TOPCIT Test Of Practical Competency in IT

Global ICT HR Competency Evaluation

TOPCIT Quality Assurance

Ministry of Science, ICT and Future Planning

IITP 정보통신기술진흥센터 Institute for Information & communications Technology Promotion

kpc KOREA PRODUCTIVITY CENTER

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Part 1

K-ICT HRD Strategy and Performance Management

▪ Shortage of HR with both Research and Field Competencies

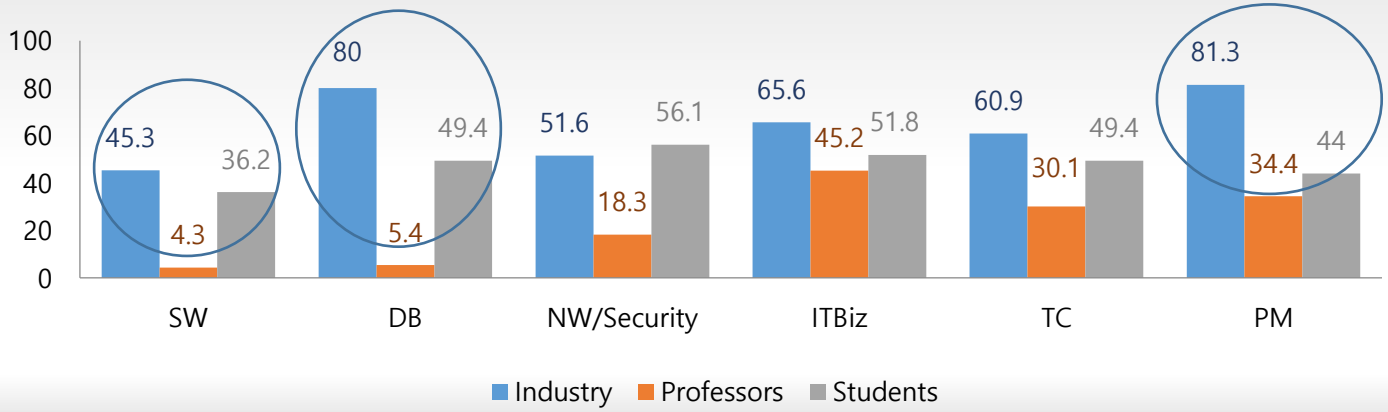
- Shortage of ICT/SW HR with Masters & Doctorates
- Low employment in small & medium sized businesses and venture companies

▪ Need for a Standardized ICT/SW Competency Index

- Experience-centered recruitment programs and too many types of qualifications

▪ HUGE Disagreement between the Industry and Academia

- Areas Lacking in Univ. Graduates' Competency * 100 : Extremely Inadequate / 0 : Competent



▪ Developing Qualified ICT HR for Creative Economy

- Univ. ICT Research Centers
- Programs for Field Experience and Technical Competency, etc.

▪ HRD for a SW Oriented Society

- Expansion of SW Oriented Universities
- Implementation of SW Curriculum in Primary and Secondary Education

▪ HR Competency Centered Education and Field Training

- TOPCIT Quality Improvement and Implementation to Industry/Universities

$1.1 Billion Funded to IITP for 2016

▪ Performance Management System (Previous)

- Graduate Employment Rate
- Thesis and Academia-Industry Project Collaborations
- University Efforts in Curriculum / Education Reformations

