Appendix D: Adding support for a new net type

The overall design describing the extensibility of the program is detailed in the main report. This appendix is a more specific outline aimed at the programmer who wishes to add support for a new type of net.

A new net type will typically be derived from an existing net type, and may thus inherit many of the classes used in the original net type. The hierarchy and the classes used are defined in the file `nettypes.xml`, the original version of which follows : (all formatting is for illustration; the file is plain text)

```
<pnmlnettypes>
   <nettype id="ptNet">
   <!--  Petri Net Type Definition for Place/Transition nets.
      TREX Schema at http://www.informatik.hu-berlin.de/top/pnml/detail.html -->
      <name>Place/Transition net</name>
      <template> ../templates/template_ptnet.xml </template>
      <placelabel> uk.ac.ic.doc.y2002.tool.editor.PlaceLabel </placelabel>
      <transitionlabel> uk.ac.ic.doc.y2002.tool.editor.TransitionLabel </transitionlabel>
      <arclabel> uk.ac.ic.doc.y2002.tool.editor.ArcLabel </arclabel>
      <subnetlabel> uk.ac.ic.doc.y2002.tool.editor.SubnetLabel </subnetlabel>
      <referenceplacelabel> uk.ac.ic.doc.y2002.tool.editor.ReferencePlaceLabel
       </referenceplacelabel>
      <importplacelabel> uk.ac.ic.doc.y2002.tool.editor.ImportPlaceLabel </importplacelabel>
      <exportplacelabel> uk.ac.ic.doc.y2002.tool.editor.ExportPlaceLabel </exportplacelabel>
      <animator> uk.ac.ic.doc.y2002.tool.application.PNAnimator </animator>


      <nettype id="ptNetArcTyped">
          <!-- Place/Transition nets with typed arcs.
          TREX Schema at http://www.informatik.hu-berlin.de/top/pnml/detail.html -->
          <name> Place/Transition net with typed arcs </name>
          <template> ../templates/template_ptnetarctyped.xml </template>
          <arclabel> uk.ac.ic.doc.y2002.tool.editor.ArcTypedLabel </arclabel>
      </nettype>


      <nettype id="GSPNet">
          <!-- Generalised Stochastic Petri Nets - unofficial definition -->
          <name> Generalised Stochastic Petri Net </name>
          <template> ../templates/template_gspnet.xml </template>
          <transitionlabel> uk.ac.ic.doc.y2002.tool.editor.TransitionStochasticLabel
           </transitionlabel>
          <animator> uk.ac.ic.doc.y2002.tool.application.GSPNAnimator </animator>
      </nettype>

</nettype>

<nettype id="ceNet">
      <!-- Ordinary (Condition/Event) Petri nets.
      TREX Schema at http://www.informatik.hu-berlin.de/top/pnml/detail.html -->
      <name> Condition/Event net</name>
      <template> ../templates/template_cenet.xml </template>
      <placelabel> uk.ac.ic.doc.y2002.tool.editor.PlaceLabel </placelabel>
      <transitionlabel> uk.ac.ic.doc.y2002.tool.editor.TransitionLabel </transitionlabel>
      <arclabel> uk.ac.ic.doc.y2002.tool.editor.ArcLabel </arclabel>
      <subnetlabel> uk.ac.ic.doc.y2002.tool.editor.SubnetLabel </subnetlabel>
      <referenceplacelabel> uk.ac.ic.doc.y2002.tool.editor.ReferencePlaceLabel
        </referenceplacelabel>
      <importplacelabel> uk.ac.ic.doc.y2002.tool.editor.ImportPlaceLabel </importplacelabel>
      <exportplacelabel> uk.ac.ic.doc.y2002.tool.editor.ExportPlaceLabel </exportplacelabel>
      <animator> uk.ac.ic.doc.y2002.tool.application.PNAnimator </animator>
</nettype>

</pnmlnettypes>
```

It can be seen that **ptNetArcTyped** and **GSPNet** are both derived from **ptNet**, and each define classes that should be used in preference to those defined in **ptNet**, automatically inheriting the rest**.** A similar formulation may be used for any new net type, but note that all the elements defined at the **ptNet** (or **ceNet**) level must be defined (or inherited) for every net type, or unpredictable results may occur. Net types may be nested to a level deeper than that shown above.

As can be seen, new classes may be defined for petri net elements and for the animator. A template is also recommended. Typically, new classes will be created as sub-classes according to the hierarchy, overriding particular functions and/or providing access functions to new PNML attributes (or sub-elements) within the element.

A new Properties Box or right-click Context menu may also be required – this may also be derived from existing classes following the hierarchy, but the information is not stored in nettypes.xml. Both are documented in the JavaDoc, and it is recommended that the code for existing classes (eg ArcPropertiesBox, ArcTypedPropertiesBox) is examined and adapted for new classes. The class of PropertiesBox or Context menu is set and stored within the PNLabel constructor – eg,

```
public ArcTypedLabel(Element e) {
super(e);
// do custom initialisation
contextmenu = ArcContextMenu.class;
propertiesbox = ArcTypedPropertiesBox.class;
}
```