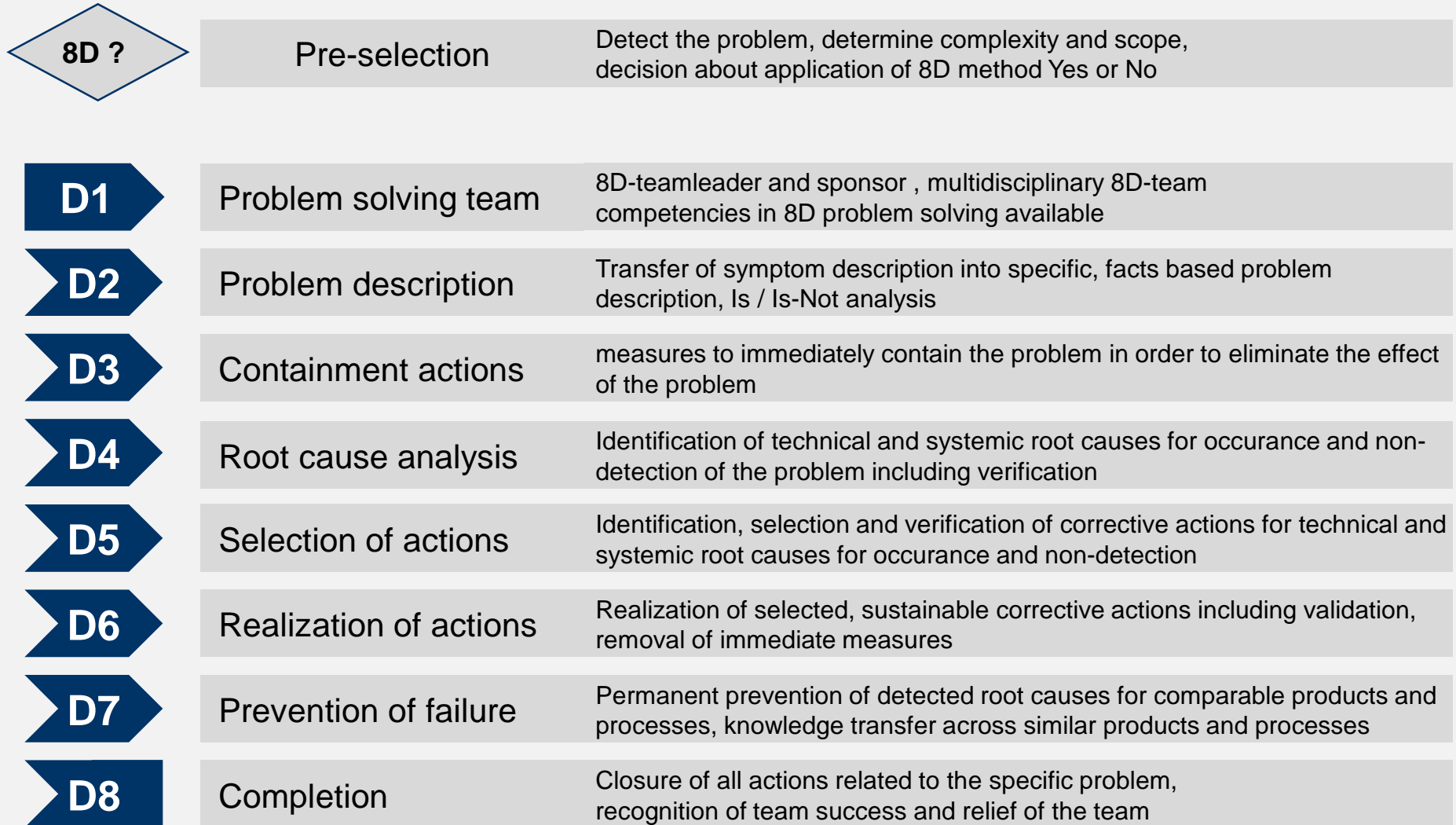
