



DENSO

Crafting the Core

Convergence and Selection of Ideas in Practice

~ Some Trials and Considerations ~
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Agenda

1. Company overview
2. This point under discussion
3. Standard idea settling and selection
4. Some attempts of idea settling and selection
5. Case with idea settling and selection
6. Idea settling and consideration of ideal way of selection

1.

Company overview

Company overview



Establishment		December 16, 1949
Capital		187.4 billion yen
Sales revenues	Connection	4,527,100,000,000 yen
Operating profit	Connection	330.6 billion yen
Number of employees	Connection	154,493 people
(starting work number of men base)	Single	38,914 people
Number of consolidated subsidiaries		190 companies (62 domestic foreign countries 128)
Equity method application		36 companies
Number of related companies		(13 domestic foreign countries 23) As of March 31 st , 2017

The main product: Automotive field

環境

Product for gas-and-electric-powered car and electric vehicle
Product for fuel cell vehicle
Gasoline engine management system
Diesel engine management system
starter, alternator, and radiator

安心・安全

Air conditioner for car air conditioner system and bus
Air cleaner and car navigation system
ETC on-board equipment and remote security system
Remote touch controller and smart key
Vehicle operation system (driving partner)

快適・利便

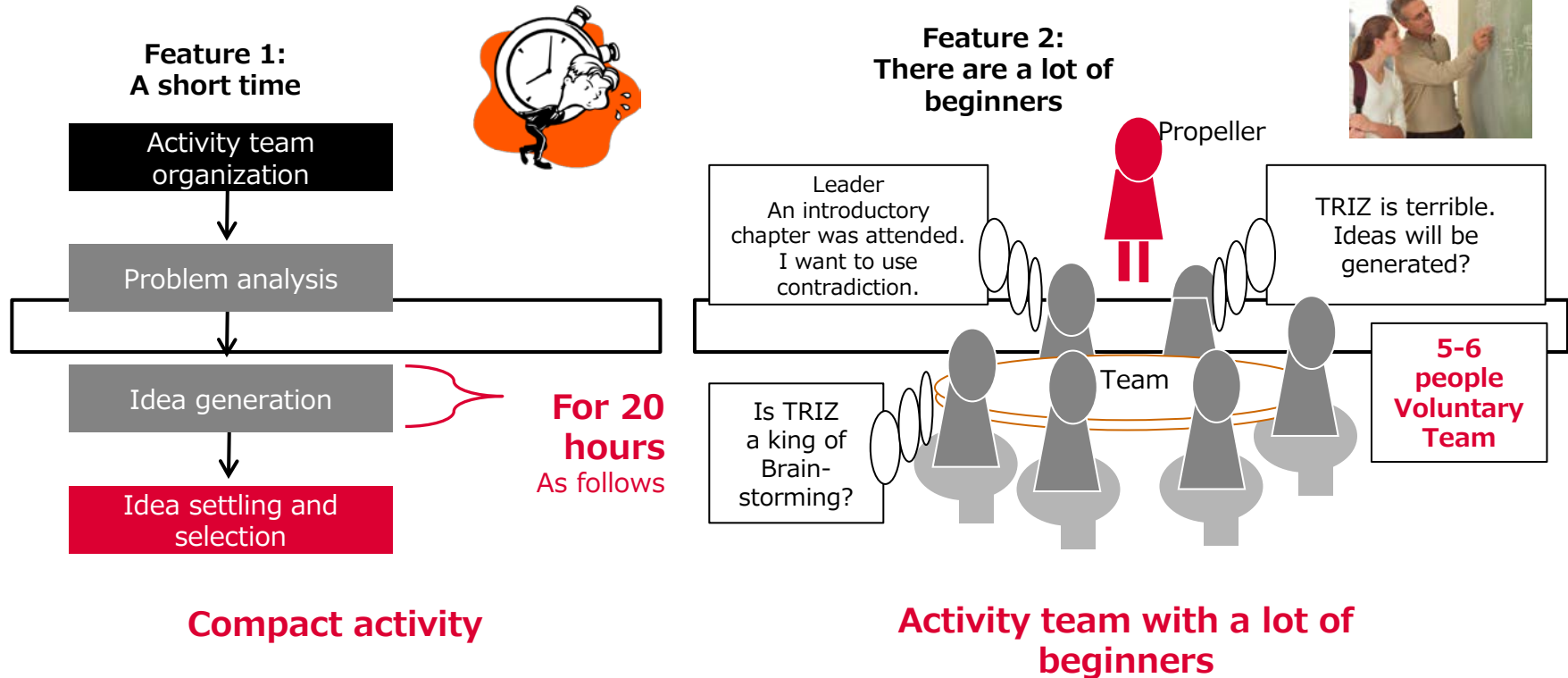
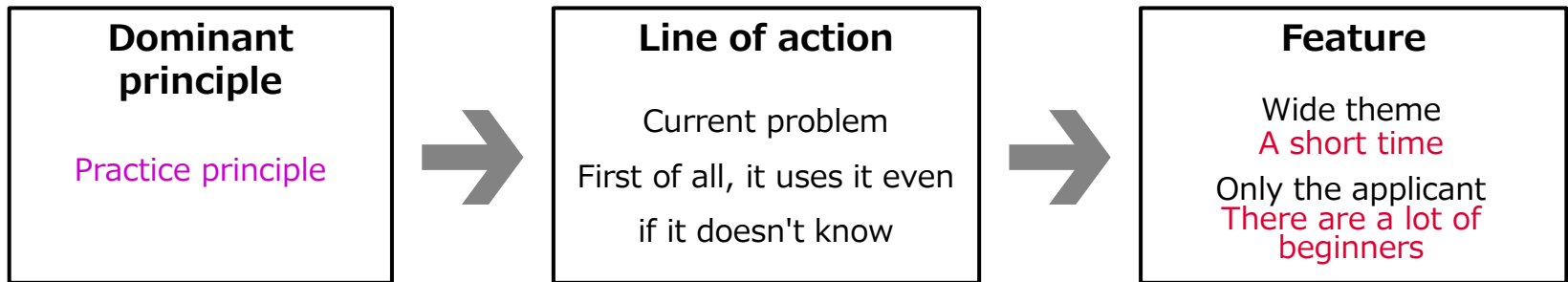
Sensing system for driving support system
Actuator & computer for ABS/ESC
Headlamp control system (AFS)
Sensor & computer for air bag
Monitoring system around vehicle
Combinations meter and wiper system

