

THE POSSIBILITIES ARE INFINITE



For GDC

SDEM Introduction

-Self Training Material-

19 May 2009
FUJITSU LIMITED

- This textbook has been developed for enhancing Global Delivery Center members' skills.
- This textbook should not be disclosed for other purposes than GDC.
- Any part of this textbook may not be reproduced in any way by any means.
- The contents of the book are subject to revision without prior notice for the purpose of improving the training sessions.

Table of Contents

Chapter 1 Why is SDEM necessary?

Lessons Learned from Failures in System Development Projects

Introduction

1. What is “Standardization” in System Development?

1.1 Background for Which Work Standard is Necessary

1.2 Objectives of Work Standard

1.3 Indispensable Issues in Defining the Work Standard

2. Objectives of SDEM

2.1 SDEM is a Work Standard of Fujitsu

2.2 Three Objectives of SDEM

3. History of SDEM

3.1 Evolution of SDEM

3.2 A Highly Respected Name

4. Summary

● Lessons Learned from Failures in System Development Projects

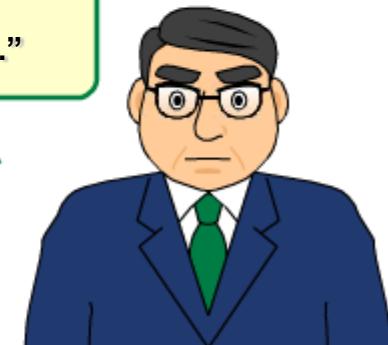
The following are the main failure reasons of system development projects in FUJITSU.

- The project was started though the requirement was not well defined. (80%)
- The requirements were not defined appropriately. (78%)
- Developers' skills for advice and guidance to the customer were insufficient. (70%)
- End users' opinions were not consolidated. (66%)
- Skills and manpower of the development team were insufficient. (58%)

It reveals that the purpose of system development was not shared enough. According to the further investigation of the root cause, it was found that work items are not well listed or overlooked in the failure projects.

In short, it is not too much to say that the project failed because it only relied on individual experiences, and neglected standard process.

Using this occasion, please go back to the basics and think about “standard process.”



 Introduction**[Objectives]**

- 1. To Understand the meaning of “Standardization” in System Development**
- 2. To be able to explain the objectives of SDEM.**

In this chapter, we are going to study the necessity of standardization and the objective of SDEM.
“Standardization” is a buzzword, but do you know the meaning and the purpose?



 Conversation between Manager and New Appointee Project Leader

Hello. I am John, a manager of system development division.
I am thinking to appoint Paul as a new project leader.
Since this is a larger project than he has ever experienced, and the customer is requesting to apply development standard process, I want him to understand SDEM.



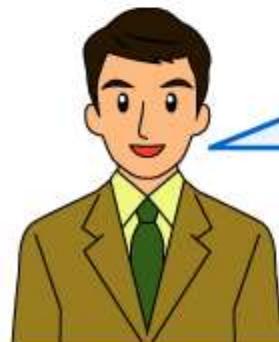
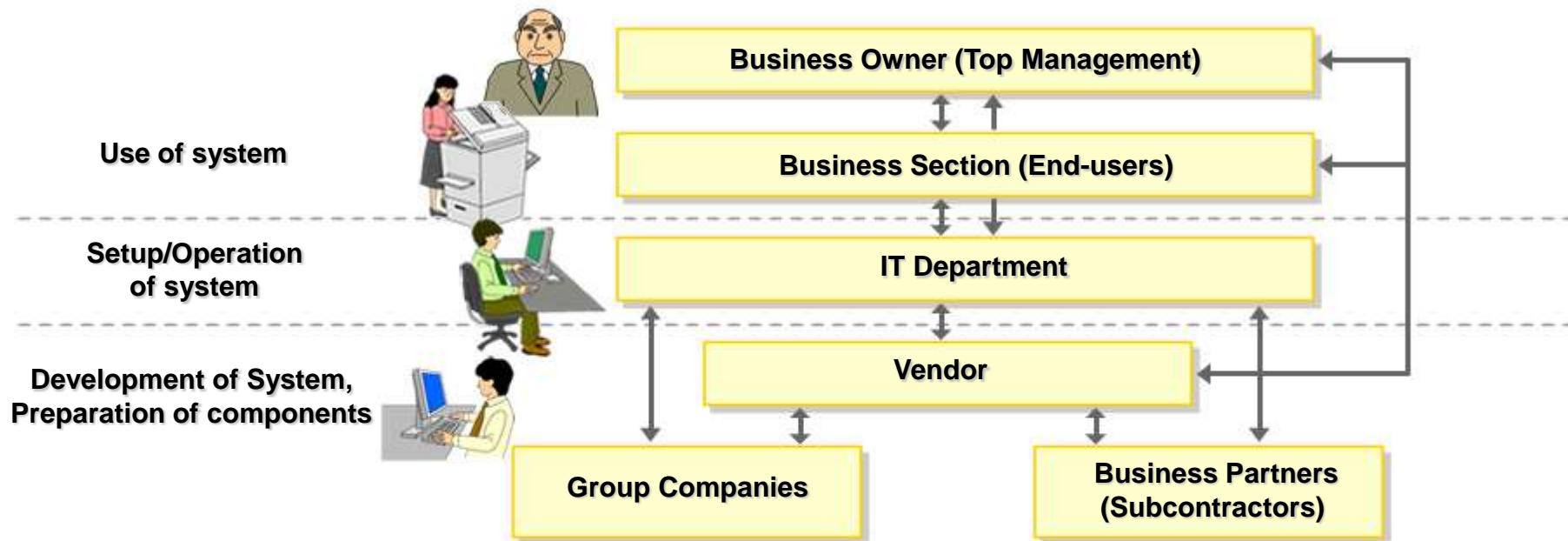
John
(SE Manager)

Hi, I am Paul.
I would like to study SDEM to make the new project a success.
Study SDEM with me!



Paul
(New Project Leader)

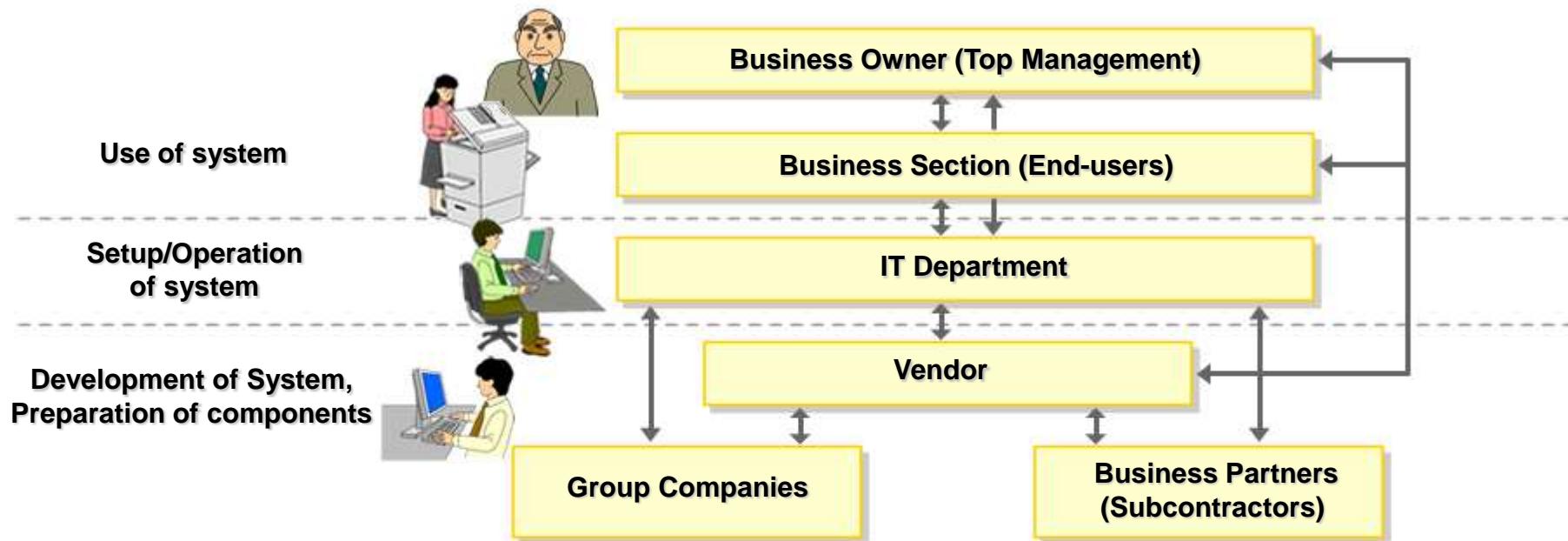
1. Background for Which Work Standard is Necessary (1) Various Stakeholders



First of all, you might question why you have to study SDEM.

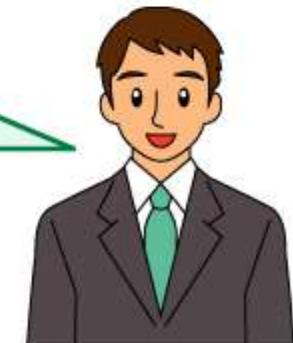
Please re-recognize that there are many stakeholders participating in system development. We have to develop the system together with them.

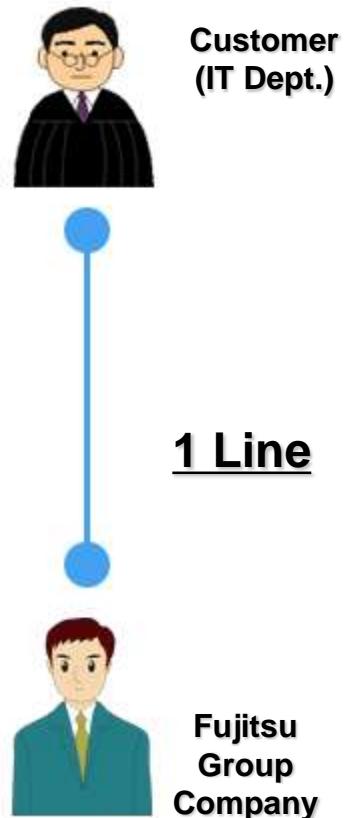


 1. Background for Which Work Standard is Necessary (1) Various Stakeholders

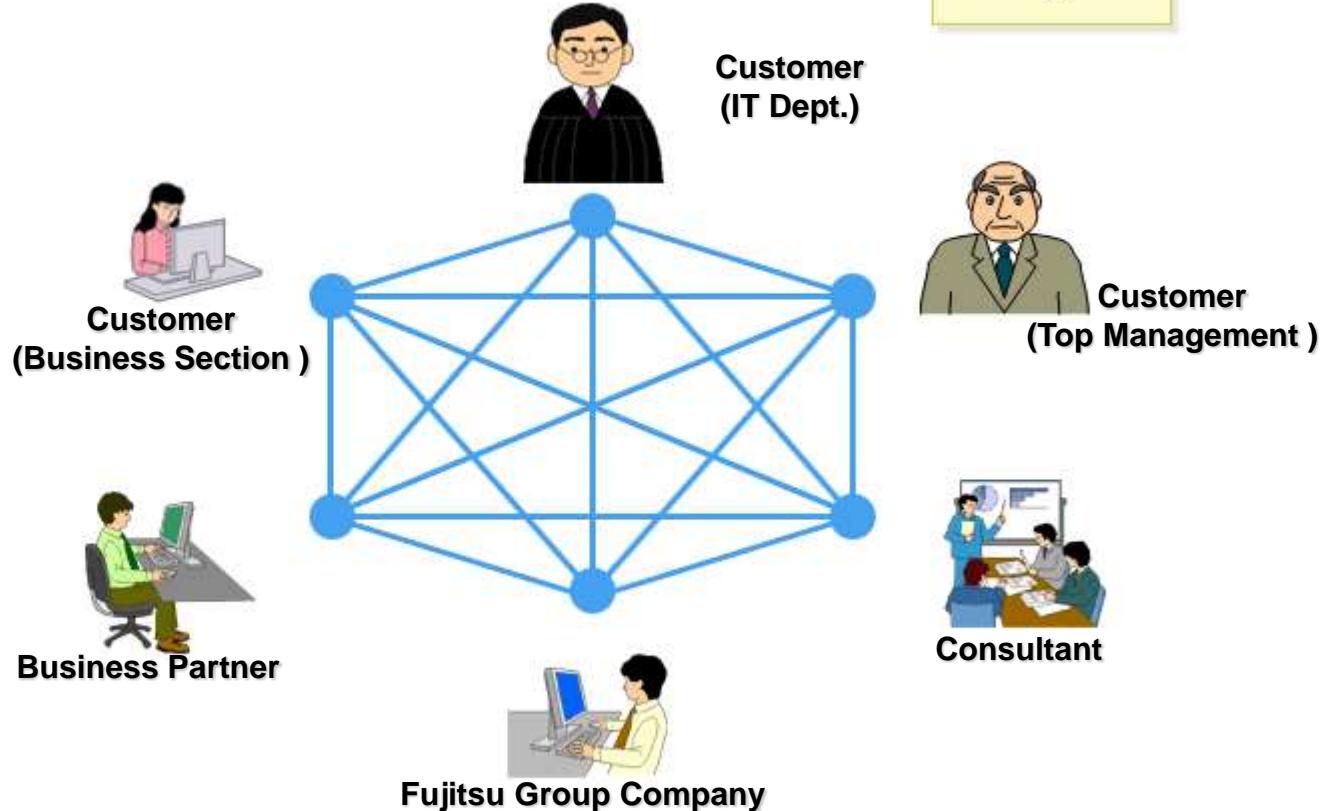
Yes, I was struggling with too many stakeholders.

Sometimes, I had to explain the same thing to other stakeholders. I thought I could proceed on a project just with the customer's IT department.



1. Background for Which Work Standard is Necessary (2) Complexity of Communications**[Two parties]****[Six parties]****15 Lines**

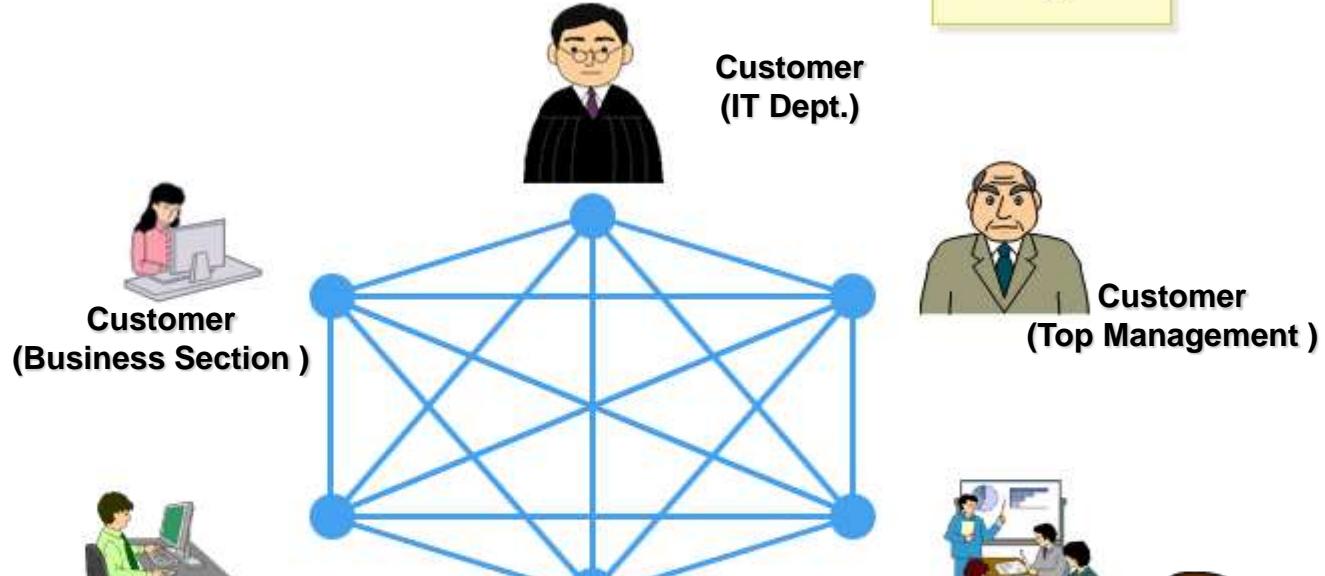
$$\frac{n(n-1)}{2}$$



● 1. Background for Which Work Standard is Necessary (2) Complexity of Communications

[Two parties]**1 Line****[Six parties]****15 Lines**

$$\frac{n(n-1)}{2}$$



In the past, I have heard that a project was in trouble because the customer's IT department did not know the specification. It is a key to involve end users and to develop a system together with them. But, I have read in a book that the more related people increase, the more complex the communication path would be. I felt I have to consider this point as well.

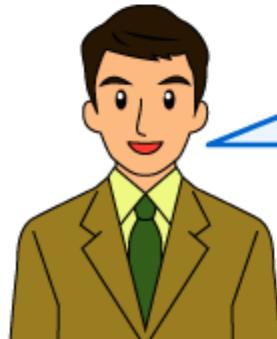


consultant



● 1. Background for Which Work Standard is Necessary (3) Inconsistency of Phase/Work Definition**Difference of Phase/Work Name**

Vendor-A	Systematization plan	System analysis		System outline design	System detailed design
Vendor-B	Planning stage	Requirements definition stage	External design stage	Internal design stage	
Vendor-C	System planning	System analysis	User interface design	System structure design	Program structure design



It is necessary to prevent misunderstanding from different definitions of terminology in order to consolidate stakeholders' thoughts.
Phases and work items are good examples.
Even if the name is the same, it is often the case that the definition is different.
Do you know any failure examples caused by terminology?



● 1. Background for Which Work Standard is Necessary (3) Inconsistency of Phase/Work Definition**Difference of Phase/Work Name**

Vendor-A	Systematization plan	System analysis		System outline design	System detailed design
Vendor-B	Planning stage	Requirements definition stage	External design stage	Internal design stage	
Vendor-C	System planning	System analysis	User interface design	System structure design	Program structure design

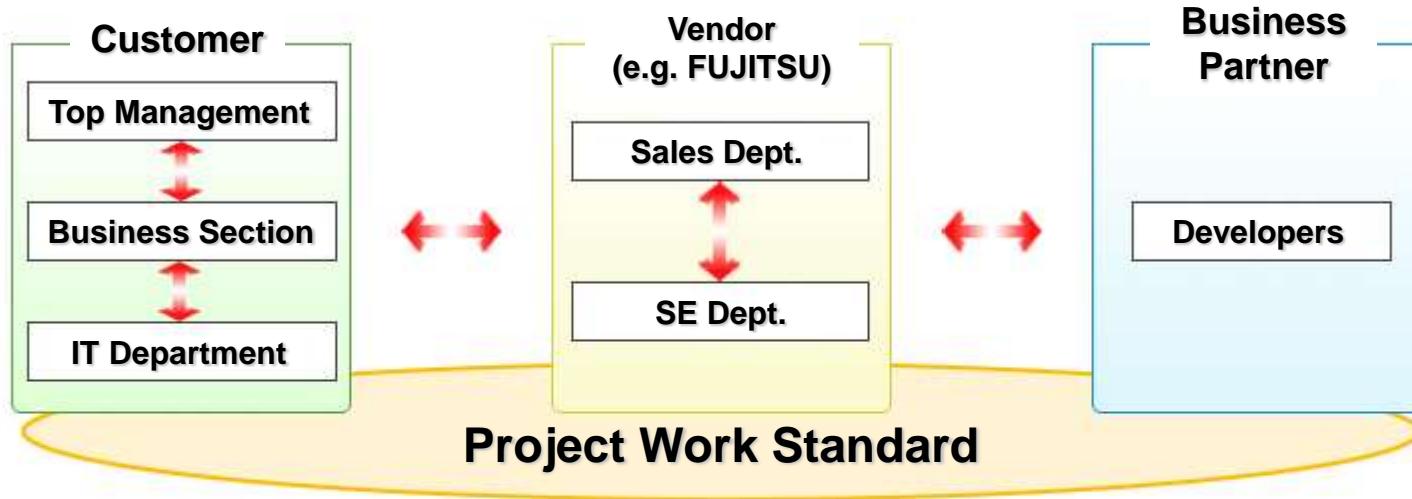


Yes I do. My colleague had faced a problem before.
The definition of work items in the phase was different even though
it was the same phase name between him and their business
partners (subcontractors.)

Therefore, a lot of necessary work items were neglected.



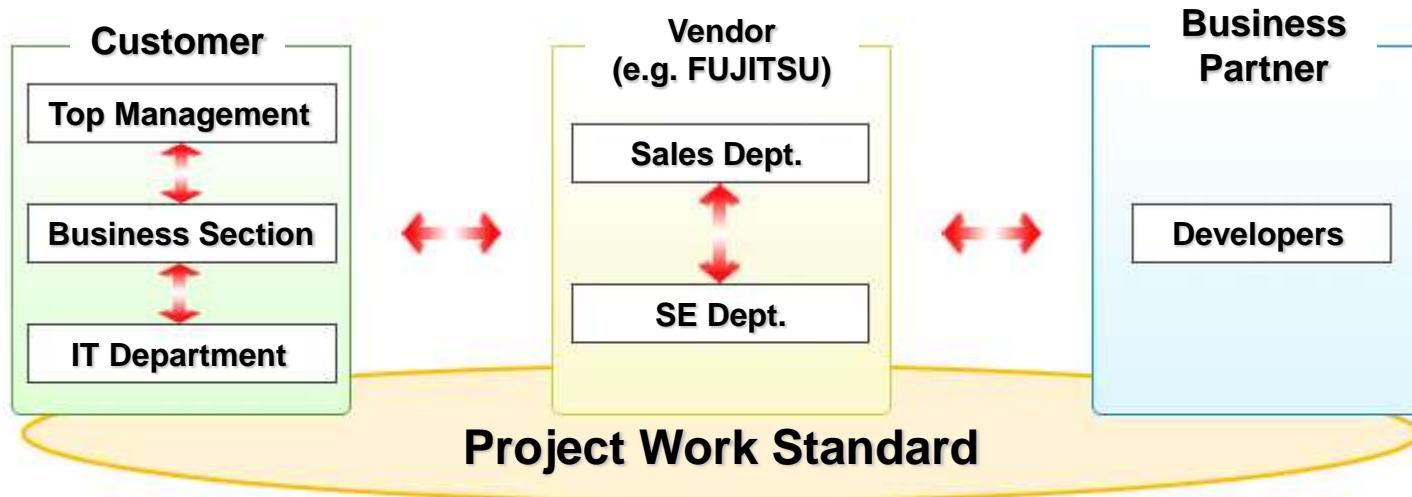
● 2. Objectives of Work Standard (1) Definition of Common Words

**Driving a Project with All Stakeholders' Consensus**

- * Prevent the oversight of work items, clarify roles and responsibilities
- * Clarify scope of estimation
- * Visualize the work and manage the progress



● 2. Objectives of Work Standard (1) Definition of Common Words

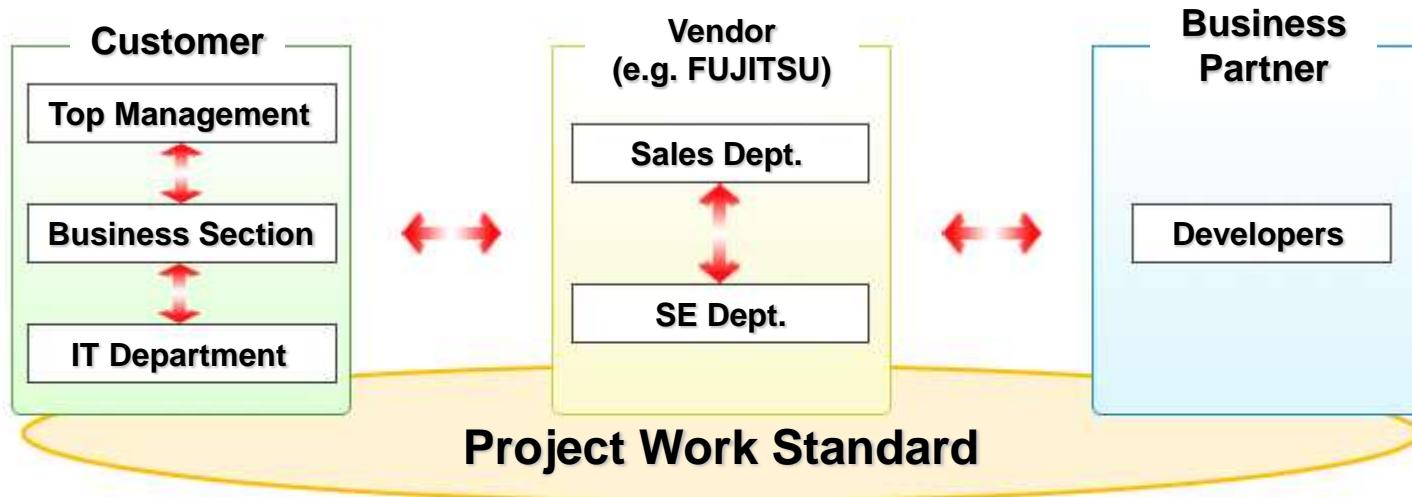


I have explained the necessity of standardization.
Hereafter, I am going to explain the objects that should be standardized.

It is indispensable to define the meaning of terminologies as a common language to make real consensus among all stakeholders.
By communicating through the common language, the misunderstanding between stakeholders can be eliminated.



● 2. Objectives of Work Standard (1) Definition of Common Words

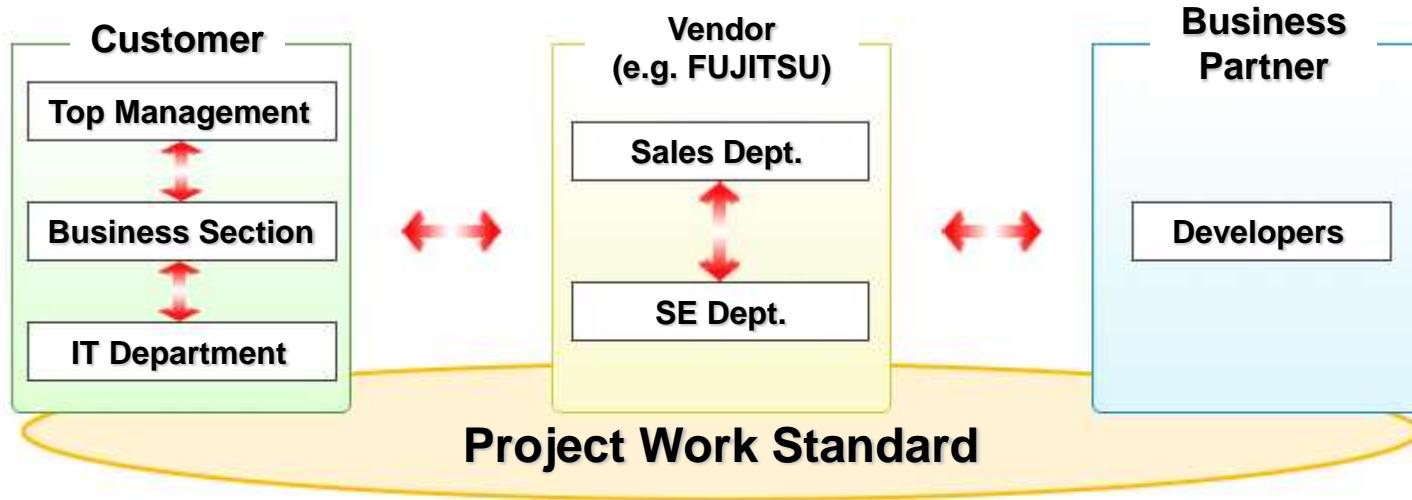


I misunderstood that the standardization was only for the engineers like us, and it was unrelated with the customer.
But now, I understand the necessity of sharing common language with all stakeholders including the customer.

Is terminology the only object of standardization?



● 2. Objectives of Work Standard (1) Definition of Common Words

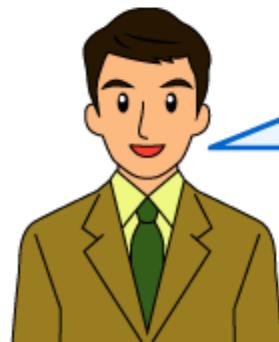
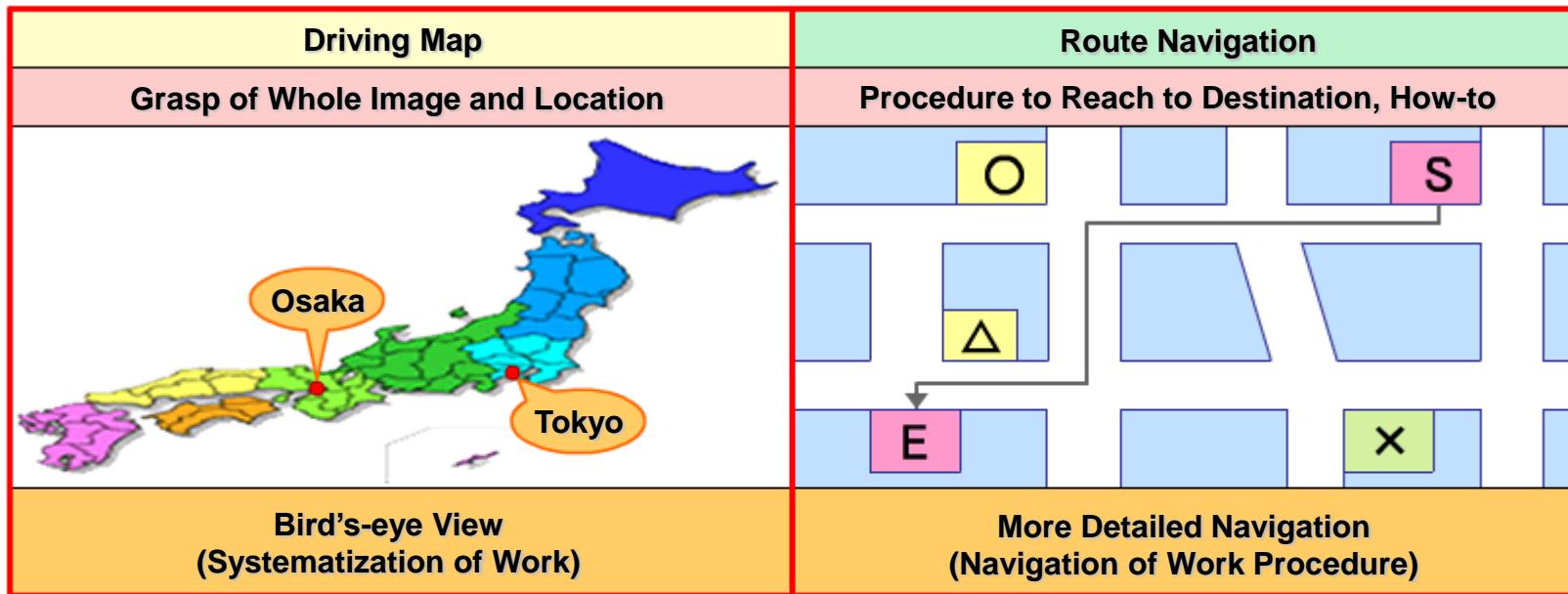


The object of standardization is not only a common language. It is necessary to consider the work procedure as well.

Let me explain the standardization of the work procedure, next.



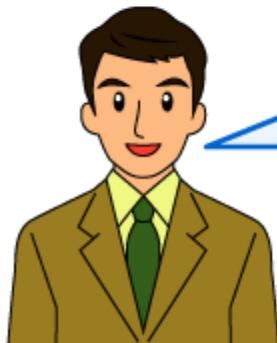
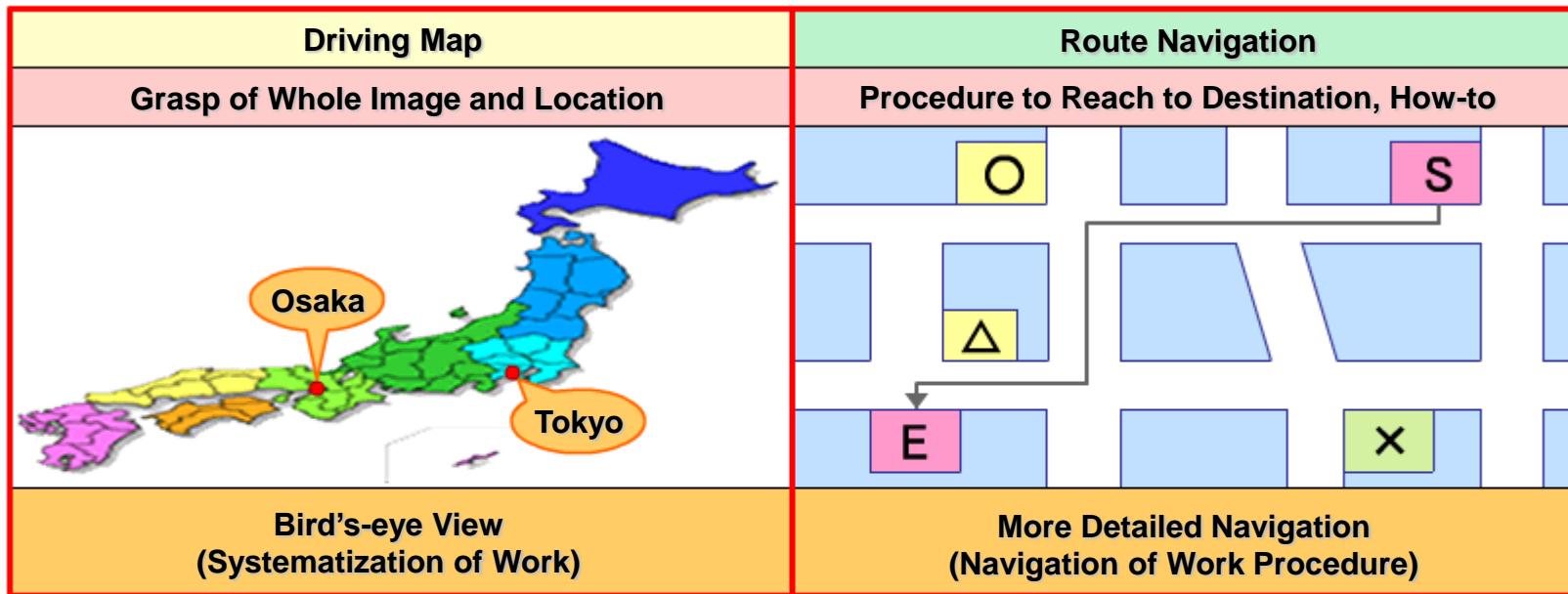
● 2. Objectives of Work Standard (2) Definition of Work Procedure



The other object of standardization is the work procedure.
 To complete the system development, it is necessary to define the path that stakeholders should take.
 The work procedure plays the role like a driving map and a route navigation to reach the goal without losing one's way.
 A driving map supports our bird's-eye view and shows where we are now.



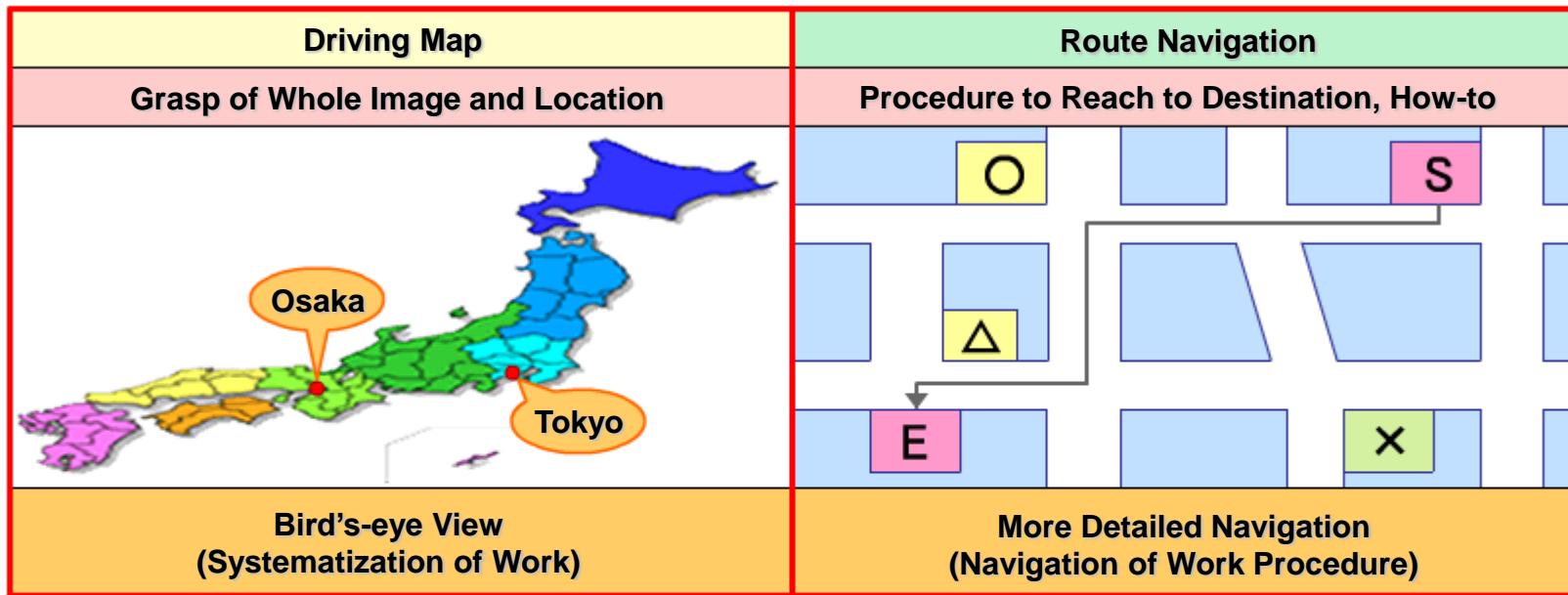
● 2. Objectives of Work Standard (2) Definition of Work Procedure



Route navigation shows the detailed procedure to reach the goal.

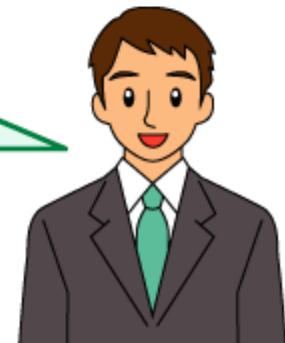


● 2. Objectives of Work Standard (2) Definition of Work Procedure



I get it.

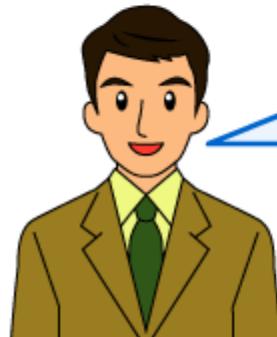
It is easy to understand when you compare the work procedure to a route map and navigation.



● 2. Objectives of Work Standard (2) Definition of Work Procedure

■ Objects of Standardization

Objectives	Standardized Objects
<p>1. To make consistent the stakeholders' understanding and prevent oversights with the specification.</p> <div style="background-color: #ffffcc; padding: 5px; border-radius: 5px; width: fit-content;">Driving Map</div>	<p>(1) Scope of Work, Estimation, Responsibility Assignment</p>
<p>2. To achieve the efficient and effective development activities.</p> <div style="background-color: #ffccff; padding: 5px; border-radius: 5px; width: fit-content;">Route Navigation</div>	<p>(2) Deliverables</p>
	<p>(1) Work Procedure</p>
	<p>(2) Quality, Efficiency of Work, Quality of Deliverables</p>
	<p>To Define the;</p> <ul style="list-style-type: none"> - Depth and Format of Deliverables - Procedures and Rules - Techniques and Tools

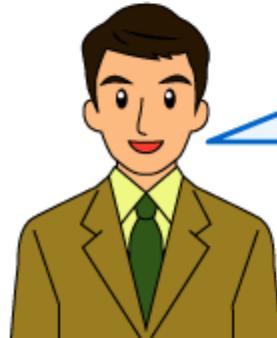


There are two objectives of standardizing the work procedure. One is to make a common understanding among stakeholders and prevent oversights. Specifically, scope of work, estimation, role and responsibility and deliverables should be clearly made with consensus among stakeholders. In order to achieve this, work items and deliverables must be standardized.

● 2. Objectives of Work Standard (2) Definition of Work Procedure

■ Objects of Standardization

Objectives	Standardized Objects
<p>1. To make consistent the stakeholders' understanding and prevent oversights with the specification.</p> <div style="background-color: #ffffcc; padding: 5px; border-radius: 5px; width: fit-content;">Driving Map</div>	<p>(1) Scope of Work, Estimation, Responsibility Assignment</p>
<p>2. To achieve the efficient and effective development activities.</p> <div style="background-color: #ffccff; padding: 5px; border-radius: 5px; width: fit-content;">Route Navigation</div>	<p>(2) Deliverables</p>
	<p>(1) Work Procedure</p>
	<p>(2) Quality, Efficiency of Work, Quality of Deliverables</p>
	<p>To Define the;</p> <ul style="list-style-type: none"> - Depth and Format of Deliverables - Procedures and Rules - Techniques and Tools



The other objective is to conduct a project with efficiency and effectiveness.

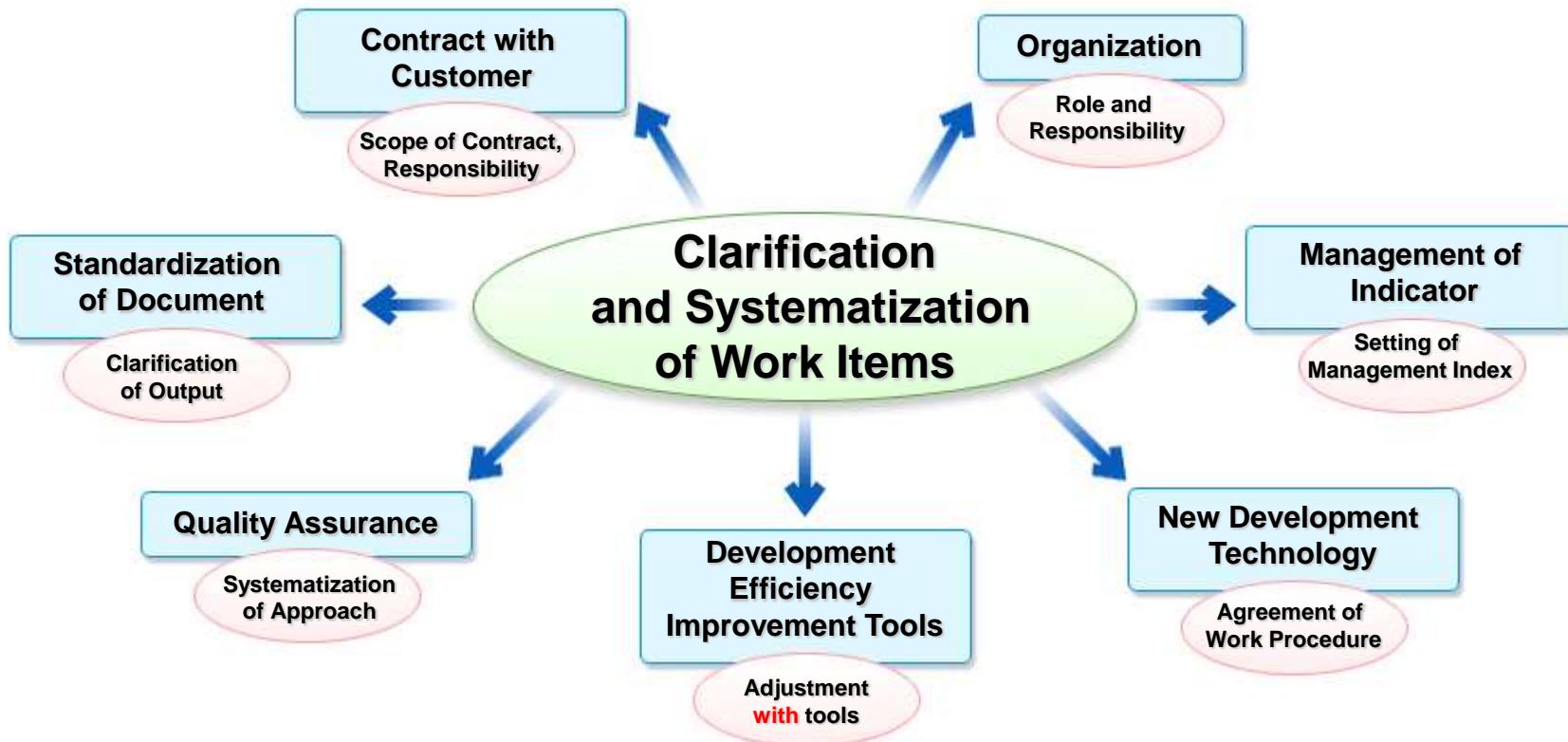
Clarification of the work procedure brings high quality and efficiency of work and deliverables.

Specifically, organizing work items by PERT chart, defining the depth and format of deliverables, defining the rules and procedures, and defining the techniques and tools are to be standardized.

● 3. Indispensable Issues when Defining the Work Standard -Clarification and Systematization of Work Items-

■ Advantage of Clarifying Work Items

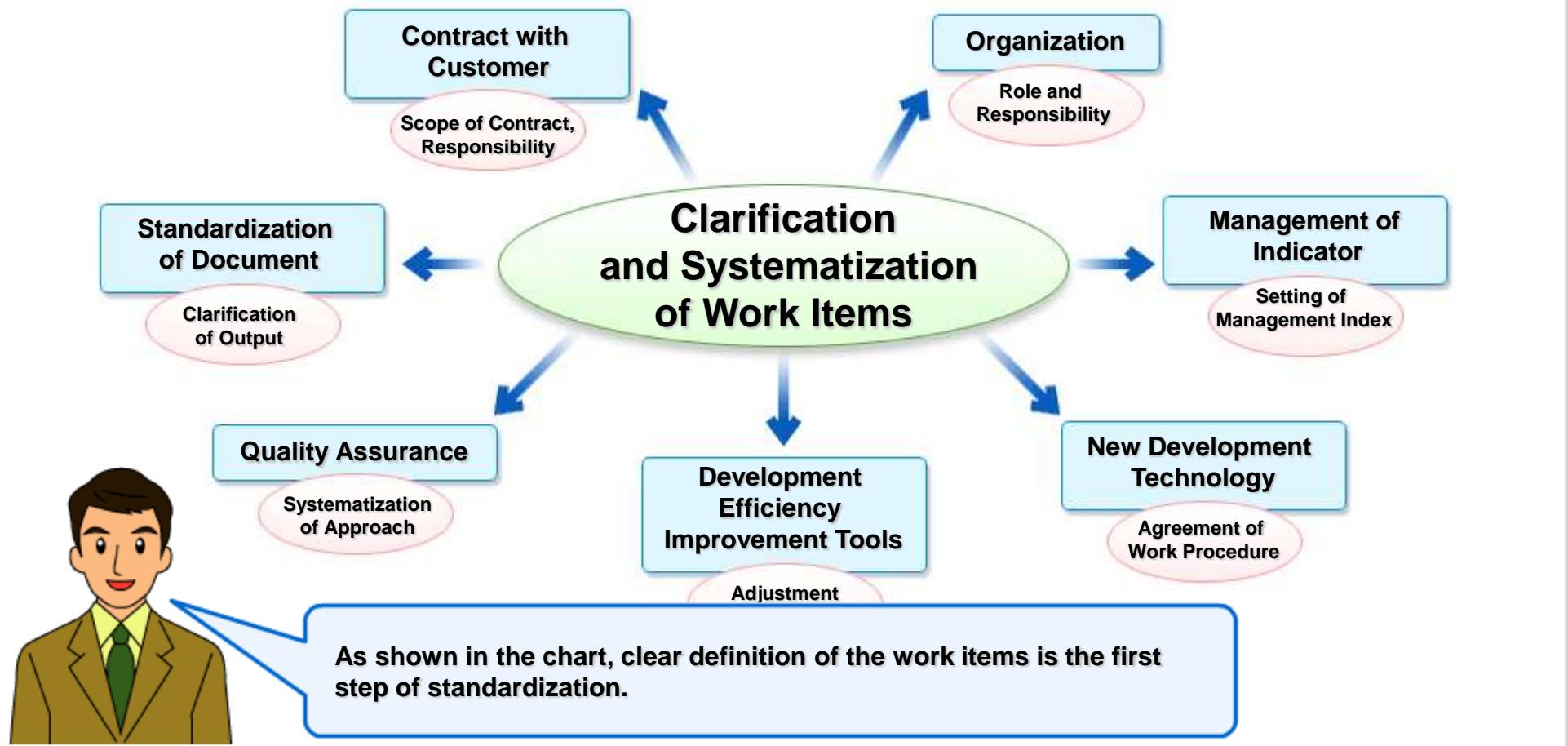
- Clarified Work Items Become the Baseline of All the Development Standards -



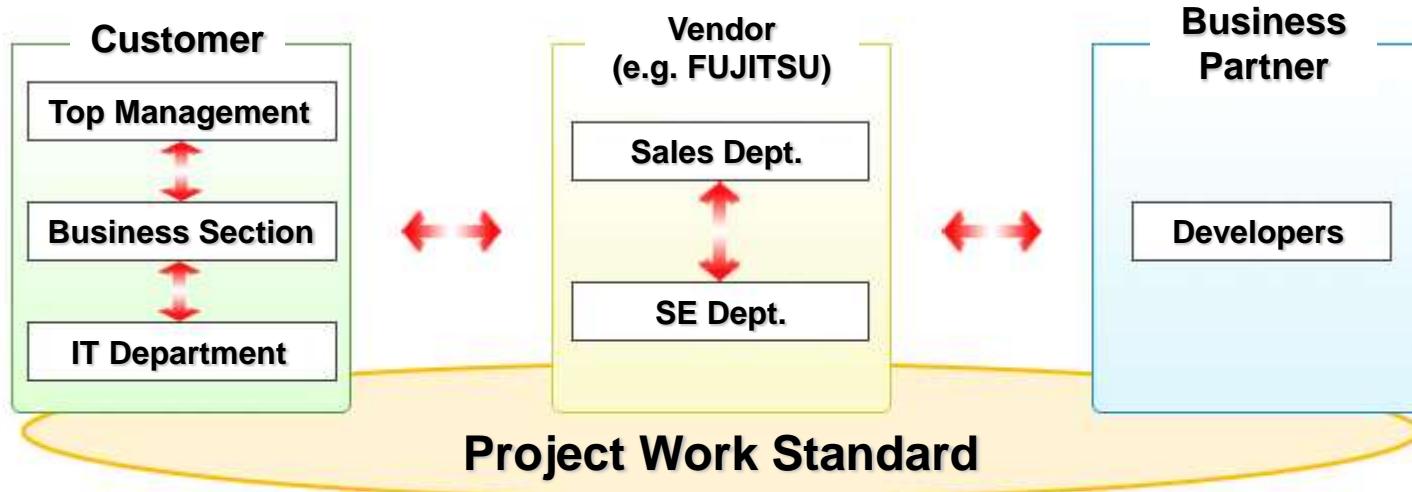
● 3. Indispensable Issues when Defining the Work Standard -Clarification and Systematization of Work Items-

■ Advantage of Clarifying Work Items

- Clarified Work Items Become the Baseline of All the Development Standards -



1. SDEM is a Work Standard of Fujitsu



Driving a Project with All Stakeholders' Consensus

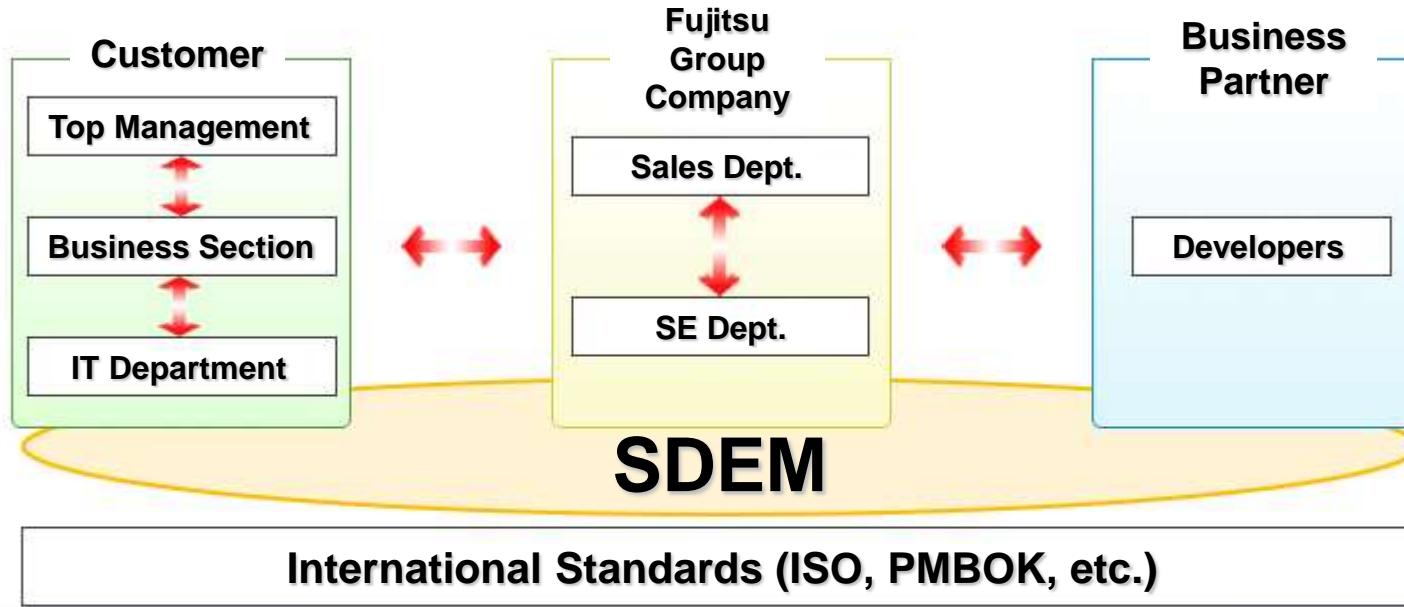
- * Prevent the oversight of work items, clarify roles and responsibilities
- * Clarify scope of estimation
- * Visualize the work and manage the progress



1. SDEM is a Work Standard of Fujitsu

- Fujitsu's Standards Compliant with International Standards (ISO) -

Common Methodology for Parties Involved in Developing a System (Planning, Development, Operation and Maintenance)



Driving a Project with All Stakeholders' Consensus

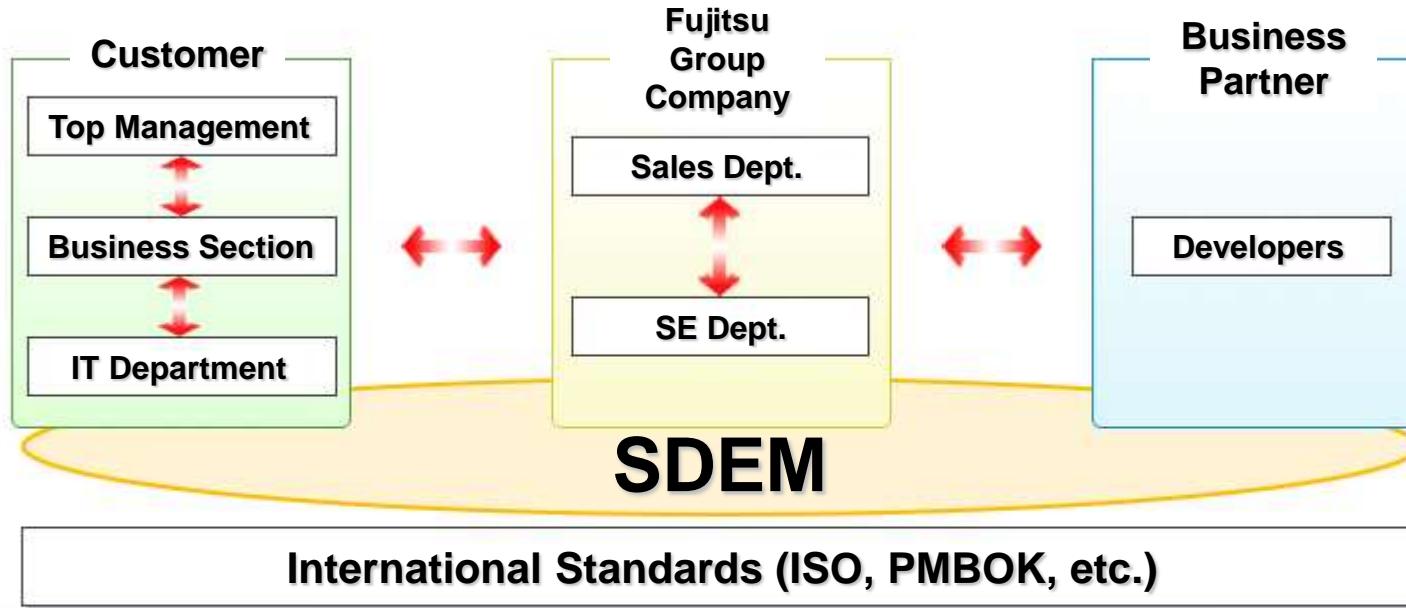
- * Prevent the oversight of work items, clarify roles and responsibilities
- * Clarify scope of estimation
- * Visualize the work and manage the progress



1. SDEM is a Work Standard of Fujitsu

- Fujitsu's Standards Compliant with International Standards (ISO) -

Common Methodology for Parties Involved in Developing a System (Planning, Development, Operation and Maintenance)



In Fujitsu group companies, SDEM is widely accepted as a work standard.

