

Skill Standards for IT Professionals, Version 2

Part 2 : Job Career

English edition Draft 1.0 December.2006

INFORMATION-TECHNOLOGY PROMOTION AGENCY, JAPAN

IT Skill Standards Center

Ministry of Economy, Trade and Industry

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Introduction

In “Part 2: Job Career,” the *career framework*, *outline of career*, and *KPI*, *Key Performance Indicator*, which are the components of the skill standard is described.

It is a feature of the skill standards to assess the level of IT human resource by KPI, which is based on experience and performance. In this part, the indexes for assessing professionals are defined. They are also the indexes demonstrating the career goal for long-term career development,

Figure 1 is the overall constitution of Part 2: Job Career.

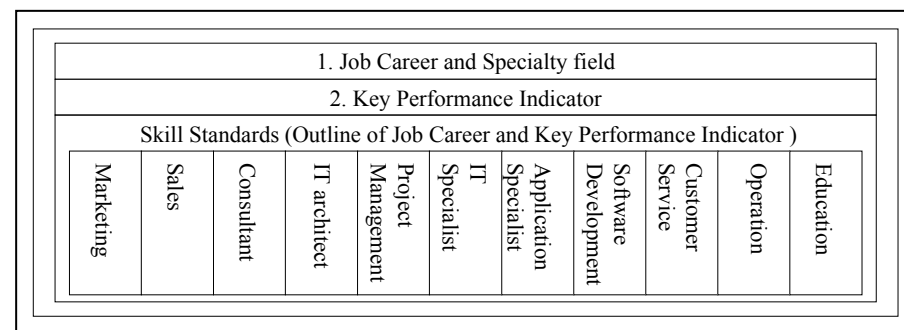


Figure 1. The total constitution of Part 2: Job Career

1. Job Careers and Fields of Specialty

terms of personnel systems.

1.1 Career Framework¹

Career framework is referencing the internationally well-known frameworks of skill and work for information and communication services. The horizontal axis of the framework represents job careers and specialty fields, and the vertical axis of the framework represents career level.

There are 11 job careers such as “consultant,” “project management,” “IT specialist,” and so on. In total, 35 specialty fields are set on the job careers in the skill standards.

Job careers shown on the horizontal axis of the framework are classified based on the differentiation of the IT service processes and the skills to perform their jobs.

It also provides seven levels of achievement for each specialty field, which is based on skill and performance. The colored cells in the career framework represent the levels in each career and specialty field defined in the skill standards. The levels represented by cells without colors indicate they are not assumed in the market.

The skill standards represents the levels of business capability as IT professional. If the levels are same but careers or specialty fields are different, the levels of business capability are the same even though the area of activities and outcomes differ. It is noted that the levels in the skill standard does not represent the “position levels” in

¹ The name of figure has been changed from “Skill Framework” to “Career Framework” in the revised edition of the skill standards, Version 2.

Job Classification	Marketing	Sales	Consultant	IT Architect	Project Management	IT Specialist	Application Specialist	Software Development	Customer Service	Operations	Education																							
Specialty Field	Marketing management	Sales channel strategy	Market communication	Consulting by visiting customers	Product sales by visiting customers	Sales via media	BT(Business Transformation)	IT	Application of a package	Integration architecture	Infrastructure architecture	Systems development	IT outsourcing	Network service	Software product development	Platform	Systems management	Database	Network	Distributed computing	Security	Business application system	Business application package	Basic software	Middleware	Application software	Hardware	Software	Facility management	System operation	Network operation	Service desk	Planning the training	Instructions
High Level	Level 7																																	
	Level 6																																	
	Level 5																																	
Middle Level	Level 4																																	
	Level 3																																	
Entry Level	Level 2																																	
	Level 1																																	

Figure 2. Career Framework

1.2 The Relation of IT Investment Phases and Career

Focusing on a process of IT investment, the main activities for each career set in the skill standards, which correspond to each IT investment phase, are represented in Figure 3.

For example, there is an area of activities called “classification/analysis of problems” in the strategic informatization planning, which is one of the IT investment phases. In this area, the activity of classification of business problems and proposal of solution is set in the “sales” career, the activity of advising for development of solutions is set in the “consultant” career, and the activity of formulation of the framework of solutions is set in the “IT architect” career.

