Kaizen Effort Samples on Japan at 2013

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For details, see our URL at http//aqc.jp

1. Vocational training and companies' requirements: Matters required for technical tradition
2. Business matching with growing markets (activities in Kanagawa Prefecture)
3. Excellent company cases and corporate improvement cases
   - Komatsu, Juken Kogyo, Toyota's production in China, Yamato Transport
   - Imabari Towel, Higeta, … Okano Kogyo, etc.
   - Video cases, including Project X
4. Production technology MAP measures and TP development chart
5. Lessons and measures gained through guidance to PCS university students in the USA

Construction of gradual achievement levels whereby success leads to success

Creation of things welcomed by the earth and customers

Object of motivation

Goal setting
Achievement management

Manufacturing

Development of excellent technology

Development of human resources

Concrete theme

Creation of places for manufacturing

Effective problem-solving method and experience

Clarification of issues to be achieved

Aspect of development of human resources (manufacturing is development of human resources)

Training in support for fostering of top manufacturing experts of the food equipment manufacturer L

Yearly turnover of about 14 billion yen; 240 employees; deficit of about 10% at that time

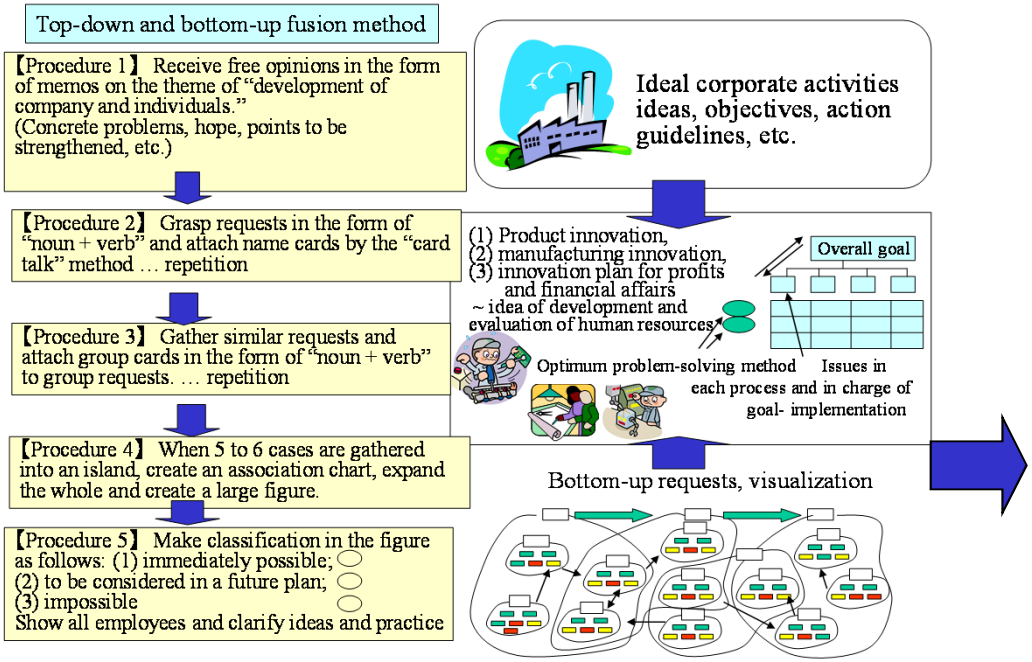
Support was promoted through practical training on holidays in 2007 for one year.

(1) Manufacturer outline and needs for training support: During the depression, the manufacturer concentrated factories into one district, and the present and next factory managers gradually proceeded with training measures for promptly strengthening abilities and strengthening earning power, including strengthening overseas development strategies. Each department's purpose is measures for moving into the black and an increase in midterm profits through goal management.

(2) Results: When about two-thirds of the training was completed, mainly the factory managers began activities by establishing (1) a profit improvement plan, (2) a plan to integrate the factories in two districts; and (3) a goal management system, and the following year, they were expected to achieve a surplus.

(3) History from grasp of needs to realization of support training:
The analysis in the left figure, after founding the factories' problems and improvement, creating a momentum to all employees' participation, and deciding the activities of the managers as business innovation experts, practical training was proceeded with.
(Preliminary setting of theme → training participation → practical use form)

Procedure for top-down and bottom-up fusion



(1) Factory cost analysis and measures
→ Establishment of a guide to moving into the black through all employees' participation

(2) No deficit/claim measures
→ Risk measures, including suppliers

(3) Factory transfer measures
→ Two factories were smoothly concentrated into one district through practical guidance by PERT+PPA method.

(4) Measures for vertical launching of new products

(5) Improvement of factory layout and division into cells
→ eliminate waste

Automated Machinery Manufacturer R: Measures in the second half of FY2008 (prospective)

No.	Item	Contents of implementation	In order of arrival
1 Q	No defect measures (Physical phenomena measures)	1) Generation mechanism analysis; 2) compliance with standardization measures and quality cost; 3) comparative analysis; 4) scientific investigation and evaluation technique; 5) preventive/correctional measures Examples, cooperation with design, changes in chemical substances, measures against decrepit equipment	2: No defect measures
2 Q	No HE measures	1) Measures for difference between unforced errors and ability; 2) measures for early feedback of problems; 3) error avoidance; 4) Cerebrophysiology; 5) CRM (training in pointing and calling) Examples: prevention of judgment errors, early communication of facts to the source of a problem ~ no recurrence	3: No HE measures
3 C	Avoidance of waste by JIT and 5S ~ reduction in overtime work, VE measures	1) Avoidance of waste in work (improvement of flow); 2) Set of parts according to order of assembly; 3) movement economization and efficiency; 4) purchase VE; 5) improvement in clerical work Examples: Operation layout and storage space JIT measures, cell optimization (space securing)	1: Reduction in overtime work cost Purchase VE
4 D	Production management (compliance with deadline, management of goods on hand, JIT payment)	1) Improvement in the standard time management system (leveling); 2) increasing range of functions and production fluctuation measures; 3) operation efficiency ~ production instruction, management and express handling measures Examples: P-D-C visualization (information sharing), early abnormality discovery and measures, review of distinction between internal and external measures ~ clarification	5: Compliance with deadline, increasing range of functions
5 Q	No defect measures from the stage of development of new products	1) Enumeration of on-site problems in design and development; 2) improvement method based on cases; 3) design-in measures and how to proceed with DR [This time's site manager and the designer/developer shall be in charge of this case.]	4. No defect

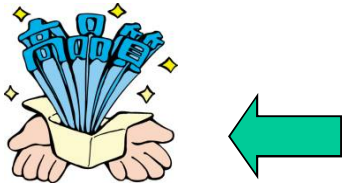
The following about which issues were provided during this period are excluded: 1) launching of products (measures for increasing speed in release of drawing); 2) development of cooperative companies; 3) technical tradition measures; 4) risk in case of abnormality, such power failure ~ measures for seeking optimal measures; and 5) purchase VE, strategy SCM.

In addition, "Skills in On-site Management," which was sent before, will be carried forward to the next time.

1. Vocational training and companies' requirements:

One of the management demands is "It is important to know the relation between a forest and trees!" This measure can be practically developed as follows:

1. First, plan a system that generates profits.
2. Determine strategies for products and manufacturing and develop hopeful activities.
3. It becomes necessary to carry out measures to develop experts in the form of fusion with local culture, and it becomes necessary to realize the image shown in the right figure.



Short deadline, high profits

Bottom-up

Top-down

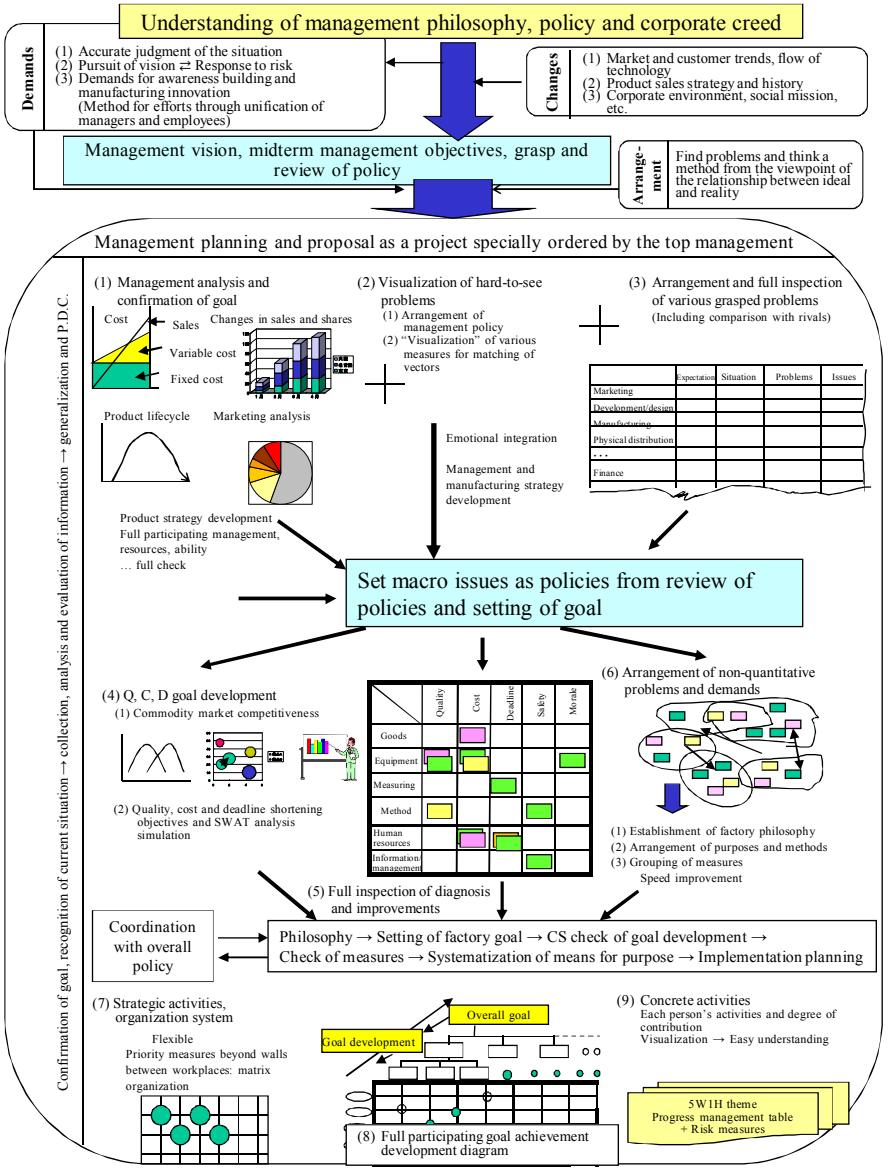
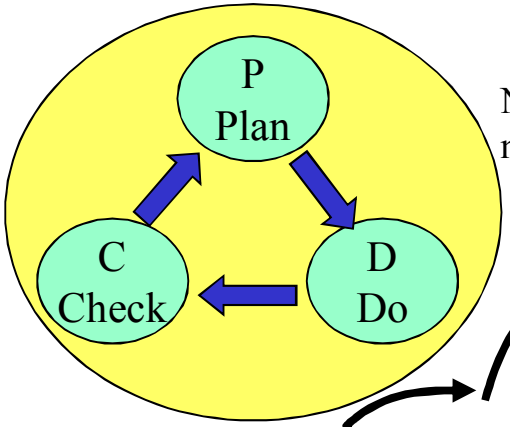


Figure 1: Image of generalization of the full participating management system and various requirements for the achievement of the goal of the midterm management plan

Requirements for “above the best” in the manufacturing industry that were found as a result of JMA investigation just before the 21st century

1 Set a high goal and make inexhaustible daily efforts to realize it.

Goal



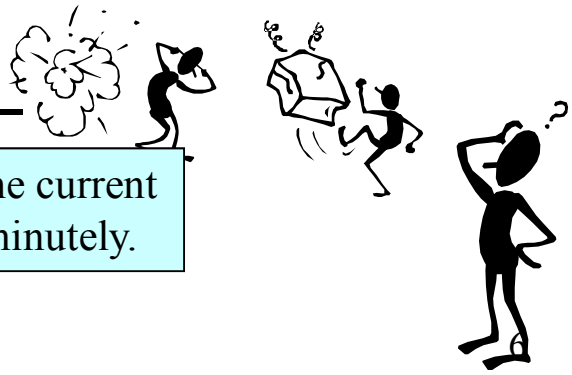
No plan,
no management!

3 Show an achievable story and make efforts to achieve it without fail.

Implementation plan

Indeed, it is not surprising that professionals can do it!

2 Analyze the current situation minutely.



“Yozan Uesugi’s reform,” which the late President Kennedy learned

Practitioners of national development and industrial development suitable for the place

When a press corps asked “Whom do you respect the most in Japan?” President Kennedy answered “Yozan Uesugi.” Because no Japanese knew his name, reporters investigated in a hurry and found that all his activities as a top-level executive had been put into practice. This made him famous. As a matter of course, he was greatly referred to for the purpose of economic regeneration in the US. After that, top-level executives in the world have been learning his basics of management practice.

The situation of the Uesugi clan and the situation around the time when Yozan Uesugi becomes a feudal lord

When Kenshin Uesugi became the first feudal lord of Echigo Province, his revenue exceeded two million goku. → Because, by the assumption of the fifth feudal lord, the Uesugi clan accumulated wasteful expenditures for inheritance procedures and others, it had only 150,000 goku and was on the verge of bankruptcy. Around that time, the income of a warrior decreased to 90%, and the population of the province reduced from 140,000 to 90,000 (in 1770). Even in this situation, the Uesugi clan spent considerable expenses for deepening relationships with the shogunate and others, such as regular trips to the capital.

Conditions for Yozan Uesugi

(1) The Uesugi clan was short of help. He was born in a house of a feudal lord with only 30,000 goku in Akizuki of Takanabe (Miyagi Prefecture), married a princess of the Uesugi clan and became a feudal lord.
(2) The princess was mentally disabled.
(3) Although he was like a hired president, he was appointed as feudal lord.

[Gist of reform]

(1) He broke down the wall of the system.
(2) He broke down physical walls (production of rice had been difficult in mountainous areas).
(3) He broke down mental walls.

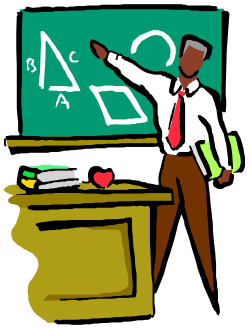
Concrete measures for this (result of analysis of the current situation)

1) Information sharing; 2) activation of discussions at workplaces; 3) development of management, placing importance on actual places and situations
As the top executive, Yozan himself carried out actions, quantified management activities and had project teams plan ideal goals and establish and develop implementation plans

Reasons for corporate bankruptcy

Corporate bankruptcy reasons ranked by President Noguchi of Yaoki-kai

1st: Manager's pride, overestimation of management ability
2nd: Lack of employee training
3rd: Lack of business purpose, goal, plan
4th: Lack of industrial information and response to environmental changes
5th: Lack of new products, delay in technological development
6th: Family rift, bad effect of family management
7th: Intermingling of public policy with private interest, lack of management philosophy
8th: Lack of decision and implementation ability
9th: Lack of management through figures and lack of study
10th: Autocrat, lack of reflection

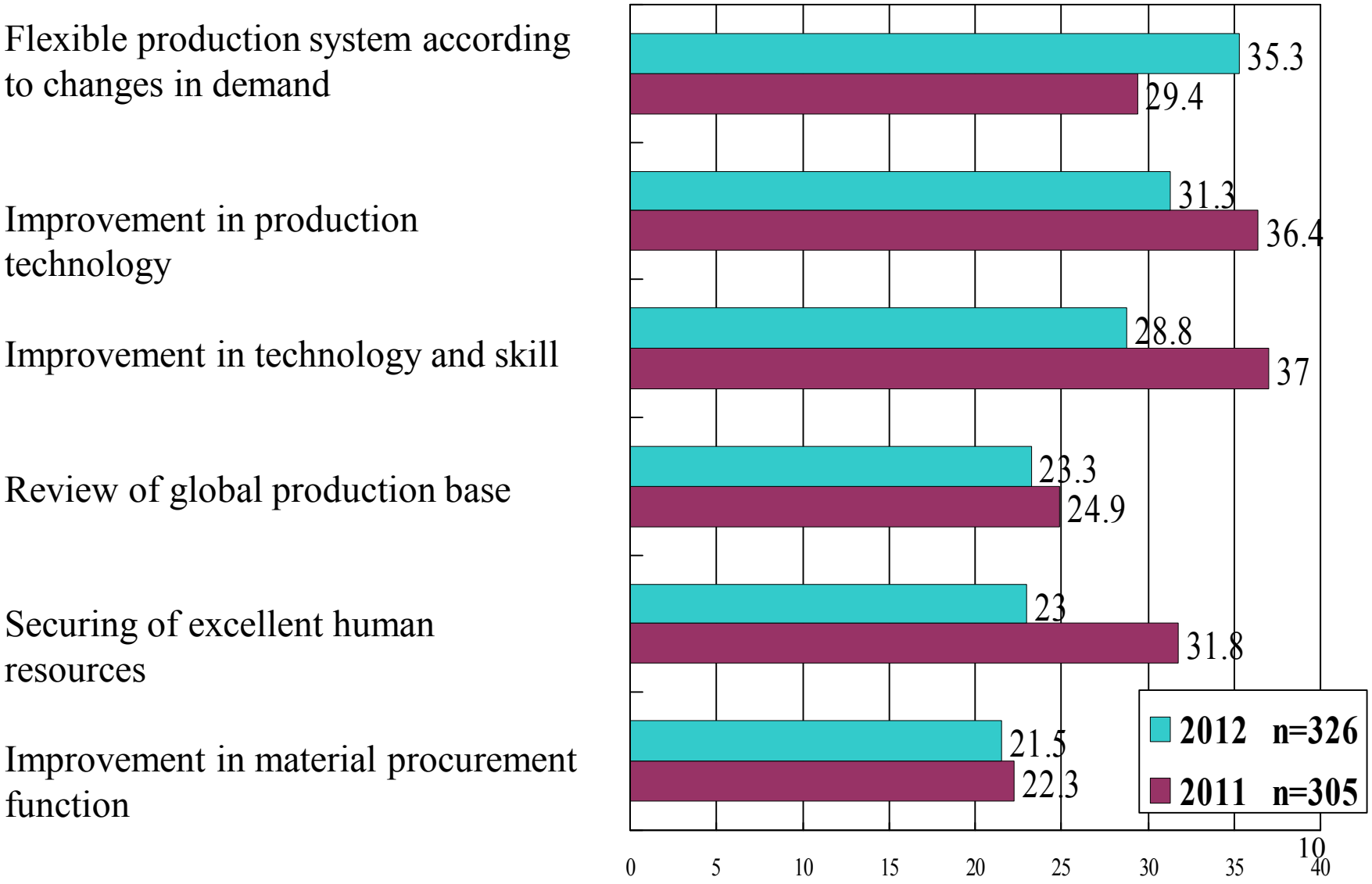


List of typical technologies used at manufacturing sites

Manufacturing technology	Production technology		Management technology	
• Chemical balance • Insulation • Heat conduction • Heat stress • Reactive product • Reaction velocity • Chemical balance • Moving velocity • Solidification temperature • Heat of fusion • Pressure distribution • Boundary condition • Magnetic degree • Viscosity • Stiffness • Extrudability • Castability • Young's modulus ….	• Finite element method • Numerical analysis/control • Characteristic curve distribution • Adaptive control • Robot • Assembly automation • Sensor • MTBF analysis • Mechatronics • Retrofit • Line control • SQC • LCA (Low Cost Automation) • OR (Operations Research) • CAD / CAM • IT … ….	• IE (Industrial Engineering) • QC (Quality Control) • VE (Value Engineering) • JIT (Just in Time) • TPM (Total Pre Maintenance) • GT (Group Technology) • DR (Design Review) • Behavioral science • EE (Engineering Economy) • Error-proofing • IR (InformationIn Research) …..	• Energy saving • Image processing • Computer integration • Flexible automation • Simulation • Downsizing • TOC (Theory Of Constrains) • PERT • KJ method • Idea generating method • CS (customer satisfaction) analysis • OTC (Design To Cost) • Order entry system • Risk analysis ….. …..	• TWI (Training Within Industry) • TP (Total Productivity) management • VM (Visual Management) • MIC (management of indirect cost) • Concurrent engineering • Finance analysis • TA (Transaction Analysis) • Target management • Contract system • F (Forman) plan • PPBS (Planning Program Budgeting System)

Survey on the actual condition of JMA management issues in 2012

Issues on which manufacturers place importance



Requirements for technical tradition in Japan

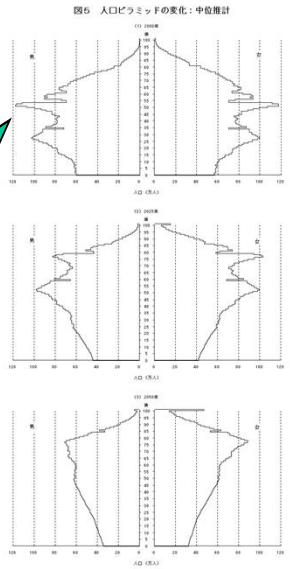
[Changes]

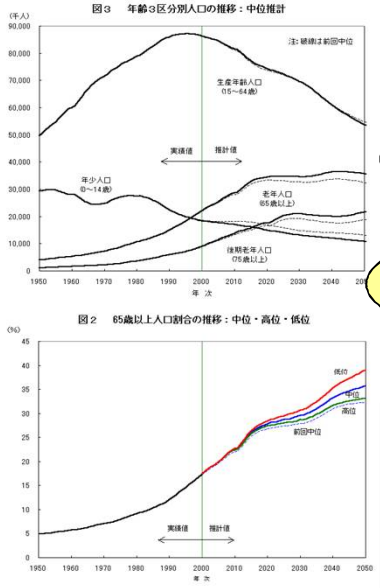
(1) Skilled workers employed during the high-growth era will be retired several years after.
(2) The penalty for having postponing problems will have to be paid.
(3) Problems have begun to occur concerning trends toward reduction in personnel cost, overseas technical transfer, dependence on automaton and outsourcing.

The occurrence of the problems has accelerated due to a declining birth rate and an aging population.

Products cannot be made because no person can make them.

Changes in the population structure in Japan





Leader

Have workers thoroughly understand and make their own.

[Suggested points]

(1) Existence of a good leader and evaluation
(2) Existence of a plan and a personnel system that make it possible to realize the company's philosophy and strategy (construction ~ use)
(3) Use and preparation of manuals

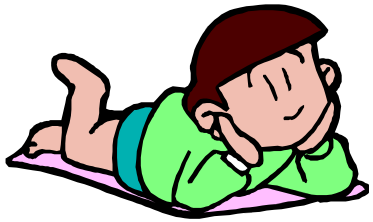
Development of technology and role of skill

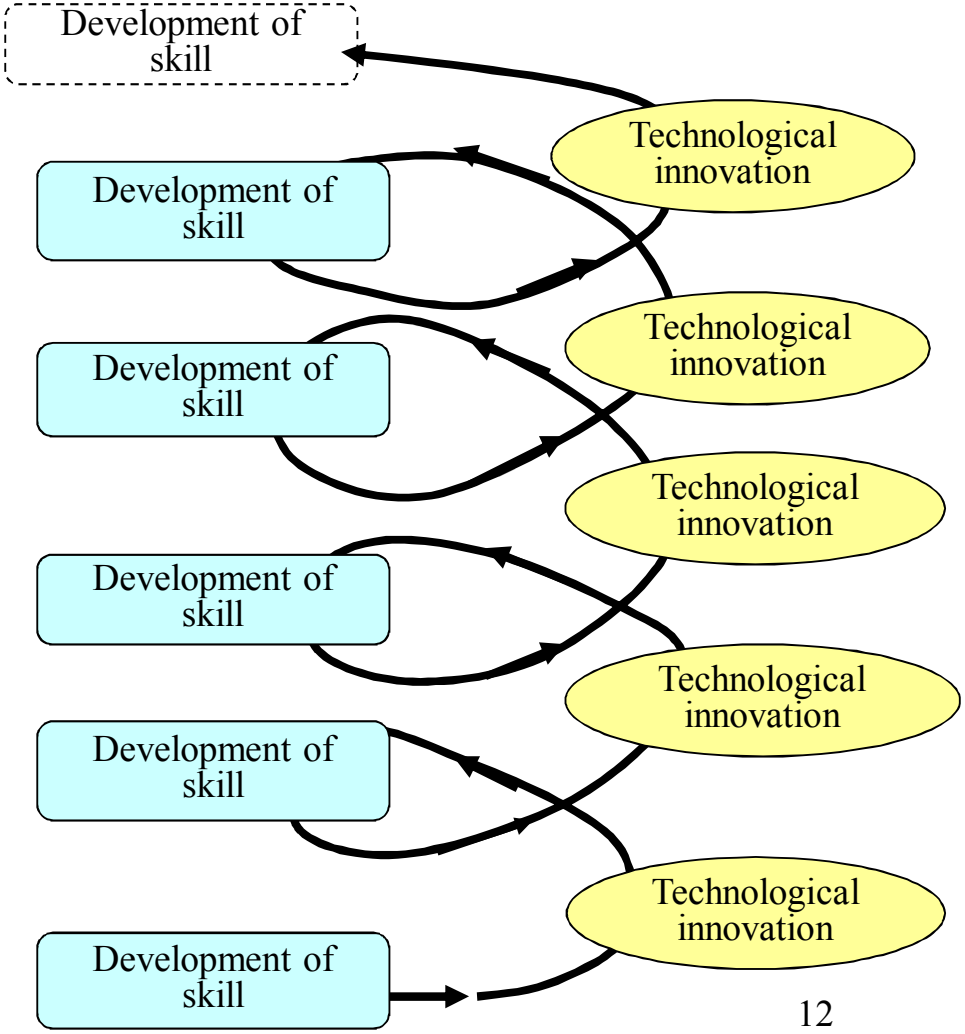
Synergy effect　　Repetition of pushing up from below and pulling up from above

Anxious points

1. Retirement of skilled baby boomer workers
2. Decrease in the number of persons inheriting tradition due to a declining birth rate and an aging population
3. Bad effect of relaxed education policy

Educational device for people who did not train the brain or have competition when young?





Shortage of professionals, which has continued to be a problem since 1997

In this situation, perhaps no company wants lathe workers.

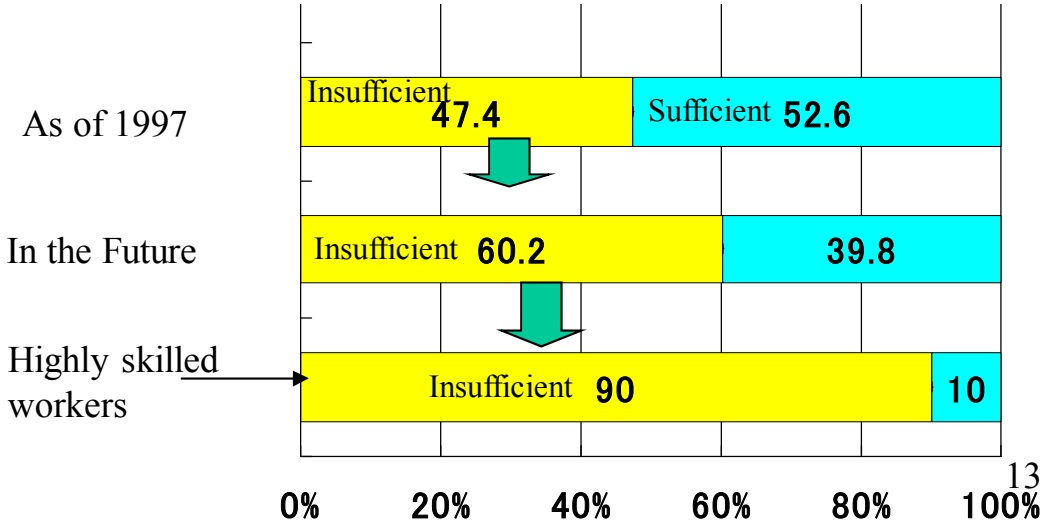
Actual situation

Although more than 8,000 small factories existed in Ota City in 1992, almost 2,000 were closed down.

Although companies have enough white-collar workers, they will employ you if you are skilled lathe or milling worker, even if you are 60 years old. We will immediately recommend you to the companies.

Interview at an employment agency

Result of the Ministry of Labour's survey of 2,077 companies in Japan in 1997



Efforts of developing SMEs which are often introduced by TV “Yume no Tobira (Doors of dreams)”

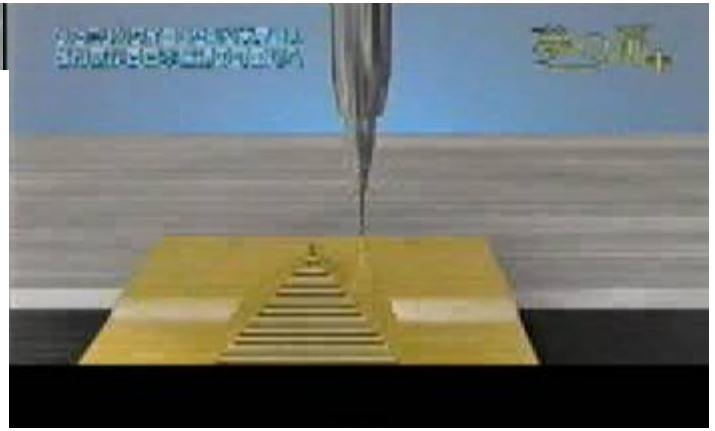
“World-smallest die” by Iriso Seimitsu

Employee:14 Capital: ¥16 million

Realization was made in 2004 and motivation was no business due to recession though the company was engaged shaving steel business.
Then it realized that “An order will come to a company with the highest technology rather than a company with moderate technology.”
As a specific target, it provided iPhone cases with highest finish which general companies cannot do so.
As a result, customers could reduce necessary finishing process and it succeeded in order increase
(The content that strategy was highly evaluated by customers.)