SDEM is a standard process developed by Fujitsu based on its numerous project experiences. Since best practices, trends of international standards and de facto standards are taken into consideration, SDEM can be accepted by various countries as well.



2. Three Objectives of SDEM

1. Common Basis for Information System-related Works

SDEM provides a common basis that comprehensively organizes project works and organizational works by utilizing Fujitsu's experience from numerous projects and emphasizing the compatibility with international standards and de facto standards. The project works include system planning, requirement definition, development, operational test and transition, operation and maintenance, and contract. The organizational works include process improvement and quality assurance.

- Emphasis on planning and business
- Emphasis on system requirements
- Emphasis on operation and transition
- Visualization of project status

2. Quality assurance

SDEM offers

- Quality Assurance for Project Process (V-shaped Model for Quality Assurance)
- Organizational quality assurance efforts

3. Basis for utilization of know-how and personnel training

- SDEM as a framework to leverage the know-how and develop human resources

2. Three Objectives of SDEM

1. Common Basis for Information System-related Works

SDEM provides a common basis that comprehensively organizes project works and organizational works by utilizing Fujitsu's experience from numerous projects and emphasizing the compatibility with international standards and de facto standards. The project works include system planning, requirement definition, development, operational test and transition, operation and maintenance, and contract. The organizational works include process improvement and quality assurance.

- Emphasis on planning and business
- Emphasis on system requirements
- Emphasis on operation and transition
- Visualization of project status

2. Quality assurance

SDEM offers

- Quality Assurance for Project Process (V-shaped Model for Quality Assurance)
- Organizational quality assurance efforts

3. Basic approach

- SDE

SDEM has three objectives.

First, this is a common basis for information system development and related works.

Second, this shows a basic approach to maintaining quality.

And third, this is the "basis for utilization of know-how and personnel training."



2. Three Objectives of SDEM

1. Common Basis for Information System-related Works

SDEM provides a common basis that comprehensively organizes project works and organizational works by utilizing Fujitsu's experience from numerous projects and emphasizing the compatibility with international standards and de facto standards. The project works include system planning, requirement definition, development, operational test and transition, operation and maintenance, and contract. The organizational works include process improvement and quality assurance.

- Emphasis on planning and business
- Emphasis on system requirements

SDEM has three objectives.

2. Quality

First, this is a common basis for information system development and related works.

SDEM

- Quality
 - Organization
- Second, this shows a basic thought how to keep quality.
And third, “Basis for utilization of know-how and personnel training.”

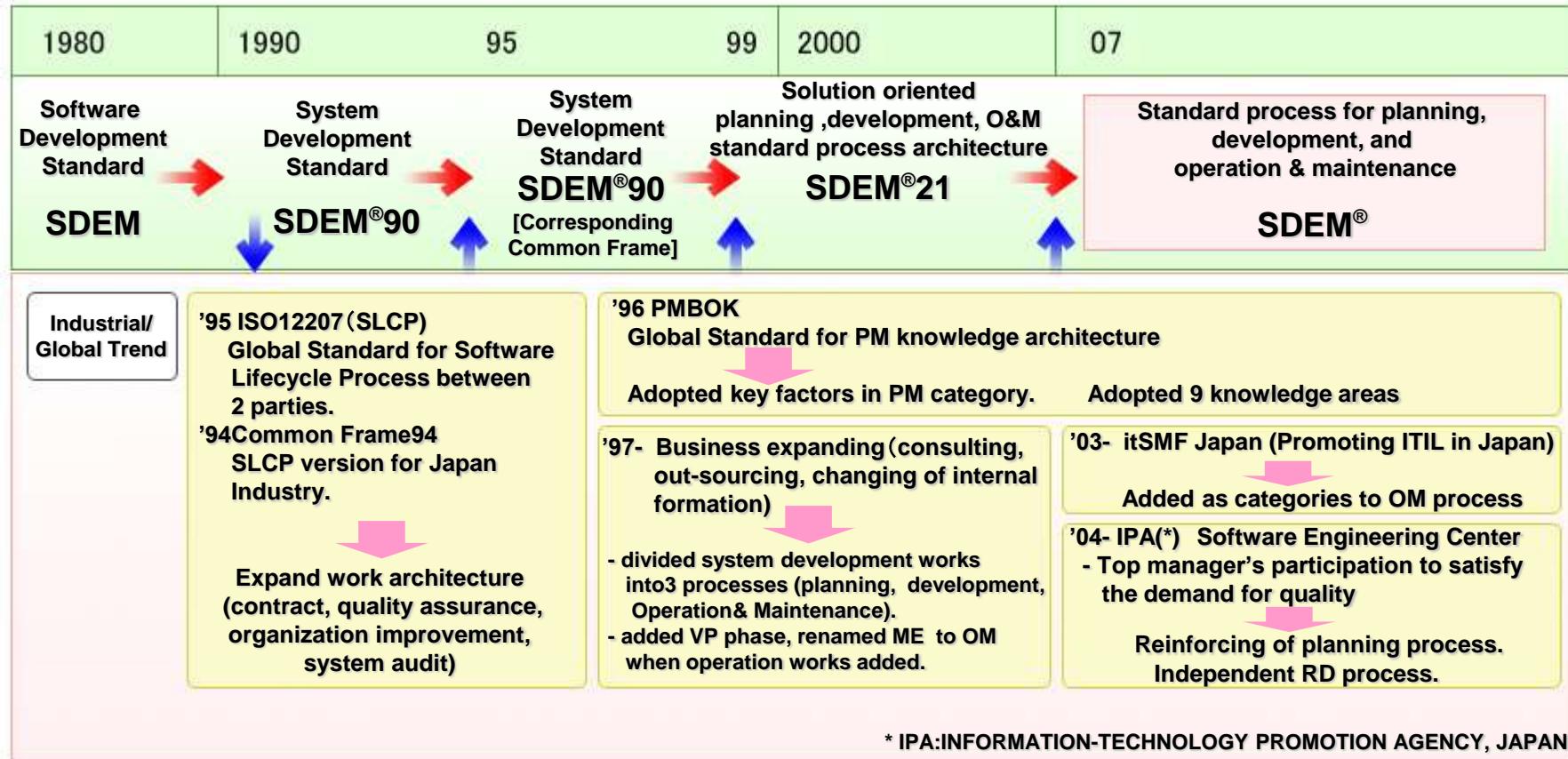
3. Basis for utilization of know-how and personnel training

- SDEM as a framework to leverage the know-how and develop human resources



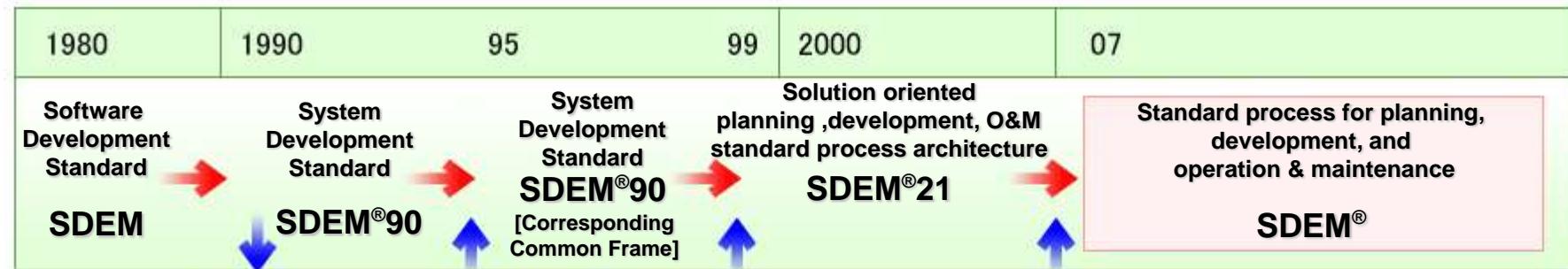
1. Evolution of SDEM

- SDEM has been enhanced according to the expansion of the software/service business and international trends.



1. Evolution of SDEM

■ SDEM has been enhanced according to the expansion of the software service business and international trend.



Exp.
(cont)
Or

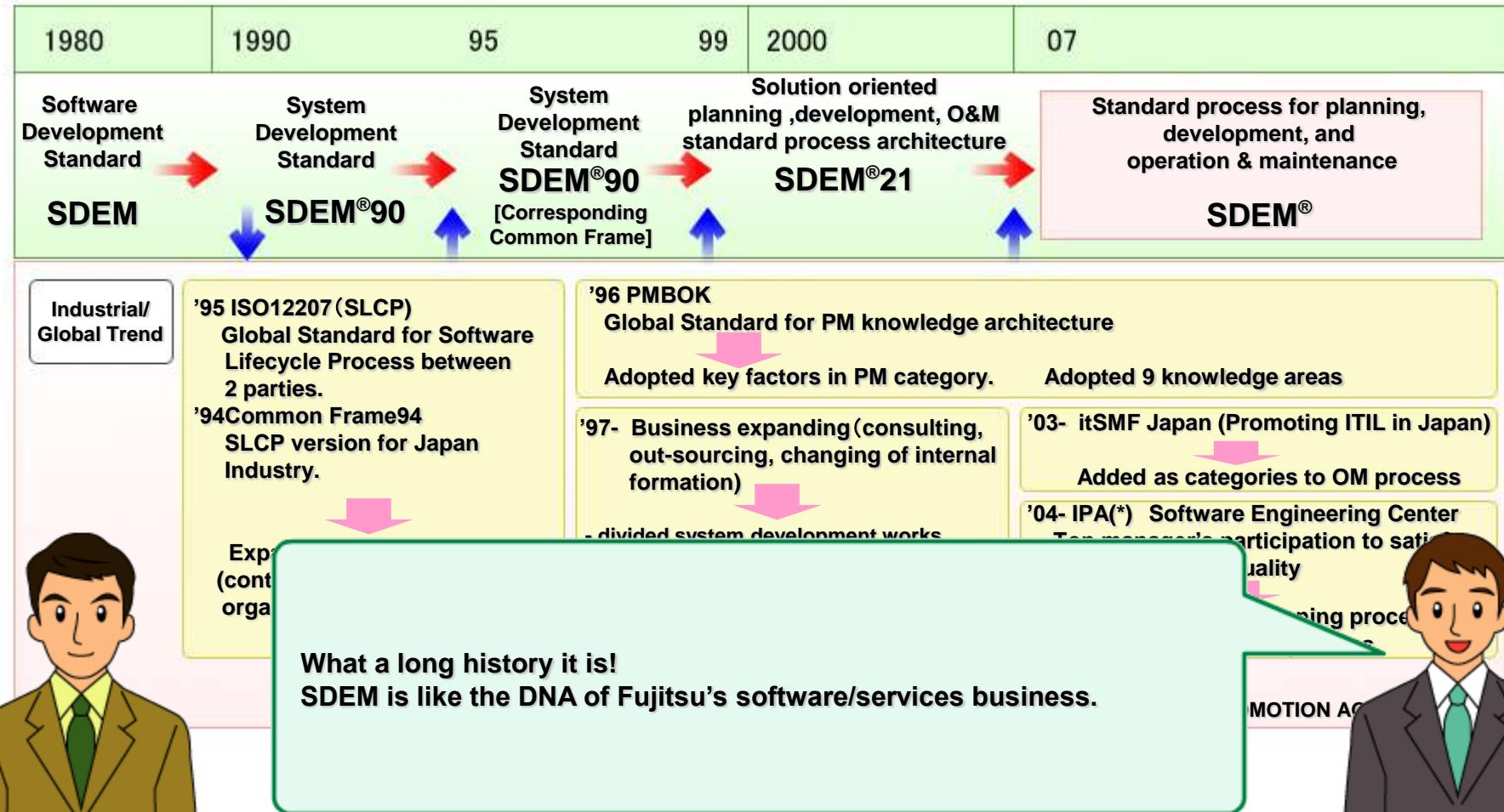
For your information, let me briefly introduce the history of SDEM.

The first version was issued in the latter half of the 1970's. Afterwards, the scope has expanded according to the expansion of the software/services business such as consulting and outsourcing. Also the international standards such as ISO12207 (SLCP) and PMBOK were taken into account.



1. Evolution of SDEM

■ SDEM has been enhanced according to the expansion of the software service business and international trend.



 2. A Highly Respected Name

- ✓ **SDEM is a Standard process for planning, development, and operation & maintenance.**
- ✓ The four characters (S, D, E & M) have various meanings relating to system development.

**Software, Systems, Solutions, Services,
Development, Engineering,
Maintenance, Management, Methodology, Map, etc,**

(“SDEM” is not a specific acronym of four defined words.)

In April 2007 we decided to retain the original name, SDEM, to carry forward the tradition and concept of SDEM to the next generation.



By the way, what does SDEM stand for?
I think the “S” might be for systems or software.



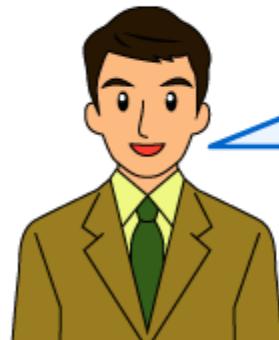
 2. A Highly Respected Name

- ✓ **SDEM is a Standard process for planning, development, and operation & maintenance.**
- ✓ The four characters (S, D, E & M) have various meanings relating to system development.

**Software, Systems, Solutions, Services,
Development, Engineering,
Maintenance, Management, Methodology, Map, etc,**

(“SDEM” is not a specific acronym of four defined words.)

In April 2007 we decided to retain the original name, SDEM, to carry forward the tradition and concept of SDEM to the next generation.

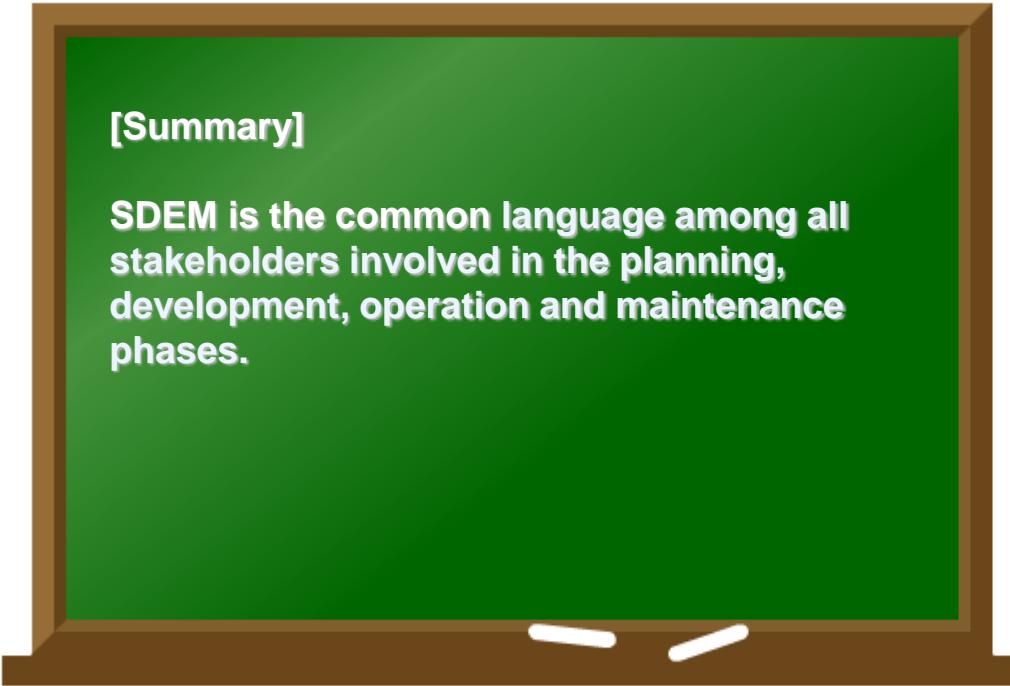


That's right before. But today's SDEM is simply “SDEM,” not the abbreviation of something.
However, still a lot of meanings keep being put in the four characters.
-Software, System, Solution, Service Development, Engineering, Maintenance, Management, Methodology, Map, etc.
Given that SDEM has a solid history, Fujitsu decided to retain the original name SDEM to carry forward the tradition and concept of SDEM to the next generation.



 **Summary****[Summary]**

SDEM is the common language among all stakeholders involved in the planning, development, operation and maintenance phases.



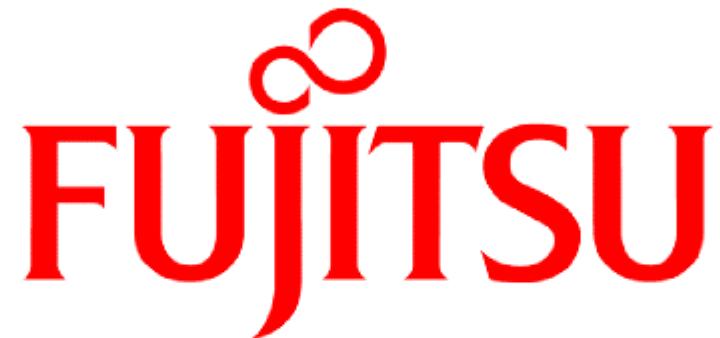
SDEM provides the common language among all stakeholders involved in the project from planning to operation/maintenance.

A lot of people are involved in today's projects because of the diversified functions and specialization.

To make the system development succeed, those people should play their roles and responsibilities with a common understanding.

SDEM comprehensively organizes the work items on the system life cycle from planning to operation/maintenance. It is possible to prevent the oversight of work, estimate and roles by identifying work items. As a result, managing project progress is also possible.





THE POSSIBILITIES ARE INFINITE

Table of Contents

Chapter 2 SDEM structure

Introduction

1. SDEM (Standard Process) Structure

1.1 SDEM Covers all System Development Processes

1.2 Structure of Project Process is a Matrix

1.3 Project Process is a Matrix of the Phases and the Categories

1.4 Category is a Major Classification of Work Items to Execute Each Process

1.5 Phase is a Milestone for Management

1.6 V-shaped Model for Quality Assurance

1.7 [Reference] Importance of Clarifying Information System Component Elements

1.8 WBS Consists of Three Layers

Table of Contents (cont.)

2. SDEM Processes

2.1 Each Process of SDEM

2.2 Planning Process

2.3 Requirement Definition, Development, Operational Test & Transition Process

2.4 Operation & Maintenance Process

2.5 Contract Process

2.6 Organizational Management Process

2.7 System Audit Process

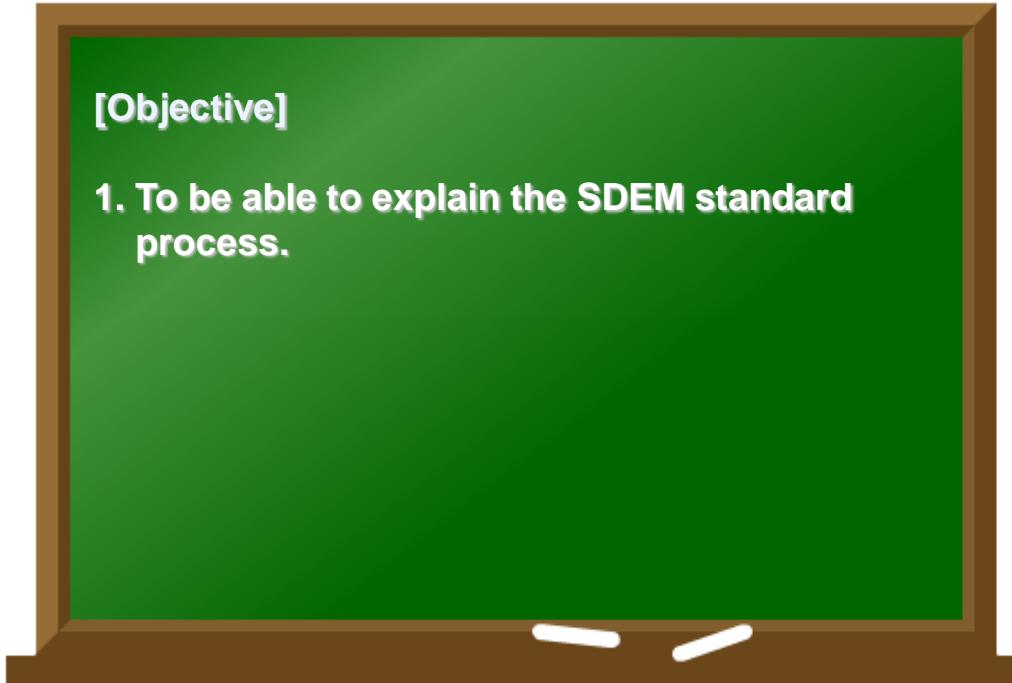
2.8 Relationships between Processes

2.9 Project Management

3. Summary

 Introduction**[Objective]**

1. To be able to explain the SDEM standard process.



In this chapter, we are going to study the structure of SDEM, phases, categories, standard process and its template.

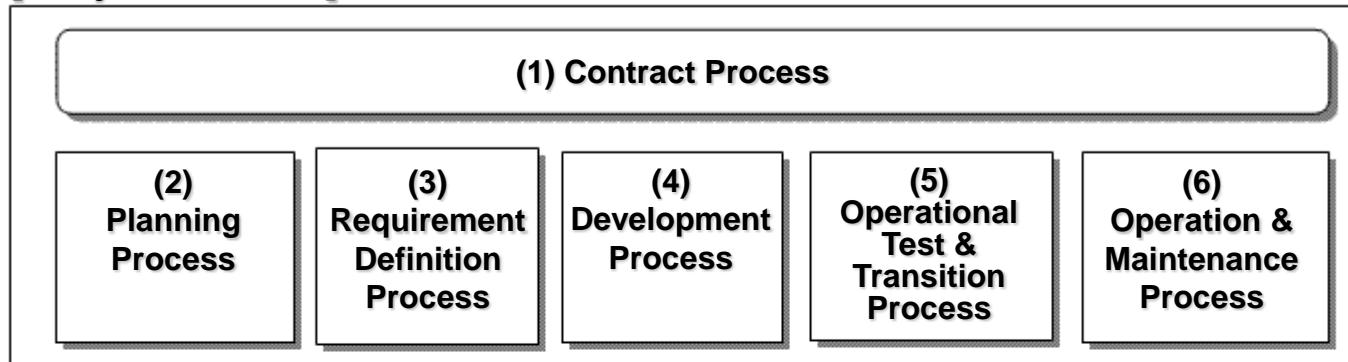
What do you think should be defined as a standard process of system development?



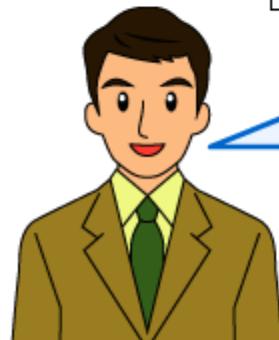
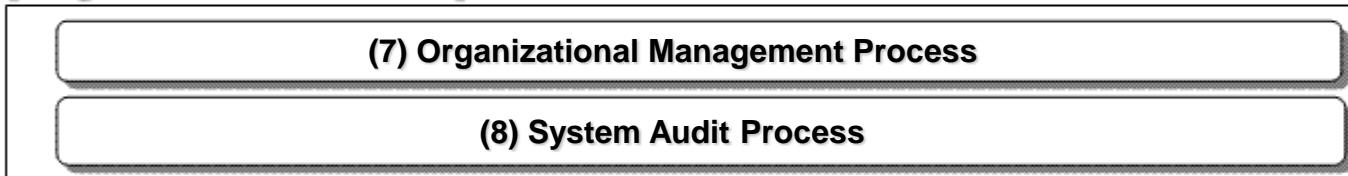
 1. SDEM Covers all System Development Processes

All processes related to system development are considered

[Project Process]



[Organizational Process]



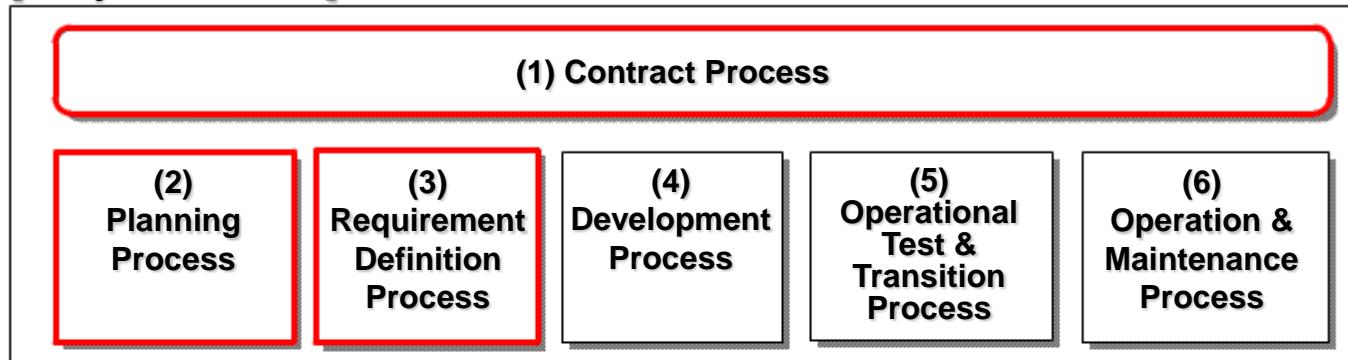
Let's look at the structure of SDEM.
This diagram shows all processes for information systems development.
In SDEM, a standard process consists of two processes. One is a project process and the other one is an organizational process. The project process consists of the following six processes shown in the diagram.



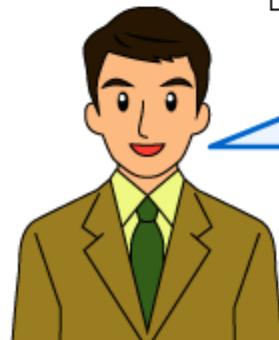
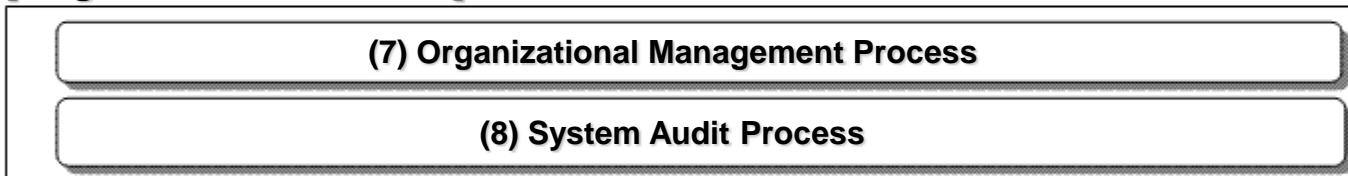
 1. SDEM Covers all System Development Processes

All processes related to system development are considered

[Project Process]



[Organizational Process]



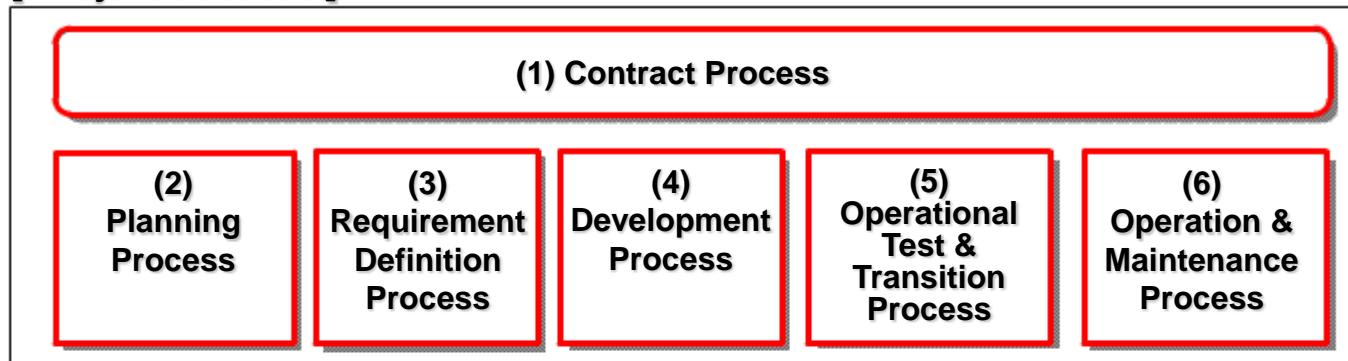
- (1) Contract process defines contract-related works between purchaser and supplier.
- (2) Planning process defines works to develop an IT strategy closely related with business management strategy.
- (3) Requirement definition process defines works to confirm customer's requirements as input for system development.



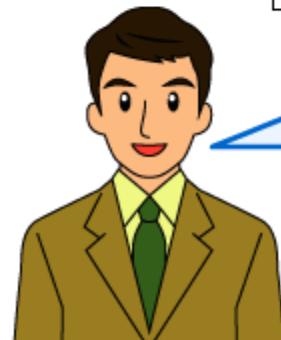
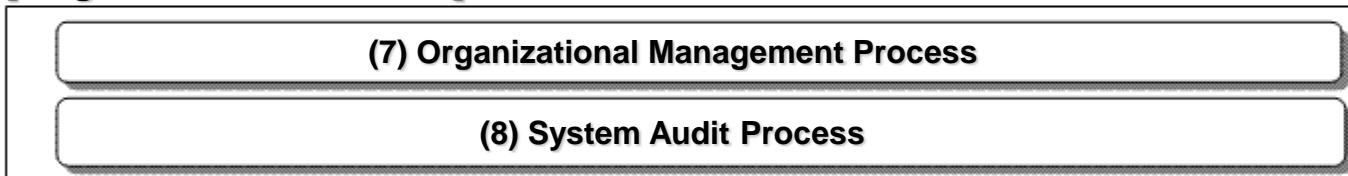
 1. SDEM Covers all System Development Processes

Every processes relate to system development are considered

[Project Process]



[Organizational Process]



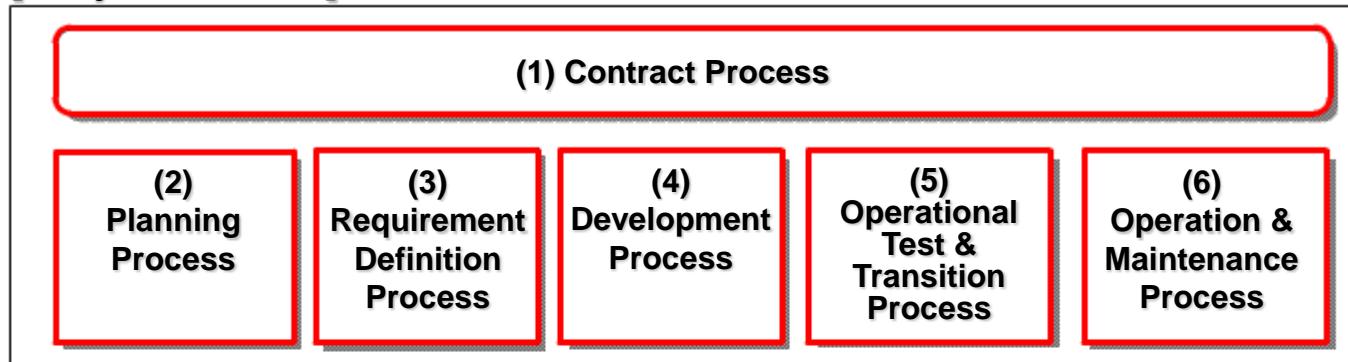
- (4) Development process is to embody the system requirements effectively and surely.
- (5) Operational test & transition process is to perform business operational tests with the developed system (performed by customer), make a decision to move forward to the product operation, and perform a transition to a new business with new system environment.
- (6) Operation & maintenance process is to evaluate and improve the system, as well as to maintain and manage the system so that users can surely and effectively perform their business.



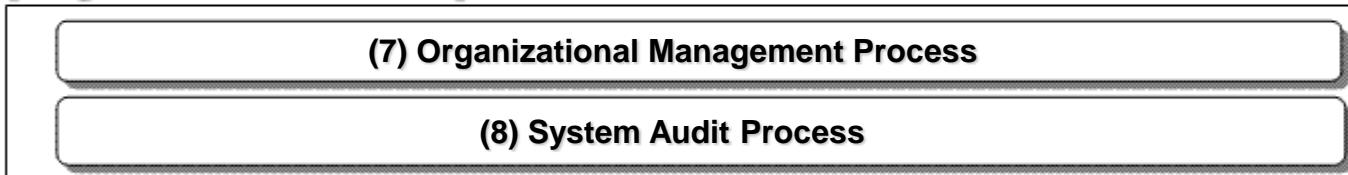
 1. SDEM Covers all System Development Processes

Every processes relate to system development are considered

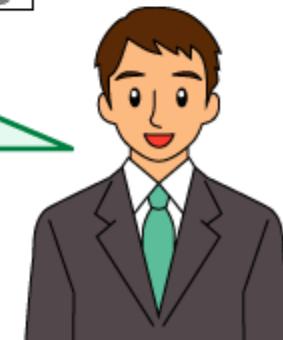
[Project Process]



[Organizational Process]



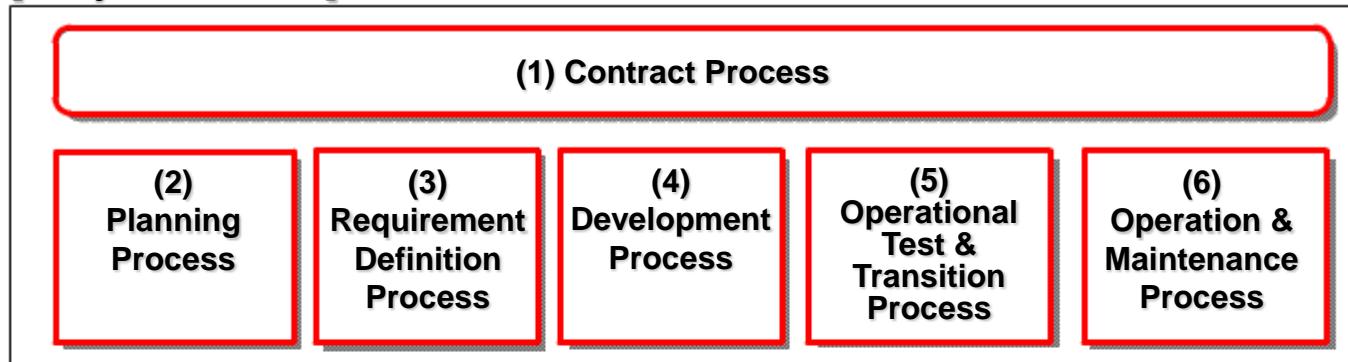
The term “process” has various meanings.
What do you mean by “process”?



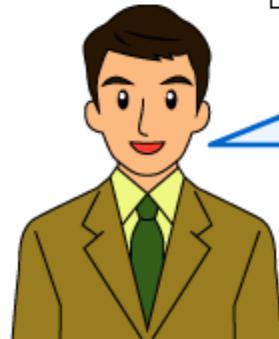
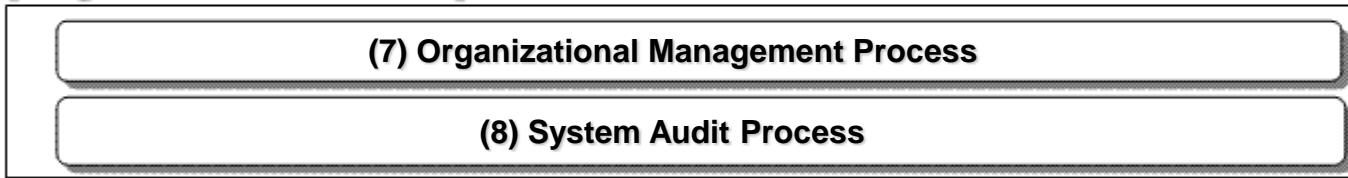
 1. SDEM Covers all System Development Processes

Every processes relate to system development are considered

[Project Process]



[Organizational Process]



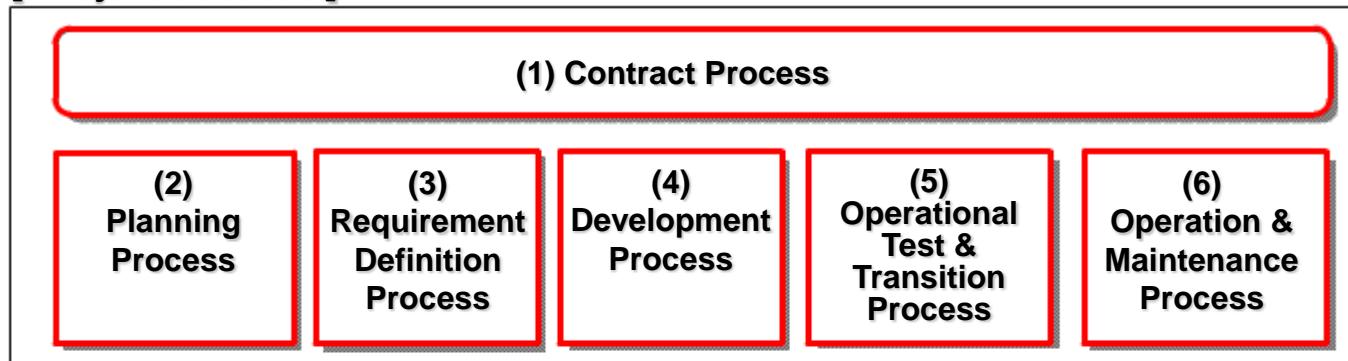
This time, I am using the term process to mean a “set of work.”
It is the same meaning used in ISO/IEC 12207.



 1. SDEM Covers all System Development Processes

Every processes relate to system development are considered

[Project Process]



[Organizational Process]



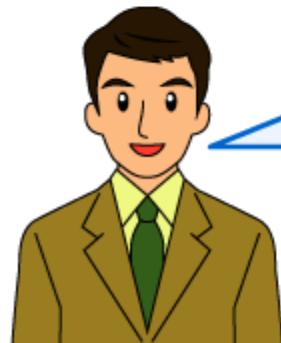
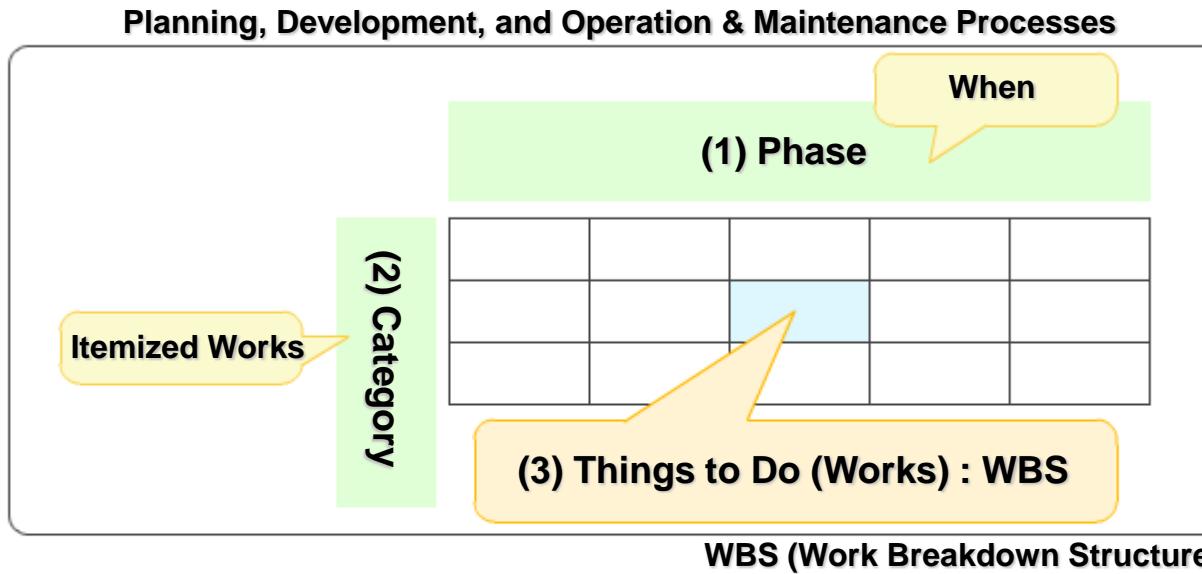
Next, look at the organizational process. It consists of two processes.

- (7) Organizational management process defines the work of support providing to projects to achieve the organizational goal.
(8) System audit process is to evaluate whether information system risk control is properly executed. This process is for independent system auditors.



 2. Structure of Project Process is a Matrix

The work items are classified in the matrix that consists of phase and category



Let me talk about the structure of project process.

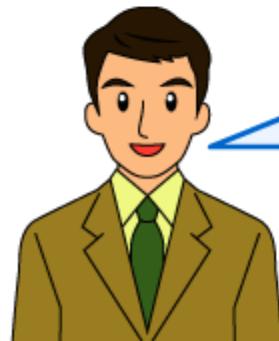
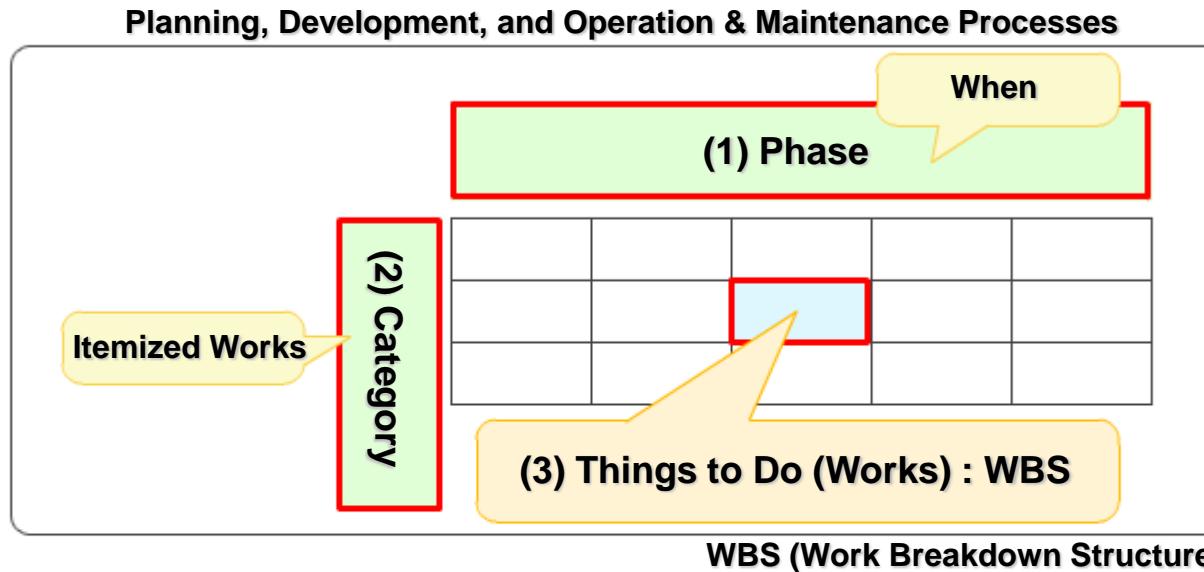
The project process consists of the Planning, Requirement definition, Development, Operational test & transition, and Operation & maintenance.

The work items are classified in the matrix that consists of phase and category.



● 2. Structure of Project Process is a Matrix

The work items are classified in the matrix that consists of phase and category



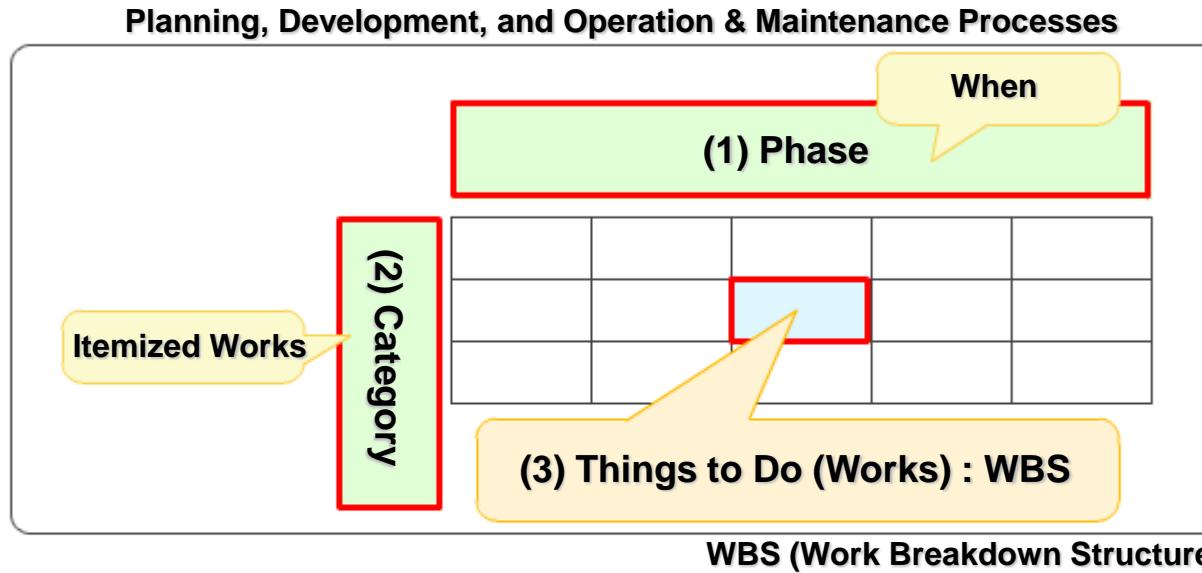
For example, the development process, phases such as Design, Implementation and Test are placed in rows; the categories such as Business, Application, Infrastructure, and Operation/transition are placed in columns.

Work items are placed at the intersections of columns and rows.

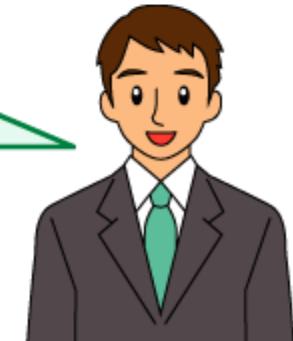


 2. Structure of Project Process is a Matrix

The work items are classified in the matrix that consists of phase and category

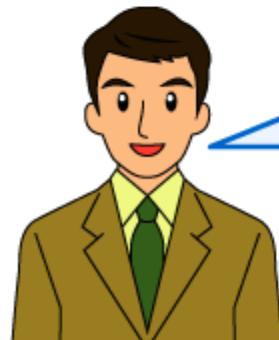
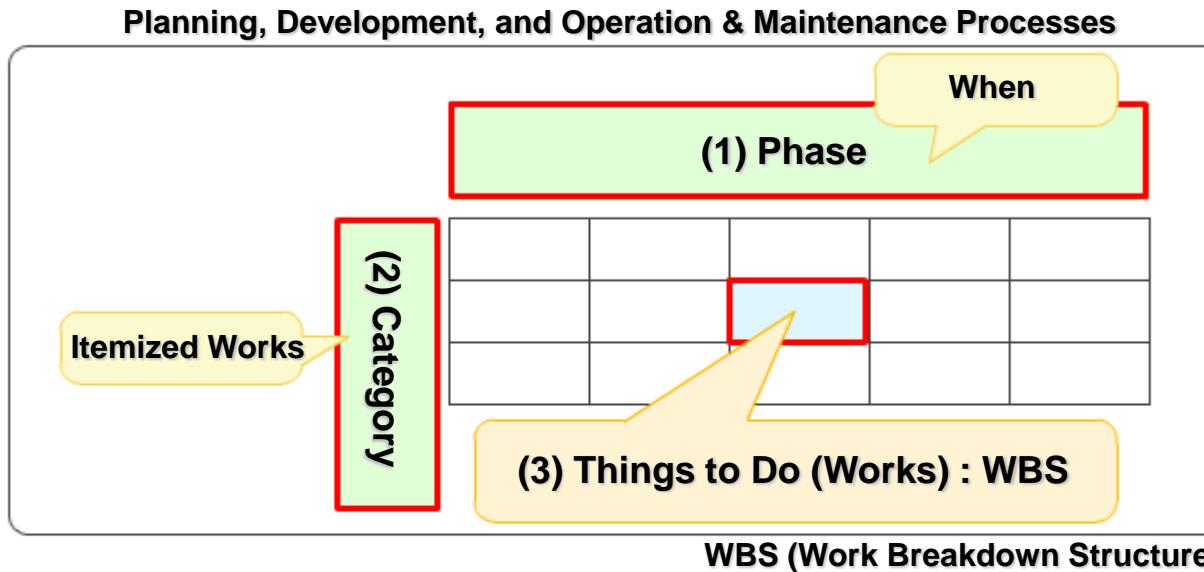


Why is it a matrix?



 2. Structure of Project Process is a Matrix

The work items are classified in the matrix that consists of phase and category



It is because the matrix helps stakeholders to grasp the overall picture.
Also, it will prevent oversight of work items.
The work placed on the intersection is part of a hierarchy.
This hierarchical structure is called “WBS” (Work Breakdown Structure).

I will explain in detail later on.



● 3. Project Process is a Matrix of the Phases and the Categories

Conceptual Category

Real World



Interface



System
(Computers)

Management



At first,
I am going to explain the structure of columns in the matrix.



3. Project Process is a Matrix of the Phases and the Categories

Conceptual Category

Real World



Interface



System
(Computers)

Management



In the columns, elements of the real world are modeled from a system development viewpoint.
Customer's daily business activities are defined as "Real world."
The "IT System" is a part to substitute the activities.



● 3. Project Process is a Matrix of the Phases and the Categories

Conceptual Category

Real World

Interface

System
(Computers)

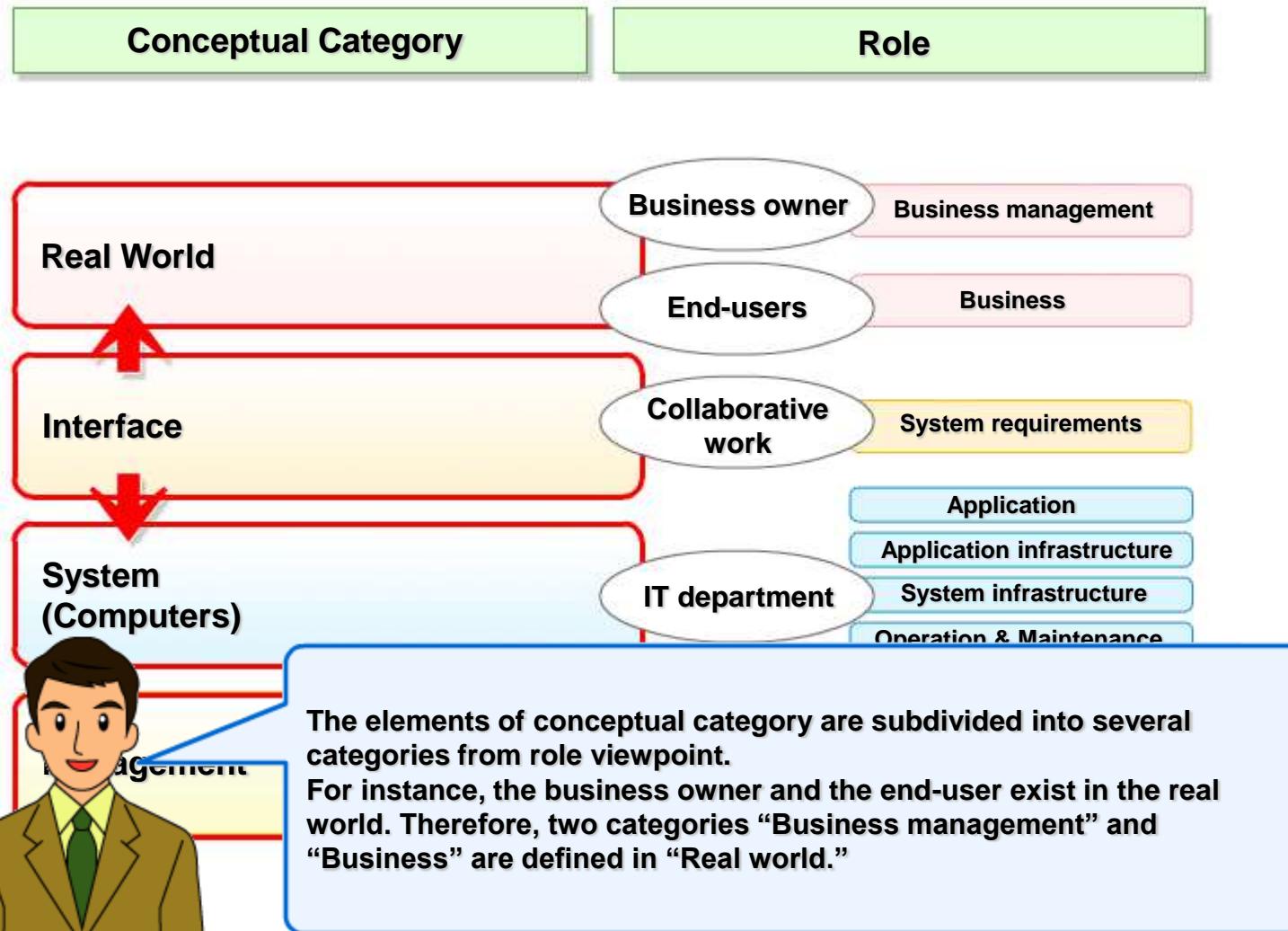
Management

These two are placed in the column first, and put the “interface” between them.

