

Notes about Performance Improvement

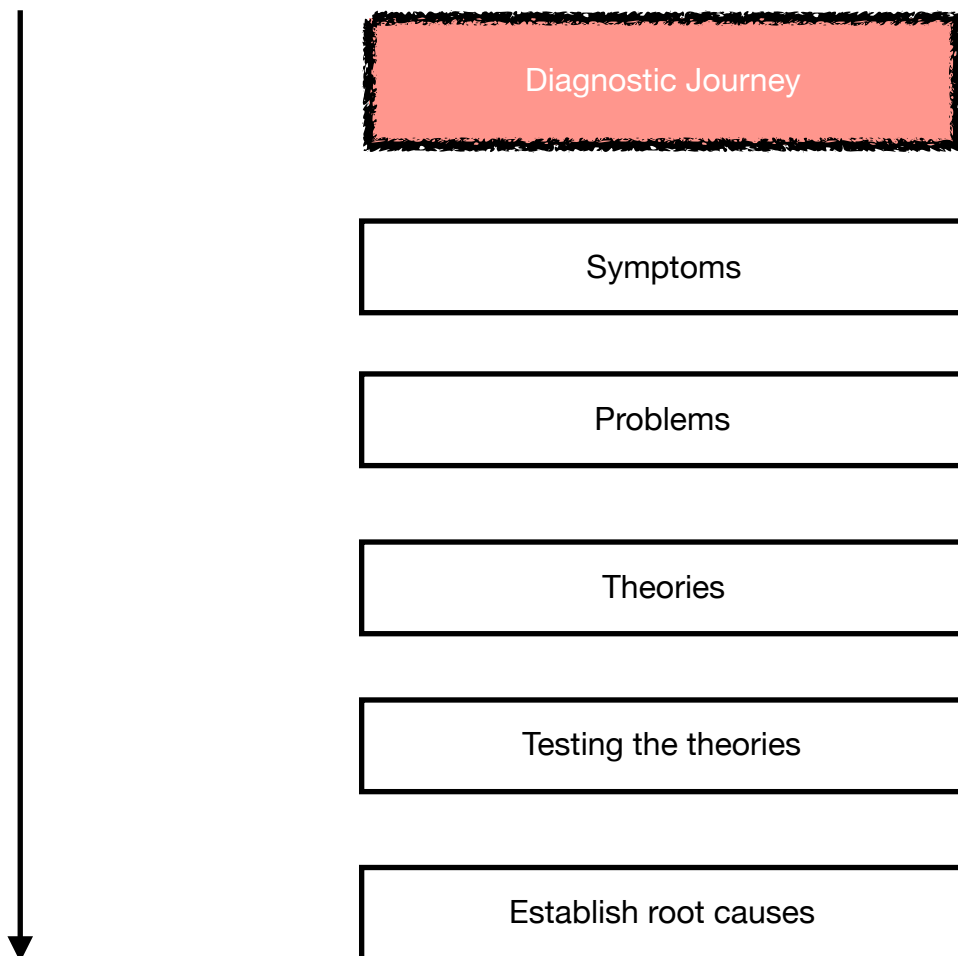
Quality problems almost always boil down to just a few species of things that **go wrong**, including:

