



SAML V2.0 Metadata Extensions for Login and Discovery User Interface Version 1.0

Committee Specification 01

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This prose specification is one component of a Work Product which also includes:

- XML schema:
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Related work:

This specification defines extensions for use with:

- *Metadata for the OASIS Security Assertion Markup Language (SAML) V2.0*. March 2005. OASIS Standard. <http://docs.oasis-open.org/security/saml/v2.0/saml-metadata-2.0-os.pdf>

Declared XML namespace:

- `urn:oasis:names:tc:SAML:metadata:ui`

Abstract:

This document defines a set of extensions to SAML metadata that provide information necessary for user agents to present effective user interfaces and, in the case of identity provider discovery, recommend appropriate choices to the user.

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1 Introduction

SAML V2.0 metadata [SAML2Meta] provides a mechanism for expressing information necessary for SAML entities to successfully communicate with each other. However in most SAML profiles there is also a user agent involved, usually representing an actual person, that also participates in the profiled message exchanges. This document defines a set of extensions to metadata that provide information necessary for user agents to present effective user interfaces and, in the case of identity provider discovery, provide for recommendation of appropriate choices to the user. There are existing, though incomplete, metadata elements that carry some of this information, but existing practice around their use is inconsistent, and defining extensions with more well-defined semantics is less disruptive to existing metadata deployments.

1.1 Terminology and Notation

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this specification are to be interpreted as described in IETF RFC 2119. These keywords are thus capitalized when used to unambiguously specify requirements over protocol and application features and behavior that affect the interoperability and security of implementations. When these words are not capitalized, they are meant in their natural-language sense.

Conventional XML namespace prefixes are used throughout the listings in this specification to stand for their respective namespaces as follows, whether or not a namespace declaration is present in the example:

Prefix	XML Namespace	Comments
md:	urn:oasis:names:tc:SAML:2.0:metadata	This is the SAML V2.0 metadata namespace defined in the SAML V2.0 metadata specification [SAML2-Meta].
mdui:	urn:oasis:names:tc:SAML:metadata:ui	This is the SAML V2.0 metadata extension namespace defined by this document and its accompanying schema.
xsd:	http://www.w3.org/2001/XMLSchema	This namespace is defined in the W3C XML Schema specification [Schema1]. In schema listings, this is the default namespace and no prefix is shown.

This specification uses the following typographical conventions in text: `<ns:Element>`, `Attribute`, `Datatype`, `OtherCode`.

This specification uses the following typographical conventions in XML listings:

```
Listings of XML schemas appear like this.
```

```
Listings of XML examples appear like this. These listings are non-normative.
```

1.2 Normative References

- [RFC2119] S. Bradner. *Key words for use in RFCs to Indicate Requirement Levels*. IETF RFC 2119, March 1997. <http://www.ietf.org/rfc/rfc2119.txt>
- [RFC4632] V. Fuller et al. *Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan*. IETF RFC 4632, August 2006. <http://www.ietf.org/rfc/rfc4632.txt>
- [RFC5870] A. Mayrhofer et al. *A Uniform Resource Identifier for Geographic Locations ('geo' URI)*. IETF RFC 5870, June 2010. <http://www.ietf.org/rfc/rfc5870.txt>
- [SAML2Errata] *SAML V2.0 Errata*. 1 December 2009. OASIS Approved Errata. <http://docs.oasis-open.org/security/saml/v2.0/sstc-saml-approved-errata-2.0.pdf>

- 36 **[SAML2Meta]** *Metadata for the OASIS Security Assertion Markup Language (SAML) V2.0.* 15
37 March 2005. OASIS Standard. [http://docs.oasis-](http://docs.oasis-open.org/security/saml/v2.0/saml-metadata-2.0-os.pdf)
38 [open.org/security/saml/v2.0/saml- metadata-2.0-os.pdf](http://docs.oasis-open.org/security/saml/v2.0/saml-metadata-2.0-os.pdf)
- 39 **[Schema1]** H. S. Thompson et al. XML Schema Part 1: Structures. World Wide Web
40 Consortium Recommendation, May 2001. [http://www.w3.org/TR/2001/REC-](http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/)
41 [xmlschema-1-20010502/](http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/)
- 42 **[Schema2]** Paul V. Biron, Ashok Malhotra. XML Schema Part 2: Datatypes. World Wide Web
43 Consortium Recommendation, May 2001. [http://www.w3.org/TR/2001/REC-](http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/)
44 [xmlschema-2-20010502/](http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/)

