

ISO/IEC 15909, NEWS FROM THE ISO/IEC PLENARY MEETING (HELSINKI 23-29 MAY)



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ISO/MEETING, EVENTS

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👉 **Résumé des épisodes précédents;-)**...

👉 **Relations between the standard, the exchange format and tools**

👉 **Outputs from discussions in the PN group**

RÉSUMÉ DES ÉPISODES PRÉCÉDENTS



HIGH LEVEL PETRI NETS STANDARD

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Multi-part standard divided into 3 parts (ISO/CEI 15909)

Part 1: "Concepts, Definitions and Graphical notation"

- Semantics model for HLPN, definition and notation for HLPN graphs, PN conformance

 *Is published now as an International Standard (IS)*

 *An amendment (NWI) for inclusion of WFPN was approved (may 2005), revision of the text to be submitted before 27/06/05*

Part 2: Transfer Format

- So-called PNML (PN Mark-up Language), whose structure is defined in a "core model"

 *Working Draft (WD), V0.5.0, 8/11/04, to be balloted before October 2004*

Part 3: Extensions (Time, Modularity)

 *Work has not started yet*

RELATIONS BETWEEN THE STANDARD, THE EXCHANGE FORMAT AND TOOLS






GOALS

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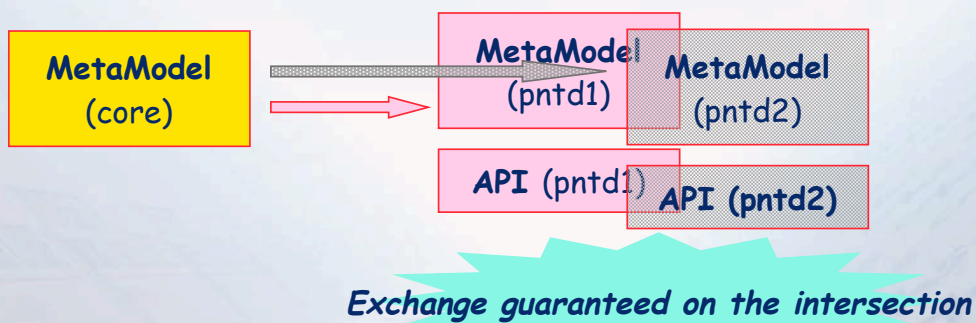
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Problem to solve

-  Part 2: provide a standard to exchange models between tools
-  Part 3: propose numerous extended types of Petri nets (hierarchy, stochastic, time, etc.)
 -  *Will use mechanisms issued from part 2*

Our goals

- 1.** Allow the standard to be used by tool designers at low cost
So that the standard is effectively used by the community
- 2.** Cater for flexibility in the standard definition
To allow for future evolutions of Petri nets
- 3.** Provide a framework for defining new Petri nets types
To help tool designers to introduce their (necessary;-) Petri net types

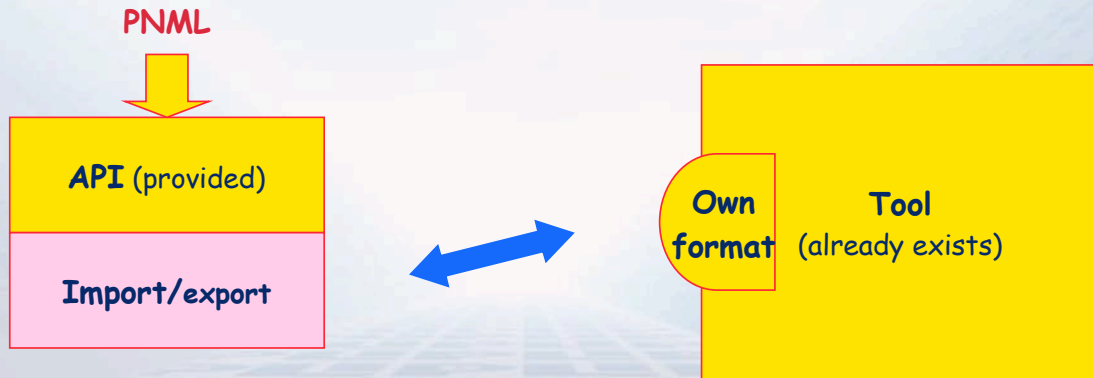


Goal

- Facilitate the extension mechanism

Requirements

- A procedure to extend the metamodel (rules to comply with)
- A tool to produce APIs
- Stable APIs

