BSH Hausgeräte Gruppe

B/S/H/

8D Method Overview for Suppliers

Source: Bosch Booklet 16
V1.0

April 2021

Agenda

1. Objective and principles for problem solving

2. Procedure of the 8D method

   D1: Establishing problem solving team/project

   D2: Problem description

   D3: Containment actions

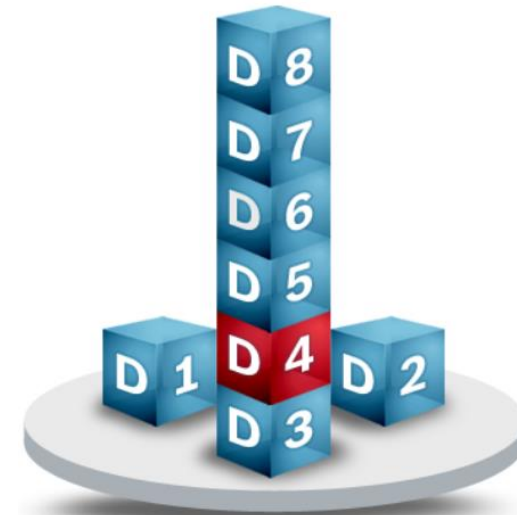   **D4**: Cause and effect analysis

   D5: Defining corrective actions and proving effectiveness

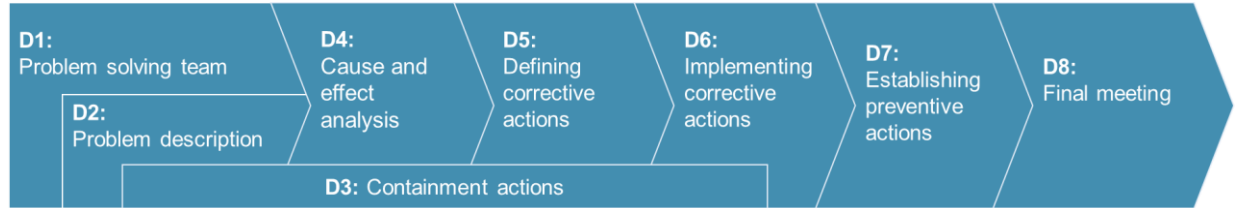   **D6**: Implementing corrective actions and tracking effectiveness

   D7: Establishing preventive actions
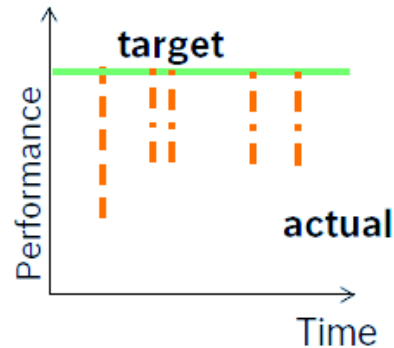
   D8: Final meeting

3. Example: Stomach ache
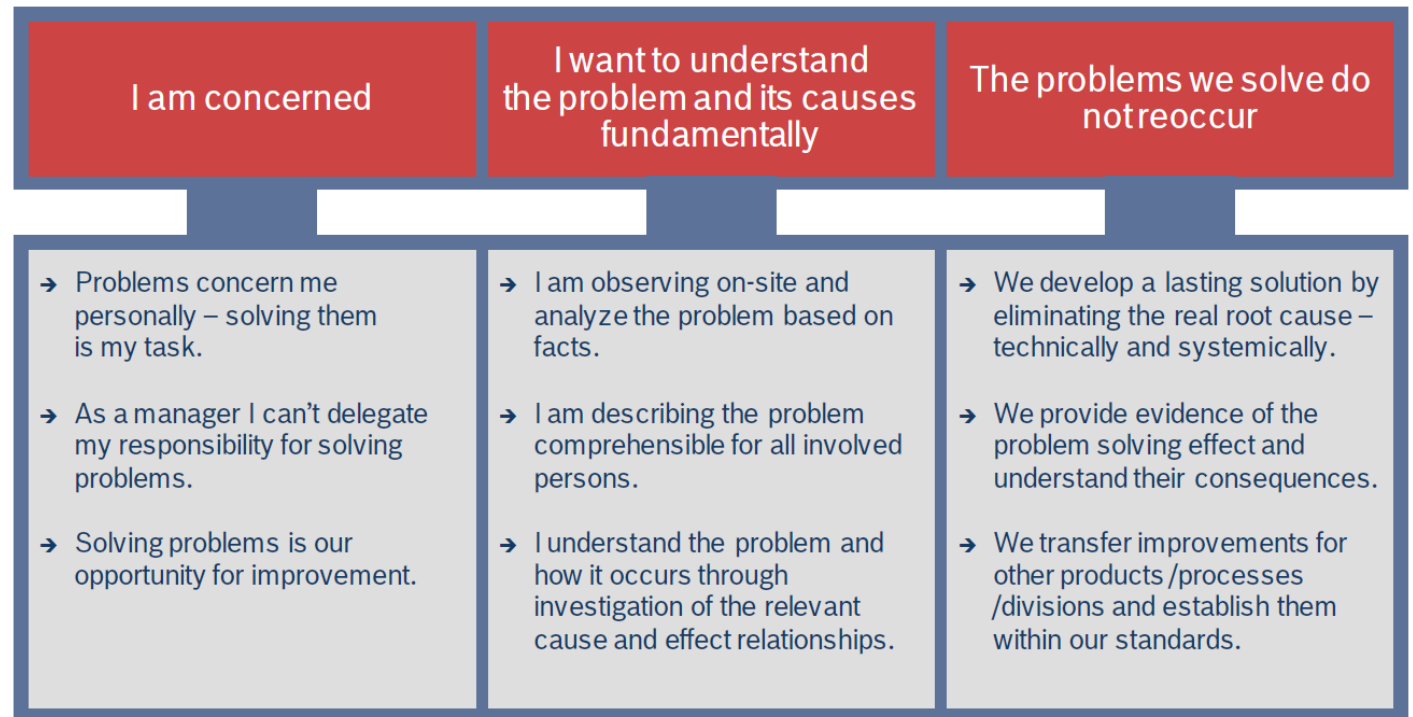
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Objective and principles for problem solving

