



European Network of
Transmission System Operators
for Electricity

IMPACT ASSESSMENT MATRIX PROFILE SPECIFICATION

2026-09-10

ICTC APPROVED
VERSION 2.4.1

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Revision History

Version	Date	Paragraph	Comments
1.0.0	2021-03-22		Document for SOC approval
2.0.0	2021-10-12		For CIM EG review. No major update. Due to update of the extensions some elements are updated.
2.0.0	2022-02-16		No major update. Due to update of the extensions some elements are updated. SOC approved.
2.1.0	2022-09-21		SOC approved.
2.2.0	2023-03-24		For review.
2.2.0	2023-04-20		For ICTC approval.
2.3.0-alpha	2024-03-20		For CIM WG review.
2.3.1-alpha	2024-09-07		For CIM WG review.
2.4.0	2025-09-11		ICTC approval.
2.4.1	2026-08-05		For CIM WG review.
2.4.1	2026-09-10		ICTC approval.

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1 Introduction

The impact assessment matrix profile is a profile to exchange impact assessment matrices that are needed within the process.

The impact assessment matrix is an output of the impact assessment done on proposed remedial actions.

Three impact assessment matrices can be exchanged: list-based impact assessment matrix, calculation-based impact assessment matrix and connecting impact assessment matrix.

2 Application profile specification

2.1 Version information

The content is generated from UML model file CIM17-2_CGMES31v01_PROF-20v03_NC25v25_MS10v12_DES10v01.qea.

This edition is based on the IEC 61970 UML version “”, dated “”.

- Title:
- Keyword:
- Description:
- Version IRI:
- Version info:
- Prior version:
- Conforms to:
- Identifier:

2.2 Constraints naming convention

The naming of the rules shall not be used for machine processing. The rule names are just a string. The naming convention of the constraints is as follows.

“{rule.Type}:{rule.Standard}:{rule.Profile}:{rule.Property}:{rule.Name}”

where

rule.Type: C – for constraint; R – for requirement

rule.Standard: the number of the standard e.g. 301 for 61970-301, 456 for 61970-456, 13 for 61968-13. 61970-600 specific constraints refer to 600 although they are related to one or combination of the 61970-450 series profiles. For NC profiles, NC is used.

rule.Profile: the abbreviation of the profile, e.g. TP for Topology profile. If set to “ALL” the constraint is applicable to all IEC 61970-600 profiles.

rule.Property: for UML classes, the name of the class, for attributes and associations, the name of the class and attribute or association end, e.g. EnergyConsumer, IdentifiedObject.name, etc. If set to “NA” the property is not applicable to a specific UML element.

rule.Name: the name of the rule. It is unique for the same property.

153 Example: C:600:ALL:IdentifiedObject.name:stringLength

154 2.3 Profile constraints

155 This clause defines requirements and constraints that shall be fulfilled by applications that
156 conform to this document.

157 This document is the master for rules and constraints tagged "NC". For the sake of self-
158 containment, the list below also includes a copy of the relevant rules from IEC 61970-452,
159 tagged "452".

160 • C:452:ALL:NA:datatypes

161 According to 61970-501, datatypes are not exchanged in the instance data. The
162 UnitMultiplier is 1 in cases none value is specified in the profile.

163 • R:452:ALL:NA:exchange

164 Optional and required attributes and associations must be imported and exported if they
165 are in the model file prior to import.

166 • R:452:ALL:NA:exchange1

167 If an optional attribute does not exist in the imported file, it does not have to be exported
168 in case exactly the same data set is exported, i.e. the tool is not obliged to automatically
169 provide this attribute. If the export is resulting from an action by the user performed after
170 the import, e.g. data processing or model update the export can contain optional
171 attributes.

172 • R:452:ALL:NA:exchange2

173 In most of the profiles the selection of optional and required attributes is made so as to
174 ensure a minimum set of required attributes without which the exchange does not fulfil
175 its basic purpose. Business processes governing different exchanges can require
176 mandatory exchange of certain optional attributes or associations. Optional and required
177 attributes and associations shall therefore be supported by applications which claim
178 conformance with certain functionalities of the IEC 61970-452. This provides flexibility
179 for the business processes to adapt to different business requirements and base the
180 exchanges on IEC 61970-452 compliant applications.

