



Final version of RDF schema for medical labels

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MedIEQ

Quality Labeling of Medical Web content using Multilingual
Information Extraction

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Executive Summary

MedIEQ is a technology project employing semantic web technologies for the description of web resources, content analysis technologies for collecting domain-specific web resources and extracting information from them. These technologies can also be applied in other domains. What we aim in this project is to examine their applicability in a specific area with special importance that of assisting the labelling of health related web resources.

Building upon the experience from the recently finished EC-funded Quatro project, in which two MedIEQ partners were involved (NCSR, WMA) and the workings (finished and prospect) of the W3C Web Content Labelling Incubator and the recently started POWDER Working Group (NCSR is actively involved in both initiatives), we decided to use the RDF language and more specifically the RDF-CL model to create the vocabulary for the medical labels. Our aim was to reuse existing RDF vocabularies and create new Properties and Classes under a MedIEQ vocabulary only when our needs are not covered.

The vocabulary used in these labels exploits criteria that are currently used by the participating labelling agencies WMA and AQuMed, the eEurope criteria guidelines and a labelling agency of reference as HON. Our aim is not to suggest this vocabulary as “the only one to use” but to show instead the value of machine readable labels. Other labelling authorities, outside MedIEQ consortium, could use project’s technology to create machine readable labels and for those of the terms in MedIEQ vocabulary appearing also in their vocabularies, to exploit MedIEQ technology to support the process of maintaining their labels.

In Deliverable D4.1 we presented the 1st version of the MedIEQ vocabulary which was containing the first set of labelling criteria. This deliverable presents:

- the final set of criteria, which extends the initial set presented in D4.1
- the final implementation of the MedIEQ vocabulary based on the RDF-CL model; this will be converted according to the POWDER recommendations as soon as these are finalised
- examples of MedIEQ labels along with example queries to exploit the labels’ content.

1. Introduction

MedIEQ aims to advance current medical quality labelling technology capitalizing on the results of previous work on quality labelling and content analysis. The implementation of this objective will be based on the realisation of the following more specific objectives:

- Develop a schema for the quality labelling of health-related web content and provide the tools supporting the creation, maintenance and access of labelling data according to this schema;
- Specify a methodology for the content analysis of health-related web resources according to the MedIEQ schema and develop the tools that will implement it;
- Specify a methodology and develop the tools for the creation and maintenance of the multilingual resources that will support content analysis in health-related web resources;
- Develop a prototype labelling system and demonstrate it in 7 different languages and two labelling applications (third party accreditation, classification).

This deliverable presents our work for the development of the final version of the MedIEQ labelling scheme. More specifically, after the description of the problem of content labelling for health-related web resources, in section 2, the deliverable presents:

- the final set of criteria, their properties and the rationale behind selecting them (sections 3.1-3.2)
- the final version of an RDF vocabulary which represents the 2nd and final set of labelling criteria, based on the scheme produced in the QUATRO project; existing RDF vocabularies are reused under this initial version of the MedIEQ vocabulary (section 3.3)
- examples of labels based on the MedIEQ scheme along with example queries to exploit the labels' content (sections 4.1-4.2).

A pre-final version of the label management tool (LAM) has been prepared. This enables the users to create, update and delete MedIEQ labels, to monitor changes in labels and properly import and export labels to the system. LAM belongs to the integrated MedIEQ system AQUA that is currently being developed in the context of WP8 "System integration".

2. Content Labelling

MedIEQ project creates and publishes machine readable labels. Currently there is a machine readable labelling model developed under the Quatro project (RDF-CL) that the project uses to create labels. The recently established W3C working group POWDER is currently working to define a new labelling model exploiting RDF-CL work. As soon as this is finalised, it will be adopted by MedIEQ.

Benefits of machine readable labels include content personalisation and content discovery based on user preferences. Search engines and other computer based agents can take advantage of machine readable labels and help the user navigate or locate the desired information. They also provide maximum flexibility for resource grouping and properties assignment from a technical point of view that will lead better content discovery and/or filtering if the user desires to through computer programs installed on the user side. Machine readable labels are not necessarily user readable in raw form but through a proper user agent like Quatro project's ViQ can be of great help to a user.

2.1. Labelling Model

Content labels for the MedIEQ project are created using the RDF language. Not only do the labels use Classes and Properties from RDF Language based vocabularies but they also follow a model that defines how the Classes and Properties are linked together to create a Content Label. The label model that we follow is the RDF-CL. Apart from defining itself as an RDF schema with Classes and Properties, RDF-CL also defines three logical parts that the label should be structured of. Each part contains information that supports the other two. The three main parts of a label are:

1. **Label Metadata:** it refers to the file that stores several labels and their restrictions itself. It holds information about who and when created the labels ,when they were last modified , details about the label authority itself ,the vocabulary it is responsible for. Terms will be used from dc , dcterms, foaf and label vocabularies.
2. **Label Restrictions/Grouping:** this holds mappings of labels to hosts and more detailed rules for explicitly linking parts of websites or resources to labels. Also elements (Intersection, Union) for combining these rules will be available. A default label is defined for the given host restrictions. More labels can be defined and linked with more fine grained descriptions given by rules. The terms come from the label vocabulary.
3. **Label Properties:** each label contains a set of properties it links to from the Label Restrictions/Grouping part. Many labels can be defined, each one containing different RDF elements that denote the properties that best describe the content of the resource we wish to label.

The criteria that will be defined in the next sections fit in the third part of the RDF-CL model, that is the Label Properties. In general, the criteria are independent of the labelling model and exist in a machine readable label as RDF Properties describing a resource. The model's task is to provide a mechanism to connect the descriptions with a group of resources on the one hand and on the other with metadata about the label creator so as to provide accountability.

The RDF-CL model has been developed for the Quatro project. Labels implementing it are already published in the web from the Quatro partners. Since then though, a wider interest on content labelling has ignited the first W3C Incubator group on Content Labelling. This groups' work has been to examine possible use cases and requirements for a content labelling and resource description system with wider application. The group has published its final report and went on to become a W3C working group (POWDER). This working group seeks to extend RDF-CL and correct if any, drawbacks. NCSR is a key partner in the specification of the new content labelling recommendation that will be published now under W3C. MedIEQ project will benefit from a W3C published recommendation on content labelling since it will be creating machine readable labels based on a widely accepted standard and thus make these labels interoperable. Such a recommendation is expected to make it easier for third parties agencies to create machine readable labels too. MedIEQ project seeks to become the first implementation of the new labelling model.

2.2. Labelling tool (LAM)

To support the label generation and management process we are developing the AQUA Label Management tool (LAM). For LAM we aim to develop an intuitive user interface and functionalities to help the user cope with the management of labels and hide the complexities of the RDF model.

LAM will be providing the following functionalities to help the labelling expert in the day to day labelling process.

- Manual label creation
- semi-automatic label creation
- label editing
- label versioning
- label uploading/downloading
- label validation
- label process management
- label customization

Since LAM is integrated in AQUA it will have a web interface as well and will be accessible through it. The user will be provided with an interface that integrates information extracted from other AQUA modules (crawler, spider, information extraction engine, etc). This information will be used to semi-automatically fill the label criteria properties as appropriate and thus help the user create labels faster and monitor them easier.

