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## Evaluation of the final prototype

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### MedIEQ

Quality Labeling of Medical Web content using Multilingual  
Information Extraction

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## Executive Summary

AQUA was developed to support the work of the quality labeling of health-related resources in Internet. The second prototype of AQUA was available at the end of October. The number of supported criteria was expanded. Additionally the toolkit Monitoring-Update-Alert (MUA) is available in this prototype.

The final version of AQUA supports:

- both case studies for third party certification and classification
- all project languages, namely, English, Spanish, German, Czech, Finnish, Greek and Catalan, plus an additional one, Swedish.
- the full-set of MedIEQ labeling criteria.

This version of AQUA integrates the final versions of the toolkits for content collection, information extraction and resources management, the methods and tools for exploiting the RDF schema, and the interface for the labeling expert. More specifically, AQUA consists of the following components / toolkits:

1. The *Label Management Toolkit (LAM)*, which manages (generates, validates, modifies, compares) machine readable labels which conform with the RDF-CL model and the MedIEQ vocabulary [*Delivered from WP4*];
2. The *Web Content Collection Toolkit (WCC)*, which identifies, classifies and collects on-line content relative to a number of machine readable quality criteria (according to the proposed vocabulary in the MedIEQ schema) [*Delivered from WP5*];
3. The *Information Extraction Toolkit (IET)*, which analyses the web content collected and extracts attributes for MedIEQ compatible content labels [*Delivered from WP6*];
4. The *Multilingual Resources Management Toolkit (MRM)*, which gives access to health-related multilingual resources; input from such resources is needed in specific parts of both the WCC and IET toolkits [*Delivered from WP7*];
5. The *Monitor-Update-Alert Toolkit (MUA)*, which handles a few auxiliary but important jobs, like the configuration of monitoring tasks, the MedIEQ database's entries updates, the alerts to labelling experts when important differences occur during monitoring existing quality labels [*Delivered from WP8*].

This document presents the results of the evaluation of the final version of AQUA. The evaluation of AQUA final prototype implemented the second part of the evaluation strategy (Evaluation II) and was performed in Spanish by WMA and in English and German by AQuMed. The main objective of this evaluation was the comparison of the required time and effort needed when working with and without the use of AQUA, within the day-to-day activities of a labelling organization. The results of the evaluation showed that the final version of AQUA is a functional prototype that has the potential to be fully integrated within the day-to-day activities of a labelling organization.

## 1. Introduction

The AQUA (Assisting QQuality Assessment) system, developed within the MedIEQ project, aims to provide the infrastructure and the means to organize and support various aspects of the daily work of labeling experts by making them computer-assisted.

AQUA incorporates several subsystems and functionalities for the labeling expert. Web Content Collection (WCC) identifies, classifies and collects online content relative to the criteria (proposed by the labeling agencies participating in the project). Information Extraction Toolkit (IET) analyses the web content collected by WCC and extracts attributes for MedIEQ compatible content labels. Label Management (LAM) generates, validates, modifies, compares content labels based on the schema proposed by MedIEQ. Multilingual Resources Management (MRM) toolkit gives access to health related multilingual resources; input from such resources is needed in specific parts of the WCC, IET and LAM toolkits.

This document describes the evaluation results of the final AQUA prototype which integrates the final versions of all toolkits already integrated in the first version (web content collection, multilingual resources management, information extraction, label management) and the new toolkit monitoring-update-alert.

The evaluation of AQUA final prototype implemented the second part of the evaluation strategy (Evaluation II) and was performed in Spanish by WMA and in English and German by AQuMed.

The final prototype of the integrated system AQUA was delivered for evaluation at the end of October 2008. This prototype supports 18 attributes of the MedIEQ Labelling Criteria for the automatic labelling and all 36 attributes for the manual labelling (see Appendix B). AQUA is available in the 7 languages of the project: English, Spanish, German, Greek, Catalan, Czech, and Finnish, plus an additional language, that is, Swedish.

For the evaluation purposes, only the criteria supported by automatic labelling were considered. The evaluation was performed between end of October and end of November 2008 by WMA and AQUMED.

This document is structured as follows: In section 2, we present the objectives of the evaluation of the final version of AQUA. In section 3, we present an overview of the evaluation methodology used, with emphasis on the refinements in comparison with the evaluation methodology reported in deliverable D15 - Evaluation strategy. Section 4 presents the detailed evaluation results. Section 4 provides a summary of the conclusions extracted from the overall evaluation. Finally, in the corresponding appendixes the data (URLs) used for the evaluation of the final prototype of AQUA are presented.