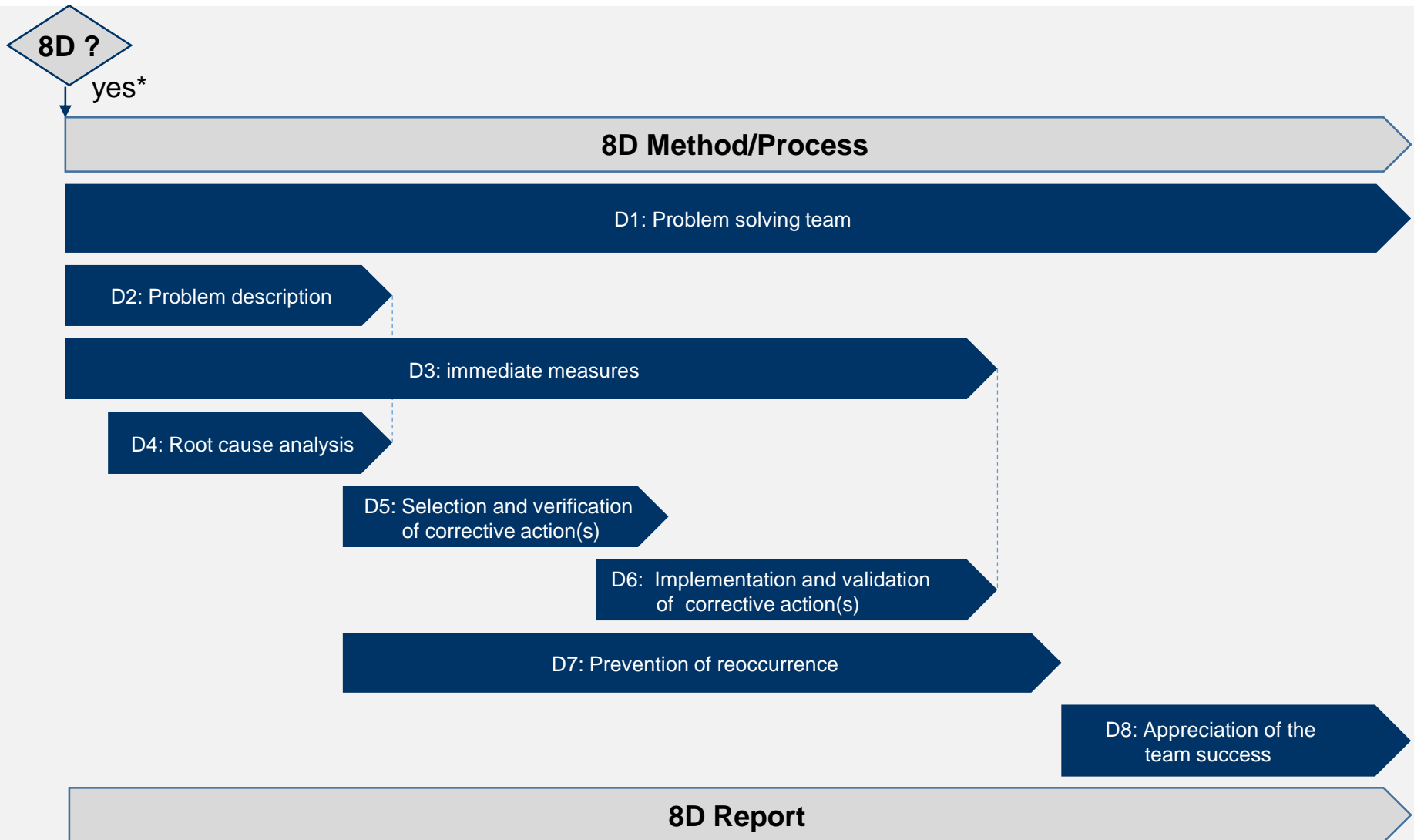