So far LAM implements only the RDF-CL model for content labels but we are about to begin adding WCL support now that the W3C POWDER working group publishes the first draft of the new recommendation. When LAM is finished it will be RDF labelling model agnostic and easily extensible to add even more models.

3. Labelling Criteria and Mapping to RDF Elements

3.1. The Criteria

We finally settled 10 MedIEQ Labelling Criteria. Each criterion consists of one or more attributes (we have 36 attributes in total, see following tables), which cover and extend other criteria sets proposed by other major initiatives in the area, like eEurope2002, Health on the Net Foundation, Web Mèdica Acreditada, etc. (see Appendix IV).

The MedIEQ criteria descriptors, attributes and definitions with examples in certain cases are provided in the following tables.

1. Resource Defining Information		
Descriptor		1. Resource defining information
Attributes		1.1 Resource URI 1.2 Resource title 1.3 Resource last update 1.4 Resource language(s)
Definition		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.

2. Ownership / Creatorship		
Descriptor		2. Ownership / Creatorship
Attributes		2.1 Organization name(s) (owner) 2.2 Organization type(s) (owner) 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 details
Definition		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.
Examples		Organization type(s) may be one or more of the following: - Government Organization

	<ul style="list-style-type: none"> - Healthcare service provider - Media and publishers - Pharmaceutical company / retailer - Universities / research institutions - Scientific or professional organizations - Patient organizations / self-support groups - Private individual - Other
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3. Purpose / mission	
Descriptor	3. Purpose / mission
Attributes	3.1 Purpose / mission of the resource provided 3.2 Purpose / mission of the owner(s) provided 3.3 Target / intended audience(s) 3.4 Statement declaring limitation of the provided information
Definition	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.
Examples	<i>Regarding 3.4:</i> 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	
Descriptor	4. Topics / Keywords
Attributes	4.1 Topics / Keywords (UMLS)
Definition	Mapping of the resource's contents to concepts from the UMLS Metathesaurus.
Examples	<pre> *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_oproporfiria Hereditaria,_ _Porfiria Intermitente Aguda_.../ </pre>

5. Virtual consultation		
Descriptor	5. Virtual consultation	
Attributes	5.1 VC service available 5.2 VC responsible name(s) 5.3 VC responsible(s) contact details 5.4 Statement declaring limitation of the VC service	
Definition	Is there an online virtual consultation (VC) service available? 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. The name(s) and details of the person(s) responsible(s) for this service should also be clearly mentioned. Moreover, a declaration that VC is only a supporting means that cannot replace a personal consultation with a physician should be provided.	
Examples	<i>Regarding 5.4:</i> Should be something like "the VC service can not 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		
Descriptor	6. Funding / Advertising	
Attributes	6.1 Statement declaring sources of funding (sponsors, grants, advertisers, etc.) 6.2 Name(s) of funding (sponsoring) organization(s) 6.3 Statement declaring limitation of influence of sponsors on content 6.4 Advertising present 6.5 Are advertisements clearly separated from editorial content? 6.6 Policy with regard to advertisement	
Definition	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. If there are any sponsors, it has to be clear who they are. Furthermore, it should be stated that sponsors do not have any influence on the content. Additionally, it has to be known whether the web resource hosts or not advertising material in whatever format. In case that happens, such material should be clearly distinguished from informative material. Furthermore, information on resource's policy with regard to advertising must be easily accessible and clear.	
Examples	<i>Regarding 6.1:</i> This must be something like "site sponsors are xx, yy, zz" or "About our site sponsor: ..." or "this site is kindly sponsored by ..."	

	<p>or "we are a non profit organization supported by individuals, foundations, and corporations" or "this web site is sponsored by donations", etc.</p> <p><i>Regarding 6.3:</i></p> <p>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".</p> <p><i>Regarding 6.6:</i></p> <p>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".</p>
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7. Other Seal or Recommendation

	Descriptor	7. Other seal or Recommendation
	Attributes	7.1 Other seal(s) present 7.2 Which other seal(s)?
	Definition	Are there other seals identified in the resource? Indicates that the resource already conforms to other, known 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): AQUMED, Intute, WHO ("Vaccine Safety Net")

8. Information Supporting Scientific Content

	Descriptor	8. Information Supporting Scientific Content
	Attributes	8.1 References, bibliography (with links to literature) 8.2 Publication / creation date 8.3 Last revision / modification date 8.4 Author name(s) 8.5 Author(s) contact details 8.6 Editorial policy
	Definition	Regarding the provided specialized health information (scientific parts of the resource) it is relevant to know if it is based on scientific books, medical journal articles, etc. For this, scientific articles or documents should include a references or bibliography section. Additionally, it is important to know if such information is up-to-date (publication and last modification dates are required) and who is the author of such content (author(s) name(s) and contact details are required for pages/documents providing scientific information).
	Examples	<i>Regarding 8.6</i> This must be something like "Information provided by this resource (or hosted in this site)

	<ul style="list-style-type: none"> • is selected upon the following procedure ... which includes health professionals/specialists etc.", or • is controlled/reviewed by medical doctors", or • 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."
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9. Confidentiality / privacy policy

	Descriptor	9. Confidentiality / privacy policy
	Attributes	9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled
	Definition	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, describing how these data are handled.
	Examples	<p><i>Regarding 9.1:</i></p> <p>To declare 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

	Descriptor	10. Accessibility
	Attributes	10.1 Accessibility level
	Definition	The 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.

3.2. What is the rationale behind selecting these criteria

As a result of the wealth of information available and its possible public health effects when this information is used by patients and consumers, a wide number of organizations have provided specific quality criteria and codes of conduct in order to improve the quality of these health related websites. The European Union held a series of meetings with key players from Government departments, International Organisations, non-governmental organisations and industry, to explore practices and experiments in this field. A web-based consultation was held and finally the EU established a core set

of quality criteria (eEurope 2002: Quality Criteria for Health related Websites) (see Annex I) to guarantee the best quality of these websites and protect consumers when using them in terms of health.

Besides the EU guidelines, other initiatives and quality criteria were also reviewed in order to select MedIEQ core set criteria (see Appendix I for more information):

1. Third parties accreditation initiatives (quality and accreditation labels are awarded by a third party to inform consumers that a site provides information meeting current standards for content and form):

- a. Health on the Net Code (HONCode)¹
- b. The Collaboration for internet rating, certification, labelling and evaluation of health information on the World-Wide-Web; MedCIRCLE (an EU funded project where Web Médica Acreditada participated as a partner) that continued the work initiated in the EU funded MedCERTAIN project.²
- c. Web Médica Acreditada (MedIEQ partner that participated in MedCIRCLE as well).
- d. URAC, Promoting Quality Health Care.³
- e. Quality Assurance and Content Description (QUATRO) project.⁴ QUATRO developed a set of descriptors and their definitions that were designed to act as a core vocabulary for a wide variety of trust mark schemes around the world. The vocabulary was created as part of the QUATRO project under the European Union's Safer Internet Programme. National Centre for Scientific Research "Demokritos" (NCSR) and Web Médica Acreditada (WMA) participated in this project as partners.

