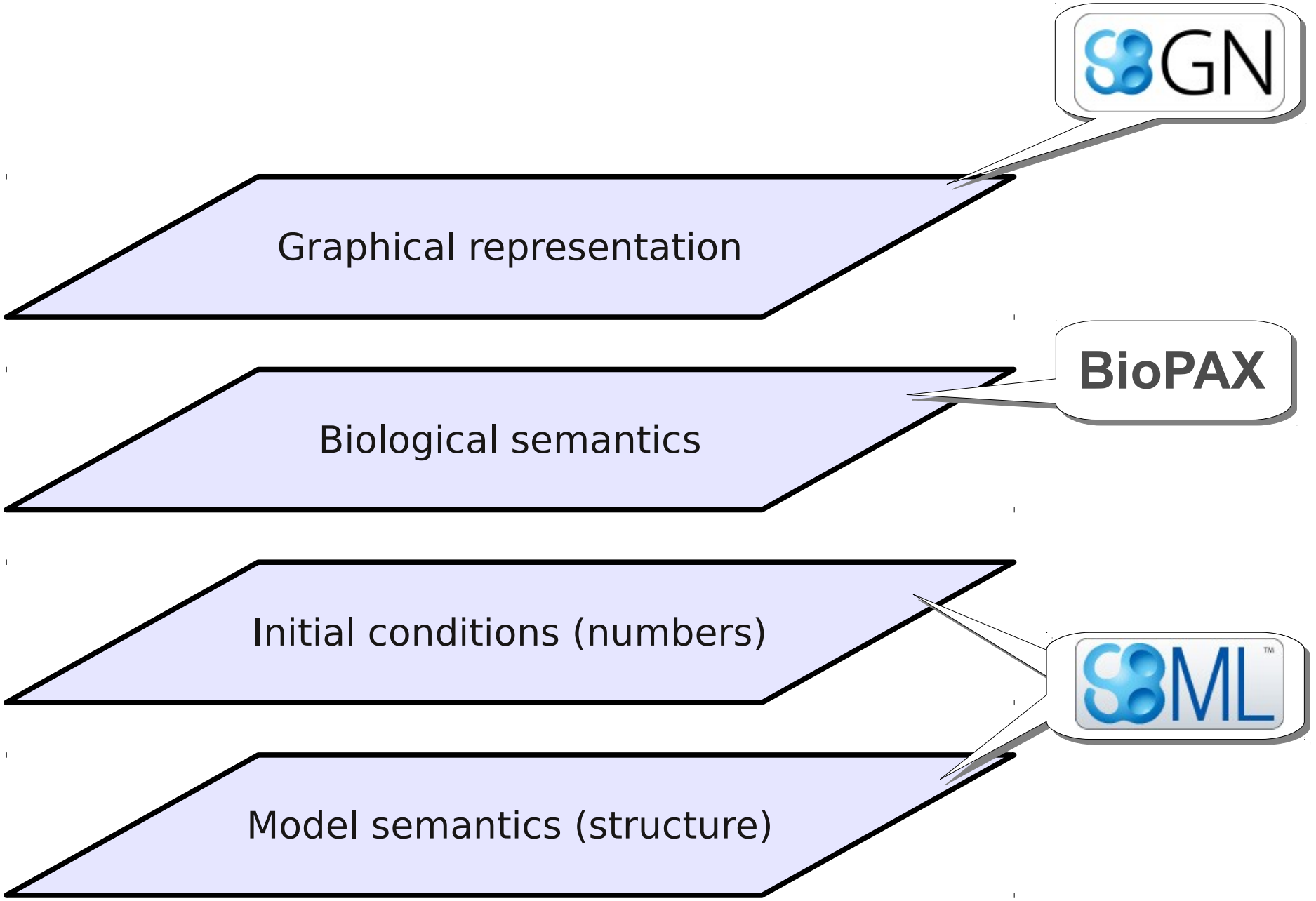
Update on the Systems Biology Graphical Notation

