# WG2-Report

## OSS Human Resource Development

Coordinator: Hiroshi Miura(Japan)

(NTT DATA Corporation/IPA)

Korea: Doohyun Kim, China: Chen Zhong

The 8th NEA OSS Promotion Forum

Tokyo, Japan

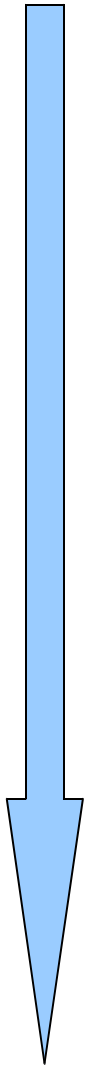
2009.10.20

# Agenda

- WG2 plan and achievement
- CJK OSS common model curriculum
- CJK OSS HRD status
- The OSS HRD activities of CJK
- WG2 future plan
- Conclusion

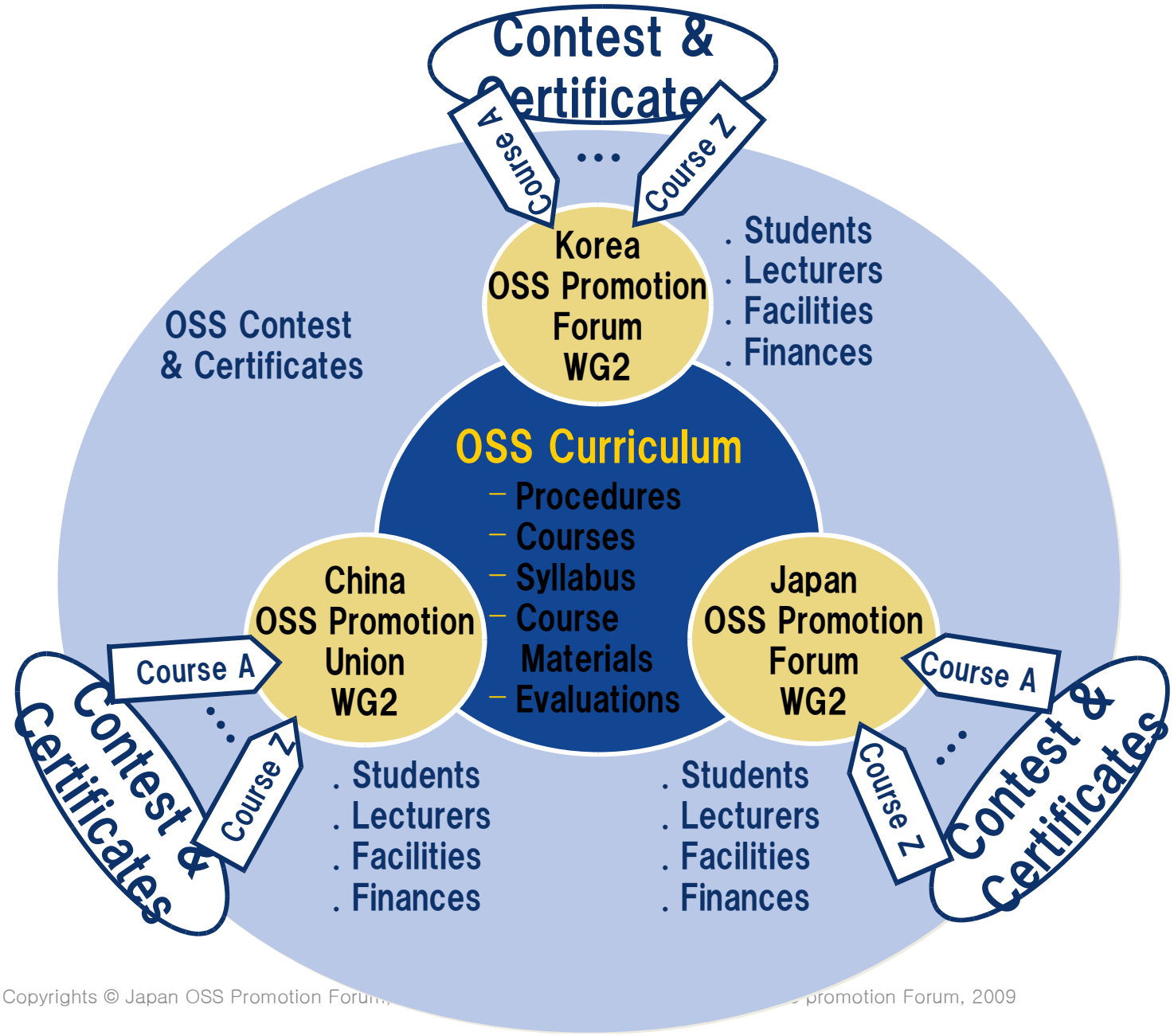
# WG2 plan and achievement

# WG2 Roadmap

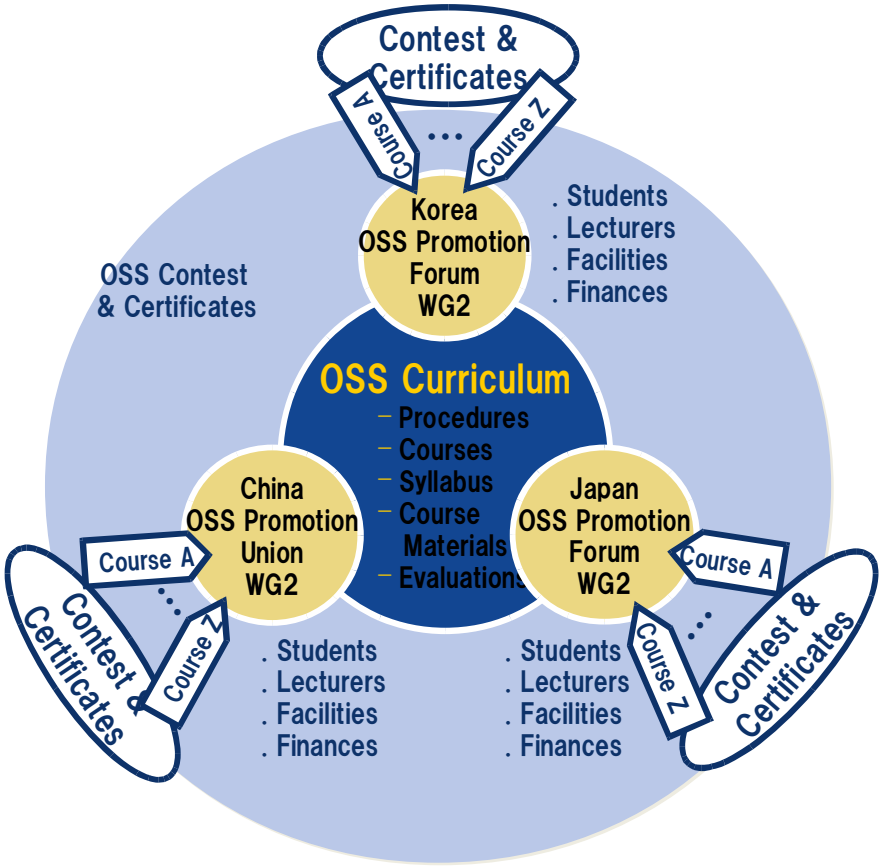


- Short-term goal ← DONE!!
  - Current CJK analysis with common skill category
  - "NEA OSS HRD Analysis Report (ver.1.0)" - by Dec. 2007
- Mid-term goal ← NOW!! working
  - Define CKJ course level by skill set and skill level
  - "NEA OSS HRD Analysis Report (ver.2.0)"
- Long-term goal ← NOW!! working
  - Define CJK Model Curriculum
  - "NEA OSS HRD Model Curriculum"
- Ultimate goal
  - Define Joint Certificate
  - "NEA OSS HRD Joint Certificate (ver.1.0)"

# Cooperation Framework



# CJK achievement




- Define CJK common OSS curriculum V1
- Start the special contribution award
- Make common sense with needed skill levels for OSS engineer
- Study on CJK certification scheme

# OSS model curriculum for Software Engineer Education

## - Skill-sets and Sample curriculum -

# Skill Set

- In the field of OSS, the **skill** means **expertise and knowledge** for following diverse, but not limited, activities:
  - Creating and maintaining new OSS projects
  - Updating existing OSS as contributors or maintainers
  - Applying OSS to software development/system development
  - Utilizing OSS to system construction/ management