## 2. Evaluation Objectives

The goal of this evaluation is to carry out a general final evaluation of AQUA, with special focus on AQUA's labelling performance, when it is implemented as the principal support for the quality labelling of web medical content.

The principal question that is addressed in this evaluation is:

- how reliable are the labelling of health related web sites using only the input proposed by AQUA in comparison with the usual process of quality labelling (manually labelling)?

Beside this principal question, there are other secondary questions that were also evaluated:

- Does the implementation of AQUA result in saving effort?
- Which other advantages offers AQUA in comparison with the usual process of quality labelling?

### 3. Evaluation Methodology

According to the methodology described in Deliverable D15, the evaluation of AQUA consists of two parts:

1. Evaluation I: evaluation of the different task available in AQUA:
  - a. Location and identification of unlabelled medical web sites
  - b. Automatic labeling
  - c. Automated monitoring and alerting system
  - d. Usability aspects
2. Evaluation II: evaluation of AQUA, when it is integrated as a part of the labeling work.

Evaluation I, with the exception of item (c), was already performed during the evaluation of the first prototype version. Results of evaluation II as well as the automated monitoring and alerting system are reported in this deliverable.

The scope of the evaluation of the final prototype differs substantially from the first evaluation since the goal is to examine the influence of integrating AQUA into the work of a labelling expert. In contrast, the first evaluation was conducted to improve the AQUA's functionalities in order to conclude with a functional prototype. This was possible through a continuing exchange between the software developer and the evaluators. The second evaluation was performed only by the evaluators independently from the developers. The developers were only involved in the preparation of the evaluation scenarios according to the instructions given by the labeling authorities.

Evaluation II considers 18 attributes that are supported for the automatic labelling (see table 1). For a detailed description of MedIEQ Labelling Criteria please refer to Deliverable 4.2.

**Table 1:** Attributes evaluated during evaluation of the final prototype.

ID	Criterion Name
1.1	Resource URI
1.2	Resource title
1.3	Resource last update
1.4	Resource language(s)
2.3	Responsible name(s)
2.4	Responsible title(s)
2.5	Responsible(s) contact details
2.6	Webmaster name(s)
2.7	Webmaster(s) contact detail
3.1	Purpose / mission of the resource provided
3.3	Target / intended audience(s)
4.1	Topics / Keywords (UMLS)
5.1	Virtual consultation service available?
6.4	Advertising present?
6.6	Policy with regard to advertisement
7.1	Other seal(s) present?
7.2	Which other seal(s)?
9.1	Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled?

Two experts for each language participated in the evaluation. One expert (expert 1) carried out the automatic task, while another one (expert 2) reviewed the web sites as usual, i.e. only manually. The results of both processes were compared in order to determine the accuracy of the expert's work when using AQUA.

This evaluation was conducted by potential users (labelling experts) from the participating labelling agencies WMA (Spanish) and AQUMED (German and English).

### **1.1. System Accuracy Evaluation**

The evaluation was conducted as follows:

- *Step 1:* 15 web sites in each language were chosen following the criteria also used for Evaluation I (see Deliverable 15). Since the final prototype supports not only web sites but also sub-sites a few of them were also included in the list. A list of the selected web sites for each language is presented in Appendix 1.
- *Step 2:* after registration in AQUA, a review task was created and run for each individual web site.
- *Step 3:* AQUA notifies the evaluator sending an e-mail that the review task was finished and the results are available. Immediately expert 1 proceeds to generate a label using the values proposed by AQUA. The following rules were taken into account:
  - a. Only if the required information or the required page are presented under the proposed links, it is possible to choose the corresponding proposed values. Otherwise the next link should be checked until finding the required page.
  - b. The proposed links should be checked beginning with the first one until the information or the page we are looking for is found. It is not necessary to check all the proposed links.
  - c. If none of the proposed links have the information or the page we are looking for, it should be coded as "error" and no value will be chosen.
  - d. If there are no proposed values for a specific criterion, the field will be left empty. It should be coded as "error"
  - e. Expert 1 must use only the information proposed by AQUA to decide which value corresponds to a criterion. It is not allow searching manually for the values that were not found by AQUA.
- *Step 4:* expert 2 reviews the same list of web sites manually. He defines value(s) for each criterion visiting the web site and looking for the corresponding information. Expert 2 registers the values for each criterion and each web site in an Excel sheet.
- *Step 5:* the labels created with AQUA's support are compared with the results of the manual review, which are considered the gold standard. If they are concordant it is considered as "correct", if not, it is considered "wrong"
- *Step 6:* calculation of the precision of the automatic labelling (accuracy)

- *Step 7*: measure of the labelling effort (processing time required for labelling a resource). Both labelling experts registered the time they needed to review each of the web sites. The mean was calculated for each expert and each language. These results were compared.