181 • R:452:ALL:NA:exchange3

182 An exporter may, at his or her discretion, produce a serialization containing additional
183 class data described by the CIM Schema but not required by this document provided
184 these data adhere to the conventions established in Clause 5.

185 • R:452:ALL:NA:exchange4

186 From the standpoint of the model import used by a data recipient, the document
187 describes a subset of the CIM that importing software shall be able to interpret in order
188 to import exported models. Data providers are free to exceed the minimum requirements
189 described herein as long as their resulting data files are compliant with the CIM Schema
190 and the conventions established in Clause 5. The document, therefore, describes
191 additional classes and class data that, although not required, exporters will, in all
192 likelihood, choose to include in their data files. The additional classes and data are
193 labelled as required (cardinality 1..1) or as optional (cardinality 0..1) to distinguish them
194 from their required counterparts. Please note, however, that data importers could
195 potentially receive data containing instances of any and all classes described by the
196 CIM Schema.

- 197 • R:452:ALL:NA:cardinality
- 198 The cardinality defined in the CIM model shall be followed, unless a more restrictive
- 199 cardinality is explicitly defined in this document. For instance, the cardinality on the
- 200 association between VoltageLevel and BaseVoltage indicates that a VoltageLevel shall
- 201 be associated with one and only one BaseVoltage, but a BaseVoltage can be associated
- 202 with zero to many VoltageLevels.
- 203 • R:452:ALL:NA:associations
- 204 Associations between classes referenced in this document and classes not referenced
- 205 here are not required regardless of cardinality.
- 206 • R:452:ALL:IdentifiedObject.name:rule
- 207 The attribute “name” inherited by many classes from the abstract class IdentifiedObject
- 208 is not required to be unique. It must be a human readable identifier without additional
- 209 embedded information that would need to be parsed. The attribute is used for purposes
- 210 such as User Interface and data exchange debugging. The MRID defined in the data
- 211 exchange format is the only unique and persistent identifier used for this data exchange.
- 212 The attribute IdentifiedObject.name is, however, always required for CoreEquipment
- 213 profile and Short Circuit profile.
- 214 • R:452:ALL:IdentifiedObject.description:rule
- 215 The attribute “description” inherited by many classes from the abstract class
- 216 IdentifiedObject must contain human readable text without additional embedded
- 217 information that would need to be parsed.
- 218 • R:452:ALL:NA:uniqueIdentifier
- 219 All IdentifiedObject-s shall have a persistent and globally unique identifier (Master
- 220 Resource Identifier - mRID).
- 221 • R:452:ALL:NA:unitMultiplier
- 222 For exchange of attributes defined using CIM Data Types (ActivePower, Susceptance,
- 223 etc.) a unit multiplier of 1 is used if the UnitMultiplier specified in this document is “none”.
- 224 • C:452:ALL:IdentifiedObject.name:stringLength
- 225 The string IdentifiedObject.name has a maximum of 128 characters.
- 226 • C:452:ALL:IdentifiedObject.description:stringLength
- 227 The string IdentifiedObject.description is maximum 256 characters.
- 228 • C:452:ALL:NA:float
- 229 An attribute that is defined as float (e.g. has a type Float or a type which is a Datatype
- 230 with .value attribute of type Float) shall support ISO/IEC 60559:2020 for floating-point
- 231 arithmetic using single precision floating point. A single precision float supports 7
- 232 significant digits where the significant digits are described as an integer, or a decimal
- 233 number with 6 decimal digits. Two float values are equal when the significant with 7
- 234 digits are identical, e.g. 1234567 is equal 1.234567E6 and so are 1.2345678 and
- 235 1.234567E0.
- 236 • R:NC:ALL:Region:reference

237 The reference to the Region is normally a reference to the capacity calculation region,
238 which is identified by “Y” EIC code of the capacity calculation region.

