

## “Walking MAP of DMBOK2”

### – A bird’s eye view to Data Management world

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## Who is the presenter ?



Minoru Nakaoka: A member of DAMA Japan chapter, currently joins in several study groups. Also a member of JEMUG (Japan Enterprise Modeling Users Group).

He had been worked as a founder member of Japan Data Management Association (JDMC).  
My motto is ‘Eyes Wide Open’

President of InfoLabYouYou (PB). Currently he works as an independent consultant in data management and data analytics areas after leaving a subsidiary in Japan of a leading Enterprise Data Warehouse solutions company in the US.

He has many experiences as a practitioner of project management and consulting in projects for planning, designing and developing of strategic information system and Enterprise Data Warehouse, having activities for clients in Japanese leading companies such industries as manufacture, financial, insurance, communications, retail and airline for over 25 years.

- PMP, Master of Arts and Sciences (OUJ), Bachelors in Computer Science (Gumma University) and also Psychology & Education (OUJ), Certified Psychologist (The Japanese Psychological Association)  
- Erhu Instrument Player, Taichi Master

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## Today’s Story : Contents

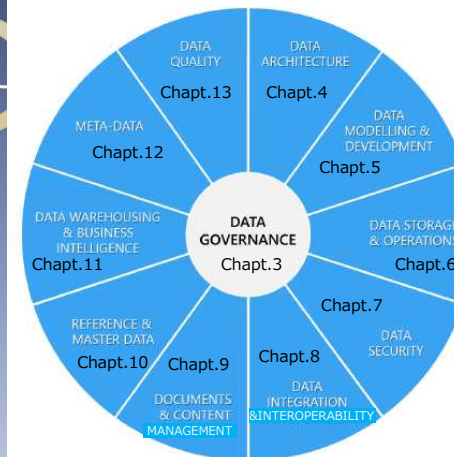
1. The “Data Management Walking MAP” of DMBOK2
  - Definition: What / Why / How / For whom ???
  - Using “Forest and Twigs” Approach
2. Some usages of the DM Walking MAP in the Business / Data Management life
  - It will depend on your target and job role
  - Insights of this Walking MAP
3. A Knowledge Repository of DM based on DMBOK2
  - An idea for the approach & information management
  - How is it Designed ?
4. Additional points observed at DM Knowledges for the Walking MAP
  - Business Strategy: This is a starting point
  - Enterprise Architecture: Target environment
  - Data Strategy: Identification of needs and scenarios
  - Other views

## 5. Summary

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## DMBOK Version2: The Data Management Framework

### - Eleven Knowledge Areas for DM (By DAMA International, 2017)



### Challenges:

- Recognize the meanings in this wheel for you
- Identify the relationships among the knowledge areas
- Describe the structure of the Data Management as possible as we can
- Find your own way to approach to a DM world

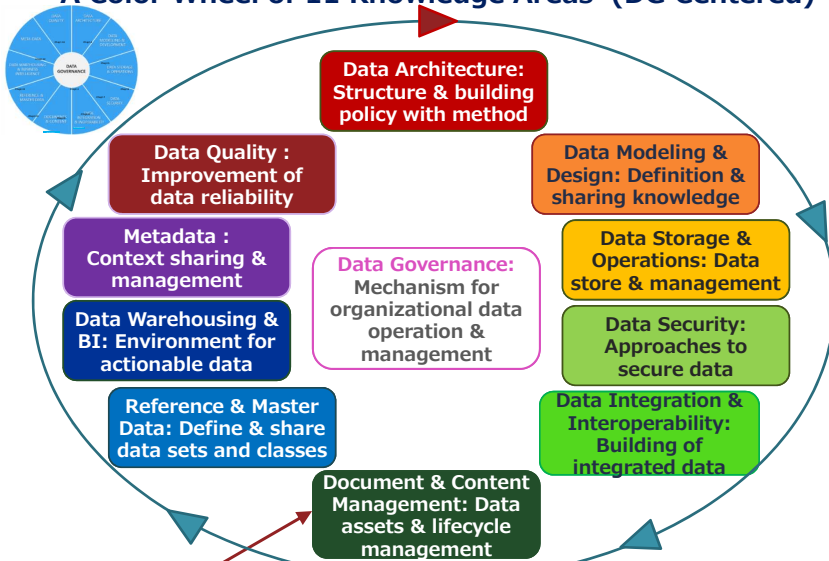


**Needs to a DMBOK2  
visualizing idea**

Chapt.1 Data Management  
Chapt.2 Data Handling Ethics  
Chapt.14 Big Data and Data Science  
Chapt.15 Data Management Maturity Assessment  
Chapt.16 Data Management Organization and Role Expectations  
Chapt.17 Data Management and Organizational Change Management

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## A hint for the structure of the Framework: - A Color Wheel of 11 Knowledge Areas (DG Centered)



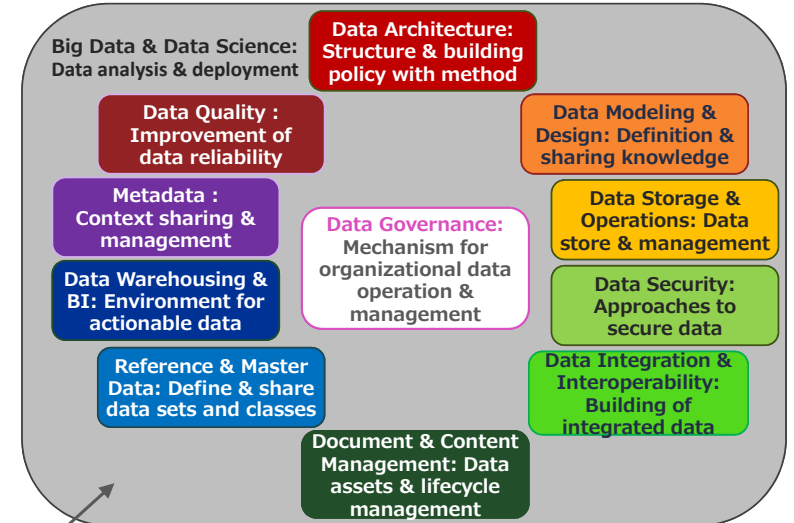
If you could carefully notice this is the issue of “data lifecycle”, you will easily find a structure of the Data Management in DMBOK2 as a clockwise ordered wheel.

