

WG2 Report

Doohyun Kim
Coordinator, WG2
Konkuk Univ.

ToC

- Background
- Action Items
- WG2 Meeting VS Symposium
- WG2 Meeting Roadmap
- OSS HRD Status Survey
- Symposium
- Contests
- Request for Joining

Background

- The 4th Forum, Tianjin, China, Apr. 13, 2006

To promote education of OSS and to develop human resource that will contribute to global communities, CJK expect OSS Promotion Forum to discuss human resources cooperation issues such as mutual testing and certification of OSS expertise, development of curriculum and textbook for OSS development and users.

- The 5th Forum, Fukuoka, Japan, Nov. 21, 2006

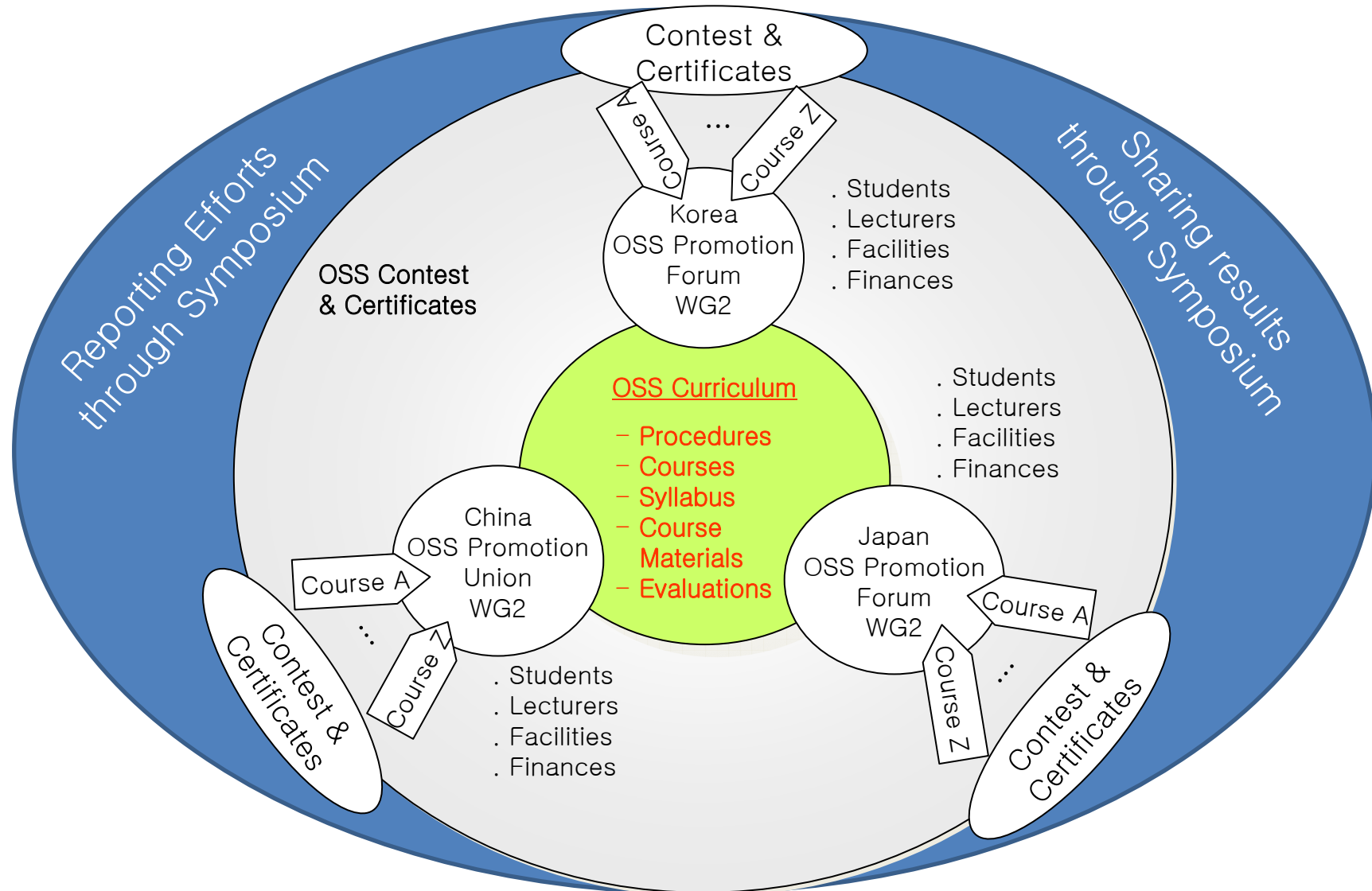
The Forum agreed to release its first report, “NEA OSS HRD model curriculum (ver. 1.0),” along with the report on pilot program execution in each country by the next forum.

- “NEA OSS HRD Analysis Report (ver. 1.0)” will be released by Dec. 2007.

Action Items

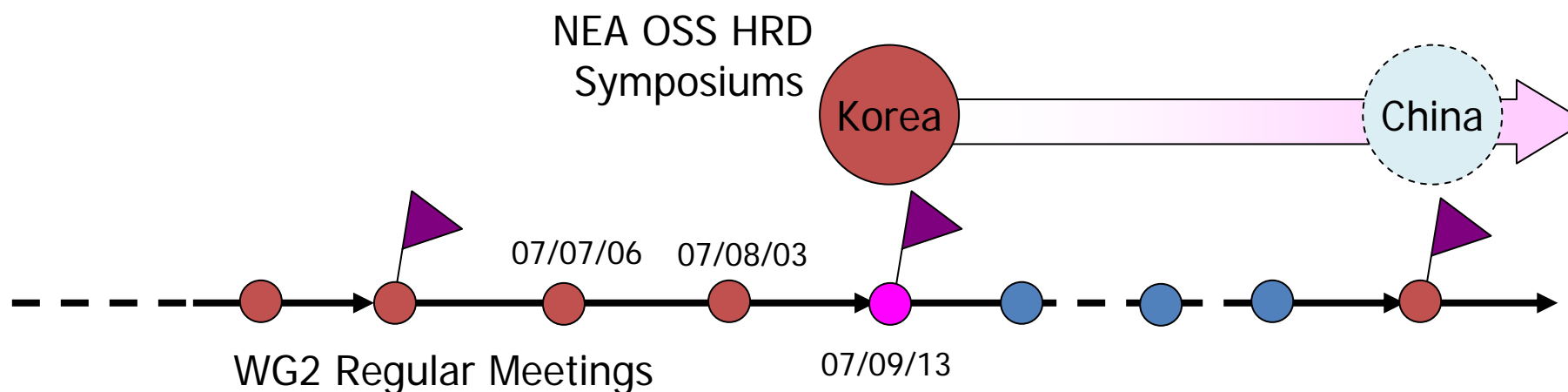
- Carrying **joint efforts** related to the OSS HRD promotion such as
 - Joint Curriculum
 - Joint Contests
 - Joint Certification
- Including, but not limited to:
 - Provision of master plans
 - Model curriculum and course development
 - Training and education
 - Contests
 - Textbook evaluations
 - Testing and certification
 - etc.

Framework



WG2 Meeting vs. Symposium

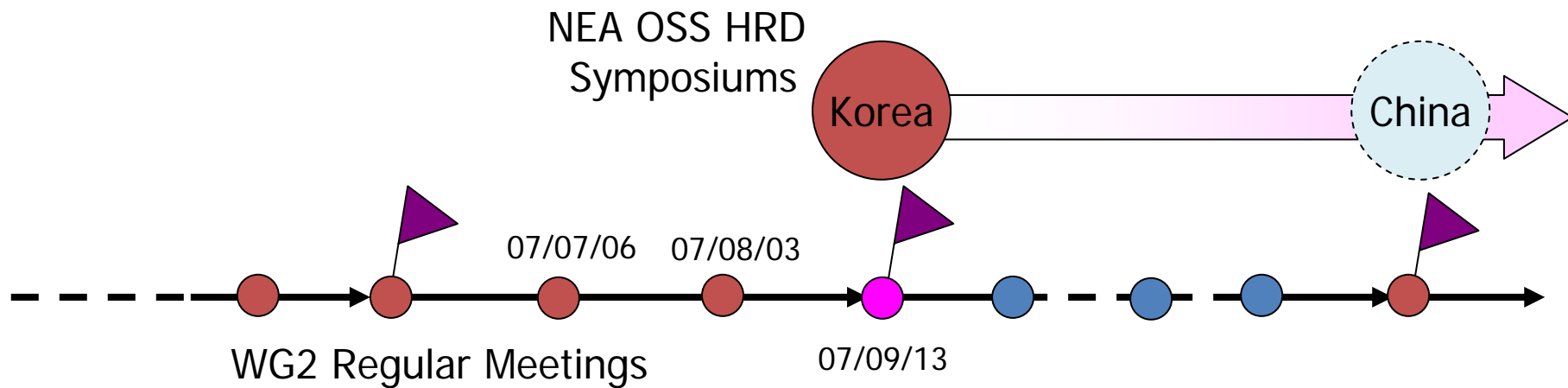
- Meeting: regular/inner activity
 - for achieving from Short-term to ultimate goals
- Symposium: outer activity for sharing efforts & results



THE 1ST NEA OSS HRD SYMPOSIUM

Motivation

	Before Seoul Forum	Seoul Forum
Promotion Scheme	Promoting by Only Tight Collaborations	Adding Promotion by Reporting and Indexing
	Producing collaboration results	Stimulating competitions by information exchange
Meeting Form	WG2 Internal meeting (Closed)	Creating CJK OSS HRD Symposium (Open)
Sharing	Presentation at NEA OSS Forum	Both of Presentation and Proceedings



Outlook

- Jamsil Lotte World Hotel, Sep. 12, 2007
- Attendees: ~100
- Presented
 - WG2 – Mission, goals, and Plans
 - European Efforts
 - Survey and HRD Status
 - HRD Trends
 - Contest Winners' Presentations
- Published Proceedings



HRD Symposium Program

Welcoming Address

- 13:00~13:05 **KOH, Kern** / Chairman, KOSS, Seoul Nat'l Univ.
 13:05~13:10 **HU, Kunshan** / Vice Chairman & WG2, COPU
 13:10~13:15 **YAMADA, Shinichi** / Executive Vice President, CTO, Senior Executive Manager, NTT DATA CORPORATION, Japan
 13:15~13:25 **Congratulatory Address**
HWANG, Daejoon / President & CEO, KERIS, Korea

European Efforts

- 13:25~13:50 **"OSS for Education, Education for OSS"**
ERKAN, Kaan / Project Leader, tOSSad, EU

Introducing WG2

- 13:50~14:00 **NEA OSS Promotion Forum WG2 – Missions, Goals and Plans**
KIM, Doohyun / WG2 Coordinator, Konkuk Univ.

