Life Sciences Center of Excellence and the Bioinformatics Common Platform

IBM Taiwan
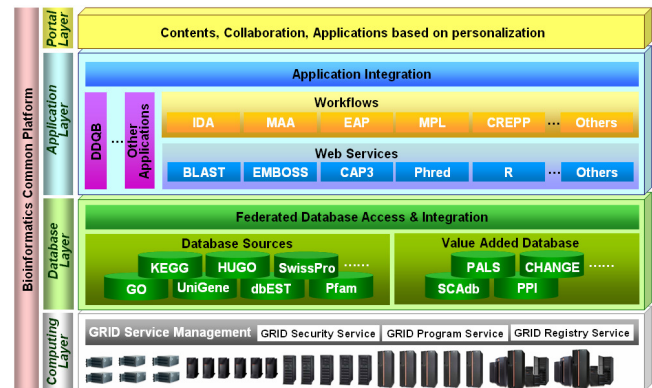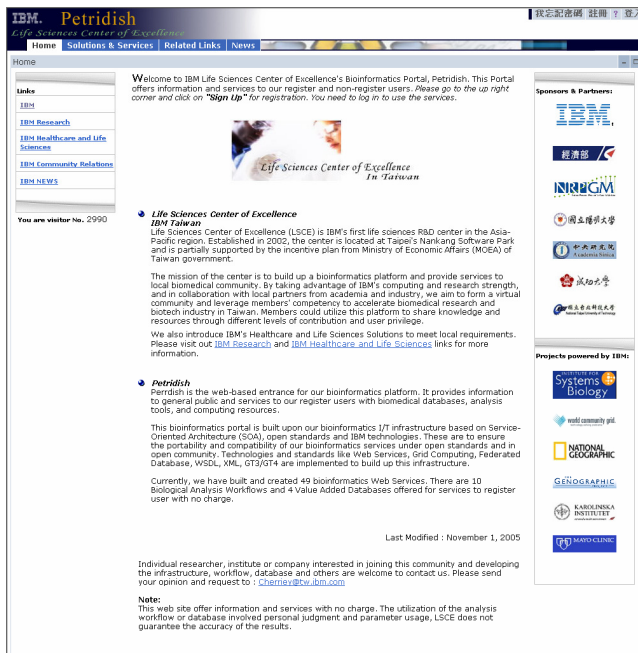## Life Sciences Center of Excellence

Life Sciences Center of Excellence is IBM's first center focused on life science and healthcare solution development and enablement in the Asia-Pacific region. Established in 2002, the center is based in the Biotechnology Plaza of Nankang Software Park, Taipei. It is partially supported by the incentive program from National Research Program for Genomic Medicine (NRPGM) and Ministry of Economic Affairs (MOEA) of Taiwan government.

The mission of the center is to build up a bioinformatics common platform and provide services to local biomedical community. By taking advantage of IBM's computing and research strength, and in collaboration with local partners from academia and industry, we aim to form a virtual community and leverage members' competency to accelerate biomedical research and biotech industry in Taiwan. Members could utilize this platform to share knowledge and resources through different levels of contribution and user privilege.

Petridish Website

Perrdish (http://www.petridish.cc/) is the web-based entrance for our bioinformatics common platform. It provides information to general public and services to our register users with biomedical databases, analysis tools, and computing resources.

This bioinformatics portal is built upon our bioinformatics I/T infrastructure based on Service-Oriented Architecture (SOA), open standards and IBM technologies. These are to ensure the portability and compatibility of our bioinformatics services under open standards and in open community. Technologies and standards like Web Services, SOAP, WSDL, XML, Federated Database, Grid Computing, GT3/GT4 are implemented to build up this infrastructure.

Under this infrastructure, it integrates bioinformatics tools by Web Service, database through federated data integration, and computation power by distributed/grid computing technology. It also reduces the time for programming and makes the component more reusable.

Currently, we have built and created over 50 bioinformatics Web Services. There are 13 Biological Analysis Workflows and 5 Value Added Databases offered for services to register user with no charge.
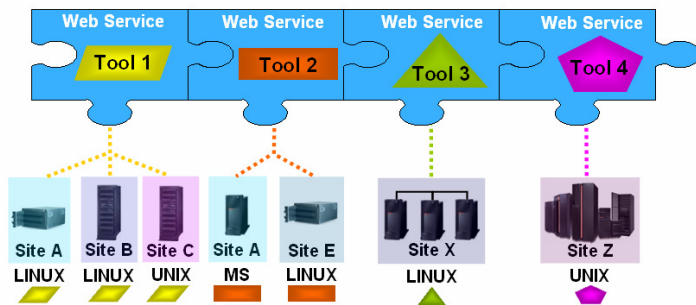
The Web Services include:

Antigenic, Blast family, CAP3, ClustalW, Ednadist, Eprdist, GLAM, Glimmer, HMMER, HMOMENT, Modeller, Phred, ProCheck, ProteinProphet, RasMol, RBSfinder, RepeatMaker, SIM4, Sputnik, SRS, TMHMM, TransTerm, tRNAscan, VectorStrip, functions written in R and others.
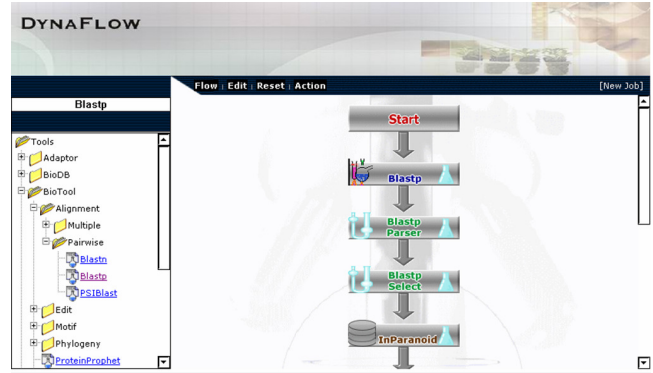
The Biological Analysis Workflows can be used for:

▪ Evolutionary distance analysis

▪ Build a phylogenetic tree using different algorithms

▪ Protein structure prediction

▪ Identification of transcription factor binding sites

▪ Evaluation the results computed by mass analysis software

▪ Identification of antigenic regions of a protein

▪ EST sequence process and analysis

and others.

DynaFlow Workflow Engine

DynaFlow is a workflow engine which can build bioinformatics analysis workflow as user's need with the Web Services provided. All provided bioinformatics tools are wrapped with Web Service standard and can be used like "Lego" as a building unit. The workflow engine will automatically distribute and arrange the job to machine which has installed related bioinformatics tool. All available computing powering can be utilized under this infrastructure and user does not have to care about the computer resources.

By choosing the appropriate bioinformatics tools or database query tools from the DynaFlow tool box, user can build his/her own analysis workflow. User neither needs to go to dispersed web sites for individual bioinformatics analysis nor works on scripts to connect bioinformatics tools any more.

It is welcome that user offers his/her idea and requests for needed bioinformatics tool Web Services. User can then build up his/her own analysis workflow though DynaFlow Workflow Engine.

For More Information
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