D1: Problem solving team	D4: Cause and effect analysis	D5: Defining corrective actions	D6: Implementing corrective actions	D7: Establishing preventive actions	D8: Final meeting
D2: Problem description					
D3: Containment actions					

Objectives:

- Eliminating problems

- Preventing the recurrence

target

Performance

actual

Time

Principles for problem solving (mindset):

| I am concerned	I want to understand the problem and its causes fundamentally	The problems we solve do not reoccur
→ Problems concern me personally – solving them is my task. → As a manager I can't delegate my responsibility for solving problems. → Solving problems is our opportunity for improvement.	→ I am observing on-site and analyze the problem based on facts. → I am describing the problem comprehensible for all involved persons. → I understand the problem and how it occurs through investigation of the relevant cause and effect relationships.	→ We develop a lasting solution by eliminating the real root cause – technically and systemically. → We provide evidence of the problem solving effect and understand their consequences. → We transfer improvements for other products /processes /divisions and establish them within our standards.

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Procedure of the 8D method

Defining responsibilities

Execution of all **8 disciplines necessary** using the **8D report template**
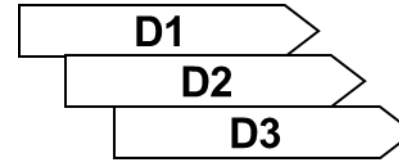
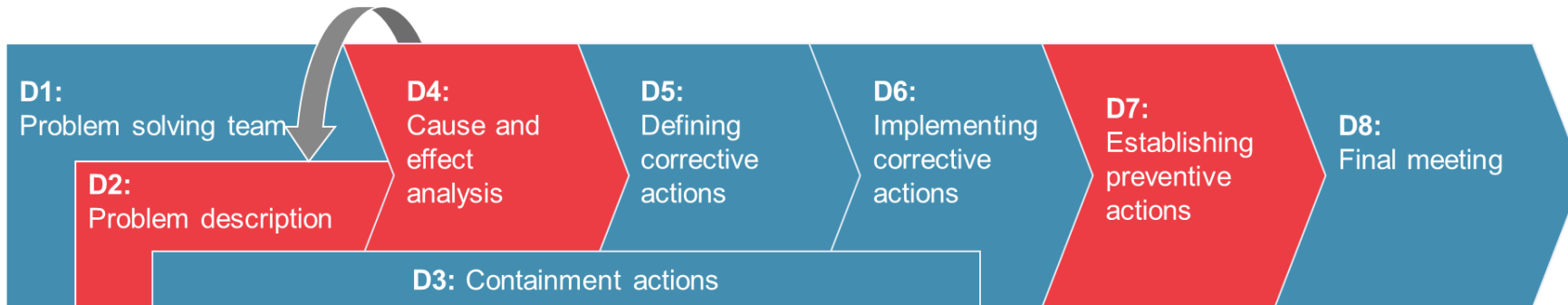**D1 to D3** can be executed in **parallel**

BSH reaction rule: **2-14-60-90-Days***

Recurrences often helpful

D1: Problem solving team

D2: Problem description

D3: Containment actions

D4: Cause and effect analysis

D5: Defining corrective actions

D6: Implementing corrective actions

D7: Establishing preventive actions

D8: Final meeting

The scope may vary depending on complexity of the topic.

* The reaction rule defined in the supplier contract applies to faulty parts which are caused by suppliers.

D1: Establishing problem solving team/project

Team leader

- Nominated by the sponsor

- Sets up the 8D project team

- Cares for **consistent application** of the method

- **Informs** the sponsor and externals about the status of the problem solving
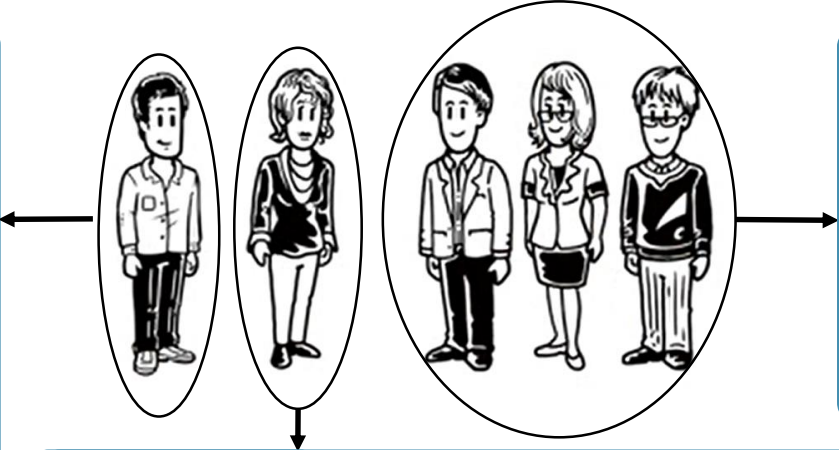
Team members