Some job careers are not incorporated into this figure because they do not act along the IT investment phases. They are the “marketing” career, which develops business strategies in an information service company, the “software development” career, which develops software products, and the “Education” career, which provides induction course services to train IT human resources who are the targets of the skill standards.

Because of the diversification of business in information services in these days, the value and area of activities in each phase for each career will change according to an individual company’s business strategies. Therefore, the aspect of IT investment phases can be extended according to the activities of value creation in each company.

IT investment phase activates Job classification	Formulation of management strategy		Strategic informatization planning		Development		Operation and maintenance	
	Formulation of vision and goal	Formulation of business strategies	Clarification and analysis of problems (Business/IT)	Solution design (structure / pattern)	Component design (system / application)	Solution Construction (development / Implementation)	Solution operation (system / application)	Solution Maintenance (system/ Duties)
Sales	Confirmation of goal and vision	Confirmation of business strategy	Business problem Proposal of Solution					
Consultant	Proposal for goal and vision	Advice on formulation of business strategy	Advice on formulation of solution	Solution design				
IT Architect			Formulation of solution framework	Design of solution architecture	Design of components	Solution construction		
Project Management			Formulation of project plan	Management and Control of Project	Management and Control of Project	Management and Control of Project	Management and Control of Project	Management and Control of Project
IT Specialist				Formulation of system construction planning	Design of system components	Construction and Installation of system components	Operation support of system components	maintenance of System components
Application Specialist				Formulation of application development plan	Design of application components	Development of application components	Operation support of application components	Maintenance of application components
Customer Service					Formulation of installation planning	Installation of hardware and software	Maintenance of hardware and software	Maintenance of hardware and software
Operations						Formulation of operation plan and operation management	Operation and Management of System operation	Operation and Management of System operation

Main phase of activity
 Sub phase of activity

Figure 3. IT Investment Phases and Job Career

1.3 Outline of Career

(1) Contents of Job Career Outline

The range of the levels and contents of job career and specialty field are described in the job career outline.

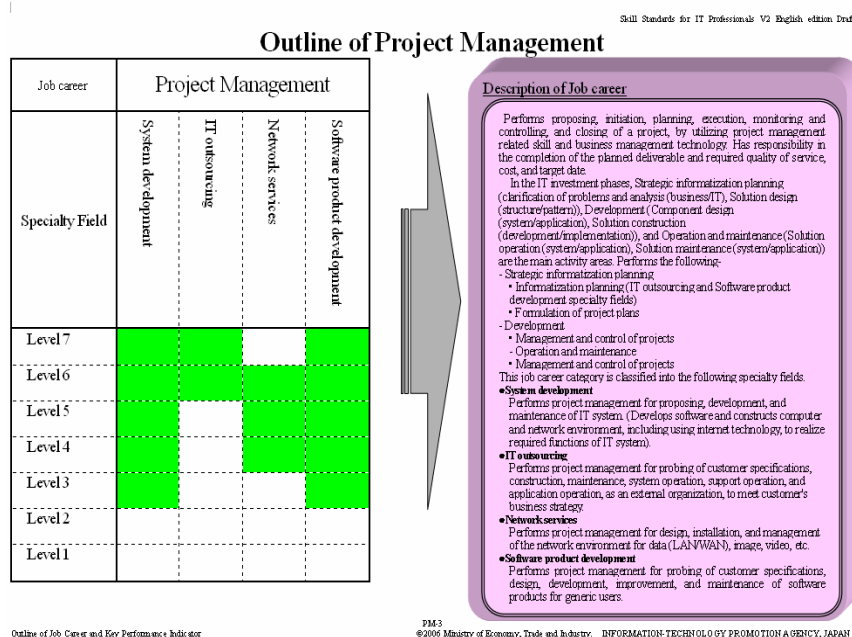


Figure 4. Example of Job Career and Specialty Field (Project Management)

(2) Description Styles of Career Outline

To make the explanation of job career easy to understand, descriptions about

business outcomes and qualities for which each job career is responsible are added to the outline. As a result, descriptions that are incorporated into the outline includes the technologies used in the job career, activity process phases, and outcomes and qualities for which the job career is responsible.

