



# **Guide to Schematron Rules and Patterns**

---

## **PM Schematron Guide**

### **Version 2022-NOV**

December 1, 2022

Distribution Notice:

This document has been approved for Public Release and is available for use without restriction.

## Table of Contents

Chapter 1 - Introduction .....	1
1.1 - Purpose .....	1
1.2 - Overview .....	1
1.3 - Schematron .....	1
1.4 - Conformance .....	1
Chapter 2 - Rules .....	2
2.1 - ../Rules/PM_ID_00001.sch .....	3
Chapter 3 - Abstract Patterns .....	4
Chapter 4 - Schematron Schema .....	5
4.1 - ../PM_XML.sch .....	6
Chapter 5 - Removed Rules .....	7

## Chapter 1 - Introduction

### 1.1 - Purpose

This is an informative supplement for PM. This guide is generated from the PM Schematron rules and provides a consolidated reference for the business rules of this specification.

### 1.2 - Overview

Chapter 2 is a listing of all the numbered rules in PM. For each rule, there is a rule description, a code description, and a code block with the Schematron rule.

Chapter 3 is a listing of abstract patterns used in PM. The abstract patterns may be used in numbered rules or provided as reference for use in rules developed by users of PM. Each abstract pattern has a code description and a code block with the abstract Schematron pattern.

Chapter 4 is a listing of the master PM Schematron file with all of the imports of rules and patterns. Many of the rules and patterns listed in Chapters 3 and 4 rely on functions and variables defined in the master file.

Chapter 5 is a listing of rules that have been deleted.

### 1.3 - Schematron

The business rules for PM are encoded using ISO Schematron. Schematron is a rule-based validation language that uses XML Path Language to make assertions about an XML document.

PM uses the XSLT 2.0 implementation of Schematron by Rick Jelliffe (2010-04-14) as its reference implementation. The only available identifying descriptors for this implementation are the implementer's name and date of release. This implementation may be found at the following URL: <http://code.google.com/p/schematron/>.



#### Important

The Schematron rules in this specification use XSLT 2.0 query binding.

### 1.4 - Conformance

This guide is informative. The Schematron rules listed here are normative in the sense that they convey criteria that a document **MUST** adhere to, exactly as English may be used to convey normative criteria. It is not necessary for implementers to use the specific Schematron encoding in this specification. Implementers **MAY** use any encodings, tools, or languages desired to implement validation schemes for conformance to this specification. However, to conform to the specification, validation schemes **MUST** match the behavior of the reference Schematron implementation. That is, a validator **MUST** find a document valid *if and only if* the reference Schematron implementation would find the document valid according to PM's Schematron rules.

## Chapter 2 - Rules

All of the numbered Rules for PM are listed in this section. These rules may depend on patterns defined in the Abstract Patterns section or on variables defined in the Schematron Schema section.

Rules identifiers are all of the format PM-ID-XXXXX, with rule files named PM\_ID\_XXXXX.sch. Any other heading indicates a supporting file that may influence a rule but is not actually a numbered rule.

## 2.1 - ../Rules/PM\_ID\_00001.sch

### Rule Description

[PM-ID-00001][Warning] pm:CESVersion attribute SHOULD be specified as version 202211 (Version:2022-NOV) with an optional extension.

### Code Description

This rule supports extending the version identifier with an optional trailing hyphen and up to 23 additional characters. The version must match the regular expression “^202211(-.{1,23})?\$”.

### Schematron Code

```
<?ICEA pattern?>
<!-- Notices - Distribution Notice:
      This document has been approved for Public Release and is available for use without restriction.
-->

<sch:pattern id="PM-ID-00001">
    <sch:rule id="PM-ID-00001-R1" context="*[@pm:CESVersion]">
        <sch:assert test="matches(@pm:CESVersion, '^202211(-.{1,23})?$' )"
            flag="warning"
            role="warning">[PM-ID-00001][Warning] pm:CESVersion attribute SHOULD be specified as version 202211 (Version:2022-NOV) with an optional extension. Found :
    <sch:value-of select="./@pm:CESVersion"/>
        </sch:assert>
    </sch:rule>
</sch:pattern>
```

**Chapter 3 - Abstract Patterns**

There are no Abstract Patterns currently defined for PM.

**Chapter 4 - Schematron Schema**

The top level Schematron file for PM is in this section. This file imports all of the others and also defines many global variables they are all dependent on.



## 4.1 - ../PM\_XML.sch

### Code Description

This is the root file for the specifications Schematron ruleset. It loads all of the required CVEs, declares some variables, and includes all of the Rule .sch files.

### Schematron Code

```
<!--UNCLASSIFIED-->
<?ICEA master?>
<!-- Notices - Distribution Notice:
    This document has been approved for Public Release and is available for use without restriction.
-->
<!-- WARNING:
    Once compiled into an XSLT the result will
    be the aggregate classification of all the CVEs
    and included .sch files
-->

<sch:schema queryBinding="xslt2">
    <sch:ns uri="http://www.w3.org/2001/XMLSchema" prefix="xs"/>
    <sch:ns uri="urn:us:gov:ic:pm" prefix="pm"/>
    <!--*****-->

<!-- (U) PM Phases -->
<!--*****-->
<!--*****-->
<!-- (U) PM ID Rules -->
<!--*****-->
<!--(U) -->

<sch:include href="../Rules/PM_ID_00001.sch"/>
    <!--*****-->

<!-- (U) PM Phases -->
<!--*****-->
</sch:schema>

<!--UNCLASSIFIED-->
```

**Chapter 5 - Removed Rules**

There are no rules that have been removed for PM.