Simulation based **Cyber-Learning/Distance Education**
WG Update

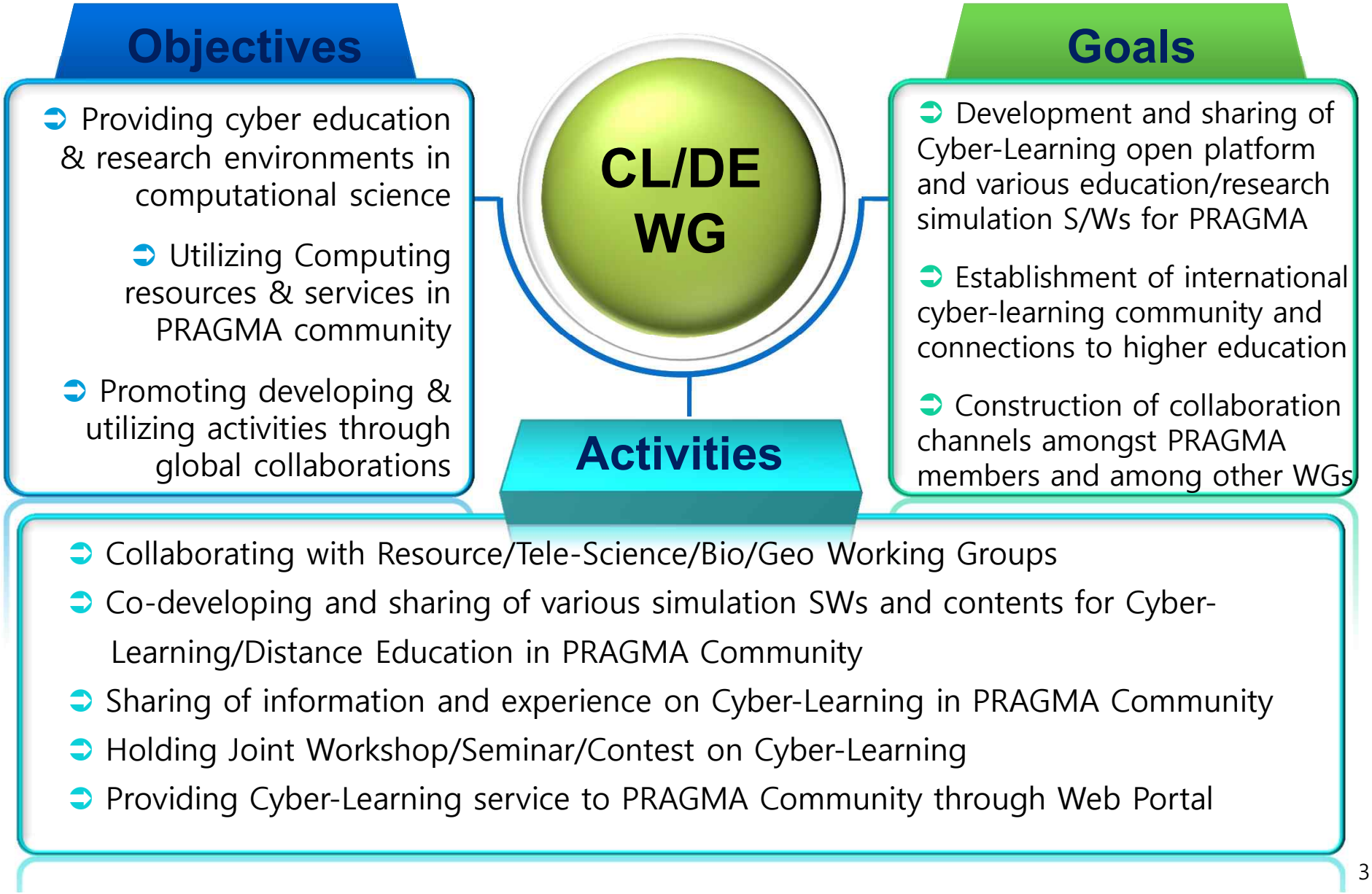
April 13, 2017

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

Contents

1. Overview of CL/Distance Education WG
2. Review of CL/DE WG @ PRAGMA31
3. Ongoing Issues and Activities on CL/DE WG
4. Meetings @ PRAGMA32

1.1 Cyber-Learning/Distance Education WG



1.2 Cyber-Learning/Distance Education WG

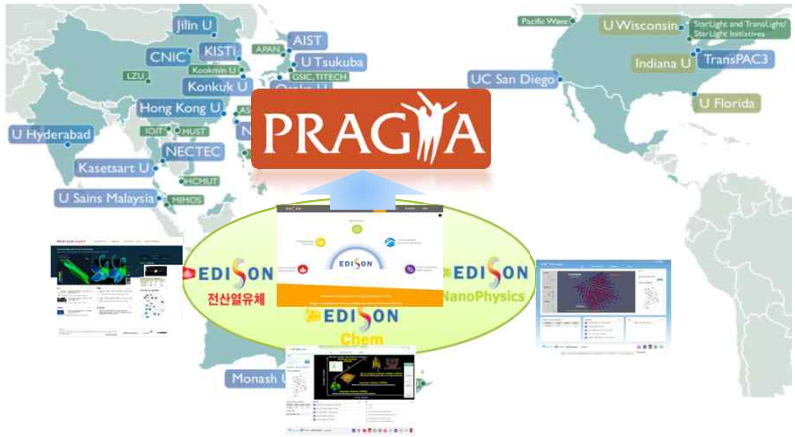
Expanding Cyber-Learning/Distance Education Community in PRAGMA(Pacific Rim Applications and Grid Middleware Assembly)

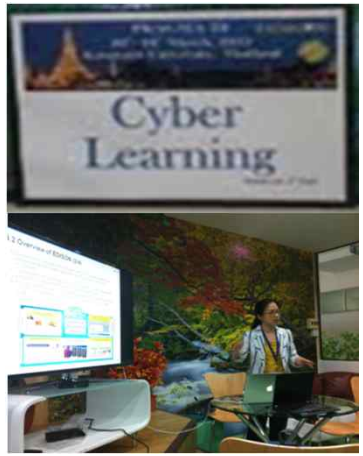
❖ Establishment of PRAGMA Cyber-Learning/Distance Education WG

- Proposing Cyber-learning/Distance Education WG at the 24th PRAGMA Workshop (2013.3.20~23, Bangkok, Thailand)
- Chair(Ruth Lee), and Co-chair(His-Ching Lin, NCHC/Putchong Uthayopas, KU)

❖ Summary of Main Results

- **Promotion of CL/DE WG & Spreading CL/DE through EDISON to the PRAGMA community (Taiwan, Vietnam, Thailand and Hong Kong)**
- **Establishment of EDISON web portal** & deployment of EDISON CFD@NCHC
- **Held a workshop on Cyber-Learning at PRAGMA 26** (2014.4.9~11, Taiwan)





2.0 To do list by PRAGMA 32 and afterward

- **Open EDISON portals for trial use to PRAGMA members**
  - ✓ EDISON portals: EDISON_CFD, EDISON_Chem & EDISON_NanoPhysics

- **Hope to deploy EDISON platform 2.0 on top of the PRAGMA resources and upload simulation solvers and contents developed by one of PRAGMA community members who are willing to share and open them…. BUT, not many request so far….**

- **Other things to do and continuously consider …**
  - ✓ How to get more people interested in simulation-based CL/DE WG from PRAGMA members?
  - ✓ How to and what to collaborate and integrate with other WGs?