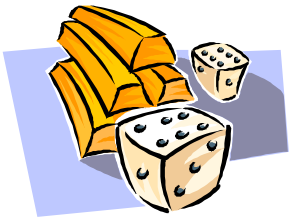
Strategy by President Kiyokazu Saito (manufacturing success)
A subcontractor like us cannot say, “We did that,” even if we have high technology. And so “we made the world-smallest die and announced it for PR to show our technology fairly under which we made it!”

Comparison with ball point pen-processing condition



Technology was recognized like strategy and 1/1,000,000 gram gear production of Jyoken Kogyo and measure to expand industry

Ultra small die development

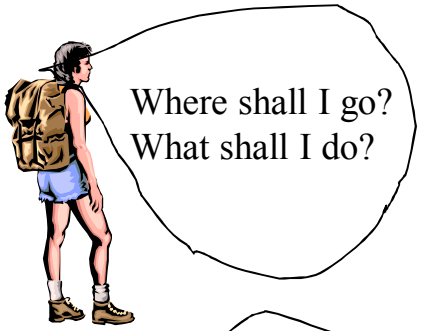


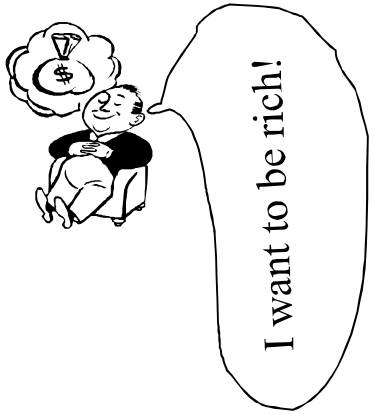
The content of efforts to be referred to

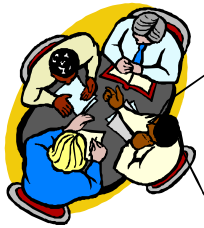
(1) To concentrate on efforts to draw out the maximum of functions of new model MC molding machines.
(2) Scientific analysis and research: Generally sold die has a limit of 12 mm in one side but this manufacturing needs a cutting instrument with 2.5 mm width. Then they surveyed cutting instrument makers and found a maker which can make 0.1 mm width. In addition, when they asked the maker about the possible smallest limit, it replied an instrument with 0.06 mm width. Then they decided to make a die with 0.3 mm. (As the fixing method is a know-how, this kind of content is not going to be disclosed.)
(3) The tool maker has excluded the ultra small size product from their catalogue because they do not know the market even if it can make such a small size. (It is important to tie-up with hidden different lines of business.)

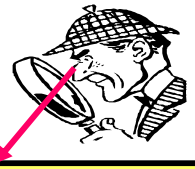
2. Business matching with growing markets

Market research, client's honest opinion, request grasping







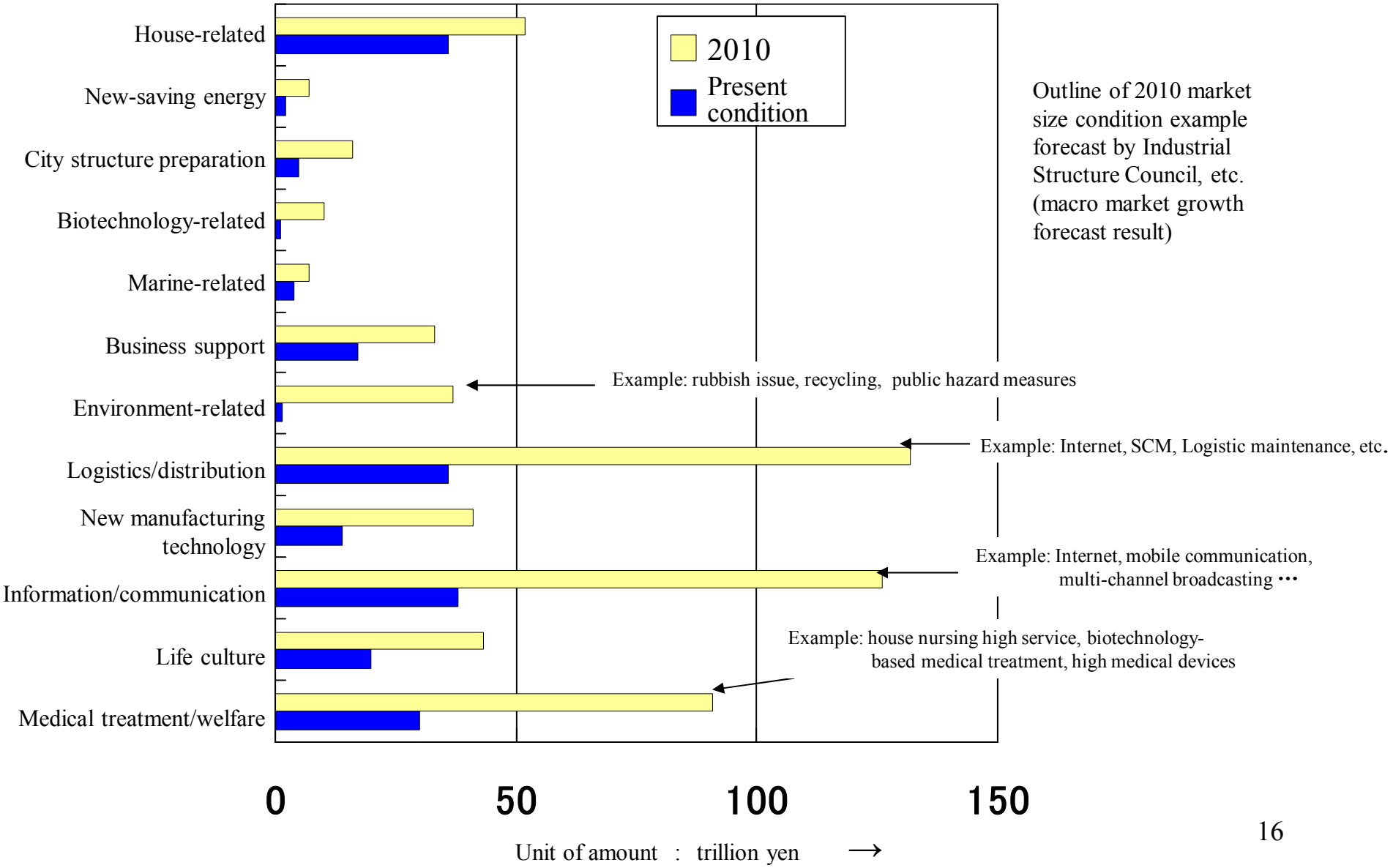


What are client's real needs instead of maker-oriented needs?

Method of market research

Research method	Examples of specific means	Opinion gathering method	Free needs gathering method	Limited item confirming method
Questionnaire distribution/ collection method	(1) Questionnaire by DM/phone/mail	○		
	(2) Gathering research method: Collect opinion after explanation	○	○	
	(3) Relaxed mood/free discussion type		○	
Product use test method by client	(1) Listing dissatisfaction/comparison method with similar products		○	○
	(2) Actual use/issue point pick-up type			
	(3) Random action analysis method		○	
	(4) Best selling goods/site shop research method		○	
	(5) Designated client intensive use test method		○Joint development	○Selling
Simulation method	(1) Model house method (including questionnaire)		○	○
	(2) Monitoring method (member recruitment)	○	○	○Issue grasping
	(3) Test sales by shops		○	○
	(4) Client needs grasping by developer method		○	○
	(5) Test piece use test method			

Example of growing market analysis data

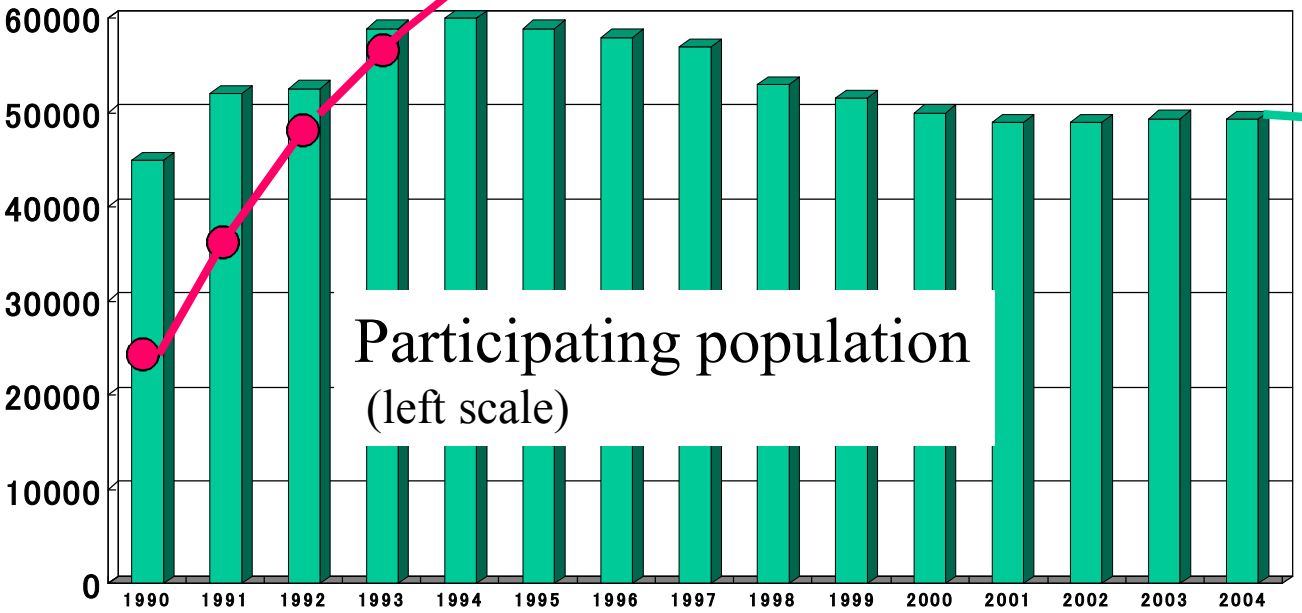


Karaoke market condition

Number of Karaoke rooms

Peak period: 160,000 rooms

Surplus goods phenomenon



From children to adults overseas

Only excellent goods sold!

Average actual economic growth ratio forecast after 20 years

Calculation is made under conditions of average actual economic growth ratio of about 2%. Data is taken from Weekly Diamond of April issue of 2007 (p.83). Calculation is made by sources: METI "Industrial Production Index," "Indices of Tertiary Industry Activity," and "Indices of All Industry Activity"; MIC "Input-Output Table," and "Family Income and Expenditure Survey"; Cabinet Office "System of National Accounts"; National Institute of Population and National Security Research "the Japanese Journal of Population."

Ranking	Name of business lines	Average annual growth ratio (%)	2006 (Trillion yen)	2016 (Trillion yen)	2026 (Trillion yen)	Growth ratio of 20 years (times)
1	Information and communication	4.3	26.08	39.61	60.16	2.31
2	Electric devices	3.8	60.30	83.81	126.83	2.10
3	Office services	3.8	92.56	134.21	194.59	2.10
4	Medical treatment/welfare	3.7	53.12	76.28	109.54	2.06
5	Finance/insurance	2.6	43.15	55.63	71.71	1.66
6	Transport machine industry	2.6	54.15	69.65	89.60	1.65
7	Complex service business	2.5	5.06	6.48	8.31	1.64
8	Non-ferrous metal industry	2.4	6.48	8.21	10.40	1.60
9	Individual service	2.3	61.02	76.29	95.79	1.56
10	Mining	2.0	1.42	1.73	2.12	1.49
11	Real estate industry	1.9	71.52	86.20	103.89	1.45
12	General machine industry	1.7	32.65	38.78	46.08	1.41
13	Learning support	1.6	41.16	48.32	56.74	1.37
14	Chemical industry	1.5	26.08	30.21	35.01	1.34
15	Electricity/gas/heat supply/ water supply industry	1.4	28.52	32.81	37.75	1.32

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	Name of business lines	Average annual growth ratio (%)	2006 (Trillion yen)	2016 (Trillion yen)	2026 (Trillion yen)	Growth ratio of 20 years (times)
16	Pulp/paper/paper processing industry	1.3	14.71	16.80	19.17	1.30
17	Transportation industry	1.3	47.43	54.14	61.80	1.30
18	Wholesale/retail industry	1.2	95.49	108.11	122.39	1.28
19	Public service	0.8	39.12	42.33	45.80	1.17
20	Oil/coal product industry	0.5	12.98	13.65	14.35	1.11
21	Agriculture, forestry and fisheries	0.4	13.68	14.29	14.93	1.09
22	Food/tobacco industry	0.4	36.47	38.04	39.67	1.09
23	Steel industry	0.1	18.86	19.02	19.18	1.02
24	Other industries	0.0	29.78	29.80	29.89	1.00
25	Precision machine industry	-0.9	4.09	3.75	3.44	0.84
26	Metal product industry	-1.6	11.15	9.51	8.11	0.73
27	Construction industry	-1.8	63.24	52.77	44.04	0.70
28	Ceramic/quarrying product industry	-2.2	6.70	5.39	4.33	0.65
29	Textile industry	-5.7	4.52	2.50	1.39	0.31
	All industries	2.0	1001.48	1198.32	1477.01	1.47

How management strategy should be

Degree of added value

Cheaper than others ⟵ ⟶ Client buys higher goods

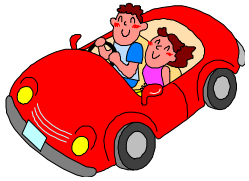
Targeted market

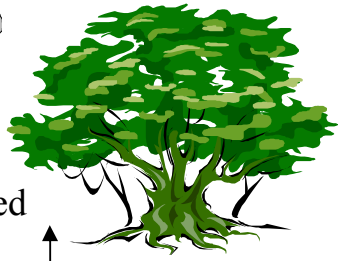
Large market

Niche market

Strategy: Large company dependence ! strategy

Example: car market- home appliance





Subcontractor-oriented

Brand strategy

Gucci, Ferragamo, Channel

••• Ferrari

¥100 shop:
To large market with a number of goods

QBB: ¥1,000 barber shop
Get profit by short-time customer rotation

Station noodle customer quick rotation strategy

Only one in the world!

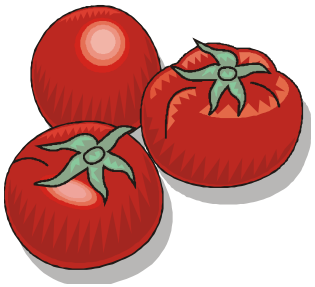
Craftsman/artwork strategy

Case study

Panama Vegas Case

The manufacturing-and-selling problem of a new tomato

A poor area called Vegas is located in Panama. Even if who looked at this example, it was the measure considered to be right. Since it was the contents with which the United Nations dealt especially and everybody thought it will make a great success production & Sales sample. The contents were the tomato production which is one of the characteristic products. If new manure is used, production of this tomato will increase several times. If this project will be success, the area becomes rich and education will be also substantial. A problem of this plan was How to find out a cooperator of this tomato production. That reason was because people of this land had the culture which dislikes a new measure. But, although time was taken, a certain farmer will cooperate in this plan. Tomato production was winning a great success soon. For this reason, tomato production spread greatly in Vegas. The needs of a tomato are great in a neighboring area. Please think about and consider what kind of progress this plan followed after that.

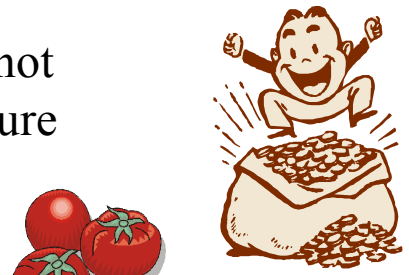


The result of a tomato Story at Vegas

Production of the tomato was successful. But, since heavy rain attacked near Vegas, passing of a road became difficult to transport Tomato boxes. For this reason, also in the tomato which remained in the field, twenty percent rotted in the fields. Furthermore, the physical distribution contractor has made demands for a price increase on the farmer who profited by tomato sale. Furthermore, Since the amount of supply of the tomato far exceeded demand, it was that the price of it is reduced. For this reason, the income of each farmhouse decreased and almost all farmhouses stopped tomato production.

In the past, agriculture has been advanced here by the system which does not determine the boundary of land each other. But Everyone got to know that Tomato production is decided by size of land. For this reason, it became the scramble of land.

Although it became the next year in such a situation, many farmers do not have money and many those who cannot buy the manure of the agriculture done until now. Then, the tomato became a high price in the market. Farmers suffered troubles and started tomato production. But, he cannot buy manure. For this reason, it became a poverty life.



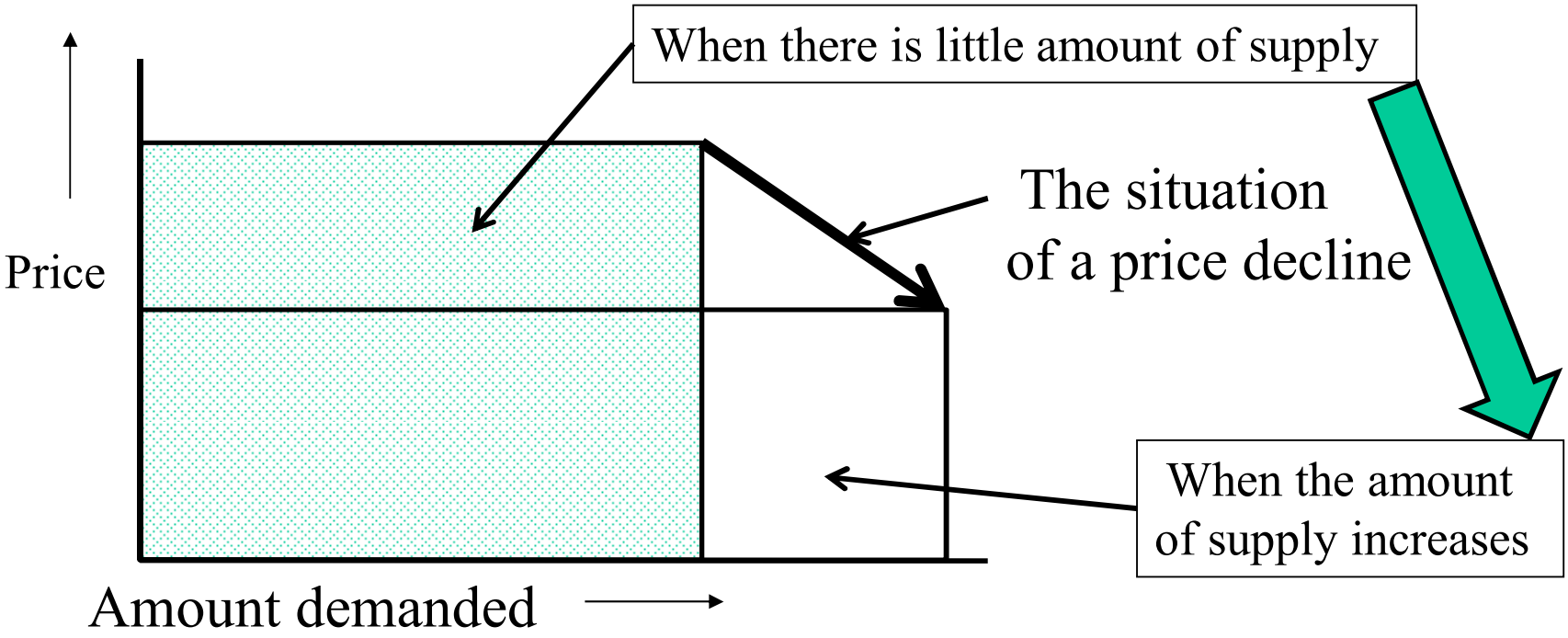
The contents of a report of the direction which drew up and furthered this plan The fact of having succeeded at first to no marketing technique tops are problematic. The reason for failure is a lack in farmers' ego and a motivation.

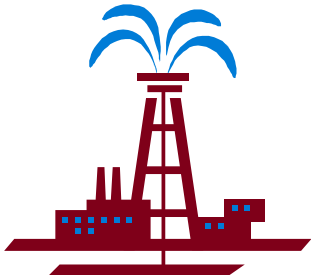
How do you think to this opinion?

UNESCO carried out a judgment called failure in this plan. Then, the volunteer was put in this place and Agriculture was revived by prolonged efforts.

A economic effect on marketing

The size of the market of mass consumption goods was decided.
If superfluous supply is performed to an amount demanded, the price will fall.
Conversely, if it runs short to an amount demanded, the price will rise.

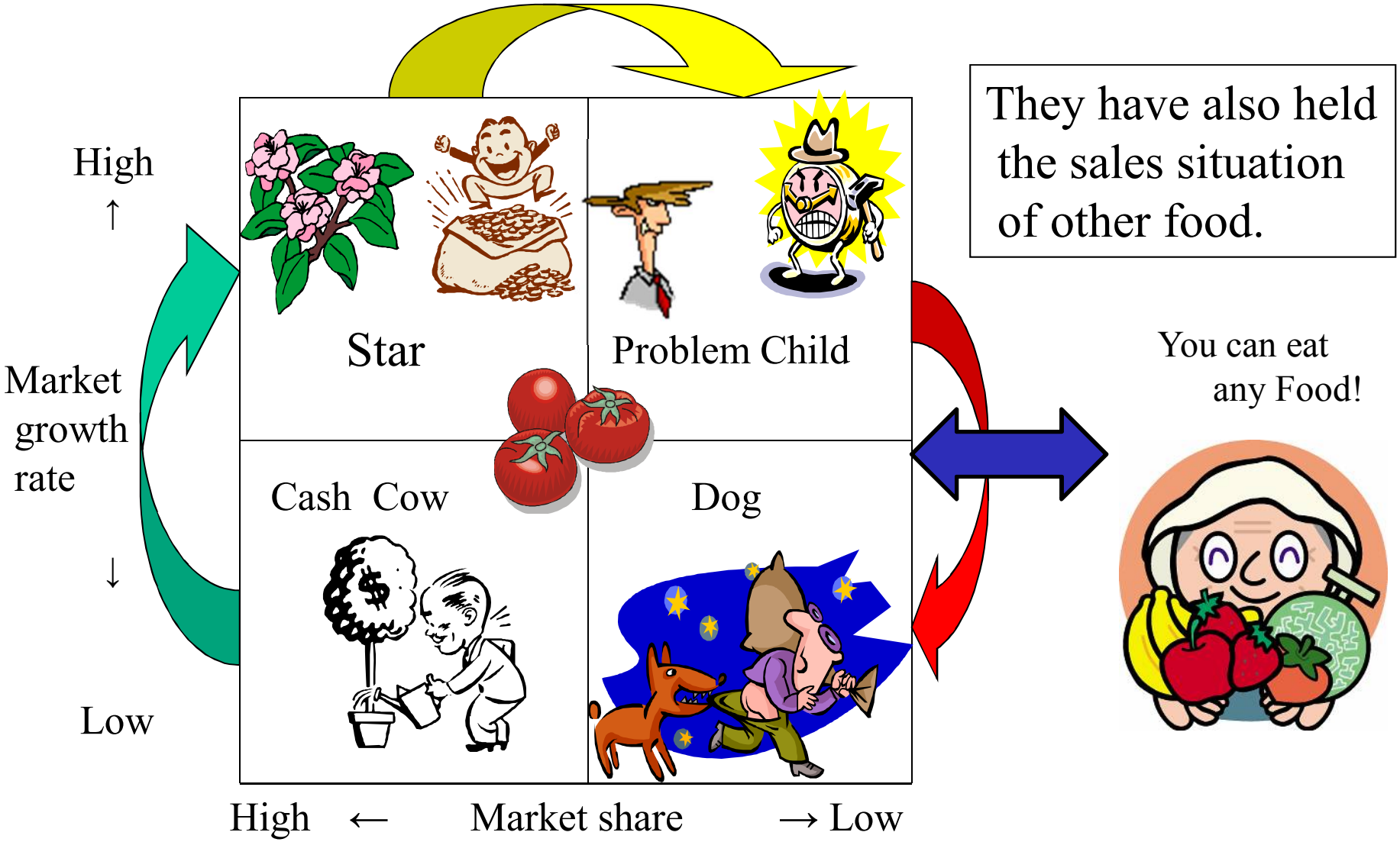




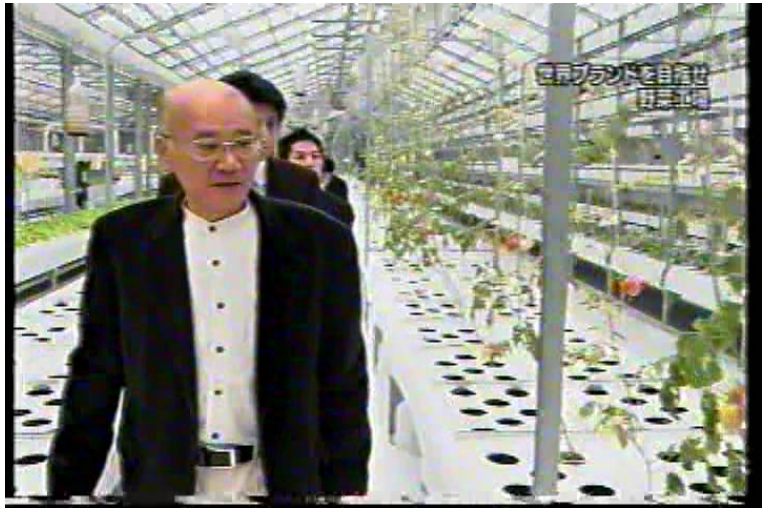
If it becomes oil overproduction, a producer price will fall. For this reason, it has adjusted by the international conference.

This tomato production case study also becomes the same situation.

PPM : Products portfolio management



The plant factory from which introduction is expected in a desert area



Example A : Mr. Masayoshi Yamae
The China export, Organic Hydroponics
The special fluid in which water does not become foul is developed.
Medicine is a top secret in order that China may infringe on a patent.

Notes:
Sufficient market aim is required. Beginning from a test market is important.

Example B: Mr. Hiroyuki Watanabe Box type vegetable plant

This system is producible in the underground of a building. LED light usage Type Production cycles, such as lettuce, a medicinal herb, and a strawberry, are short, and a high added value and vegetables with high food safety are applicable.

Yunkus is a physical distribution contractor.
This cooperates with other physical distribution contractors, and an empty track is used effectively.

The physical distribution improvement by Yunkus Ltd.

Fresh vegetables are carried to the selling big city, and they are sale and a yearly turnover of 1 billion yen. A profit higher than a vocational physical distribution is secured. It is a Side job.

3 layer structure of electricity use (Case of TEPCO area)

News Station on April 23, 2012

Characteristics: Variable portions are office and home and peak time is an only problem.
We should “concentrate on measures for the time from 14:00 to 16:00,” and we find that electricity storage and use of solar power consist of large portions for this time zone and electricity.

