



Machine-readable and interoperable
age classification labels in Europe

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Implementation Report

Freiwillige Selbstkontrolle Multimedia-Diensteanbieter e.V.

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1. Implementation strategy

The implementation strategy for the FSM MIRACLE service is laid out in greater detail in the D2.1 Implementation Strategy Report from 20 November 2014.

1.1. MIRACLE in the context of existing electronic age labels

The main task for the FSM was to make existing age-de.xml labels interoperable with the MIRACLE data model.

For about four years now, labelling of Internet content continues to spread among German content providers, especially those providing content that may be inappropriate for children or young people under a certain age. Using such an age label is one option for content providers to fulfil their legal obligations under the “Interstate Treaty on the Protection of Human Dignity and the Protection of Minors in Broadcasting and in Telemedia” (Interstate Treaty on the Protection of Minors - Jugendmedienschutz-Staatsvertrag, hereafter referred to as JMStV¹). While the use of age-de.xml labels is considered to be the most appropriate among the available options (the others being time restrictions or the validation of ID document numbers), the actual uptake by content providers had never been thoroughly investigated before.

As part of the preparations for our implementation strategy, we conducted an in-depth research in order to find out who uses age-de.xml labels, how these labels are used, which limitations content providers face, and which one of the three available labelling technologies of age-de (xml file, meta tags, http headers) they use. These findings were the basis for the decision on how to make existing age-de.xml labels available to users (or indeed systems) unfamiliar with this proprietary German standard, using the MIRACLE data model.

1.2. Reasons for setting up a mapping service

After having carefully examined alternative options, namely an alteration of or an amendment to the age-de.xml standard, we decided that establishing a mapping service is the preferable route. Even though changing the age-de.xml standard to conform to the MIRACLE syntax would have been technically possible, the political circumstances clearly prevent any swift action: Any changes to the age-de.xml standard necessarily involve the consent of numerous stakeholders, including those of the industry. The interviews we conducted alongside the age-de.xml analysis proved that German industry was and still is not ready to change existing labels and use a new syntax for German products and services, aimed at the German market.

The setting-up of a mapping service, however, does not render any future changes of the age-de.xml standard impossible or even improbable. But since the MIRACLE data model may see improvements or changes during the run-time of this project, we would not

¹ http://www.kjm-online.de/fileadmin/Download_KJM/Recht/JMStV_Stand_13_RStV_mit_Titel_english.pdf

want to risk a live ecosystem of electronic content labels and jeopardize the industry's goodwill towards these labels. The mapping service can of course always rapidly react to changes of the MIRACLE data model.

We presume that an international uptake of MIRACLE has the potential to stipulate amendments to the German age-de.xml standard.

In theory, creating a database with age-de.xml labels would have been possible, too. This could of course reduce the amount of work and traffic for the client (e.g. parental control software). Since content providers are free to change the age ratings for their contents at any time they choose, central data bases with age ratings necessarily pose the risk of outdated labels. That is why such an approach had, from the beginning of age-de.xml distribution in Germany several years ago, never been considered any further.

1.3. Anticipated amount of work

Planning the implementation of a mapping service, we were aware of the fact that this would require the support from external specialists because the FSM has no own IT staff. We wanted the FSM MIRACLE service to be based on the FSM age classification system www.altersklassifizierung.de because large sections, e.g. the validation engine for age-de.xml labels, had already been in place and only needed some amendments. Therefore we immediately talked to the company which developed that tool. When we wrote the initial proposal for this project we asked them to estimate the costs. Experts from within the project consortium and other IT specialists from the FSM membership assured us that this estimate was reasonable. That is why we refrained from talking to other potential subcontractors: The amount of work that would have been required for a third party, new to this topic, to understand the underlying concepts of age-de.xml, the existing age classification system and the peculiarities of technical age labels for web content would have made the necessary work much more complex and indeed more expensive.

