Practical Use of Scientific Creative Techniques for the Development of Telecommunication Devices

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AGENDA

1. Background and Issues
2. Case Report
   - Scalable Process
   - Visualization
   - Simplification
3. Conclusion

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Background

Introduction

- Panasonic Communications Co., Ltd. Has already deployed the scientific methods such as TRIZ in the process of product plannning, development and manufacturing, and we has reported their effectiveness.
- However, the development process by such the scientific method is only partly used in our company.

Opinion

- The effectiveness of TRIZ/the scientific method isn't low.
- There is a issue to widely introduce/operate TRIZ/scientific method.

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Issues

Requests

- Many high quality ideas and inventions are needed in a short time, easily.
- In fact, creating good ideas and inventions is difficult.

Issues to introduce/operate

- There is no time in the parallel work in the idea and invention creating and the development.
- All members are not always familiar with the scientific method.
- It is difficult that visualization of the effect of introducing the scientific method and difficult to win understanding from its organization.
- Getting complex to create ideas, it is difficult to win understanding from members.

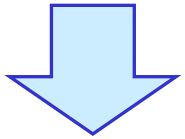
Policy solving the issue

Goal

- Practical utilization and settlement of TRIZ/scientific method for efficient creating ideas and inventions.

Methods

1. A scalable TRIZ/Scientific method process.
2. The visualization of the process/the idea.
3. Utilizing simplified TRIZ/Scientific method.



Introducing example of development on a communication equipment

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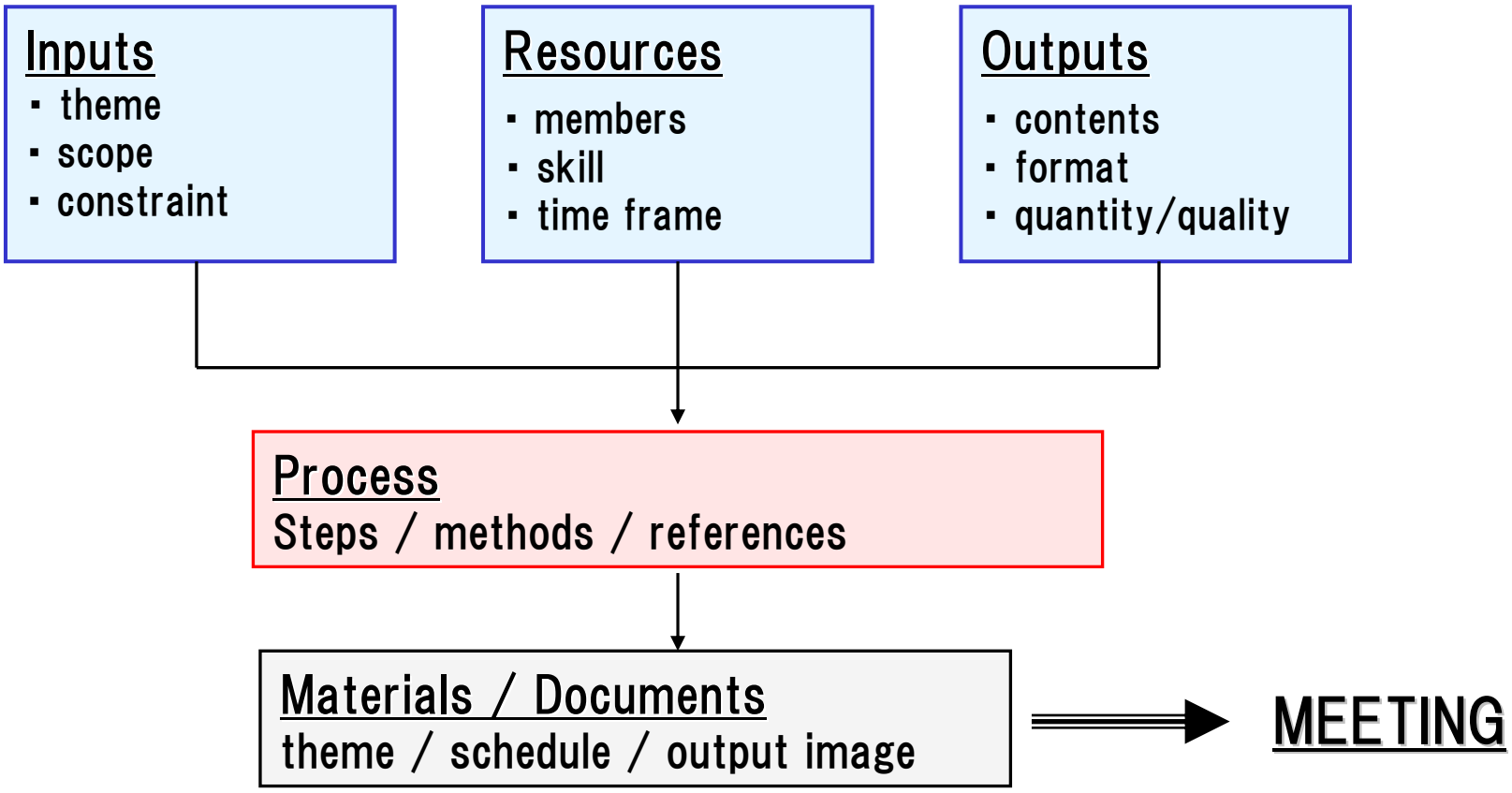
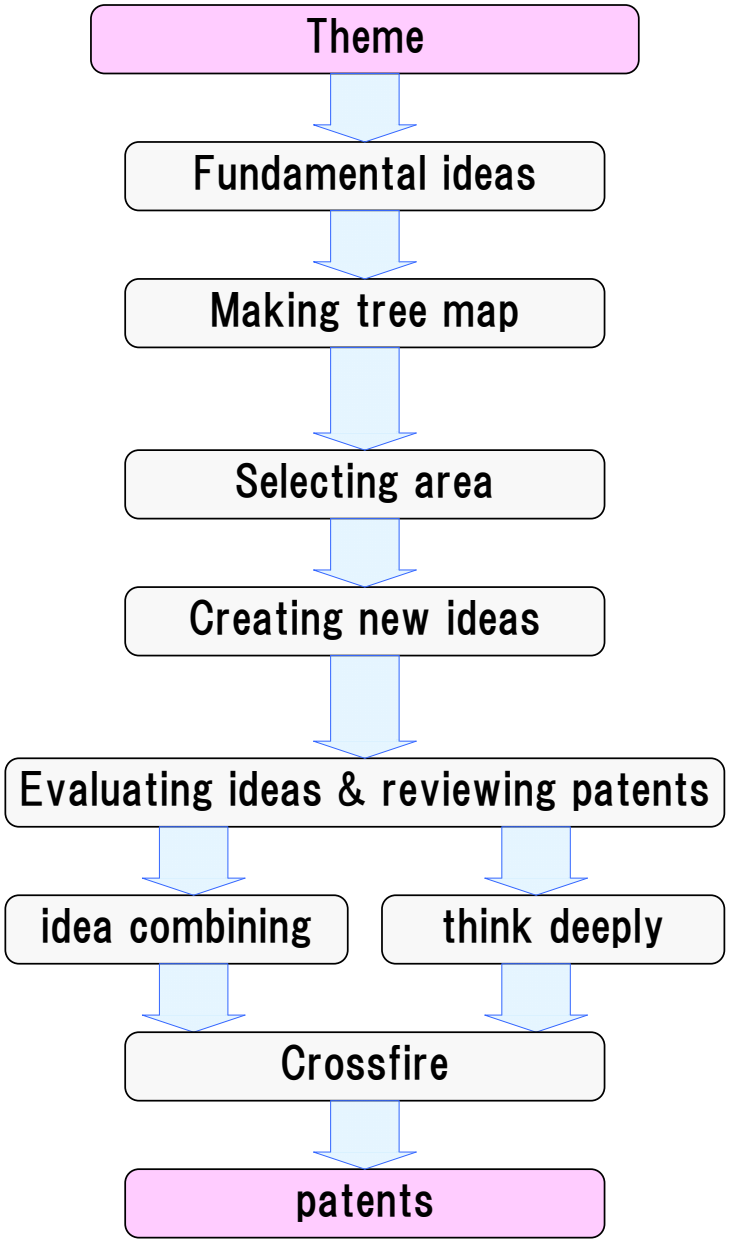
Scalable process