Demand for an Objective and Verifiable Performance Indicator

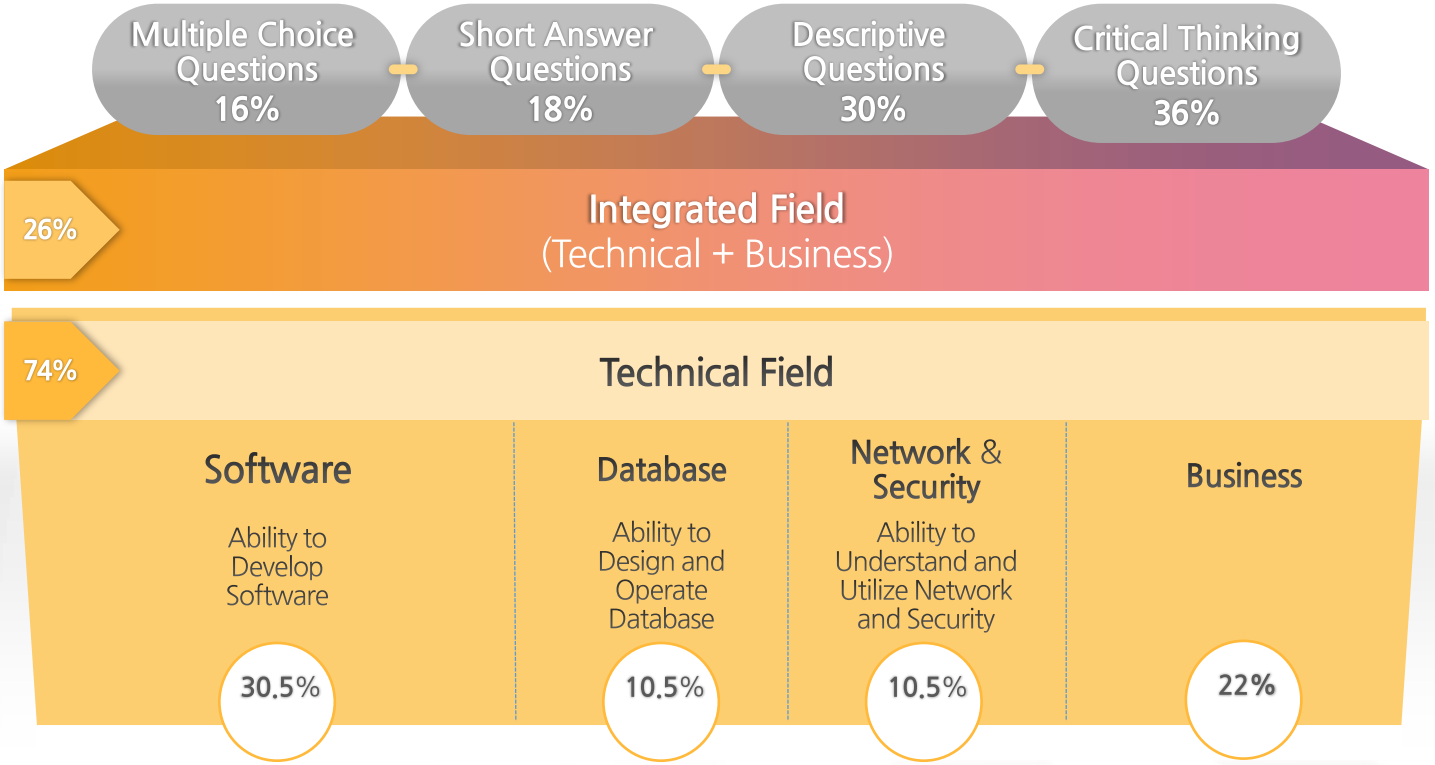
▪ Performance Management System (New): TOPCIT Included

- Govt. (MSIP)'s HRD Performance Index (Test Score)
- Verification of Students' Objective Competency
- Industry Oriented Univ. Education Standards

Part 2

TOPCIT Introduction

TOPCIT is a performance-evaluation-centered test designed to diagnose and assess the competency of ICT specialists and SW developers that is critically needed to perform jobs on the professional frontier



* 2hr 30 min
** 65 questions / 1set

Level 1	**Novice (0~99points)**	The examinee requires more intensive study and training as he/she lacks knowledge and understanding of both technical and business field of ICT.
Level 2	**Advanced Beginner (100~399 points)**	The examinee only has an understanding of the theory and practice in the technical and business field of ICT.
Level 3	**Competent (400~699 points)**	The examinee is capable of resolving tasks by applying the theory and practice from technical and business fields of ICT
Level 4	**Proficient (700~899 points)**	The examinee is capable of resolving more complicated, profound tasks by applying knowledge and practice from the technical and business field of ICT.
Level 5	**Expert (900~1,000 points)**	The examinee is capable of playing a leading role in resolving tasks by applying theory and practice from the technical and business field of ICT and coming up with innovative measures based on their own creativity.