When the discussions about the standard for the MIRACLE data model had made some considerable progress during 2014, our subcontractor, werk21 GmbH², estimated that a mapping service described by us would cost an initial amount of around 13.000 EUR (including VAT). By that time it seemed to be clear that the structures of both standards could be mapped with a reasonable effort of resources.

After having realised the FSM MIRACLE mapping service, the cost estimate proved to be very precise. The bill from 16 December 2014 amounts to 12.138 EUR (including VAT).

Taking our budget estimation from the project proposal into account, there are, as we had planned, still financial resources left for possible improvements or changes of the mapping service during the run-time of this project. For instance, the evaluation of the MIRACLE data model may lead to changes of the standard which we would have to include in our mapping service.

Part of the FSM's tasks in project MIRACLE was to analyse the use and distribution of age-de.xml labels in Germany. Beforehand, we were not sure about how much work this would actually mean. Main reason for that was that we found it hard to estimate the possible level of automation of this task on the one hand and the manual adjustments on

² <http://www.werk21.de>

the other hand, and we had also only a very rough idea of how many labels we might find. Having conducted that research, we were indeed surprised by how much manual work each case required.

After all, setting-up the MIRACLE service was a manageable challenge, even though the syntax differences between age-de.xml and MIRACLE were difficult to cope with in some special cases. The modest costs for the subcontractor prove this point. Way more challenging we found the age-de.xml distribution research. The rather generous estimation of person months allocated in the project proposal proved to be adequate.

The results of our research are, however, of high value both for MIRACLE and the concept of electronic age labels for Internet content as well as for industry and the general public. Makers of parental control software will be able to benefit from the findings, and it will be helpful for future discussions around the improvement of the age-de.xml standard.

Since the FSM will probably have an important say in these discussions, the extensive work here was indeed worthwhile.

2. Implementation

2.1. Tasks for a mapping service

The API to be provided by the FSM is supposed to translate an existing age-de.xml label into the MIRACLE data format and provide that data in a common, understandable way. Web filtering software such as parental control tools would then query the API as one of their - probably various - approaches in order to establish the correct age rating of a web content and thus decide whether or not that content may be made available to the individual user, depending on local settings and national or cultural characteristics. Web filters for office environments may also want to use the API to prevent access to adult content. The API should, however, not be limited to this use case. Depending on future developments, the API may also be used for B2B applications, e.g. gathering information for media databases or shop systems.

In addition we also wanted to provide a web interface included in the FSM age classification system so that age-de.xml information can also be manually translated into the MIRACLE data model. Not only for demonstrational purposes do we think that this approach may help developers and indeed the general public understand the underlying logic as well as similarities and differences of age-de.xml and MIRACLE.

2.2. Timeline

While we were conducting the age-de.xml distribution research during the summer and early autumn of 2014, we communicated with our subcontractor at a rather early stage regarding possible options for the MIRACLE implementation. This is why the development of the mapping service as well as the necessary adaptations to the FSM age classification system could begin instantaneously when we had prepared our strategy. Since the analysis of the political and economic situation regarding electronic age labels

had been conducted at the very beginning of the project's term, it was also clear very soon that changes to the age-de.xml standard were not really an option.

Setting-up the mapping service and the implementation of MIRACLE version 1.0 began in autumn 2014 and was finished well before Christmas. During January 2015 we thoroughly tested the service and took time for fixing bugs.