In addition, “Management” is indispensable to the project.
These are “Conceptual categories.”

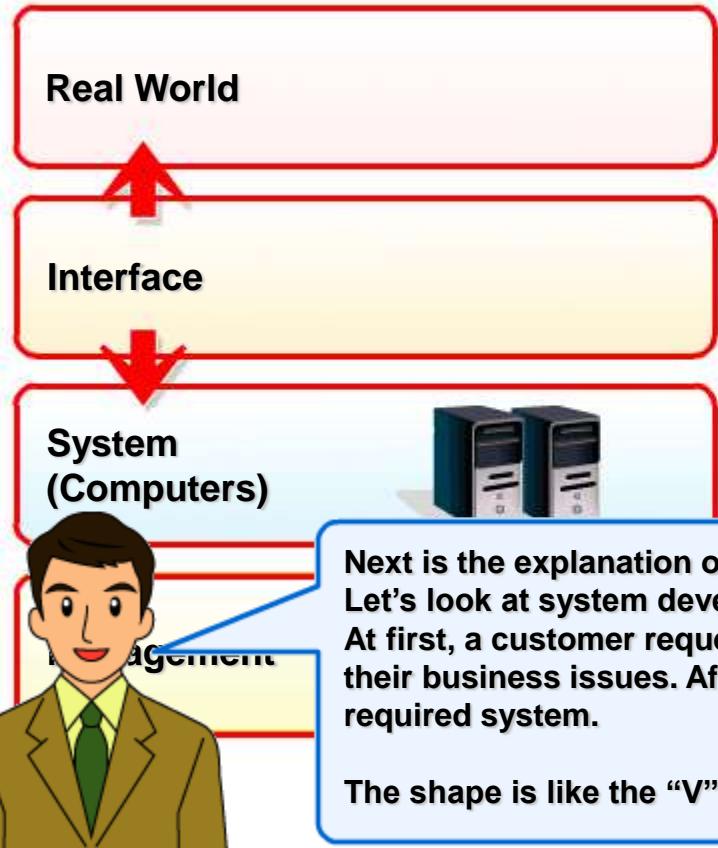


3. Project Process is a Matrix of the Phases and the Categories



● 3. Project Process is a Matrix of the Phases and the Categories

Conceptual Category

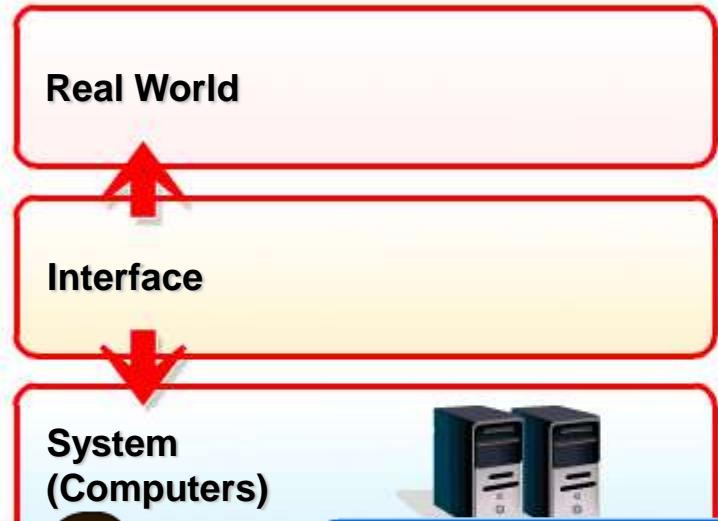


Next is the explanation of the rows.
Let's look at system development according to the passage of time.
At first, a customer requests a vendor to develop a system to solve
their business issues. After that, the vendor develops and delivers the
required system.

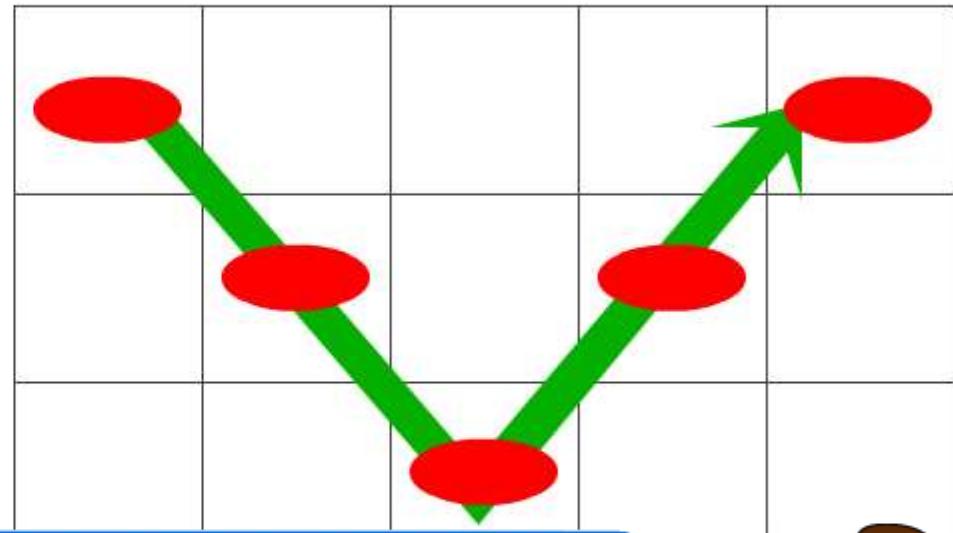
The shape is like the “V” character on this matrix.

3. Project Process is a Matrix of the Phases and the Categories

Conceptual Category

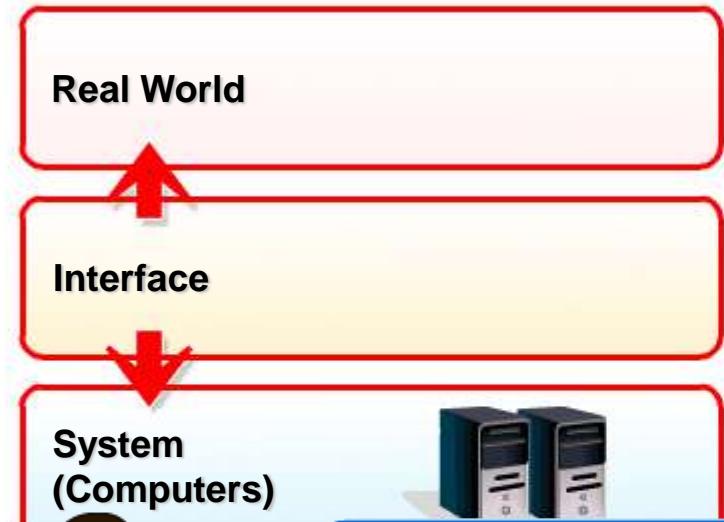


Red marks show the intersection of the V character and the category. They are called “Phases,” defined to manage a series of continuous development work.
There are several ways of defining “phases”, but in the case of SDEM, “phase” is defined based on the V-character and the category.
Each phase is closely related with the transition of role.



3. Project Process is a Matrix of the Phases and the Categories

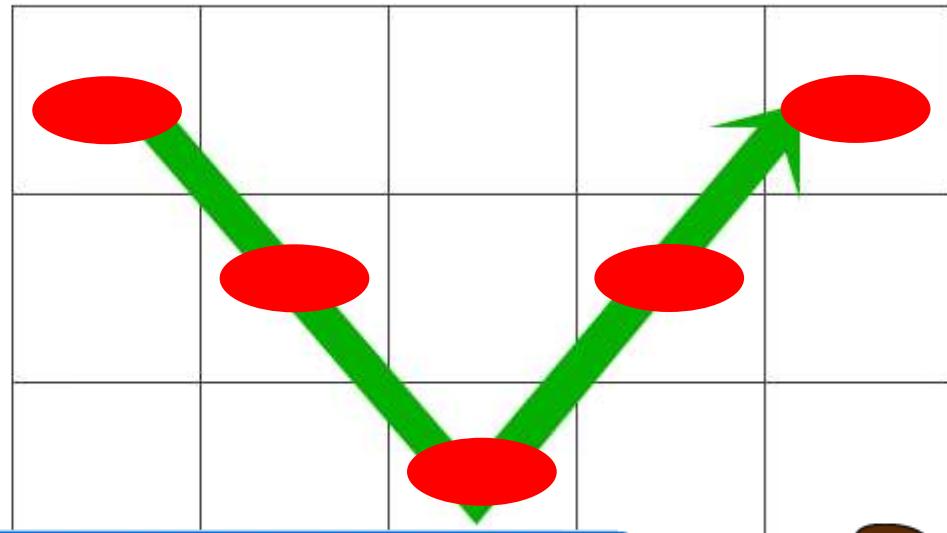
Conceptual Category



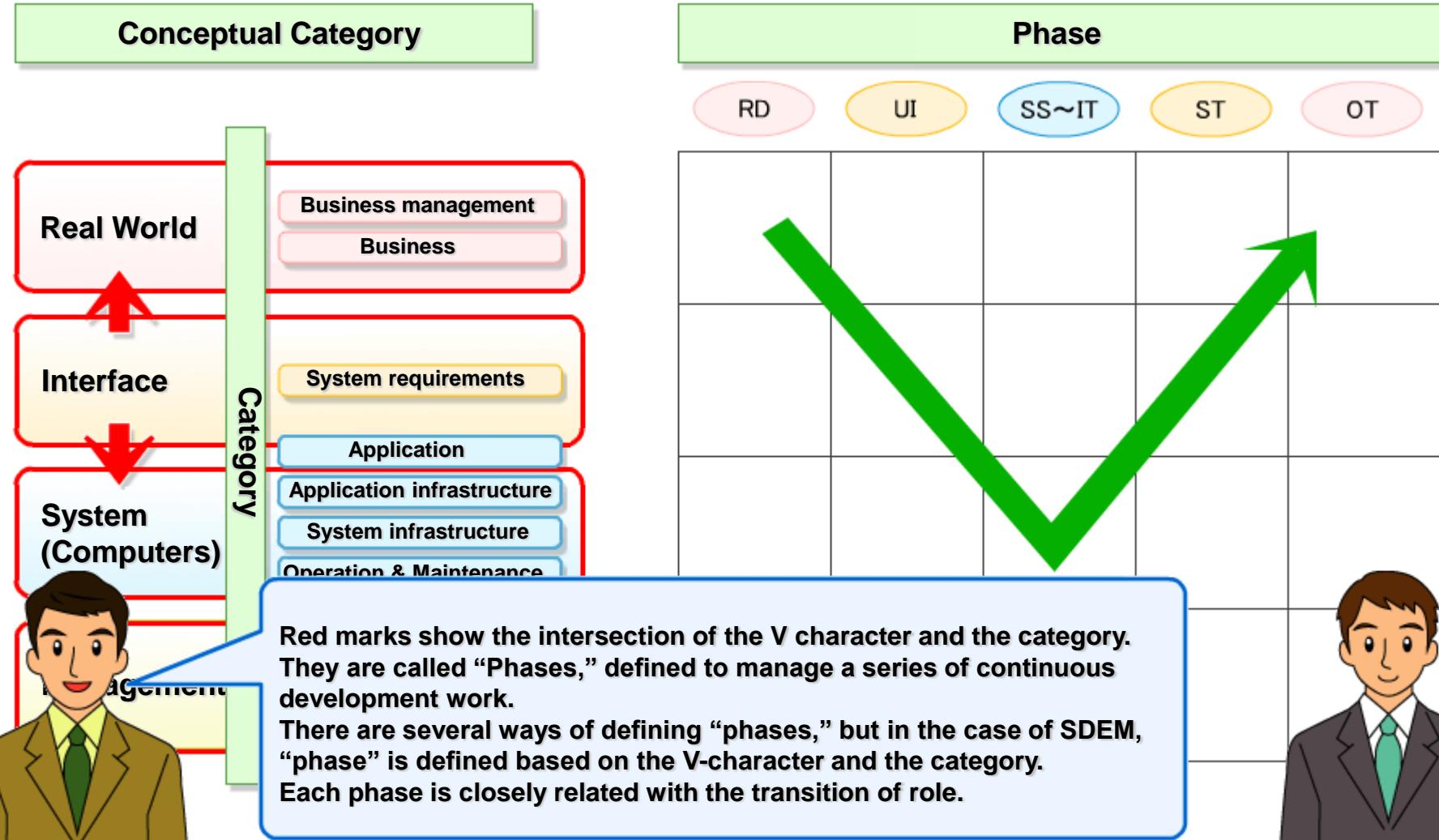
Management

Red marks show the intersection of the V character and the category. They are called “Phases,” defined to manage a series of continuous development work.

There are several ways of defining “phases,” but in the case of SDEM, “phase” is defined based on the V-character and the category. Each phase is closely related with the transition of role.

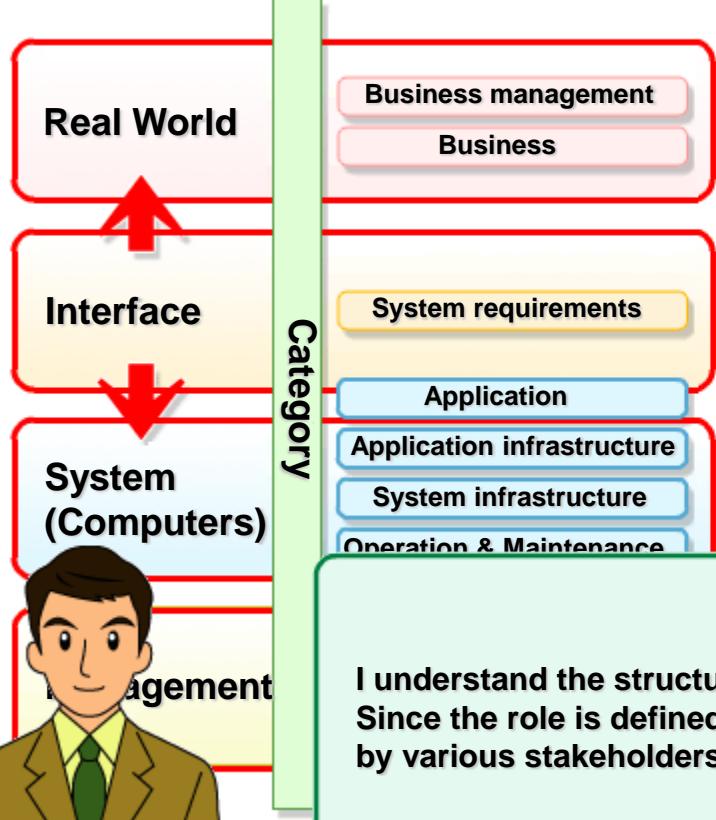


3. Project Process is a Matrix of the Phases and the Categories

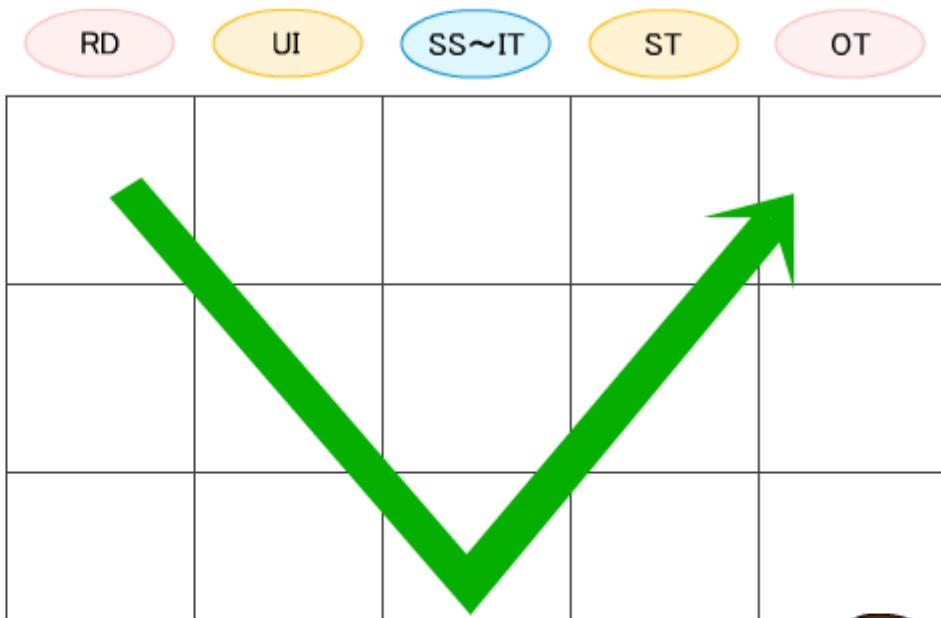


3. Project Process is a Matrix of the Phases and the Categories

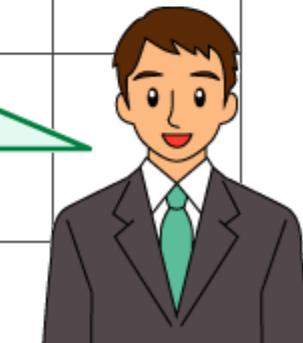
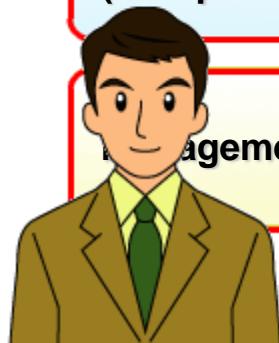
Conceptual Category



Phase



I understand the structure of SDEM well. It is simple.
Since the role is defined by columns in SDEM, it is understandable
by various stakeholders.



● 4. Category is a Major Classification of Work Items to Execute Each Process

Category is a major classification of work items to execute each process.
It classifies the relevance of work items, knowledge and technologies.

		Planning process		Operation & Maintenance process	
Conceptual Category	Real World	A. Business management B. Business	A. Business management B. Business	A. Business management B. Business	
	Interface	C. System usage	C. System requirements	C. Service delivery D. Service support	
	System	D. System	D. Application E. Application infrastructure F. System infrastructure G. Operation & Maintenance H. Transition & Deployment	E. System operation F. System maintenance	
	Management	E. Project management	I. Development support J. Project management	G. Project management	

Appropriate categories are defined in each process

● 4. Category is a Major Classification of Work Items to Execute Each Process

Category is a major classification of work items to execute each process.
It classifies the relevance of work items, knowledge and technologies.

		Planning process		Operation & Maintenance process	
Conceptual Categ	Real World	A. Business management B. Business	A. Business management B. Business	A. Business management B. Business	
	Inter face	C. System usage	C. System requirements	C. Service delivery D. Service support	
	System	D. System	D. Application E. Application infrastructure F. System infrastructure G. Operation	E. System operation F. System support	

Let's summarize the conceptual category.

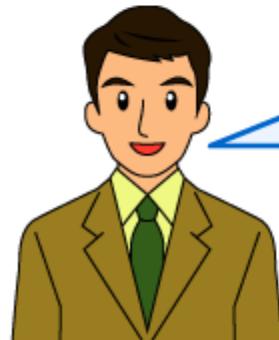
Real world is a collection of work items executed by customer's top management and staff through daily business operations.

System is a collection of work items related to the information system itself, such as application package, infrastructure, business operation, and system operation.

Interface is positioned between the "Real world" and "System." It is a collection of work items related to the behavior of "System" from "Real world" viewpoint, or the services provided by "System" for "Real world."

Management is a collection of work items related to the support and management work required to perform processes.

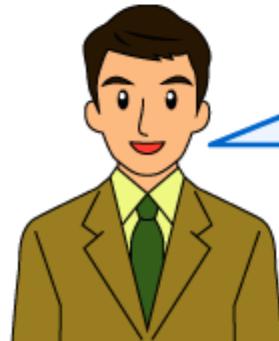
Conceptual categories consist of these four elements that surround information system environments.



● 4. Category is a Major Classification of Work Items to Execute Each Process

Category is a major classification of work items to execute each process.
It classifies the relevance of work items, knowledge and technologies.

		Planning process		Operation & Maintenance process	
Conceptual Category	Real World	A. Business management B. Business	A. Business management B. Business	A. Business management B. Business	
	Interface	C. System usage	C. System requirements	C. Service delivery D. Service support	
	System	D. System	D. Application E. Application infrastructure F. System infrastructure G. Operation & Maintenance H. Transition & Deployment	E. System operation F. System maintenance	



Next, let's summarize the category. Category is a classification of relevance of work items and the relationship of knowledge and technologies that are required to execute each process. The category of SDEM helps to clarify the role and the responsibility. According to the key features of category in each process, the categories are differently defined.



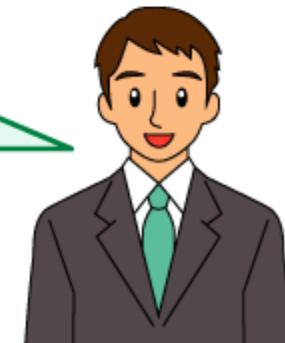
● 4. Category is a Major Classification of Work Items to Execute Each Process

Category is a major classification of work items to execute each process.
It classifies the relevance of work items, knowledge and technologies.

		Planning process		Operation & Maintenance process	
Conceptual Category	Real World	A. Business management B. Business	A. Business management B. Business	A. Business management B. Business	
	Interface	C. System usage	C. System requirements	C. Service delivery D. Service support	
	System	D. System	D. Application E. Application infrastructure F. System infrastructure G. Operation & Maintenance H. Transition & Deployment	E. System operation F. System maintenance	



The categories, conceptual categories...
I thought that they were complex. But I could re-organize my knowledge.
The conceptual category is classified from the stakeholders' viewpoint, and it is common in all the processes from planning to operation/maintenance.



 5. Phase is a Milestone for Management Table of Phase

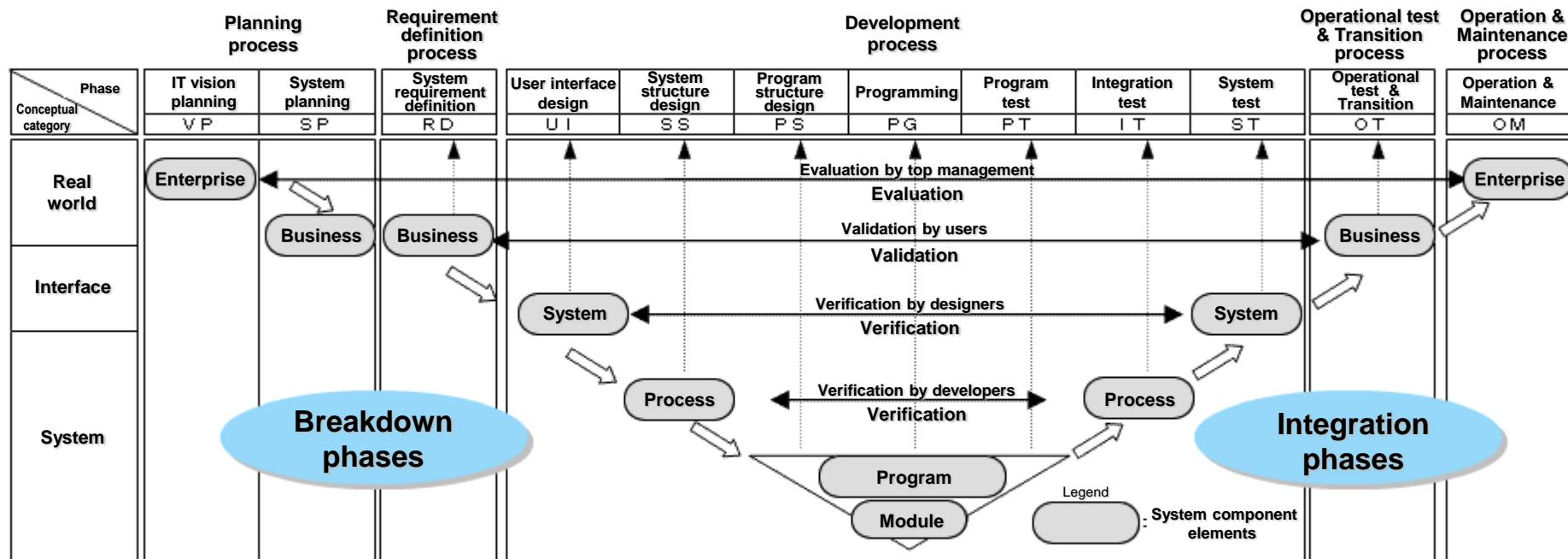
Process	Abbr.	Phase name
Planning process	VP	IT Vision Planning
	SP	System Planning
Requirement definition process	RD	System Requirement Definition
Development process	UI	User Interface Design
	SS	System Structure Design
	PS	Program Structure Design
	PG	Programming
	PT	Program Test
	IT	Integration Test
	ST	System Test
	OT	Operational Test and Transition
Operation & Maintenance process	OM	Operation and Maintenance



The phases are delimited according to the transition of the role.
The phases can be used as the milestones of management.
In other words, the phases are the milestones for verifying a series of tasks in software development.

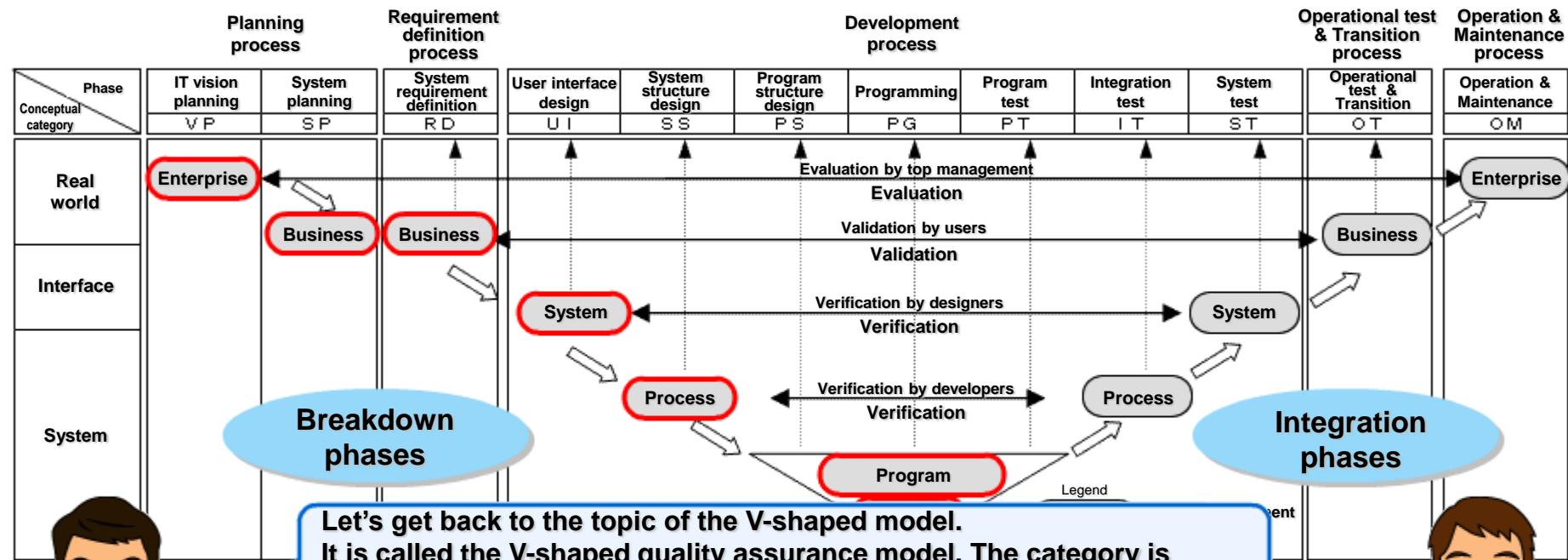
6. V-shaped Model for Quality Assurance

Phases Breakdown the Development Targets into System Components by Design, and Integrate them back by Tests - the “V-Shaped model.”

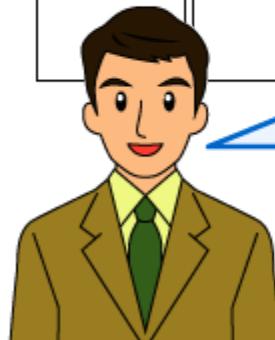


6. V-shaped Model for Quality Assurance

Phases Breakdown the Development Targets into System Components by Design, and Integrate them back by Tests - the “V-Shaped model.”

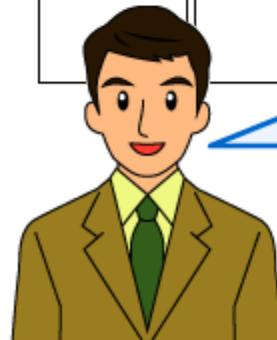
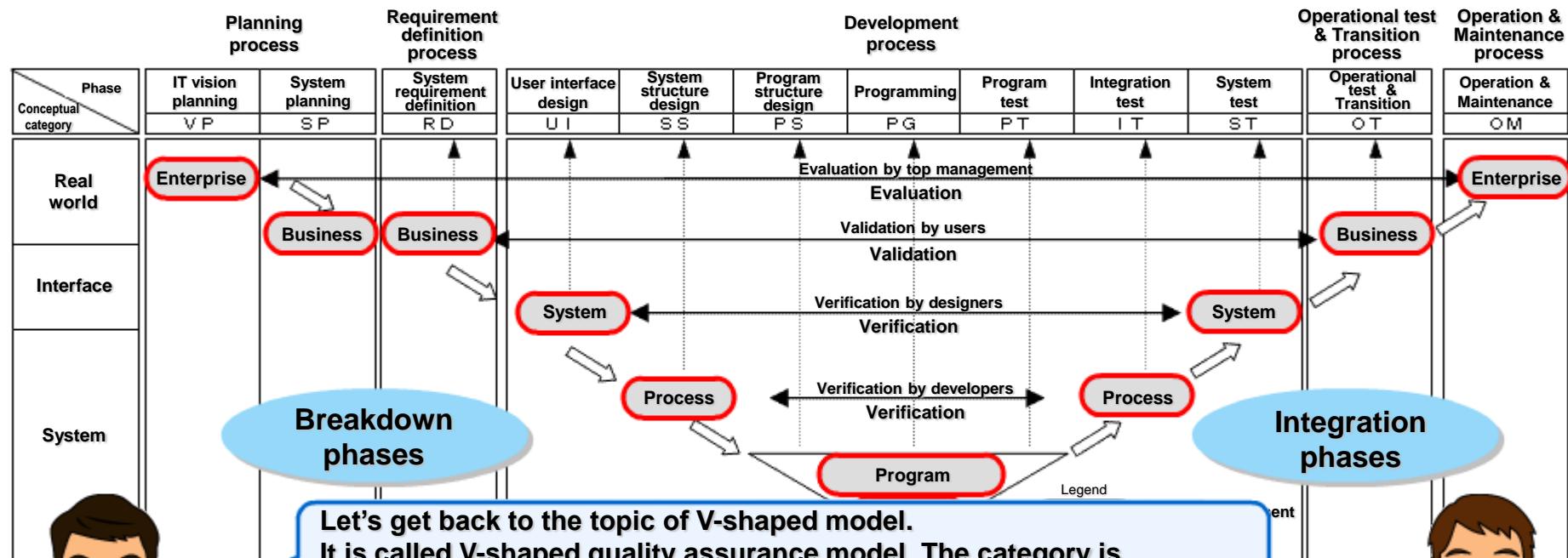


Let's get back to the topic of the V-shaped model. It is called the V-shaped quality assurance model. The category is classified in the role; the phase is classified by delimiting time. The descent phases from the upper left side to the lower center are breaking the object down into component elements.



6. V-shaped Model for Quality Assurance

Phases Breakdown the Development Targets into System Components by Design, and Integrate them back by Tests - the “V-Shaped model.”

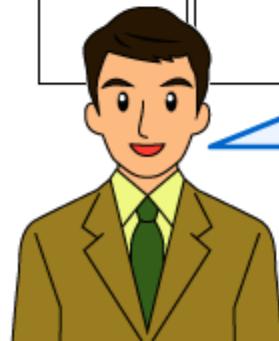
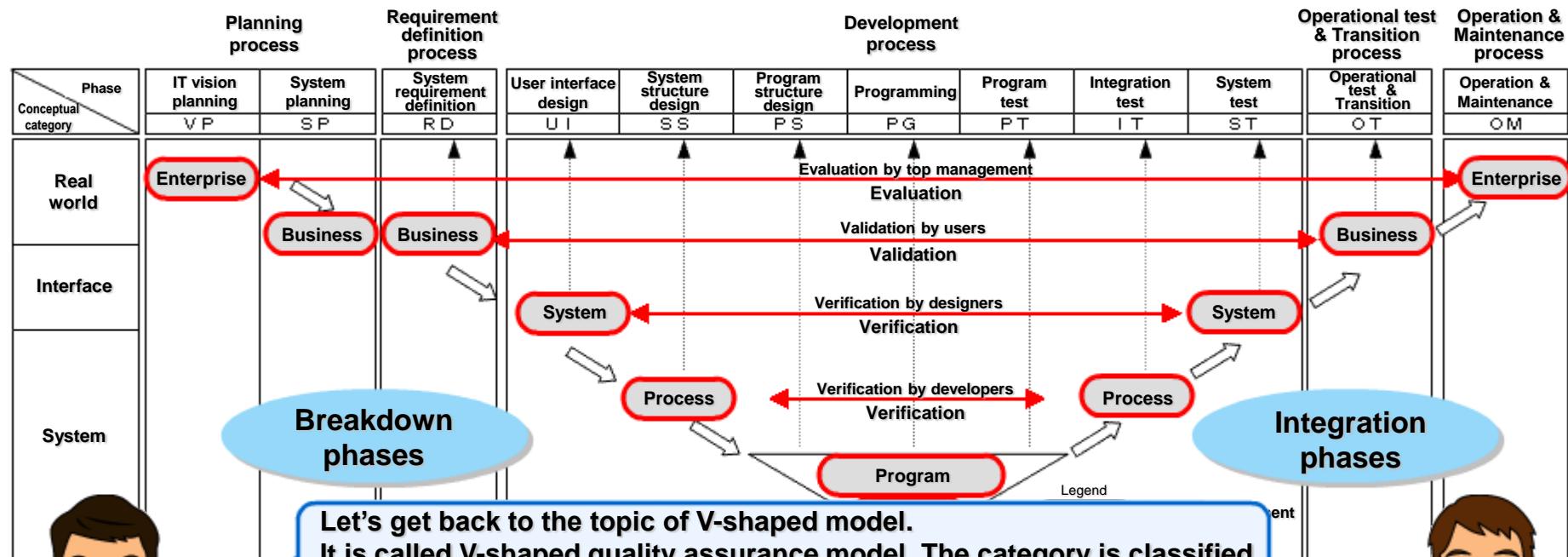


Let's get back to the topic of V-shaped model. It is called V-shaped quality assurance model. The category is classified in the role; the phase is classified by delimiting time. The descent phases from the upper left side to the lower center are breaking the object down into component elements. The ascent phases from the lower center to upper right are integrating the elements.



6. V-shaped Model for Quality Assurance

Phases Breakdown the Development Targets into System Components by Design, and Integrate them back by Tests - the “V-Shaped model.”

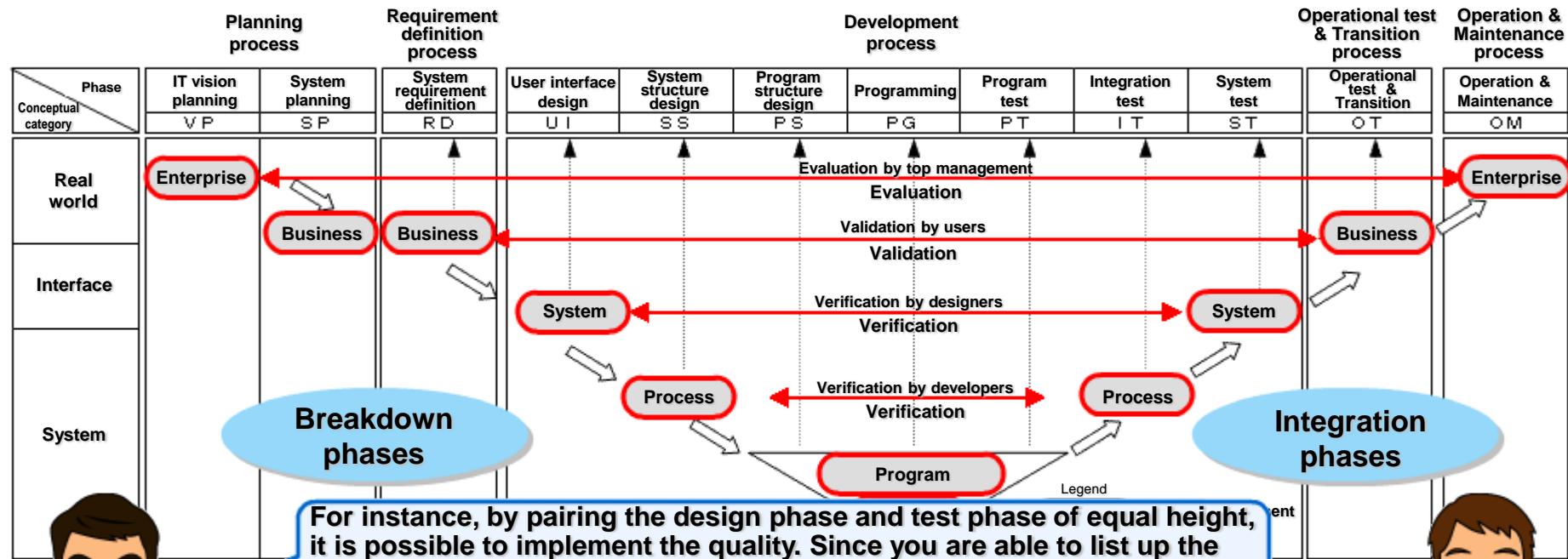


Let's get back to the topic of V-shaped model. It is called V-shaped quality assurance model. The category is classified in the role; the phase is classified by delimiting time. The descent phases from the upper left side to the lower center are breaking the object down into component elements. The ascent phases from the lower center to upper right are integrating the elements. V-shaped quality assurance is a method to evaluate the quality by comparing the same height of descent phases and ascent phases.



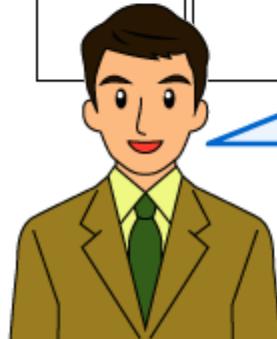
6. V-shaped Model for Quality Assurance

Phases Breakdown the Development Targets into System Components by Design, and Integrate them back by Tests - the “V-Shaped model.”



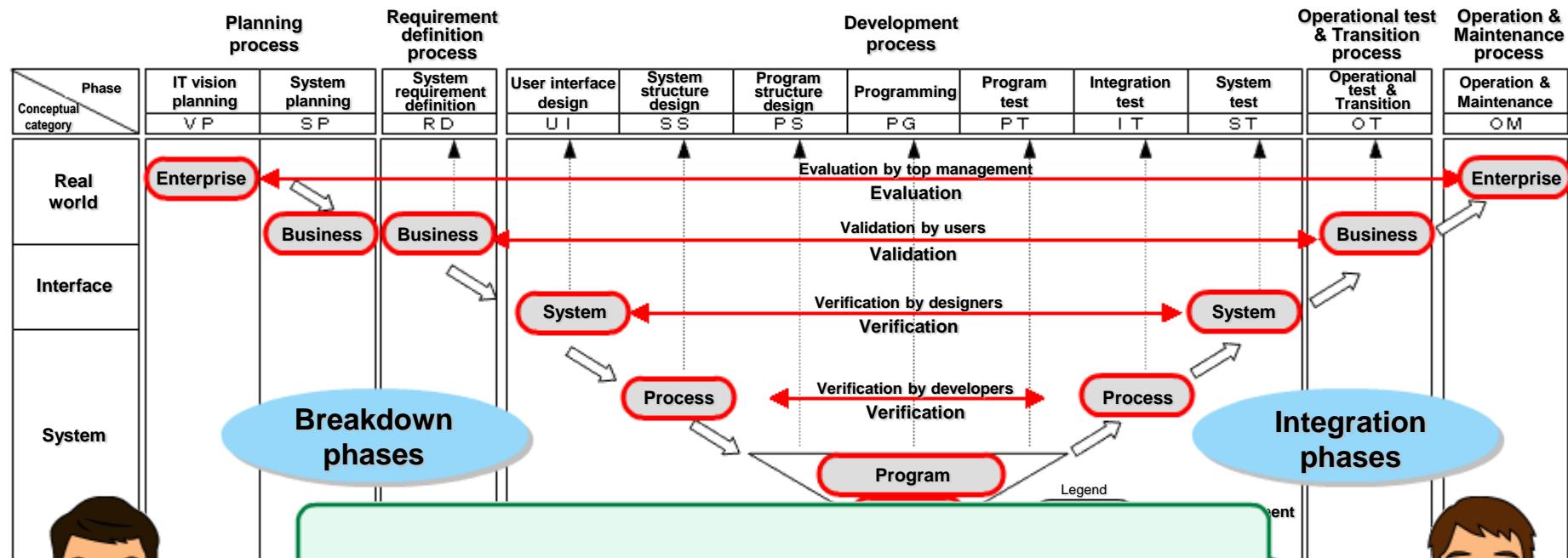
For instance, by pairing the design phase and test phase of equal height, it is possible to implement the quality. Since you are able to list up the test items to be verified and to confirm the relevance exhaustively from the output of design phase.

Needless to say, the review at the design stage, the feasibility study such as prototype evaluation, and the quality control at each test stage are indispensable. The unit of system component elements should be clarified when the project begins, since it will be the unit of design, test and configuration management.

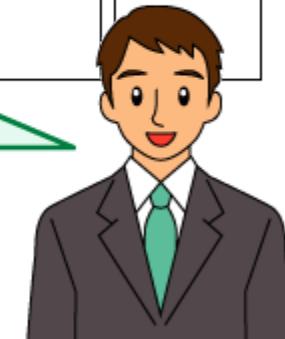


6. V-shaped Model for Quality Assurance

Phases Breakdown the Development Targets into System Components by Design, and Integrate them back by Tests - the “V-Shaped model.”



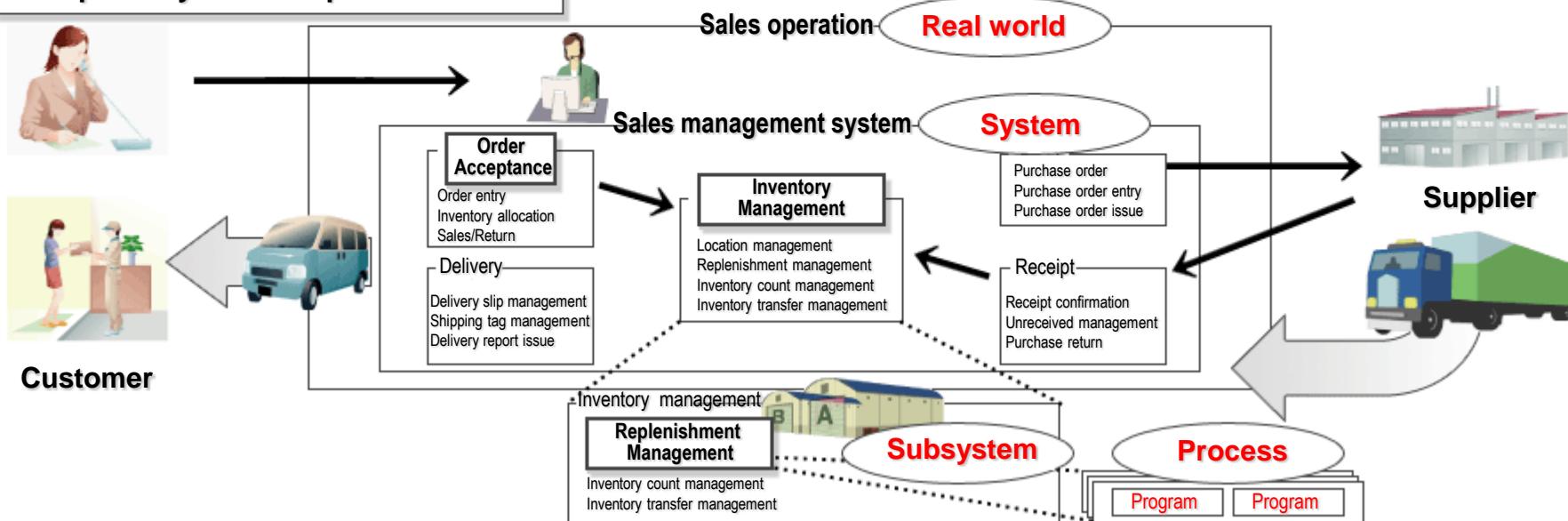
I have heard of the V-shaped model. But I did not know that it is for quality assurance and that quality is implemented by comparing the same height of descent phases and ascent phases.



● 7. [Reference] Importance of Clarifying Information System Component Elements

Element	Description
Enterprise	Overall activities for business management.
Business	A collection of operations in business management activities (including computer and manual operations).
System	A part to be systematized in business. It may be divided into several subsystems depending on the scale.
Process	A unit that is meaningful to users. This is a logical unit and a concept that is located above physical transactions and jobs.
Program	A workable unit that is logically separated from a process.
Module	An element that is logically separated from a program.

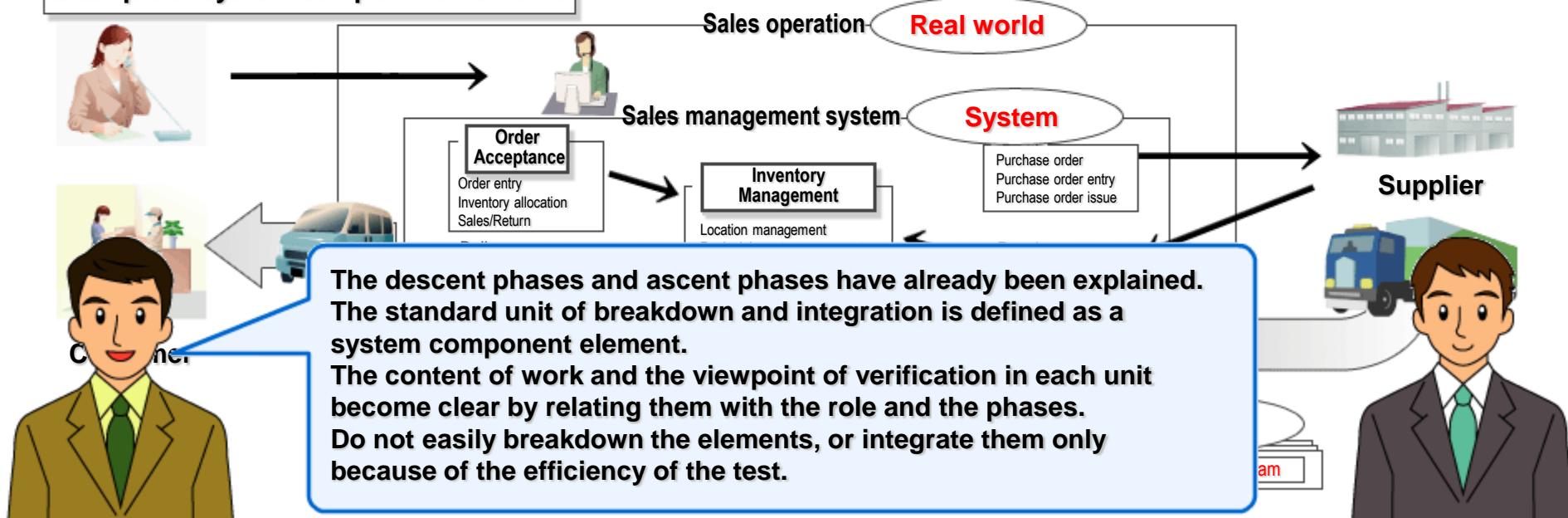
Example of system component elements



● 7. [Reference] Importance of Clarifying Information System Component Elements

Element	Description
Enterprise	Overall activities for business management.
Business	A collection of operations in business management activities (including computer and manual operations).
System	A part to be systematized in business. It may be divided into several subsystems depending on the scale.
Process	A unit that is meaningful to users. This is a logical unit and a concept that is located above physical transactions and jobs.
Program	A configuration requirement that is logically separated from a process, such as a logical unit executed an operating system.
Module	An element that is logically separated from a program.

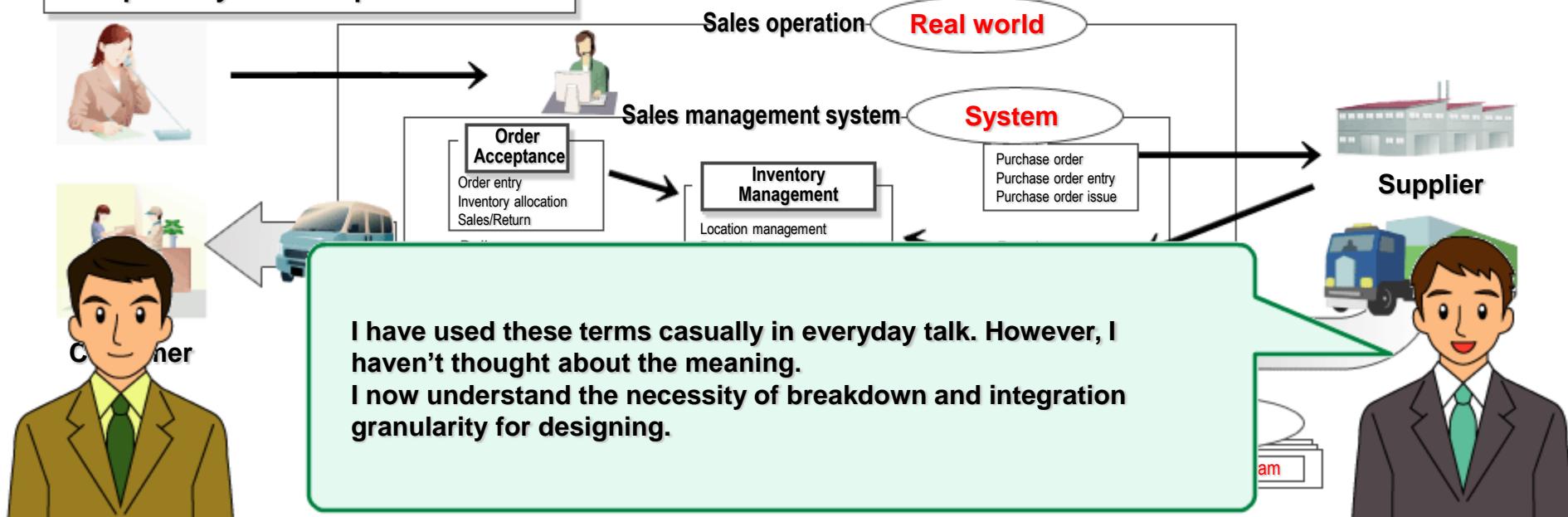
Example of system component elements



● 7. [Reference] Importance of Clarifying Information System Component Elements

Element	Description
Enterprise	Overall activities for business management.
Business	A collection of operations in business management activities (including computer and manual operations).
System	A part to be systematized in business. It may be divided into several subsystems depending on the scale.
Process	A unit that is meaningful to users. This is a logical unit and a concept that is located above physical transactions and jobs.
Program	A configuration requirement that is logically separated from a process, such as a logical unit executed an operating system.
Module	An element that is logically separated from a program.

Example of system component elements



● 8. WBS Consists of Three Layers

**WBS
first level
445 Items**

Category	Phase RD		
	C1		
		Functional requirement definition (system functions)	

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

**WBS
second level
1082 Items**

Category	Phase RD		
	C1		
	Definition of systematized business flow		
	System function definition		

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

**WBS
third level**

WBS third level	Output documents	
Clarification of work/process and input/output		
Development of systematized business flow	Systematized business flow	

- More specific than those of the second level.
- Output documents correspond to the items in this level.

Key points in work

● 8. WBS Consists of Three Layers

WBS
first level
445 Items

		Phase RD	
Category	C1		
		Functional requirement definition (system functions)	

WBS
second level
1082 Items

		Phase RD
Category	C1	
		Definition of systematized business flow
		System function definition

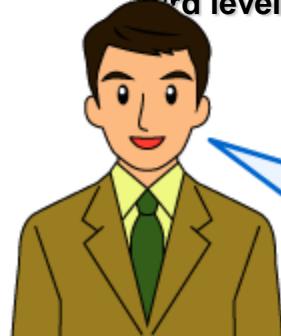
WBS
third level

WBS third level	Output documents	
Clarification of work/process and input/output		
Development of systematized business flow	Systematized business flow	

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

- More specific than those of the second level.
- Output documents correspond to the items in this level.



The work items are hierarchized and defined in the matrix that consists of phase and category.

This is called WBS (Work Breakdown Structure.)



● 8. WBS Consists of Three Layers

WBS
first level
445 Items

		Phase RD		
Category	C1			
		Functional requirement definition (system functions)		

WBS
second level
1082 Items

		Phase RD		
Category	C1			
		Definition of systematized business flow		
		System function definition		

WBS
third level

WBS third level		Output documents	
	Clarification of work/process and input/output		
	Development of systematized business flow	Systematized business flow	

It consists of three levels. The description of the lower level is more concrete.
Please refer to an appropriate level according to the purpose.

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

- More specific than those of the second level.
- Output documents correspond to the items in this level.



● 8. WBS Consists of Three Layers

WBS
first level
445 Items

		Phase RD		
Category C1				
		Functional requirement definition (system functions)		

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

WBS
second level
1082 Items

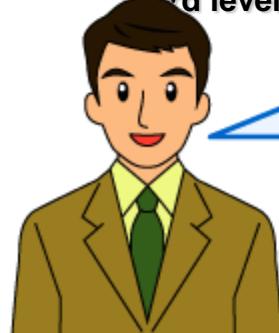
		Phase RD		
Category C1				
		Definition of systematized business flow		
			System function definition	

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

WBS
third level

WBS third level		Output documents	
Clarification of work/process and input/output			

- More specific than those of the second level.
- Output documents correspond to those in this level.



