

Efficient education system of scientific methods including TRIZ for improving the development process

- Trial of an education in close contact with the engineer's needs -

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1. About Olympus

Established : October 12, 1919
Head office : Shinjuku-ku, Tokyo, Japan
Capital : ¥73,332 million (As of March 31, 2013)
Consolidated net sales : ¥743,851 million (Fiscal Year Ended March 2013)
Consolidated headcount : 32,937 (As of March 31, 2013)



Capsule Endoscope

Medical systems

Aomori

Fukushima

Nagano

Tokyo

Life Science & Industrial systems



Biological Confocal Laser Scanning Microscope [FLUOVIEW FV1200]

Imaging systems



OM-D



PEN EPL6

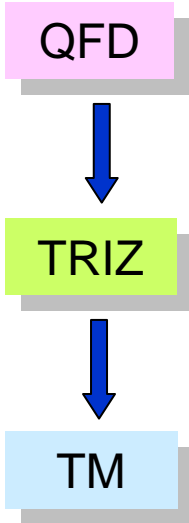


Next-generation gastrointestinal endoscopy system EVIS LUCERA ELITE

2. Promotion of scientific methods in Olympus (1)

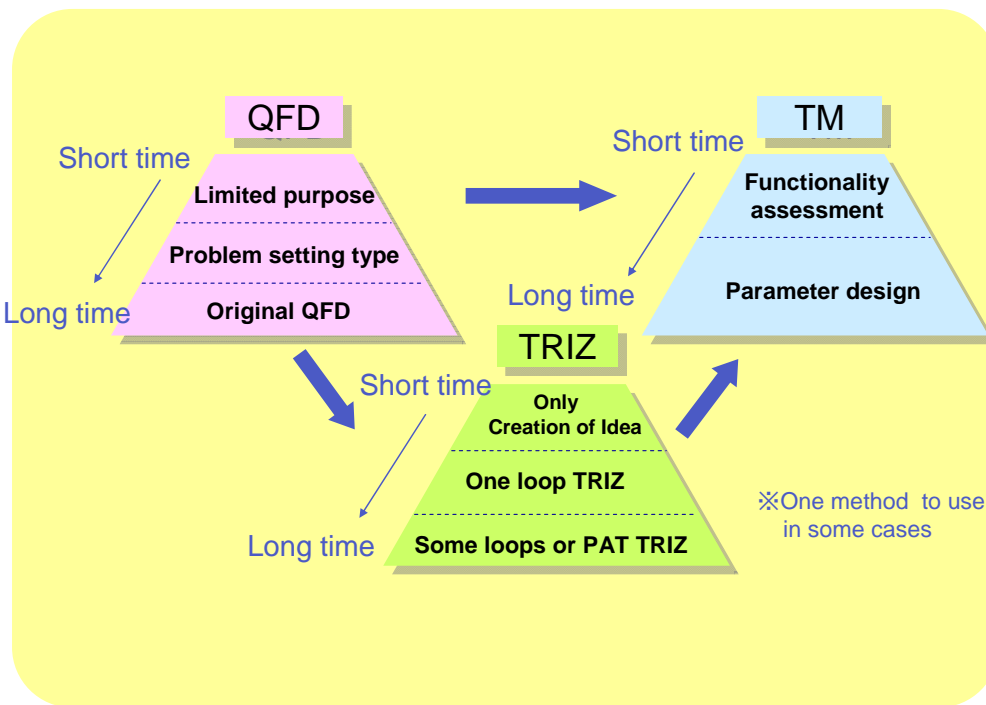
Providing a solution, depending on the purpose and period of the theme