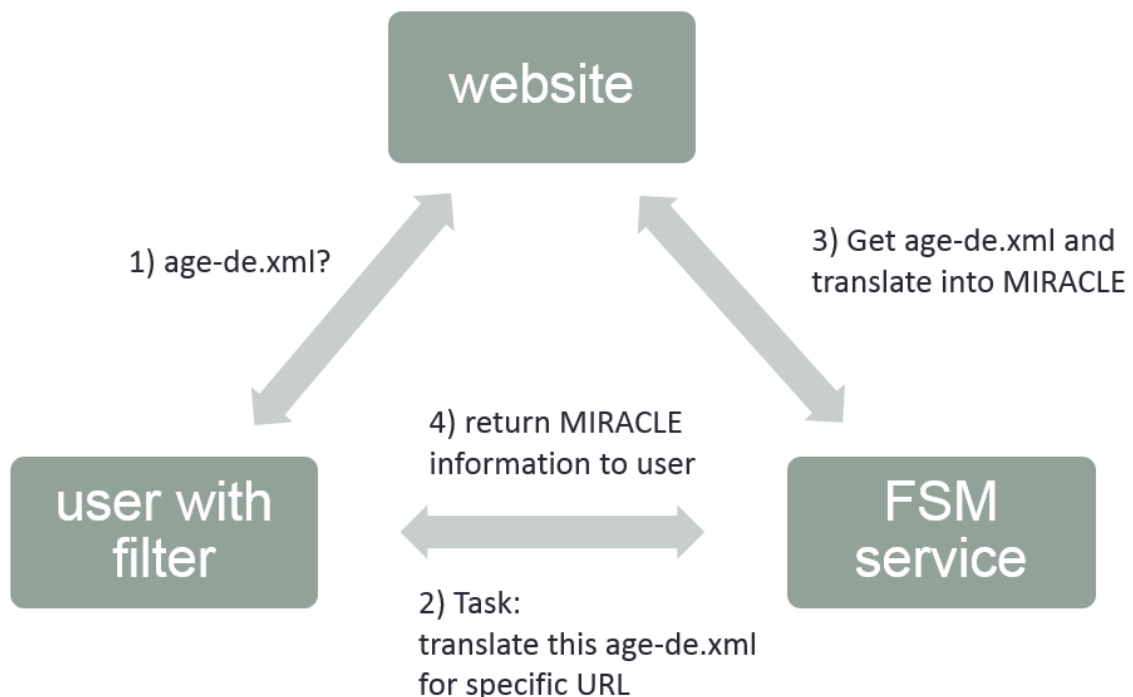
The FSM MIRACLE mapping service is now finished and publicly accessible. We will of course continue looking for flaws and unexpected reactions to unusual age-de.xml files.

2.3. MIRACLE and age-de.xml

As we had expected, all the information contained in an age-de.xml file can rather easily be translated into a MIRACLE dataset. The structures of the two standards are comparable to some extent. All elements from age-de.xml can be mapped to MIRACLE.

There are limitations whenever an age-de.xml file contains varying age levels for different scopes or URLs: While one age-de.xml can assign different age levels to a number of files, paths or folders, each MIRACLE dataset is always limited to one age level at a time, although that age level can be assigned to various URLs (scopes).

However, since the mapping service can only be queried with one URL at a time, only one MIRACLE dataset has to be generated, so this is no actual limitation to the performance of the FSM MIRACLE service.



Schematic representation of the FSM MIRACLE service

2.4. The API

The API is located at <http://api.altersklassifizierung.de/>

It can be queried for a MIRACLE dataset passing a URL as argument named “url” in a GET request.

The URL contained in the GET request should be percent-encoded. This is especially important for URLs already containing GET arguments, like e.g.

<http://www.example.com/show?id=42>

Correct syntax for the API query in this case³ would be:

<http://api.altersklassifizierung.de/?url=http%3A%2F%2Fwww.example.com%2Fshow%3Fid%3D42%20>

If there is a file named age-de.xml in the root directory of that domain and if it is valid in a way that it is possible to determine the age level for the given URL, the API will return a MIRACLE dataset.

Validation and parsing of the file is done by a segment of the original FSM age classification system that had been upgraded in order to be able to provide the age level for a specific URL rather than only checking the file structure for compliance.

Following the age-de.xml standard definition, this file usually covers a whole website, for example a complete subdomain. The webmaster may, however, choose not to assign individual age labels to every folder or file, but the age-de.xml file always contains a default entry to cover files or folders not specifically assigned otherwise.