Session I : OSS HRD Status and Survey

Session Chair: **KWON, Heechoon** / Suwon Woman's College

- 14:00~14:15 **OSS HRD Status and Survey – Japan**
NAKAHARA, Michinori / JOSS WG2, IBM Japan, Japan
 14:15~14:30 **OSS HRD Status and Survey – Korea**
SON, Sunghoon / Sangmyung Univ., Korea
 14:30~14:45 **OSS HRD Status and Survey – China**
CHEN Zhong / Peking University, China

Session II : OSS HRD Trend

Session Chair: **NAKAHARA, Michinori** / WG2, JOSS, IBM Japan

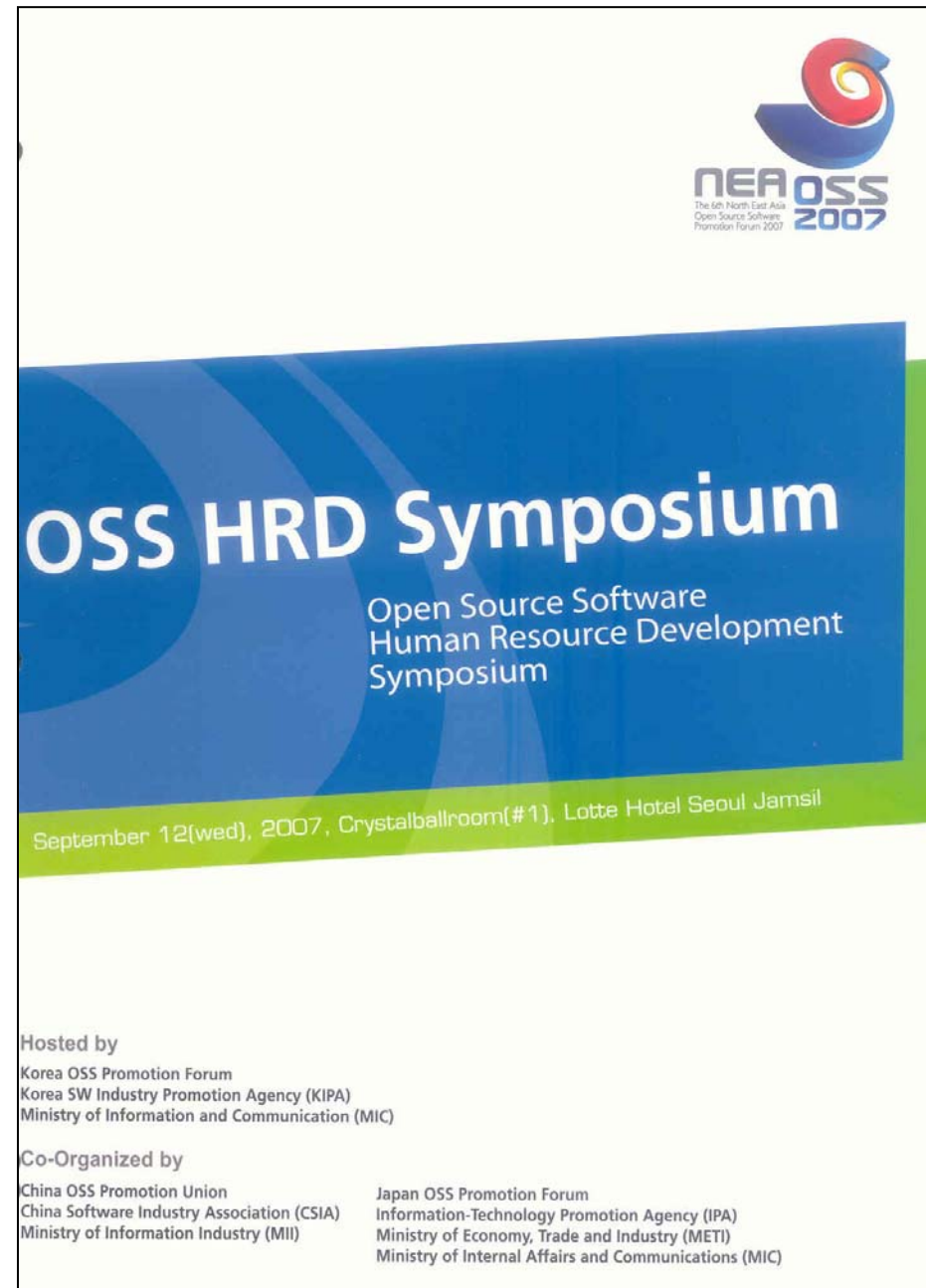
- 14:45~15:00 **Open Source software Contest in China**
YANG, ChunYan / Co-Create Software Association, China
 15:00~15:15 **OSS Training Case Study**
HAMANO, Kenichiro / Linux Academy, Japan
 15:15~15:30 **Demand for OSS Labor in Korea**
PARK, Changsun /NCOOPER
 15:30~15:45 **COFFEE BREAK**

Session III Contest Winners' Presentation

Session Chair: **LEE, Minsuk** / Hansung Univ., Korea

- 15:45~15:55 **FirteX-A High Performance and Scalable Platform for Full-text Indexing and Retrieval**
GUO, Ruijie
 15:55~16:05 **Midinux – the Linux distribution for MID Platform Midinux Project**
ZOU, Pengcheng
 16:05~16:15 **Adaptive Readahead**
WU Fengguang
 16:15~16:25 **The Seaser Project**
HIGA, Yasuo / Seasar2
 16:25~16:35 **USAGI Project**
YOSHIFUJI, Hideaki / USAGI Project
 16:35~16:45 **Wide Studio/WMT**
HIRABAYASHI, Shunichi / Wide Studio/WMT
 16:45~16:55 **Customized ERP for small and medium enterprises**
HA, Junho / Pukyong national university
 16:55~17:05 **Gadgets with Open API**
JUNG, Sangil / Kyonggi university
 17:05~17:15 **Web Application Automatic Patch System Development Project**
KIM, Yongdug / Kyungbook National University

HRD Symposium Proceedings



NEA OSS 2007
The 6th North East Asia
Open Source Software
Promotion Forum 2007

OSS HRD Symposium

Open Source Software
Human Resource Development
Symposium

September 12(wed), 2007, Crystalballroom(#1), Lotte Hotel Seoul Jamsil

Hosted by
Korea OSS Promotion Forum
Korea SW Industry Promotion Agency (KIPA)
Ministry of Information and Communication (MIC)

Co-Organized by

China OSS Promotion Union	Japan OSS Promotion Forum
China Software Industry Association (CSIA)	Information-Technology Promotion Agency (IPA)
Ministry of Information Industry (MII)	Ministry of Economy, Trade and Industry (METI)
	Ministry of Internal Affairs and Communications (MIC)

WG2 Roadmap

- Short-term goal – **by Dec. 2007**
 - Current CJK analysis with common skill category
 - **“NEA OSS HRD Analysis Report (ver.1.0)”**
- Mid-term goal
 - Define CKJ course level by skill set and skill level
 - “NEA OSS HRD Analysis Report (ver.2.0)”
- Long-term goal
 - Define CJK Model Curriculum
 - “NEA OSS HRD Model Curriculum (ver.1.0)”
- Ultimate goal
 - Define Joint Certificate
 - “NEA OSS HRD Joint Certificate (ver.1.0)”

For details

- Refer Proceedings of the 1st NEA OSS HRD Symposium
- Refer “NEA OSS HRD Analysis Report (ver.1.0)” to be released by Dec. 2007.

Key Points in

OSS HRD STATUS & SURVEY

CHINA

China NPSS

- In December of 2001, MoE and SDRRC approved Peking University etc total 35+1 universities to establish NPSS, with emphasis on Industry-oriented Engineering Education and Talents Cultivation.
- NPSS is with differentiations as following compare with traditional computer science departments in China
 - The innovative curriculum design with more hand-on project-driven
 - 50–70% courses required teaching in English or bilingual
 - Cooperation with industry through adjunct faculty and co-advisor internship
 - High-level, multi-disciplinary degree program as Master of Engineering or Bachelor Degree of Software Engineering
- 5 years practice and achievements of NPSS

NLTTC

(National Linux Technology and Training Center
)

- In 2005, Peking University etc **40 universities** was approved by MoE and MoST to establish NLTTC.
- It is the first action intended to provide **OSS Human Resources Development** for Software Industry from Higher Education System.
- **Among them 20 universities have NPSS.**

Achievements

- 40 centers has been established and put into operation in 1.5 years
- 67 Linux-related courses was taught in 40 centers or their universities.
- 334 teachers taught 470 classes, and 30964 students benefits from the classes.
- 19603 person-time applied relative certificates, and 13522 person-time got certified.