2009



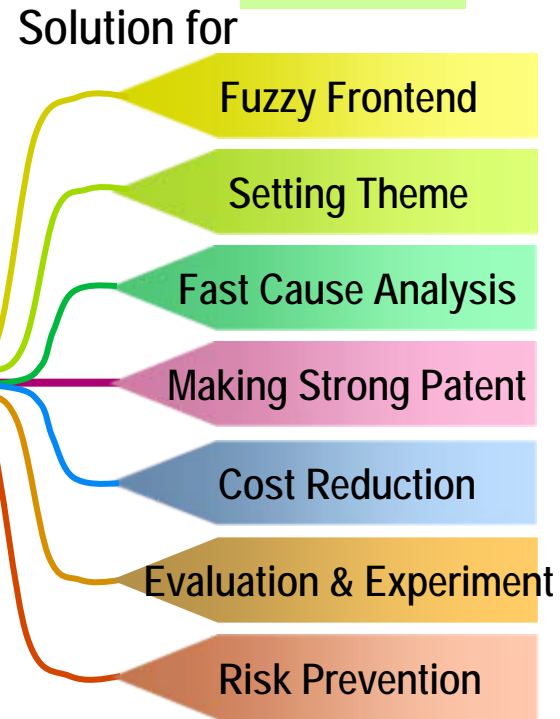
Typical Use of Methods

2010



Using various types of methods according to the problem
90 min Basic Training, applied to the theme

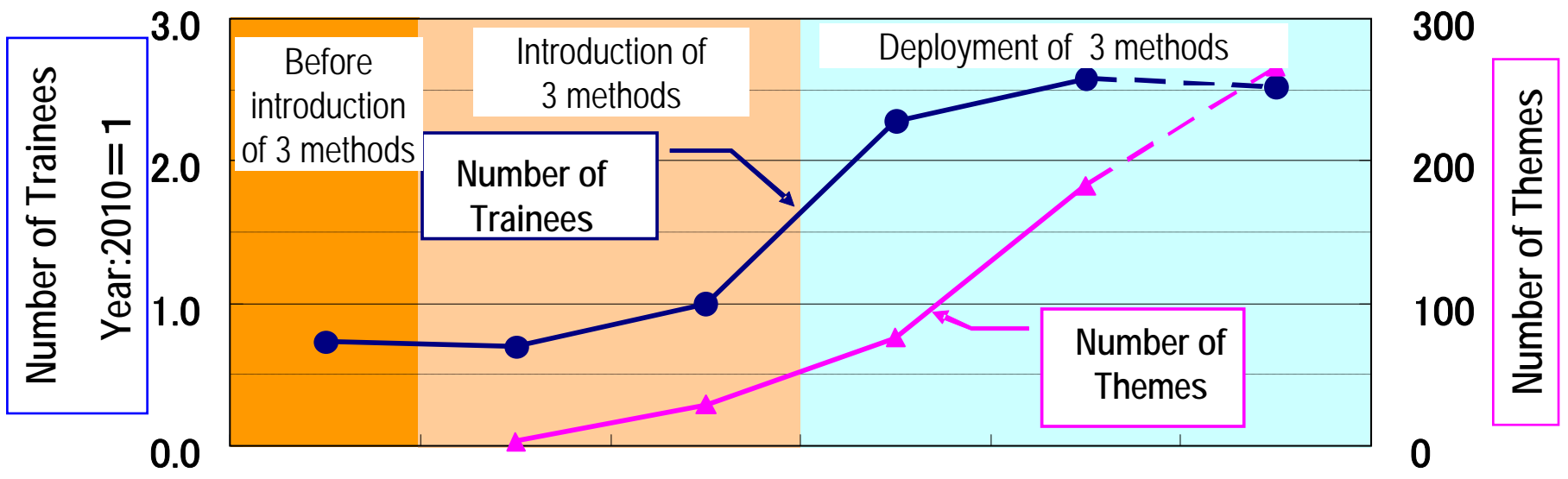
2012 ~



Providing optimal solutions to the problem

2. Promotion of scientific methods in Olympus (2)

Trends of Trainees and Themes



1996~	2008	2009	2010	2011	2012	2013
	TM QFD consultation		QFD and TRIZ Group seminar & Training for R&D			
				QFD, TM, TRIZ 90 min Basic Training Support of the theme		
					Solution support	

TM: Taguchi Method

3. Scoop out to engineer's needs

Engineers are sensitive to time !

