U.S. Coast Guard

PERFORMANCE IMPROVEMENT GUIDE

Fifth Edition
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Preface to Fifth Edition

The *Performance Improvement Guide* (PIG) is published by the US Coast Guard Leadership Development Center, in collaboration with the Office of Performance Management (CG-0954).

The Coast Guard strives to be the best-led and best-managed organization in government. That's a never-ending challenge for all Coast Guard people. This guide is an aid to help you respond to the challenge; its contents were selected to involve employees, enhance team effectiveness, ease problem-solving, facilitate better meeting management, improve processes, increase customer satisfaction, and improve overall performance to produce superior mission results.

The PIG is an idea source of tools, processes, and models. Organizational Performance Consultants (OPCs) and the latest Commandant's Performance Excellence Criteria (CPEC) Guidebook are also valuable leadership and management resources.

The Leadership Development Center appreciates the many improvement suggestions made by users of previous editions. Though the PIG format remains largely the same, its contents and organization have changed. Changes to this edition include:

- A reorganized and expanded tool section, including basic project management tools
- A section on senior leadership, including strategic planning
- Updates to examples
- Updates to wording choice and explanations to reflect the Coast Guard's evolution in its continuous improvement efforts

We hope you find this a useful, informative resource.

The Leadership Development Center Staff
and the Performance Excellence Program

CONTENTS

U.S. COAST GUARD LEADERSHIP COMPETENCIES

The Coast Guard's definition of leadership is:

> "You influencing others to achieve a goal"

In this guide you will find ideas and resources to help you positively influence others to achieve unit goals. Whether you're a team leader, team member, or facilitator, you have the potential to lead and influence change.

The Coast Guard uses 28 leadership competencies consistent with our missions, work force, and core values of Honor, Respect, and Devotion to Duty. These competencies fall into four categories:

- LEADING SELF
  - Accountability and Responsibility
  - Followership
  - Self Awareness and Learning
  - Aligning Values
  - Health and Well-Being
  - Personal Conduct
  - Technical Proficiency

- LEADING OTHERS
  - Effective Communications
  - Influencing Others
  - Respect for Others and Diversity Management
  - Team Building
  - Taking Care of People
  - Mentoring

- LEADING PERFORMANCE AND CHANGE
  - Customer Focus
  - Management and Process Improvement
  - Decision Making and Problem Solving
  - Conflict Management
  - Creativity and Innovation
  - Vision Development and Implementation

- LEADING THE COAST GUARD
  - Stewardship
  - Technology Management
  - Financial Management
  - Human Resource Management
  - Partnering
  - External Awareness
  - Entrepreneurship
  - Political Savvy
  - Strategic Thinking

The discussions, strategies, models, and tools in this guide strongly support the development of most of these competencies. For more information on the Coast Guard's Leadership Competencies, see the Coast Guard Leadership Development Program, COMDTINST 5351.1 (series).

LEADERSHIP RESPONSIBILITIES

Senior leaders, team leaders, and facilitators play key and support roles in the managing and improving organizational performance. These roles include identifying important opportunities; aligning with stakeholders; selecting the appropriate tools; planning work; training team members; cultivating teamwork;, implementing solutions; and leading long-term change.

The following matrix outlines some key and support roles:

Team Role Matrix

Role	SL	TL	FAC	Team
Manages organization	●	○		
Conducts planning	●	●	○	
Interfaces with organization	●	●	○	
Selects team		●		
Builds team	○	●	○	○
Manages project	○	●	○	○
Coordinates pre- and post-meeting logistics		●	●	○
Focuses energy of group on common task	○	●	●	●
Encourages participation		●	●	●
Contributes ideas		●		●
Protects individuals and their ideas from attack		●	●	●
Focuses on process		○	●	●
Remains neutral			●	
Helps find win/win solutions	○	●	●	●

SL = Senior Leaders
TL = Team Leader
FAC = Facilitator

● Key Role
○ Support Role

The senior leader, team leader, and facilitator roles, responsibilities, and checklists presented in this guide provide a brief overview. For more in-depth discussion, please refer to the additional references section.