The first level is suitable for grasping the outline of a project. Work items in this level are effective to manage a project comprehensively. Work items in the WBS first level are divided into the second level. These are used for progress management, resource allocation (period, manpower, techniques/tools, and equipment) as well as role assignment to the project members.



● 8. WBS Consists of Three Layers

WBS
first level
445 Items

		Phase RD		
Category	C1			
		Functional requirement definition (system functions)		

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

WBS
second level
1082 Items

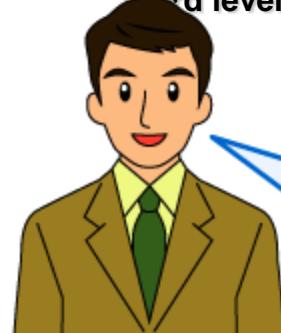
		Phase RD		
Category	C1			
		Definition of systematized business flow		
			System function definition	

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

WBS
third level

WBS third level		Output documents	
	Clarification of work/process and input/output		
	Development of systematized business flow	Systematized business flow	

- More specific than those of the second level.
- Output documents correspond to the items in this level.



The work items in the WBS second level are more specifically categorized on the third level.
The documents that should be made, and the work details that should be noted are described.



● 8. WBS Consists of Three Layers

WBS
first level
445 Items

		Phase RD		
Category C1				
		Functional requirement definition (system functions)		

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

WBS
second level
1082 Items

		Phase RD		
Category C1				
		Definition of systematized business flow		
			System function definition	

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

WBS
third level

WBS third level		Output documents	
Clarification of work/process and input/output			
Development of systematized business flow	Systematized business flow		

- More specific than those of the second level.
- Output documents correspond to the items in this level.



Details up to the WBS second level are written in the handbook.
Is the third level defined anywhere?



8. WBS Consists of Three Layers

WBS
first level
445 Items

		Phase RD		
Category C1				
		Functional requirement definition (system functions)		

- Work items in this level are used to manage a project in the most comprehensive way.
- All items are covered by a matrix of categories and phases.

WBS
second level
1082 Items

		Phase RD		
Category C1				
		Definition of systematized business flow		
			System function definition	

- Investment units of project development resources (period, manpower, techniques/tools, and equipment)
- Role units of project members.

WBS
third level

WBS third level		Output documents	
Clarification of work/process and input/output			
Development of systematized business flow	Systematized business flow		

- More specific than those of the second level.
- Output documents correspond to the items in this level.



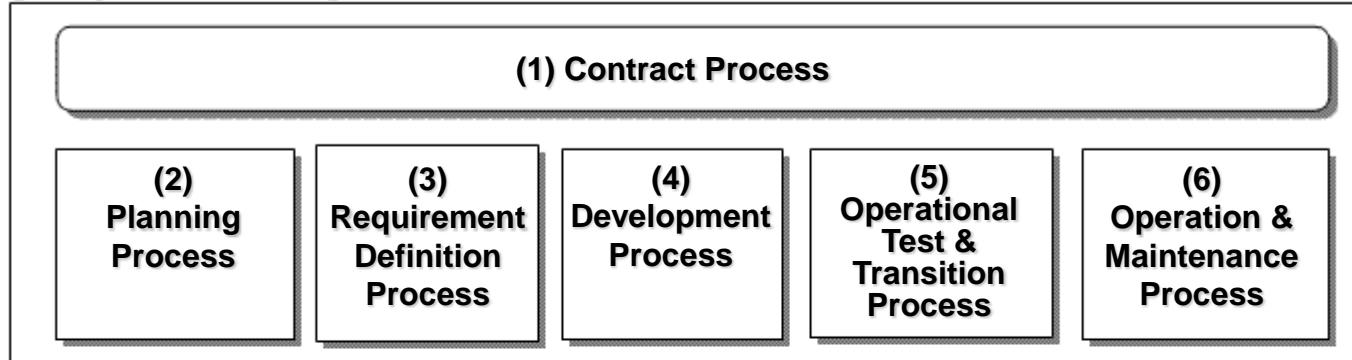
It is recommended to define in each country/group, since this level is closely related with actual projects and affected by its characteristics. In Japan, each group defines its own third level details.



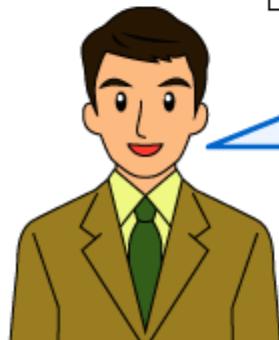
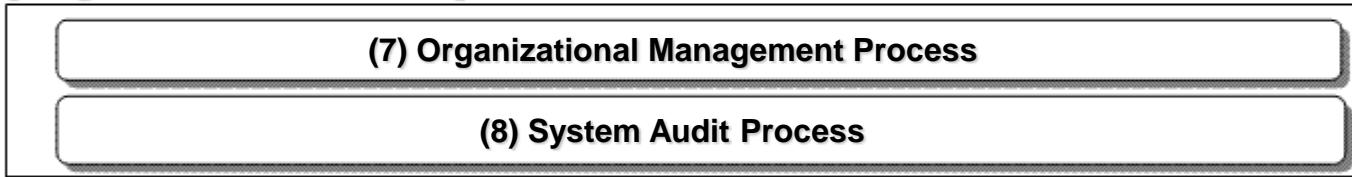
 1. Each Process of SDEM

All processes related to system development are considered

[Project Process]



[Organizational Process]



Next, I am going to explain the processes one by one.



● 2. Planning Process (1) Key Features

- To develop IT strategy tightly synchronized with business strategy
- To define the business requirements according to the IT strategy. This will be the input of RD process

Phase Category		IT Vision Planning VP	System Planning SP	
A: Business management		A1VP100: Business environment understanding	A1SP100: ROI study	
		A1VP200: Systematization of company-wide goal and definition of strategy [Business management]	A1SP200: IT system planning and approval	
		A1VP300: Recognition of budget and cost scale		
		A1VP400: Promotion plan development and approval		
B: Business		B1VP100: Current business study	B1SP100: Understanding of new business policy	
		B1VP200: Systematization of company-wide goal and definition of strategy [Business]	B1SP200: Business requirement definition	
			B1SP300: Development of business transition plan	
C: System usage		C1VP100: Study of current system outline	C1SP100: Definition of system requirement outline	
		C1VP200: IT system vision planning	C1SP200: Systematization of new IT system	
D: System		D1VP100: Investigation of current system restrictions	D1SP100: Investigation of current system resources	
		D1VP200: Investigation of restrictions caused by market and technology trend	D1SP200: Study of market and technology trend	
			D1SP300: Evaluation of system feasibility	
			D1SP400: Development of systematization basic policy	
			D1SP500: Development of basic system configuration draft	
E: Project management	E1VP100: Project initiation	E1VP200: VP project promotion and monitoring control	E1SP100: SP project promotion and monitoring control	
			E1SP200: Estimation of IT system cost	
			E1SP300: Execution plan development for new IT system project	
			E1SP400: Project closing	

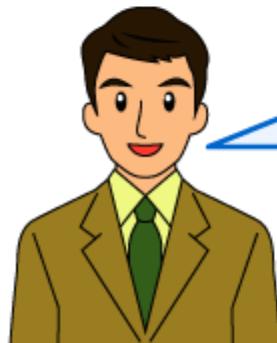
● 2. Planning Process (1) Key Features

- To develop IT strategy tightly synchronized with business strategy
- To define the business requirements according to the IT strategy. This will be the input of RD process

Phase Category		IT Vision Planning VP	System Planning SP	
A: Business management		A1VP100: Business environment understanding	A1SP100: ROI study	
		A1VP200: Systematization of company-wide goal and definition of strategy [Business management]	A1SP200: IT system planning and approval	
		A1VP300: Recognition of budget and cost scale		
		A1VP400: Promotion plan development and approval		
B: Business		B1VP100: Current business study	B1SP100: Understanding of new business policy	
		B1VP200: Systematization of company-wide goal and definition of strategy [Business]	B1SP200: Business requirement definition	
			B1SP300: Development of business transition plan	
C: System usage		C1VP100: Study of current system outline	C1SP100: Definition of system requirement outline	
		C1VP200: IT system vision planning	C1SP200: Systematization of new IT system	
D: System		D1VP100: Investigation of current system restrictions	D1SP100: Investigation of current system resources	
		D1VP200: Investigation of restrictions caused by market and technology trend	D1SP200: Study of market and technology trend	
			D1SP300: Evaluation of system feasibility	

The planning process is a process for developing a feasible IT vision and project execution plan that matches business management and enterprise strategies.

Through this process, the people concerned with system development can share the purpose of a new information system.
There are the following four key features.



2. Planning Process (1) Key Features

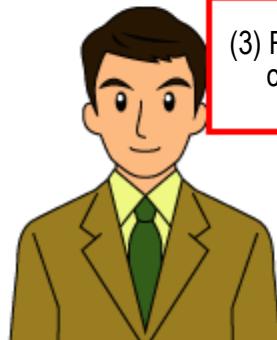
- To develop IT strategy tightly synchronized with business strategy
- To define the business requirements according to the IT strategy. This will be the input of RD process

(1) Business management category represents business owner's view.

(2) System requirement outline defines both functional and non-functional requirements.

(3) Realization policy to consider the constraints and existing systems.

(4) Study of current business and current system to confirm that new system is really consistent with the enterprise policy, and solve the current business and system issues.



Phase Category		IT Vision Planning VP	System Planning SP	
A: Business management		A1VP100: Business environment understanding A1VP200: Systematization of company-wide goal and definition of strategy [Business management] A1VP300: Recognition of budget and cost scale A1VP400: Promotion plan development and approval	A1SP100: ROI study A1SP200: IT system planning and approval	
	B: Business	B1VP100: Current business study B1VP200: Systematization of company-wide goal and definition of strategy [Business]	B1SP100: Understanding of new business policy B1SP200: Business requirement definition B1SP300: Development of business transition plan	
	C: System usage	C1VP100: Study of current system usage C1VP200: IT system vision and design	C1SP100: Definition of system requirement outline C1SP200: Systematization of new IT system	
	D: System	D1VP100: Investigation of market and technology D1VP200: Investigation of market and technology	D1SP500: Development of basic system configuration draft D1SP600: Development of basic policy for transition and deployment	
E: Project management	E1VP100: Project initiation	E1VP200: VP project promotion and monitoring control	E1SP100: SP project promotion and monitoring control E1SP200: Estimation of IT system cost E1SP300: Execution plan development for new IT system project	E1SP400: Project closing

2. Planning Process (1) Key Features

- To develop IT strategy tightly synchronized with business strategy
- To define the business requirements according to the IT strategy. This will be the input of RD process

Phase Category		IT Vision Planning VP	System Planning SP	
A: Business management		A1VP100: Business environment understanding A1VP200: Systematization of company-wide goal and definition of strategy [Business management] A1VP300: Recognition of budget and cost scale A1VP400: Promotion plan development and approval	A1SP100: ROI study A1SP200: IT system planning and approval	
B: Business		B1VP100: Current business study B1VP200: Systematization of company-wide goal and definition of strategy [Business]	B1SP100: Understanding of new business policy B1SP200: Business requirement definition	
C: System usage			B1SP300: Development of business transition plan	
D: System		C1VP100: Study of current system usage C1VP200: IT system vision and market analysis	C1SP100: Definition of system requirement outline C1SP200: Systematization of new IT system	

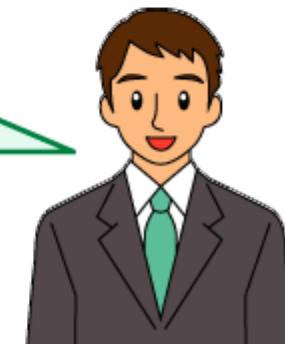
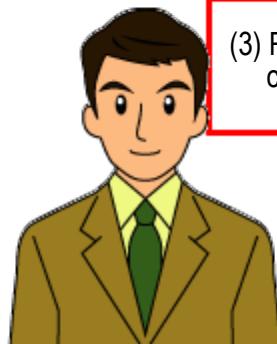
(1) Business management category represents business owner's view.

(2) System requirement outline defines both functional and non-functional requirements.

(4) Study of current business and current system to confirm that new system is really consistent with the enterprise policy, and solve the current

(3) Realizing constraints

I misunderstood that the planning process is unrelated to us because only the customer is responsible for the planning process. But now I understand it is important for development members like us as well to participate in the planning process. SDEM covers a wide range of work items not only related with the program development but also the planning process. In the planning process, it is necessary to understand the present system to identify the restrictions.

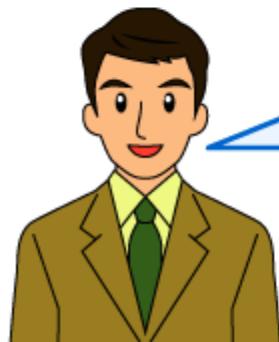


● 2. Planning Process (2) Category and Phase Definition

Five categories, two phases in planning process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System usage
System	D. System
Management	E. Project management

Main phase	Phase
Planning	IT Vision Planning (VP)
	System Planning (SP) the



These are categories in the planning process.
During the planning process, both the real world and the IT system are studied together.
Therefore, a comprehensive and structural knowledge and technologies for both the real world and the IT system are required.



 2. Planning Process (2) Category and Phase Definition

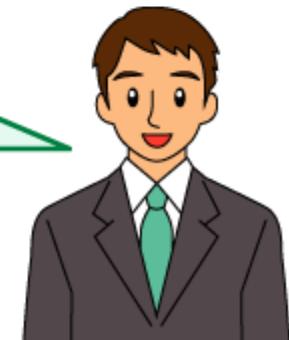
Five categories, two phases in planning process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System usage
System	D. System
Management	E. Project management

Main phase	Phase
Planning	IT Vision Planning (VP)
	System Planning (SP)



Do you mean that to develop a customer's IT system we must have an interest in the customer's business and strategies or it will be difficult to develop the system?

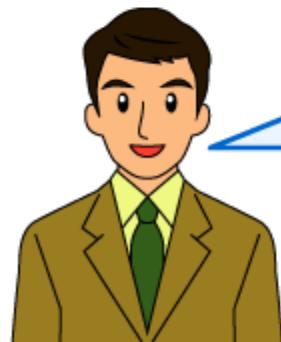


● 2. Planning Process (2) Category and Phase Definition

Five categories, two phases in planning process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System usage
System	D. System
Management	E. Project management

Main phase	Phase
Planning	IT Vision Planning (VP)
	System Planning (SP)



That's right.

The next topic is a phase. The planning process consists of two phases: "IT vision planning" and "System planning."

The former process defines the purpose and measure of systematization, and the latter process is to develop a planning document for making decisions on IT system investment.



 2. Planning Process (2) Category and Phase Definition

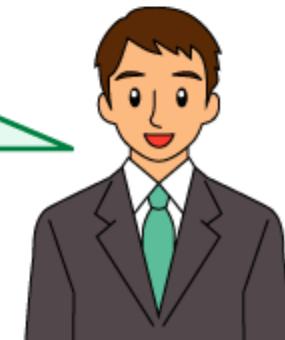
Five categories, two phases in planning process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System usage
System	D. System
Management	E. Project management

Main phase	Phase
Planning	IT Vision Planning (VP)
	System Planning (SP)

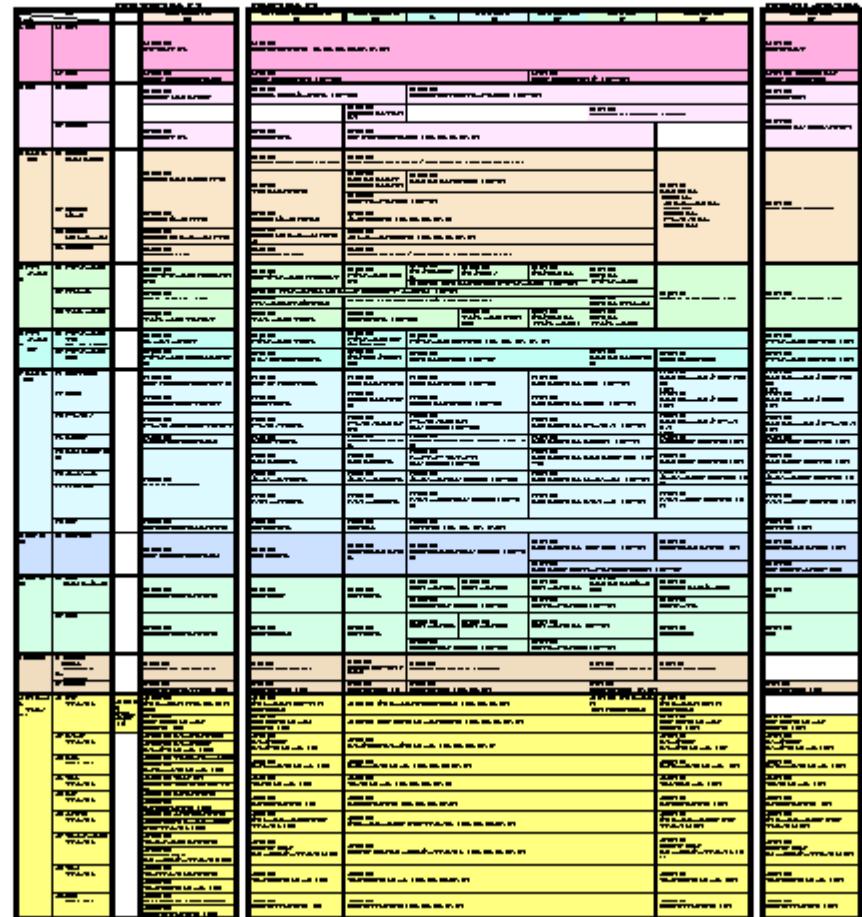


I understand. The first step of system development is to confirm the effectiveness of the new system to the customer's business.



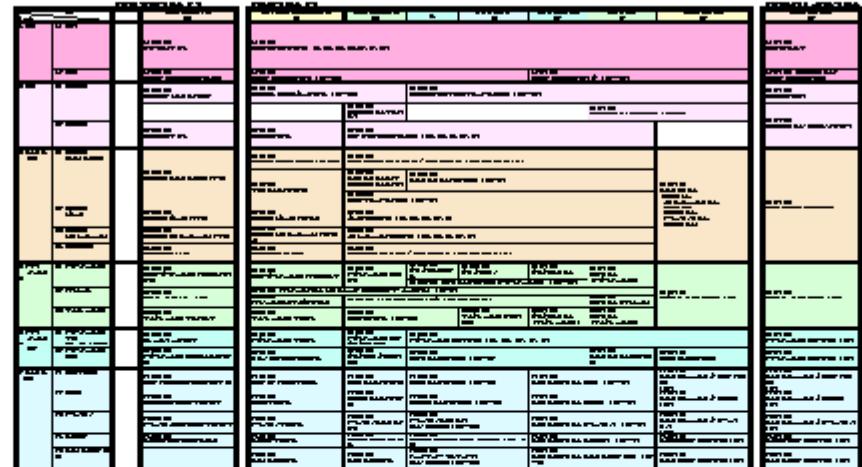
● 3. Requirement Definition, Development, Operational Test & Transition Process (1) Key Features

- To develop a business system through system requirement definition, design, development and test (including non-IT part) according to the business requirements
- To determine whether a new system can be in production and transition to a new business process

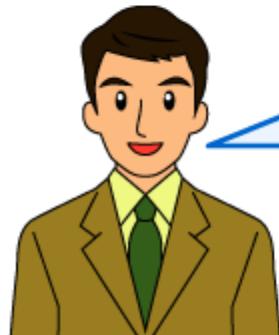


● 3. Requirement Definition, Development, Operational Test & Transition Process (1) Key Features

- To develop a business system through system requirement definition, design, development and test (including non-IT part) according to the business requirements
- To determine whether a new system can be in production and transition to a new business process

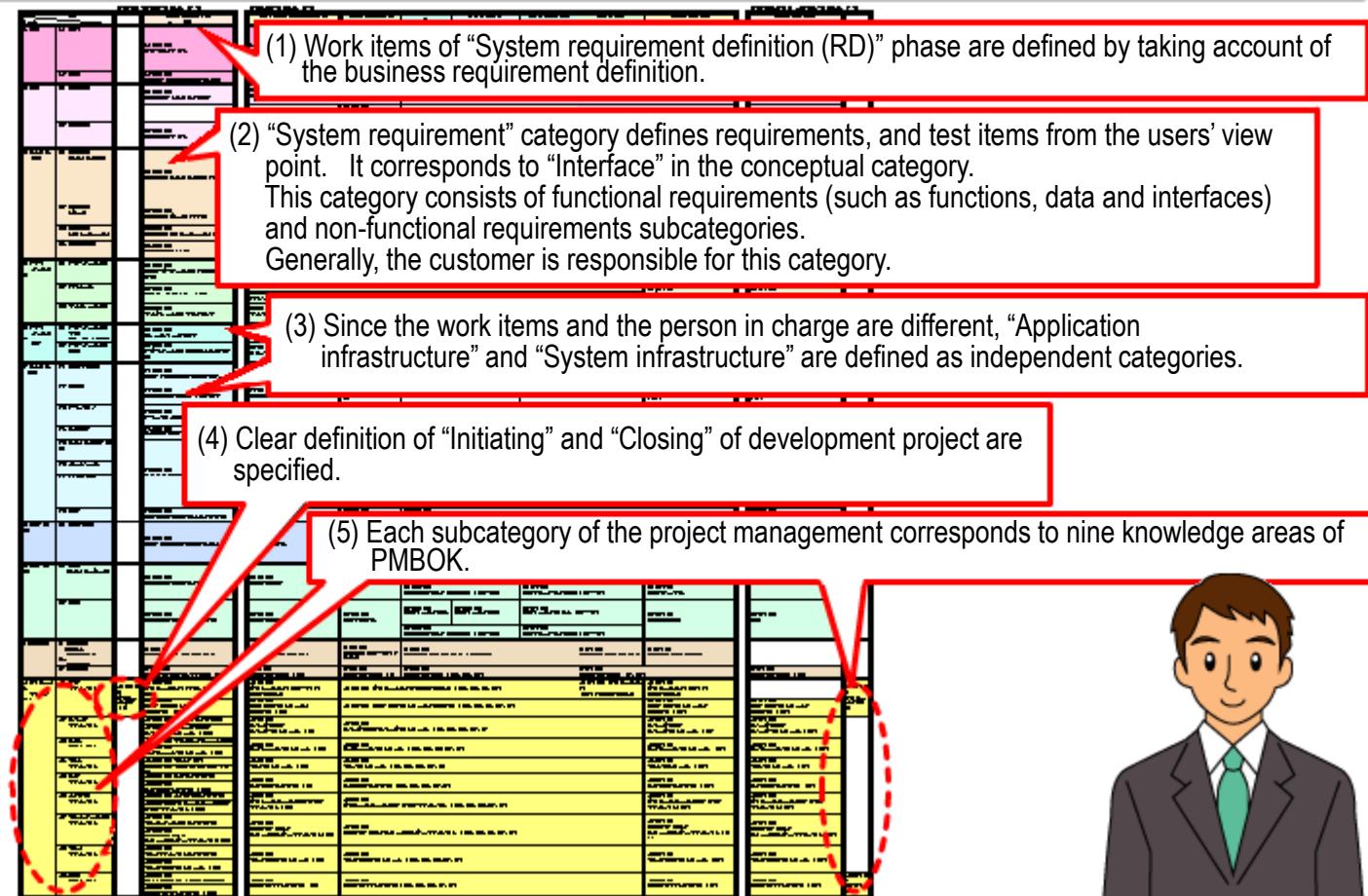


Let's look at three processes all together.
They are the processes for system development.
After the business requirement is defined in the planning process, the system requirement is defined, then design, development and testing the system all follow.
Since the business requirements come from the planning process, it is necessary to do the testing, including non-IT parts, in the test process gradually.
Finally, the new business flows and the new system replace the existing ones through the transition period.
There are the following five key features.



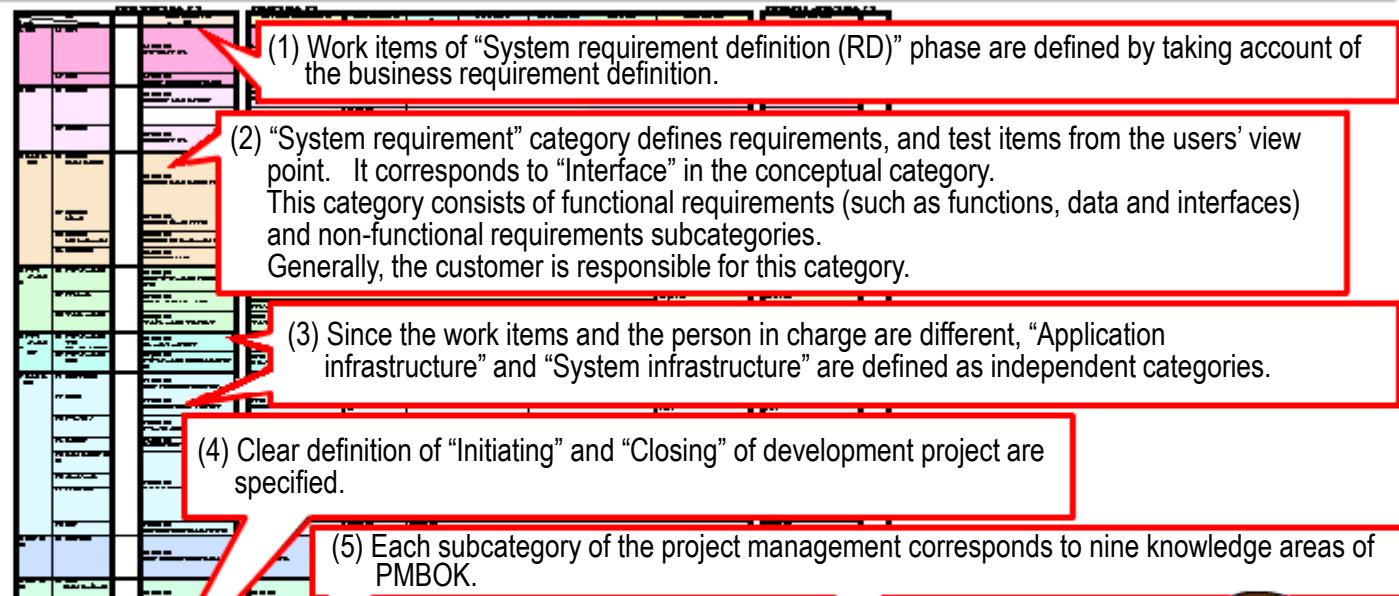
● 3. Requirement Definition, Development, Operational Test & Transition Process (1) Key Features

- To develop a business system through system requirement definition, design, development and test (including non-IT part) according to the business requirements
- To determine whether a new system can be in the production and transit to new business process with the new system

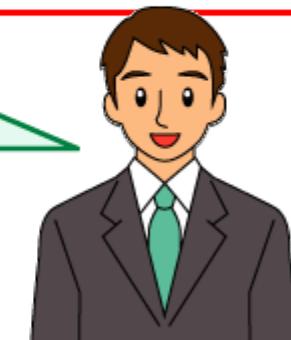


● 3. Requirement Definition, Development, Operational Test & Transition Process (1) Key Features

- To develop a business system through system requirement definition, design, development and test (including non-IT part) according to the business requirements
- To determine whether a new system can be in the production and transit to new business process with the new system



The requirement definition is a part of the project, therefore, the end-users are also members of the project, aren't they?



● 3. Requirement Definition, Development, Operational Test & Transition Process (2) Category/Phase Definition

There are ten categories in total, one phase in requirement definition process, seven phases in development process, one phase in operational test & transition process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System requirements
System	D. Application
	E. Application infrastructure
	F. System infrastructure
	G. Operation & Maintenance
	H. Transition & Deployment
Management	I. Development support
	J. Project management

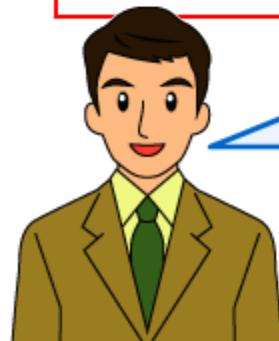
Process	Main phase	Phase
Requirement definition	Requirement definition	System Requirement Definition (RD)
Development	Design	User Interface Design (UI)
		System Structure Design (SS)
	Implementation	Program Structure Design (PS)
Test	Implementation	Programming (PG)
		Program Test (PT)
	Test	Integration Test (IT)
Operational test & Transition	Operational test & Transition	System Test (ST)
		Operational test & Transition (OT)

● 3. Requirement Definition, Development, Operational Test & Transition Process (2) Category/Phase Definition

There are ten categories in total, one phase in requirement definition process, seven phases in development process, one phase in operational test & transition process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System requirements
System	D. Application
	E. Application infrastructure
	F. System infrastructure
	G. Operation & Maintenance
	H. Transition & Deployment
Management	I. Development support
	J. Project management

Process	Main phase	Phase
Requirement definition	Requirement definition	System Requirement Definition (RD)
Development	Design	User Interface Design (UI)
		System Structure Design (SS)
Implementation	Program Structure Design (PS)	Program Structure Design (PS)
		Programming (PG)
Integration Test	(IT)	Program Test (PT)
		System Test (ST)
		Integration & Transition Test (OT)



Comparing with the planning process, the scope of systematization becomes clear, and the system is embodied gradually. Therefore, more specific and deeper knowledge is required in the system requirement definition process, and the category of requirement definition process is defined more in detail.



● 3. Requirement Definition, Development, Operational Test & Transition Process (2) Category/Phase Definition

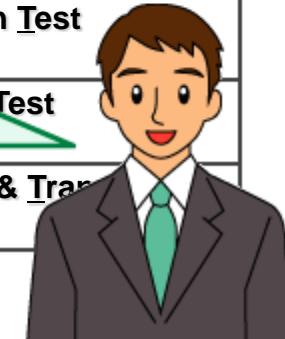
There are ten categories in total, one phase in requirement definition process, seven phases in development process, one phase in operational test & transition process.

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. System requirements
System	D. Application
	E. Application infrastructure
	F. System infrastructure
	G. Operation & Maintenance
	H. Transition & Deployment
Management	I. Development support
	J. Project management

Process	Main phase	Phase
Requirement definition	Requirement definition	System Requirement Definition (RD)
Development	Design	User Interface Design (UI)
		System Structure Design (SS)
Implementation	Program Structure Design (PS)	Program Structure Design (PS)
		Programming (PG)
Operational Test & Transition	Program Test (PT)	Program Test (PT)
		Integration Test (IT)
Operational Test & Transition	System Test (ST)	System Test (ST)
		Operational Test & Transition (OT)



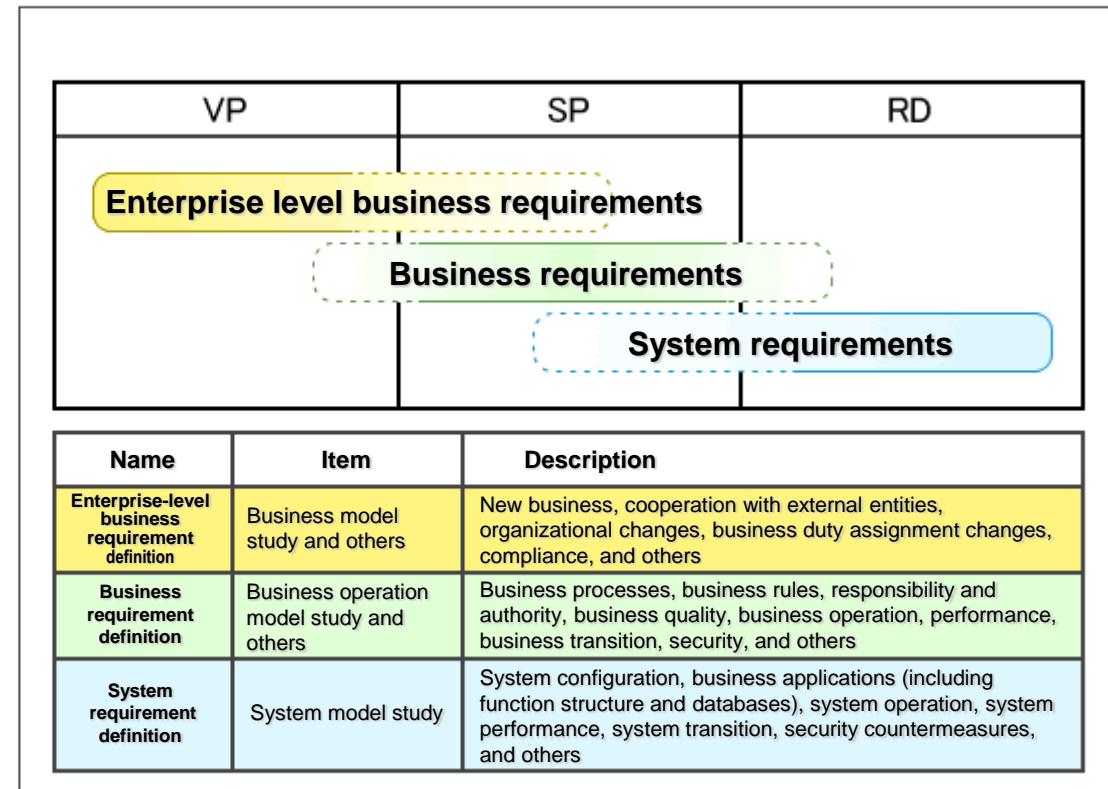
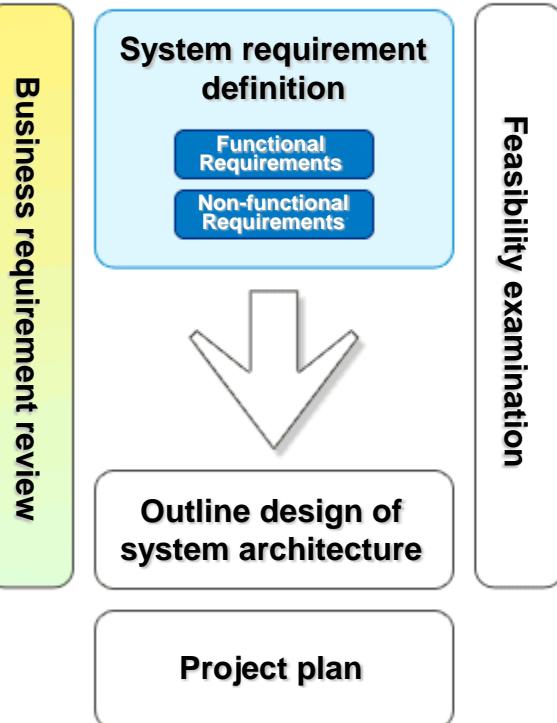
Each category is defined in common with requirement definition process, development process and operational test/transition process.



● 3. Requirement Definition, Development, Operational Test & Transition Process (3) Requirement Definition Process

This process is to confirm user requirements for a system and define system requirements as input for system development

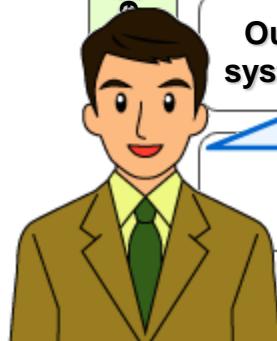
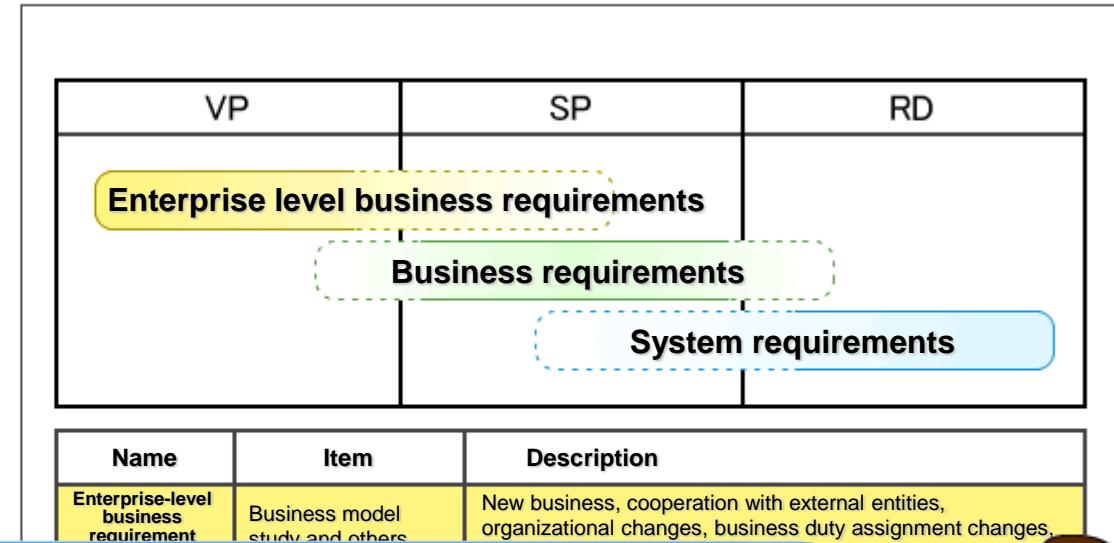
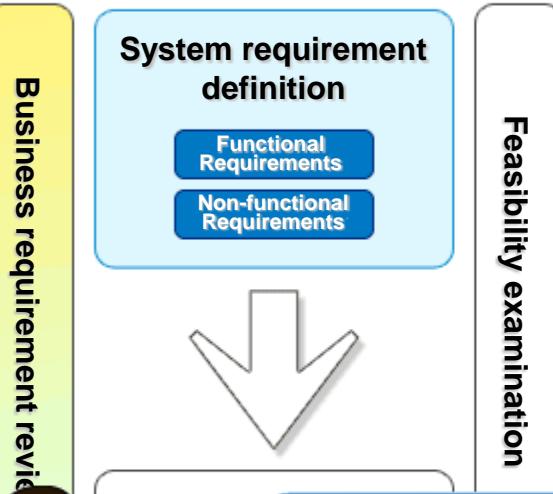
(1) The main work in RD process



● 3. Requirement Definition, Development, Operational Test & Transition Process (3) Requirement Definition Process

This process is to confirm user requirements for a system and define system requirements as input for system development

(1) The main work in RD process



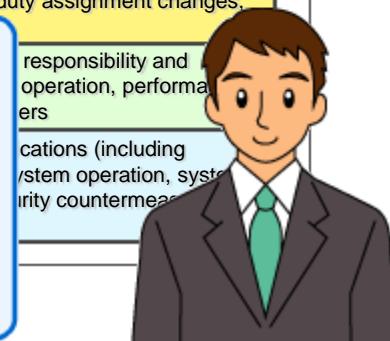
Outline of system architecture

Project plan

Let's look at these processes one by one.

The requirement definition process is to confirm user requirements for the new IT system and to define system requirements as input for system development.

In addition to the above, the system structure outline design, feasibility study of user requirements and preparation for project plan should be done in this process.



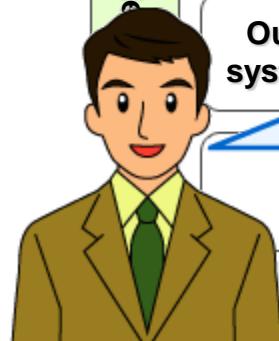
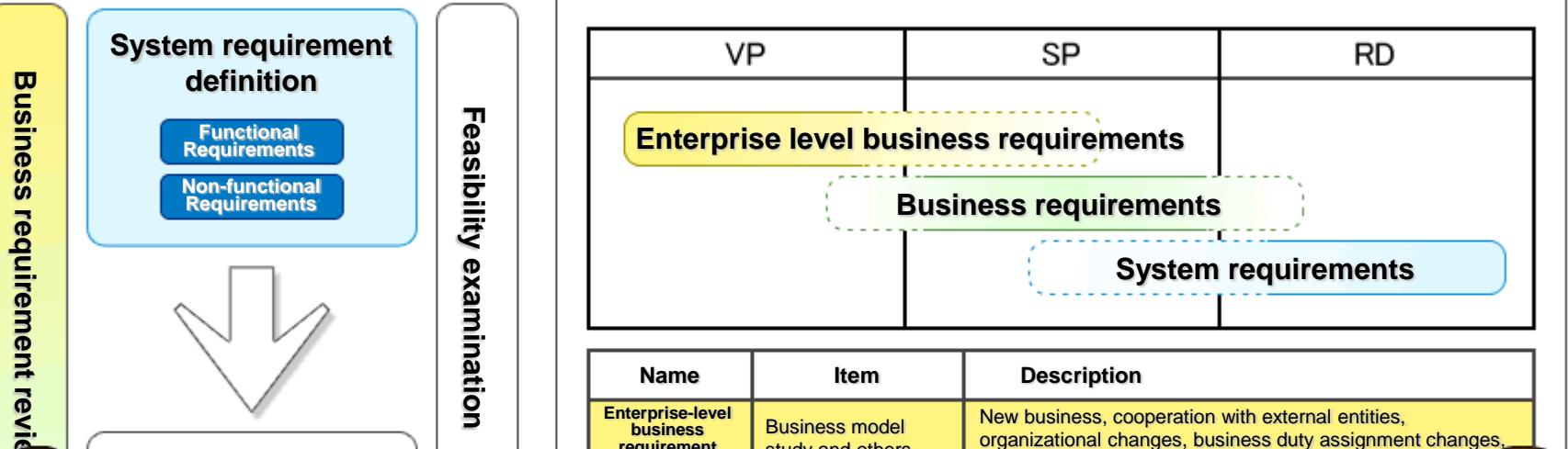
responsibility and operation, performance

cations (including system operation, system countermeasures)

3. Requirement Definition, Development, Operational Test & Transition Process (3) Requirement Definition Process

This process is to confirm user requirements for a system and define system requirements as input for system development

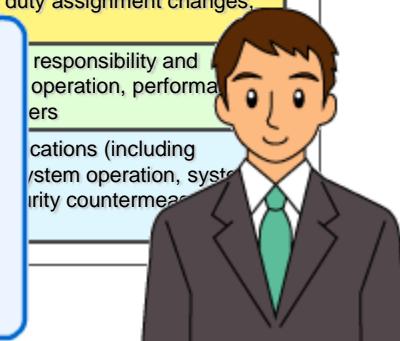
(1) The main work in RD process



Outline of system architecture

Project planning

The term “requirement” has various meanings, such as enterprise level requirement, system requirement, functional requirement and non-functional requirement. All of those have to be clarified. Since this is the interface between the customer and system developers like us, this phase is a cornerstone of system development.



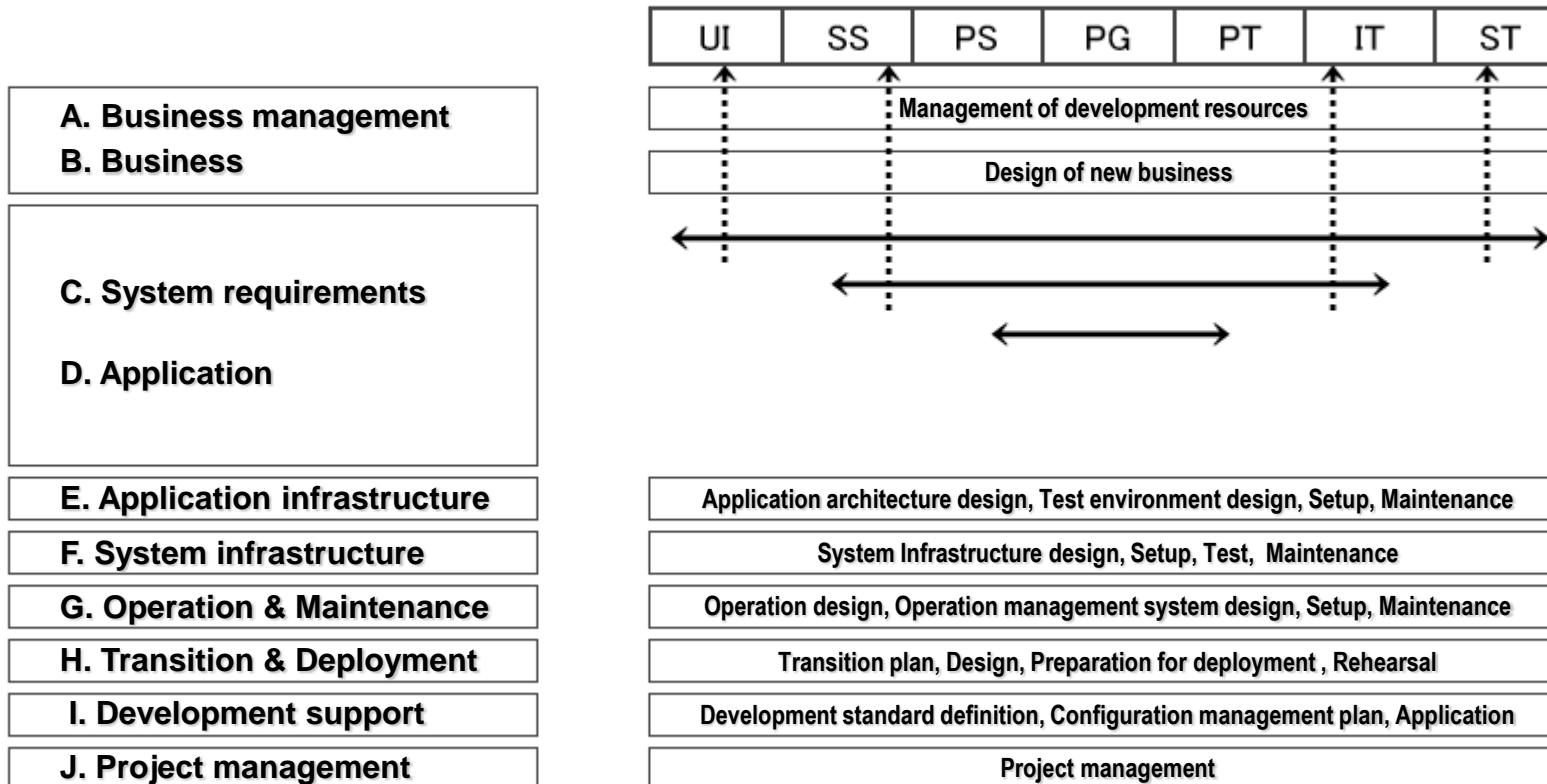
responsibility and operation, performance

cations (including system operation, security countermea

● 3. Requirement Definition, Development, Operational Test & Transition Process (4) Development Process

This process executes the design, development, and the test to realize the system requirements

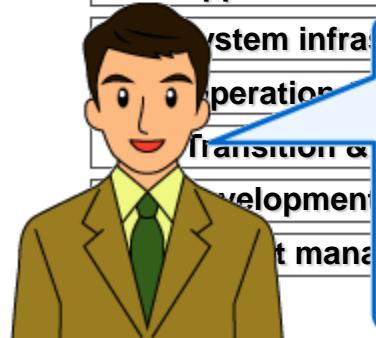
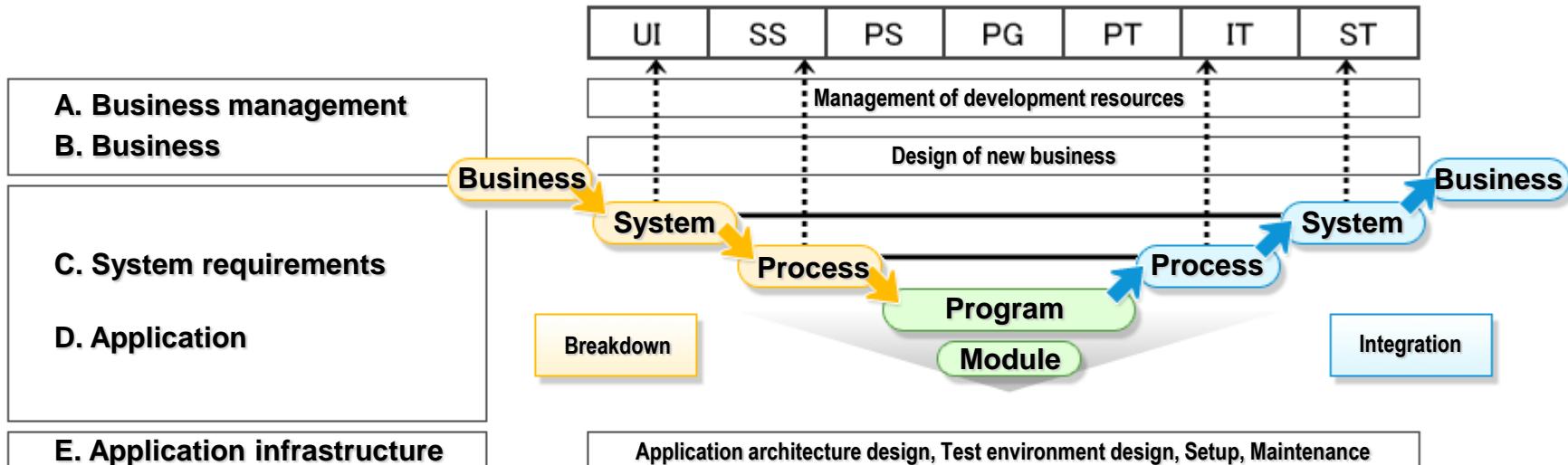
The main work on breakdown and integration of systems



● 3. Requirement Definition, Development, Operational Test & Transition Process (4) Development Process

This process executes the design, development, and the test to realize the system requirements

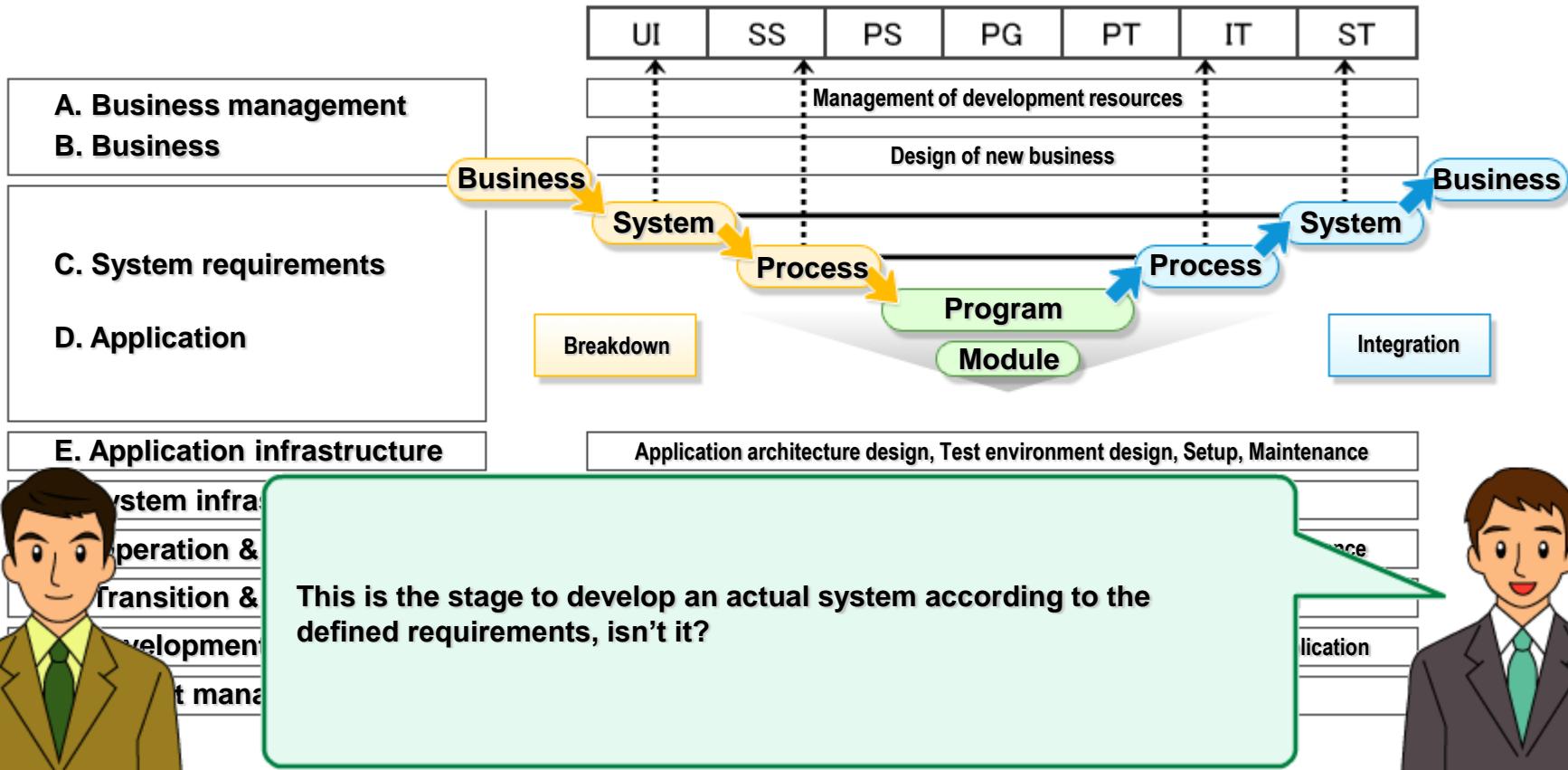
The main work on breakdown and integration of systems



3. Requirement Definition, Development, Operational Test & Transition Process (4) Development Process

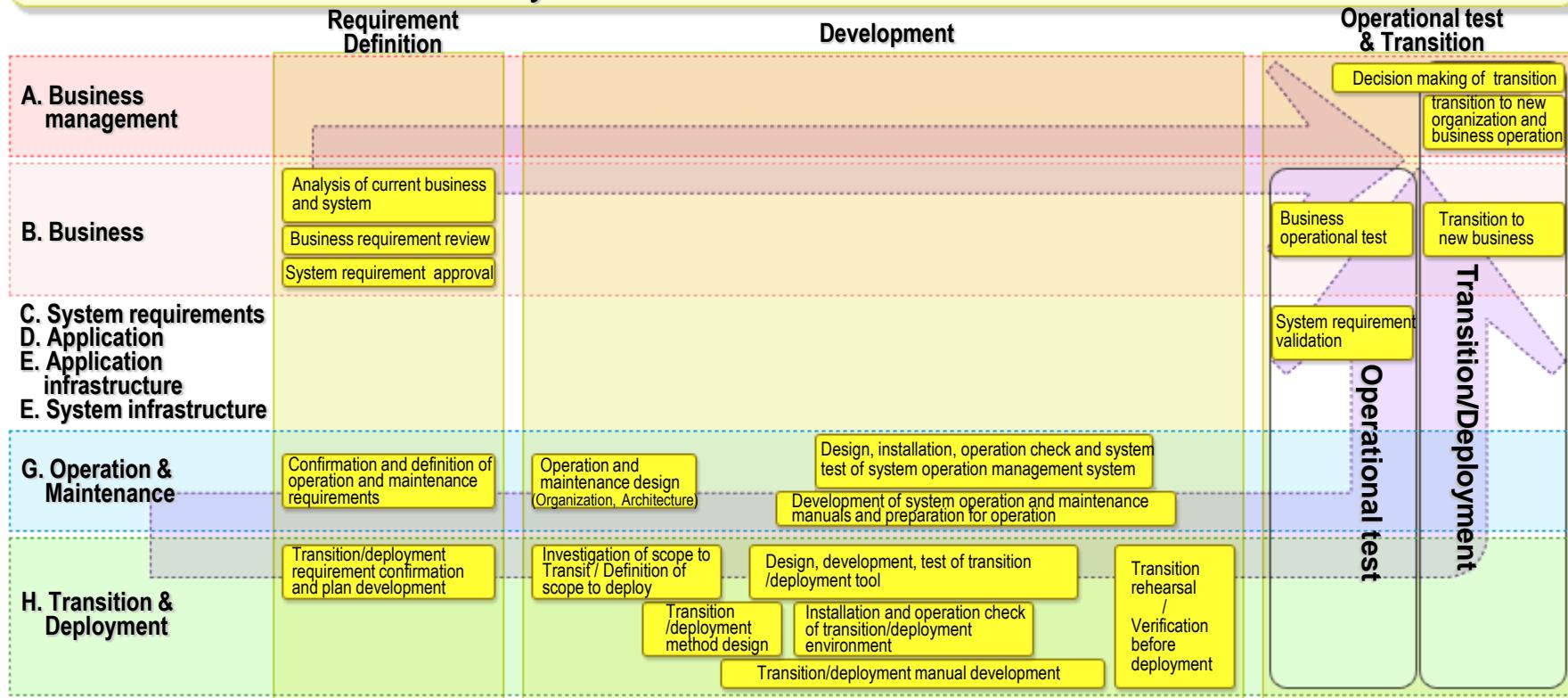
This process executes the design, development, and the test to realize the system requirements

The main work on breakdown and integration of systems



3. Requirement Definition, Development, Operational Test & Transition Process (5) Operational Test & Transition Process

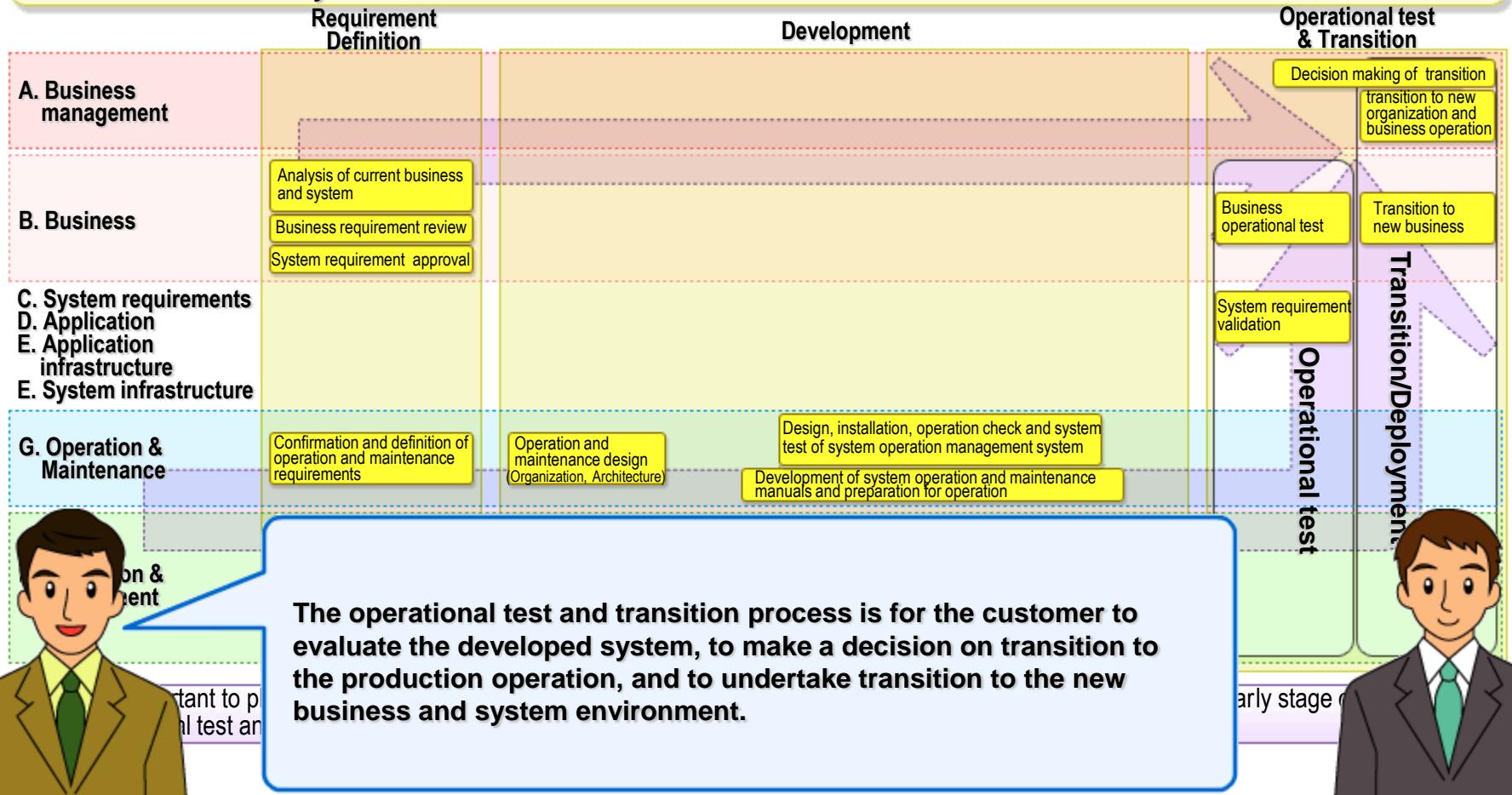
This process is to perform business operational tests by end-users with the system developed in the development process and make a decision on transition to the production operation, and to undertake transition to the new business and system environment.