- Persons with **adequate knowledge** and **abilities** for problem solving

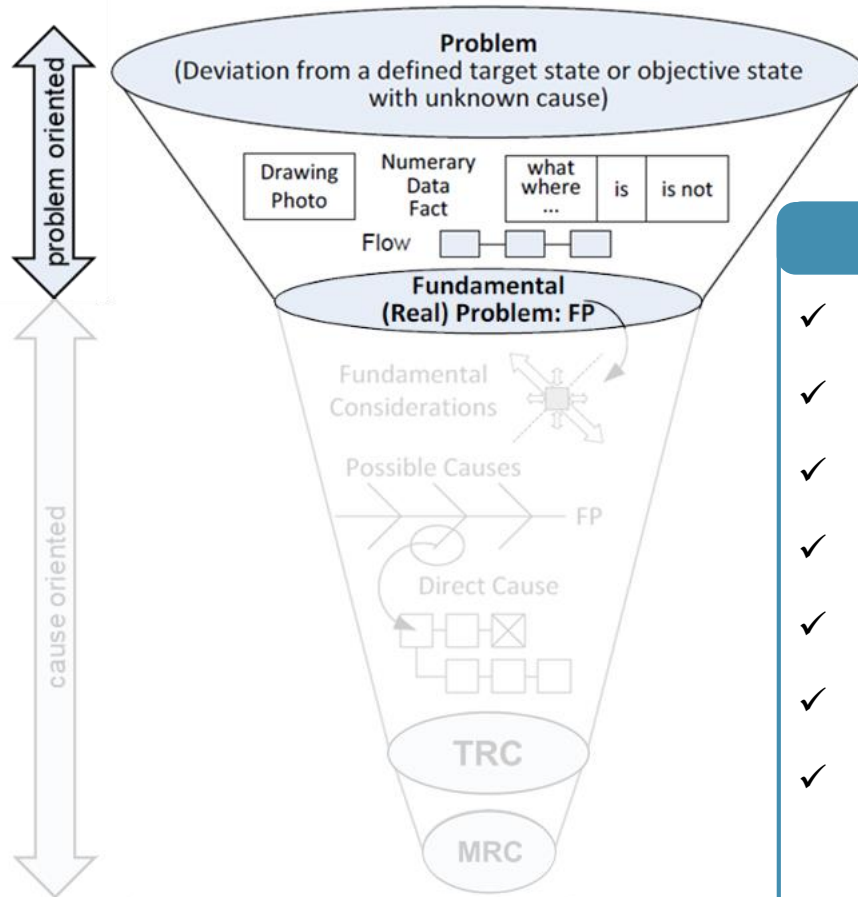- Can also be **representatives of** external **customers/suppliers**

Sponsor

- Minimum head of department

- Sets up the 8D project team

- **Requests regular reporting** of the team

- Has to be **involved in the determination of the MRCs**

- **Prioritization** of the intern **problem solving topics**

The composition of the team must be adapted if necessary during the steps D1 to D7.

Result: **Problem solving team, if necessary project organization**

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D2: Problem description

Problem
(Deviation from a defined target state or objective state with unknown cause)

Drawing Photo | Numerary Data Fact | what where … | is | is not

Flow

Fundamental (Real) Problem: FP

Fundamental Considerations

Possible Causes

FP

Direct Cause

TRC

MRC

problem oriented

cause oriented

Procedure:

✓ Situation description (**pictures**, diagrams,…)

✓ Facts collection, Is/Is not[1] (statistical proof)

✓ Structuring, analysis, containment of the problem

✓ Explanation of the target status

✓ Include all affected areas/products

✓ **Comprehensible and detailed description**

✓ **Beginning** of **risk evaluation[2]**

→ Estimation of the occurrence probability and the damage extent

NO hypothesis!

NO guesses!

Problem solving funnel
Bosch Booklet 16, page 7-8

[1]Facts collection, Is/is not
Example video

[1]Facts collection, Is/is not
Bosch Booklet 16, page 12-14

[2]Risk evaluation Bosch
Booklet 16, page 53

Result: **Description of the fundamental problem**

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D3: Containment actions

Objectives: **Containment of the effects** and **prevention of the recurrence** at the customer

Procedure:

✓ **Directly after** a problem **becomes known containment actions** have to be **defined**; example given:

→ **Lots on hold/sorting** manufactured products

→ **Incoming inspection** for delivered products

✓ **Update risk evaluation**

→ **Assessment of** possible unrequested **side effects before implementation** of containment actions