45 2 Metadata Extensions for Login and Discovery User 46 Interface

47 2.1 User Interface Information

48 The user interface extension elements are oriented towards the requirements of user agent presentation
49 of entities represented by SAML metadata, typically as part of identity provider discovery or representing
50 services requesting information from a user's identity provider. The specifics of such presentation and the
51 use of the elements that follow is not in scope for this specification, but communities of use SHOULD es-
52 tablish guidelines and even prescriptive requirements to encourage consistency and understandability for
53 users.

54 The `<mdui:UIInfo>` container element, defined below, MUST appear within the `<md:Extensions>`
55 element of a role element (one whose type is based on `md:RoleDescriptorType`). The use of the
56 `<mdui:UIInfo>` element, or any other element defined in this section, outside of that context is not
57 defined by this specification.

58 This element, if it appears, MUST contain at least one child element.

59 Finally, this element MUST NOT appear more than once within a given `<md:Extensions>` element.

60 2.1.1 Element `<mdui:UIInfo>`

61 The `<mdui:UIInfo>` element contains information which pertains to (but is not specifically limited to) the
62 creation of user interfaces for tasks such as identity provider selection/discovery, user authentication, at-
63 tribute release consent, etc.

64 This element contains any number of the following elements, in any order:

65 `<mdui:DisplayName>`

66 A localized name for the entity operating in the containing role.

67 `<mdui:Description>`

68 A localized description of the entity operating in the containing role.

69 `<mdui:Keywords>`

70 Localized search keywords, tags, categories, or labels for the containing role.

71 `<mdui:Logo>`

72 A localized logo image for the entity operating in the containing role.

73 `<mdui:InformationURL>`

74 A URL to localized information about the entity operating in the containing role.

75 `<mdui:PrivacyStatementURL>`

76 A URL to localized information about the privacy practices of the entity operating in the containing
77 role.

78 In addition, this element MAY contain an arbitrary number of extension elements from other namespaces,
79 the definitions/semantics of which must be supplied elsewhere.

80 The schema for the `<mdui:UIInfo>` element, and its corresponding `mdui:UIInfoType` complex type, is
81 as follows:

```
82 <element name="UIInfo" type="mdui:UIInfoType"/>  
83 <complexType name="UIInfoType">  
84   <choice minOccurs="0" maxOccurs="unbounded">  
85     <element ref="mdui:DisplayName"/>  
86     <element ref="mdui:Description"/>  
87     <element ref="mdui:Keywords"/>  
88     <element ref="mdui:Logo"/>
```

```
89     <element ref="mdui:InformationURL"/>
90     <element ref="mdui:PrivacyStatementURL"/>
91     <any namespace="##other" processContents="lax"/>
92 </choice>
93 </complexType>
```

94 2.1.2 Element <mdui:DisplayName>

95 The <mdui:DisplayName> element specifies a localized name fit for display to users. Such names are
96 meant to allow a user to distinguish and identify the entity acting in a particular role. The content of this
97 element should be suitable for use in constructing accessible user interfaces for those with disabilities.
98 There MUST NOT be more than one <mdui:DisplayName> element with the same xml:lang attribute
99 value within a single role descriptor.

100 The schema for the <mdui:DisplayName> element is as follows:

```
101 <element name="DisplayName" type="md:localizedNameType"/>
```

102 2.1.3 Element <mdui:Description>

103 The <mdui:Description> element specifies a brief, localized description fit for display to users. In the
104 case of an <md:SPSSODescriptor> role, this SHOULD be a description of the service being offered. In
105 the case of an <md:IDPSSODescriptor> role this SHOULD include a description of the user com-
106 munity serviced.

107 In all cases this text MUST be standalone, meaning it is not to be used as a template requiring additional
108 text (e.g., "This service offers \$description").

109 There MUST NOT be more than one <mdui:Description> element with the same xml:lang attribute
110 value within a single role descriptor.