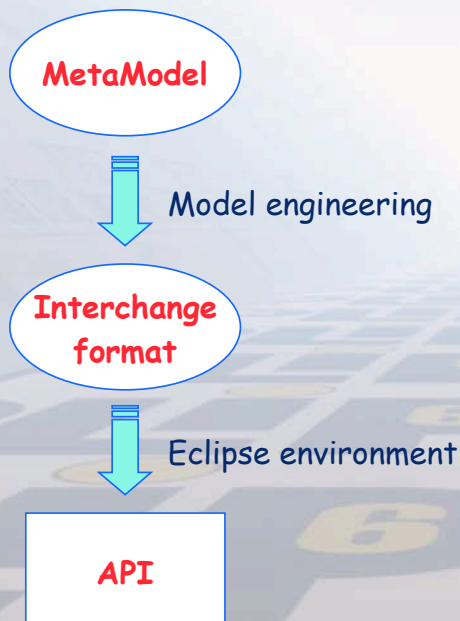


Goal

- ☞ To preserve the tool integrity and specificity

Requirements

- ☞ API should be simple (fetch/put objects and, load/store model)
- ☞ API should rely on a multiplatform language (Java?;-)
- ☞ The import/export should be easy to write



Step 1:

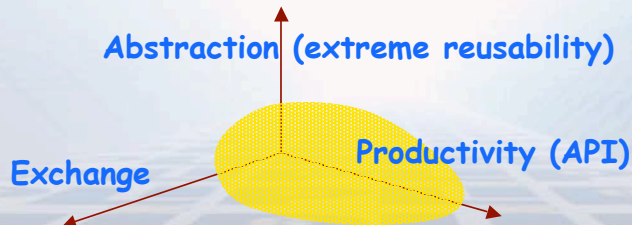
- ☞ Deducing a XML-based (PNML) representation from a metamodel
 - XMI/MOF are a basis for step 2
 - Specific PNML is deduced from the metamodel

Step 2:

- ☞ Generating APIs using EMF
 - Eclipse will most probably remain widely used (lgpl like)
 - Java is portable for such goals

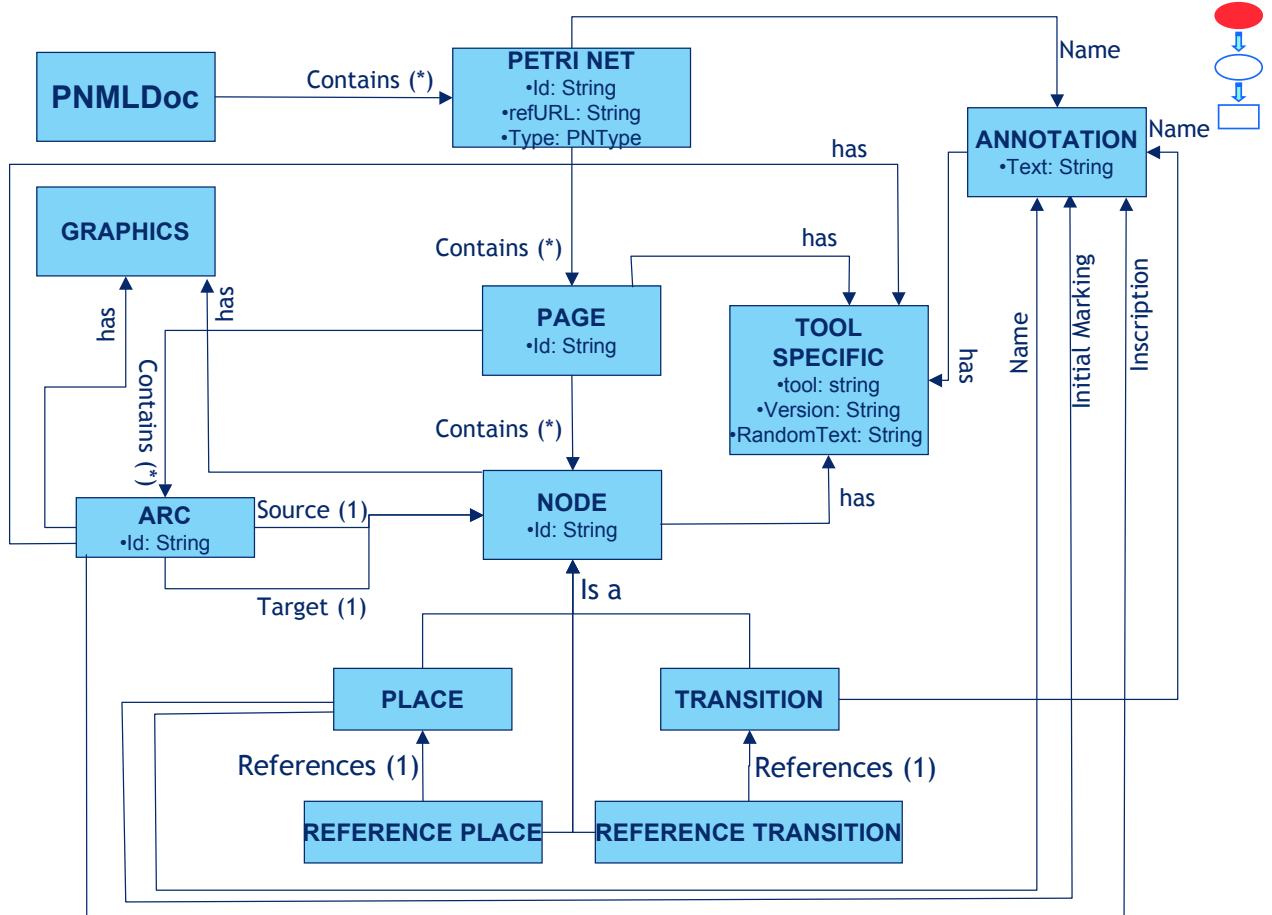
👉 Core definition of the basic Petri nets in the sense of ISO/IEC 150909-1 (P/T)

