What is the career of IT engineers?

WCTP 2014

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Agenda

* IT Industry in Japan
* What we need to study?
* What is ITSS
* IT engineers in Japan
* ITSS in Philippines
* Conclusion

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Background of IT industry

"IT" means "ICT" on this presentation.

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Introduction

- Business Model of Software Industry is changing.
  - Short Delivery Term
  - Low Cost
  - High Quality
  - Web service / Cloud / Commodity
  - Global Competition

- Software Engineers are increasing.
  - How do they work to survive in IT industry?
  - How do they develop their carriers?

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IT industry in Japan

- Trend of Information Technology Industry in Japan
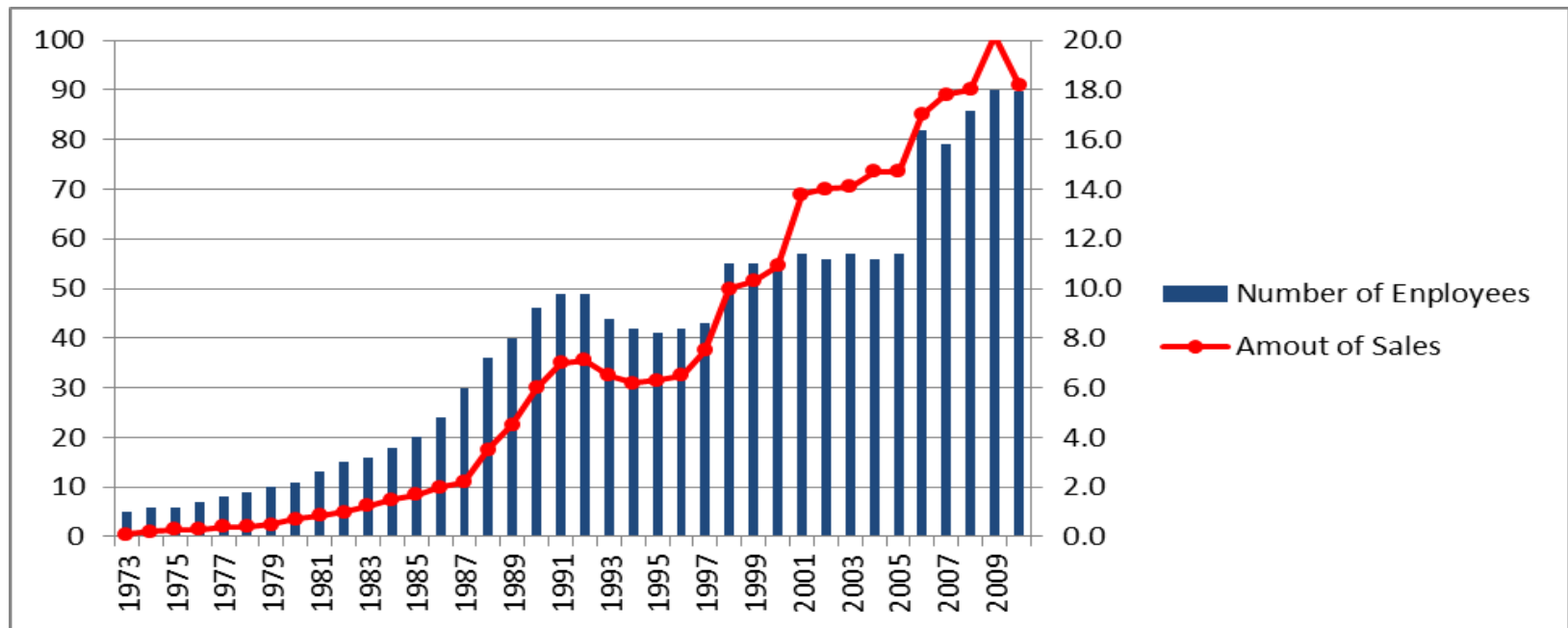
The information system is changing to "service system".
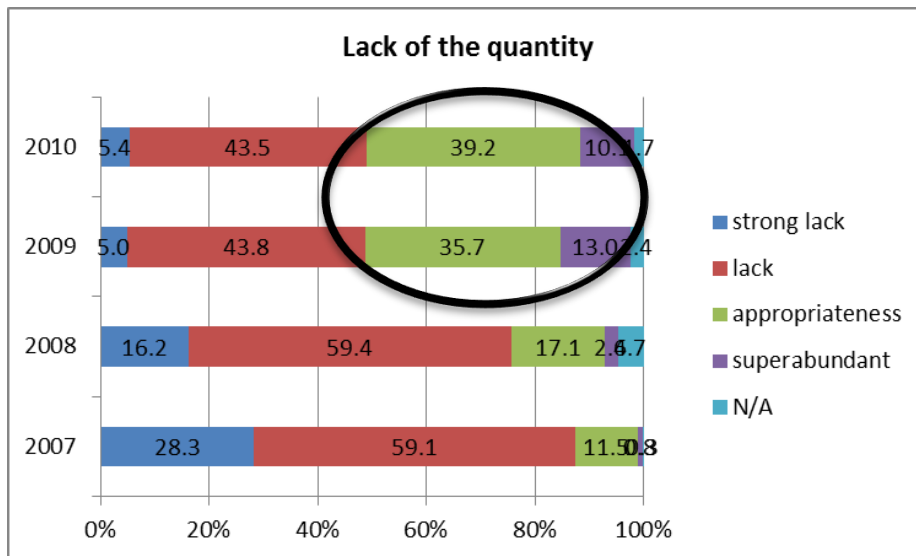90% of the IT company think that they need to change their business strategy.
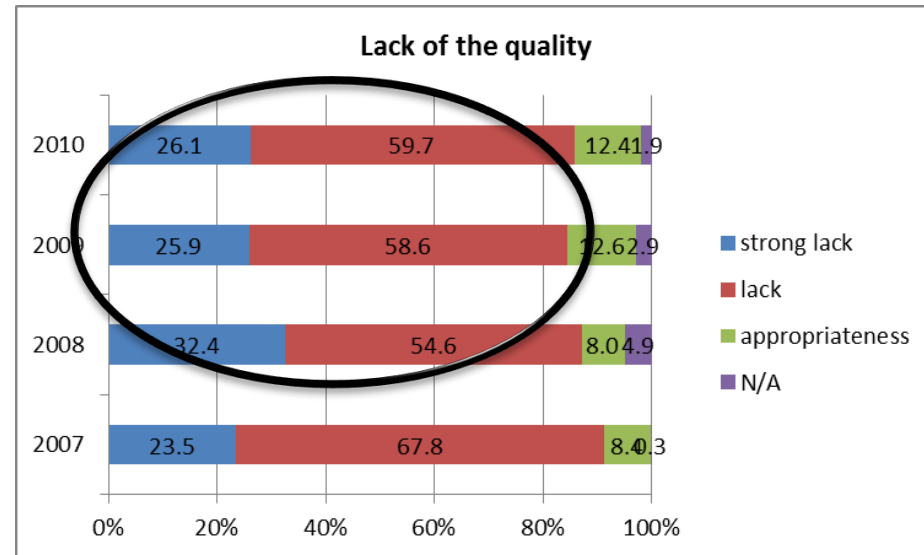
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IT Industry in Japan

* Japanese software-development or software-service market is fairly large. As a result, Japanese companies cannot adaptable enough on global market.

* Japanese IT companies obtained profit by **hardware.** As a result, *they did not realize importance of software and that of services implemented by software.*

* In these decades, Japanese software quality is improving using **"KAIZEN"**. But they need more change.

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IT industry in Japan

- Trend of Information Technology Industry in Japan
  (IPA: Information-Technology Promotion Agency in Japan)

Lack of the quantity

Year	strong lack	lack	appropriateness	superabundant	N/A
2010	5.4	43.5	39.2	10.1	1.7
2009	5.0	43.8	35.7	13.0	2.4
2008	16.2	59.4	17.1	2.6	4.7
2007	28.3	59.1	11.5	0.8	

Quantity → weak Lack

Lack of the quality

| Year	strong lack	lack	appropriateness	N/A
2010	26.1	59.7	12.4	1.9
2009	25.9	58.6	12.6	2.9
2008	32.4	54.6	8.0	4.9
2007	23.5	67.8	8.4	0.3

High skilled engineers are lacking

The industry is changing from SI to Service development.
So, the IT engineers need to get new skill to fit the market.