General home: 18%
10 million KW

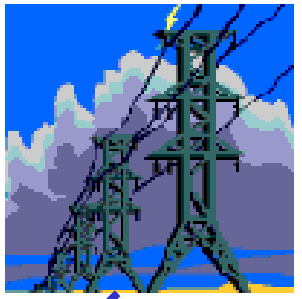
Office: 51%
28 million KW

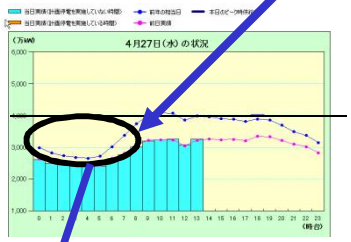
Companies (plants) 31%
17 million KW

Total
55 million KW

Peak time
60 million KW

Smart Unit Image





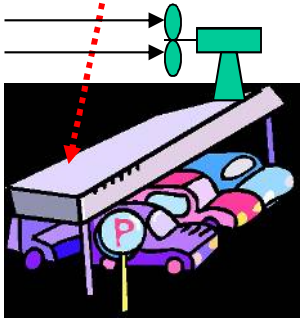
Use of timer
UPS: Night electricity is stored for use by using uninterrupted power system

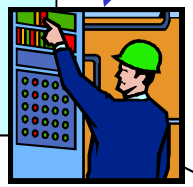
Insulation

Sun lighting

Effective air circulation

Plant building





Neighbor natural energy
•Solar generation
•Small wind generation
•Small water generation

Air-conditioning system by using waste

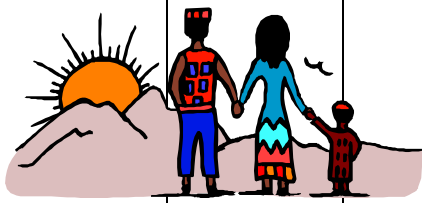
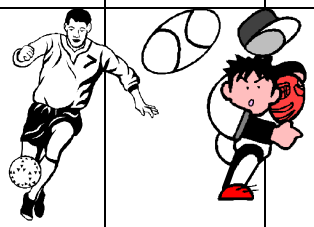
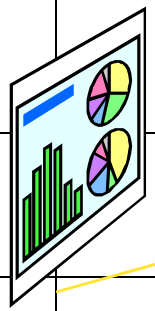
Generating equipment considering natural disaster

Electricity supply from EV and PHV during parking

Air-conditioning system by using geothermal heat

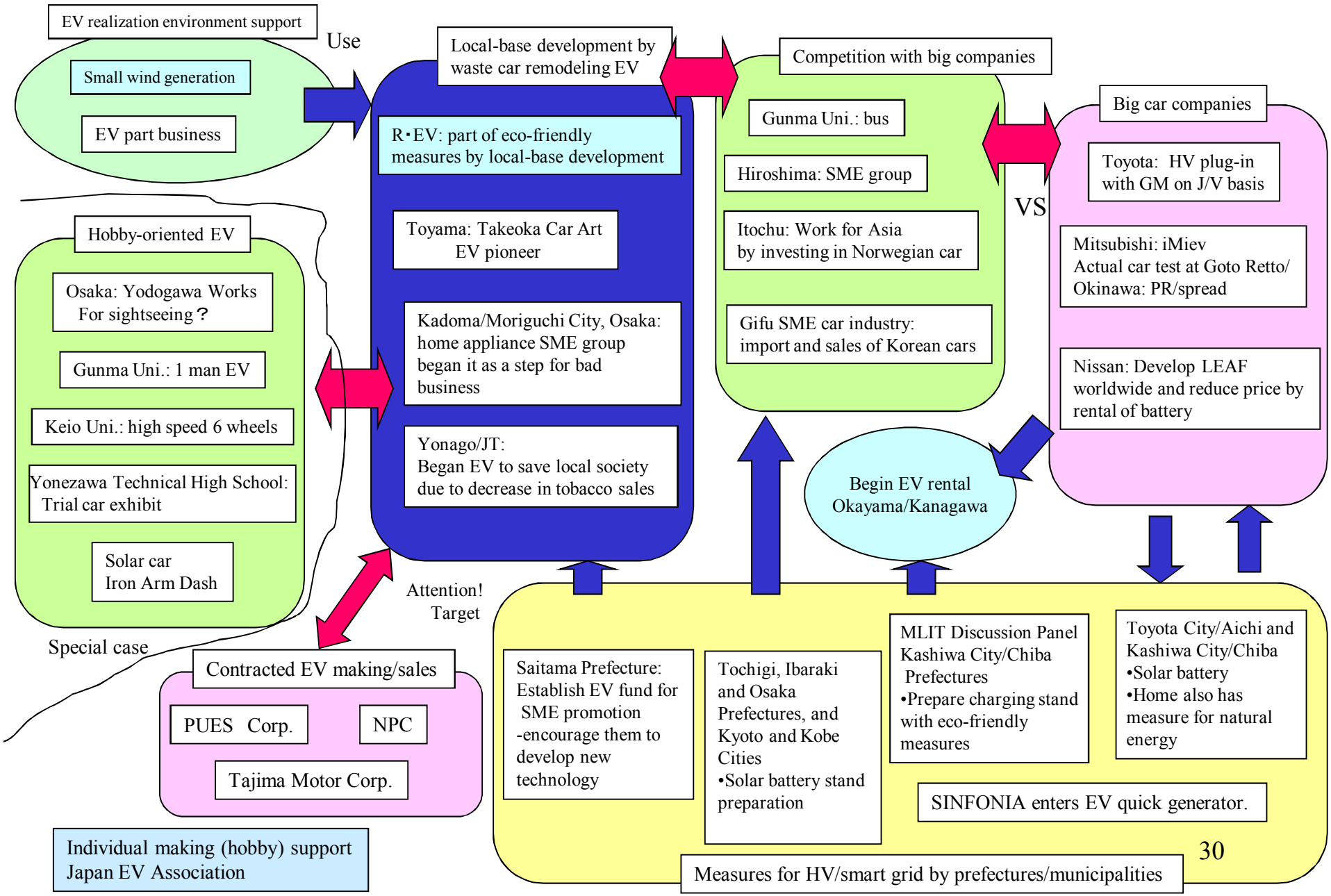
Demand control and measures to reduce electricity

National Youth Outdoors Learning Center “Use Promotion Map” Building

Market contribution and menu provided			(1) Infant	(2) Elementary school	(3) Middle school	(4) High school	(5)University/ technical college	(5)Special support
Leisure and culture (psychological improvement) health and body building	A. Memory building Life experience	• Outside activity • Marine activity • Room orienting • Candle fire						★General family ★Employee trip
	B. Body strength/exercise Skill improvement	Walking activity Bicycle activity Room sports						
	C. Culture leisure	Tool-using activity Night activity (star watching, etc.)						
Brain storming	D. Measures for intellectual improvement	• Craft activity ★Invention class night			★Extensive measures for examination		Let us tell a dream!	
PR	E. Local friendliness	• Holding events • Lecture by well-known persons						
Industry support	F. Local industry support	★New employee training ★Various company training ★New business project ★Drill against natural disaster						★Local project

2010: EV (September of first year) "Status analysis results"

Car industry forecast 2020: 2 million units, 2030: 6 million units, 2050: 8 million units



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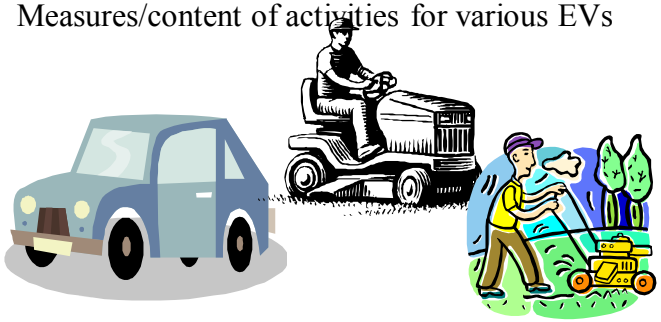
R • EV target this time

Measures to aim to enter market by manufacturing EV from beginning seen at other areas

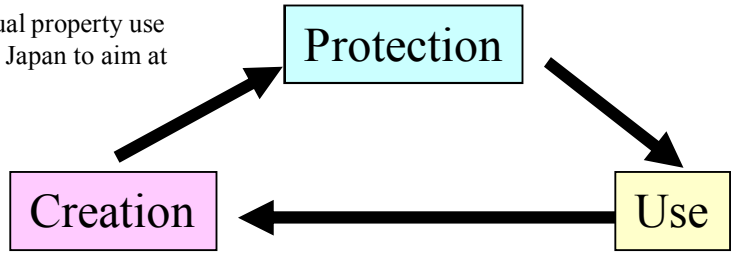
Activities by each prefecture and organizations

Acting organization and acting group	Measures/content of activities for various EVs 	Activity by category													
		Get rid of red ink/keep profit	Use of subsidy	How to attract the youth	Stress on existence	Academic interest	Develop world market	Enter passenger car market tentatively	Use of company group power	Certify potentiality	Hobby/like-minded club	Local attachment/contribution	Effective use of waste car	Include EV farming broadly	Others
R•EV (Ryomo P)	Asanuma Management Center/JMA support project	○							◎	○		◎	◎	◎	
Yonago	Measure for EV by Kyoto Uni. due to JT office closure	◎										◎			
Hiroshima	Delorean plan/Hiroshima Kokusai Gakuin University			○	◎	○			◎	◎					
Yonezawa	Yonezawa Technical High School Zero Emission P			◎	○	◎					○				
Saitama	Technical development support business for next generation car	○	◎				○	◎		◎					
Ota City	Arai Jidosha Hanbai sells EV rickshaw and electricity-driven bike	◎			○				○						○
Higashi Osaka	Higashi Osaka SME group (lacquered tricycle type)	○	○		◎				○				○		
Ehime Institute of Industrial Technology	Open publicly second-hand car remodeling EV manufacturing				◎					◎			◎		
Gunma Uni.	EV trial for social proof test/sponsor recruitment				◎	○			◎			○			
Nursing car	Japan's smallest company (appeared on NHK)							○		○		◎			
Dash village	Tetsuwan Dash/NIHON TV/Solar car/Dr. Yamamoto support				◎	○			○		◎		◎		○
Japan EV association	Can run 560km by one charge (world record))										◎		◎		

A project to make a new car from scratch considering competition with big companies

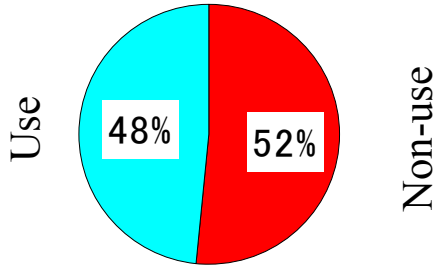
Example of patent right free licensing, assignment and sales

Intellectual property use cycle for Japan to aim at



We would like to contribute to developing SMEs by opening and selling patents which are not used by big companies.

Enhance international competition



FY2005 survey by Japan Patent Office

1. Technology on a contactless smart card by Sony Corporation

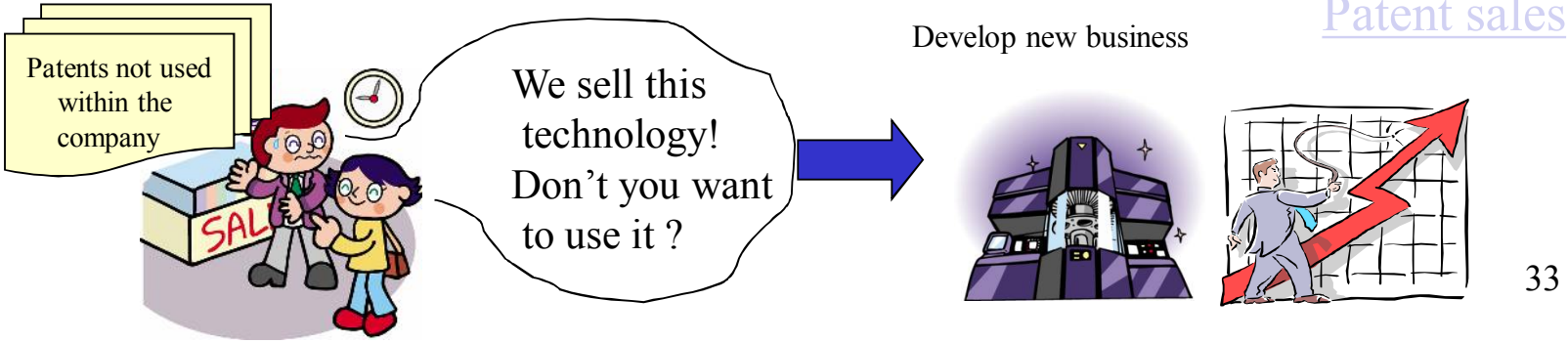
   The patent No.2705076 is a patent named Felica concerning IC cards and is an invention used for various systems including IC tags. Sony not only implements this patent by itself but also has granted the license to other companies such as JR. JR has made cards called "Suica" and this contactless smart card is widely used for passing an attended ticket gate or payment in shopping.

2. "Intellectual Property Pool System" of Hitachi, Ltd.

   Hitachi has been controlling the patents of each group company comprehensively, and Intellectual Property Department has been selling them with high profits which are equivalent to the profit earned by a big plant.

3. Nissan Motor "Sales of Patents by Intellectual Property Department"

   Nissan has started sales of technology which can be used by other industries than car industries including surface treatment technology. (TV broadcasting in 2007)

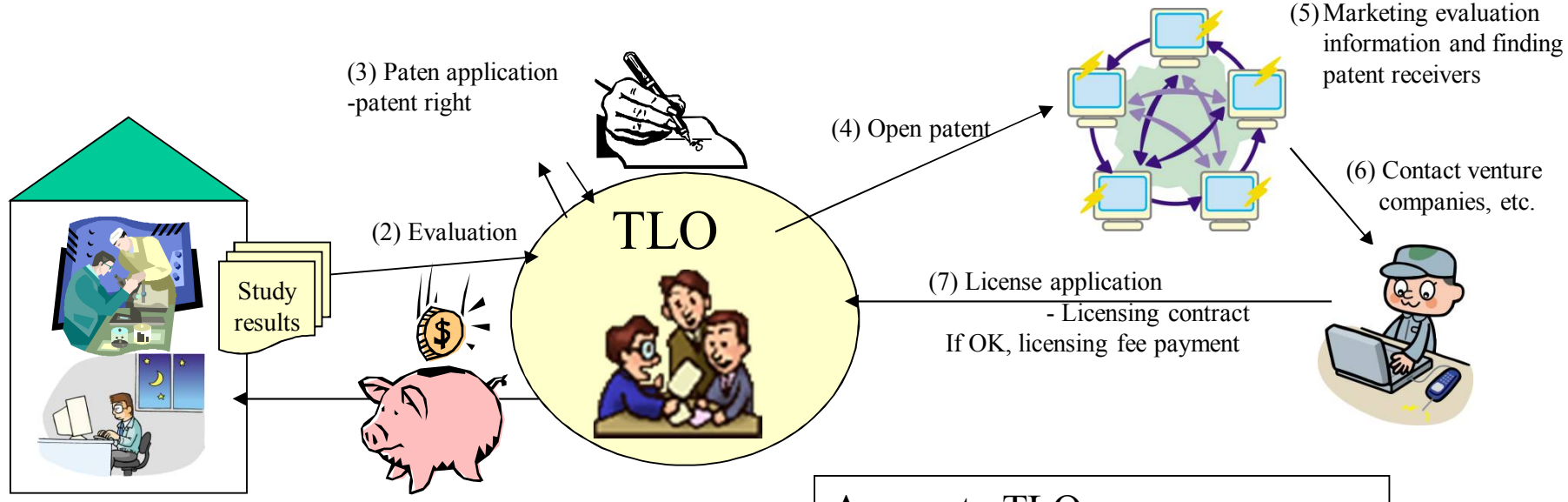


Technology Licensing Organization (TLO)

TLO (Technology Licensing Organization) is an organization which gets assignment of the right to receive the patent from an inventor mainly concerning research results of a university, acquires a patent of the invention and grants licensing, etc. to companies based on acquired patents. Characteristics include

(1) To find R&D which has potentiality of commercialization;
(2) To evaluate potentiality by researching market needs instead of only finding R&D ; and
(3) To work to find companies to which license is granted after applying for the patent of high technology to meet the above (1) and (2) and acquiring the patent. In 2005, 40 organizations were certified and they are now working.

Specific examples of commercialization: a milking machine to be used for study of dioxin contamination of breast milk, and a vision analyzer for ultra low eyesight patients.



Access to TLO
http://www.jpo.go.jp/kanren/tlo.htm

Examples: Todai TLO, Ltd.: http://www.casti.co.jp
Waseda University (Research Collaboration and Promotion Center) http://www.waseda.jp/tlo/

Examples of specific support and measures for business expansion

1. Business matching promoted by SME Support, JAPAN

Content of implementation: First meeting was held at Tokyo Station Conference on January 25, 2012.

(1) 21 SMEs made their PR for about 5 minutes to introduce technology and products to sell to big companies

(2) They held a meeting to explain and consult at a separate room according to the content of the above.

They made efforts to sell their products and technology to big companies at 10 separate rooms with attendance of about 500 audience.

Jointly held with Planning Section, Planning Business Dept., KSP Inc. TEL: 044-819-2001

Sponsored by: Keio University SFC Research Center, Open Network Lab. and National Institute of Information and Communication Technology

2. Kawasaki City "Intellectual Property Exchange/Intellectual Property Symposium": Introduction of the content of specific technology grant

An explanation meeting was held on February 8, 2012 by Kawasaki City to grant technology owned by the central government and public organizations.

(1) Bureau chief Koizumi said: Kawasaki has more than 200 research offices and has promoted to develop advanced technology in collaboration of industry and academia.

(2) JAXA: Japan Aerospace Exploration Agency and JAMSTEC: Japan Agency for Marine-Earth Science and Technology, etc. have introduced the content of grantable technology.

After introduction of the content of technology to be granted to SMEs, an exchange meeting was held. (First meeting was only to exchange company cards.)

3. Tokyo Institute of Technology(TIT) YVP: Venture support

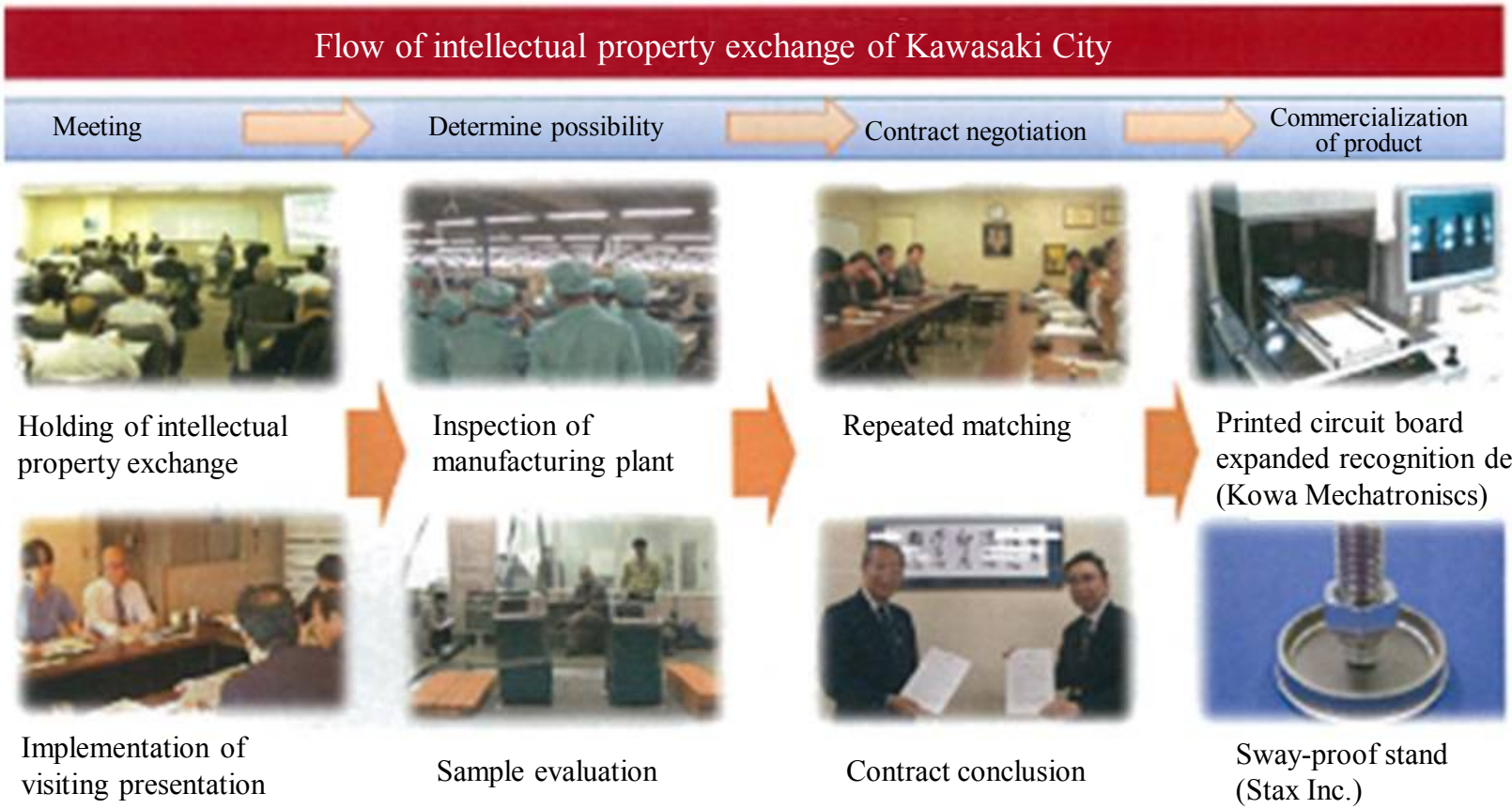
An example of commercialization of technology developed by Tokyo University was introduced by a TV program "Yume no Tobira." However the content of business firstly developed by TIT: room rental to venture companies and various activities are being developed. (Free seminars are held from time to time.)

• URL:http://www.smrj.go.jp/incubation/yvp/

4. M&A Capital Partners Co., Ltd. URL:http://www.ma-cp.com/

A company introduced to JMA. It mainly mediates a business between a company which "wants to sells technology to some SMEs due to absence of a successor though it has maintained its technology and market" and a company which "wants to buy such technology." The company began to work for the needs accompanied by declining birth rate and aging population.

The Content of Intellectual Property Exchange, Kawasaki City (5)



Results of past performances (as of 2007-Febraury 2012)

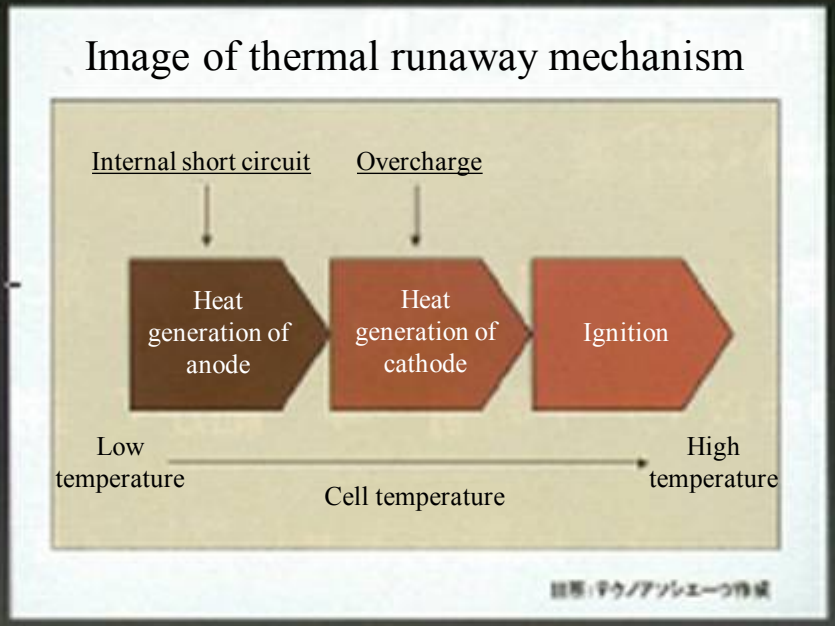
(1) Number of meetings: 21 times

(2) Companies providing intellectual property: 7 companies + 3 independent administrative corporations
(Fujitsu Limited, Toshiba Corporation, NEC Corporation, Hitachi, Ltd., Pioneer Corporation, Ajinomoto Co., Inc., Nissan Motor Co., Ltd.)
(Japan Aerospace Exploration Agency, Japan Agency for Marine-Earth Science and Technology and the National Institute of Advanced Industrial Science and Technology)

(3) Results: Patent Licensing Contract – Number of contracts 10 cases and joint research 1 case

CMIWS Co., Ltd.

Monitoring inner part of lithium cell can prevent thermal runaway?



Use of optical sensor advantage enables you to monitor inner part of cell (temperature, distortion).

Soundpower Corporation

音力発電

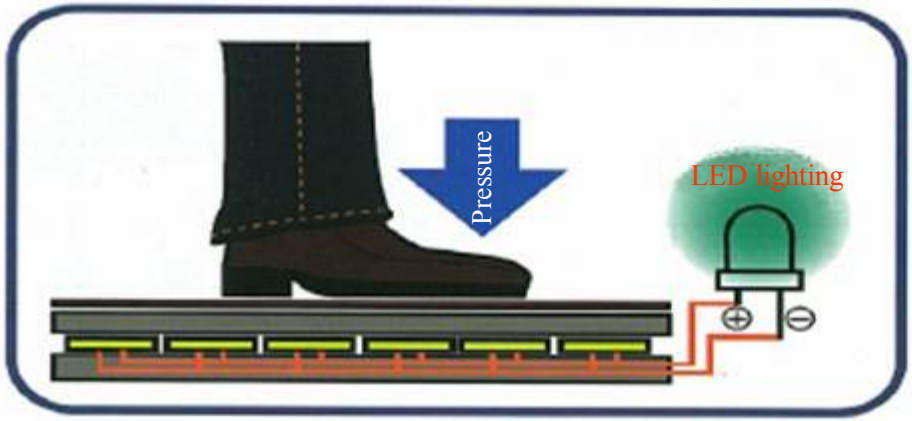
Introduction of generating unit (1)

What is “Generating Floor ®” about?

“Generating floor” is a floor-type generating unit which generates power by using vibration given by people and vehicles to floors during moving as energy sources.

Piezoelectric elements are spread all over the inside of the floor, which changes vibrating energy added to the floor to power. An advantage of using piezoelectric elements is to keep the sinking of the floor when stepped less than some millimeters, which does not disturb people very much.

One step on the generating floor enables 100-200 pieces of LED with high brightness to emit light. For example, if you put a generating floor on the passage with LED, it will be a blinking guide light according to the movement of people. In addition, it can send a wireless signal and so it can be applied to a digital signage and so on.



[Generating volume of generating floor on a rental basis]

- 0.1-0.3W (instant maximum value of about 1 m second)
- 2mW (per second)

*In case where a person with 60kg walks at the pace of 2 steps a second.

3

The Content of Intellectual Property Exchange, Kawasaki City (4)

Some of the initiatives by intellectual property meetings of Kawasaki City

- Recognition of small-and-medium size companies -

- **Many opinions are "to have their own products to get rid of the type of business of production based on order (subcontractor)."**
- **The companies feel attraction for technology with results at the stage of practical use instead of the latest and most advanced technology.**
- **Many companies have resistance to intellectual property meeting with big companies.**
- **The companies expect further support by administration in addition to provisions of the places.**

- Roles to be played by administration/coordinators -

- **Provisions of places for matching (holding exchange meetings and provision of information on seeds and needs)**
- **Adjustment of licensor and licensee (joint talk at the time of matching and creation of good atmosphere, interpretation of culture)**
- **Discussion and proposal of product commercialization and business idea (think and consider with small-and medium size companies)**
- **Advice on contract negotiation and procedures**
- **Support for product commercialization (finding of development partners, implementation of performance test, acquisition of development funds), etc.**

Content of Intellectual Property Exchange at Kawasaki City

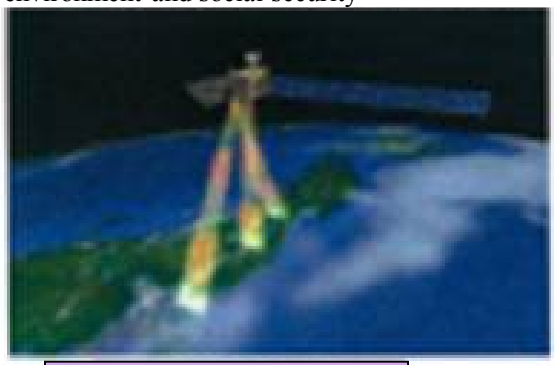
R&D projects of JAXA

Rocket transport system

Development of main rocket H-IIA and H-IIB

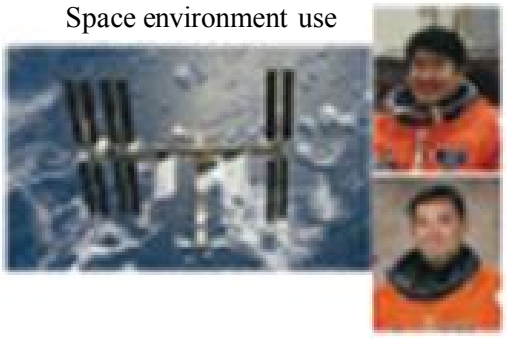
Artificial satellite/earth observation

Development and use of artificial satellite- contribution to global environment and social security



International space station/manned space activities

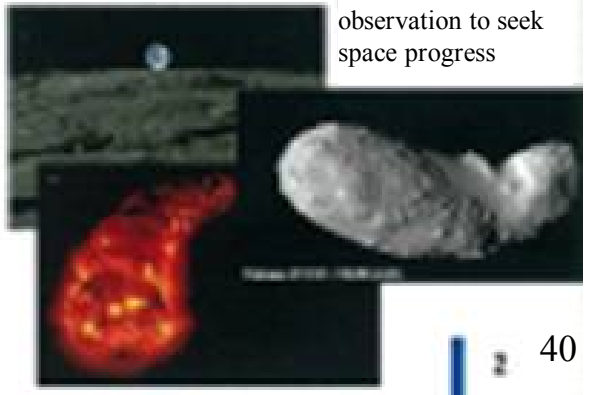
Space environment use



Basic research concerning space aviation

Research on space science

Solar system probe, astronomical observation to seek space progress



3. Excellent company cases and corporate improvement cases

Shichifuku Towel Co., Ltd. (Location is Imabari, Ehime Prefecture)

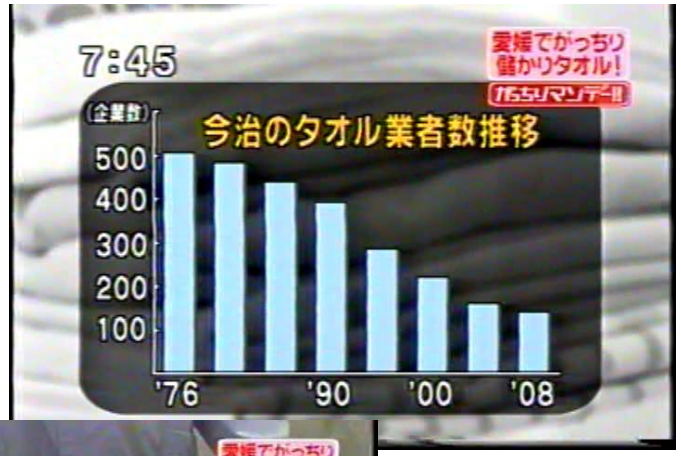
There were 500 towel makers in 1976 and there are only about 100 such companies in 2008, many of which are run in the red. Among them, this company has maintained extremely high profits!