It is important to plan, to define requirements, to design, and to prepare for the operational test and transition in the early stage of a project. Operational test and transition process are the responsibility of business management and the business category.

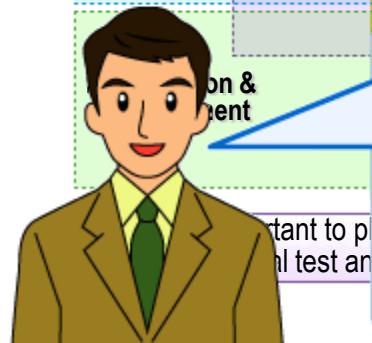
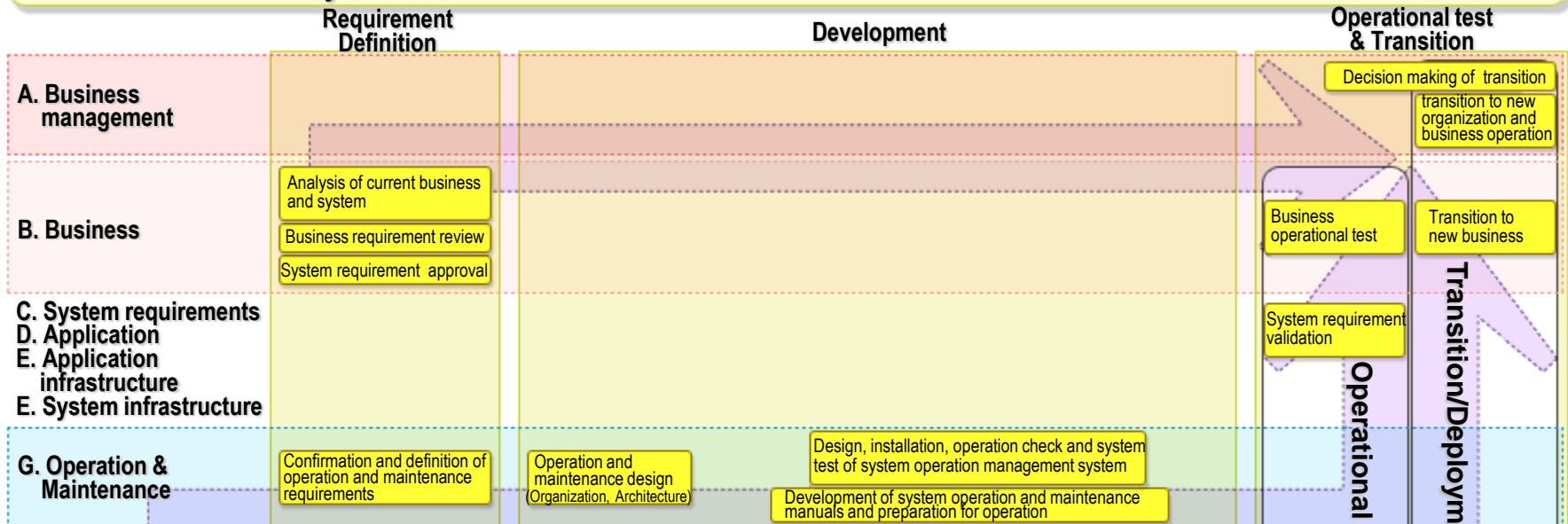
3. Requirement Definition, Development, Operational Test & Transition Process (5) Operational Test & Transition Process

This process is to perform business operational tests by end-users with the system developed in the development process to make a decision to transit to the production operation, and to perform a transition to a new business and system environment.



3. Requirement Definition, Development, Operational Test & Transition Process (5) Operational Test & Transition Process

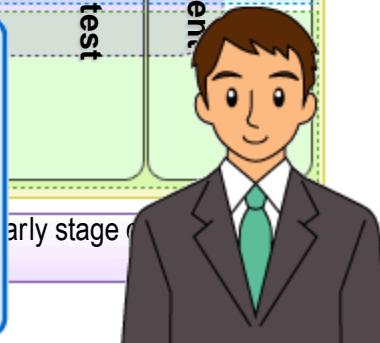
This process is to perform business operational tests by end-users with the system developed in the development process to make a decision to transit to the production operation, and to perform a transition to a new business and system environment.



It is necessary for the customer to make a final decision on transition by themselves.

In other words, the customer has to have their own criteria for the new system.

It is during the planning process and requirement definition process that the customer clarifies them.



4. Operation & Maintenance Process (1) Key Features

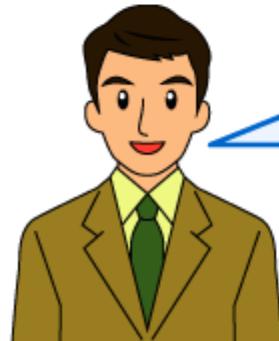
This process is to operate the system smoothly to perform the users' business in the real world, as well as to maintain the system to keep or improve the service quality while coping with external factors.

Plan		Operate & Maintenance (OM)	
A: Business management	A-1 Customer management	A-10M101: Decision of customer success factor A-10M102: Study plan development A-10M103: Organization plan development	A-OM001: Evaluation of customer success factor A-OM002: Customer operation improvement A-OM003: Approval of implementation proposal for study plan A-OM004: Execution and management of organization plan
	A-2 Organization		
B: Business	B-1 Business operator	B-10M101: Development of business operator management plan B-10M102: Development of business operator optimization plan B-10M103: Development of study plan B-10M104: Development of risk assessment plan	B-OM001: Evaluation, monitoring, and improvement of business operator management B-OM002: Evaluation, monitoring, and improvement of business operator optimization B-OM003: Approval of implementation proposal for study plan B-OM004: Evaluation, monitoring, and improvement of risk assessment plan
C: Service delivery	C-1 Service level management	C-10M101: Planning of service level management	C-OM001: Service level management operation C-OM002: Evaluation and improvement of service level management
	C-2 IT service financial management	C-20M101: Planning of IT service financial management	C-OM003: Operation of IT service financial management C-OM004: Evaluation and improvement of IT service financial management
	C-3 Capacity management	C-30M101: Planning of capacity management	C-OM005: Capacity management operation C-OM006: Evaluation and improvement of capacity management
	C-4 IT service continuity management	C-40M101: Planning of IT service continuity management	C-OM007: Operation of IT service continuity management C-OM008: Evaluation and improvement of IT service continuity management
	C-5 Availability management	C-50M101: Planning of availability management	C-OM009: Availability management operation C-OM010: Evaluation and improvement of availability management
	C-6 Information security management	C-60M101: Planning of information security management	C-OM011: Operation of information security management C-OM012: Evaluation and improvement of information security management
D: Service support	D-1 Service desk	D-10M101: Service desk planning	D-OM001: Management and operation of service desk D-OM002: Evaluation and improvement of service desk
	D-2 Incident management	D-20M101: Incident management	D-OM003: Incident management operation D-OM004: Evaluation and improvement of incident management
	D-3 Problem management	D-30M101: Problem management	D-OM005: Problem management D-OM006: Evaluation and improvement of problem management
	D-4 Change management	D-40M101: Change management	D-OM007: Change management operation D-OM008: Evaluation and improvement of change management
	D-5 Release management	D-50M101: Release management	D-OM009: Release management operation D-OM010: Evaluation and improvement of release management
	D-6 Configuration management	D-60M101: Configuration management	D-OM011: Configuration management operation D-OM012: Evaluation and improvement of configuration management
E: System operation	E-1 System operation status management	E-10M101: System operation planning	E-OM001: System operation improvement E-OM002: System operation
	E-2 Operation problems	E-20M101: Confirmation of operation problems	E-OM003: Operation establishing execution E-OM004: Confirmation of operation problems
	E-3 System operation	E-30M101: Confirmation of system operation	E-OM005: Home operation execution E-OM006: Home operation confirmation E-OM007: Home operation termination
	E-4 System operation status	E-40M101: Confirmation of system operation status	E-OM008: Confirmation of system operation status E-OM009: Evaluation of system operation status
F: System maintenance	F-1 System maintenance planning	F-10M101: System maintenance planning	F-OM001: Information gathering for system maintenance F-OM002: Review of system maintenance plan
	F-2 Application maintenance	F-20M101: Application maintenance	F-OM003: Assessing quadrant and load balancing of applications F-OM004: Adjustment of application policies F-OM005: Adjusting of application change

4. Operation & Maintenance Process (1) Key Features

This process is to operate the system smoothly to perform the users' business in real world, as well as to maintain the system to keep or improve the service quality coping with the external factor

Plan		Operation & Maintenance (O&M)	
A: Business management	A-1 Customer management	A-OM101: Decision of customer success factor A-OM102: Customer satisfaction improvement	
	A-2 Organization	A-OM103: Approval of organization plan to steady plan A-OM104: Organization plan development	
B: Business	B-1 Business operation	B-OM101: Development of business operation management plan B-OM102: Development of business operation optimization plan B-OM103: Development of stability plan B-OM104: Development of risk assessment plan	
	C: Service delivery	B-OM105: Evaluation, validation, and improvement of business operation management B-OM106: Evaluation, validation, and improvement of business operation optimization B-OM107: Evaluation, validation, and improvement of stability plan B-OM108: Evaluation, validation, and improvement of risk assessment plan	
		C-OM101: Planning of service level management C-OM102: Planning of IT service financial management	
		C-OM103: Capacity management C-OM104: Planning of capacity management C-OM105: Service level management C-OM106: Planning of IT service continuity management	
		C-OM107: Planning of availability management C-OM108: Planning of information security management C-OM109: Information security management	
D: Service support	D-1 Service desk	D-OM101: Service desk planning D-OM102: Incident management	
	D-2 Problem management	D-OM103: Escalation management D-OM104: Problem management	
	D-3 Return call center	D-OM105: Case control	



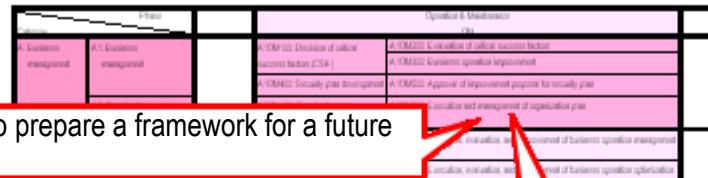
The operation & maintenance process is to operate and to maintain the system to keep, or improve the quality of services by coping with changes in the external environment so that the system contributes to the customer's business in the real world.
There are the following five key features.



4. Operation & Maintenance Process (1) Key Features

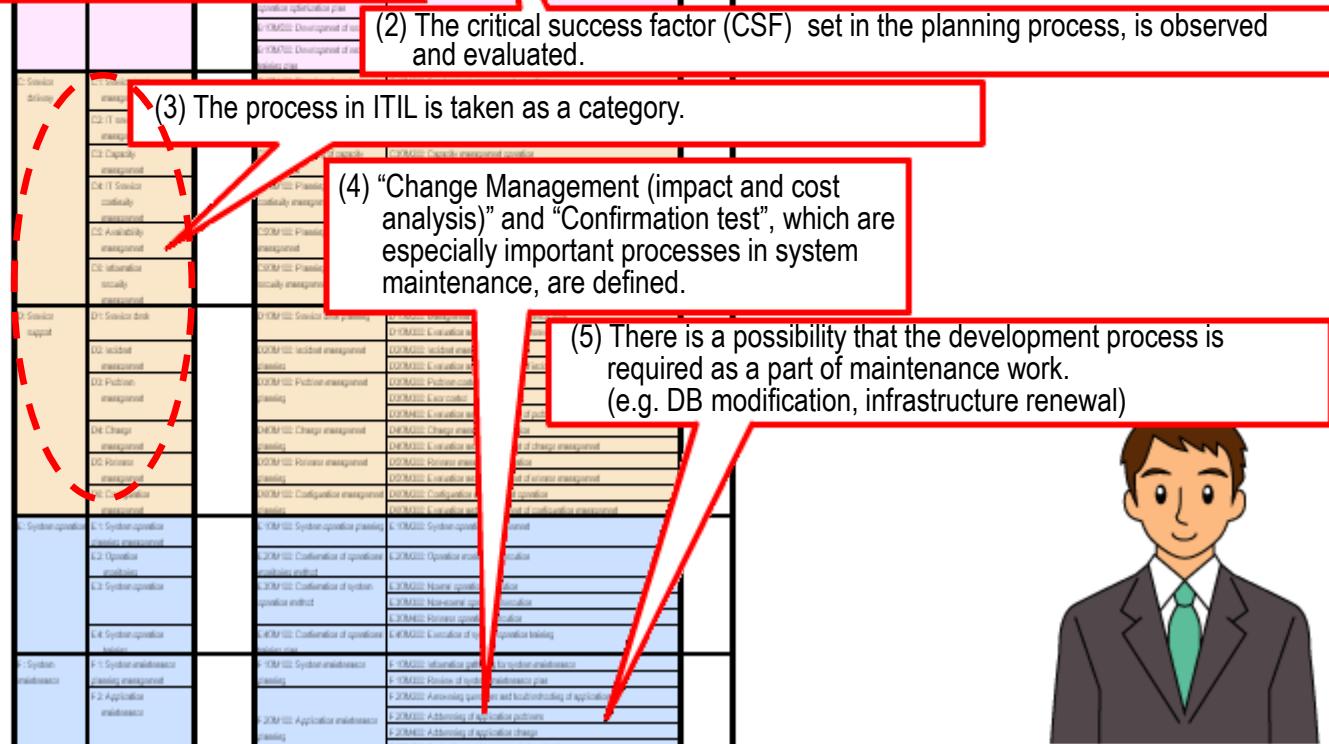
This process is to operate the system smoothly to perform the users' business in real world, as well as to maintain the system to keep or improve the service quality coping with the external factor

(1) To improve current business operations, and to prepare a framework for a future system if necessary.



(2) The critical success factor (CSF) set in the planning process, is observed and evaluated.

(3) The process in ITIL is taken as a category.



(4) "Change Management (impact and cost analysis)" and "Confirmation test", which are especially important processes in system maintenance, are defined.

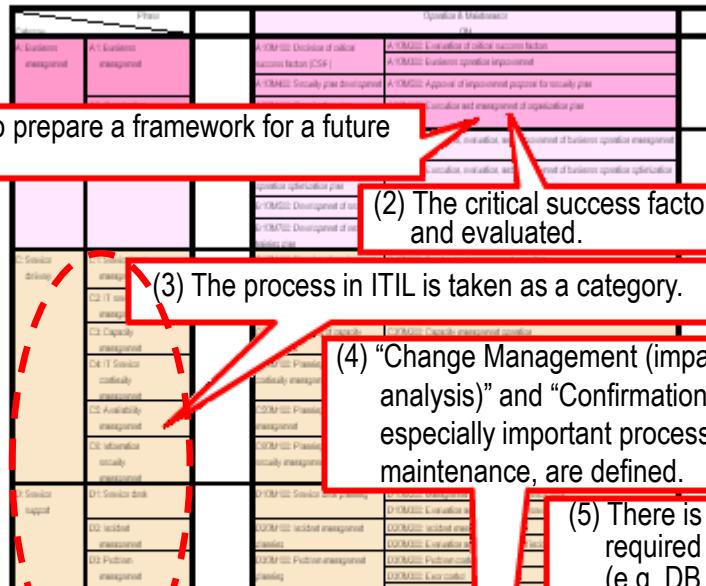
(5) There is a possibility that the development process is required as a part of maintenance work.
(e.g. DB modification, infrastructure renewal)



4. Operation & Maintenance Process (1) Key Features

This process is to operate the system smoothly to perform the users' business in real world, as well as to maintain the system to keep or improve the service quality coping with the external factor

(1) To improve current business operations, and to prepare a framework for a future system if necessary.



(2) The critical success factor (CSF) set in the planning process, is observed and evaluated.

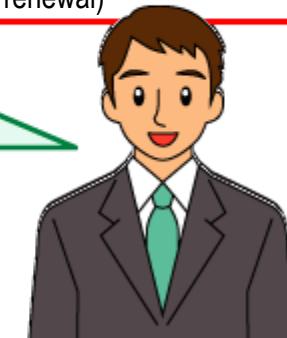
(3) The process in ITIL is taken as a category.

(4) "Change Management (impact and cost analysis)" and "Confirmation test", which are especially important processes in system maintenance, are defined.

(5) There is a possibility that the development process is required as a part of maintenance work.
(e.g. DB modification, infrastructure renewal)



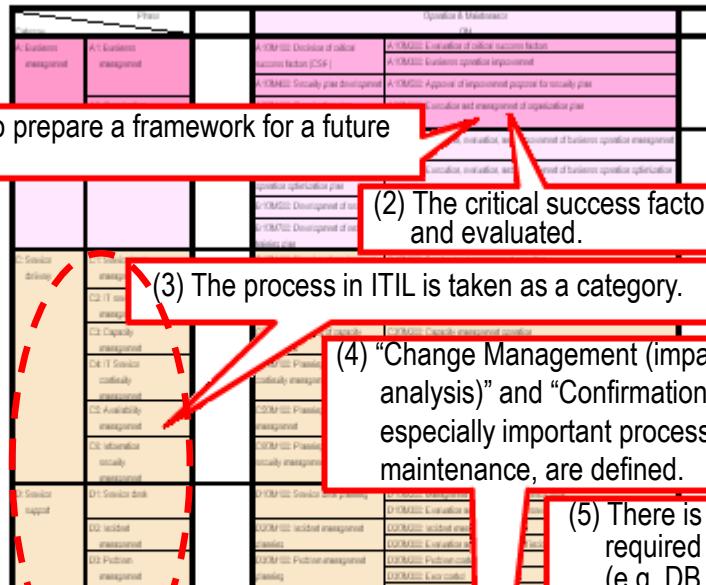
I misunderstood that everything is completed once the IT system is delivered.



4. Operation & Maintenance Process (1) Key Features

This process is to operate the system smoothly to perform the users' business in real world, as well as to maintain the system to keep or improve the service quality coping with the external factor

(1) To improve current business operations, and to prepare a framework for a future system if necessary.

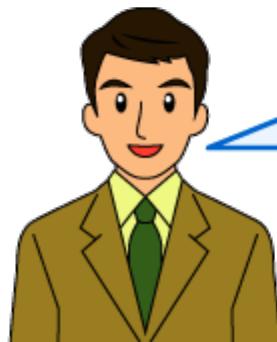


(2) The critical success factor (CSF) set in the planning process, is observed and evaluated.

(3) The process in ITIL is taken as a category.

(4) "Change Management (impact and cost analysis)" and "Confirmation test", which are especially important processes in system maintenance, are defined.

(5) There is a possibility that the development process is required as a part of maintenance work.
(e.g. DB modification, infrastructure renewal)



It is important for the customer to achieve the business goal. To achieve this, stable operation of the information system is a key. Therefore, the operation & maintenance process is important as well. As the phrase "Only operation yields benefits" shows, everyone recognizes the importance of operation & maintenance.

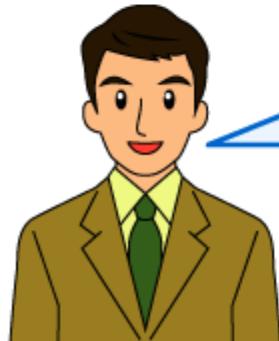


● 4. Operation & Maintenance Process (2) Category and Phase Definition

There are seven categories and one phase in operation & maintenance process

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. Service delivery
	D. Service support
System	E. System operation
	F. System maintenance
Management	G. Project management

Main phase	Phase
Operation & maintenance	<u>Operation and Maintenance (OM)</u>



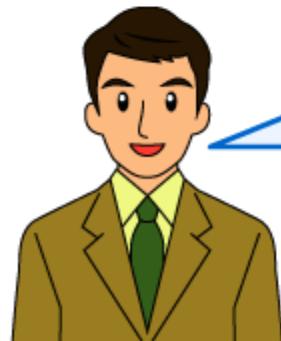
The category includes the IT service management functions (service delivery, service support) of ITIL, and actual work of operation & maintenance (e.g. system operation, system support category.)

4. Operation & Maintenance Process (2) Category and Phase Definition

There are seven categories and one phase in operation & maintenance process

Conceptual category	Category
Real World	A. Business management
	B. Business
Interface	C. Service delivery
	D. Service support
System	E. System operation
	F. System maintenance
Management	G. Project management

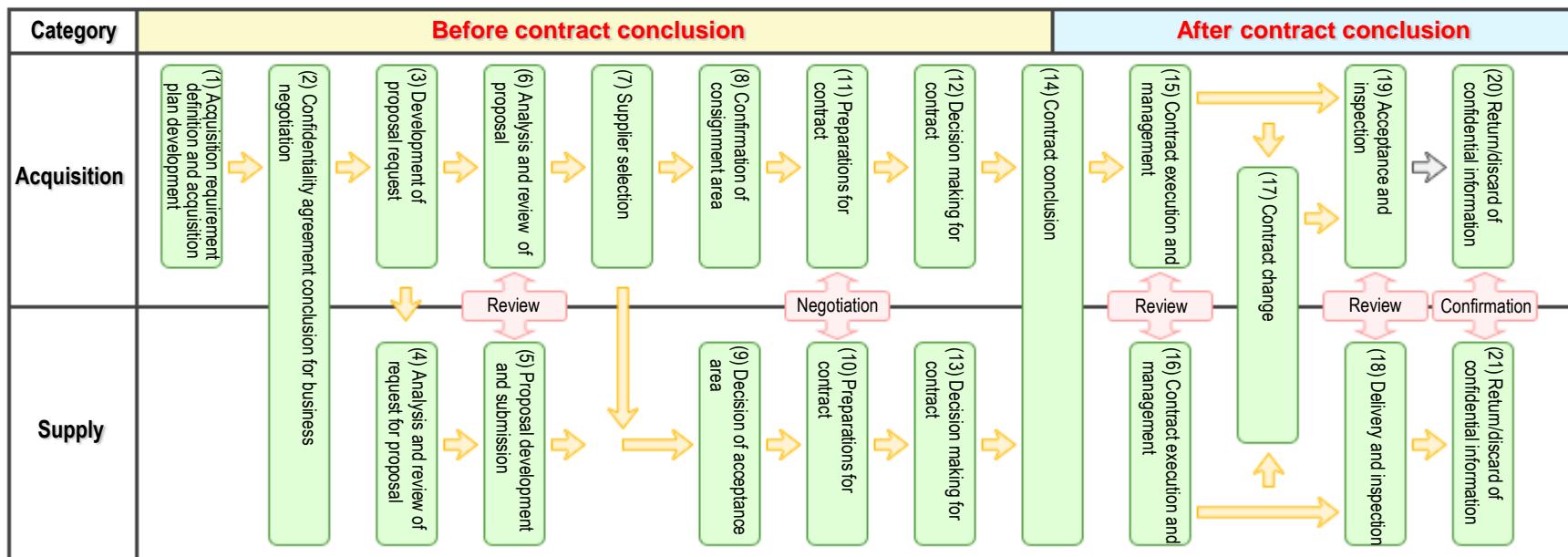
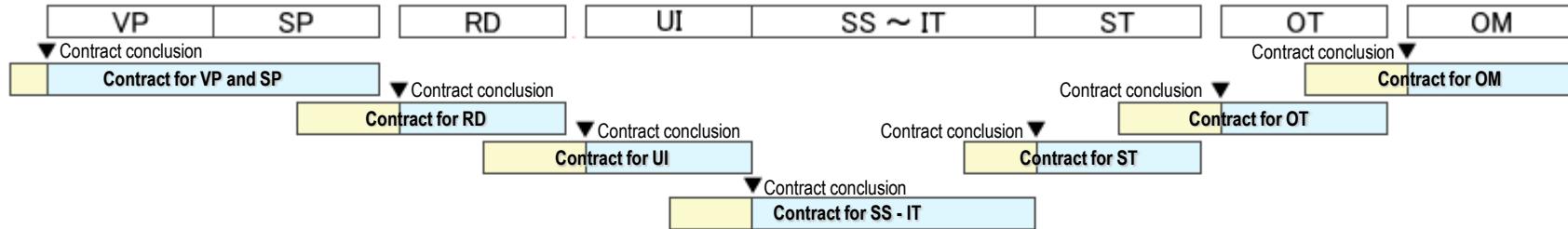
Main phase	Phase
Operation & maintenance	<u>Operation and Maintenance (OM)</u>



There is only one phase in this function.
The items of WBS are classified into “Planning” and “Execution and management.” Please refer to the handbook for details.

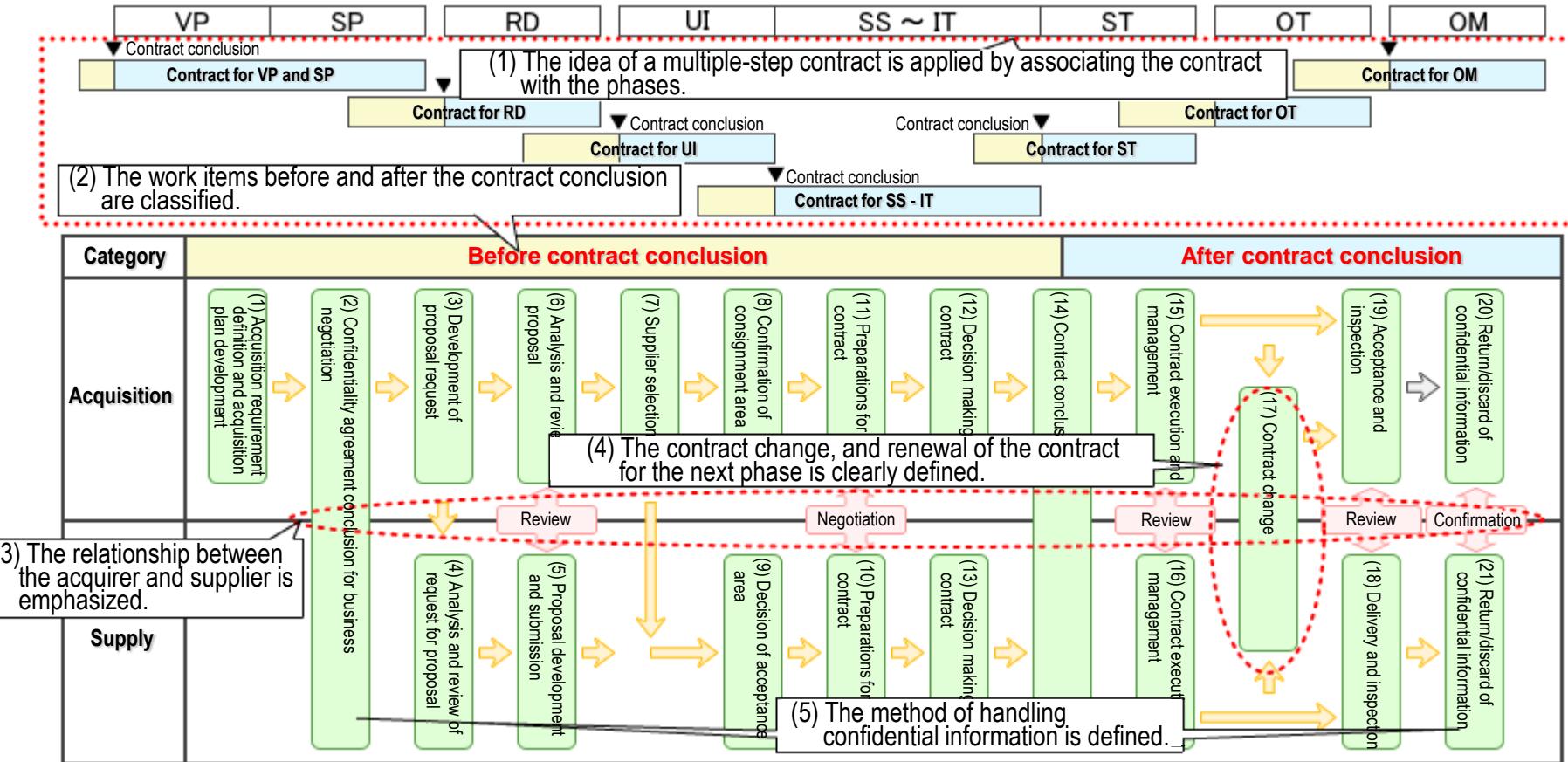
5. Contract Process (1) Key Features

This process is to define contract-related work between a purchaser and supplier



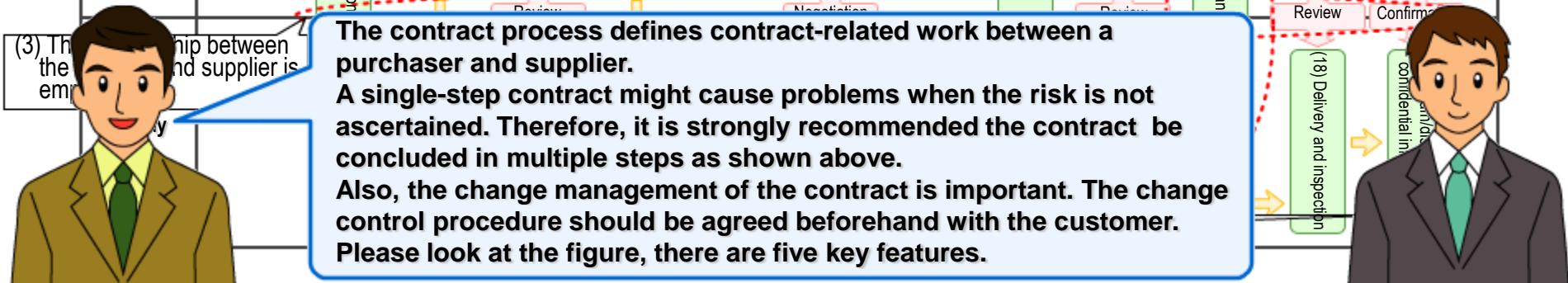
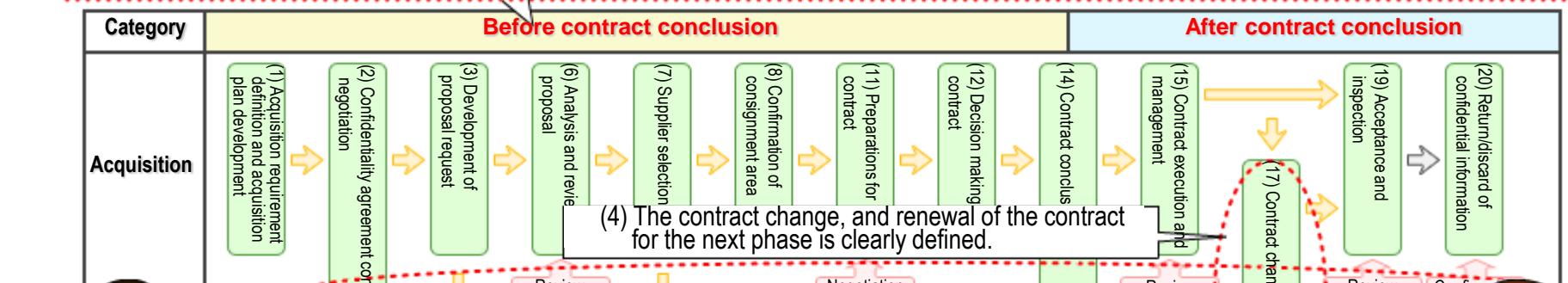
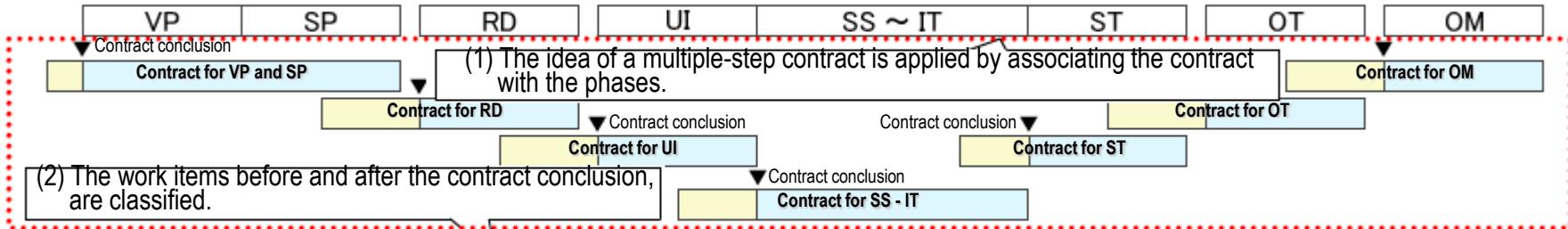
5. Contract Process (1) Key Features

This process is to define contract-related work between an acquirer and supplier



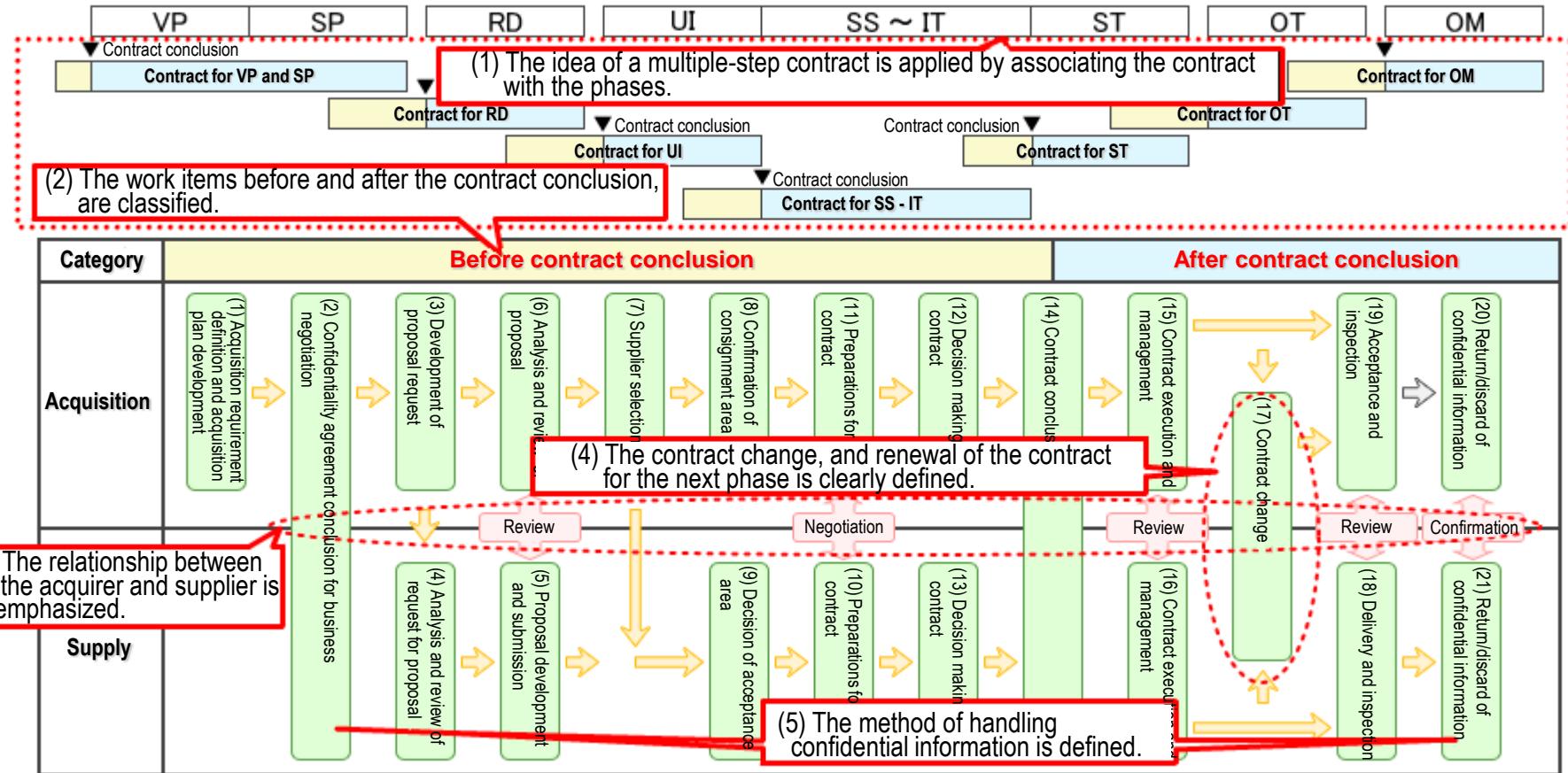
5. Contract Process (1) Key Features

This process is to define contract-related work between an acquirer and supplier



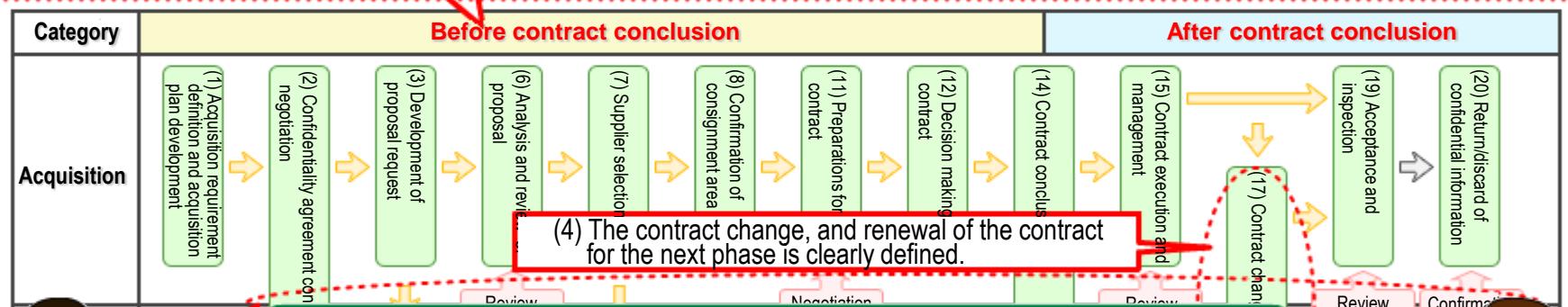
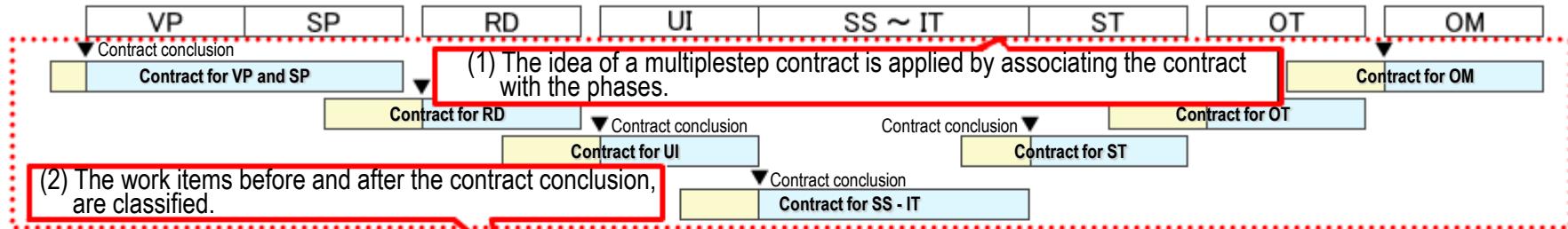
5. Contract Process (1) Key Features

This process is to define contract-related work between an acquirer and supplier

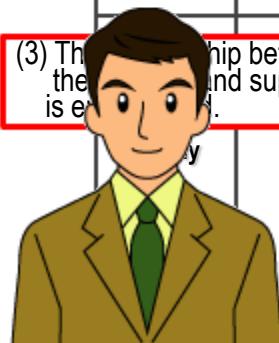


5. Contract Process (1) Key Features

This process is to define contract-related work between an acquirer and supplier

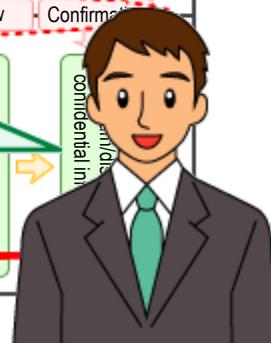


(3) The relationship between the acquirer and supplier is established.



I thought once the contract is concluded, only the development work should be done.

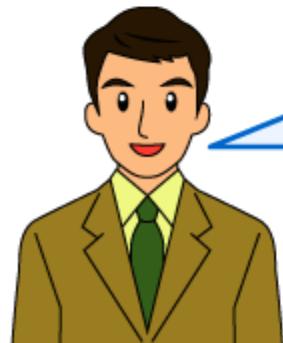
There is a possibility that the scope, the requirement and the specification that the customer agreed to might be overturned by the customer's insistence if the contract, and its change management rules, are vague.



5. Contract Process (2) Category Definition

There are two categories in the contract process

Category
Acquisition
Supply



The contract process consists of two categories: acquisition and supply. The acquisition category is a set of work items performed by the purchaser, whereas the supply category is a set of work items performed by the supplier.



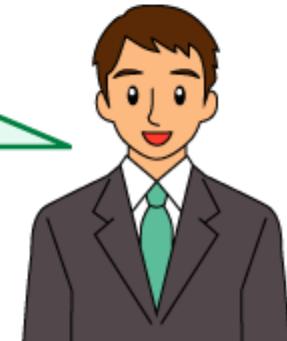
 5. Contract Process (2) Category Definition

There are two categories in contract process

Category
Acquisition
Supply



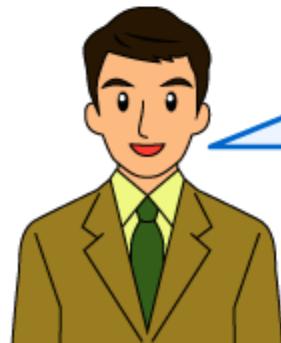
I understand that we will play the roles of both supplier and purchaser in the system development.
So far, I thought we were only playing the role of the supplier.



● 5. Contract Process (2) Category Definition

There are two categories in contract process

Category
Acquisition
Supply



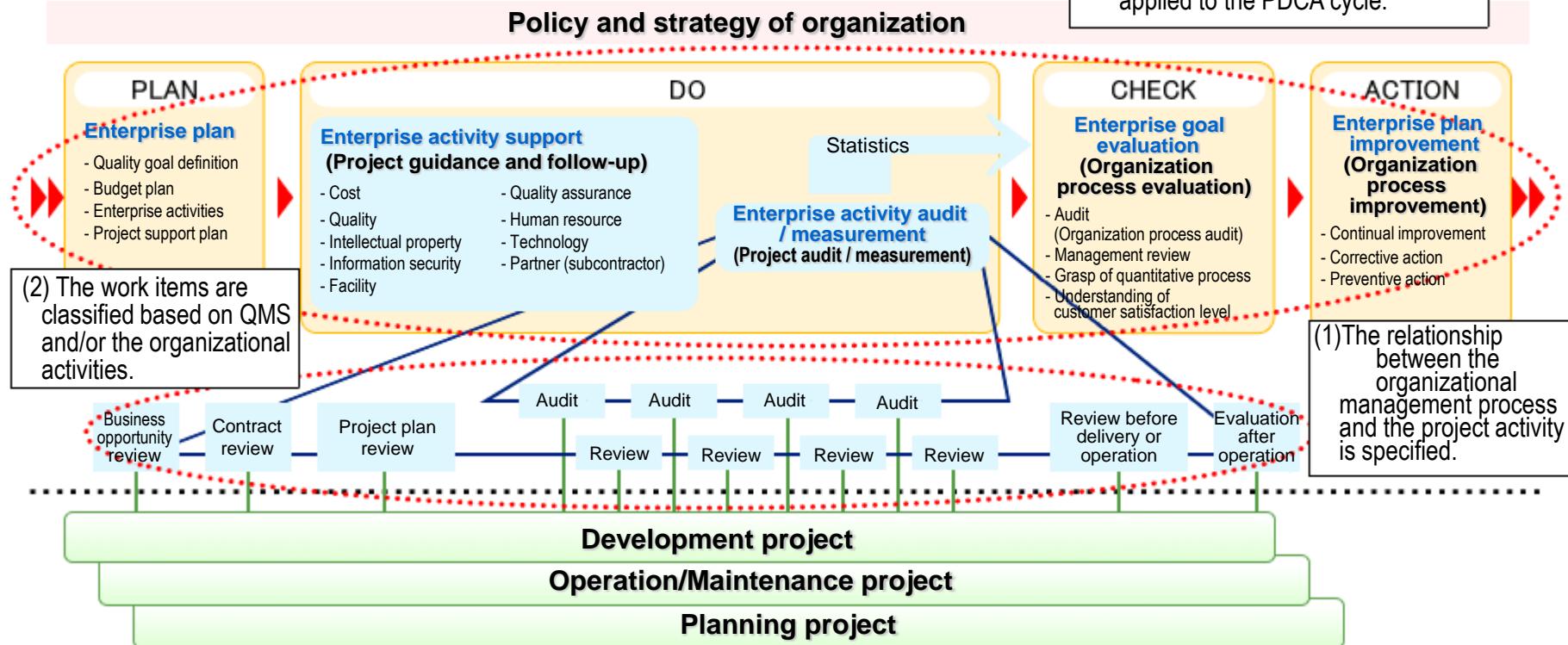
It depends on the situation.

The purchaser and supplier in this case may not necessarily be in a customer-vendor relationship. For example, when a vendor entrusts some of its work to a business partner (subcontractor), the vendor is a purchaser and the business partner is a supplier.



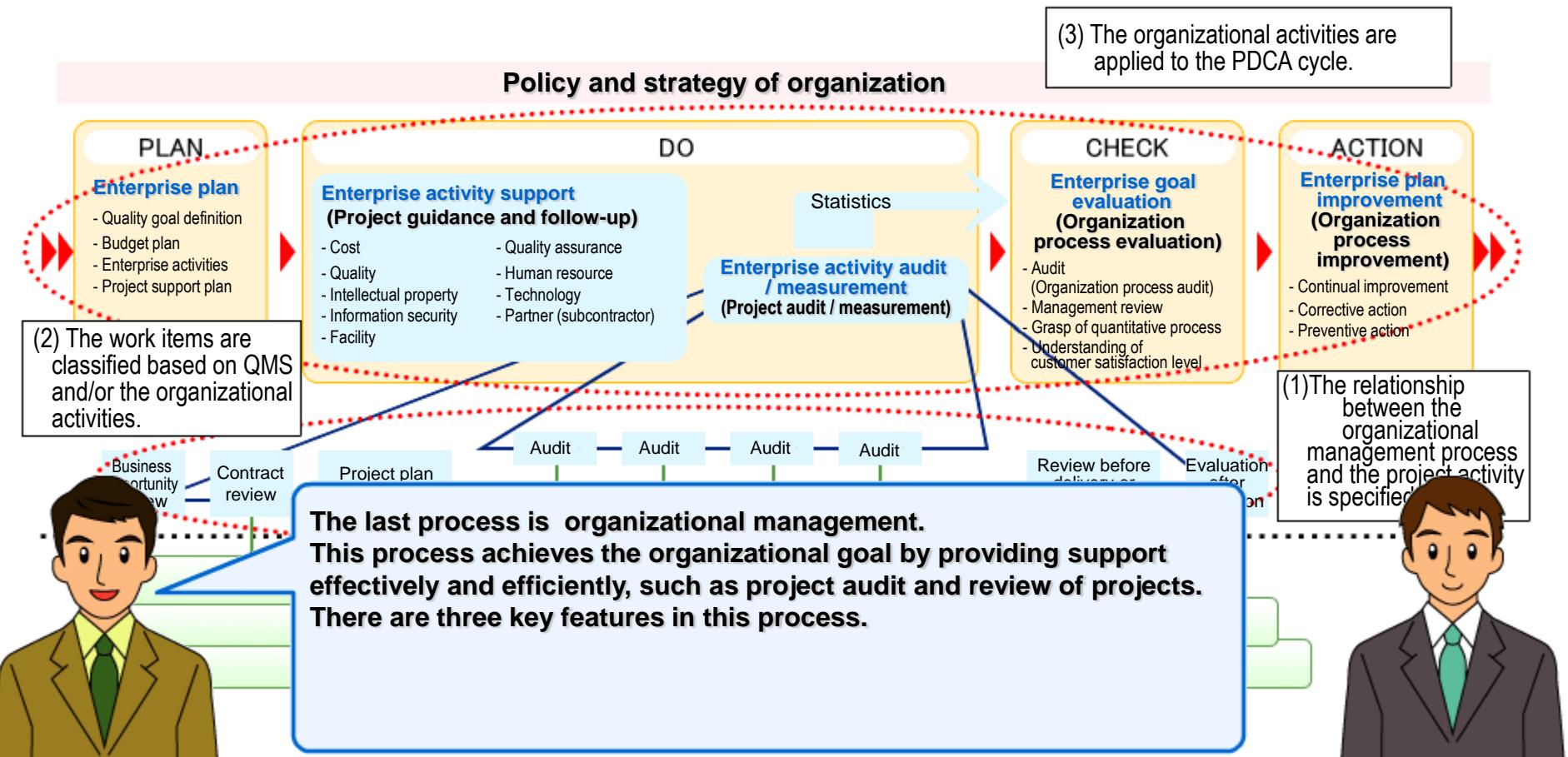
6. Organizational Management Process (1) Key Features

This process makes organizational support such as project audit and review of projects more effective and efficient, so that the organization is able to achieve its goal as a whole.