# CJK Standard Skill Set

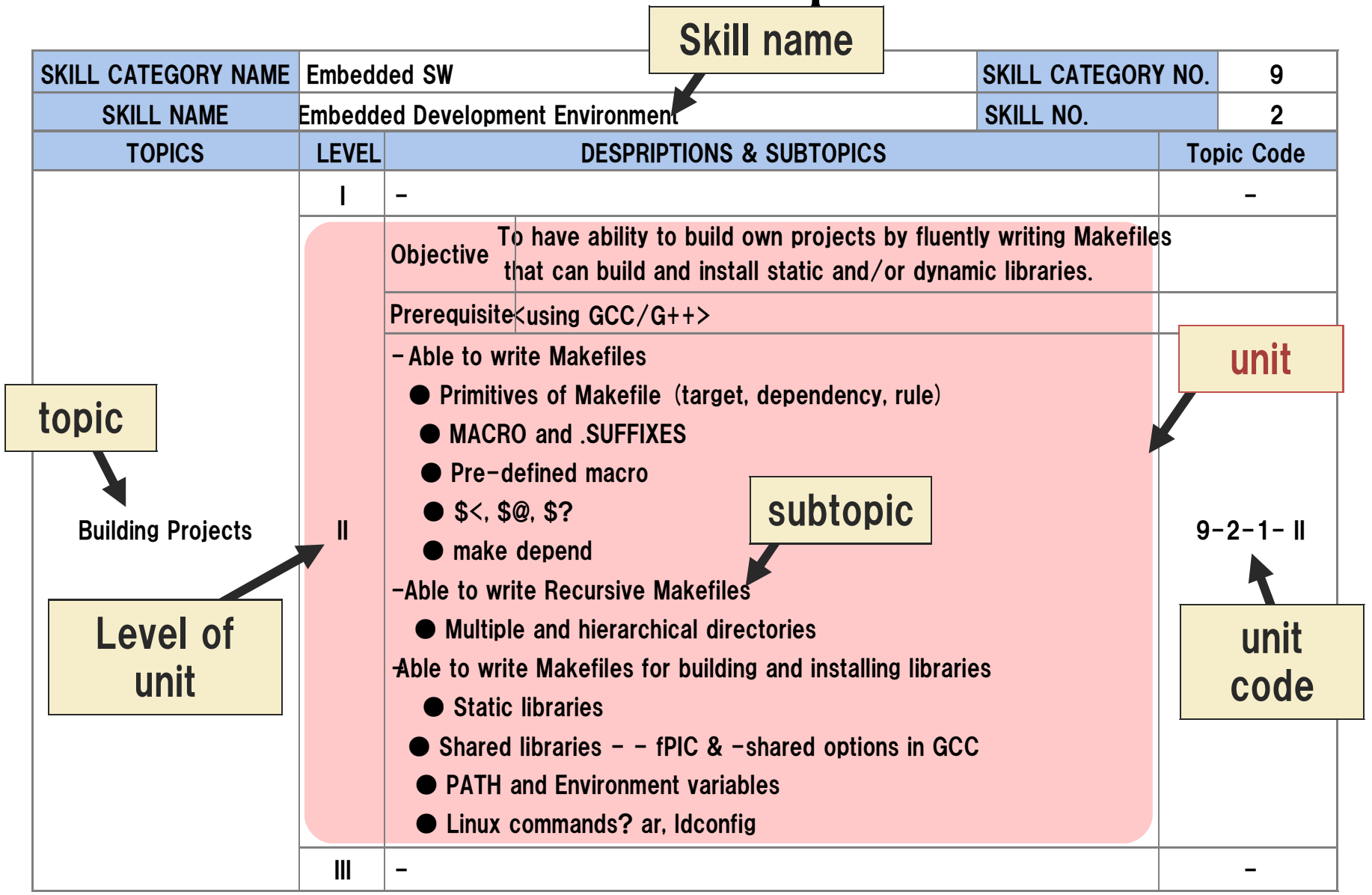
- Extending Skill-Set and Model Curriculum
  - Version 1(2008): Embedded Software Developer
  - Version 2(2009): Enterprise System Engineer

| Skill Category | Skills | |
|---|---|---|
| Basic | Knowledge of OSS | |
| | Legal Affairs | |
| | Computer System and Architecture | |
| | Distributed Architecture | |
| System | Concept of Linux and Basic Operations | |
| | Kernel of Linux | |
| | Linux System Management | C |
| | Linux System Programming | K |
| | Network Server Management | |
| | Cluster System Architecture | |
| | Concurrent System Programming | |
| | Java EE Application Server (former WAS) | K |
| Network | Linux Network Programming | |
| | Network Architecture | K |
| | Network Management | |
| Programming | Java | |
| | C | J |
| | C++ | |
| | Light Weight Language | J |
| | GUI | |
| | Web Programming | K |

| Skill Category | Skills | |
|---|---|---|
| Multimedia System | Multimedia Programming | |
| | Multimedia Service Platform | |
| Development system | Development Frameworks | |
| | Development Tools | CJK |
| | Integrated Development Environment | |
| Security | Encryption | C |
| | Network Security | C |
| | OS Security | C |
| RDB | Basic Skills in RDB | J |
| | RDB System Management | |
| | DB Application Development | J |
| Embedded SW | Embedded System | |
| | Embedded Development Environment | |
| | Embedded System Development | |
| | Embedded System Optimization | |
| | Device Driver Development | |

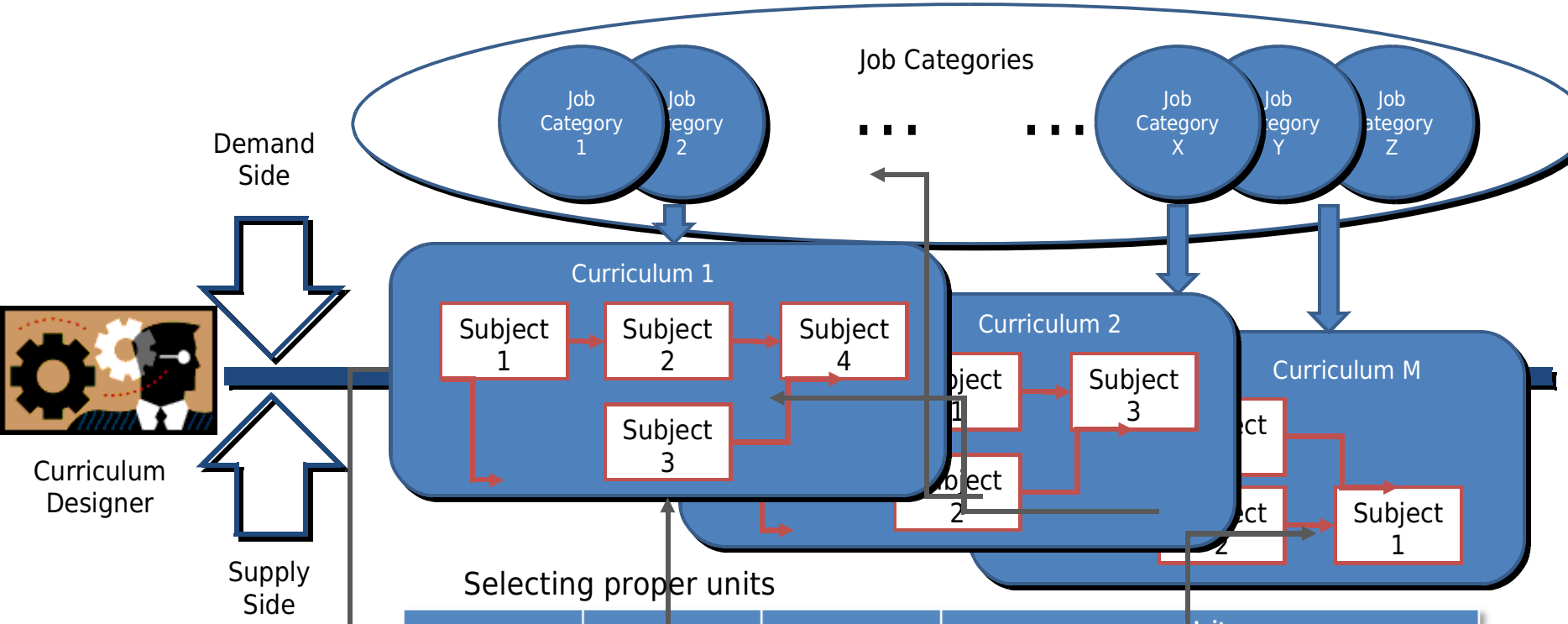
Done
Enterprise
Embedded & Enterprise
To be done in 2009

# Skill Description




| SKILL CATEGORY NAME | Embedded SW | | SKILL CATEGORY NO. | 9 |
|---|---|---|---|---|
| SKILL NAME | Embedded Development Environment | | SKILL NO. | 2 |
| TOPICS | LEVEL | DESPRIPTIONS & SUBTOPICS | | Topic Code |
| | I | - | | - |
| | II | Objective: To have ability to build own projects by fluently writing Makefiles that can build and install static and/or dynamic libraries. | | |
| | | Prerequisite<using GCC/G++> | | |
| | | -Able to write Makefiles<br>● Primitives of Makefile (target, dependency, rule)<br>● MACRO and .SUFFIXES<br>● Pre-defined macro<br>● $<, $@, $?<br>● make depend<br>-Able to write Recursive Makefiles<br>● Multiple and hierarchical directories<br>-Able to write Makefiles for building and installing libraries<br>● Static libraries<br>● Shared libraries - - fPIC & -shared options in GCC<br>● PATH and Environment variables<br>● Linux commands? ar, ldconfig | | |
| | III | - | | - |