2. Filtering tools (applied manually or automatically, resources are selected according to their quality and relevance to a particular audience and classified in order to facilitate the access by health information seekers):

- a. The information portal for patients of the Agency for Quality in Medicine in Germany (MedIEQ partner that participated in MedCIRCLE as a partner as well). The resources are reviewed using Check-In Instrument⁵ and DISCERN questionnaire⁶.
- b. Catalogue et Index des Sites Médicaux Francophones (CisMEF)⁷.

3. User guidance tools (enables users to check if a site complies with certain standards by accessing a series of questions from a displayed logo):

- DISCERN: Quality Criteria for Consumer Health Information

4. Codes of Conduct (are defined as sets of quality criteria that provide a list of recommendations for the development and content of websites):

- Guidelines for Medical and Health information sites on the Internet of the American Medical Association⁸. Principles governing AMA Web sites.
- Internet Health Coalition⁹.

¹ Health on the Net Code by the Health on the Net Foundation. <http://www.hon.ch>

² MedCIRCLE. <http://www.medcircle.org>

³ URAC. <http://www.urac.org/>

⁴ QUATRO. <http://www.quatro-project.org>

⁵ Check-In http://www.patienten-information.de/content/informationsqualitaet/download/check_in.pdf

⁶ DISCERN. <http://www.discern.org.uk/>

⁷ CisMEF. <http://www.chu-rouen.fr/cismef/>

⁸ <http://jama.ama-assn.org/>

⁹ Internet Health Coalition. <http://www.ihealthcoalition.org/>

The recommendations of the EU guidelines and the main key initiatives in this field were reviewed to select a set of criteria that had to meet the following three features:

- a. to be included in the EU guidelines and in the key initiatives,
- b. be useful to apply all the MedIEQ tools that we are developing, i.e. they can be extracted automatically by MedIEQ tools,
- c. to be a key information for best educational purposes from consumers' point of view.

In addition, different metadata terms were taken into account in this analysis in parallel thinking about setting up a map between these criteria and the metadata terms.

3.3. Mapping Criteria to RDF Elements

In the following, we list the criteria one by one, the RDF elements that they are mapped to and the typed values we expect these elements to accept. Each RDF element is prefixed with the proper QName that defines the RDF Schema it was taken from (see Table 1).

<u>QName</u>	<u>URI</u>
rdf	http://www.w3.org/1999/02/22-rdf-syntax-ns#
rdfs	http://www.w3.org/2000/01/rdf-schema#
dc	http://purl.org/dc/elements/1.1/
dcterms	http://purl.org/dc/terms/
quatro	http://purl.org/quatro/elements/1.0/#
foaf	http://xmlns.com/foaf/0.1/
meq	http://www.medieq.org/2007/rdf-schema#
label	http://www.w3.org/2004/12/q/contentlabel#

Table 1 RDF Schemata used for defining a MedIEQ label

Criterion	RDF element	Value
1. Resource defining information		
1.1 Resource URI	label:hostRestriction	RDF Literal / String
1.2 Resource title	dc:title	RDF Literal / String
1.3 Resource last update	dcterms:modified	xsd:date
1.4 Resource language(s)	dc:language	RDF Literal / String

Criterion	RDF element	Value
2. Ownership / Creatorship		
2.1 Organization name(s) (owner)	foaf:Organization	
2.2 Organization type(s) (owner)	meq:organizationType	RDF Literal / String
2.3 Responsible name(s)	foaf:Agent	foaf:Agent
2.5 Responsible(s) contact details	meq:responsibleParty	
2.4 Responsible title(s)	foaf:title	RDF Literal / String

2.6 Webmaster name(s)	meq:webmaster	foaf:Agent
2.7 Webmaster(s) contact details	foaf:Agent	

Criterion	RDF element	Value
3. Purpose / mission		
3.1 Purpose / mission of the resource provided	meq:sitePurposeDoc meq:sitePurposeDocExists dcterms:abstract	URI xsd:boolean RDF Literal / String
3.2 Purpose / mission of the owner(s) provided	meq:ownerPurposeDoc meq:ownerPurposeDocExists dcterms:abstract	URI xsd:boolean RDF Literal / String
3.3 Target / intended audience(s)	meq:audience	RDF Literal / String

Criterion	RDF element	Value
4. Topics / Keywords		
4.1 Topics / Keywords (UMLS)	meq:UMLS	meq:umlsTopic meq:umlsConcept

Criterion	RDF element	Value
5. Virtual consultation		
5.1 VC service available	meq:vcExists	xsd:boolean
5.2 VC responsible name(s)	meq:vcContact	foaf:Agent
5.3 VC responsible(s) contact details	foaf:Agent	
5.4 Statement declaring limitation of the VC service	meq:vcLimitationsDoc meq:vcLimitationsDocExists	URI xsd:boolean

Criterion	RDF element	Value
6. Funding / Advertising		
6.1 Statement declaring sources of funding (sponsors, grants, advertisers, etc.)	meq:fundingSourceDoc meq:fundingSourceDocExists	URI xsd:boolean
6.2 Name(s) of funding (sponsoring) organization(s)	meq:fundingOrganization	foaf:Organization
6.3 Statement declaring limitation of influence of	meq:fundingInfluenceDoc meq:fundingInfluenceDocExist	URI xsd:boolean

sponsors on content	s	
6.4 Advertising present	quatro:ac	xsd:boolean
6.5 Are advertisements clearly separated from editorial content?	meq:advertDistinct	xsd:boolean
6.6 Policy with regard to advertisement	meq:advertPolicyDoc meq:advertPolicyDocExists	URI xsd:boolean

Criterion	RDF element	Value
7. Other seal or Recommendation		
7.1 Other seal(s) present	meq:otherQualityLabelExists	xsd:boolean
7.2 Which other seal(s)?	meq:hasLabelFrom	URI

Criterion	RDF element	Value
8. Information Supporting Scientific Content		
8.1 References, bibliography (with links to literature)	meq:bibliographyExists	xsd:boolean
8.2 Publication / creation date	meq:publicationDateExists	xsd:boolean
8.3 Last revision / modification date	meq:modificationDateExists	xsd:boolean
8.4 Author name(s)	meq:authorNamesExists	xsd:boolean
8.5 Author(s) contact details	meq:authorContactsExists	xsd:boolean
8.6 Policy / disclaimer on supporting information	meq:policyDisclaimerDoc meq:policyDisclaimerDocExists	URI xsd:boolean

Criterion	RDF element	Value
9. Confidentiality / privacy policy		
9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled	meq:confidentialityDocExists meq:confidentialityDoc dcterms:abstract	xsd:boolean URI RDF Literal / String

Criterion	RDF element	Value
10. Accessibility		
10.1 Accessibility level	quatro:gk	quatro:WAI-A quatro:WAI-AA quatro:WAI-AAA

3.4. Vocabulary localization

The MedIEQ rdf schema will be localized in all the languages of the partners involved in the project. By localizing an rdf schema we mean that we translate the human readable rdfs:label string literals in every language. These strings will provide the human readable version of the label and can be extracted from a label using a query language (Sparql in our case). We will also find translations of all the third party properties we use for creating the label.