(1) Quality strategy

1) Study high quality towel at the request of Tokyo Hands
2) Develop sales targeting hotels with water-absorbing quality
3) PR with good design was a break at the US trade fair and use of their towels at Hollywood has spread (free design)

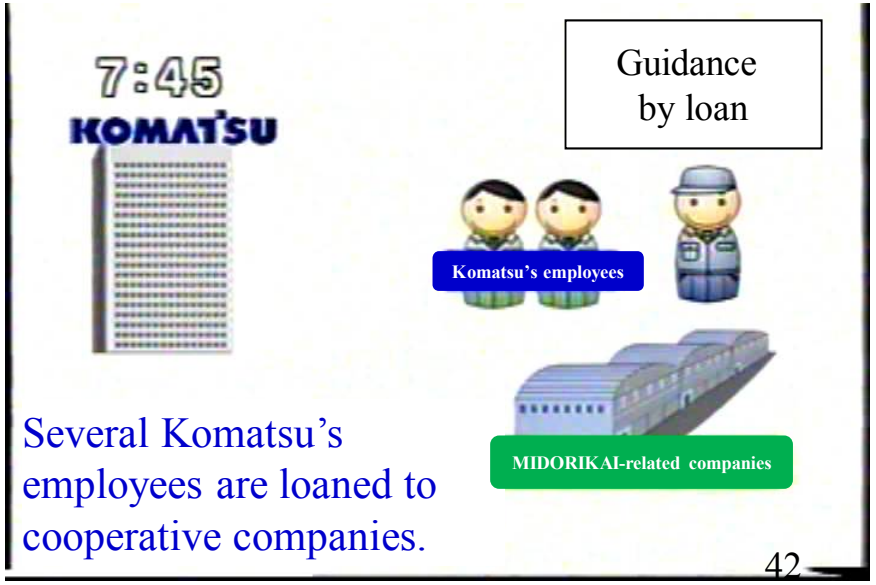
(2) Delivery strategy

1) Put company name and phone number on products
2) Construct direct sale system to retailers
3) Produce towels according to free design
   In particular, Hollywood stars advertise towels freely! Meet individual needs

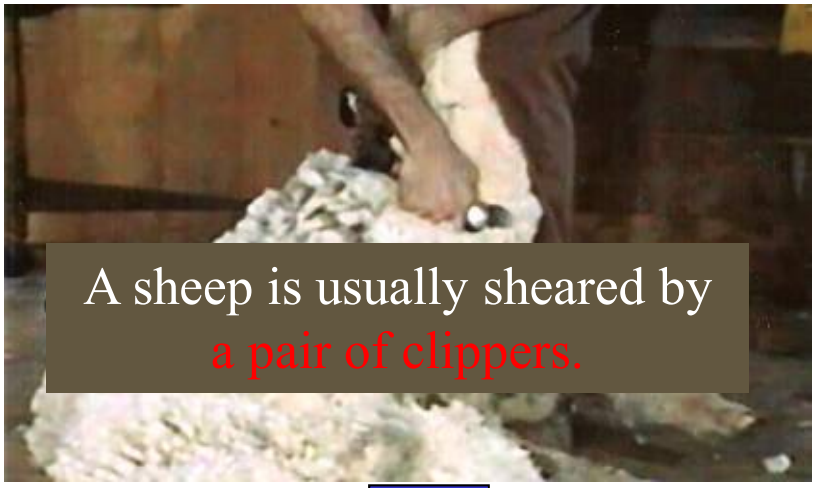


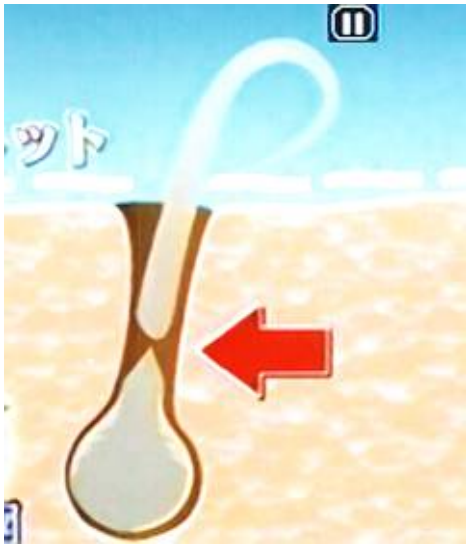
Group guidance seen at “MIDORIKAI” of Komatsu Ltd.

Video case introduction 2



Technological innovation to shear a sheep





Innovative technology by Higeta Shoyu

Develop technology by hints from anticancer agent

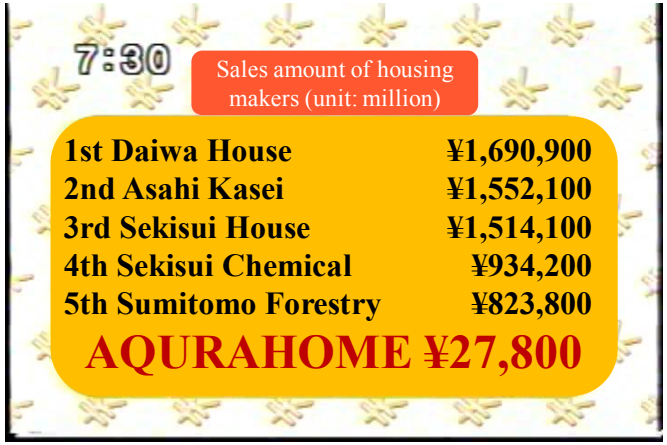
(1) Cover a sheep with net-like clothes
(2) Give an injection and take some time
(3) Take off wool from skin with net-like clothes

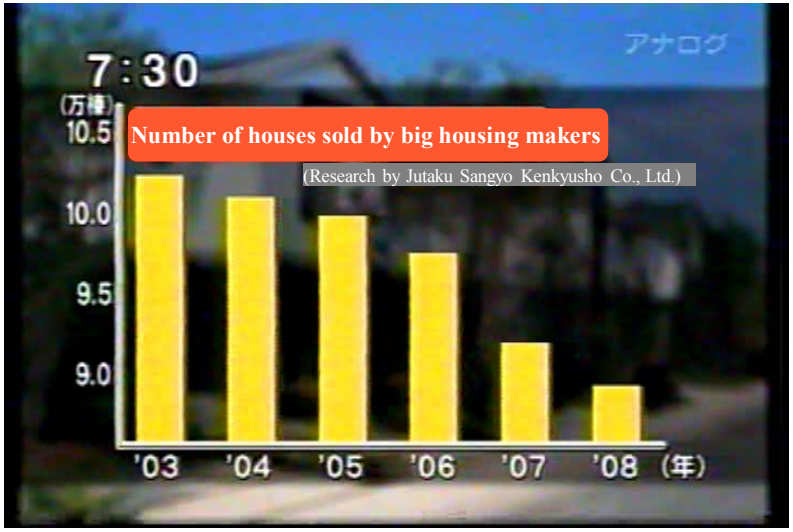
Measures needed high technology because a pair of clippers give a sheep not only damage but also stress.

Case introduction of Incth Co., Ltd.

2002 announcement 40 days → 10days, the following year: 3 days, 2007: 46 hours

AQURAHOME VE





AQURAHOME VE

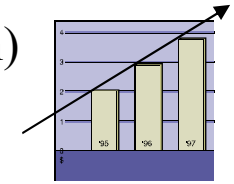
Viewpoints

1. Consider lowering cost by total cost of material + man-hour
2. President house is a test room
3. IT systemization of large know-how book

Teach VE know-how to others
-on sale

SCM: Sell/produce socks for direct sale to retailers

SCM of dan Company (present Tabio Corporation)



Plant/large volume/speculative production

Wholesale

Unsold goods

Shop sales

Out of stock

SCM

Supply Chain Management

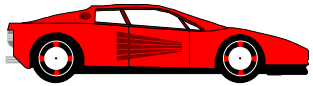
Meet market needs, best seller becomes a single item. Production for immediate delivery increases sales and makes financing smooth !

Shop sales

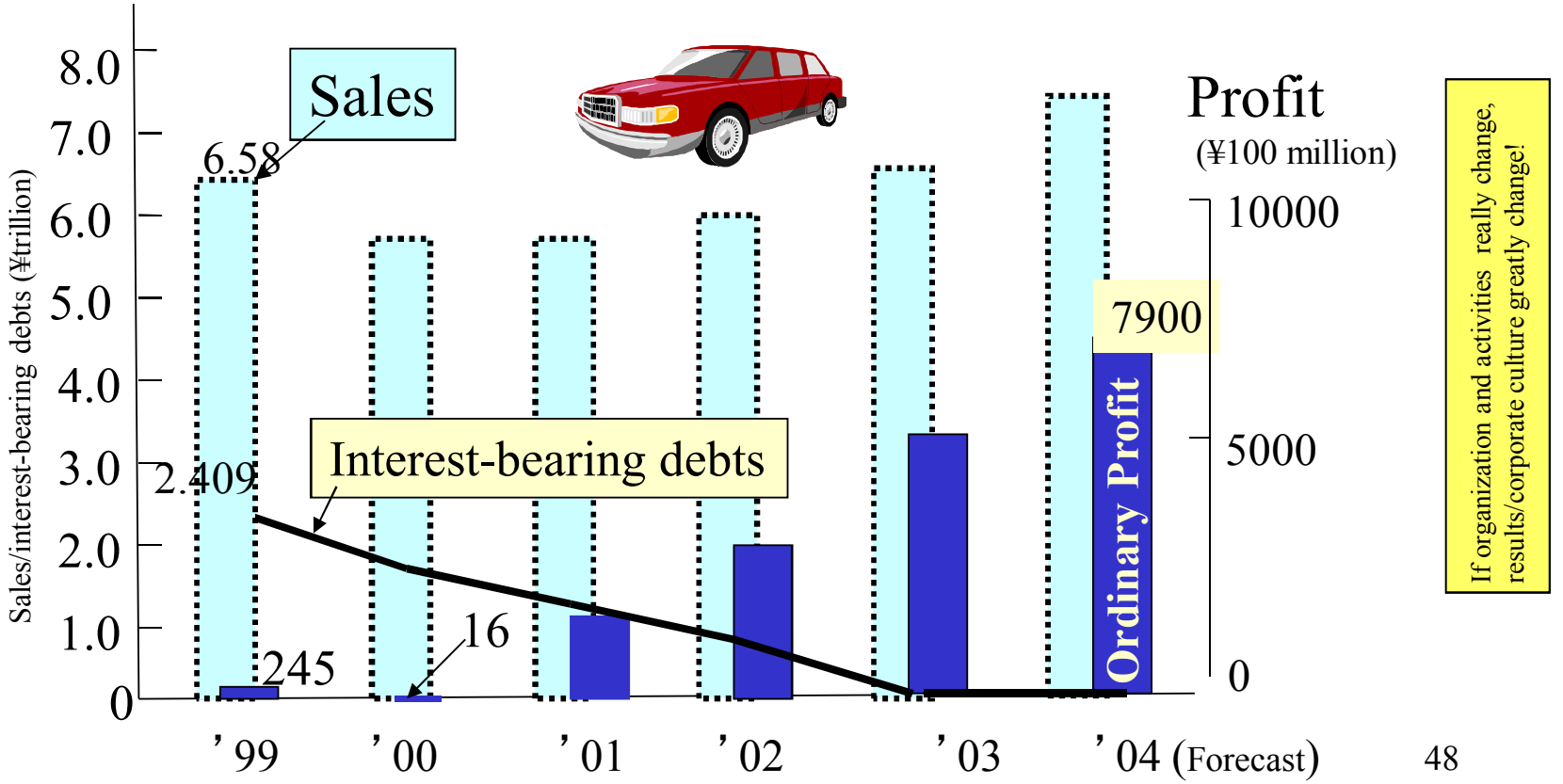
Points seen in the results of revival of Nissan Motor

CF; The activities of Nissan President Ghosn who implemented cross-function over the barrier of the organization and the points of the results

Points in moving into the black



1. Planned activities (revival plan)
2. Power of top management
3. **Activities beyond framework/organization**



4. Production technology MAP measures and TP development chart

Content of achieving quality objectives in ISO9000:2000

Actual step to achieve quality improvement objectives

Rule 2.3 Approach to quality management system

a) Determine needs and expectations of customers and other interested parties.
b) Establish quality objective policy and quality objectives.
c) Define process and responsibility required to achieve quality objectives.
d) Define and provide resources required to achieve quality objectives.
e) Apply indicators to judge effectiveness and efficiency in each process.
g) Determine means to prevent nonconformity and remove the cause of it.
h) Establish and apply process for continuous improvement of quality management system.

1. Set objectives

2. Develop objectives

3. Choose measures and allocate resources

4. Specific improvement activities

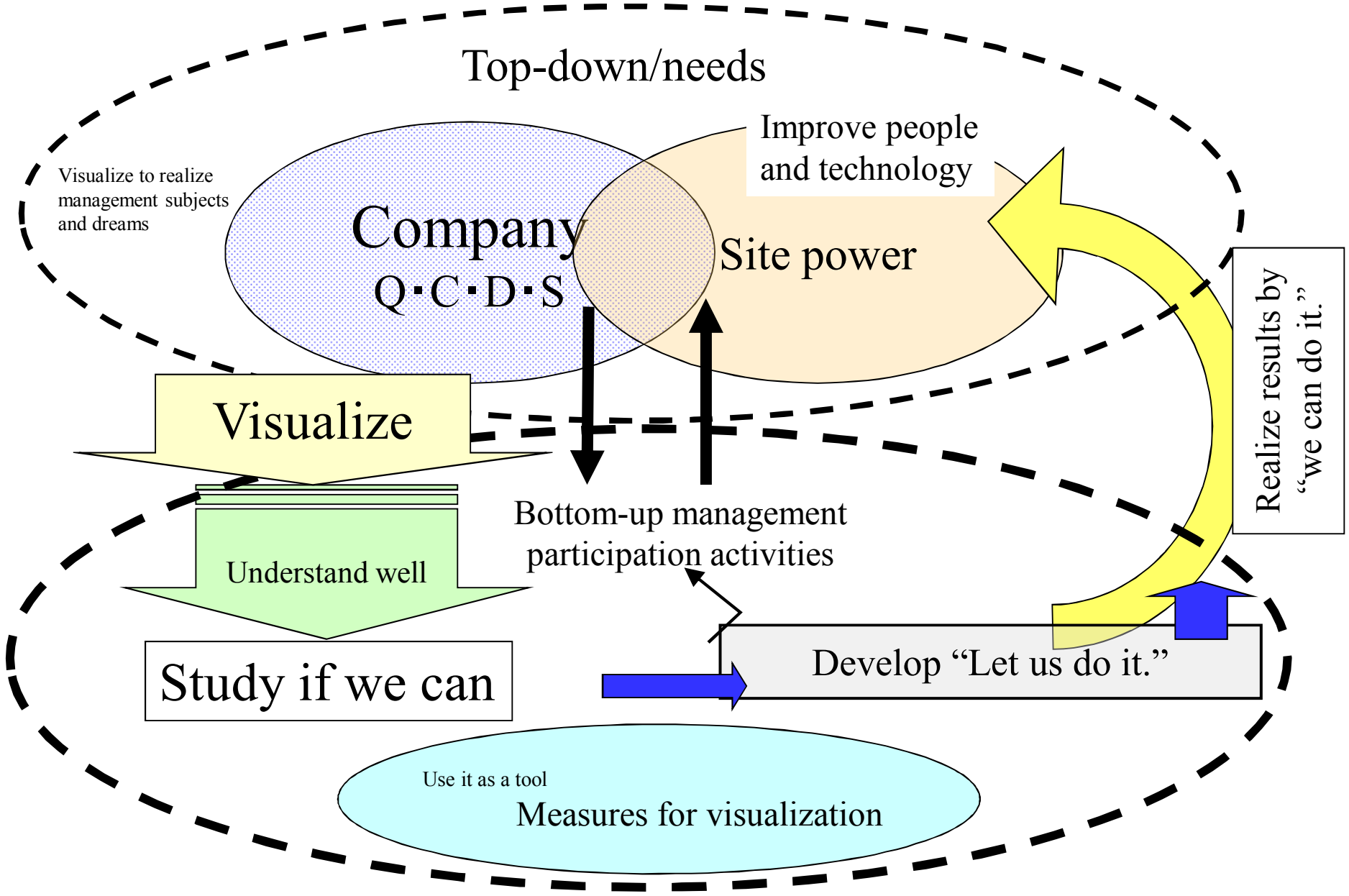
5. Create and verify results

We move to the theme on how to do activities to achieve quality improvement objectives for all to participate in. Effective use of resources (quality improvement activities for all to participate in) is one of the important themes in ISO9000s. To do this, we apply TP development chart which JMA has used. The procedures are the same as the content specified in ISO9000.

Link

Application

JMA・TP development chart



Necessity of "visualization" of management functions and measures

Use it for objective achievement activities for all to participate in TP development chart (basic)

(1) Set total objectives

P

(5) Create and achieve results

(2) Develop objectives

Guide for measures

(3) Guide for measures ↓ Choose measures

(4) Specific activities

D

C

M

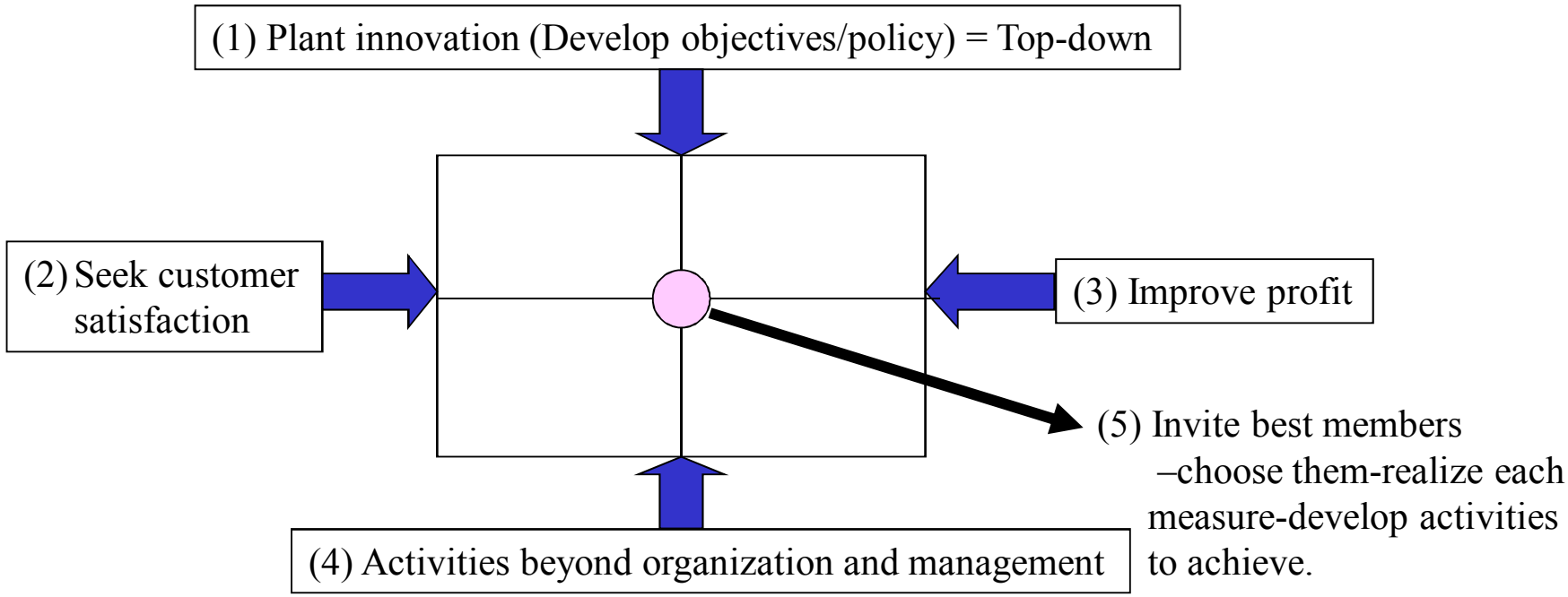
M=measures

Simulate objective achieving status

TP (total productivity) = $\dfrac{\text{Q: Quality} \nearrow \bullet \text{ P: Productivity} \nearrow \bullet \text{ S\&E: Eco/safety} \nearrow}{\text{C: Cost} \searrow \bullet \text{D\&T: Delivery/time} \searrow}$

TP= Total Productivity

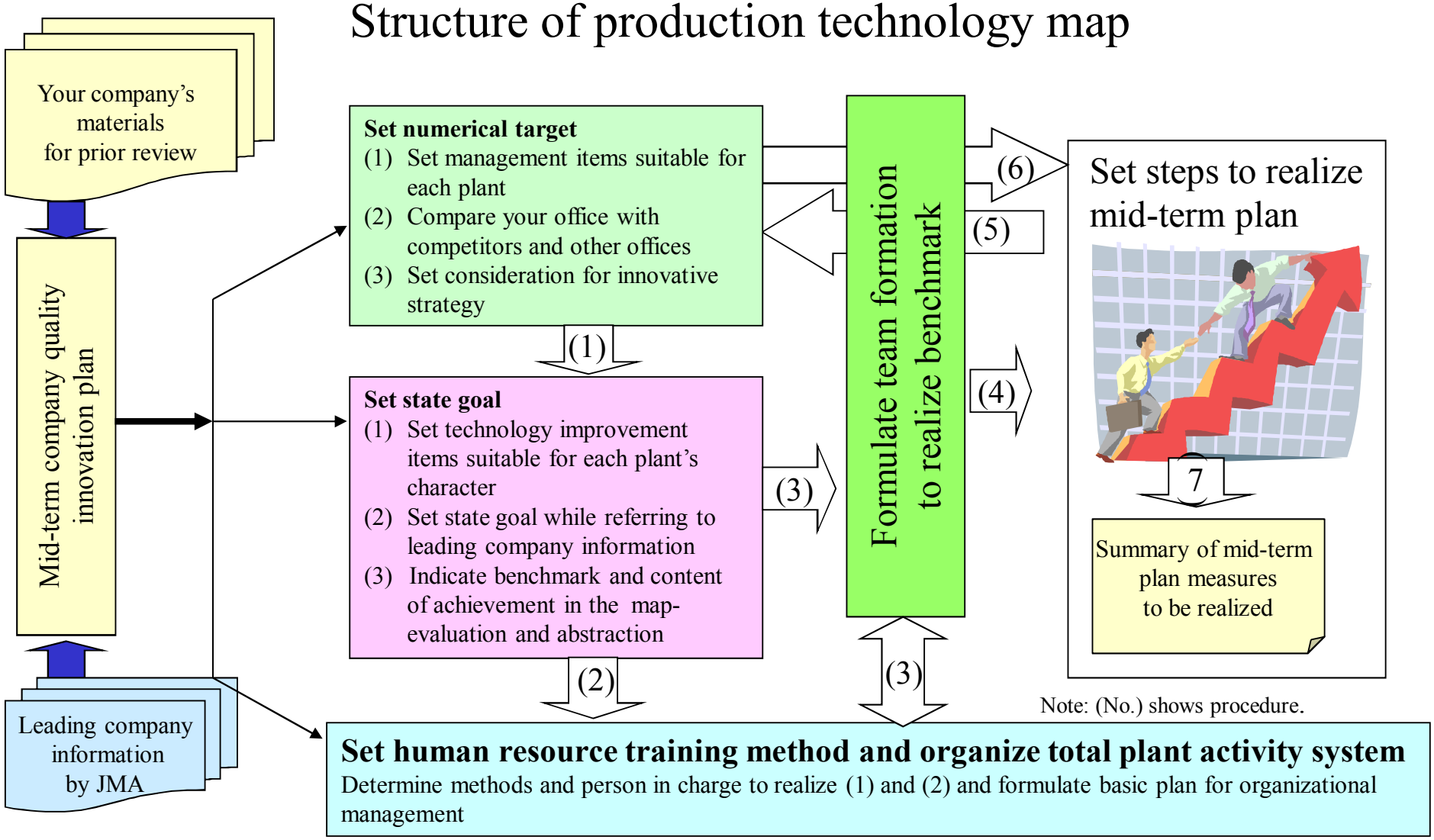
$$= \frac{\text{Q: Quality} \nearrow \bullet \text{P: Productivity} \nearrow \bullet \text{S: Safety} \nearrow \bullet \text{M: Morale}}{\text{C: Cost} \searrow \bullet \text{D: Delivery} \searrow \bullet \text{E: Eco influence} \searrow}$$



(1) Think what to do for what purpose, do activities by clearly grasping contribution and make efforts to realize measures as soon as possible.
(2) Each person and group conducts activities by understanding the relationship (between forest and trees-branches).
(3) While achieving objective and measures (each subject) of the company, each person tries to create an active workplace with activity awareness and contribution of each person and high motivation to work in order to solve individual issues.

Aim of TP Management and evaluation method

Structure of production technology map



Objectives: To realize mid-term plan, (1) Review and set numerical target suitable for each plant. To realize target, (2) Choose the content and best method required for improvement in manufacturing/production/control technology and set measures suitable for each plant and state goal for leading company while referring to information of leading/different companies.
After this measure, to realize (1) and (2), you will indicate goal achieving method for all to participate in.
For this purpose, (3) Choose human resource training method, systemize it and put all in the map.

Example of evaluation to improve level at production site

Points in benchmark setting and use of it

1. Choose highest level case and content which you can reach by element of plant control/improvement including different lines of business and make it be the highest among 5 levels.

2. Judging from the present situation, make the lowest level be at level 1 and indicate the content of each of five levels.

3. As shown in the right chart, make 5 level table and then evaluate the present level. Determine what to do for level improvement by item, show specific measures to implement/achieve together with human resource/technology training plan and carry them out!

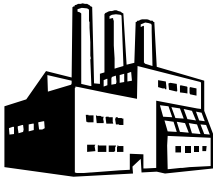
項目	(システムレベル) 低レベル管理、作業 → 無人化指向					無人化レベル
1 システムの体質(稼働の管理)	手作業による生産計画・指示フォロー	手作業の一部機械化	定常業務の自動化(オンライン化)	関連システムの自動化(オンライン化)	設備の自動化との連合(データーハイウエイ又はハイアラーキー)	受注～生産オンライン一貫システム(BCOM システムとドッキング)
2 生産形態	受注生産で問題点事後対策方式	流れのGT化 工程内問題発見→改善活動	計画的負荷平準化生産 シングル段取	小ロット化 タクト段取化	FMS 自動化生産	〃
3 設備自動化	1人1台持 個別工程管理方式	1人多台持 多工程持生産 異常監視付	1人多台持 品質管理実施 各設備M／C付	夜間無人運転(ポカヨケ付) 多工程M／C管理	CAD(製品設計)内容がCAM化される全ラインM/C管理	CAD/CAM/CAT
4 管理自動化	t数によるマクロ管理	個数ST管理による負荷管理	工程平準化計画のCPU自動作成	中央CPUと統合システム	〃	〃
5 人の仕事	人海戦術	問題発見型作業方式(小G活動)	現場ノウハウ探究作業方式による自動化追求	故障ゼロ対策へ向けての追求	完全生産へ向けての自動化追求	〃
6 工場体質改善運動	問題意識 参画意識運動(工場運動をやっている程度)	標準づくり P－D ↖S↙ システム化 運動充実	改善活動を重視した活動PM留学	改善班活動実施による小ムダ作業廃止	重点的生産技術開発プロジェクト活動 製造技術革新活動	新製品 新技術開発 スタッフ活動
7 設備管理	日報による稼働率集計 事後保全対処	稼働率計による稼働率管理 予防保全対策	全員参加によるPM改善対策	改良保全対策	作業員の高度技術習得による改良保全、設備改善	保全予防
8 品質管理	事後、不良発見による統計分析会議(死亡診断書スタイル)	ソフト(QC, ATS, …) QC, 小G活動による発生時問題追求対策	ハード 工程内検査による早期問題対策(ポカヨケ他)	手直撲滅追求による不良ゼロ対策	不良の出ない製造技術革新	不良ゼロ 故障ゼロ無人化生産
工場運動 9 現場	小G活動の推進	QC、PM サークル活動	IE、ポカヨケ 改善活動	多能化、多工程化 研究活動	マテハンロボット自家製作活動	〃
工場運動 10 事務所	手作業合理化 書類半減運動(OA化、パソコン化)	製造ノウハウ基準化・標準化	CPUによるP-S-0 システムのオンライン化	先手管理	戦略的生産管理	ノーペーパー 極少人員管理
11 生産管理方式	マクロ的生産指示による生産指示とグラフによるフォロー	日々管理による設備毎負荷管理	時間別、設備毎生産指示、フォローシステム化	自動生産指示フォローシステム化	オンライン生産指示フォロー体制	〃
12 異常(問題点)発見システム	手作業による資料集計→検討会方式	QC手法による問題点表示方式	エレクトロニクス応用による汎用表示	自動異常前発見を即改善に活かすシステム化	異常未然防止型システム	故障、不良ゼロ 無人化対応
13 生産の対応	事後処理型問題発掘追求方式	事実重視による即、現場にて問題対策方式	計画(目標)管理による問題対策方式	チョコ停他、小サイクルタイム混乱要因の対策方式	革新的生産技術追求システム対応	
14 マテハン技術	パレットによる搬送 人手によるワーク移載	ロボット、補助具利用による移載 マテハンの改善	無人搬送システムによる物流制御	つなぎ改善による極少マテハン追求	つなぎ、マテハン設備を用いた、生産管理、異常監視システム追求	
15 レイアウト	工場毎に独立した集中方式	2～3の工程をつないだマテハン合理化ライン	全ラインを一貫したマテハン合理化ライン	仕掛極少とした平準化ライン	最高スピード物流を追求したライン(1個流し生産)	

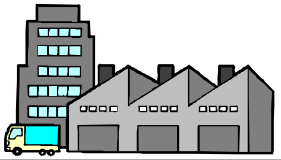
What the productivity indicators should be: macro → micro

Indicators for the enterprise (whole company, whole factory): Aim to make the return on asset, the profit per capita and the total asset turnover world-class!

Indicators for semi-macro activities:
Yield ratio / percent defective, product-sales lead time, productivity per capita, marginal profit per product, etc.

Contribution





Comparison between factories and with other companies

Activity indicators (concrete activity indicators: micro indicators in comparison to macro ones): Capacity utilization, production achievement (target, result/difference), standard time recovery rate, number of defective and repairing articles, multifunction rate, line balance, number of goods in process, appropriate inventory difference, etc.

Evaluation of the appropriateness of production activities and the achievement of objectives

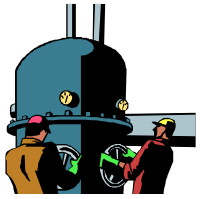
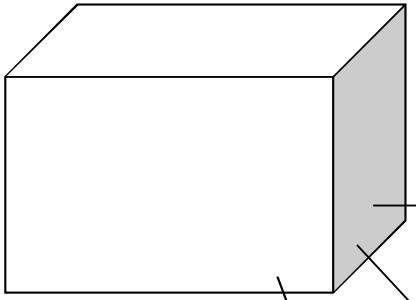


Figure 3-7: Relation between top-down indicators and micro (concrete) activities indicators at manufacturing site

5. Lessons and measures gained through guidance to PCS university students in the US

Hakomono education, which has become a problem in Japan

What is *hakomono* education?