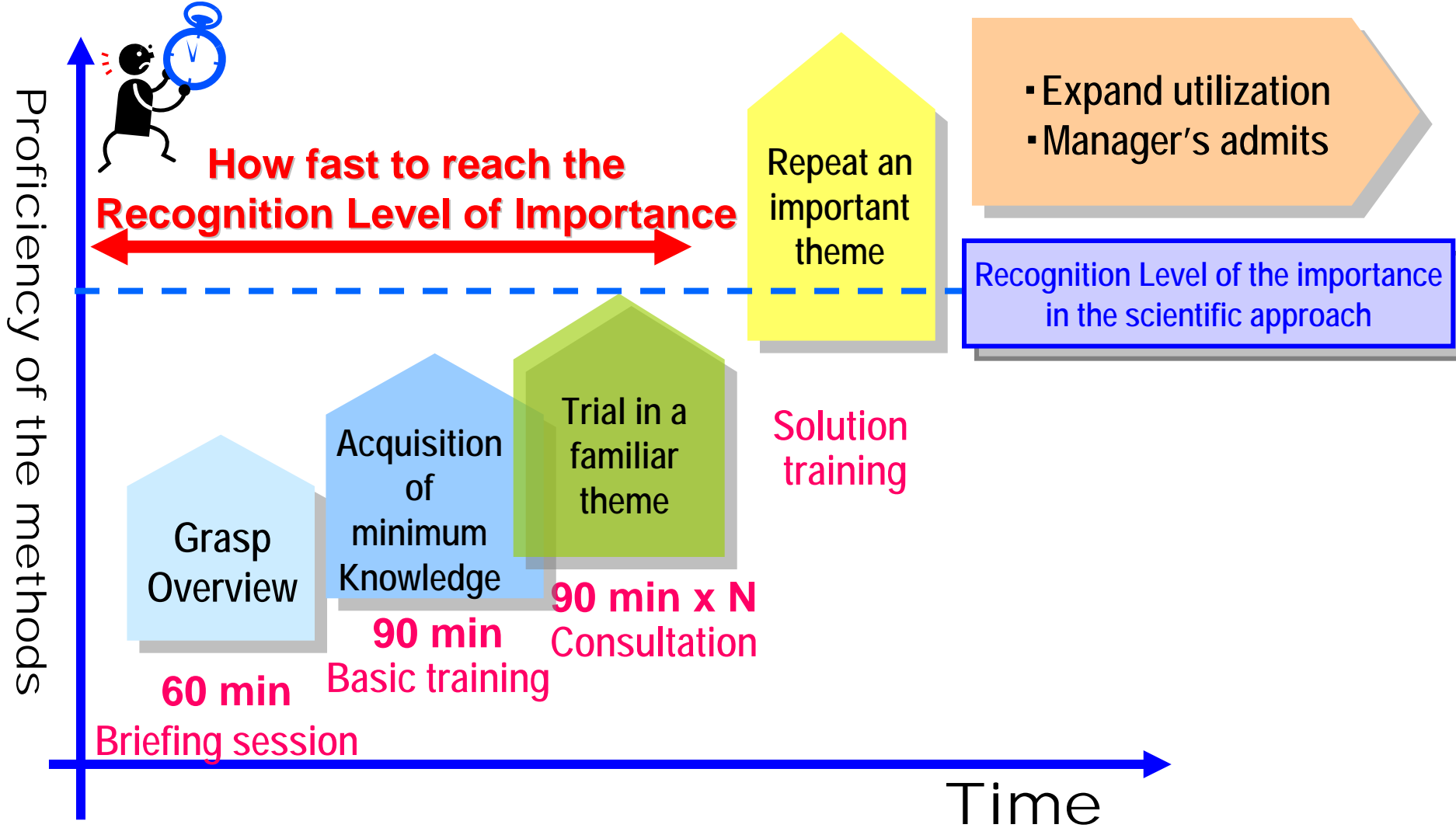
- ◆ **No time for training** by the time savings of the development work
- ◆ I want to **know quickly the effect** of new tools.
- ◆ Methods such as QFD were not useful even though they were time-consuming. My purpose is **not the use of methods, but the efficiency of development**
- ◆ Experienced engineers want to know **the directly linked methods to problem solving**. And they want to know the best approach to each scene in particular



Long time to train and to apply methods is NG !

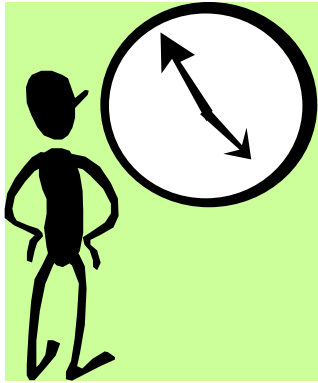
4. Activities focus on time

Encourage experiences before becoming to dislike methods



5. Education system to meet the engineer's needs 8

By focusing on time, creating the system for various engineer's requests



◆ **Minimum knowledge in minimum time**

⇒ 90 min "Basic training" (QFD/TRIZ/TM)