- 239 • R:NC:ALL:SystemOperator:reference

240 The reference to the System Operator is normally identified by “X” EIC code of TSO.

- 241 • C:NC:IAM:ListBasedImpactAssessmentMatrix:outcomeValue

242 For a ListBasedImpactAssessmentMatrix, RemedialActionScheduleOutcomeValue shall
243 not be exchanged.

- 244 • C:NC:IAM:CalculationBasedImpactAssessmentMatrix:outcomeValue

245 For a CalculationBasedImpactAssessmentMatrix, RemedialActionOutcomeValue shall
246 not be exchanged.

- 247 • C:NC:IAM:ConnectingImpactAssessmentMatrix:outcomeValue

248 For a ConnectingImpactAssessmentMatrix, shall have either
249 RemedialActionScheduleOutcomeValue or RemedialActionOutcomeValue.

- 250 • R:NC:ALL:NA:serialization

251 The profiles are defined in the EnterpriseArchitect application and have multiple artifacts
252 that describe them. The main artifacts are:

- 253 1) the EAP file (EnterpriseArchitect project file),
- 254 2) the profiles' specification document and
- 255 3) the application profiles (RDFS and SHACL).

256 Due to the complexity of the profiles, there are various cross profile associations that,
257 from profiling and profile maintenance point of view, it is not practical to include the
258 complete inheritance structure in all profiles. If this is done the documentation provided
259 for all profiles would also include duplicated information on the description of classes
260 defined in other profiles. The following cases are often observed in profiles:

- 261 ○ Case 1: An association end refers to an abstract class
- 262 ○ Case 2: An abstract class (stereotyped with “Description”) has an association
263 (direction to another class)
- 264 ○ Case 3: An abstract class (not stereotyped with “Description”) has an
265 association (direction to another class)
- 266 ○ Case 4: An abstract class has attributes and subclasses are not in the profile

267 In all cases, the datasets shall only include the subtypes of the abstract classes with
268 the related properties (i.e. association or attributes) defined in the profile. The
269 information is taken from either canonical model or the profiles where complete
270 (expected) inheritance structure for the related abstract class is described. SHACL
271 based constraints include constraints only for the concrete classes that are subtypes of
272 the abstract class in the profile, and this can be used to inform which are the concrete
273 classes expected in a dataset that conforms to this profile.

274 It should be taken into account that this approach deviates from MVAL5 (IEC 61970-
275 600-1:2021), which creates multiple inheritance at serialization. For instance, with this
276 more explicit exchange the serialization of the association between abstract class
277 Equipment and abstract class Circuit for a PowerTransformer will be serialized as
278 follows:

- 279 ○ for association

280 <cim:PowerTransformer rdf:about="_c328f787-bc17-47ad-a59f-6ba7133340d0">

281 <nc:Equipment.Circuit rdf:resource="#_9ced16ac-d076-4ef9-a241-a998a579e77b"/>

282 </cim:PowerTransformer>

283 ○ for attribute

284 <cim:ACLineSegment rdf:about="_04f681aa-6999-4fb3-9775-acaa5eb7ceff">

285 <cim:Equipment.inService>true</cim:Equipment.inService>

286 </cim:ACLineSegment>

287 The usage of rdf:ID or rdf:about depends on the stereotype of the class. rdf:about is
288 used if the class has the stereotype "Description".

289 An example of not allowed serialization, as the Equipment is an abstract class

290 <cim:Equipment rdf:about="_c328f787-bc17-47ad-a59f-6ba7133340d0">

291 <nc:Equipment.Circuit rdf:resource="#_9ced16ac-d076-4ef9-a241-a998a579e77b"/>

292 </cim:Equipment>

293 • C:NC:IAM:RemedialActionImpact:associations

294 A RemedialActionImpact shall have either RemedialActionGroup or RemedialAction
295 associated with it.

296 • C:NC:IAM:RemedialActionOutcomeValue:associations

297 A RemedialActionOutcomeValue shall have either RemedialActionGroup or
298 RemedialAction associated with it.

299

300

301

302 2.4 Metadata

303 ENTSO-E agreed to extend the header and metadata definitions by IEC 61970-552 Ed2. This
304 new header definitions rely on W3C recommendations which are used worldwide and are
305 positively recognised by the European Commission. The new definitions of the header mainly
306 use Provenance ontology (PROV-O), Time Ontology and Data Catalog Vocabulary (DCAT). The
307 global new header applicable for this profile is included in the metadata and document header
308 specification document.