### **1.2. Monitoring – Update – Alert Toolkit Evaluation**

The automated monitoring (monitoring-update-alert MUA) was implemented just in the final prototype. For this reason this is the only toolkit that was evaluated separately during the evaluation of the final AQUA prototype.

Since real web sites do not change within a short time, it was necessary to “create” an example web site that can be modified according to predefined scenarios.

The evaluation was conducted as follows:

- *Step 1*: creation of an example web site (available online at: <http://www.iit.demokritos.gr/~skonstan/mua/>)
- *Step 2*: registration of the example web site in AQUA and creation of a review task. A label was created according to the values proposed by AQUA.
- *Step 3*: the example web site was modified according to following scenarios:
  - *Scenario 1*: Change responsible contact details
    - a. Change Name / e-mail: Adrian Amber / e-mail: [amber@site.com](mailto:amber@site.com)
    - b. Add an address: VA Medical Center 3900 Woodland Ave. Philadelphia, PA 19104
  - *Scenario 2*: Change webmaster name and e-mail: Anne Fishman / [fishman@site.com](mailto:fishman@site.com)
  - *Scenario 3*: Change privacy Policy  
From “... *However, unless an individual gives permission, the AHA will not allow any third party to use Personal Information collected by the AHA*”, the policy was changed to “... *Unless you give us an explicit declaration, we could allow any third party to use Personal Information collected by the AHA for research purposes*”.
- *Step 4*: The created review task was run again
- *Step 5*: Check if AQUA identified the modification on the example web site.

### **1.3. Evaluation measures**

According to the scope and the questions defined for the second evaluation, the following aspects are measured:

1. Accuracy of the labelling work using AQUA as a principal support: it gives us a hint about the influence of AQUA on the accuracy of the labelling work. It is measured by comparing the labels created using AQUA with a manual review of the same web sites. It is expressed in terms of precision:

Number of correct values / number of total values

2. Processing time required for labelling a resource: this measure is an indication of the labelling effort. Goal is to compare the labelling effort using AQUA with the labelling effort without using it. This measure is expressed in time = minutes required to review a resource.

## 4. Evaluation results

### 4.1. Evaluation for English web sites

#### 4.1.1. Accuracy of the labelling work

Attribute	Possible value(s)	Nr. Values	Nr. correct values	Precision	Precision <sup>1</sup> (12 web sites)
1.1 Resource URI	URL	15	12	0.8	1
1.2 Resource title		15	11	0.73	0.91
1.3 Resource last update	Date	15	4	0.27	0.33
1.4 Resource language(s)	German, English, etc	15	0	0	0
2.3 Responsible name(s)	Name, N/A	15	0	0	0
2.4 Responsible title(s)	Academic title	15	0	0	0
2.5 Responsible(s) contact details	Telephone number, address, e-mail, etc	15	0	0	0
2.6 Webmaster name(s)	Name, N/A	15	1	0.07	0.08
2.7 Webmaster(s) contact detail	Telephone number, address, e-mail, etc	15	1	0.07	0.08
3.1 Purpose / mission of the resource provided	Statement	15	0	0	0
3.3 Target / intended audience(s)	Patient/Adult Patient/children Professional	15	11	0.73	0.91
4.1 Topics / Keywords (UMLS)	MESH Keywords	15	0	0	0
5.1 Virtual consultation service available?	True False	15	9	0.6	0.75
6.4 Advertising present?	True False	15	10	0.67	0.83
6.6 Policy with regard to advertisement	Statement	15	2	0.14	0.16
7.1 Other seal(s) present?	True False	15	11	0.74	0.91
7.2 Which other seal(s)?	HON, WMA, Afgis, etc	15	11	0.74	0.91
9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled?	Statement	15	3	0.2	0.25

In three cases, namely:

- [http://www.netdoctor.co.uk/health\\_advice/facts/salmonella.htm](http://www.netdoctor.co.uk/health_advice/facts/salmonella.htm)
- <http://www.americanheart.org/presenter.jhtml?identifier=1200000>
- <http://home3.inet.tele.dk/omni/english.html>

<sup>1</sup> Precision calculated without taking into account 3 web sites that AQUA did not extract any data.

there were no proposed values by AQUA, although the review task was executed many times, possibly due to the structure of the HTML code of these sites. In this case all fields were considered as “wrong”.

#### **4.1.2. Processing time required**

The presented time measures were calculated only for 13 web sites, since it was not possible to obtain any proposed values for three of the selected web sites.