111 The schema for the <mdui:Description> element is as follows:

```
112 <element name="Description" type="md:localizedNameType"/>
```

113 2.1.4 Element <mdui:Keywords>

114 The <mdui:Keywords> element specifies a list of localized search keywords, tags, categories, or labels
115 that apply to the containing role. This element extends the **mdui:listOfStrings** schema type with the fol-
116 lowing attribute:

117 xml:lang [Required]

118 Language specifier.

119 The content of this element is a "list" of strings in the XML Schema [Schema2] sense, which means the
120 keyword strings are space-delimited. Spaces within individual keywords are encoded with a "plus" (+)
121 character; as a consequence, keywords may not contain that character.

122 There MUST NOT be more than one <mdui:Keywords> element with the same xml:lang attribute
123 value within a single role descriptor.

124 The schema for the <mdui:Keywords> element, and its corresponding **mdui:KeywordsType** complex
125 type, is as follows:

```
126 <element name="Keywords" type="mdui:KeywordsType"/>
127 <complexType name="KeywordsType">
128   <simpleContent>
129     <extension base="mdui:listOfStrings">
130       <attribute ref="xml:lang" use="required"/>
131     </extension>
132   </simpleContent>
133 </complexType>
134 <simpleType name="listOfStrings">
135   <list itemType="string"/>
136 </simpleType>
```


137 **2.1.5 Element <mdui:Logo>**

138 The <mdui:Logo> element specifies the external location of a localized logo fit for display to users. This
139 element extends the **anyURI** schema type with the following attributes:

140 height [Required]

141 The rendered height of the logo measured in pixels.

142 width [Required]

143 The rendered width of the logo measured in pixels.

144 xml:lang

145 Optional language specifier.

146 In order to facilitate the usage of logos within a user interface, logos SHOULD:

- 147 • use a transparent background where appropriate
- 148 • use PNG, or GIF (less preferred), images
- 149 • use HTTPS URLs in order to avoid mixed-content warnings within browsers

150 The order of logo elements is not significant, and a consumer MAY select any logo that meets its present-
151 ation and internationalization requirements. Communities of use SHOULD establish guidelines or require-
152 ments for logo size, aspect ratio, etc. to ensure consistency. If logos without an xml:lang attribute are
153 present, then they SHOULD be considered the default logos for use when logos in the user's preferred
154 language are not available.

155 Note that while vector graphic formats may be renderable at many sizes, the height and width attrib-
156 utes remain mandatory to allow consumers that lack intelligence regarding image processing to locate im-
157 ages suitable for particular sizes. The same image MAY be specified with multiple sizes when appropri-
158 ate.

159 The schema for the <mdui:Logo> element, and its corresponding **mdui:LogoType** complex type, is as
160 follows:

```
161 <element name="Logo" type="mdui:LogoType"/>  
162 <complexType name="LogoType">  
163   <simpleContent>  
164     <extension base="anyURI">  
165       <attribute name="height" type="positiveInteger" use="required"/>  
166       <attribute name="width" type="positiveInteger" use="required"/>  
167       <attribute ref="xml:lang"/>  
168     </extension>  
169   </simpleContent>  
170 </complexType>
```

171 **2.1.6 Element <mdui:InformationURL>**

172 The <mdui:InformationURL> specifies an external location for localized information about the entity
173 acting in a given role meant to be viewed by users. The content found at the URL SHOULD provide more
174 complete information than what would be provided by the <mdui:Description> element.

175 There MUST NOT be more than one <mdui:InformationURL> element with the same xml:lang at-
176 tribute value within a single role descriptor.

177 The schema for the <mdui:InformationURL> element is as follows:

```
178 <element name="InformationURL" type="md:localizedURIType"/>
```

179 **2.1.7 Element <mdui:PrivacyStatementURL>**

180 The <mdui:PrivacyStatementURL> specifies an external location for localized privacy statements.
181 Such statements are meant to provide a user with information about how information will be used and
182 managed by the entity acting in a given role.

183 There MUST NOT be more than one <mdui:PrivacyStatementURL> element with the same
184 xml:lang attribute value within a single role descriptor.

185 The schema for the <mdui:PrivacyStatementURL> element is as follows:

```
186 <element name="PrivacyStatementURL" type="md:localizedURIType"/>
```

187 2.2 Discovery Hinting Information

188 The discovery hinting extension elements provide information that hints at the identity provider with which
189 a user is associated. A server-side selection mechanism could leverage such hints in conjunction with cli-
190 ent-supplied information to adjust likely choices.

