

TRIZ experiences at SMD

SeHo Cheong

About the author



SeHo Cheong enters in Samsung in 1984.

He is one of the first initiators of TRIZ implementation at Samsung.

Since 2004 he was vice-president of Samsung Advanced Institute of Technology.

He supervises and organizes interaction between 6 Sigma and TRIZ application.

Since 2007 he was vice-president of Samsung Electro-Mechanics,
team leader of Solution Creation Group and R&D Innovation Group.

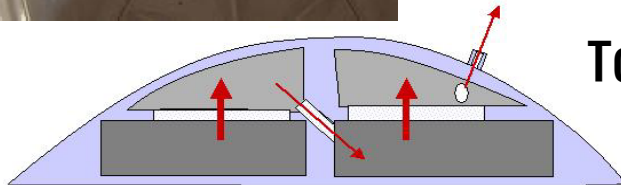
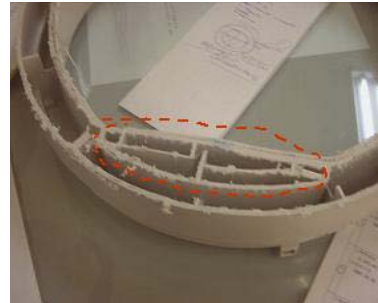
Since 2009 he is managing director of Samsung Mobile Display.

He takes charge of TRIZ Team.

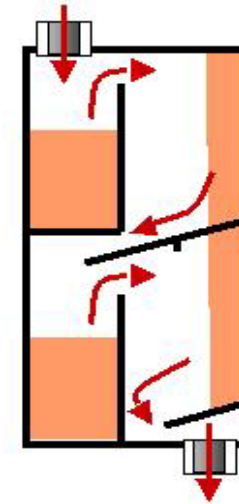
He has qualified a TRIZ Level 3.

Best Practice in 2001 made CEO & engineer TRIZ's friend

- Some early case studies were considered significant because they persuaded senior management to support TRIZ.



Toshiba



SAMSUNG

- After washing by rotation, dehydrate clothes by fast rotation.
- They had a lateral shape Patent.
- By using centrifugal force, we can make a vertical type patent.
- Important thing is finding mechanism and logic.

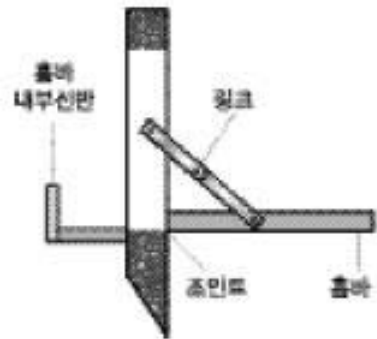
IFR (Ideal Final Result) applied to develop Home-Bar



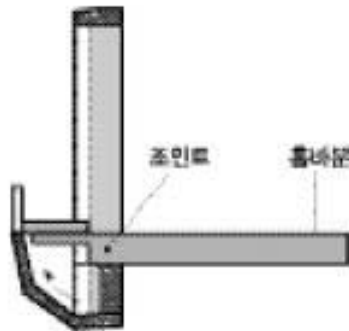
2 link



1 link



System evolves to maximize the useful function and to minimize harmful effect.



Link was not looking good. made cost. can do harm fingers.



SAMSUNG
Refrigerator,
Zipel
0 link

“Samsung Mobile Display” = Display Company

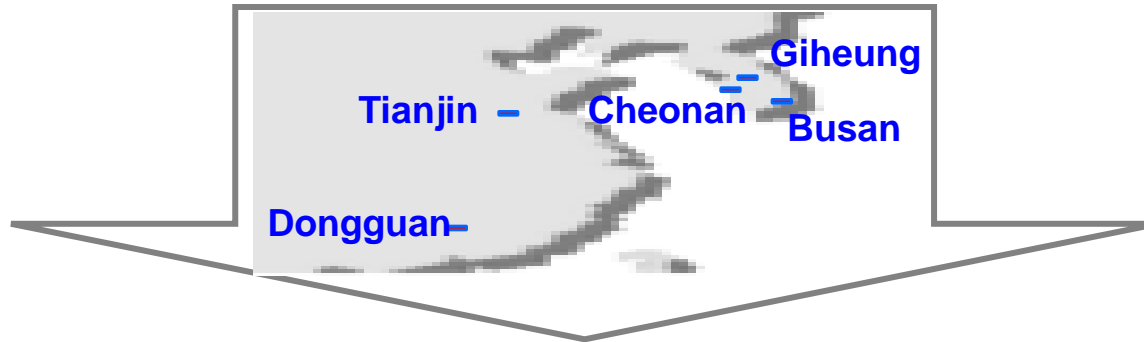


- Market-leading capabilities for LCD panels
- Large-scale AM OLED R&D

2009.1.1



- AM OLED mass production technology
- Development capabilities for LCD modules.