Examples:

(1) "Top-level management lectures" that are held regularly on newsy themes, inviting famous companies and persons

(2) Unnecessary lectures on contents that can be understood only by reading books, such as the Drugger theory and MBA, for the purpose of cultivation and basic training

(3) Stereotyped "manager training" that is given to managers without any output demand and ends in an educational program

(1) Routine training by routine menu

(2) Leaving all decision-making to famous teachers under the name of OJT

Hold a drinking session on the theme of heart-to-heart communication

(3) Educational form where a period and a menu are determined and obeyed dispassionately

Explanation

Situation of training and work at the Television Sound Unit of the Service Division of Company M

Chief A (32 years old) of the Household Television Unit of the Service Division of Company M has six service men. They are in charge of the services of household circuit components for televisions, tape recorders, stereo sets and others in the prefectural capital with a population of 300,000 and its surroundings.

Among its services, services to troubles and complaints directly from customers are provided by its front-line sole agents and chain stalls. In reality, however, there are some troubles that the sole agents and chain stalls cannot repair. The Unit is in charge of repair work entrusted by the sole agents and general customers and has an important mission of giving technical guidance to the sole agents.

All the six service men are in their 20s or younger. Service Man B (25 years old) is in charge of the eastern district, C (24 years old) the western district, D (26 years old) the southern district, and E (22 years old) the northern district, where the number of customers is relatively small. Many of them are lone wolves who have confidence in their skill. On the other hand, F (20 years old) and G (19 years old), both of whom has just graduated from the electronic science course of an industrial high school, were in charge of repair of products brought into the Service Center or products carried back. These two employees were guided by one of the four field service men who was comparatively not busy or the person in charge who carried back the product. With regard to how to proceed with the work, arrangements were made in the morning of every Monday and, whenever a problem occurred, instructions were given to the persons in charge.

In this local city, Company T had the largest share in the sales of televisions, advertising its great skills and reliable services. However, Company X, which is good at advertising and guidance to its sole agents, has recently selected the local city to expand its sales, built a small factory for manufacturing parts and carried out strong marketing efforts. As a result, the difference in share between both has greatly reduced, and Company M was strongly requested to improve both the quality and quantity of the services as a strategy against Company X. In an informal meeting of the presidents of the chain stalls also, because many demanded technical training seminars for salespersons to improve after-the-sale service skill, a workshop on skill in repair of new color televisions was held on Thursday two weeks ago in haste at the discretion of Department Chief H and Division Chief I (35 years old). Although Division Chief I has rich experience in washing machines and refrigerators, he is unfamiliar with electronics. Because Chief A has always heard complaints to the effect that “chain stalls bring in too many products that need basic repair,” he made a plan with enthusiasm, taking an advantage of a great opportunity, and took the lead in proceeding with the workshop that day.

Situation of training and work at the Television Sound Unit of the Service Division of Company M (continued)

B, D and E were ordered to cancel a day trip service and give practical guidance.

In the workshop, guidance on repair and adjustment procedures was given in good order, and the participants made detailed questions with enthusiasm, with the result that the workshop ended one hour after the scheduled closing time. When an informal meeting was held at the end of the workshop, participants stated favorable opinions: “I can provide services with confidence” and “we can reduce the number of products brought in.” However, some participants stated that “So far, persons in charge have not given such guidance. In the future, we would like persons in charge to give technical guidance in addition to repair, answering our questions.” Chief A answered that “Because even basic repair was so far brought into our office, we have no time to give full guidance. In the future, because you have improved your skill in today’s workshop, we will have a little time to spare.” Moreover, Department Chief H also concluded that “Let’s take an advantage of this opportunity to improve the after-sales service and repulse the pursuit of Company X.”

Because, at the end of last week, sole agents gave orders to procure service parts of televisions one after another, the number of orders became more than three times as large as normal. On Monday this week, Chief J of the Parts Unit consulted with Division Chief I and notified that parts would be distributed mainly to the sole agents for the time being. On that occasion, Chief J talked to Chief A with smile that “Because you encouraged the participants in the workshop two weeks ago, each chain stall was full of spirit and, after all, cut our own throats. If you had made previous announcement, we could have taken some measures.”

When C was going out for repair in the morning on Tuesday, C came to Chief A and complained as follows: “because some of the parts of the Y-3 crystal resonator brought in last week did not arrive, I will be late in repair. Since the local commercial high school Y plays a baseball game at Koshien, I will have to bring it there without fail. Chief J said “I cannot give you what I do not have.” Because I directly connect with the client, I cannot say that I cannot repair it.” Chief A consulted with Division Chief I, who borrowed a resonator used for display at the advertising showroom and gave it to C to smooth out.

Explanation

Situation of training and work at the Television Sound Unit of the Service Division of Company M (continued)

Because the commercial high school Y advanced to the quarterfinals was scheduled to play a game from 3 p.m. today, Company T's employees who graduated from the school could not concentrate on their work from the morning.

In this situation, Mr. Q, a client in the southern suburban part, called the Company M and said that "How about the repair I requested some days ago? Because the high school Y's game began from 3:00 p.m. and Pitcher Ota is from our town, please bring it to me by the beginning of the game." When Chief A immediately called E for confirmation, E said that because the Y-3 special part would not come until 11:00, he was requested by D to repair another tape recorder. Chief A ordered E to complete the repair as soon as the arrival of the part and deliver it to the client. After that, Chief A went to Chief J for confirmation.

Chief J turned the tables on, saying as follows: "You are joking! Last week we sold two articles to sole agents, and yesterday we received two articles from the south branch. We gave one of them to you and gave the other to Kimura Chain Stall this morning, making a humble apology. In spite of this, F said that there was a shortage, and we earnestly requested the north branch to bring it by 11:00 a.m. Because, as a result of the settlement in March, there was the problem that there were too many parts on hand, the Department Chief ordered 20% reduction from May, as you know. Be that as it may, you have many parts, the price of Y-3 special part is high, and there has so far hardly been ordered. If the part is so defective, we'd better consider make a complaint to the factory. Investigate the actual situation."

Sometime after 2:00 p.m., E came and said that "although it took me a lot of time, I managed to repair it. I'm going to delivery it." Then, E went out vigorously. Around 4:00 p.m., Mr. Q again called: "What is up with you. Your employee brought it now. Good parts of the game have already passed and our team is losing. First of all, what is the name of the employee who brought it? He even did not say sorry and said that I have to pay business trip expenses. No kidding! If you do such a thing, I will not buy your products. Since a short while ago, Company X has come to us about once a month to hear the condition." After that, he banged the phone down.

Shape of On-the-job-training to be considered preliminary at all position levels

1. Importance of setting objectives of on-the-job-training

In the above mentioned example, the company conducted a training while facing fierce competition with Company X. Its problem was the emotional atmosphere and self-satisfaction (inner-directed). The following measures should be taken:

Example of setting objectives:

Realization of far superior service compared to company X

Doubling sales/profit, doubling service capability

2. Clarification of achievement

If similar problems occurred repeatedly, the company would deplete customer confidence. One claim would lead to 30 customers' loss, and if rumors spread, 1,000 customers' loss per month.

Example of setting objectives:

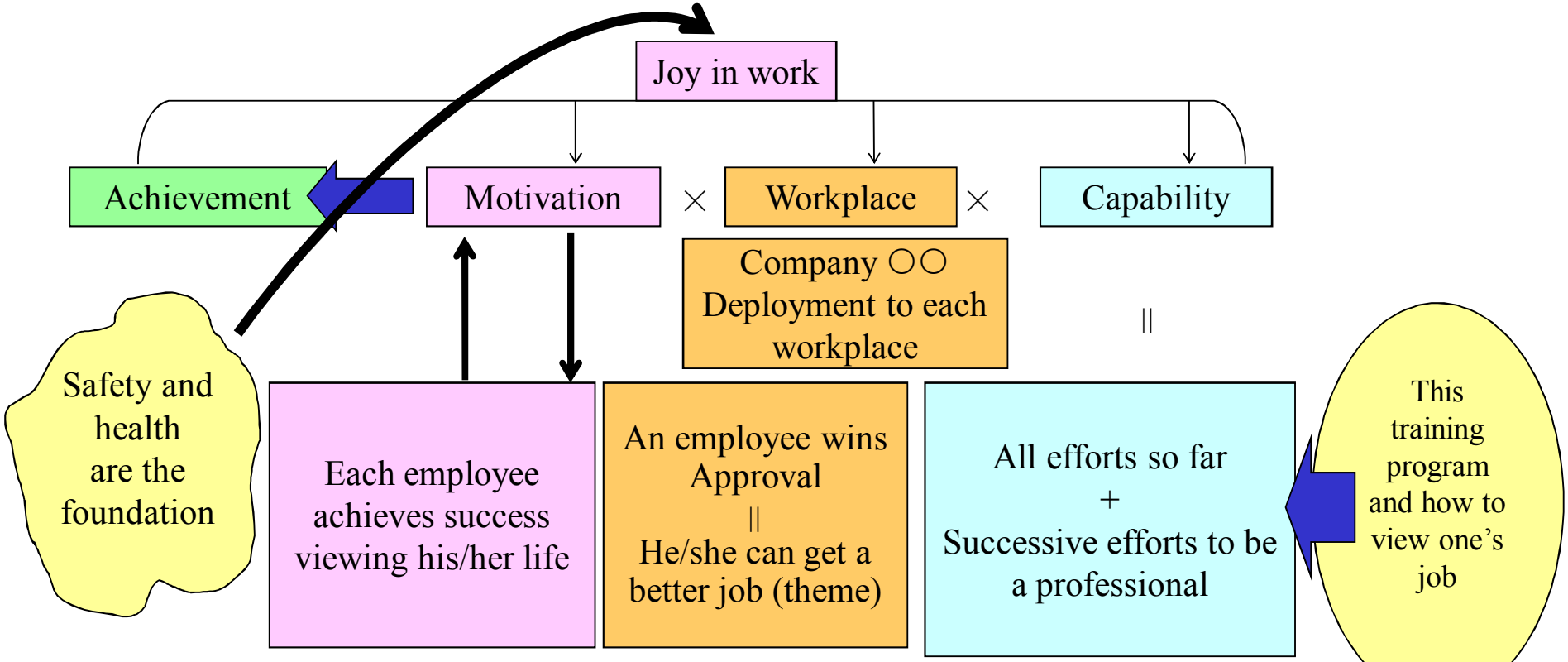
No trouble in the past (including decrease in expected troubles) + addition of concrete service items (including measures for risk in emergency)

3. Whose skills are built up to what extent? (Development of a map)

Like soccer and baseball, organized activities are associated with positions, players, evaluation of skills and measures for level-up

Example of setting objectives: Employees and contents of education:

Development of education based on matrixed evaluation standard



Example of training for new employees with manufacturing job conducted by JMA

First Day: To get used to the workplace (Exercise style)	Second Day: How to settle into a new job quickly and on improved ability
1. Structure and Roles of a company 2. Business manner (greeting, honorific expression, etc.) 3. Communication skills through exercises 4. Exercise to prevent mistakes after joining a company 5. Prior review and preparation of work	1. Importance of profitability and instructions employed by the company 2. How to acquire skills for one's job: analysis of the procedure and how to make notes 3. How to pursue improvement using simulant materials of practical operation Under the title of "My challenge", employees write up how to make use of what they learn in practice operations and dreams for work.

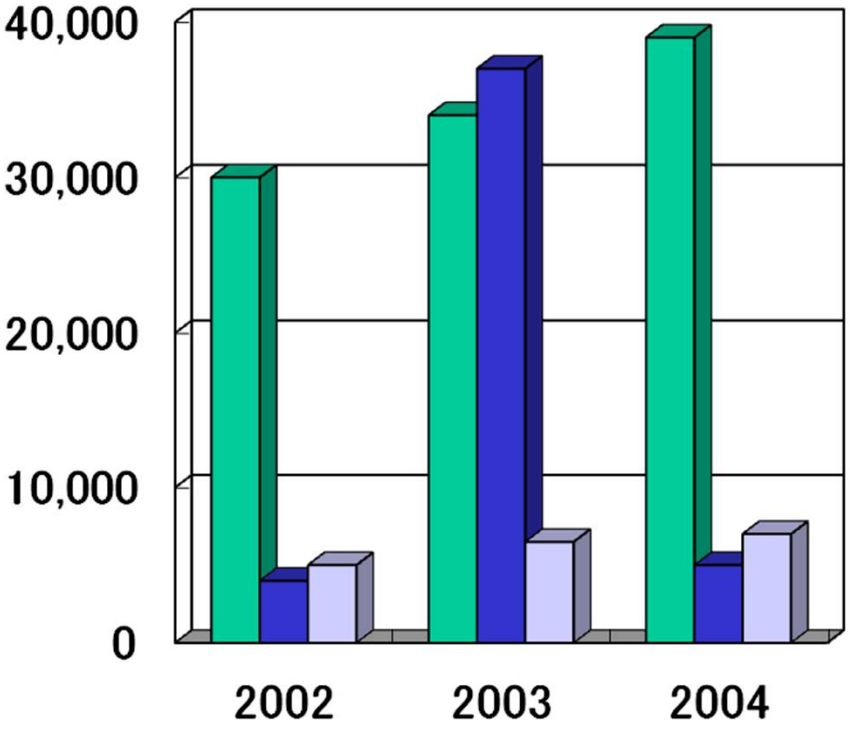
Outline of a "training for new employees with manufacturing job" conducted by the present writer in JMA

Use of Internship

Another sheet for young employees

Internship Program: A program aiming to get students interested in and to obtain manufacturing jobs through working experience during their school days. The program has been organized by Ministry of Health, Labor and Welfare. From April to September in 2005, 2,800 students out of 8,400 applicants were accepted in various companies. According to Tokyo Employers Association, one of the problems is there are limited companies accepting this program.

(Number of students)



Possible to be an eye-catching policy!

Problems in 2005

1. Small-and-middle-sized enterprises have limited interested in internship
2. In 1997, the former Ministry of Education, Ministry of International Trade and Industry and Ministry of Health, Labor and Welfare put together the basic concept, but have failed to reach an unified policy.
3. As a result, projects sponsored by the government have not fully operated.

[Example of Application and Result]

Press die manufacturer
Nagara, Co, Ltd. (Nagoya)
TEL: 052-362-6066
According to Company President Hayase, the company has accepted about 15 to 20 students every year. They experience manufacturing works about for 2 weeks in summer vacation. Among them, 4 or 5 students join the company and are ready to become die builders in a short term.

1. Framework: Practical training + Study group activities

1. Example: In training targeting at "Development of Producing Technology Department Manager", participants learn and improve necessary management skills.
2. Implementation of practical training about for 12 days in a year in defined circumstances, such as 1 million yen for a person/ achievement and more than 3 million yen for a person.

Framework for the activity is defined as development directly linked to the budget. The host provides place and materials, and if necessary, a company observation tour and a lecture by a specialist.

3. Limited lecturers should lead the activity. (Insufficient contents should be complemented by visiting lecturers)
4. Training contents will be decided after carrying out and analyzing a questionnaire survey to each company, and priority and common issues are decided.
5. After setting main themes, training promoting organizations send textbooks and ask each company to consider them preliminary.
   (1) Explanation of main points and Q&A (half a day), (2) Prior distribution of problems and agendas→opinion exchange, (3) Decide homework and consider how to employ what the participants have learned (practice), (4) Arrangement of influenced contents in each company→designing, and (5) Activity report and planning of future development (including estimate of effect)
6. Contents regarding priority and issues and eligible for disclosure are disclosed in the industry, which will be compiled as collection of initiatives and case examples by lecturers

2. Process to invite companies to participate

More than 6 companies, 3 participants per company
Preliminary meeting is held 3 month s after the training decision

Visit companies and promote the training program to each company Before the budget decision for the next fiscal year is made.
1. Explanation of intent and purpose
2. Example: Investigation of each company's needs based on problems concerning producing technology as a key point
3. Ask a budget for human resource cultivation

Ask participant companies possible themes and needs by the end of XX (month) next year

1. Provisional setting of themes and achievement→Feedback
2. Concrete schedule
3. Decision of lecturers

After deciding to conduct training, a training organizing body signs up to pay a fixed trainer's fee

XX (month) - start of activities

1. General training and mutual discussion: Setting of themes by each company (mediation of a producing technology map)
2. Training of significant themes Individual supports by JMA trainers (Visiting and Online support)
3. Top-level executives can attend training for significant themes to observe

* Next top-level executives are subject to cross-industrial exchange

Achievement of activities (Activities in about one year)
1. Progress report Introduction to industry
2. Summarizing the result by each participant: Planning of human resource development (It is not disclosed because it includes confidential in-house information.)
3. Information which can be disclosed is summarized and utilized to promote by the person in charge.

Example of training to develop top and key persons in a manufacturing section in a form of cross-industrial exchanges

1. Differences from other similar efforts (difference between general training and this research group)

Target

	Item	Certification acquisition seminar	New Project	Activities of J research group
1	Restriction for Achievement	No restriction for basic and applied education by trainers and achievement.	Each company sets restriction and supports achievement→ Realize it together with cross-industrial exchange.	Restriction if applicable: Exchange of information in each company. Results are at the same level as a written report.
2	Activity form	Practical exercise in each or model company in order to check what is acquired in training.	JMA lecturers support each company individually until it achieves its goal.	Each company decides its theme and implement measures, and participants exchange information each other aiming at intercommunication.
3	Budgetary treatment	The budget for a year is fixed, but depends on the number of participants.	Payment to participating companies and lecturers are fixed. The number of participants are limited to three.	Appropriate fee setting (generally, JMA provides charge-free service)

2. Candidate theme

In case of cross-industrial exchange, it is determined after adjustment between gathered companies

1. Development of the next factory manager: Measures to arrange management and strengthen execution ability
2. Development of the next producing technology manager: Observation of other leading companies aiming at strengthening producing and manufacturing technology and promotion of planning and practice.
3. Development of top-quality realization instructor: Influence on management, aiming at improvement of quality→outline of cutting-edge technology → implementation
4. Development of a key person with improvement capability in charge of management of manufacturing site: Integration of IE+QC＋VE＋JIT, taking measures to obtain results quickly
5. Development of global business leaders: Investigation and arrangement of requirements for human resources to give a global response and successful case examples of enhancement of technology → organizing know-how
   [Example in the following page: Designed in supporting an international bearing manufacturer]
6. Others, measures for design-in, manufacturing directly linked to VOC, measures for target cost, etc.

3. Task of trainers

1. After deciding supporting and training costs with a trainer, the trainer (1) provides materials, (2) is in charge of seminars, (3) offers consultation on progress of each company, (4) prepares activity reports, and (5) leads promotion at production innovation meetings, etc., except for special lectures and training to promote the program after the completion of the training.
2. Support for concrete achievement: Appropriate contact to participant companies during activities→Active support to increase success rate free of charge (mainly online contact, but claim of actual expenses in case of a business trip)
3. Publication of monthly activity reports during activities to participant business leaders, arranging with JMA head office

Figure 1-4 Emphasis on achievement and shape of practical training

Are they the bad influence of Japanese-style education?

1. Conducting training in quantity means head office has done work.
[Bad case: Furnishing head office with an alibi]

2. Example typified by TQC training:**[Bad case→similar training in quantity]**
   - Training of conceptualism changes in consciousness and integrate direction.
   - Satisfied with establishing a framework of "training", face-to-face training is also available.
   - High achievers are praised and followed by other participants.

3. Systemization of step-by step training and determining contents of the training after deciding the period
[Bad case: Rip-off by training providers (wasteful spending of budget)]

OJT trainings operated repeatedly?
[Neglect of clarification of achievement and individualization]

Inflow to OJT education
[Training style leaving all to trainers]

Example of analysis

QC Procedure

- Problem finding
- Fact analysis
- Invention/Test
- Standardization/Restriction

What is a training for?

1. Problem: the repair of a TV set which was supposed to finish by 3 o'clock was delayed and the customer made a complaint about it (Write the result with 5Ws and 1H)

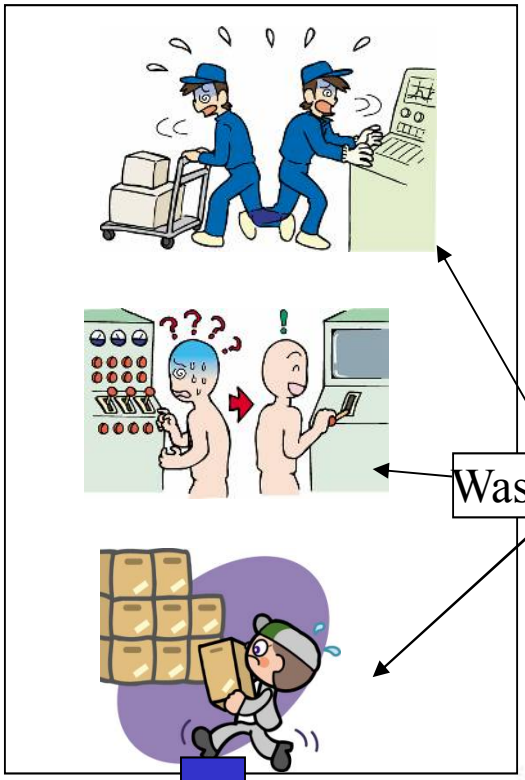
2. Analysis of the fact: some examples

	Prior consideration	At the time of a problem occurrence	Subsequent handling
Analysis of the situation Participating training and taking measures	2. Improvement of A/S is necessary	1. Quick response is necessary to deal with Company X's market entry.	4. The lecture has a high rating, but just a time reduction?
Implementation	3. 3 employees attended the meeting owing to lack of electronic knowledge 6. How about preventive measures to a customer who needs a TV set at 3 o'clock?	4. Orders have more than tripled. Is it necessary to reexamine the production plan? 5. Lack of crystal oscillators	7. Mr. Hatakeyama in a southern area of the city gave a warning.
Prediction and confirmation of the result	Insufficient	8. Senior staff member, Makino is busy in responding to complaints by customers	9. The customer made a complaint that he/she did not receive a TV set by 4 o'clock.

3. Invention/Test → Standardization/Restriction

Learning → Using → Prior consideration and taking proactive measures are the key.

Looking Points to KAIZEN



Wastes

Videoing

Wastes in transportation, management, defect and rework, equipment failure, set-up, check-up, idling, report checking, operation time, unnecessary checks etc. etc.

What is waste？

First-class work（Ideal）

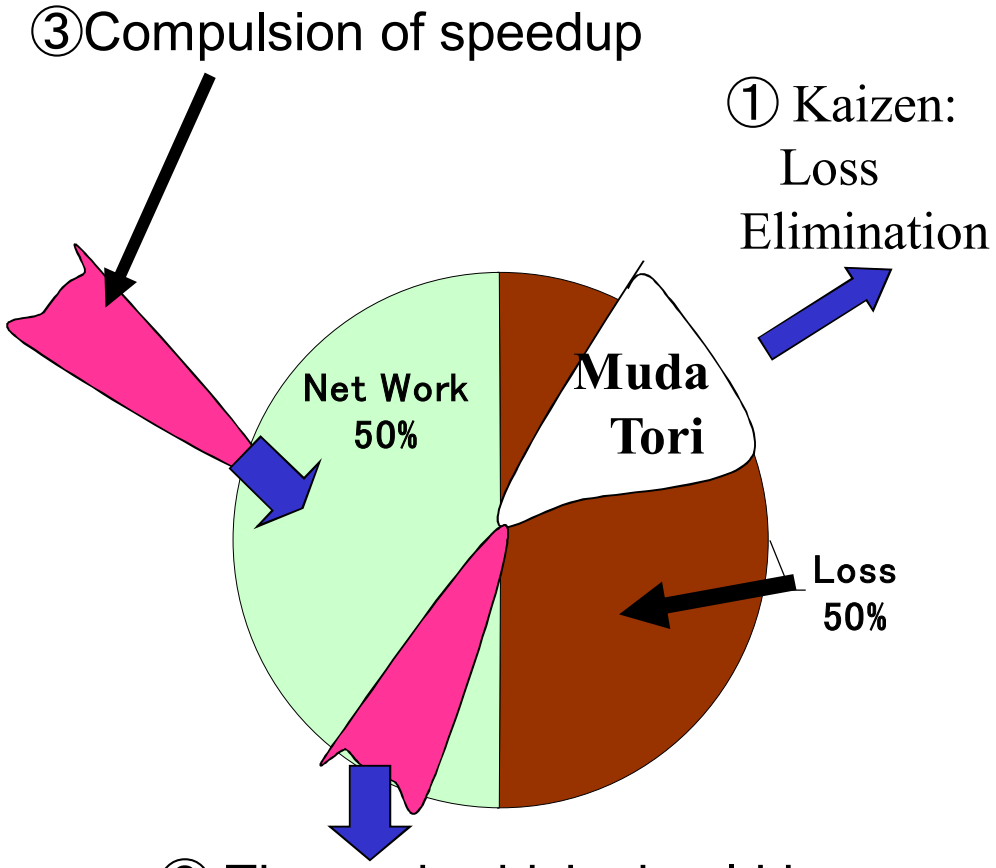
－ Reality

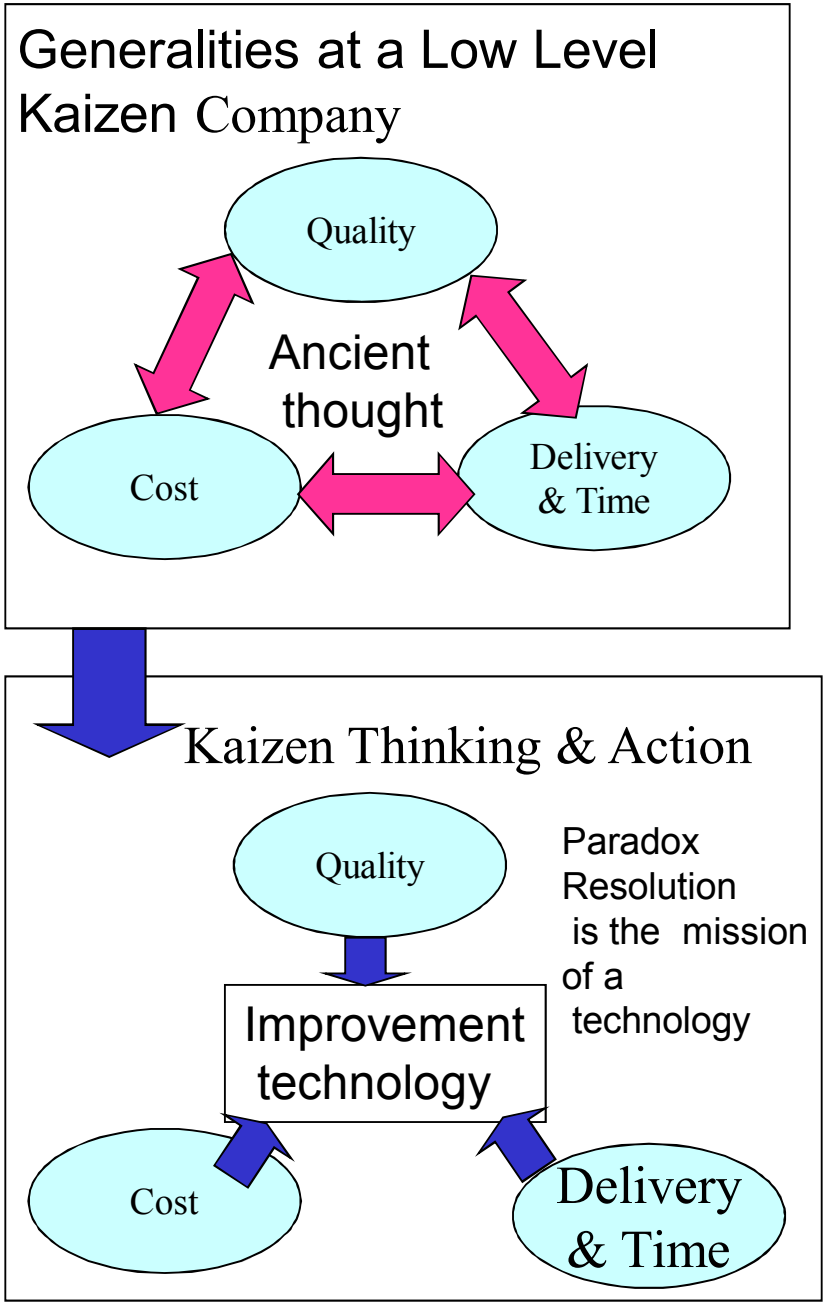
Kaizen Gap

Themes for waste elimination kaizen

Concept of Kaizen

Three sorts to Time reduction





Usage of Process Analysis

Foreclosed of work, the thing, and information to the grip improvement excavation in four aspects

○（マル）: Work to give birth to net and additional value, If it is lathe work, the content that grinds the material at the best in the world and the highest speed is shown.
□（シカク）: If the quality item is made in the inspection and the process, it judges it of inspect unnecessary. The inspection aims at the inspection guarantee (self-conclusion type) in the process as much as possible.
▽（サンカク）: As for the hand waiting and the material,WIP and information file, etc.
→（ヤジルシ）: Movement, transportation, transportation, and transmission of information Need to elimination or Shorter transport distance

Methods for Kaizen

Ideal
－Real
Improvements Gap
⇧

Question for Improvements

E（Eliminate）省略？

C（Combine）結合？

R（Rearrange）置き換え？

S（Simplify）単純化→自動化？

This gap is Loss
to have to be improved
soon or near future !

Need
Clean up
Losses

Image of Each Job element

Consideration of process study and uselessness

Questions for Improvements

E（Eliminate）

C（Combine）　R（Re - Arrange）

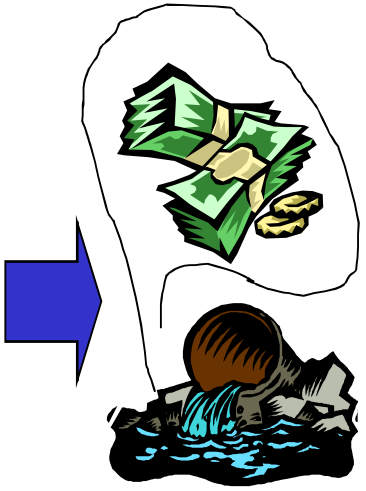
S（Simplify）

○：Net Job＝Does it have the value that the customer buys?