4. The Vocabulary in Action

4.1. An Example Label

An example label can be found in Appendix II. We used all possible schema elements. We can clearly see the first part with the label metadata, then the Ruleset follows, that defines the provenance and finally we defined a default label with properties from the MedIEQ schema so as to properly capture and map to RDF all the web resources properties related to our criteria.

4.2. Example Queries to extract data from Content Labels

Some SPARQL queries that extract information from certain parts of that label, follow.

The following query returns the properties:

1. Has Advertisement
2. Content Language
3. Other seals presence
4. Existence of virtual consultation

for the default label "label_1".

```
PREFIX label: <http://www.w3.org/2004/12/q/contentlabel#>
```

```
PREFIX wma: <http://wma.comb.es/rdf/vocabularyv01#>
```

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
```

```
PREFIX dc: <http://purl.org/dc/elements/1.1/>
```

```
PREFIX quatro: <http://purl.org/quatro/elements/1.0/#>
```

```
SELECT *
```

```
{
```

```
?g dc:creator ?z .
```

```
FILTER REGEX( str(?g) , "label_1\")
```

```
?g a label:ContentLabel ;
```

```
    quatro:ac ?has_advert ;
```

```
    dc:language ?language ;
```

```
    meq:otherQualityLabelExists ?otherLabel ;
```

```
    meq:vc ?vc ;
```

```
    ?vc meq:vcExists ?vcExists;
```

```
}
```

The next query returns label metadata and identification information for the creator and a namespace for his/her labelling scheme. Label metadata for our labelling scheme come from the foaf vocabulary.

```
PREFIX dc: <http://purl.org/dc/elements/1.1/>
```

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
```

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
```

```
PREFIX label: <http://www.w3.org/2004/12/q/contentlabel#>
```

```
SELECT ?y ?z
WHERE {
  ?x label:authorityFor \"http://www.medieq.org\" .
  ?x dc:creator ?o .
  ?o ?y ?z }
```

This query returns the default label for a web resource.

```
PREFIX label: <http://www.w3.org/2004/12/q/contentlabel#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
SELECT ?host ?hostrest ?label
WHERE {
  ?x rdf:type label:Ruleset .
  OPTIONAL { ?x label:hasHostRestrictions ?host . }
  OPTIONAL { ?x label:hasDefaultLabel ?label . }
  OPTIONAL { ?host label:hostRestriction ?hostrest . } . }
```

This query returns the rules for identifying other labels for a web resource. The rules are perl5 regular expressions.

