific instruments for data collection; and (ii) organize and carry out the data collection activities.

**Description of work**

The consortium will employ several data collection instruments. The instruments envisaged are at two levels. At the first level, there will be several scenarios which will be developed and elaborated to provide a base ground for subsequent inquiries. At the second level, there will be instruments intended to populate and explore the scenarios. These may include short visits, focused thematic meetings, interviews, questionnaires, as well as guidelines and technical report reviews in order to collect the required information at an international level.

*Short visits.* Short visits to a third party (i.e., an organisation or an institution outside the consortium), may seek to observe, document, and internalise the practice of *Universal Access* in a particular application area or technological domain. It should be noted, that such means for data collection are intended to provide a mechanism for transfer of experience whereby expertise is transferred from a source outside the consortium towards a recipient participant of the Working Group. For instance, it may be deemed appropriate to investigate how *Universal Access* is being practised by early adopters in certain engineering disciplines (e.g., architecture, civil engineering) or in software engineering. Such an insight can be obtained by planning short visits to appropriate organisations and documenting the accumulated experiences on *Universal Access*.

*Subcontracts to experts.* Subcontracts to experts will effectively facilitate the scenarios envisaged by means of collecting the state of the art in a particular area or application domain, and present it to the Working Group. Such subcontracts will typically have a duration of a few person-days or person-weeks, and will involve experts in the selected field. Subcontracts may be carried out either by an individual participant or a group of experts within the Working Group. In any case, they should be targeted to specific issues prevailing in one or more of the designated scenarios.

*Focused thematic meetings.* This method of data collection is a version of the focused group technique that is typical in HCI design and evaluation. Participants in a focused thematic meeting may be participants of the Working Group as well as invited third parties. The host organisation, typically the Co-ordinator or a Working Group member, will undertake the local organisation and will feed the results of the focused thematic meeting back to the Working Group for subsequent processing.

The data are to be elicited by contacting: (a) early practitioners of Universal Access (as well as target domain experts (e.g., Healthcare Telematics actors); (b) past and on-going EC-funded and international project consortia; as well as (c) running projects funded by the IST Programme which are committed to practising the principles of Universal Access.

<b>Workpackage number:</b>	<b>WP 3: CONSOLIDATION</b>
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**Objectives**

To create a basic information base on Universal Access in Healthcare Telematics.

**Description of work**

This workpackage will undertake analysis and consolidation of the collected data in order to provide an evolutionary corpus of Universal Access materials relevant to the Healthcare Telematics area. Such materials are expected to serve several purposes:

- define a code of practice for Universal Access in Healthcare Telematics; this will take the form of detailed insights into how Universal Access shapes early design efforts and concept formation;
- enumerate product concepts of interest to the industry, clearly demonstrating how they have come about as a result of the agreed code of practice;
- provide process and artefact oriented guidelines for third parties wishing to integrate Universal Access practices in Healthcare Telematics;
- correlate guidelines and recommendations with scenario-specific outcomes and exemplars;
- correlate research findings and concrete experiences.

Such a knowledge corpus will be incrementally turned into a collection of materials to be disseminated during the outreach phase of the project. In particular, the accumulated experience will be packaged in such a way (e.g., seminars, presentation slides, handbooks intended for the industry and the research community, technical reports to be submitted to international standardisation bodies), so as to provide process guidance on Universal Access, as well as general and context specific guidelines and recommendations applicable to the target technologies (e.g., desktop and mobile platforms), and the selected application domain (e.g., Healthcare Telematics).



<b>Workpackage number:</b>	<b>WP 4: OUTREACH</b>
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**Objectives**

To disseminate the results of the project to the widest possible target user community and to prepare and carry out technology transfer actions facilitating the wider adoption and practice of Universal Design by actors in the European IST sector.

**Description of work**

The outreach tasks to be performed in this workpackage include:

*Seminars.* The Working Group plans to undertake a total of six seminars as part of its three-year workplan. Seminars will be announced in good time in order to attract wide participation. The typical duration will be around three days of intensive courses where participants of the Working Group will present detailed techniques, design methods, as well as experiences in the theory and practice of Universal Access. The materials to be presented will come out of the consolidation and material preparation phase. The dates of the seminars will be arranged in such a way so as to ensure the widest possible participation by end user communities. For instance, seminars may be held closely before or after major European or international events (e.g., conference on Healthcare Telematics). The themes of the seminars will vary depending on progress made within the Working Group and the composition of the target audience. The seminars will be designed in such a way so as to provide practical insights and hands on experience to the target audience.

*Standardisation.* Another important outreach activity will be the contribution to on-going standardisation activities. This channel will utilise the strong links between some Working Group participants with international standardisation committees, as well as past experiences of participants to provide input in the form of Technical Reports. The specific medium for influencing the standards communities will be the preparation of Technical Reports. The Technical Reports will be forwarded to ISO TC 159 / SC 4 / WG 5 as well as to other relevant bodies, such as ETSI HF 2 (formerly HF 4), national standardisation bodies, such as DIN in Germany and BSI in the U.K. The intention of these Technical Reports will be either to update draft standards, or to propose new Work Items under an existing standard.