# Model Curriculum Architecture

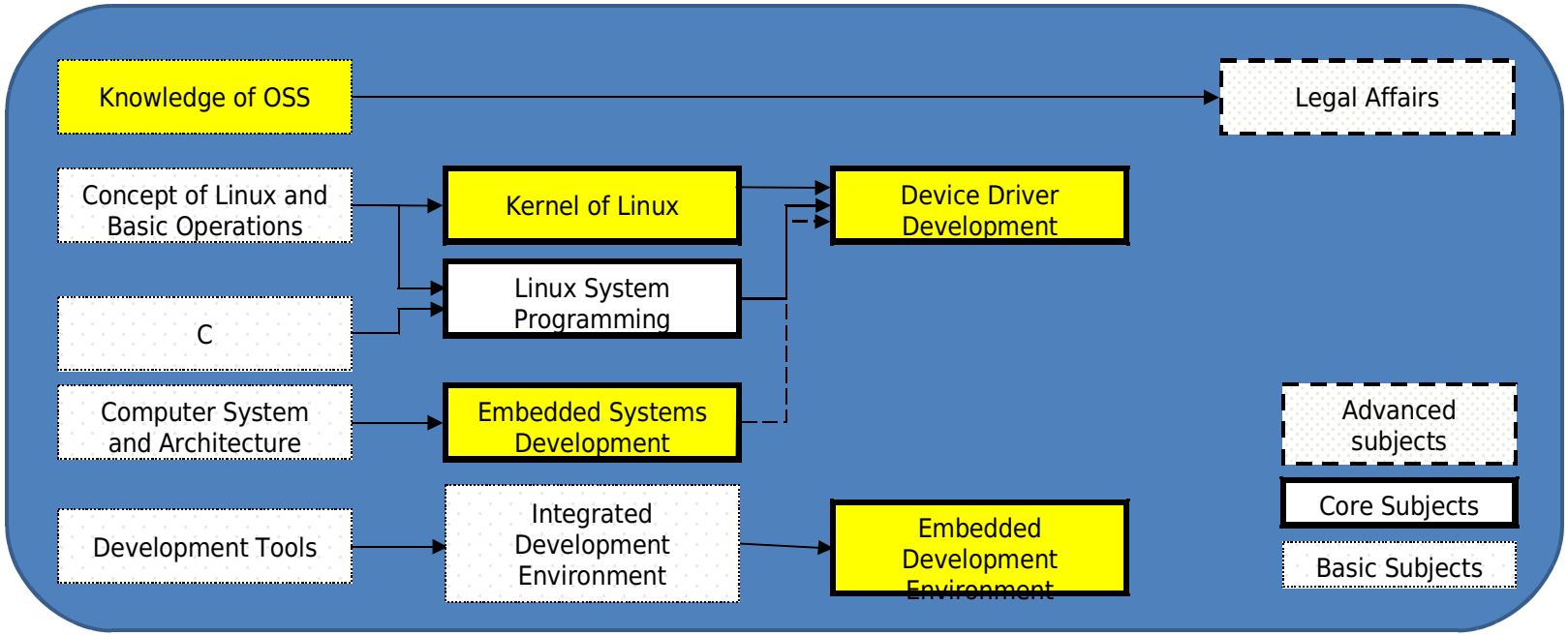



Selecting proper units

| Skill Categories | Skills | Topics | Units | | |
|---|---|---|---|---|---|
| | | | Level1 subtopics | Level2 subtopics | Level3 subtopics |
| Skill Category 1 | Skill 1-1 | Topic 1-1-1 | 1-1-1-I | 1-1-1-II | |
| | | Topic 1-1-2 | 1-1-2-I | 1-1-2-II | |
| | Skill 1-2 | Topic 1-2-1 | | 1-2-1-II | 1-2-1-III |
| Skill Category 2 | Skill 2-1 | Topic 2-1-1 | | 2-1-1-II | 2-1-1-III |
| | | Topic 2-1-2 | 2-1-2-I | 2-1-2-II | 2-1-2-III |
| | Skill 2-2 | Topic 2-2-1 | | 2-2-1-II | 2-2-1-III |
| | | Topic 2-2-2 | 2-2-2-I | 2-2-2-II | |
| Skill Category N | Skill N-1 | Topic N-1-1 | | | N-1-1-III |
| | Skill N-2 | Topic N-2-1 | N-2-1-I | N-2-1-II | N-2-1-III |

# Model Curriculum for OSS-based Embedded S/W Developer

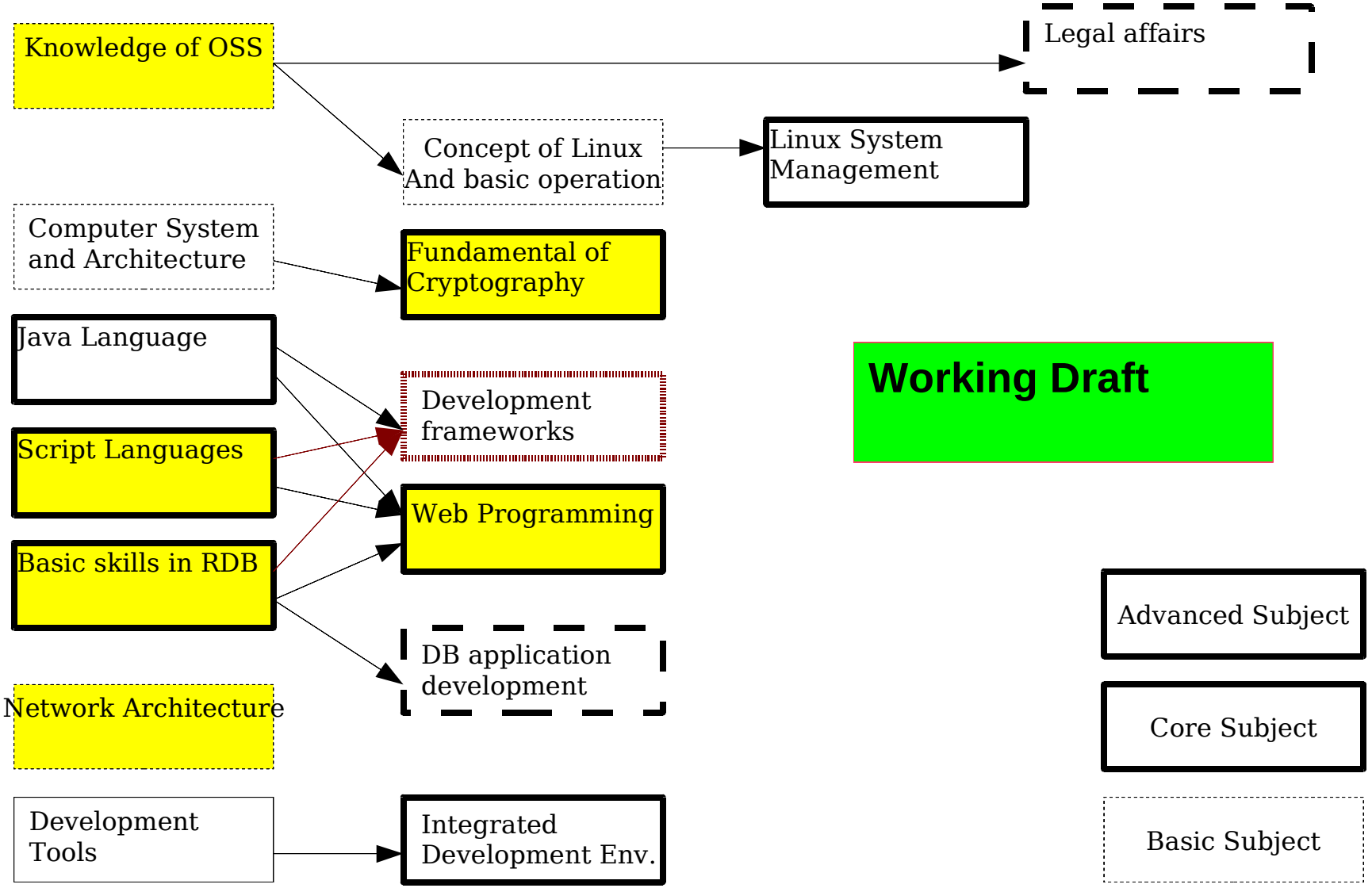
Curriculum




Subjects as selections of units

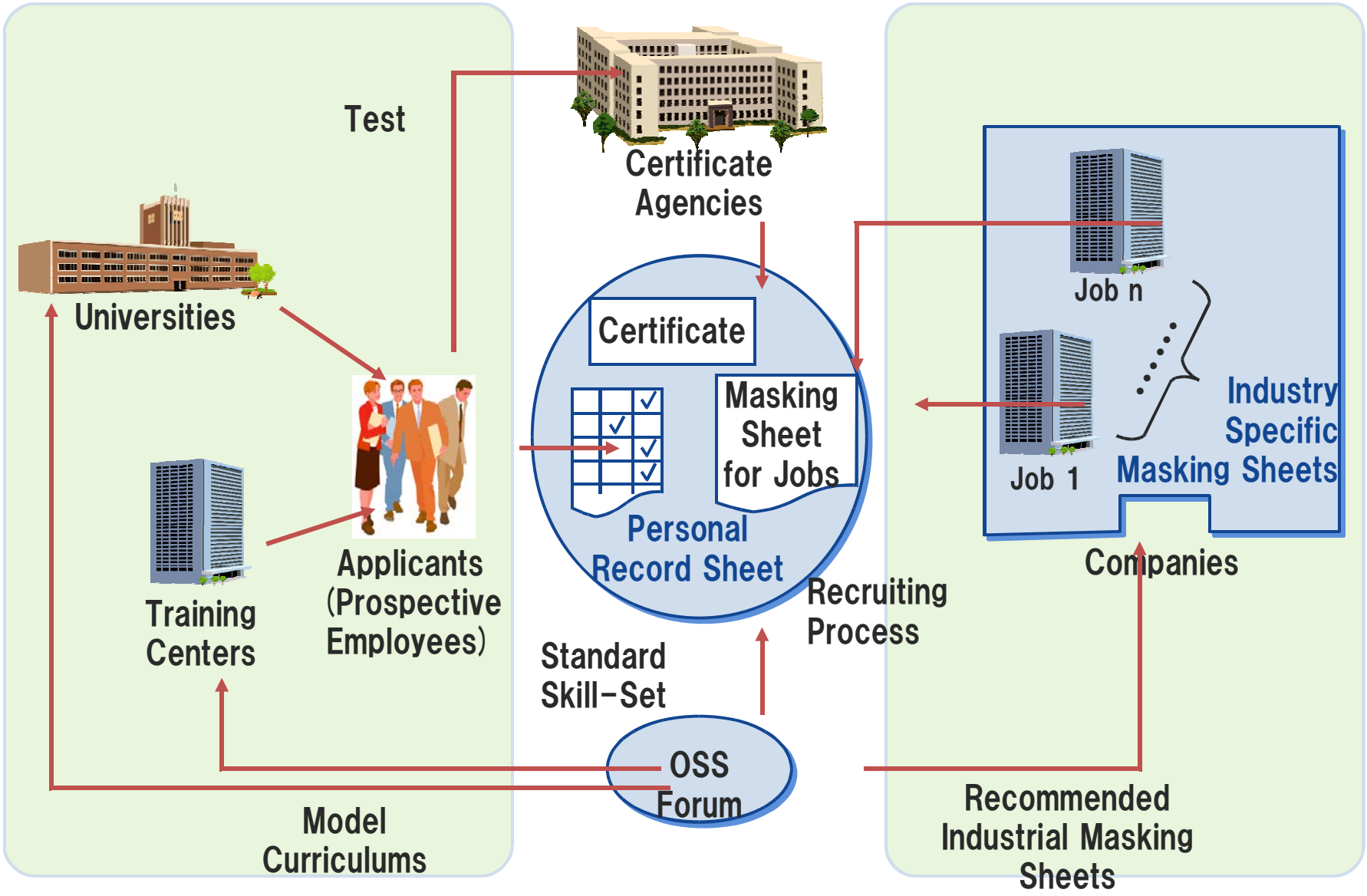
| Knowledge of OSS | Kernel of Linux | Embedded System Development | Device Driver Development | Embedded Development Environment |
|---|---|---|---|---|
| Introduction (1-1-1-*)<br>History (1-1-2-I)<br>Use of OSS (1-1-8-I)<br>Community (1-1-10-I)<br>OSS sites (1-1-11-II)<br>OSS OS deployment (1-1-12-II) | Introduction (2-2-1-I)<br>Scheduling (2-2-2-I)<br>Interrupt (2-2-4-I)<br>System Calls (2-2-5-I)<br>Process mgmt (2-2-6-*)<br>Memory mgmt (2-2-7-1)<br>File systems (2-2-8-I) | Task and Scheduling (9-1-1-II)<br>Resource mgmt (9-1-2-II) | Linux Kernel (9-5-1-II)<br>Kernel Debug (9-5-2-II)<br>Kernel Config (9-5-3-*)<br>Character Dev. (9-5-4-II)<br>Building Target (9-5-7-I)<br>Kernel Synch (9-5-9-II)<br>Kernel Thread (9-5-10-II) | Project Building (9-2-1-II)<br>Mgmt Project (9-2-2-I)<br>Cross Dev. Env (9-2-4-I)<br>Remote Debugging (9-2-7-I) |