```
PREFIX label: <http://www.w3.org/2004/12/q/contentlabel#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
SELECT ?has_URI ?label ?rule ?u
WHERE { ?x rdf:type label:Ruleset .
  OPTIONAL { ?x label:rules ?rule . }
  OPTIONAL { ?rule rdf:Description ?u . }
  OPTIONAL { ?u label:hasLabel ?label . }
  OPTIONAL { ?u label:hasURI ?has_URI . } . }
```

5. Conclusion

We've presented the final version of our labelling schema and tools for exploiting it. We listed the final set of criteria whose identification can be automated in web resources. Those criteria have been put under a formal context (RDF) and we give a final version of a set of guidelines to use this formal context for creating medical content labels under the RDF-CL model.

Our interest is towards machine readable labels that provide a foundation for semantic web applications. Cooperation with expert organizations on labelling help us model the task of Content Labelling and make it comprehensible to machines and programs to automate tasks such as inference and decision making on the interest of the average internet user.

We actively support a W3C working group that will specify a new model for describing resources. We are committed to using it once published as a W3C recommendation and we hope its wider adoption will help the evolution of the content labelling ecosystem on the average internet user's interest.

References

- [1] <http://www.w3.org/2004/12/q/doc/content-labels-schema.htm>
- [2] <http://www.w3.org/2007/powder/>
- [3] <http://www.w3.org/2005/Incubator/wcl/XGR-wcl-20070220/>
- [4] <http://www.w3.org/2005/Incubator/wcl/>

Appendix I – Major Quality Assessment initiatives

A. *eEurope 2002: Quality Criteria for Health related Websites*

Transparency and Honesty

- Transparency of provider of site – *including* name, physical address and electronic address of the person or organisation responsible for the site (see Article 5 and 6 Directive 2000/31/EC on Electronic Commerce).
- Transparency of purpose and objective of the site
- Target audience clearly defined (further detail on purpose, multiple audience could be defined at different levels).
- Transparency of all sources of *funding* for site (grants, sponsors, advertisers, non-profit, voluntary assistance).

Authority

- Clear statement of sources for all information provided and date of publication of source.
- Name and *credentials* of all human/institutional providers of information put up on the site, including dates at which credentials were received.

Privacy and data protection

- Privacy and data protection policy and system for the processing of personal data, including processing invisible to users, to be clearly defined in accordance with community Data Protection legislation (Directives 95/46/EC and 2002/58/EC).

Updating of information

- Clear and regular updating of the site, with date of up-date clearly displayed for each page and/or item as relevant. Regular checking of relevance of information.

Accountability

- *Accountability* - user feedback, and appropriate oversight responsibility (such as a named quality compliance officer for each site).
- Responsible partnering - all efforts should be made to ensure that partnering or linking to other websites is undertaken only with trustworthy individuals and organisations who themselves comply with relevant codes of good practice.
- Editorial policy - clear statement describing what procedure was used for selection of content.

Accessibility

- *Accessibility* - attention to guidelines on physical accessibility as well as general findability, searchability, readability, usability, etc.

B. *The Health on the Net Code*

1. **Authoritative**
Indicate the qualifications of the authors
2. **Complementarity**
Information should support, not replace, the doctor-patient relationship
3. **Privacy**
Respect the privacy and confidentiality of personal data submitted to the site by the visitor
4. **Attribution**
Cite the source(s) of published information, date and medical and health pages
5. **Justifiability**
Site must back up claims relating to benefits and performance
6. **Transparency**
Accessible presentation, accurate email contact
7. **Financial disclosure**
Identify funding sources
8. **Advertising policy**
Clearly distinguish advertising from editorial content

C. *The Web Mèdica Acreditada criteria*

The Web Mèdica Acreditada (WMA) Quality Seal of the Medical Association of Barcelona (COMB) represents the commitment by owners of medical WebPages to accept the rules of ethical conduct established under the:

1. Prevailing Ethics Code of the Council of Medical Associations of Catalonia.
2. Norms established by the Code of Conduct for health web sites, created by the certification system of the Accredited Medical Website (WMA) of the Medical Association of Barcelona.

The Code of Conduct includes the following aspects:**1. Certification**

COMB has established a process of certification, which includes a standing committee and a delegated committee. These committees serve as consultants to the web site so that the contents, resources, and information of these adapt to the norms of the seal.

2. Identification

- Ownership (institution and professional or health professionals, including data about medical association membership, medical specialization and professional activity and, if possible, a brief summary including most significant training and professional experiences).
- Address and contact e-mail placed in a clear and prominent place on the web site (it is recommended that this place be within the Home page). This mailto allows visitors to request information or send doubts about any issue relating the web site.

3. Contents

- It is always advisable to include the date of updates made to web site. This date should preferably appear within the home page.
- Informative content that is self-produced must include the author, a bibliography of the work and the dates of both initial publication and of subsequent updates.
- In the same way, in reference to content from other sources, it will be compulsory to cite owner (name of entity, p. ex.) and the Internet address of the entity or of the document cited whenever possible. An explanation must be provided if this information is not available.
- The website should be structured in such a way that allows for clear access to the different sections within the web site as well as to external web sites.
- All links within the web site that lead to external sources must indicate destination. Whenever possible, it is advisable that a small text be included along-side the link with a brief description of source.

4. Confidentiality

The web sites must abide by the principles of confidentiality and secrecy in all that refers to data and information sent or provided by patients, for professional health purposes, through the net.

5. Control and validation

The Web sites that have received the Seal will be indexed in the Web Mèdica Acreditada's electronic page section. At the same time, the main pages of these are obligated to post the Accredited Medical Quality Website Seal logo in a prominent place on the page.

6. Advertising and other sources of financing

It is an absolute requirement that advertising material, in whatever format, included within a web site that holds the Accredited Medical Quality Website Seal, is distinguished from informative material.

7. Virtual Consultation (Document of the Ethics Committee)

Based on the document, "Internet and the virtual consultation", elaborated by the COMB's ethics code committee and published in SIC 96, the following document establishes guidelines that doctors must follow when dealing with medical consultations via e-mail.

8. Non-compliance and responsibilities

In the case these norms are not complied with, the Medical Association of Barcelona reserves the right to withdraw the conferred Accredited Medical Quality Website Seal, without undermining the responsibilities that, in accordance with the prevailing norm, may derive from this non-compliance.

D. The Check –In Instrument

Area of application and aims

1. Is it exactly described, which is the goal of the publication?
 - a. Is there an introduction that describes which topics are treated on the publication?
 - b. Is there a detailed table of content?
2. Is it exactly described which is the target group?

Participation of interested groups

3. Is / are the author/s mentioned?
 - a. Name of the author
 - b. If an institution is mentioned as author, a responsible has to be specify.
4. Are the qualifications of the author/s mentioned?
 - a. Short description of the professional career of the author/s
 - b. It is indicated, where the author actually works.
 - c. It is clear and explicit described that different authors from different fields participated in the development of the information.
5. Do patients and/or self-help groups participate in the development of the publication?
 - a. There is an explanation that patients were involved in the development of the information
 - b. Experiences from patients are part of the information
 - c. It is noted that patients/consumer read the information before its publication and they hat the opportunity to make comments.

Correctness of the development

6. Does the publication base on scientific sources?
 - a. Is there a list of sources with a reference at the end of the publication (including Date of publication)?
 - b. List of the references at the end of the publication.
 - c. The sources are not listed, however there is an advice that the sources can be obtain from author. (only if the address of the author is mentioned)
7. Is the kind of scientific sources mentioned (evidence level)?
8. Date of the creation
9. Validity of the information
 - a. The publication has a publication date and an advice that it will be update, if new knowledges are available
 - b. Question 10 is positive
10. Date of the next update is mentioned
11. Is there an indication, that the information was develop according to certain quality guidelines (e.g. DISCERN)?
 - a. The author states that he followed quality criteria by creating the information.
 - b. The criteria are describe or there is a link to the criteria.
12. Is it specified, if the publication participates in a quality initiative (e.g. AFGIS, HON Code, MedCIRCLE)?
 - a. Logo at the homepage
 - b. Logo hast to be active
13. Hast the publication enough additional support information or new sources?
14. Does the publication describe how the treatment / procedure works?
15. Does it describe the benefits of the treatment /procedure?
 - a. Verbal description of the benefits of the treatment / procedure (with a reference)
 - b. The benefits are described through understandable statistic measures (with a reference)
16. Does it describe sufficiently the risks of the treatment / procedure?

- a. Verbal description of the risks (with a reference)
 - b. The risks are described through understandable statistic measures (with a reference)
17. Is it specified, if the treatment / procedure affects daily life?
- a. Is there a mention that the treatment / procedure could affect the daily life?
 - b. The influence the treatment / procedure on daily life are described in detail.
 - c. The description is good enough according to your personal opinion.
18. Does it describe, if there is contradictory experiences (results) with the application of the treatment /procedure?
19. Is it stated, that all of the established treatments for this disease are mentioned?
20. Is it describe, what happened if no treatment is used?
- a. Description of the natural course of the disease

Editorial independence

21. Is the information independent and neutral?
- a. The financing is exposed, sponsor is mentioned.
 - b. Explanation that the sponsor do not have influence on the content of the publication
 - c. Neutral formulation

Design

22. Is the most important content easy to identify? (e.g. summary, important recommendations)
- a. Is it possible to get a overlook without reading the whole text? Is important content highlighted?
23. Is it the information comprehensible?
- a. Is there a glossary) or is medical vocabulary explained?
 - b. Sentence structure is easy (8-10 words)
 - c. User friendly navigation
 - d. Is there tables and graphics that explain better the text?

Additional questions for information in internet

- IN1. Information about the information provider and his aims?
- a. Is the address of the provider mentioned? (“Impressum”)
 - b. Are the aims and goals of the provider described? (“About us”)
- IN2. Does the provider give information about protection and handling of personal data?
- 1. It is explain, if and for which purpose personal data are collected
 - 2. It is explain, how does with these data be dealt
- IN3. Is it possible to contact the author and webmaster?
- a. Address, telephone number and/or e-mail of author
 - b. Address, telephone number and / or e-mail of webmaster
- IN4. Is the access to the information without limitations?
- a. Without password and free
 - b. Accessibility (A, AA, AAA)
- IN5. Can the information completely printed?
- a. Is there a PDF version of the information?
 - b. Is there a link, “print the complete information”?

Appendix II – An example MedIEQ RDF content label

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:quatro="http://purl.org/quatro/elements/1.0/#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:meq="http://www.medieq.org/2007/rdf-schema#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:label="http://www.w3.org/2004/12/q/contentlabel#">
  <rdf:Description rdf:about="">
    <dc:creator>
      <foaf:Organization>
        <foaf:name xml:lang="en">MedIEQ</foaf:name>
        <foaf:mbox rdf:resource="pnas@iit.demokritos.gr" />
        <foaf:homepage rdf:resource="http://www.medieq.org" />
      </foaf:Organization>
    </dc:creator>
    <dcterms:issued>2006-5-19</dcterms:issued>
    <dcterms:modified>2006-05-30</dcterms:modified>
    <label:authorityFor rdf:datatype="http://www.w3.org/2001/XMLSchema#string">
      http://www.medieq.gr
    </label:authorityFor>
  </rdf:Description>
  <label:Ruleset rdf:ID="Ruleset">
    <label:hasHostRestrictions>
      <label:Hosts>
        <label:hostRestriction rdf:datatype="xsd:string">
          www.medieq.org
        </label:hostRestriction>
      </label:Hosts>
    </label:hasHostRestrictions>
    <label:hasDefaultLabel rdf:resource="label_1"/>
  </label:Ruleset>
  <label:ContentLabel rdf:ID="label_1">
    <rdfs:comment>Label for all/most of website</rdfs:comment>
    <dc:title>The Resource's Title</dc:title>
    <dcterms:modified>2006-05-29</dcterms:modified>
    <dc:creator>
      <foaf:organization>
        <foaf:name xml:lang="en">An Author</foaf:name>
        <foaf:mbox rdf:resource="pnas@iit.demokritos.gr" />
        <foaf:homepage rdf:resource="http://url.to.the.resource.com" />
        <meq:organizationType></meq:organizationType>
      </foaf:organization>
    </dc:creator>
    <dc:language xml:lang="en-US">English</dc:language>
    <meq:webmaster>
      <foaf:Agent>
        <foaf:name xml:lang="en">An Author</foaf:name>
        <foaf:mbox rdf:resource="pnas@iit.demokritos.gr" />
        <foaf:homepage
          rdf:resource="http://url.to.the.resource.com" />
        </foaf:Agent>
      </meq:webmaster>
    <meq:responsibleParty>
      <foaf:Agent>
        <foaf:title>MD</foaf:title>
        <foaf:name xml:lang="en">An Author</foaf:name>
        <foaf:mbox rdf:resource="pnas@iit.demokritos.gr" />
        <foaf:homepage rdf:resource="http://url.to.the.resource.com" />
        </foaf:Agent>
      </meq:responsibleParty>
    <meq:sitePurposeDoc rdf:resource="http://www.medieq.org/sitePurpose.html"/>
    <meq:sitePurposeDocExists rdf:datatype="xsd:boolean">
      true
    </meq:sitePurposeDocExists>
    <meq:ownerPurposeDoc rdf:resource="http://www.medieq.org/ownerPurpose.html"/>
  </label:ContentLabel>
</rdf:RDF>
```

```

<meq:ownerPurposeDocExists rdf:datatype="xsd:boolean">
  true
</meq:ownerPurposeDocExists>

<meq:audience>Adult</meq:audience>

<quatro:gk rdf:resource="http://purl.org/quatro/elements/1.0/#WAI-AA"/>

<meq:mconfidentialityDocExists rdf:datatype="xsd:boolean">
  true
</meq:mconfidentialityDocExists>
<meq:confidentialityDoc>
  <rdf:Description rdf:about="http://www.medieq.org/confidentialityDocument.html">
    <dcterms:abstract>
      Abstract from the conf doc
    </dcterms:abstract>
  </rdf:Description>
</meq:confidentialityDoc>

<quatro:ac rdf:datatype="xsd:boolean">true</quatro:ac>

<meq:fundingSourceDoc rdf:resource = "http://www.medieq.org/fundingSourceDoc.html" />
<meq:fundingSourceDocExists rdf:datatype="xsd:boolean">
  true
</meq:fundingSourceDocExists>

<meq:fundingOrganization>
  <foaf:Organization>
    <foaf:name xml:lang="en">An Author</foaf:name>
    <foaf:mbox rdf:resource="pnas@iit.demokritos.gr" />
    <foaf:homepage rdf:resource= "http://url.to.the.resource.com" />
  </foaf:Organization>
</meq:fundingOrganization>
<meq:advertDistinct rdf:datatype="xsd:boolean">
  true
</meq:advertDistinct>

<meq:advertPolicyDoc rdf:resource= "http://www.medieq.org/advertising/policyDoc.html" />
<meq:advertPolicyDocExists rdf:datatype="xsd:boolean">
  true
</meq:advertPolicyDocExists>

<meq:fundingInfluenceDocExists rdf:datatype="xsd:boolean">
  true
</meq:fundingInfluenceDocExists>

<meq:vcExists rdf:datatype="xsd:boolean">true</meq:vcExists>

<meq:vcLimitationsDoc rdf:resource = "http://www.medieq.org/vc/LimitationsDoc.html"/>

<meq:vcLimitationsDocExists rdf:datatype="xsd:boolean">
  true
</meq:vcLimitationsDocExists>

<meq:vcContact>
  <foaf:Agent>
    <foaf:name xml:lang="en">MedIEQ</foaf:name>
    <foaf:mbox rdf:resource="mailto:pnas@iit.demokritos.gr" />
    <foaf:homepage rdf:resource="http://www.medieq.org" />
  </foaf:Agent>
</meq:vcContact>

<meq:otherQualityLabelExists rdf:datatype="xsd:boolean">
  true
</meq:otherQualityLabelExists>
<meq:hasLabelFrom rdf:resource="http://www.icra.org"/>

<meq:UMLS>
  <meq:umlsTopic> <rdf:value>Body Regions [A01]</rdf:value></meq:umlsTopic>
</meq:UMLS>

<meq:UMLS>
  <meq:umlsConcept><rdf:value>Peritoneal
Cavity[A01.047.025.600.678]</rdf:value></meq:umlsConcept>
</meq:UMLS>

<meq:UMLS>
  <meq:umlsConcept><rdf:value>Abdomen[A01.047]</rdf:value></meq:umlsConcept>
</meq:UMLS>

</label:ContentLabel>

</rdf:RDF>