OSS related courses category

Category	Response	Rate (%)	Quantity	Rate (%)
Information Management	14	8.92%	23	8.71%
App. Development and Middleware	21	13.38%	40	15.15%
Programming Language	21	13.38%	35	12.87%
SOA	5	3.18%	6	2.27%
Information Security	14	8.92%	19	7.20%
e-business	11	7.01%	16	6.06%
Operating System	28	17.83%	56	21.21%
Platform Technology	3	1.91%	4	1.52%
Software Engineering	19	12.01%	42	15.91%
SSME	4	2.55%	5	1.89%
Open Software	7	4.46%	13	4.92%
Computer Fundamental	2	1.27%	2	0.74%
Embedded System	2	1.27%	3	1.10%
Project Management	6	3.82%	8	2.94%

Note: Response – number of universities offered courses in the category

Quantity – number of courses offered by all the universities surveyed

OSS Category		Response	Rate (%)	Quantity	Rate (%)
OS	Ubuntu/Linux	6	2.43%	7	1.36%
	Fedora/Linux	12	4.86%	29	5.63%
	RedHat/Linux	27	10.93%	69	13.40%
	RedFlag/Linux	9	3.64%	13	2.52%
	TurboLinux/Linux	4	1.62%	5	0.97%
	Suse/Linux	7	2.83%	12	2.33%
	OS Total	65	26.32%	135	26.21%
Dev.Tools	GNU gcc/g++	26	10.53%	61	11.84%
	Eclipse	27	10.93%	51	9.90%
	Python	4	1.62%	6	1.17%
	VIM/Emacs	8	3.24%	18	3.50%
	PHP	12	4.86%	22	4.27%
	Java	28	11.34%	75	14.56%
	Ruby	3	1.21%	4	0.78%
	Dev.Tools Total	108	43.72%	237	46.02%
App. Platform	MySql	21	8.50%	42	8.16%
	PostgreSQL	4	1.62%	4	0.78%
	Tomcat	23	9.31%	49	9.51%
	Jboss	11	4.45%	21	4.08%
	App. Platform Total	59	23.89%	116	22.52%
Others	SCIM	1	0.40%	1	0.19%
	FireFox	11	4.45%	23	4.47%
	ThunderBird	3	1.21%	3	0.58%
	Others Total	15	6.07%	27	5.24%

Courses for B.S/M.S students

Category	Post-graduates	Under-graduates
Information Management	2	16
App. Development and Middleware	2	29
Programming Language	2	28
SOA	2	1
Information Security	3	14
E-Business	1	8
Operating System	4	40
Platform Technology	2	1
Software Engineering	10	17
SSME	1	3
Open Software	-	6
Computer Fundamental	-	1
Embedded System	-	1
Project Management	1	4
Total	30	169
%	15.08%	84.92%

Students enrolled in the classes

Category	Person-time	Rate (%)
Information Management	2044	6.60%
App. Development and Middleware	5605	18.10%
Programming Language	9646	31.15%
SOA	280	0.90%
Information Security	1680	5.43%
e-Business	770	2.49%
Operating System	5108	16.50%
Platform Technology	67	0.22%
Software Engineering	3427	11.07%
SSME	180	0.58%
Open Software	1488	4.81%
Computer Fundamental	120	0.39%
Embedded System	30	0.10%
Project Management	519	1.68%
Total	30964	100%

Credits of the courses

Category	2c	3c	4c	>4c
Information Management	8	5	2	1
App. Development and Middleware	14	10	3	1
Programming Language	11	8	6	1
SOA	2	1	–	–
Information Security	7	6	3	–
E-Business	5	3	2	–
Operating System	22	18	4	1
Platform Technology	2	–	–	–
Software Engineering	12	18	3	–
SSME	2	2	–	–
Open Software	4	4	–	–
Computer Fundamental	1	–	–	–
Embedded System	–	–	–	–
Project Management	2	4	–	–
Total	92	79	23	4
%	46.46%	39.90%	11.16%	2.02%

Percentage of core or elective courses

Category	Core	Selective
Information Management	10	8
App. Development and Middleware	9	20
Programming Language	20	10
SOA	1	2
Information Security	7	10
E-Business	–	9
Operating System	25	18
Platform Technology	–	3
Software Engineering	17	10
SSME	–	4
Open Software	3	3
Computer Fundamental	–	1
Embedded System	1	–
Project Management	2	3
Total	95	101
%	48.47%	51.53%

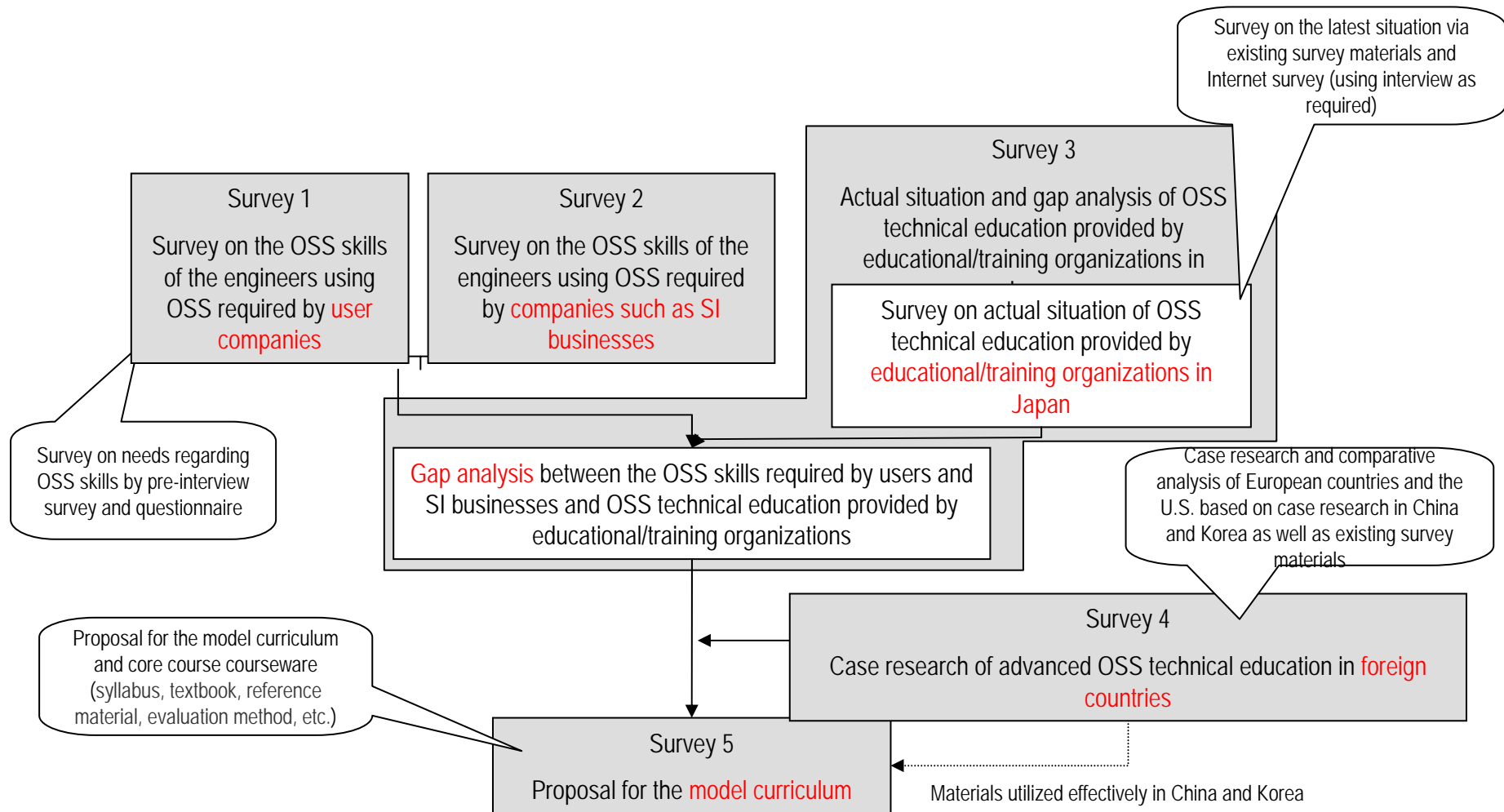
Summary in China

- OSS has been **incorporated into the current curriculum** as extension or standalone experimental courses
- **Percentage of OSS is increasing** among the BS and MS students degree or non-degree programs
- Need feedback from industry
- Need refinement of the OSS courses and experiments

JAPAN

Overview of Japan survey

To analyze the gap between companies and educational/training institutes regarding OSS human resources and to develop a model curriculum for OSS technical education



Overview of Japan survey (cont.)

Responses are obtained for questions regarding OSS skills of the engineers using OSS in the following **27 skills in 8 categories**

Category	Name of skill	Outline
Basics	Knowledge of the OSS outline	The history and idea of OSS, typical OSS, trends for standardization, areas in which OSS is used and market trends, OSS project growth and operation, joining OSS communities and major communities
	Basic knowledge in the field of legal affairs	Basic knowledge from a legal perspective including OSS-related licenses
	Skills in computer systems and architecture	Including CPUs, buses, DMA, I/O, POSIX, and threads
	Skills in distributed architecture	Including statistical probability theory, traffic theory, RIP/OSPF, and CORBA
System	Skills in the concept of Linux and its basic operation	Concept organization and basic operation
	Skills in the Linux kernel	Including kernel structure, processes, threads, and schedulers
	Skills in Linux system management	Including installation, kernel configuration, boot configuration, network configuration, packaging management, user management, file management, service management, device management, log management and backup
	Skills in Linux system programming	Including shell programming, threads, file input/output programming, network programming, shared memory, semaphores, queues, and problem identification
	Skills in network server management	Including WEB application servers, network infrastructure, file servers, and troubleshooting
	Skills in cluster system architecture	Including failsafe HPC and Enterprise Systems
Network	Skills in network architecture	A general introduction to TCP/IP
	Skills in network management	Computer network creation and operation

(Notice) The 27 skill items are organized as unified items in Japan, China, and Korea.