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## A hint for the structure of the Framework: - A Color Wheel Chart plus Big Data & Data Science



The Practices for Data Science activities should stand on excellent planning and execution of Data Management. (People, Processes, Technologies)

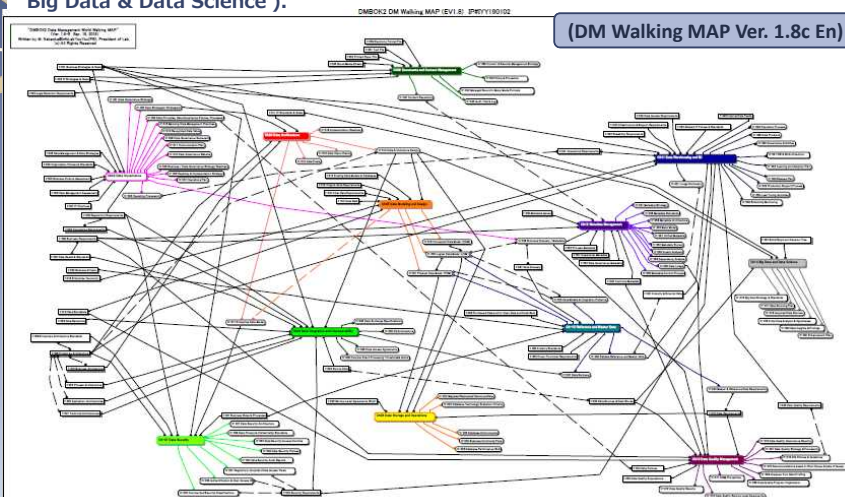
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## A Big Forest of the Data Management: 'DMBOK2 DM Walking MAP' View (A directed graph)

➤ This MAP has been designed of both Knowledge Areas as colored nodes plus Input and Output information nodes for each Knowledge Area (11 Knowledge Areas and 'Big Data & Data Science').



We can use our view or map of DM both of a bird's eye on the Forest and specific looks of Twigs in it. This is a big view of DM for our business.

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## Noticing points: About Context Diagram in DMBOK2

**Notice: Before going into details of Walking MAP, we should have some notices in following messages that are described at DMBOK2 pages 36 – 37 (Chapter 1).**

The Knowledge Area Context Diagrams describe the detail of the Knowledge Areas, including detail related to people, process and technology. They are based on the concept of a SIPOC diagram used for product management (Suppliers, Inputs, Processes, Outputs, and Consumers). Context Diagrams put activities at the center, since they produce the deliverables that meet the requirements of stakeholders.

Lists in the context diagram are illustrative, not exhaustive. Items will apply differently to different organizations. The high-level role lists include only the most important roles. Each organization can adapt this pattern to address its own needs.

**Even if these context diagrams might have such carefulness to use, people also could recognize following “Walking MAP” approach has highly positive effectiveness in understanding the Data Management world through my experiences .**

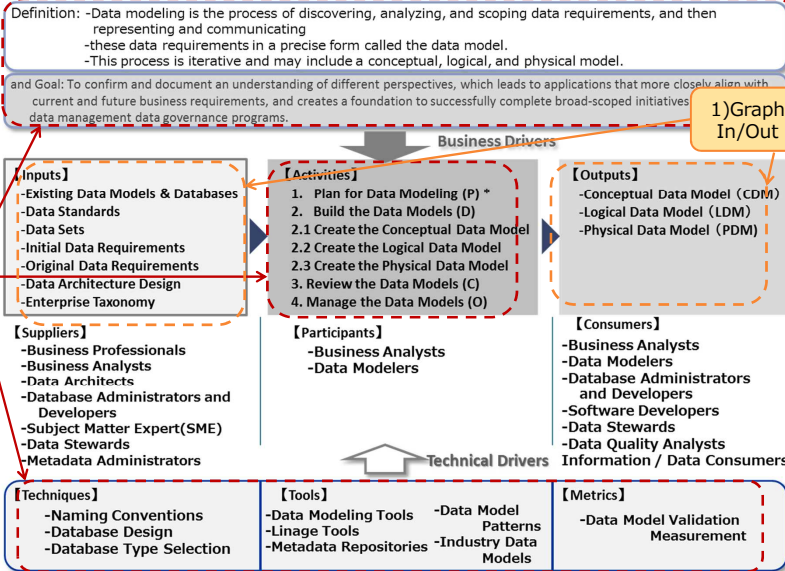
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## How DMBOK2 Walking MAP has been designed ?

- Based on information from 'Context Diagram', and directed graph notation has been employed. (And some other Relationships and Information are extended.)
- Example: Chapt.5 Data Modeling and Design (p.124)