As of March 31, 2017

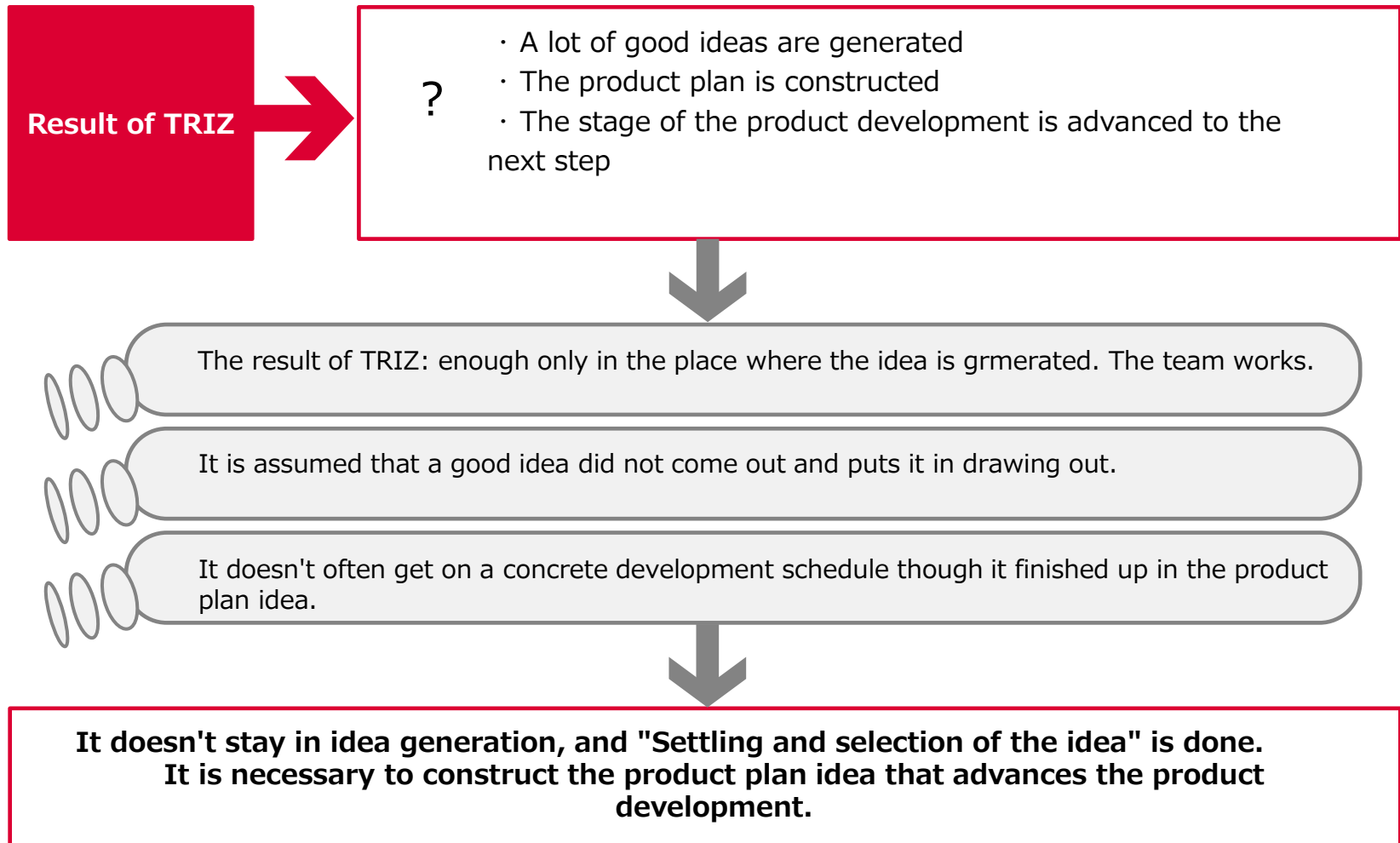
2.

This point under discussion

2-1. Feature of TRIZ activity of our company



2-2. What is the result of the TRIZ activity?



This theme: Attempt activity of idea

3.

Standard idea settling and selection

3 - 1 . Method of centering on the Pugh Method (1)

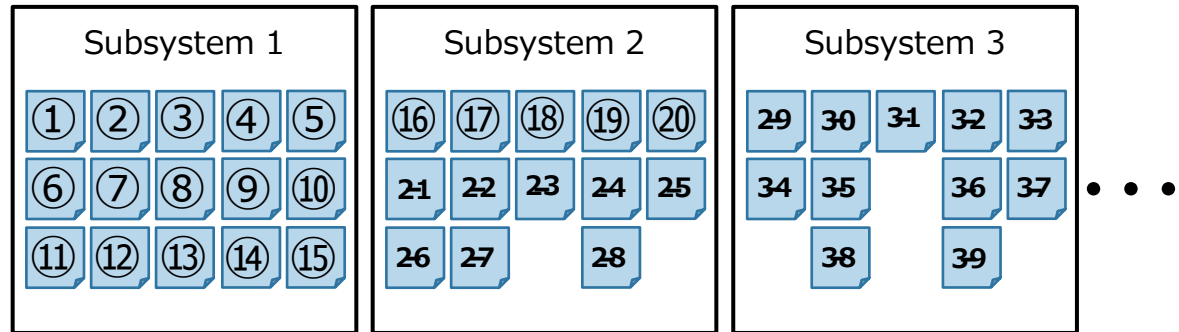
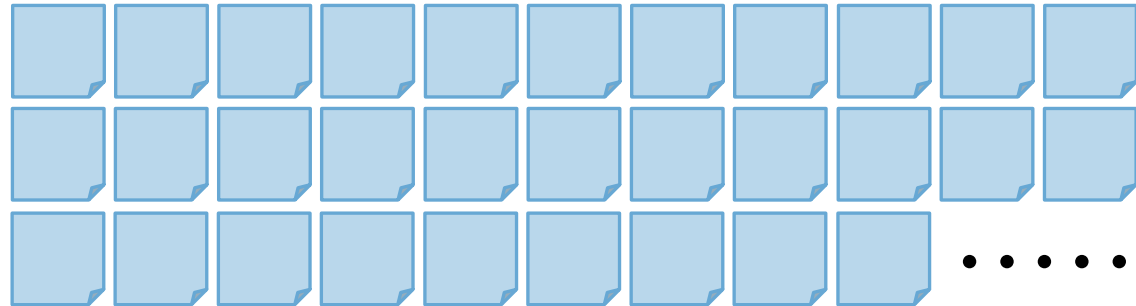
Idea generaion






Subsystem
division
(idea settling)



Each subidea
Idea evaluation
(idea selection)



Idea title in one line	Quality			Cost		Delivery date
	Q1	Q2	Q3	C1	C2	D1
①	—	—	—	—	—	—
②	S	S	S	S	S	S
③	+	S	+	+	S	S
④	+	S	+	+	S	S
⑤	—	—	—	—	—	—