```

Appendix III – The MedIEQ RDF schema

```

<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY foafns "http://xmlns.com/foaf/0.1/" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY meq "http://www.medieq.org/2007/rdf-schema#" >
]>

<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:meq="http://www.medieq.org/2007/rdf-schema#"
  xmlns:label="http://www.w3.org/2004/12/q/contentlabel#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:quatro="http://purl.org/quatro/elements/1.0/#">

  <rdf:Description rdf:about="">
    <dc:title>MedIEQ project property elements</dc:title>
    <dc:publisher>Participants in MedIEQ, a project co-funded under the European Union Safer Internet Programme</dc:publisher>
    <dc:contributor rdf:resource="http://www.iit.demokritos.gr/skel/" />
    <dc:contributor rdf:resource="http://danbri.org" />
    <dcterms:created>2007-06-01</dcterms:created>
    <rdfs:seeAlso rdf:resource="http://www.medieq.org/rdf-schema" />
  </rdf:Description>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#sitePurposeDoc">
    <rdfs:label xml:lang="en-US">site-purpose document</rdfs:label>
    <rdfs:range rdf:resource="&rdfs;Resource" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#sitePurposeDocExists">
    <rdfs:label xml:lang="en-US">site-purpose document exists</rdfs:label>
    <rdfs:range rdf:resource="&xsd;boolean" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#ownerPurposeDoc">
    <rdfs:label xml:lang="en-US">owner-purpose document</rdfs:label>
    <rdfs:range rdf:resource="&rdfs;Resource" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#ownerPurposeDocExists">
    <rdfs:label xml:lang="en-US">owner-purpose document exists</rdfs:label>
    <rdfs:range rdf:resource="&xsd;boolean" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#audience">
    <rdfs:label xml:lang="en-US">audience</rdfs:label>
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#limitStatementDoc">
    <rdfs:label xml:lang="en-US">limit-statement document</rdfs:label>
    <rdfs:range rdf:resource="&rdfs;Resource" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#limitStatementDocExists">
    <rdfs:label xml:lang="en-US">limit-statement document exists</rdfs:label>
    <rdfs:range rdf:resource="&xsd;boolean" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#responsibleParty">
    <rdfs:label xml:lang="en-US">responsible party</rdfs:label>
    <rdfs:range rdf:resource="&foafns;Agent" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#organizationType">
    <rdfs:label xml:lang="en-US">Organization Type</rdfs:label>
    <rdfs:domain rdf:resource="&foafns;Organization" />
    <rdfs:range rdf:resource="&xsd:string" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#webmaster">
    <rdfs:label xml:lang="en-US">webmaster related properties</rdfs:label>
    <rdfs:range rdf:resource="&foafns;Agent" />
  </rdf:Property>

  <rdf:Property rdf:about="http://www.medieq.org/2007/rdf-schema#vcExists">
    <rdfs:label xml:lang="en-US">virtual-consultation exists</rdfs:label>
    <rdfs:range rdf:resource="&xsd;boolean" />
  </rdf:Property>