309 The header vocabulary contains all attributes defined in IEC 61970-552. This is done only for
310 the purpose of having one vocabulary for header and to ensure transition for data exchanges
311 that are using IEC 61970-552:2016 header. This profile does not use IEC 61970-552:2016
312 header attributes and relies only on the extended attributes.

313 2.4.1 Constraints

314 The identification of the constraints related to the metadata follows the same convention for
315 naming of the constraints as for profile constraints.

316 • R:NC:ALL:wasAttributedTo:usage

317 The prov:wasAttributedTo should normally be the "X" EIC code of the actor or their URI
318 (prov:Agent).

319

320 2.4.2 Reference metadata

The header defined for this profile requires availability of a set of reference metadata. For instance, the attribute `prov:wasGeneratedBy` requires a reference to an activity which produced the model or the related process. The activities are defined as reference metadata and their identifiers are referenced from the header to enable the receiving entity to retrieve the “static” (reference) information that is not modified frequently. This approach imposes a requirement that both the sending entity and the receiving entity have access to a unique version of the reference metadata. Therefore, each business process shall define which reference metadata is used and where it is located.

329 **3 Detailed Profile Specification**

330 3.1 General

331 This package contains impact assessment matrix profile.

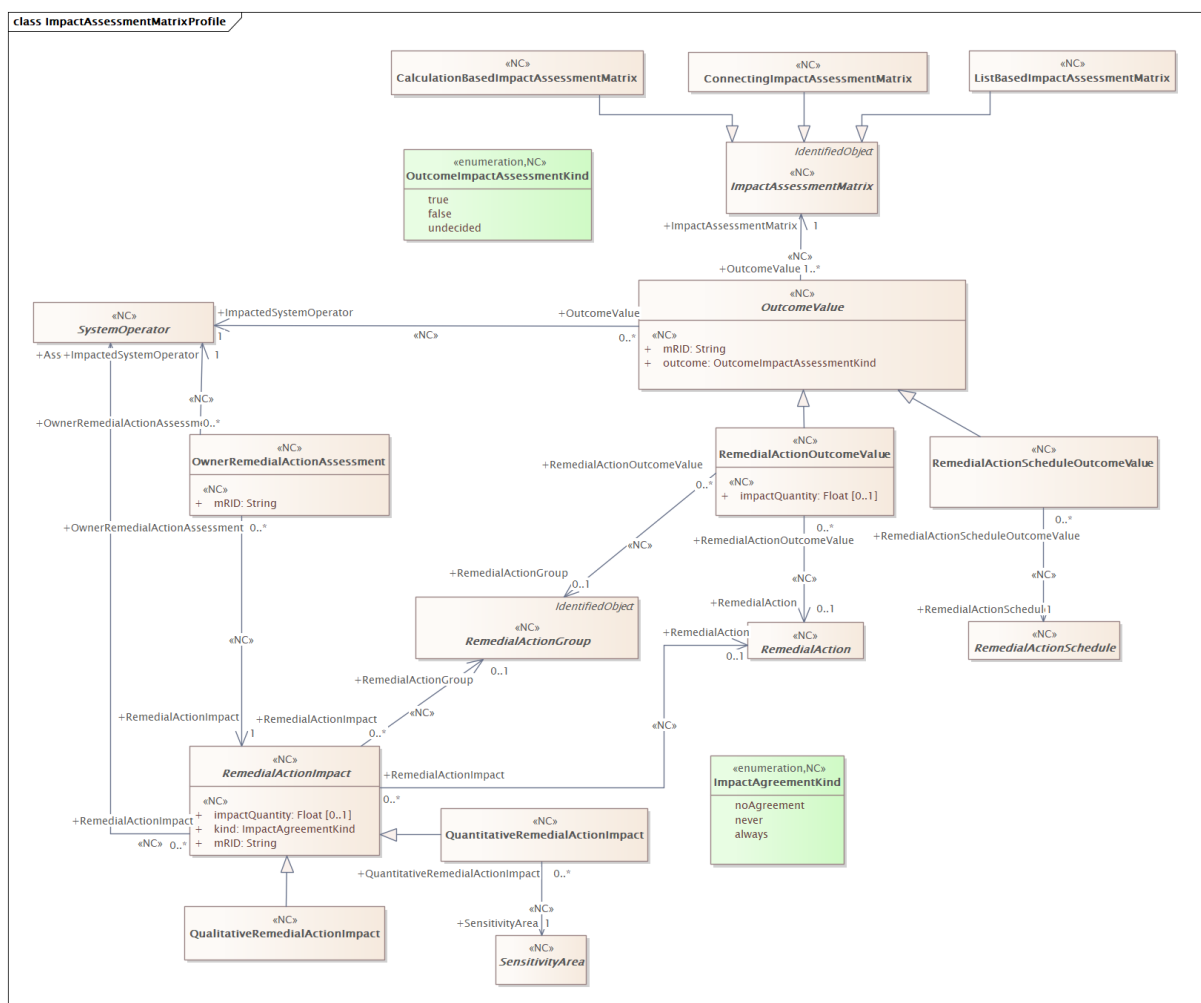


Figure 1 – Class diagram
ImpactAssessmentMatrixProfile::ImpactAssessmentMatrixProfile

Figure 1: The diagram contains the main classes used in the profile.

3.2 (abstract) IdentifiedObject root class

This is a root class to provide common identification for all classes needing identification and naming attributes.

Table 1 shows all attributes of IdentifiedObject.

Table 1 – Attributes of ImpactAssessmentMatrixProfile::IdentifiedObject

name	mult	type	description
description	0..1	String	The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy.
mRID	1..1	String	Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID, as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended. For CIMXML data files in RDF syntax conforming to IEC 61970-552, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.