8D – Problem Solving in 8 Disciplines



Overview



* Decision-making criteria for 8D Method

Original symptom description



Problem-specific team

Basic requirements

- Team leader named
- Sponsor named
- The relevant departments are represented in the team, expertise is available
- The sponsor's position within the hierarchy reflects the dimension of the problem
- Skills relating to the 8D problem resolution process are available

Criteria for reaching excellent

- Clearly named and comprehensible function and department
- 8D moderator
- Independent reviewer (fresh eyes)

Applicable methods and tools

- Organization chart
- Training matrix

Original symptom description

Failure collecting chart

| Fehlerbild | Mo | Di | Mi | Do | Fr |
|--------------|----|----|----|-----|----|
| Fehlerbild 1 | 0 | 0 | 0 | 117 | 53 |
| Fehlerbild 2 | 23 | 0 | 0 | 0 | 0 |
| Fehlerbild 3 | 1 | 2 | 1 | 4 | 0 |



Information obtainment

Collection of facts

Is-/Is-Not Analysis

What? When?
Where? How many?

Collection of facts

Is-/Is-Not Analysis

Does a target-actual deviation exist?

Information substance grows

Specific problem description

Basic requirements

- Understandable problem description (description of deviation between target and actual)
- Problem description based on figures, data, facts; clear and understandable description (It is easy to follow: What is the deviation? Where is the deviation? When did the deviation occur? How often/how many items or item numbers are affected?)
- Is / Is-Not analysis is done

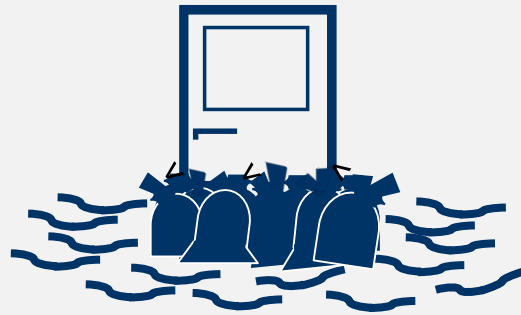
Criteria for reaching excellent

- Further documentation with additional media (images, audio, video) are attached.
- Is / Is-Not analysis is documented by using further methods
- Potential effects on similar products, processes and locations have been checked

Applicable methods and tools

- Is / Is-Not facts
- Histogram (failure distribution)
- Error collection card (time of occurrence)
- Pareto analysis (frequency distribution)
- Flow charts (workflows, schematic diagrams, processes, interfaces)
- To-do list
- ABC analysis (prioritization)

Specific problem description



Protect against impact!
(through effective immediate measures)

Immediate measures

Identify

Vote

Verify

Prove effectiveness



Buy yourself time!
(through effective immediate measures)

Risk analysis

Implemented immediate measures and evidence of effectiveness

Basic requirements

- Identification and selection of immediate measures on the basis of Is / Is-Not analysis
- Detailed description of the immediate measure
- Responsible person named
- Dates (actual plan) documented
- Evidence of effectiveness kept
- Residual risk, side effects of the immediate measure considered

Criteria for reaching excellent

- Ongoing documentation of effectiveness of the immediate measures until durable corrective actions are implemented
- Methodical investigation of the residual risk and documentation of the side effects
- Traceable documentation of the identification and selection of immediate measure on the basis of the Is / Is-Not analysis

Applicable methods and tools

Applicable methods for establishing measures

- ABC analysis
- Pareto analysis
- Risk matrix
- Before-after comparison

Applicable methods for validation/ implementation

- Flow diagrams
- Histogram
- Pareto analysis

Specific problem description

Collection of facts

Is-/Is-Not analysis

Analysis results

1 Technical Examination

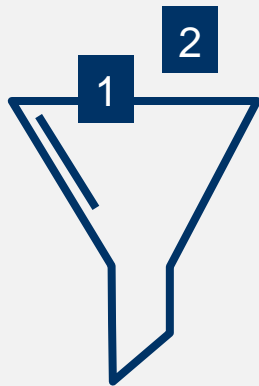
Occurrence

Non-detection

2 Systemic Examination

Occurrence

Non-detection



Determination of potential causes

Identification of most likely causes

Verification of most likely causes

Ishikawa



FTA



5 Why



Hypothesis-test

Cross exchange
simulation, DoE



Verified root causes

Basic requirements

- Systematic identification of causes with the aid of methods (e.g. Ishikawa or 5 Why)
- Technical root causes for the occurrence and non detection have been identified
- Confirmation of causes via Is/Is Not description from D2 (no contradiction)
- Systemic root causes for the occurrence and non detection have been identified
- A failure cause category has been assigned to each identified root cause
- Risk assessment has been updated