Since this file has to be placed in the document root of a web server, there can typically only be one age-de.xml file per (sub-)domain. That is why an age-de.xml file can contain different age ratings for different paths or files (scope). In contrast, the MIRACLE data model allows only one rating at a time. While MIRACLE also allows the labelling of more than one file or folder, these files may not have different properties such as different age ratings or content descriptors⁴.

This is why age-de.xml labels with single age ratings that cover complete websites can be translated into MIRACLE as such, using wildcards. Caching on the client side is possible, there is no need for subsequent requests when more pages within the same (sub-)domain are visited.

Example 1 – Labelling a website:

Requested URL by user/client:

<http://www.bundespruefstelle.de/bpjm/Service/english.html>

Content of <http://www.bundespruefstelle.de/age-de.xml>

```
1. <?xml version="1.0" encoding="UTF-8" standalone="yes"?>
2. <age-declaration>
3.   <ageblock-basic>
4.     <age-issuer>www.jugendschutzprogramm.de</age-issuer>
```

³ Note: Since the domain example.com is used for demonstrational purposes only and has of course no age-de.xml, no data will be returned upon this request.

⁴ Content descriptors and feature descriptors are part of the MIRACLE data model definition. age-de.xml labels cannot contain such information. Therefore, the API will not return such data.

```

5.      <last-change>2013-12-06</last-change>
6.      <country>de</country>
7.      <label-version>1.0</label-version>
8.      <revisit-after>1days</revisit-after>
9.    </ageblock-basic>
10.   <ageblock-labeltype>
11.     <xmlfile>>true</xmlfile>
12.     <httpheader>>false</httpheader>
13.     <htmlmeta>>false</htmlmeta>
14.     <label-z>>false</label-z>
15.     <default-age>0</default-age>
16.   </ageblock-labeltype>
17.   <ageblock-labeltype-definition>
18.     <labeltype-xmlfile>
19.       <label class="default">
20.         <min-age>0</min-age>
21.         <default-age>0</default-age>
22.       </label>
23.       <label class="bundespruefstelle">
24.         <age>0</age>
25.         <min-age>0</min-age>
26.         <default-age>0</default-age>
27.         <scope>www.bundespruefstelle.de</scope>
28.       </label>
29.     </labeltype-xmlfile>
30.   </ageblock-labeltype-definition>
31. </age-declaration>

```

The age-de.xml contains only one scope that covers the complete website, and consequently assigns one age level.

MIRACLE dataset as returned from

<http://api.altersklassifizierung.de/?url=http%3A%2F%2Fwww.bundespruefstelle.de%2Fbpjm%2FService%2Fenglish.html>

```

1.  <?xml version="1.0" encoding="UTF-8"?>
2.  <age-declaration xmlns="http://www.miracle-
   label.eu/ns/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
   instance" xsi:schemaLocation="http://www.miracle-label.eu/ns/miracle-1-0.xsd">
3.    <issuer>
4.      <age-issuer>www.jugendschutzprogramm.de</age-issuer>
5.      <last-change>2013-12-06</last-change>
6.      <country>
7.        <country-code>de</country-code>
8.      </country>
9.    </issuer>
10.   <scope>
11.     <scope-urls>
12.       <scope-url class="web-url">www.bundespruefstelle.de/*</scope-url>
13.     </scope-urls>
14.   </scope>
15.   <rating>
16.     <age>0</age>
17.   </rating>
18. </age-declaration>

```

age-de.xml	MIRACLE
<scope>www.bundespruefstelle.de</scope>	<scope-url class="web-url">www.bundespruefstelle.de/*</scope-url>
<age>0</age>	<age>0</age>

Note the different syntax with the asterisk necessary in the MIRACLE data set but not allowed (would be disregarded) in age-de.xml.

Example 2 – Age labels with different scopes and age levels:

Whenever the age-de.xml file contains age ratings for individual pages or directories with different age levels, the MIRACLE dataset will be valid for individual URLs only. Since the MIRACLE data model allows only one age level at a time, combinations or groups of files cannot be defined in one MIRACLE dataset in case they require different age levels.