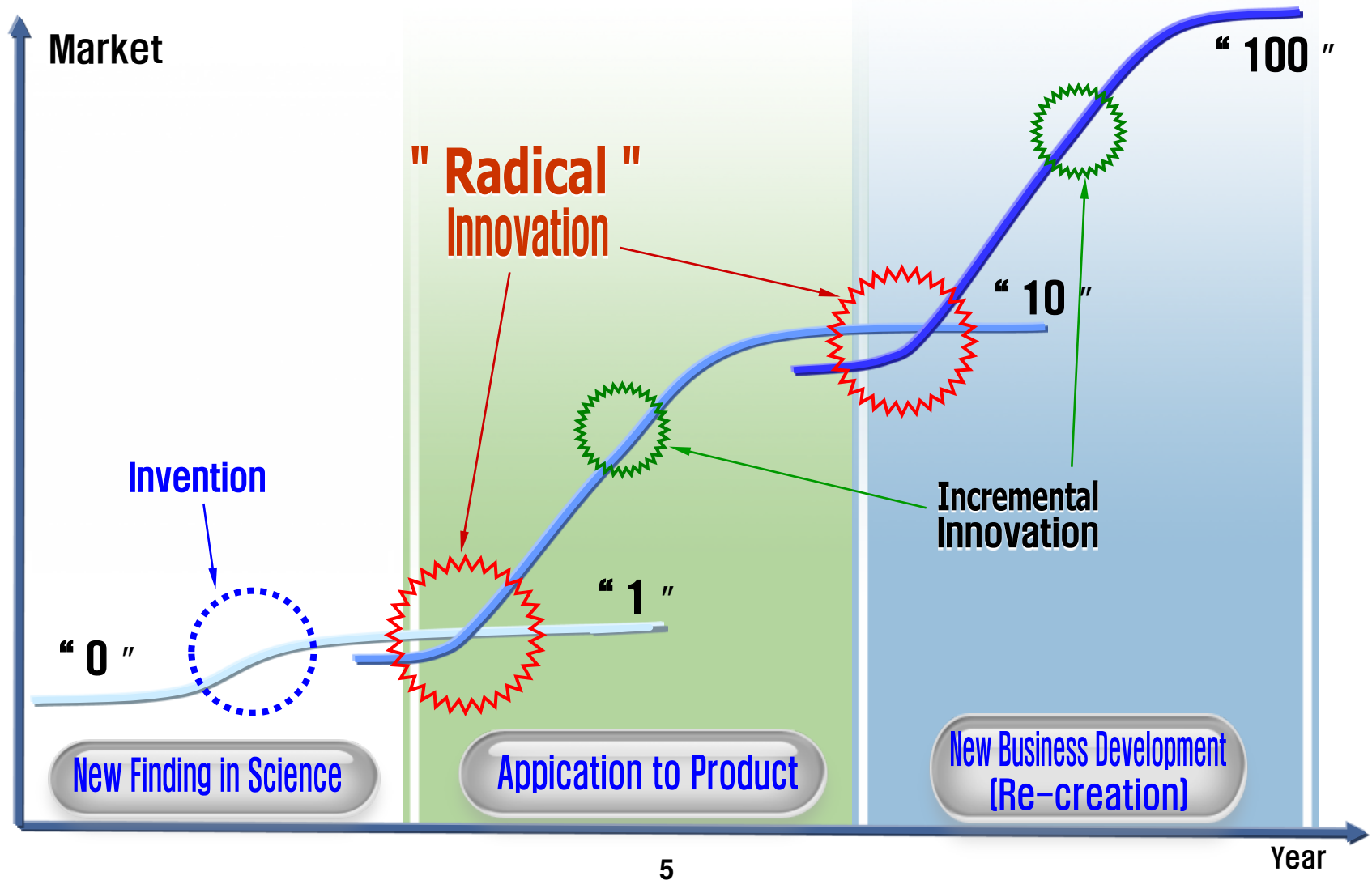


Vision

- The No. 1 company in the small-and-medium display market (AMOLED, PMOLED, STN LCD, TFT LCD, Touch Panel product)
- The first company in the world to commercialize AM OLED laptop computers, large televisions, and flexible displays.

