

Team Lead:  
Team Members:  
Black Belt Mentor:  
Black Belt Candidate:

Approval Information/Signatures:  
  
Start Date: \_\_\_\_\_ End Date: \_\_\_\_\_

**Process Improvement Effort Title**  
Alignment – Goal: \_\_\_\_\_ Objective: \_\_\_\_\_

1. Clarify & Validate the Problem

4. Conduct Cause Analysis

6. See Countermeasures Through

2. Break down the Problem & Identify Performance Gaps

5. Develop Countermeasures & Implementation Plan

7. Confirm Results & Process Change

3. Set Improvement Target(s)

8. Standardize Successful Processes




OODA – Observe, Orient, Decide, Act  
 PDCA – Plan, Do, Check, Act  
 DMAIC – Define, Measure, Analyze, Improve, Control  
 DDRFSI – Discovery, Design, Relevance, Feasibility, Sustainability, Impact

# USAF Practical Problem Solving Model & Related Toolsets


NOTES:  
 - Tools listed are non-inclusive and can be used in multiple steps; use as required  
 - Adjust block positions as needed to allow all 8-steps to fit on A3size paper

## 1. Clarify & Validate the Problem

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- Does this problem, when solved, help meet identified needs?
    - Is it aligned to the organization's prioritized strategy as well as higher echelon strategy or to our AF five priorities?
    - Does it help satisfy customer needs (VOC)?
  - Will this problem, when solved, address key issues identified in the Discovery phase or by using SWOT analysis?
  - Has this problem been identified and directed by a Value Stream Map at the appropriate level?
    - What does the "Future State" need?
    - What resources have been identified to address the issue?
  - What opportunities were identified or observed by the process or problem area "walk"? (Includes administrative flows that are hard to "walk")
    - Will addressing or improving these issues deliver results related to #a or #b?
    - Will addressing or improving this problem deliver the future state from #c?

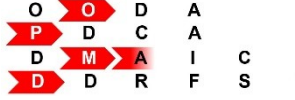
**TOOLS:** SA&D, SecAF & CSAF five-priorities memo (31 July 2017), Voice of Customer, VSM, Go & See, Pain Point observations, SWOT

## 2. Break down the Problem & Identify Performance Gaps

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- Does the problem require more analysis or does leadership have enough information to execute a solution?
    - Is this simply a leadership directive?
  - If more data is needed, how do we measure performance now?
    - What are the KPIs? What is the performance gap?
  - Does other "non-existent" data need to be gathered?
  - What does the data indicate are the potential root causes?
  - Does the data review indicate a bottleneck or constraint?

**TOOLS:** KPI/Metrics, Performance Gap Analysis, Lessons Learned Analysis, Bottleneck Analysis, Pareto Chart, Control Chart, VSM/Process Maps, Run/Bar/Pie charts

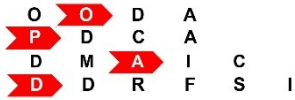
## 3. Set Improvement Target(s)

- 
- Is the improvement target measurable? Is it specific? Is it challenging?
  - Is the target "Output Oriented"?
    - What is the desired output?
    - Should be "things to achieve"; should avoid "things to do"
      - Will be addressed by Action Plans (Step 5)
  - The desired target should:
    - Do what? By how much? By when?
  - If it is a Process Problem, what is the future state?
    - How will it be realized?

**TOOLS:** Ideal State, Future State Mapping, B-SMART


 Vector Check: Confirmation of work to date & "Authorization to Proceed"

## 4. Conduct Cause Analysis


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- What analysis tools are necessary?
    - Who'll need to be involved in root cause analysis?
      - 10 heads are better than one
      - Remember to address "cultural" issues related to problem
  - What is (are) the root cause(s) according to the tools?
  - How will the root cause be addressed?
  - Will addressing these address the performance gap?
  - Can the problem be turned on or off by addressing the root cause?
  - For each potential root cause does it make sense if the 5 Whys are worked in reverse?
    - Working in reverse, say "therefore" between each of the "whys"
  - Is there data supporting the true root causes?

**TOOLS:** 5 Whys, Brainstorming (Idea platform), Pareto Chart, Affinity, Fishbone, Control Charts, Histogram, Run Chart, Process Map, Scatter Diagram, FMEA, Interrelationship Graph


## 5. Develop Countermeasures (CM) & Implementation Plan

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- Develop and design potential countermeasure features
    - Tools and philosophies from Lean, TOC, 6 Sigma, and BPR (as appropriate)
    - Use empirical data to judge the relevance, value, and effectiveness of countermeasures to the needs of the customer and verify they will use it
    - Test the feasibility of implementing the countermeasure
  - Select the most practical and effective countermeasures
  - Develop an Implementation Plan/Project Management Plan
  - Build consensus with others by involving all stakeholders appropriately
    - Provide leadership with the body of data to decide if the organization can sustain the effort and scale if applicable
  - Prioritization of countermeasures for implementation
  - Develop "straw man" action plan for Vector Check

**TOOLS:** [Design] 6S & Visual Mgt, Standard Work, Cell Design, Variation Reduction, Error Proofing, Quick Changeover, TPM  
 [Tradeoff Analysis] Force Field Analysis, PICK Chart, Financial Payoff Analysis (Hard/Soft Savings/Cost Avoidance), EVM  
 [2d/3d Order Effects] DOTmLPF-P analysis  
 [Level of Effort] Just Do It, Kaizen Burst, RIE, BPR, Project  
 [Project Management Plan] Resource Plan, Management Plan, Communication Plan, Change Management Plan, Risk Management Plan, Stakeholder Management Plan, Procurement Plan, Critical Path, Project Schedule (Gantt chart) with OPR/OCR/POC, RACI/RASCI Chart


 Vector Check: ATP #2: Approval of Resource, Implementation Plan, & Goals

## 6. See Countermeasures Through

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- Is there an Action Plan for each Countermeasure?
  - When is the completion date?
  - Develop the team and workforce
    - What training or education is needed? By Whom? Best method?
  - Monitor and Control Implementation
    - Control Scope
    - Control Schedule
    - Control Costs
    - Control Quality

**TOOLS:** Action/Implementation Plans, Timelines, Gantt chart, Quality Assurance Surveillance Plan, Project Budget

## 7. Confirm Results & Process Change

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- How are we performing relative to the Observe phase (Steps 1 & 2)?
  - Monitor overall effectiveness of the countermeasures to determine impact against desired outcome(s)
  - How are we performing relative to Step 3?
  - How are we performing relative to Resource Payoff projections?
  - If we are not meeting targets, do we need to return to Step 4?
    - Most problem solving "breakdowns" occur relative to improper root cause identification

**TOOLS:** KPIs/Metrics, Resource Breakdown Structure, Performance Management, Audit

## 8. Standardize Successful Processes

- What's needed to Standardize Improvements or Scale?
  - Tech Order changes?
  - Air Force Instruction changes?
  - Official Instruction changes?
- How should improvements and lessons learned be communicated?
  - Process Model Library updated
  - Key meetings?
  - Idea platform community discussion
- Were other opportunities or problems identified by the Problem Solving Process?
  - Restart OODA Loop?

**TOOLS:** Checkpoints/Standardization Table, Standard Work/AFI/policy changes, Network diagram, Precedence Diagram, Process Model, Performance Management update