2.1 Ongoing Activities Under PRAGMA (1/2)

Int'l Collaboration between KISTI & NCHC Since 2013

❖ **Mutual cooperation plan between KISTI, Korea and NCHC, Taiwan**

- Jointly promote and apply simulation SWs for the purpose of education and research
- Identify research issues in the CFD and Nanophysics sectors and promote joint research
- Share latest research results to save development cost
- Expand mutual system users to cultivate cyber-learning communities
- Share computing resources, information, experience and ideas for the simulation-based cyber learning
- Facilitate researcher-to-researcher exchanges

National Center for High-performance Computing

NARLabs National Applied Research Laboratories

+

Supercomputing Center
The center of National Science & Technology Information Infrastructure

KiSTi www.kisti.re.kr
Korea Institute of Science and Technology Information

2.1 Ongoing Activities Under PRAGMA (2/2)

Deployment of EDISON CFD Site at NCHC, Taiwan

- **Goal: Boosting the CFD community in Taiwan relatively in a short time**
- **Counterparts:** The EDISON team & Dr. H. KAN and Mr. Gary Wu@ NCHC
- **System specification**
  - **Hardware: 4-machine system setup**
    - 3 computing nodes, each with Intel(R) Xeon(R) CPU E5-2640v2@2.00GHz (8 cores, 16 threads) x 2, 48GB RAM, 838GB HDD by RAID5
    - One SSD-based Storage Server
  - Software: EDISON M/W (Job management/metadata framework) and application layers (Liferay-based portal) and one CFD Apps

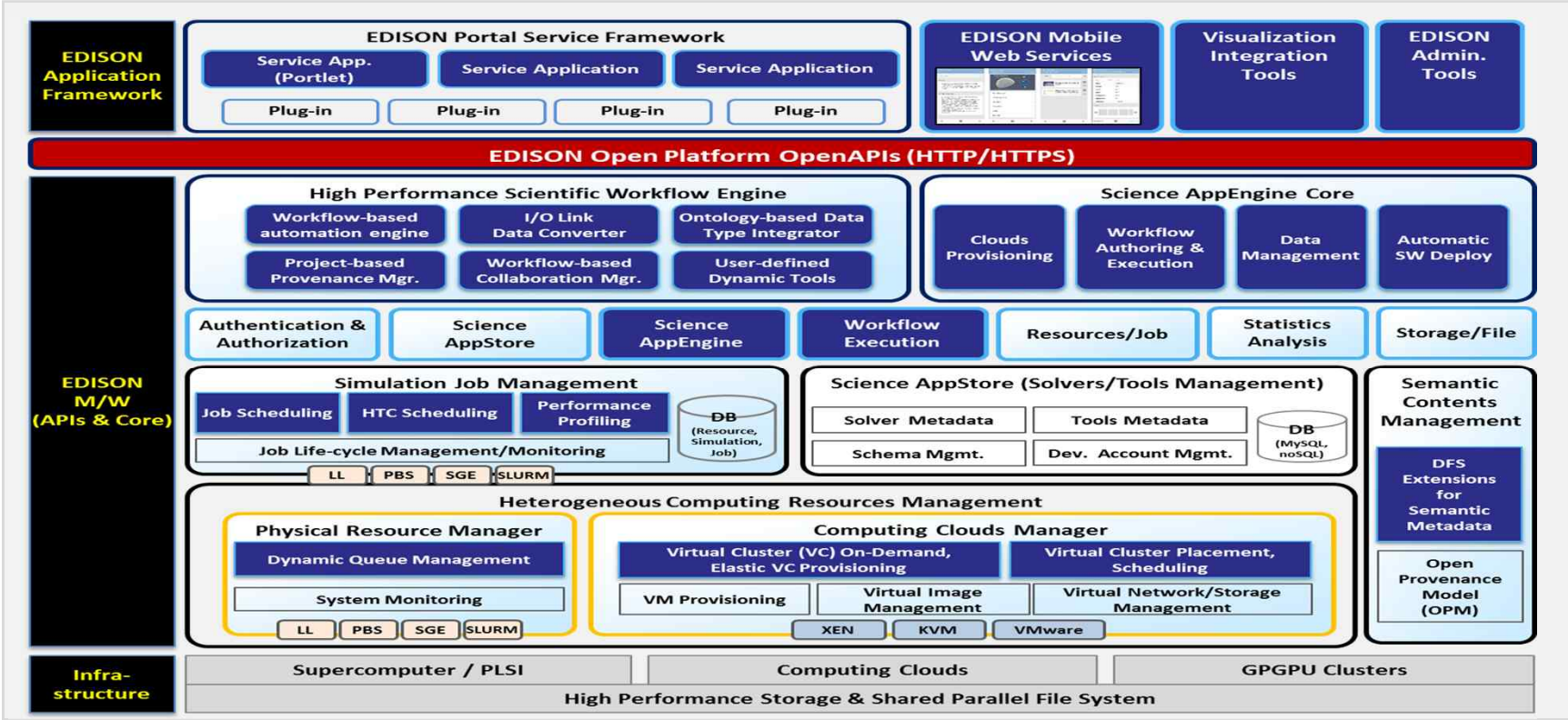
EDISON CFD site at NCHC
based on EDISON Platform 1.0