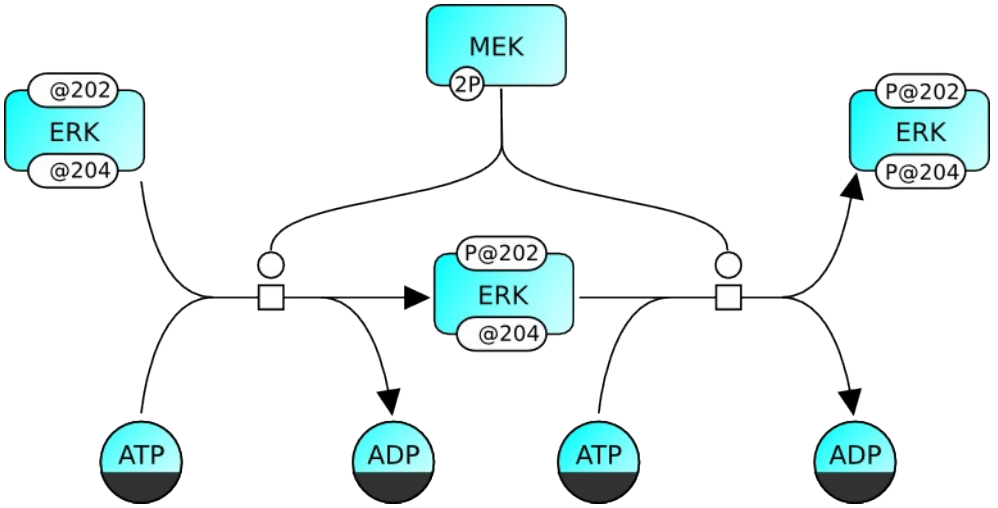
http://www.sbgn.org/

SBGN and the other combine standards



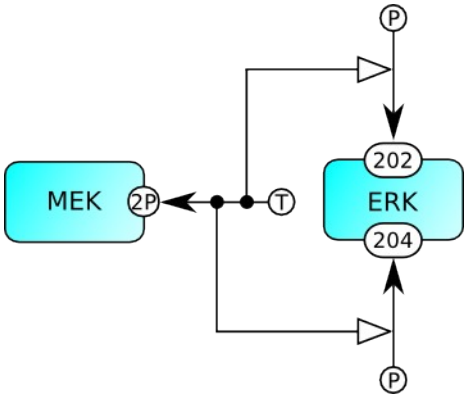
Graph trinity: three languages in one notation

Process Descriptions



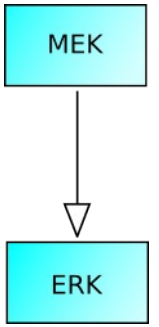
- Unambiguous
- Mechanistic
- Sequential
- Combinatorial explosion