◆ **Supporting the use of the methods in the theme**

⇒ Applying their own knowledge to the theme,
and increasing the "problem-solving drawer"

◆ **Providing exercises courses to young engineers**

⇒ "Exercise Course" provides an experience of the
development flow in the actual subject.
(2 days: Half of the conventional lesson)

◆ **Provides an opportunity to make a solution to the experienced engineers**

⇒ 90 Minutes of 7 Solution courses



6. Contents of Solution (1) Aim of providing 7 solutions

Using various methods naturally while deploying 7 solutions

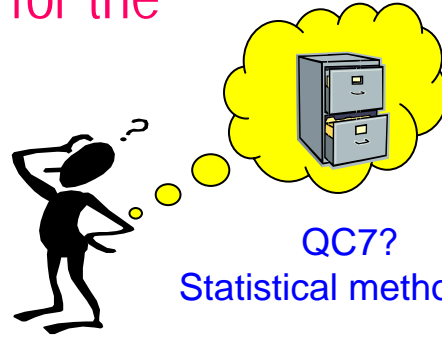
Engineers should have many "Drawers" for the solution of problem



Mr. A knows the scientific method



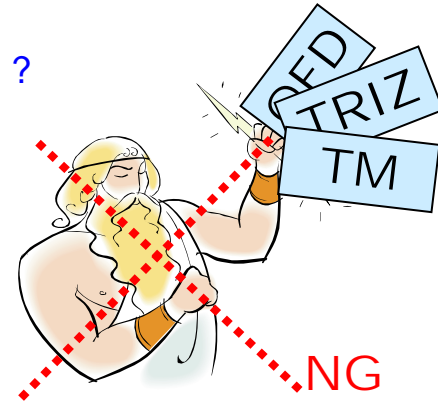
Many "Drawers" for the purpose



QC7?
Statistical methods ?

Mr. B relies on his knowledge and experience of the past

Forcing to use the method is not our purpose!



Evangelist of the method is not required.

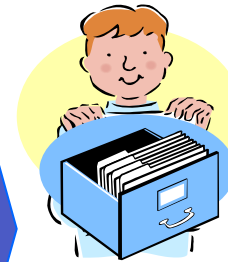
Learning by practice in close contact with the theme