- Reviewing an optimal process according to the outputs, the inputs and the resources.



Overview of process



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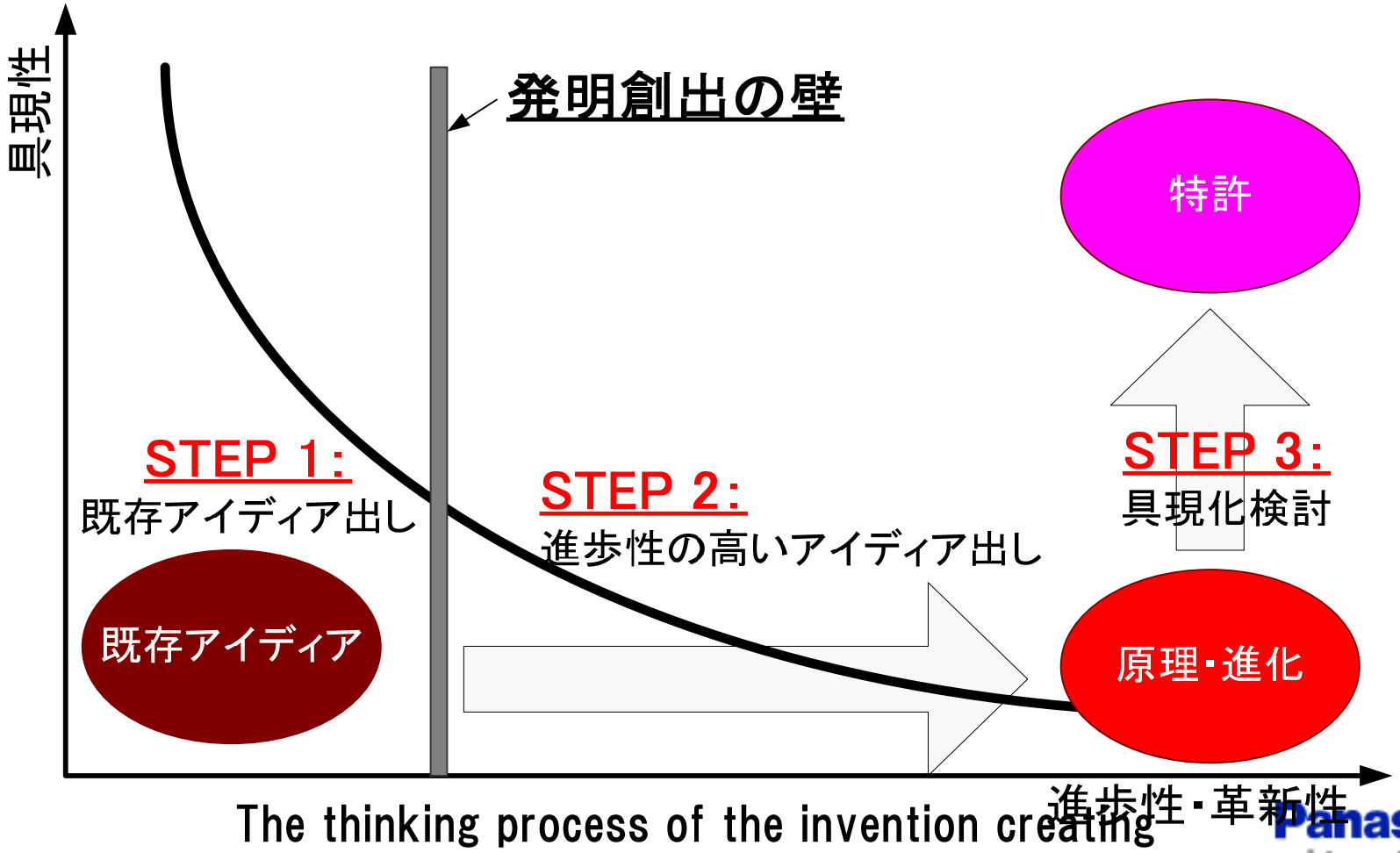
Sharing meanings of the process

