Accessing Semantic Information

- SBO + Miriam Web Services as well as KEGG / ChEBI / OntologyQuery are available to Modules of the Systems Biology Workbench

- One (C#) library / SBW module, provides querying, as well as centralized caching to other modules

- Thus all programming languages can now access those features.
Displaying Information
Need Exchange Format

- If we still seriously think about a ‘libSBGN’, with:
  - support for multiple model exchange languages
  - support for automated VALIDATION of a map
  - semi-automated Translation between graph types
  - auto layout routines

- Need Exchange Format
Example

- Our tools use the SBML Layout / Render Extension to actually store position / dimensions + glyphs. Which is sufficient for us to exchange maps between tools.

- Render Extension Style sheet, which can be applied to SBML Layout based on SBO terms.
Style Sheet

Transition SBO:0000167

S0 → S1

S2 → S3

S4 → S5

Association SBO:0000177

S6 ← S9

S7

Disassociation SBO:0000180

S10 ← S11

S12
Style Sheet

Complex: SBO:0000253

Compartment: SBO:0000289

More Clonemarkers
However

- Layout + RenderExtension do not make it possible to VALIDATE a given map
  - For that we need to store the actual graph
Problems (?)

- Some glyphs will never be (automatically) assigned:
  - Logical Operators,
  - Tag, Logic arc, Equivalence arc, aubmap
  - Omitted / unknown process
  - They are available in Athena, but probably not in the automated viewer.

- No support for the submap feature with automated collapsing as indicated by the SBGN spec, for that we wait for Sarah 😊
Questions
Funding