While working for the RAND Corporation in the 1950s, Dr. Charles Kepner and Dr. Benjamin Tregoe conducted research on breakdowns in decision making at Strategic Air Command.

They discovered that successful decision making by US Air Force officers had less to do with rank or career path than in the logical process an officer used to gather, organize, and analyze information before taking action.

Based on their initial research, they founded Kepner-Tregoe, a company that continues to analyze and develop thinking processes for critical business applications.

Problem Solving and Decision Making according to Kepner and Tregoe consists of four distinct processes, each designed to address a specific type of business situation:

- Situational Appraisal
- Problem Analysis
- Decision Analysis
- Potential Problem Analysis

The brake makes noise when I turn right after leaving the motorway!

Cause: Corrosion on disc brake after rain.
Ceiling light jitters from time to time.

Air ventilation has been adapted – wet air reaches light bulbs.

Situational Appraisal

helps to evaluate "the whole picture" by

• breaking issues down into workable pieces,
• establishing priorities, and
• selecting appropriate steps to resolve the issues.

Situation Appraisal answers the question

“What’s going on?”

Situational Appraisal

is a tool to use in order to:

• Examine an issue in greater depth
• Surface opinions or feelings about an emotional/volatile issue
• Know what is on people's minds
• Get started on an assignment or project
• Address complex situations

The steps of Situation Appraisal help “SCAN” a complex circumstance:

• See the Issues
• Clarify the Issues
• Assess Priorities
• Name Next Steps
Problem Analysis

is used to find the cause of a positive or negative deviation.

When people, machinery, systems, or processes are not performing as expected, Problem Analysis points to the relevant information and leads the way to the root cause.

http://www.edisonohio.edu/business/KepnerTregoeDecisionMaking.htm

Problem Analysis

When something unexpectedly goes wrong, people typically want to take immediate action.

Doing something makes us feel better - maybe we will be able to fix the problem.

http://www.tregoe.org/AboutTEF/AboutTEF-PA.htm

Problem Analysis

However, without knowing what caused the problem, we are more likely to make changes that either don’t fix the problem or make it worse.

Other times people focus more on who’s at fault than on how to fix it.

Getting and using information effectively is difficult.

http://www.tregoe.org/AboutTEF/AboutTEF-PA.htm

Problem Analysis

Problem Analysis helps us “FIND” the most likely cause when something goes wrong:

• Focus on the Problem
• Identify Is and Is Not
• Narrow Possible Causes
• Determine True Cause

http://www.tregoe.org/AboutTEF/AboutTEF-PA.htm

Decision Analysis

Many times a day, we are all faced with the need to make decisions.

Sometimes those decisions are crucial, and sometimes they are more routine.

http://www.tregoe.org/AboutTEF/AboutTEF-DA.htm

Decision Analysis

Decision Analysis is designed to help us to look at the purpose of our decision and carefully consider what we want to accomplish before we ever examine our options.

In choosing an option, we consider not only how well it meets our objectives, but also what risks may be involved.

http://www.tregoe.org/AboutTEF/AboutTEF-DA.htm
Decision Analysis

The steps of Decision Analysis help us “SELECT” an appropriate choice:

- State the Decision
- Establish and Classify Criteria
- List Options
- Evaluate Options against Criteria
- Consider Risks
- Trust Your Work – Pick a Winner!

http://www.tregoe.org/AboutTEF/AboutTEF-DA.htm

Decision Analysis is used for making a choice.

Decision Analysis helps when the path ahead is uncertain, when there are too many choices, or the risk of making the wrong choice is too high.

Decision Analysis clarifies the purpose and balances risks and benefits to arrive at a solid and supported choice.

http://www.edisonohio.edu/business/KepnerTregoeDecisionMaking.htm

Potential Problem Analysis

is used to protect actions or plans.