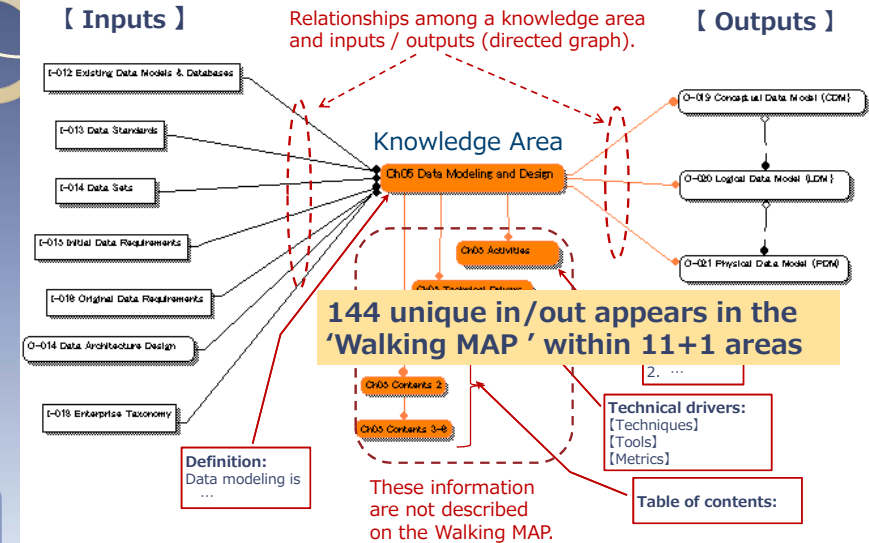


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## Quick Look: Basic Structure of each Knowledge Area

### An Example: Basic Structure of 'Data Modeling and Design' Area



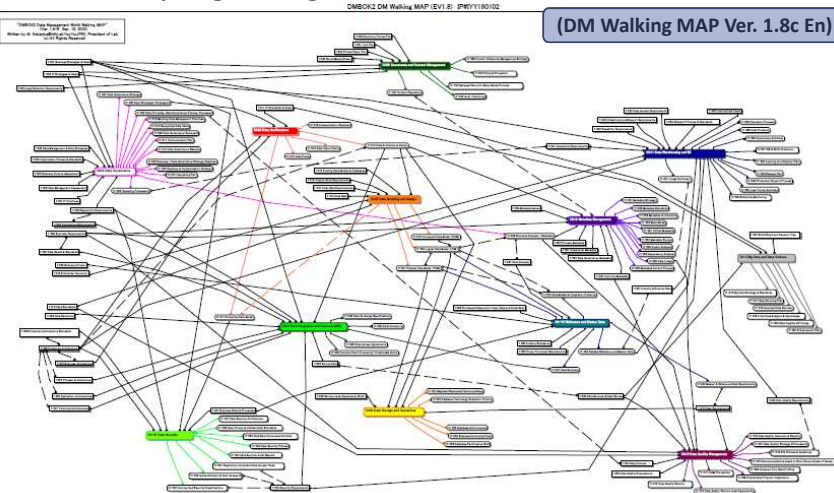
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## A Big Forest of the Data Management:

### - Extension for the latest version of Walking MAP

- Some additional Relationships and information are added in this Walking MAP Extension comparing with original DMBOK2.

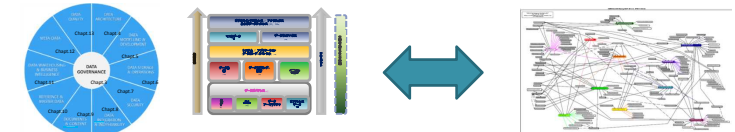


We can use our view or map of DM both of a bird's eye on the Forest and specific looks of Twigs in it. This is the Data Management for our business.

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## What are the values of DM Walking MAP ? How to use it ?



- ◆ Ideas for usage will be covered differently by your standing point and role

1. To make a high level of data management strategies by using the knowledges in DMBOK2, and turn these into your intelligences
2. To understand the whole knowledge areas in DMBOK2 by the relationships between inputs and outputs including activities
3. To know the required activities in each DM area by inspecting both of the inputs and outputs

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## What are the values of DM Walking MAP ? How to use it ?

◆ **Ideas for usage** will change differently by your standing point and role (Cont'd)

4. To notice the priorities of required knowledge areas at DM activities depending on your role and responsibilities as a DM resource

5. To refer in planning and making a DM roadmap in confidence

6. To reduce the risks in considering a DM program and use as a communication tool with stakeholders

... Maybe more



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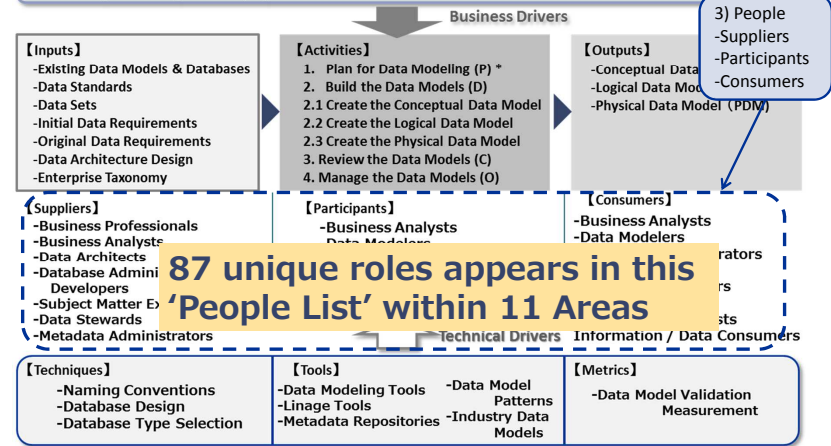
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## Additional Aspects : What job role relates to where ?

➤ 'People' fields support to inform additional relationships to DMBOK2 Walking MAP  
➤ Example: Chapt.5 Data Modeling and Design

Definition: -Data modeling is the process of discovering, analyzing, and scoping data requirements, and then representing and communicating  
-these data requirements in a precise form called the data model.  
-This process is iterative and may include a conceptual, logical, and physical model.

and Goal: To confirm and document an understanding of different perspectives, which leads to applications that more closely align with current and future business requirements, and creates a foundation to successfully complete broad-scoped initiatives such as master data management data governance programs.

