

PREMIS implements GSN Community Standard Version 3 in the following scope, as described in this document:

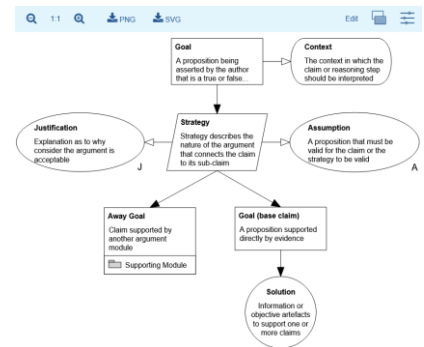
- Core GSN: full implementation of argument element types and relations, and the diagram
- Modular Extension: all three types of argument interfaces are supported
- Argument Pattern Extension: partial implementation of pattern functionality, no graphical representation

## 1 Representing GSN arguments in PREMIS

You can work with GSN arguments in the following views in PREMIS:

- **GSN diagram view**

The diagram view is intended to present the argument in a graphical way. You can adjust the layout of the argument, as well as paging of the argument sections.



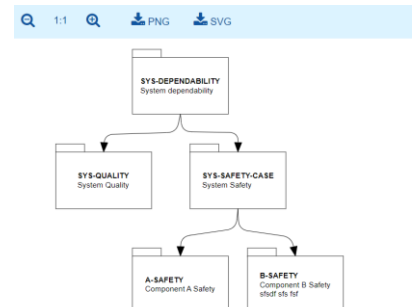
- PR.0.1.1: Compatible infusion set is use
- PR.STR0.1.1: Argument by demonstr
  - A Infusion procedures are performe
  - PR.0.1.1.1: Medical personel is tra
    - Trainings on medical procedur
    - Trainings on medical equipme
  - PR.F0.1.1.1: Clinician manual and
    - PR.Ev0.1.1.1: Clinician manual
    - PR.F0.1.1.2: Clinician manual and
      - PR.Ev0.1.1.2: Clinician manual

- **Argument tree view (Full view)**

You can edit the structure of GSN assurance cases in the full view of the argument. You can add, modify, edit, search and delete goals, strategies, justifications, solutions and context elements as well as perform an assessment. PREMIS will ensure the right structure of your argument.

- **Modular diagram view (Architecture view)**

The diagram presents the architecture view of connected assurance cases.



## 2 Core GSN

PREMIS implements all types of GSN argument elements and all relations between them. Core GSN is fully implemented in PREMIS:

- Goal (Claim)
- Strategy
- Justification
- Assumption
- Solution
- Context

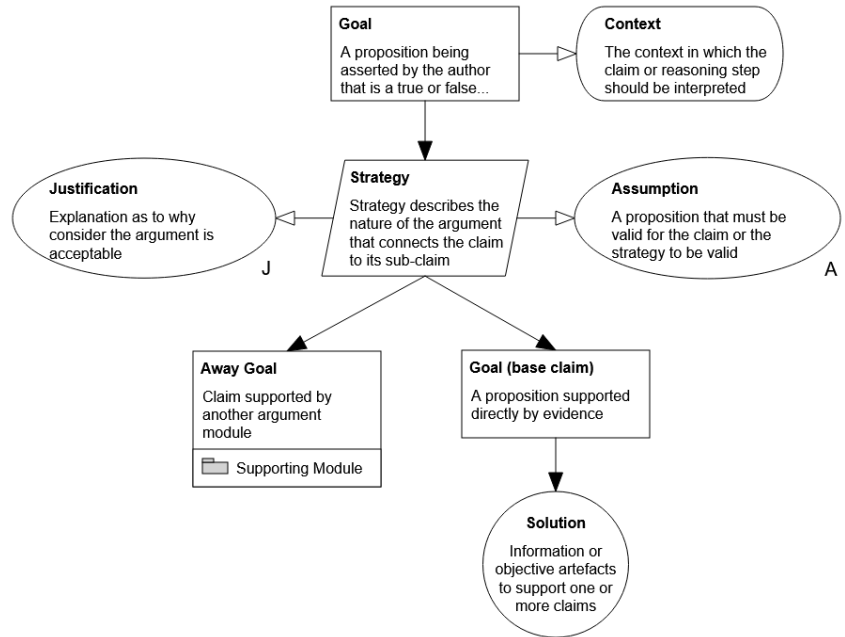


Figure 1. GSN diagram produced in PREMIS presenting types of argument elements

### 2.1 Pages of assurance case diagrams

PREMIS supports development of large assurance cases. As such assurance cases can be difficult to visualize as one GSN diagram, it is possible to divide the diagram into several pages. A user can decide if the argument is to be presented on one big page or on a number of pages. PREMIS still maintains the consistency of an assurance case no matter how its GSN representation had been split into pages.

PREMIS implements 'Off-Page' decorators. By clicking on a decorator you can navigate to the other page of the diagram.

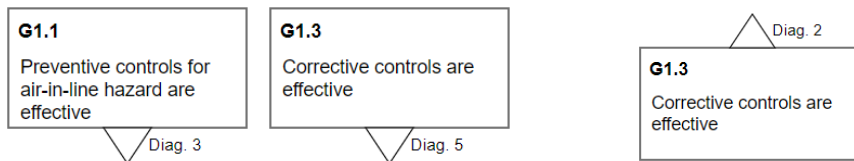


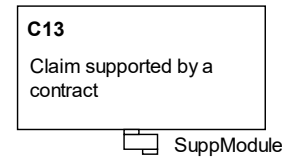
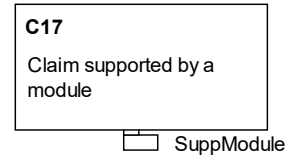
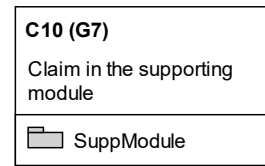
Figure 2. 'Off-Page' decorators for assurance case diagrams divided into pages

Elements on the boundaries of a diagram pages are claims. It is required that one reasoning step is presented on one page and cannot be divided between different pages. A single reasoning step is a claim, its context, supporting strategy and premises.