[Description Styles]

Utilize “technology,” perform “activity process,” and has responsibility for “outcome” and “quality.”

- **Technology:** Major components of technology to perform one's duties
- **Activity Process:** Main activities and process areas performing activities
- **Outcome:** Major outcomes delivered as a result of activities
- **Quality:** Main quality conditions demanded on outcomes

1.4 Job Category and Role

The skill standard classifies job careers by the aspect of IT investment phase and area of activities. The IT investment phase is the process model to produce business outcomes and results. Regardless of the size of the project, it has to perform all activities that are defined in the IT investment phases to complete the outcome in an IT project. Therefore, by assigning human resources in charge of each career or specialty field to major activity areas defined in the skill standards, they will be able to collaboratively work together to accomplish the project.

Generally in an actual project, one covers several roles and activities because of the various restrictions and requirements. In these cases, an company may needs to develop their own specific indexes by referencing the skill standards. They first make their own capability model reflecting the needed roles and jobs within their company, then extract the skills demanded in that model, and define the career and

specialty according to these skills. The model has roles crossing over some job careers and specialty fields of skill standards used within the company. However, the activities to make outcomes do not change in general concept. The only difference is that they have additional responsibilities besides their specific job career in adapting to each company's circumstances.

What is expected of an IT professional is to accomplish their assigned duties by utilizing their expertise. They need to achieve goals successfully in their specialty. Therefore, when one has to share another career's specialty field because of project restrictions, the project system needs to be organized by considering the risk of being responsible for duties that are outside one's area of expertise.

The skill standards can also be considered a model for training and development. It is important to judge in which career individuals will develop as their own long term careers. The capability model for human resources, which is peculiar to each company and reflects each company's role, should be built flexibly according to business strategies and HRD principles for the company.

2. Key Performance Indicator (KPI)

KPI defines the assessment indexes for practical business capability levels. It is one of the significant ways to assess the business capability level for IT human resources by KPI, which is based on experience and business performance. This is a feature of the skill standards.

KPI focuses on two contributions that assess human resources who are successful in business. The first is the contribution to business—the contribution to business outcomes as experience and business performance in successful jobs or projects. The second is the contribution to professional society or saying professional contribution—the contributions made within and/or outside the company from improvements expertise in specialty, the contributions for training and development subordinates or colleagues, and the technology succession.

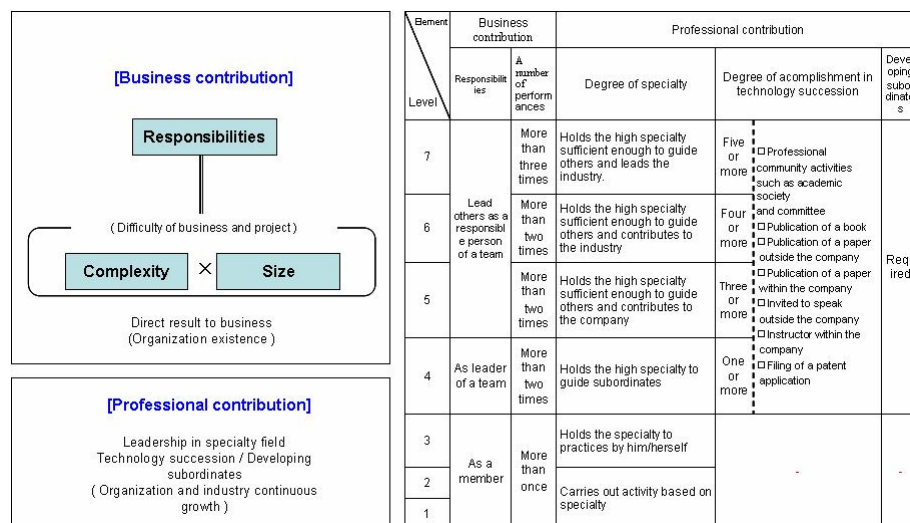


Figure 5. Structure of KPI

The skill standards emphasizes not only business contribution but also continuous contribution to the professional community. The skill standards takes both of the two viewpoints for assessing human resources as basic lines because of the growth of the company and individuals in the medium to long term and continued growth of the company. Therefore, for IT human resources, it is necessary to satisfy both criteria stipulated by the KPI, which are business contribution and professional contribution. The definitions of each level of KPI are positioned as the entry criteria for a particular level. On the basis of this, the threshold values are set, which are necessary for the assessment of each level, such as the business performance or the amount of optional items for technology succession, and so on.