name	0..1	String	The name is any free human readable and possibly non unique text naming the object.

3.3 (NC) ImpactAgreementKind enumeration

The impact agreement for the remedial action.

Table 2 shows all literals of ImpactAgreementKind.

Table 2 – Literals of ImpactAssessmentMatrixProfile::ImpactAgreementKind

literal	value	description
noAgreement		No agreement is reached on the qualitative impact of a remedial action.
never		An agreement is reached that a remedial action is never impacting.
always		An agreement is reached that the remedial action is always impacting whichever the intensity.

3.4 (NC) OutcomeImpactAssessmentKind enumeration

Outcome impact assessments kinds.

Table 3 shows all literals of OutcomeImpactAssessmentKind.

Table 3 – Literals of ImpactAssessmentMatrixProfile::OutcomeImpactAssessmentKind

literal	value	description
true		True.
false		False.
undecided		Undecided. Used only for list-based impact assessment matrix.

3.5 Float primitive

A floating point number. The range is unspecified and not limited.

3.6 String primitive

A string consisting of a sequence of characters. The character encoding is UTF-8. The string length is unspecified and unlimited.

3.7 (NC) CalculationBasedImpactAssessmentMatrix

Inheritance path = [ImpactAssessmentMatrix](#) : [IdentifiedObject](#)

Calculation based impact assessment matrix. It relates to the remedial action schedule. Calculation-Based is the impact matrix determined by calculating the impact factors (eventually scaled by the intensity of the remedial action) and matching them against a threshold in a determined way described by the methodologies.

Table 4 shows all attributes of CalculationBasedImpactAssessmentMatrix.

**Table 4 – Attributes of
ImpactAssessmentMatrixProfile::CalculationBasedImpactAssessmentMatrix**

name	mult	type	description
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

3.8 (NC) ConnectingImpactAssessmentMatrix

Inheritance path = [ImpactAssessmentMatrix](#) : [IdentifiedObject](#)

Connecting system operator matrix is the impact matrix indicating which system operators are connecting for that specific remedial action. The concept of connecting system operator for a remedial action is defined by CSAm Article 2.1(14).