Visualization

STEP 1 : Thinking existence ideas

STEP 2 : Creating new ideas

STEP 3 : Studying implementation



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Fundermenta ideas

Simplification

<Purpose>

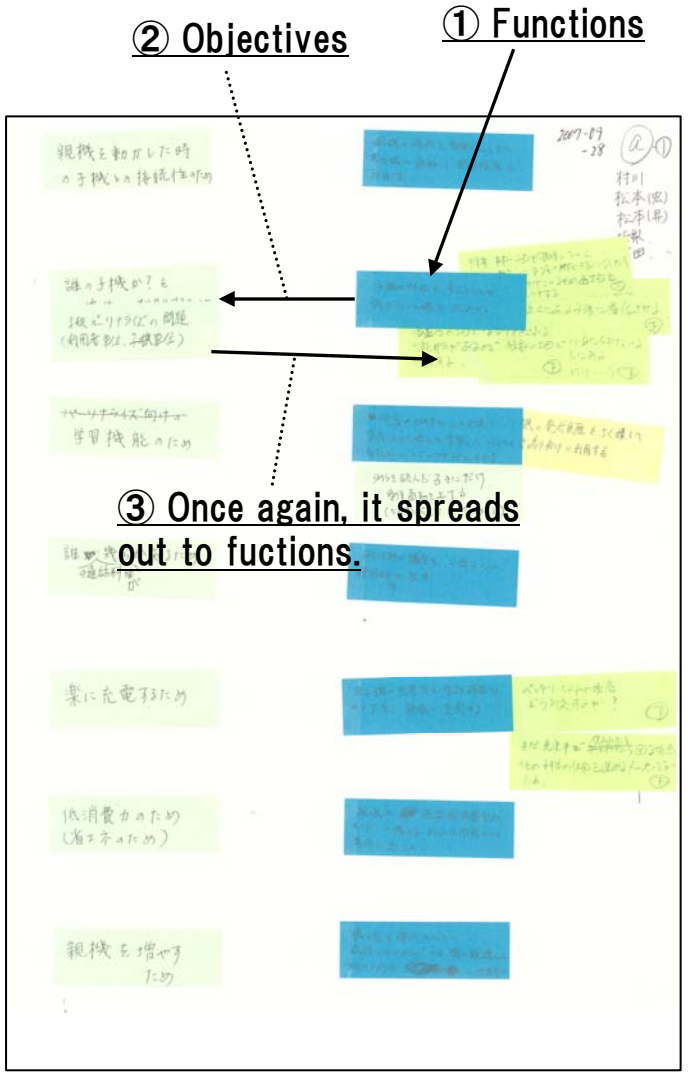
- Thinking fundamental ideas, quickly and widely
- Making Functions/Techniques tree map by using idea sheets.

<Way>

① Write functions/techniques ideas on a sheet and put it on right side.

② The different member think out objectives ideas and put it on left side.

③ Moreover, another member think of functions/techniques ideas again.



Example of the works.

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Making Tree Map

Simplification

<Purpose>

To be simplify making the map, focusing purpose of making the tree map to easy to find idea and to see tendency.

<Way>

① Making functions/techniques items by using objectives sheets

② Allocation each function/techniques sheets to appropriate item.

Example of the works.

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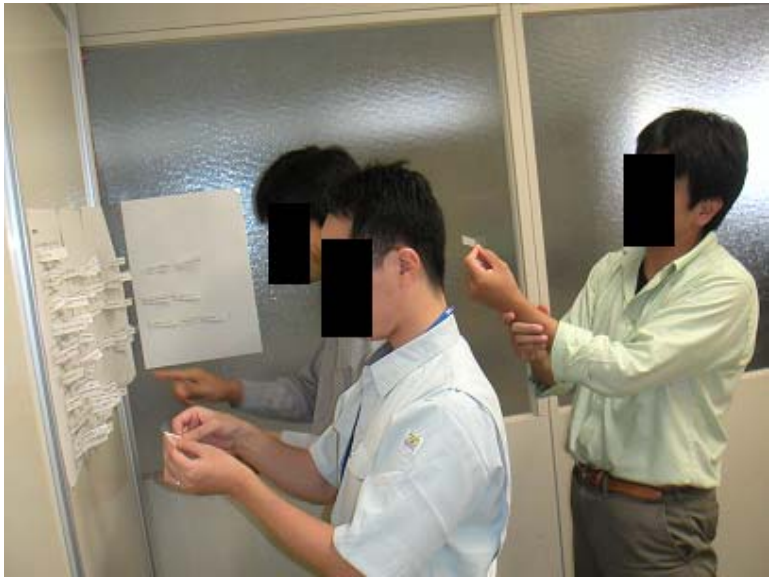
Theme Selection

<Purpose>

Theme selection for detailed idea investigation.

<Way> (Practical example this time)

① It decides by the vote of the member to the classification item and the idea of the function/techniques tree.

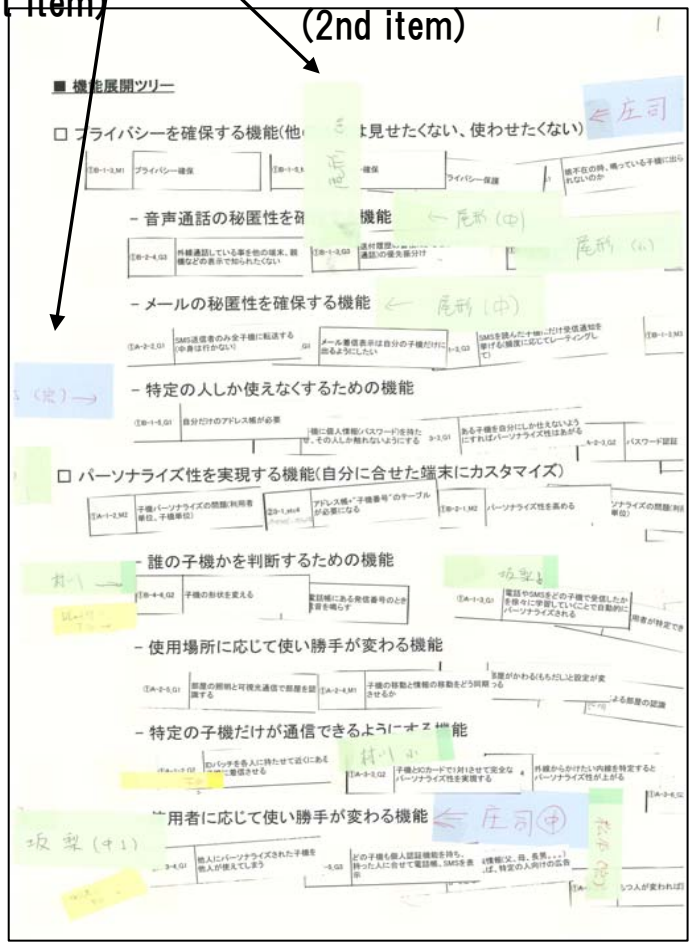


Picture of the works

① voting sheet

(1st item)

(2nd item)



Example of the works.

