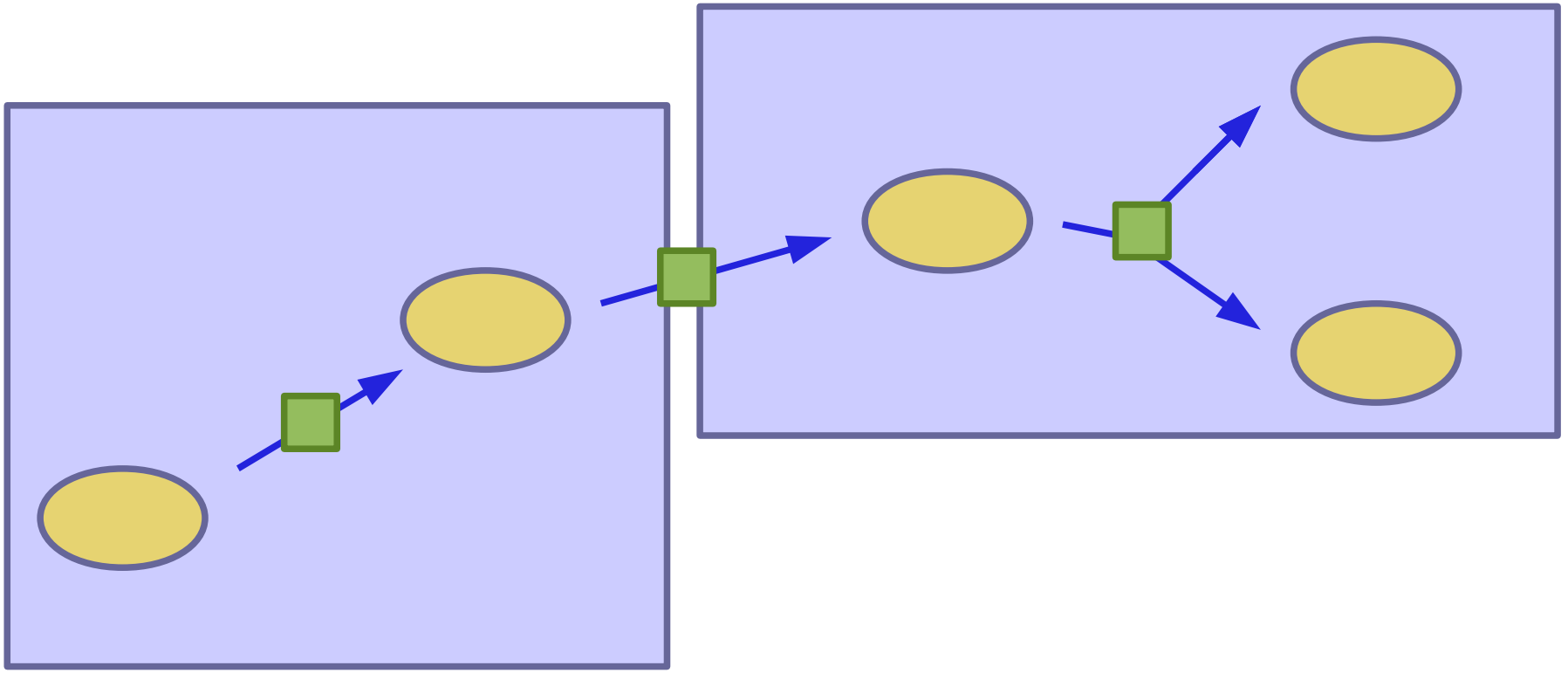
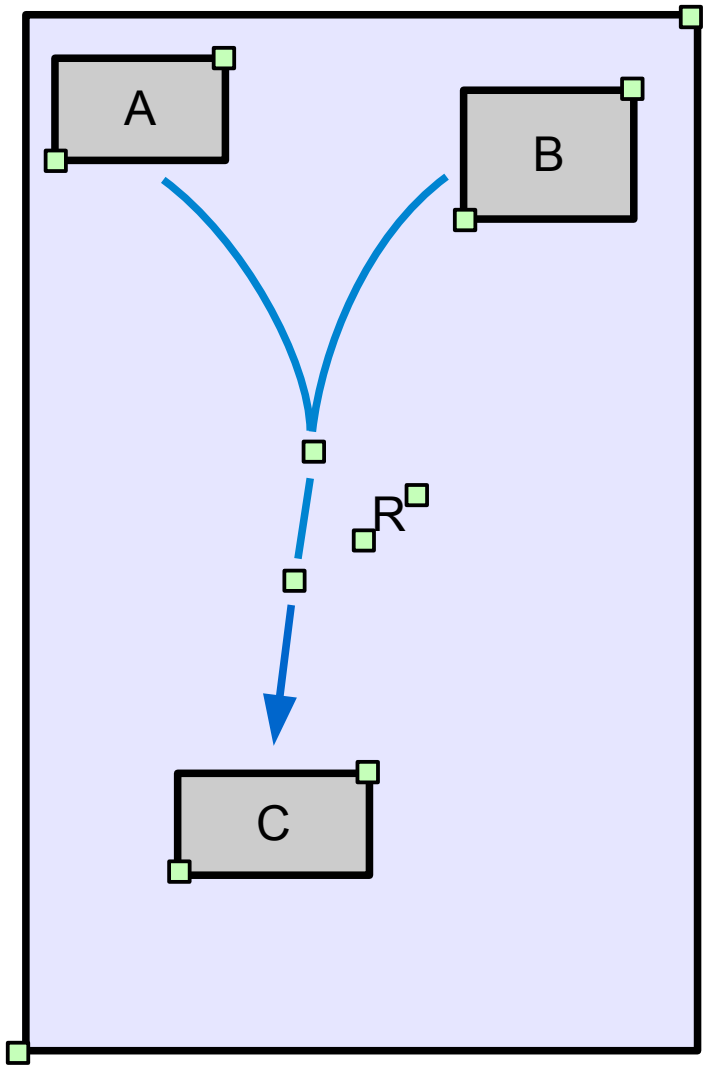
Layout and Rendering package