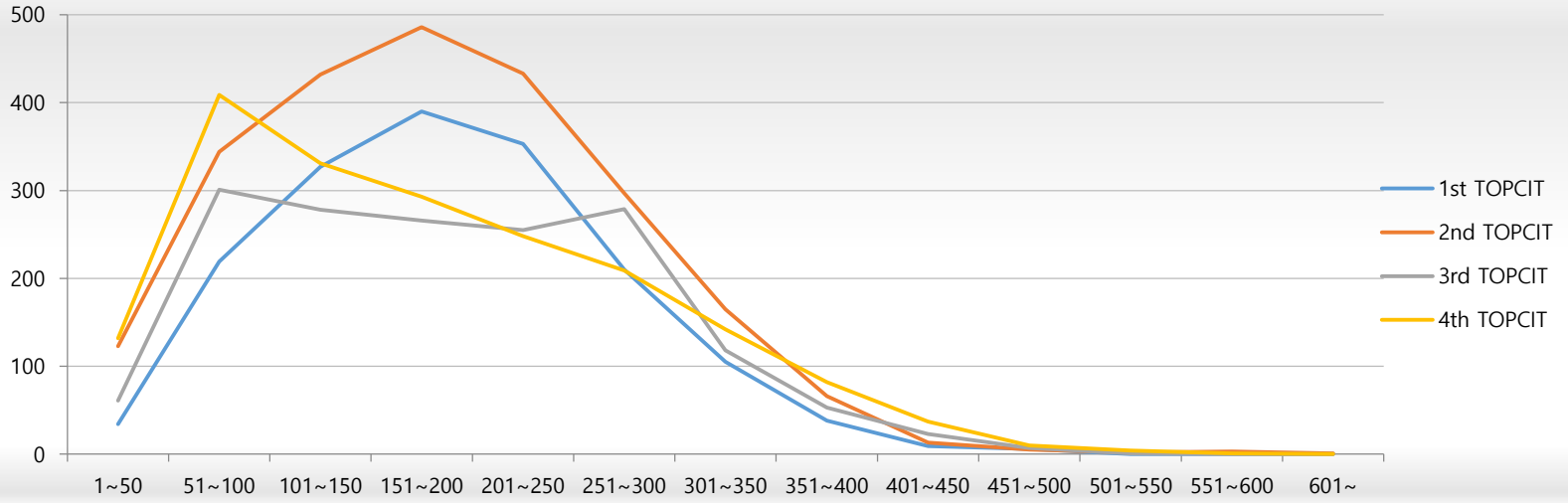
▪ Examinees (1st ~ 4th TOPCIT)

Students	Employees	Military Personnel	Others	TOTAL
7,433	2,334	2,638	775	**13,180**

▪ Results (Test Score)

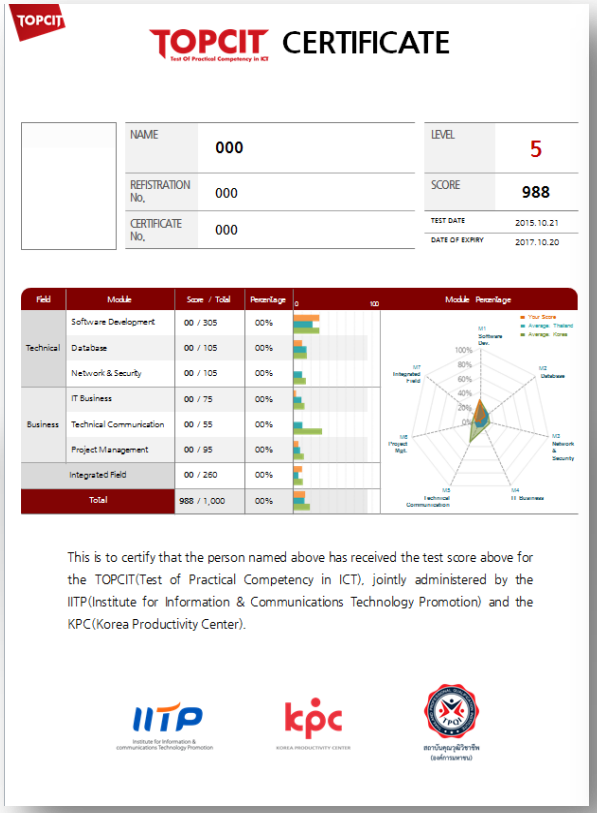
	1st TOPCIT	2nd TOPCIT	3rd TOPCIT	4th TOPCIT
Average (Students)	188.8 (170.5)	185.3 (195.9)	185.5 (204.5)	179.9 (204.7)
Highest Score	500	645	509	560