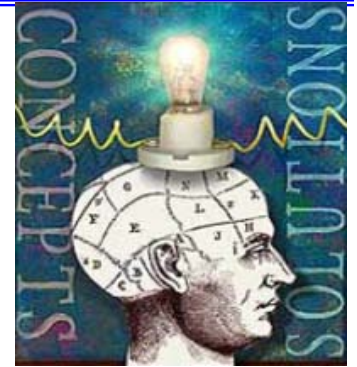
TRIZ in Radical Innovation

- TRIZ in Radical Innovation is significant because it will give your company early market dominance.



To keep the markets dominance

- You desperately need creativity.
- TRIZ is a consequence of creative people and creative works. That's why we can make a good solution by using TRIZ.
- A good solution gets the company more competitive.
- Engineers need to focus on something which interrupts development.
- If you formulate contradiction, you'll find the element hampering the development of system.
 - System is enhanced by getting rid of contradiction
 - Can get ground breaking solutions.



Engineers are asked if they ~

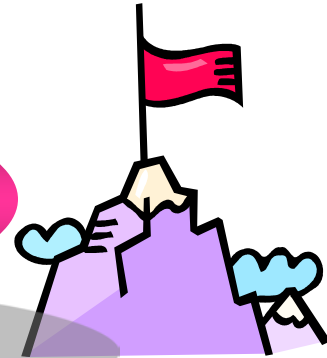
- focus on major contradictions?
- use resources?
- have a concept for future super systems and sub-systems?
- investigate the root cause of the problem?
- draw various concepts at the beginning of the project?



Problem

- Psychological Inertia
- Lack of Knowledge
- Trade-off. Give up
- Wrong problem

Solution



“Persuade CEO” and “Bring CEO Message”

TRIZ will be matched to solve our business

- **The use of TRIZ can change the uncreative to the creative.**
It is hard to be the creative.
But TRIZ will be helpful for someone becoming the innovative.
- Train all technical employee who works for research institute, development team and manufacturing center etc.
- **Make the instruction by using SMD execution example.**
- R&D, manufacturing, Quality management, Marketing, HR division etc. should use TRIZ to develop creative management tool of SMD style.
- **Give high evaluation grade to person who has TRIZ LEVEL certification.**