Criteria for reaching excellent

- Easy-to-follow documentation; all causes of the problem occurrence and non detection have been demonstrably determined
- The continuous description of the procedure of describing symptoms through to verification of causes is understandable for third parties

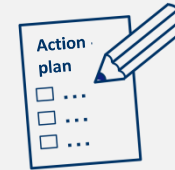
Applicable tools and methods

- Ishikawa
- FTA
- 5 Why method
- Continuing Is / Is-Not (changes and differences)
- Hypothesis test

Verified, actual root causes

| Technical Occurrence | Technical Non-detection | Systemic Occurrence | Systemic Non-detection |
|---|---|---|---|
| Measure <input type="checkbox"/> | Measure <input type="checkbox"/> | Measure <input type="checkbox"/> | Measure <input checked="" type="checkbox"/> |
| Measure <input type="checkbox"/> | Measure <input checked="" type="checkbox"/> | Measure <input type="checkbox"/> | Measure <input type="checkbox"/> |
| Measure <input checked="" type="checkbox"/> | Measure <input type="checkbox"/> | Measure <input checked="" type="checkbox"/> | Measure <input type="checkbox"/> |

Proof of effectiveness



Verified measures with action plans for implementation

Basic requirement

- Possible corrective actions listed in relation to all root causes (technical and systemic)
- Traceable effectiveness assessment
- Reasons for selection of corrective actions must be comprehensible
- Approved, detailed action plan (dates, responsible parties, required resources are approved)
- Possible unintended effects of each of the corrective actions have been analyzed

Criteria for reaching excellent

- Methods are used to provide evidence, which is documented (e.g. using a decision matrix)
- Providing evidence is comprehensible for third parties

Applicable methods and tools

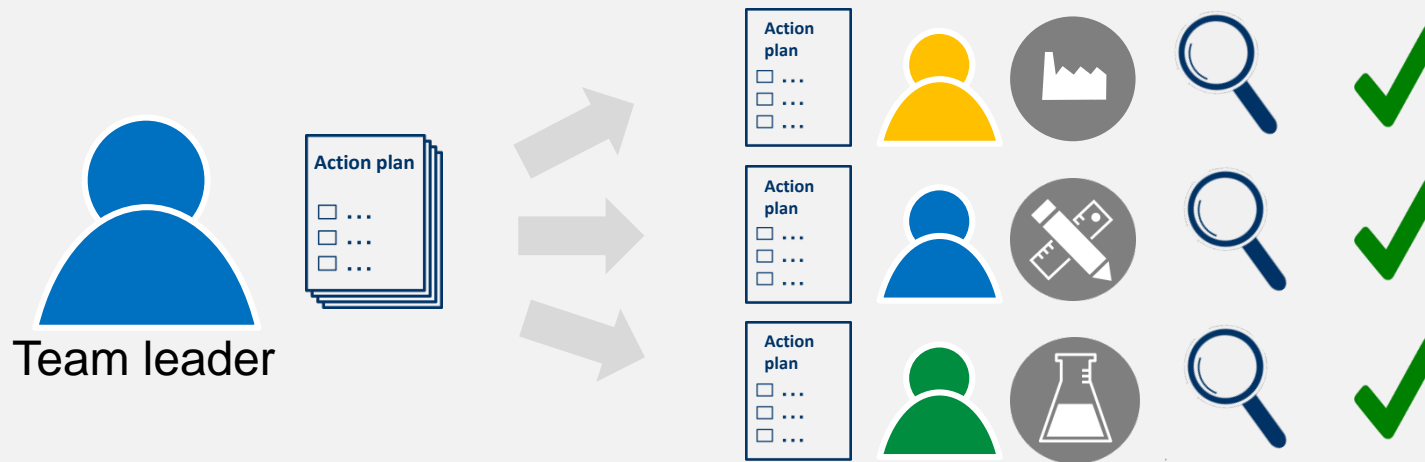
Methods for collecting and defining corrective actions

- Creativity techniques
- Poka-yoke approach
- Flow charts (workflows, schematic diagrams, processes, interfaces)