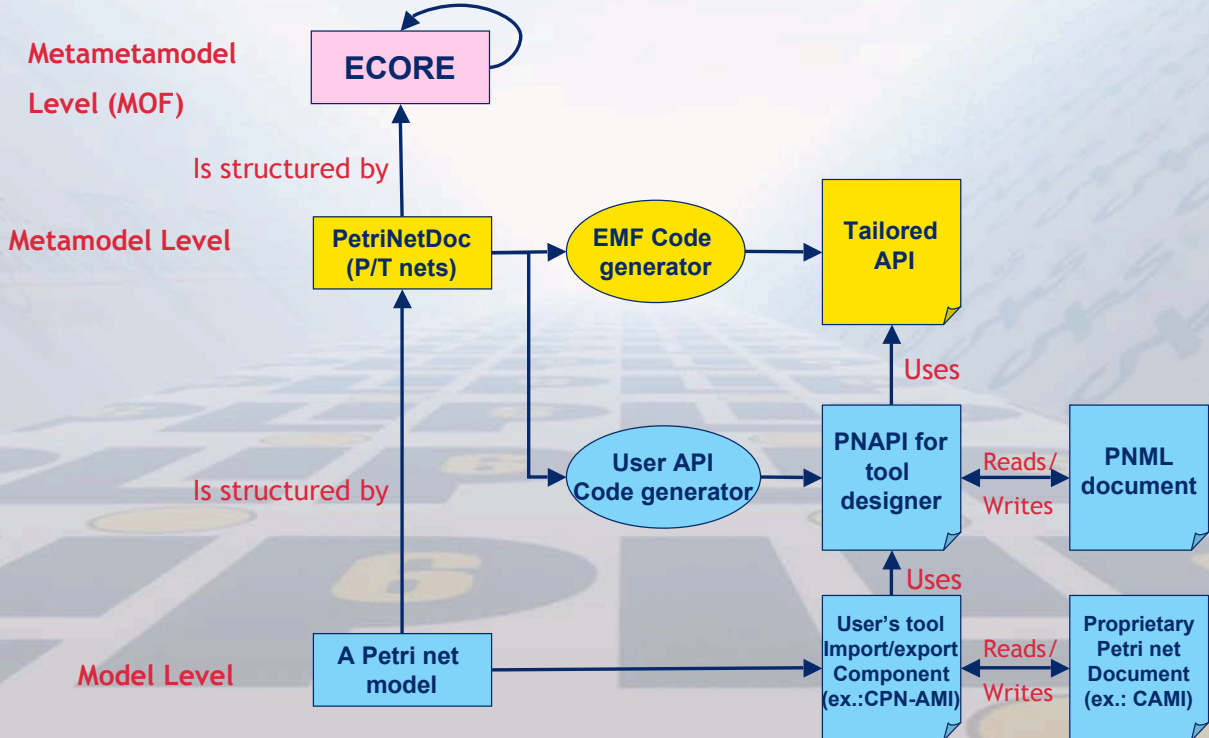
👉 Derived from the proposal in current version of ISO/IEC 150909-2