Requested URL by user/client:

<http://www.prosieben.de/video/stars>

Content of <http://www.prosieben.de/age-de.xml>

```

1.  <?xml version="1.0" encoding="UTF-8" standalone="yes"?>
2.  <age-declaration>
3.    <ageblock-basic>
4.      <age-issuer>www.fsm.de</age-issuer>
5.      <last-change>2015-01-27</last-change>
6.      <country>de</country>
7.      <label-version>1.0</label-version>
8.      <revisit-after>1days</revisit-after>
9.      <custom info="fsm-
    hash_ProSieben.de">f5317826f136b7d5b6e6f30bda69d1f2ecd1c3e2</custom>
10.     <custom info="fsm-hash_Stars">6f36f199e12e42a0a8d91912dd7e70c1932c01d6</custom>
11.     <custom info="fsm-
    hash_Formate mit Altersfreigabe 12">fed3f7dbc2df35c852a2a5f6cf701e6b6d101cf1</custom
    >
12.     <custom info="fsm-
    hash_Formate mit Altersfreigabe 16">55175d39bdc61da3c82b5e59e2d399905850676f</custom
    >
13.   </ageblock-basic>
14.   <ageblock-labeltype>
15.     <xmlfile>true</xmlfile><httpheader>>false</httpheader><htmlmeta>>false</htmlmeta><la
    bel-z>>false</label-z><default-age>16</default-age>
16.   </ageblock-labeltype>
17.   <ageblock-labeltype-definition>
18.     <labeltype-xmlfile>
19.       <label class="default"><min-age>12</min-age><default-age>16</default-
    age></label>
20.       <label class="FormatemitAltersfreigabe16">
21.         <age>16</age>
22.         <min-age>16</min-age>
23.         <default-age>16</default-age>
24.         <scope>*.prosieben.de/tv/we-love-soelden</scope>
25.         <scope>*.prosieben.de/tv/we-love-lloret</scope>
26.         <scope>*.prosieben.de/tv/spartacus</scope>
27.         <scope>*.prosieben.de/tv/unter-fremden-decken</scope>
28.         <scope>*.prosieben.de/tv/joko-und-klaas</scope>
29.         <scope>*.prosieben.de/tv/joko-gegen-klaas</scope>
30.         <scope>*.prosieben.de/tv/primeval</scope>
31.         <scope>*.prosieben.de/tv/wilfred</scope>
32.         <scope>*.prosieben.de/tv/vikings</scope>
33.         <scope>*.prosieben.de/tv/black-sails</scope>
34.         <scope>*.prosieben.de/tv/under-the-dome</scope>
35.         <scope>*.prosieben.de/tv/gotham</scope>
36.       <custom info="fsm-
    hash">55175d39bdc61da3c82b5e59e2d399905850676f</custom></label>
37.     <label class="FormatemitAltersfreigabe12">