SENIOR LEADERSHIP

Senior leaders—whether at the organizational, unit, or work group level—are responsible for effective management. Management should be part of a regular routine, not a separate event. Leading-edge organizations use performance measurement and management systems to gain insight into, and make judgments about, the effectiveness and efficiency of their programs, processes, and people. Best-in-class organizations determine and use indicators to measure progress toward meeting strategic goals and objectives, gather and analyze performance data, and use the results to both drive improvements and successfully translate strategy into action.

Effective Management

The Commandant's Performance Excellence Criteria (CPEC) provides a systematic way to improve management practices across the organization. The criteria are slightly modified from the Malcolm Baldrige National Performance Excellence Criteria, which are based on core principles and practices of the highest performing organizations in the world. The Commandant's Performance Challenge (CPC) Criteria are a subset of the CPEC tailored specifically for new users.

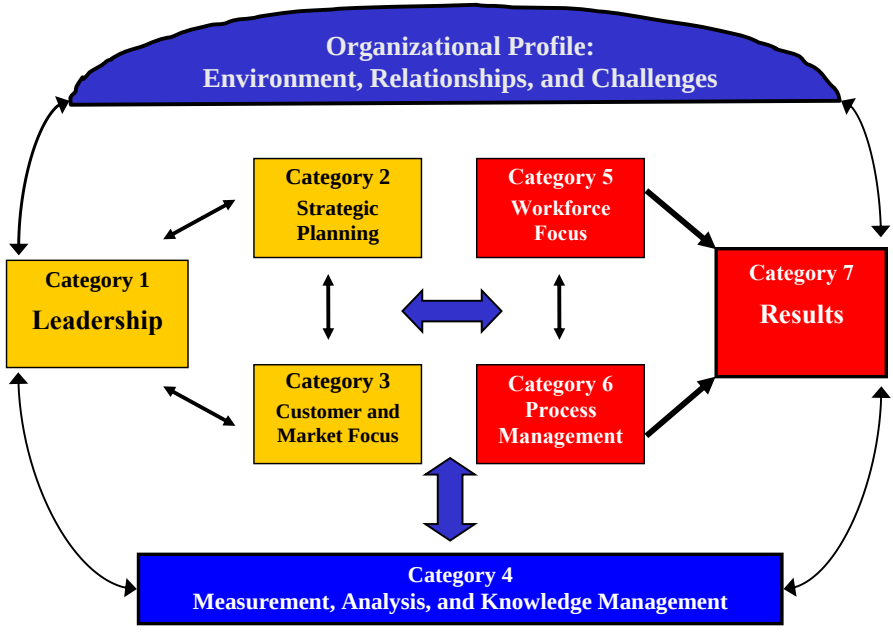


Figure 1. CPEC Framework: A Systems Perspective

Actively using the criteria fosters systems thinking with a focus on factors such as missions, customers, innovation, people, measurement, leadership, processes, readiness, and stewardship. The way each leader manages assigned responsibilities has implications for the entire Coast Guard and the public we serve. In other words, *management matters*—excellent management practices equate to performance results. The best way leaders can learn how the CPEC can help them accomplish command goals is to use the system.

The criteria are built upon eleven core principles and concepts. These principles and concepts are the foundation for integrating key performance requirements within a results-oriented framework. These core principles and concepts are:

- Visionary Leadership
- Customer-Driven Excellence
- Organizational and Personal Learning
- Valuing Employees and Partners
- Agility
- Focus on the Future
- Managing for Innovation
- Management by Fact
- Public Responsibility and Citizenship
- Focus on Results and Creating Value
- Systems Perspective

For more CPEC information, see the Commandant's Performance Excellence Criteria Guidebook, COMDTPUB P5224.2 (series).

Strategic Planning

Strategic planning is the process by which leaders clarify their organization's mission, develop a vision, articulate the values, and establish long-, medium-, and short-term goals and strategies.

The Strategic Planning Process presented in this guide is based on the Hierarchy of Strategic Intent shown below. At the top of the hierarchy is the organization's Mission and Vision, both of which should be long-lasting and motivating. At the base of the hierarchy are the shorter-term strategies and tactics that unit members will use to achieve the Vision.