Category	Name of skill	Outline
Programming	Skills in Java	Including Applet, Servlet, JSP, and EJB
	Skills in C and C++	Including POSIX termio, curses, gtk++, and Qt
	Skills in lightweight language	Including PHP, Perl, Python, and Ruby
Development System	Skills in development frameworks	Including Struts and UML
	Skills in development tools	Including version management systems, debuggers, bug-tracking-down systems, system profilers, and kernel debuggers
	Skills in integrated development environments	Including Eclipse, Net Beans, and WideStudio
Security	Skills in encryption	Public key infrastructure, digital signatures, authentication, and hash functions
	Skills in network security	Firewall design/building, network intrusion analysis, log analysis, defense design against security attacks and unauthorized access techniques by exploiting TCP/IP
	Skills in OS security	Linux system security and security-enhanced OSes
RDB	Basic skills in RDBs	Including ER models and SQL programming
	Skills in RDB system management	Installation, configuration, and tuning of MySQL, FireBird, PostgreSQL, etc.
Embedded SW	Skills in embedded systems	System structure, development methodologies, RTOSs, sensor programming, embedded processors, and architecture (including ARM9, XScale, MIPS, SH, VR, MP, and 68k)
	Skills in embedded development environments	Cross-compile tools, toolchains (make, adb.minicom, Jflash, boothroad, tftp, and tinybox), and GUI programming (GTK+, QT, Qtopia)
	Skills in embedded application development	Including VM, J2ME, UPnP, SMS, and WAP protocols
	Skills in embedded system	Low powerization, device programming, and parallelization

Survey 1: Survey on the OSS skills of the engineers using the OSS required by the user companies

We conducted a questionnaire survey for Japanese listed companies that use OSS for the information systems for the company

(1) Implementation term

April 2nd through April 18, 2007

(2) Companies surveyed

1,500 companies

1) Advanced companies **using OSS for their IT systems** 82 companies

2) Domestic listed companies of **all business** (except SI businesses and software development companies)
1,418 companies

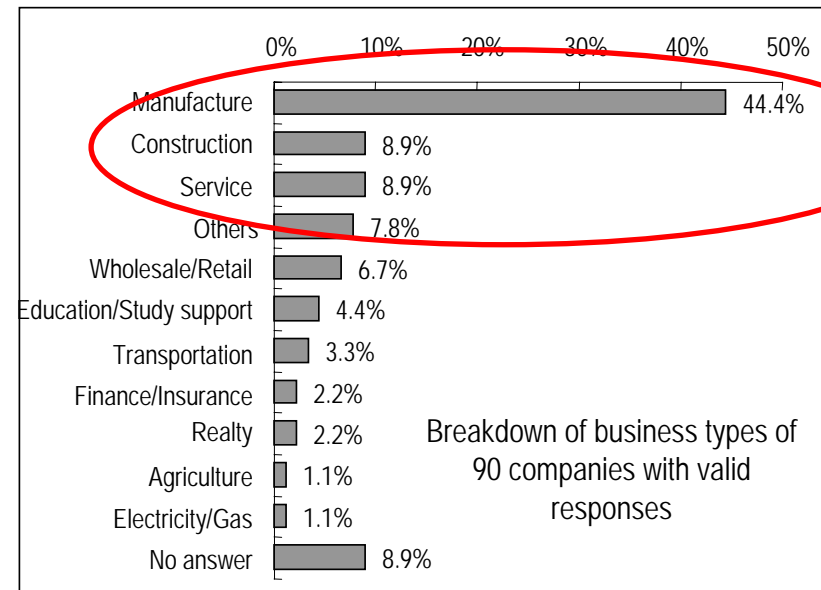
(3) Survey method

By mail. Postcards are sent twice in the period to ask for submission.

(4) State of collection

Valid responses: 90 (collection rate 6%)

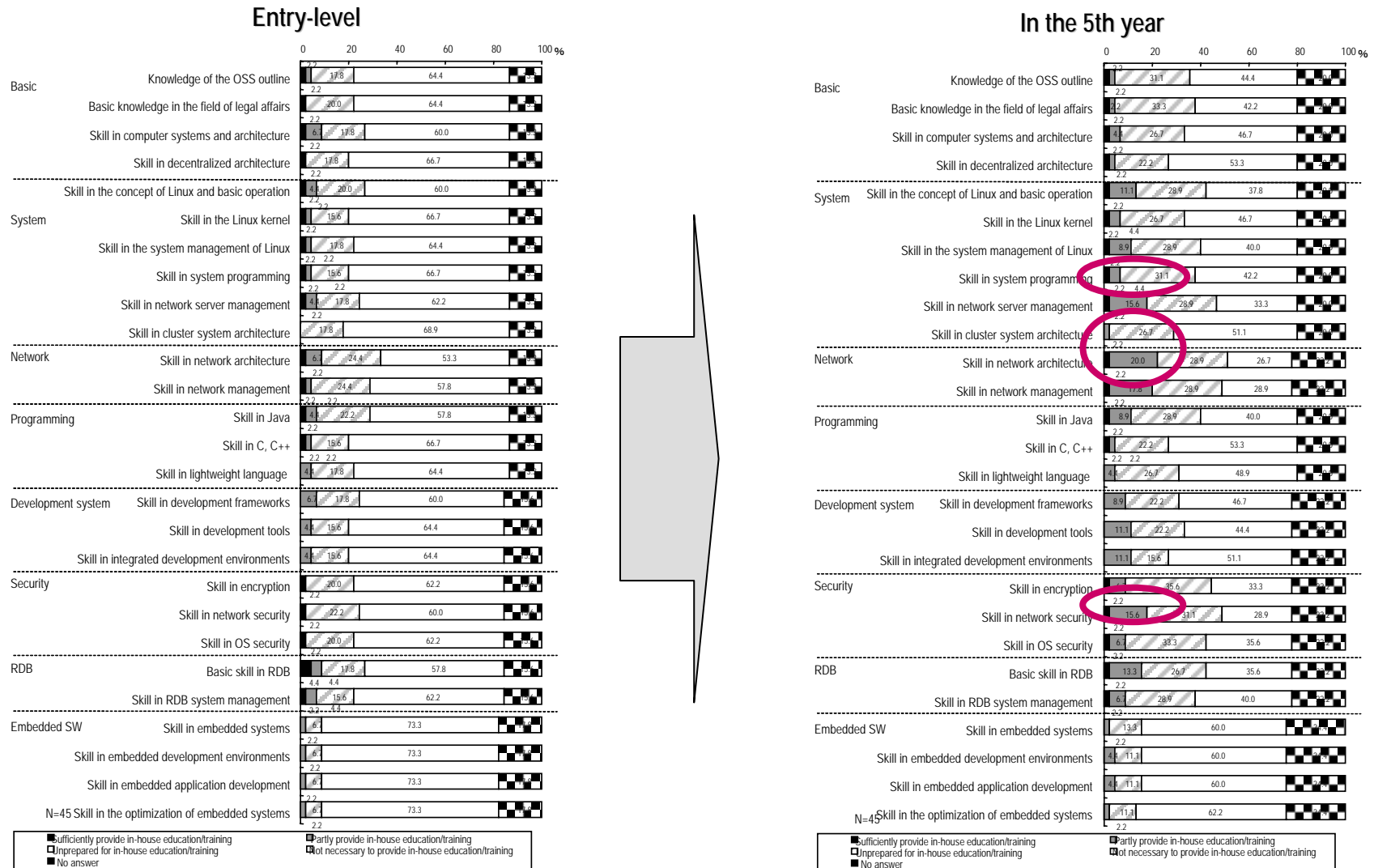
* We conducted an additional simple questionnaire survey for companies that found it difficult to answer the questionnaire survey. There were 124 valid responses.



Survey 1: Survey on the OSS skills of the engineers using OSS required by the user companies

At entry-level, almost no OSS skill training is provided

In the 5th year, about 20% of the companies provide training on network-related skills



Survey 2: Survey on the OSS skills of the engineers using OSS required by the companies such as SI businesses

Conducted a questionnaire survey for SI businesses and software development companies that use OSS for the information systems for clients

(1) Implementation term

April 2nd through April 18th, 2007

(2) Companies surveyed

1,350 companies; domestic SI businesses and software development companies

(3) Survey method

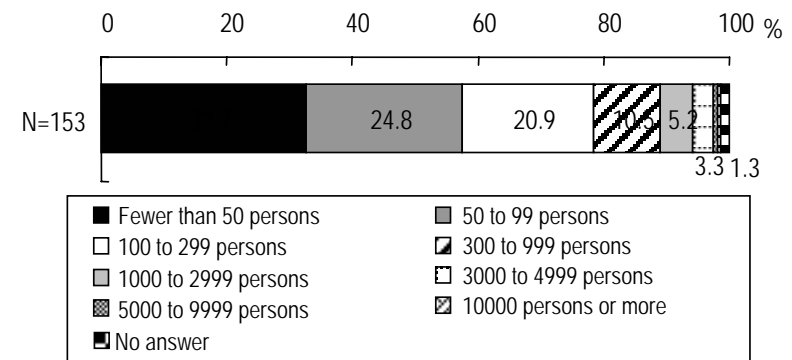
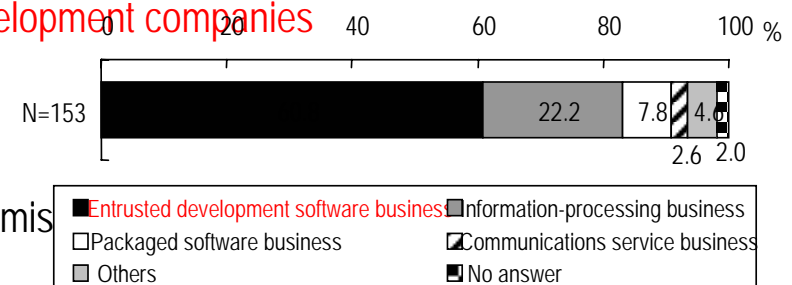
By mail. Postcards are sent twice in the period to ask for submission

(4) State of collection

Valid responses: 153 (collection rate 11.3%)

* We conducted an additional simple questionnaire survey for companies that found it difficult to answer the questionnaire survey. The number of valid responses was 176.