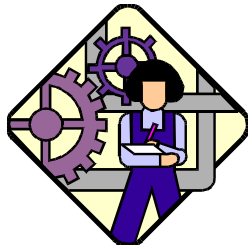
→：Transportation: Smaller the better, Elimination is Best

□：Inspection (If the quality is surely warrantable in the process, it is unnecessary.

▽：It is necessary to lose a useless hand waiting.



Loss is just Loss money



Process Analysis Chart

No.	Work Process	Dist. m	Op. ○	Tr. →	Delay ▽	Ins. □	Kazen Memo
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
Total:800PCS/Day,Defect10%							

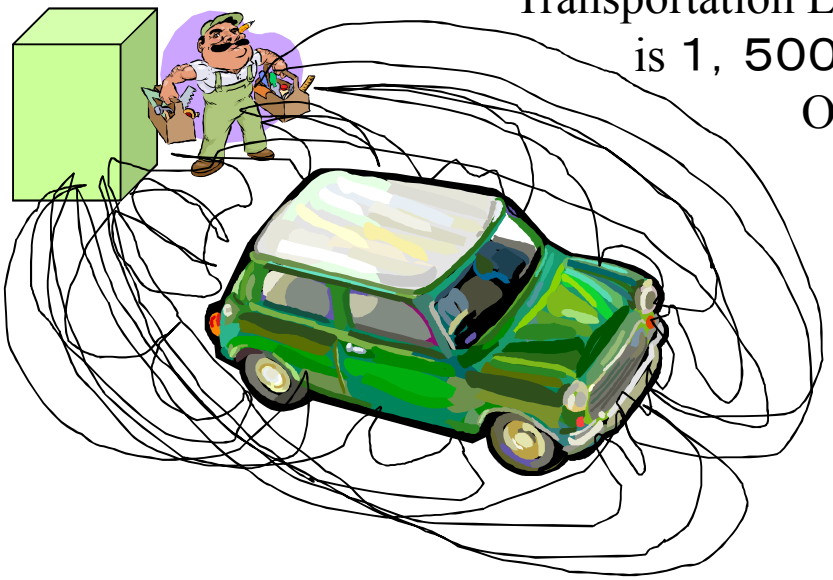
Model Answer

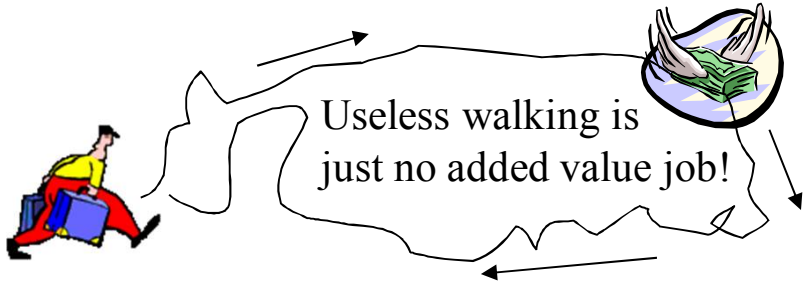
動線図による問題解析の例

Before

Central Tool Box

Transportation Length
is 1，500m/
One car

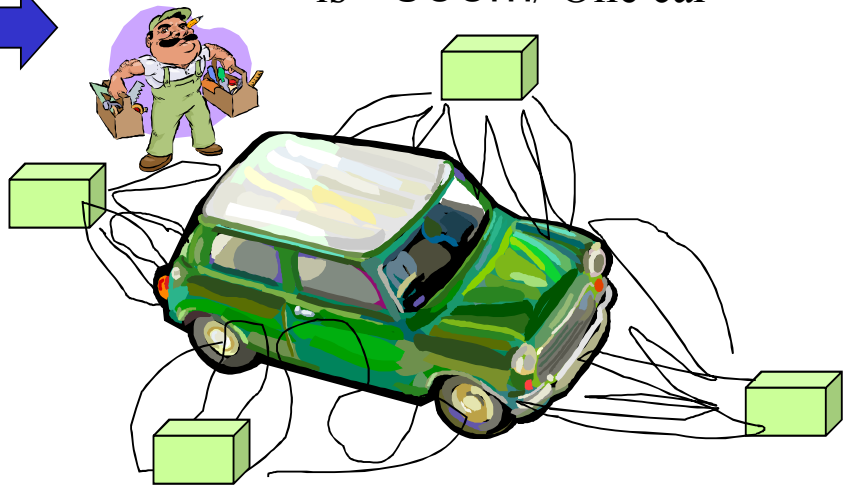




After

The content of the improvement:
The parts box was distributed.

Transportation Length
is 300m/ One car



Analysis of Current Conditions in Electrical Outlet Assembly Operations

Step	Work	Transport	Hold	Inspect	Distance (m)	Time (min.)	#W1H					Comments
							What?	Where?	When?	Who?	How?	
1. Get wires	○	→	▽	□	4	0.04		✓				Can wire bin be placed closer to work table?
2. Pick up at least 20 wires	●	○	▽	□		0.20	✓					What if she picks up exactly 20 wires?
3. Carry wires to worktable	○	→	▽	□	3	0.04		✓				
4. Inspect and arrange wires	●	○	▽	■		0.02	✓				✓	What if the wires were cut in the process?
5. Return extra wires	○	→	▽	□	3	0.04		✓				
6. Go to terminal connector bin	○	→	▽	□	2	0.02		✓			✓	
7. Place connectors and outlet boxes in parts boxes	●	○	▽	□		0.20	✓					Can a cart be used to carry sets of parts and wires?
8. Return to worktable	○	→	▽	□	5	0.06		✓			✓	
9. Assemble 20 outlets	●	○	▽	□		10.00	✓					
10. Carry outlets to finished production	○	→	▽	□	2	0.03		✓				Can this be moved closer to the work table?
11. Return to worktable	○	→	▽	□	3	0.03		✓				

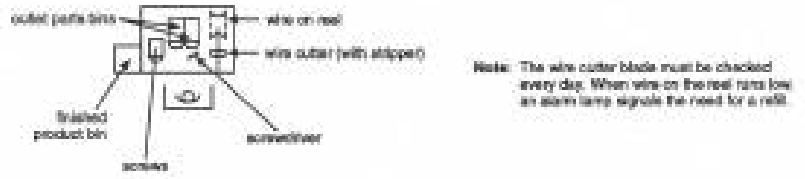
Case Study 4-1, cont'd
Process Analysis of Electrical Outlet Assembly Operation

Improvement Points:

- Wires and other electrical outlet parts were brought closer to the operator's work table.
- Wire is kept on a reel to make it more easily accessible.
- A foot-operated wire cutter is used to free the operator's hands for other work.
- The operator can pick up all needed parts and perform the assembly work while seated at the work table.
- The finished product bin has been moved next to the work table.

New Standards for Electrical Outlet Assembly Operations (After Improvement)

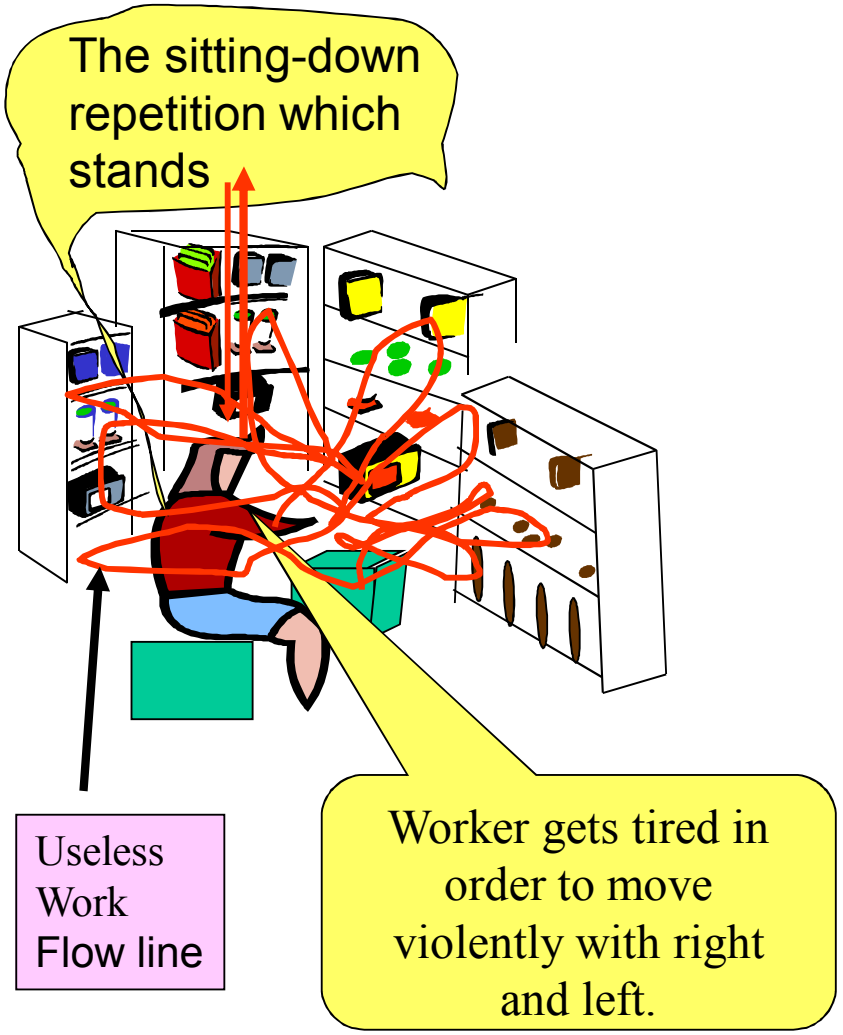
Step	Work	Transport	Hold	Inspect	Distance (m)	Time (min.)	ESIH					Comments
							What?	Where?	When?	Who?	How?	
1. Cut wires	●	○	▽	■		0.02	✓					Use a foot-operated wire cutter
2. Pick up terminal connectors and assemble electrical outlet	●	○	▽	□		0.30	✓					
3. Place assembled electrical outlet in finished product bin	●	○	▽	□		0.01	✓					



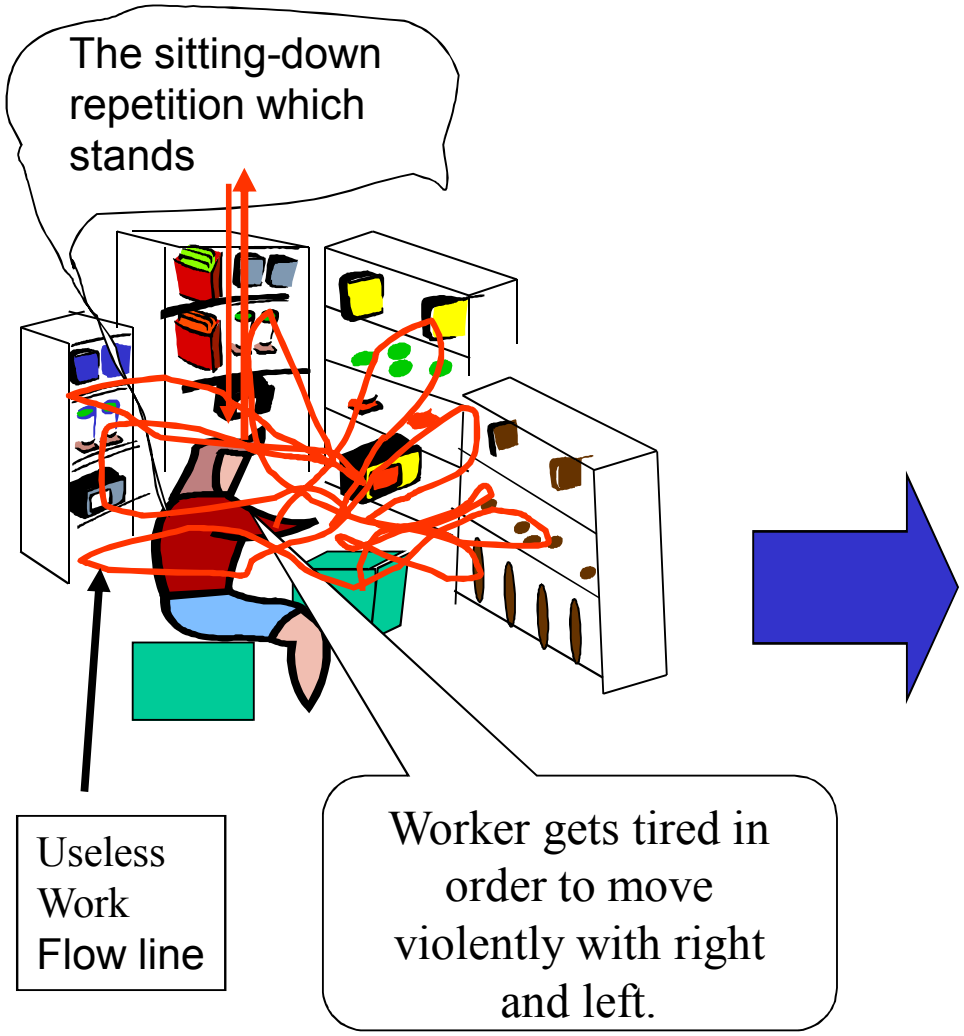
Note: The wire cutter blade must be checked every day. When wire on the reel runs low an alarm lamp signals the need for a refill.

Figure 4-6

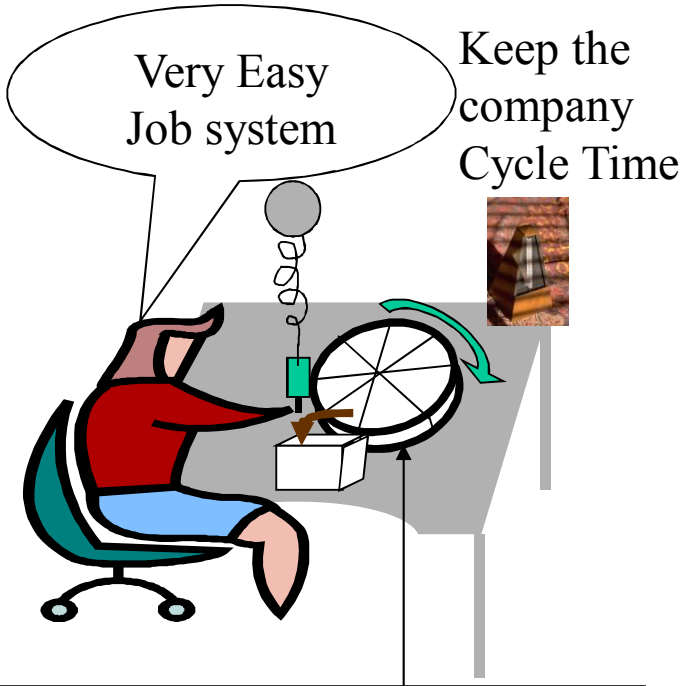
Before Kaizen



Before Kaizen

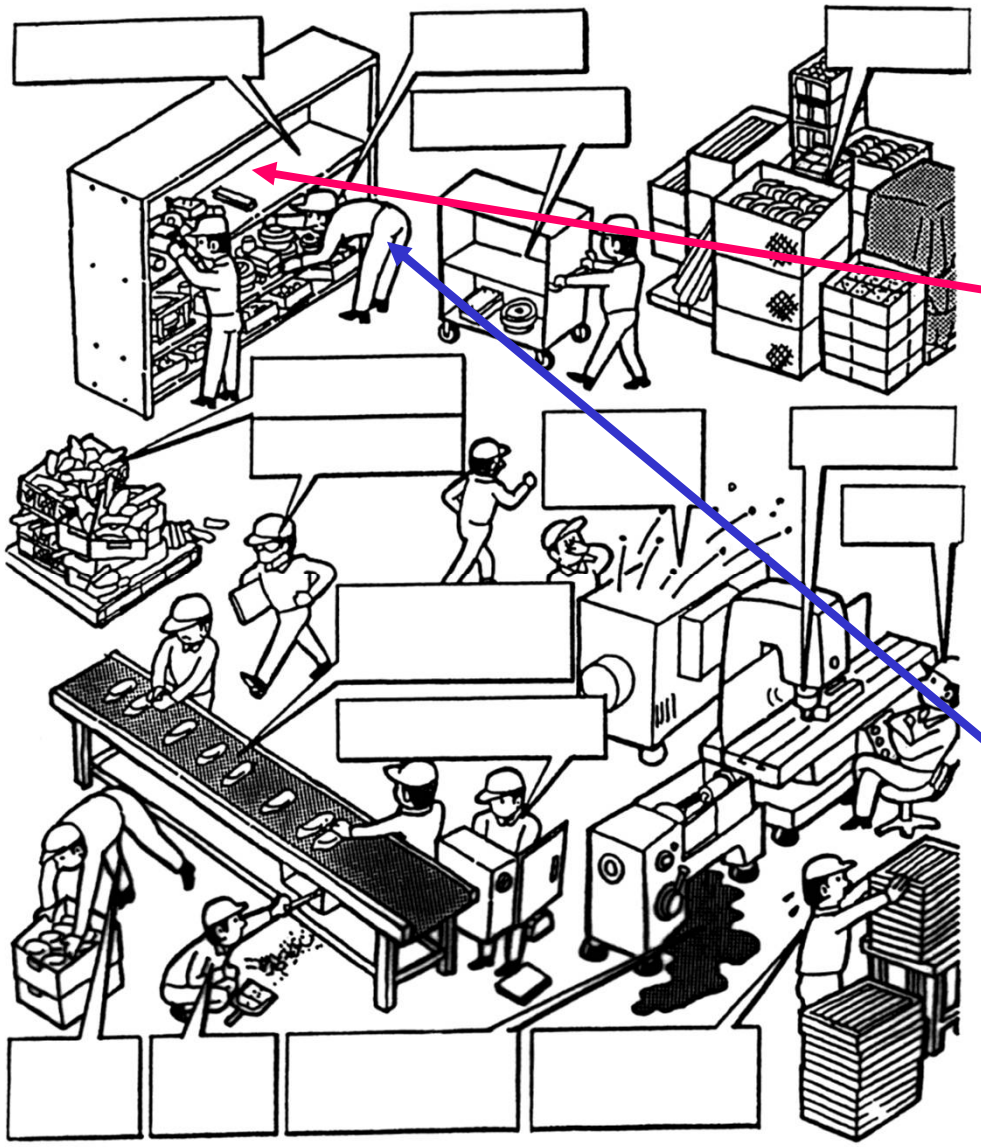


Use JIT Assemble Work system



Kaizen to a kind of cell System

Sample of a Field diagnosis



Please look for problems!

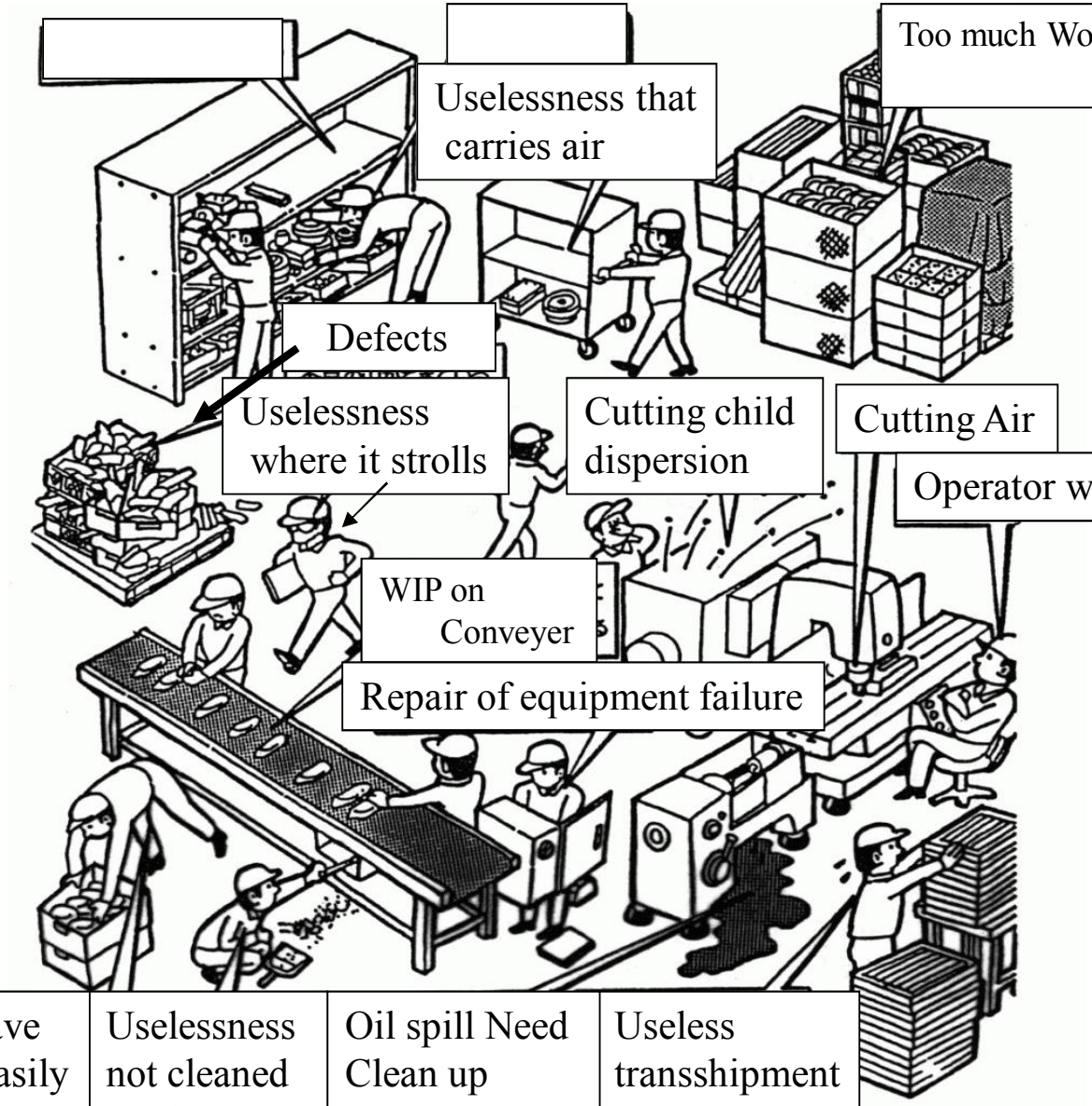
Work looked for on a shelf
The place of air is a problem.
It is a major division like a library.
Inside classification→ Small Classification.
You should carry out the work which finds the thing to look for simply.

Futility which bends and looks for the waist.
You should put the often used thing on the height of a breast from the waist.

現場診断法～物の見方の例

【実践・演習】 Sample of Improvement

Model Answers from Here



Motion Mind and Improvement Looking Points 1/2

Principle of use of body

Rules	Review method of improvement that it means principle
1, Principle of both hands simultaneous operation	Both hands should be moved contrasting it, be started at the same time, and end at the same time.
2, Principle of hand waiting prevention	It is necessary to make it to work one hand is not allowed to play excluding break time, and with the hand waiting.
3, Principle of operation number minimization	The range where the hand moves decreases the body and the range, the distance, and the operation of the sector are decreased to the center as much as possible.
4, Principle of the elements use	You may use gravity and inertia as much as possible for the movement and the work of the thing.
5, Principle of movement without obstruction	You may make the movement of the hand free movement that changing suddenly, zigzag, and the limitation are not generated.
6, Principle of easy posture maintenance	Decrease the uncomfortable body position and the top and bottom of the body as much as possible.
7, Principle of operation rhythm making	Give the sequence of movement the rhythm and the automatic operation of nature.

Motion Mind and Improvement Looking Points 2/2

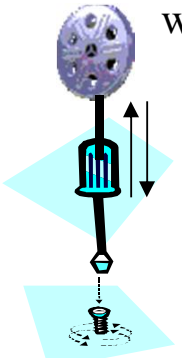
Principle concerning arrangement of work place

Rules	Review method of improvement that it means principle
1, Principle of fixed position making material	The tool, the material, and the operation lever, etc. decide the position, and facilitate leaving.
2, Principle of adjacent	The employed material and the measurement tool, etc. with a lot of frequency are adjacent, and decrease the uselessness of the movement.
3, Principle of gravity use	In the movement of the material, the simplification is attempted by the use for gravity, the spring, and the pedal operation, etc.
4, Principle of front arrangement	To prevent the rotation of the body and the vertical motion work, the one often used is arranged in the near future.
5, Principle of height of work	The chair is given to work, and the simplification of work is aimed at for a long time at the same position.
6, Principle of lighting and lighting	Give a lighting not tired and the lighting that is appropriate for work.
7, Principle of comfortable working environment	Measures to keep comfortable work in consideration of the temperature, humidity, and ventilation are aimed at for the workshop.

Sample of Motion Mind Improvements

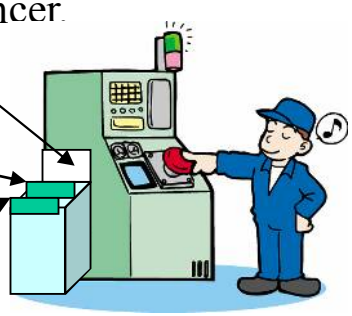
A, The one often used is acquired.

B, Fixed positional assembly : with the balancer



C, JIT installation of the one used without fail

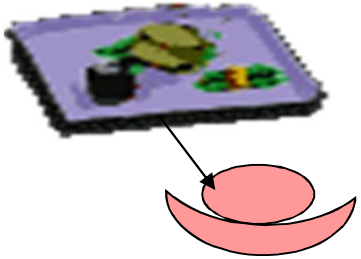
Check list
tools
measuring instrument
…



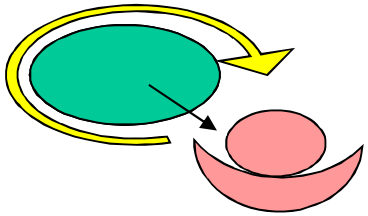
D, Batch preparation for arrangements substitution with set truck

Manual tool and measuring instrument part ····· checklist

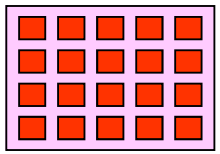
E, The one set part supply : in the method of spreading a table.



F, Taking out : with the turntable one by one.

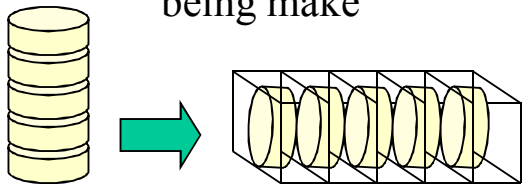


G, The number of confirmations of the material : in the container of the constant type.

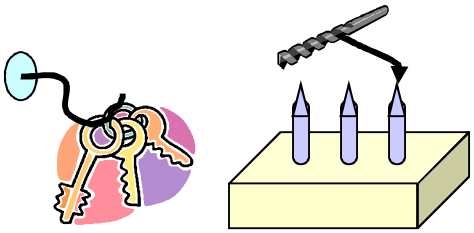


One Look
5×4＝20

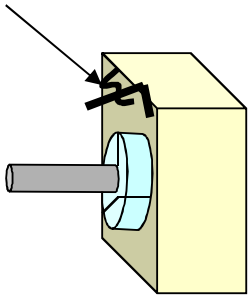
H, Horizontal array reserved seat ..shelf.. being make



I, Necessary tools : to the reserved seat.

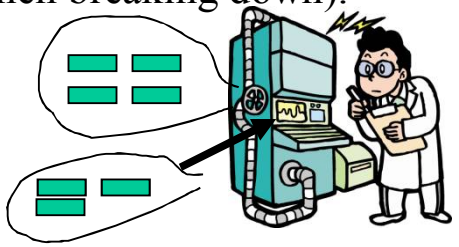


J, Necessary tools : to the reserved seat.



K, Tools that can be united integrate.

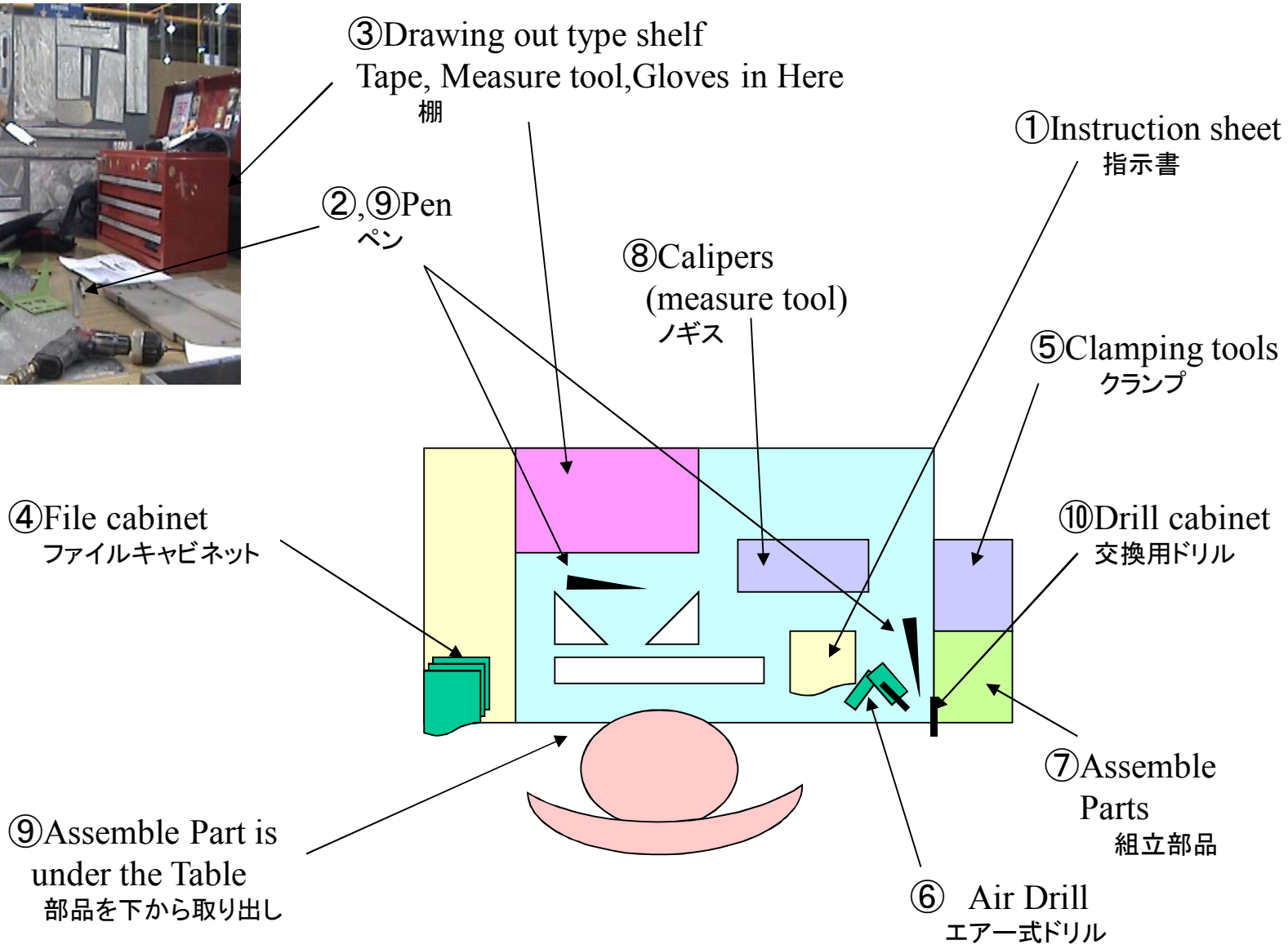
L, Parts in the drawing describe the shelf number (retrieval simplification when breaking down).