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Job Career in Japanese IT engineers

- Career pattern of the general IT engineers in Japan
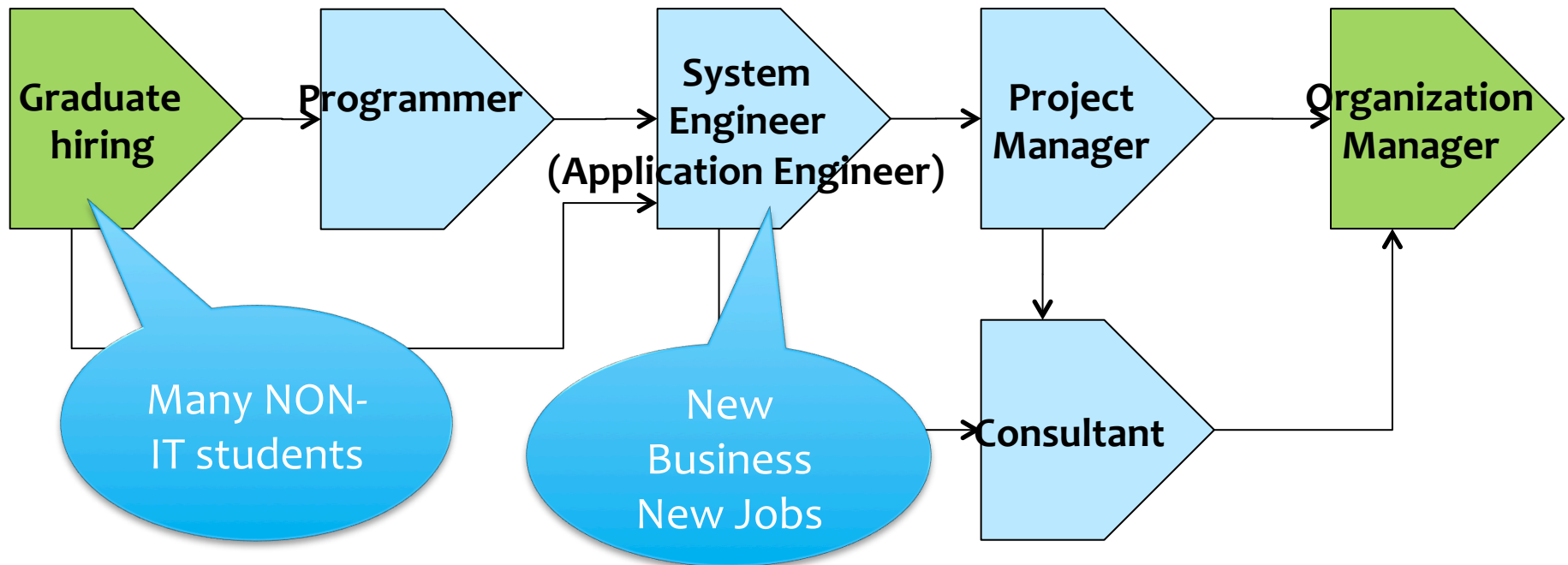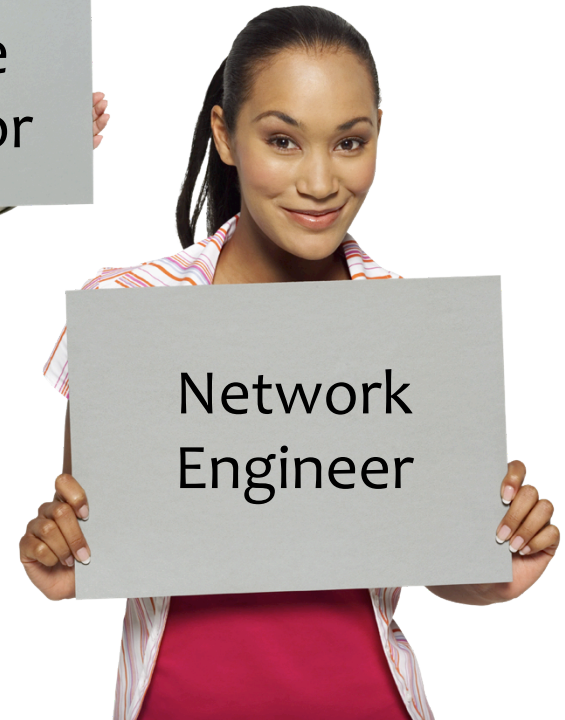
IT industry in Philippines

* ## IT industry is growing.

ITS/ITES industry in Phillipines

(Million $)

Business Segment	2004	2005	2006	···	2010	2004->2010
Customer Care	1,024	1,792	2,680		5,296	517.2%
Back Office	120	180	288		2,392	1993.3%
Medical Transcription	42	70	98		1,708	4066.7%
Regal Transcription	4	6	9		36	900.0%
Other Data Transaction	26	39	52		269	1034.6%
Animation	52	74	97		759	1459.6%
Software Development（export）	170	204	272		1,275	750.0%
Engineering Design	34	48	68		357	1050.0%
Digital Contents	3	7	13		208	6933.3%
Total	1,474	2,419	3,457		12,199	827.6%
Increasing par year	−	64%	43%		37%	−

(Data from JETRO)

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IT industry in Philippines

* How about you?

Web Designer

Game Creator

Network Engineer

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What we need to study?

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Basic Knowledge and skills

* Common IT Skills and Knowledge
    * Basic Technology on ICT
    * Basic Knowledge on specialty field

* Common management Skills and Knowledge
    * Basic Business management Skills and Knowledge
    * Basic Human Skills

| Skills and knowledge on a specific situation |
| --- |
| Specific skills and knowledge on a product and process |
| Common skills and knowledge on each technology and each specialty field |
| Common skills and knowledge on each job category |
| Common skills and knowledge on all industries |
| Basic and conceptual knowledge and skills |

