

Cyber-Learning WG Update

October 18, 2013

**Ruth J Lee (KISTI),
Hsi-ching Lin (NCHC),
Putchong Uthayopas (KU)**



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. Uthay opas, Putchong, KU)

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

Presentation

- “Introduction to e-Learning Platform for EM Education in Taiwan”.
(Hsi-Ching Lin, NCHC)

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 Bio WG

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

- EDISON Web Portal: CFD, Nano-Physics, Computational Chemistry

EDISON Portal for Nanophysics

The screenshot shows a web browser window for the 'Edison Nano-physics' project. The URL is nano.edison-project.org. The page features a header with the project logo, navigation links for 'ABOUT' and 'SCIENCE APPSTORE', and a search bar. On the left, there's a sidebar with icons for 'Appstore', 'Simulation', and 'Virtual Lab'. The main content area displays a 3D visualization of a 'Crystalline GaAs bulk' structure composed of red and blue spheres connected by lines, labeled 'Arsenide' and 'Gallium'. Below this is a copyright notice: 'Copyright © KISTI Supercomputing Center. All Rights Reserved.' To the right of the visualization is a 'Login' form with fields for 'ID' and 'PW', and a 'LOGIN' button. Below the login is a link to 'Create Account' and another to 'Forgot password'. Further down is a map titled 'PRAGMA Grid/Cloud' showing a network of nodes across the globe, with labels for various countries and institutions like KISTI, NUS, and ANU. At the bottom, there are sections for 'System Resource Statistics', 'News', 'FAQ', and logos for various partners including NRF, KISTI, and KAIST.

EDISON Nanophysics: Technical Approach



- 4 steps to support “easy simulations”

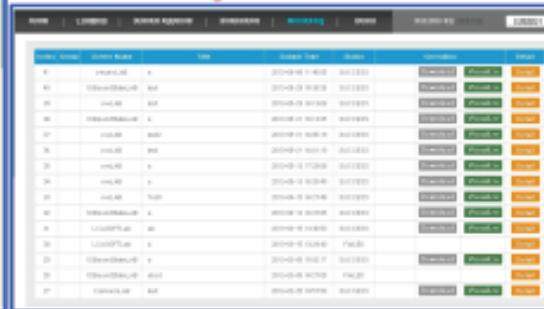
STEP 1: Selection of a TCAD Software



STEP 2: Control of Simulation Parameters



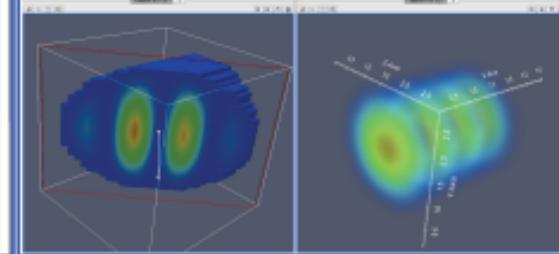
STEP 3: Monitoring of Simulation Jobs



STEP 4: Interpretation of Results



4.2. 2-D/3-D Visualizer (Paraview)



- A few points for remarks

- **Native-web interface:** Do not invoke GUIs through X-term. Light - a clear strength in resource overhead for supporting multiple job requests.
- **Job monitoring:** Submitted jobs runs in the backend HPC. Provides a control interface of submitted jobs – In the case of X-term GUIs?

EDISON Portal for Computational Chem



EDISON Computational C x chem.edison-project.org

애플리케이션 웹 조작 갤러리 IE에서 가져온 북마크 추천 사이트

EDISON_chem

ABOUT SCIENCE APPSTORE

EDUCATION-research Integration through Simulation On the Net
Computational Chemistry

Length Scales Time Scales

Molecular Modeling using Multiscale Simulations
Multiscale Systems (MMMS)