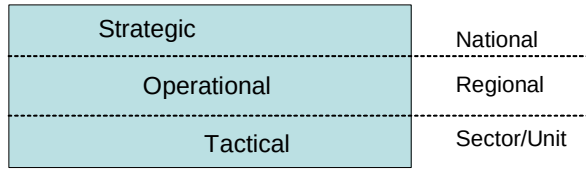
Hierarchy of Strategic Intent

*Use the Hierarchy to answer "*Why *my organization does X" by looking up one level, e.g., "this set of tactical plans exist to achieve that Outcome." Answer "*How*" the organization will accomplish X by looking down one level, e.g., "our Strategies are how we will attain our Critical Success Factors."*

Does every Unit Need its Own *Strategic* Plan?

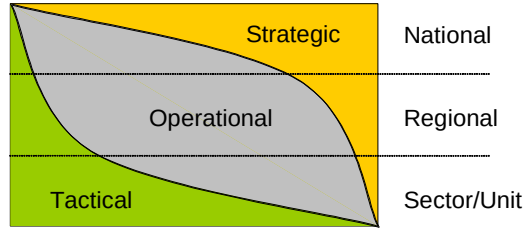
The traditional view of planning might dictate that leaders at field units and even individual HQ program offices leave Strategic Planning to the senior-most, agency-level leaders, as depicted here:

Traditional View:



However, in reality, every USCG command/staff has strategic value. To ensure each is ready to perform its assigned responsibilities, able to sustain and improve performance, and to anticipate and prepare for future needs, planning at all levels—Strategic, Operational, Tactical—is necessary.

The Reality:



There are, however, differences in the planning scope and horizons at the national, regional, and unit levels—perhaps 18-24 months for cutters, 5 years for Sectors, 5-8 years for Areas, and 20 years for the Coast Guard.

Strategic Planning process steps are listed below:

Step 1.0 Develop Guiding Documents. This includes developing Mission, Vision, and Values statements; if these already exist, review them to prepare for strategic planning.

Step 2.0 Define the Strategy. This step is the heart of strategy development; it establishes Outcomes, Critical Success Factors, and outlines the Goals to accomplish both.

Step 3.0 Develop Action Plan and Execute. This includes developing action plans, allocating resources, and deploying the plan. Avoid an "Execution Gap," by conducting Action Planning in a disciplined manner and Execute Action Plans with accountability.

SITUATION ANALYSIS AND STRATEGIC ALIGNMENT

Prior to strategic planning, leaders should study all the factors that may affect the organization during its target time-frame. Leaders should align the strategic plan with efforts up and down the chain of command in such a way that it maintains a "unity of effort" or common strategic intent. This analysis focuses on the following.

- **Planning Assumptions:** resource constraints, strategic challenges, organization sustainability issues, and emergency business continuity
- **Environmental Factors:** Coast Guard strategic, operational, and tactical plans; and financial, societal, ethical, regulatory, and technological risks
- **Future Focus:** Major shifts in technology, missions, or the regulatory and competitive environments (particularly those derived from up-line plans)
- **Performance Metrics:** such as mission/operational performance status and other key effectiveness measures
- **Assessments:** Organizational Assessment Survey (OAS); Commandant's Performance Challenge (CPC); unit climate surveys; compliance inspection and audit findings; strategic capability; and organizational strengths, weaknesses, opportunities, and threats

Process Steps

DEVELOP GUIDING DOCUMENTS

Once the leaders are ready to engage in the planning process, they should revisit or establish organizational Guiding Documents, such as, Mission, Vision, and Values Statements. Since these Statements are long-lasting, they may require only slight adjustments to respond to changes in the operational or competitive environments. Reviewing them reorients the planning team toward this enhanced future state. If such documents do not exist, they must be developed before any other planning can occur. The essential steps in this process are:

STEP 1: Develop Guiding Documents

DEFINE THE MISSION

A **Mission** refers to why an organization exists – its reason for being or purpose. Generally, for most military organizations, the mission is clear and unambiguous. Well-articulated Mission Statements are those that clarify:

- For Members – What to expect and how they fit in;
- For Customers – What the products and services are;
- For Leaders – How to direct decision-making.