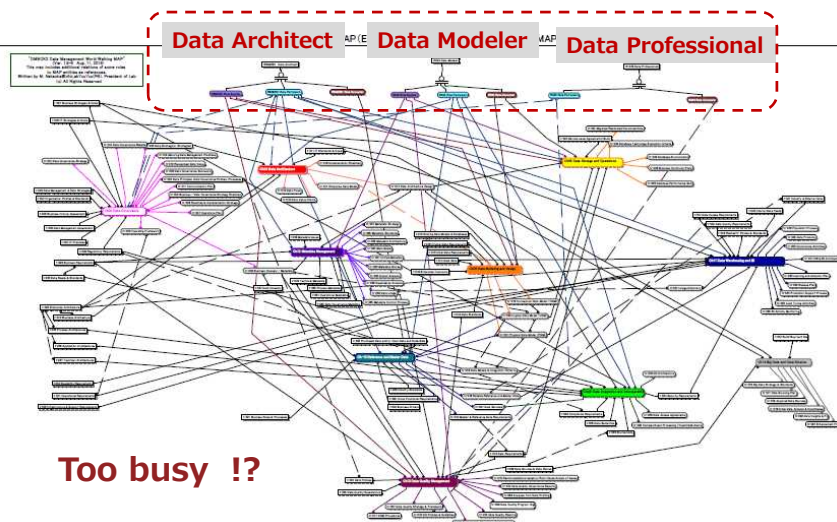


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## People: Relating Knowledge Areas to People by Roles on DM Walking MAP(v1.8c) - Data Architect, Data Modeler, Data Professional



Too busy !?

- These three Roles seem to be expected to have activities relating with various DM Knowledge Areas connecting to nodes in the DM Walking MAP. But the description looks too busy here.

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## People – Relationships between People in Knowledge Areas and high level grouped Roles

➤ This matrix shows the relationships between DMBOK2 Knowledge Areas & People standpoints(Top) and high level summarized 14 groups(Left Side: 12 Internal groups and External 2 groups). (Number of unique role in 11 Knowledge Areas in total is 87.)

Belongs to	Roles: High Level Grouping	DMBOK2 Area	Chapt.3 Data Governance		Chapt.4 Data Architecture		Chapt.5 Data Modeling & Design		Chapt.6 Data Storage & Operations		Chapt.7 Data Security		Chapt.8 Data Integration & Interoperability		Chapt.9 Document & Content Management		Chapt.10 Reference & Master Data		Chapt.11 Data Warehousing & BI		Chapt.12 Metadata		Chapt.13 Data Quality		Sub Total	
			Suppliers	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers	Supplier	Consumers		
			#of Roles in this group																							
Internal	Business Managers	7	1	3	1						1		2	1					2	1			1	1		
	Supervisors	9		4	8							2	1		1					1	1			1	2	17
	Operation Managers	7	1	2	1	1								2					2	1	1					12
	Business Leads	5		2		1		2					1					1	1				1	1	1	12
	Analysts, Modelers	8		1	1	1	1	2	3	1	1	1	1	3			2	3	1	2	1	2	1	2	3	34
	Data Providers(Internal)	8													2	3										7
	Architects	6	1	1	1	1	1		1	1	1		1	1		1	1	2	1		1	1	1			18
	Data Stewards	5	1	4	1	1	1	1	1		1	1			1	1	1	1			1	1	1			19
	Data Managers/Administrators	6	1	1	2		1	2	1	1	1				1	1				1	1					11
	Developers	6						1	2	2				1	1		2	2				2				14
	Specialists/Support People	6			1	1										1	1			1	1	1	1	1	1	6
	Data Consumers	7							1	1					2			1	1	1		4		2	1	14
Outside	Outside Data Providers	1													2		1	1	1			4		2	1	1
	Outside stakeholders	6	1								2				1	2					2					9
		TTL Suppliers	7		4			7		4	4	4	4	4	4	5	7		6	5	7		5	7		58
		TTL Participants		16		2		2		2	2	4	4	8	6	5		7	7		5		11			70
		TTL Consumers			8		4	7					3		5		6		3		9			8	5	59
		Details of these 3 role groups will																							Total	187

Details of these 3 role groups will be discussed in next few pages.

Details Version: People Working Guide

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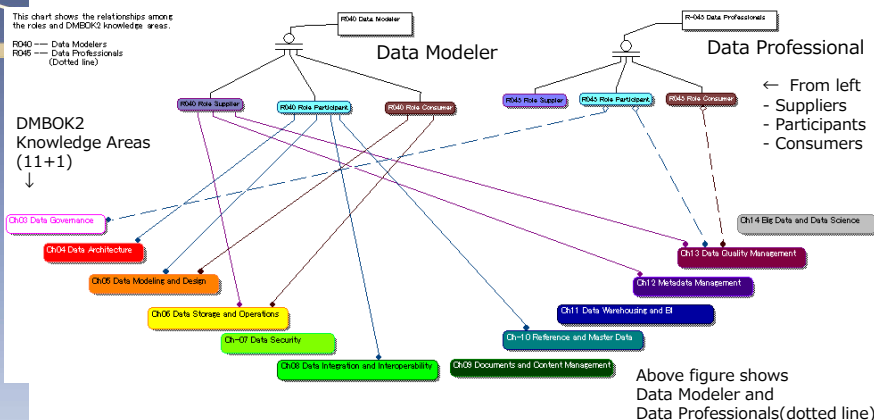
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## [Roles & Relationships] The Situations for the Roles and People - Data Modeler and Data Professional for The knowledge Areas

- Two types of people from DMBOK2 (Data Modeler and Data Professional) are described in this graph. And the three Standpoints (ie. Suppliers, Participants, and Consumers) of each People type are connected to 12 Knowledge Areas of DMBOK2.