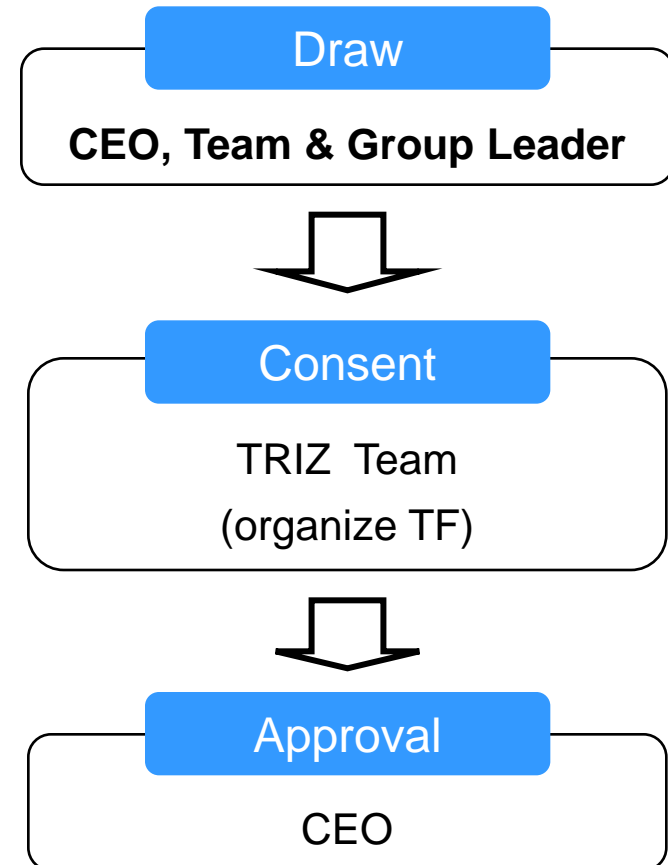
The situation & feature of SMD Project

● No Benchmarking Solution

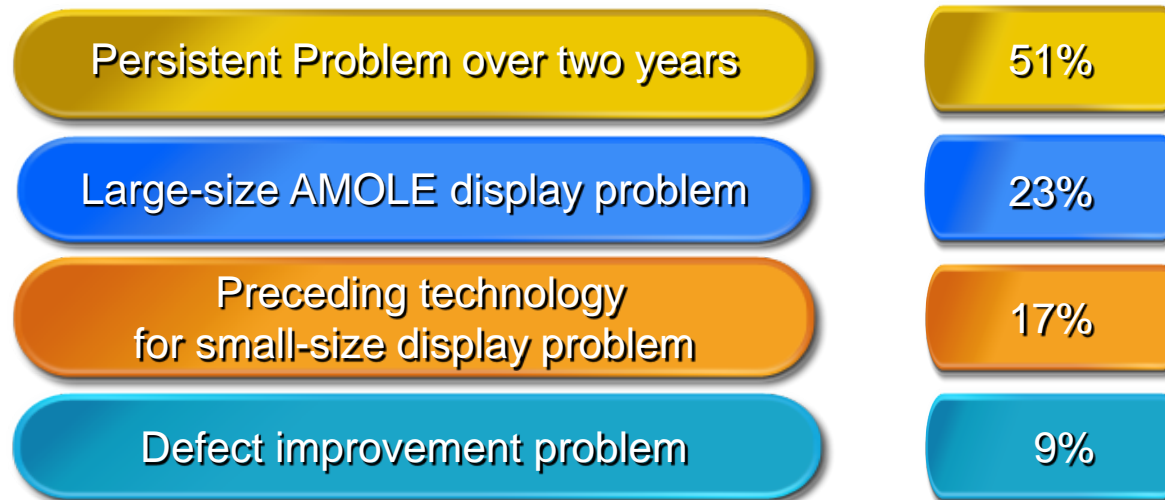


→ Our company is a frontier one in areas of AMOLED and LCD.

● Top-Down style project selection



Classification of TRIZ Project(2009)



- In Samsung Mobile Display, only 9% of projects were defect improvement projects. The majority were new products, or processes for creating the new products.

Typical problems for TRIZ application

- Improvement quality and productivity of technological process
(Unresolved over 2 years, Defects improvement problem)
: e.g. AMOLED LTPS process, Evaporation & Encapsulation, Deposition, Plating etc
- Development of the core and new technologies or process
(Preceding technology, Breakthrough concept problem)
: e.g. large-size AMOLED display etc
- Development of new business
: e.g. Flexible Display, X-lay Display etc
- Combined types of problems
- Circumventing patent
- Conceptual design of manufacturing equipment and product

- Why is less effective result despite a lot of TRIZ projects?

Verification is important.

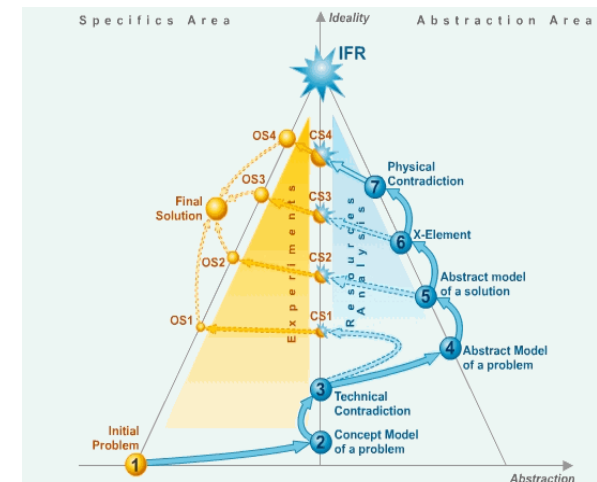
Creativity comes from execution. Waiting kills creativity.