EDISON CFD site at NCHC
based on EDISON Platform 2.0

2.2 Activities Done After PRAGMA31@KISTI (1/5)

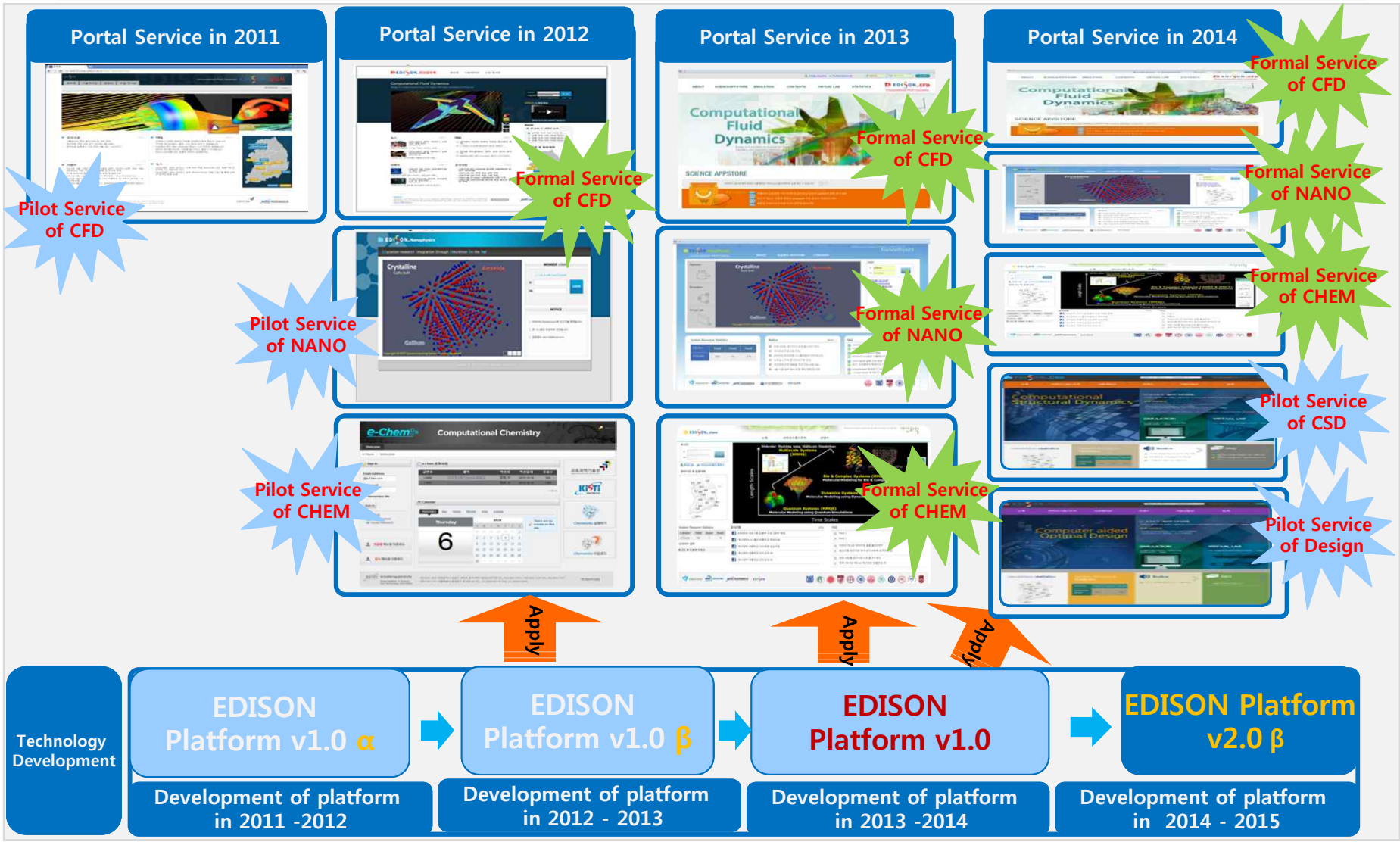
Core components of EDISON open platform 2.0 for CSE

- Establish web portal framework & web portal integrated environment of EDISON to support multidisciplinary computational science and engineering
- Development of core technologies for open platform such as Science AppEngine, optimization of workflow runtime engine & flexible provisioning of computing resources