# Sample course for OSS based Enterprise Application Engineer



| Knowledge of OSS | Fundamental of Cryptography | Script Languages | Web Programming | Basics of RDB | Network Architecture |
|---|---|---|---|---|---|
| •Introduction to OSS 1-1-1-*<br>•History of UNIX and Linux 1-1-2-*<br>•OSS servers 1-1-3-*<br>•OSS development tools 1-1-4-*<br>•OSS standardization 1-1-6-*<br>•OSS server applications 1-1-7-*<br>•Use of OSS 1-1-8-*<br>•Web system development 1-1-9-*<br>•OSS communities 1-1-10-*<br>•(OSS business 1-1-10-*)<br>•(Earning OSS information 1-1-11-*)<br>•(Deployment of OSS operating system 1-1-12-*)<br>•Deploying server application 1-1-13-*<br>•Deployment of OSS server 1-1-14-*<br>•(Deployment of OSS server application 1-1-15-*) | •Security functions and cryptography positioning 7-1-1-*<br>•Cryptography systems/common key cipher systems 7-1-2-*<br>•Cryptography systems/public key cipher systems 7-1-3-*<br>•Cryptography Toolkits 7-1-4-*<br>•Digital signature 7-1-5-*<br>•OSS utilization scentse 7-1-6-*<br>•Authentication 7-1-8-*<br>•SSH 7-1-10-*<br>•SSL/TLS 7-1-11-*<br>•PGP 7-1-13-* | •History of Script Languages 4-4-1-*<br>•Understanding Web architecture and web 2.0 technology 4-4-2-*<br>•Fundamental structure of Perl 4-4-3-*<br>•Fundamental structure of PHP 4-4-4-*<br>•Fundamental structure of Python 4-4-5-*<br>•Fundamental structure of Ruby 4-4-6-*<br>•Ruby Object-oriented programming 4-4-7-*<br>•Ruby Embedded classes 4-4-8-*<br>•Concept of Ruby on Rails 4-4-9-*<br>•Database application development 4-4-10-*<br>•Outline of DOM 4-4-13-*<br>•Fundamental structure of Javascript 4-4-14-* | •Understanding Web architecture and web 2.0 technology 4-6-1-*<br>•Markup Language for Web Programming 4-6-2-*<br>•Web programming with PHP 4-6-3-*<br>•CGI programming with Perl 4-6-4-*<br>•Internet Programming with Python 4-6-5-*<br>•Web programming with Ruby on Rails 4-6-6-*<br>•Java Programming 4-6-7-*<br>•Web programming with JSP/Servlet 4-6-8-*<br>•XML programming with Java 4-6-9-*<br>•Developing Java Web Services 4-6-10-*<br>•Web Application Development with Ajax 4-6-11-*<br>•Web 2.0 programming with Java 4-6-12-*<br>•Internet Programming with Google APP Engine 4-6-13-* | •Basic database theory 8-1-1-*<br>•Fundamental knowledge of RDBMSs 8-1-2-*<br>•Fundamental concepts of transactions 8-1-3-*<br>•Database components 8-1-4-*<br>•Database access in SQL 8-1-11-* | •The concept and mechanism of open networks 3-1-1-*<br>•The mechanism of TCP applications 3-1-10-* |

# Model Curriculum and Masking Sheet



# Masking Sheet and Record Sheet

## Personal Record Sheet

| Category(9) | Skills(37) | Topic Check Boxes |
|---|---|---|
| Basic | Knowledge of OSS | ( V ) 1-1-1-I ( ) 1-1-1-II |
| | | ( V ) 1-1-2-II ( V ) 1-1-2-II |
| | | ( ) 1-1-3-II |

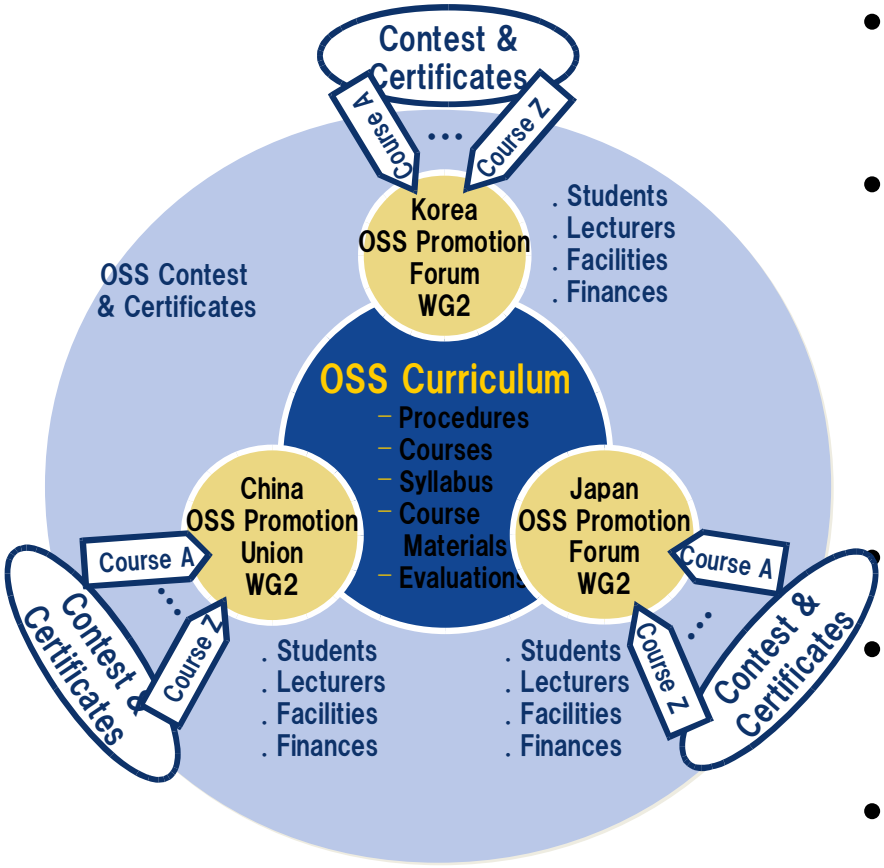
## Industrial Masking Sheet

| Category(9) | Skills(37) | Topic Check Bo |
|---|---|---|
| Basic | Knowledge of OSS | ( V ) 1-1-1-I ( ) 1-1-1-II |
| | | ( V ) 1-1-3-II |
| | | ( V ) 1-1-3-II |

- CJK OSS HRD status-

# State of China

# China Progress




- **Hold a HRD Symposium and Training seminar**
- **Hosted 2009 Open Source China Open Source World Summit & The 6th OpenOffice.org Annual Conference**
- **Promoted OSS day in Campus**
- **Contest 2009 China OSS Award**
- **Executed Abroad Study Program**

# OSS Conferences held in China

## CJK OSS Human Resource Development and Training Symposium

- 40+ Attendees from Japan, Korea and China
- Succeed experiences of China-Japan-Korea OSS HRD and Industry be Introduced

## 2009 Open Source China Open Source World Summit

- 300+ Attendees from Government, Software Companies, Communities and Universities
- China Experts discussed OSS key issues such as GUI, Driven and Mobile phone with Jim Zemlin, Mark Shuttleworth, Louis Suarez-Potts etc.

## The 6th OpenOffice.org Annual Conference 2008

- 200+ Attendees from 24 Countries and Districts
- China developers become second large develop force in OpenOffice Community



## Open Source Software Day

- More than 25,000 attendees from 70 universities in 20 provinces
- Keynote reports about OSS new technology, development tools, products and applications were held in 70 universities
- Promoted OSS knowledge in campus

## Abroad Study Program for Excellent OSS Teachers from NLTTPC

- Sponsored by China government
- To train  new and advanced professional skills
- Face to face shared experiences with OSS Community
- The First Term: 10 teachers , 90days, July- September 2008 in USA
- The Second Term:  13 teachers finished pre-training in Bejing

# China Open Source Software Contest 2009

## Purpose

- Cultivating OSS talent. Promoting the development and application.

## Publicity Mode

- In 46 universities, more than 30 cities of China, nearly 1880 listeners.
- Theme: Frontier and hot issue in OSS area.
- Time: about 5 months.

Qualification : Colledge students and enthusiasts in the open source community.