Average time for the manually review: 7.8 (range 6 – 10 min)

Average time for automatic labelling: 13.9 (range 8 – 24 min)

## 4.2. Evaluation for German web sites

### 4.2.1. Accuracy of the labelling work

Attribute	Possible value(s)	Nr. Values	Nr. correct values	Precision	Precision <sup>2</sup> (14 web sites)
1.1 Resource URI	URL	15	14	0.93	1
1.2 Resource title	Title	15	12	0.8	0.85
1.3 Resource last update	Date	15	3	0.2	0.21
1.4 Resource language(s)	German, English, etc (more than one possible)	15	0	0	0
2.3 Responsible name(s)	Name, N/A	15	0	0	0
2.4 Responsible title(s)	Academic title	15	0	0	0
2.5 Responsible(s) contact details	Telephone number, address, e-mail, etc	15	0	0	0
2.6 Webmaster name(s)	Name, N/A	15	0	0	0
2.7 Webmaster(s) contact detail	Telephone number, address, e-mail, etc	15	0	0	0
3.1 Purpose / mission of the resource provided	Statement	15	0	0	0
3.3 Target / intended audience(s)	Patient/Adult Patient/children Professional	21	8	0.53	0.57
4.1 Topics / Keywords (UMLS)	MESH Keywords	15	0	0	0
5.1 Virtual consultation service available? <sup>3</sup>	True False	-	-	-	-
6.4 Advertising present?	True False	15	9	0.6	0.64
6.6 Policy with regard to advertisement	Statement	15	0	0	0
7.1 Other seal(s) present?	True False	15	13	0.87	0.92
7.2 Which other seal(s)?	HON, WMA, Afgis, etc	15	13	0.87	0.92
9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled?	Statement	15	0	0	0

In one case, namely, <http://www.akdae.de/>, there were no proposed values by AQUA, although the review task was executed many times, possibly due to the structure of the HTML code of this site. In this case all fields were considered as “wrong”.

<sup>2</sup> Precision calculated without taking into account the 3 web sites that could not be review using AQUA

<sup>3</sup> As agreed with AQUMED, this criterion is not supported by AQUA, because virtual consultation is for AQUMED not relevant.

**4.2.2. Processing time required<sup>4</sup>**

Average time for the manually review: 11.9 (range 8 – 18 min)

Average time for automatic labelling: 8.7 (range 5 – 15 min)

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<sup>4</sup> Just for 14 web sites. It was not possible to obtain any results for one web site

### 4.3. Evaluation for Spanish web sites

#### 4.3.1. Accuracy of the labelling work

Attribute	Possible value(s)	Nr. Values	Nr. correct values	Precision
1.1 Resource URI	URL	15	15	1
1.2 Resource title		15	11	0.73
1.3 Resource last update	Date	12	0	0
1.4 Resource language(s)	German, English, etc	15	0	0
2.3 Responsible name(s)	Name, N/A	13	0	0
2.4 Responsible title(s)	Academic title	13	0	0
2.5 Responsible(s) contact details	Telephone number, address, e-mail, etc	13	0	0
2.6 Webmaster name(s)	Name, N/A	4	0	0
2.7 Webmaster(s) contact detail	Telephone number, address, e-mail, etc	5	0	0
3.1 Purpose / mission of the resource provided	Statement	11	0	0
3.3 Target / intended audience(s)	Patient/Adult Patient/children Professional	15	3	0.2
4.1 Topics / Keywords (UMLS)	MESH Keywords	15	0	0
5.1 Virtual consultation service available?	True False	2 13	0 5	0 0,38
6.4 Advertising present?	True False	4 11	3 2	0.75 0.18
6.6 Policy with regard to advertisement	Statement	15	1	0,06
7.1 Other seal(s) present?	True False	6 9	0 0	0 0
7.2 Which other seal(s)?	HON, WMA, Afgis, etc	15	4	0.26
9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled?	Statement	15	4	0.26

#### 4.2.2. Processing time required

Average time for the manually review: 8:06 (range 5 – 11 min)

Average time for automatic labelling: 6.3 (range 3 – 8 min).