Entity Relationships



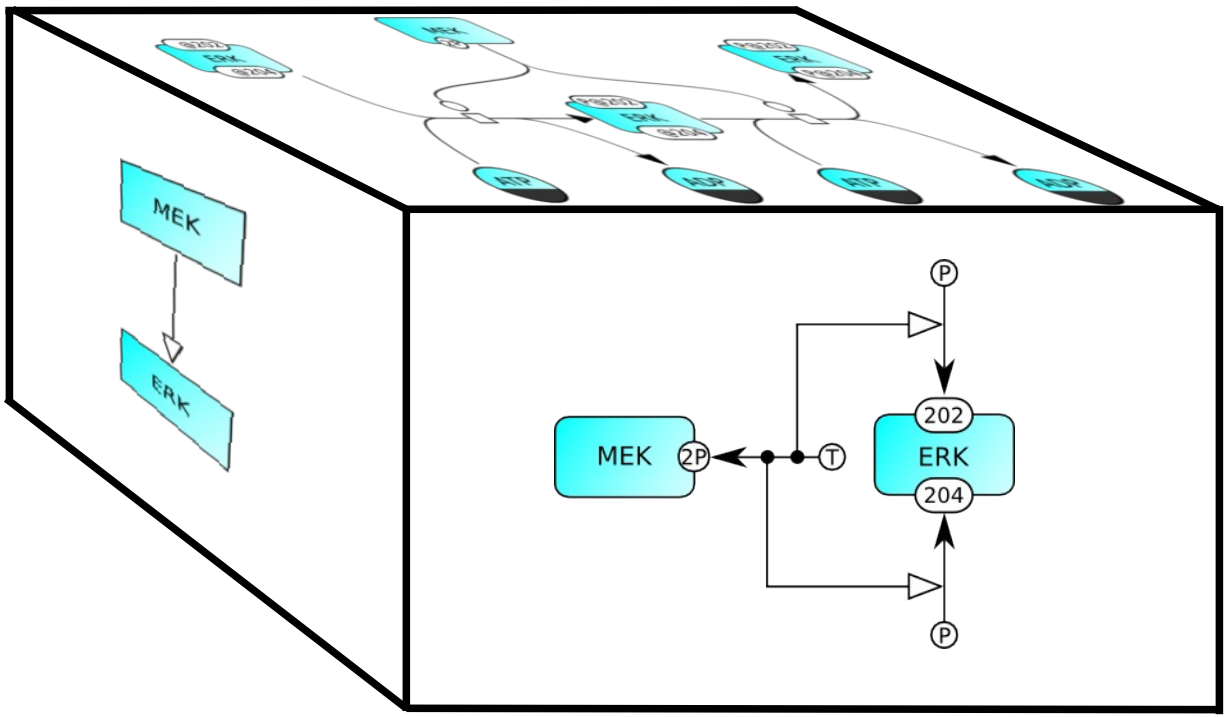
- Unambiguous
- Mechanistic
- Non-sequential
- Independence of relationships