▪ Test Score Distribution Chart



④ Test Score Analysis

- Individual Test Score Analysis is provided to each examinee, including personal competency assessment, category scores, category suggestions, proposed study course.
- Analysis can be used to develop examinee competency or improve the education system



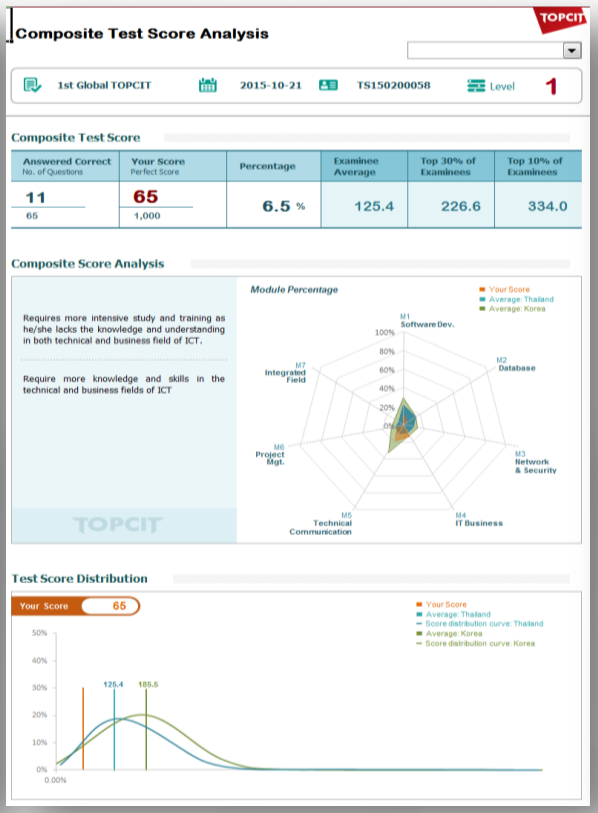
TOPCIT CERTIFICATE

NAME	000	LEVEL	5
REFISTRATION No,	000	SCORE	988
CERTIFICATE No,	000	TEST DATE	2015.10.21
		DATE OF EXPIRY	2017.10.20

Field	Module	Score / Total	Percentage
Technical	Software Development	00 / 305	00%
	Database	00 / 105	00%
	Network & Security	00 / 105	00%
Business	IT Business	00 / 75	00%
	Technical Communication	00 / 55	00%
	Project Management	00 / 95	00%
Integrated Field		00 / 260	00%
Total		988 / 1,000	00%

Module Percentage

This is to certify that the person named above has received the test score above for the TOPCIT(Test of Practical Competency in ICT), jointly administered by the IITP(Institute for Information & Communications Technology Promotion) and the KPC(Korea Productivity Center).



Composite Test Score Analysis

1st Global TOPCIT | 2015-10-21 | TS150200058 | Level 1

Composite Test Score

Answered Correct / No. of Questions	Your Score / Perfect Score	Percentage	Examinee Average	Top 30% of Examinees	Top 10% of Examinees
11 / 65	65 / 1,000	6.5 %	125.4	226.6	334.0

Composite Score Analysis

Requires more intensive study and training as he/she lacks the knowledge and understanding in both technical and business field of ICT.

Require more knowledge and skills in the technical and business fields of ICT

Module Percentage

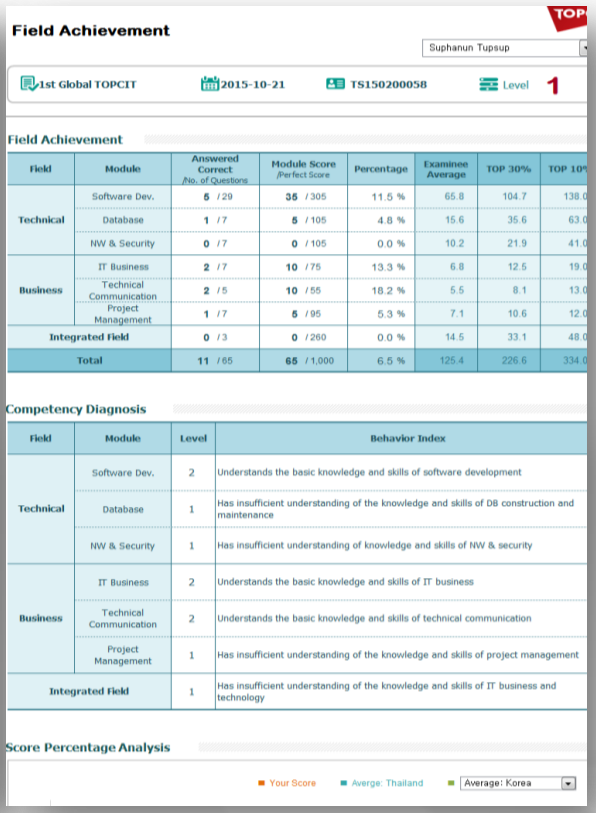
M1 Software Dev. | M2 Database | M3 Network & Security | M4 IT Business | M5 Technical Communication | M6 Project Mgt. | M7 Integrated Field