#### 4.4. Evaluation of Monitor-Update-Alert (MUA) Toolkit

Scenario	Original value	Updated value	Recognized by MUA?
Scenario 1a Change responsible / contact detail	Adrian Amber	Warren Nick	No
	<a href="mailto:amber@site.com">amber@site.com</a>	<a href="mailto:nick@site.com">nick@site.com</a>	Yes
Scenario 1b Add an address	none	VA Medical Center 3900 Woodland Ave. Philadelphia, PA 19104	No
Scenario 2	George Eups	Anne Fishman	Yes
	<a href="mailto:Eups@site.com">Eups@site.com</a>	<a href="mailto:fishman@site.com">fishman@site.com</a>	Yes
	999 Grand Avenue, New York, USA	---	Yes
Scenario 3	From time to time, there is a benefit in allowing a third party to use collected Personal Information on individuals. However, unless an individual gives permission, the AHA will not allow any third party to use Personal Information collected by the AHA.	From time to time, there is a benefit in allowing a third party to use collected Personal Information on individuals. <b><i>Unless you give us an explicit declaration, we could allow any third party to use</i></b> Personal Information collected by the AHA for research purposes	Yes

## 5. Discussion/Conclusions

The evaluation of the final version of AQUA proves that the labelling process of health related web resources is highly complex and difficult.

For some of the labelling criteria AQUA was not able to find any values; in these cases the expert must review the web site manually in order to complete the label.

Comparing the accuracy of results with those of the first AQUA prototype, we can observe a significant improvement, e.g. criteria 1.2 "Resource Title" and 3.3 "Target Audience", whereas the accuracy in other criteria e.g. 6.4 "Advertisement" and 7 "Other Seal" remains almost the same.

Regarding the evaluation of the labelling effort, the result differs per language tested. For German and Spanish there was time saving, while for English not. The differences can be explained through some limitation of this evaluation measure. This measure depends on the evaluator; there are evaluators who work quicker than others. During the evaluation three different persons conducted the manual review. The type of the web site and its complexity can also influence the time needed to review a web site. The web sites' structure is also different between the languages because they must follow certain laws and regulation, which are specific for in each country. This factor also contributes to the required labelling effort. A complex web site with many sub-pages required more time than a simple good structured one. In this case, the case of complex web sites, the use of AQUA provides a significant advantage in the hands of a labelling expert.

Monitor-update-alert (MUA) was the only toolkit that was evaluated separately. The results were satisfactory. In just two cases AQUA could not extract any value, and as a result, the alerting mechanism (MUA) did not alert the expert for the web site modification.

Monitoring of labelled web sites is one of the biggest challenges of the labelling work because it has to be conducted regularly. The possibility to automate this process means a big effort saving for the labelling expert, who only would have to check the modification reported by the system. MUA evaluation results are promising.

Working with AQUA, allows experts to create machine readable labels according to the current standards, without adding extra amount of work to them, opening the possibility to benefit from the technologies of the Semantic Web.

## Appendix A. List of URLs used in the Evaluation

### A.1. URL list used for evaluation in English

1. <http://home3.inet.tele.dk/omni/english.html>
2. <http://www.surgical-tutor.org.uk/default-home.htm>
3. [http://www.helpguide.org/mental/anorexia\\_signs\\_symptoms\\_causes\\_treatment.htm](http://www.helpguide.org/mental/anorexia_signs_symptoms_causes_treatment.htm)
4. <http://www.whonamedit.com/>
5. <http://www.afanswers.com/>
6. <http://www.a-fib.com/>
7. <http://www.americanheart.org/presenter.jhtml?identifier=1200000>
8. <http://www.rheumatology.org/>
9. <http://www.allergy-network.co.uk/>
10. <http://www.brianseye.com/>
11. [http://www.netdoctor.co.uk/health\\_advice/facts/salmonella.htm](http://www.netdoctor.co.uk/health_advice/facts/salmonella.htm)
12. <http://physiotherapy.curtin.edu.au/>
13. <http://www.med.wright.edu/>
14. <http://www.cancernews.com/default2.asp>
15. <http://www.fascrs.org/>

### A.2. URL list used for evaluation in German

1. <http://aids-hilfe-bonn.de/>
2. <http://www.pilhar.com/>
3. <http://alzheimerforum.de/>
4. <http://augenlinik-grosspankow.de/>
5. <http://bluthochdruck.msd.de/>
6. <http://awmf.org/>
7. <http://chirotherapie.net/>
8. <http://www.uniklinikum-leipzig.de/krankheitsdatenbank/index.php>
9. <http://deutsche-krebsgesellschaft.de/>
10. <http://hepatitis-nrw.de/>
11. <http://kiss-info.de/>
12. <http://www.hospiz-und-palliativmedizin.de/>
13. <http://www.akdae.de/>
14. <http://www.gesundheitsinformation.de/index.de.html>
15. <http://www.der-paritaetische.de/index.php?id=49>

### A.3. URL list used for evaluation in Spanish

1. <http://www.sanytel.com>
2. <http://www.drjoandequadras.com>
3. <http://www.lactosa.org>
4. <http://www.maxilofacial.info>
5. <http://www.pap.es/>
6. <http://www.blefaroplastia.net/>
7. <http://fibrofatiga-unidos.info>
8. <http://www.geocities.com/catedramf>
9. <http://www.scf.sld.cu>
10. <http://aparatodigestivo.net>
11. <http://www.foromedico.es>
12. <http://www.rettsyndrome.org.es/>
13. <http://www.dermaperu.com>
14. <http://doctordiegotomas.com>
15. <http://www.eudona.com>