191 Information provided by the content of this element is meant only as a hint and SHOULD NOT be used to
192 definitively select an identity provider without user intervention or confirmation. As a consequence, hints
193 are inappropriate to use in conjunction with discovery protocols or protocol features that would prevent
194 user interaction.

195 The `<mdui:DiscoHints>` container element, defined below, MUST appear within the `<md:Exten-`
196 `sions>` element of an `<md:IDPSSODescriptor>` element. The use of the `<mdui:DiscoHints>` ele-
197 ment, or any other element defined in this section, outside of that context is not defined by this specifica-
198 tion.

199 This element, if it appears, MUST contain at least one child element.

200 Finally, this element MUST NOT appear more than once within a given `<md:Extensions>` element.

201 2.2.1 Element `<mdui:DiscoHints>`

202 The `<mdui:DiscoHints>` element contains information that may be used by an identity provider selec-
203 tion/discovery service as hints in determining with which identity provider(s) the user may be associated.
204 This element contains any number of the following elements, in any order:

205 `<mdui:IPHint>`

206 IP address blocks associated with, or serviced by, the entity operating in the containing role.

207 `<mdui:DomainHint>`

208 DNS domain names associated with, or serviced by, the entity operating in the containing role.

209 `<mdui:GeolocationHint>`

210 Geographic coordinates associated with, or serviced by, the entity operating in the containing
211 role.

212 In addition, this element MAY contain an arbitrary number of extension elements from other namespaces,
213 the definitions/semantics of which must be supplied elsewhere.

214 The schema for the `<mdui:DiscoHints>` element, and its corresponding **mdui:DiscoHintsType** com-
215 plex type, is as follows:

```
216 <element name="DiscoHints" type="mdui:DiscoHintsType"/>  
217 <complexType name="DiscoHintsType">  
218   <choice minOccurs="0" maxOccurs="unbounded">  
219     <element ref="mdui:IPHint"/>  
220     <element ref="mdui:DomainHint"/>  
221     <element ref="mdui:GeolocationHint"/>  
222     <any namespace="##other" processContents="lax"/>  
223   </choice>  
224 </complexType>
```

225 2.2.2 Element `<mdui:IPHint>`

226 The `<mdui:IPHint>` element specifies an [RFC4632] block associated with, or serviced by, the entity.
227 Both IPv4 and IPv6 CIDR blocks MUST be supported.

228 The schema for the `<mdui:IPHint>` element is as follows:

```
229 <element name="IPHint" type="string"/>
```

230 2.2.3 Element `<mdui:DomainHint>`

231 The `<mdui:DomainHint>` element specifies a DNS domain associated with, or serviced by, the entity.

232 The schema for the `<mdui:DomainHint>` element is as follows:

```
233 <element name="DomainHint" type="string"/>
```

234 **2.2.4 Element <mdui:GeolocationHint>**

235 The <mdui:GeolocationHint> element specifies a set of geographic coordinates associated with, or
236 serviced by, the entity. Coordinates are given in URI form using the geo URI scheme [RFC5870].

237 The schema for the <mdui:GeolocationHint> element is as follows:

```
238 <element name="GeolocationHint" type="anyURI"/>
```

239 **2.3 Security Considerations**

240 The information contained in these extensions, as well as the content identified by various URLs, is inten-
241 ded for the construction of user interfaces. As such, special consideration by implementers and deployers
242 is warranted.

243 Any URLs MUST be carefully sanitized and encoded to protect against cross-site scripting and related
244 vulnerabilities. Schemes other than "https", "http", or "data" SHOULD NOT be used.

245 Since it is generally impractical to guarantee the continued safety of content behind a particular URL, the
246 use of "https" URLs is RECOMMENDED, and control over the URLs in question must be carefully estab-
247 lished by the publisher of metadata containing these extensions. Consumers of metadata using these ex-
248 tensions to construct UIs must ensure the provenance of metadata and that the processes by which the
249 extensions are managed by the publisher are sufficiently sound.

250 This is particularly relevant for the <mdui:Logo> element, since such URLs are often dereferenced by
251 the user agent without intervention. Where practical, the use of server-side image processing may enable
252 a higher degree of safety and control over the presentation of images than direct embedding of links to lo-
253 gos.

