## Validation results

### Validation reports and representations

The primary result of a greenfox validation is an RDF graph called the **white validation report**. This is mapped to the **red validation report**, an RDF graph obtained by removing from a white report all triples triggered by successfully completed constraint checks. For red and white validation reports a **canonical XML representation** is defined. Apart from that there are implementation-dependent **derived representations** which may use any data model and mediatype.

The **white validation report** is an RDF graph with exactly one SHACL instance [x.x] of gx:ValidationReport. The instance has the following properties:

* gx:conforms, with an xsd:boolean value indicating conformance
* gx:result, with one value …
  + for each constraint violation (“red and yellow values”)
  + for each instance of constraint validation (combination of focus resource and constraint) which did not produce a violation (“green values”)

The **red validation report** is an RDF graph obtained by removing from the white validation report all green result values. Note that the validation report defined by the SHACL language [x.x] corresponds to the red validation report defined by greenfox.

The **canonical XML representation** of a white or red validation report is an XML document with a <gx:validationReport> root element, which has for each gx:result value from the RDF graph one child element, which is a <gx:red>, <gx:yellow>, <gx:green> or <gx:white> element, according to the gx:result/gx:severity property value being gx:Violation, gx:Warning, gx:Info or gx:Observation).

A **derived representation** is any kind of data structure, using any mediatype, representing information content from the white or red validation report in an implementation-defined way.

### Validation result

A **validation result** is a unit of information which either describes a constraint violation (“red” or “yellow” result) or a successful validation of a focus resource against a constraint (“green” result).

A validation result is an RDF resource with several properties as described below. A key feature of the result model is that …

* Every result is related to an individual file system resource (file or folder)
* Every result is related to an individual constraint (and, by implication, a shape)

This allows for meaningfull aggregation by resource, by constraint and by shape and, by implication, any combination of aggregated resources, constraints and shapes. Such aggregation may, for example, be useful for integrating validation results into a graphical representation of the file system and for analysis of impact.

**Table x: The validation result model – RDF properties, SHACL equivalent and XML representation.** The XML representation is rendered as an XPath expression to be evaluated in the context of the XML element representing the result, which is a <gx:red>, <gx:yellow>, <gx:green> or <gx:white> element. Apart from the values shown in the table, individual constraint components may define additional values.

|  |  |  |  |
| --- | --- | --- | --- |
| **Property** | **Description** | **SHACL result property** | **XML representation** |
| gx:severity | The possible values:  gx:Violation  gx:Warning  gx:Info  gx:Pass  gx:Observation  While gx:Observation is a value not related to a constraint check, the other ones represent constraint violations or a successful check | sh:severity | Local name of the result representing element:  red - gx:Violation  yellow – gx:Warning  green – gx:Pass  white – gx:Observation |
| gx:fileSystem | Identifies the file system validated | An aspect of sh:focusNode | ancestor::  gx:validationReport  /@fileSystemURI |
| gx:focusFile | Filepath of a file resource | An aspect of sh:focusNode | @file |
| gx:focusFolder | Filepath of a folder resource | An aspect of sh:focusNode | @folder |
| gx:xpath | The XPath expression of a value shape | sh:resultPath | @xpath or ./xpath |
| gx:foxpath | The foxpath expression of a value shape | sh:resultPath | @foxpath or ./foxpath |
| gx:value | A resource value, or single item of a resource value, causing a violation | sh:value | @value or ./value  A value consisting of several items is represented by a sequence of <value> child elements |
| gx:sourceShape | The value shape or resource shape defining the constraint;  the value is the @id value on the shape element in the schema if present, or a value assigned by the greenfox processor otherwise | sh:sourceShape | @shapeID |
| gx:constraint  Component | Identifies the kind of constraint | sh:  constraintComsponent | @constraintComponent |
| gx:message | A message communicating details to humans;  The value is the @msg or <msg> value on the shape or constraint element in the schema, or a value assigned by the greenfox processor | sh:message | @msg or ./msg with  ./msg/@xml:lang |