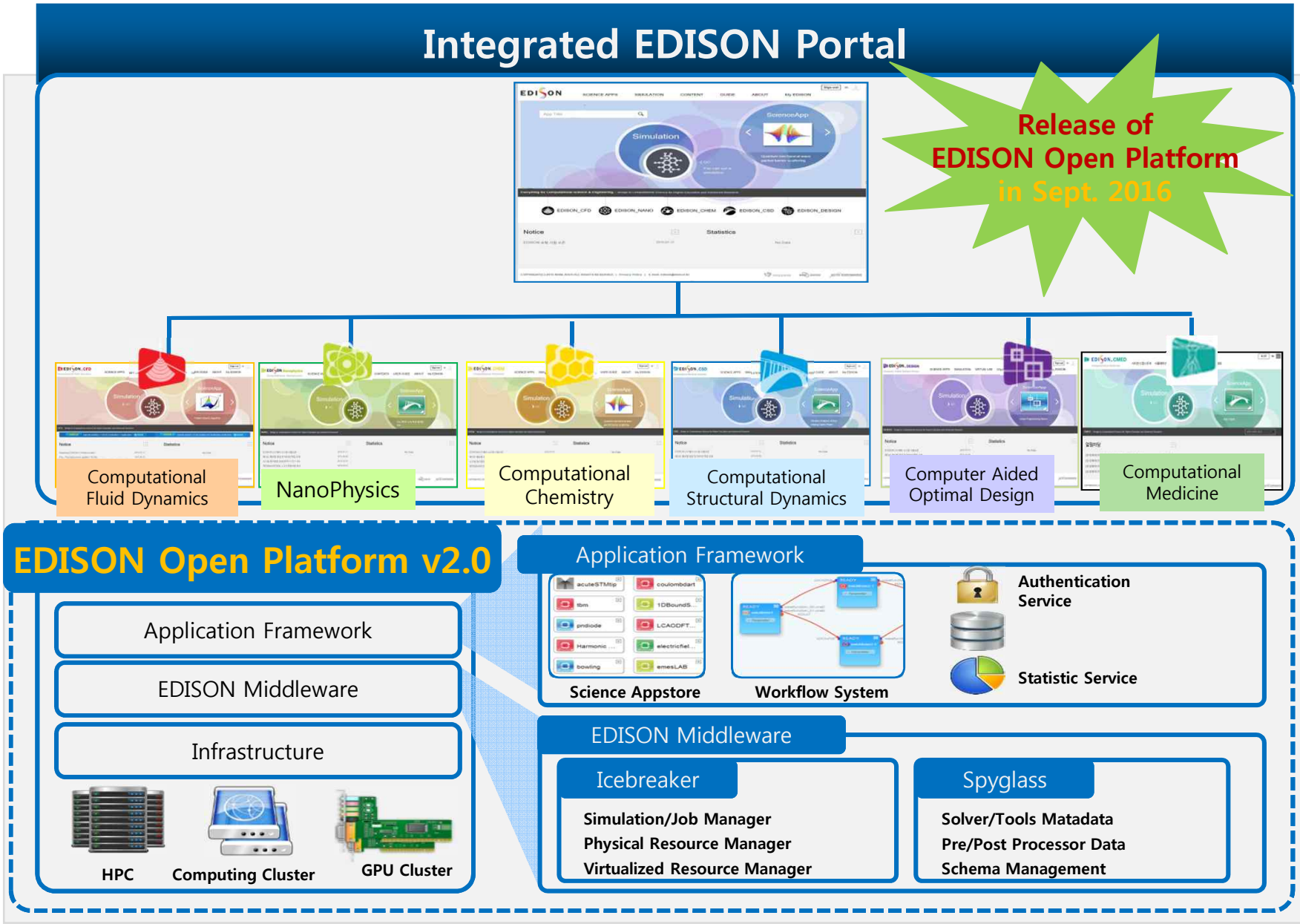


2.2 Activities Done After PRAGMA31@KISTI (2/5)

History of EDISON Platform & Portals

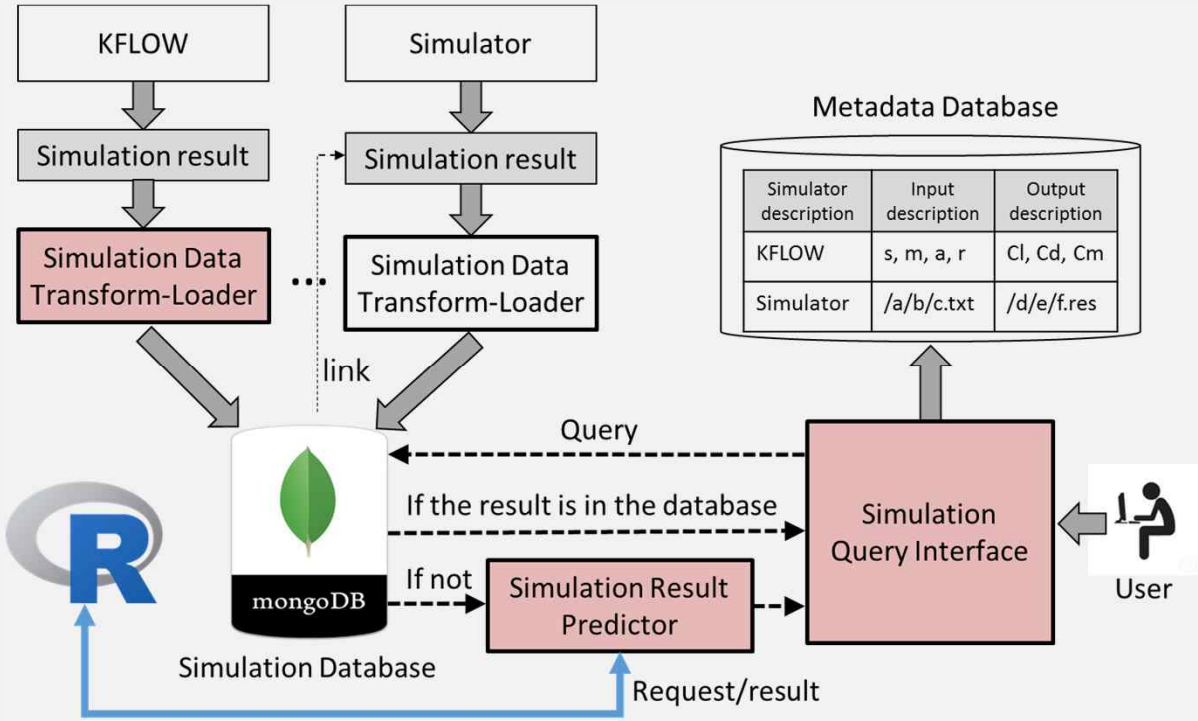


2.2 Activities Done After PRAGMA31@KISTI (3/5)



2.2 Activities Done After PRAGMA31@KISTI (4/5)

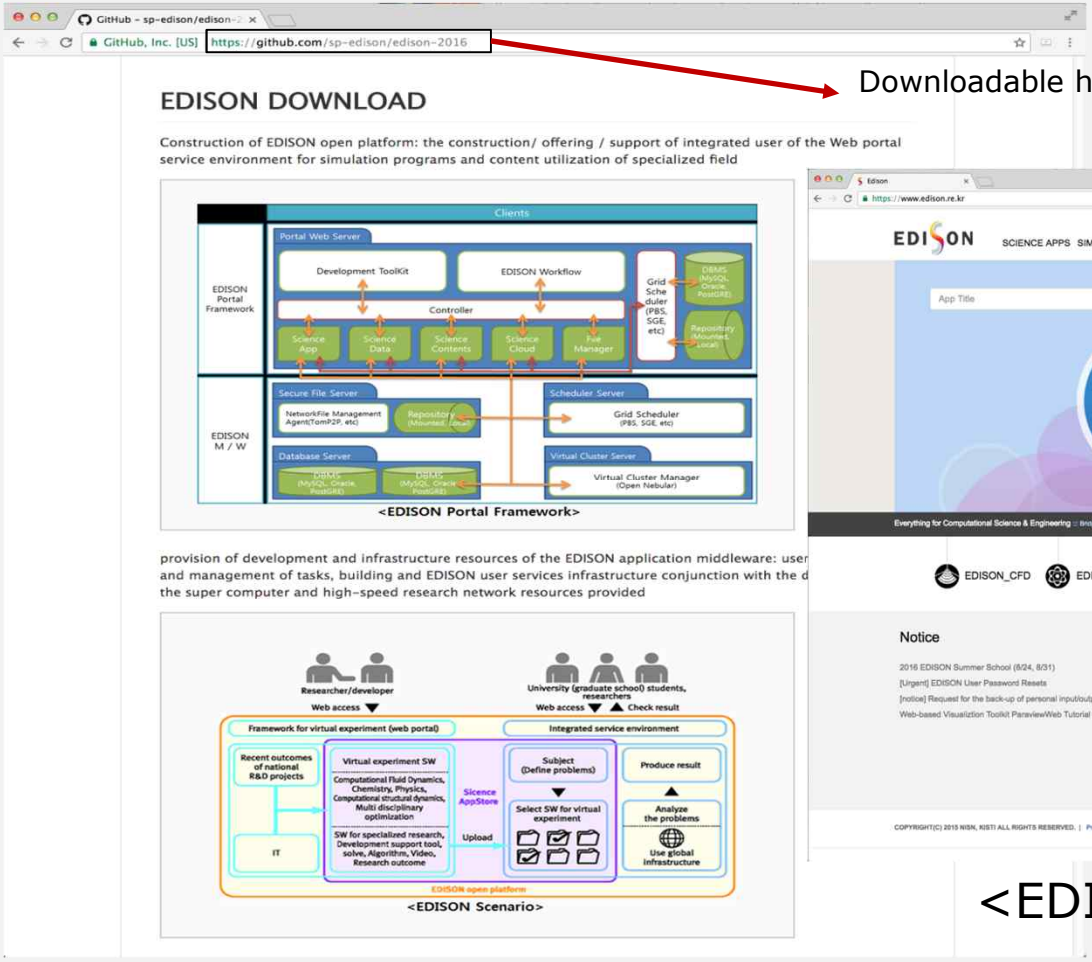
- **Design of data-driven simulation service for EDISON**
  - **For overcoming repetitive simulation executions**
  - **Expecting preliminary service launching early 2018**