Activity Flows

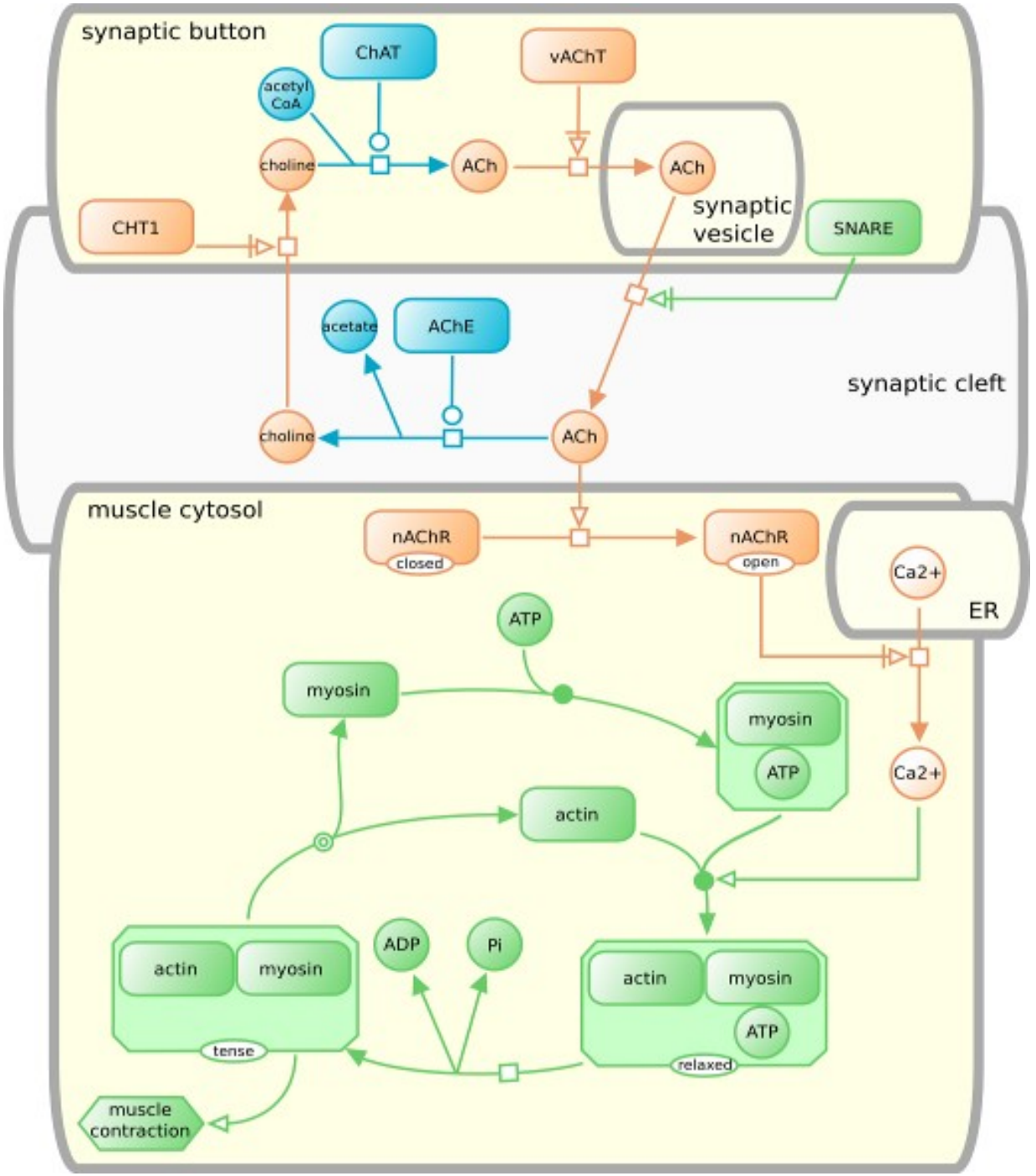


- Ambiguous
- Conceptual
- Sequential

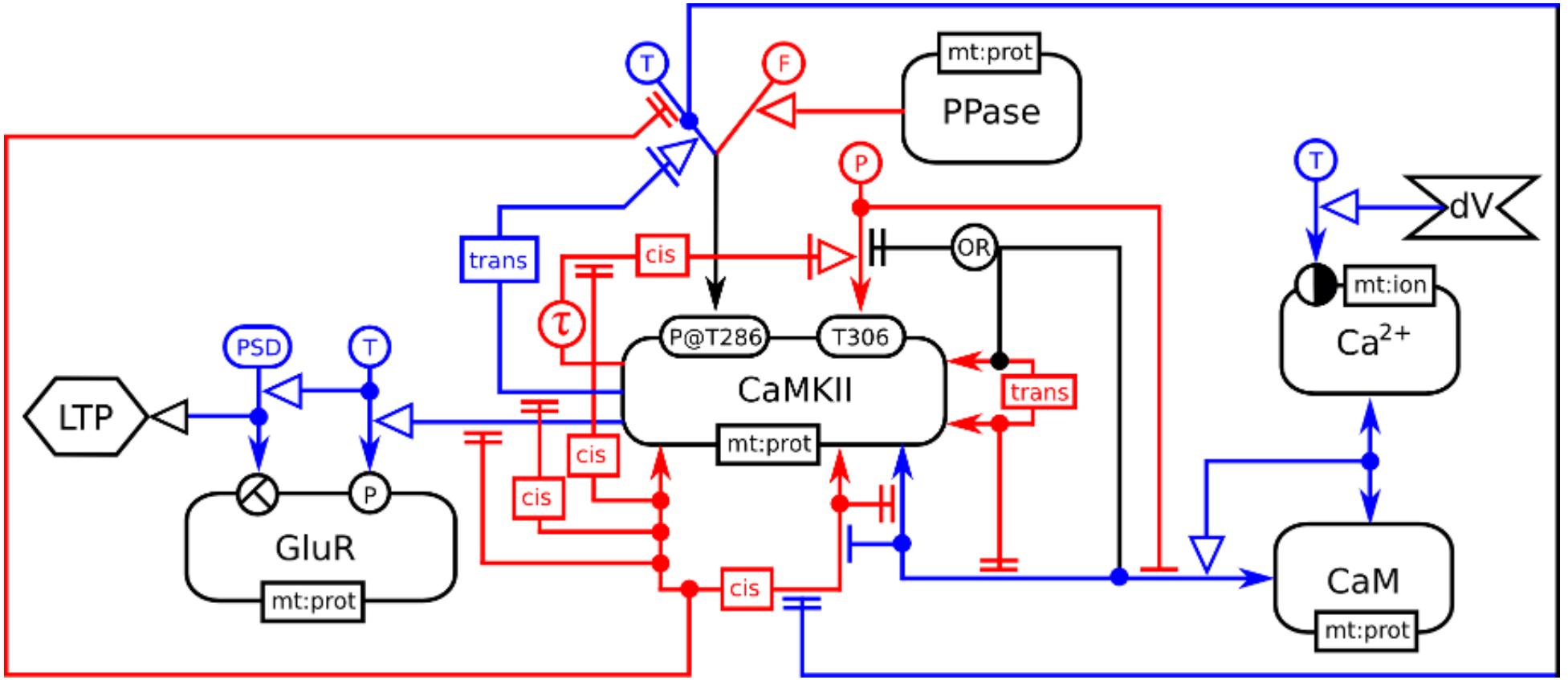
Three orthogonal projections of biology



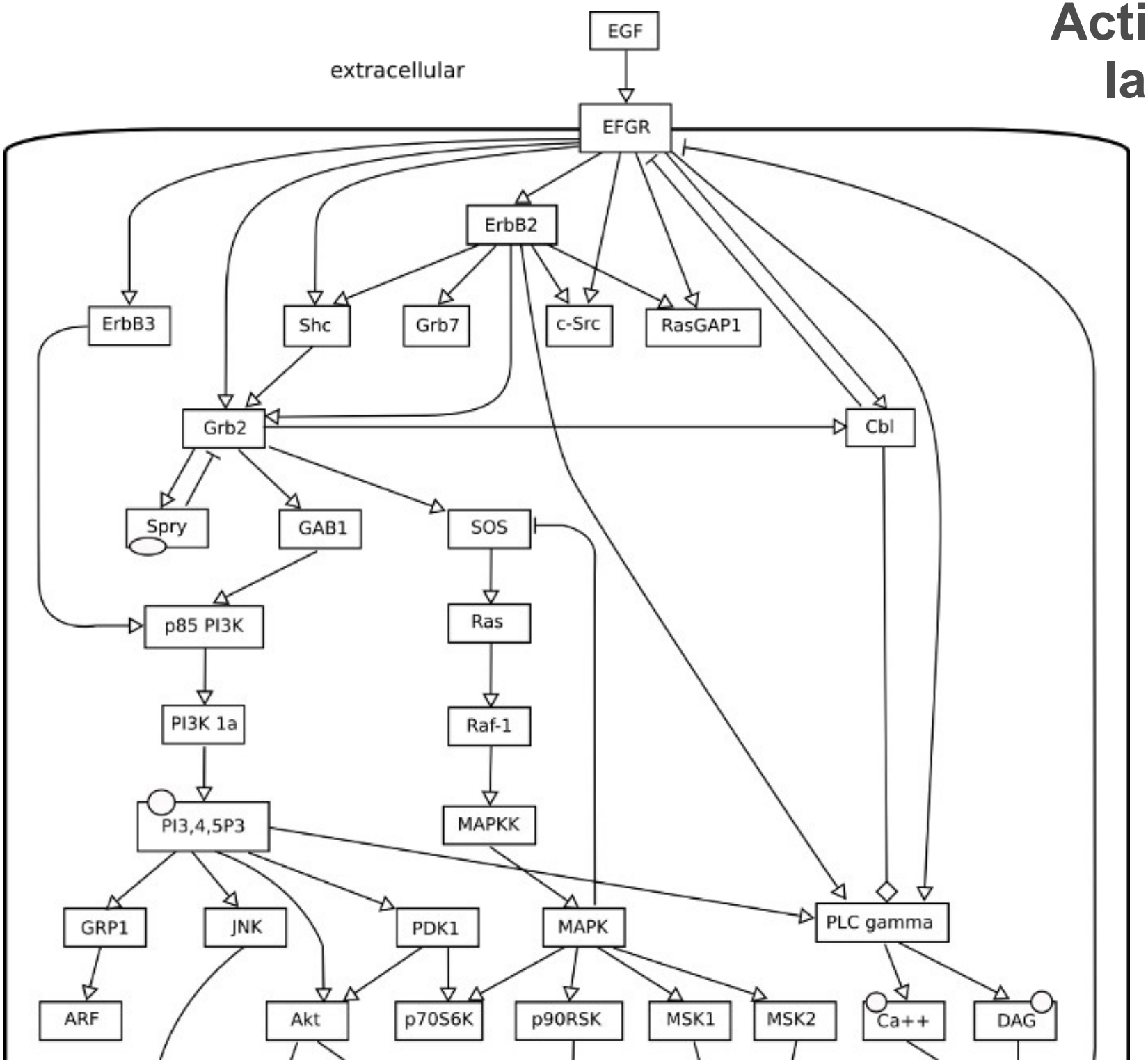
Process Description language



Entity Relationship language



Activity Flow language



http://sbgn.org/Documents/Specifications

Systems Biology Graphical Notation:
Process Description language Level 1

Version 1.3

14 February, 2010

Editors:

Stuart Moodie — *University of Edinburgh, UK*
Nicolas Le Novère — *EMBL European Bioinformatics Institute, UK*
Emek Demir — *Sloan-Kettering Institute, USA*
Huaiyu Mi — *University of Southern California, USA*
Alice Villéger — *University of Manchester, UK*