This chart shows the relationships among the roles and DMBOK2 knowledge areas:



### People-Area Relationship Graph

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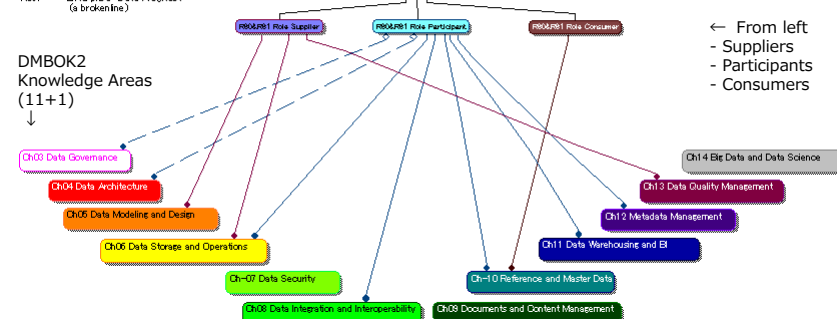
## [Roles and Relationships] People-Area Relationship Graph - Some Situations for Role as Data Architects

Data Architect & Enterprise Data Architect (Dotted relationship lines)

This chart shows the relations between the roles and DMBOK2 knowledge areas:

R060 - Data Architect  
R061 - Enterprise Data Architect (a broken line)

DMBOK2 Knowledge Areas (11+1)



### People-Area Relationship Graph

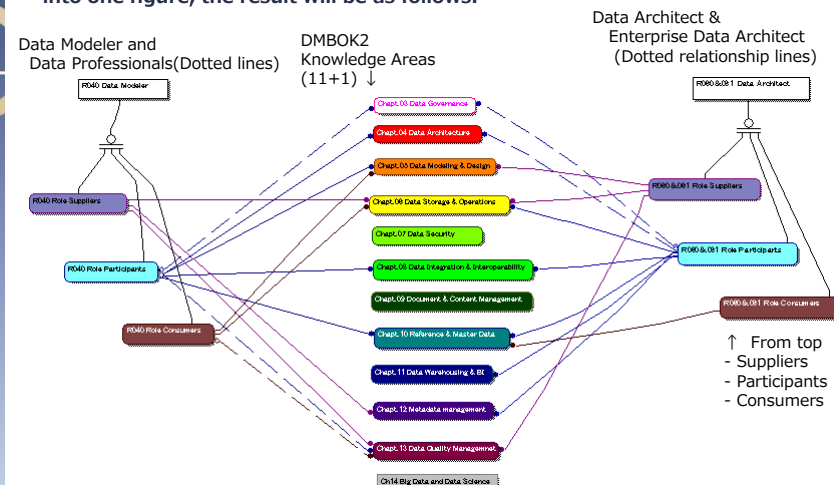
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## [Roles and Relationships] People-Area Relationship Graph (Joined) - Similarities and Differences between Data Modelers and Data Architects

- If we combine the Roles and Relationships of Data Modelers and Data Architects into one figure, the result will be as follows.



Differences of both sides will come from the situations: some points

- Scope of work areas
- 'Metadata Area' seems to rely on function of Architects

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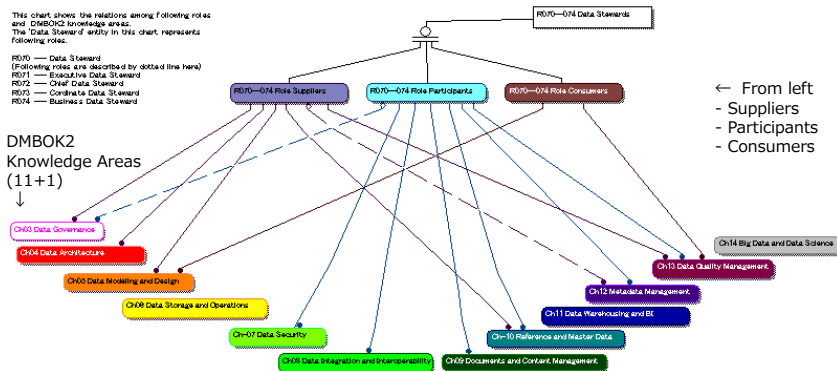
## [Roles and Relationships] People-Area Relationship Graph - Some Situations for Role as Data Stewards

- 'Data Stewards' mainly have work roles relating with operational areas of data.

This chart shows the relations among following roles and DMBOK2 knowledge areas. The 'Data Steward' entity in this chart represents following roles:

R070 - Data Steward (Following roles are described by dotted line here)  
R071 - Executive Data Steward  
R072 - Chief Data Steward  
R073 - Coordinator Data Steward  
R074 - Business Data Steward

DMBOK2 Knowledge Areas (11+1)



It is observed that many modified level of Roles exist as the 'Data Steward' function. The relationships for these roles outside of the name of 'Data Steward' are described by the dotted relationship line.

- Note: 1. In this figure, we have combined following Roles into one box:
- Data Steward, Executive Data Steward, Chief Data Steward, Coordinator Data Steward, Business Data Steward
2. The word of 'Data Steward' have been modified by various situations in recent years, so if we simply look on a word of 'Data Steward' there could be various meanings by background context.

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## Consideration Examples: Why Data Modeling and Data Modelers are important for Enterprise Activities ?

- From some perspectives derived in the DM Walking MAP

'Data Models' are forms of deliverables, and 'Data Modeling' is one of technical issues for describing the Real World Model into a Digital World.

Data Modeling as / for ...

1. Knowledge Management
  - Be aware of coordination with Business Rules
2. Metadata Management
  - Meta Models (The Structures of context manipulation)
3. The Management of Data Structures and Data Flow Management
  - Logical models (ER/UML), Linage descriptions, etc.
4. Notations for Master Data / Reference Data
  - Management support for AsIs / ToBe Models
5. Supporting features for Data Integration Tool
  - Relation description for Data Links / ETL Integration Model
6. Application Implementation Management
  - Physical Models (Various Notation Forms)

And more ...

Above discussions show us ...