There are some gaps between the students and the IT company

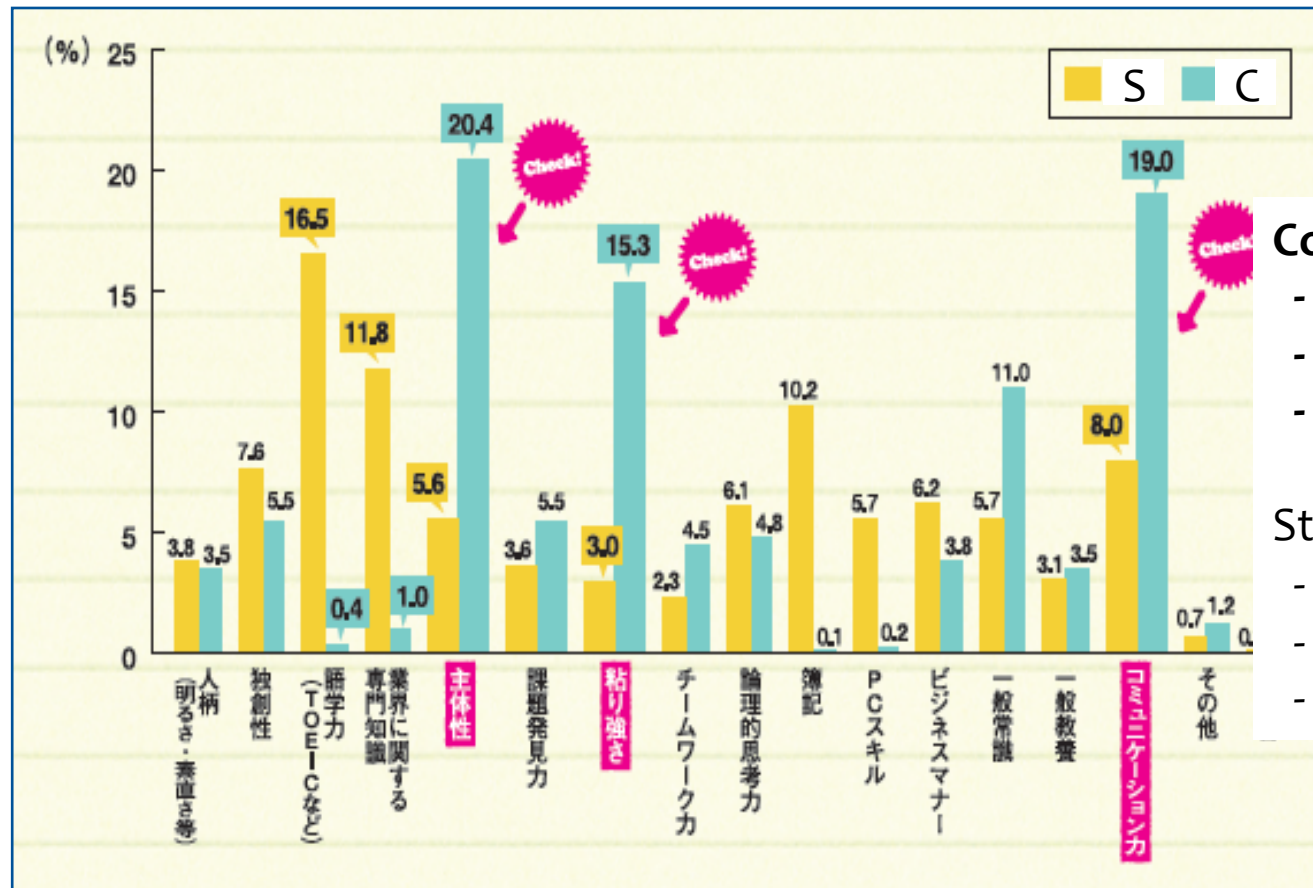* New graduate employees have enough skills & knowledge
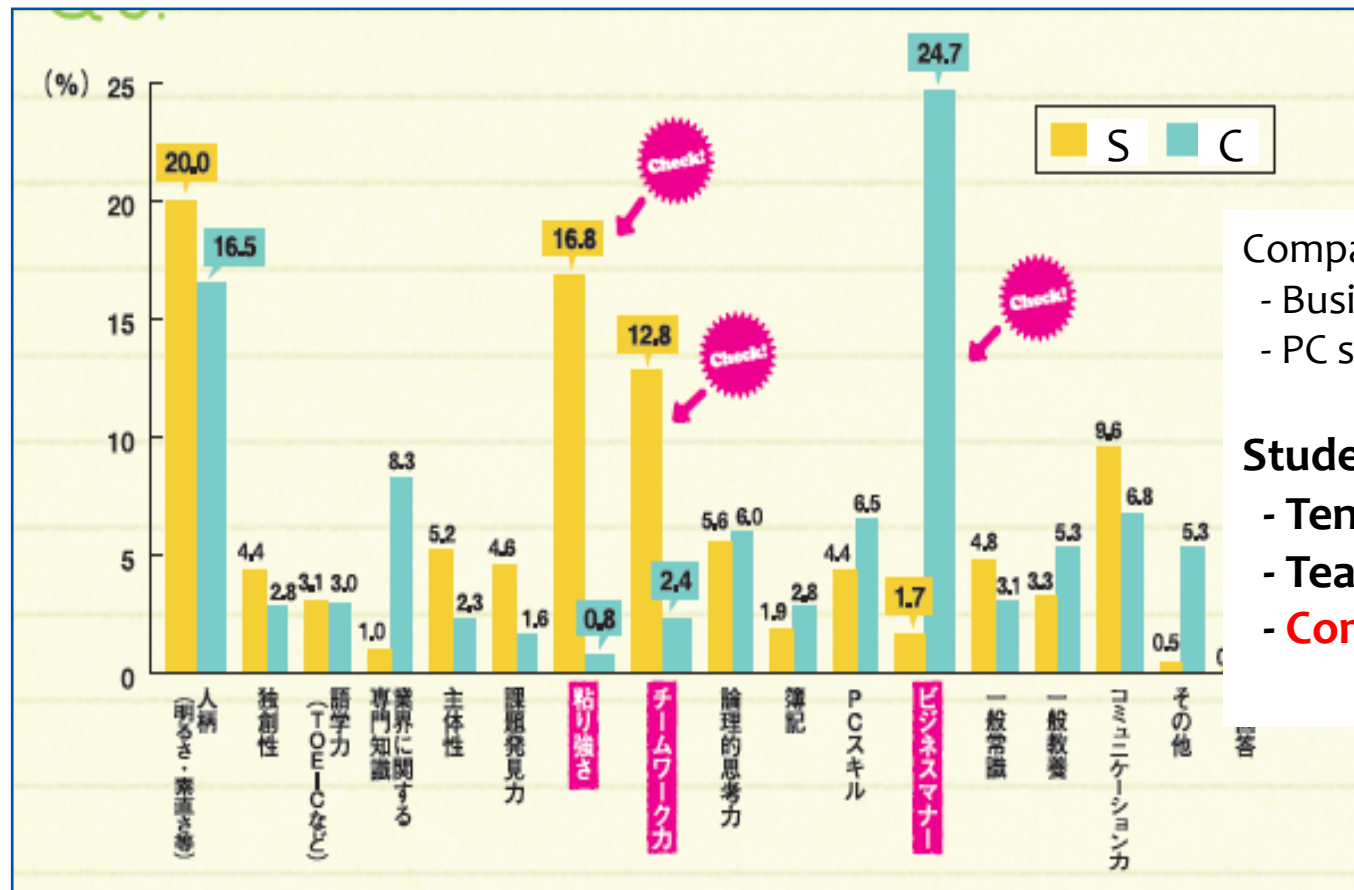
Company think
 - Business manner
 - PC skills

Student think
 - **Tenacity**
 - **Team working skill**
 - **Communication skill**

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There are some gaps between the students and the IT company

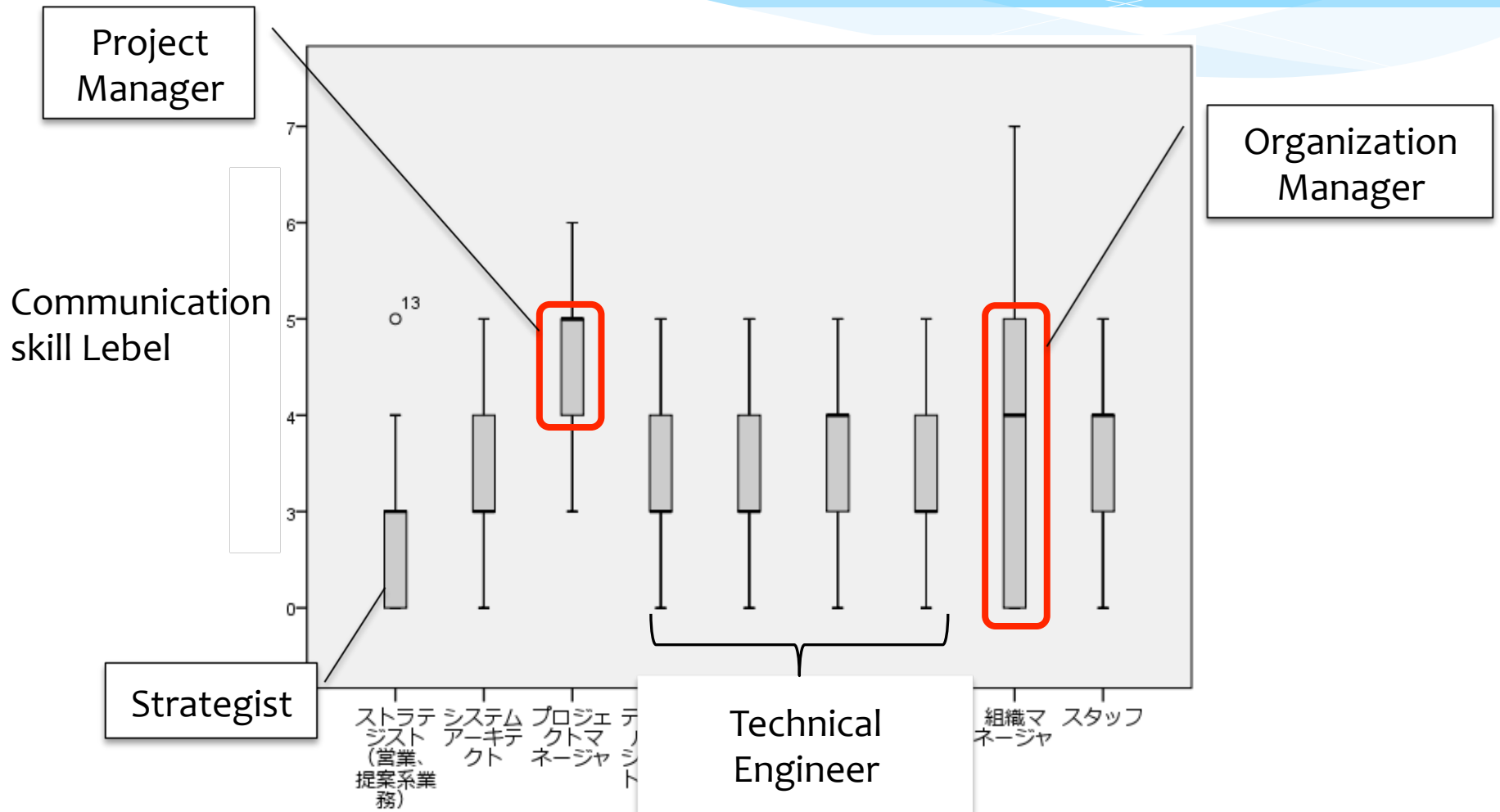* New graduate employees don't have enough skills & knowledge

Company think
- **Communication skill**
- **Aggressive attitude**
- **Tenacity**

Student think
- English
- Business knowledge
- Accounting

How about communication skill in company?