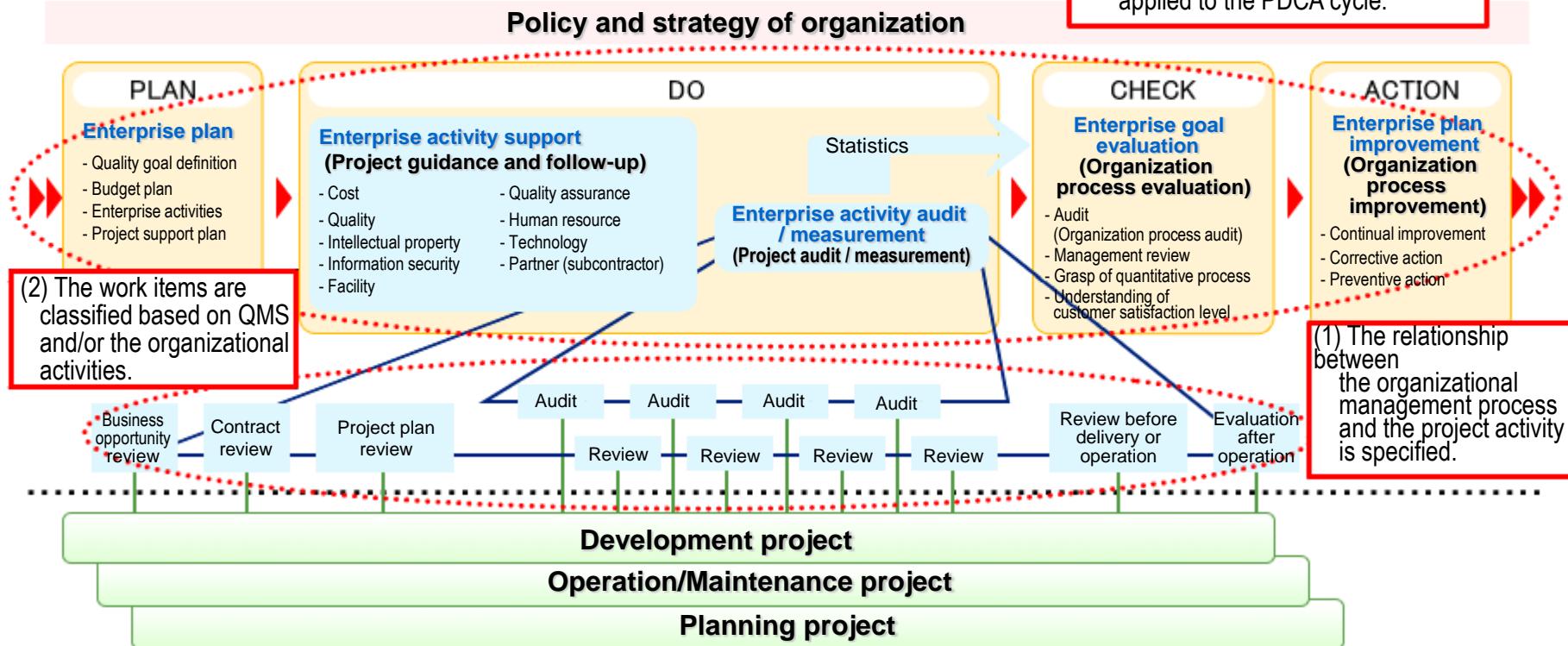
6. Organizational Management Process (1) Key Features

This process is to make organizational support such as project audit and review to their projects more effective and efficient. So that the organization is able to achieve its goal as a whole.



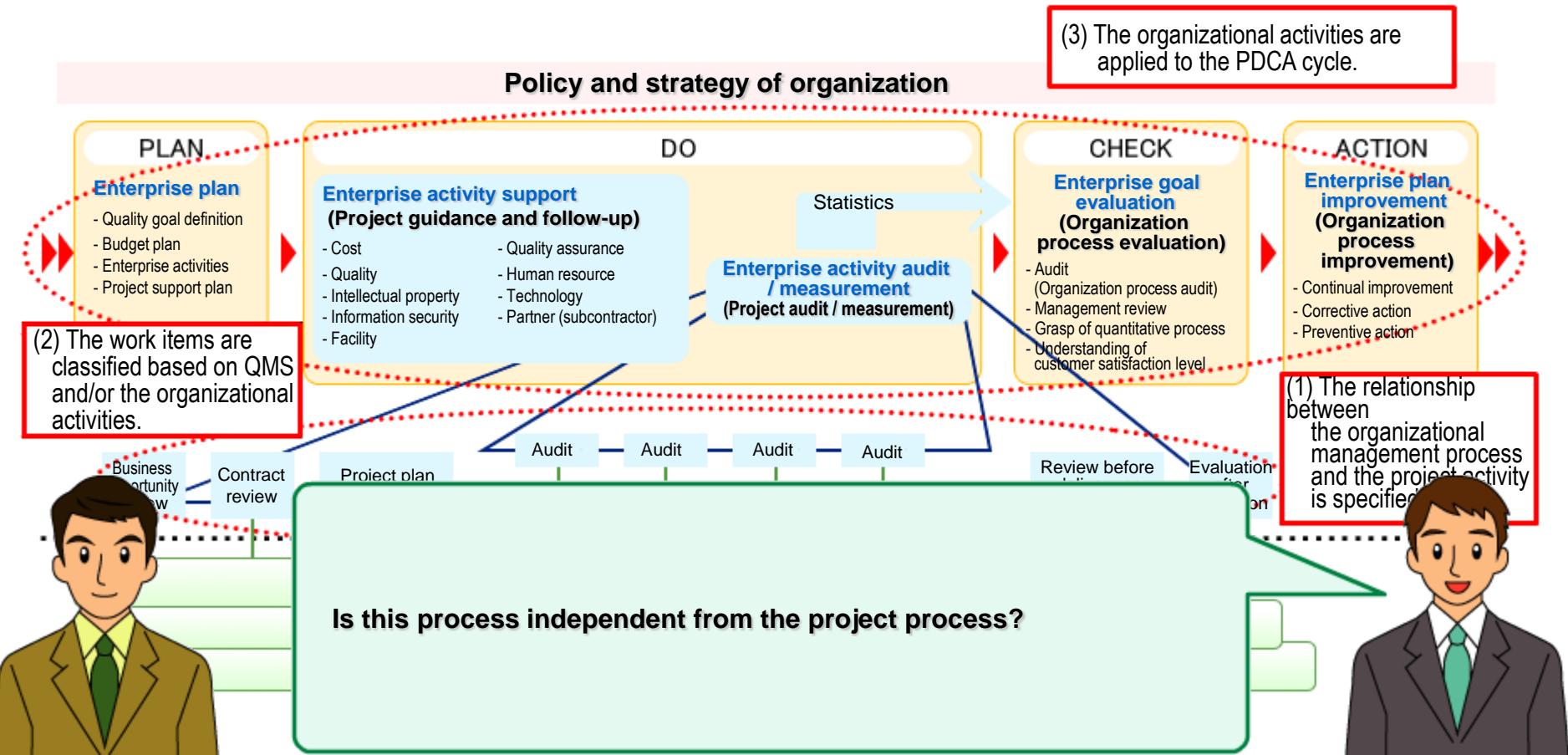
6. Organizational Management Process (1) Key Features

This process is to make organizational support such as project audit and review to their projects more effective and efficient. So that the organization is able to achieve its goal as a whole.



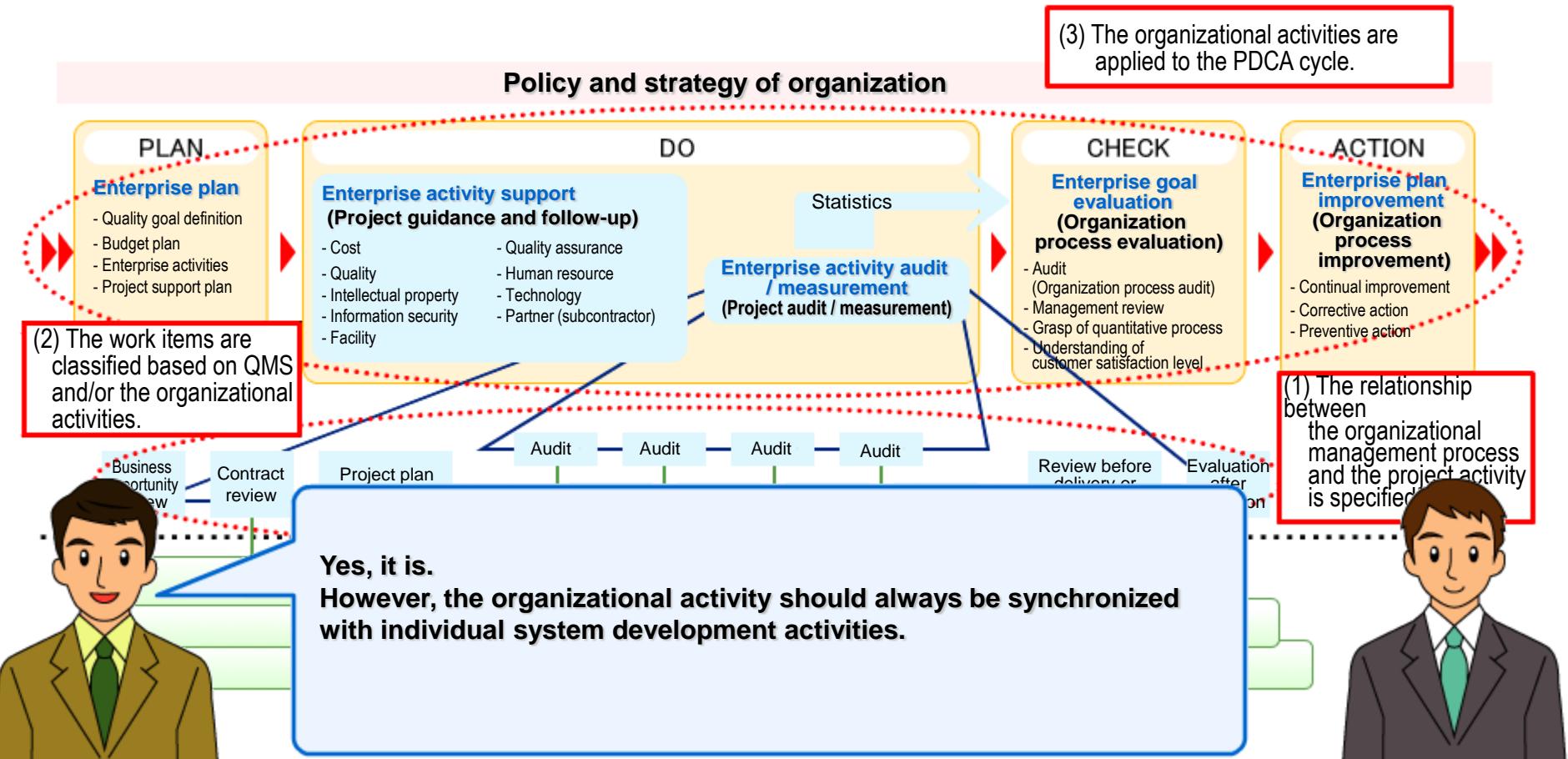
6. Organizational Management Process (1) Key Features

This process is to make organizational support such as project audit and review to their projects more effective and efficient. So that the organization is able to achieve its goal as a whole.



6. Organizational Management Process (1) Key Features

This process is to make organizational support such as project audit and review to their projects more effective and efficient. So that the organization is able to achieve its goal as a whole.



● 6. Organizational Management Process (2) Category and Phase Definition

There are ten categories in the organization management process. Phases are defined according to each organizational activity and project activity.

Category
A. Enterprise promotion
B. Cost management
C. Quality assurance
D. Quality management
E. Human resource management
F. Management of Intellectual Property Activities
G. Technical Management
H. Information Security Management
I. Equipment Management
J. Subcontractor selection

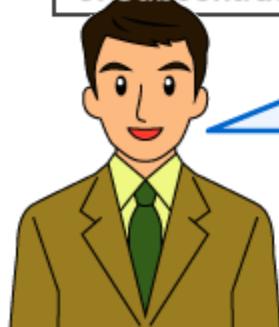
Phase	
Enterprise goal (TARGET)	
Enterprise activity promotion	Promotion plan (PLAN)
	Execution of activities (DO)
	Monitoring and audit of activities (CHECK)
	Evaluation and improvement of activities (ACTION)
	Evaluation and improvement of enterprise activities (IMPROVEMENT)

● 6. Organizational Management Process (2) Category and Phase Definition

There are ten categories in the organization management process. Phases are defined according to each organizational activity and project activity.

Category
A. Enterprise promotion
B. Cost management
C. Quality assurance
D. Quality management
E. Human resource management
F. Management of Intellectual Property Activities
G. Technical Management
H. Information Security Management
I. Equipment Management
J. Subcontractor selection

Phase	
Enterprise goal (TARGET)	
Promotion plan (PLAN)	
Enterprise activity promotion	Execution of activities (DO)
	Monitoring and audit of activities (CHECK)
	Evaluation and improvement of activities (ACTION)
	Evaluation and improvement of enterprise activities (IMPROVEMENT)



By exposing organizational issues and solving them through running the P-D-C-A cycle, the maturity level of the organization will be improved.

7. System Audit Process (1) Key Features

The System Audit Process inspects whether information system risk control is properly executed. This process is executed by independent system auditors.

[Project Process]

(1) Contract Process

(2)
Planning
Process

(3)
Requirement
Definition
Process

(4)
Development
Process

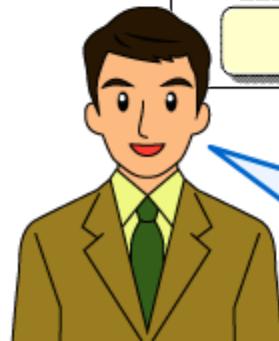
(5)
Operational
Test &
Transition
Process

(6)
Operation &
Maintenance
Process

[Organizational Process]

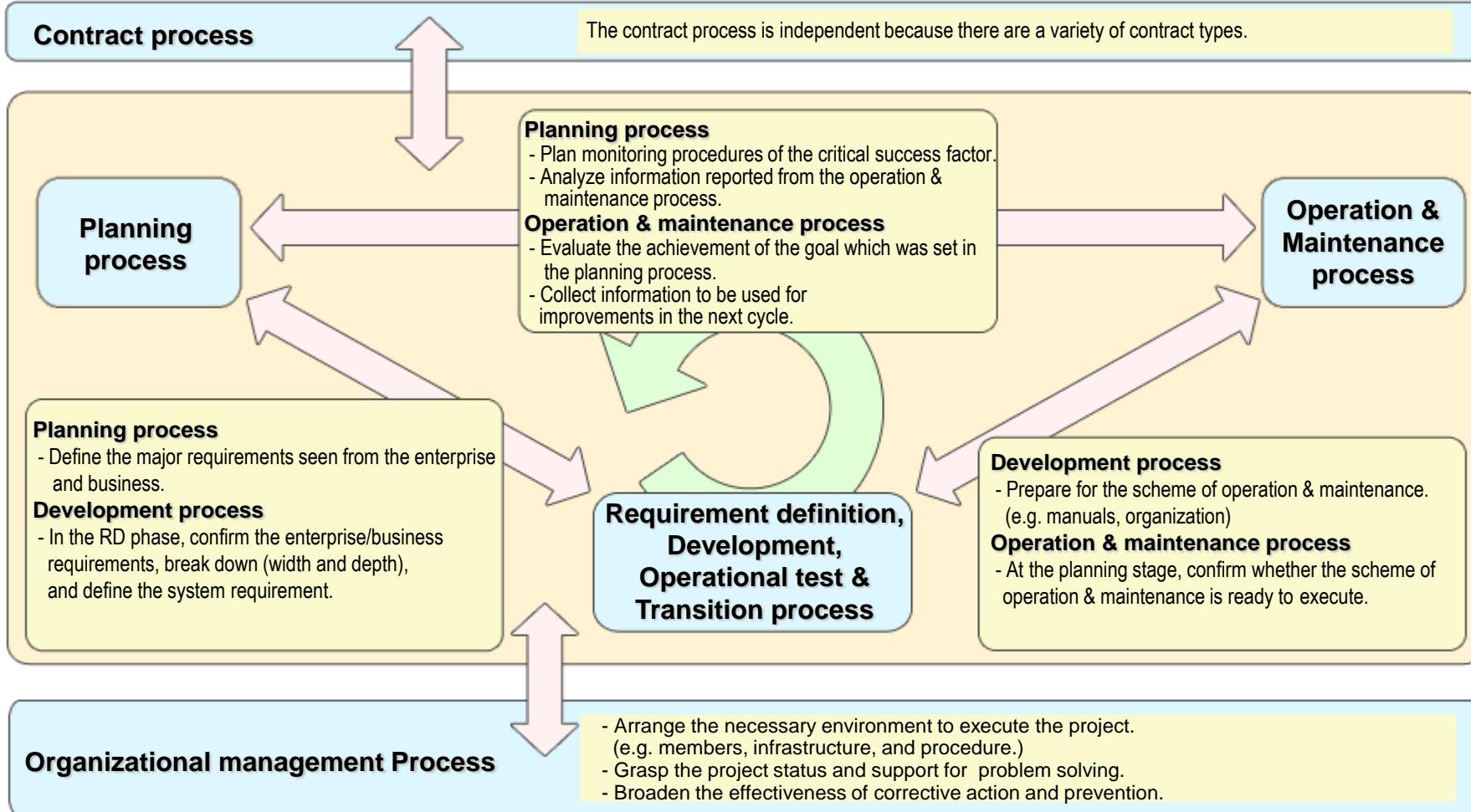
(7) Organizational Management Process

(8) System Audit Process



The system audit process inspects whether information system risk control is properly executed. This process is executed by independent system auditors.

8. Relationships between Processes



8. Relationship between Processes

Contract process

The contract process is independent because there are a variety of contract types.

Planning process**Planning process**

- Plan monitoring procedures of the critical success factor.
- Analyze information reported from the operation & maintenance process.

Operation & maintenance process

- Evaluate the achievement of the goal which was set in the planning process.
- Collect information to be used for the improvements in the next cycle.

Operation & Maintenance process**Planning process**

- Define the major requirements seen from the enterprise and business.

Development process

- In the RD phase, confirm the enterprise/business requirements, break down (width and depth,) and define the system requirement.

Requirement definition, Development, Operational test & Transition process**Development process**

- Prepare for the scheme of operation & maintenance. (e.g. manuals, organization.)

Operation & maintenance process

- At the planning stage, confirm whether the scheme of operation & maintenance is ready to execute.

Organizational map

I have explained each process one by one.

But these processes are related each other and the integrity is maintained.

A project does not necessarily start from the planning process.



8. Relationship between Processes

Contract process

The contract process is independent because there are a variety of contract types.

Planning process

Planning process

- Plan monitoring procedures of the critical success factor.
- Analyze information reported from the operation & maintenance process.

Operation & maintenance process

- Evaluate the achievement of the goal which was set in the planning process.
- Collect information to be used for the improvements in the next cycle.

Operation & Maintenance process

Planning process

- Define the major requirements seen from the enterprise and business.

Development process

- In the RD phase, confirm the enterprise/business requirements, break down (width and depth,) and define the system requirement.

Requirement definition, Development, Operational test & Transition process

Development process

- Prepare for the scheme of operation & maintenance. (e.g. manuals, organization.)

Operation & maintenance process

- At the planning stage, confirm whether the scheme of operation & maintenance is ready to execute.

Organizational management

As you mentioned, there can be system development projects initiated from the operation & maintenance process.



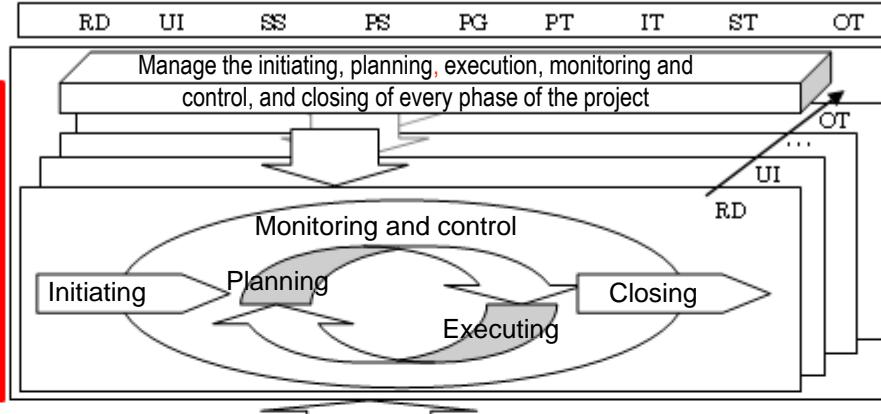
9. Project Management (1) Concept

- Nine knowledge areas of PMBOK were adopted into category
- P-D-C-A cycle is applied in each phase

[Project activities]

Project management categories

- Integration management
- Scope management
- Time management
- Cost management
- Quality management
- Human resource management
- Communications management
- Risk management
- Procurement management



[Organization activities] Audit, judgment, review, support

Initiating

- Project approval
- Project launching
- Phase launching

Closing

- Judgment of phase completion and closing
- Contract closing
- Organization of deliverables and resources
- Analysis and evaluation of collected data

Planning

- Clarification of work items and role assignments
- Estimation of development scale, efforts, period, and costs
- Creation of master and detailed schedule
- Development of development and quality plans
- Development of risk countermeasures plan
- Application for intellectual property rights and definition of protection measures
- Definition of problem management method
- Plan review

Monitoring control

- Risk management and revision
- Arrangement and approval of specification change
- Plan modification management

Executing

- Understanding and reporting of project status
- Project problem management
- Human resource procurement and understanding of work situation
- Revision of human resource plan and outsourcing plan
- Collection and analysis of progress and development scale data
- Collection and analysis of quality data
- Management and revision of efforts and costs



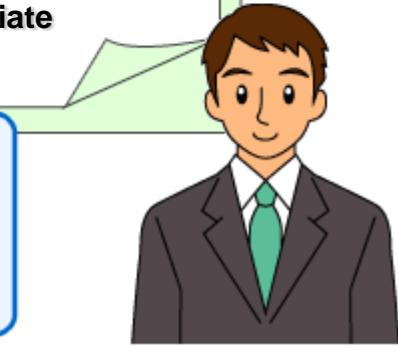
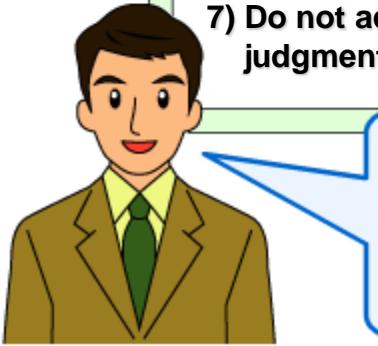
The subcategories of the project management process correspond to the nine knowledge areas of PMBOK.

 9. Project Management (2) Seven Principles for Preventing Failures on a Project

The failure of a project causes tremendous loss to the stakeholders, including delivery delays, defects, and cost overruns. The following seven points are important for preventing failure.

- Seven principles for preventing failures on a project -

- 1) Verify the resources of both the consignor and consignee at the time of a proposal, business negotiation, or acceptance of an order and then establish a framework to undertake the project.
- 2) Clarify the reasons for the estimate and do not make any groundless cutbacks.
- 3) At the time of an agreement, the stakeholders should agree on conditions such as the scope, responsibility, and role assignment. Changes are to be reflected in the agreement immediately.
- 4) Develop a project plan so that stakeholders can agree on it when the project starts.
- 5) Establish a phase completion criteria and do not defer major issues regarding requirements and specifications until subsequent phases.
- 6) Conduct a project audit when necessary and be sure to implement the PDCA cycle.
- 7) Do not accept reported information without verification; instead, make an appropriate judgment based on the work site and actual items.



These “Seven principles for preventing failures on a project” are based on Fujitsu’s extensive project experience.

The failure of a project causes tremendous loss to stakeholders, including delivery delays, defects, and cost overruns.

Please follow these seven principles to prevent failures on projects.

 9. Project Management (2) Seven Principles for Preventing Failures on a Project

The failure of a project causes tremendous loss to the stakeholders, including delivery delays, defects, and cost overruns. The following seven points are important for preventing failure.

- Seven principles for preventing failures on a project -

- 1) Verify the resources of both the consignor and consignee at the time of a proposal, business negotiation, or acceptance of an order and then establish a framework to undertake the project.
- 2) Clarify the reasons for the estimate and do not make any groundless cutbacks.
- 3) At the time of an agreement, the stakeholders should agree on conditions such as the scope, responsibility, and role assignment. Changes are to be reflected in the agreement immediately.
- 4) Develop a project plan so that stakeholders can agree on it when the project starts.
- 5) Establish a phase completion criteria and do not defer major issues regarding requirements and specifications until subsequent phases.
- 6) Conduct a project audit when necessary and be sure to implement the PDCA cycle.
- 7) Do not accept reported information without verification; instead, make an appropriate judgment based on the work site and actual items.

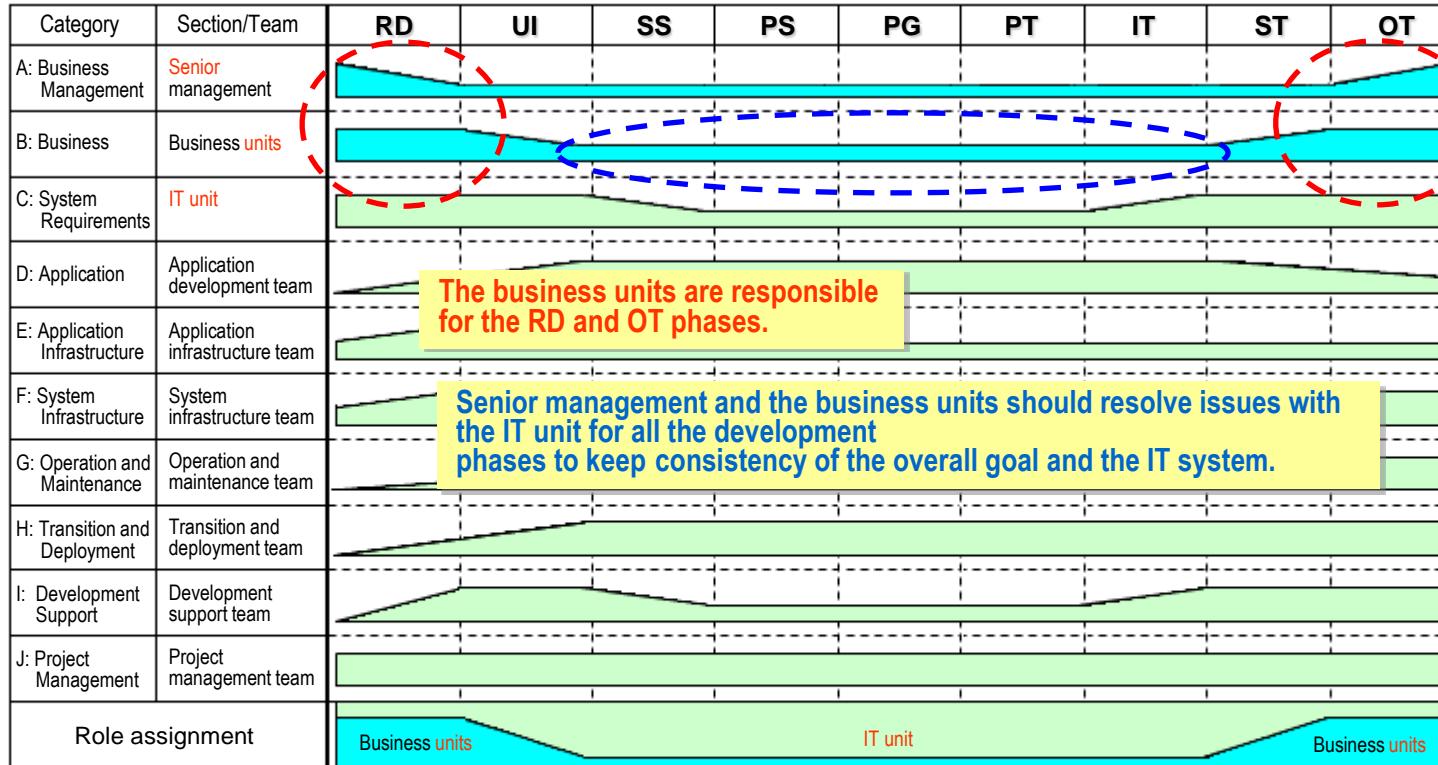


I found it in the “Introduction,” on the top page of the SDEM handbook.
As a project manager, I will faithfully comply with these seven principles.



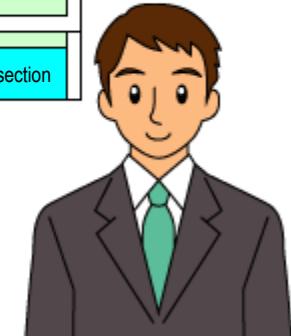
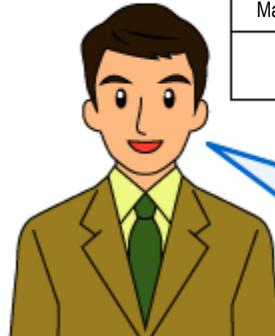
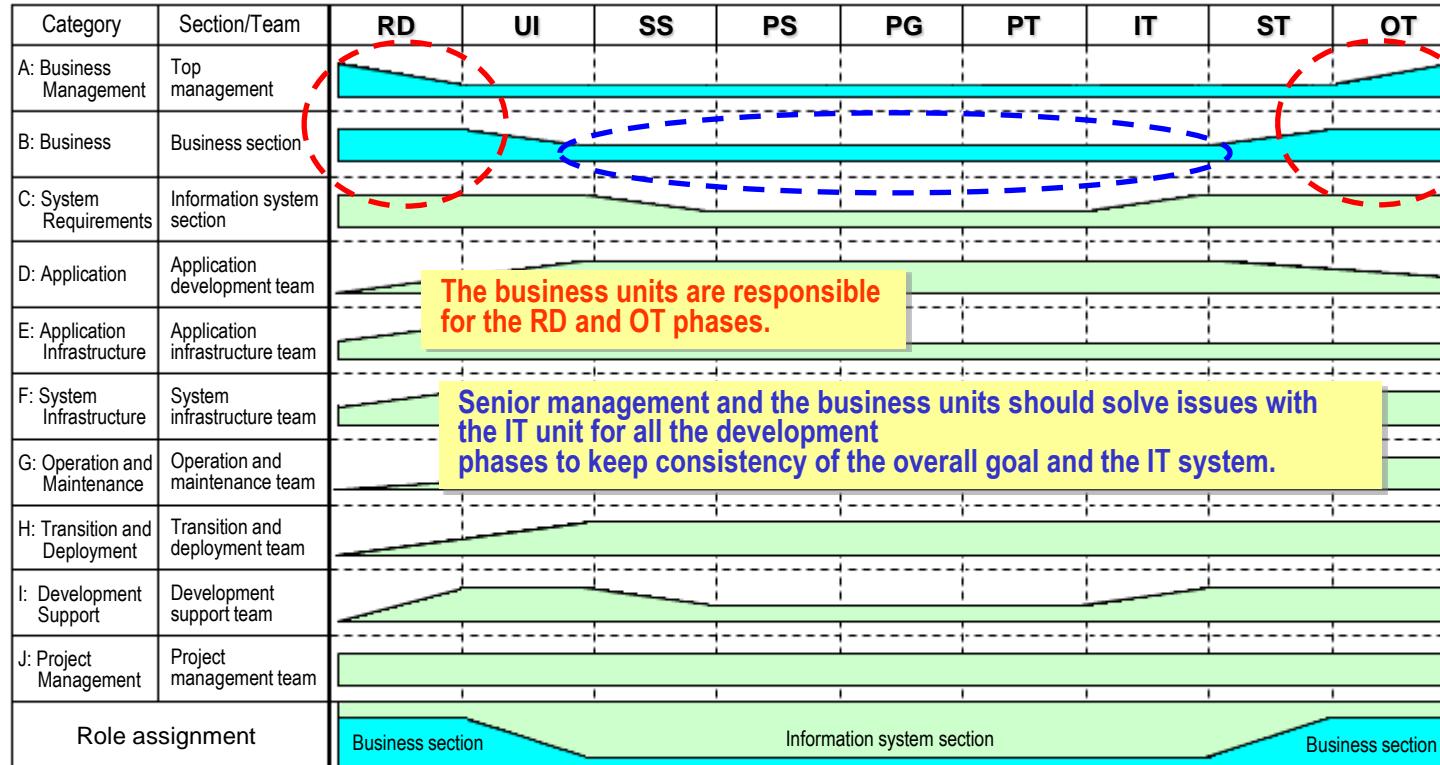
9. Project Management (3) Role and Responsibility Policy

An example of a role assignment model for each stakeholder by using the categories and phases in SDEM



9. Project Management (3) Role and Responsibility Policy

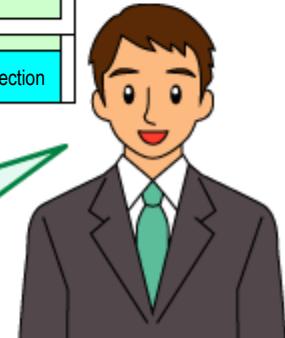
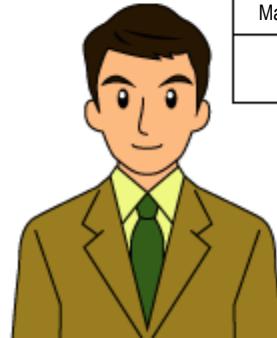
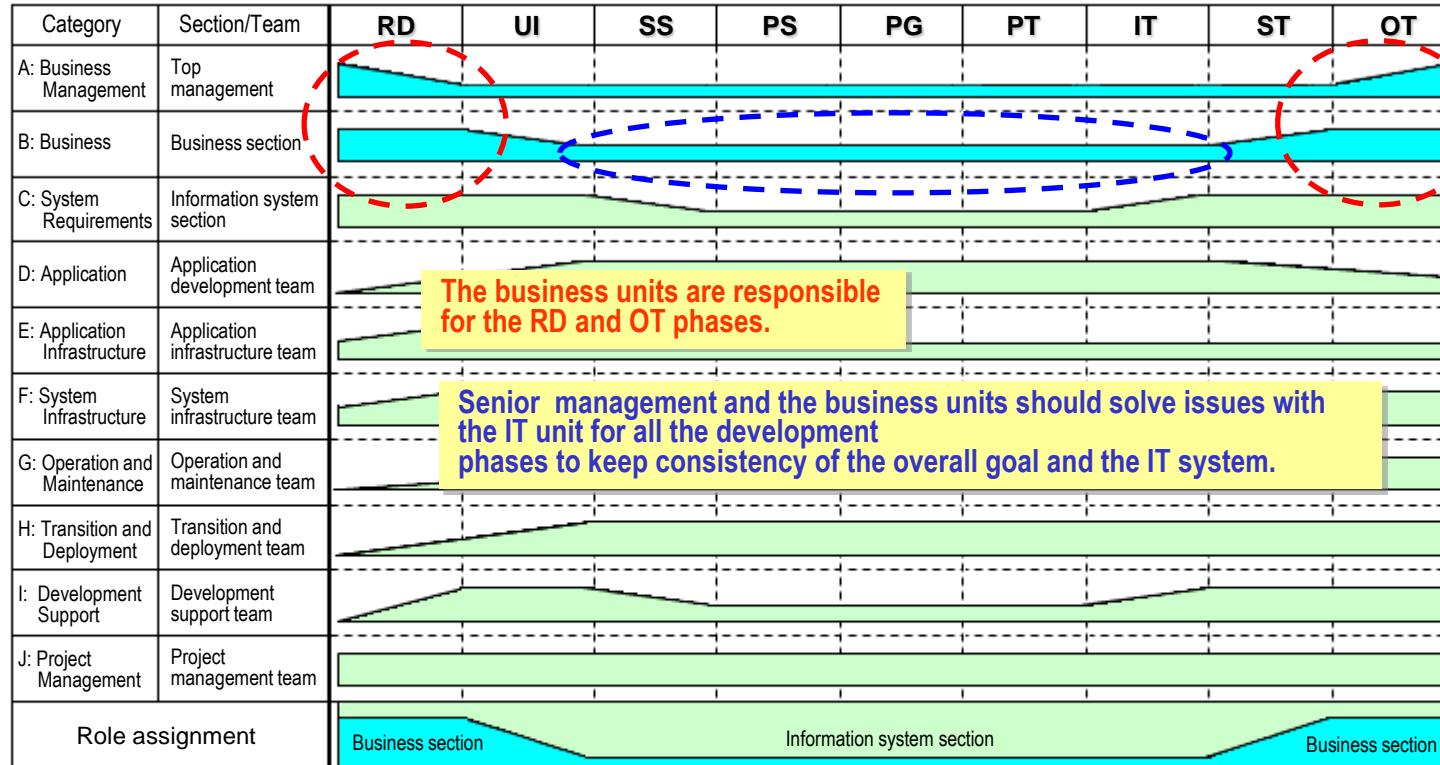
An example of a role assignment model for each stakeholder by using the categories and phases in SDEM



Since various stakeholders are related to system development, it is important to clarify their roles by applying SDEM.

9. Project Management (3) Role and Responsibility Policy

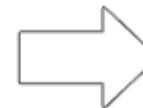
An example of a role assignment model for each stakeholder by using the categories and phases in SDEM



Associating the category with the section/team helps our understanding. Senior management and the business units also have their own roles that should be played through all stages of the project.

 9. Project Management (4) Phase Completion**(1) Phase completion**

- The WBS items in the phase are completed
- Actions to be taken for pending matters are defined
- The next phase is ready, etc.

**Approval**

- It is important not to push back issues to the next phase.
- The issues have to be examined in the current phase.
- Completion criteria have to be agreed by the stakeholders in the planning phase.

(2) Examples of phase completion criteria

Phase	Completion criterion
System requirement definition (RD)	Business requirements and system requirements are reviewed and defined and the outline design and feasibility of the system have been examined.
User interface design (UI)	Outline system specification as viewed from the user (system functions, data, interfaces, screens, and forms) is designed and agreed upon.
System structure design (SS)	The internal system structure (including program units and database structure design) and the interfaces between programs are designed and confirmed.
Program structure design (PS)	Implementation logic for all programs is determined.
Programming (PG)	All programs have been created.
Program test (PT)	All test items planned have been conducted and the achievement of the quality goal has been evaluated.
Integration test (IT)	All test items planned have been conducted and the achievement of the quality goal has been evaluated.
System test (ST)	All test items planned have been conducted and the achievement of the quality goal has been evaluated.
Operational test & transition (OT)	The system has been accepted and approved.

 9. Project Management (4) Phase Completion

(1) Phase completion

- The WBS items in the phase are completed
- Actions to be taken for pending matters are defined
- The next phase is ready, etc.

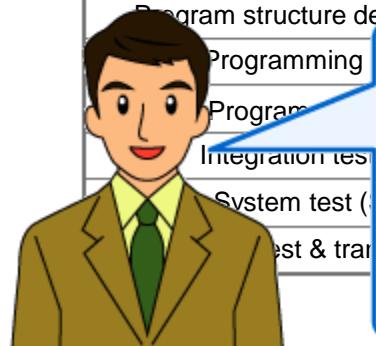


Approval

- It is important not to push back matters to the next phase.
- The matters have to be examined in the current phase
- Completion criterion has to be agreed by the stakeholders at the planning phase

(2) Examples of phase completion criteria

Phase	Completion criterion
System requirement definition (RD)	Business requirements and system requirements are reviewed and defined and the outline design and feasibility of the system have been examined.
User interface design (UI)	Outline system specification as viewed from the user (system functions, data, interfaces, screens, and forms) is designed and agreed upon.
System structure design (SS)	The internal system structure (including program units and database structure design) and the interfaces between programs are designed and confirmed.
Program structure design (PS)	Implementation logic for all programs is determined.



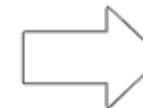
WBS helps us to define phase completion criteria, and to execute the work appropriately.



 9. Project Management (4) Phase Completion

(1) Phase completion

- The WBS items in the phase are completed
- Actions to be taken for pending matters are defined
- The next phase is ready, etc.

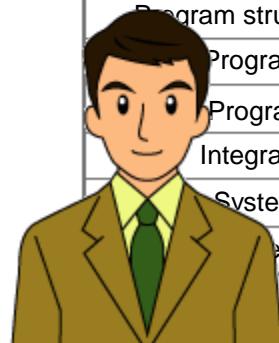


Approval

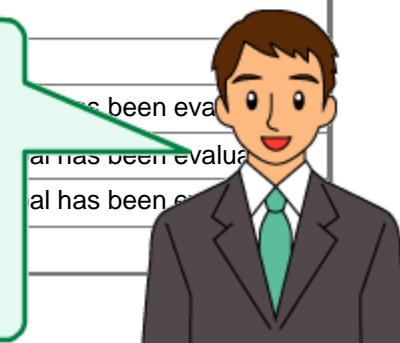
- It is important not to push back matters to the next phase.
- The matters have to be examined in the current phase
- Completion criterion has to be agreed by the stakeholders at the planning phase

(2) Examples of phase completion criteria

Phase	Completion criterion
System requirement definition (RD)	Business requirements and system requirements are reviewed and defined and the outline design and feasibility of the system have been examined.
User interface design (UI)	Outline system specification as viewed from the user (system functions, data, interfaces, screens, and forms) is designed and agreed upon.
System structure design (SS)	The internal system structure (including program units and database structure design) and the interfaces between programs are designed and confirmed.
Program structure design (PS)	Implementation logic for all programs is determined.
Programming	
Program test (PT)	
Integration test (IT)	
System test (ST)	
Test & transition (TT)	

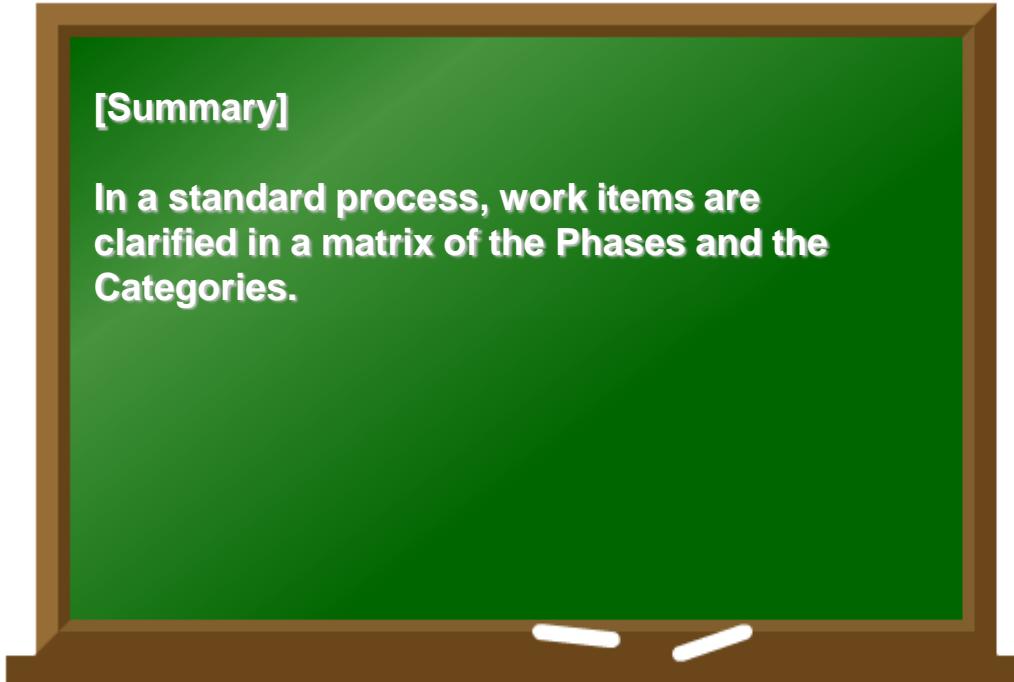


I did not care much about phase completion criteria, but rework might be prevented by clarifying the phase completion criteria.



 **Summary****[Summary]**

In a standard process, work items are clarified in a matrix of the Phases and the Categories.

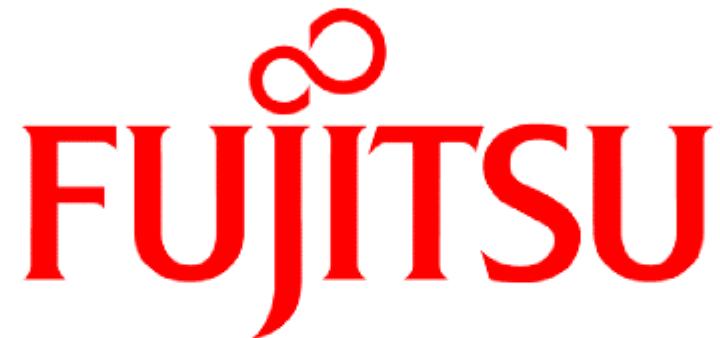


The work items are organized in a matrix that consists of phases and categories in each project process.

The phases are placed in rows; the categories such as Business, Application, Infrastructure, and Operation/transition are placed in columns. The work items are placed at the intersections of the columns and rows.

By showing work items in a matrix, it becomes all-encompassing and oversights in work can be prevented.





THE POSSIBILITIES ARE INFINITE

Table of Contents

Chapter 3 Quality Implementation

Introduction

1. Approach to Quality Management

1.1 Quality Implementation with SDEM

1.2 Quality Management and Evaluation with SDEM

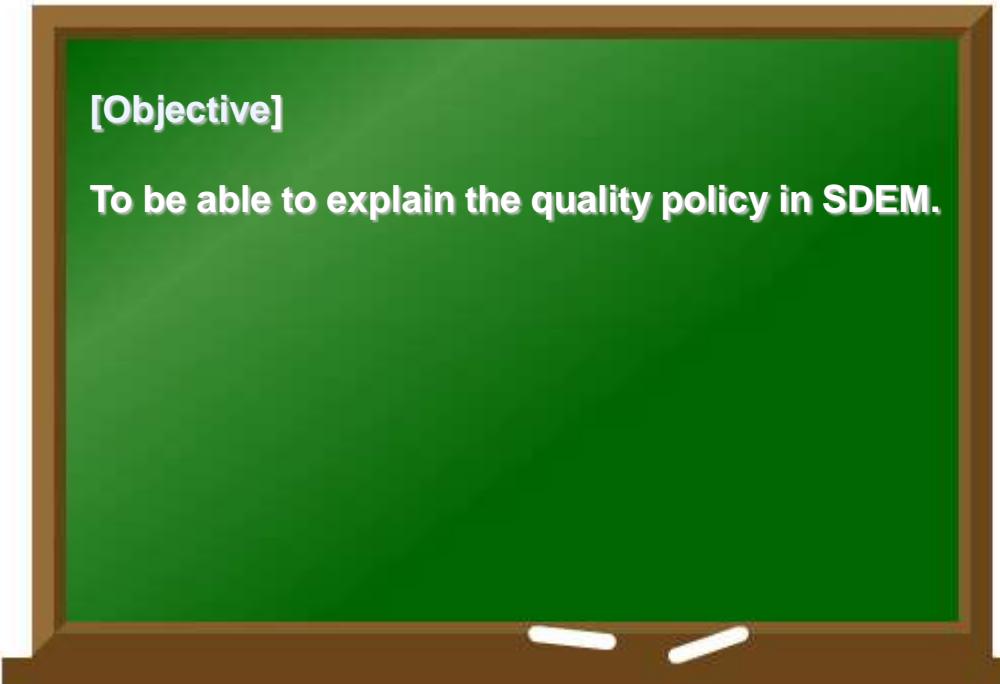
1.3 Quality Management Indicators

2. Summary

 Introduction**[Objective]**

To be able to explain the quality policy in SDEM.

In this chapter, we are going to study the SDEM approach to quality implementation.



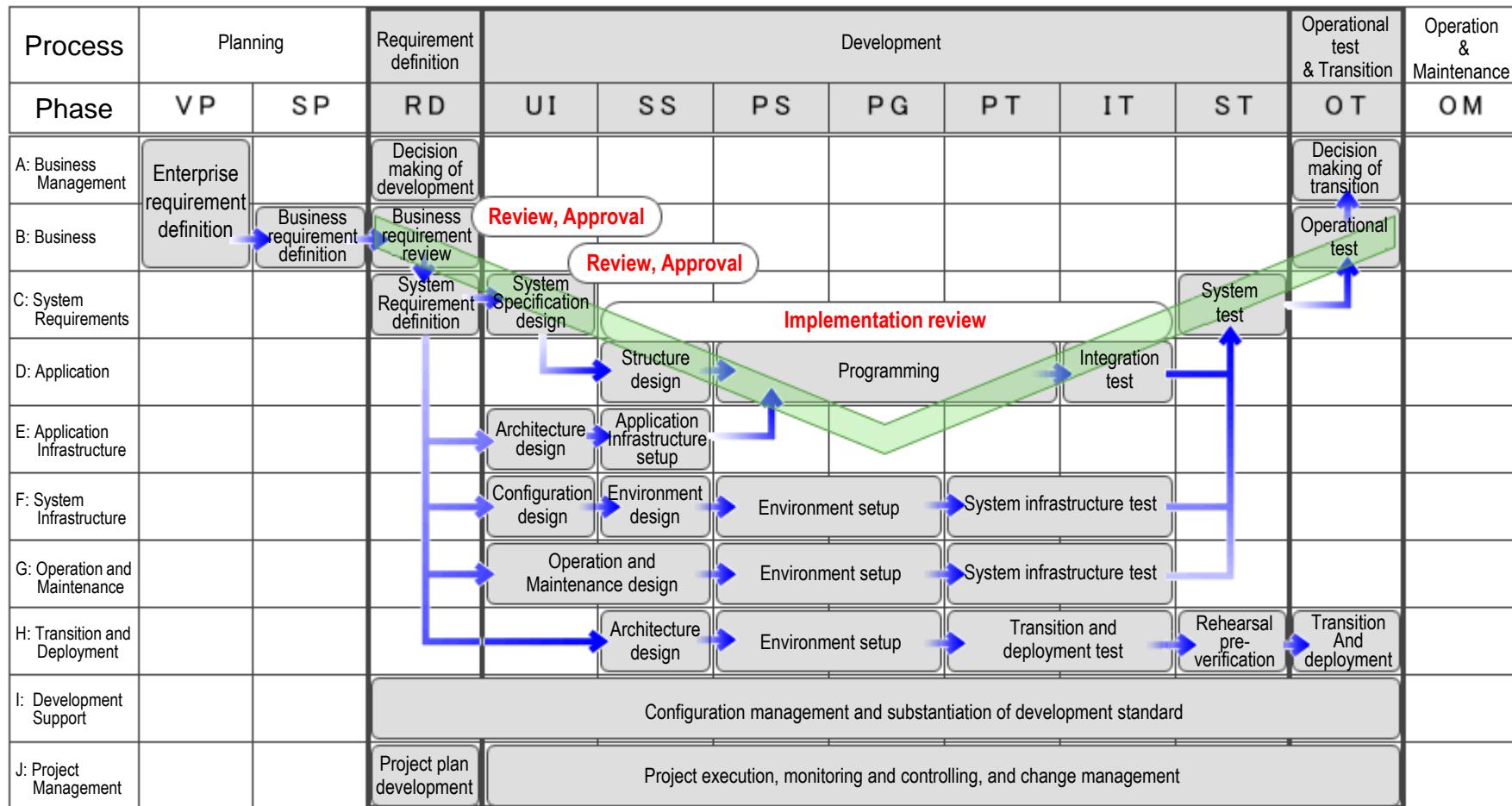
 Conversation between Manager and Newly Appointed Project Leader

So far, I have studied the standardized processes of SDEM one by one.
However, the relevance of quality and SDEM is still unclear.

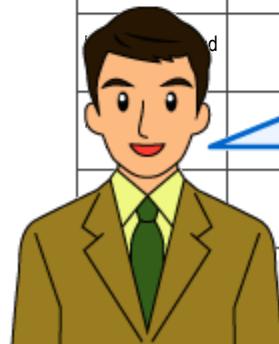
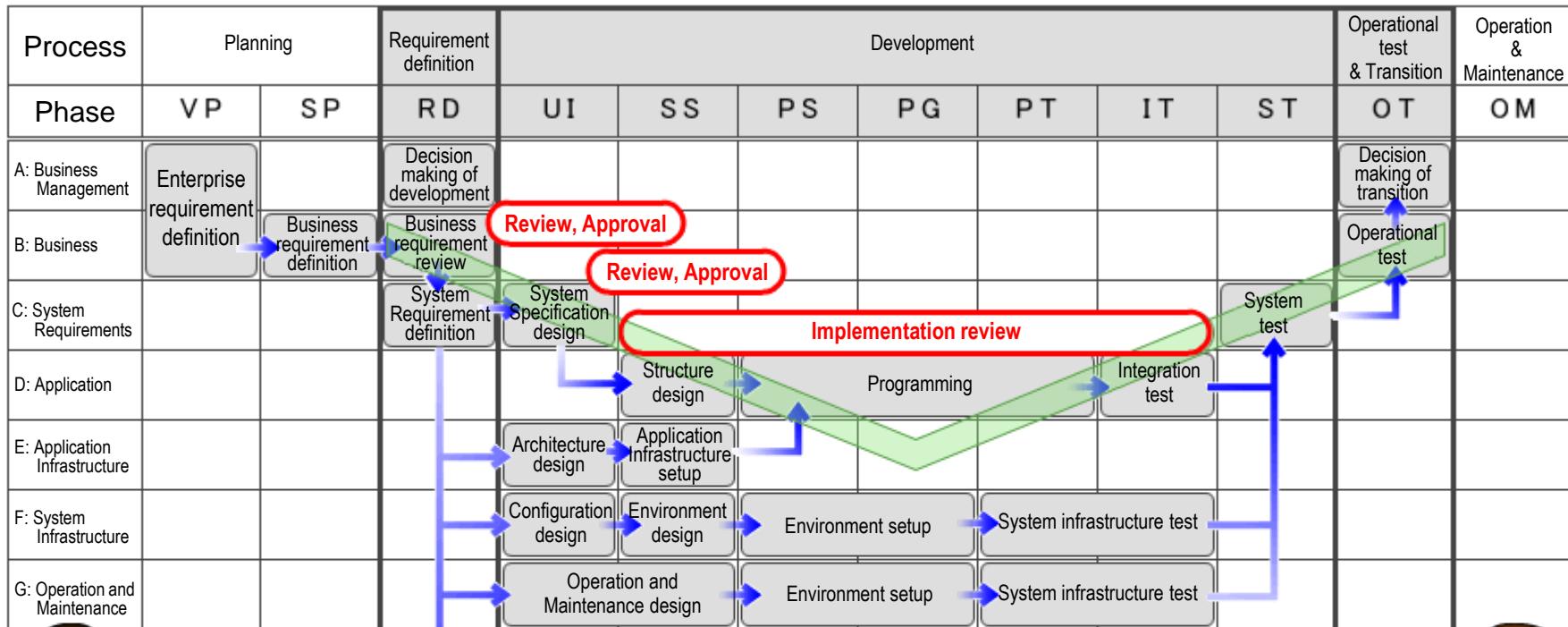


Let's go back to look at SDEM from the bird's eye viewpoint and find out that the process standardization relates to quality improvement.