## Special Contribution Award

- Ni, Guangnan, excellent contribution on R&D, application in China

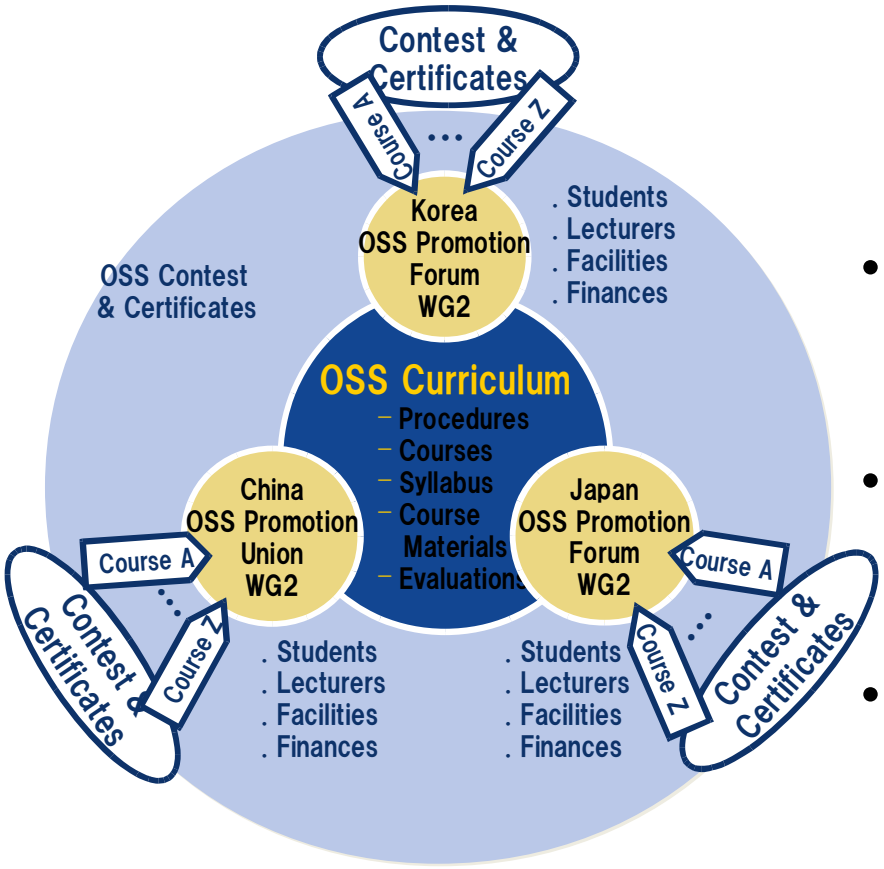
## **OSS Award**

- Linux kernel Development
- Peking University Application Server (PKUAS)
- DBExplorer
- ANL MFR AirCraft Maintenance and Follow-up Reporting System.

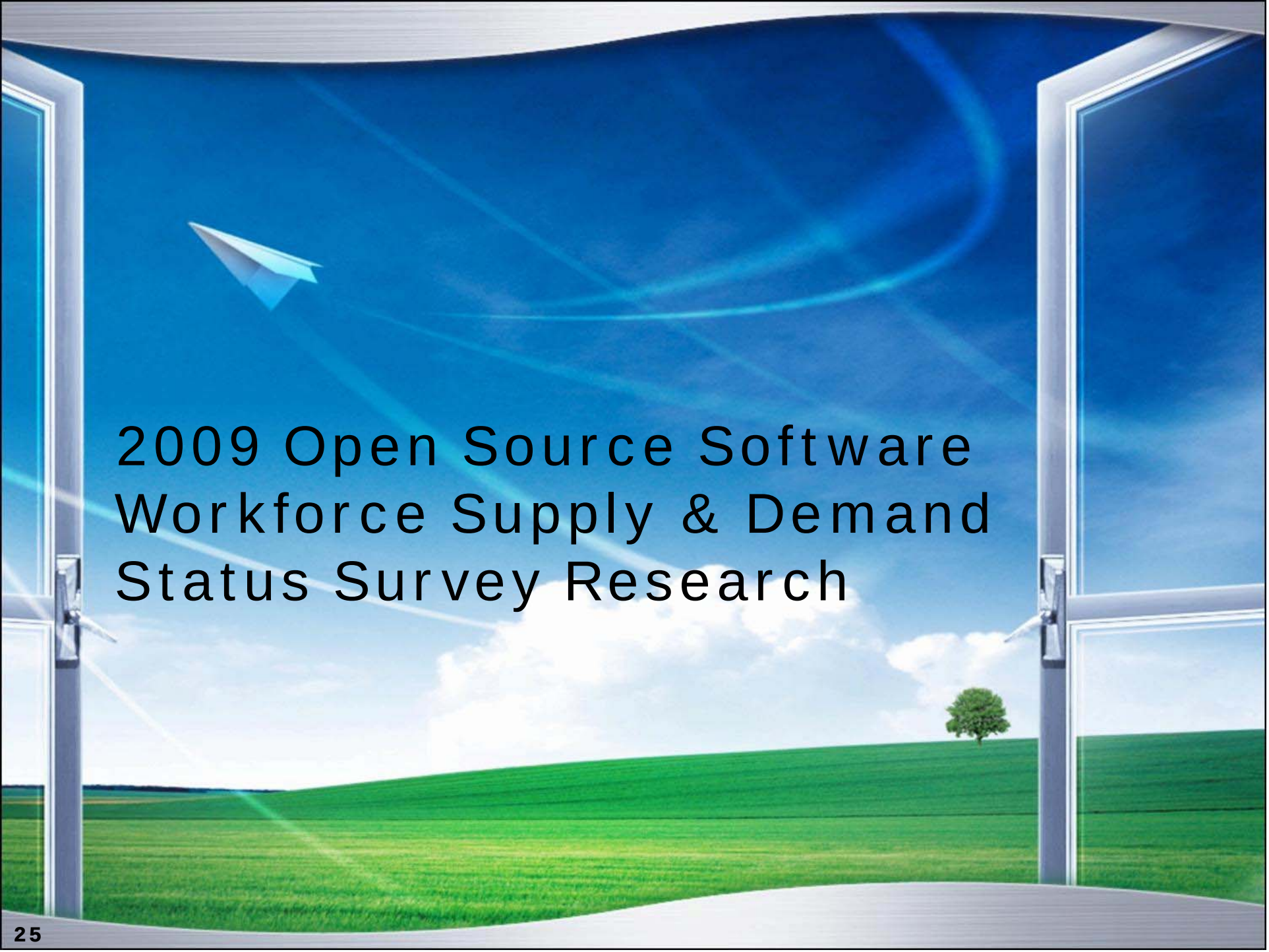
-CJK OSS HRD status-

# State of Korea

# Korea Progress

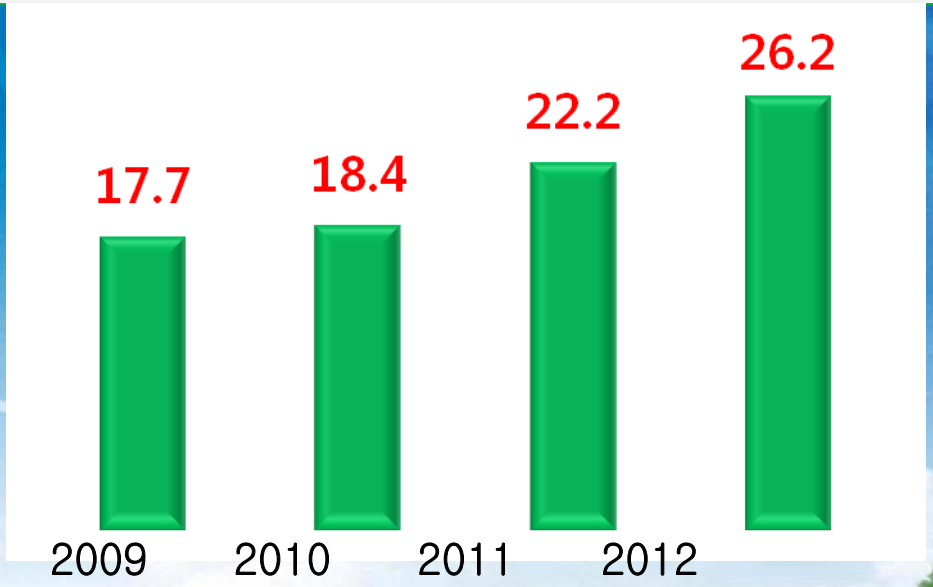



- Completed 2009 Korea OSS HRD Survey
  - Hires will be continuously increased till 2012.
- Continued University SW Education Innovation Projects(20 in total)
- Funded 41 OSS projects in Univ., Companies, and Communities.
- Open Source Software Challenge 2009 in process
  - 128 teams
  - Winners will be awarded at OSS Day, Nov. 5, 2009.


2009 Open Source Software
Workforce Supply & Demand
Status Survey Research

# Appropriate OSS Hires

Given corporate situations and the growth of the OSS industry, the following represents average OSS hires per firm.




Respondents indicated a gradual increase in appropriate OSS hires: **17.7 persons in 2009, 18.4 persons in 2010, 22.2 persons in 2011, 26.2 in 2012.** These projections seem to indicate a **positive mindset of companies** toward **changes in the overall OSS industry**.

# OSS Workforce Supply Survey

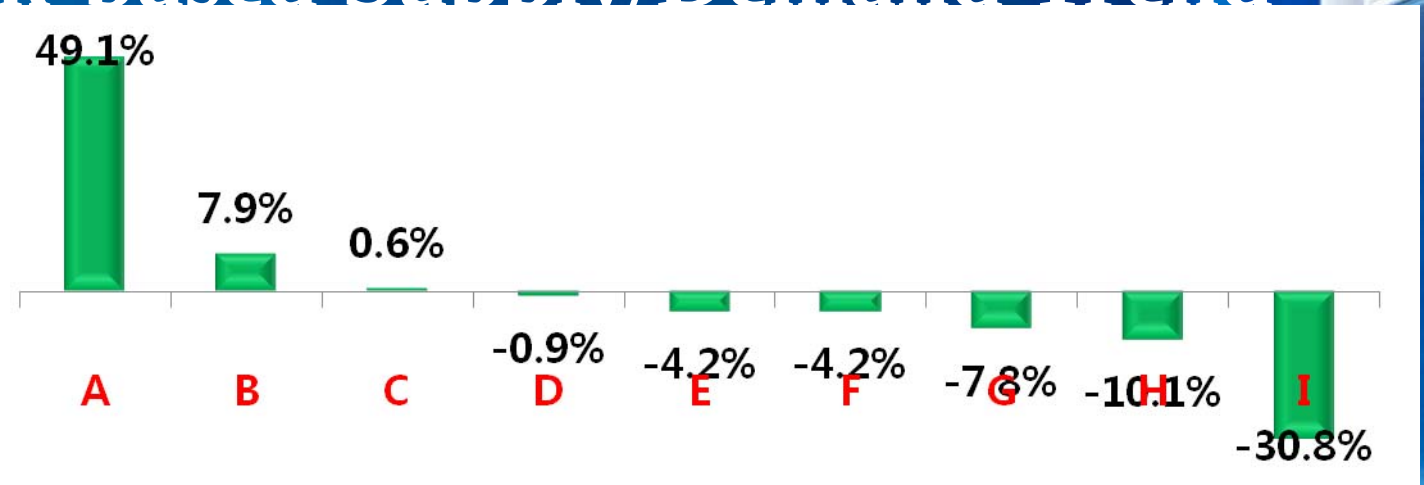
- **IT-related & OSS Classes Offered throughout the Year**