Existing as an extension of SBML L2, will be converted into a L3 package.



Basic Layout (`layout`)



Describes the position of boxes and arcs only

- Glyphs for Compartments, Species, Reactions, SpeciesReferences, Labels, ...
- The glyphs are described by a bounding box or a bezier spline
- The glyphs may reference objects in the sbml model

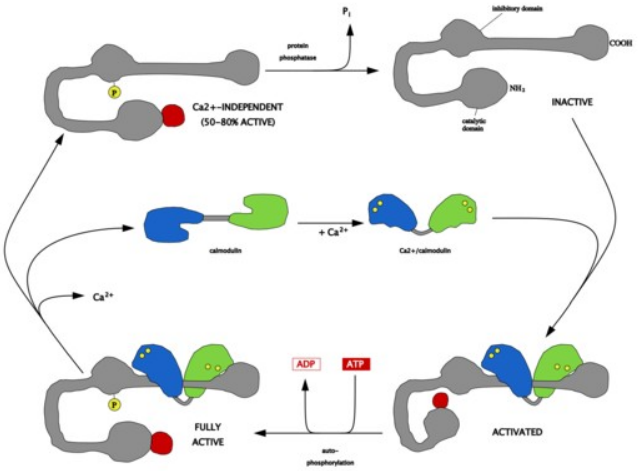
Data structure of layouts (rough scetch)

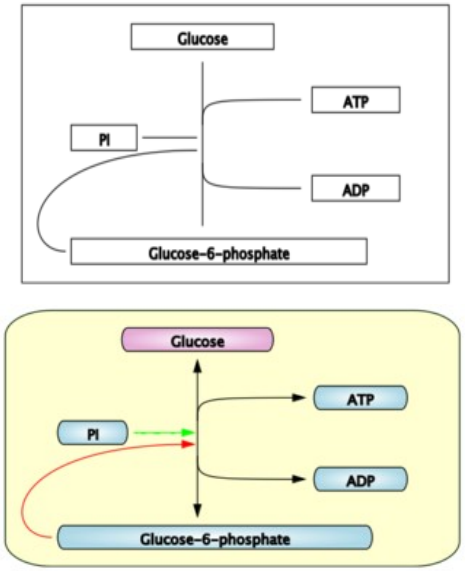
- ListOfLayouts
  - Layout
    - ListOfCompartmentGlyphs
    - ListOfSpeciesGlyphs
      - SpeciesGlyph
        - Bounding box
        - Reference to a species in the model (`xpointer`)
    - ListOfReactionGlyphs
      - ReactionGlyph
        - Arc
        - ListOfSpeciesReferenceGlyphs
        - ...
    - ...

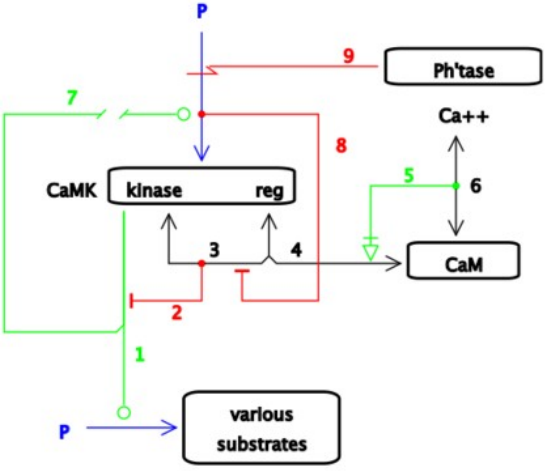
Rendering extension (`render`)

Describes how the glyphs look like

- Colors, shapes, linestyles, ...
- Loosely based on SVG
- Very flexible / can be used as style sheets
- For details ask Ralph Gauges







- Effort was started in St. Louis 2003
- Published in Gauges, Rost, Sahle, Wegner (2006), *Bioinformatics* **22** (15) 1879-1895
- Support for layout is available in libsbml (Ralph Gauges)
- Used in SBW modules Deckard, Bergmann, Sauro (2006), *Bioinformatics* **22** (23) 2966-2967
- Used in Arcadia (Alice Villéger)
- An XSLT is available for converting a layout (including render extension) to SVG

Note:

Both layout and rendering is orthogonal to SBGN.