→ **Take all** (potential) products **into consideration**

Transport   Intermediate store   Customer

✓ **Implementation of the containment actions**

✓ **Documentation** of containment actions and their results

✓ **Forwarding of the information** to all (potential) affected areas
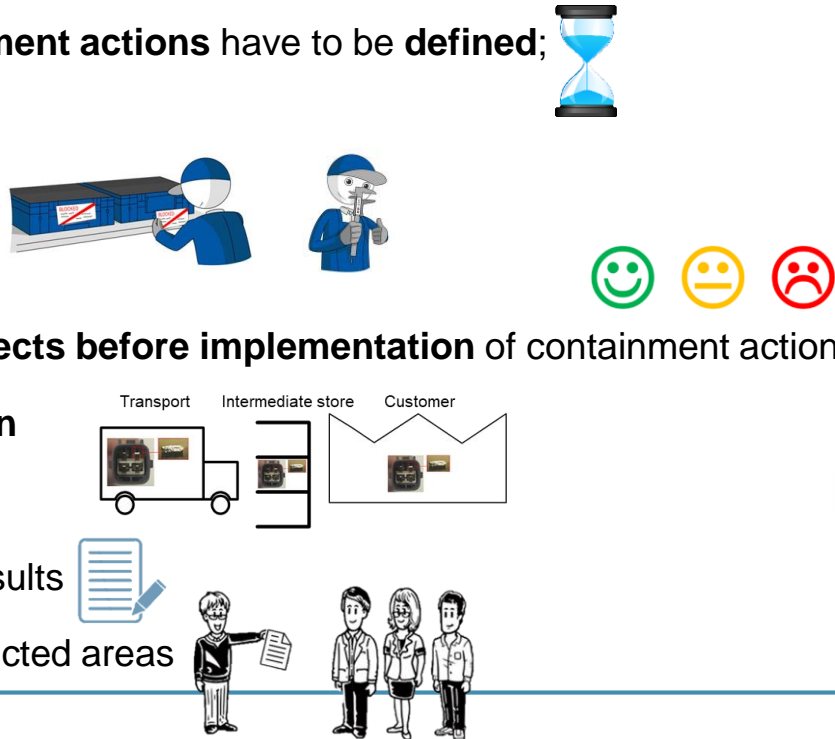
BSH reaction rule
After 2 Days:
Status of defined
containment actions

Result: Implemented containment actions incl. documentation and information to the customer

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D4: Cause and effect analysis

Procedure:

✓ **Putting myself into** the object

✓ **Describe and understand the target-function and actual-function** and **determination of deviations**

✓ Derivation of **possible causes**

✓ **Prioritize** and **check plausibility of** possible **causes**

Methods:

Cause-effect-relationship and target-actual comparison[1]

Cause and effect diagram (Ishikawa)

[1]Cause-effect-relationship and target-actual comparison Bosch Booklet 16, page 25-26

Problem solving funnel Bosch Booklet 16, page 9-10

The probable cause is **not** equal to the root cause.

Result: Probable causes

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D4: Cause and effect analysis

Objective: **Check plausibility** and **eliminate** possible **causes** (with evidence)

Man
(Management)

(Measuring equipment)

Method

Cause

Cause

Cause

Cause

Cause

Fundamental Problem
(Effect, Deviation, Defect)

Cause

Cause

Cause

Cause

Environment

Machine

Material
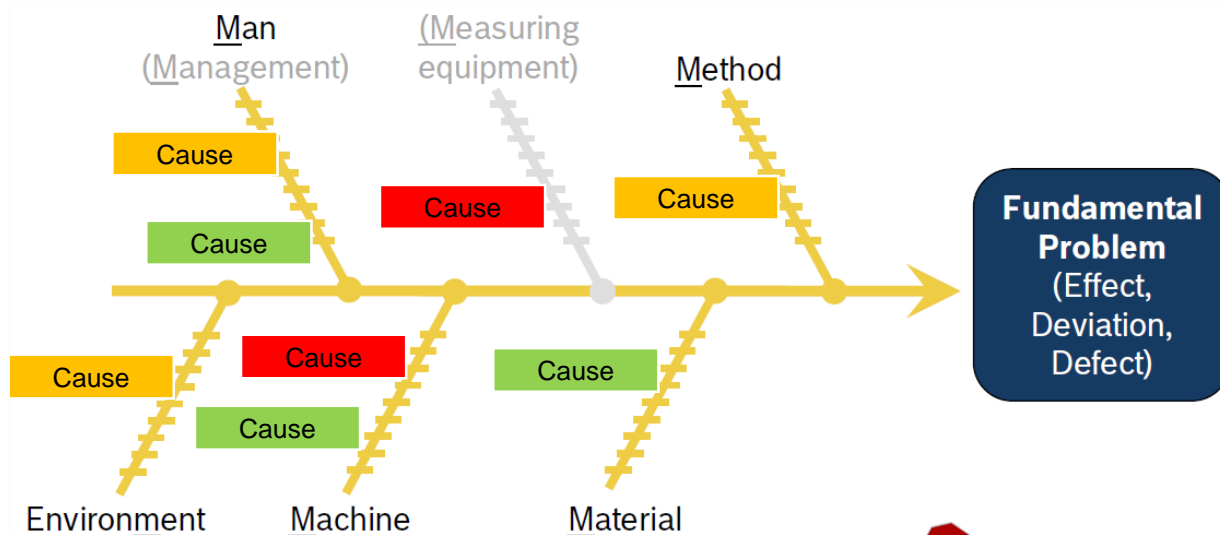
Procedure:

✓ **Evaluating** possible causes according to:

Cause	Plausible and probable
Cause	Possible
Cause	Eliminated with evidence

Use Ishikawa to **check** the **completeness**, instead of apply it for brainstorming.

[Ishikawa Bosch Booklet 16, page 14-15](#)