Test Score Distribution

Your Score 65

Your Score | Average: Thailand | Score distribution curve: Thailand | Average: Korea | Score distribution curve: Korea

125.4 185.5



Field Achievement

Suphanun Tupsup

1st Global TOPCIT | 2015-10-21 | TS150200058 | Level 1

Field Achievement

Field	Module	Answered Correct / No. of Questions	Module Score / Perfect Score	Percentage	Examinee Average	TOP 30%	TOP 10%
Technical	Software Dev.	5 / 29	35 / 305	11.5 %	65.8	104.7	138.0
	Database	1 / 7	5 / 105	4.8 %	15.6	35.6	63.0
	NW & Security	0 / 7	0 / 105	0.0 %	10.2	21.9	41.0
Business	IT Business	2 / 7	10 / 75	13.3 %	6.8	12.5	19.0
	Technical Communication	2 / 5	10 / 55	18.2 %	5.5	8.1	13.0
	Project Management	1 / 7	5 / 95	5.3 %	7.1	10.6	12.0
Integrated Field		0 / 3	0 / 260	0.0 %	14.5	33.1	48.0
Total		11 / 65	65 / 1,000	6.5 %	125.4	226.6	334.0

Competency Diagnosis

Field	Module	Level	Behavior Index
Technical	Software Dev.	2	Understands the basic knowledge and skills of software development
	Database	1	Has insufficient understanding of the knowledge and skills of DB construction and maintenance
	NW & Security	1	Has insufficient understanding of knowledge and skills of NW & security
Business	IT Business	2	Understands the basic knowledge and skills of IT business
	Technical Communication	2	Understands the basic knowledge and skills of technical communication
	Project Management	1	Has insufficient understanding of the knowledge and skills of project management
Integrated Field		1	Has insufficient understanding of the knowledge and skills of IT business and technology

Score Percentage Analysis

Your Score | Averge: Thailand | Average: Korea

▪ Industry Implementation

- Used for Employee Recruitment (Advantage for TOPCIT Level 3) and Employee Evaluation
- **52 Companies (Samsung SDS, LG, SK, Hyundai, KEPCO, etc.)**

▪ University Implementation

- Used for Curriculum Reformation and Graduation Examination
- **49 Universities (Korea Univ., Sogang Univ., Sungkyunkwan Univ., etc.)**

▪ Korean National Competency Standard (NCS)

- TOPCIT [Level 1~5] = NCS [Level 2~5] (Recognized by the Govt.)

NCS	TOPCIT	National Technical Qualification	Overseas Qualification	Academics (Simplified)
Level 5	Level 4~5	-	-	Master's
Level 4	Level 3	Engineer	Advanced	Bachelor's
Level 3	Level 2	Certified Technician	Intermediate	Vocational
Level 2	Level 1	Technician	Novice	Meister High

Thailand - Thailand Professional Qualification Institute (TPQI)

- Biannual TOPCIT Thailand
  - Korea: Program, Test Materials, Grading
  - Thailand: Recruitment, Promotion, Location)
- Reward for Highest Scoring Examinee (Certification and Trip to Korea)

Mongolia - Information Technology, Post and Telecommunications Authority (ITPTA)

- Biannual TOPCIT Mongolia
  - Korea: Program, Test Materials, Grading
  - Mongolia: Recruitment, Promotion, Location)
- Reward for Highest Scoring Examinee (Certification and Trip to Korea)

Philippines - Commission on Higher Education (CHED) / National University / Asia Pacific University