- Top-down project selection is very important

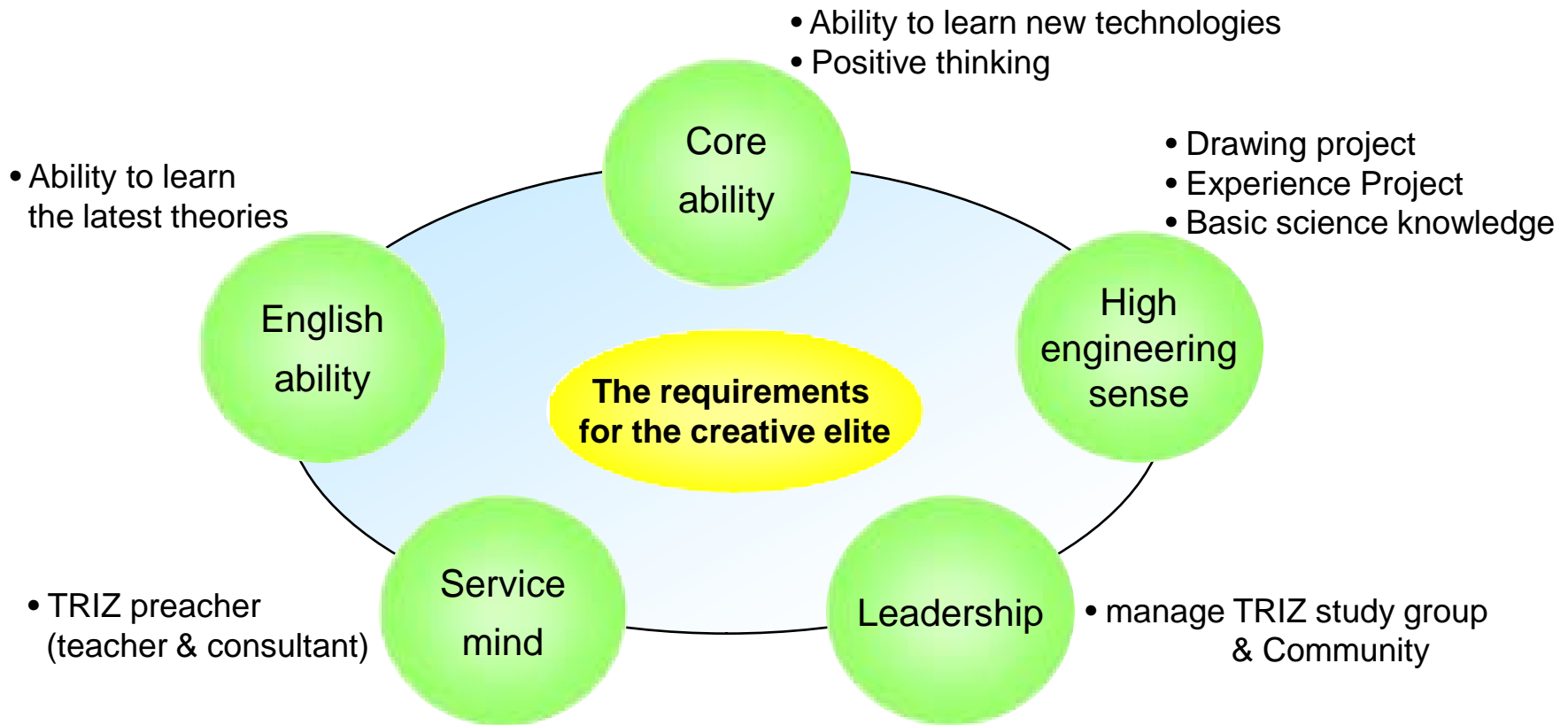
This protects projects from getting cancelled early.

- We wish to solve the problem with the first trial, but usually it suffers several rounds of contradiction.



Bring up creative elite who should be the “Right people”.

- Select people for the “Creative elite” (internal TRIZ promotion and education team) who have both the technical ability and the personality to help other people succeed.



Bring up Creative Elite

Program

- Education

Teach by Samsung Trainer (TRIZ Level 3 or Level 4)