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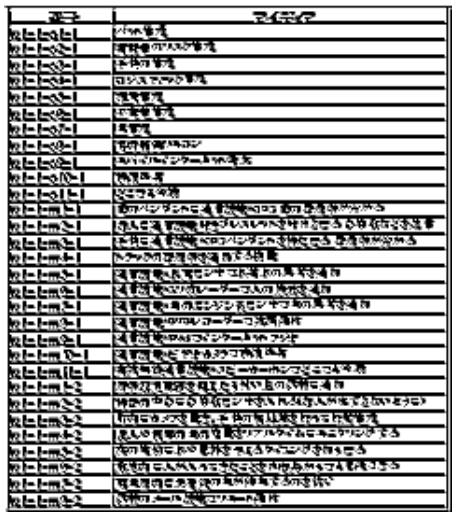
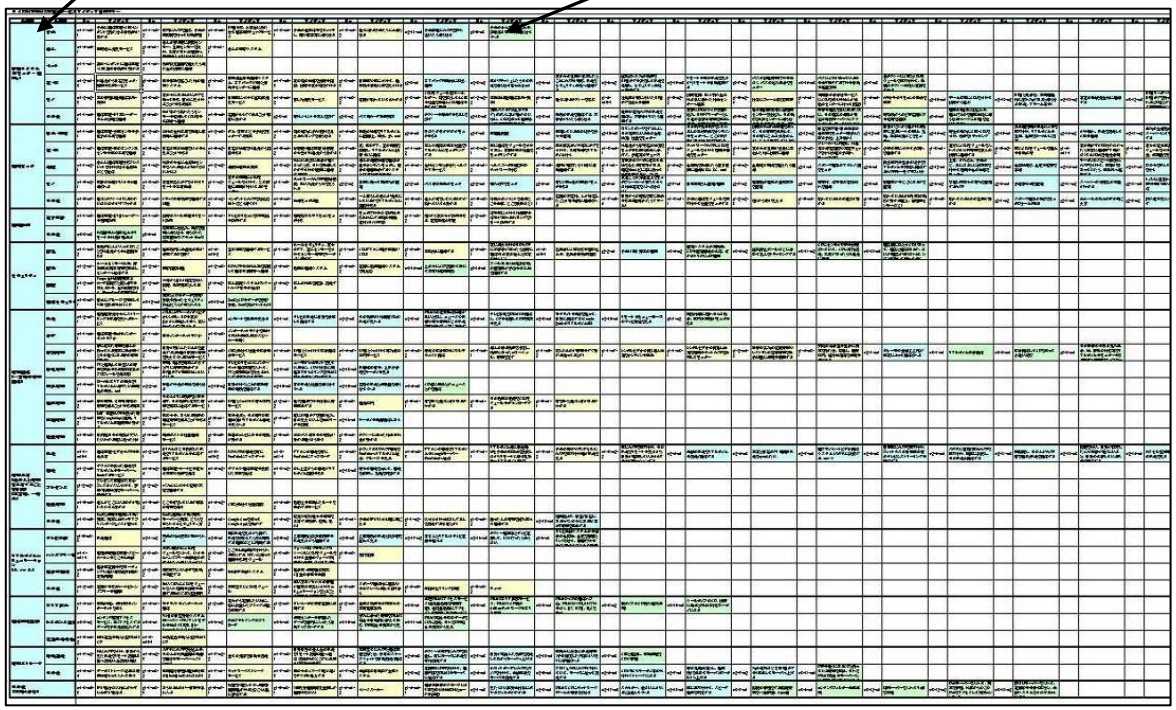
Function/Techniques Map

Visualization

- A function and techniques tree map is made in order to see ideas easy and grasp the tendency.



Idea lists



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Managed Brainstorming

Simplification

<Purpose>

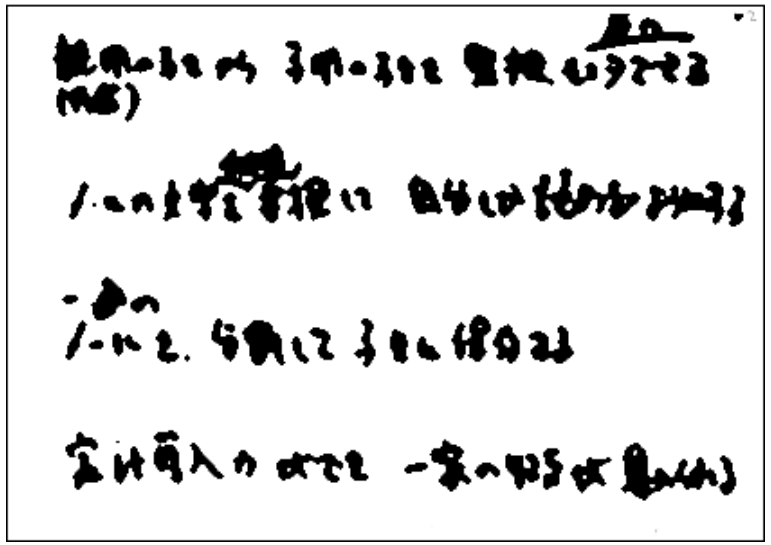
- Idea creating in selected theme.

<Way>

① Each member creates and presents no overlapped idea in selected theme, in only 30 seconds.

② Each member can pass only to twice times.

③ The game ends when only one member remains.



The idea description sheet example

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Managed Brainstorming

Simplification

<Purpose>

- Idea creating in selected theme.
- To control creating idea direction without instruction.

<Way>

① It prepares the photograph which relates to the selected theme.

② It creates ideas while showing a photograph.

The photograph example : The desk

The photograph example : The meeting space

The STC operation

Simplification

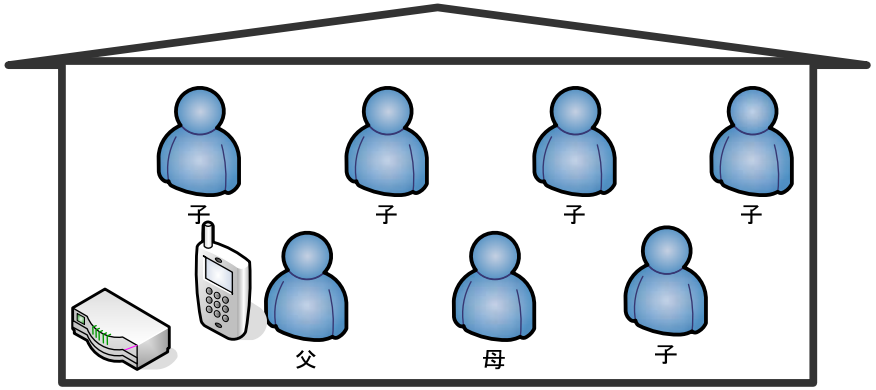
<Purpose>

- Creating more ideas by using STC operation (with scene)

