"Payao": Web 2.0 community tagging system to SBML models

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Abstract
Creating an extensive model of gene-regulatory and biochemical networks with the latest data is a painstaking task. Curations are essential to creating an accuratre model. Yet as science and technology advances rapidly, once curated models soon become out-of-date and need to be revised constantly.   Many pathways and networks are now available online. What is needed is a framework to facilitate tracking and update mechanism for modelers and reserachers in the community to contribute to the collaborated model building.

To provide such a framework, we have been developing the system called "Payao". "Payao" aims to enable a community to work on the same models simultaneously, insert tags to the specific parts of the model, exchange comments, record the discussions and eventually update the models accurately and concurrently.   "Payao" reads the models in Systems Biology Markup Language (http://sbml.org) format, displays them with CellDesigner, a process diagram editor (http://celldesigner.org) , and provides an interface for adding tags and comments to the models for the community members.

The system "Payao" combines Web 2.0 technologies and model viewer functions online. It consists of client / server utilities: Payao server uses CellDesigner plugin API and obtains the model information (such as Species, Reactions, Compartments) to display. Users can add information such as keywords, links, pubmedID and free text as tags to specified components in the model. Other users can contribute comments to the tags, It maintains the user list with access controls, so that the models can be properly managed. The information on the login users and tag data are stored in RDBMS.   The "Payao" client tool is build by FLEX system

Major features of "Payao" alpha version are as follows;
- User access control
- Register SBML models to the system
- View the list of all the registered models
- Manage MyModels, and FavoriteModels
- View SBML models in CellDesigner 3.5 notation.
- View "Notes" added by CellDesigner 3.5
- Add Tags which contain keywords, links, pubmed IDs and free text to the target Species/Reactions, as well as user-defined components and areas.
- Add comments to the tags

System Requirement:
Tomcat 5.5.x as servlet container, JRE 5.0 and above, Seaser 2 (S2Flex2) as framework.
RDBMS: MySQL 5.0 and above, and CellDesigner 3.5 API

Currently, alpha system is available for development and prototype testing only. After this initial testing phase, we will move to beta-test with public access aiming at November 2007.

In the long run, we would like to develop this system to be a platform for a community model building system to accomodete both computational and experimental data.
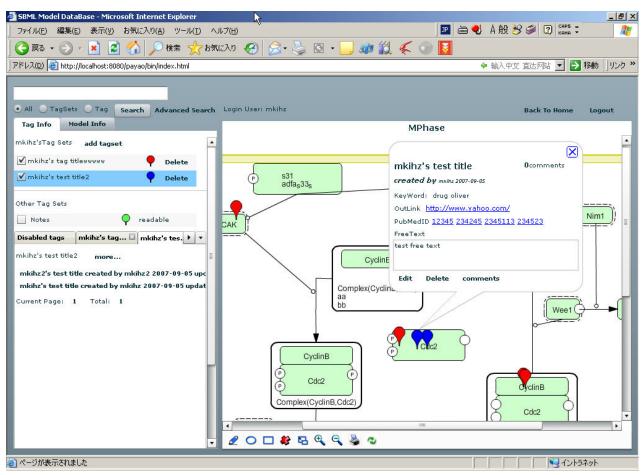

Figure 1: Screen image of "Payao" tagging system alpha version