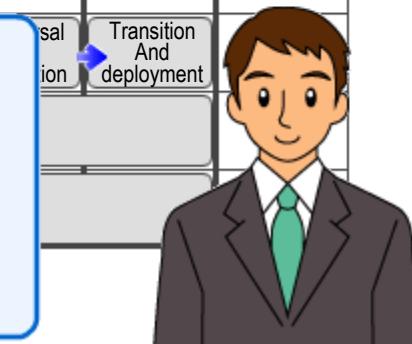
1. Quality Implementation with SDEM



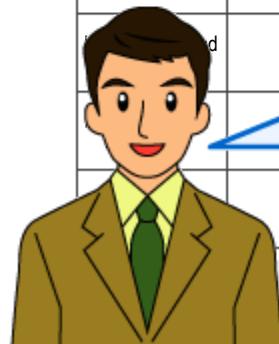
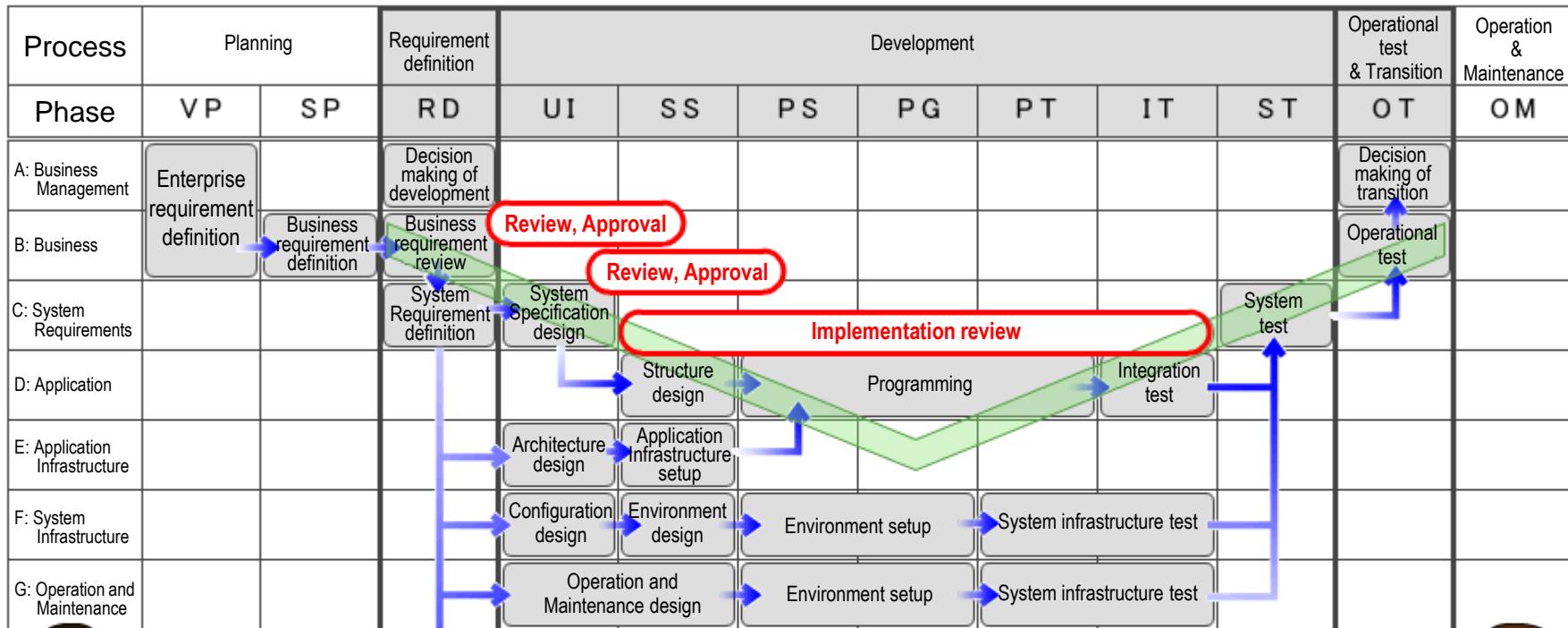
1. Quality Implementation with SDEM



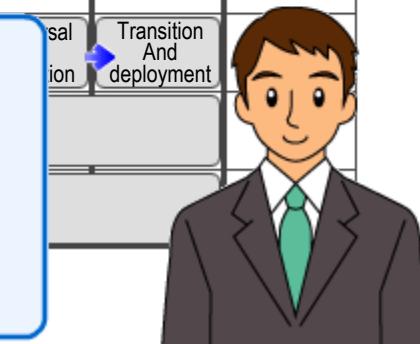
As I said, in order to implement quality, it is necessary to verify and validate the system component elements of the requirement definition and design process at the same height of test process. In addition to that, accumulation of quality from the upper phases is also important. "Review" plays an important role for implementing quality. Therefore, "Review" is clearly specified in the WBS second level of business and system requirements categories for the requirement definition, design, and development phases in SDEM.



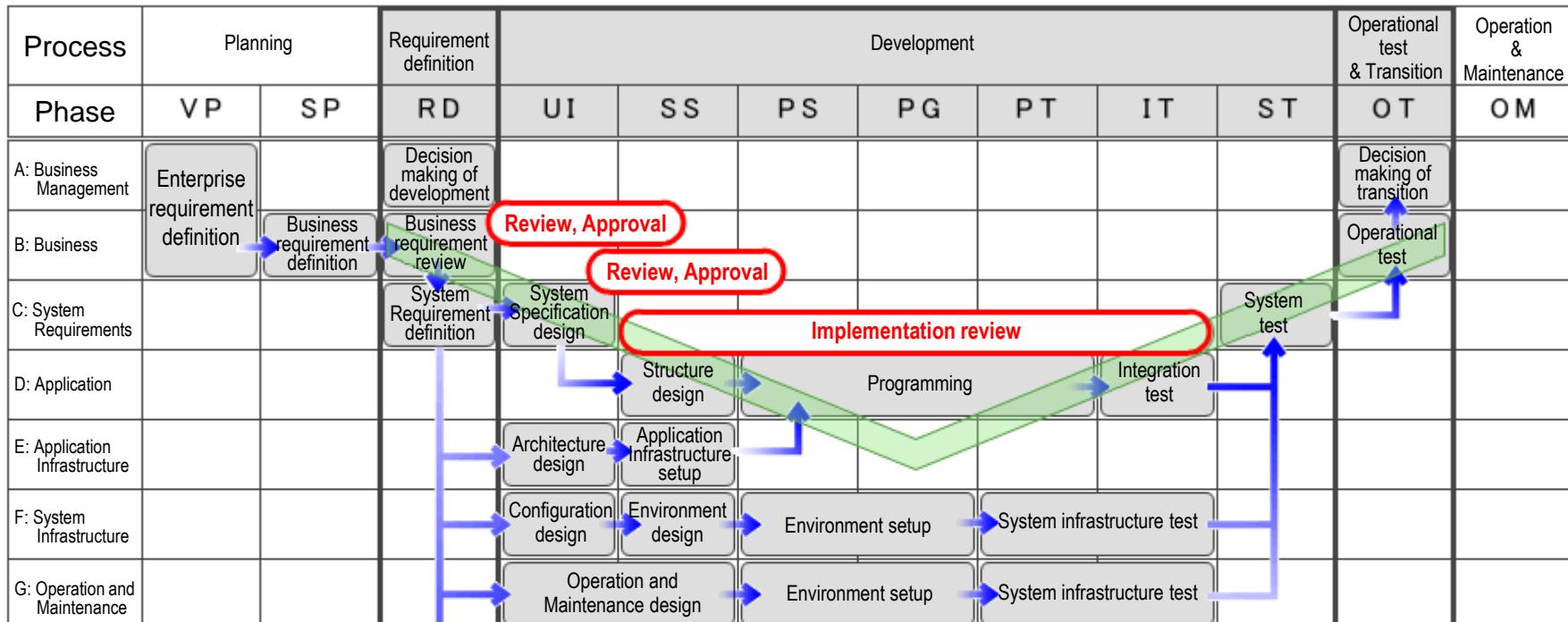
1. Quality Implementation with SDEM



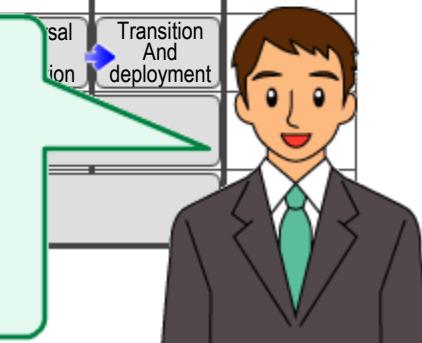
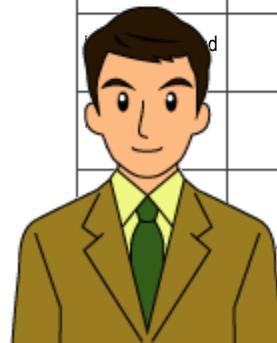
Reviews performed by each group, or directly by a designer or developer, are not specifically defined as WBS because they are considered a part of their own work.



1. Quality Implementation with SDEM



I want to note that it is important to implement quality phase by phase, and that the quality is verified by using the documents made in the breakdown phases.
Since we are urged to move the project forward, we tend to forget about reviews for quality implementation.



2. Quality Management and Evaluation with SDEM

(1) Quality Management Policy

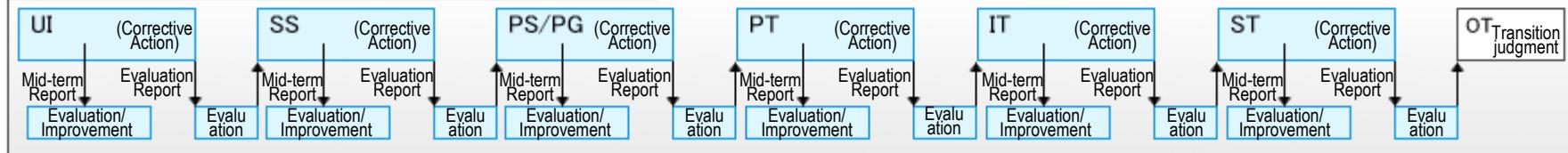
- The person in charge of project promotion assumes total responsibility for quality.
- Elect the person in charge of quality management in the partner company (subcontractor) too.
- In the UI phase, perform the following three steps of review: 1) Within the partner, 2) In-house, 3) With the customer/end-user.

(2) Key points

- Perform a phase completion meeting to confirm the status and track the quality, then go to the next phase.
- When PS-PT is done by the partner (subcontractor), perform an acceptance test for each PG.
- Perform the evaluation in the first half of the phase, then solve the problems, if any.

	Description
Unit of evaluation	UI : each function, SS : each structural design (each screen and job), PS-PT : each program
Evaluator	UI/SS/IT/ST : SE who designs the entire system, PS-PT : Designer who takes charge of SS
Terms for evaluation	Perform evaluation, solve problems in the mid-term and the end of phase. Perform evaluation before the next phase.
Evaluation procedure	<p>(1) The person in charge of development should perform the evaluation report in the middle of the phase.</p> <p>(2) Take corrective action in those areas that might not satisfy the quality management metrics.</p> <p>Review : Investigate the similarity of oversight, fix the review methodology, perform an improved review.</p> <p>Test : Detect the unconsidered items by comparing with other test cases, review test case, perform re-test.</p> <p>(3) In final (or next) evaluation, confirm the effectiveness of corrective action and whether quality metrics are satisfied.</p>

(3) Quality evaluation procedure



● 2. Quality Management and Evaluation with SDEM

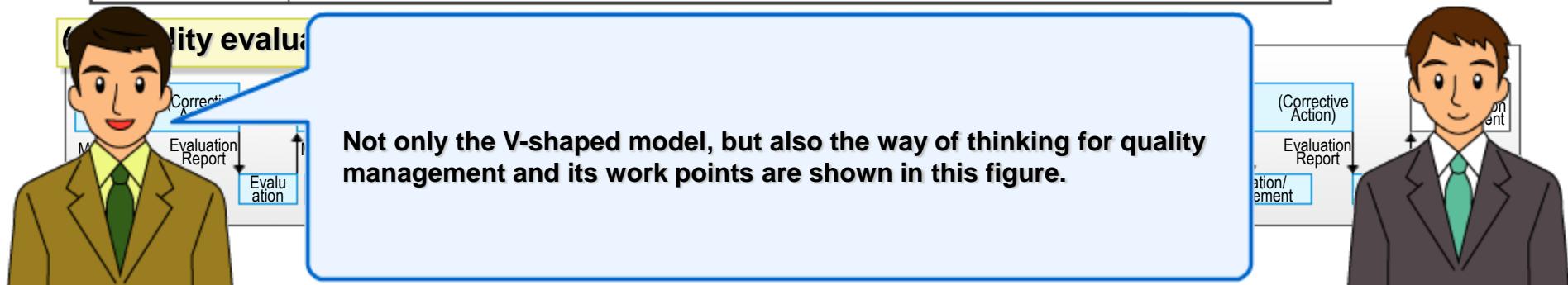
(1) Quality Management Policy

- The person in charge of project promotion assumes total responsibility for the quality.
- Elect the person in charge of quality management in the partner company (subcontractor) too.
- In the UI phase, perform the following three steps of review. 1) Within the partner, 2) In-house, 3) With the customer/end-user.

(2) The point

- Perform a phase completion meeting to confirm the status and track the quality, then go to the next phase.
- When PS-PT is done by the partner (subcontractor), perform an acceptance test for each PG.
- Perform the evaluation in the first half of the phase, then solve the problems, if any.

	Description
Unit of evaluation	UI : each function, SS : each structural design (each screen and job), PS-PT : each program
Evaluator	UI/SS/IT/ST : SE who designs the entire system, PS-PT : Designer who takes charge of SS
Terms for evaluation	Perform evaluation, solve problems in the mid-term and the end of phase. Perform evaluation before the next phase.
Evaluation procedure	<p>(1) The person in charge of development should perform the evaluation report in the middle of the phase.</p> <p>(2) Take the corrective action in those areas that might not satisfy the quality management metrics.</p> <p>Review : Investigate the similarity of oversight, fix the review methodology, perform an improved review.</p> <p>Test : Detect the unconsidered items by comparing with other test cases, review test case, perform re-test.</p> <p>(3) In final (or next) evaluation, confirm the effectiveness of corrective action and whether quality metrics are satisfied.</p>



● 2. Quality Management and Evaluation with SDEM

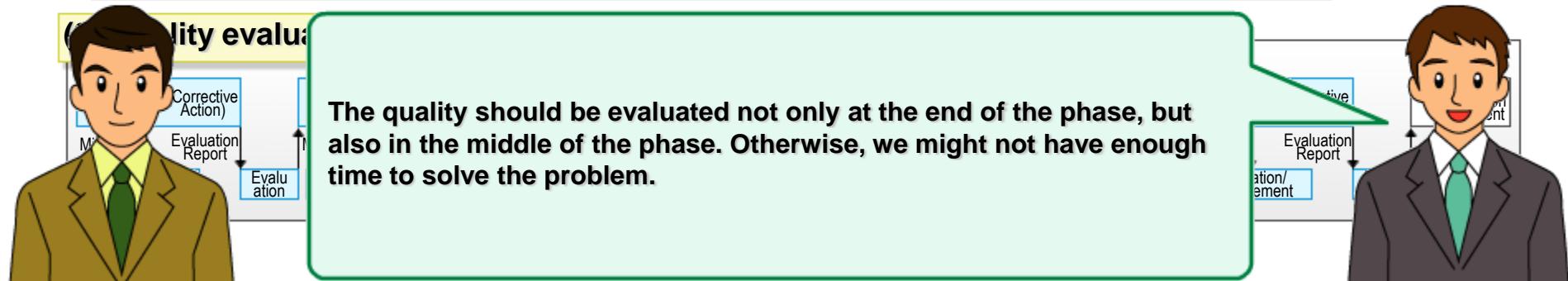
(1) Quality Management Policy

- The person in charge of project promotion assumes total responsibility for the quality.
- Elect the person in charge of quality management in the partner company (subcontractor) too.
- In the UI phase, perform the following three steps of review. 1)Within the partner, 2) In-house, 3)With the customer/end-user.

(2) The point

- Perform a phase completion meeting to confirm the status and track of the quality, then go to the next phase.
- When PS-PT is done by the partner (subcontractor), perform an acceptance test for each PG.
- Perform the evaluation in the first half of the phase, then solve the problems, if any.

	Description
Unit of evaluation	UI : each function, SS : each structural design (each screen and job), PS-PT : each program
Evaluator	UI/SS/IT/ST : SE who designs the entire system, PS-PT : Designer who takes charge of SS
Terms for evaluation	Perform evaluation, solve problems in the mid-term and the end of phase. Perform evaluation before the next phase.
Evaluation procedure	<p>(1) The person in charge of development should perform the evaluation report in the middle of the phase.</p> <p>(2) Take the corrective action in those areas that might not satisfy the quality management metrics.</p> <p>Review : Investigate the similarity of oversight, fix the review methodology, perform an improved review.</p> <p>Test : Detect the unconsidered items by comparing with other test cases, review test case, perform re-test.</p> <p>(3) In final (or next) evaluation, confirm the effectiveness of corrective action and whether quality metrics are satisfied.</p>



3. Quality Management Indicators

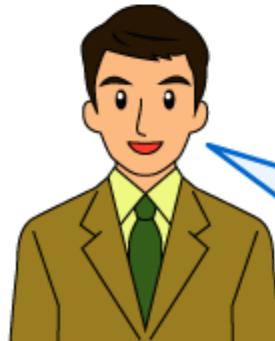
An example of quality management metrics

No.	Definition of quality management indicator	Phase to be applied to							
		UI	SS	PS	PG	PT	IT	ST	OT
1	Transitional changes in the number of errors occurring in reviews and solved errors	A	A	A	A				
2	Transitional changes in the number of errors occurring in tests and solved errors							A	
3	Transitional changes in the number of specification changes and changed specifications	A	A	A	A			A	
4	Transitional changes in the number of questions and answered questions	A	A	A	A			A	
5	The number of errors occurring in tests and remaining test items						A	A	A
6	Rate of specified test items						A	A	A
7	Test error rate						A	A	A
8	Detailed rates of test errors						B	B	B
9	Review error rate	B	B	B	B				
10	Detailed rates of review errors	B	B	B	B				

- For the purpose of reference, each quality management indicator is prioritized as A or B, as follows:
A: must be applied B: applied if necessary

- Get statistics and analyze for each subsystem, process and vendor as well as for the entire system.

Quality management metrics for each phase allow you to judge the quality objectively.



3. Quality Management Indicators

An example of quality management metrics

No.	Definition of quality management indicator	Phase to be applied to							
		UI	SS	PS	PG	PT	IT	ST	OT
1	Transitional changes in the number of errors occurring in reviews and solved errors	A	A	A	A				
2	Transitional changes in the number of errors occurring in tests and solved errors							A	
3	Transitional changes in the number of specification changes and changed specifications	A	A	A	A			A	
4	Transitional changes in the number of questions and answered questions	A	A	A	A			A	
5	The number of errors occurring in tests and remaining test items						A	A	A
6	Rate of specified test items						A	A	A
7	Test error rate						A	A	A
8	Detailed rates of test errors						B	B	B
9	Review error rate	B	B	B	B				
10	Detailed rates of review errors	B	B	B	B				

- For the purpose of reference, each quality management indicator is prioritized as A or B, as follows:

A: must be applied B: applied if necessary

- Get statistics and analyze for each subsystem, process and vendor as well as for the entire system.

**The objectivity is high when evaluating quality by numeric values.
I think it is an effective method of quality management for projects.**



3. Quality Management Indicators

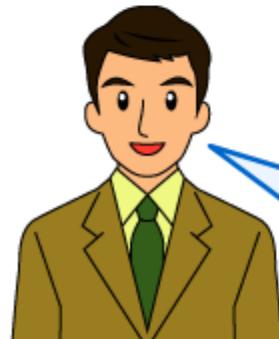
An example of a quality management metrics

No.	Definition of quality management indicator	Phase to be applied to							
		UI	SS	PS	PG	PT	IT	ST	OT
1	Transitional changes in the number of errors occurring in reviews and solved errors	A	A	A	A				
2	Transitional changes in the number of errors occurring in tests and solved errors							A	
3	Transitional changes in the number of specification changes and changed specifications	A	A	A	A			A	
4	Transitional changes in the number of questions and answered questions	A	A	A	A			A	
5	The number of errors occurring in tests and remaining test items						A	A	A
6	Rate of specified test items						A	A	A
7	Test error rate						A	A	A
8	Detailed rates of test errors						B	B	B
9	Review error rate	B	B	B	B				
10	Detailed rates of review errors	B	B	B	B				

- For the purpose of reference, each quality management indicator is prioritized as A or B, as follows:

A: must be applied B: applied if necessary

- Get statistics and analyze for each subsystem, process and vendor as well as for the entire system.



The purpose of quantitative management is to give an opportunity to identify problems.

The key point of quantitative management is not to manage “figures themselves” but to manage a project “by figures.” Therefore, you should not focus too rigidly on the numbers.

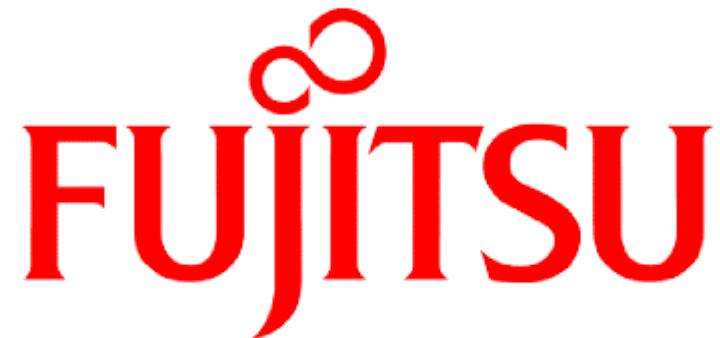


 **Summary****[Summary]**

For quality implementation, it is important to review the specification periodically during the breakdown phases on the V-shaped model, and to verify them progressively during the integration phases by comparing them with the specifications and the deliverables.

During the breakdown phases of the V-shaped model, the quality is maintained by repeating reviews and approvals of the specifications step by step. Also rework is prevented by evaluating the deliverables progressively in the integration phases. The verification is done based on the documents made in the breakdown phases.





THE POSSIBILITIES ARE INFINITE

Table of Contents

Chapter 4 Use of SDEM

Introduction

1. How to Apply SDEM

2. Case Studies (Successful Projects that Applied SDEM)

Case-1 Project in which we participated from UI phase

Case-2 Detection of incomplete estimate (Comparison with another company)

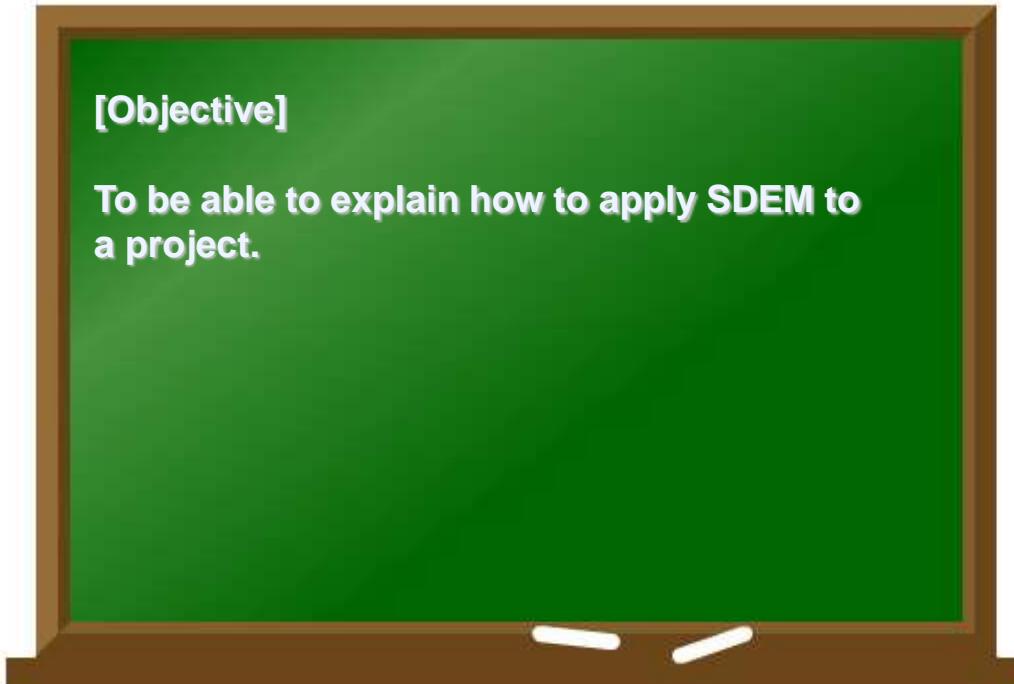
Case-3 SDEM is applied as a reference in troubleshooting analysis

3. Summary

Epilogue -Message from DNA Successors-

 Introduction**[Objective]**

To be able to explain how to apply SDEM to a project.



In this chapter, let's study how, by whom, and in what situation SDEM can be utilized.

In what situation do you think SDEM can be used actually?



 Conversation between Manager and New Appointee Project Leader

We have discussed about the standard process for system development.
Can you apply SDEM to your project?



 Conversation between Manager and New Appointee Project Leader

We have discussed about the standard process for system development.
Can you apply SDEM to your project?



I think SDEM is useful for developing our own project standards.
However, I don't think I am able to apply SDEM in an actual situation yet.



 Conversation between Manager and New Appointee Project Leader

We have discussed about the standard process for system development.
Can you apply SDEM to your project?

I think SDEM is useful for developing our own project standards.
However, I don't think I am able to apply SDEM in an actual situation yet.

I see. Let us study how to use SDEM.



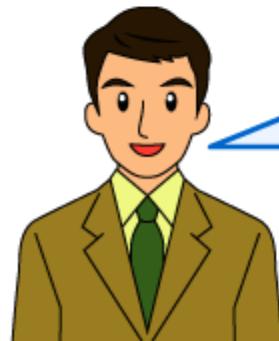
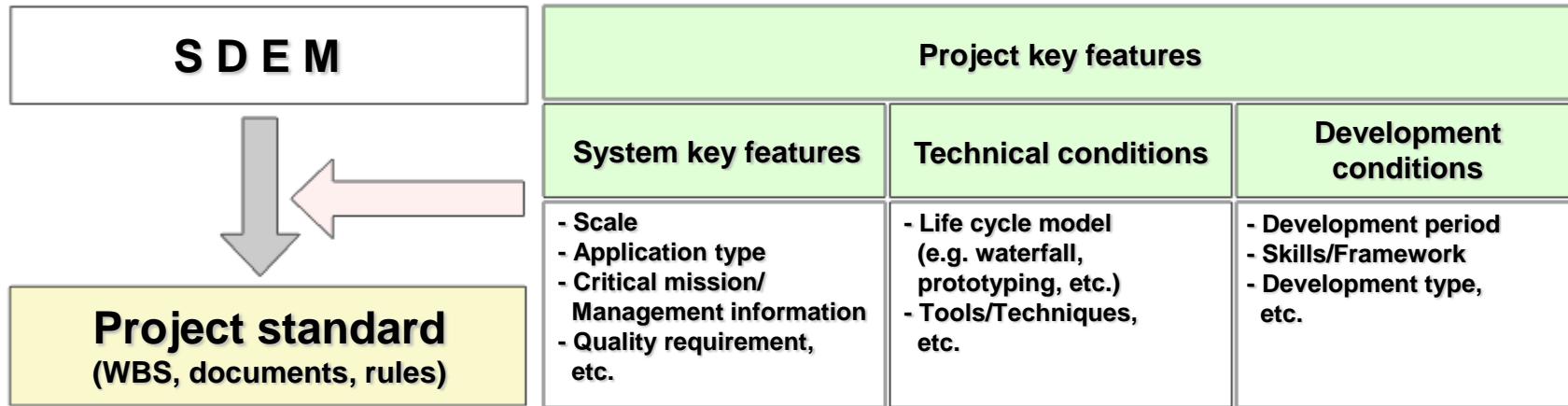
1. How to Apply SDEM (1)

- SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences.
- To define project standards by tailoring (customizing) SDEM with taking account of key features of a project.

Project key features		
System key features	Technical conditions	Development conditions
<ul style="list-style-type: none">- Scale- Application type- Critical mission/ Management information- Quality requirement, etc.	<ul style="list-style-type: none">- Life cycle model (e.g. waterfall, prototyping, etc.)- Tools/Techniques, etc.	<ul style="list-style-type: none">- Development period- Skills/Framework- Development type, etc.

1. How to Apply SDEM (1)

- SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences.
- To define project standards by tailoring (customizing) SDEM with taking account of key features of a project.

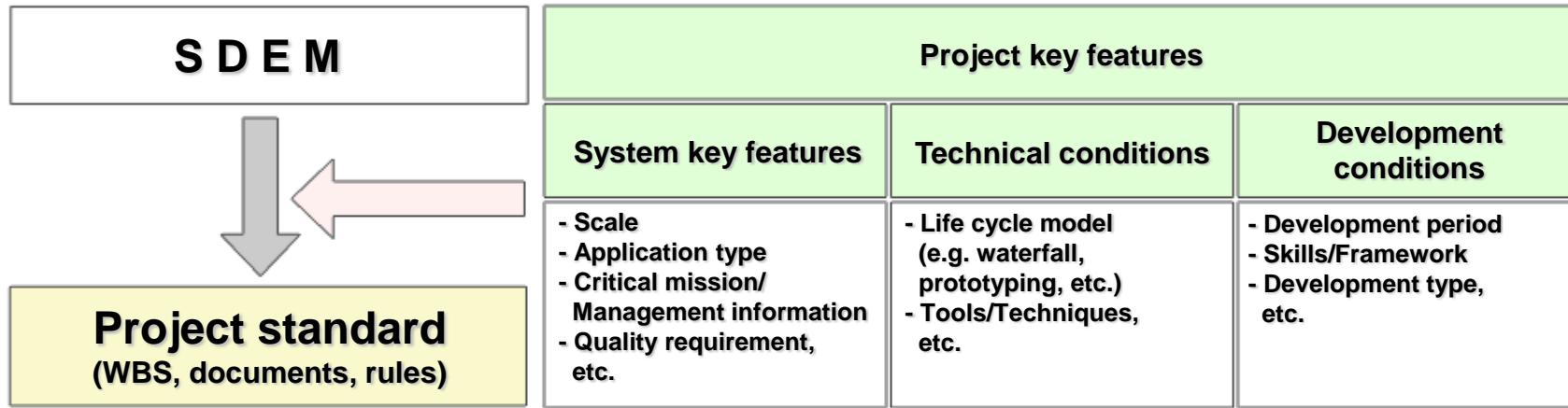


SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences. In order to apply SDEM to an actual project, you have to conduct tailoring (customization) according to the purpose and key features of the project. You may omit some work items, but it is important to clarify the reason why you omit these work items.



1. How to Apply SDEM (1)

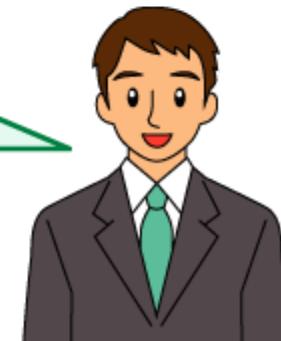
- SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences.
- To define project standards by tailoring (customizing) SDEM with taking account of key features of a project.



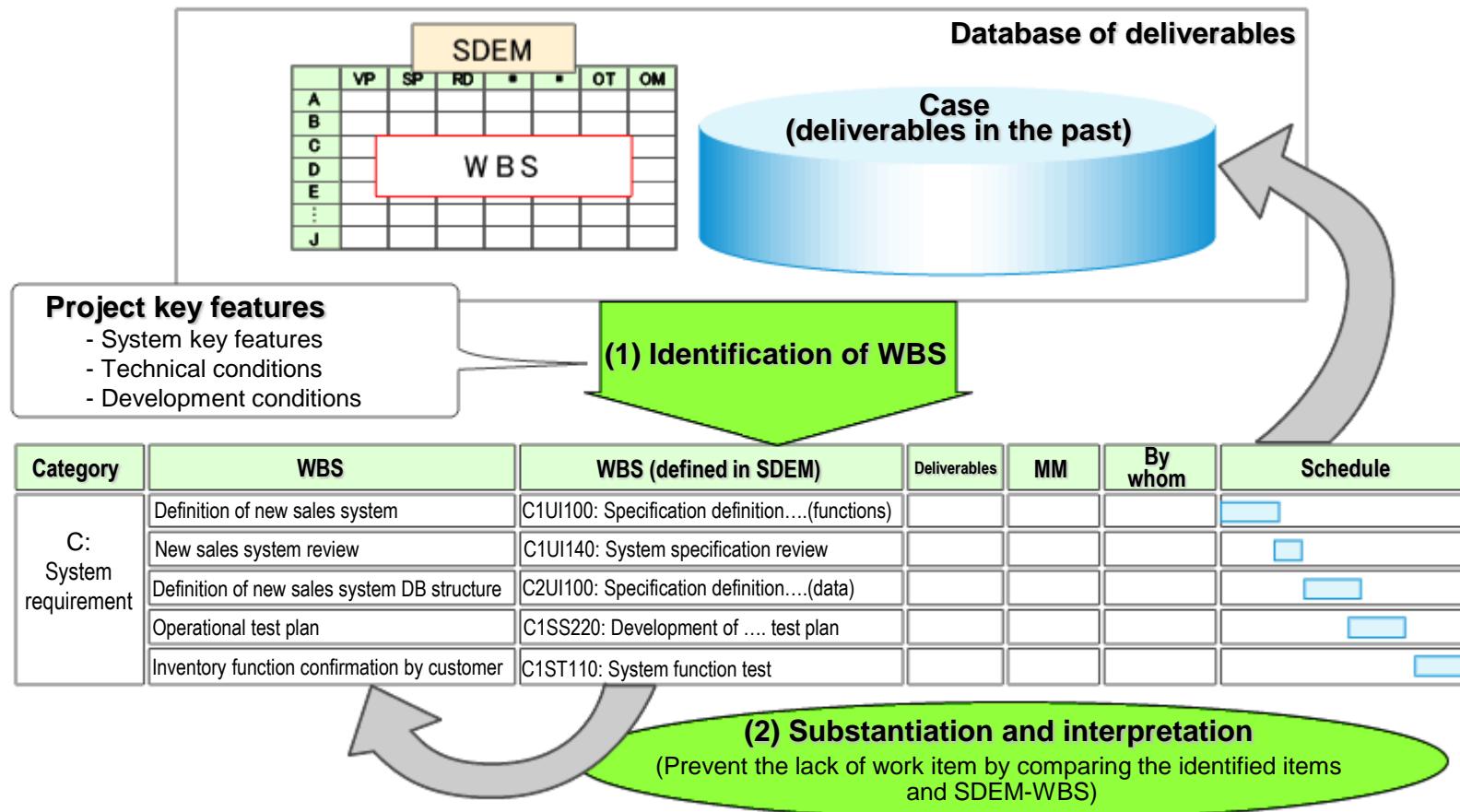
I thought SDEM is only for large-scale system development and it is not useful for my project.

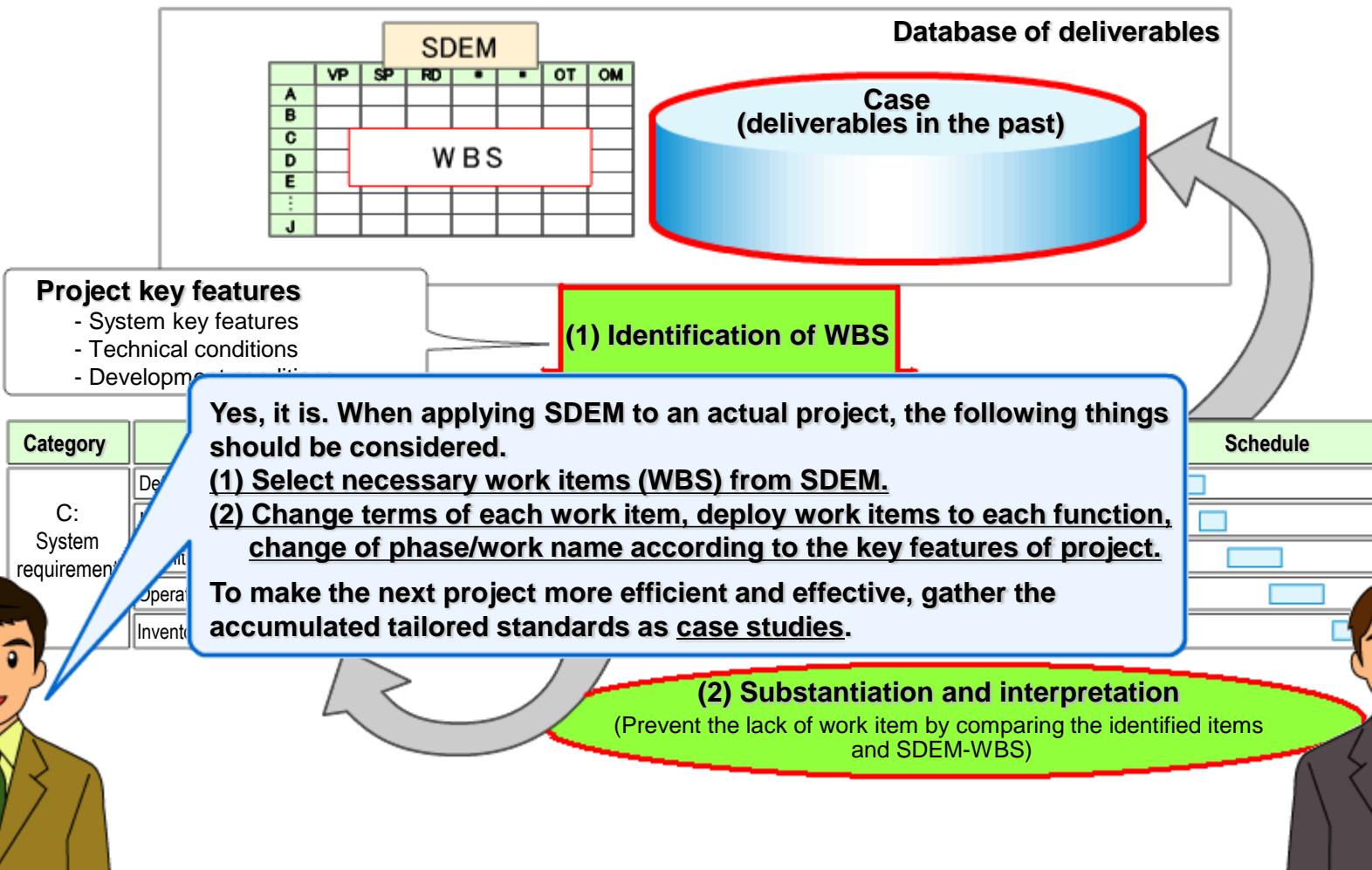
But now I understand that I was wrong. Even if my project is small-scale, it is possible to apply by extracting necessary work items from SDEM.

This is called tailoring, isn't it?

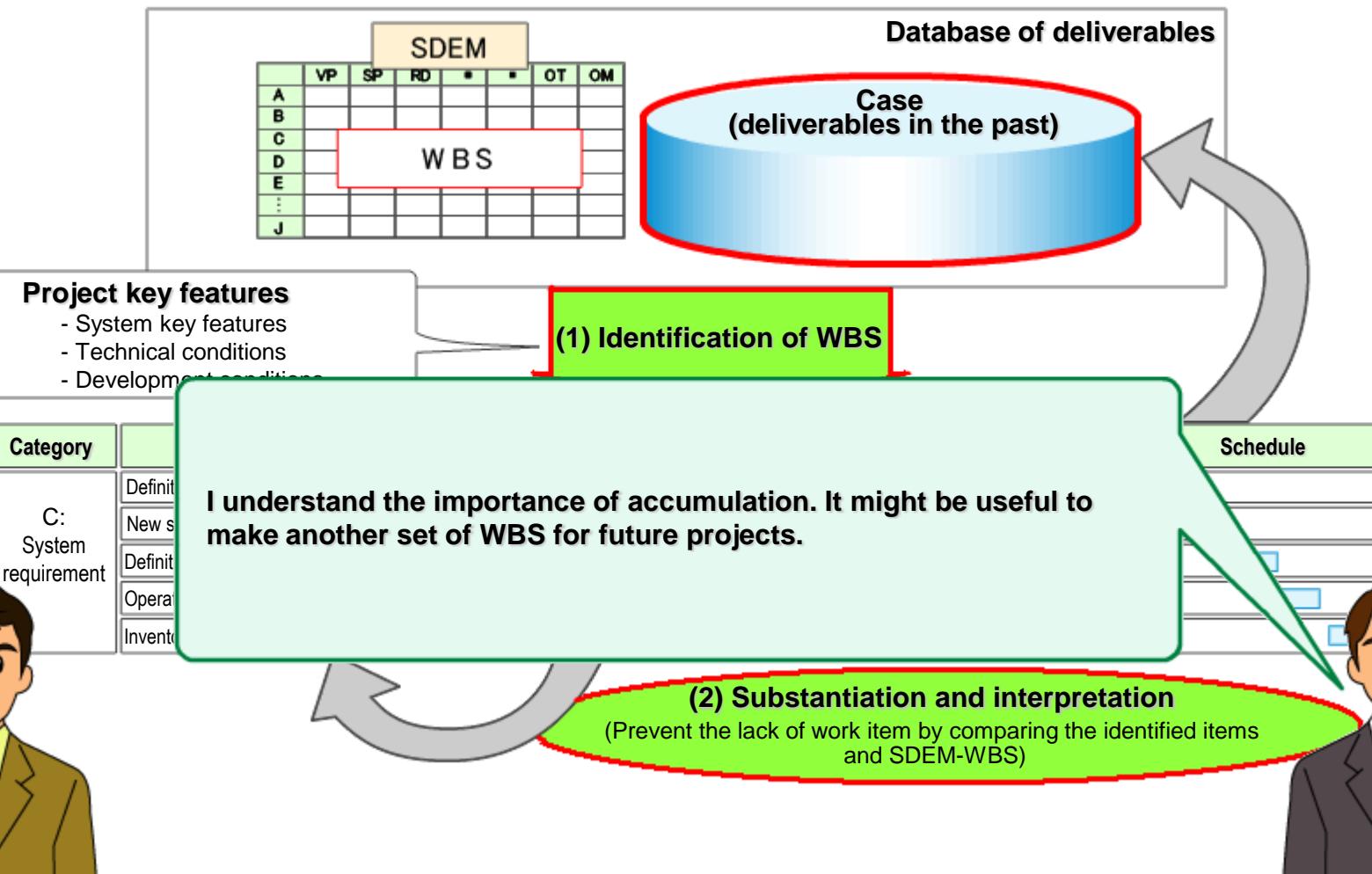


1. How to Apply SDEM (2)



1. How to Apply SDEM (2)

1. How to Apply SDEM (2)



 1. How to Apply SDEM (3)

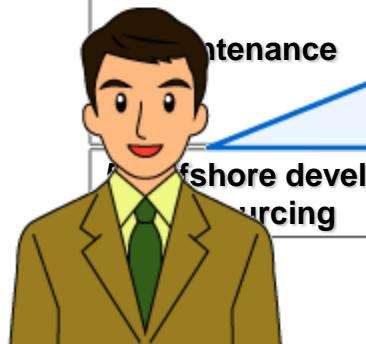
SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences. Therefore, by tailoring SDEM, you can apply SDEM to any project without depending on various project key features.

Project key features	Notices when applying SDEM
1) Small project	When applying SDEM to a small project, combine phases or categories into one group and omit unnecessary WBS items as needed.
2) Package application	Based on Fit and Gap analysis of system requirements and key features of package products, combine the D2 category (development processes) and WBS items of other categories as needed.
3) Infrastructure building	If you build an infrastructure only, you can change the phase names to clarify the contents of a phase, because there are no component elements such as processes or programs. (Example of phase name: requirement definition, architecture design, environment design, environment building, system infrastructure test, system test, operational test)
4) Maintenance	<ul style="list-style-type: none">- It is important to clarify the type of maintenance and maintenance methods by developing a maintenance plan (project plan) before the development phase is completed.- In the system maintenance category, investigations of especially important impact areas and regression tests are defined. For other work, use the WBS items in the development phase as required.
5) Offshore development outsourcing	Clarify the scope you want to outsource. In a phase where you provide or receive necessary resources, you have to prepare detailed input (especially WBS and documents) to clarify each other's roles. Also, you have to agree with the subcontractor on acceptance criteria in advance.

1. How to Apply SDEM (3)

SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences. Therefore, by tailoring SDEM, you can apply SDEM to any project without depending on various project key features.

Project key features	Notices when applying SDEM
1) Small project	When applying SDEM to a small project, combine phases or categories into one group and omit unnecessary WBS items as needed.
2) Package application	Based on Fit and Gap analysis of system requirements and key features of package products, combine the D2 category (development processes) and WBS items of other categories as needed.
3) Infrastructure building	If you build an infrastructure only, you can change the phase names to clarify the contents of a phase, because there are no component elements such as processes or programs. (Example of phase name: requirement definition, architecture design, environment design, environment building, system infrastructure test, system test, operational test)
	- It is important to clarify the type of maintenance and maintenance methods by developing a maintenance plan.

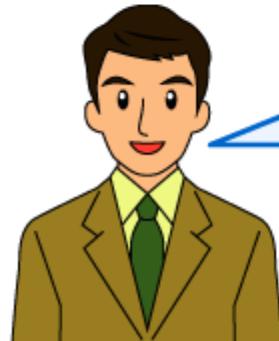
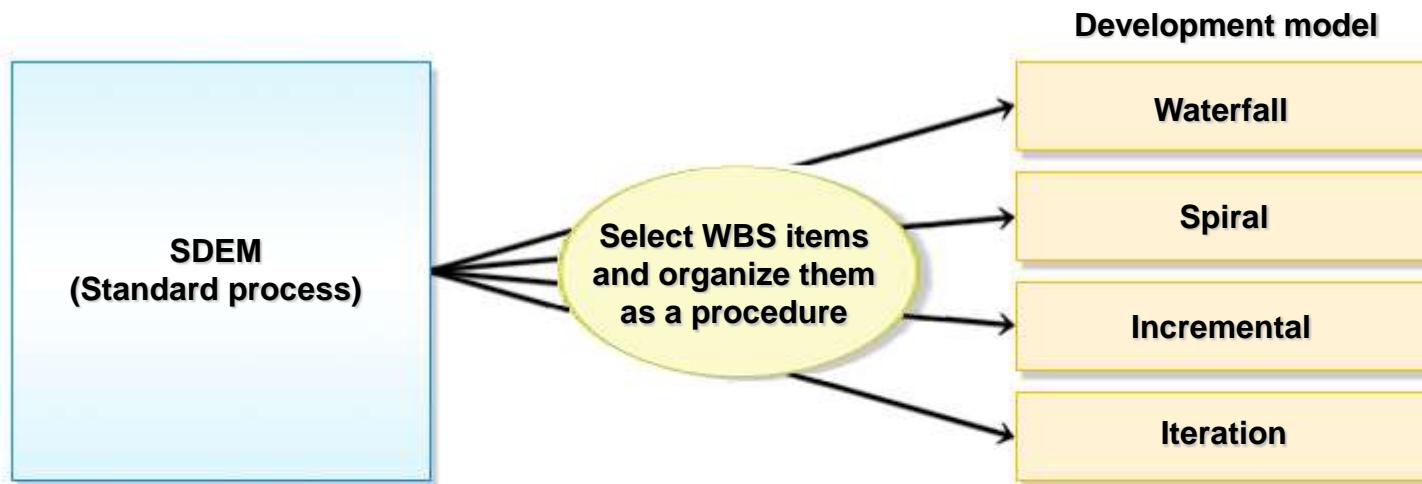


Points to be noted on the application of SDEM are summarized in the table.

As I mentioned before, SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences. Therefore, by tailoring SDEM, you can apply SDEM to any project whatever features it has.

areas and regression tests are required.

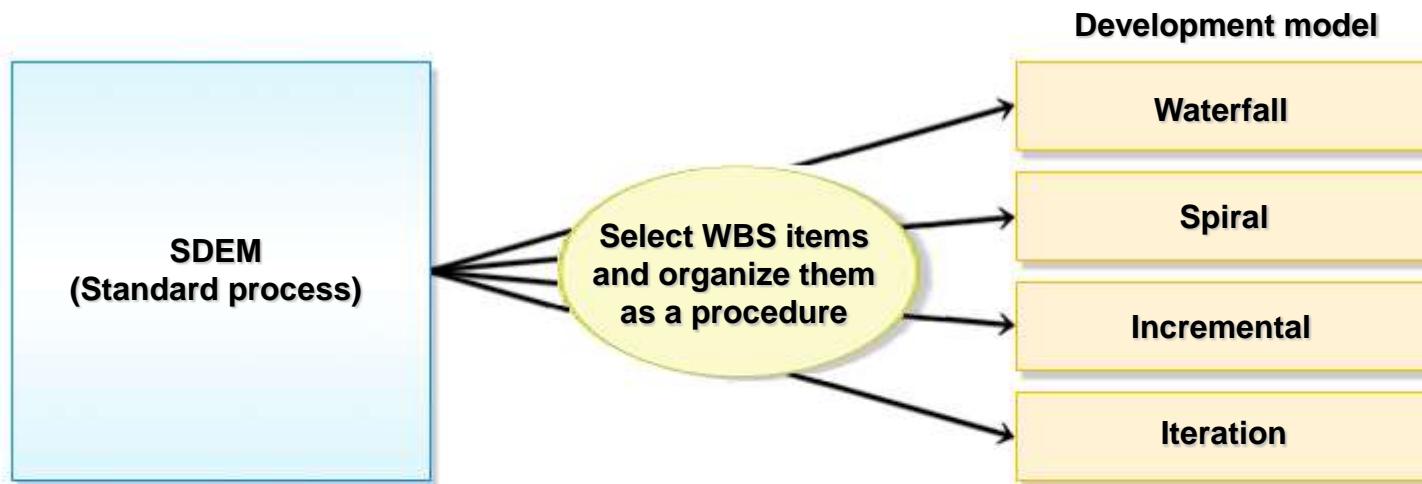
necessary resources, you have roles. Also, you have

 1. How to Apply SDEM (4)

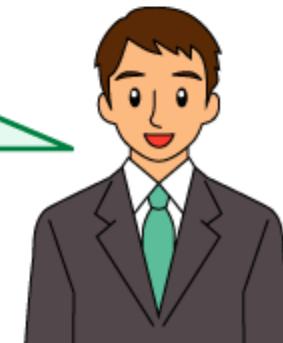
SDEM is a collection of work items. Therefore, it can be applied to any development model by selecting and systematizing the work items. In the case of an evolutional development model such as iteration, you only have to decide the scope of work or process we should repeat and assemble them as a work procedure.

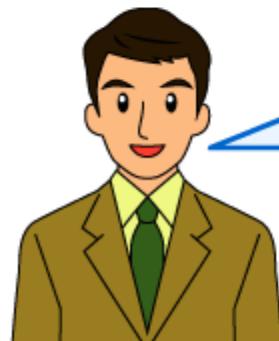
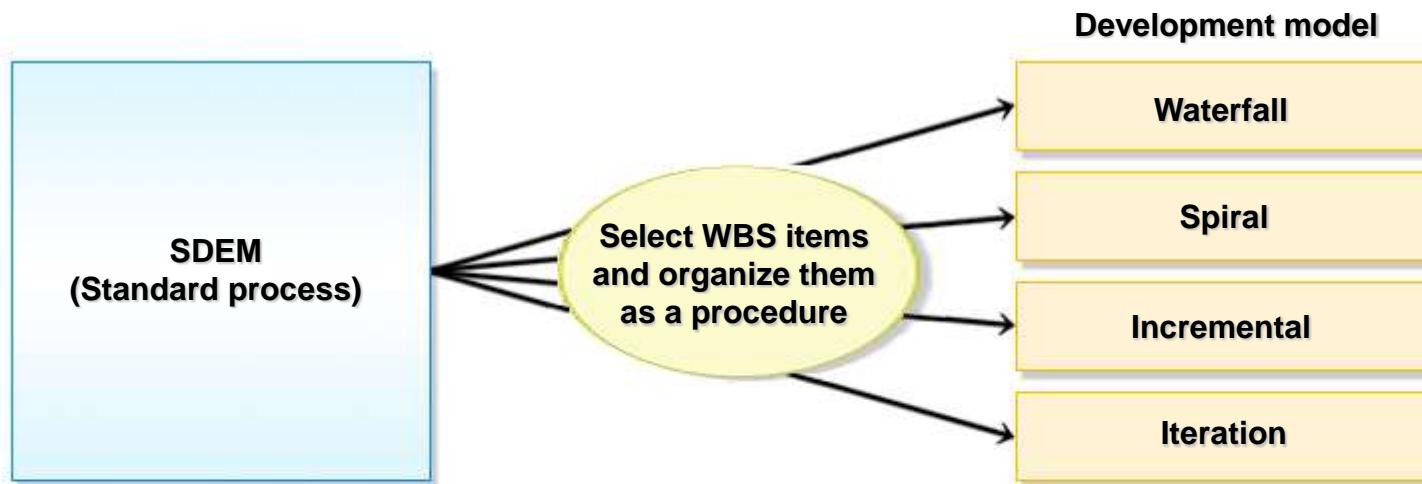


1. How to Apply SDEM (4)



I thought SDEM is only applicable to waterfall system development, and it can not be applied to our project that is an evolutionary model. But I found it is possible to apply SDEM to my project.



 1. How to Apply SDEM (4)

Please note that the number of repetitions and the purpose of each cycle should be agreed with the customer beforehand.
Unlimited repetition causes the overrun of schedule and cost.

Please refer to SDEM Standard Process Description (Green Book) for more details.



- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase



Let me introduce three cases to which SDEM has been applied.