Bio & Complex Systems (MMBS & MMCS)
Molecular Modeling for Bio & Complex Systems

Dynamics Systems (MMDS)
Molecular Modeling using Dynamics Simulations

Quantum Systems (MMQS)
Molecular Modeling using Quantum Simulations

Quick

- Appstore
- Simulation
- Virtual Lab

System Resource Statistics

Cluster	Total	Used	Avail
vCluster	32	0	32

News

- EDISON 포털 서비스가 2013년 9월 3...
- 강의교재 03
- EDISON 여름학교 강의자료 4 SW 등록메...
- EDISON 여름학교 강의자료 3. 입출력프로...
- EDISON 여름학교 강의자료 2. 사이버랩

FAQ

There are no data

미래창조과학부 NRF 한국연구재단 KISTI 국기자금회계정보연수원 EDISON

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EDISON Portal for Computational Chem

PRAGIA

The screenshot shows the 'Science AppStore' section of the EDISON Portal. At the top, there are tabs for 'ABOUT', 'SCIENCE APP STORE' (which is highlighted with a red checkmark), and 'SIMULATION'. Below this, there's a heading 'EDucation-research Integration through Simulation On the Net Computational Chemistry'. The main area displays five software applications:

Index	SW name	Version	Affiliation	Name	Date	Manual	Run
5	Schrodinger equation solver for 1D model potentials	Ver 1.0	KAIST	Wooyoun Kim	2013-09-16		
4	GalaxyDock: Protein-ligand docking program	Ver 1.0	Seoul National University	Chaok Seok	2013-09-16		
3	Wavepacket Dynamics Program	Ver 1.0	Seoul National University	Seokmin Shin	2013-08-29		
2	Molecular Dyanmics simulation program for two different types of the LJ particle	Ver 1.0	Sejong University	Soonmin Jang	2013-09-16		
1	GalaxyTBM: Template-based protein structure prediction program	Ver 1.0	Seoul National University	Chaok Seok	2013-08-29		

Below the table, there are filters for 'Problem filter', 'Search', and 'View all', and sorting options for 'Date', 'Affiliation', and 'SW name'.

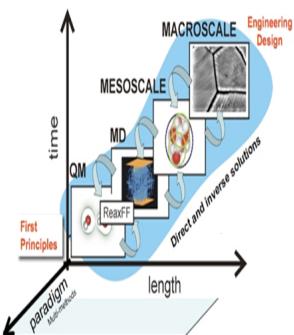
EDISON_Computational Chemistry

Advance on the students' adoptability for the advanced technology by improving education-research level

Development of simulation program and contents for Chemistry education and research

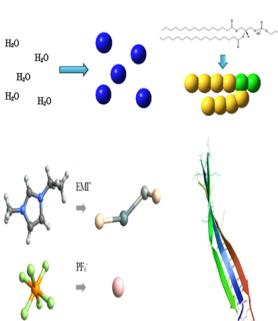
Multiscale Systems

QM/AM/MM multiscale computation S/W and contents



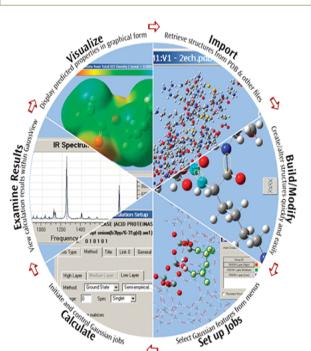
Dynamics Systems

Dynamic system modeling S/W and contents



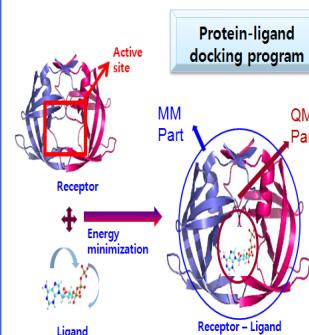
Quantum Systems

Molecular structure/energy/orbital function/spectrum computation S/W and contents