254 **2.4 Relationship with Existing Metadata Elements**

255 **2.4.1 <md:Organization> Elements**

256 SAML metadata defines localized organizational names, display names, and URLs at both the entity and
257 role level. These elements are meant to reflect information about the organization that "owns" or operates
258 a particular entity. To date, most known identity provider discovery interfaces have relied on entity-level
259 <md:OrganizationDisplayName> element content. Some applications will also display the organiza-
260 tion name for service providers as a means of identifying the service.

261 However, such usage is based on two implicit assumptions:

- 262 • the organization name is recognizable and can be understood by the user within the context that
263 it is used
- 264 • the organization only has one entity operating in a given role at any specific time

265 There are many cases, however, where one or both of these assumption are not true. An example con-
266 flicting with the first assumption may be Virginia Polytechnic Institute and State University, which the
267 world knows as "Virginia Tech". An example that conflicts with both assumptions might be a third-party
268 hosting service. Its name would not be recognized by any user and it could operate many entities at any
269 given time.

270 However, the organizational display name may still be useful, for example within "owned by..." or "oper-
271 ated by..." statements.

272 **2.4.2 Service Name and Description**

273 Entities with a <md:SPSSODescriptor> role may optionally include one or more <md:AttributeCon-
274 sumingService> elements which in turn contain <md:ServiceName> and <md:ServiceDescrip-
275 tion> elements. These elements are normally used to expose the attribute requirements for various ser-
276 vice "levels" and to associate certain names and descriptions with them.

277 The following issues make these elements inappropriate for carrying a general display name and descrip-
278 tion for the service:

- 279 • other role elements have no analogous elements
- 280 • some services do not require attributes, but the <md:AttributeConsumingService> element
281 requires the inclusion of one or more <md:RequestedAttribute> elements
- 282 • one typical usage for these elements may not convey a name and description for the service it-
283 self, but rather for some aspect of the service (e.g., a service level, or a type of access)

284 2.4.3 Suggested Precedence

285 Implementations that rely on display name information SHOULD rely on elements in the following order of
286 preference:

- 287 • <mdui:DisplayName>
- 288 • <md:ServiceName> (if applicable)
- 289 • entityID or a hostname associated with the endpoint of the service

290 As a consequence, entities may rely on the existing <md:ServiceName> (or where appropriate the
291 <md:ServiceDescription>) element by omitting the <mdui:DisplayName> (or <mdui:Descrip-
292 tion>) element from their metadata.

293 Note that when multiple <md:AttributeConsumingService> elements are used, some identity or dis-
294 covery protocols may lack the ability to signal which of the multiple elements is relevant to a request. In
295 such deployments, limiting the cardinality to a single element or requiring the use of the <mdui:Dis-
296 playName> element may be necessary.

297 Implementations MAY support the use of <md:OrganizationDisplayName>, particularly as a migra-
298 tion strategy, but this is not recommend this as a general practice.

299 2.5 Example

300 An elided example follows.

```
301 <EntityDescriptor entityID="https://idp.switch.ch/idp/shibboleth"  
302                 xmlns="urn:oasis:names:tc:SAML:2.0:metadata"  
303                 xmlns:mdui="urn:oasis:names:tc:SAML:metadata:ui">  
  
304   <IDPSSODescriptor  
305     protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol">  
306     <Extensions>  
307       <mdui:UIInfo>  
  
308         <mdui:DisplayName xml:lang="en">SWITCH</mdui:DisplayName>  
309         <mdui:DisplayName xml:lang="de">SWITCH</mdui:DisplayName>  
310  
311         <mdui:Description xml:lang="en">  
312           Switzerland's national research and education network.  
313         </mdui:Description>  
314         <mdui:Description xml:lang="de">  
315           Das schweizerische Hochschul- und Forschungsnetzwerk.  
316         </mdui:Description>  
  
317         <mdui:Logo height="16" width="16">  
318           https://switch.ch/resources/images/smalllogo.png  
319         </mdui:Logo>  
320         <mdui:Logo height="97" width="172">  
321           https://switch.ch/resources/images/logo.png  
322         </mdui:Logo>  
  
323         <mdui:InformationURL xml:lang="en">  
324           http://switch.ch  
325         </mdui:InformationURL>  
326         <mdui:InformationURL xml:lang="de">  
327           http://switch.ch/de  
328         </mdui:InformationURL>  
  
329       </mdui:UIInfo>  
  
330     <mdui:DiscoHints>  
  
331       <mdui:IPHint>130.59.0.0/16</mdui:IPHint>  
332       <mdui:IPHint>2001:620::0/96</mdui:IPHint>  
  
333       <mdui:DomainHint>switch.ch</mdui:DomainHint>  
  
334       <mdui:GeolocationHint>geo:47.37328,8.531126</mdui:GeolocationHint>
```

```
335     </mdui:DiscoHints>
336 </Extensions>
337     <!-- other role-level elements -->
338 </IDPSSODescriptor>
339 </EntityDescriptor>
```