Among 67 colleges surveyed, there were a total of 5,323 IT-related classes, which equates to an average of **79.5 classes per school.** The number of **OSS classes** was **651, equating to an average of 9.9 classes per school.** OSS classes took up **12.5% of the total.** The proportion of OSS classes at private educational institutions was **36.0%, showing a higher ratio than that of colleges.**

- **OSS Classes by Technology**

Approximately 65.7% of OSS classes focused on OS **servers.** 56.7% of classes focused on embedded software while 43.3% of classes focused on "desktop." Respondents used **MySQL** of DMBS (**85.1**% of respondents) for software, **Tomcat (56.7% of respondents) for middleware**, **Apache (73.1% of respondents) for web-mail**, and **C (79.1% of respondents)** and JAVA (70.1% of respondents) for **programming languages.**

# Task-based Supply/Demand Trend




A : SI, software development
B : System operation & management
C : Education-related

D : Technical sales

E : Embedded(system) software development

F : Telecommunication/broadcasting services
G : Embedded (device) software development
H : Office work

I : Package software development

**Changes from 2006 figures:**

○ Increasing task areas : SI, software development up **49.1%,** system operation & management up **7.9%**. **New entrants in SI/software development saw the highest increase of 69.9%.**

○ Decreasing task areas : Package software development **-30.8%**, embedded (device), software development **-7.8%**, embedded (system) development, telecommunication/broadcasting services **-4.2%** respectively. Demand for **work office** was also down 10.1%.


University SW Education
Innovation Project

# OSS HR Development Activities

- **Model curriculum development**
  - ✓ HR Supply-Demand survey
  - ✓ WG2 in CJK OSS Promotion Forum
- **Seminars, tutorials, guide books, news letters, Textbook**
  - ✓ on market and best practices
  - ✓ on solutions, adoption, migration, and operation
  - ✓ on technologies and license issues
  - ✓ on diverse OSS subjects
- **Fostering developer communities**
  - ✓ support for OSS projects
  - ✓ support for OSS communities
  - ✓ OSS contests
- **OSS education**
  - ✓ K12 - ICT education with OSS tools, with new textbooks
  - ✓ teaching teachers
  - ✓ support universities for OSS based computer lab
  - ✓ support universities for developing course materials

# University SW Education Innovation Project

- **Background**
  - ✓ **OSS market share in public sector : 37.4% (’07) ← 8.7% (’03)**
  - ✓ **Portals being migrating to OSS based solutions**
  - ✓ **Common practice in universities**
    - using and even teaching proprietary software in classes
    - OSS class share : only 12.5%(‘08), 8.1% (’06)

- **SW Education Innovation Project for Universities**
  - ✓ **20 universities won out of 32 proposals**
    - 7 Universities for K12 teachers - linked with 18 K12 schools (primary, middle, high)
  - ➔ **171 OSS Courseware (from OpenOffice to Advanced Skills)**
  - ➔ **Established 20 Open Source Software Only LAB facilities**

# Funding OSS Projects (from 2004)

- **Funding Open-Source Technology Development Projects**
  - ✓ for universities, communities, and companies
- **41 projects(2008: 11, 2009: 30), 343 developers(2008:109, 2009: 234)**

| 2009 |
| --- |
| Hangul Myungjo Vector Fonts for Ubuntu UI - LexyTech Inc., Hoseo Univ. |
| Efficient Tool for Kernel Test - SureSoftTech Inc., Chungnam Univ. |
| Improving Embedded Linux Dev. Env. using USB - SevenCore Inc., Hansung Univ. |
| nFORGE : Collaborative Software Dev. Platform - NHN, Kyungki Univ. |
| Android UI Dev. Tool and Layered UI Platform - Hansung Univ., SevenCore Inc. |
| Integrated Performand Analysis Tool for Embedded Linux - Kookmin Univ., Qualcomm Korea, Samsung Electronics Corp. |
| Perfomance Improvement of Apach Hadoop Platform - Seoul Nat'l Univ., NHN |

| 2008 |
| --- |
| Hadoop Remote Driver for Anyframe – KAIST |
| Localization of WireShark – Kwangwoon Univ. |
| Mobile Network Framework – Sogang Univ. and Nsoft Inc. |
| Hangul Vector Font for UI improvement of Ubuntu – Hoseo Univ. and Rexi Tech Inc. |
| Linux File system for performance evaluation of SSD – Yonsei Univ. |
| Localization of Sqeak – Korea Univ. |
| Hangul Nanumi (Hangul Lexical Analyzer) – KAIST |
| High Performance Ext2 File system for SSD – Seoul City Univ. |

# Open Source SW Challenge 2009

(http://ossproject.or.kr)


# Awards

| Grade | International Division | | | Domestic Division | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Free subjects | | | Free subjects | | | Assigned subjects | | |
| Grand Prize | 1 | MKE Minister's Prize | 5 Million KRW | 1 | MKE Minister's Prize | 5 Million KRW | 1 | MKE Minister's Prize | 5 Million KRW |
| Gold Prize | 1 | NIPA Head's Prize | 3 Million KRW | 1 | NIPA Head's Prize | 3 Million KRW | 1 | NIPA Head's Prize | 3 Million KRW |
| Silver Prize | | | | 2 | KOSSA Head's Prize | 1 Million KRW | 2 | KOSSA Head's Prize | 1 Million KRW |
| 12 Sponsor Awards | BIT Computer (1), SAMSUNG SDS(2), SK C&C(2), NHN(2), CUBRID(2), HAANSOFT(2), ANAM Information Technology(1) | | | | | | | | |

**Benefits for winners :**

- International Division winners: Winners are invited to the prize award ceremony .
  (Flight and hotel expenses for one person per team will be provided.)
- Grand Prize winner: Winners are eligible to attend Northeast Asia OSS Promotion Forum in 2010

# Overview of Participant - Domestic Division

## Assigned subjects

| Assigned subjects | Subjects | Details | Number of Team |
|---|---|---|---|
| | Education & Internet | Wiki Engine Program Development for OSS-eduWiki | 2 |
| | | Korean lexical analyzer Program Development | 6 |
| | Mobile | LiMo(Linux base Mobile) platform base Program Development | 3 |
| | | Android related Program Development | 62 |
| | Multimedia | OpenGL base Multimedia Program Development | 3 |
| | Development Framework | Non-Standard Web Program change to Standard Web Program Development | 1 |
| | Total | | 77 |

## Free subjects

| Free subjects | Subjects | Number of Team |
|---|---|---|
| | Development Tool | 7 |
| | Search engine | 2 |
| | Monitoring Tool | 3 |
| | Mobile Solution | 7 |
| | Security Solution | 3 |
| | Application Solution | 15 |
| | Network Solution | 6 |
| | Non-classified & Special solution | 8 |
| | Total | 51 |

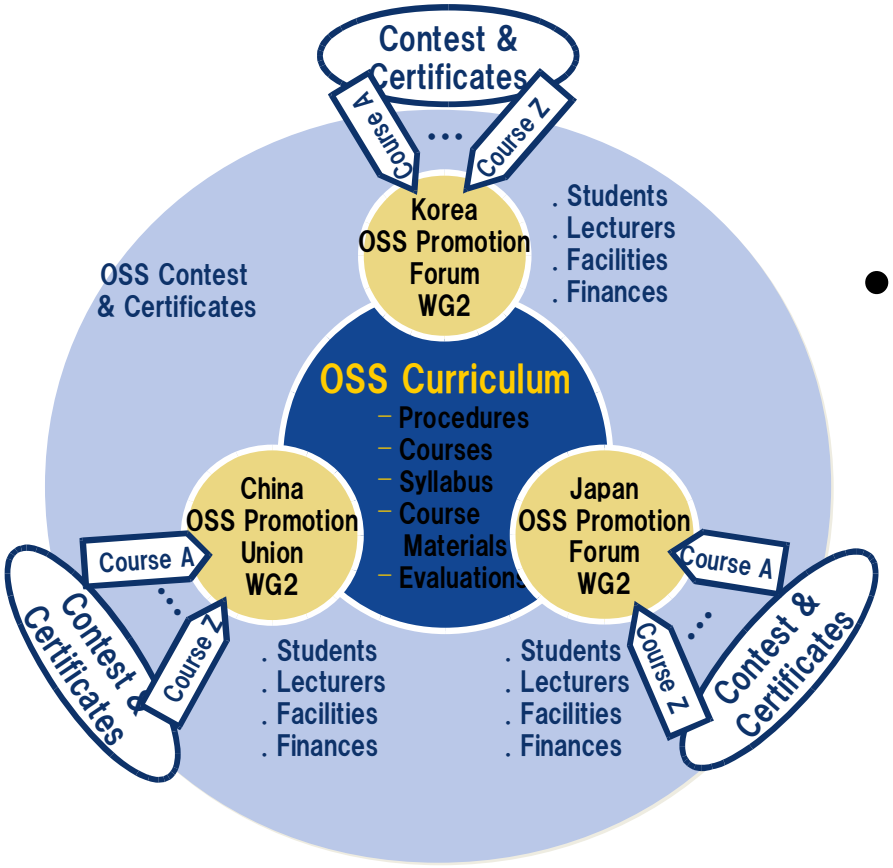
# Prize Award Ceremony at Open Source Software Day

- **Title** : Open Source Software Day (OSS Day)
- **Hosted by** : Ministry of Knowledge Economy
- **Organized by** : National IT Industry Promotion Agency
  Korea Open Source Software Association
- **Date**: November. 5 (Thur.), 2009
- **Venue**: 3F, Business Tower, Nuritkum Square, Seoul
- **Attendees**: 500 developers from universities, government, and the industry
- **Keynote Speakers**:
  Jim Zemlin (Linux Foundation Executive Director)
  Gavin King (Hibernate, Seam, JSR JPA Spec. lead)