Training solutions and 90 minutes Basic course

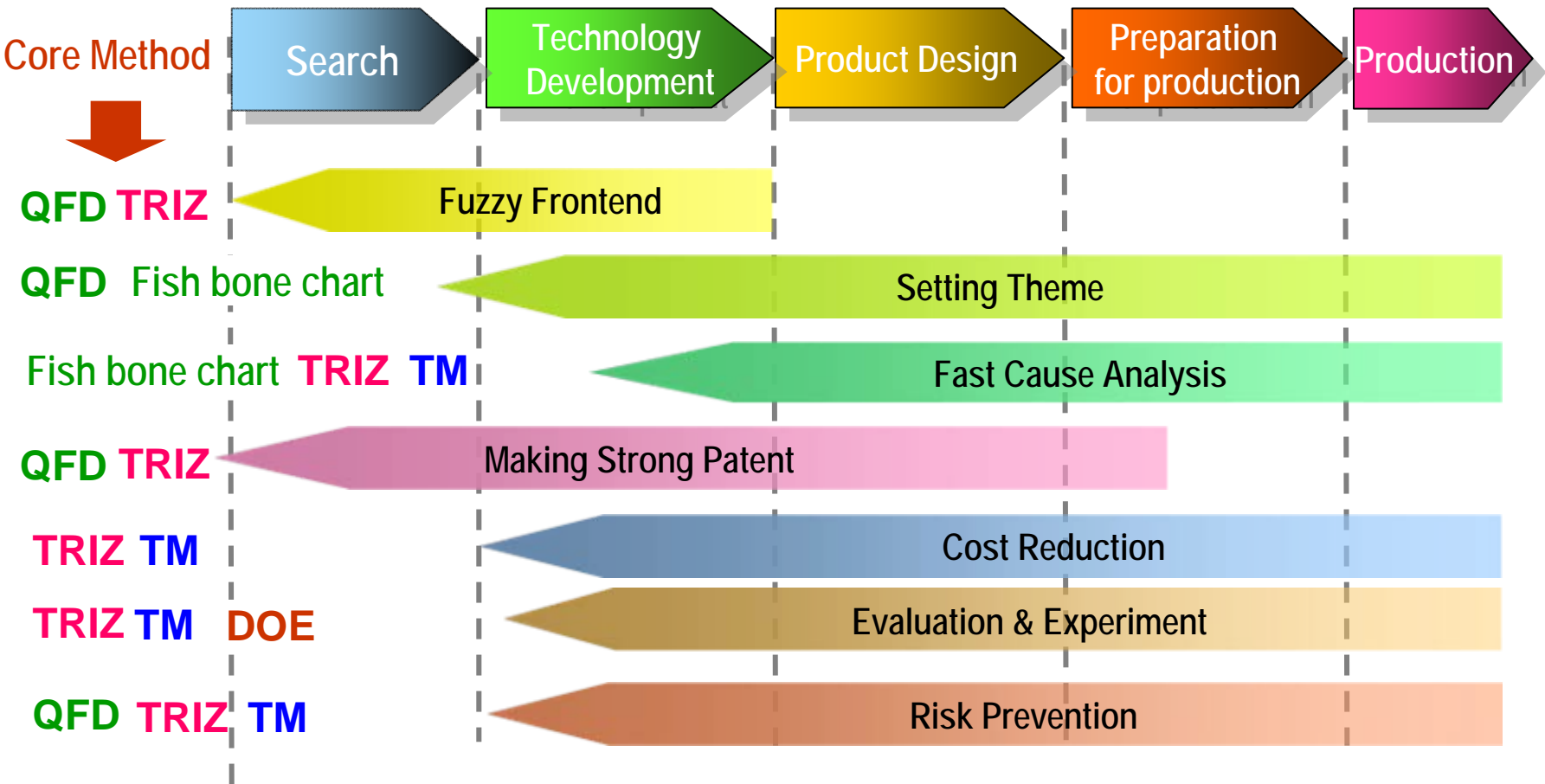


Support engineers at the seams of theme



Get a new "Drawer" !

Introducing solutions for experienced engineers



※ TRIZ includes Functional approach and Root cause analysis

7. Results(1) Education contents

Expansion of educational materials for each purpose and in-house cases linked to the 7 solutions

Basic training (QFD/TRIZ/TM)

基礎教育テキスト
科学的手法 TRIZ 編 ver.9.0

7 Solution courses

リスク回避 ソリューション ver. 3.2

2013年5月1日 ECM推進部

2 Days course of lectures and exercises

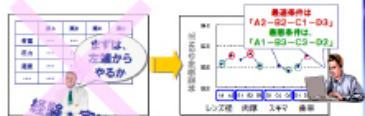
オリンパスカ
『タグチ・メソ
スタパル

オリンパスカレッジ 演習テキスト
『効率的発想法 (QFD+TRIZ)』 ver.4.3

2013年度版
CMIC開発ソリューション本部
ECM推進部 監修

Case studies for Each Solution

科学的手法 社内適用事例集



2012年4月 現在

ものづくり革新センター 開発ソリューション本部 TRIZ技術部

Sharing the Case Studies on the Company Data base



Contents include Purpose, Method, Result and Effect on one page

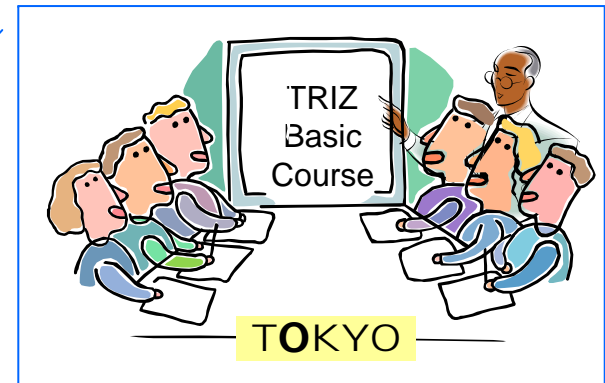
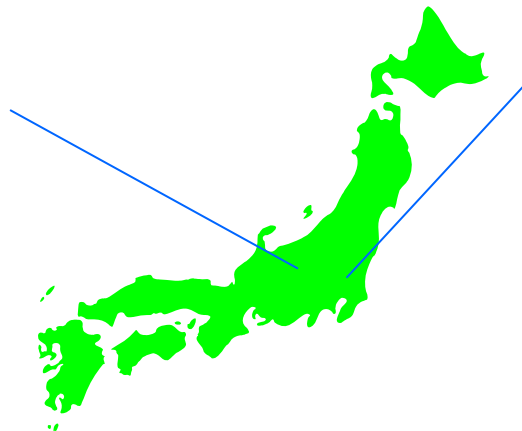
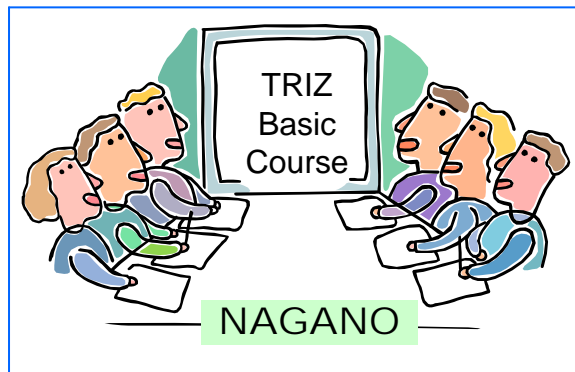
7. Result (2) Merit of 90 min