340 **3 Conformance**

341 **3.1 SAML V2.0 Metadata Extensions for Login and Discovery User** 342 **Interface Version 1.0**

343 A metadata producer conforms to this profile if it has the ability to produce metadata in accordance with
344 sections 2.1 and 2.2.

345 A metadata consumer conforms to this profile if it can consume extended metadata produced in accord-
346 ance with sections 2.1 and 2.2.

347 An identity provider discovery service or agent conforms to this profile if it has the ability to consume and
348 utilize extended metadata produced in accordance with sections 2.1, 2.2, and 2.4.3.

349 **Appendix A Acknowledgments**

350 The editor would like to acknowledge the contributions of the OASIS Security Services Technical Commit-
351 tee, whose voting members at the time of publication were:

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- 360 • Rod Widdowson, EDINA, University of Edinburgh
- 361 • Ian Young, EDINA, University of Edinburgh

362 Appendix B Revision History

363 Working Draft 10:

- 364 • Address public comments from [http://wiki.oasis-open.org/security/PublicComments20111014-](http://wiki.oasis-open.org/security/PublicComments20111014-20111113)

365 [20111113](http://wiki.oasis-open.org/security/PublicComments20111014-20111113)

366 Working Draft 09:

- 367 • Clarify lack of support for '+' in keywords
- 368 • s/then/than

369 Working Draft 08:

- 370 • Fix namespace in example

371 Working Draft 07:

- 372 • Remove normative reference to schema (can't be kept current with document process)
- 373 • Allow for spaces in keywords using '+' escape
- 374 • Add security considerations section
- 375 • Add TC member list

376 Working Draft 06:

- 377 • Add `<Keywords>` element as a search "catch-all"

378 Working Draft 05:

- 379 • Fix typo
- 380 • Reword "languageless logo" text and move together with other logo use guideline text

381 Working Draft 04:

- 382 • Migrated text to new OASIS template and filename
- 383 • Removed specific logo guidance in favor of generic advice
- 384 • Added fallback option to hostnames in addition to entityID
- 385 • Better guidance on intended use of elements and scope of specification

386 Working Draft 03:

- 387 • Fixed namespace in section 1 table
- 388 • Add limit on one wrapper element per Extensions block
- 389 • Improve example to reflect guidance in spec
- 390 • Add note about accessibility to DisplayName

391 Working Draft 02:

- 392 • Fixed missing wildcard in schema
- 393 • Corrected some typos
- 394 • Removed ODN from fallback precedence

395 Working Draft 01

- 396 • Initial OASIS submission
- 397 • Removed SAML version number from namespace for consistency with other extensions
- 398 • Various editorial rewording and combining of normative sections, externalized the schema.
- 399 • Added conformance section
- 400 • Changed base type of `<Logo>` to URI, and switched `<GeolocationHint>` to URI based on
- 401 `RFC5870`
- 402 • Added wildcards to wrapper elements, changed them to choice bags

403 Presubmission Changes:

404 Changes to Draft 03:

- 405 • Correct typo in DiscoHints schema; the 's' was missing from Hints
- 406 • Add a couple examples where the assumptions noted in section 2.3.1 do not hold
- 407 • Minor typographical corrections

408 Changes to Draft 02:

- 409 • Add SAML version number to declared namespace
- 410 • Add `<UIInfo>` and `<DiscoHints>`

411 Changes to Draft 01:

- 412 • Move from the use of metadata entity attributes to direct XML elements located with in role `<Ex-`
- 413 `tensions>` elements

- 414 • Make `xml:lang` attribute on `<Logo>` elements optional with the lack of language indicating the
- 415 default logo to use
- 416 • Add `<PrivacyStatementURL>` element