-CJK OSS HRD status-

# State of Japan

# Japan Progress




- Update national exam incl. OSS as questionnaire
- Define OSS curriculum V1 and go to V2 which is compatible w/NEAOSS v1

# Motivation and Goal

- HRD GAPs in Japan among;
  - Industry and Academia, OSS promotion and develop
- Frustration on promoter of OSS/Linux
  - Linux → mature , ≠spread broaden
  - OSS → popular, ≠ break in business situation.
- How to develop;
  - OSS developer involved in the global community
  - high-skilled Engineer who can utilize OSS products
- Promote OSS for business, and to help teachers

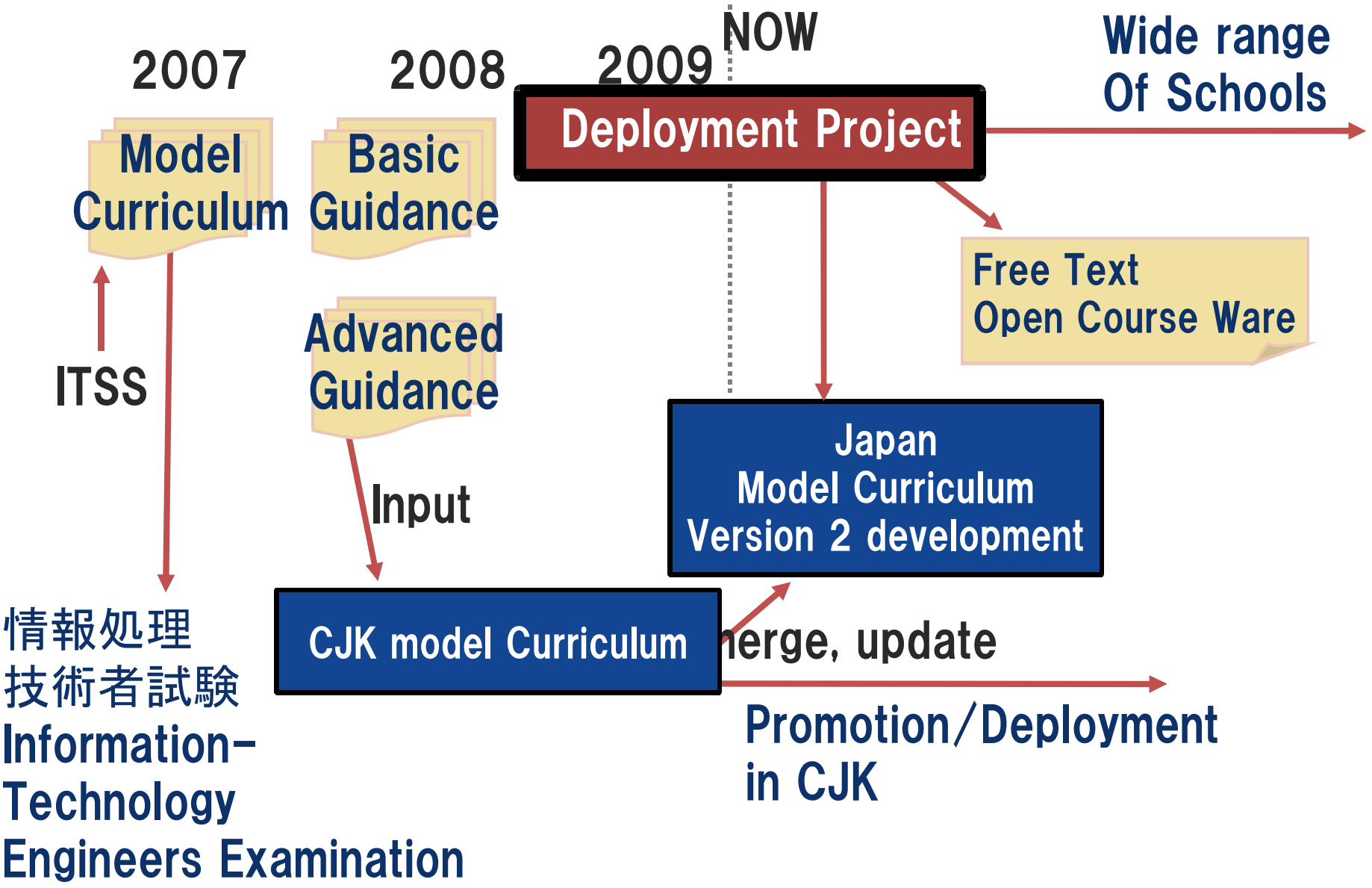
# Solutions

- Develops, for engineer
  - IT student education programs and IT engineer training programs
    - Development of model curriculum (V1 in 2008, V2 in 2009-2010)
    - Deployment program (6 schools in 2008, in selection in 2009)
- Promote, for OSS developer
  - OSS Award from 2005, 20 developers and promoters in 5 yrs.
  - OSS Encouragement Award from 2009, several developers/groups at first time.

# Basic concept of OSS model curriculum

- Model curricula and courseware are recommended to accelerate the emergence of OSS engineers
  - Target: universities, technical colleges, technical schools (educate potential IT engineers)
    - Designed primarily to accelerate the development of OSS engineers
    - Aiming to attain ITSS Level 2
  - To foster mid-level IT human resources
    - Attain ITSS Level 3 for four job titles:
      Application specialist (enterprise systems),
      Application specialist (embedded systems),
      IT specialist and architect, IT service management

# Curriculum development business plan



# How to utilize

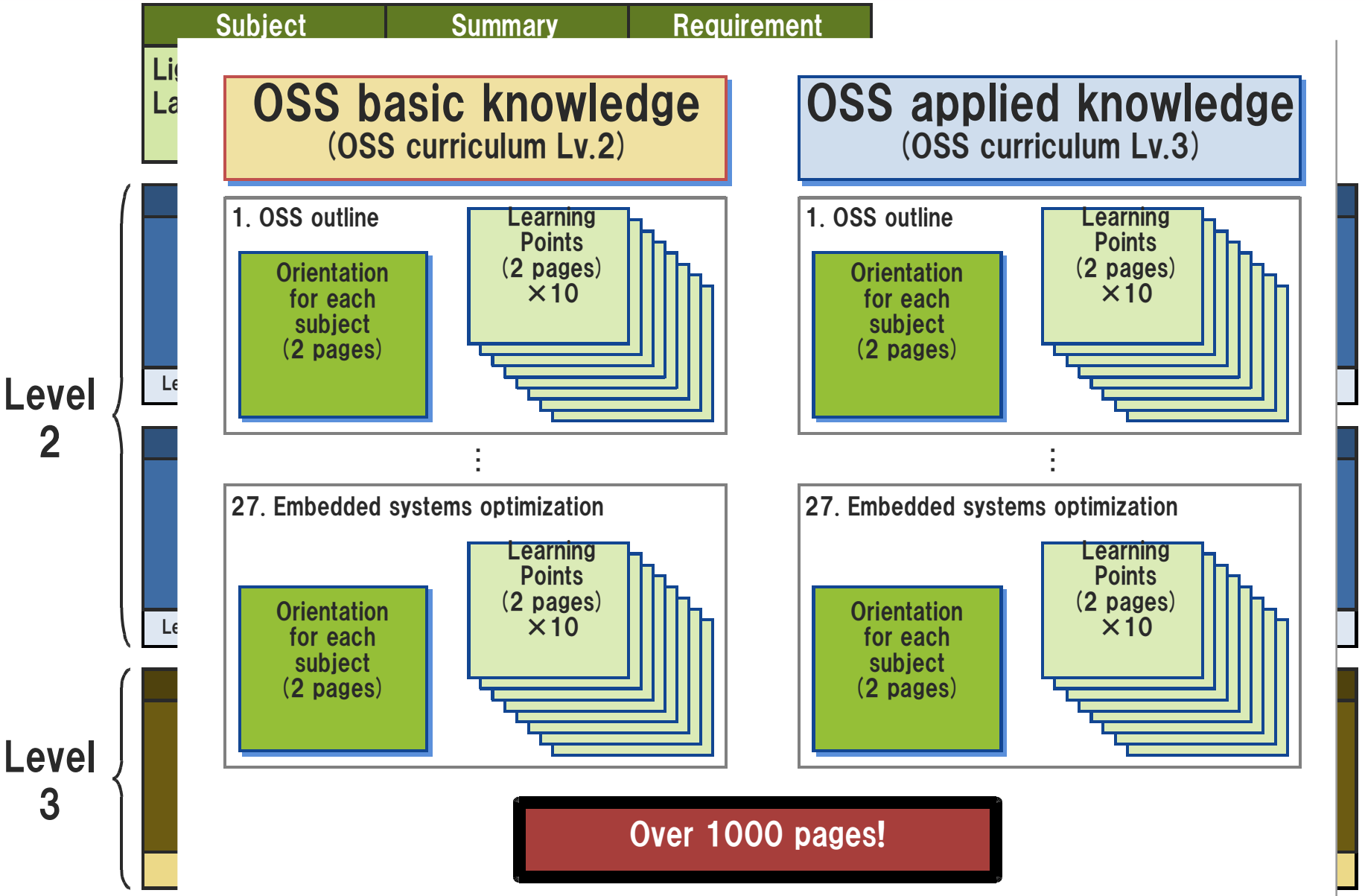
**Learning Guidance on OSS basic/applied knowledge**

- Learning scheme
- Learning guidance for each subject

Associate with the IT knowledge scheme and define the OSS education curriculum from the learning guidance tied with current education programs for information technologies.

| | | | |
|---|---|---|---|
| Use as an OSS based education curriculum for each college/technical college | OSS Learning Guidance + Current Education Curriculum for IT |  | College/technical college |
| Use as an OSS based education curriculum for each special technical school | OSS Learning Guidance + Current Education Curriculum for IT |  | Special technical school |
| Use as an OSS based education curriculum for each company/job site | OSS Learning Guidance + Current Education Curriculum for IT |  | Industries |

# OSS Model Syllabus and learning guidance



# Guides for Model Curriculum

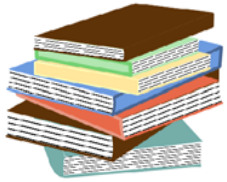
- **Mapping among exams, courses and Japan OSS model curriculum.**

OSS Model Curriculum

Link

•Guidebook
•Guide Web site

***Japan OSS promotion forum*** HRD Sub group

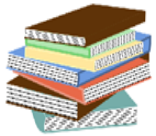


Free textbook
By CC-BY license
Funded by IPA

Map

**OSS course in schools**

**OSS Skill exams**



**Existing text and**

# Common & Different activities among CJK

# The OSS HRD activities of CJK

- OSS training promotion
  - Symposium
  - Curriculum development and deployment
- OSS funding
  - Project, Education, Training
- OSS community growing
  - Contests and Award

More WG2 members needed!!