2 weeks for 2 months

Doing his own project during education

- Project

Consult by Samsung Consultant & Russian TRIZ Expert

2 items for 6 months

- Role

Propagate TRIZ at their team

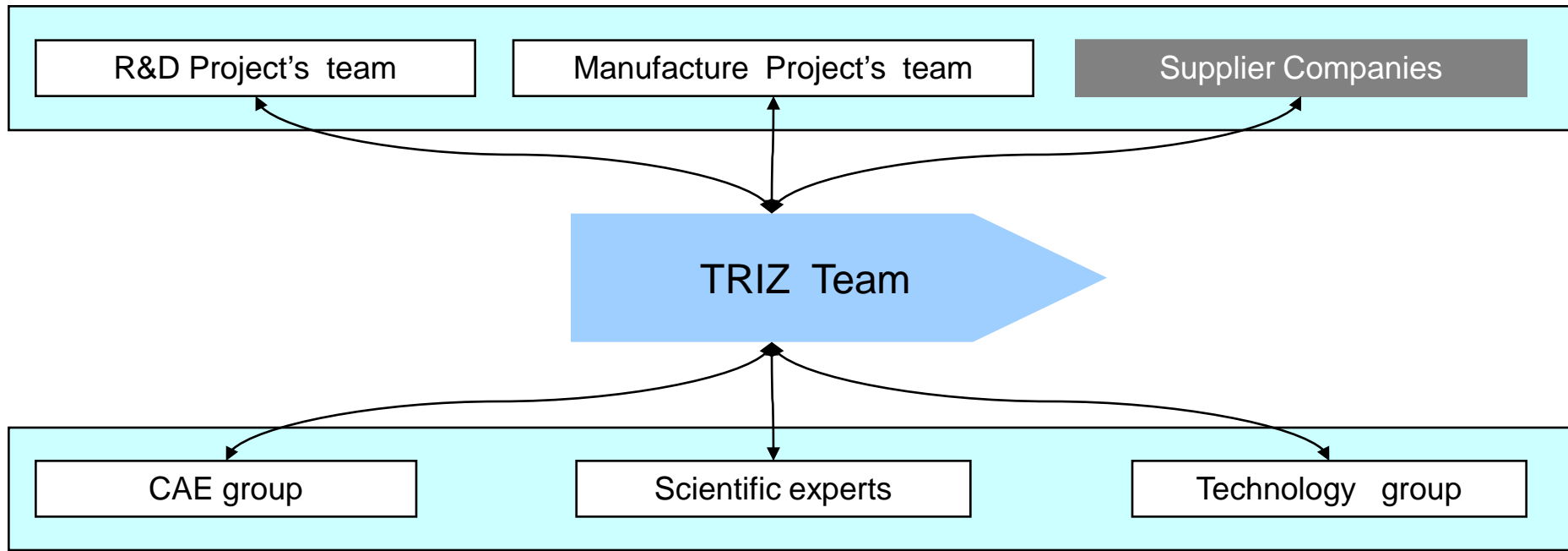
- Result of 2009 : 20 engineers qualified as 'Creative Elite'.



Interaction between TRIZ team and other divisions

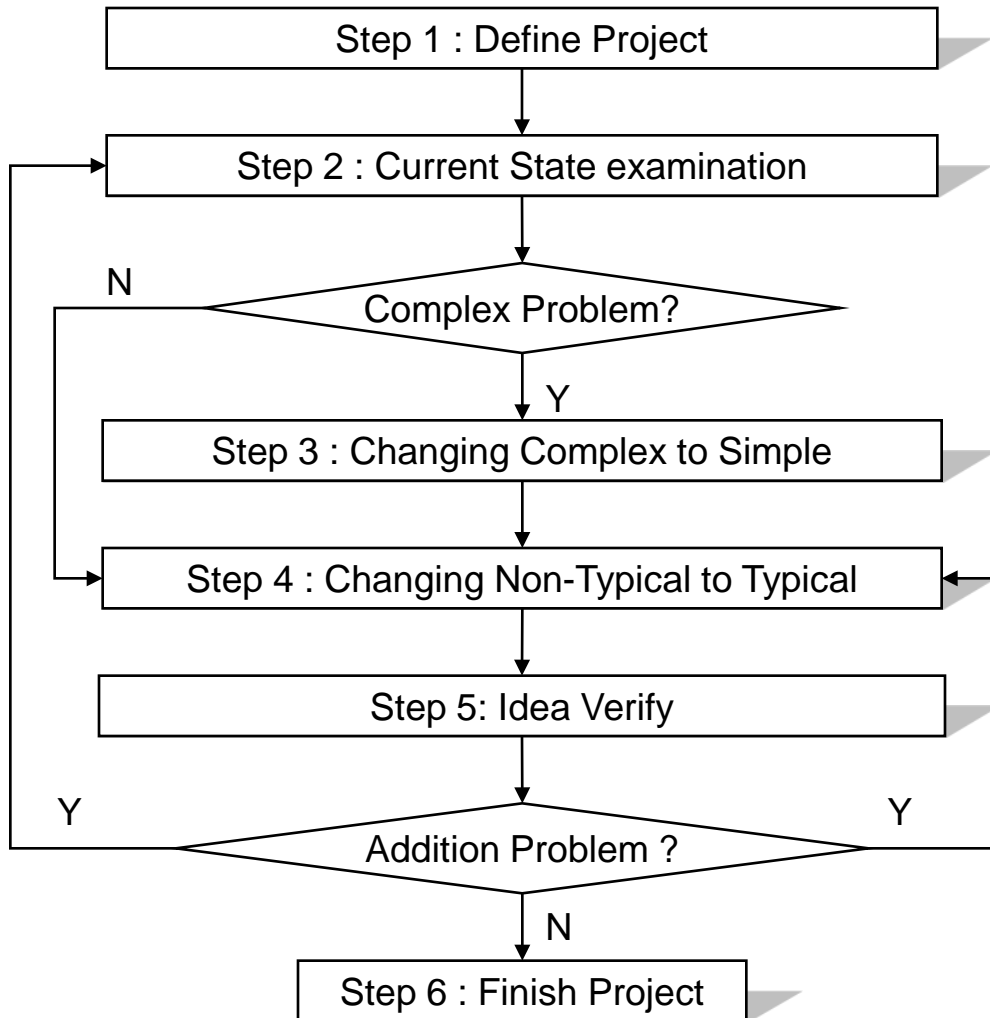
- Use a task force for big projects with the project team and the TRIZ team as partners.