Result: **Probable causes and decisions regarding further investigations**

D4: Cause and effect analysis
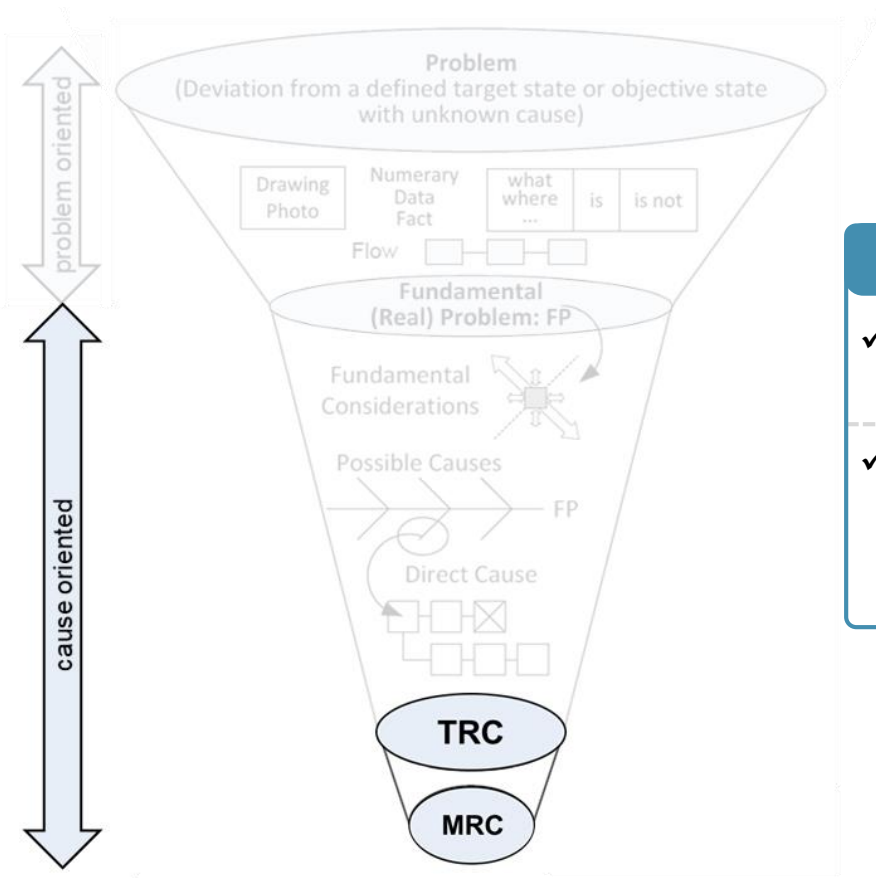
Procedure:

✓ **Proving** causal and functional **relations** (logic and function)

✓ **Closure** of the **risk evaluation**

→ The occurrence probability and the damage extent are determined

Methods:

5 Why?[1]

Technical Root Cause: Interaction of causing conditions

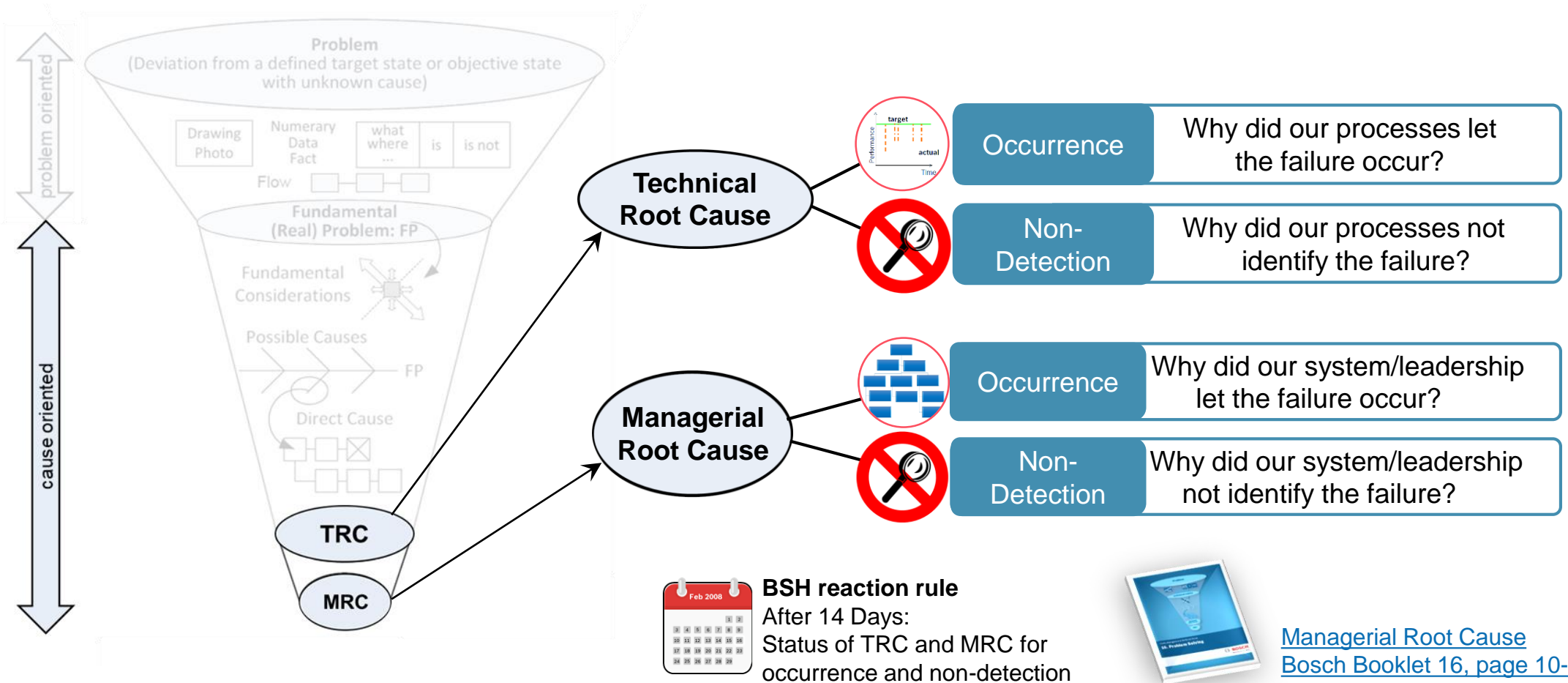**Managerial Root Cause**: Systemic root cause and leadership root cause