A **Mission Statement** must:

- Be clear and understandable;
- Be brief enough for people to keep it in mind;
- Be reflective of the organization's distinctive competency;
- Be broad enough to allow implementation flexibility;
- Be narrow enough to maintain a sense of focus;
- Be a template by which members can make decisions;
- Reflect organization values, beliefs, and philosophy.

DEVELOP THE MISSION STATEMENT

To develop a Mission Statement, leaders may facilitate the following process with a team specifically selected for this purpose.

1. Individually, develop a mission statement based upon the criteria listed here.
2. As a group, share individual Mission Statements.
3. Identify common themes and *must haves*.
4. If useful, choose and modify an individual statement.
5. Devote 5-10 minutes to refine the chosen statement.
6. Check the refined statement against the criteria.
7. If necessary, select a sub-team to finalize the statement offline.

DEVELOP THE VISION

Vision refers to the category of intentions that are broad, all inclusive, and forward thinking. A Vision should:

- Provide aspirations for the future;
- Provide a mental image of some desired future state;
- Appeal to everyone's emotions and aspirations.

BRAINSTORM INDIVIDUAL AND COLLECTIVE LEGACY

Start by defining *the organization* for which the Vision is being developed. A Vision can be developed for a subgroup of a larger organization, which has a separate, broader, more inclusive Vision. Subgroup Visions must be aligned with and mutually supportive of the larger organizational Vision. Ask the group to quietly and honestly list their own responses to the five questions below. Tell participants they will be asked to share their answers to Questions 4 and 5 with the group.

The Five Vision Questions

1. What do you like about being a part of this organization?
2. What do you like about the organization's mission?
3. When it's at its best, what do you like about the organization?
4. **What legacy would you like to leave behind?**
5. **What legacy should we collectively leave behind?**

REPORT INDIVIDUAL RESPONSES TO THE GROUP

Once everyone has listed their responses, go around the room and ask each participant share his/her responses to Questions 4 and 5. The following ground rules apply.

- Speak from the heart
- Listen carefully
- Seek first to understand (clarifying questions only)
- Do not evaluate responses

IDENTIFY COMMON VISION THEMES

As a group, identify the common themes in the individual responses to the questions. Has a Vision or the elements of a Vision emerged? What's missing? Facilitate discussion until all key elements have been fully developed and are clear to all.

FINALIZE VISION STATEMENT OFFLINE

If necessary, select a smaller team to work offline to finalize the Vision Statement. The team will use the responses and common themes as input to develop several Vision Statements for the group's approval. The simple act of developing these concepts within the group will provide enough direction to continue developing the strategic plan.

> ***Trick of the Trade:*** *Never wordsmith in a group! You'll destroy momentum.*

Why Does a Unit Need Its Own Vision?

Unit leaders often resist developing a Vision Statement. Many feel that their command's Vision should match the Commandant's Vision or the District Commander's Vision. They are correct to the extent that a unit's Vision must be aligned with and supportive of those higher in the chain of command; however, many *up-line* Visions are too broad or all encompassing to be relevant to the members of a given unit. More importantly, each unit has a specific if not unique role in successful mission execution and mission support. Leaders are responsible for articulating that role and setting a Vision to drive improvement and higher levels of performance.

A unit Vision should span a couple of COs tours or about five years. A five-year Vision is often a *reach* for a field unit and is generally long enough to hold a crew's focus. It is also a reasonable time frame given the ever-changing nature of the Coast Guard's operating environment and initiatives responsive to a given Commandant's Intent.

REVIEW THE VALUES

Values are the essence of the organization. They describe who we are and how we accomplish our work. Values affect:

- Decision-making;
- Risk taking;
- Goal setting;
- Problem solving;
- Prioritization.

Core Values form the foundation on which we perform work and conduct ourselves. The values underlie how we interact with one another and the strategies we use to fulfill our mission. Core values are essential and enduring and cannot be compromised.

Any strategy session should review the Coast Guard's Core Values, listed below. The organization's Mission and Vision and all aspects of the Strategic Intent should be aligned with these values. Because the Coast Guard Core Values are so pervasive, it is not necessary for units to develop their own; rather, assess how/if the unit behaves consistent with and reinforces the values.

