

## **Visual analytics of biological networks using VANTED and its SBGN-ED add-on**

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We present methods and algorithms to support working with SBGN maps in systems biology.

VANTED ([www.vanted.org](http://www.vanted.org)) is an integrative and extendable framework for systems biology applications which aims at the integration, analysis and visual exploration of experimental data in the context of biological networks as well as the modelling, simulation and analysis of molecular biological processes. The VANTED extension SBGN-ED ([www.sbgm-ed.org](http://www.sbgm-ed.org)) is a SBGN editor which allows creating, editing and exploring all types of SBGN maps. Furthermore, the syntactical and semantical correctness of created or edited maps can be validated. Already existing non-SBGN maps from the KEGG database can be translated into SBGN PD maps including automatic layout. Translation of PD to AF maps and a visualisation of SBML models in SBGN PD is also provided. Additionally, the tool allows exporting of SBGN maps into several file and image formats including the SBGN-ML format.