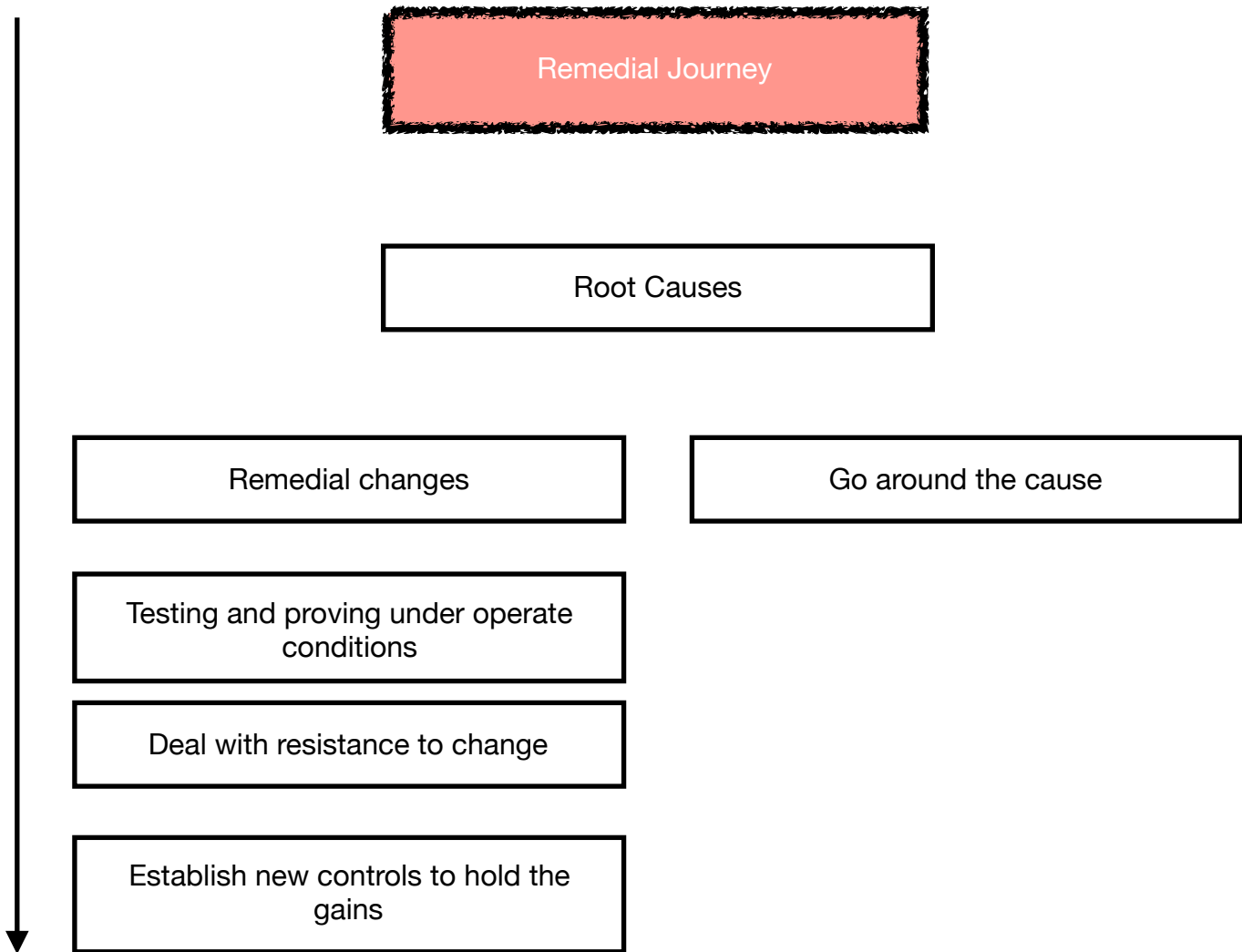
- Excessive number of defects.
- Excessive number of delays or excessively long time cycles.
- Excessive costs of the resulting rework, scrap, late deliveries, dealing with dissatisfied customers, replacement of returned goods, loss of customers and clients, loss of goodwill, etc.

Our **objectives**:

- Discovering root causes of the problem.
- Devising remedial changes to the “guilty” process to remove or go around the cause(s).
- Installing new controls to prevent to go back.

Route of the process





Now we are going to introduce two versions of the same model.

Juran Model of quality (performance) improvement

- (1) Identify a project - is up to the quality council
 - Nominate projects
 - Evaluate projects
 - Select a projects
 - Ask: Is it an improvement project?
- (2) Establish the project - is up to the quality council
 - Prepare a problem statement and a mission statement
 - Select and launch a team
- (3) Diagnose the cause - the project team does this
 - Analyze symptoms

- Confirm or modify the mission
- Formulate theories
- Test theories
- Identify root cause or causes

(4) Remedy the cause - the project team and the work responsible of the cause and maybe others teams affected

- Evaluate alternative remedial changes
- Design the remedy
- Design new controls of the remedy
- Prevent or overcome resistance to the remedial changes
- Prove effectiveness of the remedy under operating conditions
- Implement the remedial changes

(5) Hold the gains - is up to the project team and the affected operating forces

- Design and implement effective controls
- Foolproof the remedy, if it is necessary
- Audit the controls

(6) Replicate the results and nominate new projects - is up to the quality council

- Replicate the results to clone with modifications (if necessary) the remedy
- Nominate new projects based on lessons learned from this cycle

And the process start again from point (1),

Quality Improvement Responsibilities

Activities by Management	Activities by Teams
· Establish quality councils	· Analyze symptoms
· Select projects	· Theorize as to causes
· Write problem and mission statements	· Test theories
· Provide resources, especially time	· Establish root cause(s)
· Assign teams and projects to teams	· Stimulate remedies and controls
· Review progress	· Nominate new projects
· Provide recognition and rewards	

Six Sigma Model of quality (performance) improvement

(1) Define - is up to the champions and executive council

- Identify potential projects
- Evaluate projects
- Select projects
- Prepare a problem and a mission statement, and a team charter
- Select and launch teams

(2) Measure - the project team does this

- Measure baseline performance
- Map and measure the process creating the problem
- Plan data collection to:
 - Measure key products characteristics (outputs) and process parameters (inputs)
 - Measure key customers requirements (CTQ, "critical to quality")
 - Measure potential failure modes
 - Measure the capability of the measurement system
 - Measure the short-term capability of the process

(3) Analyze - the project team does this

- Analyze response variables (outputs)
- Analyze input variables (input)
- Analyze relationships between specific output and input variables, especially cause-effect relationship
- Confirm determinants of process performance (vital few input variables)

(4) Improve - is up to the project team, often with help of others

- Plan designed experiments
- Conduct screening experiments to identify the critical, vital few input variables
- Conduct designed experiments to establish a mathematical model of process performance
- Optimize process performance
- Evaluate possible improvements
- Design and implement the improvements

(5) Control - is up to the project team and the operating forces

- Design controls and document improved process
- Validate the measurement system to be used in controls
- Establish process capability of improved process
- Implement new process and monitor it