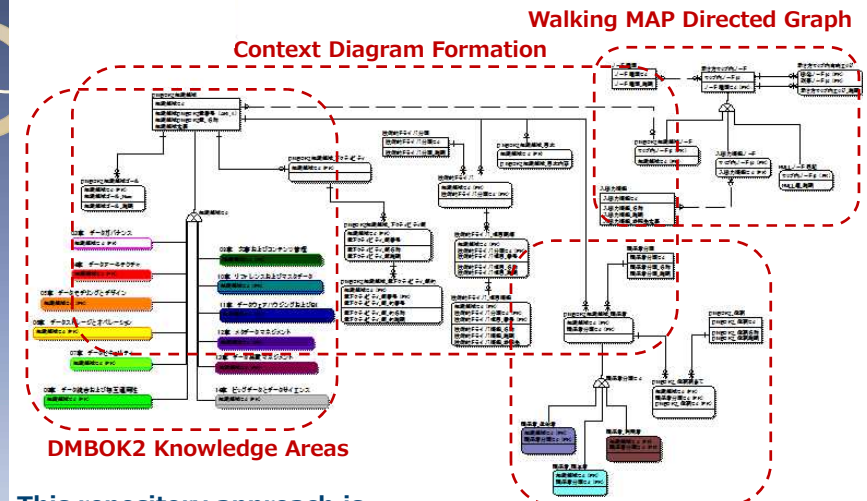
- The Data Modeling should be everyone's grounding knowledge at a certain level.
- The Data Models should be widely shared and appropriately managed.
- The People or Roles, who could describe data concepts correctly into Data Models and understand well them, are very important for the business.

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## Data Management Repository description of DMBOK2 - Base Logical Model (v1.0)



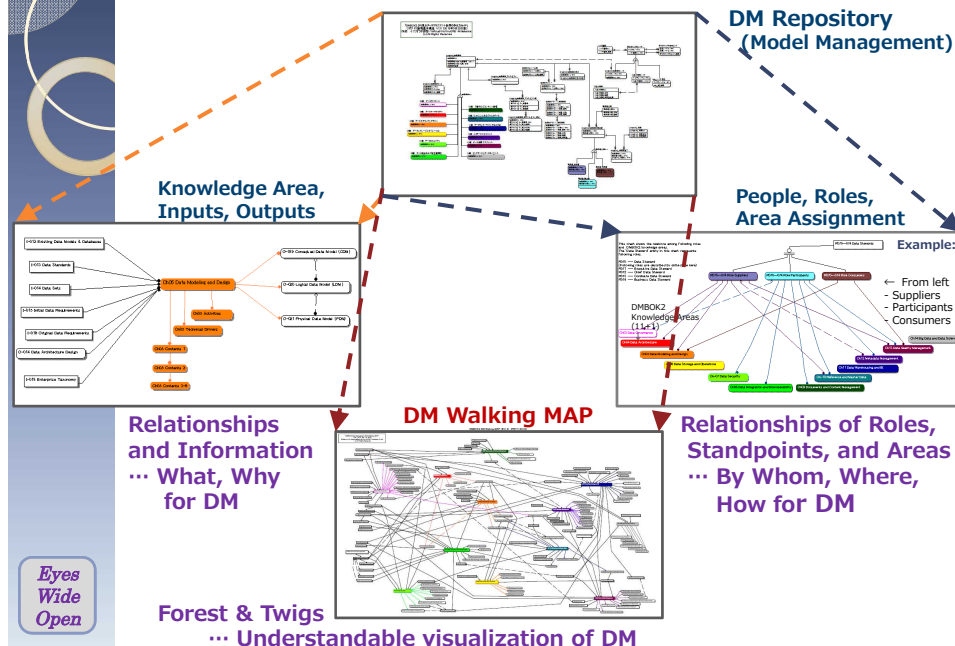
This repository approach is a flexible way for managing and customizing the DM Walking MAP information depending on your needs.

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## Relationships between the Repository and information

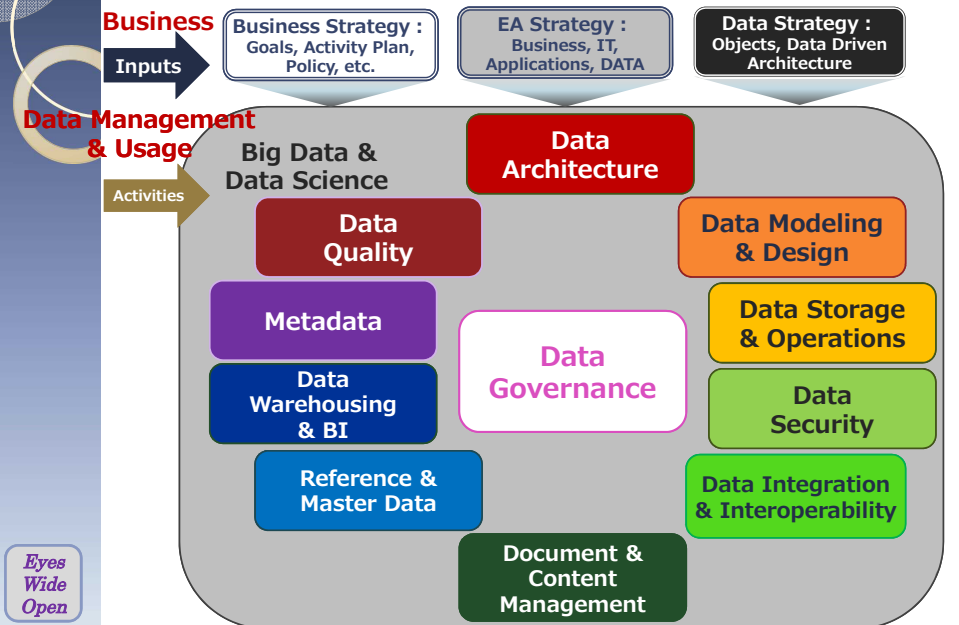


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## Additional points observed at DM Knowledge Areas for the Walking MAP



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# Business Strategy: What and Where ?