U.S. Coast Guard Core Values

HONOR. Integrity is our standard. We demonstrate uncompromising ethical conduct and moral behavior in all of our personal actions. We are loyal and accountable to the public trust.

RESPECT. We value our diverse workforce. We treat one another with fairness, dignity, and compassion. We encourage individual opportunity and growth. We encourage creativity through empowerment. We work as a team.

DEVOTION TO DUTY. We are professionals, military and civilian, who seek responsibility, accept accountability, and are committed to the successful achievement of our organizational goals. We exist to serve. We serve with pride.

DEFINE THE STRATEGY

Defining the Strategy is inherently a leadership responsibility. While Action Planning can be jointly accomplished by organizational leaders and front-line teams, Coast Guard leaders cannot delegate strategy development.

Developing strategy encompasses defining Outcomes from the Stakeholders' perspective, identifying Critical Success Factors, and developing Goals for an 18- to 36-month time horizon. These Strategic Plan elements lay the groundwork for all strategic activities within the command. The following outlines essential steps in this process.

Step 2: Define the Strategy

DEFINE OUTCOMES

Outcomes are the organizational or public benefit(s) that the unit seeks to achieve or influence:

- Outcomes identify the impact the organization has as opposed to the activities in which it engages.
- Outcomes should be derived from Stakeholder perspectives, expressed as expected results from the organization.
- Outcomes should encompass multiple stakeholder perspectives to ensure they are "balanced."

Outcomes are not always under the full control of the organization; many factors can influence outcomes. However, if outcomes are well defined and continually focused upon, *they can be attained more often than not!*

IDENTIFY STAKEHOLDERS

1. Begin by asking:
   - Who has an interest in what the organization provides?
   - Who cares whether the organization succeeds?
2. Participants can answer these questions on sticky notes (putting one stakeholder or group name on each). When finished, they can randomly place the notes on butcher-block paper or a whiteboard.
3. The participants then silently "affinitize" the stakeholders by clustering similar groups into similar or related categories. Attempt to create four to eight categories and name them.
4. Display these relationships in a diagram or chart.

DEFINE STAKEHOLDER EXPECTATIONS

1. Break the participants into groups; assign one the previously defined primary stakeholder groups to each breakout group.
2. Ask each group to envision themselves riding a crowded escalator on which two members of their assigned stakeholder group are on the stairs ahead of them. The stakeholders do not realize you are there and they are discussing their experience with your organization as you've defined it in its enhanced future state (Vision).
3. Ask the group: What do you want to hear them say?
4. Each group then reports out the top two or three stakeholder quotes that most represent a future desired outcome. Record key items or common themes that cut across groups.

DEVELOP OUTCOMES

1. Identify five to seven common outcome themes. Assign breakout groups to develop them into Outcomes Statements. Outcome Statements should be measurable and directly reflect the Vision.

2. Ask each group to report their outcomes. Take comments, but do not allow the group to wordsmith.
3. Assign an individual or small team to finalize the Outcome Statements offline.

IDENTIFY CRITICAL SUCCESS FACTORS (CSFS)

CSFs are what the organization *must absolutely do right, or manage well,* if it is to achieve its Outcomes.

- Organizations may not control all factors leading to outcomes; however, CSFs are wholly within their control. CSFs generally relate to processes, people, or technologies that enable Outcome achievement.
- CSFs are leading indicators for Outcomes. Successful organizations know their CSFs and how they affect Outcomes. These causal relationships are monitored and reinforced through a robust measurement system.
- Until cause-effect relationships are identified, CSFs are no more than a management hypothesis based on individual experience, theory, or background. Measurement can be used to validate these hypotheses.

IDENTIFY CSFS

Develop a list of potential CSFs by asking the group:

- What must you absolutely do right or keep in control to achieve your desired Outcomes?
- What is within your ability to control?

REDUCE TO THE CRITICAL FEW CSFS

If breakout groups are used, each group should report their top CSFs. Then, together, the larger group should identify common themes, paring the list down to three to four total.