2.1 Business Contributions

(1) Content of Business Contributions – Contribution to Business

Business contributions – contribution to business - are assessed using three components: responsibility, which represents the weight of the responsibility of projects for one is in charge; the complexity, which represents the degree of difficulty of the project for which one is responsible; and the size. The next figure is an example of the KPI for level 7 in the specialty field of system development in the job career of project management.

Key Performance Indicator : Project Management		
Specialty Field	System development	Level 6
<p>[Contribution to business]</p> <p>● Responsibilities In the whole process areas of proposing, initiation, plan formulation, execution, monitoring and controlling, and closing of a project, acts as a project manager in charge of a project from beginning to end, by managing stakeholders and leading project members. Has experience in achieving successful results in the completion of the planned deliverable and required quality of service, cost, and target date, three times or more (at least one project must meet complexity and size of Level 6 or equivalent, and others can be of Level 5).</p> <p>● Complexity Has experience in achieving successful results in the completion of project that meets two or more of the following complexity criteria. <input type="checkbox"/> International project (in critical environment from cultural, social, international, and political aspects) <input type="checkbox"/> Globally leading-edge project <input type="checkbox"/> Complex migration requirements <input type="checkbox"/> Complex contract conditions (strict requirements on required quality, cost, and target date, etc.) <input type="checkbox"/> Complex systems construction requirements (performance, security, running and operational requirements, etc.) <input type="checkbox"/> Complex systems design (multi-platform, high availability, new product and technology, number and conditions of interfaces) <input type="checkbox"/> Complex application requirements <input type="checkbox"/> Complex project structure (customer, subcontract, off-shore, cooperative business relationship, and related divisions)</p> <p>● Size Has experience in achieving successful results in the completion of project that meets either one of the following size. <input type="checkbox"/> Project with 50 persons or more during peak periods, or an annual contract value of 500 million yen or more. <input type="checkbox"/> In case of the project that meets four or more complexity criteria (above), from 10 but less than 50 persons during peak periods or an annual contract value from 100 million but less than 500 million yen.</p> <p>[Contribution to professional society] - Holds the high specialty in either one or more of the following major themes of this Specialty Field sufficient enough to guide others and contributes to the industry. <input type="checkbox"/> Project Integration Management <input type="checkbox"/> Project Scope Management <input type="checkbox"/> Project Time Management <input type="checkbox"/> Project Cost Management <input type="checkbox"/> Project Quality Management <input type="checkbox"/> Project Human Resource Management <input type="checkbox"/> Project Communications Management <input type="checkbox"/> Project Risk Management <input type="checkbox"/> Project Procurement Management - Has recognized accomplishments four items or more in the area of technology succession. <input type="checkbox"/> Professional community activities such as academic society and committee <input type="checkbox"/> Publication of a book <input type="checkbox"/> Publication of a paper outside the company <input type="checkbox"/> Publication of a paper within the company <input type="checkbox"/> Invited to speak outside the company <input type="checkbox"/> Filing of a patent application - Has accomplishments in developing subordinates (by mentoring, coaching, etc.)</p>		

Outline of Job Career and Key Performance Indicator

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Figure 6. Example of KPI (Project Management)

1. Responsibilities

This component represents the weight of the responsibility for the customer. The weight of the responsibility is different depending on whether one is in charge of the entire project, in charge of a part of the project, or a member of the team in a project. The responsibilities associated with these positions are set for each and every level.

2. Complexity

This is the component that represents the degree of difficulty of the project itself. The degree of difficulty is set for each level, such as advancement, mission-critical system, and international recognition.