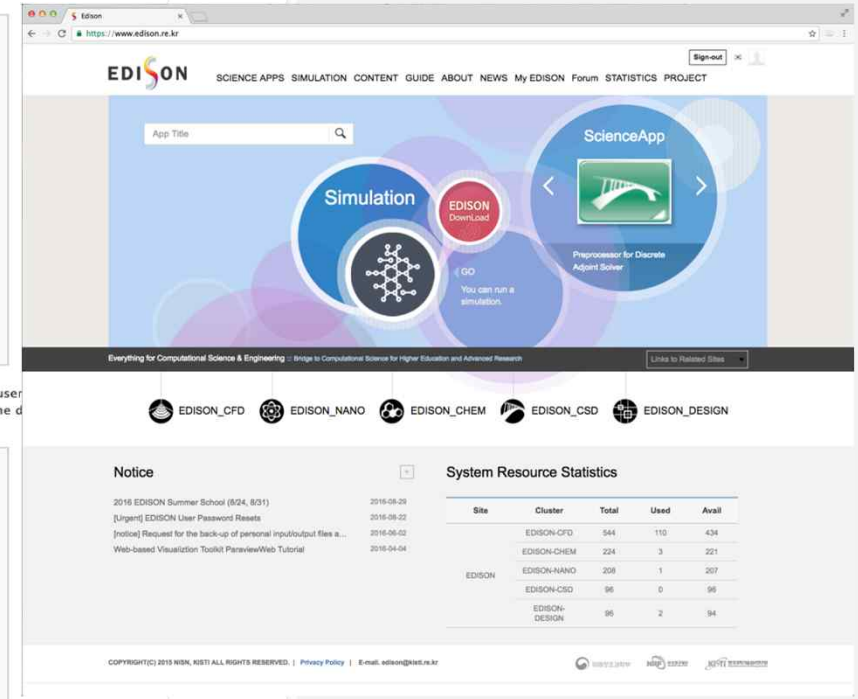
<Data-driven Simulation Service Architecture (for KFLOW + others)>