Try to start Motion KAIZEN

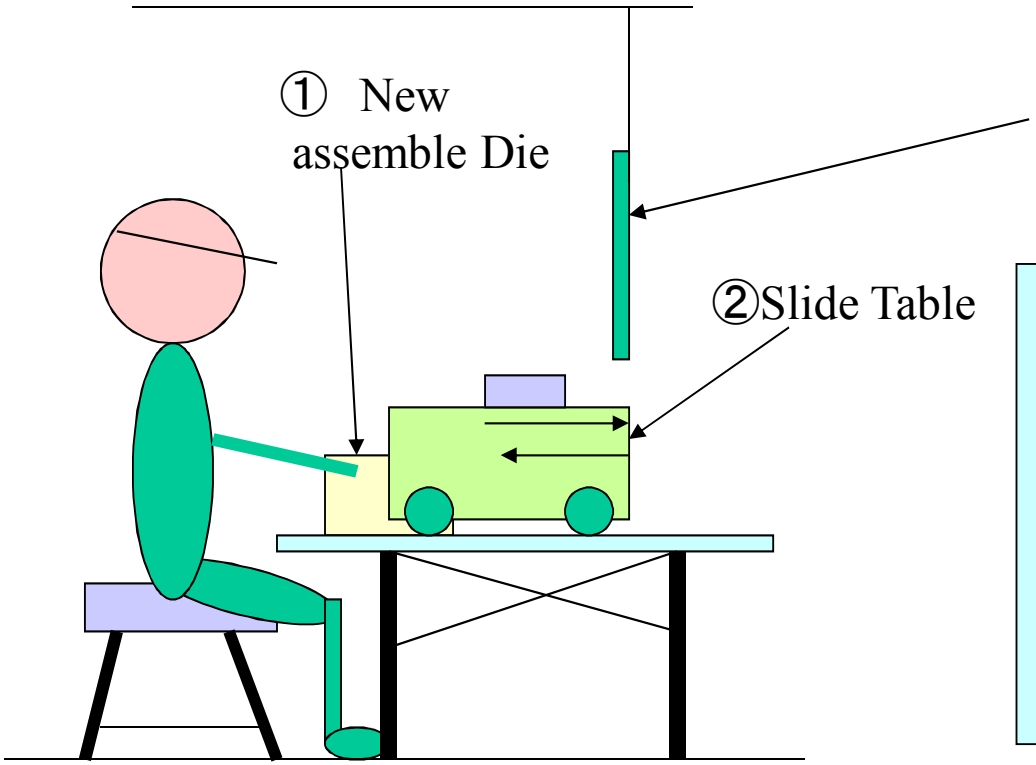
No.	Work Unit	Time Measurement 1st		Time Measurement 2nd	
		Reading Time	Net time	Reading Time	Net time
	Start				
1	All pins are put in to the Board.				
2	Thee Seat boards put in each pin group				
3	Five caps are put on Each Pin group.				
	Total Time				
		Time Measurement 3rd		Time Measurement 4th	
		Reading Time	Net time	Reading Time	Net time
	Start				
1	All pins are put in to the Board.				
2	Thee Seat boards put in each pin group				
3	Five caps are put on Each Pin group.				
	Total Time				

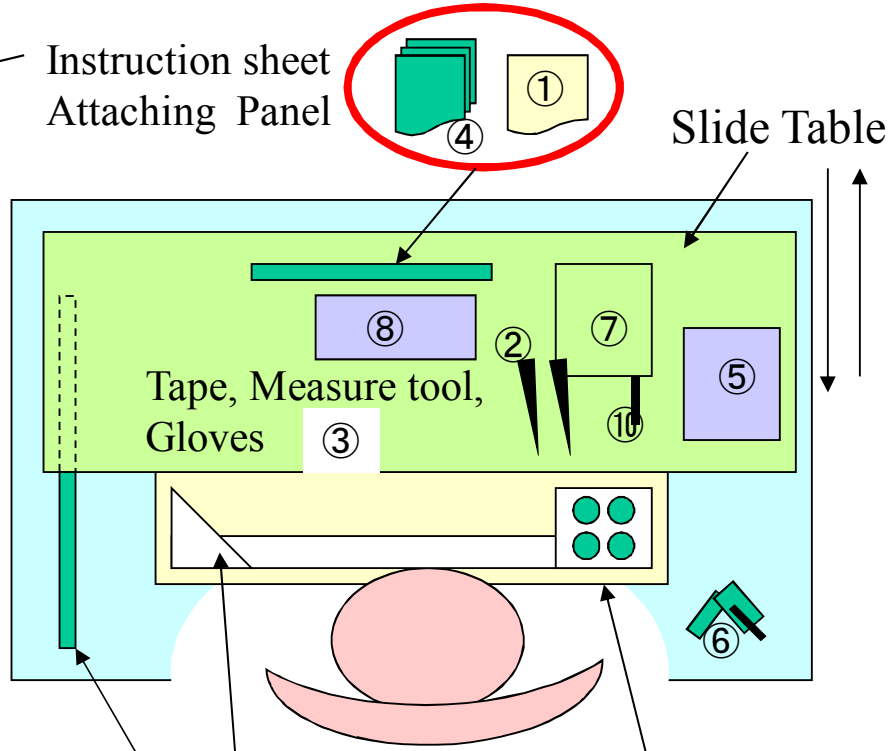
Example of Time Analysis and KAIZEN



Improvement Idea about Parts Assemble Job Step

After Improved Working Style





① New Assemble Table Job
Set three Parts on the Parts Clamping Die.
and Drill jobs make holes after that set Parts by set tool
②Slide Table : Positioning treatment and Fixing device
Major jobs are Measurement , Check Parts Position and
Making Marks & Writing on Parts.
This Die can turn 360° (Angle)

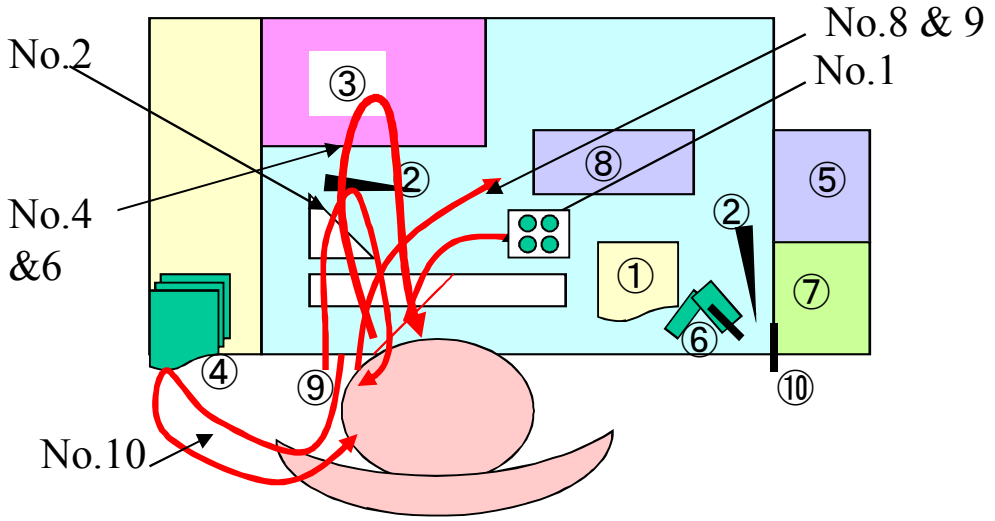
Assemble three Parts

New assemble Die

⑨
Under table
Assemble Part

Work Process and Time Analysis Table(No.1)

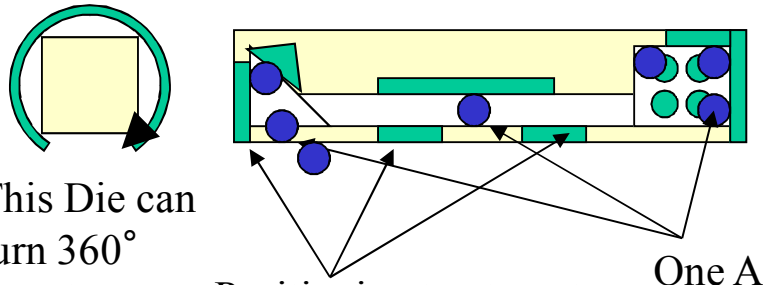
Sample sows No.4 & 6

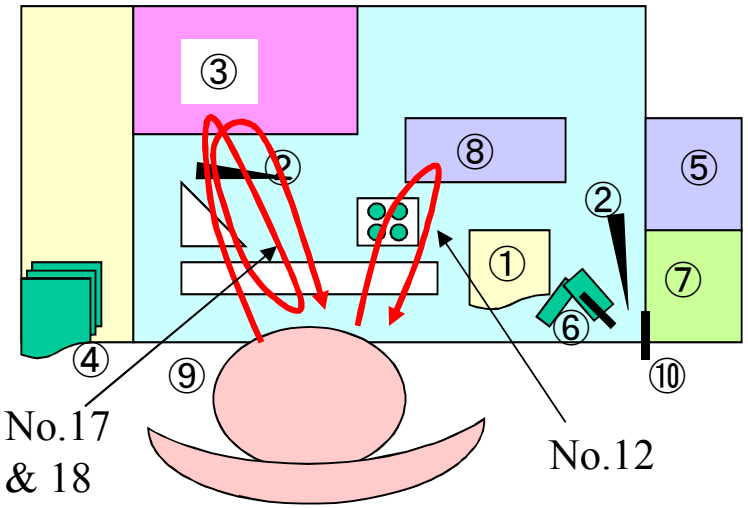


No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
1	Check Instruction sheet	□	0→0:04	0:04	Cell Layout will reduce 0.3
2	Take pen	→	0:04 →0:06	0:02	Cell Layout will reduce 0.1
3	Check and Right on Part	○	0:06 →0:08	0:02	
4	Move hand to take a Tape	→	0:08 →0:14	0:06	Cell Layout will reduce 0.5
5	Tape treatment	□	0:14 →0:19	0:05	
6	Back Tape to Shelf	→	0:19 →0:23	0:04	Cell Layout will reduce 0.3
7	Take Pars and Check	○	0:23 →0:39	0:16	Assemble Die Tool Set will reduce 0.11
8	Take Instruction sheet	→	0:39 →0:42	0:05	Cell Layout will reduce 0.2
9	And back to the Table	→	0:42 →0:44	0:02	Cell Layout will reduce 0.2
10	Move to File cabinet	→	0:44 →1:02	0:18	Cell Layout will reduce 10
	Total		62Sec.		Reduction Total is 26 Sec.

Work Process and Time Analysis Table(No.2)

Image of New assemble Die



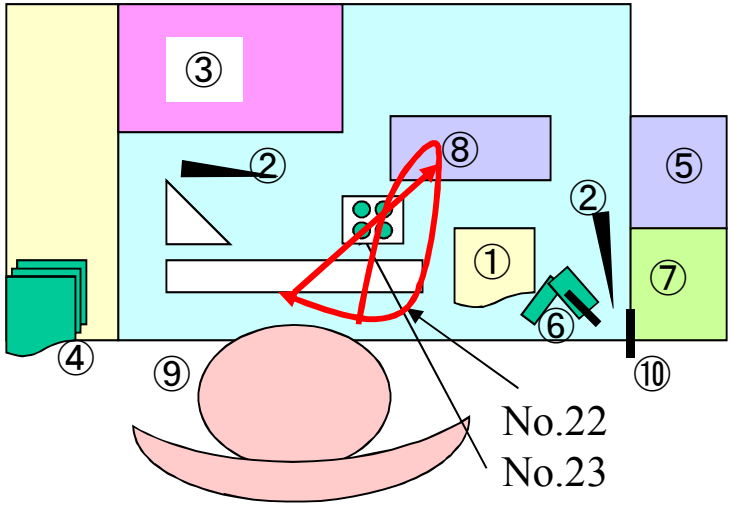


No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
11	Check the Instruction	□	1:02→1:08	0:06	
12	Take Measurement Tool	→	1:08 →1:11	0:03	Cell Layout will reduce 0.02
13	Adjust Distance	□	1:11 →1:34	0:23	Adjustment with standard can reduce 0.17
14	Check Parts Distance	□	1:34→1:40	0:06	New Assemble Die has no check: 0.06
15	Adjust Distance	□	1:40 →2:23	0:02	Adjustment with standard can reduce 0.37
1 6	Adjust Distance	□	2:23 →2:31	0:08	New Assemble Die has no check:0.08
17	Back Measurement Tool	→	2:23 →2:34	0:01	
18	Take Pen and M-Tool	→	2:34 →2:39	0:05	Cell Layout will reduce 0.03
19	Marking on Part	○	2:39 →3:34	0:55	New Assemble Die can decreases time (?)
20	Parts Pre Assemble Check	○	3:34 →3:44	0:10	New Assemble Die has no check:0.10
	Total		152Sec.		Estimated Reduction Time: 83 Sec.

Work Process and Time Analysis Table(No.3)

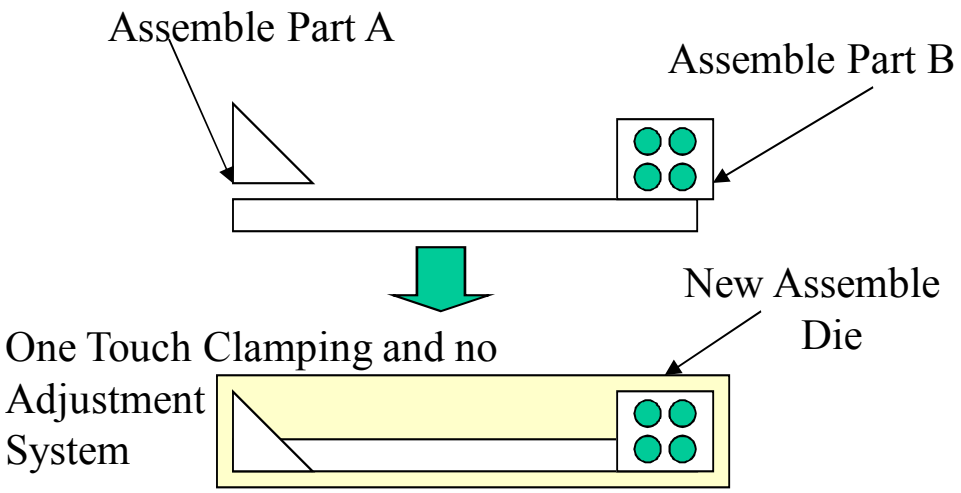
No.25 Job
Inspection Tool
Back in Box

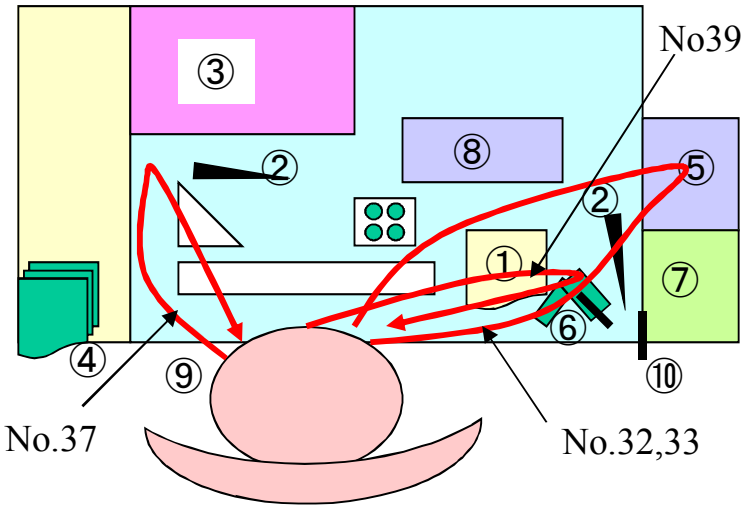
No.26 Job
Clamping a Part



No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
21	Instruction Sheet file back	○	3:34→3:56	0:22	Cell Layout will reduce 0.22
22	Take Inspection Tool	→	3:56 →3:58	0:02	Cell Layout will reduce 0.01
23	Set Distance on the Tool	□	3:58 →4:08	0:10	Adjustment with standard can reduce 0.07
24	Set Distance on a Part	○	4:08 →4:23	0:15	
25	Back Inspection Tool	→	4:23 →4:32	0:09	Cell Layout will reduce 0.08
26	Clamping a Part	○	4:32 →5:37	0:74	New Assemble Die has no Clamping 0.70
27	Take Gloves and Put on	→	5:37 →5:50	0:13	New Assemble Die has no Gloves 0.13
28	Change Drill	○	5:50 →6:01	0:11	
29	Drill: Holes Making	○	6:01 →6:16	0:15	Work that danger is somewhat attended
30	Clamping Position Chang	○	6:16 →6:31	0:15	New Assemble Die has no Clamping 0.15
	Total		!77Sec.		Estimated Reduction Time: 143 Sec.

Work Process and Time Analysis Table(No.4)

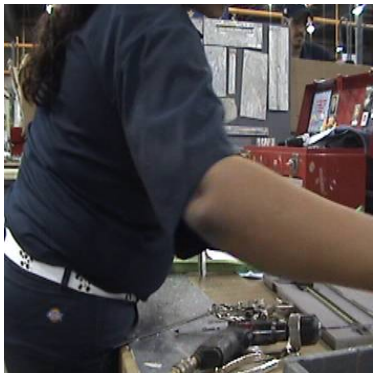




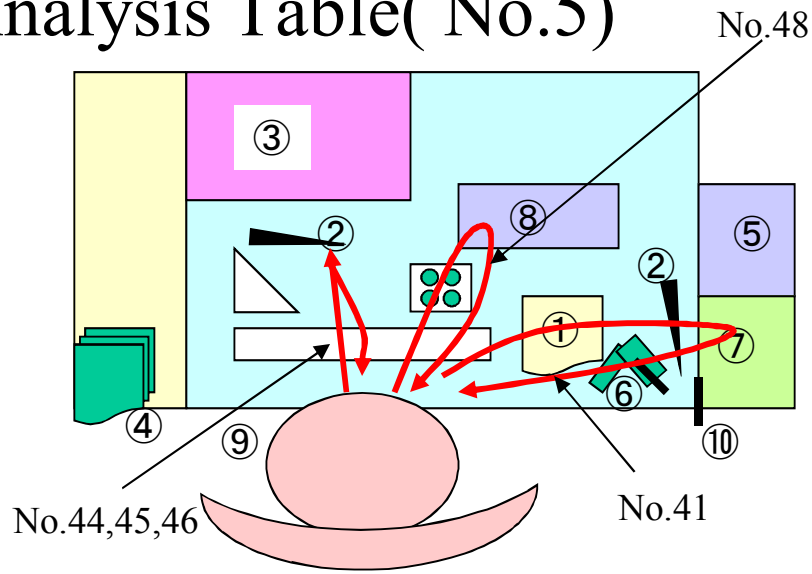
No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
31	Drill: Holes Making	○	6:31→6:44	0:13	Work that danger is somewhat attended
32	Take Assemble Parts	→	6:44 →6:53	0:09	Cell Layout will reduce 0.05
33	Take Parts Set Tool	→	6:53 →6:57	0:04	Cell Layout will reduce 0.02
34	Set Parts set on Work	○	6:57 →7:17	0:20	
35	Take out Clamping	○	7:17 →7:23	0:06	New Assemble Die has no Clamping 0.04
36	Set & Check Part B	□	7:23 →0:39	0:16	New Assemble Die has no Clamping 0.12
37	Takes off one's gloves.	→	7:39 →7:44	0:05	New Assemble Die has no Gloves 0.05
38	Adjust and Clamping B	○	7:44 →9:07	0:83	New Assemble Die has no Clamping 0.83
39	Take Glove and Drill	→	9:07 →9:11	0:04	New Assemble Die has no Gloves 0.02
40	Drill: Holes Making	○	9:11 →9:25	0:14	Work that danger is somewhat attended
	Total		174 Sec.		Estimated Reduction Time:113

Work Process and Time Analysis Table(No.5)

Taking Parts



Part B



No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
41	Take Assemble Parts	→	9:25→9:29	0:04	Cell Layout will reduce 0.02
42	Set Parts	○	9:29 →9:39	0:10	
43	Take out Clamping	○	9:39 →9:43	0:04	New Assemble Die has no Clamping 0.04
44	Turn the Parts Unit	→	9:43 →9:45	0:02	
45	Take Pen	→	9:45 →9:47	0:02	
46	Take Glove	→	9:47 →9:50	0:03	New Assemble Die has no Gloves 0:03
47	Write memo on Parts Unit	○	9:50 →10:06	0:16	
48	Take Inspection Tool	→	10:06 →10:13	0:07	Cell Layout will reduce 0.05
49	Set Distance on the Tool	□	10:06→10:28	0:22	Adjustment with standard can reduce 0:17
50	Check Parts Unit Distance	○	10:28 →10:45	0:17	New Assemble Die has no Check 0:17
	Total		Total 83 Sec.		Estimated Reduction Time: 43 Sec.

Work Process and Time Analysis Table(No.6)

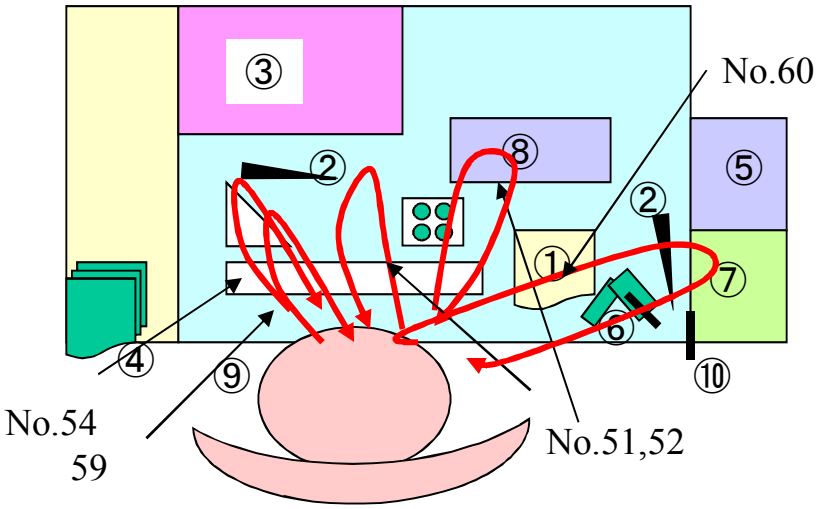
No. 55 Drill

Work that danger is somewhat attended

Reason Why?:

1, The fixation of the part unit is unstable.

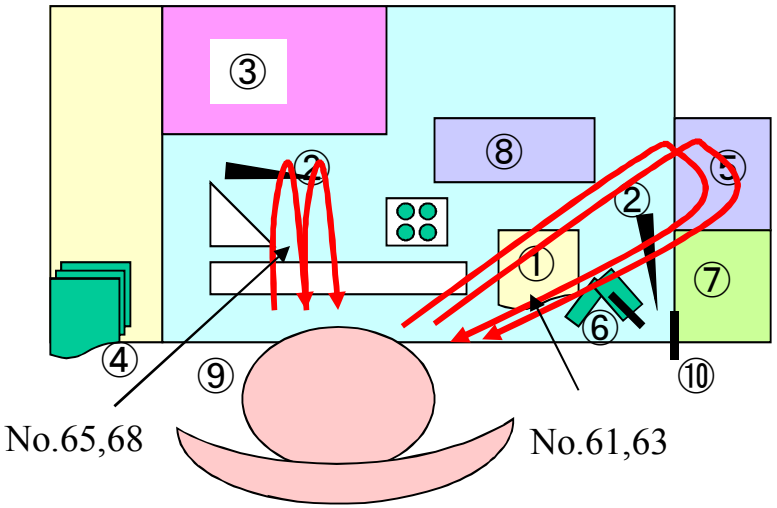
2,If the nether part unit slips, the drill might become be broken and ease to make a injury status on this Job.



No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
51	Back tool	→	10:45→10:49	0:04	Cell Layout will reduce 0.02
52	Take Pen & Scale	→	10:49 →10:53	0:04	Cell Layout will reduce 0.02
53	Mark & Sign on Parts Unit	○	1053 →11:27	0:34	
54	Take Glove & Drill	→	10:27 →11:36	0:09	New Assemble Die has no Gloves 0:07
55	Drill	○	11:36 →11:44	0:08	Work that danger is somewhat attended
56	Back Drill and Take Parts	→	11:44 →11:50	0:06	Cell Layout will reduce 0.03
57	Assemble Part	○	11:50 →12:02	0:12	
58	Turn Parts Unit	→	12:02 →12:07	0:05	
59	Takes off one's gloves.	→	12:07 →12:10	0:03	New Assemble Die has no Gloves 0:03
60	Take Parts	→	12:10 →12:20	0:10	Cell Layout will reduce 0.05
	Total		95 Sec.		Estimated Reduction Time: 22 Sec.

Work Process and Time Analysis Table(No.7)

No.66 Mark & Sign



No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
61	Take Parts	→	12:20→12:27	0:07	Cell Layout will reduce 0.04
62	Assemble Parts & Checking	○	12:27 →12:58	0:31	
63	Take Parts	→	12:59 →13:02	0:03	Cell Layout will reduce 0:01
64	Set Parts & Check	○	13:02 →13:31	0:29	
65	Take Pen	→	13:31 →13:32	0:01	Small time can reduce
66	Memo on Parts & Check	○	13:32 →13:49	0:17	
67	Clamping	○	13:49 →14:10	0:21	New Assemble Die has no Clamping: 0:17
68	Put on Glove	→	14:10 →14:13	0:03	New Assemble Die has no Gloves 0:03
69	Drill	○	14:13 →14:28	0:15	Work that danger is somewhat attended
70	Adjustment	□	14:28 →14:41	0:13	New Assemble Die has no Adjustment : 0.13
	Total		141 Sec.		Estimated Reduction Time: 35 Sec.