3. Size

This component represents the size of the project. Project size (for example, the number of human resources that are required is 10, 50 or 100 persons) or business size (for example, a budget that is 1 million yen, 10 million yen, or 50 million yen) is explicated for every level.

When actually assessing the level of IT human resources, assessment will combine these indexes. In other words, the responsibility, complexity, and size will be included in the business contribution. For this reason, if complexity is high even if size is comparatively small, the requirements equally estimated as business result or project with high difficulty will be written together. Therefore, additionally in the part, the requirements that compensate for smaller size are written side by side. Then, if the complexity is high even though the size is relatively small, a project filled with these requirements should be recognized as contributing at the same level as other projects or business outcomes. Furthermore, a relationship develops between assessing the KPI for this degree of business contribution with the perspective of individual responsibility.

Even if one is in charge of an entire project, the business contribution level rises and falls depending on the project size and complexity (difficulty of the project). Therefore, a more intimate assessment is possible by combining these indexes. For example, a medium-sized project is assessed at level 5; however, achieving success in a business whose complexity is higher than usual satisfies the criteria for level 6.

(2) Description Styles of Business Contribution

1. Responsibilities

Responsibility is determined comprehensively from multiple indexes. It includes such indexes

as degree of support from superiors and project members, degree of independence, authority over the goal or process, relationship between business outcomes and personnel evaluation (directly or indirectly), and contribution to the organizational goal. The activity phase, position and role, assessment target, and the degree of achievement are described as the responsibility.

[Description Style]

In phases of “activity phase”, acts as “role” in charge of “responsible area”. Has experience in achieving successful results in “quality condition”, “number of times” or more

- Activity phase: Main activity phase where one performs.
- Role: Duty performed in the activity phase.
- Responsible area: Responsible activity, business outcome, team under management, etc.
- Quality condition: Quality requirement that need to be fulfilled.
- Number of times: The number of experiences and/or outcomes that achieved

Roles for every level are prescribed basically as follows

Level	Role	Notes
Level 7	Responsible person of a team in charge	One's responsible target covers not only for the one's own specialty field, but also for other fields in the same job careers.
Level 6		
Level 5		One's responsible target covers the one's specialty field.
Level 4	Leader of a team	
Level 3	Member	—
Level 2		

Level 1		
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Remarks that in the project management career, level 4 is also set as a responsible person in charge to reflect the high responsibility of this job career.

In addition, the number of business outcomes is clearly stated at every level in numerical values, and the fixed numerical value as the criterion for judgment. The number of business outcomes for every level is as follows.

Level	numerical value	Notes
Level 7	Three times	At least one experience must meet complexity and size of Level 7, and others can be of Level 6.
Level 6	Three times	At least one experience must meet complexity and size of Level 6, and others can be of Level 5.
Level 5	Three times	At least one experience must meet complexity and size of Level 5, and others can be of Level 4
Level 4	Twice	At least one experience must meet complexity and size of Level 4, and others can be of Level 3
Level 3	More than Once	Complexity and size of the appropriate particular level.
Level 2		
Level 1		

Indexes for each level are the lowest requirements (entry criteria) that are necessary for recognition in a particular level. Therefore, business performance under the conditions of subject level complexity is set one time or more. The number of business outcomes is n times. (At least one experience must meet complexity and size of the subject level, and others can be of the one lower level.)

In order to remove contingency, business performance for level 4 is two times or more, and

three times or more for level 5 and above to assure certainty.

2. Complexity

Complexity is judged comprehensively from the proportion of factors such as the degree of needed knowledge and skills, degree of needed judgment requirements, peculiarity of the goal and/or process, and standards and negotiation.

In the complexity section, the complexity factors are listed for the job career, and the necessary number of items is clearly stated.

Level	For the size requirements stipulated at a particular level	For the size requirements stipulated one level under a particular level
Level 7	Three items or more	Five items or more
Below Level 6	Two items or more	Four items or more

However, “either one of “ is stated for the level 3 ” of the job careers that do not have level 2 and 1, such as a project management career.

The items listed as complexity requirements are defined in the expressions that display complexity of each career / specialty field.