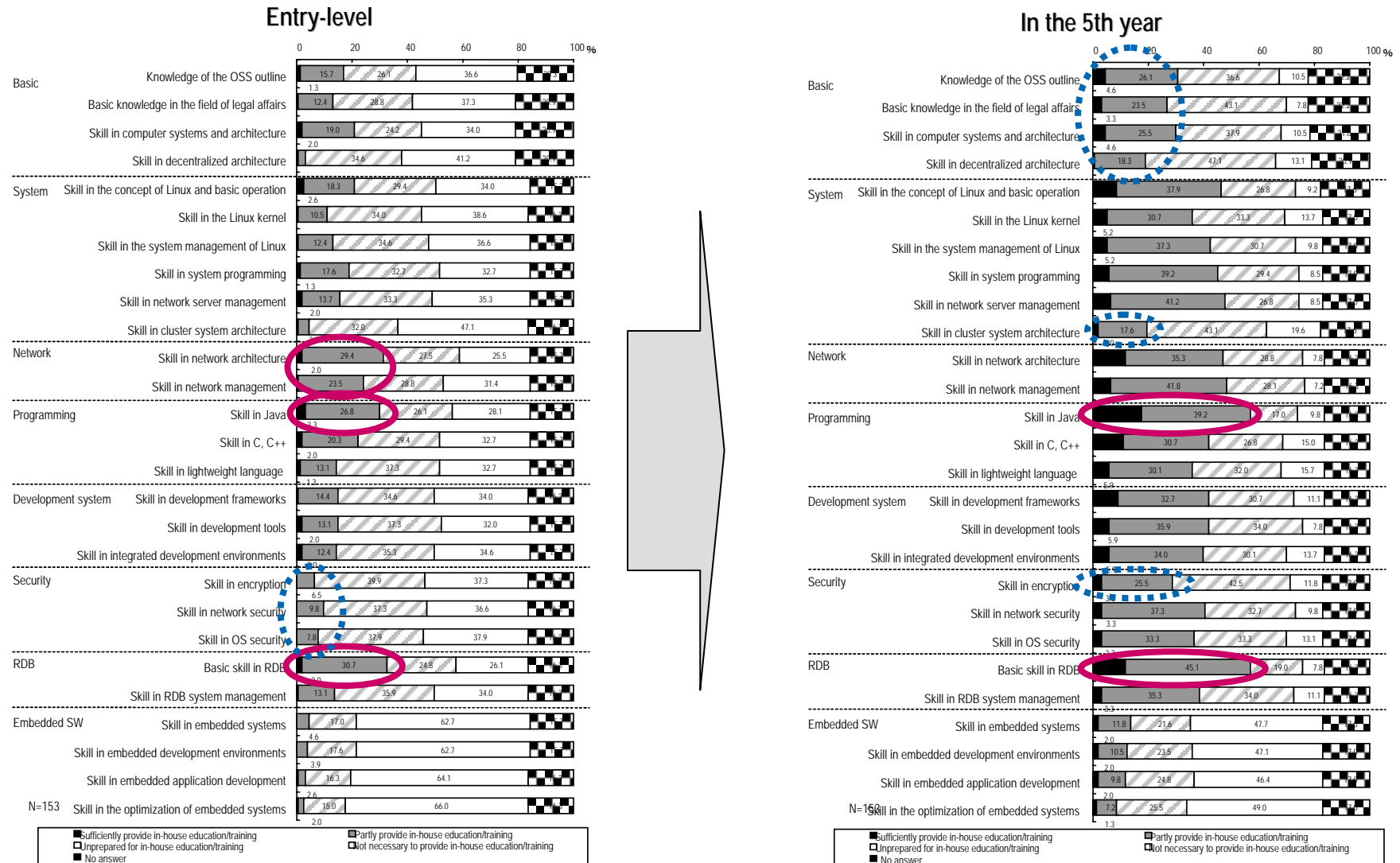
Category of business (above) and number of employees (below) of the respondent companies



Survey 2: Survey on the OSS skills of the engineers using OSS required by the companies such as SI businesses

At entry-level, 10 - 20% of the companies provide OSS skill training

In the 5th year, about 60% of the companies provide training on Java, etc, but little training on basics



Survey 3: Actual situation and gap analysis of OSS technical education provided by educational/training organizations in Japan

Survey on **universities and vocational schools** considered to be eager for OSS technical education

Category		Name of skill	Outline	University/Special						Number of times of implementation of six organizations	Level of the courses of six organizations (ITSS)
				Wakkanai Hokusei Gakuen University, Faculty of Information Media	Tohoku Gakuin University, Department of Information Science	TOKYO School of Technology, Faculty of Computer Science	Shonan Electronic College	Kobe Institute of Computing, Faculty of Information Technology	Asia Business College		
Basics	1	Knowledge of the OSS outline	The history and idea of OSS, typical OSS, trends for standardization, areas in which OSS is used and market trends, OSS project growth and operation, joining OSS communities and major communities	○		○	○	○	○	5	1
	2	Basic knowledge in the field of legal affairs	Basic knowledge from a legal perspective including OSS-related licenses	○			○			2	1
	3	Skills in computer systems and architecture	Including CPUs, buses, DMA, I/O, POSIX, and threads	○	○	○	○		○	5	1
	4	Skills in distributed architecture	Including statistical probability theory, traffic theory, RIP/OSPF, and CORBA			○				1	2
System	5	Skills in the concept of Linux and its basic operation	Concept organization and basic operation	○		○	○	○	○	5	1-2
	6	Skills in the Linux kernel	Including kernel structure, processes, threads, and schedulers	○	○	○	○	○		5	1-2
	7	Skills in Linux system management	Including installation, kernel configuration, boot configuration, network configuration, packaging management, user management, file management, service management, device management, log management and backup	○	○	○			○	4	1-2
	8	Skills in Linux system programming	Including shell programming, threads, file input/output programming, network programming, shared memory, semaphores, queues, and problem identification	○		○	○		○	4	1-2
	9	Skills in network server management	Including WEB application servers, network infrastructure, file servers, and troubleshooting	○	○	○	○	○	○	6	1-2
	10	Skills in cluster system architecture	Including failsafe HPC and Enterprise Systems							0	-
Network	11	Skills in network architecture	A general introduction to TCP/IP	○	○	○	○	○	○	6	1-2
	12	Skills in network management	Computer network creation and operation	○	○	○	○	○	○	6	1-2
Programming	13	Skills in Java	Including Applet, Servlet, JSP, and EJB	○	○	○	○		○	5	1-2
	14	Skills in C and C++	Including POSIX termio, curses, gtk++, and Qt	○	○	○	○	○	○	6	1-2
	15	Skills in lightweight language	Including PHP, Perl, Python, and Ruby	○	○	○	○	○	○	5	1-2
Development System	16	Skills in development frameworks	Including Struts and UML	○		○	○			3	1-2
	17	Skills in development tools	Including version management systems, debuggers, bug-tracking-down systems, system profilers, and kernel debuggers	○					○	2	1-2
	18	Skills in integrated development environments	Including Eclipse, Net Beans, and WideStudio	○		○	○			3	2
Security	19	Skills in encryption	Public key infrastructure, digital signatures, authentication, and hash functions			○		○		2	2
	20	Skills in network security	Firewall design/building, network intrusion analysis, log analysis, defense design against security attacks and unauthorized access techniques by exploiting TCP/IP	○	○	○	○	○	○	6	1-2
	21	Skills in OS security	Linux system security and security-enhanced OSes	○			○		○	3	1-2
RDB	22	Basic skills in RDBs	Including ER models and SQL programming	○	○	○	○	○	○	6	1-2
	23	Skills in RDB system management	Installation, configuration, and tuning of MySQL, FireBird, PostgreSQL, etc.	○	○	○	○			4	1-2
Embedded SW	24	Skills in embedded systems	System structure, development methodologies, RTOSs, sensor programming, embedded processors, and architecture (including ARM9, XScale, MIPS, SH, VR, MP, and 68k)				○	○	○	3	1
	25	Skills in embedded development environments	Cross-compile tools, toolchains (make, adb.minicom, Jflash, boothroad, iftp, and tinybox), and GUI programming (GTK+, QT, Qtopia)				○			1	2
	26	Skills in embedded application development	Including VM, J2ME, UPnP, SMS, and WAP protocols				○	○		2	1
	27	Skills in embedded system optimization	Low powerization, device programming, and parallelization				○			1	1

(Notice) This table is produced based on the information of the syllabus obtained through the Internet or from each organization.