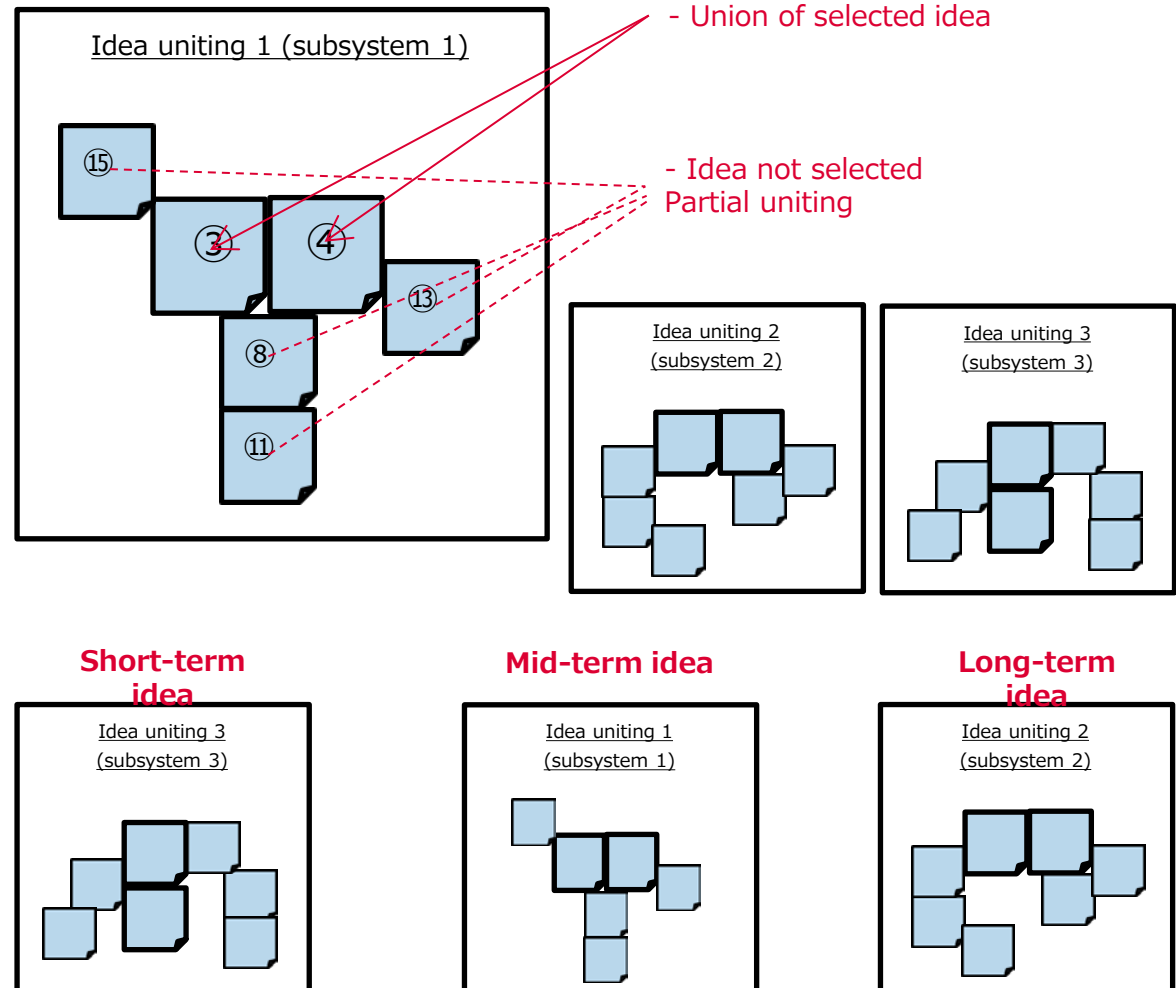
 Standard
 Selection
 Selection

3 - 1 . Method of centering on the Pugh Method (2)

Idea uniting
(idea settling)

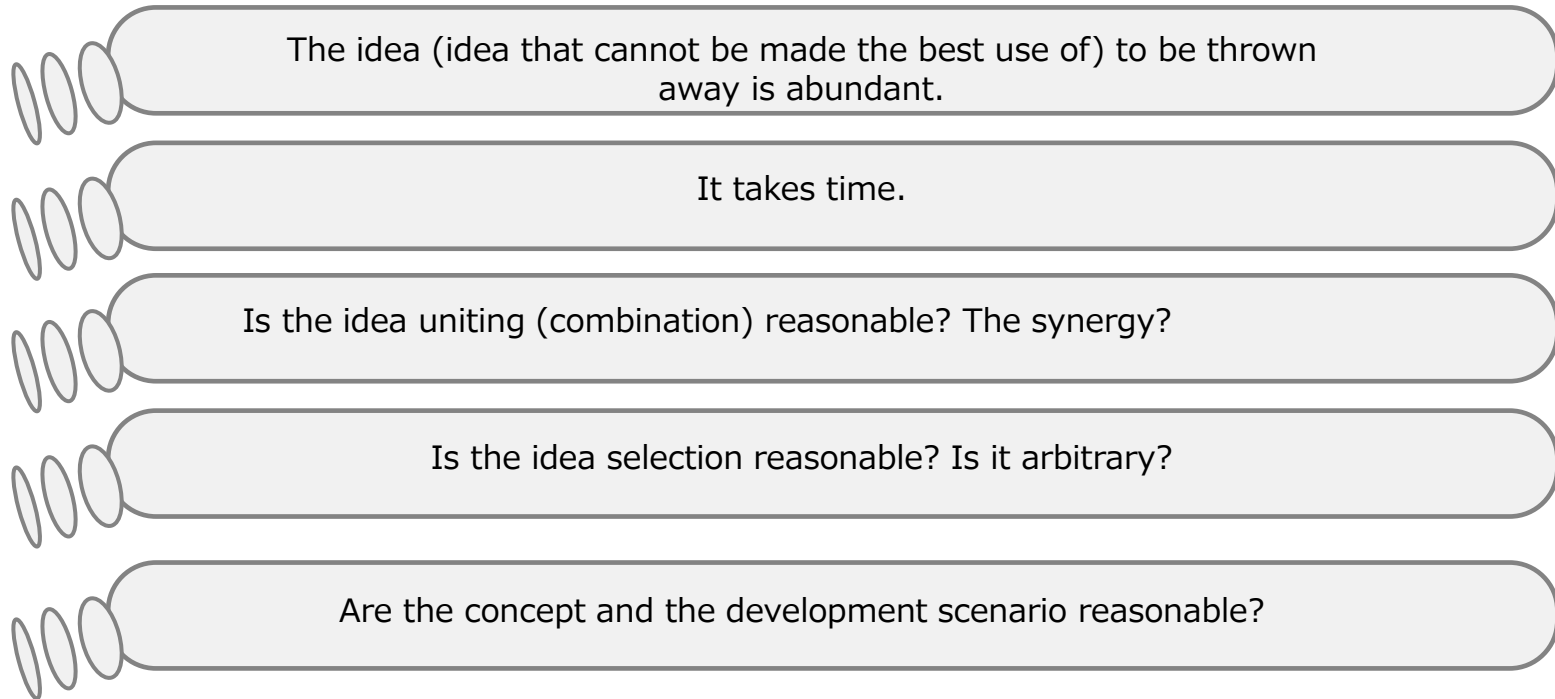


Concept-making
(idea selection)



Settling and the selection of the idea are done repeatedly, and the concept-making.

3-2. Problem of centering on the Pugh Method



In a standard idea settling and the selection, there are various problems.

This theme: It introduces settling some ideas and the attempt of the selection.

4.

Some attempts of idea settling and selection

4 - 1 . Idea review and popularity vote (intuition evaluation)

Idea review

A lot of ideas
It makes the best
use of.



(At the same time.)

Title of idea

Proposer

Explanation

Picture

Explanation

19

← The proposer: to all members.

← About all ideas
The point aimed at and sales appeal.

← It is within 20 seconds as for one idea.

- For 200 ideas: 200×20 seconds
= For 4000 seconds = 67 minute = about one hour



← The member: at a dash.
All ideas are input to the head.

All ideas
Intuition evaluation
(idea selection)

The idea
settling
Omission

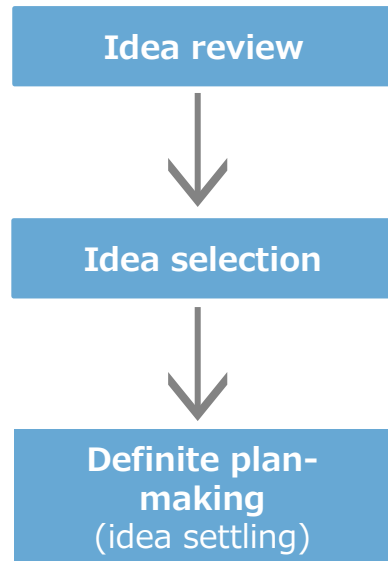
Idea	Member					Total
	A	B	C	D	E	
①	1		1		3	5
②				1	2	3
③	3	3	2	3		11
④	2		3	2		7
⑤					1	1

← Selection 2

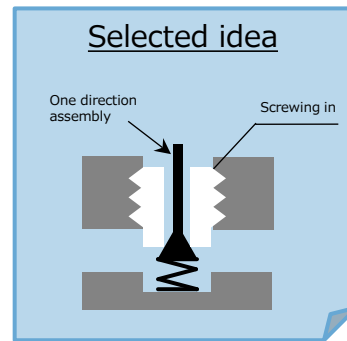
← Selection

Point	Intuition evaluation
3	It is new Effect size
2	Reasonable Feasibility
1	It is not easy to throw it away. It is interesting.