👉 Our goals

- 👉 Ease the support of PNML by tools (1)
- 👉 Facilitate the extension by tool designers (2, 3)





Read-mode primitives

Load/store primitives

Write-mode primitives

Internal Representation
(not dedicated to a tool)

```

// fetch places
Load the model
loop
  get_place (p)
  // fetch attributes
until no more
// fetch transitions
loop
  get_transition (t)
  // fetch attributes
until no more
// fetch arcs
loop
  get_arc (y)
  get_source (y)
  get_destination(y)
  // fetch attributes
until no more
        
```

Work performed by Lom Hillah (master student)

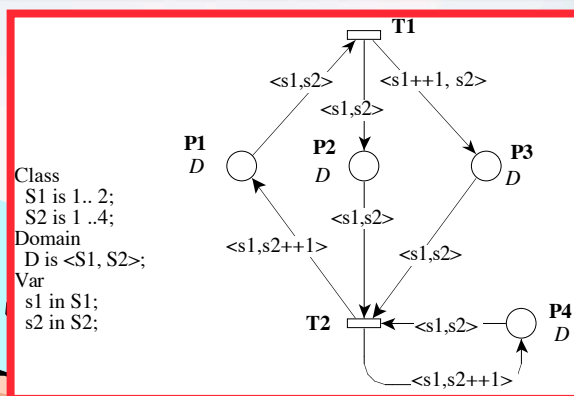
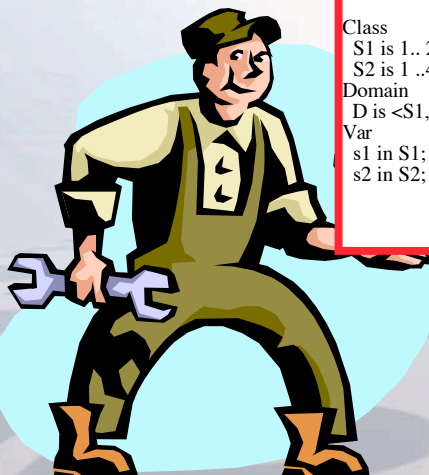
- ☞ Master project started on **April 1st 2005 and ending on September 30 2005**
- ☞ Objective: feasibility of the proposed methodology

Mini demos (more to come this afternoon if required)

- ☞ Demo 1: flexibility (to illustrate point of view 1)
 - Live modification of the metamodel to produce an API dedicated to the enriched model
- ☞ Demo 2: easy support of PNML by a tool (to illustrate point of view 2)
 - Defining a PNML import/export for P/T AMI-Nets (used in CPN-AMI, storage format = CAMI)
 - Development of the translator: about 5 days (when APIs are completed)

These are assessment prototype to assess feasibility of the proposed approach

- ☞ A basis for discussion
- ☞ A basis for Lom's next steps



👉 Goals:

1. Allow the standard to be used by tool designers at low cost
2. Cater for flexibility in the standard definition
3. Provide a framework for defining new Petri nets types

👉 Consequences:

- 👉 A basis to support objectives in ISO/IEC 15909-3
- 👉 Increase the interest for the standard
- 👉 Increase the interest for Petri nets

👉 Self confidence in success

- 👉 Fairly good since...
 - *A propotype is functional (after 7 weeks of work)*
 - *Majors difficulties have been identified (complexity of the tailored API, how to manage generation of the PNAPI)*

OUTPUTS FROM DISCUSSIONS IN THE PN GROUP

Plenary ISO SC7 meeting, WG 19

Issues raised

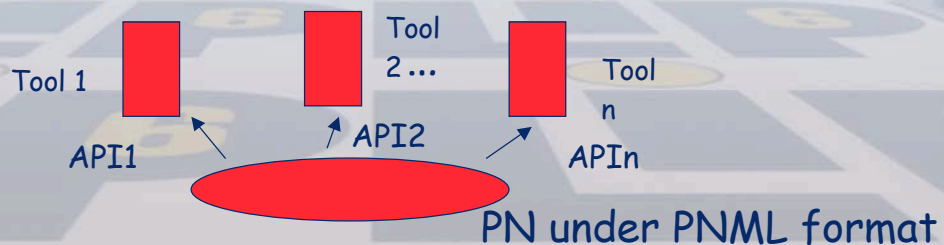
Change of the name of WFPN

Which one?