[1]5 Why Example video
[1]5 Why Bosch Booklet 16, page 15-16

Result: **TRC and MRC of the occurrence and of non-detection**

D4: Cause and effect analysis

Problem
(Deviation from a defined target state or objective state with unknown cause)

problem oriented

Drawing Photo | Numerary Data Fact | what where ... | is | is not

Flow

Fundamental (Real) Problem: FP

Fundamental Considerations

Possible Causes — FP

cause oriented

Direct Cause

TRC

MRC

Technical Root Cause

| | Occurrence | Why did our processes let the failure occur? |
| Non-Detection | Why did our processes not identify the failure? |

Managerial Root Cause

| | Occurrence | Why did our system/leadership let the failure occur? |
| Non-Detection | Why did our system/leadership not identify the failure? |

BSH reaction rule
After 14 Days:
Status of TRC and MRC for occurrence and non-detection

Managerial Root Cause
Bosch Booklet 16, page 10-11

Result: TRC and MRC of the occurrence and of non-detection

D4: Cause and effect analysis
Examples for MRCs

Managerial Root Cause

Occurrence — Our system/leadership let the failure occur because of the following MRCs:
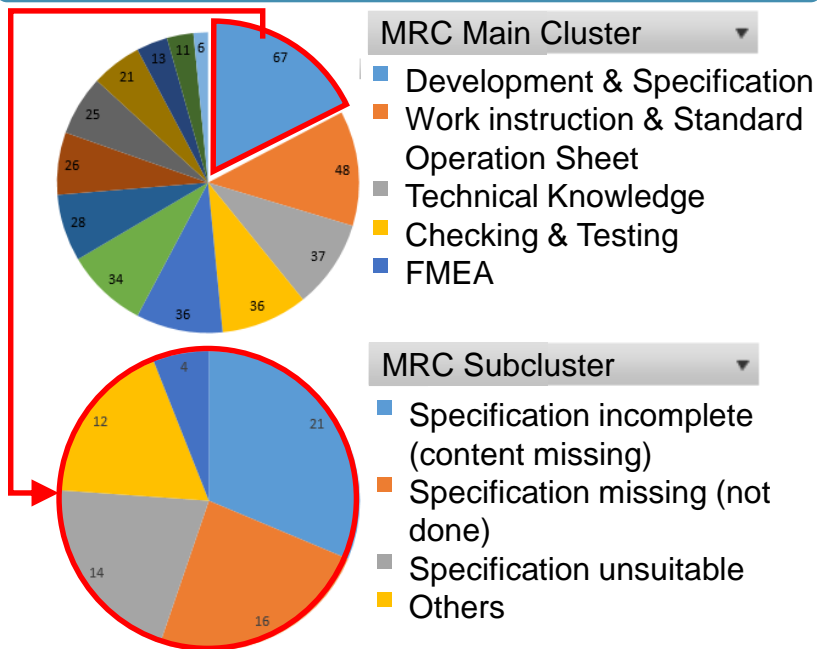
Non-Detection — Our system/leadership did not identify the failure because of the following MRCs:

MRC Main Cluster ▼
- Development & Specification
- Work instruction & Standard Operation Sheet
- Technical Knowledge
- Checking & Testing
- FMEA

Occurrence Main Cluster values: 67, 48, 37, 36, 36, 34, 28, 26, 25, 21, 13, 11, 6

MRC Subcluster ▼
- Specification incomplete (content missing)
- Specification missing (not done)
- Specification unsuitable
- Others

Occurrence Subcluster values: 21, 16, 14, 12, 4

MRC Main Cluster ▼
- Checking & Testing
- Development & Specification
- Work instruction & Standard Operation Sheet
- FMEA
- Others

Non-Detection Main Cluster values: 78, 42, 33, 28, 24, 22, 21, 16, 16, 10, 9, 6, 5

MRC Subcluster ▼
- Inspection process (not defined)
- Test method (not defined)
- Test method unsuitable (ineffective/inaccurate/sample size)
- Others

Non-Detection Subcluster values: 17, 11, 11, 11, 10, 9, 6, 3

Result: MRC Main Cluster and Subcluster

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D5: Defining corrective actions and proving effectiveness

Procedure:

✓ **Definition** of potential **corrective actions** (TRC and MRC)

✓ Performing theoretical and/or practical examination of the measures, in order to **prove effectiveness** (and prevent with objective evidence unrequested secondary effects) + **documentation**

→ „Are the defined corrective actions the best long-term solution?"

✓ **Selecting corrective actions** to be implemented

✓ Defining **responsibilities for the implementation** of corrective actions and creation of a **time plan**

If it´s not possible to prove effectiveness, the definition of the root causes and/or the corrective actions are wrong. Step D4 and D5 have to be repeated.