4 - 2 . Definite plan method

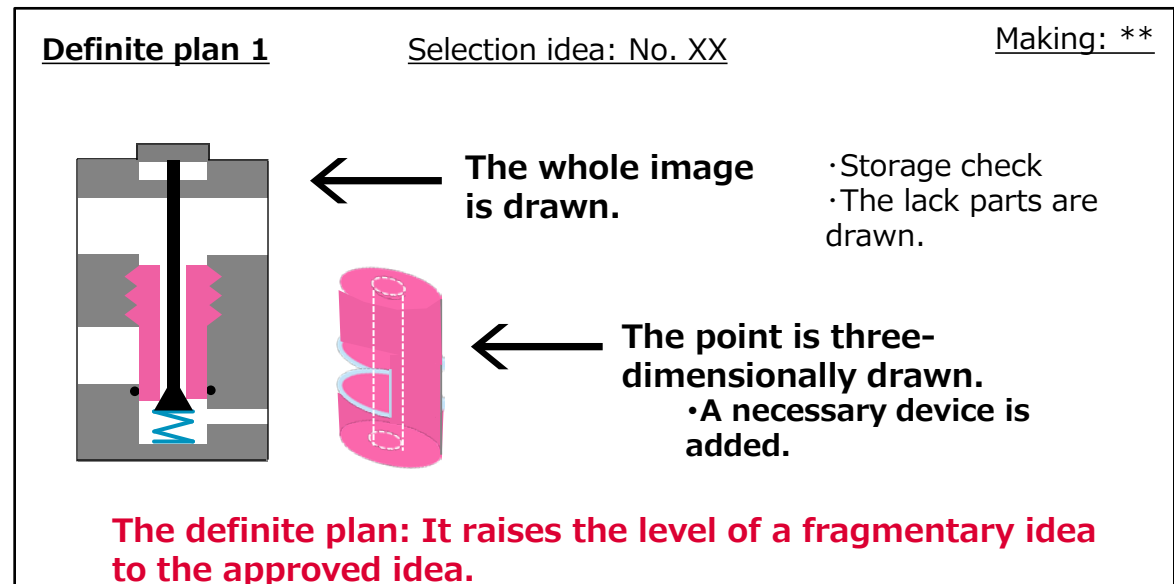


The idea uniting
It doesn't aim.



← The selected idea
It racks one's brains in passing it.

- The idea uniting is not forcibly thought.



Do not aim at the idea uniting, and the definite plan-making to the standard method

4 - 3 . Portfolio method and selection judgment line

Idea review



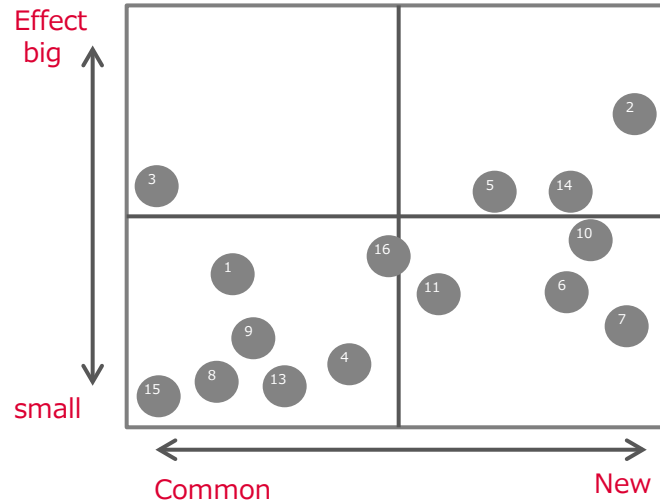
Portfolio
(idea settling)

All ideas
Portfolio
arrangement



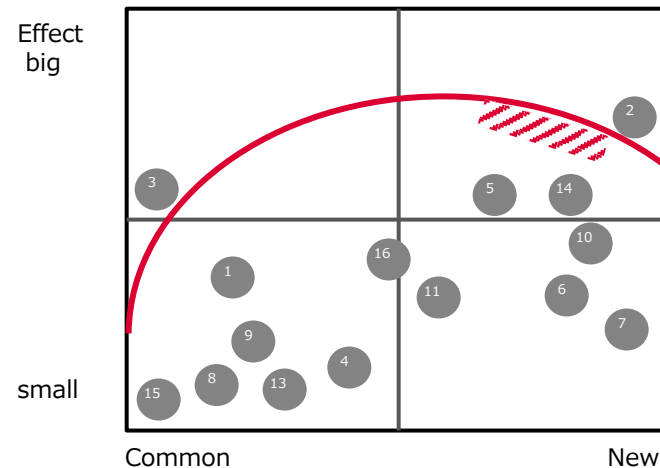
Selection judgment
line
(idea selection)

The idea selection
From a strategic
standpoint



← Two axes are decided.

← All Ideas *
It arranges it on the portfolio.



← Idea selection
The judgment line is put.

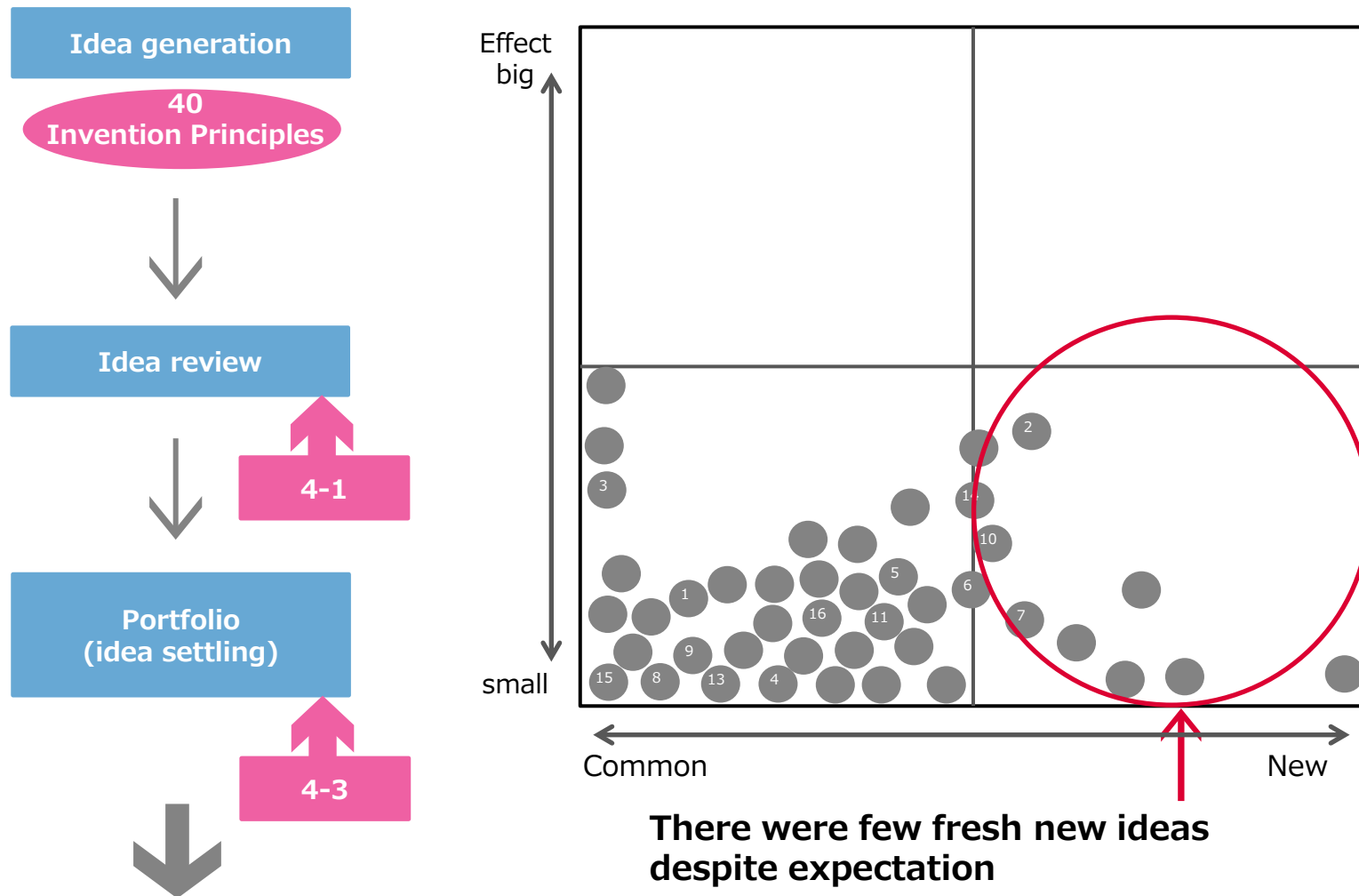
- The strategy of the idea selection
It shows in the judgment line.
- The effect: even a commonsense idea.
The one that it is possible to expect it is selected.
- It thinks about the risk of fresh new ideas.
Only the high effects are selected.