When a project simply must go well, risk is high, or myriad things could go wrong, Potential Problem Analysis reveals the driving factors and identifies ways to lower risk.

http://www.edisonohio.edu/business/KepnerTregoeDecisionMaking.htm

Potential Problem Analysis can help us to:

1. Examine the potential consequences of our decisions or actions;
2. Implement a decision that has been made; and
3. Prepare for an upcoming event or change.

http://www.tregoe.org/AboutTEF/AboutTEF-PPOA.htm

Problem Solving and Decision Making – Kepner-Tregoe

Decision Analysis

provides a process for making a decision when the choice among options is unclear, helping to examine systematically the elements of any decision – criteria, options, and risks.

Decision Analysis answers the question

“What course of action should we take?”

http://www.tregoe.org/AboutTEF/AboutTEF-AnalyticProcess.htm

Problem Solving and Decision Making – Kepner-Tregoe

Potential Problem Analysis

Actually making a decision is only the beginning.

Once that choice is made, we begin the process of living with it.

The best decision-making process is rendered useless if the implementation of that decision is unsuccessful.

http://www.tregoe.org/AboutTEF/AboutTEF-PPOA.htm
Potential Problem Analysis provides tools for risk reduction by helping to

- identify potential problems (opportunities) and
- plan preventive (promoting) and
- contingent (capitalizing) actions.

Potential Problem Analysis answers the question “What lies ahead?”

http://www.tregoe.org/AboutTEF/AboutTEF-AnalyticProcess.htm

Ask the right questions!

- What is … ?
- When was/did … ?
- Who is/can/did … ?
- Where is/was/did … ?
- Why is/does … ?
- How is/can/did … ?

Problem Solving and Decision Making – Kepner-Tregoe

You begin with a specific goal in mind
You get a different result
You find the deviation

Begin → Goal

Point of Deviation

Actual

You analyze and correct the deviation

This is the Problem

Ask the right questions!

- What is NOT … ?
- When was/did … NOT… ?
- Who is/can/did … NOT… ?
- Where is/was/did … NOT… ?
- Why is/does … NOT… ?
- How is/can/did … NOT ?

Problem Solving and Decision Making – Kepner-Tregoe
• What is known?
• What was observed?
• What are the constraints?
• What is important?
• What are the goals / objectives?
• What can be expected?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• What is NOT known?
• What was NOT observed?
• What are NOT constraints?
• What is NOT important?
• What are NOT goals?
• What is NOT expected?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• When did the problem occur?
• When must the solution be implemented? When did changes occur?
• When were instruments calibrated?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• When did the problem NOT occur?
• When is the solution NOT needed?
• When did changes NOT occur?
• When were instruments NOT calibrated?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• Who can provide more information?
• Who is the customer?
• Who performed (each) task?
• Who is source of information?
• Who is affected by problem?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• Who can NOT provide information?
• Who is NOT the customer?
• Who did NOT perform (each) task?
• Who is NOT source of information?
• Who is NOT affected by the problem?
Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• Where did the problem occur?
• Where are input sources located?
• Where is equipment located?
• Where are products shipped?
• Where is the customer located?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• Where did the problem NOT occur?
• Where are input sources NOT located?
• Where is equipment NOT located?
• Where are products NOT shipped?
• Where is the customer NOT located?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• Why is the problem important?
• Why does the solution work?
• Why is there a problem?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• Why is the problem NOT important?
• Why does the solution NOT work?
• Why is there NOT a problem?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• How is the problem related to other problems?
• How can a task be performed?
• How did the problem develop?

Problem Solving and Decision Making – Kepner-Tregoe

Ask the right questions!

• How is the problem NOT related to other problems?
• How can a task NOT be performed?
• How did the problem NOT develop?
The Decision Making process into six logical steps:

1. State the Purpose
2. Establish Objectives
3. Classify Objectives
4. Weigh the WANTs
5. Compare Alternatives
6. Choose the Best Course of Action

2. Establish Objectives –
   All objectives are defined in a list.

4. Weigh the WANTs –
   Rate importance of each WANT on a scale of 10 to 1 for each.

3. Classify Objectives –
   Separate into MUSTs and WANTs.

5. Compare Alternatives –
   Assign and compare total scores for each alternative.
The Decision Making process into six logical steps:

6. Choose the Best Course of Action –
Commit to the best choice by verifying that each acceptable alternative meets all MUST requirements and has maximal WANT score.

http://www.econ.state.or.us/ICsup1.pdf

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