Table 5 shows all attributes of ConnectingImpactAssessmentMatrix.

**Table 5 – Attributes of
ImpactAssessmentMatrixProfile::ConnectingImpactAssessmentMatrix**

name	mult	type	description
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

3.9 (abstract,NC) ImpactAssessmentMatrix

Inheritance path = [IdentifiedObject](#)

The result of an impact assessment analysis for each remedial action or remedial action schedule onto the grid and operation of each system operator.

Table 6 shows all attributes of ImpactAssessmentMatrix.

Table 6 – Attributes of ImpactAssessmentMatrixProfile::ImpactAssessmentMatrix

name	mult	type	description
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

3.10 (NC) ListBasedImpactAssessmentMatrix

Inheritance path = [ImpactAssessmentMatrix](#) : [IdentifiedObject](#)

List-Based is the impact matrix determined by agreement of the system operators involved. System operators jointly decide which Remedial Action (eventually scaled by the intensity of the remedial action) is impacting.

Table 7 shows all attributes of ListBasedImpactAssessmentMatrix.

**Table 7 – Attributes of
ImpactAssessmentMatrixProfile::ListBasedImpactAssessmentMatrix**

name	mult	type	description
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

3.11 (abstract,NC) OutcomeValue root class

Outcome of an impact assessment matrix.

Table 8 shows all attributes of OutcomeValue.

Table 8 – Attributes of ImpactAssessmentMatrixProfile::OutcomeValue

name	mult	type	description
outcome	1..1	OutcomeImpactAssessmentKind	(NC) Outcome value.
mRID	1..1	String	(NC) Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID, as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended. For CIMXML data files in RDF syntax conforming to IEC 61970-552, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.

Table 9 shows all association ends of OutcomeValue with other classes.

Table 9 – Association ends of ImpactAssessmentMatrixProfile::OutcomeValue with other classes

mult from	name	mult to	type	description
1..*	ImpactAssessmentMatrix	1..1	ImpactAssessmentMatrix	(NC) the impact assessment matrix which has this value.
0..*	ImpactedSystemOperator	1..1	SystemOperator	(NC) The impacted system operator that has an outcome value.

3.12 (NC) OwnerRemedialActionAssessment root class

Owner remedial action assessment of the impact of their remedial action on neighboring system operators.

Table 10 shows all attributes of OwnerRemedialActionAssessment.

**Table 10 – Attributes of
ImpactAssessmentMatrixProfile::OwnerRemedialActionAssessment**

name	mult	type	description
mRID	1..1	String	(NC) Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily

name	mult	type	description
			achieved by using a UUID, as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended. For CIMXML data files in RDF syntax conforming to IEC 61970-552, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.

Table 11 shows all association ends of OwnerRemedialActionAssessment with other classes.

**Table 11 – Association ends of
ImpactAssessmentMatrixProfile::OwnerRemedialActionAssessment with other classes**

mult from	name	mult to	type	description
0..*	RemedialActionImpact	1..1	RemedialActionImpact	(NC) Remedial action impact which is evaluated by the owner of the remedial action.
0..*	ImpactedSystemOperator	1..1	SystemOperator	(NC) System operator that is evaluated to be impacted by the remedial action done by the remedial action owner.

3.13 (NC) QualitativeRemedialActionImpact

Inheritance path = [RemedialActionImpact](#)

Defines the qualitative impact for a remedial action. Relevant remedial action is assumed to have impact when the impact quantity is applied.

Table 12 shows all attributes of QualitativeRemedialActionImpact.

**Table 12 – Attributes of
ImpactAssessmentMatrixProfile::QualitativeRemedialActionImpact**

name	mult	type	description
impactQuantity	0..1	Float	(NC) inherited from: RemedialActionImpact
kind	1..1	ImpactAgreementKind	(NC) inherited from: RemedialActionImpact
mRID	1..1	String	(NC) inherited from: RemedialActionImpact

Table 13 shows all association ends of QualitativeRemedialActionImpact with other classes.

