



Cyber Learning **wG Update**

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Cyber Learning

Objectives

- ➲ Providing cyber education & research environments in computational science
- ➲ Utilizing Computing resources & services in PRAGMA community
- ➲ Promoting developing & utilizing activities through global collaborations

Goals

- ➲ Development and sharing of Cyber-Learning open platform and various education/research simulation S/Ws for PRAGMA
- ➲ Establishment of international cyber-learning community and connections to higher education
- ➲ Construction of collaboration channels amongst PRAGMA members and among other WGs

Activities

- ➲ Collaborating with Resource/Tele-Science/Bio/Geo Working Groups
- ➲ Co-developing and sharing of various simulation SWs and contents for Cyber-Learning in PRAGMA Community
- ➲ Sharing of information and experience on Cyber-Learning in PRAGMA Community
- ➲ Holding Joint Workshop/Seminar/Contest on Cyber-Learning
- ➲ Providing Cyber-Learning service to PRAGMA Community through Web Portal

Review of Cyber-Learning WG@PRAGMA 25

➤ **Breakout Session I : 14:40~16:30, Oct. 17(Thur), 2013 (Room 504)**

Presentations & Demos :

- ✓ Introduction of EDISON Web Portal for Nano Physics (Dr. Hoon Ryu, KISTI)
- ✓ Introduction of EDISON Web Portal for Computational Chemistry (Dr. Joon Lee, KISTI)
- ✓ Knowbita: Massive Online Open Course Infrastructure for Computing Education (Prof. Uthayopas, Putchong, KU)
- ✓ Introduction to e-learning for EM Education in Taiwan (Dr. His-Ching Lin, NCHC)

➤ **Breakout Session II : 10:40~12:00, Oct. 18(Fri), 2013 (Room 504)**

Discussions :

- ✓ Building a forum that exchange ideas, status, and best practice at a regular basis
- ✓ Sharing technologies/solutions developed by WG members
- ✓ Looking for collaborative opportunities among WG members
- ✓ Holding Cyber-Learning Workshop or EDISON Tutorials at PRAGMA 26
- ✓ Collecting ideas to make others join and actively work, etc.

➤ **Breakout Session III : 14:00~15:30, Oct. 18(Fri), 2013 (Room 514)**

Joint Session with BioScience WG

➤ **Cyber-Learning related Poster Presentation : 16:30~17:30 Oct. 17, 2013**

- ✓ Come and ask your questions on EDISON Web Portal: CFD, Nano-Physics, Computational Chemistry

To do list by PRAGMA 26 and later meeting



- **Testing EDISON portals of 2 areas by WG members**
 - ✓ EDISON_Chem & EDISON_NanoPhysics
 - > trial use for finding out future collaboration items and later use in classroom
- **Starting to discuss about any possible collaboration with BioScience WG**
 - ✓ Prof. SunTae Hwang, Kookmin Uni., Korea
 - ✓ Dr. Sukjong You, KISTI, Korea
- **Holding Cyber-Learning Workshop or tutorial at PRAGMA26**
- **Other things to consider...**
 - ✓ How to get more people attend to Cyber-Learning WG from PRAGMA members?
 - ✓ How to and what to collaborate with other WGs?
 - ✓ Still need to clarify the long term goals and roadmap?

Activities Done After PRAGMA 25 (1/5)



➤ Provision of EDISON Web Portals for PRAGMA Users

- ✓ Trial use of EDISON Web Portal Service in 2 Areas(NanoPhysics, Computational Chemistry) to Hong Kong Univ.
 - NanoPhysics : Dr. Sha Wei of Electrical and Electronic Engin.
 - Computational Chemistry : More than 40 users tried to use.
- ✓ Provides ID and password for trial use of EDISON web portal

EDISON Web Portal for
Computational Chemistry
(<http://chem.edison-project.org>)

EDISON Web Portal for
Nano Physics
(<http://nano.edison-project.org>)

➤ Feedback from WG Users for EDISON Web Portals

- ✓ The interface and GUI are nice and easy to use
- ✓ The simulation solvers are only for educational purpose, not for academic research purpose. Because the solvers is only set for some well-known standard structures, such as 1D diode, MOS FET, etc
 - More real world devices' structures should be provided in the future, such as solar cells, LEDs, lasers.
 - A mesh generation with imposed boundary condition could be provided in the future.
 - Multi-scale solvers should be developed, such as electromagnetics quantum mechanics and drift-diffusion
 - Electron, photon and phonon are most important elements in Physics. Electromagnetics and optics solvers, thermal solvers should be developed and provided.

Activities Done After PRAGMA 25 (2/5)

➤ Visiting for International Cooperation between KISTI and NCHC

- Date: Feb. 17~22 2014
- Place: KISTI, Korea
- Visitors: Dr. Fang-Pang Lin and Dr. Chung I Huang (NCHC)

➤ Seminar & Discussions:

- Title: Development of Earth Science Observational Data Infrastructure of Taiwan (by Dr. Fang-Pang Lin)
- Discuss about future collaborations on Cyber-Learning and others between KISTI, Korea and NCHC, Taiwan

Activities Done After PRAGMA 25 (2/5)