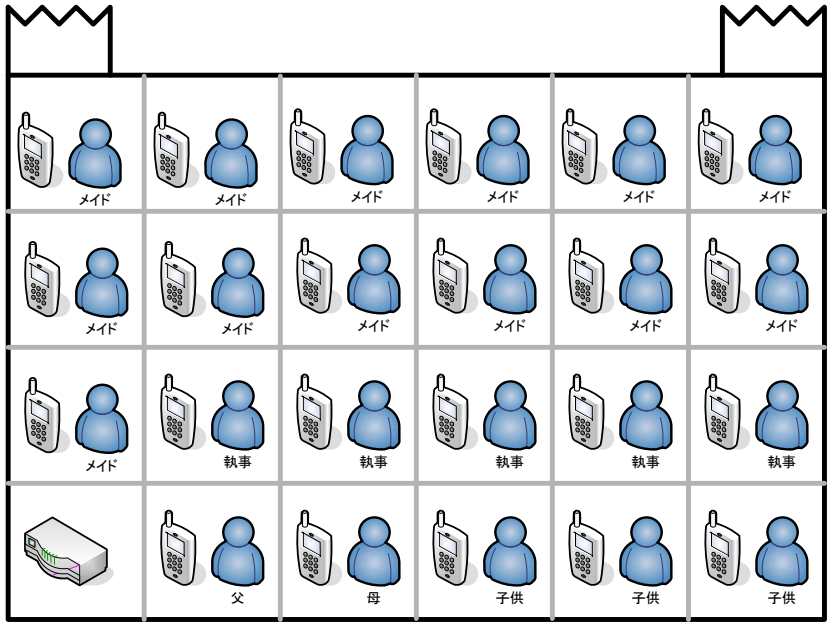
<Way>

① Prepare a scene picture with extreme parameter.

② Member can concentrate on finding issues and creating ideas.



The STC operation(with scene) example

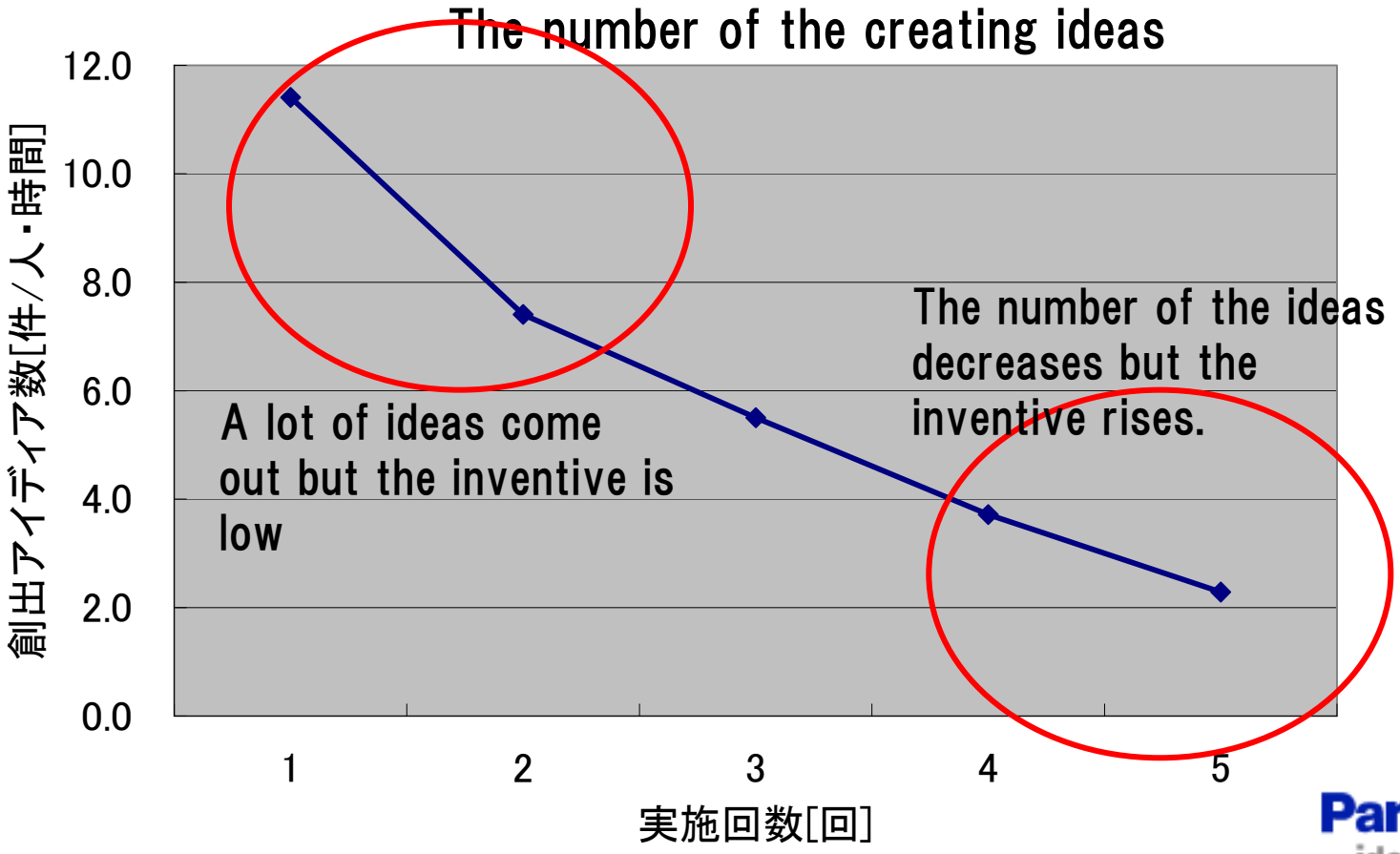


The STC operation(with scene) example

The number of the creating ideas

Visualization

- The visualization of the number of the creating ideas.
  - At the initial stage, a lot of ideas are presented.
  - When repeating, the number of the creating ideas decreases but the inventive quality becomes high.