To discuss any aspect of SBGN, please send your messages to the mailing list sbgn-discuss@sbgn.org. To get subscribed to the mailing list or to contact us directly, please write to sbgn-editors@lists.sourceforge.net. Bug reports and specific comments about the specification should be entered in the issue tracker http://p.sf.net/sbgn/pd_tracker.

ms Biology Graphical Notation:
Relationship language Level 1

Version 1.2

Date: April 14, 2011

Editors:

EMBL European Bioinformatics Institute, UK
Memorial Sloan-Kettering Institute, USA
University of Southern California, USA
School of Informatics, University of Edinburgh, UK
Manchester Centre for Integrative Systems Biology, UK

aspect of SBGN, please send your messages to the mailing uss@caltech.edu. To get subscribed to the mailing list or to tly, please write to sbgn-editors@lists.sourceforge.net. d specific comments about the specification should be entered tracker https://sourceforge.net/tracker/admin/?atid= _id=178553.

ms Biology Graphical Notation:
tivity Flow language Level 1

Release 1.0

Date: September 4, 2009

Editors:

SRI International, USA
IPK Gatersleben & MLU Halle, Germany
EMBL European Bioinformatics Institute, UK
CSBE, University of Edinburgh, UK
University of Edinburgh, UK[7pt]

aspect of SBGN, please send your messages to the mailing uss@sbgn.org. To get subscribed to the mailing list or to tly, please write to sbgn-editors@lists.sourceforge.net. d specific comments about the specification should be entered cker http://sourceforge.net/tracker/?func=add&group_ d=1175366.