To do the idea selection in the strategy, the portfolio method is tried.

5.

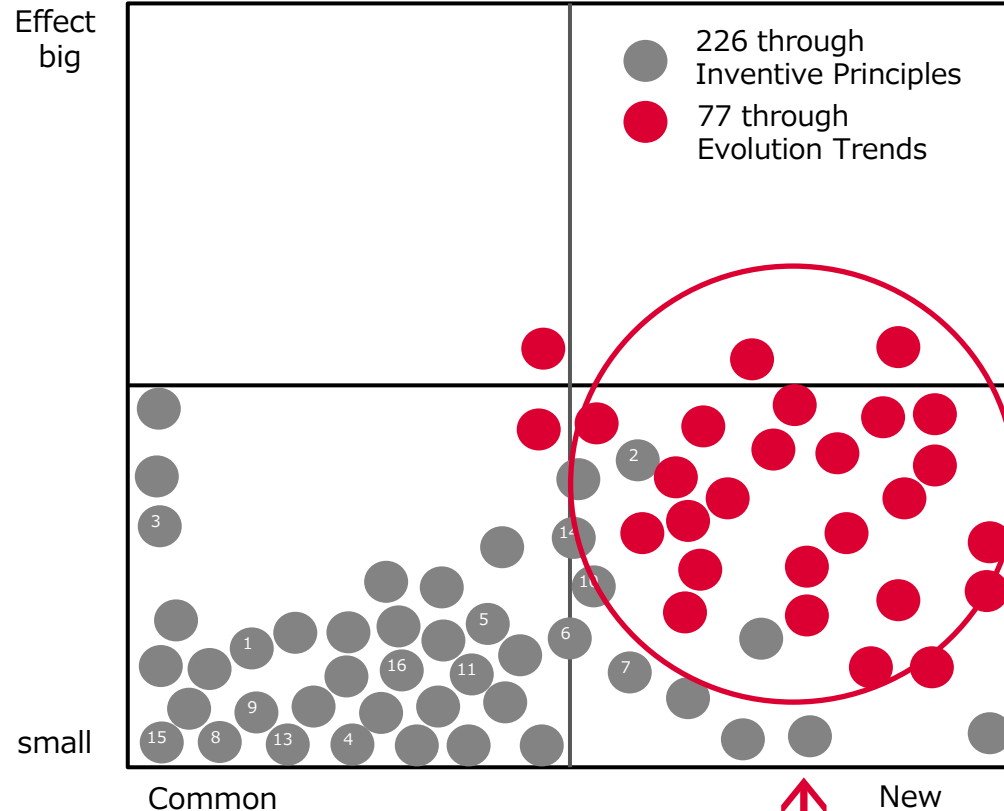
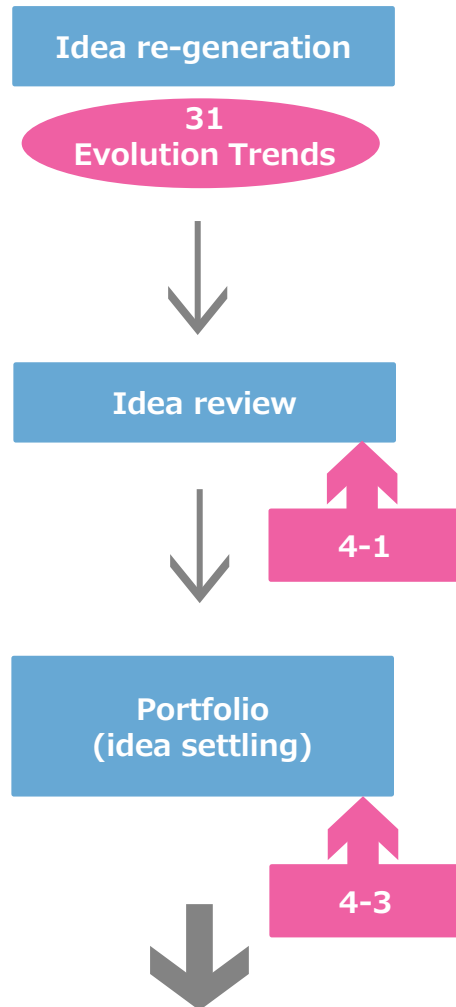
Case with idea settling and selection

5 - 1 . Theme: Activity case study with plan for the next term (1)



Tool is changed to expand the idea of the new paradigm and the idea re-generaion.