```

```

38.     <age>12</age>
39.     <min-age>12</min-age>
40.     <default-age>12</default-age>
41.     <scope>*.prosieben.de/tv/galileo</scope>
42.     <scope>*.prosieben.de/tv/galileo-big-pictures</scope>
43.     <scope>*.prosieben.de/tv/taff</scope>
44.     <scope>*.prosieben.de/tv/2-broke-girls</scope>
45.     <scope>*.prosieben.de/tv/sleepy-hollow</scope>
46.     <scope>*.prosieben.de/tv/greys-anatomy</scope>
47.     <scope>*.prosieben.de/tv/are-you-there-chelsea</scope>
48.     <scope>*.prosieben.de/tv/family-guy</scope>
49.     <scope>*.prosieben.de/tv/friends-with-benefits</scope>
50.     <scope>*.prosieben.de/tv/heroes-of-the-internet</scope>
51.     <scope>*.prosieben.de/tv/mike-and-molly</scope>
52.     <scope>*.prosieben.de/tv/comedystreet-xxl</scope>
53.     <scope>*.prosieben.de/tv/private-practice</scope>
54.     <scope>*.prosieben.de/tv/scream-if-you-can</scope>
55.     <scope>*.prosieben.de/tv/Suburgatory</scope>
56.     <scope>*.prosieben.de/tv/switch-reloaded</scope>
57.     <scope>*.prosieben.de/tv/the-big-bang-theory</scope>
58.     <scope>*.prosieben.de/tv/schulz-in-the-box</scope>
59.     <scope>*.prosieben.de/tv/circus-halli-galli</scope>
60.     <scope>*.prosieben.de/tv/new-girl</scope>
61.     <scope>*.prosieben.de/tv/two-and-a-half-men</scope>
62.     <scope>*.prosieben.de/tv/how-i-met-your-mother</scope>
63.     <scope>*.prosieben.de/tv/crazy-dates</scope>
64.     <scope>*.prosieben.de/tv/the-crazy-ones</scope>
65.     <scope>*.prosieben.de/tv/himmel-oder-hoelle</scope>
66.     <scope>*.prosieben.de/tv/offline-palina-world-wide-weg</scope>
67.     <scope>*.prosieben.de/tv/crash-games-jeder-sturz-zaehlt</scope>
68.     <scope>*.prosieben.de/tv/catch-the-millionaire</scope>
69.     <scope>*.prosieben.de/tv/promiboxen</scope>
70.     <scope>*.prosieben.de/tv/mom</scope>
71.     <scope>*.prosieben.de/tv/devious-maids</scope>
72.     <scope>*.prosieben.de/tv/mein-bester-feind</scope>
73.     <scope>*.prosieben.de/tv/friends-with-better-lives</scope>
74.     <scope>*.prosieben.de/tv/the-flash</scope>
75.     <custom info="fsm-
hash">fed3f7dbc2df35c852a2a5f6cf701e6b6d101cf1</custom></label>
76.     <label class="Stars">
77.     <age>12</age>
78.     <min-age>12</min-age>
79.     <default-age>12</default-age>
80.     <scope>*.prosieben.de/stars</scope>
81.     <custom info="fsm-
hash">6f36f199e12e42a0a8d91912dd7e70c1932c01d6</custom></label>
82.     <label class="ProSieben.de">
83.     <age>0</age>
84.     <min-age>0</min-age>
85.     <default-age>0</default-age>
86.     <scope>*.prosieben.de</scope>
87.     <custom info="fsm-hash">f5317826f136b7d5b6e6f30bda69d1f2ecd1c3e2</custom>
88.     </label>
89. </labeltype-xmlfile>
90. </ageblock-labeltype-definition>
91. </age-declaration>

```

The age-de.xml contains many scopes and assigns different age levels to groups of them.

MIRACLE dataset as returned from

<http://api.altersklassifizierung.de/?url=http%3A%2F%2Fwww.prosieben.de%2Fvideo%2Fstars>

```

1. <?xml version="1.0" encoding="UTF-8"?>
2. <age-declaration xmlns="http://www.miracle-
label.eu/ns/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:schemaLocation="http://www.miracle-label.eu/ns/miracle-1-0.xsd">

```

```

3. <issuer>
4. <age-issuer>www.fsm.de</age-issuer>
5. <last-change>2015-01-27</last-change>
6. <country>
7. <country-code>de</country-code>
8. </country>
9. </issuer>
10. <scope>
11. <scope-urls>
12. <scope-url class="web-url">www.prosieben.de/video/stars</scope-url>
13. </scope-urls>
14. </scope>
15. <rating>
16. <age>0</age>
17. </rating>
18. </age-declaration>

```

age-de.xml	MIRACLE
<scope>*.prosieben.de</scope>	<scope-url class="web-url">www.prosieben.de/video/stars</scope-url>
<age>0</age>	<age>0</age>

Note that the URL the client requested is not individually assigned in the age-de.xml. The API therefore returns the age level contained in the general scope. This behaviour fully conforms to the age-de.xml standard. Returning the information to the client, the API produces a <scope-url> that corresponds to the request.