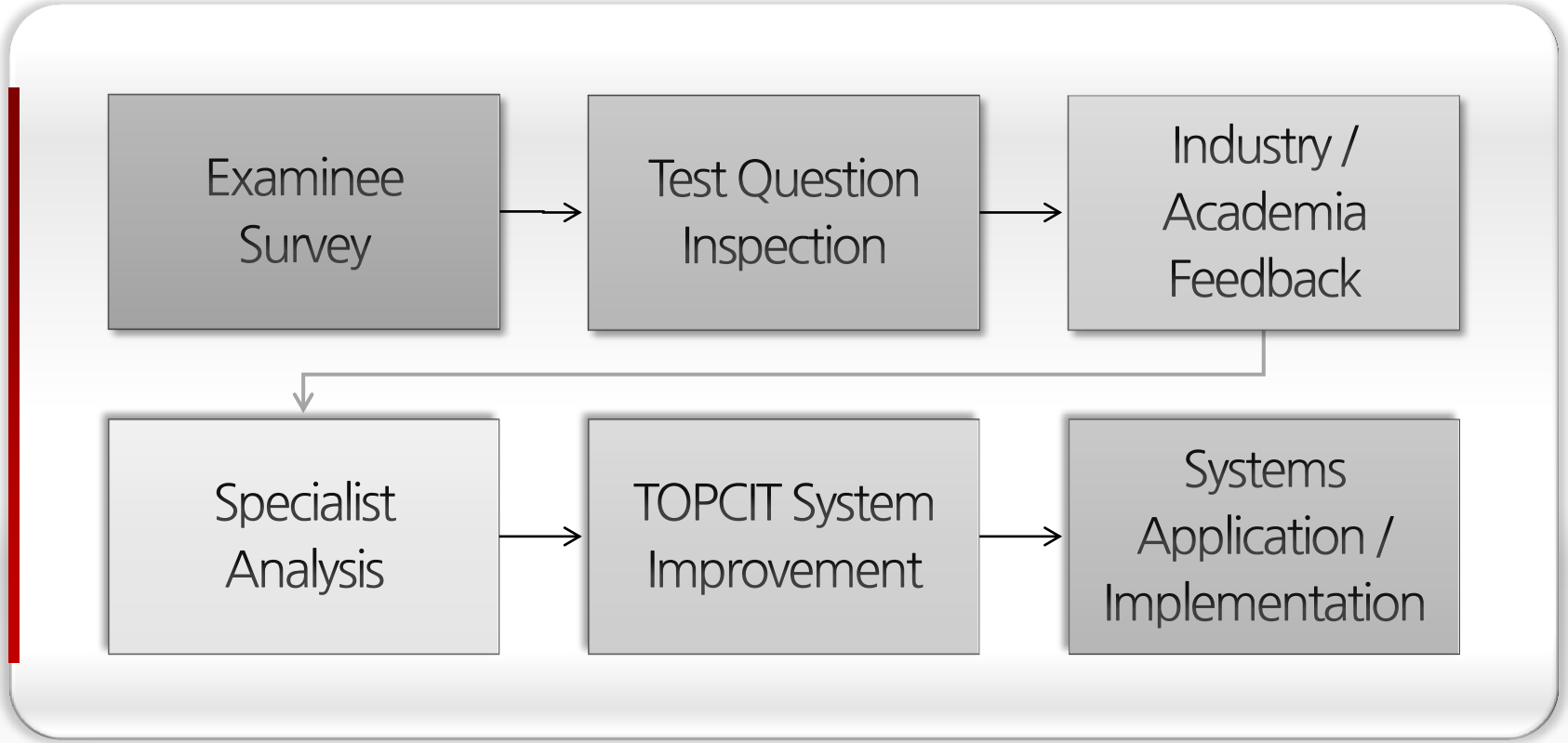
- Biannual TOPCIT Philippines (student evaluation before/after mandatory internship)
- Reward for Highest Scoring Examinee (Certification and Trip to Korea)

Part 3

TOPCIT Quality Assurance

III. TOPCIT Quality Assurance ① Process

Guarantee ICT **HR Competencies Verification** with **2 year** TOPCIT score validity