DEVELOP LONG-RANGE GOALS

Goals are intentions that make the Vision, Mission, and Outcomes actionable. They typically encompass a shorter time frame than a Vision or an Outcome. Goals should address all organization aspects, including mission, operations, customer, process, people, and resources. They should facilitate reasoned trade-offs and be achievable. Goals usually cut across functions and can counteract sub-optimization.

CREATING GOALS

1. Review the previously developed material.
   - Outcomes – Ensure the Goals are directly aligned with and support the Outcomes.
   - Critical Success Factors (CSFs) – Ensure the Goals support achieving the CSFs.
   - SWOT Analysis (see box and tools) – Ensure strengths align to opportunities; establish Goals to leverage strengths to exploit opportunities; identify weaknesses that line up with threats; establish Goals that mitigate weaknesses and, consequently, reduce threats.
2. Identify six to eight potential organizational Goals; ensure Goals are concrete and within your control to attain. If breakout groups are used, report out Goals and consolidate.

SWOT Analysis

STRENGTHS: Internal aspects of your organization that will help you achieve your Outcomes and CSFs.

WEAKNESSES: Internal aspects of your organization that will impede your ability to achieve your Outcomes and CSFs.

OPPORTUNITIES: External events/happenings that may help you to achieve your Outcomes and CSFs.

THREATS: External events/happenings that may impede your achievement of your Outcomes and CSFs.

AUDIT GOALS

- Ensure the Goals satisfactorily aligned with up-line plans by auditing them against Outcomes, CSFs, and SWOT.
- Ensure perspective balance among: Mission/Operations, Customer/Stakeholder, Internal Processes, People, and Financial/Resources.
- Ensure the Goals meet the *Goal Writing Primer* criteria.

Goal Writing Primer

CREATING GREAT GOALS!

- Avoid the tendency to create too many goals. "If everything is important, then nothing is important."
- Ensure goals support the Mission, Vision, Outcomes, and CSFs.
- Ensure you can articulate the *Why* of each goal.
- Make sure the goal describes a desired state or outcome.

GOALS SHOULD BE SMART

- **S**pecific
- **M**easurable
- **A**ction-oriented
- **R**ealistic
- **T**ime Based

DEVELOP THE ACTION PLAN AND EXECUTE

In their book Execution: The Discipline of Getting Things Done, Larry Bossidy and Ram Charan highlight the major reason most organizations fail in their attempts to implement strategy; they call it the "Execution Gap."

Action Planning therefore must be a component of Execution. This step in the strategic planning process is the key to "operationalizing" the strategy that leadership has so adeptly fashioned. The best, most well-thought-out strategic plans are worthless if they cannot be implemented. The following outlines essential steps in this process.

STEP 3: Develop the Action Plan and Execute

DEVELOP STRATEGIES AND TACTICS

Strategies and Tactics tend to be actions that can be accomplished within a 12- to 18-month time frame. They should be tied to resources and specific milestones and deliverables in order to be monitored for progress/accomplishment. Strategies and Tactics are not static and may be modified as circumstances in the strategic environment change. They must, however, be tied closely to a goal or set of goals in the plan and provide some strategic value to the organization.

- **Strategies** are specific, quantifiable, assignable sets of actions or projects that lead to accomplishing a Goal over a specific time period.
- **Tactics** are specific tasks within a Strategy that can be assigned to an individual or team to accomplish over a short period of time.

DEVELOP STRATEGIES

The leadership group should involve mid-level and front-line organization members in generating a set of Strategies they know will effectively accomplish their Goals. Strategies can cover one or multiple Goals. Once identified, leaders assign responsibility to a division or team for each Strategy to be undertaken.

DEFINE TACTICS

Strategies should then be further broken down into Tactics by the division or team assigned responsibility. As the team identifies Tactics it should consider:

- **WHAT** ...the Strategy is intended to achieve;
- **WHY** ...achievement is important;
- **WHO** ...will participate in accomplishing the Strategy;
- **HOW** ...the Strategy will achieve the Goals;
- **WHEN** ...deliverables are needed to accomplish the Strategy.

ESTABLISH AN ACTION PLAN

As it formulates its list of Tactics, the planning team should assign each Tactic to a work team or individual along with a milestone date. After a few *catch-ball* or pass-back review and improve cycles, the Action Plan is *approved* by the leadership team in a manner appropriate for the unit.