BSH reaction rule
After 60 Days:
Detailed report with defined corrective actions

Defining corrective actions
Bosch Booklet 16, page 54

Result: Corrective actions with effectiveness evidence

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D6: Implementing corrective actions and tracking effectiveness

Procedure:

✓ **Implementation** of the selected **corrective actions (concerning TRC and MRC)**

✓ **Tracking of effectiveness** of the implemented corrective actions and documentation of the results for **TRC and MRC**
   → Control the intern process and the customer process

✓ **Removal of the containment actions** after implementation and after proving effectiveness of the corrective actions

Performance

Actual = Target

Time
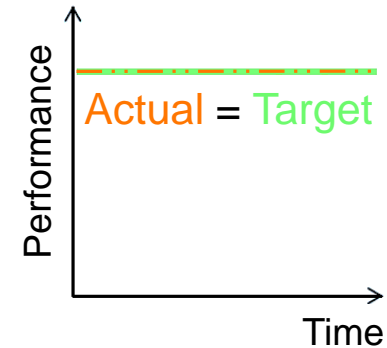
Implementing corrective actions
Bosch Booklet 16, page 55

Result: Established and in the effectiveness confirmed corrective actions, removal of the containment actions from D3

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D7: Establishing preventive actions

Procedure:

✓ **Review of other processes/products**

✓ **Transfer lessons learned** to other processes, products, locations, …

→ "Are other customers possibly affected too?"

→ "Can we benefit from the expertise to prevent other potential problems?"

✓ **Transmit** gained **knowledge** (Lessons Learned[1]) to avoid duplicated work

✓ It has to be assured, that the defined actions will be implemented (update of the documentation, e.g. FMEA, control plan)

[1]Lessons Learned Bosch Booklet 16, page 40-42

Preventive actions Bosch Booklet 16, page 55

Result: **Updated standards, exchange of experience (Lessons-Learned)**

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D8: Final meeting

Procedure:

✓ **Assessment of 8D problem solving with project team using the evaluation sheet**

✓ **Critical evaluation** of the implementation of the problem solving process

→ "How often were the deadlines met?"

→ "How often were the targets achieved?"

→ "Which improvements can be helpful for future problem solving processes?"

✓ **Documentation** of the results

✓ **Signature and conclusion of the 8D report by the customer and the sponsor**

Evaluation sheet

Datei Start Einfügen Seitenlayout Formeln Daten

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8D Evaluation Sheet

8D Report Number :
8D-Report Title :

Assessment team:
Business Unit
Plant / Location:

8D STEP	NOT SATISFYING	BASIC LEVEL	EXCELLENT	SUM
D2 Problem Description	Empty or only symptom description, data collection is missing.	x Fundamental (real) Problem, occurence and effects are described comprehensibly and unambiguously (including detailled quantitative data: what, where, when, how much, who, ...).	Additional information with regard to interface and effect at customer are available	3

BSH reaction rule
After 90 Days:
Completion of problem solving with 8D method

Final meeting Bosch Booklet 16, page 55

Evaluation sheet

Key Questions

Result: Evaluation of the steps D1 to D7 and conclusion of the problem solving with agreement of the involved persons

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Example: Stomach Ache
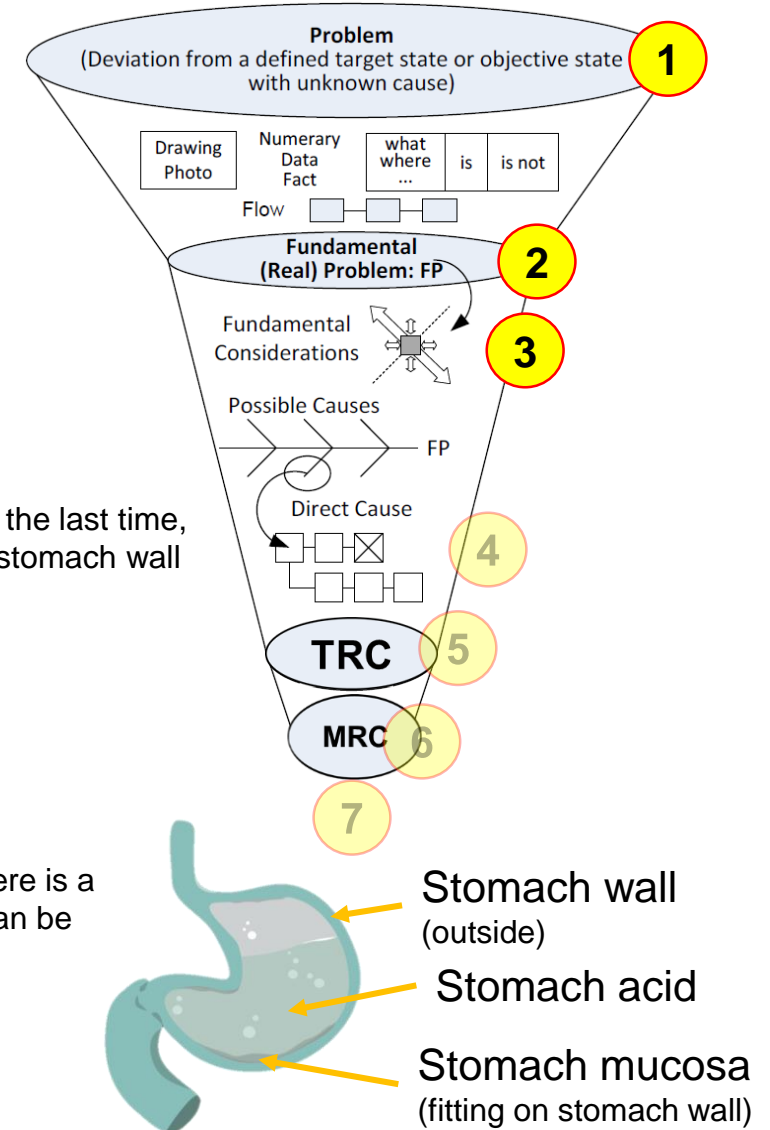
1 **SYMPTOM:**
Stomach ache