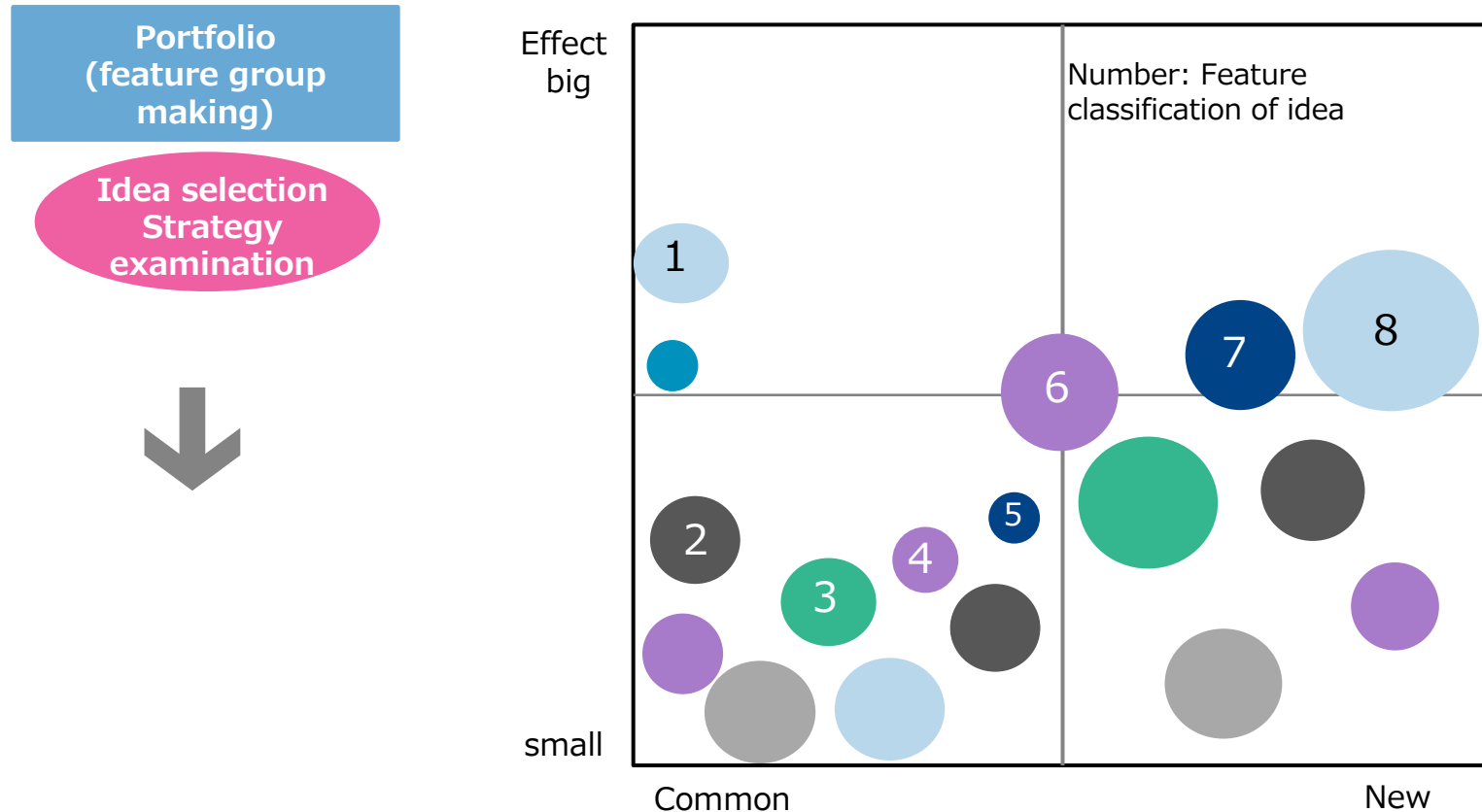
5 - 1 . Theme: Activity case study with plan for the next term (2)



It was possible to generate
by aiming at fresh new ideas

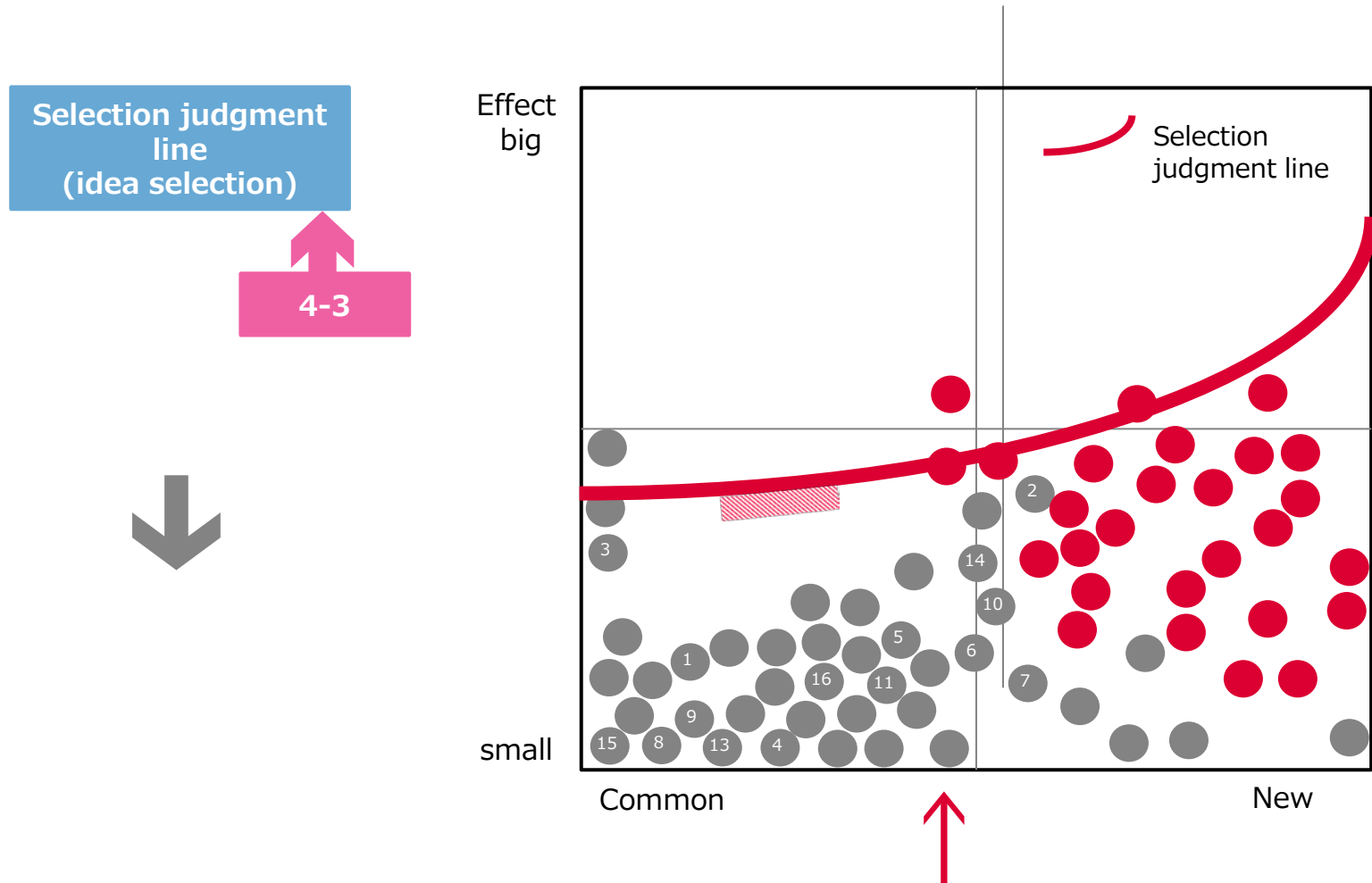
Ideas of new paradigms were able to be expanded

5 - 1 . Theme: Activity case study with plan for the next term (3)



The feature classification of the idea was examined

5 - 1 . Theme: Activity case study with plan for the next term (4)