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Idea evaluation

Simplification

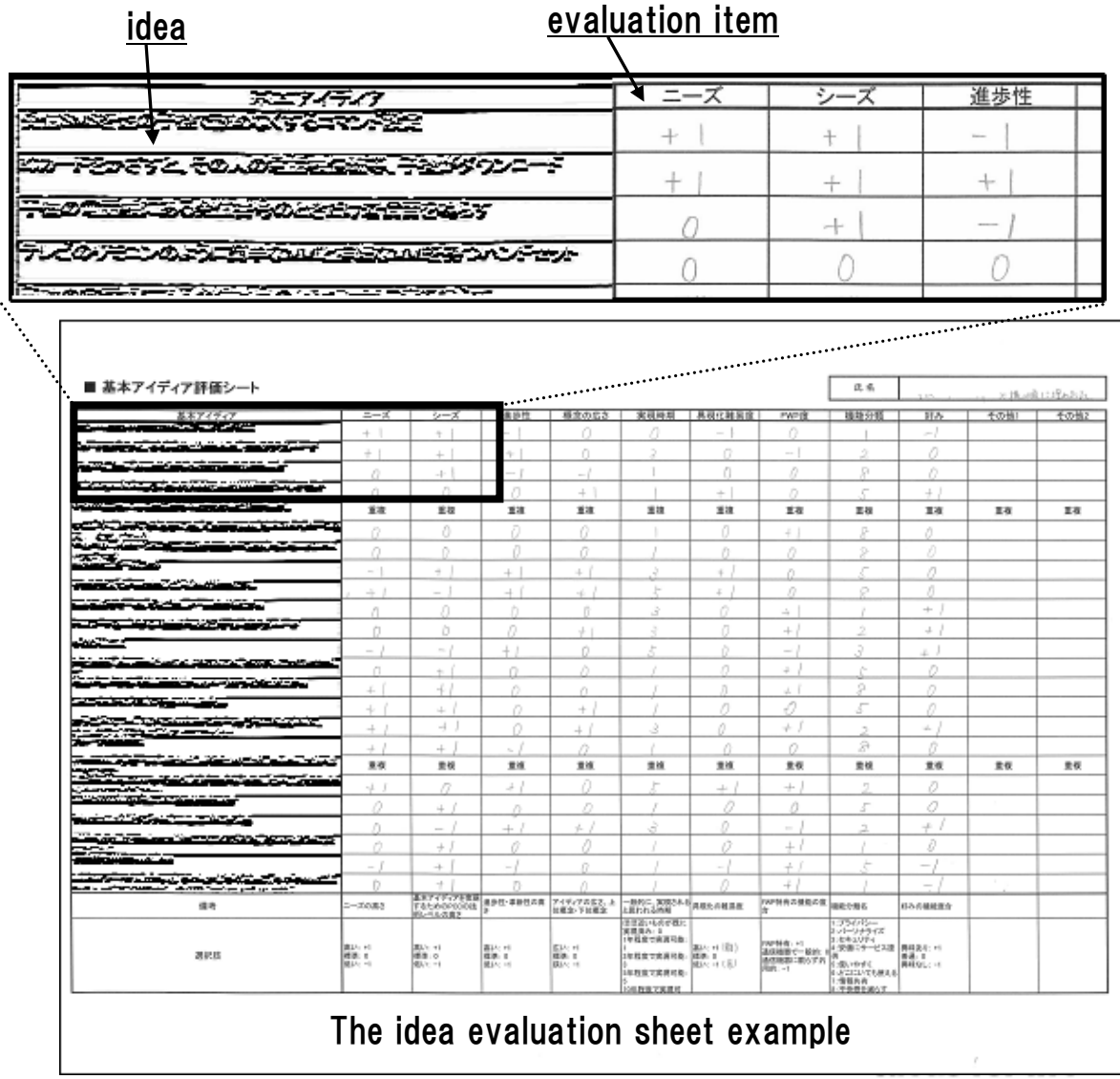
<Purpose>

□ To visualize creating ideas and control the direction of creating ideas.

<Way>

① Prepare evaluation sheets.

② Evaluate simply in about 3 degrees.