- "○" means that there is a course for the acquisition of each skill.
- "Number of times of implementation of six organizations" represents the number of schools at which the course concerning each skill is provided.
- "Level of the courses of six organizations" is the result of transposing the level of the course to ITSS level. For example, "1" means that all the courses are evaluated at level 1, and "1-2" indicates that there are the courses of level 1 and 2.

Survey 3: Actual situation and gap analysis of OSS technical education provided by educational/training organizations in Japan

Survey on leading training centers and training centers focusing on OSS technical education

Category		Name of skill	Outline	Training center					Number of times of implementation of five organizations	Level of the courses of five organizations (ITSS)
				NEC Learning	Hitachi Information Academy	Fujitsu Learning Media	Open Source Research Institute	Linux Academy		
Basics	1	Knowledge of the OSS outline	The history and idea of OSS, typical OSS, trends for standardization, areas in which OSS is used and market trends, OSS project growth and operation, joining OSS communities and major communities	○	○	○	○	○	5	1
	2	Basic knowledge in the field of legal affairs	Basic knowledge from a legal perspective including OSS-related licenses			○			1	1
	3	Skills in computer systems and architecture	Including CPUs, buses, DMA, I/O, POSIX, and threads	○	○	○		○	4	1
	4	Skills in distributed architecture	Including statistical probability theory, traffic theory, RIP/OSPF, and CORBA	○		○			2	2
System	5	Skills in the concept of Linux and its basic operation	Concept organization and basic operation	○	○	○	○	○	5	1-2
	6	Skills in the Linux kernel	Including kernel structure, processes, threads, and schedulers	○		○		○	3	2
	7	Skills in Linux system management	Including installation, kernel configuration, boot configuration, network configuration, packaging management, user management, file management, service management, device management, log management and backup	○	○	○	○	○	5	1-3
	8	Skills in Linux system programming	Including shell programming, threads, file input/output programming, network programming, shared memory, semaphores, queues, and problem identification	○	○	○		○	4	1-2
	9	Skills in network server management	Including WEB application servers, network infrastructure, file servers, and troubleshooting	○	○	○	○	○	5	1-3
	10	Skills in cluster system architecture	Including failsafe HPC and Enterprise Systems	○		○			2	1-2
Network	11	Skills in network architecture	A general introduction to TCP/IP	○	○	○	○	○	5	1-3
	12	Skills in network management	Computer network creation and operation	○	○	○		○	4	1-3
Programming	13	Skills in Java	Including Applet, Servlet, JSP, and EJB	○	○	○		○	4	1-2
	14	Skills in C and C++	Including POSIX termio, curses, glibc, and Qt	○	○	○		○	4	1-2
	15	Skills in lightweight language	Including PHP, Perl, Python, and Ruby	○	○	○	○	○	5	1-2
Development System	16	Skills in development frameworks	Including Struts and UML	○	○	○		○	4	1-2
	17	Skills in development tools	Including version management systems, debuggers, bug-tracking-down systems, system profilers, and kernel debuggers	○	○	○		○	4	2
	18	Skills in integrated development environments	Including Eclipse, Net Beans, and WideStudio	○	○	○		○	4	1-2
Security	19	Skills in encryption	Public key infrastructure, digital signatures, authentication, and hash functions	○	○	○		○	4	1
	20	Skills in network security	Firewall design/building, network intrusion analysis, log analysis, defense design against security attacks and unauthorized access techniques by exploiting TCP/IP	○	○	○		○	4	1-3
	21	Skills in OS security	Linux system security and security-enhanced OSes	○	○	○		○	4	1-3
RDB	22	Basic skills in RDBs	Including ER models and SQL programming	○	○	○	○	○	5	1-3
	23	Skills in RDB system management	Installation, configuration, and tuning of MySQL, FireBird, PostgreSQL, etc.	○	○	○	○	○	5	1-3
Embedded SW	24	Skills in embedded systems	System structure, development methodologies, RTOSs, sensor programming, embedded processors, and architecture (including ARM9, XScale, MIPS, SH, VR, MP, and 68k)	○	○	○			3	1-2
	25	Skills in embedded development environments	Cross-compile tools, toolchains (make, adb.minicom, Jflash, boothroad, lftp, and tinybox), and GUI programming (GTK+, QT, Qtopia)	○	○	○			3	1-2
	26	Skills in embedded application development	Including VM, J2ME, UPnP, SMS, and WAP protocols	○		○			2	1-2
	27	Skills in embedded system optimization	Low powerization, device programming, and parallelization	○		○			2	1

(Notice) This table is produced based on the information of the syllabus obtained through the Internet or from each organization.

- "○" means that there is a course for the acquisition of each skill.
- "Number of times of implementation of five organizations" represents the number of schools at which the course concerning each skill is provided.
- "Level of the courses of five organizations" is the result of transposing the level of the course to ITSS level. For example, "1" means that all the courses are evaluated at level 1, and "1-2" indicates that there are the courses of level 1 and 2.

Survey 4: Case research of advanced OSS technical education in foreign countries

There is **no significant difference** in the coverage of the education curriculum among Japan, China, and Korea. However, **Chinese and Korean institutions focus on OSS technical education in embedded SW.**

Category	Name of skill	Japan						China					Korea				
		Wakkanai Hokusei Gakuen University	Tohoku Gakuin University	Tokyo University of Technology	Japan Electronics College	Kobe Institute of Computing	Aso Business Computer College	Beijing University	South China University of Technology	Hangzhou Dianzi University	Zhejiang Technology Institute of Economy	Changzhou Institute of Engineering Technology	Seoul National University	Konkuk University	Yonsei University	Korea University	Kyunghee University
Basics	Knowledge of the OSS outline	●		●	●	●	●	●	●	●	●	●	●	●			
	Basic knowledge in the field of legal skills	●			●			●	●	●	●	●	●				
	Skills in computer systems and architecture	●	●	●	●		●	—	—	—	—	—	●	●	●		
	Skills in distributed architecture			●				—	—	—	—	—	●				
System	Skills in the concept of Linux and its basic operation	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Skills in the Linux kernel	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●
	Skills in Linux system management	●	●	●			●	●	●	●	●	●					
	Skills in Linux system programming	●		●	●		●	●	●	●	●	●	●	●	●	●	●
	Skills in network server management	●	●	●	●	●	●	●	●		●	●					
	Skills in cluster system architecture							—	—	—	—	—					
Network	Skills in network architecture	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Skills in network management	●	●	●	●	●	●	●	●	●	—	●				●	●
Programming	Skills in Java	●	●	●	●		●		●			●	●	●	●	●	●
	Skills in C and C++	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●
	Skills in lightweight language	●	●		●	●	●	●	●	●		●					
Development System	Skills in development frameworks	●		●	●				●			●	●	●	●	●	●
	Skills in development tools	●					●	●	●			●	●	●	●		
	Skills in integrated development	●		●	●			●	●			●					
Security	Skills in network encryption			●	●	●		●	●		●	●	●	●	●	●	●
	Skills in network security	●	●	●	●	●	●	●	●		●	●				●	
	Skills in OS security	●			●	●	●		●		●	●		●	●		
RDB	Basic skills in RDBs	●	●	●	●	●	●		●		●	●	●	●	●	●	●
	Skills in RDB system management	●	●	●	●				●		●	●	●	●	●	●	●
Embedded SW	Skills in embedded systems				●	●	●	●	●	●	●	●	●	●		●	●
	Skills in embedded development environments				●			●	●	●	●	●	●	●		●	●
	Skills in embedded application development				●	●			●		●	●	●	●		●	
	Skills in embedded system optimization				●			—	—	—	—	—	●	●			

Notice) ● for China and Korea means that there is a course covering a skill. Therefore, there is not necessarily a course specializing in a concerned skill.

Notice 2) This table is on the educational organizations that focus on OSS education in each country. Copyright (C) 2007, Japan OSS Promotion Forum