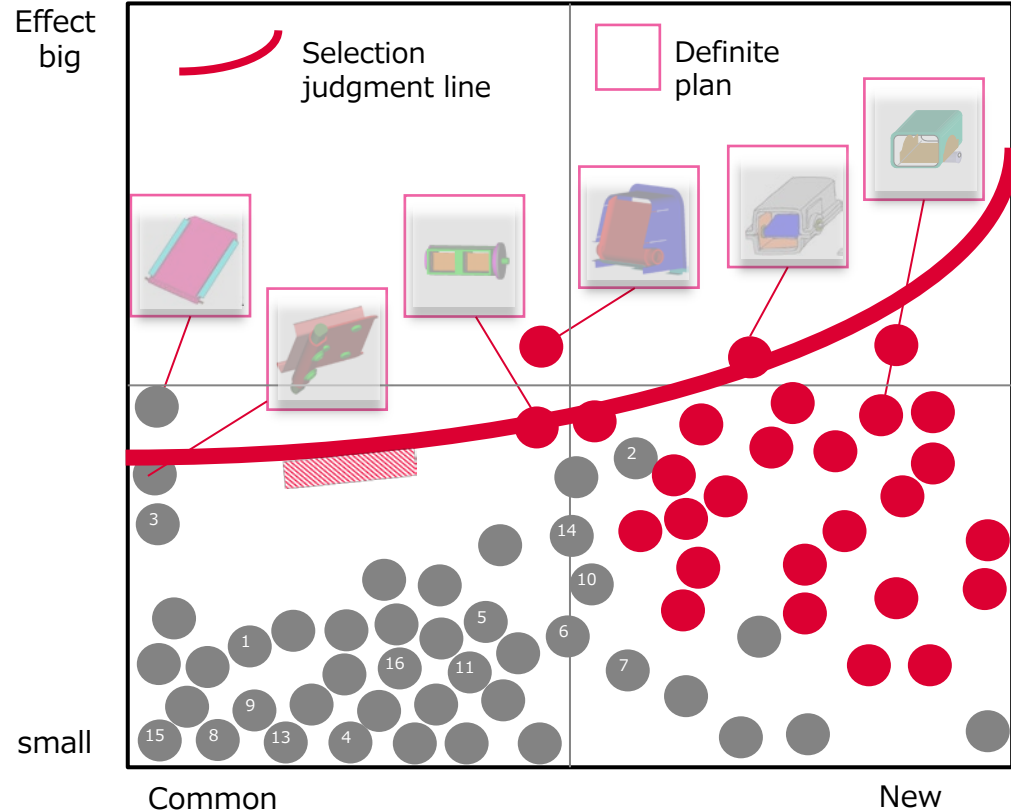
Selection judgment line:

- A common idea selects the effect smallness from the feasibility
- Only the effect bigness takes the risk and fresh new ideas are selected

5 - 1 . Theme: Activity case study with plan for the next term (5)

With the idea
selection
Definite plan-making

4-2



Development scenario
making

The idea is selected based on the selection judgment line,
and two or more definite plans are made

6. ■

Idea settling and consideration of ideal way of selection
(Propose it as a series of procedure)

6 - 1 . It proposes the idea settling and the selection as a series of procedure (1)

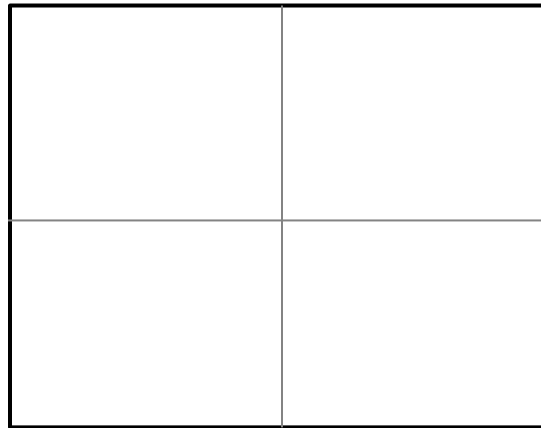
1

Portfolio ①

It thinks about two axes before generating ideas

Characteristic D

Characteristic C



Characteristic A

Characteristic B



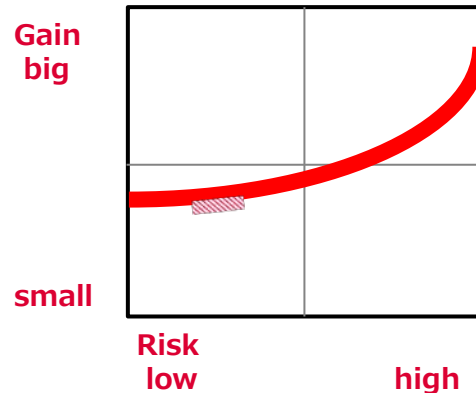
strategic idea generation

6 - 1 . It proposes the idea settling and the selection as a series of procedure (2)

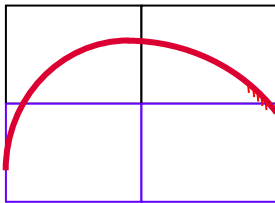
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Portfolio ②

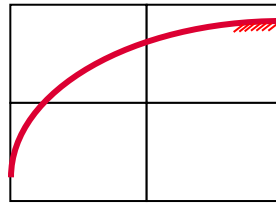
It thinks about the idea selection judgment line before generating ideas