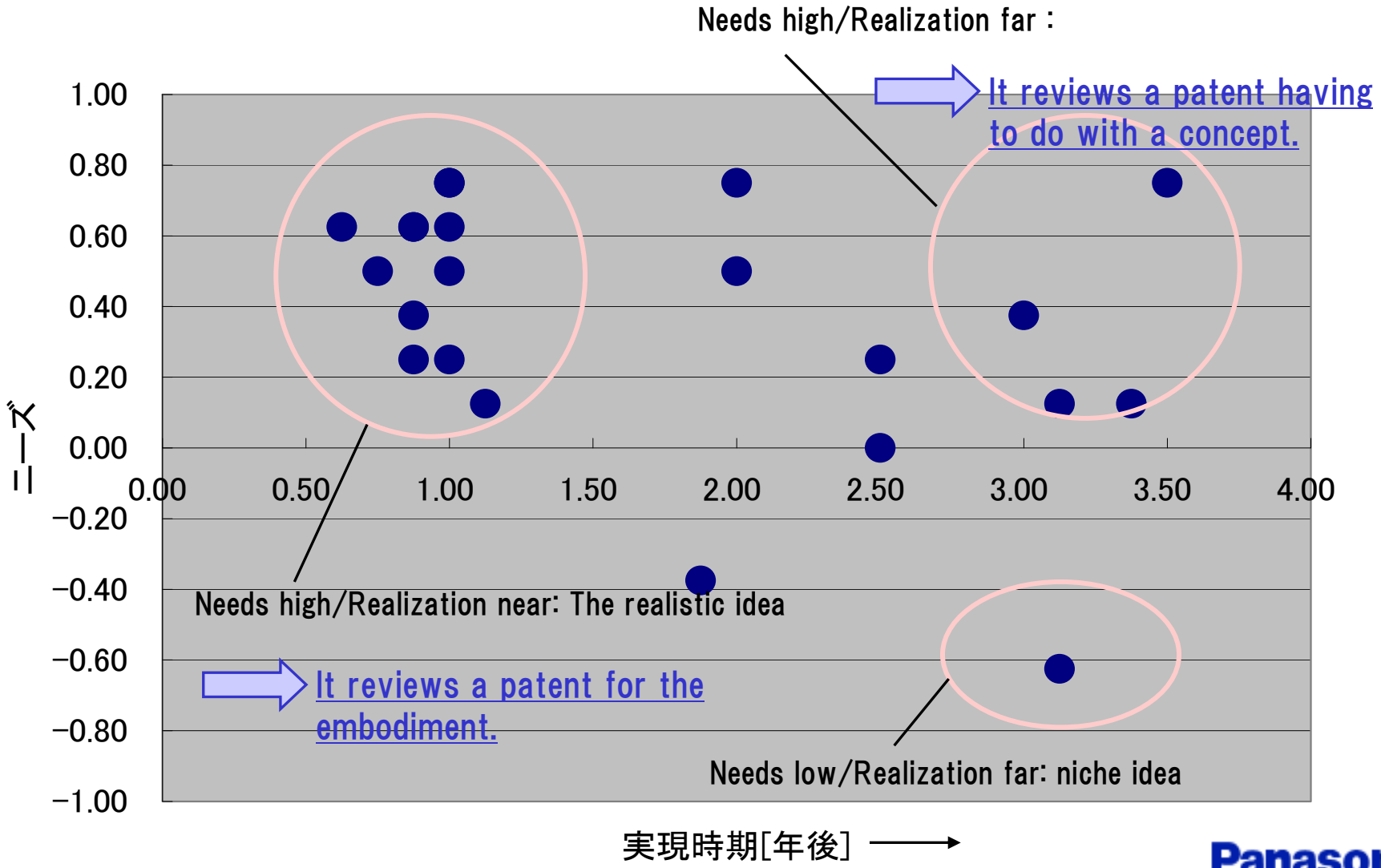


The idea evaluation sheet example

The evaluation result example

Visualization

- The evaluation result in "the realization time vs needs"



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Learning patentability

Visualization

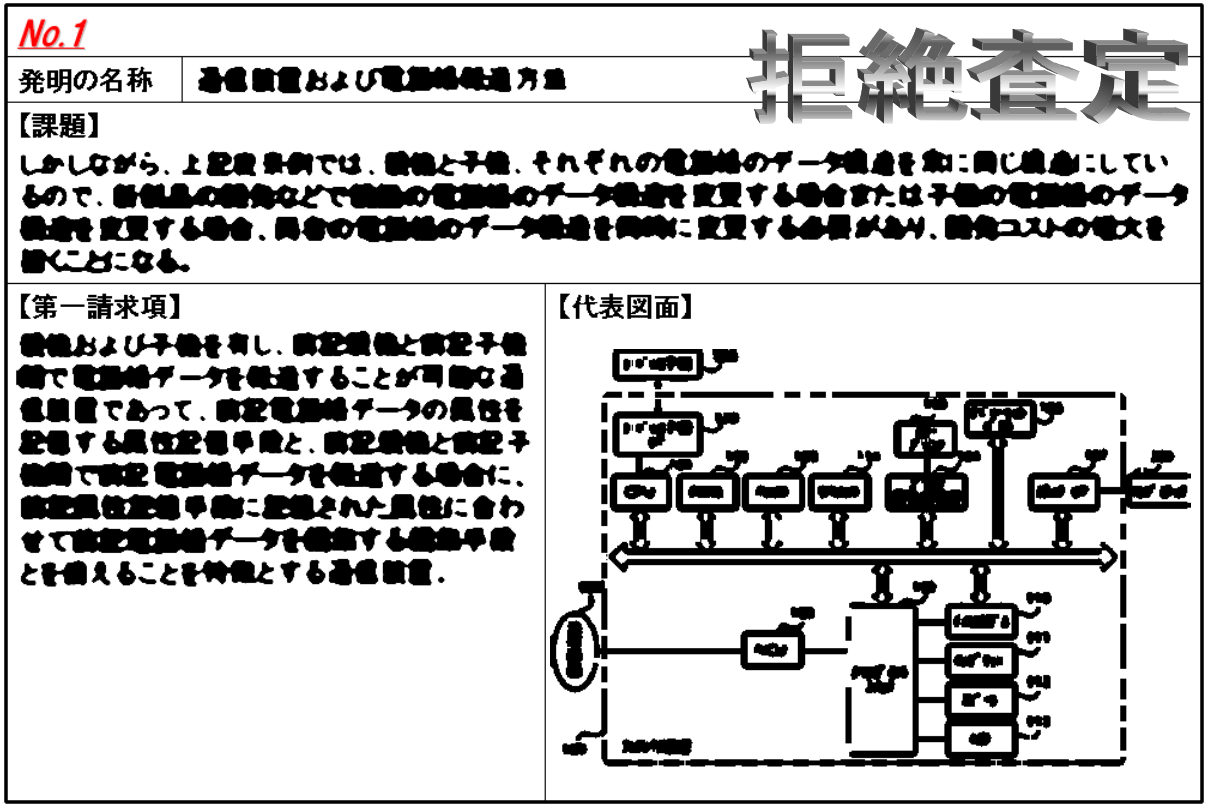
<Purpose>

To learn patentability in selected theme.

<Way>

① In the quiz form, members read and answer decision of patent or rejection.

② Totally around 6 patents are done.