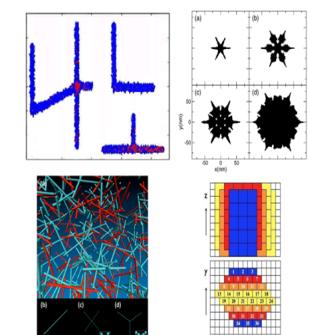
Bio-systems

Biomolecular modeling S/W and contents



Complex systems

Material and complex modeling S/W and contents

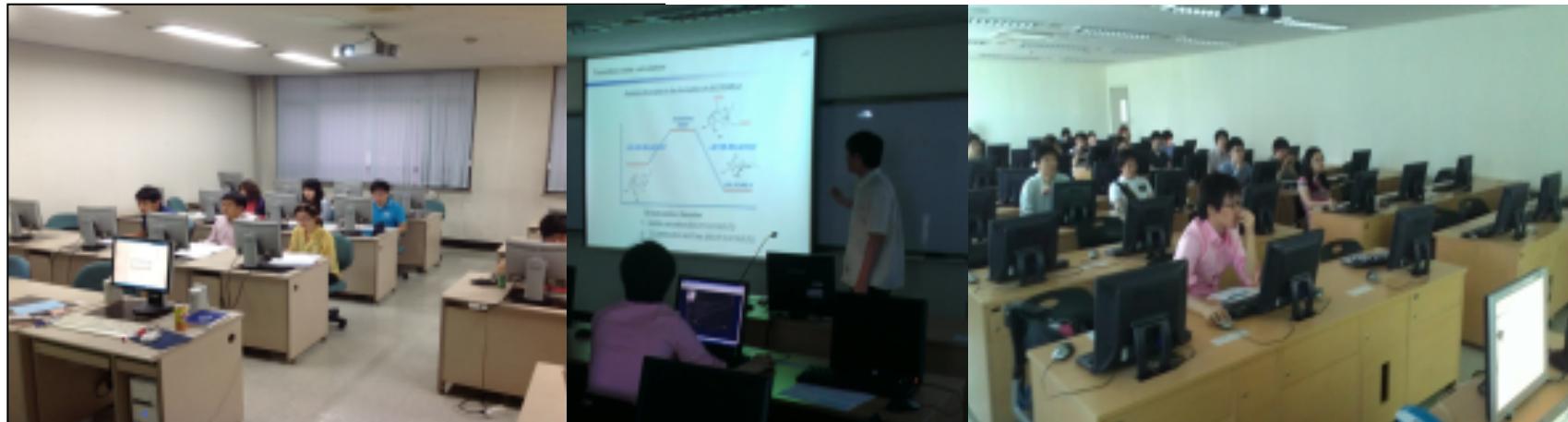


Utilization of the cyberinfrastructure of KISTI for supporting stable computational resource



□ EDISON Chem User Services (Total: 5,118 students)

- 1st semester 2011 : 1,265 students
- 2nd semester 2011 : 1,399 students
- 1st semester 2012 : 1,377 students
- 2nd semester 2012 : 1,077 students



EDISON Chem (<http://chem.edison-project.org>)