## Appendix B. The MedIEQ Labelling Criteria

1. Resource Defining Information		
		Definitions in English
<b>Descriptor</b>	1. Resource defining information	<u>Definition:</u> Includes information identifying/describing the resource. Concerning the resource URI: a) whether the resource's URI is valid or not and b) in case it redirects to external domains, are these domains between those specified when the resource was added? The rest is information like the resource's last update, its title and the language(s) in which content is provided.
<b>Attributes</b>	1.1 Resource URI	<u>Definition:</u> A set of identifiers constructed according to the generic syntax for URIs (Uniform Resource Identifiers) as specified by IETF (the Internet Engineering Task Force <sup>5</sup> )
	1.2 Resource title	<u>Definition:</u> A name given to the resource.
	1.3 Resource last update	<u>Definition:</u> The date when the resource was last updated.
	1.4 Resource language(s)	<u>Definition:</u> The language(s) of the contents of the web resource.

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<sup>5</sup> <http://www.ietf.org/>

<b>2. Ownership / Creatorship</b>		
<b>Descriptor</b>		<b>Definitions in English</b>
<b>Descriptor</b>	2. Ownership / Creatorship	<u>Definition:</u> The user should know who is behind the resource in order to judge by himself the credibility of the provided information. Therefore, information like the name(s) of the organization(s) providing the information and the type of this (these) organization(s) should be available. At the same time, the name(s), title(s) (e.g. MD, PhD, Dr, etc.) and contact details of website responsible(s), to contact in case of questions on health related issues, as well as the name(s) and contact details of the webmaster(s) should be available.
<b>Attributes</b>	2.1 Organization name(s) (owner)	<u>Definition:</u> The name(s) of the organization(s) owning the resource (the term "organization" is here employed in its generic meaning; owners can be entities like organizations, foundations, companies, groups of people or just individuals – see 2.2)
	2.2 Organization type(s) (owner)	<u>Definition:</u> The type(s) of the organization(s) owning the resource.  An organization may be of one or more of the following types: <ul style="list-style-type: none"> <li>- Government Organization</li> <li>- Healthcare service provider</li> <li>- Media and publishers</li> <li>- Pharmaceutical company / retailer</li> <li>- Universities / research institutions</li> <li>- Scientific or professional organizations</li> <li>- Patient organizations / self-support groups</li> <li>- Private individual</li> <li>- Other</li> </ul>
	2.3 Responsible name(s)	<u>Definition:</u> The name(s) of the person(s) responsible for the contents of the web resource.
	2.4 Responsible title(s)	<u>Definition:</u> The grade(s), in terms of educational or training context, of the responsible(s) for the contents of the web resource (e.g. medical doctor, specialist, etc.)
	2.5 Responsible(s) contact details	<u>Definition:</u> Contact information (like phone number, e-mail, etc.) of the responsible(s) for the contents of the web resource.
	2.6 Webmaster name(s)	<u>Definition:</u> The name(s) of the webmaster(s) of the web resource.
	2.7 Webmaster(s) contact details	<u>Definition:</u> Contact information (like phone, e-mail, etc.) of the webmaster(s).

3. Purpose / mission		
		Definitions in English
<b>Descriptor</b>	3. Purpose / mission	<u>Definition:</u> It has to be clear for the user which is the goal and motivation of the provided information and for what kind of users it was created e.g. adults, children, people with diabetes, etc.
<b>Attributes</b>	3.1 Purpose / mission of the resource provided	<u>Definition:</u> A statement describing the aim or the goal of the web resource should be provided. <u>Example:</u> something like “the resource is for educational purposes” or “the aim of this website is to promote a better knowledge about...” should be declared.
	3.2 Purpose / mission of the owner(s) provided	<u>Definition:</u> A statement describing the aim or the goal of the owner(s) of the web resource should be provided.
	3.3 Target / intended audience(s)	<u>Definition:</u> The web resource should specific declare the audience or demographic group(s) (e.g. patient/adult, patient/child, health professional) to whom its contents are addressed or may be useful for.
	3.4 Statement declaring limitation of the provided information	<u>Definition:</u> The intention of any Health-related information provided by any web resource should be only to support and never replace the relationship between Internet users and Health professionals, and this should be clearly stated by the web resource. <u>Example:</u> should be something like “the health information is provided to support and not to replace the relationship that exists between visitors and their health professionals”.