Level of clients



Level of partners

We use a very basic flowchart where appropriate for the specific project.



- Multi Screen Thinking
- Operation Zone
- Operation Time

- Feature Transfer
- Root Conflict Analysis
- Function Analysis

- Inventive Standards
- 40 Principles
- Separation rules
- ARIZ

TRIZ education curriculum



- CEO and director have to pass through a basic training course.
- 4 Step Education Course



Step	Course	Attendance	Type	Time		Main contents
				Training	Project	
1	Cyber	All staff	On-Line	20hrs	-	Fundamental TRIZ
2	Basic	CEO / Director Engineer	Gathering	24hrs	-	Classical TRIZ
3	Level 2	Creative Elite	Camp	60 hrs	50hrs	Modern TRIZ Basic of ARIZ TRIZ Software Practice Project
4	Level 3	Level 2	Gathering	16 hrs	8hrs	Advanced ARIZ Coaching Skill Practice Project

Lesson from experience

TRIZ education

- If you use your company's own cases in the TRIZ training, it would make the trainees to apply what they learned to their work easily.
- Level 2 course consists of 3 days education and 2 days project consulting. Let's use small group(5~6 members) for solving project problem. You can figure out your project with other participants, who have different backgrounds, can help each other.



TRIZ Supporting System

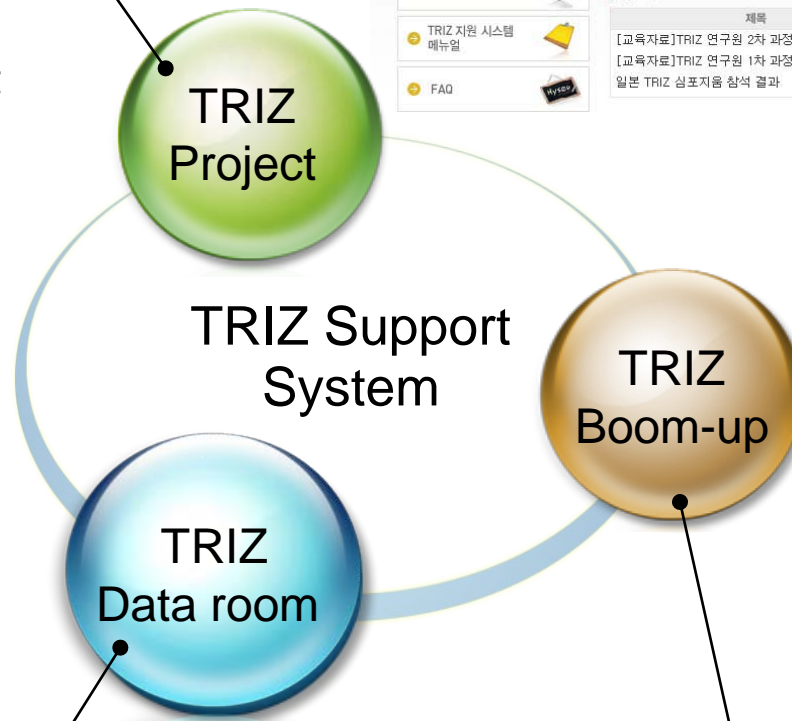
Mission

Effective operation of the TRIZ project and Communication between user.

