

“Payao”: Web 2.0 community tagging system for biological networks

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Abstract

Creating an extensive model of gene-regulatory and biochemical networks with latest data is a painstaking task. Curations are essential to create an accurate model. Yet as advancement of the science and technologies are so rapid, once curated models become soon out-of-date and need to be revisited for constant updates. Many pathways and networks are nowadays available online. Now we need a framework to facilitate tracking and update mechanism for modelers and researchers in the community to contribute to the collaborating model building.

To provide such a framework, we have been developing the web system called “Payao”. “Payao” aims to enable a community to work on 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 of adding tags and comments onto the models for the community members.

The system “Payao” combines Web 2.0 technologies and model viewer and tagging functions online. It consists of server / client 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 adequate access control, so that the model can be properly managed. The information on the login users and tag data are stored in RDBMS. “Payao” client tool is built 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 Requirements;

Tomcat 5.5.x as servlet container, JRE 5.0 and above, Struts 2 (S2Flex2) as framework,

RDBMS: MySQL 5.0 and above, and CellDesigner 3.5 API

Currently, alpha version is available for development and prototype testing only. After this initial test, 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 community model building system to accomodate both computational and experimental data.

Figure 1: Screen image of “Payao” tagging system alpha version