Discussion on:

PNML core model

Guidelines for an API manipulating PNML (annex of the standard)



Some concepts that should be defined in the standard?

Derived from the reality...

Petri net Type

A sort of Petri net denoted by a given metamodel

This metamodel is issued from a core

A PNML exchange format is associated to this Petri net type

It has a formal definition (either in the standard or related to a tool and close to a standard)

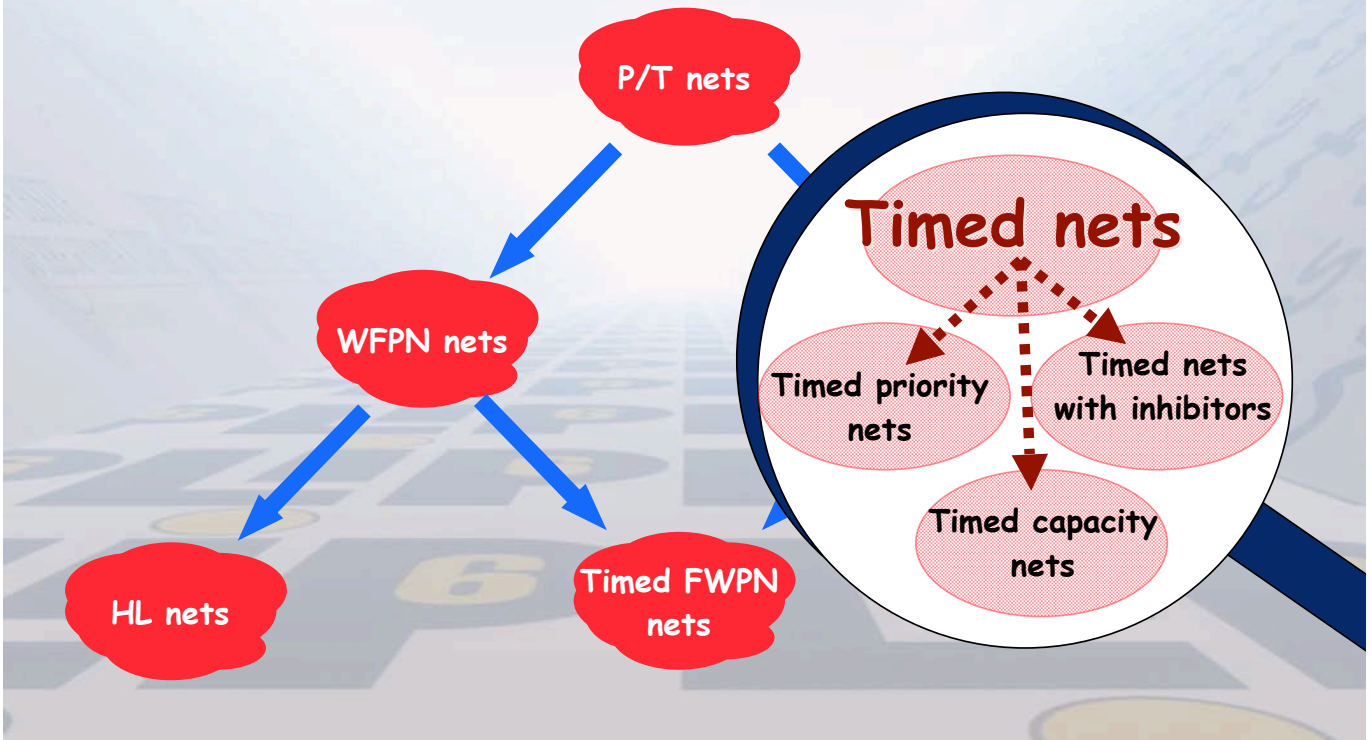
Petri net class

A «family» of Petri net for with Petri net types are very closed

All «variants» of the class are strongly related to a «head» Petri net type

Small variations from the Petri net type of this «head»

The definition of any Petri net type belonging to the class derives from the head one



👉 Where shall we maintain the Petri net classes hierarchy?

- 👉 Use of «package» hierarchy from a root class
- 👉 Toos based on EMF (thanks to confirmation by L. Hillah)

CoreMetaModel
abstract