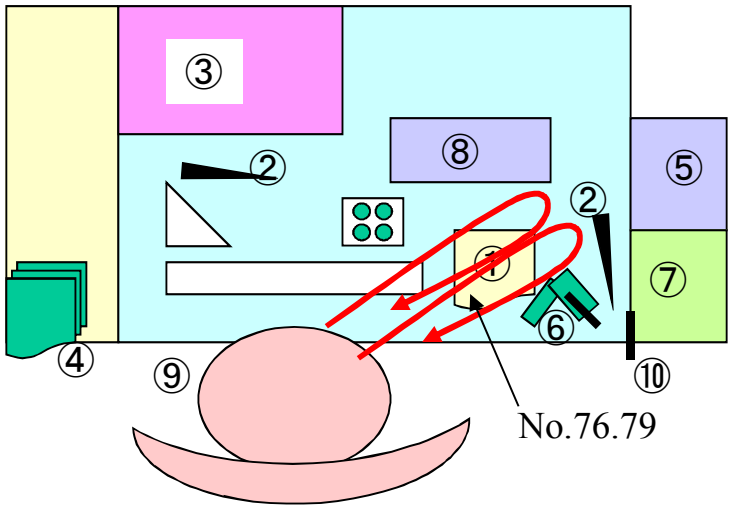
Work Process and Time Analysis Table(No.8)

Each color shows Each Improvement

: By New Assemble Die Improvement

: By Cell Layout Improvement

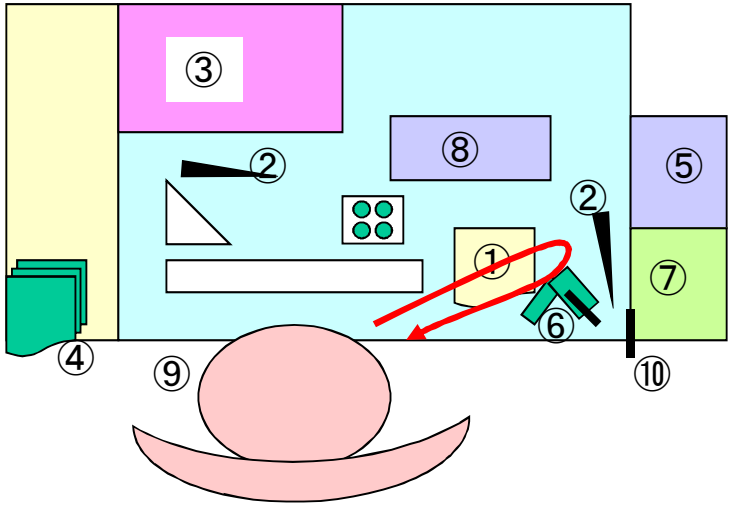
: By Adjustment Improvement



No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
71	Take parts	□	14:41→14:47	0:06	Cell Layout will reduce 0.04
72	Parts Assemble	○	14:47 →14:56	0:09	
73	Take out Clamping ,Check	○	14:56 →15:10	0:14	New Assemble Die has no Clamping: 0:14
74	Take part and Checking	□	15:10 →15:26	0:16	
75	Take out Clamping ,Check	○	15:26 →15:28	0:02	New Assemble Die has no Clamping:: 0:02
76	Adjust Part & re-Clamping	→	15:28 →15:51	0:23	
77	Drill	○	15:51 →16:06	0:15	Work that danger is somewhat attended
78	Adjusting	□	16:06 →16:19	0:03	This adjust can't understand, May be Cancel
79	Take Clamping	→	16:19 →16:23	0:04	Cell Layout will reduce 0.02
80	Clamping Parts Unit	○	16:23 →16:31	0:08	New Assemble Die has no Clamping:: 0:08
	Total		110 Sec.		Estimated Reduction Time:28

Work Process and Time Analysis Table(No.9)

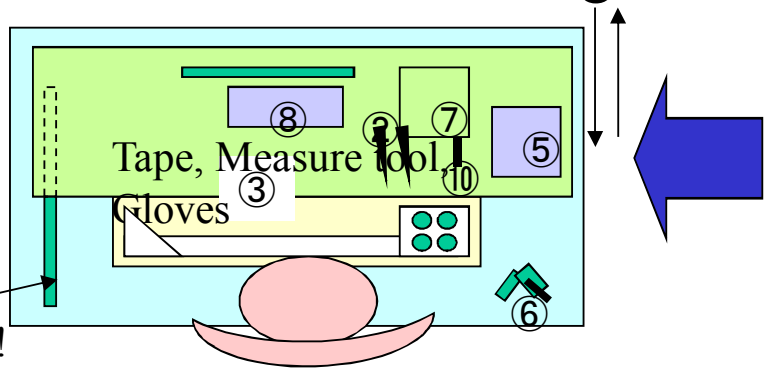
Like this Short Time Transportation
can reduce,
but At This time Can not calculate

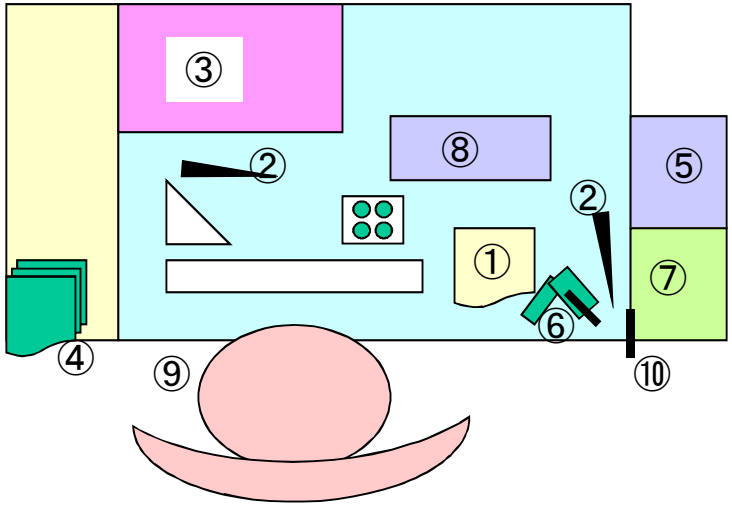


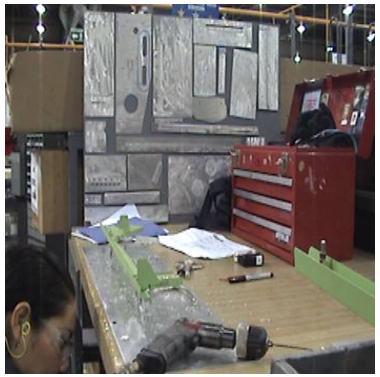
No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
81	Drill	○	16:31→16:57	0:26	Work that danger is somewhat attended
82	Parts Assemble	○	16:57 →17:09	0:12	
83	Take out Clamping	○	17:09 →17:22	0:13	New Assemble Die has no Clamping: 0:13
84	Parts Setting	○	17:22 →17:34	0:12	
85	Preparation of Clamping	→	17:34 →17:50	0:16	New Assemble Die has no Clamping:0.16
86	Clamping	○	17:50 →18:30	0:40	New Assemble Die has no Clamping: 0:40
87	Drill	○	18:30 →18:46	0:16	Work that danger is somewhat attended
88	Take off Parts	○	18:46 →19:19	0:33	
89	Check and Memo on Parts	○	19:19 →20:19	0:60	
90	Desk Clean up	→	20:19 →21:09	0:50	
	Total		278 Sec.		Estimated Reduction Time:69 Sec.

Work Process and Time Analysis Table(No.10)

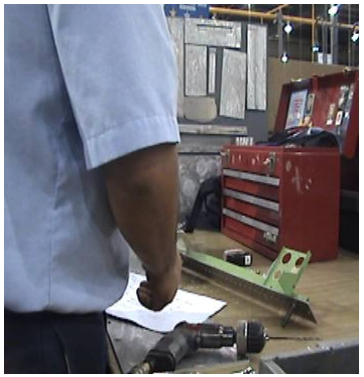
New Assemble Line Image







Operator Move
To Under the Table



Inspection & Finishing.
I will stop Time Analysis
After This process.
But if necessary, please
Continue same analysis
By your company..

No.	Work Process	IE	DVD Time	Net Time	Example of a Improvement Idea
91	Take Parts under the Table	→	21:09→21:23	0:14	Cell Layout will reduce 0.04
92	Take Parts	→	21:23 →21:27	0:02	Cell Layout will reduce 0.02
93	Under Table Setting	○	21:27 →22:24	0:57	
94	Waiting & Inspection	→	22:24 →●		22:24 = 1,344 Sec.
	Total		Total 75 Sec.		Estimated Reduction Time:6 Sec.

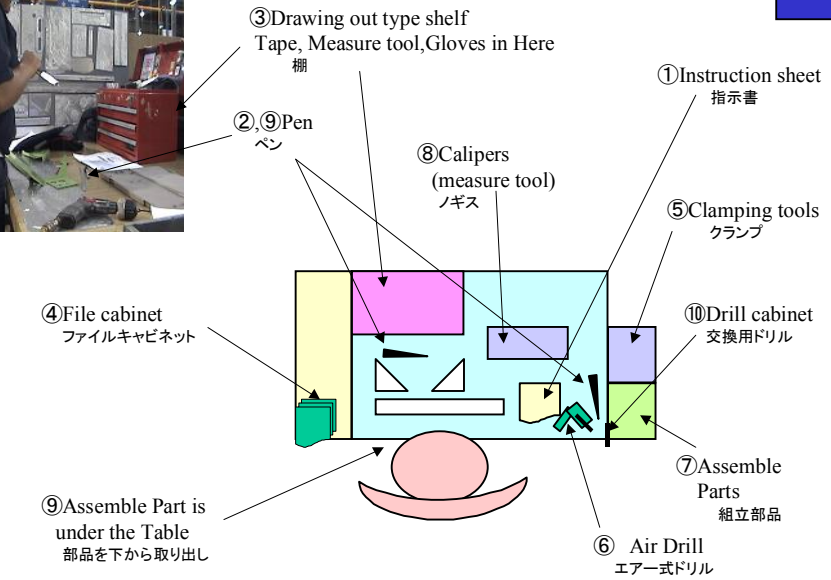
Estimated Reduction Time 568 by Improvements

Current Working Time 22:24 = 1344 Sec.

568÷1344＝42，26% Reduce

Current Job System

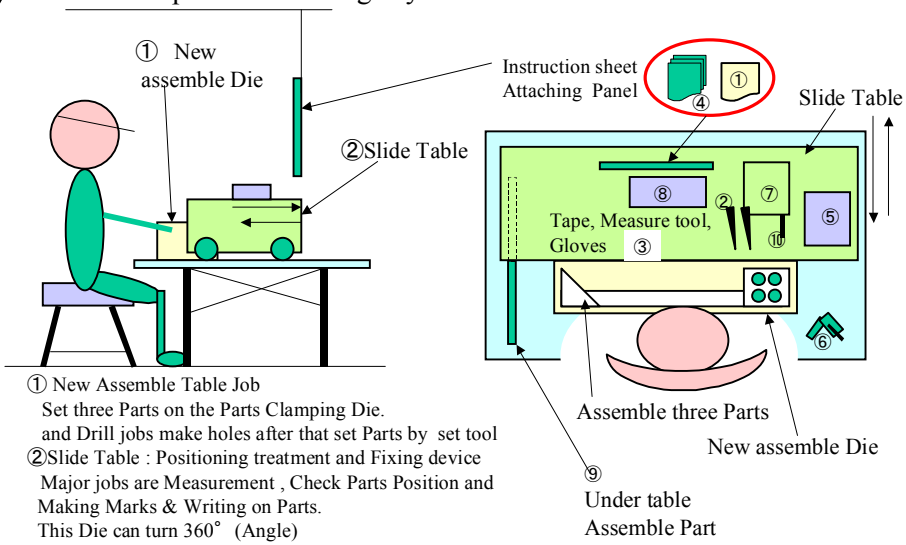
3, Practices of DVD job Process on your Company
実例テーマへの適用



Improvement Idea

Improvement Idea about Parts Assemble Job Step

After Improved Working Style



① New Assemble Table Job
Set three Parts on the Parts Clamping Die.
and Drill jobs make holes after that set Parts by set tool
②Slide Table : Positioning treatment and Fixing device
Major jobs are Measurement , Check Parts Position and
Making Marks & Writing on Parts.
This Die can turn 360° (Angle)

Figure 2-2: Card-style Problem Analysis Method

Title: Summarizing the practices of veteran salespeople for increasing sales for the purpose of making effective use of such practices
(example: SN Company's Sales Strategy Division)

February 1991

1. Objective: Improving your company's sales efficiency and doubling the sales

Item	1991	1993
Sales	○○△ MY	To sell products more than other people ○○○ MY
Number of customers	N persons	M persons
New products	△ MY	△△ units
Share	15%	20%

2. Major means available
   (1) Increasing the number of customers contacted and the number of customer service hours
   (2) Research on customers' needs: formulating strategies for improvement
   (3) Preparation of tools

3. Tools to be used
   (1) Education in PC and the use of networks
   (2) Introducing IT systems for various sales tools
   (3) Sharing sales know-how to formulate strategies

4. Schedule
   (1) February X, 1991: Kick-off meeting
   (2) March 1991: Proposals and coordination
   (3) Until May 1991: Development of tools
   (4) June 1991: Test runs
   (5) From July 1991: Review and start of operations

5. Reference: *Customer-oriented Sales Services by Toyota Sales Staff*; Summary of Yasufumi Shiina's activities

From the book published by Nisshin Houdou

Building relationships with customers

Making friends with customers
- Increase in the number of private customers through hand-made and hand-delivered messages
- Visit customers in a bad weather. With no other salespeople around, customers welcome you and both you and your customers will have plenty of time.
- No customer declines the offer of a chat over a glass of water.
- Use lottery tickets (give your customer one of tickets with consecutive numbers).

Catching the attention of customers who are likely to purchase cars
- Take time to analyze the behavior of customers who come into your store (or showroom). Don't talk to them immediately.
- Coax the president of a company to buy a car, then employees will buy cars of the same type.
- When delivering a car to a customer, take another new car to show it to the customer and his neighbors (a trade fair during delivery).

Increasing the chance for customers to get to know your name
- Put as many business cards as possible in your customers' desk drawers. Customers may not like having so many cards at first, but they will eventually remember your name.
- Use a large seal that attracts other people's attention as your registered seal. You may be requested by customers to make similar seals for them.
- Make giant-size business cards and distribute them among customers. Let your name be remembered and even recorded in Guinness World Records.

Seizing business opportunities
- Immediately respond to wrong number calls and customers' complaints to obtain orders. Respond to complaints and wrong number calls about Toyota cars and make sure to obtain orders.
- Assess cars even from behind a fence. Competitors may refrain from sales activities hearing your name.

Sorting out customers who are willing to buy products and catching their attention

- Work harder than other people to sell products (work until later).

Avoid customers that have no requests
- Say no to customers who do not make payments at the time of contract signing.
- Analyze the behavior of those who don't buy cars to identify them correctly.
- Tear a contract into pieces before the eyes of a customer who do not buy a car.

Avoid doing what annoys customers
- Don't praise their children too much. Consider circumstances facing children.

Identifying customers' true needs
- Make a list of ways to purchase cars to make it easier for customers to buy cars.
- If parents and children disagree in choosing which cars to buy, line up three cars to let them choose one (hands-on approach)
- According to analysis, the following people don't buy cars:
  (1) Those who are opposed to owning cars
  (2) Those who have financial problems
  (3) Those who have difficulty in obtaining parking space
  (4) Those who don't have a driver's license
  (5) Those who have no need for cars
- Line up used and new cars for customers who want to buy used cars (so that they can to compare used and new cars).

Provide good after-sales care services
- Provide quick services in an emergency, such as when you have closed the door of a car whose key you have received from a customer. Send a copy of the key to the customer to improve customer satisfaction.
- Use PCs to make a list of customers sorted in the alphabetical order of their names to send messages on their birthdays and to manage customer data, including the number of cars sold, service periods and replacement periods, using the alarm feature.

Including quick repair and troubleshooting services

Devotion to Toyota Corolla
- Sales strength is supported by the product quality. Understand the difference with other cars and use your knowledge as a basic tool for sales.
- Act with the joy of sales to achieve a specific goal.

Responding to orders quickly

Systematically solving problems facing customers
- Make a bag. Describe all procedures and schedules in tables so that you can manage everything with your bag without searching elsewhere.
- Give your customers a ride for parking and tax registration all at once. Finish time-consuming procedures all at a time for customers.

Providing quick paperwork services
- Keep a checklist in your bag so that you can quickly check procedures and documents any time.
- Carry around the following seven tools:
  (1) A large A4-size paper bag
  (2) Giant-size business cards
  (3) A car catalog
  (4) List of prices and payment conditions by car type
  (5) Stickers with your name and a store map
  (6) Order forms
  (7) Your registered seal
  With these tools, you can respond to any requests of customers. Carry a large bag.
- Prepare contracts and payment documents during a conversation and complete all documents before the conversation is over so as to obtain the customer's seal on the spot.

Effective use

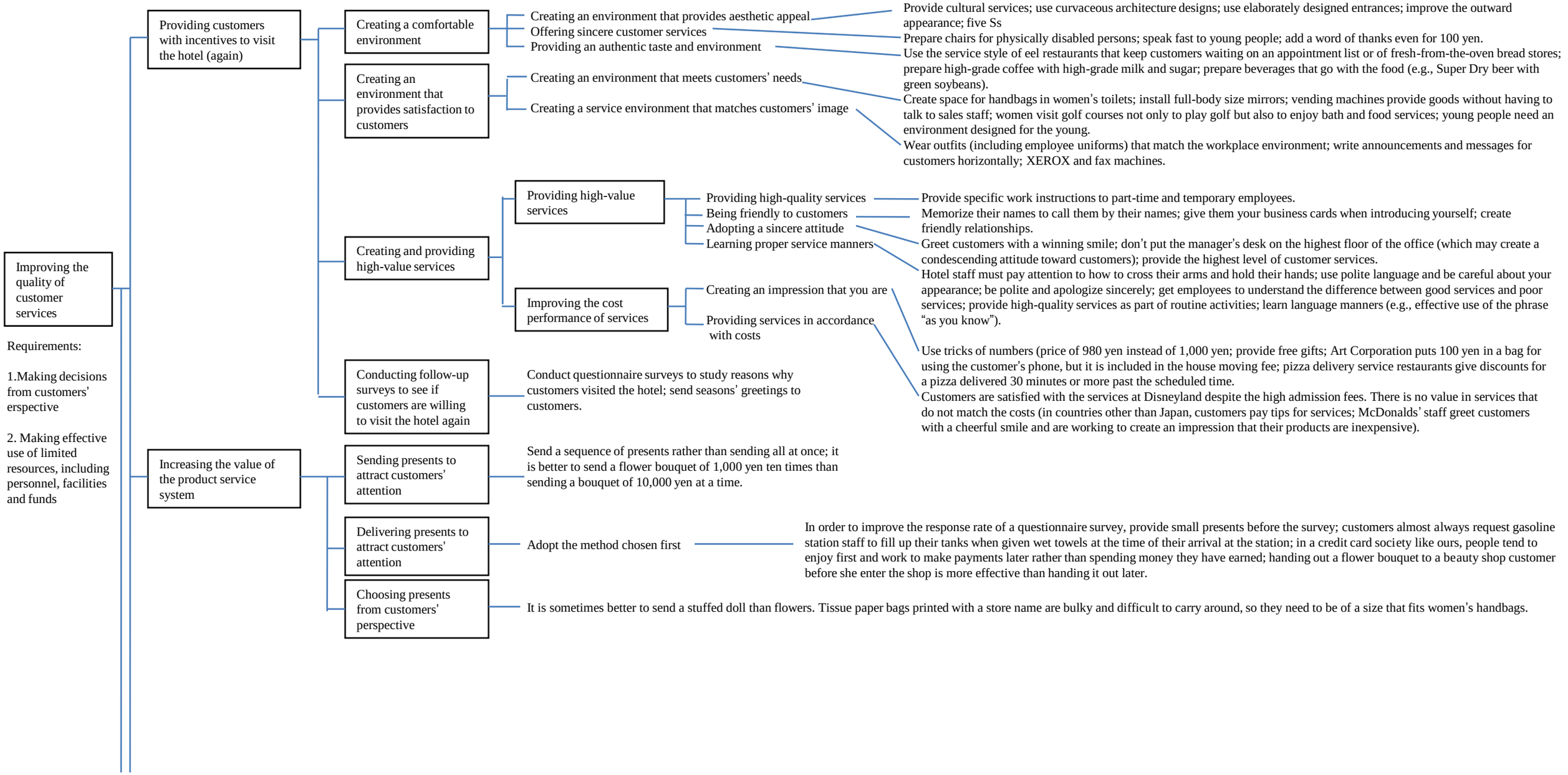
Equals

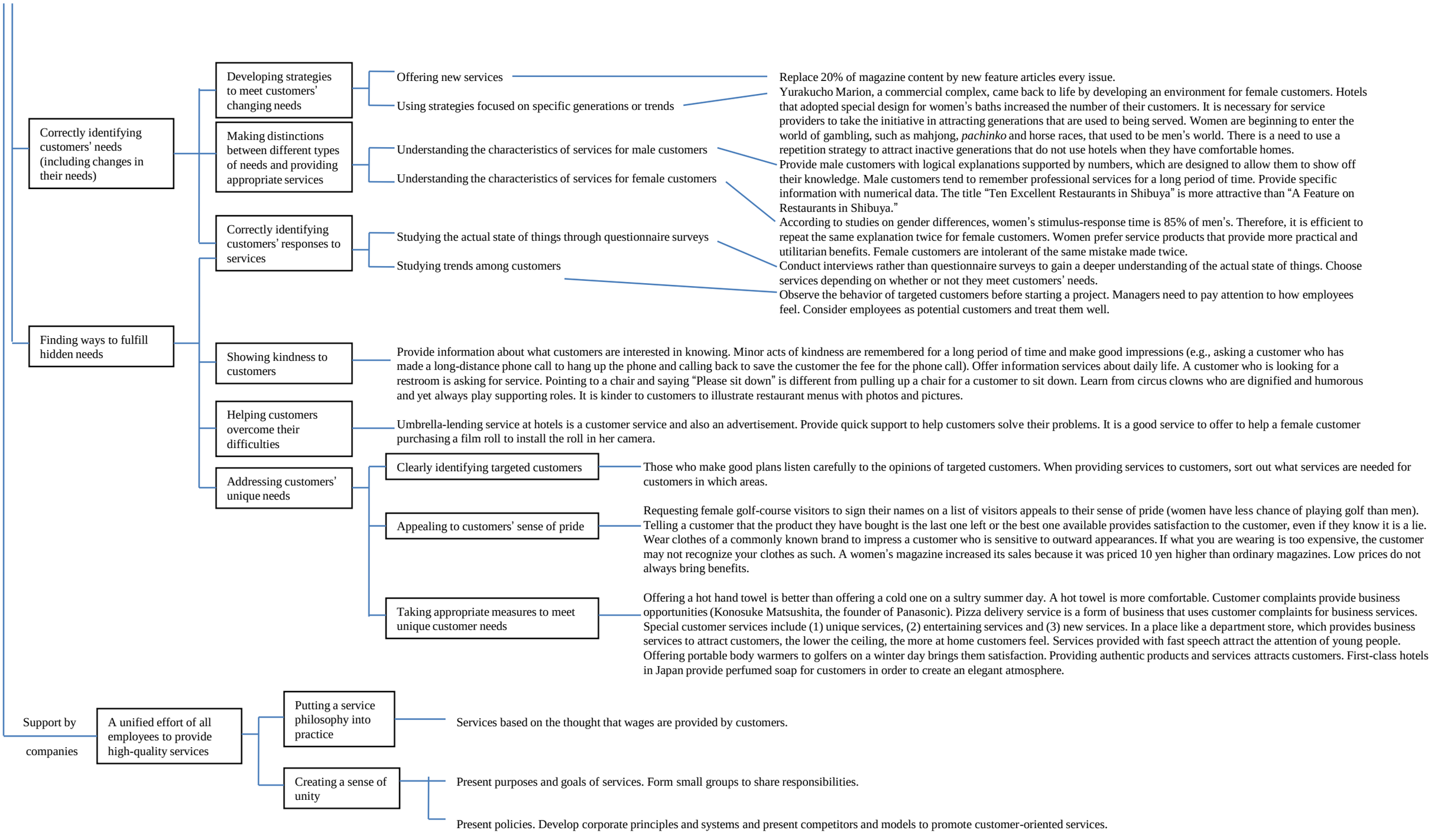
Selling cars to achieve record-breaking sales

Making sales efforts and using wisdom to make it easier for customers to buy cars
- Make a lookup table to show how to purchase products for 3,000 yen per month. Provide customers with a table of monthly installment payments to show purchasing know-how.

Formulating strategies
- Write down effective action plans on a card and formulate strategies in charts before visiting customers.

Building relationships of trust and making efforts to increase sales
- Take all available measures to gain customers' favor and trust.
- The author has achieved top sales for 15 years and has sold 18 cars in a single day. His record of selling 4,500 cars in 15 years is recorded in Guinness World Records.


Improving the quality of customer services
Requirements:
1.Making decisions from customers' erspective
2. Making effective use of limited resources, including personnel, facilities and funds
Providing customers with incentives to visit the hotel (again)
Creating a comfortable environment
Creating an environment that provides aesthetic appeal
Offering sincere customer services
Providing an authentic taste and environment
Provide cultural services; use curvaceous architecture designs; use elaborately designed entrances; improve the outward appearance; five Ss
Prepare chairs for physically disabled persons; speak fast to young people; add a word of thanks even for 100 yen.
Use the service style of eel restaurants that keep customers waiting on an appointment list or of fresh-from-the-oven bread stores; prepare high-grade coffee with high-grade milk and sugar; prepare beverages that go with the food (e.g., Super Dry beer with green soybeans).
Creating an environment that provides satisfaction to customers
Creating an environment that meets customers' needs
Creating a service environment that matches customers' image
Create space for handbags in women's toilets; install full-body size mirrors; vending machines provide goods without having to talk to sales staff; women visit golf courses not only to play golf but also to enjoy bath and food services; young people need an environment designed for the young.
Wear outfits (including employee uniforms) that match the workplace environment; write announcements and messages for customers horizontally; XEROX and fax machines.
Creating and providing high-value services
Providing high-value services
Providing high-quality services
Being friendly to customers
Adopting a sincere attitude
Learning proper service manners
Provide specific work instructions to part-time and temporary employees.
Memorize their names to call them by their names; give them your business cards when introducing yourself; create friendly relationships.
Greet customers with a winning smile; don't put the manager's desk on the highest floor of the office (which may create a condescending attitude toward customers); provide the highest level of customer services.
Hotel staff must pay attention to how to cross their arms and hold their hands; use polite language and be careful about your appearance; be polite and apologize sincerely; get employees to understand the difference between good services and poor services; provide high-quality services as part of routine activities; learn language manners (e.g., effective use of the phrase "as you know").
Improving the cost performance of services
Creating an impression that you are
Providing services in accordance with costs
Use tricks of numbers (price of 980 yen instead of 1,000 yen; provide free gifts; Art Corporation puts 100 yen in a bag for using the customer's phone, but it is included in the house moving fee; pizza delivery service restaurants give discounts for a pizza delivered 30 minutes or more past the scheduled time.
Customers are satisfied with the services at Disneyland despite the high admission fees. There is no value in services that do not match the costs (in countries other than Japan, customers pay tips for services; McDonalds' staff greet customers with a cheerful smile and are working to create an impression that their products are inexpensive).
Conducting follow-up surveys to see if customers are willing to visit the hotel again
Conduct questionnaire surveys to study reasons why customers visited the hotel; send seasons' greetings to customers.
Increasing the value of the product service system
Sending presents to attract customers' attention
Send a sequence of presents rather than sending all at once; it is better to send a flower bouquet of 1,000 yen ten times than sending a bouquet of 10,000 yen at a time.
Delivering presents to attract customers' attention
Adopt the method chosen first
In order to improve the response rate of a questionnaire survey, provide small presents before the survey; customers almost always request gasoline station staff to fill up their tanks when given wet towels at the time of their arrival at the station; in a credit card society like ours, people tend to enjoy first and work to make payments later rather than spending money they have earned; handing out a flower bouquet to a beauty shop customer before she enter the shop is more effective than handing it out later.
Choosing presents from customers' perspective
It is sometimes better to send a stuffed doll than flowers. Tissue paper bags printed with a store name are bulky and difficult to carry around, so they need to be of a size that fits women's handbags.


Correctly identifying customers' needs (including changes in their needs)
Developing strategies to meet customers' changing needs
Offering new services
Using strategies focused on specific generations or trends
Replace 20% of magazine content by new feature articles every issue.
Yurakucho Marion, a commercial complex, came back to life by developing an environment for female customers. Hotels that adopted special design for women's baths increased the number of their customers. It is necessary for service providers to take the initiative in attracting generations that are used to being served. Women are beginning to enter the world of gambling, such as mahjong, pachinko and horse races, that used to be men's world. There is a need to use a repetition strategy to attract inactive generations that do not use hotels when they have comfortable homes.
Making distinctions between different types of needs and providing appropriate services
Understanding the characteristics of services for male customers
Understanding the characteristics of services for female customers
Provide male customers with logical explanations supported by numbers, which are designed to allow them to show off their knowledge. Male customers tend to remember professional services for a long period of time. Provide specific information with numerical data. The title "Ten Excellent Restaurants in Shibuya" is more attractive than "A Feature on Restaurants in Shibuya."
Correctly identifying customers' responses to services
Studying the actual state of things through questionnaire surveys
Studying trends among customers
According to studies on gender differences, women's stimulus-response time is 85% of men's. Therefore, it is efficient to repeat the same explanation twice for female customers. Women prefer service products that provide more practical and utilitarian benefits. Female customers are intolerant of the same mistake made twice.
Conduct interviews rather than questionnaire surveys to gain a deeper understanding of the actual state of things. Choose services depending on whether or not they meet customers' needs.
Observe the behavior of targeted customers before starting a project. Managers need to pay attention to how employees feel. Consider employees as potential customers and treat them well.
Finding ways to fulfill hidden needs
Showing kindness to customers
Provide information about what customers are interested in knowing. Minor acts of kindness are remembered for a long period of time and make good impressions (e.g., asking a customer who has made a long-distance phone call to hang up the phone and calling back to save the customer the fee for the phone call). Offer information services about daily life. A customer who is looking for a restroom is asking for service. Pointing to a chair and saying "Please sit down" is different from pulling up a chair for a customer to sit down. Learn from circus clowns who are dignified and humorous and yet always play supporting roles. It is kinder to customers to illustrate restaurant menus with photos and pictures.
Helping customers overcome their difficulties
Umbrella-lending service at hotels is a customer service and also an advertisement. Provide quick support to help customers solve their problems. It is a good service to offer to help a female customer purchasing a film roll to install the roll in her camera.
Addressing customers' unique needs
Clearly identifying targeted customers
Those who make good plans listen carefully to the opinions of targeted customers. When providing services to customers, sort out what services are needed for customers in which areas.
Appealing to customers' sense of pride
Requesting female golf-course visitors to sign their names on a list of visitors appeals to their sense of pride (women have less chance of playing golf than men). Telling a customer that the product they have bought is the last one left or the best one available provides satisfaction to the customer, even if they know it is a lie. Wear clothes of a commonly known brand to impress a customer who is sensitive to outward appearances. If what you are wearing is too expensive, the customer may not recognize your clothes as such. A women's magazine increased its sales because it was priced 10 yen higher than ordinary magazines. Low prices do not always bring benefits.
Taking appropriate measures to meet unique customer needs
Offering a hot hand towel is better than offering a cold one on a sultry summer day. A hot towel is more comfortable. Customer complaints provide business opportunities (Konosuke Matsushita, the founder of Panasonic). Pizza delivery service is a form of business that uses customer complaints for business services. Special customer services include (1) unique services, (2) entertaining services and (3) new services. In a place like a department store, which provides business services to attract customers, the lower the ceiling, the more at home customers feel. Services provided with fast speech attract the attention of young people. Offering portable body warmers to golfers on a winter day brings them satisfaction. Providing authentic products and services attracts customers. First-class hotels in Japan provide perfumed soap for customers in order to create an elegant atmosphere.
Support by companies
A unified effort of all employees to provide high-quality services
Putting a service philosophy into practice
Services based on the thought that wages are provided by customers.
Creating a sense of unity
Present purposes and goals of services. Form small groups to share responsibilities.
Present policies. Develop corporate principles and systems and present competitors and models to promote customer-oriented services.