- *Asking questions*
- *Is/Is not*
- *Ultrasound*
- *Palpation*

2 **FUNDAMENTAL PROBLEM:**
Since 3 days burning pain in the upper stomach, patient has been in his home country the last time, symptom occurs for the first time, patient is 26 years old, ultrasound shows thickened stomach wall

- *Understand the context*
- *Asking questions (Of what does the object consists? What does it depends on? How does the object work?)*

3 **FUNDAMENTAL CONSIDERATIONS:**
The stomach mucosa protects the stomach wall from the corrosive stomach acid. If there is a disproportion between the stomach acid and the stomach mucosa, the stomach wall can be attacked by the stomach acid and can get thicker.
Possibility causes: too much stomach acid, too less stomach mucosa

- *Blood test*
- *Gastroscopy*

Stomach wall (outside)

Stomach acid

Stomach mucosa (fitting on stomach wall)

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Example: Stomach Ache
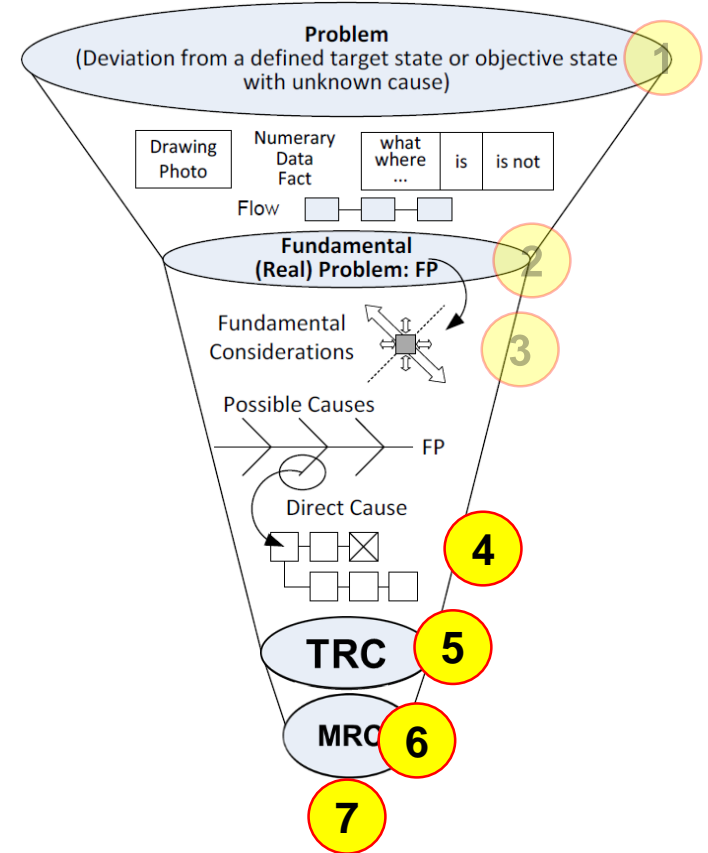
4   **DIRECT CAUSE:**
I have too much stomach acid.

5 Why?

5   **TECHNICAL ROOT CAUSE:**
My body produces too much stomach acid through daily fast-food consumption.

5 Why?

6   **MANAGERIAL ROOT CAUSE**:
I have too much stress/too less time to prepare healthy meals.

- *How can I prevent the recurrence of the stomach ache?*

7   **LESSONS LEARNED:**
At the weekend, I will precook healthy meals for the week.
I will search some restaurants that offer fast but less fatty food. During my holiday, I compile a collection of low-fat and fast recipes.

Problem
(Deviation from a defined target state or objective state with unknown cause) **1**

| Drawing Photo | Numerary Data Fact | what where … | is | is not |

Flow

Fundamental (Real) Problem: FP **2**

3

Fundamental Considerations

Possible Causes ————— FP

Direct Cause **4**

TRC **5**

MRC **6**

7

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Links

D2	**Problem solving funnel** Bosch Booklet 16, page 7-8	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=8
	Facts collection, Is/is not Example video	◄	https://www.youtube.com/watch?v=CXYmYBrNwuc
	Facts collection, Is/is not Bosch Booklet 16, page 12-14	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=13
D3	**Risk evaluation** Bosch Booklet 16, page 53	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=54
	Containment actions Bosch Booklet 16, page 53	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=54
D4	**Cause-effect-relationship and target-actual comparison** Bosch Booklet 16, page 25-26	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=26
	Problem solving funnel Bosch Booklet 16, page 9-10	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=10
	Ishikawa Bosch Booklet 16, page 14-15	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=15
	5 Why Example video	◄	https://www.youtube.com/watch?v=IETtnK7gzlE
	5 Why Bosch Booklet 16, page 15-16	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=16
	Managerial Root Cause Bosch Booklet 16, page 10-11	◄	https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=11

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Links

D5	**Defining corrective actions** Bosch Booklet 16, page 54		https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=55
D6	**Implementing corrective actions** Bosch Booklet 16, page 55		https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=56
D7	**Lessons Learned** Bosch Booklet 16, page 40-42		https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=41
	Preventive actions Bosch Booklet 16, page 55		https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=56
D8	**Final meeting** Bosch Booklet 16, page 55		https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=56
	Evaluation sheet		https://media3.bsh-group.com/Documents/16274480_Appendix_3_Self-evaluation_EN_DE.xlsx
	Key Questions		https://media3.bsh-group.com/Documents/16274489_Appendix_4_Key_Questions_D_Steps.pdf
	Terms and definitions Bosch Booklet 16, page 50-51		https://media3.bsh-group.com/Documents/16274506_booklet-no16-problem-solving_EN.pdf#page=51

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