```

```
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#vcServiceDoc'>
  <rdfs:label xml:lang='en-US'> virtual consultation service document</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#vcServiceDocExists'>
  <rdfs:label xml:lang='en-US'>virtual consultation service document exists</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#vcContact'>
  <rdfs:label xml:lang='en-US'>virtual consultation contact related properties</rdfs:label>
  <rdfs:range rdf:resource='&foafns;Agent' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#vcLimitationsDoc'>
  <rdfs:label xml:lang='en-US'>virtual-consultation limitations doc</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#vcLimitationsDocExists'>
  <rdfs:label xml:lang='en-US'>virtual-consultation limitations doc exists</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#advertsDistinct'>
  <rdfs:label xml:lang='en-US'>is adverts distinct</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#advertPolicyDoc'>
  <rdfs:label xml:lang='en-US'>advert policy document</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#advertPolicyDocExists'>
  <rdfs:label xml:lang='en-US'>advert policy document exists</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#fundingSourceDoc'>
  <rdfs:label xml:lang='en-US'>funding-source document</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#fundingSourceDocExists'>
  <rdfs:label xml:lang='en-US'>funding-source document exists</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#fundingInfluenceDoc'>
  <rdfs:label xml:lang='en-US'>funding-influence document</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#fundingInfluenceDocExists'>
  <rdfs:label xml:lang='en-US'>funding-influence document exists</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#fundingOrganization'>
  <rdfs:label xml:lang='en-US'>funding organization related properties</rdfs:label>
  <rdfs:range rdf:resource='&foafns;Organization' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#hasLabelFrom'>
  <rdfs:label xml:lang='en-US'>has label from from other labelling agency</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#otherQualityLabelExists'>
  <rdfs:label xml:lang='en-US'>other quality label exists</rdfs:label>
  <rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<rdfs:Resource rdf:about='http://www.medieq.org/2007/rdf-schema#publication'>
  <rdfs:label xml:lang='en-US'>publication related properties</rdfs:label>
  <rdfs:range rdf:resource='&rdfs;Resource' />
</rdfs:Resource>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#bibliographyExists'>
```

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<rdfs:label xml:lang="en-US">bibliography document exists</rdfs:label>
<rdfs:range rdf:resource='&rdfs;Resource' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#publicationDateExists'>
<rdfs:label xml:lang="en-US">document publication date exists</rdfs:label>
<rdfs:range rdf:resource='&xsd;boolean' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#modificationDateExists'>
<rdfs:label xml:lang="en-US">document modification date exists</rdfs:label>
<rdfs:range rdf:resource='&xsd;boolean' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#authorNamesExists'>
<rdfs:label xml:lang="en-US">document author name exists</rdfs:label>
<rdfs:range rdf:resource='&xsd;boolean' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#authorContactsExists'>
<rdfs:label xml:lang="en-US">document author contact details exist</rdfs:label>
<rdfs:range rdf:resource='&xsd;boolean' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#policyDisclaimerDoc'>
<rdfs:label xml:lang="en-US">policy-disclaimer document</rdfs:label>
<rdfs:range rdf:resource='&rdfs;Resource' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#policyDisclaimerDocExists'>
<rdfs:label xml:lang="en-US">policy-disclaimer document exists</rdfs:label>
<rdfs:range rdf:resource='&xsd;boolean' />
<rdfs:domain rdf:resource='&meq;publication' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#confidentialityDoc'>
<rdfs:label xml:lang="en-US">confidentiality document</rdfs:label>
<rdfs:range rdf:resource='&rdfs;Resource' />
</rdf:Property>

<rdf:Property rdf:about='http://www.medieq.org/2007/rdf-schema#mconfidentialityDocExists'>
<rdfs:label xml:lang="en-US">confidentiality document exists</rdfs:label>
<rdfs:range rdf:resource='&xsd;boolean' />
</rdf:Property>

<dcterms:SubjectScheme rdf:about="http://www.medieq.org/2007/rdf-schema#UMLS">
  <rdfs:label xml:lang="en-US">UMLS</rdfs:label>
  <rdfs:comment xml:lang="en-US">UMLS</rdfs:comment>
  <rdfs:seeAlso rdf:resource="http://www.nlm.nih.gov/pubs/factsheets/umls.html"/>
  <dc:type rdf:resource="http://dublincore.org/usage/documents/principles/#encoding-scheme"/>
</dcterms:SubjectScheme>

<dcterms:SubjectScheme rdf:about='http://www.medieq.org/2007/rdf-schema#umlsTopic'>
  <rdfs:label xml:lang="en-US">umls topic</rdfs:label>
  <rdfs:range rdf:resource='&xsd:string' />
  <rdfs:domain rdf:resource='&meq;UMLS' />
</dcterms:SubjectScheme>

<dcterms:SubjectScheme rdf:about='http://www.medieq.org/2007/rdf-schema#umlsConcept'>
  <rdfs:label xml:lang="en-US">umls concept</rdfs:label>
  <rdfs:range rdf:resource='&xsd:string' />
  <rdfs:domain rdf:resource='&meq;UMLS' />
</dcterms:SubjectScheme>
</rdf:RDF>
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Appendix IV - Overlapping of Labelling Criteria for Health Related Websites

eEurope 2002	MedIEQ	WMA	AQUMED (Check-In)	HON
1.1 Transparency of provider of site - name, physical address and electronic address of the person or organisation responsible for the site.	2.1 Organization name(s) (owner) 2.2 Organization type(s) (owner) 2.3 Responsible name(s) 2.4 Responsible contact details 2.5 Webmaster name(s) 2.6 Webmaster contact details	1.1 Contact e-mail in the website easily visible 1.2 The e-mail is a valid address 3. Person(s) in charge is identified 4. The health care professional is identified with name, speciality and position 5. Type of the website in the request form 6. Website name 7. Website description	Is there information about the information provider and his aims? Is it possible to contact the author and webmaster?	6. The designers of this Web site will seek to provide information in the clearest possible manner and provide contact addresses for visitors that seek further information or support. The Webmaster will display his/her E-mail address clearly throughout the Web site.
1.2 Transparency of purpose and objective of the site.	3.1 Purpose/mission of the resource described 3.2 Purpose/mission of the owner(s) described		Is it exactly described, which is the goal of the publication? Is there information about the information provider and his aims?	
1.3 Target audience clearly defined (further detail on purpose, multiple audience could be defined at different levels).	3.3 Target/intended audience	16. Who's the target audience of the website?	Is it exactly described which is the target group?	