**Table 13 – Association ends of
ImpactAssessmentMatrixProfile::QualitativeRemedialActionImpact with other classes**

mult from	name	mult to	type	description
0..*	RemedialAction	0..1	RemedialAction	(NC) inherited from: RemedialActionImpact
0..*	RemedialActionGroup	0..1	RemedialActionGroup	(NC) inherited from: RemedialActionImpact
0..*	AssessingSystemOperator	1..1	SystemOperator	(NC) inherited from: RemedialActionImpact

3.14 (NC) QuantitativeRemedialActionImpact

Inheritance path = [RemedialActionImpact](#)

Defines the quantitative impact for a remedial action. The value if the impact quantity is derived through offline calculation that has caused an impact of an element that is monitored by the assessed system operator higher than the relevant threshold for the conducting equipment.

Table 14 shows all attributes of QuantitativeRemedialActionImpact.

**Table 14 – Attributes of
ImpactAssessmentMatrixProfile::QuantitativeRemedialActionImpact**

name	mult	type	description
impactQuantity	0..1	Float	(NC) inherited from: RemedialActionImpact
kind	1..1	ImpactAgreementKind	(NC) inherited from: RemedialActionImpact
mRID	1..1	String	(NC) inherited from: RemedialActionImpact

Table 15 shows all association ends of QuantitativeRemedialActionImpact with other classes.

**Table 15 – Association ends of
ImpactAssessmentMatrixProfile::QuantitativeRemedialActionImpact with other classes**

mult from	name	mult to	type	description
0..*	SensitivityArea	1..1	SensitivityArea	(NC) Sensitivity area which should be monitored to evaluate the threshold given by the remedial action impact on relevant equipment.
0..*	RemedialAction	0..1	RemedialAction	(NC) inherited from: RemedialActionImpact
0..*	RemedialActionGroup	0..1	RemedialActionGroup	(NC) inherited from: RemedialActionImpact
0..*	AssessingSystemOperator	1..1	SystemOperator	(NC) inherited from: RemedialActionImpact

3.15 (abstract,NC) RemedialAction root class

Remedial action describes one or more actions that can be performed on a given power system model situation to eliminate one or more identified breaches of constraints. The remedial action can be costly, and have a cost characteristic, or non costly.

3.16 (abstract,NC) RemedialActionGroup

Inheritance path = [IdentifiedObject](#)

Grouping of remedial actions that can be operated together.

Table 16 shows all attributes of RemedialActionGroup.

Table 16 – Attributes of ImpactAssessmentMatrixProfile::RemedialActionGroup

name	mult	type	description
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

3.17 (abstract,NC) RemedialActionImpact root class

Remedial action impact assessment based on a given agreement with a specific system operator.

Table 17 shows all attributes of RemedialActionImpact.

Table 17 – Attributes of ImpactAssessmentMatrixProfile::RemedialActionImpact

name	mult	type	description
impactQuantity	0..1	Float	(NC) Delta, positive or negative, quantity that when it is applied to the remedial action, it will

name	mult	type	description
			cause impact on a conducting equipment monitored by the assessed system operator. Example of relevant remedial action changes are redispatching, countertrading, change of set point on HVDC systems or change of taps on phase-shifting transformers.
kind	1..1	ImpactAgreementKind	(NC) The impact agreement kind.
mRID	1..1	String	(NC) Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID, as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended. For CIMXML data files in RDF syntax conforming to IEC 61970-552, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.

Table 18 shows all association ends of RemedialActionImpact with other classes.

Table 18 – Association ends of ImpactAssessmentMatrixProfile::RemedialActionImpact with other classes

mult from	name	mult to	type	description
0..*	RemedialAction	0..1	RemedialAction	(NC) The remedial action that has an impact.
0..*	RemedialActionGroup	0..1	RemedialActionGroup	(NC) The remedial action group that has an impact.
0..*	AssessingSystemOperator	1..1	SystemOperator	(NC) The impacted System Operator that assigns a remedial action impact.