2.2 Activities Done After PRAGMA31@KISTI (5/5)

- **Release of EDISON Open Platform v2.0**



Downloadable here



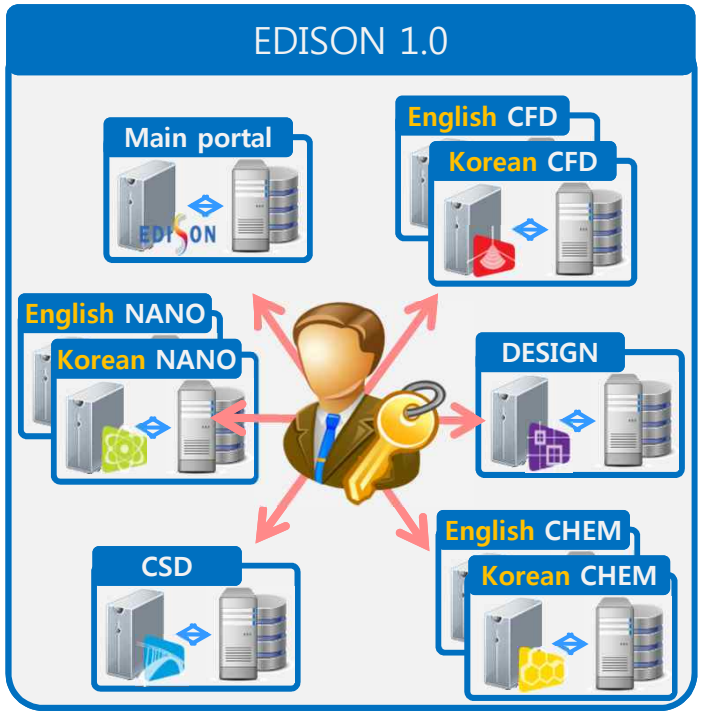
<EDISON Portal Site>

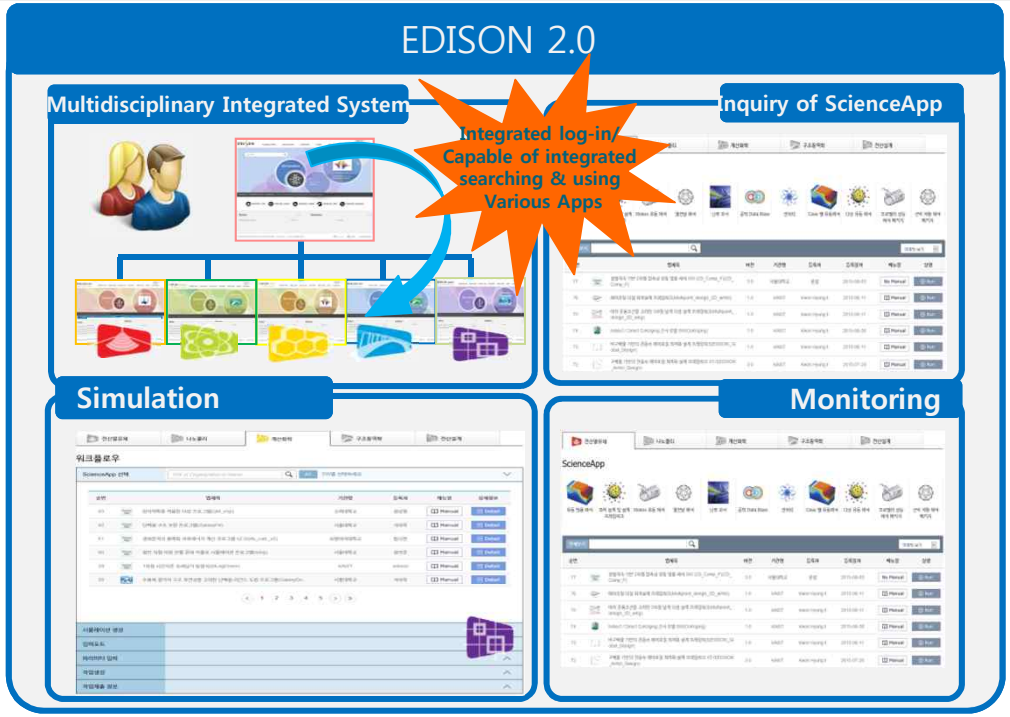
<GitHub repository>

2.3 Excellence of Integrated EDISON Portal (1/5)

Possible to Multidisciplinary convergence study of CSE

- **Integrated log-in with ONE user ID**
  - Search, access & use various Apps of 5 areas of EDISON with one user ID
- **Integration of five ScienceApp databases for each domain field**
- **Search Apps & execute simulation jobs in 6 computational science engineering areas through the EDISON main portal**





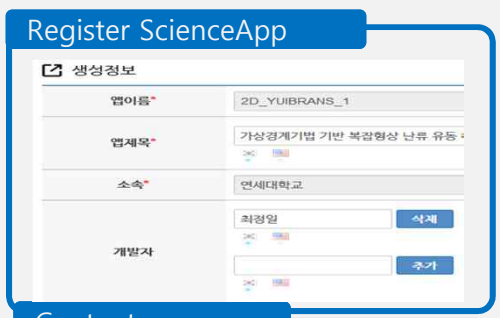
2.3 Excellence of Integrated EDISON Portal (2/5)

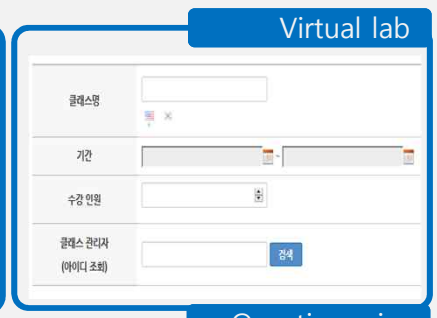
Multilingual support for Global users

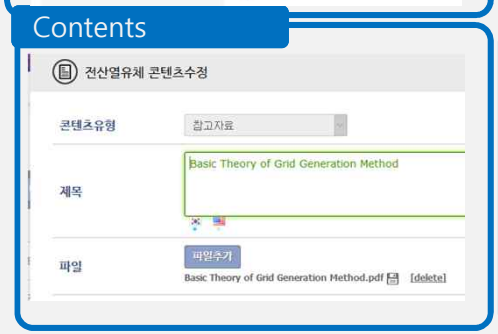
- **Capable of inputting all data input in Korean & English**
  - Capable multilingual support including Chinese & Japanese (about 47 languages)
- **Preparation the foundation for globalization on EDISON Platform and computational science & engineering ScienceApp**

EDISON 1.0

EDISON 2.0







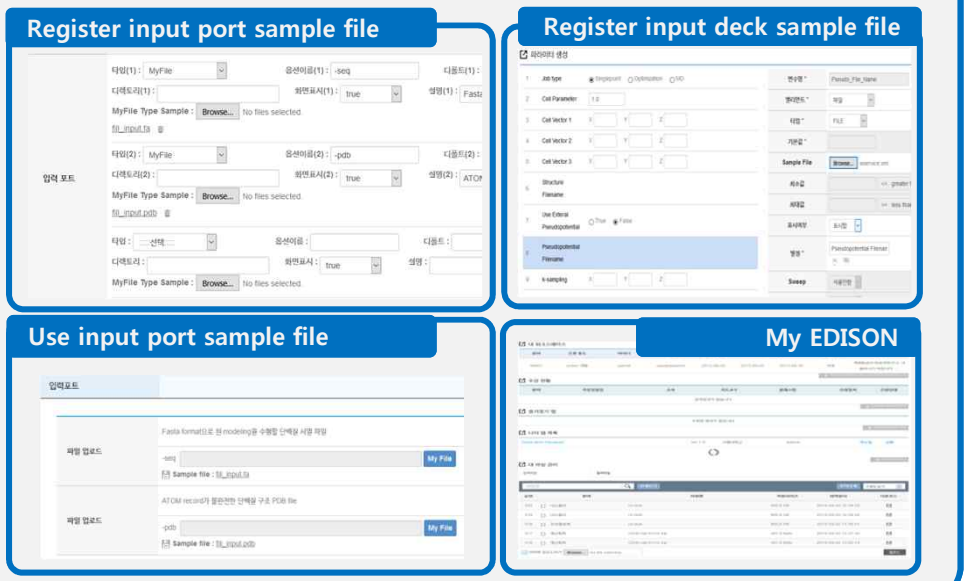
2.3 Excellence of Integrated EDISON Portal (3/5)

Provide user-friendly manuals & various execution samples

- **Apply user requirement :** Total 357 (314 cases solved & improved, 10 cases under progress, 33 cases under process by application center)
- **Provide various sample files for easy execution of ScienceApp**
  - Beginner can execute ScienceApp with one click
- **Provide the user guidance for EDISON portal & enhance personalization**
  - Provide one-click tutorial and detailed manual
  - Capable of easy grasping of using log and enhancing management function by providing My EDISON