90 minutes class is hard for the teacher, but there is also a benefit

【Effect of the basic course and the solution course】

- Teachers seriously consider what they want to transmit first. And their skills get polished. They added a twist to the program.
- Plan a flexible training to suit the convenience of developers.
- Plan easily a remote training using the TV conference system.

Training held simultaneously in Tokyo and Nagano

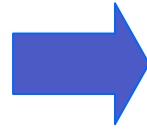


7. Result (3) Devised Points of the exercise

Exercise from setting theme to solving problem by QFD and TRIZ



Previous model: Cleaner



Current Model: Flashlight with Manual generator



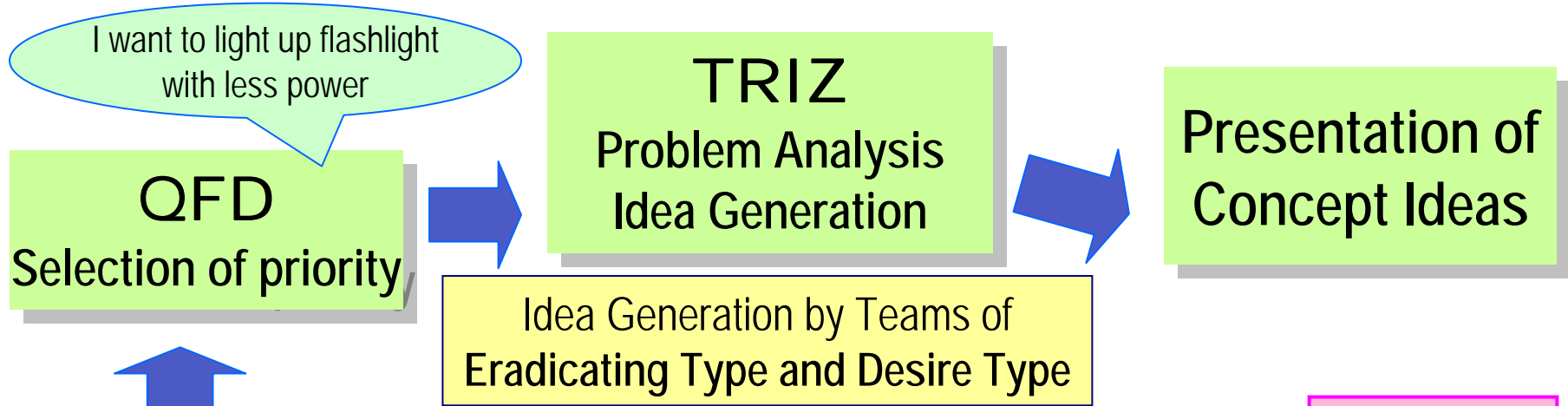
Scene of exercises

《 Devised Points 》

- Exercise in real product planning
- Contents including mechanical, electrical and optical systems that OLYMPUS engineers are interested in
- Fun new products launch a competition by the training team at the end

7. Result (4) Actual Case of Exercise Course

【Efficient Thinking】 “Develop new products of flashlight!”