Knowbita

Massive Online Open Courseware Infrastructure for Kasetsart University

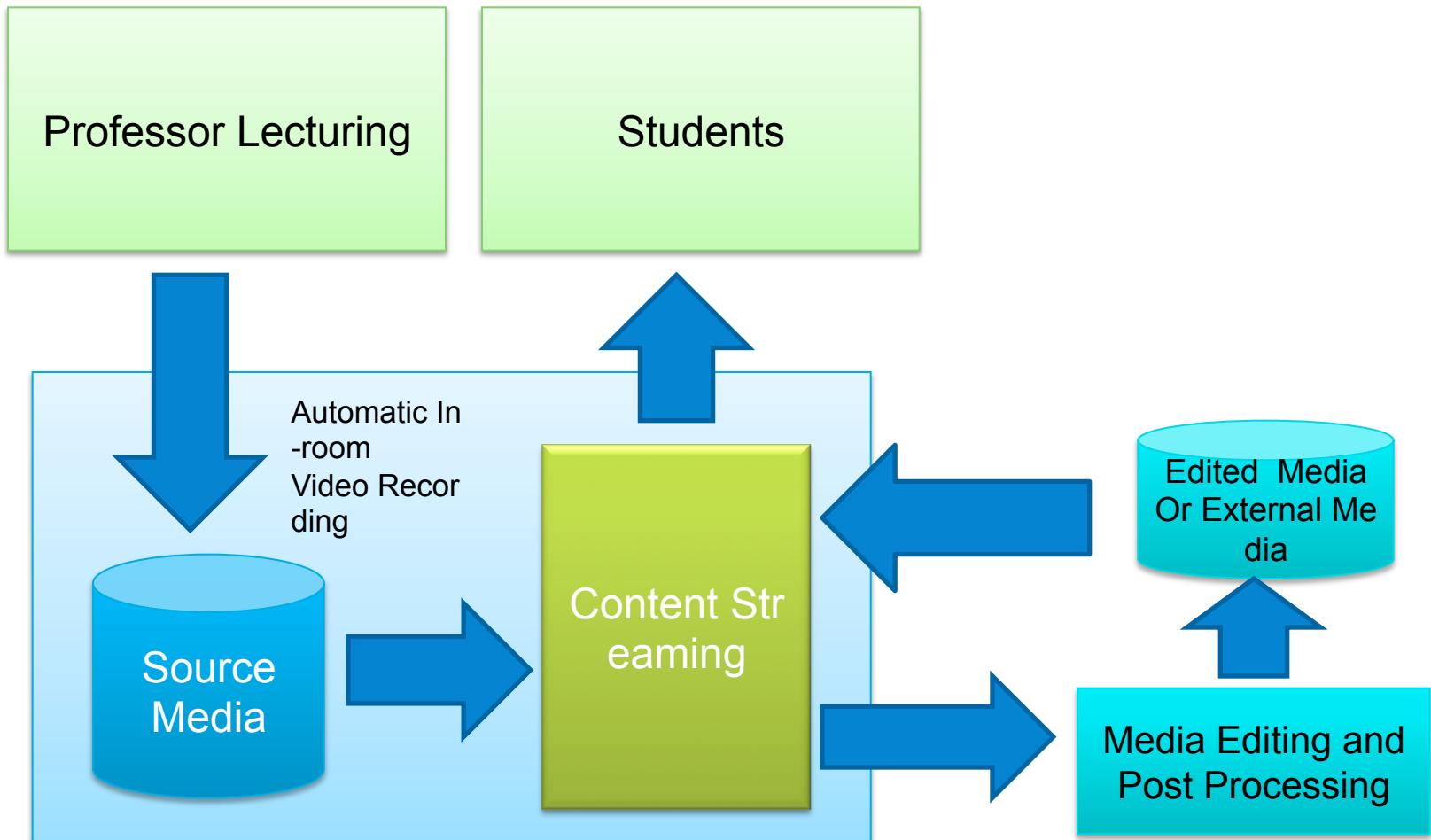
Putchong Uthayopas
Department of Computer Engineering, Faculty of Engineering, Kasetsart University, Thailand
pu@ku.ac.th



Knowbita project

- ➔ Knowbita = Knowledge Based Interactive Teaching Assistant
- ➔ Collaboration between local Thai software company: Nyancode Inc. and Department of Computer Engineering
- ➔ Nyancode is an expert in CDN, Video Streaming for large media company in Thailand
- ➔ We help them in design concept for software that will be used by our department

New workflow



Automatic and Low cost

Summary

- Learning in changing and new media and technology must be employed to facilitate new learning for young generation students.
- Knowbita is a MOOC infrastructure being co-design and developed in Thailand.
- Future technology should be investigated
 - Building more powerful mobile application for Knowbita system
 - Using virtual programming environment to teach student, simulation
 - Building a collaborative platform
 - Gamification

Introduction to e-Learning Platform for EM Education in Taiwan

Hsi-Ching Lin
NCHC

PRAGMA25
10.16-18



Motivations

Challenges in EM educations

- The very first course in EE that simultaneously requires
 - Mathematical skills with vector calculus
 - Physical understanding of wave propagation
- Long history, but we have a very limited time.
- Challenges from the emergent new fields in EE.
- Tendency of downplaying in the curricula in many universities.