Project Manager

Organization Manager

Communication skill Lebel

Strategist

Technical Engineer

ストラテジスト（営業、提案系業務） システムアーキテクト プロジェクトマネージャ テ... シ... ... 組織マネージャ スタッフ

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How about communication skill in company?

* Ratio of skills of the manager

"Skills of An Effective Administrator" Robert, L. Katz

Human Skill include Leadership and **Communication** (Relationship with others)

Conceptual Skill include Creative Ability

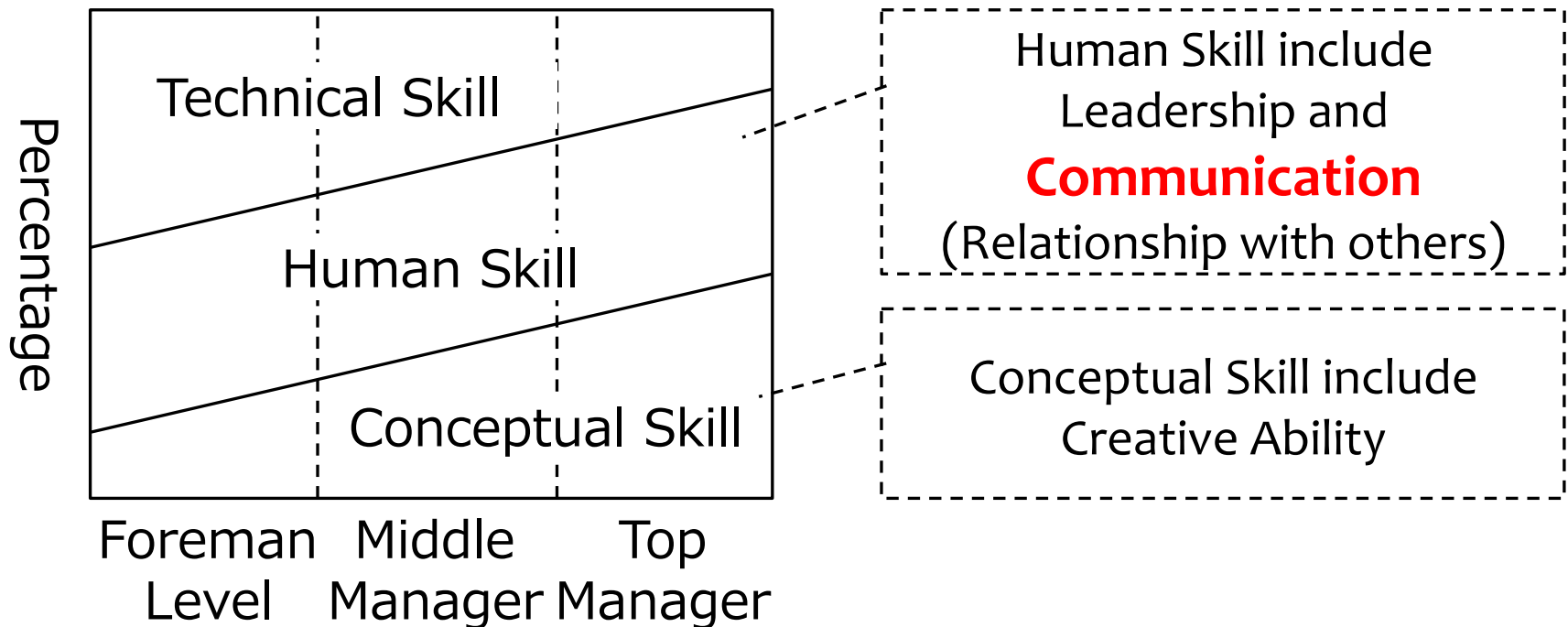enPiT Cloud Cloud Bauhaus

Image of IT Specialists requested by industries

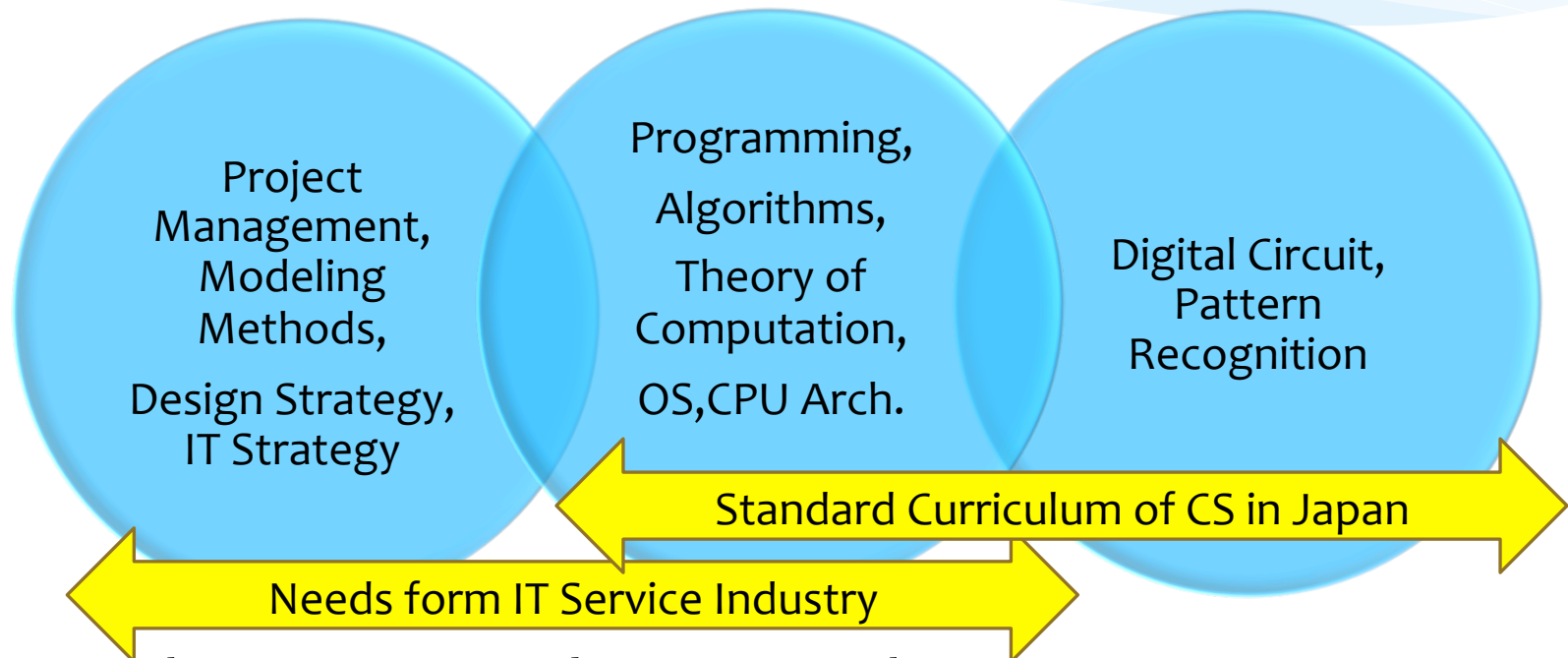According to the report by **Japan Business Federation** (*"Keidanren"*)

* Examples of **IT Specialists**
    * Project Managers
    * Embedded system engineers
    * Specialist of BPR
    * Security engineers
    * CIO (chief information officer)

* They hired a lot of non-CS graduates.

* "Only 10 % of new employees can be immediate contributors. Through IT training, still 20% are no use."

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CS Education needs to change

Project Management, Modeling Methods,

Design Strategy, IT Strategy

Programming,

Algorithms,

Theory of Computation,

OS,CPU Arch.

Digital Circuit, Pattern Recognition

Standard Curriculum of CS in Japan

Needs form IT Service Industry

There is a gap between them.
IT industry wants more practical education.
So, we started a new course using PBL.