4. Topics / Keywords		
		Definitions in English
<b>Descriptor</b>	4. Topics / Keywords	<u>Definition:</u> Mapping of the resource’s contents to concepts and terms from the UMLS Metathesaurus.
<b>Attributes</b>	4.1 Topics / Keywords (UMLS)	<u>Definition:</u> A series of concepts and terms from UMLS that better describe the contents of the web resource under examination. <u>Example:</u> *Porfiria Veteada C0162532* /*category: *Disease or Syndrome/ /*Description: *An autosomal dominant porphyria that is due to a deficiency of protoporphyrinogen oxidase (EC 1.3.3.4) in the LIVER, the seventh enzyme in the 8-enzyme biosynthetic pathway of HEME. Clinical features include both neurological symptoms and cutaneous lesions. Patients excrete increased levels of porphyrin precursors, COPROPORPHYRINS and protoporphyrinogen/ /*has parent*: _Porfirias Hepáticas _ /*Can be qualified by: *_blood, __cerebrospinal fluid,_chemically induced_.../ /*siblings:* C_oporporfiria Hereditaria,_ _Porfiria Intermitente Aguda_.../

<b>5. Virtual consultation</b>		
<b>Descriptor</b>		<b>Definitions in English</b>
<b>Descriptor</b>	5. Virtual consultation	<u>Definition:</u> A VC service is an online service allowing the user to ask questions and/or send/upload information on health related issues asking for advice. A VC service may have one of the following forms: a. discussion forum, b. chat, c. VC e-mail, d. VC request form.
<b>Attributes</b>	5.1 VC service available	<u>Definition:</u> Is there any online virtual consultation (VC) service available?
	5.2 VC responsible(s) name(s)	<u>Definition:</u> The name(s) of the person(s) responsible(s) for the VC service (it is important for the user to know who is answering, who is behind the VC service; such information should be clearly mentioned)
	5.3 VC responsible(s) contact details	<u>Definition:</u> Contact information (like phone number, e-mail, etc.) of the responsible(s) for the VC service (it is important for the user to know who is answering, who is behind the VC service; such information should be clearly mentioned).
	5.4 Statement declaring limitation of the VC service	<u>Definition:</u> a VC service should have an assisting role and can never replace a personal consultation with a physician. This should be clearly stated by the web resource providing the VC service.  <u>Example:</u> should be something like “the VC service cannot replace a personal consultation with a physician” or “internet based advice, whether personalised or not, cannot replace a face to face consultation with a healthcare practitioner”.

6. Funding / Advertising		
		Definitions in English
<b>Descriptor</b>	6. Funding / Advertising	<u>Definition:</u> Health web resources should disclose possible conflicts of interest. For this reason it is important to know how and by whom a web resource is funded. Furthermore, information on resource's policy with regard to advertising must be easily accessible and clear.
<b>Attributes</b>	6.1 Statement declaring sources of funding (sponsors, grants, advertisers, etc.)	<u>Definition:</u> in case a web resource receives financial support, its exact sources of funding (e.g. donations, advertisement, sponsors, etc.) should be declared.  <u>Example:</u> this could be something like "site sponsors are xx, yy, zz" or "About our site sponsor: ..." or "this site is kindly sponsored by ..." or "we are a non profit organization supported by individuals, foundations, and corporations" or "this web site is sponsored by donations", etc.
	6.2 Name(s) of funding (sponsoring) organization(s)	<u>Definition:</u> the name(s) of the funding entities should be listed.
	6.3 Statement declaring limitation of influence of sponsors on content	<u>Definition:</u> it should be clearly stated, that the contents of the web resource were created without the slightest influence from the sponsors.  <u>Example:</u> this could be something like "sponsorship will not be accepted in situations where the fact of the sponsorship would raise an inference of influence on editorial content or decision-making, or of xx endorsement of the sponsor or its products and services" or "the sponsor XX did not have any influence on the content of this web site".
	6.4 Advertising present	<u>Definition:</u> It has to be known whether the web resource hosts or not advertising material in any format.
	6.5 Are advertisements clearly separated from editorial content?	<u>Definition:</u> advertisements should be presented in a way that doesn't confuse Internet users, making clear for them what is advertisement and what it is editorial information.
	6.6 Policy with regard to advertisement	<u>Definition:</u> the web resource should provide a clear policy regarding contained advertisements.  <u>Example:</u> something like: "... guidelines have been established by our site to govern various aspects of Advertising ... including banner, button, and contextual Advertising, Sponsorship Messages, and Promotions" or "this web site does not accept advertisement.