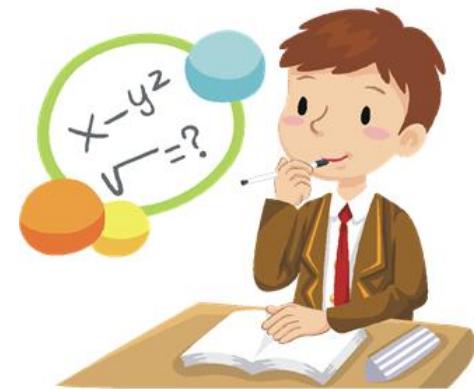
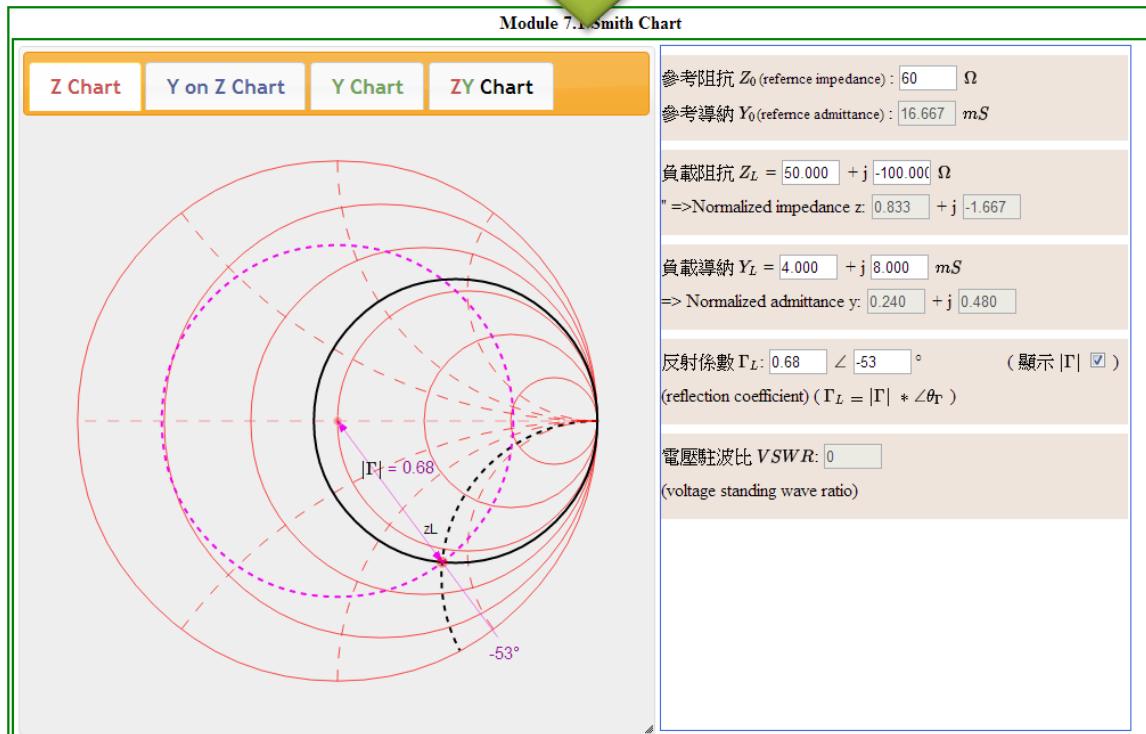
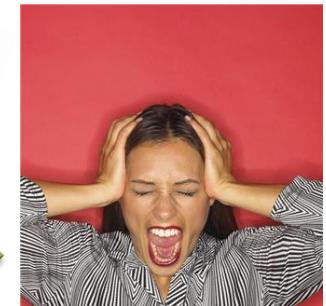
EM Math Equation Animation

$$Z_{in}(z') = Z_0 \frac{Z_L + jZ_0 \tan(\beta z')}{Z_0 + jZ_L \tan(\beta z')}$$

$$\Gamma(z') = \Gamma_L e^{-2\gamma z'} = \frac{Z_{in}(z') - Z_0}{Z_{in}(z') + Z_0}$$