The *Balanced* Strategic Plan

Comprehensive strategy and measurement balances:

- Past, present, and future performance;
- Near- and long-term strategic challenges;
- Strategic, operational, and tactical considerations;
- Perspectives of product and service, customer effectiveness, financial and budget, human resources, and organizational effectiveness.

A balanced strategic planning approach acknowledges that good strategy development requires a more holistic view of organizational performance.

ALLOCATE STRATEGIC RESOURCES

To deploy the strategy, the leaders should engage in a process to identify and allocate resources for strategy execution. A recommended methodology follows:

IDENTIFY NON-DISCRETIONARY FUNDING

1. The CO and the unit funds manager identify the non-discretionary funds available for Strategic Projects.
2. The planning team creates the ground rules for using the funds to execute Strategic Action Plans.

PRESENT DIVISION ACTION PLAN

1. Division heads present their proposed actions for meeting the goals and estimate the people and funding required to complete the action.
2. The group questions the assumptions and the validity of the proposed action in a facilitated discussion, including how each action may affect other divisions or planned actions.
3. After all have spoken, the group should break into sub-teams to further refine proposals.

REFINE ACTION PLANS AND RESOURCES

1. When groups reconvene, the facilitator should put the plans and resources into a strategic resource worksheet or spreadsheet for all to see.
2. The process continues through the questioning, refining, and reshaping cycle until consensus is reached (usually requires three to four cycles).
3. Document the final resource allocation in a strategic resource worksheet.

MONITORING PROGRESS AND EXECUTION

Monitoring and controlling progress involves collecting and disseminating performance information as well as issues and concerns that may negatively affect achieving a strategy or tactic. Leaders and other stakeholders need this information to make midcourse direction and resource corrections. It also provides a fact-based method to hold individuals accountable to achieve assigned strategies and tactics.

EXECUTING STRATEGIC PROJECTS

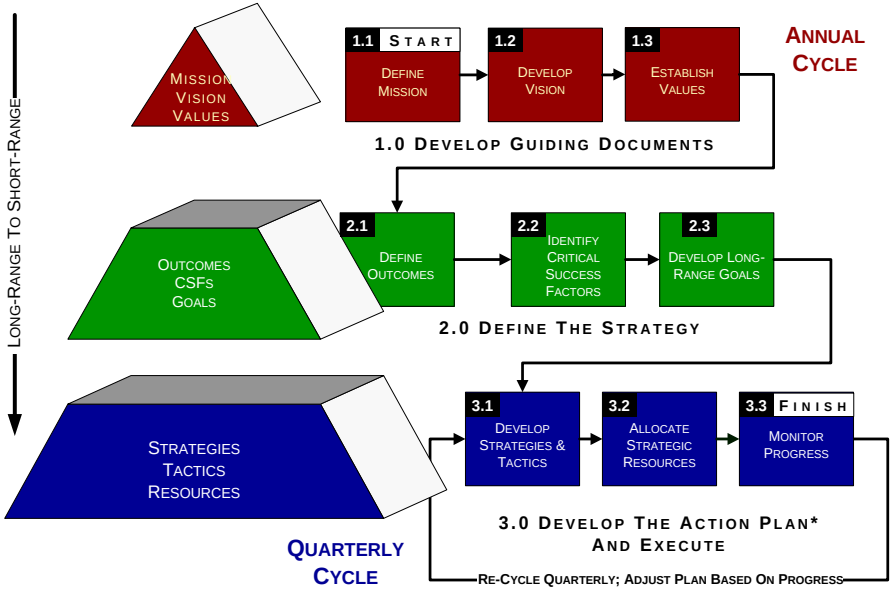
1. Some action may be more easily executed as a project. In these cases, proper planning should precede any quantifiable work. The assigned team or individual should develop and document the plan using whatever convention is customary. A project abstract and/or GANTT Chart usually suffice.
2. Whether a project or a single action item, the responsible individual or team shall work closely with a Leadership Champion or Sponsor to ensure the project requirements are being met, paying particular attention to deliverables and timelines.