7. Other Seal or Recommendation		
		Definitions in English
<b>Descriptor</b>	7. Other seal or Recommendation	<u>Definition:</u> Are there seals identified in the resource? Indicates that the resource already conforms to other, known sets of quality criteria. Identifiers for other seals: a) Real seals: WMA, HONcode, pWMC, URAC, eHealth TRUST-E, AFGIS, b) Filtering health portals (a resource is recommended by): AQUAMED, Intute, WHO ("Vaccine Safety Net")
<b>Attributes</b>	7.1 Other seal(s) present	<u>Definition:</u> Are there seals or trustmarks displayed in the web site or does the web resource declares that conforms to any accreditation guidelines or scheme?
	7.2 Which other seal(s)?	<u>Definition:</u> If there are any seal (s) or trustmark (s), specify which ones e.g. HON, WMA, etc. (see def. of 7, above)

<b>8. Information Supporting Scientific Content</b>		
<b>Descriptor</b>		<b>Definitions in English</b>
<b>Descriptor</b>	8. Information Supporting Scientific Content	<u>Definition:</u> Regarding the provided specialized health information (scientific parts of the resource) it is relevant to have additional information, for example how it was created, by whom, whether the information is up-to-date or not, etc.
<b>Attributes</b>	8.1 References, bibliography (with links to literature)	<u>Definition:</u> Information about which sources were used to create the scientific information, if it is based on scientific literature or it is an expert's opinion, etc.
	8.2 Publication / creation date	<u>Definition:</u> Since health/medical knowledge changes rapidly, and to help users decide whether the scientific information provided by the web resource is up-to-date or not, it is important to display when it was initially created or published.
	8.3 Last revision / modification date	<u>Definition:</u> The date the scientific information provided by the web resource was last revised or modified should be visible.
	8.4 Author name(s)	<u>Definition:</u> The authorship is an important criterion, since it gives information about who is behind this information. Furthermore, from the name(s) of the author(s) the visitor of the web resource could identify e.g. other relevant publications.
	8.5 Author(s) contact details	<u>Definition:</u> Contact information (like phone number, e-mail, etc.) of the author(s) - in case of questions or comments it is important to give readers the possibility to contact the author(s).
	8.6 Editorial policy	<p><u>Definition:</u> Information about how the scientific information was created e.g. who was involved, which criteria were used, if there was any peer review, etc.</p> <p><u>Example:</u> this must be something like "Information provided by this resource (or hosted in this site)</p> <ul style="list-style-type: none"> <li>• is selected upon the following procedure ... which includes health professionals / specialists etc.", or</li> <li>• is controlled/reviewed by medical doctors", or</li> <li>• is given only by medically trained and qualified professionals unless a clear statement is made that a piece of advice offered is from a non-medically qualified individual or organisation."</li> </ul>

9. Confidentiality / privacy policy		
		Definitions in English
<b>Descriptor</b>	9. Confidentiality / privacy policy	<u>Definition:</u> Internet users are much concerned about protection of their privacy and personal data. For this reason the resource should provide a confidentiality / privacy policy ensuring that personal data (visitor coordinates, e-mail messages, etc.) is safely handled, and describing how these data are handled.
<b>Attributes</b>	9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled	<p><u>Definition:</u> The web resource should disclose if any personal information of the user are stored. If this occurs, the web resource should state how such personal data is handled and for which purpose it is stored. Furthermore it is also important to declare whether this information is shared with other people or not. If not, the web resource should describe how restricted access to personal data is guaranteed.</p> <p><u>Example:</u> declaring e.g. that “any personal data used by xx, including any information collected through this website will be treated as strictly confidential ...” or “the use of this data is strictly for statistical purposes ...etc.” or “organization xx pledges always to respect the privacy and anonymity of its users, including survey participants” or “the information provided to us voluntarily by our visitors in their communications with us is securely stored and not shared with any third party” or clearly explain “With whom the information may be shared” or to state “the kind of security procedures that are in place to protect the loss, misuse or alteration of information” or “What choices are available to users regarding collection, use and distribution of the information” or “use personally identifiable information for internal purposes” or explain how they are using cookies or if they back up the information collected or “maintain a very strict privacy policy”, etc.</p>

10. Accessibility		
		Definitions in English
<b>Descriptor</b>	10. Accessibility	<u>Definition:</u> The web resource is examined upon various accessibility criteria and information on its accessibility level (whether the resource is of level A, AA or AAA) is deduced.
<b>Attributes</b>	10.1 Accessibility level	<u>Definition:</u> the accessibility level of the web resource, according to the W3C accessibility guidelines <sup>6</sup> .

<sup>6</sup> <http://www.w3.org/TR/WCAG10/>