### 3 Modular Extension

PREMIS implements modular arguments and binding of different argument modules through their interfaces. PREMIS implements three types of interfaces specified in GSN Modular Extension:

- ▶ **Away element** – citation of an element in another module. This is simply a link to a claim in another module. When you use away elements then names and descriptions of the claims from the supporting module will appear in your argument. It works like a link, but to another module.
- ▶ **Supported by another module** – element is supported by another element in a supporting module. This type of connection was already implemented in PREMIS.
- ▶ **Supported by a contract** – element is supported by another element in a supporting module through an intermediary contract. The contract needs an assessment to be made by the user if the supporting claim sufficiently supports a given claim in all its context.



Another element of GSN Modular extension is the **architecture view**:

- **Argument modules** are represented as rectangles with a smaller rectangles adjoining at the top left,
- **ModuleSupportedBy** relationship is represented as a line with a solid arrowhead.

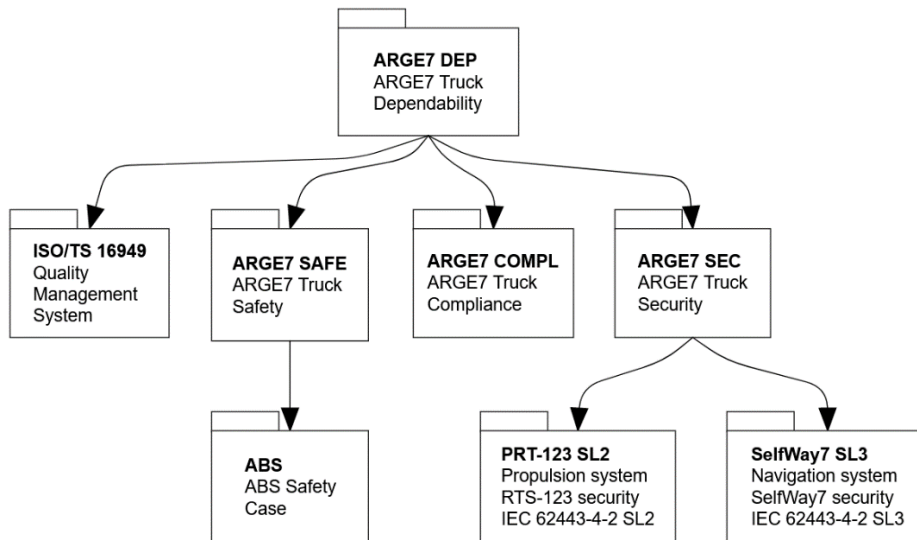
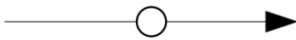




Figure 3. Architecture view in PREMIS

The scope of argument binding in PREMIS is limited to claims. No other types of away elements are implemented in the current version of PREMIS.

## 4 Argument Pattern Extension

PREMIS features include argument templates and a synchronization mechanism which implements some elements of GSN Argument Pattern Extension:

- **Optional instantiation**   
PREMIS implements optional instantiation with the use of tags. Users may use tags to denote branches of the argument in the template and then for each implementation argument they can specify branches to be applicable for a given instantiation. The same parameters can be used to control a number of optional branches of the template.
- **Choice instantiation**   
PREMIS implements optional instantiation with the use of tags. Users may use tags to denote sets of branches of the argument in the template. For each implementation argument the user may specify parameters to control sets of applicable branches.
- **Multiple instantiations**   
Multiple instantiations are managed manually at the instantiation time. By default PREMIS creates one instantiation and the user can perform multiplication with copy/paste operation.

PREMIS implements the pattern mechanisms described above, however, the graphical symbols of patterns defined in GSN Standard are not implemented in the current version of PREMIS.

## 5 PREMIS Extensions – Argument assessment

PREMIS implements argument assessment and enables presenting GSN diagrams colored depending on the assessment results. A sample diagram is presented in Fig. 5.

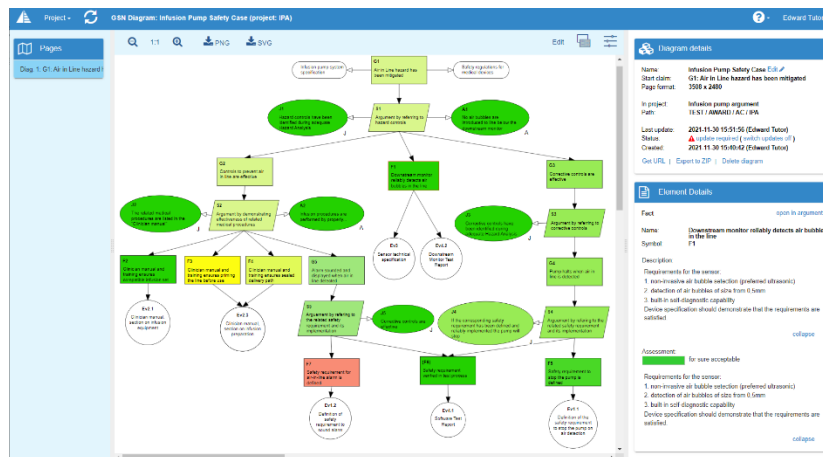


Figure 4. PREMIS extension: presenting assurance case assessment

When you need more information about PREMIS please visit our website [www.argevide.com](http://www.argevide.com) or contact us at [office@argevide.com](mailto:office@argevide.com)