2.4.1. Features

Since the age-de.xml standard⁵ provides the opportunity to choose between different forms of labelling (directly within the xml file, html meta tags, http headers), the API also has to cover all these options. Thus, if the xml file indicates that pages within this domain or subdomain are labelled with an http header or an html meta tag, the page has to be requested, and the response read to extract the age. In case this fails (usually because the respective http header line or the specific html meta tag is missing), the age-de.xml standard provides a default age entry that has to be used instead.

Example 3 – Age labels contained in the http header:

Requested URL by user/client:

<http://www.clipfish.de/special/spielfilme/genre/17/kinder/>

Content of <http://www.clipfish.de/age-de.xml>

```

1. <?xml version="1.0" encoding="UTF-8" standalone="yes"?>
2. <age-declaration>
3. <ageblock-basic>
4. <age-issuer>www.fsm.de</age-issuer>
5. <last-change>2014-04-15</last-change>
6. <country>de</country>
7. <label-version>1.0</label-version>
8. <revisit-after>1days</revisit-after>

```

⁵ http://www.online-management-kontor.de/images/downloads/age-de-xml-label-definition_v3.0g_english1.pdf

```

9.     <custom info="fsm-
hash_clipfish">4d271f16f98be35cb56522ad67ba79dc4b3e6676</custom>
10.  </ageblock-basic>
11.  <ageblock-labeltype>
12.    <xmlfile>>false</xmlfile>
13.    <httpheader>>true</httpheader>
14.    <htmlmeta>>false</htmlmeta>
15.    <label-z>>false</label-z>
16.    <default-age>16</default-age>
17.  </ageblock-labeltype>
18.  <ageblock-labeltype-definition>
19.    <labeltype-httpheader-definition>
20.      <label class="default">
21.        <min-age>0</min-age>
22.        <default-age>16</default-age>
23.      </label>
24.      <label class="clipfish">
25.        <min-age>0</min-age>
26.        <default-age>16</default-age>
27.        <scope>*.clipfish.de</scope>
28.      <custom info="fsm-hash">4d271f16f98be35cb56522ad67ba79dc4b3e6676</custom>
29.    </labeltype-httpheader-definition>
30.  </ageblock-labeltype-definition>
31. </age-declaration>
32. </age-declaration>

```

The age-de.xml advises filters to check the http header for age information and contains the <default-age> tag as a fallback information.

Http request and response headers of

<http://www.clipfish.de/special/spielfilme/genre/17/kinder/>

```

GET /special/spielfilme/genre/17/kinder/ HTTP/1.1
Host: www.clipfish.de
...

HTTP/1.1 200 OK
Server: Apache/2.2.21 (Unix) mod_ssl/2.2.21 OpenSSL/0.9.8g
Vary: Accept-Encoding,User-Agent
Content-Encoding: gzip
Content-Type: text/html; charset=utf-8
Cache-Control: no-store, no-cache, must-revalidate, post-check=0, pre-check=0
Expires: Thu, 19 Nov 1981 08:52:00 GMT
Pragma: no-cache
X-Content-Age: 12
...

```

The http header for an individual page contains the age information “12”; the use of the default information from the age-de.xml is not necessary.

MIRACLE dataset as returned from

<http://api.altersklassifizierung.de/?url=http%3A%2F%2Fwww.clipfish.de%2Fspecial%2Fspielfilme%2Fgenre%2F17%2Fkinder%2F>

```

1.  <?xml version="1.0" encoding="UTF-8"?>
2.  <age-declaration xmlns="http://www.miracle-
label.eu/ns/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:schemaLocation="http://www.miracle-label.eu/ns/miracle-1-0.xsd">
3.  <issuer>

```

```

4.   <age-issuer>www.fsm.de</age-issuer>
5.   <last-change>2014-04-15</last-change>
6.   <country>
7.     <country-code>de</country-code>
8.   </country>
9. </issuer>
10.  <scope>
11.    <scope-urls>
12.      <scope-url class="web-
url">www.clipfish.de/special/spielfilme/genre/17/kinder/</scope-url>
13.    </scope-urls>
14.  </scope>
15.  <rating>
16.    <age>12</age>
17.  </rating>
18. </age-declaration>