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What is ITSS

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What is ITSS

- ## Skill Standards for IT Professionals(ITSS)
  IPA (INFORMATION-TECHNOLOGY PROMOTION AGENCY)

  *11 Job Category

  *Each job category has skill's descriptions and levels.

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What is ITSS

Job Category	Marketing			Sales			Consultant		IT Architect		
Specialty Field	Marketing Management	Sales Channel Strategy	Market Communication	Consulting Sales by Visiting Customers	Product Sales by Visiting Customers	Sales via Media	Industry	Business Function	Application Architecture	Integration Architecture	Infrastructure Architecture
Level 7	▨			▨			▨	▨	▨	▨	▨
Level 6	▨	▨	▨	▨	▨		▨	▨	▨	▨	▨

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What is ITSS

* Scope of ITSS
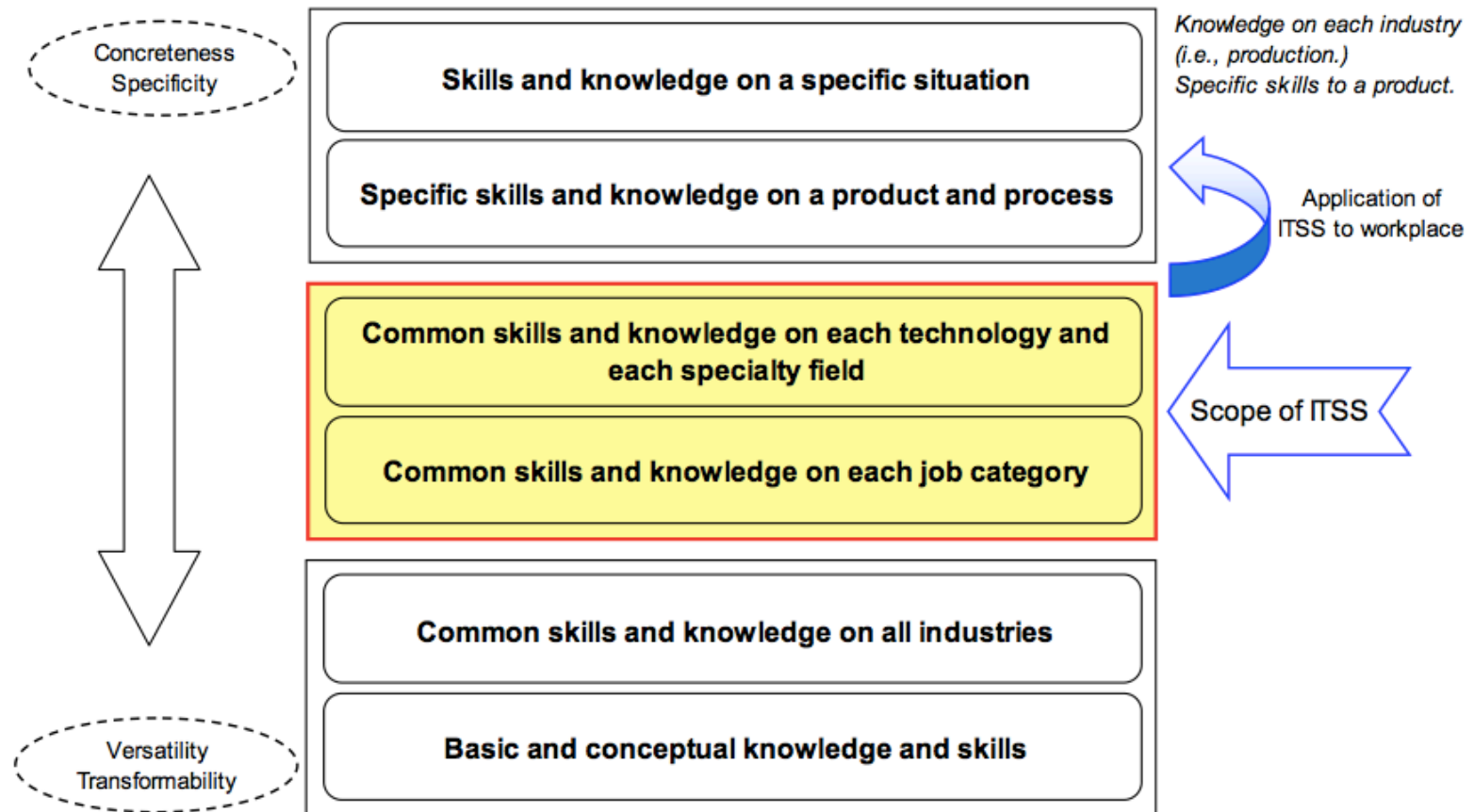
What is ITSS

* Level Structure of ITSS
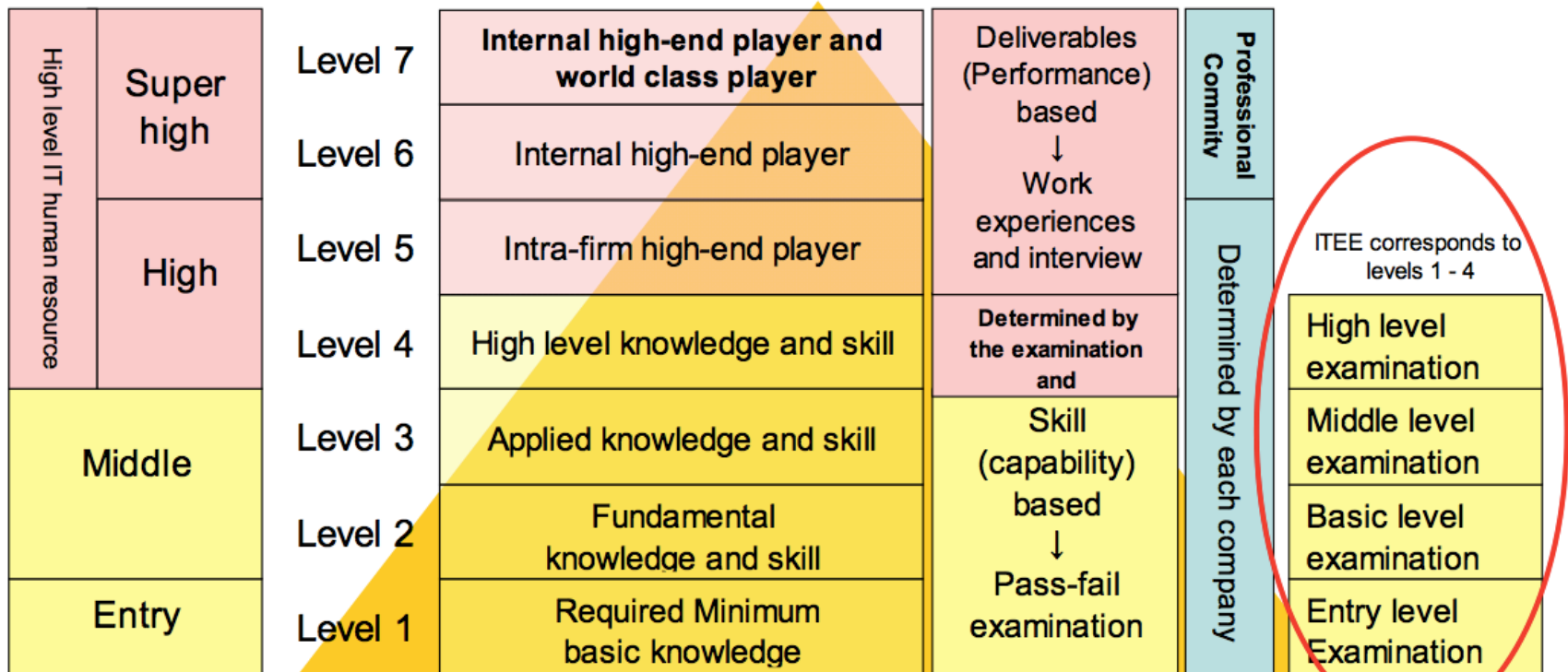
Note: ⬭ shows the scope of the revisions of examinations

What is ITSS

* Job Categories

Common Career	ITSS
Basic Strategy	Marketing Sales Consultant
Solution	IT Architect Project Management IT Specialist Application Specialist Software Development Customer Service IT Service Management
Other	Education

Why ITSS

* IT Professionals
  * We actually and successfully achieve business results and contributes to the IT industry growth.
  * Necessary criteria of an IT professional are to be able to,
    * Achieve commitments to a customer and company.
    * Train and develop subordinates for passing on her/his skills and knowledge acquired through experience.
    * Perform activities continuously to improve her/his business capabilities.
    * Take social responsibility and have ethics of an IT professional.