Methods for assessing and verifying the corrective actions

- Decision matrix
- Risk analysis matrix
- Action plan

Verified measures with action plans for implementation



Validation of corrective actions

Removal of immediate measures from D3

Sustainable corrective actions implemented

Basic requirement

- Implementation of the selected long-term corrective actions based on the action plan (from D5)
- Validation of the effectiveness of the long-term corrective actions
- Cancellation of immediate measures after validation of long-term corrective actions

Criteria for reaching excellent

- Verification, especially of validation, is performed and documented with the aid of methods (e.g. experiments, evidence, photos, drawings, etc.).
- Verification, in particular of validation, is described in a way that is comprehensible to third parties.
- Long-term embedding of the corrective actions into specific processes and into related organizational systems and standards are documented and traceable

Applicable methods and tools

Methods for realization

- Action plan
- Ressource plan
- Project plan
- Product and process approval

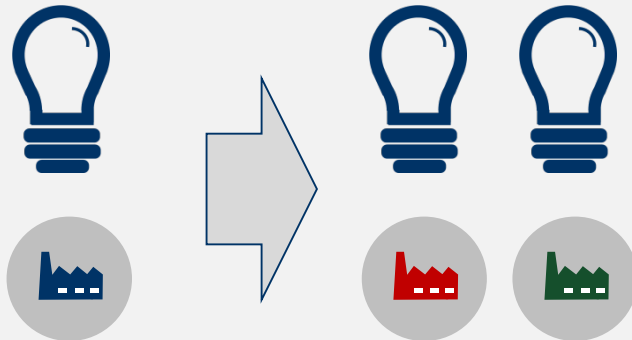
Methods for validation

- Pareto chart of failures, histogram, error collection card
- Log files, dumps
- Machinery/process capabilities
- Interaction analysis overall process/system

Problem from D2, causes from D4, actions from D5 and D6

1

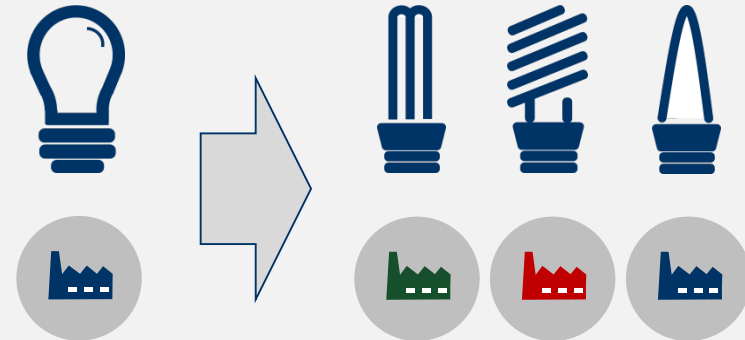
Prevention
product / process related



Within 8D

2

Transfer of knowledge
across similar products and processes



Handover to Lessons Learned

Sustainable and preventive actions across similar products

Basic requirement

- Documents that the problem resolution team are able to influence are reviewed and revised (e.g. FMEA, test schedules and instructions)
- Assessment of whether the existing problem solution is also applicable to similar products, processes and locations; involving other parties/persons (e.g. sponsor) and roles if necessary, and lessons learned if necessary initiated
- If no preventive actions have been taken, the reasons are documented

Criteria for reaching excellent

- Responsible person for the monitoring of preventive measures or the transfer of the gained knowledge into the organization (eg in a lessons learned process)
- Acceptance of preventive measures in follow-up processes (such as lessons learned) has been confirmed and documented
- The documentation is available and comprehensible

Applicable methods and tools

- Lessons learned
- Knowledge management
- Expert networks (e.g. FMEA moderators)

8D report with all documents



Appreciate success



Relieve the team

8D problem solving completed and team success appreciated

Basic requirement

- Completion of all actions relating to the specific problem
- Report is available and is approved by the sponsor and team leader
- Team recognition and release of team members

Criteria for reaching excellent

- Documentation for the self-assessment of problem solving based on the evaluation criteria is available
- Team assessment as a final discussion with a view to teamwork and communication with the participation of as many participants as possible
- Self-assessment of the problem solution is part of the final discussion with the sponsor
- valuation by independent outside parties has taken place (outside the 8D team)

Applicable methods and tools

- Assessment matrix
- Feedback

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