EDISON 1.0

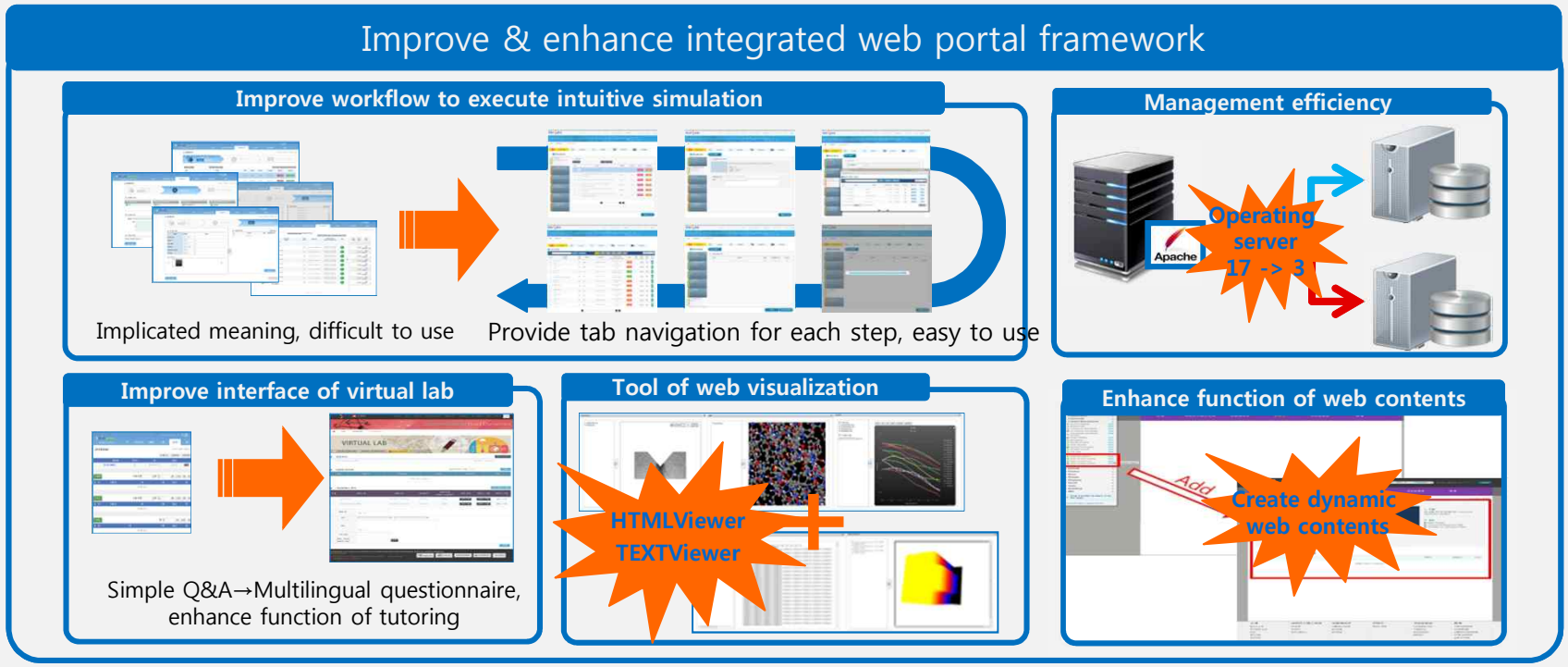
EDISON 2.0



2.3 Excellence of Integrated EDISON Portal (4/5)

Enhancement of integrated web portal framework for various CSE fields

- **Improve web portal framework by applying user requirements**
  - Provide the intuitive & easy user interface on simulation workflow & virtual lab that are difficult to use
  - Improve the performance of visualizing tool of web(improve the speed such as data loading and convergence graph drawing) and develop HTMLViewer & TEXTViewer
- **Strengthen the functions of management of portal, site & web contents**
  - Achieve efficiency of management by minimize operation servers from **17** to **3**
  - Realize duplication of servers to increase stability