3.18 (NC) RemedialActionOutcomeValue

Inheritance path = [OutcomeValue](#)

Outcome of an impact assessment matrix for a remedial action.

Table 19 shows all attributes of RemedialActionOutcomeValue.

Table 19 – Attributes of ImpactAssessmentMatrixProfile::RemedialActionOutcomeValue

name	mult	type	description
impactQuantity	0..1	Float	(NC) Delta, positive or negative, quantity that when it is applied to the remedial action, it will cause impact on a conducting equipment monitored by the assessed system operator. Example of relevant remedial action changes are redispatching, countertrading, change of set point on HVDC systems or change of taps on phase-shifting transformers.
outcome	1..1	OutcomeImpactAssessmentKind	(NC) inherited from: OutcomeValue
mRID	1..1	String	(NC) inherited from: OutcomeValue

Table 20 shows all association ends of RemedialActionOutcomeValue with other classes.

Table 20 – Association ends of ImpactAssessmentMatrixProfile::RemedialActionOutcomeValue with other classes

mult from	name	mult to	type	description
0..*	RemedialActionGroup	0..1	RemedialActionGroup	(NC) The remedial action group that has a remedial action group outcome value.
0..*	RemedialAction	0..1	RemedialAction	(NC) The remedial action that has a remedial action outcome value.
1..*	ImpactAssessmentMatrix	1..1	ImpactAssessmentMatrix	(NC) inherited from: OutcomeValue
0..*	ImpactedSystemOperator	1..1	SystemOperator	(NC) inherited from: OutcomeValue

3.19 (abstract,NC) RemedialActionSchedule root class

A schedule for a determined remedial action.

3.20 (NC) RemedialActionScheduleOutcomeValue

Inheritance path = [OutcomeValue](#)

Outcome of an impact assessment matrix for a remedial action schedule.

Table 21 shows all attributes of RemedialActionScheduleOutcomeValue.

Table 21 – Attributes of ImpactAssessmentMatrixProfile::RemedialActionScheduleOutcomeValue

name	mult	type	description
outcome	1..1	OutcomeImpactAssessmentKind	(NC) inherited from: OutcomeValue
mRID	1..1	String	(NC) inherited from: OutcomeValue

Table 22 shows all association ends of RemedialActionScheduleOutcomeValue with other classes.

Table 22 – Association ends of ImpactAssessmentMatrixProfile::RemedialActionScheduleOutcomeValue with other classes

mult from	name	mult to	type	description
0..*	RemedialActionSchedule	1..1	RemedialActionSchedule	(NC) The remedial action schedule that has a remedial action schedule outcome value.
1..*	ImpactAssessmentMatrix	1..1	ImpactAssessmentMatrix	(NC) inherited from: OutcomeValue
0..*	ImpactedSystemOperator	1..1	SystemOperator	(NC) inherited from: OutcomeValue

3.21 (abstract,NC) SensitivityArea root class

A monitoring area that defines the required observability area given by the sensitivity factors.

3.22 (abstract,NC) SystemOperator root class

A power system operation post responsible for performing and coordinating the real-time and planning functions required to maintain the secure, reliable, and efficient operation of the power system within a defined operational scope.

488 Note: SystemOperator represents the execution of power system operational responsibilities in
489 practice. While the operational post exists independently at the ecosystem level,
490 SystemOperator identifies the specific agent fulfilling that responsibility at a given time. The
491 operational scope may correspond to a control area, network, voltage domain, or other defined
492 boundary.

493

494

495 **Annex A (informative): Sample data**

496 **A.1 General**

497 This Annex is designed to illustrate the profile by using fragments of sample data. It is not meant
498 to be a complete set of examples covering all possibilities of using the profile. Defining a
499 complete set of test data is considered a separate activity to be performed for the purpose of
500 setting up interoperability testing and conformity related to this profile.

501 **A.2 Sample instance data**

502 Test data files are available in the CIM EG SharePoint.