- OSS developer promotion
  - Special Contribution Award
  - Encouragement Award

# WG2 Future plan

# Works to do in 2009/2010

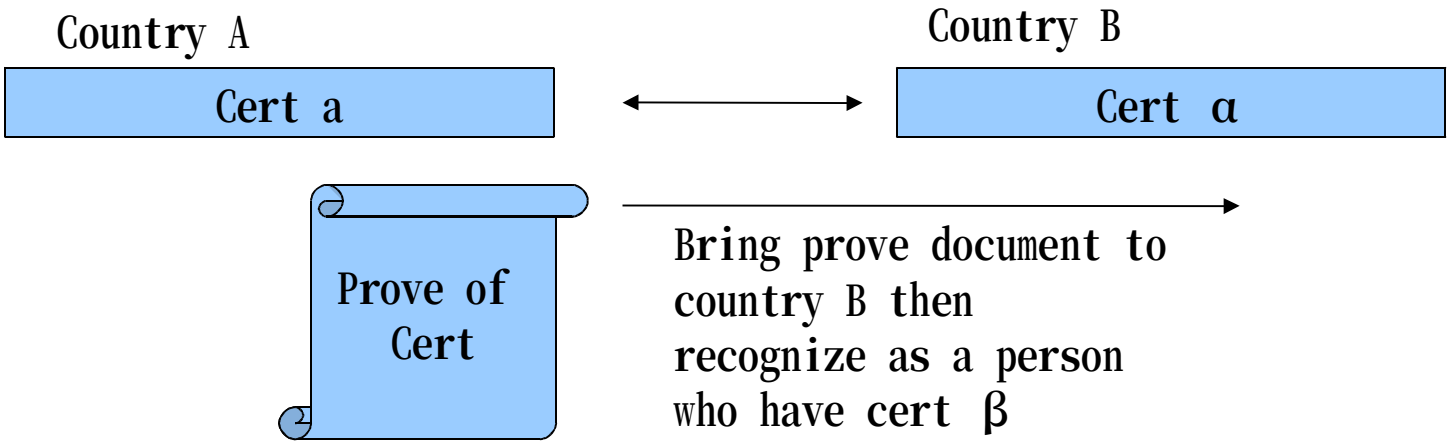
- NEA OSS Wiki Project
  - Building Wiki site based on CJK OSS Skill-Set and Model Curriculum
  - To provide an open place for “crowdsourcing” - gathering common and practical knowledge from world-wide OSS experts
- As a first step,WG2 will start to study a feasibility of the plan.

# Works to do 2009/2010

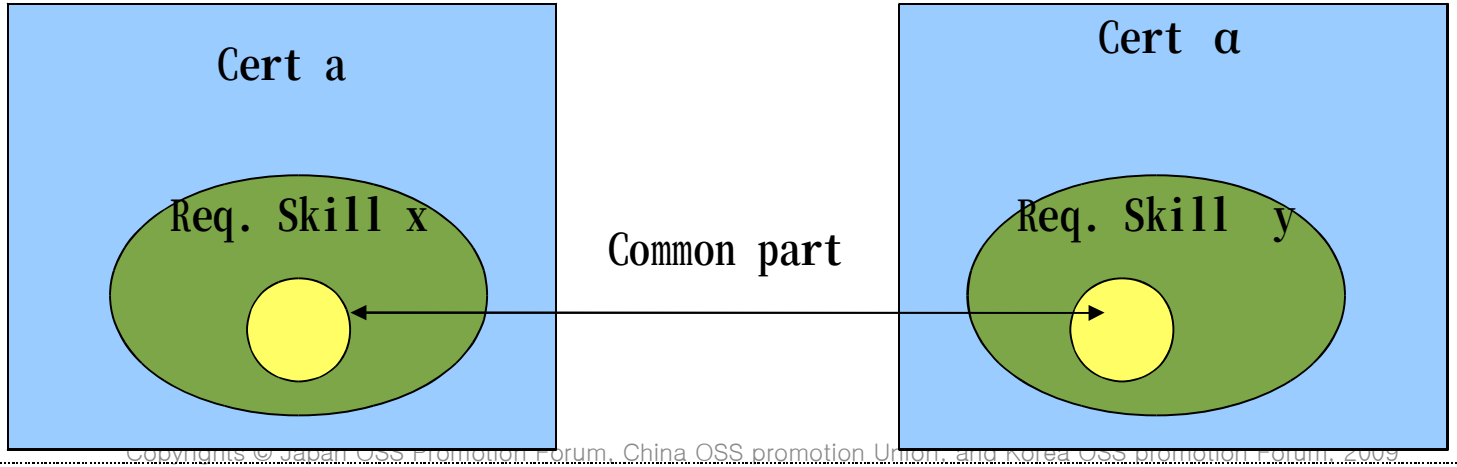
- Toward certification for OSS experts
  - Study Harmonized and mutual certification
  - Utilize masking sheet as a tool for application of certification
  - Start its discussion on certification by studying each certification program on OSS skill-sets.

# 'mutual'? 'harmonized'?

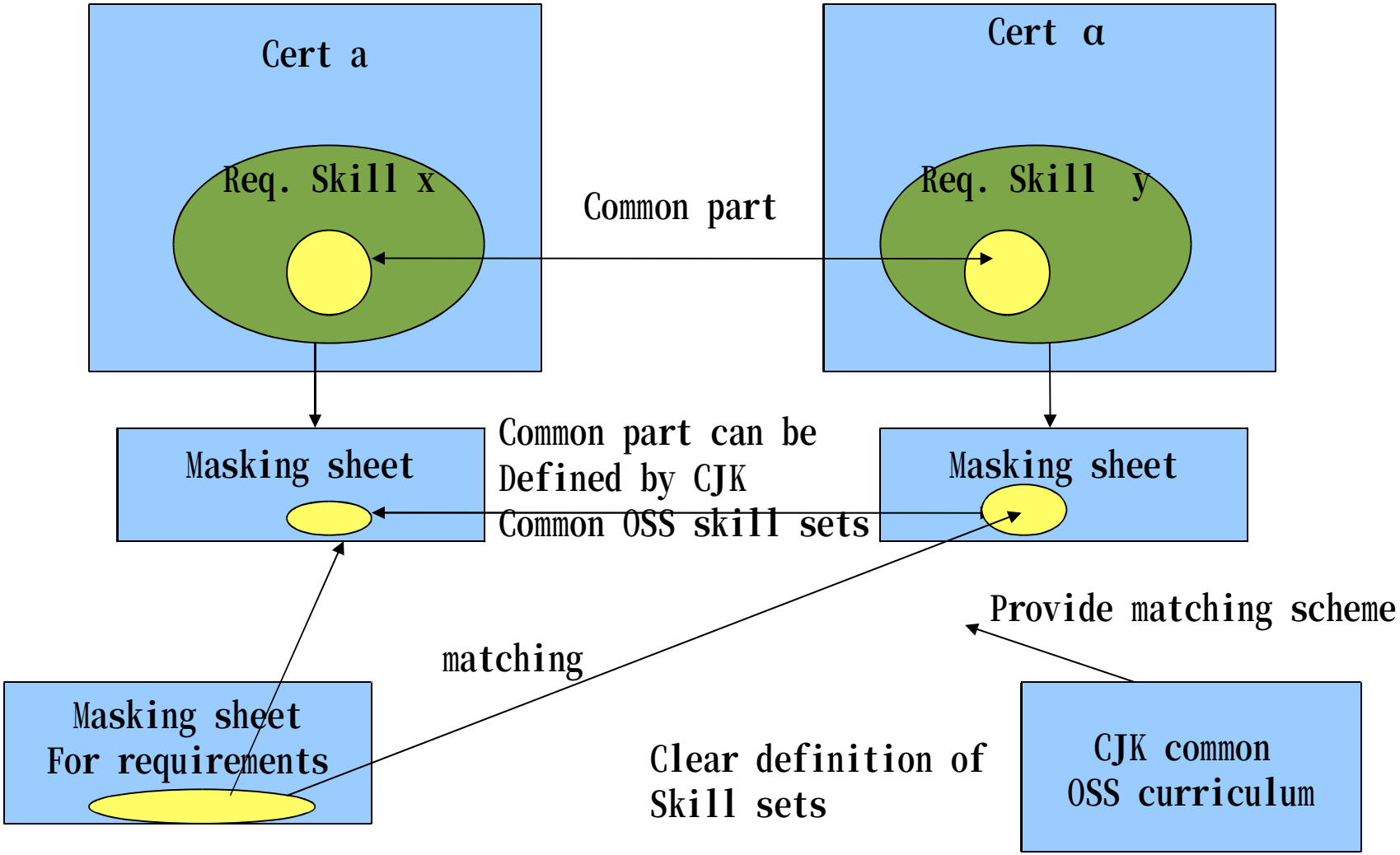
## Mutual Certification




## Harmonized Certification



# Solution to utilize harmonized certification



# Works to do in 2009/2010

- Release the model curriculum draft 2.0, and start tasks for draft 3.0
- Preparation for the next OSS award
- Preparation for the OSS training sessions in the 9th forum.

# Conclusions

# Conclusions

- WG2 have released
  - “NEA OSS HRD Analysis Report (ver.1.0)”  in Oct. 2008
  - “CJK OSS Model Curriculum (draft 1.0)” in Jul. 2009
- WG2 developed the concept of masking sheet and definition of skill sets.
- WG2 will release the “CJK OSS Model Curriculum (draft 2.0)” within 2009.
- WG2 promoted many other CJK HRD activities including contests, awards, symposiums, trainings, workshops, surveys, projects, funds, and etc.

# Thank you!