Community votes since COMBINE 2011

- Multiplication of sources and sinks in PD
  - From Dec 16 to Dec 31 2010, 11 votes expressed
- Process duplication in PD
  - From Dec 16 to Dec 31 2010, 8 votes expressed
- Activity node in SBGN AF
  - From Dec 22 2010 to Jan 10 2011, 16 votes expressed
- Reversible arcs in PD
  - From Fri Jan to Feb 11 2011, 7 votes expressed

117 people have now subscribed to sbgn-discuss@caltech.edu
Many other discussions were started, from the conceptual structure of SBGN to fine technical points. The resulting activity ranged from lone voice in the desert to feverish debates

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Specifications since COMBINE 2011

- SBGN PD L1 V1.3 released on Mon, 14 Feb 2011
  - Maintenance release
- SBGN ER L1 V1.2 released on Thu, 14 Apr 2011
  - Maintenance release

- Draft of PD L1 V2 being finalised
  - Main release
- Draft of ER L1 V2 released on Mon 18 Apr 2011
  - Maintenance release
- Draft of AF L1 V1.1 being finalised

Governance

- SBGN Editorial board
  - Falk Schreiber stepped down, Alice Villéger was elected.
  - Current board: Emek Demir, Nicolas Le Novère, Huaiyu Mi, Stuart Moodie, Alice Villéger
  - Alumni: Anatoly Sorokin (2008-2009), Falk Schreiber (2008-2010)
- SBGN Scientific committee
  - Gary Bader joined. The committee was renewed after new year.
  - Currently: Gary Bader (invited), Igor Goryanin (PI), Mike Hucka (invited), Hiroaki Kitano (PI), Nicolas Le Novère (PI)
  - Past members Kurt Kohn (invited 2009-2011)

Endorsement and support

- libSBGN milestone 1 released on Thu Feb 3. Now en route to milestone 2. Presentation this morning.
- We are aware of 21 software projects linked to SBGN (Supporting or planning to support), see http://www.sbgn.org/SBGN_Software
- Google scholar so far records 92 citations for the SBGN paper

SBGN competition

- Best SBGN Outreach: Lecture, Training, Publication, Book, Website
  - Winner 2010: Anatoly Sorokin
- Best SBGN Map: Breadth, Accuracy, Aesthetics
  - Winner 2010: Central metabolism in plants (Schreiber team)
- Best SBGN Software Support (1) - Completeness, Exactitude, Validation
  - Winner 2010: SBGN-ED
- Best SBGN Software Support (2) - Layout and Rendering
  - Winner 2010: Arcadia = VISIBIOweb
- Timeline competition 2011
  - Opening of the competition at HARMONY (now!)
  - End of applications at the end of June
  - Opening of the votes mid July
  - Results at COMBINE 2011 (3-7 September)

SBGN in HARMONY

- Tuesday 19th morning (RRL 104) presentations and discussions
  - Update on SBGN development and adoption (NLN)
  - Update on SBGN PD, pending issues (SM)
  - Update on SBGN ER, pending issues (NLN)
  - Update on SBGN AF, pending issues (HM)
  - Update on libSBGN (MvI, TC)

SBGN in HARMONY

- Tuesday 19th afternoon (RRL 104) directed practical work
  - Implementation of SBGN support
    - Conversion from BioPAX and SBML
    - Using existing layout formats with SBGN
    - SBGN to final graphical formats
  - SBGN specification writing (including validation rules)
  - Production of FAQs and examples
  - write libSBGN validation rules in Schematron
  - SBGN quizz

SBGN in HARMONY

- Wednesday 20th
  - (RRL 118) Targeted discussions, emerging from previous day, or too technical for the plenary session. LibSBGN development
  - (RRL 102) Follow-up on previous day's practical work, LibSBGN development
- Friday 22nd Interoperability
  - Mapping between BioPAX, SBML and SBGN concepts
  - Conversion/linkage of the three languages
  - Relationships between SBML layout, BioPAX Level 3 plans for graphs and SBGN-ML

Pending issues relevant for the whole of SBGN

- Stylesheets
  - How to extend SBGN through themes and stylesheets
  - Would not be normative, and not encoded in SBGN-ML
- Needs for other languages
  - Orthogonal and complementing the first three
  - Topological relationships between entities
  - Physiology and quantitative biology
- Others?