I want to light up flashlight with less power

QFD
Selection of priority

TRIZ
Problem Analysis
Idea Generation

Presentation of Concept Ideas

Idea Generation by Teams of Eradicating Type and Desire Type

VOC



Flashlight



Brainstorming by TRIZ

Eradicating Type
Idea Sample



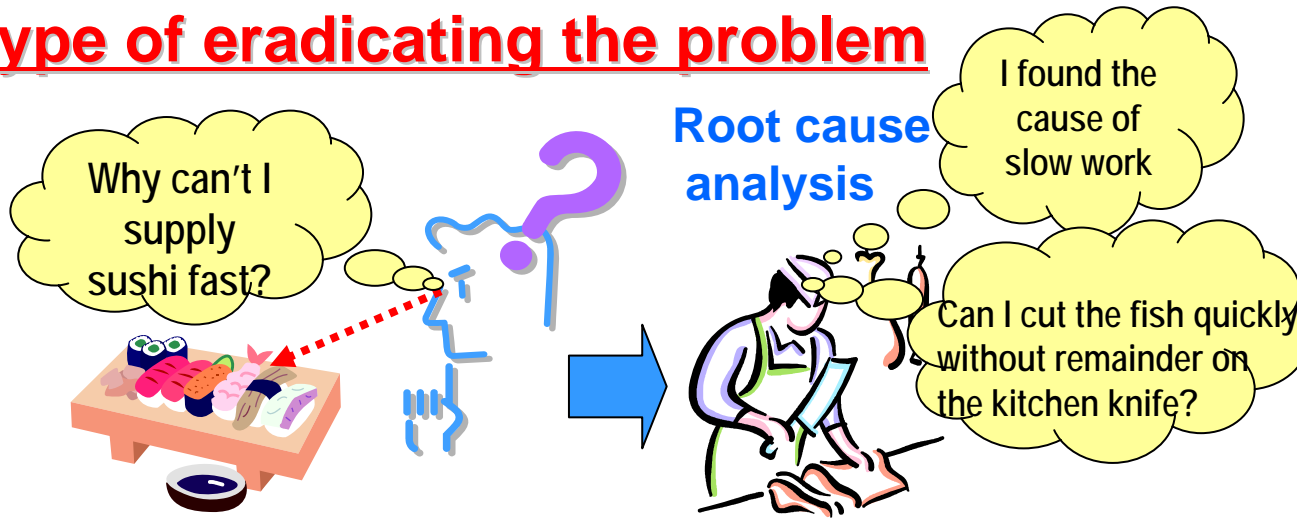
Desire Type
Idea Sample



《Reference》 2 Types of idea approaches by TRIZ

2 types of idea approaches by TRIZ to the purpose

Type of eradicating the problem



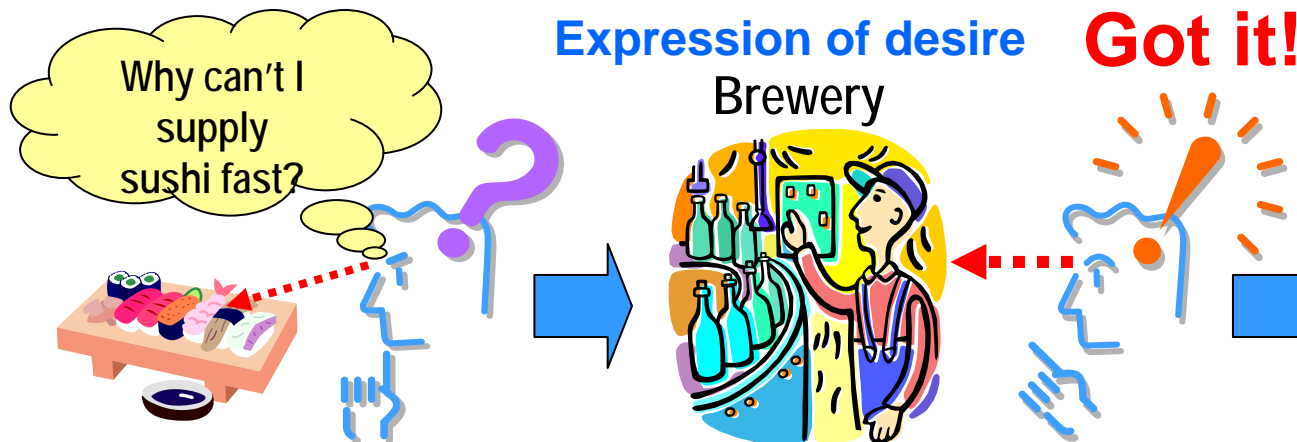
In Sushi Bar

New type of Kitchen Knife



You can solve the problem concretely. However, the range of ideas is narrow.