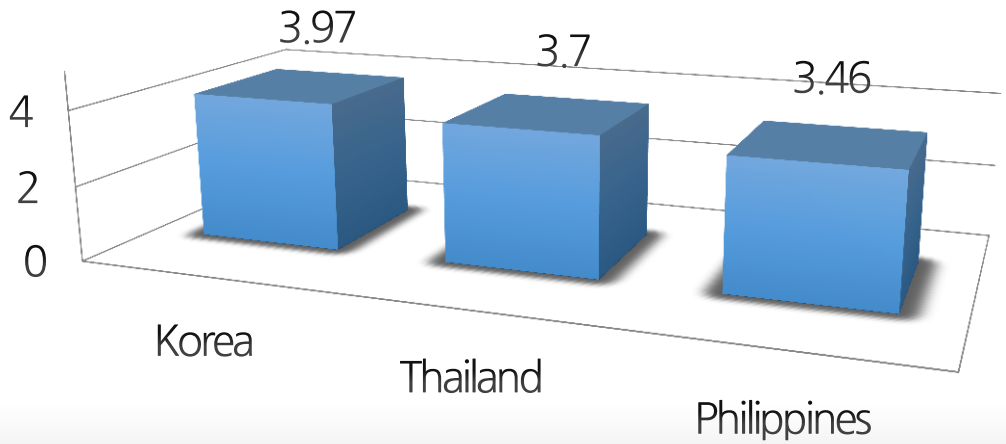


▪ Summary

- Surveys (difficulty, time adequacy and test subject importance / sufficiency) conducted every TOPCIT test day.

▪ Survey Results

- Participants: ≈3,500 Examinees (Korea · Thailand · Philippines)
- Method: Survey at the end of CBT
- **Analysis (Example: Level of Difficulty) :** (Scale of 0~5)



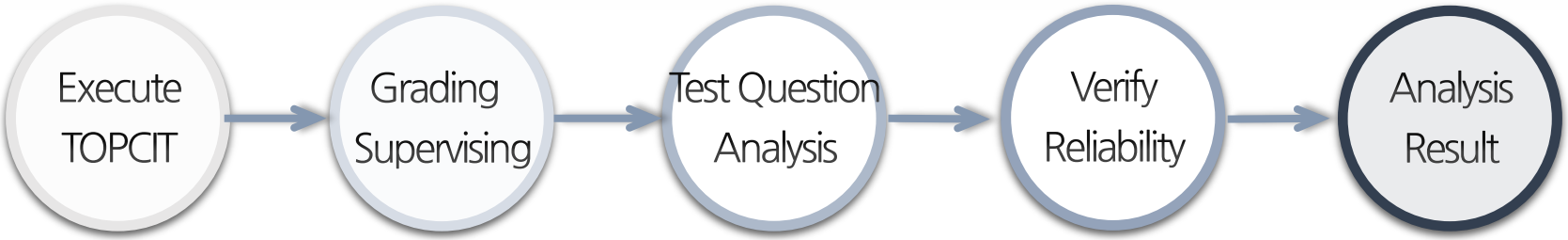
* 5 = Very HARD / 1= Very EASY

▪ Summary

- For each TOPCIT, the test questions (difficulty and distinction) and reliability are analyzed to improve test question quality and to adjust difficulty level

▪ Inspection Results

- Subject: 2015 Test Questions (total: 130)
- **Process**



- **Results**
  - Difficulty / Distinction (Specialist Analysis): **Adequate**

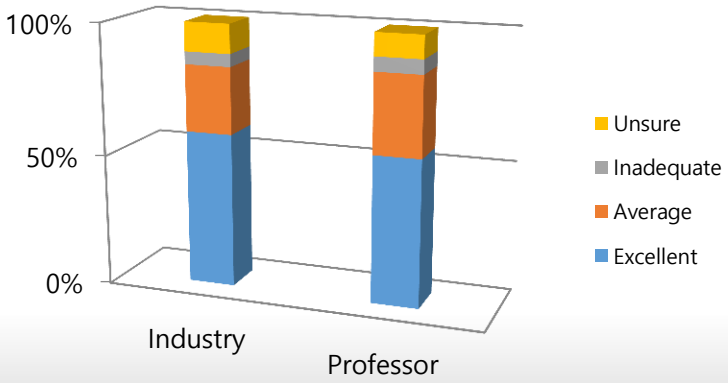
▪ Summary

- Periodic survey of industry / academia's various feedbacks on matters such as Testing System, Question Quality, and Possible Improvements