A patent summary sheet example

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Idea combining

Simplification

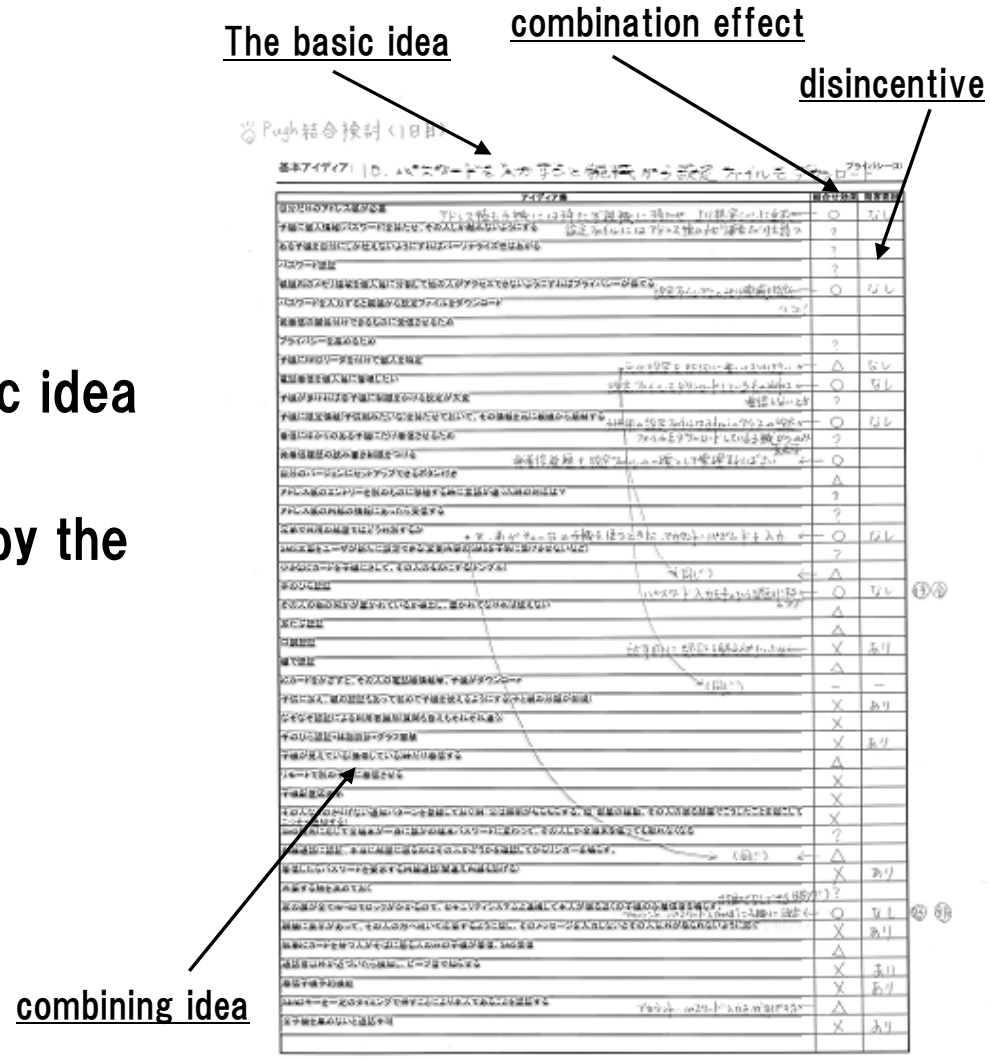
<Purpose>

To creates new issues by the idea combining.

<Way>

① Combining ideas between a basic idea and each other idea.

② Evaluate an effect, disincentive by the combining.



Idea combination sheet example

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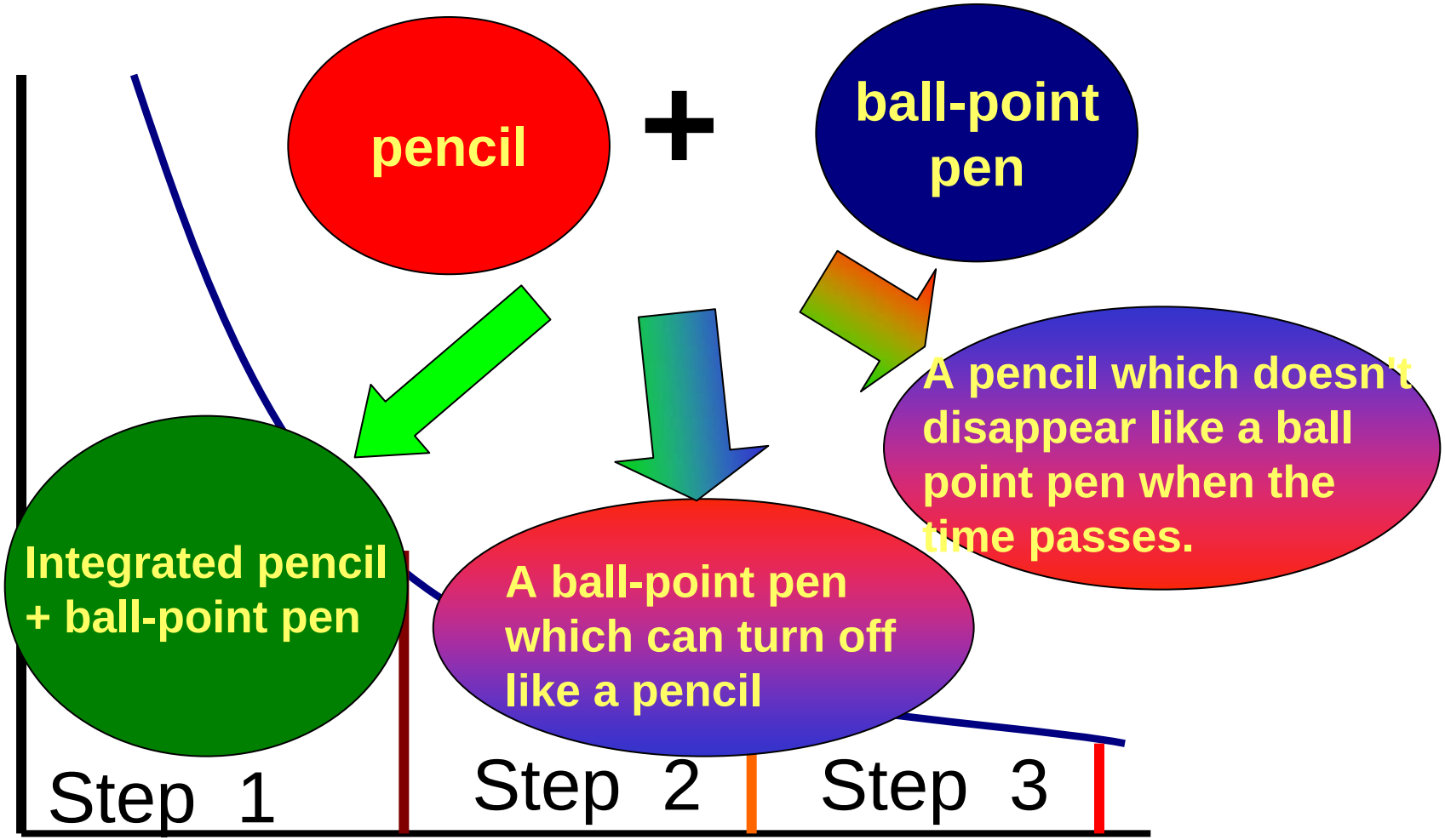
Idea combination

Just functional idea combination ⇒ fusional idea combination



Detailed Investigation

Simplification

<Purpose>

To find the detailed issues to make it patents.

<Way>

① Repeat reviewing in order of “usage scene” → “function“ → “issue“ → “idea” based on basic idea.

Detailed Investigation sheet example

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Crossfier

<Purpose>

To create additional ideas , additional patents and variety of craims.

<Way>

① Investigation of additional ideas from other (ex. Completitors) point of view.

Conclusion

In this presentation, we introduced practical process, visualization approach and simplification approach, and practical example on introducing/operating TRIZ/scientific methods.

Effects

- By the scalable process approach, TRIZ/scientific methods have become to be accepted easily
- By the visualization approach, TRIZ/scientific methods have been received by members and efficient idea creation was realized.
- By the the simplification approach, members can use TRIZ/scientific methods easily.

Next Steps

- Research on establishment of idea creating by using TRIZ/scientific methods.
- Research on more simple and efficient TRIZ/scientific methods.

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