Furthermore, the condition “global” is necessary in level 7 as a complexity requirement. Level 7 is defined as the level that is recognized as possessing experience and business performance for leading the development of advanced services and market conversion in the whole market. This means that it needs business performances that are recognized as global level not just domestic. Leading-edge achievement which is first of a kind or is applicable globally will be accepted even it is performed in Japan domestically. It also means the achievement merely performed internationally outside of Japan is not sufficient.

3. Size

Size is the range of tasks and projects covered, and it is synthetically determined by the indexes such as number of stakeholders, number of processes, project term, and funds and/or contract value amount. The criterion clarifies whether the target for the range of size indexes is the whole project or the team which completes the outcomes for which each career is responsible.

In addition to the size requirements stipulated for a particular level, another size requirement is stated that is applicable when having higher complexity. However, at the lower levels, which do not request the size requirement, only size requirements at a particular level is stipulated.

2.2 Professional Contributions

(1) Description of Professional Contributions – Contribution to Professional Society

Professional contributions - contribution to professional society - are to assess the contribution activities to professional society in terms of the creation of value in a specific area which are represented by the improvement and spread of expertise as the basis for development directed to future, succession of technology, and development of subordinates.

It defines the indexes for creation and succession of technology and developing subordinates or colleagues from a perspective that raises the value of IT human resources as professional and keeps raising public interest in the development of those professionals.

At the upper levels of all job careers, the indexes of professional contributions are defined the contribution activities such as training subordinates or colleagues, community activities inside and outside the company, writing treatises or technical reports, and lectures. In order to

develop skills, it is necessary to carry on skills as a professional from higher level to lower levels within the same job career, as well as to do it within company from manager to subordinates or senior to junior. In addition, for human resources in the upper levels, the contribution of the sharing of findings and wisdom, which are related to skills, is required and includes writing treatises or technical reports and giving lectures within the community of professionals outside the company. Such activities by a professional lead to polishing one's skill and are connected to the social appraisal for the high-level skills that one possesses.

(2) Description style of Professional Contributions

It is structured by the point of view regarding the range of expertise and contributions, accomplishment in the succession of technology, and development of subordinates or colleagues.

1. Possessed expertise and the range of contribution

Major theme of each specialty field is indicated, and then the influence from the expertise for the field is defined for each level.

[Description style]

<Level 7 ~ Level 3>

Holds the (high) specialty in either one or more of the following “major themes” of this specialty field and “Contributing”

☐ *****
☐ *****
☐ *****

} (list the major theme for each career / specialty field)

<Level 2, Level 1>

-Has basic knowledge and experience of the following “major themes” of this specialty field

☐ *****
☐ *****
☐ *****

} (list the major theme for each career / field of specialty)

- Major theme: displaying expertise in each job career / specialty field.
- Contribution: stipulating the degree of expertise and the range of exhibition.

It stipulates the degree of expertise and the range of contribution for each level as follows (applicable to level 3 or over).

Level	Degree of expertise	Contribution range
Level 7	Hold high specialty sufficient enough to guide others	Leading the industry
Level 6		Contributing to industry
Level 5		Contributing to the company
Level 4	Hold high specialty	Guiding subordinates
Level 3	Hold specialty	Practice by himself without support from others

☐ Technology succession

It indicates technology succession with itemization and the necessary amount of accomplishment for each every level common to all job careers.

[Description style]

Has recognized accomplishments n items or more in the area of “technology succession.”

- ☐ Professional community activities including memberships in an academic society and committee
- ☐ Publication of a book
- ☐ Publication of a paper outside the company
- ☐ Publication of a paper within the company
- ☐ Invited to speak outside the company
- ☐ Instructor within the company
- ☐ Filing of a patent application

The number of items n is provided as follows.

Level	The necessary number of accomplishment
Level 7	Five items or more
Level 6	Four items or more
Level 5	Three items or more
Level 4	One item or more
Level 3	Not applicable (none)
Level 2	
Level 1	

- ☐ Developing subordinates

For all job careers, developing subordinates or colleagues (mentoring or coaching) is mandatory in level 4 or higher for each specialty field.

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Skill Standards for IT Professionals, V2. Draft Part 2. December.2006.

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