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How to use ITSS

* Job category (Career) – Tasks – Skill & Knowledge

Network Engineer

Tasks	Skill & Knowledge
Network Design	Network Protocols
Choice HW/MW/SW	System Performance, Reliability
Network Setting	Network Security
… more!	Communication
	… more!
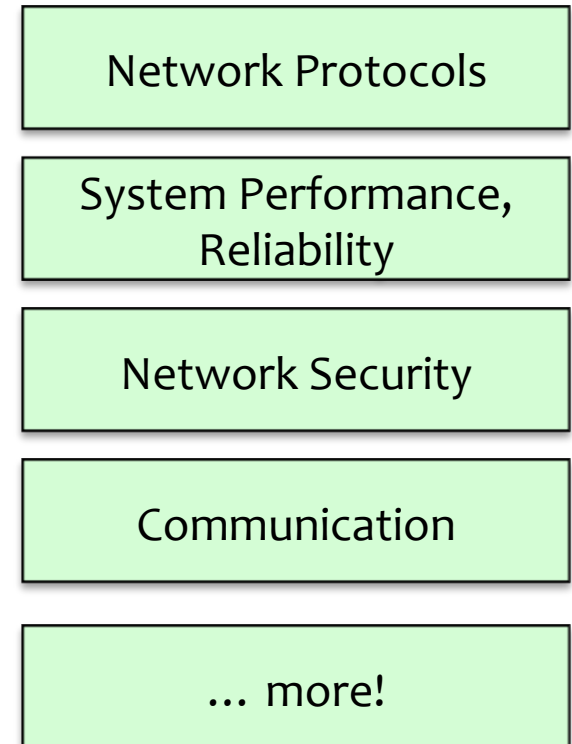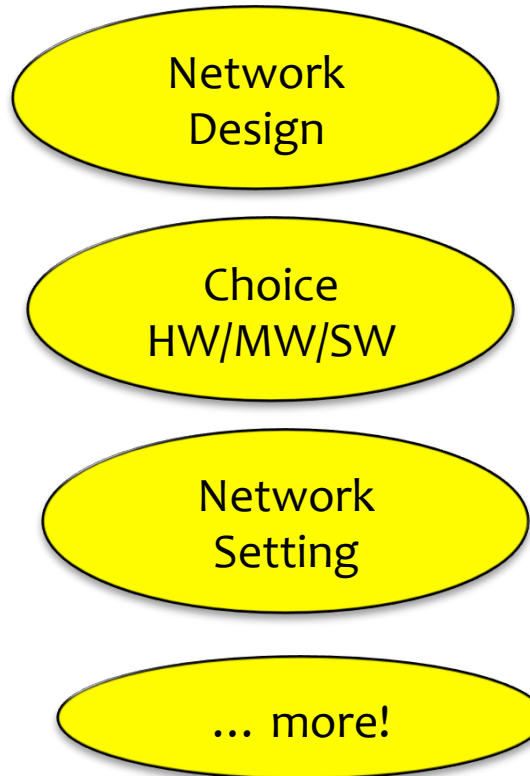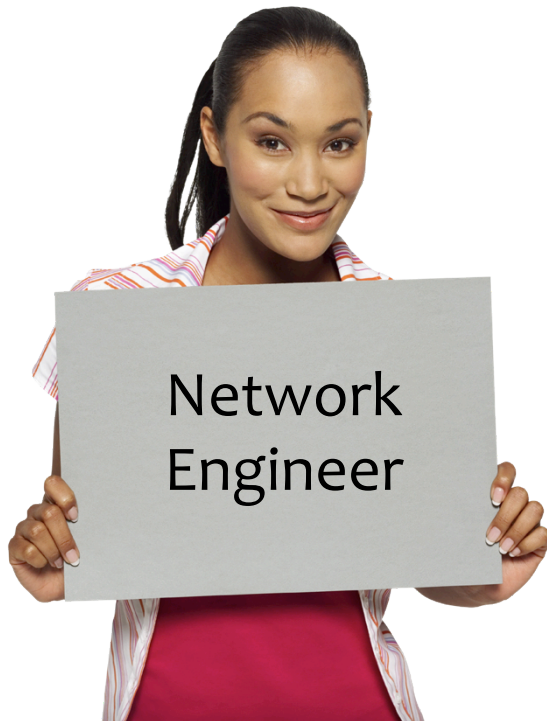
How to use ITSS

* Image of typical career steps

Example: Project Management

IT engineers in Japan

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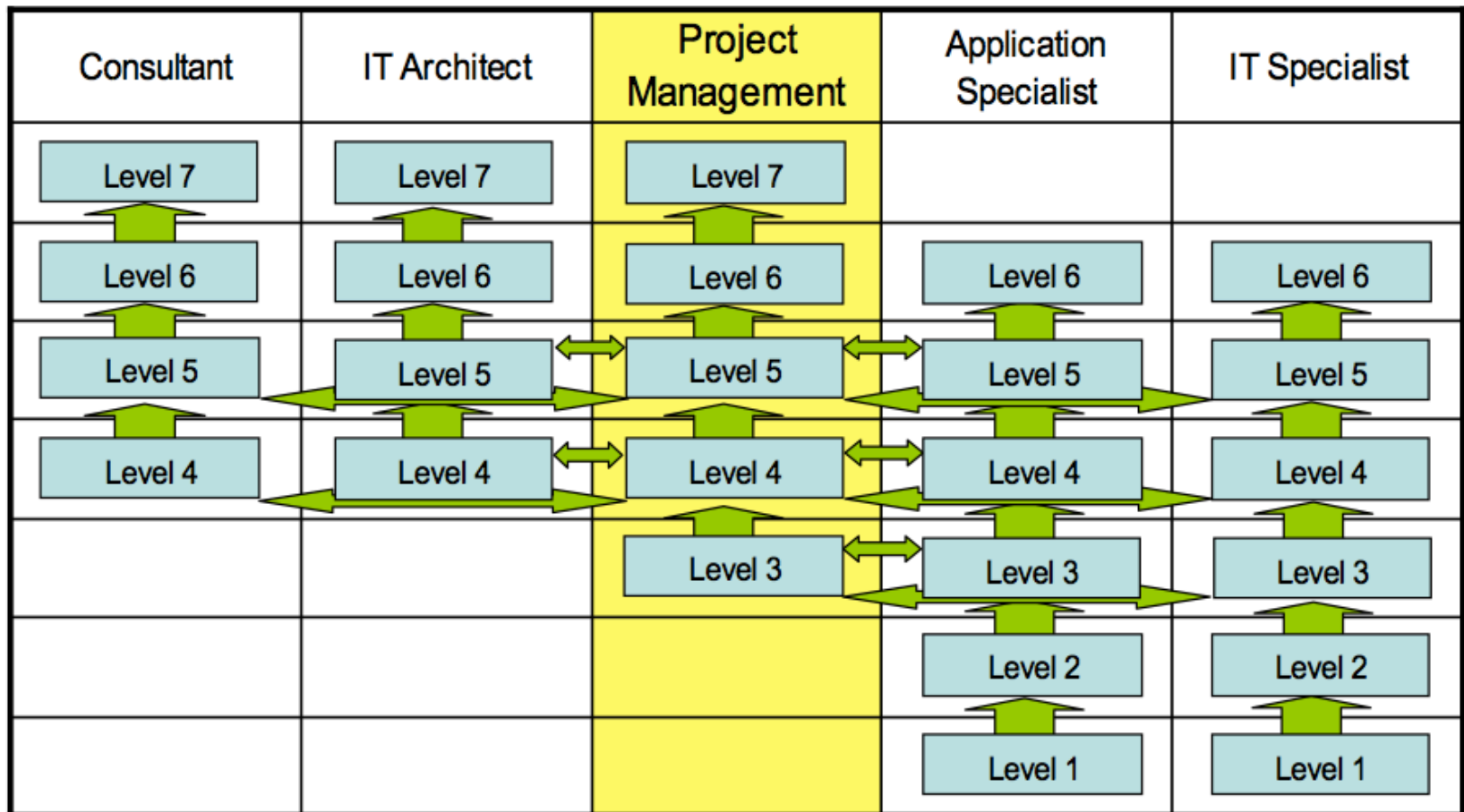
IT engineers in Japan