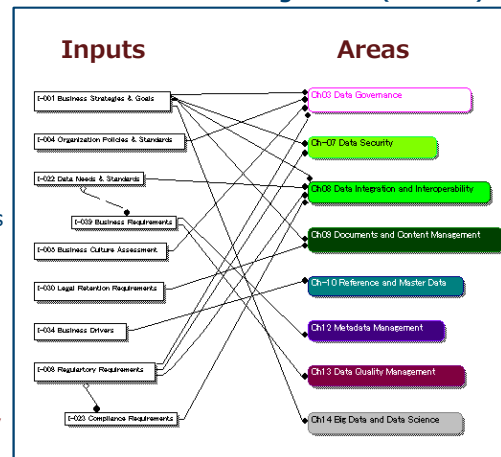
**Business Strategy, Goal, Policies, Regulations, and other conditions:**

- ✓ Business Strategies & Goals
- ✓ Organization Policies & Standards
- ✓ Data Needs & Standards
- ✓ Business Requirements
- ✓ Business Culture Assessment
- ✓ Legal Retention Requirements
- ✓ Business Drivers
- ✓ Regulatory Requirements
- ✓ Compliance Requirements

**Funding**  
(not represented here)

**These information mainly seem to come from outside of the Data Management Knowledge Areas themselves.**

**A Subset of Relationship Views on the Walking MAP (Ver. 1.8c)**



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# Enterprise Architecture Strategy: What is this ?

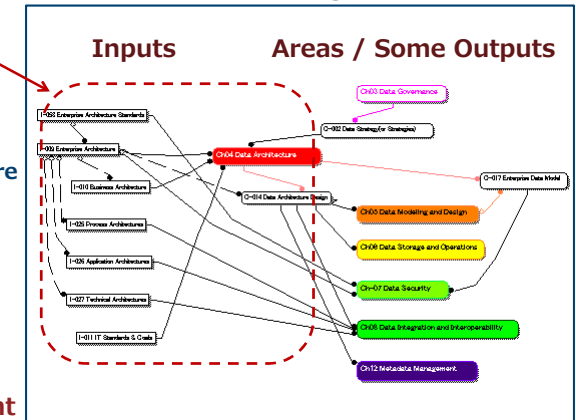
**These are the fundamental elements of EA**

**A Subset of Relationship Views on the Walking MAP (Ver. 1.8c)**

- ✓ EA Standards
- ✓ Business Architecture
- ✓ **Data Architecture**
- ✓ Process Architecture
- ✓ Application Architecture
- ✓ Technical Architecture

**+ 'Data Governance'**

**These information seem to come from outside of the Data Management Areas, and some information are joined from inside of DM through perspectives of data driven enterprise . (Ex. Data Architecture and Data Governance)**



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## Intention for Data Architecture

**Excerpts from DMBOK2 Chapt.4 'Data Architecture' (p.98) : (Summarized) ... Underlines are added by the presenter.**

- Data Architecture is fundamental to data management. Because most organizations have more data than individual people can comprehend, it is necessary to represent organizational data at different levels of abstraction so that it can be understood and management can make decisions about it.
- Data Architecture artifacts includes specifications used to describe existing state, define data requirements, guide data integration, and control data assets as put forth in a data strategy.
- An organization's Data Architecture is described by an integrated collection of master design documents at different levels of abstraction, including standards that govern how data is collected, stored, arranged, used, and removed. It is also classified by descriptions of all the containers and paths that data takes through an organization's system.

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## A Enterprise Architecture (EA) Framework

➤ We should also consider this Framework for your EA Strategy as background.

**THE ZACHMAN ENTERPRISE FRAMEWORK<sup>2</sup> TM**

	WHAT	HOW	WHERE	WHO	WHEN	WHY	
SCOPE CONTEXTS	Inventory Identification Inventory Types	Process Identification Process Types	Network Identification Network Types	Organization Identification Organization Types	Timing Identification Timing Types	Motivation Identification Motivation Types	STRATEGISTS AS THEORISTS
BUSINESS CONCEPTS	Inventory Definition Business Entity Business Relationship	Process Definition Business Transform Business Input	Network Definition Business Location Business Connection	Organization Definition Business Role Business View	Timing Definition Business Cycle Business Moment	Motivation Definition Business End Business Means	EXECUTIVE LEADERS AS OWNERS
SYSTEM LOGIC	Inventory Representation System Entity System Relationship	Process Representation System Function System Input	Network Representation System Location System Connection	Organization Representation System Role System View	Timing Representation System Cycle System Moment	Motivation Representation System End System Means	ARCHITECTS AS DESIGNERS
TECHNOLOGY PHYSICS	Inventory Specification Technology Entity Technology Relationship	Process Specification Technology Transform Technology Input	Network Specification Technology Location Technology Connection	Organization Specification Technology Role Technology View	Timing Specification Technology Cycle Technology Moment	Motivation Specification Technology End Technology Means	ENGINEERS AS BUILDERS
COMPONENT ASSEMBLIES	Inventory Configuration Component Entity Component Relationship	Process Configuration Component Transform Component Input	Network Configuration Component Location Component Connection	Organization Configuration Component Role Component View	Timing Configuration Component Cycle Component Moment	Motivation Configuration Component End Component Means	TECHNICIANS AS IMPLEMENTERS
OPERATIONS CLASSES	Inventory Instantiation Operations Entity Operations Relationship	Process Instantiation Operations Transform Operations Input	Network Instantiation Operations Location Operations Connection	Organization Instantiation Operations Role Operations View	Timing Instantiation Operations Cycle Operations Moment	Motivation Instantiation Operations End Operations Means	WORKERS AS PARTICIPANTS
	INVENTORY SETS	PROCESS TRANSFORMATIONS	NETWORK MODES	ORGANIZATION GROUPS	TIMING PERIODS	MOTIVATION REASONS	

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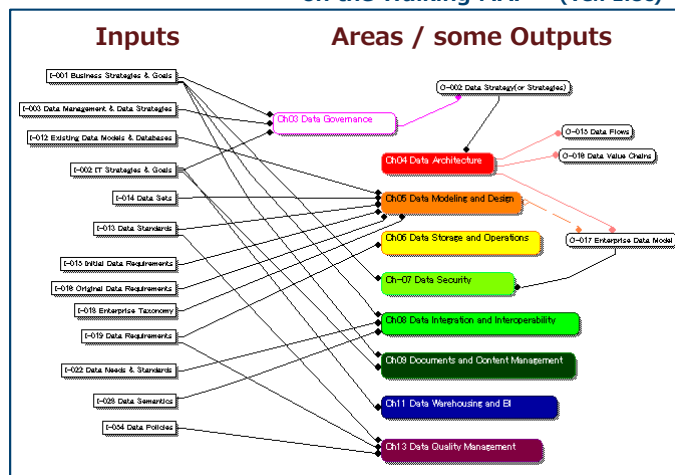
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## Data Strategy: What is this ?

