## 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 related to 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 (called red and yellow values)
  + for each instance of constraint validation which did not produce a violation (called 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 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 (corresponding to a gx:result property value of the validation report with gx:severity property value 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
* Every result is related to an individual constraint (= constraint component + parameter values)

This allows for lossless aggregation by resource, by constraint and any combination. 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:Observation  While gx:Observation is a value not related to a constraint violation, the other ones represent violations of different severity | sh:severity | Local name of the result representing element  (red, yellow, green,  white) |
| gx:fileSystem | Identifies the file system validated | An aspect of sh:focusNode | ancestor::  gx:validationReport  /@fileSystemURI |
| gx:focusFile | Identifies a file resource | An aspect of sh:focusNode | @file |
| gx:focusFolder | Identifies a folder resource | An aspect of sh:focusNode | @folder |
| gx:xpath | The XPath expression of a value shape | sh:path | @xpath or ./xpath |
| gx:foxpath | The foxpath expression of a value shape | sh:path | @foxpath or ./foxpath |
| gx:value | A resource value or value item causing a violation | sh:value | @value or ./value |
| gx:sourceShape | The value or resource shape defining the constraint | sh:sourceShape | @shapeID |
| gx:constraint  Component | Identifies the kind of constraint | sh:  constraintComsponent | @constraintComponent |
| gx:message | A message communicating details to humans | sh:message | @msg or ./msg with  ./msg/@xml:lang |
|  |  |  |  |

(An observation is not tied to a constraint checking – it is a value.)

(A constraint may be associated with one or more observations.)

(Example: observation of file size, which is not associated with a checking.)