```

age-de.xml	http header	MIRACLE
<code><scope>*.clipfish.de</scope></code>		<code><scope-url class="web-url">www.clipfish.de/special/spielfilme/genre/17/kinder/</scope-url></code>
<code><default-age>16</default-age></code>	X-Content-Age: 12	<code><age>12</age></code>

Note that the API returns the individual URL the client requested, alongside the age level valid for that scope, and not the default age contained in the age-de.xml.

If the age-de.xml references meta tags contained in each page's <head> section, this information is dealt with respectively by the API.

2.4.2. Status codes

If no file with the name age-de.xml is found, the API returns http status code 204 (No Content) to the client (i.e. the filtering software). This should generally be a very rare case: Only when the client has detected an age-de.xml file in the first place is it supposed to query the API.

In cases when a file with the name age-de.xml does exist but is malformed or cannot be understood by the API, http status code 204 (No Content) will be returned to the client.

This also includes the case of a server returning its own error page with the information that a resource cannot be found, thus sending status code 200 (Ok) instead of the proper http error code 404 (Not Found), so the error could be easily detected: The server's error page is in this case not a valid age-de.xml file, so the API returns http status code 204 (No Content) to the client.

2.4.3. Accessibility

The API is publicly accessible free of charge as for the main use case any client computer which is running a child protection software cooperating with FSM needs access to it.

Additionally, a service integrated into the website of the FSM age classification system allows to query age levels and MIRACLE results for any given URL. The web service is intended for manual checking and demonstrational purposes, not for automated requests. It is available at <https://www.altersklassifizierung.de/miracle/>.



Screenshots of <https://www.altersklassifizierung.de/miracle/>

2.4.4. Limitations

The MIRACLE data model provides certain classes of information which are not covered by the age-de.xml standard, namely content descriptors, feature descriptors, or licence details. Since the existing labels that use age-de.xml do not provide such information, the FSM mapping services does not need to translate them. The service is therefore limited to but also extends to all information possibly contained in an age-de.xml file, including http headers and meta tags thus referenced.

3. Challenges, possible improvements, outlook

Currently, XML is the only output format available from the API. Once other formats, e.g. JSON, are specified and examples or templates available, it will be possible to extend the service to allow alternative output formats.

MIRACLE is a pilot project, and we expect the initial number of requests made to the FSM mapping service to be rather manageable. Therefore, the server infrastructure we set up together with our subcontractor provides limited resources. Should the number of queries rise significantly we would have to adjust the server infrastructure. Together with our subcontractor we are experienced in handling different server load scenarios and can react flexibly to the demands of possible clients.

During the testing period we encountered a number of age-de.xml files which were, while still roughly compliant with the standard, laid out in an unusual way or not structured in a way expected by the API. Consequently, the API provided unclear results or errors. We managed to find solutions for each such case we encountered but cannot be absolutely sure if these were all unusual age-de.xml layouts in existence. During the remainder of project MIRACLE we will continue to monitor the API's performance especially with regard to complicated, complex and unusual age-de.xml files. Should errors occur, we will see them fixed immediately. Our subcontractor provides a ticket system to handle our reports. We will of course be happy to receive error reports from companies, institutions and the general public.

The age-de.xml standard contains a B2B scenario and can, at least in theory, be used to label individual images, audio or video files. We are, however, not aware of any practical instance where this option is actually being used. All age-de.xml files known to us are used for labelling web pages (domains, websites, folders) and not binary files. The FSM MIRACLE service has therefore not been designed to cover this B2B case. While we think it would technically be possible to do so in the future, we do not expect to see such a use case for age-de.xml anytime soon. From what industry tells us we should rather think that large amounts of binaries will be labelled using the MIRACLE data model instead.