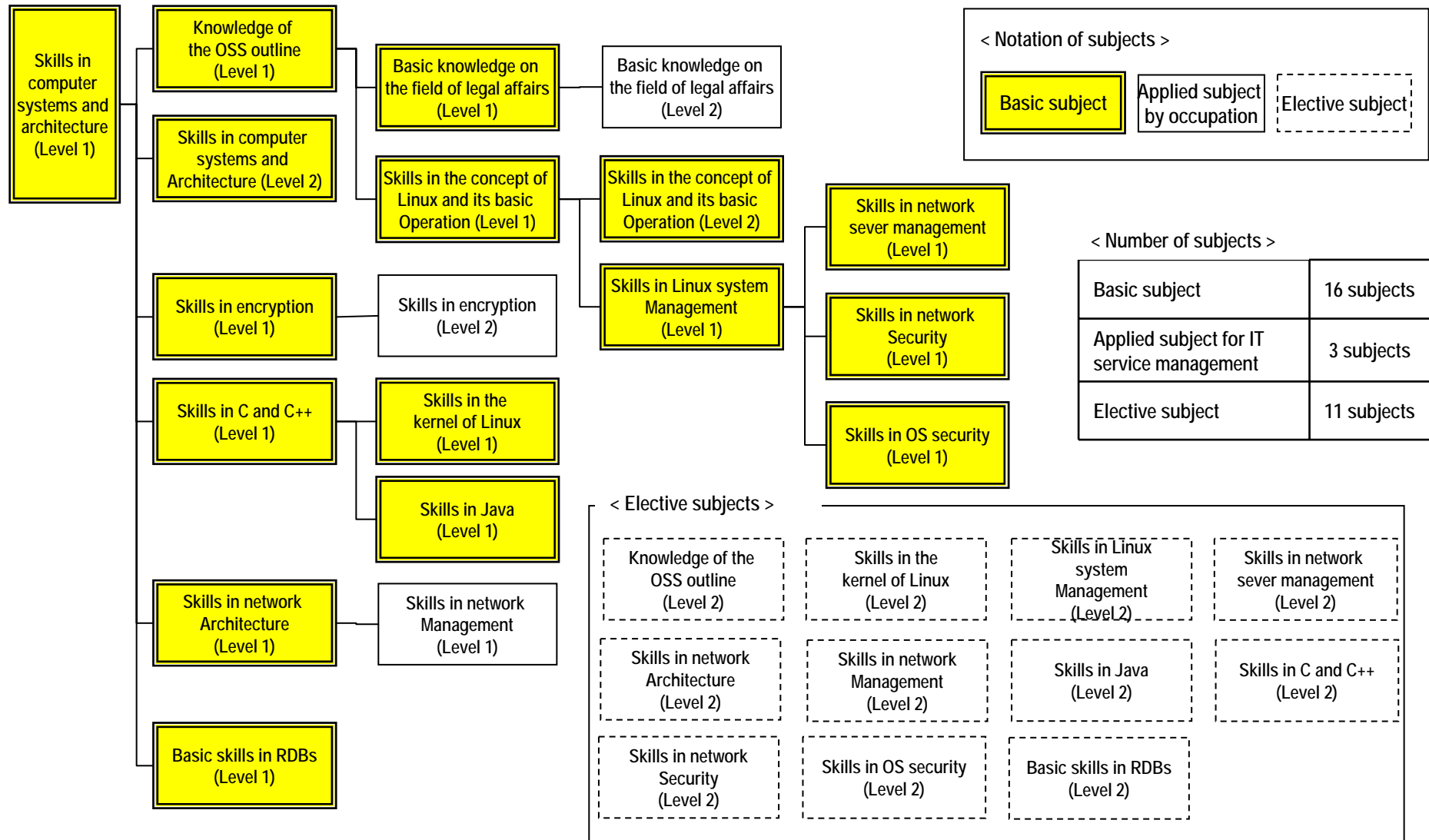
Survey 5: Proposal for a model curriculum

curriculum	skill#	Unit (= Class)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OSS knowledge	1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Legal affairs	2	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2
Computer arch.	3	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Distributed arch.	4	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2
Linux operation	5	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Linux kernel	6	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2
Linux sys. man.	7	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Linux sys. prog.	8	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2
Network server	9	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2
Cluster arch.	10	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2
Network arch.	11	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2
Network man.	12	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Java	13	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
C and C++	14	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2
Light weight lang.	15	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2
Dev. frameworks	16	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2
Dev. tools	17	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2
IDE	18	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2
Encryption	19	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2
Network security	20	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
OS security	21	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
RDB basic	22	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
RDB sys. man.	23	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2
Emb. system	24	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Emb. dev. env.	25	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Emb. appl. dev.	26	L1	L1	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2
Emb. system opt.	27	L1	L1	L1	L1	L1	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2

Survey 5: Proposal for a model curriculum

OSS model curriculum envisioned in universities, colleges and special schools

(IT service management human resources)



KOREA

Overview

- Conducted by CNET Korea Inc. under the sponsorship of KIPA (2006. Nov.~Dec.)
- Survey target
 - Demand-side : 171 companies sampled over 13,311 IT&C companies
 - Supply-side :
 - 38 universities are selected out of 150 universities (IT departments)
 - 13 IT education institutes
- Survey method
 - Questionnaires by e-mail
 - phone interviews

OSS HR in IT Companies

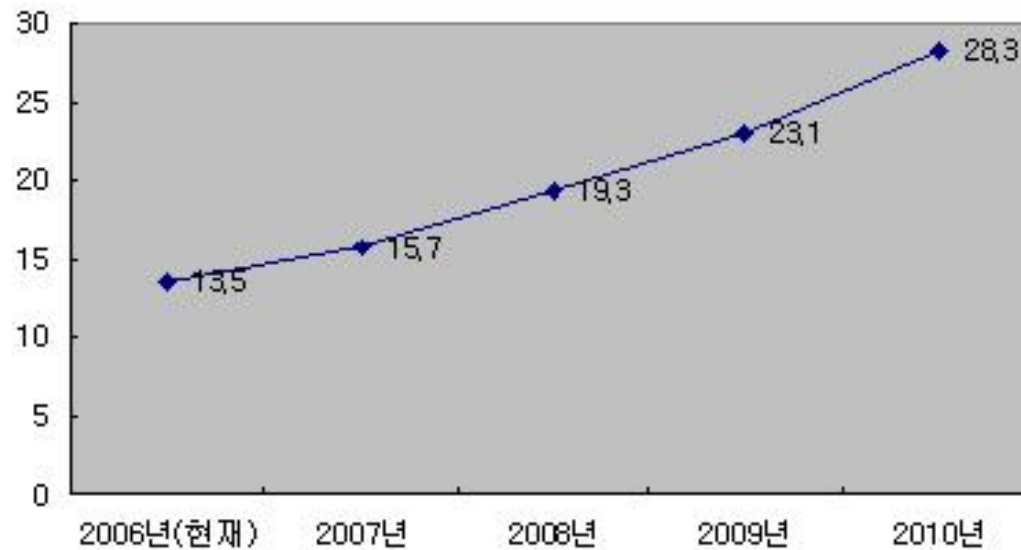
- How many people are **working** on Open Source SW in your company?

Categories	Beginner	Experienced	Total	Ratio (%)
1. Research / Engineering	-	21	21	0.9
✓ SI design/development	52	193	245	10.6
✓ SW design/development	148	720	868	37.7
✓ Digital contents	70	123	193	8.4
✓ System administration	24	96	120	5.2
✓ Communication/Broadcasting	15	54	69	3.0
✓ HW design/development	64	74	138	6.0
✓ IT Education	5	6	11	0.5
✓ IT Sales	18	140	158	6.9
2. Office work	59	421	480	20.8
Total	455	1,848	2,303	100.0

cf) Only those companies who provided the exact numbers are included in this table

Employment Plan for OSS

- How many human resources are needed in open source SW in your company?



cf) Only those companies who provided the exact numbers are included in this table

Employment Plan for OSS

- How many people will your company employ in open source SW for each field?

Category	Beginner				Experienced			Total
	College graduate	BS degree	Master degree	Doctoral degree	2~4 yrs.	5~7 yrs.	8 yrs. or more	
① SI Development/Design								
• Consultant, Project manager	2	4	4	–	7	12	5	34
• System engineer	9	6	2	–	10	4	1	32
• DB design, Administrator	1	7	2	–	11	3	1	25
• Network Design, Administrator	2	4	1	–	3	1	2	13
② SW Development/Design								
• SW Development/Programming	4	50	18	–	54	23	2	151
• Web engineer	1	11	2	–	16	7	1	38
• Information security engineer	2	6	3	–	7	4	1	23
③ Digital Contents	1	2	1	–	10	13	1	28
④ System administration								
• System administrator	4	11	–	–	11	2	–	28
• Web master	–	2	–	–	2	1	–	5
• Technical support engineer	1	4	1	–	2	1	–	9
⑤ Communication/Broadcast Service								
• Comm. Network Development/Design Engineer	–	2	–	–	1	1	–	4
• Comm. Network Administrator	–	–	–	–	1	–	–	1
• Comm. Network construction engineer	–	2	–	–	–	2	–	4
• Broadcast engineer	–	–	–	–	–	5	–	5
⑥ HW Design/Development								
• Platform Porting	–	–	2	–	2	6	–	10
• Firmware Development	–	2	3	–	4	5	2	16
• Application SW Development	–	3	6	–	6	9	–	24
⑦ IT Education	–	1	–	–	2	2	–	5
⑧ IT Sales								
• General Sales	1	4	–	–	8	1	–	14
• Engineering Sales(Pre Sales)	–	7	2	5	9	9	3	35
⑨ Office work(Marketing/Management)	1	1	–	3	13	7	2	27
Total (in persons)	29	129	47	8	179	118	21	531

cf) Only those companies who provided the exact numbers are included in this table

Required Technical Skills for OSS

- Which technical skills do you want new recruits to have ?

Category		Sub-category	# of Responses	Ratio (%)
Operating System		Server	53	58.2
		Desktop	11	12.1
		Embedded	28	30.8
SW	DBMS	MySQL	34	37.4
		PostgreSQL	8	8.8
		MaxDB	8	8.8
	Middleware	Tomcat	32	35.2
		Jboss	17	18.7
	Web/mail	Apache	36	39.6
		Sendmail	13	14.3
		qMail	11	12.1
	Programming	Language	C	29
C++			40	44.0
JAVA			42	46.2
PHP			15	16.5
Python			9	9.9
Perl			6	6.6
GUI		Qt	22	24.2
		Gtk+	17	18.7
System		Linux	43	47.3
		Network	24	26.4
		Security	26	28.6

cf) Only those companies who provided the exact numbers are included in this table

cf) Multiple choices might be allowed for this question

OSS Courses at University

- To which category do your Open Source SW courses are related ?