Type of fulfilling the desire



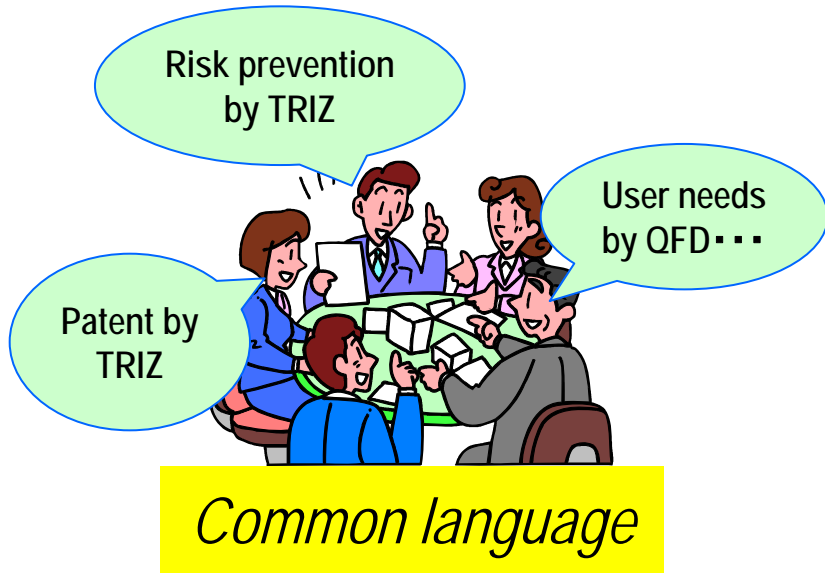
Belt-conveyor Sushi bar



You can obtain a wide innovative idea. However, the idea lacks detail or specifics. **OLYMPUS**

7. Result (5) Company-wide promotion

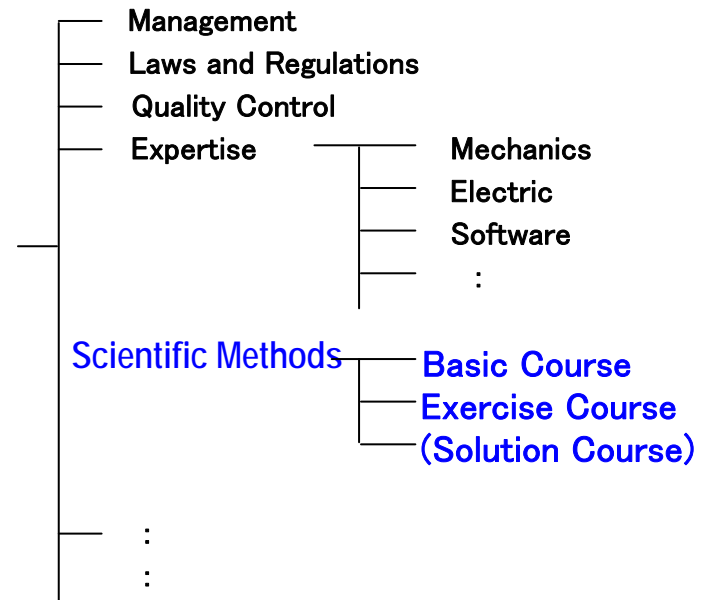
Aiming at a common language of engineers in the "OLYMPUS College"



Trainees can obtain points for promotion participating in the "Two-day Exercise Course." So, awareness of the trainees have increased.



*OLYMPUS College
Company-wide education curriculum organized by the human resources department



Summary

1. The approach that focuses on time is acceptable to the developer, and, applied themes and number of trainees have also increased.
2. Training of 90 minutes brought the benefits of a short period. It has become possible to greatly increase the opportunity to learn scientific methods simplifying trainings in remote areas.

Next challenge

Practice support and education are the two wheels of solution deployment. The development of human resources that can be utilized across each method and 7 Solutions is the next challenge.

Thanks to Mr. Mamoru Zenko and Mr. Hajime Kasai of **IDEA, INC.**. They provided the chance of using scientific methods (QFD + TRIZ) and support for our activities at **OLYMPUS**.

Thank you for your attention

OLYMPUS