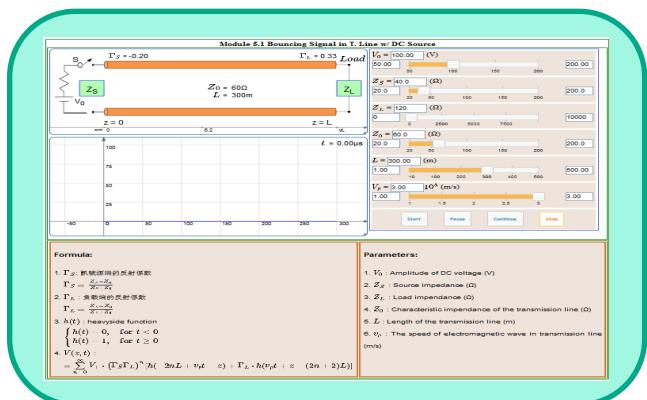


$$VSWR = \frac{1 + |\Gamma|}{1 - |\Gamma|}$$

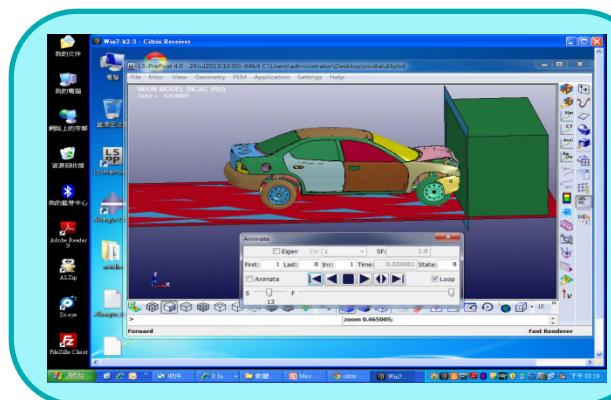


Future Work

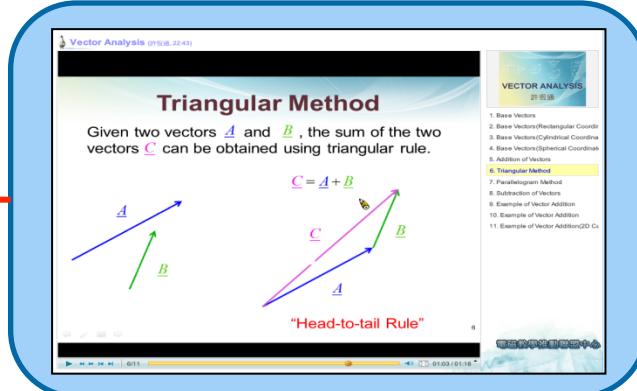
Multimedia-base learning (GUI run on local)



Simulation-base learning (GUI run on remote)



Digital material
Powerpoint, video/audio



Summary of Breakouts

⇒ Short Term Goal by PRAGMA26

1. Testing EDISON portals of 3 areas for global user

- EDISON_Chem -> test by Thailand for later use in classroom
- EDISON_Nano -> test by Taiwan for later use in classroom
- Contents of EM, EE -> test by KISTI for Korean users
- EDISON_CFD -> test by Hongkong for later use in classroom

2. Start to talk with BioScience WG (Prof. SunTae Whang, Dr. Sukjong You) about any possible collaboration

3. Plans to do

- How to get more people attend to Cyber-Learning WG from PRAGMA members?
 - . Working with other WGs
- Holding Cyber-Learning Workshop or tutorial at PRAGMA26
- Still need to clarify the long term goal and roadmap?

Thank You!!!