*Participation in conferences.* In addition to seminars, the Working Group will participate in mainstream European and international conferences. Some of the conferences, in which IS4ALL plans to have an active involvement include HCII'2001, UAHCI'2001 (jointly with HCII'2001), HCII'2003, UAHCI'2003 (jointly with HCII'2003), CHI'2001, CHI'2002, CHI'2003, CUU'2000, CUU'2002 (See also section 8.1). Additionally, IS4ALL will participate in conferences and other events (e.g., clustering and concertation meetings) recommended by the European Commission, which are specific to the Healthcare domain.

*Web site.* IS4ALL will establish a web site, which will be dedicated to widely disseminate the outcomes of the project (e.g., project information, results, documents)

<b>Workpackage number:</b>	<b>WP 5: ASSESSMENT AND EVALUATION</b>
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**Objectives**

To provide timely feedback to the project through continuous on-going evaluation and independent reviews of the project's deliverables.

**Description of work**

Upon commencement of the project a number of professionals will be invited to participate in a panel of evaluators and will be assigned to this workpackage as subcontractors. The project co-ordinator will formally notify the European Commission. The panel of independent evaluators will review deliverables (which have the form of reports), after these have been sent to the Commission. The assignment of evaluators to a particular deliverable will depend on their specific expertise and availability. Their review reports will be submitted to the Commission and added as confidential appendices to the deliverables, which are usually public documents. The review reports will be used as feedback to the IS4ALL Working Group for continuous improvement of the quality of the project's results.

In addition to the independent evaluators, the project will set up an internal evaluation committee. This committee will comprise an individual from each Working Group member organisation, who will undertake the responsibility to review draft outcomes (i.e., not only deliverables, but also other materials produced during the course of the project) and provide detailed comments on their improvement before they are submitted to the European Commission or become public documents.

## 5.2.4 Deliverables list

<b>Deliverables list</b>				
<b>Del. No.</b>	<b>Del. name</b>	<b>Del. type</b>	<b>Security*</b>	<b>Delivery (proj. month)</b>
D1.1	Report on the Quality Assurance Process	report	Rest.	Month 6
D1.2	Supplementary Report 1	report	Rest.	Month 3
D1.3	Periodic Progress Report 1	report	Rest.	Month 6
D1.4	Supplementary Report 2	report	Rest.	Month 9
D1.5	Supplementary Report 3	report	Rest.	Month 12
D1.6	Supplementary Report 4	report	Rest.	Month 15
D1.7	Periodic progress Report 2	report	Rest.	Month 18
D1.8	Supplementary Report 5	report	Rest.	Month 21
D1.9	Supplementary Report 6	report	Rest.	Month 24
D1.10	Supplementary Report 7	report	Rest.	Month 27
D1.11	Periodic Progress Report 3	report	Rest.	Month 30
D1.12	Supplementary Report 8	report	Rest.	Month 33
D1.13	Final Project report	report	Pub.	Month 36
D1.14	Periodic Progress Report 4	report	Rest.	Month 36
D1.15	Project Presentation	report	Pub.	Month 6
D2.1	Report on data collection plan and instruments	report	Pub.	Month 6
D2.2	Scenario development	report	Pub.	Month 3
D3.1.1	Consolidated results and recommendations of the first workshop	report	Pub.	one month after the workshop
D3.1.2	Consolidated results and recommendations of the second workshop	report	Pub.	one month after the workshop
D3.1.3	Consolidated results and recommendations of the third workshop	report	Pub.	one month after the workshop
D3.2	Outreach material to be used in the course of the project	report, web site	Pub.	Months 12, 24, 36
D3.3	Universal Access code in Healthcare applications and services	report, prototypes	Pub.	Months 24, 36
D4.1.1	First seminar and material used	seminar, report	Pub.	Month 12
D4.1.2	Second seminar and material used	seminar, report	Pub.	Month 16
D4.1.3	Third seminar and material used	seminar, report	Pub.	Month 20
D4.1.4	Fourth seminar and material used	seminar, report	Pub.	Month 24
D4.1.5	Fifth seminar and material used	seminar, report	Pub.	Month 28
D4.1.6	Sixth seminar and material used	seminar, report	Pub.	Month 32

D4.2	Report on conference participation	report	Pub.	Months 12, 24, 36
D4.3	Technical report submitted to standards organisations	report	Pub.	Month 30
D5.1	Annual Evaluation Report 1	report	Pub.	Month 10
D5.2	Annual Evaluation Report 2	report	Pub.	Month 22
D5.3	Annual Evaluation Report 3	report	Pub.	Month 34

*\*Int. Internal circulation within project (and Commission Project Officer if requested)*

*Rest. Restricted circulation list (specify in footnote) and Commission PO only*

*IST Circulation within IST Programme participants*

*FP5 Circulation within Framework Programme participants*

Pub. Public document