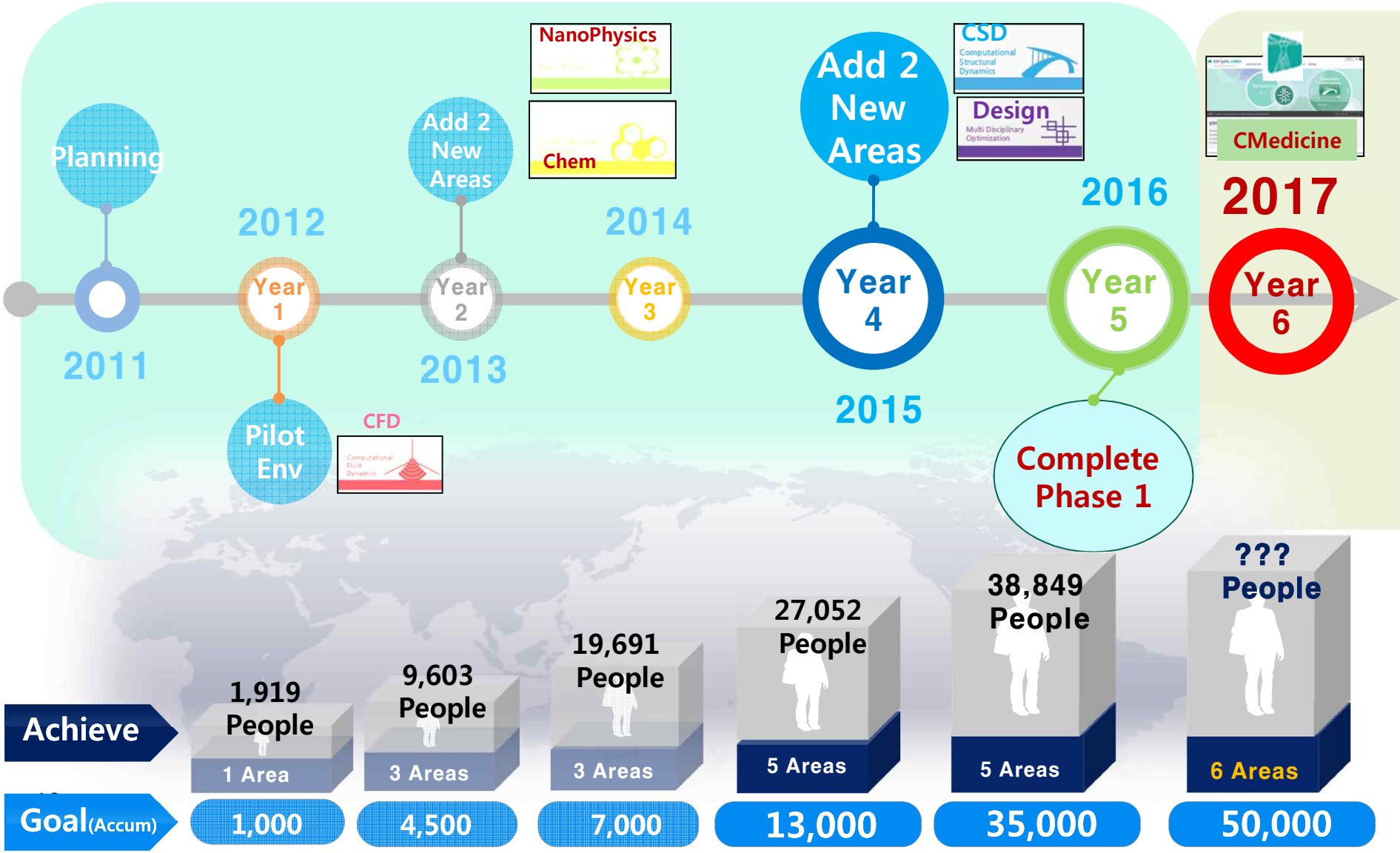


2.3 Excellence of Integrated EDISON Portal (5/5)

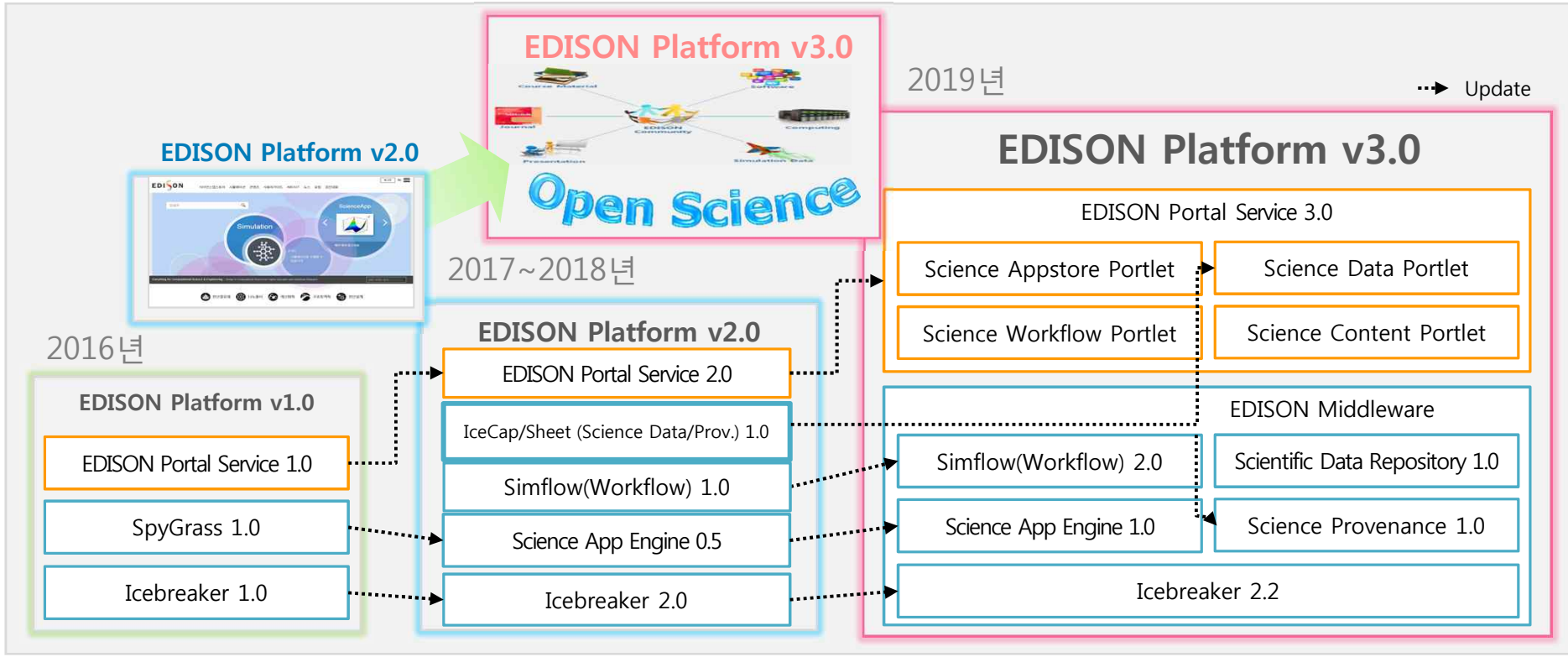
▪ Domestic and International Recognitions

2013 2014 2016

2.4 Status of EDISON User Services for 6 Years



2.5 Plans of EDISON for the next Phase



- **Release of Cloud based Image & Portlet based Liferay Marketplace**


EDISON Site


Github Page


EDISON Site


Github Page

Liferay Marketplace


Cloud based Image

3.1 Ongoing Issues of CL/DE WG (1/2)

- **Initiating by sharing Distance Learning Materials such as video tutorials**
  - ✓ Share expertise among PRAGMA members — e.g., how to deploy a virtual machine (VM) via Rocks, OpenNebula, Ezilla, etc.
  - ✓ Could be shared outside of PRAGMA — e.g., Beth integrated existing online videos as part of her Big Data MOOC class in 2015
  - ✓ PRAGMA content can often be ephemeral — this would be a good way to hold onto knowledge
  - ✓ MOOCs? Beth taught a Big Data class

- **Automating installation to expand usage of EDISON software**
  - ✓ What functionality does EDISON provide? Can we automate its installation — e.g., similar to Lifemapper installation automation work
  - ✓ This could help increase interactions with other PRAGMA WGs — I.e., to create their own EDISON portals (e.g., nanophysics)

3.1 Ongoing Issues of CL/DE WG (2/2)

- **Online guidelines — seasoned developers helping less experienced developers**
  - ✓ Idea from Kar Long Chan (NAIST)
  - ✓ Inspired by gaming (e.g., warcraft)
- **Streamline access to resources for student experimentation**
  - ✓ Heru's students previously used FutureGrid and XSEDE
  - ✓ PRAGMA testbed should be a low-cost way to students to get access to resources for small-scale experimentation
- **Call for simulation solvers and education contents such as tutorials developed by one of PRAGMA community members who are willing to share and open them**
- **Other things to do and seriously consider …**
  - ✓ How to get more people attend to CL/DE WG from PRAGMA members? → Possibly combining related WGs such as Resource WG, BioScience WG and CL/DE WG, and etc
  - ✓ How to and what to collaborate and integrate with other WGs?

4. Meetings for CL/DE WG@PRAGMA32

- **Breakout Session I : 15:15~17:00, April 13(Thur), 2017**
  @ Hall(?)
  - ✓ Discussions for exchanging ideas, status, best practices and etc
  - ✓ **Open for any presentations on CL/DE**

- **Breakout Session II : 10:30~12:30, April 14(Fri), 2017**
  @ Hall(?)
  - ✓ Discussions for future action and collaboration items among participants

Open for everyone.

Please come & join

Cyber-Learning/Distance Education WG!!!

Thank You!!!


12-15 April
2017
Gainesville
FLORIDA
PRAGMA 32
Internet of People and Things