eEurope 2002	MedIEQ	WMA	AQUMED (Check-In)	HON
<p>1.4 Transparency of sources of funding for site (grants, sponsors, advertisers, non-profit, voluntary assistance).</p>	<p>6.1 Statement declaring sources of funding (sponsors, grants, advertisers, etc.) 6.2 Name(s) of funding (sponsoring) organization(s) 6.3 Statement declaring limitation of influence of sponsors on content 6.3 Advertising present / not present 6.5 Policy with regard to advertisements: present / not present</p>	<p>When the web with the Certified Medical Web Site Seal is financed either completely or partially through a sponsor, the sponsor must be clearly displayed in a prominent location on the web page.</p>	<p>Is the information independent and neutral? The financing is exposed, sponsor is mentioned. Explanation that the sponsor do not have influence on the content of the publication.</p>	<p>7. Support for this Web site will be clearly identified, including the identities of commercial and non-commercial organisations that have contributed funding, services or material for the site.</p> <p>8(i). If advertising is a source of funding it will be clearly stated. A brief description of the advertising policy adopted by the Web site owners will be displayed on the site.</p>
	<p>6.4 Are advertisements clearly separated from editorial content?</p>	<p>22-25. It is an absolute requirement that advertising material, in whatever format, included within a web site that holds the Certified Medical Web Site Seal, is distinguished from informative material. This can be done through the use of electronic advertising applications such as fixed or movable banners or by simply specifying which is what.</p>		<p>8(ii). Advertising and other promotional material will be presented to viewers in a manner and context that facilitates differentiation between it and the original material created by the institution operating the site.</p>

eEurope 2002	MedIEQ	WMA	AQUMED (Check-In)	HON
2.1 Clear statement of sources for all information provided and date of publication of source.	8.1 References, bibliography (with links to literature)	18. 2. Scientific content “First look” of the scientific content to detect inaccurate or false information 12. Informative content that is self-produced must include the author, a bibliography of the work and the dates of both initial publication and of subsequent updates. - In the same way, in reference to content from other sources, it will be compulsory to cite owner (name of entity, p. ex.) and the Internet address of the entity or of the document cited whenever possible. An explanation must be provided if this information is not available.	Does the publication base on scientific sources?	4(i). Where appropriate, information contained on this site will be supported by clear references to source data and, where possible, have specific HTML links to that data. 5. Any claims relating to the benefits/performance of a specific treatment, commercial product or service will be supported by appropriate, balanced evidence in the manner outlined above in Principle 4.
	8.2 Publication/creation date 8.3 Last revision/modification date	11. Date of the last update of the documents or information provided.	Date of the creation	4(ii). The date when a clinical page was last modified will be clearly displayed (e.g. at the bottom of the page).
2.2 Name and credentials of all human/institutional providers of information put up on the site, including dates at which credentials were received.	8.4 Author name(s) 8.5 Author contact details	10. Authorship and credentials of the Documents	Is / are the author/s mentioned?	1. Any medical or health advice provided and hosted on this site will only be given 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.

eEurope 2002	MedIEQ	WMA	AQUMED (Check-In)	HON
3.1 Privacy and data protection policy and system for the processing of personal data, including processing invisible to users, to be clearly defined in accordance with community Data Protection legislation (Directives 95/ 46/ EC and 2002/ 58/ EC).	9.1 Explanation on how personal data (visitor coordinates, e-mail messages, etc.) is handled.	19-20. In accordance with the prevailing Norms of Medical Ethics and Data protection legislation, the websites must abide by the principles of confidentiality and secrecy in all that refers to data and information sent or provided by patients, for professional health purposes, through the Net. This rule of confidentiality should be included within all sections that include forms or other applications that patients can use to send information.	Does the provider give information about protection and handling of personal data?	3. Confidentiality of data relating to individual patients and visitors to a medical/health Web site, including their identity, is respected by this Web site. The Web site owners undertake to honour or exceed the legal requirements of medical/health information privacy that apply in the country and state where the Web site and mirror sites are located.
4.1 Clear and regular updating of the site, with up-date date clearly displayed for each page and/or item as relevant. Regular checking of relevance of information.	1.3 Resource last update	9. The last general update of the website is present in the homepage.	Date of the creation	
5.1 Accountability – user feedback, and appropriate oversight responsibility (such as a key quality compliance officer for each site).	2.1 Organization name(s) (owner) 2.3 Responsible name(s) 2.4 Responsible contact details	3. Person(s) in charge is identified 4. The health care professional is identified with name, speciality and position		

eEurope 2002	MedIEQ	WMA	AQUMED (Check-In)	HON
5.2 Responsible partnering - all efforts should be made to ensure that partnering or linking to other websites is undertaken only with trustworthy individuals and organisations who themselves comply with relevant codes of good practice.				
	7.1 Other seal(s) present / not present 7.2 Which other seals?	8. Another Seal of quality or third-party programme is present?	Is there an indication, that the information was develop according to certain quality guidelines (e.g. DISCERN)? Is it specified, if the publication participates in a quality initiative?	
5.3 Editorial policy - clear statement describing what procedure was used for selection of content.	8.6 Editorial policy	4. Only websites are included in the programme where medical doctors are present		1. Any medical or health advice provided and hosted on this site will only be given 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.

eEurope 2002	MedIEQ	WMA	AQUMED (Check-In)	HON
6.1 Accessibility - attention to guidelines on physical accessibility as well as general findability, searchability, readability, usability, etc.	10. Accessibility	13. Accessibility: the Accessibility priority level based on WAI is A, AA or AAA		
	3.4 Statement declaring limitation of the provided information.			2. The information provided on this site is designed to support, not replace, the relationship that exists between a patient/site visitor and his/her existing physician.
	4. Topic/Keywords (UMLS)	18.2. Topic (free language)		
	5.1 Virtual Consultation service present / not present 5.2 VC responsible name 5.3 VC responsible contact details 5.4 Statement declaring limitation of the VC service	26. If any kind of virtual consultation is present and a statement declaring limitation of the provided information is included. 26.1.Virtual consultation 26.2. Limits of this service (a Statement must be included) 26.3. Person in charge Identification.		
	1.4 Resource language(s)	17. Resource language(s)		
	1.1 Resource URI 1.2 Resource title			