Main Features

Registration / Progress Monitoring / Assessment Output Doc. registration

Education material
Seminar material
Good cases of Projects



Festival
Level management
Communication



TRIZ Festival in SMD is held annually

● Purpose

To motivate performing of TRIZ project and boom up TRIZ.

● 2009's TRIZ Festival

The 12 best Projects presented and 62 Projects posted their result.
According to decision of jury consisted of CEO and inside directors,
7 awards were given.



STA (Samsung TRIZ Association) Webzine

Purpose

To enhance TRIZ activity and create synergy effect among Samsung relatives through sharing TRIZ information & their issue.

Corporate member

- Samsung Electronics Co.
- Samsung Electro-Mechanics Co.
- Samsung SDI Co.
- Samsung Corning Precision Glass Co.
- Samsung Mobile Display Co.



STA TRIZ Webzine
The More Creative The More Innovative

웹진 지난호 보기 | 41 | 호

TRIZ ISSUE

- 2009년 삼성 TRIZ 컨퍼런스 결과
지난 11월 20일, 2009년 삼성 TRIZ 컨퍼런스가 삼성종합기술원 대강당에서 성황리에 개최 되었습니다. 이번 컨퍼런스는 삼성 내 10개 관계사의 TRIZ 전문가 및 관심 임직원 190여명이 참석한 가운데 각 사의 우수사례와 추진 방법을 공...
- [SDI] TRIZ 우수사례 발표대회 실시
- [전자]'09년 전자 TRIZ 우수과제 및 승급과정 인증 심의회 실시
- [전자]TRIZ Future Conference 2009 결과
- [전자]'09년 전자 TRIZ 우수사례 발표회 실시 예정
- [SMD]2009년 제1회 전자 TRIZ 경연대회 개최

TRIZ Education

TRIZ 온라인 교육 소개

- [전자]DMC연구소 M/M연구팀 TRIZ 세미나 실시
- [전자]TP센터 TRIZ세미나 및 교류회 실시
- [전자]DS부문 당청(LCD) 7차 TRIZ응용과정 교육 실시

발명 칼럼

창의적 인재는 누구인가?
지식기반사회에서 인재의 중요성은 세삼 강조할 필요가 없다. 좁은 국토에, 자원도 빈약한 우리나라가 살아...

TRIZ 교육 수강자 생생 소감

'창의성' 문제에 적면만 당사자의 몫
김의송 책임 (SYS.LSI / C&M)

Say Say TRIZ

유럽 TRIZ 컨퍼런스(ETRIA)를 다녀와서
지난 11월 4일부터 11월 6일 사이에 열린 ETRIA Future 2009 conference에 참석 하게 되었다. 제9회째 열리는 본 행사는 세계 3...



Results of SMD TRIZ in 2009

● Right Projects : 48 items

- Recognition patents : about 50 items
- Overcome secondly Problem during Idea application
- Cooperation with R&D, CAE, Analysis and manufacturing technique division etc
(Express chemical analysis, Simulation & Idea verify)
e.g.: Cell Seal Crack, FMM Mask etc

● Right Peoples : 8 → 28 persons (Level 2/3)

● Right Tools

- Introduce TRIZ methodology based on OTSM-TRIZ
- Find useful tool for SMD : WIW, ENV, MST, RCA, Inventive Standards
e.g.) Electro-Mechanics: RCA, Electronics : Function Analysis

● Right Supports

- Develop TRIZ support program and system
Idea portal, TRIZ material share, BP share
- Introduce TRIZ S/W : Goldfire 5.5
e.g.) Electronics : I-spark 2.0
- Successfully open TRIZ Festival

Future works

- Right Projects
 - Develop a broad base of projects (not just top-down)
 - Reinforce Task Force Project
- Right Peoples : more than 100% increase (Level 2/3)
- Right Tools
 - Improve TRIZ methodology with continuously modified toolset
 - Develop TRIZ methodology for indirect business such as marketing and Human Resource division etc
- Right Supports
 - Improve quality and effect of TRIZ education & consulting program.
 - Open TRIZ Festival regularly



**Thank you
for your attention!**