- Overview of survey
  - Data : IT Skill Research Forum(2008-2010)

Job Category	Total
Marketing	666
Sales	3,488
Consultant	580
IT_Architect	3,129
Project_Management	13,825
IT_Specialist	5,828
Application_Specialist	18,181
Software_Development	4,971
Customer_Service	1,832
Education	424
IT_Service_Management	8,438
Total	61,362

Age	Numbers	%
Under 20 years old	45	.1
20-25 years old	5,847	9.5
26-30 years old	11,986	19.5
31-35 years old	13,584	22.1
36-40 years old	11,348	18.5
41-45 years old	9,888	16.1
46-50 years old	5,603	9.1
51-55 years old	2,084	3.4
56 years old or older	977	1.6
Total	61,362	100.0

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IT engineers in Japan

* Job Category and Ages
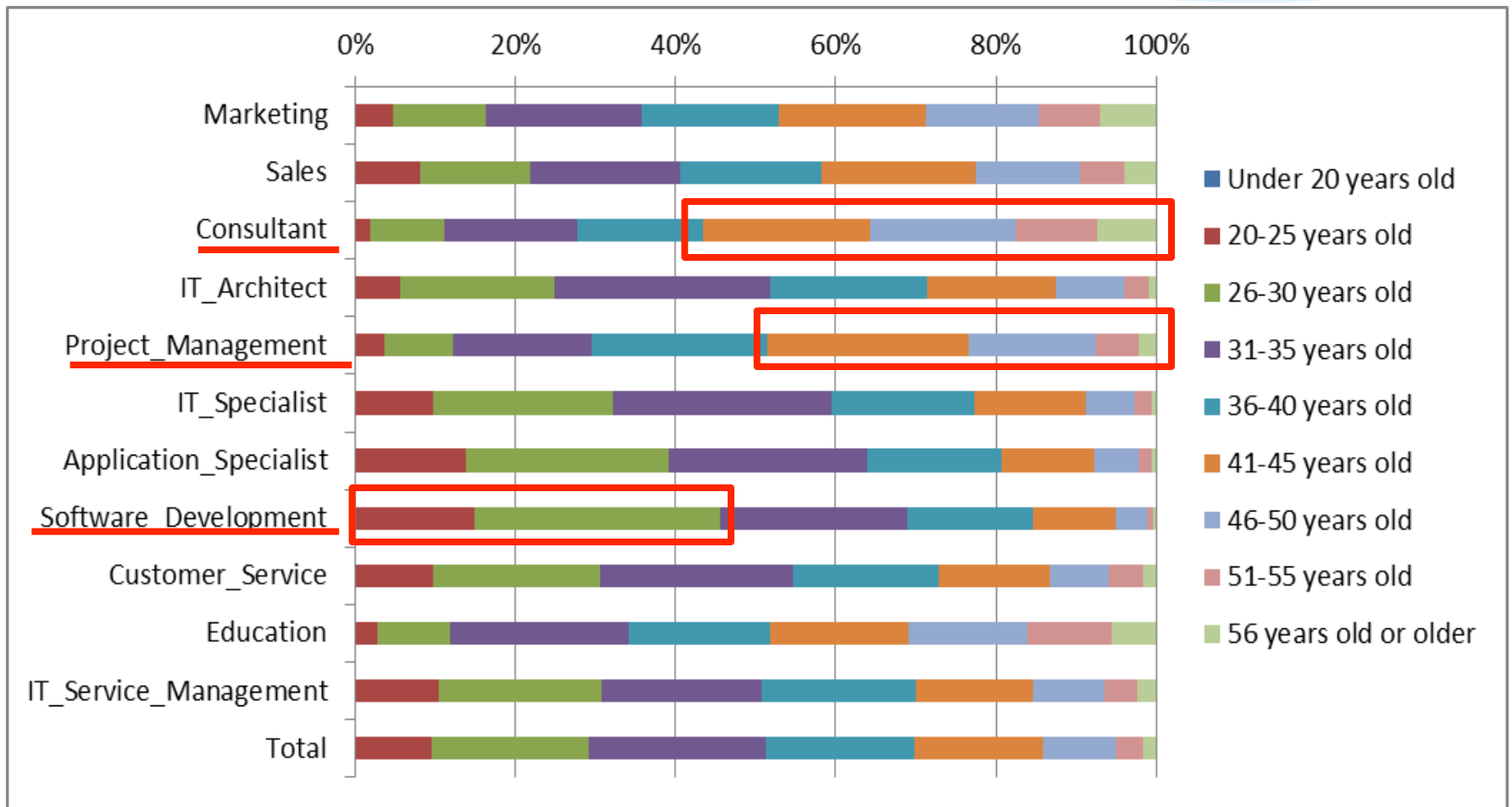
IT engineers in Japan

* The years of experience of job category and age

Job category	Age	The years of experience of the most recent job category						Total	%
		Under 3	3-4	5-9	10-14	15-19	Over 20		
Application_Specialist	Under 20 years old	12	4	0	0	0	0	16	0.1
	20-25 years old	2250	240	16	0	0	0	2506	13.8
	26-30 years old	1508	1642	1440	21	0	0	4611	25.4
	31-35 years old	484	581	2418	999	15	2	4499	24.7
	36-40 years old	231	234	634	1081	819	27	3026	16.6
	41-45 years old	156	122	319	381	710	434	2122	11.7
	46-50 years old	74	58	124	118	140	470	984	5.4
	51-55 years old	21	23	19	34	45	177	319	1.8
	56 years old or older	5	6	11	9	5	62	98	0.5
	Total	4741	2910	4981	2643	1734	1172	18181	100.0
	%	26.1	16.0	27.4	14.5	9.5	6.4	100.0	
Job category	Age	The years of experience of the most recent job category						Total	%
		Under 3	3-4	5-9	10-14	15-19	Over 20		
Software_Development	Under 20 years old	7	0	0	1	0	0	8	0.2
	20-25 years old	681	50	1	0	0	0	732	14.7
	26-30 years old	661	493	365	3	0	0	1522	30.6
	31-35 years old	148	160	625	223	4	1	1161	23.4
	36-40 years old	88	66	163	266	183	15	781	15.7
	41-45 years old	46	50	62	51	193	113	515	10.4
	46-50 years old	18	10	30	22	21	91	192	3.9
	51-55 years old	2	3	4	6	5	22	42	0.8
	56 years old or older	1	0	2	2	0	13	18	0.4
	Total	1652	832	1252	574	406	255	4971	100.0
	%	33.2	16.7	25.2	11.5	8.2	5.1	100.0	

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IT engineers in Japan

* Skill Level

Level	2008	2009	2010	
U-Entry Level	1,750	1,712	1,995	
1	4,525	4,292	5,182	
2	8,398	7,925	9,028	
3	10,559	9,658	11,316	Middle Level
4	3,913	4,107	4,353	High Level
5	901	941	999	
6	133	129	123	
7	13	7	8	
Total	30,192	28,771	33,004	

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IT engineers in Japan

* Experience of Job Category in a IT company
  * Business application Developer (1,000 employees)

Job Category	MK	SL	CON	ITA	PM	ITS	APS	SWD	ISM
Marketing (MK)	■								
Sales (SL)	■	■							
Consultant (CON)	■	■	■						
IT Arcktect (ITA)	■	■	■	■	*	*	*		
Project Management (PM)	■	■	■	■	■	*	**		
IT Specialist (ITS)	■	■	■	■	■	■	**		
Aplication Specialist (APS)	■	■	■	■	■	■	■	*	
Software Development (SWD)	■	■	■	■	■	■	■	■	
IT Service Management (ISM)	■	■	■	■	■	■	■	■	■

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IT engineers in Japan

* General IT Project in Japan

IT Company X

Industry A Client a — Department A — Project a1 / Project a2

Industry B Client b — Department B — Project b1 / Project b2

Industry C Client c — Department C — Project c1 / Project c2

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IT engineers in Japan

IT Company X

Project a1

Department A

Department Manager

Section Manager | Section Manager | Section Manager

Group Leader | Group Leader | Group Leader | ...

Project Manager

IT Architect

Application Specialist

IT Specialist: DB

IT Specialist: Network

.....

Other Dep.
or
Partner company

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How to use ITSS

* Job category (Career) – Tasks – Skill & Knowledge

Tasks	Skill & Knowledge
Network Design	Network Protocols
System Analyzing	System Performance, Reliability
Business Planning	Business Model
	Cost control
… more!	… more!