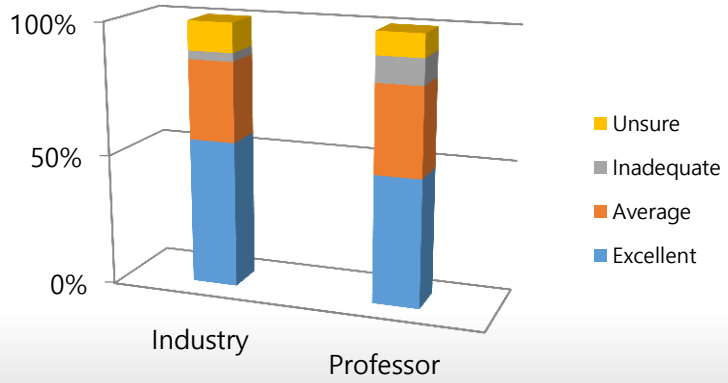
▪ Results

- Participants: 700 ICT Professors, Engineers, HR Managers, Students
- **Results: TOPCIT is adequate for industry demand**

→ Test System: **Satisfactory >80%**



→ Test Question Standards: **Satisfactory >80%**



▪ Summary

- Deduce improvements needed for TOPCIT through industry-academia specialists' detailed analyses, then implement improvements to the system.

▪ Analysis Result

- Analysts: 50 ICT Professors and Technical Officers
- Period: up to 3 Months
- **Results**

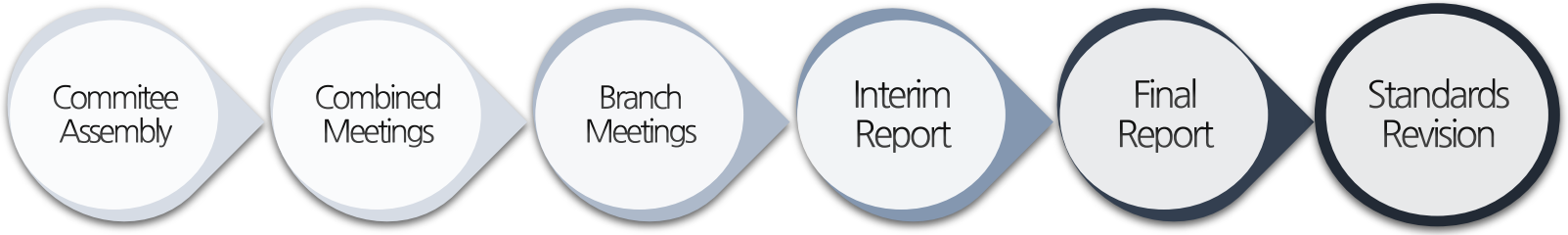
Contents Modification	Subject Proportioning	Systems Improvement
• Increase Number of Questions for SW Fundamentals and Problem Solving Skills	• Proportion of IT Business Questions Modified.	• Development of an Advanced Level TOPCIT covering SW, DB, NW for specialists in the field

▪ Summary

- Applying Results from Surveys, Test Question Inspections, IND-ACA Feedbacks and Technological Changes to Qualifications Standards Modification

▪ Improvement Results

- Composition: 7 Branches with 26 Specialists(Industry Employees + Univ. Professors)
- Contents: Apply Latest Trends and Industrial Technology, Eliminate Redundancy, Implement Specialists' Suggestions
- Process



- **Result : Over 30% of the Qualifications Standards Modified**

Country	Type	Period	Location
Korea	2016-1st Periodic	5.28 (Sat)	120 Universities
	2016-2nd Periodic	10.29 (Sat) / Concurrent	Universities
Thailand	2016-1st Periodic	4.18 (Mon) ~ 4.20 (Wed)	3 Universities
	2016-2nd Periodic	Oct	Universities
Mongolia	2016-1st Periodic	May	National IT Park
	2016-2nd Periodic	Oct	National IT Park
Philippine	2016-1st Periodic	May	2 Universities
	2016-2nd Periodic	Oct	Universities

- Tests are Jointly Organized and Executed by IITP and Collaborating Institution/Agency

IV. Conclusion

Through TOPCIT's **Biennial ICT HR Quality** Guarantee, we hope to output qualified ICT/SW graduates into the industry, which will not only strengthen **Industry Competiveness** but also bring out **Innovative Curriculum Reformation** to the ICT/SW education in Universities.

Moreover, through our collaboration with **Thailand, Mongolia and Philippines** (MOU Countries), we will contribute to Asian ICT/SW **HR Quality Development** and **Industry Competitiveness**

Thank You

TOPCIT

Test Of
Practical Competency
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