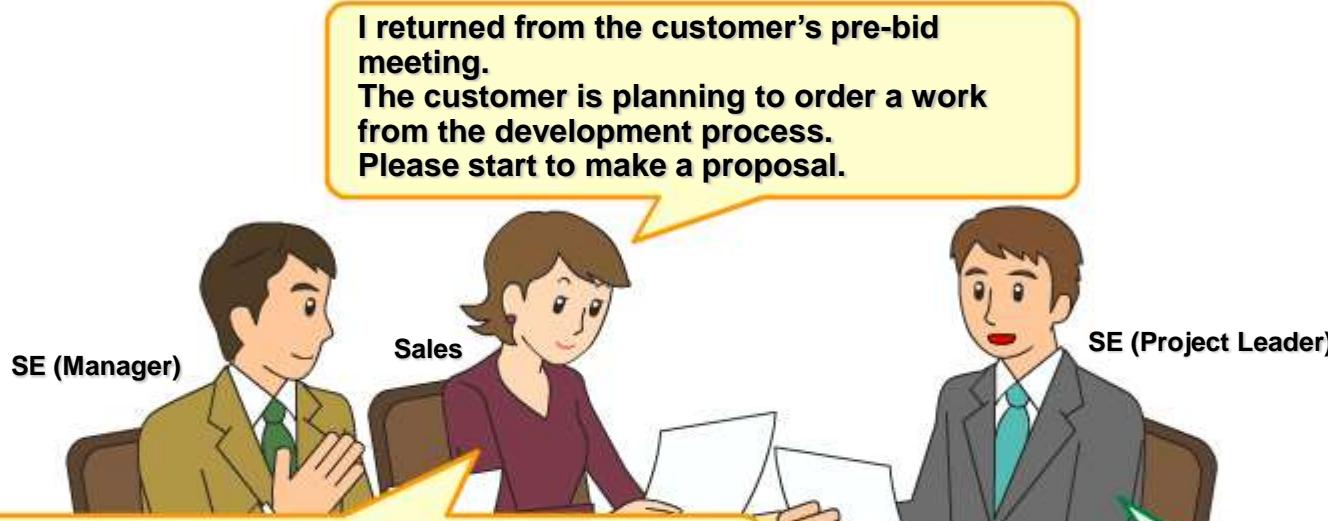
I will try to look at these cases from the viewpoint of my project.

 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

I returned from the customer's pre-bid meeting.
The customer is planning to order a work from the development process.
Please start to make a proposal.



 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

The consulting company took charge of the requirement definition.

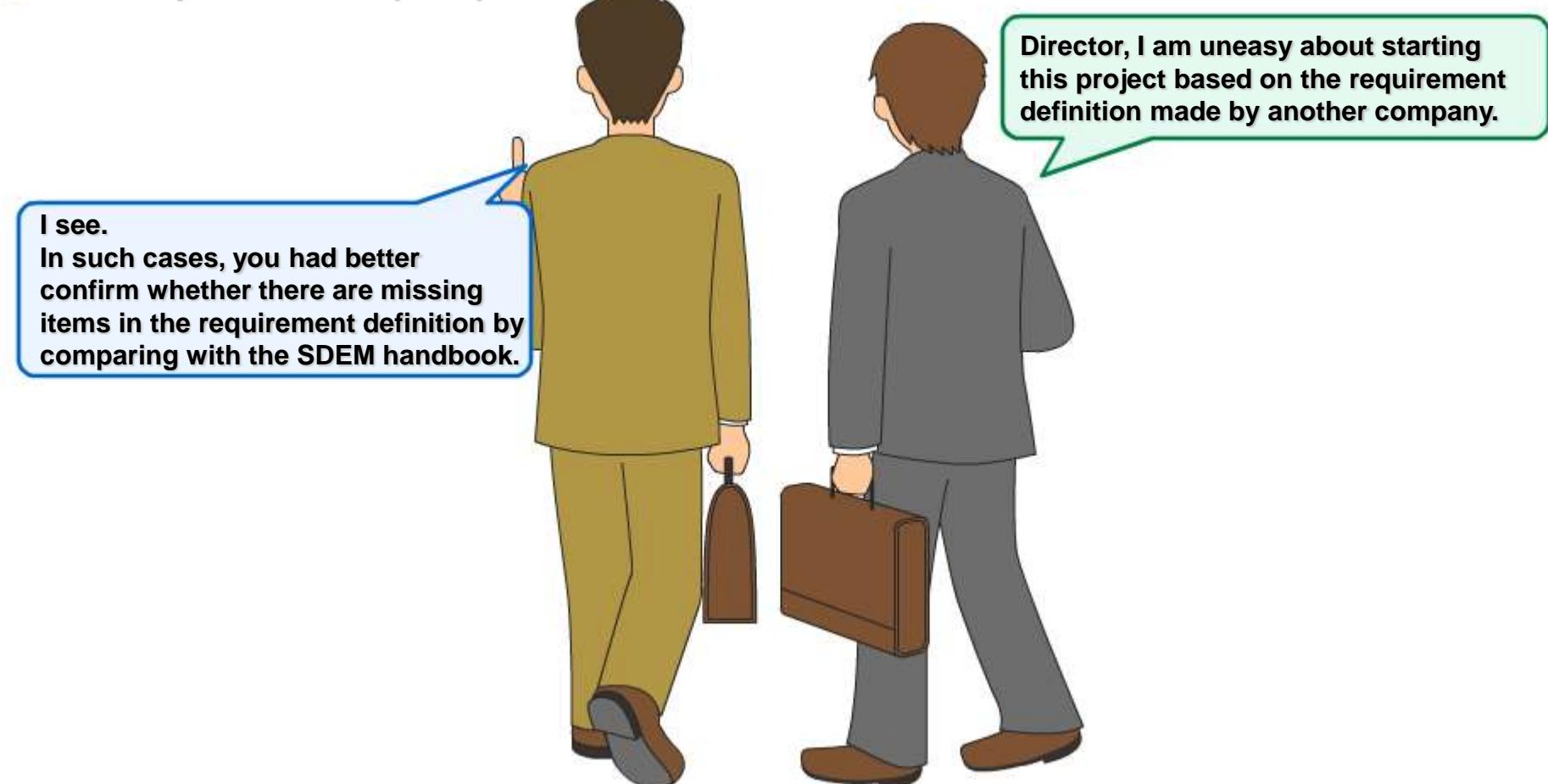
Their outputs are attached to the RFP.

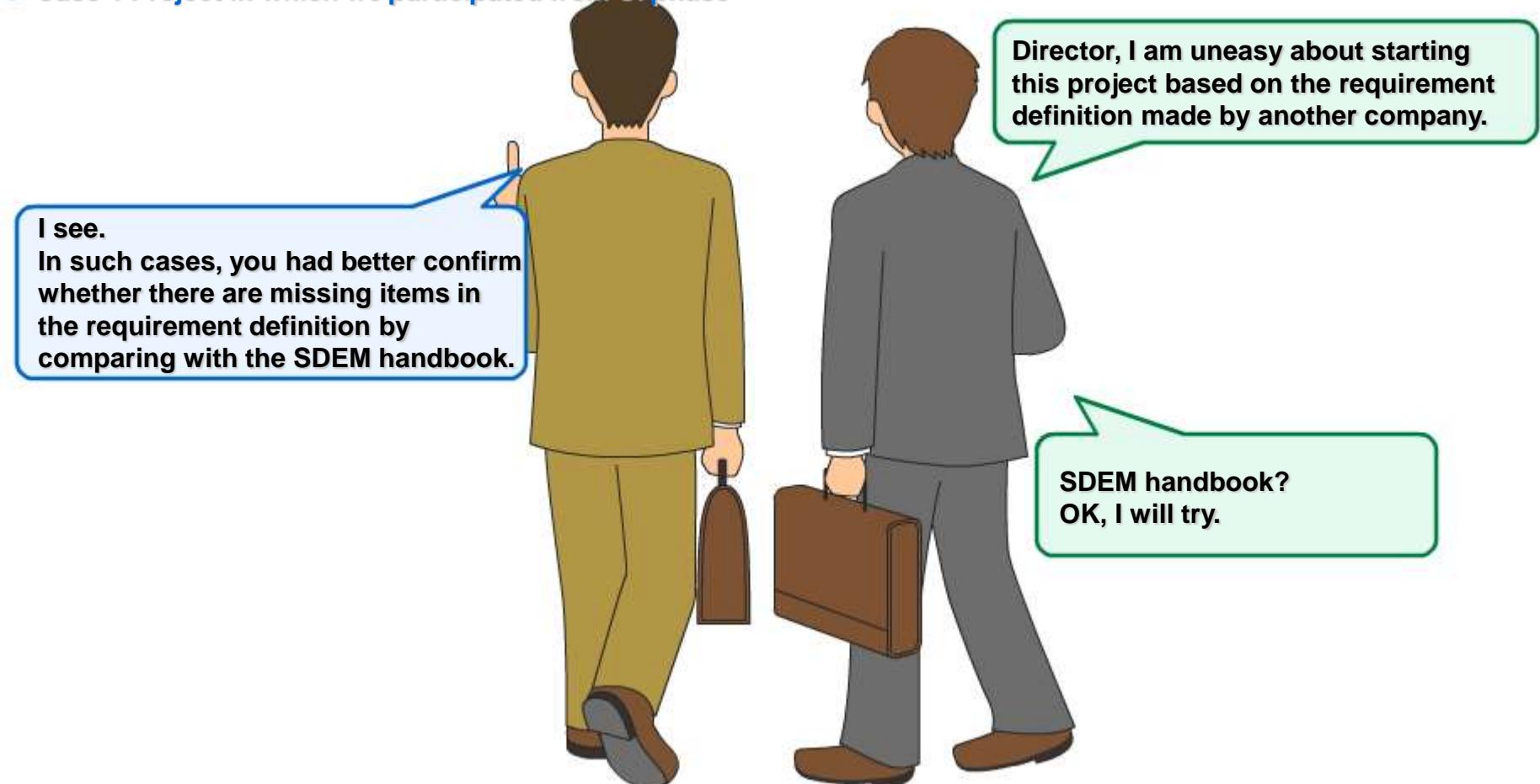
Certainly. First of all, I will confirm the content of the RFP and then start to make the proposal.

- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase



 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase

This is exactly the requirement definition
of this business opportunity. Hm-hum.

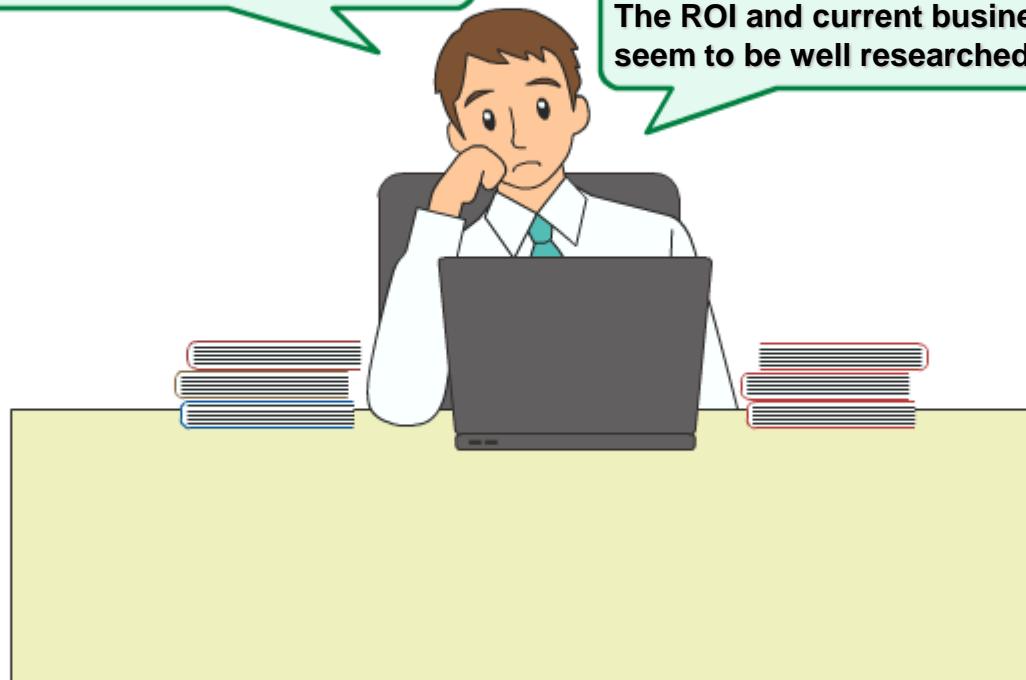


- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase

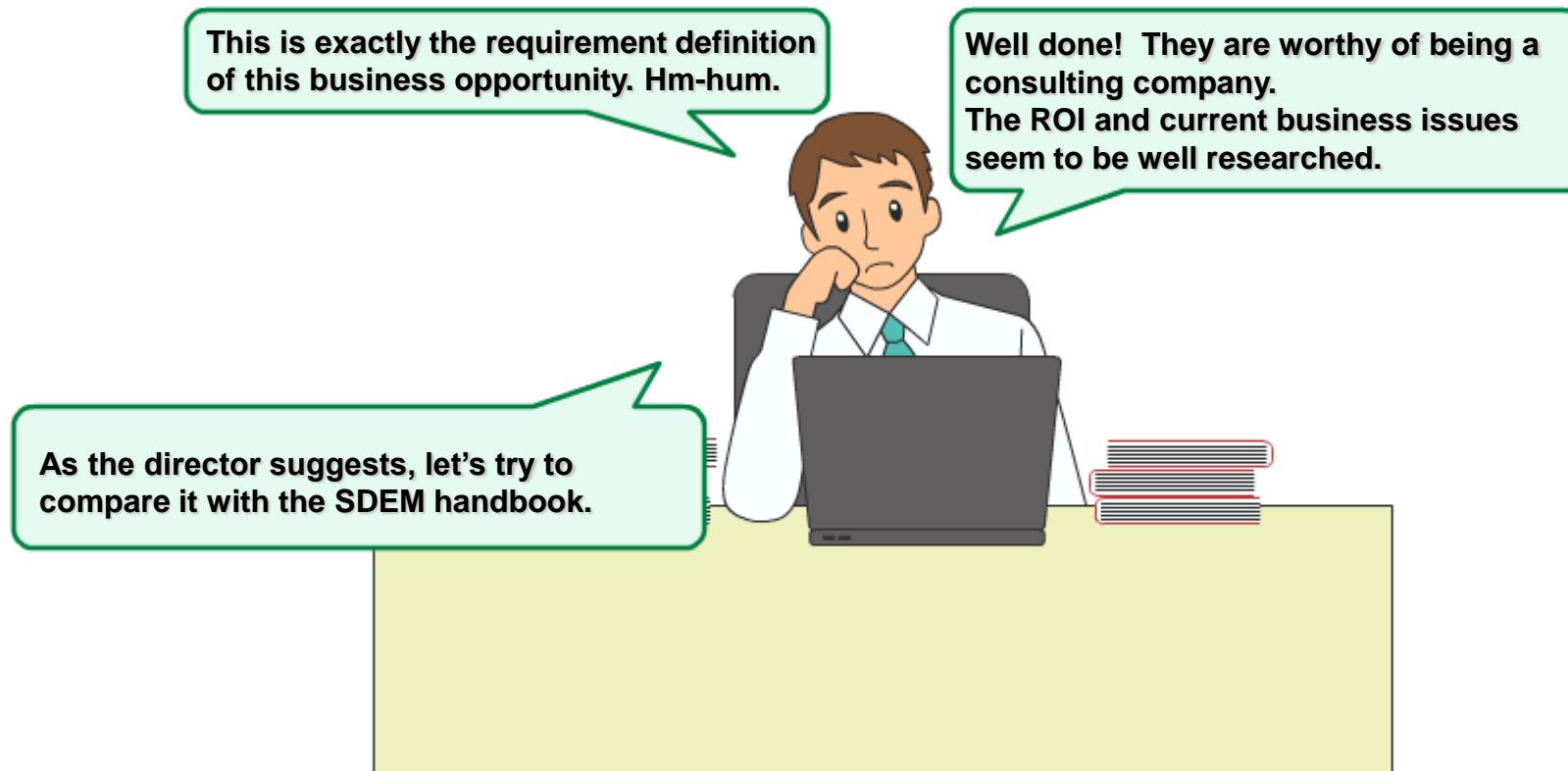
This is exactly the requirement definition of this business opportunity. Hm-hum.

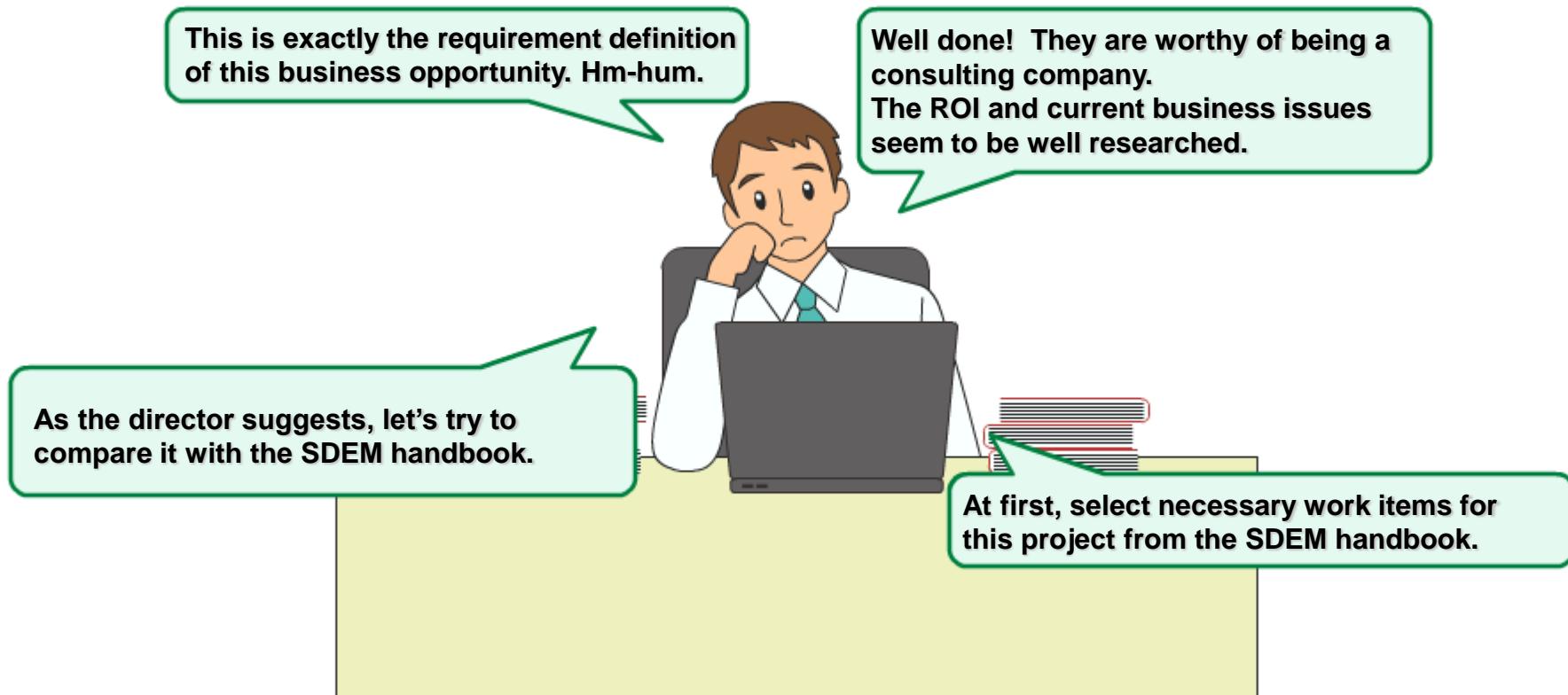
Well done! They are worthy of being a consulting company.
The ROI and current business issues seem to be well researched.



- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase



 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

1. Successful Projects that Applied SDEM (1)

Case-1 Project in which we participated from UI phase

Category name	Number of oversights
A. Business management	0
B. Business	2
C. System requirements	
D. Application	
E. Application infrastructure	
F. System infrastructure	
G. Operation & Maintenance	
H. Transition & Deployment	
I. Development support	
J. Project management	

Since this is a confirmation of the output of requirement definition, comparing with WBS items of RD is the work. A lot of items on WBS second level are defined in the SDEM handbook.

Let's start checking. ... Next is the RD phase.

"Business management" category, and there are four items. "ROI review" is OK, "Judgment of whether system can be developed or not" is OK, "Substantiation of new organization requirements" is OK, and "Substantiation of requirements for new business operation environment" is OK. Everything is considered well. Go to the following item.



In this case, it is assumed that all WBS items are necessary. In a real situation, omit needless work items according to the characteristics of the project.

1. Successful Projects that Applied SDEM (1)

Case-1 Project in which we participated from UI phase

Category name	Number of oversights
A Business management	0
B Business	2
C System requirements	
D Application	
E Application infrastructure	
F System infrastructure	
G Operation & Maintenance	
H Transition & Deployment	
I Development support	
J Project management	

Since this is a confirmation of the output of requirement definition, comparing with WBS items of RD is the work. A lot of items on WBS second level are defined in the SDEM handbook.

Let's start checking. ... Next is the RD phase.

"Business management" category, and there are four items. "ROI review" is OK, "Judgment of whether system can be developed or not" is OK, "Substantiation of new organization requirements" is OK, and "Substantiation of requirements for new business operation environment" is OK.

Everything is considered well. Go to the following item.

The next one is the "System requirement" category. I remember that a project failed because non-functional requirements were not considered. I should confirm it carefully. Let's confirm WBS of non-functional requirements again.



In this case, it is assumed that all WBS items are necessary. In a real situation, omit needless work items according to the characteristics of the project.

① 1. Successful Projects that Applied SDEM (1)

② Case-1 Project in which we participated from UI phase

Category name	Number of oversights
A. Business management	0
B. Business	2
C. System requirements	12
D. Application	2
E. Application infrastructure	3
F. System infrastructure	10
G. Operation & Maintenance	5
H. Transition & Deployment	10
I. Development support	5
J. Project management	—

“Definition of performance and scalability requirements” is missing, “Definition of reliability requirements” is missing, ... “Definition of transition and deployment requirements” is missing.
 Oh my goodness!! All the items in “Non-functional requirements” are missing.
 Let me confirm all the items anyway.



In this case, it is assumed that all WBS items are necessary.
 In a real situation, omit needless work items according to the characteristics of the project.

● 1. Successful Projects that Applied SDEM (1)

● Case-1 Project in which we participated from UI phase

Category name	Number of oversights
A. Business management	0
B. Business	2
C. System requirements	12
D. Application	2
E. Application infrastructure	3
F. System infrastructure	10
G. Operation & Maintenance	5
H. Transition & Deployment	10
I. Development support	5
J. Project management	—

“Definition of performance and scalability requirements” is missing, “Definition of reliability requirements” is missing, ... “Definition of transition and deployment requirements” is missing.
Oh my goodness!! All the items in “Non-functional requirements” are missing.
Let me confirm all the items anyway.

I found a lot of necessary work items are neglected in this RFP.
This RFP will cause a development rework, but the customer has already accepted this RFP from the consulting company.

I have to report on this problem to my director.



In this case, it is assumed that all WBS items are necessary.
In a real situation, omit needless work items according to the characteristics of the project.

- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase



 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

Thank you.

It's terrible!! It is almost impossible to make a proposal based on such a defective RFP.

Please make a report for the customer to point out the problems with this RFP.

Director, I have confirmed the RFP against the SDEM handbook, and I found that a lot of necessary work items are neglected in this RFP.



- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase

Thank you.

It's terrible!! It is almost impossible to make a proposal based on such a defective RFP.

Please make a report for the customer to point out the problems with this RFP.

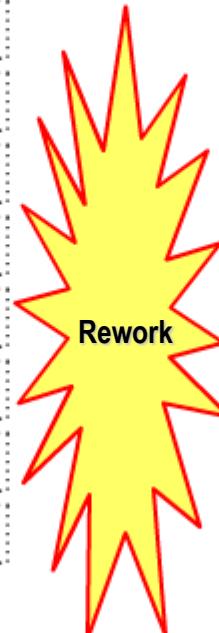
Director, I have confirmed the RFP against the SDEM handbook, and I found that a lot of necessary work items are neglected in this RFP.

Certainly.



1. Successful Projects that Applied SDEM (1)**Case-1 Project in which we participated from UI phase**

Category name	Covering rate
A . Business management	100%
B . Business	66%
C . System requirements	25%
D . Application	33%
E . Application infrastructure	40%
F . System infrastructure	41%
G . Operation & Maintenance	20%
H . Transition & Deployment	10%
I . Development support	54%
J . Project management	



List up insufficient work items according to SDEM categories.



- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase

Please look at this SDEM handbook, our company's standard process for system development.

I found that there are many items not considered in this RFP.



Particularly, Non-functional definition is serious.

Non-functional definition means ..., and it might cause the

 1. Successful Projects that Applied SDEM (1) Case-1 Project in which we participated from UI phase

Please look at this SDEM handbook, our company's standard process for system development.

I found that there are many items not considered in this RFP.



Particularly, Non-functional definition is serious.

Non-functional definition means ..., and it might cause the

I understand. I did not notice that there are such a lot of items missing.

Only your company kindly pointed out the problem of this RFP. Perhaps we should rework to complete the requirement definition.

Could you undertake this project from re-making RD?

- 1. Successful Projects that Applied SDEM (1)

- Case-1 Project in which we participated from UI phase

In this case, we have pointed out another company's incomplete output of the upper process to the customer by using SDEM.

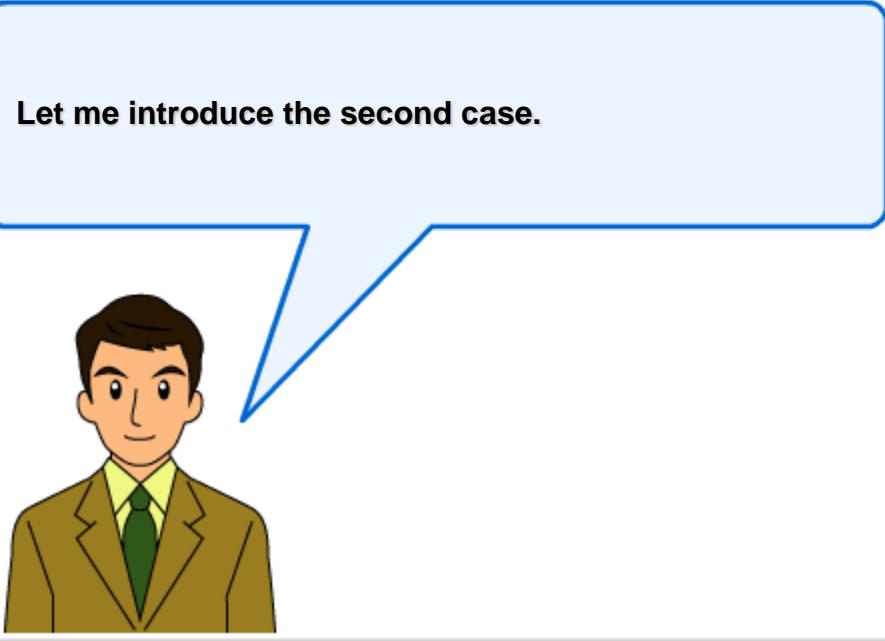
At first, the customer was requesting the vendor to take charge of development work from UI phase by following the RFP that the consulting company made. However, as a result of our investigation, we found a lot of missing work items that had to be done before the UI phase. It would cause a lot of development rework.

The problem was avoided by pointing out the incompleteness of the upper process output to the customer.



- 1. Successful Projects that Applied SDEM (2)

- Case-2 Detection of incomplete estimate (Comparison with another company)



Let me introduce the second case.



 1. Successful Projects that Applied SDEM (2) Case-2 Detection of incomplete estimate (Comparison with another company)

 1. Successful Projects that Applied SDEM (2) Case-2 Detection of incomplete estimate (Comparison with another company)

Please pass me the RFP.

Well, most of the current functions are still needed, but there are many changing policies such as data entry by each field and reporting cycle from monthly base to weekly base.

It is necessary to re-define the requirement by involving the end-users.

SE (Manager)



Our customer “Company-A” is requesting us to propose a new accounting system. We are providing maintenance service for their current accounting system. But they are asking several vendors to make a competition. Here is the RFP. Their system division made it.

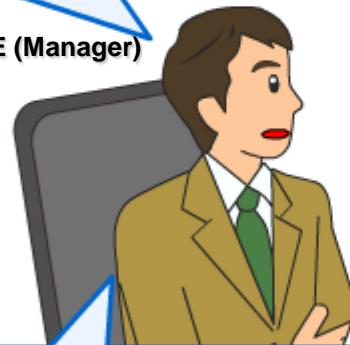
 1. Successful Projects that Applied SDEM (2) Case-2 Detection of incomplete estimate (Comparison with another company)

Please pass me the RFP.

Well, most of the current functions are still needed, but there are many changing policies such as data entry by each field and reporting cycle from monthly base to weekly base.

It is necessary to re-define the requirement by involving the end-users.

SE (Manager)



George (SE leader), please prepare a proposal according to this RFP.

Please include requirement definition work by referring to SDEM.

Sales

SE (Project Leader)

Our customer “Company-A” is requesting us to propose a new accounting system. We are providing maintenance service for their current accounting system. But they are asking several vendors to make a competition. Here is the RFP. Their system division made it.

A cartoon illustration showing three men. On the left, a man with brown hair and a white shirt is labeled "Sales". In the center, a man with brown hair and a white shirt is labeled "SE (Project Leader)". On the right, a man with brown hair, wearing a yellow suit jacket, is labeled "SE (Manager)". They are all wearing white shirts. The man in the center is speaking, and a green speech bubble originates from his mouth. The man on the right is holding a stack of papers.

 1. Successful Projects that Applied SDEM (2) Case-2 Detection of incomplete estimate (Comparison with another company)

	RD	UI-SS	OT
Business mgmt.	Customer/In-house MM / MM		Customer/In-house MM / MM
Business			
Sys. requirements			
Application			
Application infrastructure			
Sys. infrastructure			
Op.& Maintenance			
Transition & Deploy			
Development support	Dev. Support xxx MM	Dev. Support xxx MM	Dev. Support xxx MM
Project management	Prj-Mgmt. xxx MM	Prj-Mgmt. xxx MM	Prj-Mgmt. xxx MM

1. Successful Projects that Applied SDEM (2)

Case-2 Detection of incomplete estimate (Comparison with another company)



	RD	UI-SS	OT
Business mgmt.	Customer/In-house MM / MM		Customer/In-house MM / MM
Business			
Sys. requirements			
Application			
Application infrastructure			
Sys. infrastructure			
Op.& Maintenance			
Transition & Deploy			
Development support	Dev. Support xxx MM	Dev. Support xxx MM	Dev. Support xxx MM
Project management	Prj-Mgmt. xxx MM	Prj-Mgmt. xxx MM	Prj-Mgmt. xxx MM

At first, clarify the range of the phase. It should be from requirement definition (RD) to operational test and transition (OT). Also, roles and responsibilities should be defined. RD and OT are in the “Business management” category which is the customer’s responsibility. For their information, I will make estimates of RD and OT too.

Our company is responsible for the system requirement category that is between the business and system categories. It has to be in the estimate.

To estimate the development, list up the WBS second level work items.

Development support is also our work and should be included.

The project management is the customer’s system division’s role, but I think it is difficult for them.

Let’s add our project management work to the estimate considering that it is joint work.

...It's completed.

- 1. Successful Projects that Applied SDEM (2)

- Case-2 Detection of incomplete estimate (Comparison with another company)

Few days later

As for Company-A's new accounting system,
Vendor-X has almost won the business.
The estimate of Vendor-X was two-thirds of ours.



● 1. Successful Projects that Applied SDEM (2)

● Case-2 Detection of incomplete estimate (Comparison with another company)

Few days later

As for Company-A's new accounting system,
Vendor-X has almost won the business.
The estimate of Vendor-X was two-thirds of ours.

Let's go to the customer to explain
again.



- 1. Successful Projects that Applied SDEM (2)

- Case-2 Detection of incomplete estimate (Comparison with another company)



- 1. Successful Projects that Applied SDEM (2)

- Case-2 Detection of incomplete estimate (Comparison with another company)

Our proposal also satisfies your RFP, I think the price or the estimation is a matter of argument.
Please allow me to explain the content of our estimate.

Your estimate seems to be too high.
The estimate of Vendor-X is cheaper than your company though their proposal also satisfies our RFP.



- 1. Successful Projects that Applied SDEM (2)

- Case-2 Detection of incomplete estimate (Comparison with another company)

Our proposal also satisfies your RFP, I think the price or the estimation is a matter of argument.
Please allow me to explain the content of our estimate.

Your estimate seems to be too high.
The estimate of Vendor-X is cheaper than your company though their proposal also satisfies our RFP.



● 1. Successful Projects that Applied SDEM (2)

● Case-2 Detection of incomplete estimate (Comparison with another company)

Thank you very much. Please look at this SDEM handbook, our company's standard process for system development. As for the range of estimation, I think it must be from system requirement definition phase to operational test and transition phase.

Particularly, the customer is responsible for requirement definition and operational test/transition process.

We are considering support for the work that you should complete.

Our total estimation is xxxMM, including yyyMM of requirement definition and operational test/transition support.



1. Successful Projects that Applied SDEM (2)

Case-2 Detection of incomplete estimate (Comparison with another company)

Thank you very much. Please look at this SDEM handbook, our company's standard process for system development. As for the range of estimation, I think it must be from system requirement definition phase to operational test and transition phase.

Particularly, the customer is responsible for requirement definition and operational test/transition process.

We are considering support for the work that you should complete.

Our total estimation is xxxMM, including yyyMM of requirement definition and operational test/transition support.

	RD	UI-SS	OT
Business mgmt.	Customer/In-house MM / MM		Customer/In-house MM / MM
Business			
Sys. requirements			
Application			
Application infrastructure			
Sys. infrastructure			
Op.& Maintenance			
Transition & Deploy			
Development support	Dev. Support xxx MM	Dev. Support xxx MM	Dev. Support xxx MM
Project management	Dev. Support xxx MM	Dev. Support xxx MM	Dev. Support xxx MM

I am not sure whether the requirement definition, operational test/transition and project management are included in the estimate of Vendor-X. It is difficult for us to complete these tasks by ourselves because there are not enough resources in our company.
I will confirm it with Vendor-X.

- 1. Successful Projects that Applied SDEM (2)

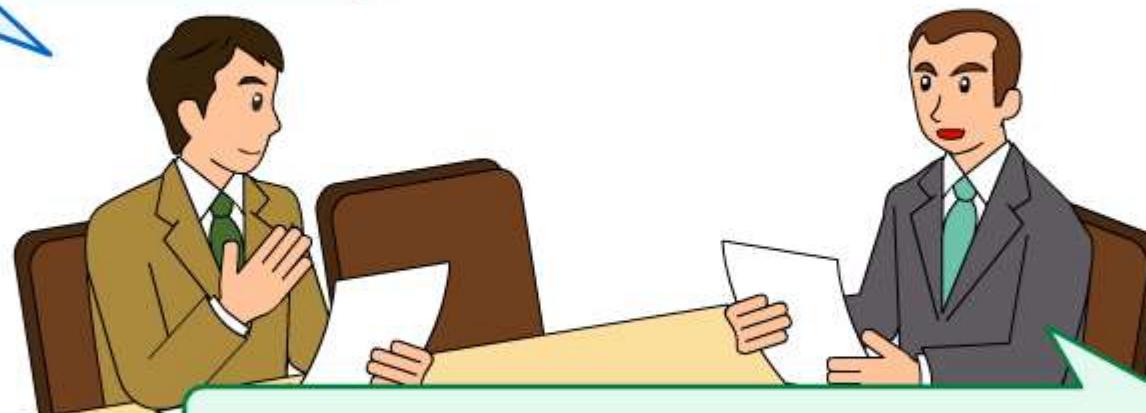
- Case-2 Detection of incomplete estimate (Comparison with another company)

How was the answer from Vendor-X?



 1. Successful Projects that Applied SDEM (2) Case-2 Detection of incomplete estimate (Comparison with another company)

How was the answer from Vendor-X?



Well, my concerns were realized.
The requirement definition, operational test/transition, and project management...
everything was defined as the customer's work, and was not considered in the
estimation of Vendor-X.
I kindly appreciate your consideration of the entire project including our work, roles
and workload. I persuaded my boss to order this project to your company.

- 1. Successful Projects that Applied SDEM (2)

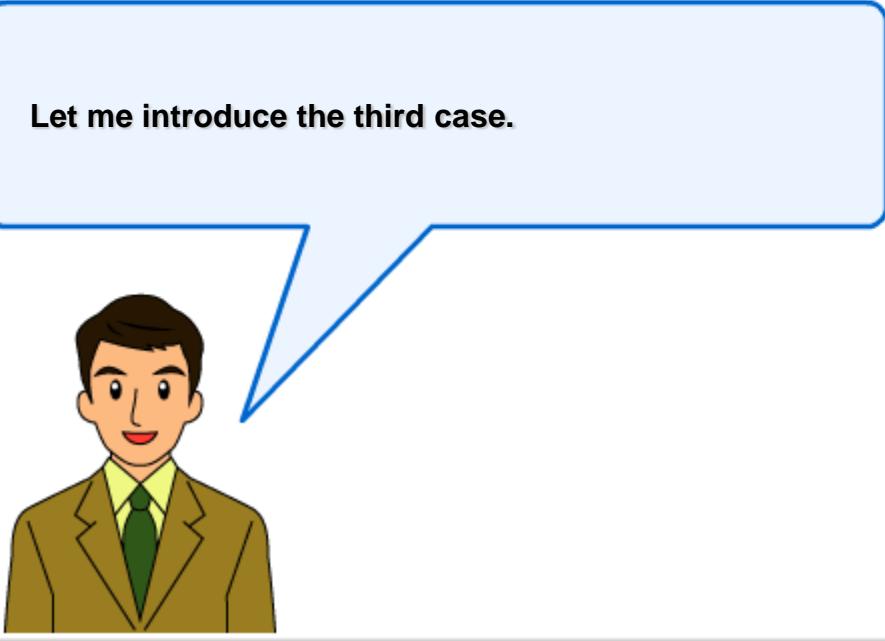
- Case-2 Detection of incomplete estimate (Comparison with another company)

In this case, we have pointed out the incompleteness of the competitor's estimation, and explained the difference from our estimation to the customer by using SDEM. The estimation of Vendor-X was cheaper. However, their scope was only development process, and they implied that other work items such as project management are performed by the customer. On the other hand, our proposal considered the customer's viewpoint as well. The work items that the customer had to execute, their scope and workload were clearly described. We could succeed to make the customer relieved by using SDEM to explain the content of the estimation.



- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis



Let me introduce the third case.



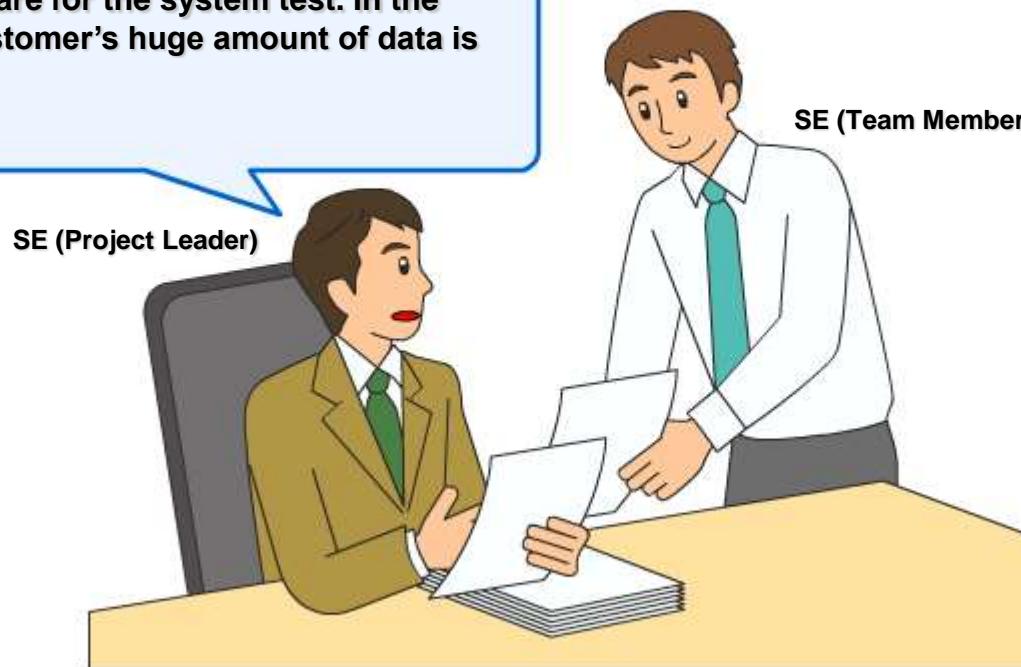
● 1. Successful Projects that Applied SDEM (3)

● Case-3 SDEM is applied as a reference in troubleshooting analysis

The IT phase is almost the last stage. PT and IT were running well.

Please start to prepare for the system test. In the system test, the customer's huge amount of data is necessary.

Is the data ready?



● 1. Successful Projects that Applied SDEM (3)

● Case-3 SDEM is applied as a reference in troubleshooting analysis

The IT phase is almost the last stage. PT and IT were running well.

Please start to prepare for the system test. In the system test, the customer's huge amount of data is necessary.

Is the data ready?

SE (Project Leader)

I am asking the customer to prepare the master and transaction data.

SE (Team Member)



Situation: The IT phase of system development is almost completed and they are starting ST phase. There is no serious problem as the project is proceeding through its specific definition of the phases.

Few days later

- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

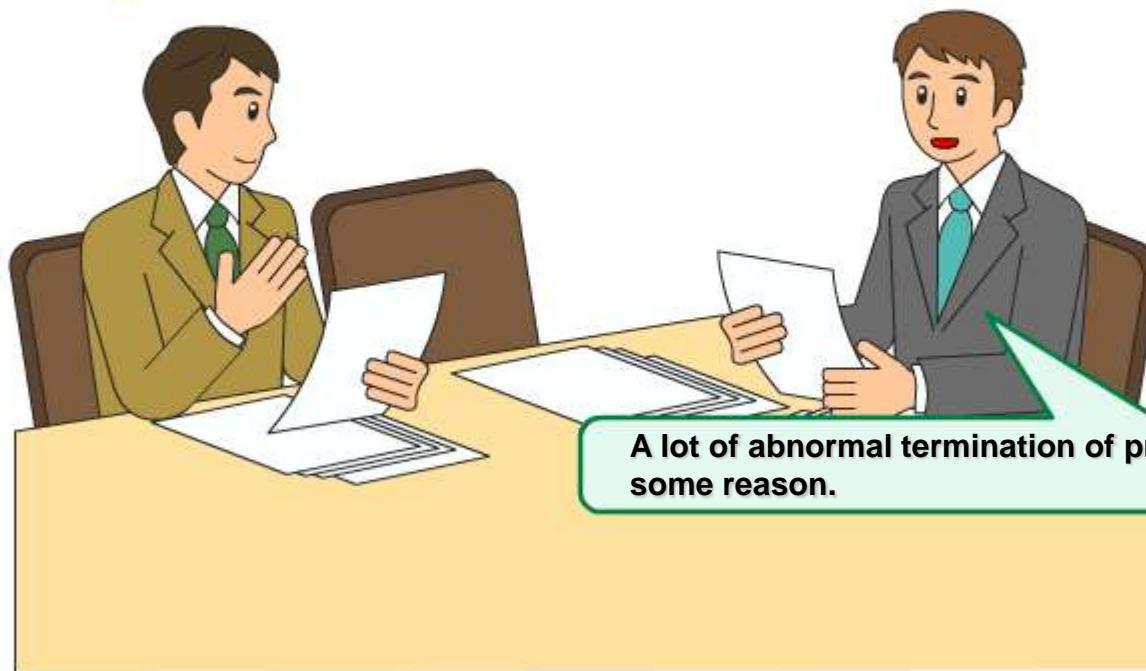
We have entered the ST phase. Please report on the present progress.



- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

We have entered the ST phase. Please report on the present progress.



 1. Successful Projects that Applied SDEM (3) Case-3 SDEM is applied as a reference in troubleshooting analysis

We have entered the ST phase. Please report on the present progress.



The abnormal errors in this phase are very troublesome.

Investigate the cause, and take measures to resolve it.

A lot of abnormal termination of programs is detected for some reason.

- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

Does the customer's data cause this problem?



● 1. Successful Projects that Applied SDEM (3)

● Case-3 SDEM is applied as a reference in troubleshooting analysis

Does the customer's data cause this problem?

Yes, it does.

The data contains the values that we have not assumed.



- 1. Successful Projects that Applied SDEM (3)

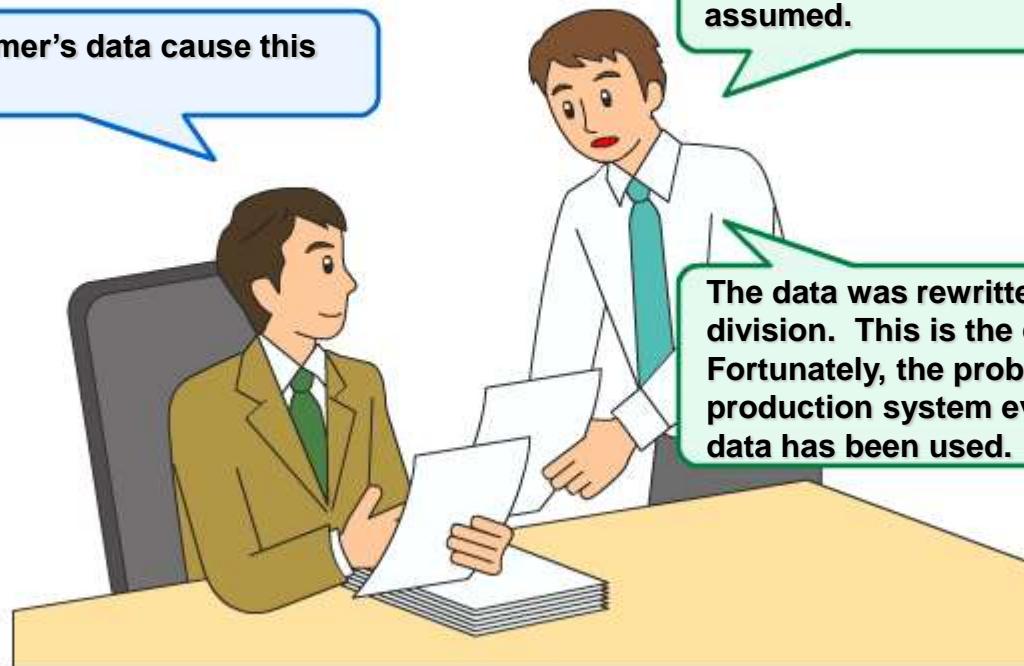
- Case-3 SDEM is applied as a reference in troubleshooting analysis

Does the customer's data cause this problem?

Yes, it does.

The data contains the values that we have not assumed.

The data was rewritten directly by the end-user division. This is the cause of conflicting data. Fortunately, the problem has not occurred in the production system even though the conflicting data has been used.



- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

Does the customer's data cause this problem?



It is necessary to correct the data even if ST is delayed.
Otherwise, the customer's business cannot be switched to the new system.
Thanks for reporting.

Yes, it does.

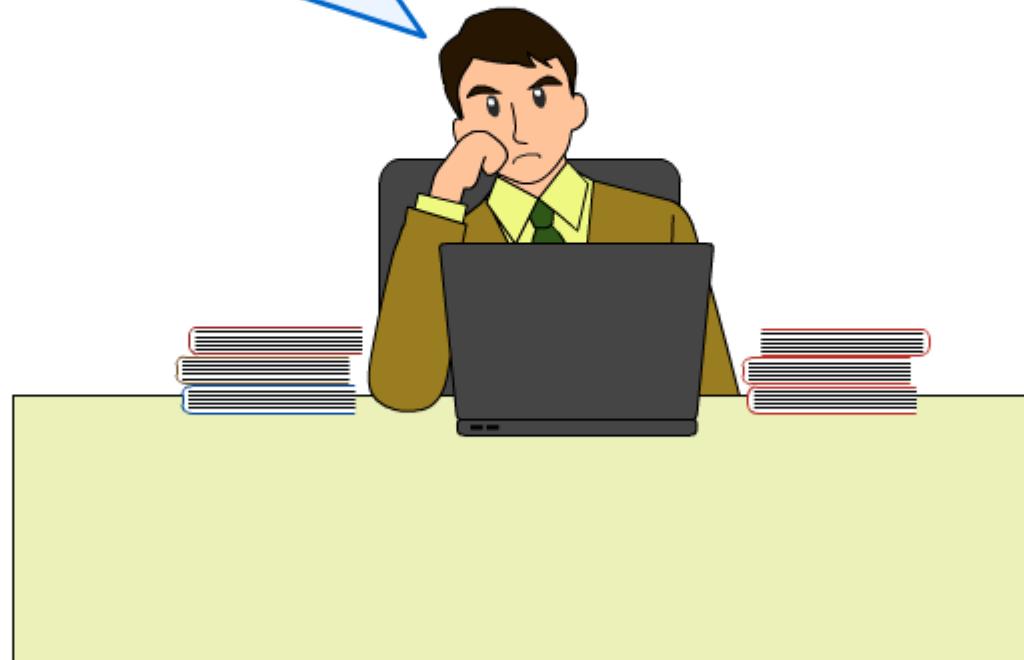
The data contains the values that we have not assumed.

The data was rewritten directly by the end-user division. This is the cause of conflicting data. Fortunately, the problem has not occurred in the production system even though the conflicting data has been used.

- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

**Who should have corrected the conflict of production data?
Let's list up the work items again.**



- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

**Who should have corrected the conflict of production data?
Let's list up the work items again.**



According to the “Transition and Deployment” category of SDEM,
“H1UI130: Current data investigation : ... any data that is not consistent
between the current and new systems should be cleaned up as required”
had been overlooked.
Only the customer is able to correct this conflicting data.
Let's explain this issue to the customer, and request the data correction.

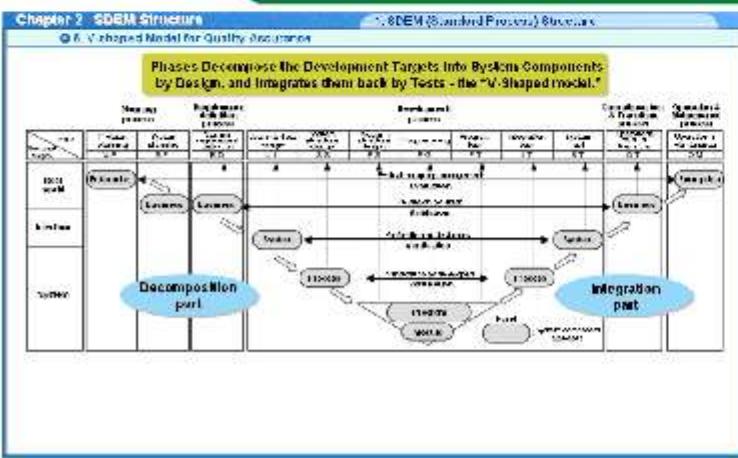
- 1. Successful Projects that Applied SDEM (3)

- Case-3 SDEM is applied as a reference in troubleshooting analysis

In this case, we referred to SDEM to solve the trouble in the ST phase.
Most trouble around the test phase is caused by problems overlooked in the design phase.

To investigate the problems in the test phases, people tend to investigate the cause in the current phase or the previous phase.

Please remember the V-shaped model of SDEM, and confirm whether there is incompleteness in the design phases corresponding to the test phases where the problem occurs.



 **Summary****[Summary]**

- 1. The oversight of work items can be prevented by referring to the SDEM standard process.**
- 2. SDEM can be applied in each stage (such as business opportunity, planning, execution, operation.)**

SDEM is a comprehensively organized collection of work items based on know-how that is obtained from various project experiences. According to the purpose and key features of the project, you may develop your project standard by tailoring SDEM. Oversight of work items can be prevented by referring to the category, process and WBS of the SDEM standard.



 Message from DNA Successors

This is the end of this training.

Finally, let me introduce the messages from
three DNA successors.



● 1. DNA Successor (1)

For systems engineers, SDEM is indispensable like air.

I wish to express my gratitude for SDEM.

Hereafter, SDEM will be with us as one of Fujitsu's DNA.

Mr. A

**(Years of SE experience: 20
Fields: Shared technology service,
Educational solutions,
Distribution, etc).**

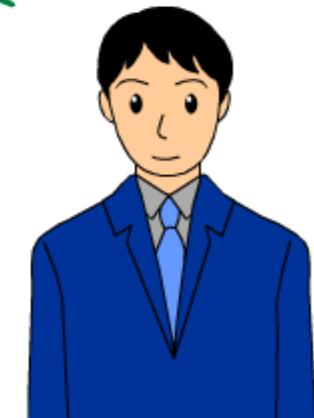


● 1. DNA Successor (2)

I am using SDEM for the following purposes.

- For estimation by listing up WBS.
- For making the master and detailed schedule by rearranging the WBS.
- For listing up the deliverables.
- For the confirmation of other parties work items that might influences me and my group.
- For the explanation of the work to the customers and partners.

Mr. B
(Years of SE experience: 9
Fields: Distribution,
Shared technology service).



 1. DNA Successor (3)

According to my experience, we are able to understand the outputs of RD and the following phases deeply by understanding the outputs of VP and SP phase.

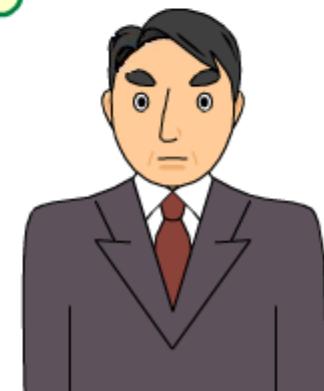
Do you know what is the purpose of work items in RD and following phases?

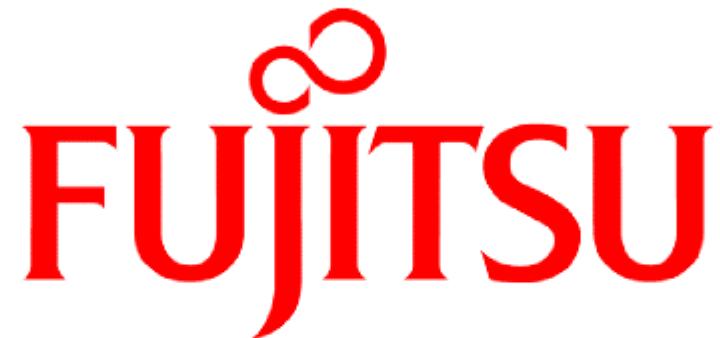
The answer is in VP/SP phase.

Without understanding the substantial objective of an IT system, the customer might not be satisfied even if you faithfully systematize what the customer or their consultant requested. If all of your team members understand why the customer is requesting the new system, various misunderstandings would be prevented.

It is very important to understand the contents of VP/SP phase even though most SEs are not responsible for these phases.

Mr. C
(Years of SE experience: 25
Fields: Manufacturing,
OS development, etc).





THE POSSIBILITIES ARE INFINITE