### About Strategy for Data:

- Describe existing state
- Define data requirements
- Guide data integration
- Control data etc.

### A Subset of Relationship Views on the Walking MAP (Ver. 1.8c)

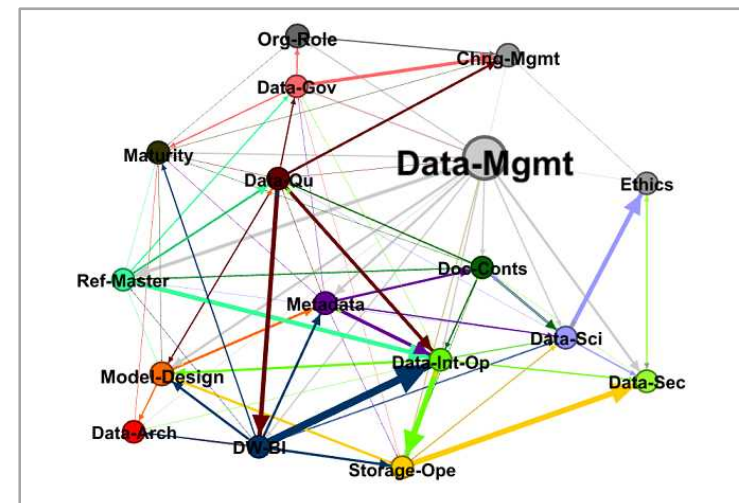


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## Relationships Among DMBOK2 Chapters

- This figure shows the relationships among DMBOK2 chapters based on referential relations(directed graph). The width of arrow shows the strength of relationship between two nodes.
- This would be identified as the version two of Walking Map as a extension.

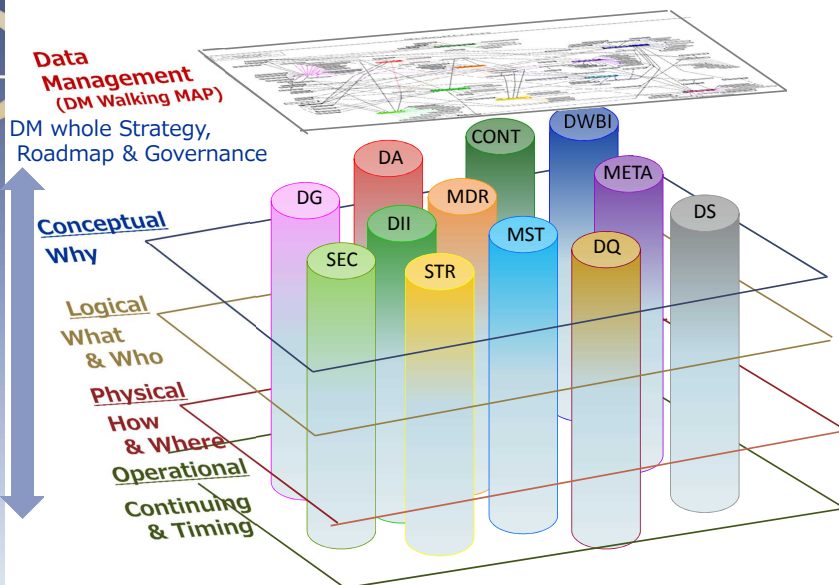


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## Hierarchical view(3D+Time) of Data Management

- Our targets for Data Management reside in a hierarchical (3D) and time sensitive structure. We live in a real DM world of complex networks.



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## Summary : Bottom Line (1)

- If we would like to have approaches to a effective DM, we must go into looking all those of business, management activities, and technologies.
  - ✓ For this direction, we should have good understanding of DMBOK2 and considering how to energize its contents to reach our successful goals of DM using DMBOK2 knowledges not simply but **with wisdom.**
- Then, a Forest and Twigs approach of the DM Walking MAP that has been introduced today will be one of effective ways to go.
  - ✓ And also the resources of people or roles, who could understand and have look of higher view for data management, are a must.
- By adapting an approach of using Knowledge Repository for your Data Management, you will be able to gain some useful insights for successful and understandable elements for your own way of Data Management.

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## Summary : Bottom Line (2)

➤ When we look precisely into the DM Walking MAP, we can identify three key information groups as prerequisites, which are;

- (1) Business Strategy,
- (2) Enterprise Architecture Strategy, and
- (3) Data Strategy.

➤ It will be the critical mission for Data Governance Organizations or Teams that they should make efforts to go into real Data Management activities through coordination between above three types of inputs and progressive operation of the Data Management Strategy at your environment.

✓ These activities are;

- (1) making proper direction,
- (2) executing and supervising correctly, and
- (3) having DM reviews in periodical and timely manner.

And also strong collaboration between business and IT department's resources will be necessities for this execution.

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You could reach at Minoru Nakaoka here:



@WelcomeLab or e-mail (on top slide)

Web: <https://info.InfoLabYouYou.com/>



**Note:** Today's scripts are all prepared by M.Nakaoka.

He has tried to make information right in here as possible as he could.  
The contents and discussions here should be used by your own careful consideration. Your kind feedbacks to M.Nakaoka are welcomed.

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