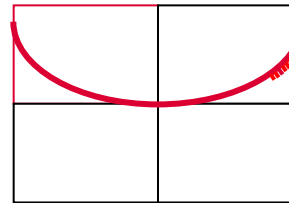
= Standard type =



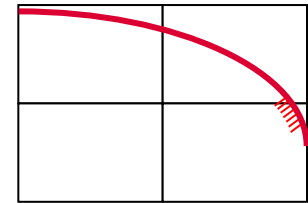
= Problem solving type =



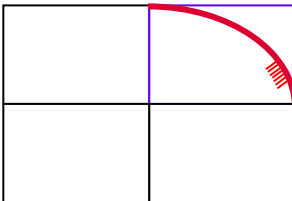
= Next type plan type =



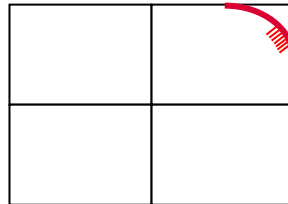
= Type plan type in the future =



= Research type =

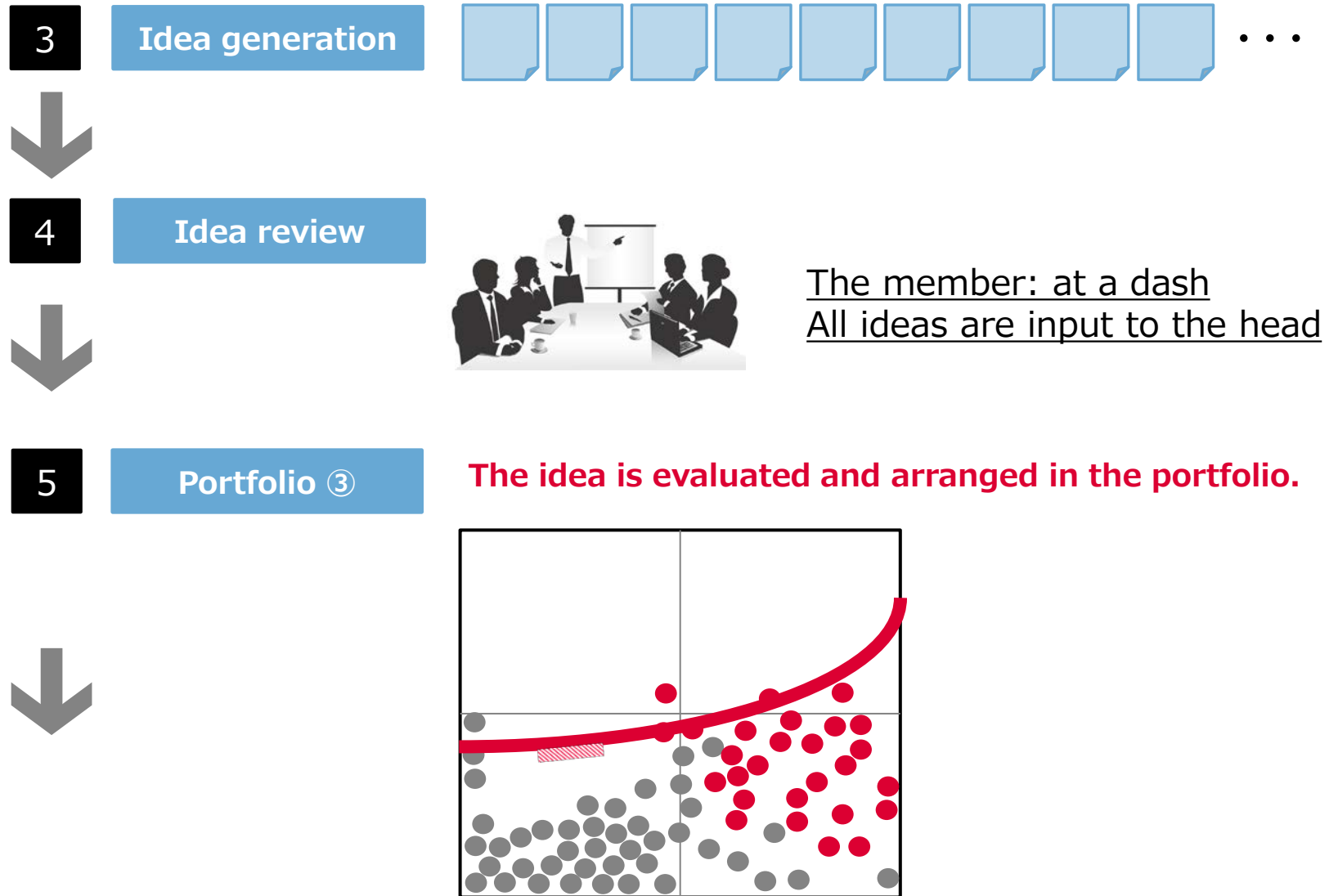


= Search type =

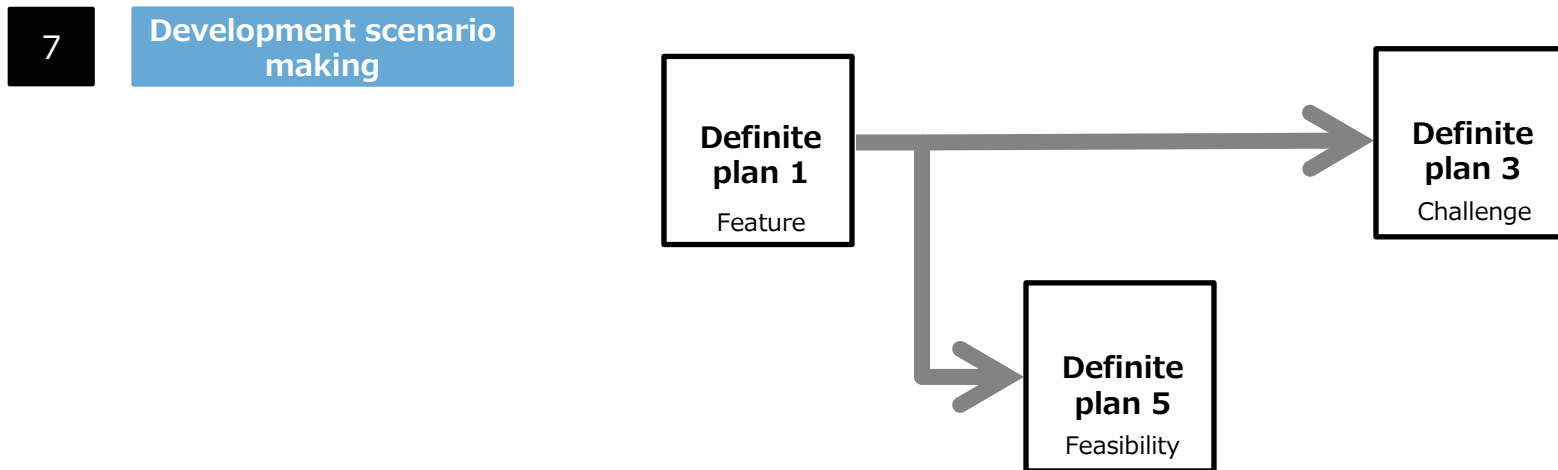
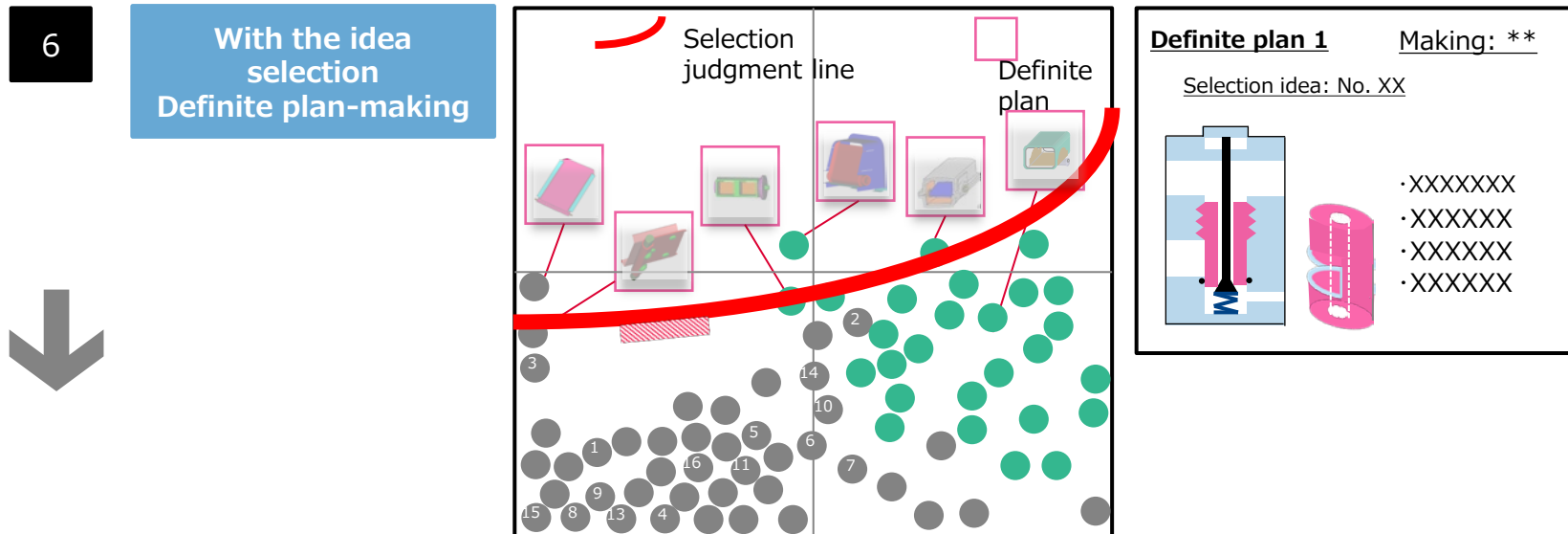


strategic idea generation

6 - 1 . It proposes the idea settling and the selection as a series of procedure (3)



6 - 1 . It proposes the idea settling and the selection as a series of procedure (4)



6 - 2 . Summary

1. Idea settling and selection are equally important to idea generation in the TRIZ activity
 2. The method of some "Idea settling and selection" is tried, and it proposes the portfolio, the idea selection judgment line, the idea review, and the definite plan-making, etc. as a series of procedure for maximizing the result of the TRIZ activity
- Wishing to contribute for the references of the people who promote the TRIZ activity

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Crafting the Core