???

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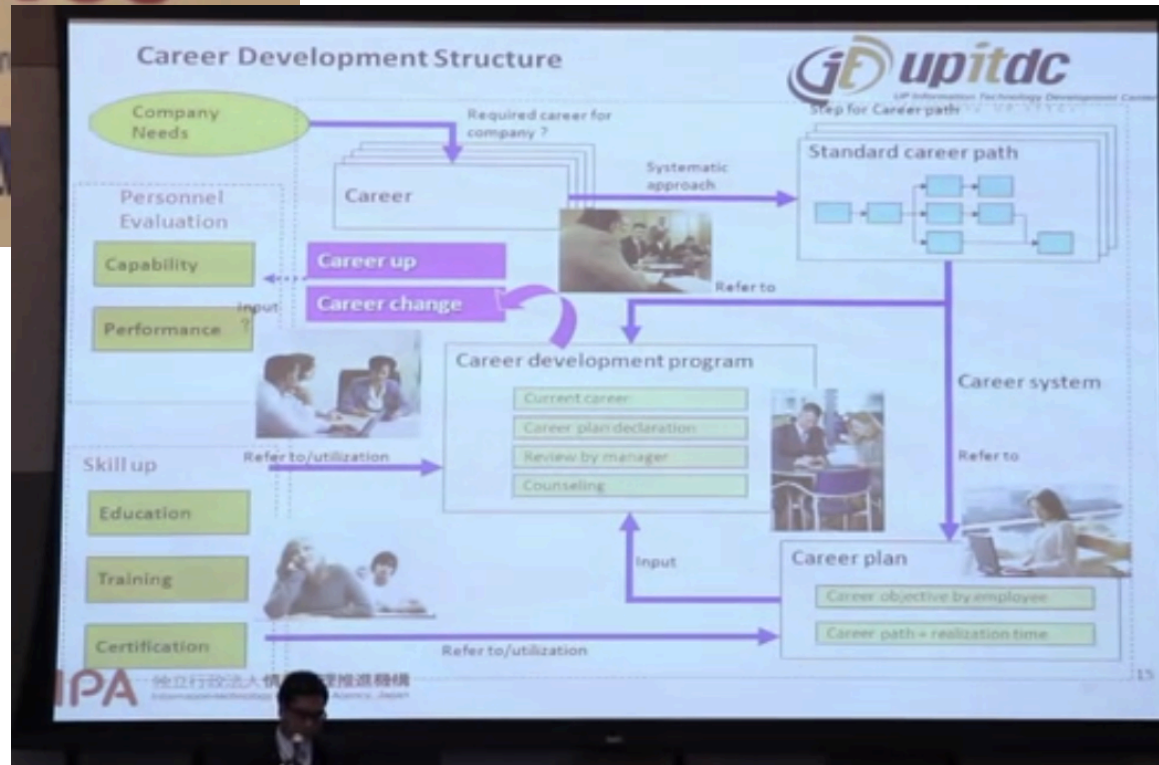
ITSS in Philippines

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ITSS in Philippines

* ITSS in Philippine started in 2010.
  * PSIA (The Philippine Software Industry Association)
  * UPITDC

* PSIA and the Overseas Human Resource and Industry Development Association (HIDA) presented the 2013 IT Skills Seminar at the New World Hotel, Makati City Philippines last January 30, 2013.
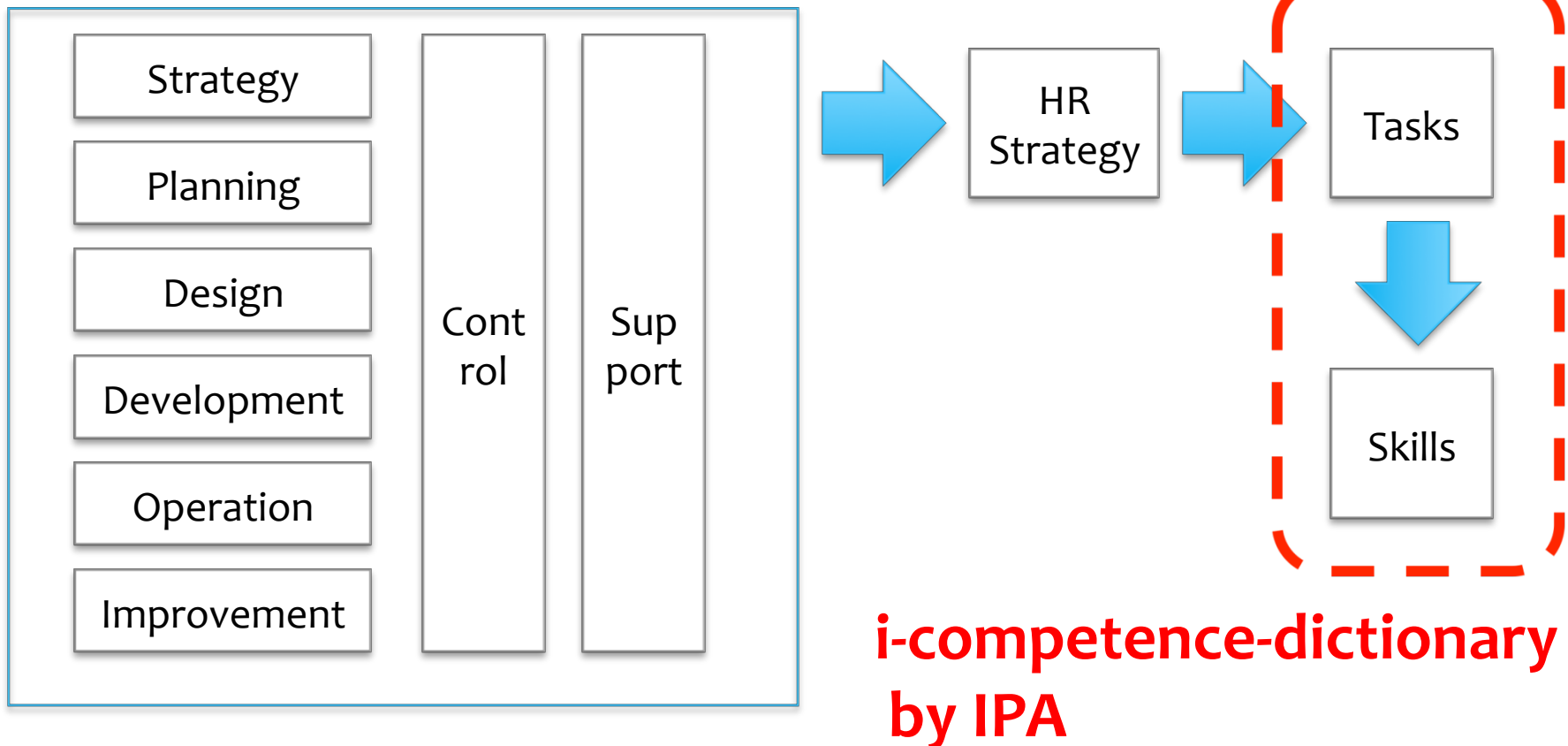* http://youtu.be/wcF87f5d_kc

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ITSS in Philippines

http://youtu.be/wcF87f5d_kc

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Future works of ITSS (IPA)

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New ITSS

* Design Business Strategy, and HR Strategy

Strategy		
Planning	Cont rol	Sup port
Design		
Development		
Operation		
Improvement		

HR Strategy → Tasks → Skills

i-competence-dictionary by IPA

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Conclusion

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What is "Career"?

* Why do you work?
* Maslow's hierarchy of needs

Self-actualization
morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts

Esteem
self-esteem, confidence, achievement, respect of others, respect by others

Love/Belonging
friendship, family, sexual intimacy

Safety
security of body, of employment, of resources, of morality, of the family, of health, of property

Physiological
breathing, food, water, sex, sleep, homeostasis, excretion

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What is "Career"?

* Schein's 'Career Anchors'

  * It's a self-concept, and consists of one's perceptions of one's talents and abilities, one's basic values and one's perceptions of motives and needs as they pertain to career.

  * 9 -work-motivations

  1) autonomy/independence,

  2) security/stability,

  3) technical-functional competence,

  4) general managerial competence,

  5) entrepreneurship, 6) creativity,

  7) service or dedication to a cause,

  8) pure challenge, and 9) life style.

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What is "Career"?

* Career is a history of relationship between you and society.
* It is not only Job category.

* You can ~~find~~ develop your career.

Thank you for your attention.

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