Category		Sub-category	# of Responses	Ratio (%)
Operating System		Server	21	56.8
		Desktop	11	29.7
		Embedded	11	29.7
SW	DBMS	MySQL	23	62.2
		PostgreSQL	2	5.4
		MaxDB	0	0
	Middleware	Tomcat	12	32.4
		Jboss	1	2.7
	Web/mail	Apache	24	64.9
		Sendmail	3	8.1
Others		qMail	0	0
Programming	Language	C	19	51.4
		C++	15	40.5
		JAVA	19	51.4
		PHP	12	32.4
		Python	0	0
		Perl	1	2.7
	GUI	Qt	8	21.6
		Gtk+	2	5.4
	System	Linux	15	40.5
		Network	16	43.2
		Security	7	18.9
Others			3	8.1

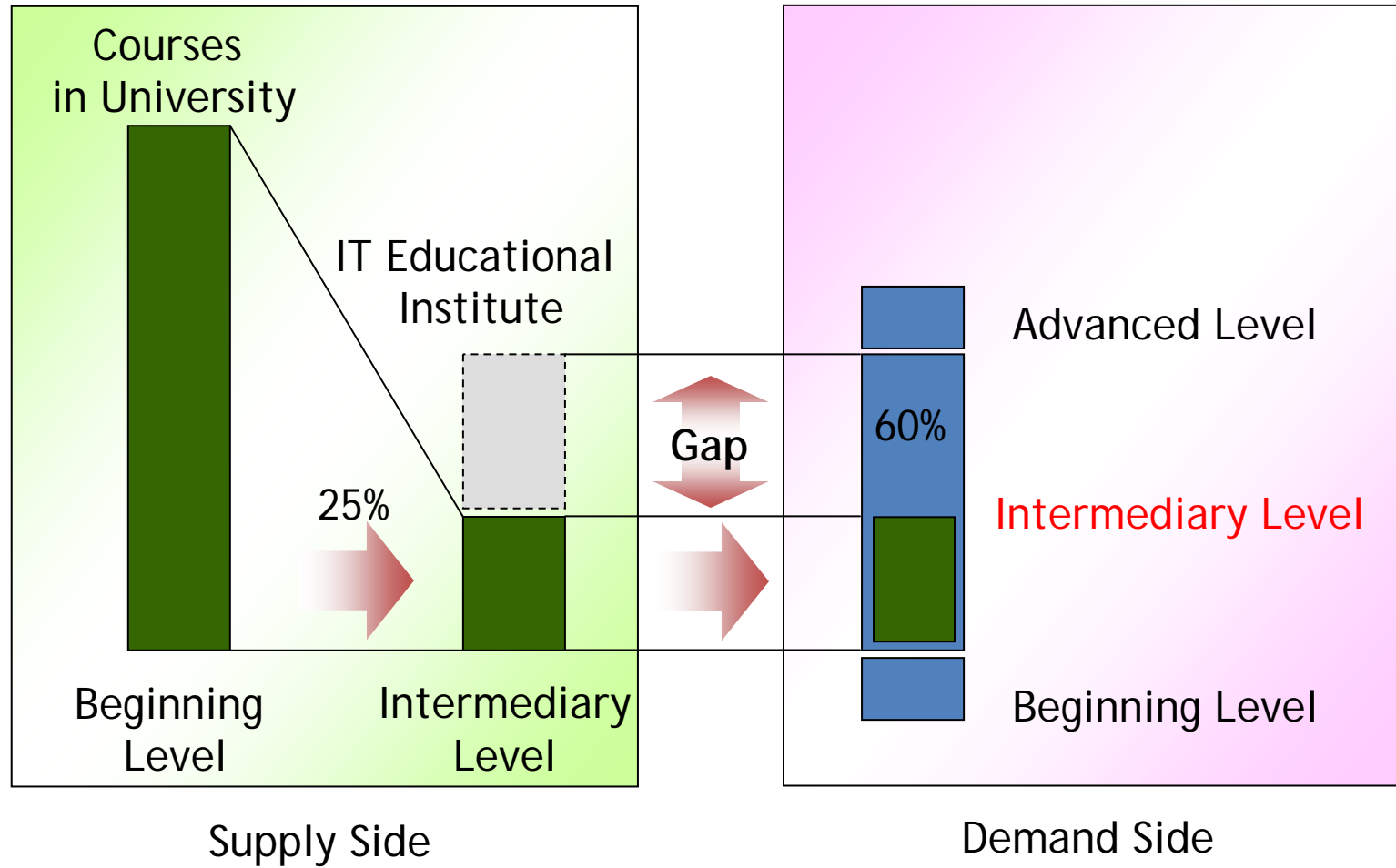
cf) Only those companies who provided the exact numbers are included in this table

cf) Multiple choices might be allowed for this question

The Supply almost meet the Demand in Quantity

Category	Sub-category	Demand		Supply				
		# of Responses	Ratio (%)	University		Edu. Institute		
				# of Responses	Ratio (%)	# of Responses	Ratio (%)	
Operating System	Server	53	58.2	21	56.8	9	75.0	
	Desktop	11	12.1	11	29.7	4	33.3	
	Embedded	28	30.8	11	29.7	6	50.0	
SW	DBMS	MySQL	34	37.4	23	62.2	6	50.0
		PostgreSQL	8	8.8	2	5.4	0	0
		MaxDB	8	8.8	0	0	0	0
	Middleware	Oracle	46	50.5	11	29.7	4	33.3
		Tomcat	32	35.2	12	32.4	4	33.3
		Jboss	17	18.7	1	2.7	0	0
	Web/mail	Apache	36	39.6	24	64.9	6	50.0
		Sendmail	13	14.3	3	8.1	3	25.0
		qMail	11	12.1	0	0	1	8.3
Progra- mming	Language	C	29	31.9	19	51.4	5	41.7
		C++	40	44.0	15	40.5	5	41.7
		JAVA	42	46.2	19	51.4	6	50.0
		PHP	15	16.5	12	32.4	5	41.7
		Python	9	9.9	0	0	0	0
		Perl	6	6.6	1	2.7	0	0
	GUI	Qt	22	24.2	8	21.6	5	41.7
		Gtk+	17	18.7	2	5.4	4	41.7
	System	Linux	43	47.3	15	40.5	6	50.0
Network		24	26.4	16	43.2	5	41.7	
Security		26	28.6	7	18.9	7	58.3	

Gap in levels



Summary in Korea

- The Supply almost meet the Demand in quantity
- But there exist a gap in skill levels, especially in intermediate level
- Two directions
 - Strengthen university education up to intermediary level
 - Promote IT education/training institutes or companies
- For both directions
 - Need to define **skills and model curriculum for intermediary level**
 - Need **Quality Assurance by enhancing OSS expert certificate systems within CJK**

CONTESTS

Contest Winners & Ceremony

- Presented in the NEA OSS HRD Symposium
- Award Ceremony: Sep. 13, 18:00 (in this forum)
- see Symposium Proceedings for more details

China	FirteX–A High Performance and Scalable Platform for Full–text Indexing and Retrieval GUO, Ruijie
	Midinux – the Linux distribution for MID Platform Midinux Project ZOU, Pengcheng
	Adaptive Readahead WU Fengguang
Japan	The Seaser Project HIGA, Yasuo / Seasar2
	USAGI Project YOSHIFUJI, Hideaki / USAGI Project
	Wide Studio/WMT HIRABAYASHI, Shunichi / Wide Studio/WMT
Korea	Customized ERP for small and medium enterprises HA, Junho / Pukyong national university
	Gadgets with Open API JUNG, Sangil / Kyonggi university
	Web Application Automatic Patch System Development Project KIM, Yongdug / Kyungbook National University



WG2 People

Current WG2 People

- China

- Mr. Hu Kunshan
(Vice Chairman, COPU, CSIA)
- Prof. Chen Zhong
(Peking Univ.)
- Ms. Yang Chun Yan
(Co-Create S/W Association)
- Mr. Sun Shulong
(Beijing S/W Practice Base)
- etc

- Japan

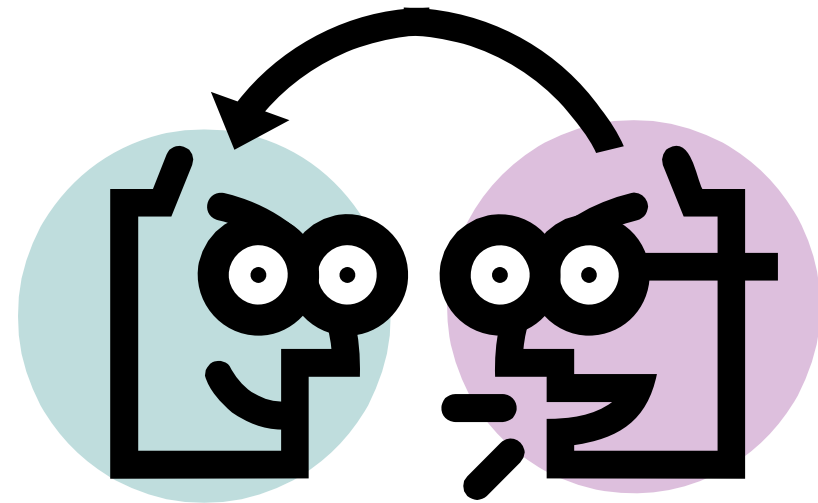
- Mr. Michinori Nakahara
(IBM Japan)
- Mr. Kenichiro Hamano
(Linux Academy)
- Prof. Makoto Oya
(Shonan Institute of Tech.)
- Mr. Ishii
(IPA)
- etc

- Korea

- Prof. Doohyun Kim
(Konkuk Univ.)
- Prof. Kern Koh
(Chairman KOSS, Seoul Nat'l Univ.)
- Prof. Sunghoon Son
(Sangmyung Univ.)
- Prof. Minsuk Lee
(Hansung Univ.)
- Prof. Heechoon Kwon
(Suwon Woman's College)
- etc

Request for Joining

- Demand sides
 - Companies
 - Industrial Associations
 - Etc.
- Supply sides
 - Training Institutes
 - Universities and Professors
 - Academic Associations
 - Etc.
- Communities



Building
OSS Human Resource
Ecosystem

Take Chances!
for contributions
and rewards

Thank you!