NARLabs

ESOD
Earth Science Observation Database

Development of Earth Science Observational Data Infrastructure of Taiwan

Fang-Pang Lin
National Center for High-Performance Computing, Taiwan

KISTI, Daejeon, 17 Feb 2013



➤ Meeting for Collaboration between EDISON and ActiveFolder

- ✓ Date: Feb. 22 2014
- ✓ Place: Kookmin University, Korea
- ✓ Participants: Prof. Sun-tae Hwang (Kookmin Univ.); Dr. Ruth Lee (KI STI) and related 4 researchers
- ✓ Discussions:
 - Identify the possibility of integration between IceBreaker on EDISON and ActiveFolder
 - Identify the correlation relationships between Science AppStore and ActiveFolder
- ✓ Possible Scenarios:
 - ActiveFolder Task Manager registers the results downloaded from EDISON and manages pre/post process information of the solver
 - ActiveFolder could be worked as a local system once the jobs passed by EDISON portal



Integrating All the Activities of Simulation on File System

- ➲ Active Folder – good for case comparative study
 - Tasks
 - ✓ Described as regular folders and files
 - Product
 - ✓ Input or output of simulation
 - ✓ Can be handled like regular file by using legacy software
 - ✓ Contains provenance information (meta data, task info, etc)
 - ✓ Can be reproduced by the task which is extracted from the provenance information
 - Apps(Computing Resource)
 - ✓ Computing server(Local, Grid, Cloud, what ever, ...) is registered as regular folders and files
 - ✓ To submit a Job(task), just Drag&Drop the task folder to the folder which represents computing server

➤ Meeting for Collaboration between EDISON and BioKnowledge Viewer

- ✓ Participants: Dr. Sukjong You (KISTI), Dr. Ruth Lee (KISTI) and related 4 researchers
- ✓ Discussions:
 - Identify the integration between EDISON_Chem and BioKnowledge Viewer
 - Manuals of BioKnowledge Viewer will be prepared and released.
 - BioKnowledge Viewer Service on EDISON Portal will be serviced

Activities Done After PRAGMA 25 (4/5)

Overview of BioKnowledge viewer

- Text-mining system for constructing biological networks
- Making a biological interaction map for user's query
- Providing an interactive navigation interface with using the graph database (Neo4J)

<http://bioknowledgeviewer.kisti.re.kr>

The screenshot shows the BioKnowledge Viewer interface. At the top, there is a navigation bar with links for HOME, DOCUMENTS, DOWNLOAD, and CONTACT. Below the navigation bar is a large graph titled "BioKnowledge Viewer". The graph consists of various nodes representing biological entities like "tertiary tyrosine phosphorylated proteins", "co-crosslinking surface immunoglobulin NEU/RAK", "adapter protein NEU/RAK", "SAP kinase NEU/RAK", "chemical peptidase NEU/RAK", "docking protein NEU/RAK", "essential sigma factor NEU/RAK", "FOS", "SH2 domain binding motif NEU/RAK", "Sre kinases NEU/RAK", and "tropomyosin NEU/RAK". Edges between nodes are labeled with terms such as "INCREASE", "REDUCE", "CALL", "NEU/RAK", "NEU/RAK", "NEU/RAK", and "NEU/RAK". On the right side of the graph, a sidebar contains the text: "Generate a biological network" and "BioKnowledge Viewer is designed for constructing a biological network based on text-mining tools. Biologists can easily make a biological interaction network by typing a keyword to analyze the pubmed literature using server side text-mining system". Below the graph, there is a descriptive text: "BioKnowledge Viewer which can generate a biological interaction network provides a useful way which is biologists can easily construct a biological network using text-mining system with manual curation process."

Features	Powerful text-mining on server-side	Manage the networks with Neo4J	Curate and expand the user's networks easily
BioKnowledge Viewer has useful feature for constructing a biological network.	We provide server-side analysis service that can analyze the pubmed data. BioKnowledge Viewer employed Metamap and ABNER as a biological tagger so that biological entity including gene, protein and other objects can be identified.	BioKnowledge Viewer has been implemented with Neo4J which is a graph database. User can manage the biological network in user's PC with Neo4J and navigate the network on BioKnowledge Viewer.	User can check the text-mining results on BioKnowledge Viewer and cure the data. If you want to construct huge biological network, you can analyze several keyword and merge the network on it.

Activities Done After PRAGMA 25 (5/5)



Taiwan–Korea Cyber–Learning Joint Workshop

Date: April 9th, 2014 / Venue: Tainan, Taiwan

Sponsors: NARL, Taiwan & KRCF, Korea

Titles	Presentation
Cyber-Learning Environments & Software	
Cyber-Learning Activities in Taiwan	Hsi-Chin Lin
Cyber-Learning Activities in Korea	Ruth Lee
Cyber-Learning Activities in Hongkong	Wing Keung Kwan
Coffee Break	
Applications of Cyber-Learning in CFD & Nanotechnology	
CFD in EDISON Web Portal	Seonguk Lee
CFD Cyber-Learning Platform at NCHC	Heng-Chuan Kan
Nontrivial topological electronic structures in a single Bi(111) bilayer on different substrates	Heng-Chuan Chuang
Nano Physics in EDISON Web Portal	Hoon Ryu
The Analysis of regulatory networking with non-coding RNA	Po-Han Lee
Summary & Wrap up	



Meetings for CL WG@PRAGMA 26



- **Breakout Session I : 16:00~17:00, April 10(Thur), 2014 @Room I V**
 - ✓ Discussions for exchanging ideas, status, best practices and etc
- **Cross WG Session : 9:50~10:50, April 11(Fri), 2014 @Chung-Hua Hall**
- **Breakout Session II : 14:00~15:20, April 11(Fri), 2014 @Room IV**
 - ✓ Discussions for future action and collaboration items among participants
- **Cyber-Learning related Demo on EDISON_NanoPhysics : 17:00 ~18:00, April 10(Thur), 2014 @Chung-Hua Hall**

Open for everyone.

Please come & join our Cyber-Learning WG!!!

Thank You!!!