CONDUCT STRATEGY/PROGRESS REVIEW MEETINGS

1. Responsible entities are accountable for all aspects of execution. They and their Leadership Champions shall confer on a regular basis in a mutually agreed manner. They shall keep stakeholders informed of progress.

2. Responsible entities should brief leaders during regularly scheduled, periodic strategic progress reviews. During these briefings, the responsible person explains current status, presents any new challenges and barriers to progress, and outlines next steps. Midcourse corrections arising from the review session shall be incorporated into the next update to the Action or Project Plan.

Strategy drives action:



Refer to the table of tool usage for additional planning tools.

TEAM LEADERSHIP

Effective team leaders help inspire and focus small- to mid-size groups (natural work groups, problem-solving teams, focus groups, etc.) to achieve project goals. Team leaders are selected based upon the team's function and are typically designated in a charter. For those on a natural work group, a team leader is normally established by billet or position. Any team member, though, may be designated as team leader for a particular meeting or project piece.

Regardless a group's scope, effective team leaders:

- Ensure optimal team composition
- Develop stakeholder commitment
- Communicate vision
- Outline boundaries
- Give proper direction and support
- Use facilitative leadership
- Build teamwork
- Ensure accountability

While the formal position power of being a team leader can only be assigned to one person, all team members should be ready to take on informal leadership roles.

Key Roles & Tasks of Team Leader

Key Roles of Team Leader	Tasks
Organizational Interface *representing the project to others*	• Gain and maintain alignment with chartering body/senior managers • Make presentations • Maintain written communications • Initiate personal contact and request feedback • Champion performance improvement initiatives
Team Building *using methods and creating an environment so each member participates in generating ideas, interpreting findings, and making decisions*	• Use team building methods. For example: ♦ Consider using warm-up activities ♦ Develop ground rules ♦ Use group idea-generation tools ♦ Use consensus for making decisions ♦ Help team through the stages of group development • Cultivate full participation. For example: ♦ Enforce guidelines ♦ Negotiate and mediate ♦ Counsel individuals ♦ Adjust membership • Provide training in models and tools
Project Management *directing the team's attention to the necessary work*	• Select and manage important projects • Align with stakeholders • Establish scope • Build and lead teams • Identify work • Create and update work plans • Manage resources • Monitor progress • Review performance

Organizational Interface

Alignment and continuous communication with senior leadership and other key stakeholders is crucial to running a successful project. One essential tool is a charter. A charter outlines expectations from all parties, clarifies roles and responsibilities, and aligns team efforts to organizational needs. Some issues that the chartering body and team leader should discuss prior to commencing the team's activities are:

- Purpose of the charter
- Role(s) of the team leader and chartering body
- Parameters the team has to work within (time, funds, equipment, people, and policy)
- Who has decision-making authority
- Concerns regarding accomplishing the charter objectives
- Strategies to accomplish the desired objectives

In addition to the team leader, another person key to a successful project is the champion or sponsor. For a chartered team, the sponsor is the person who approved the charter. This person must be high enough in the organization to address problems, should any arise, within the scope of the project.

As a team leader, remember to keep the sponsor aware of progress and committed to team success. Encourage the sponsor to attend some of your meetings. Speak up if you have concerns. Let the sponsor know about:

- Team goals and project plans
- Interim findings and recommendations
- Roadblocks encountered
- Resources needed
- Milestones reached

Good alignment is often the difference between success and failure. For more information on charters, see the tools section.

Beyond the charter, team leaders ensure that the interests of people not on the team are adequately represented. They get commitment from people who may be affected by the team's actions before decisions are made.

Some key questions to ask before putting the team together are who has a stake in the outcomes of the project? To what extent will these stakeholders support the team's efforts? One effective method of answering these questions is to conduct a stakeholder analysis. For more information on stakeholder analysis, see the tools section.

Team leaders choose the right team members based upon project requirements, as well as each member's knowledge, skills, and ability to work as an effective team member. They continue to build the team's interpersonal and rational skills. Ignoring the interpersonal side of the equation may hinder team effectiveness or, in more extreme cases, lead to failure.

In this respect, an outside facilitator can help team leaders be more effective. Inviting an outside facilitator allows a team leader to focus on the content of a meeting while the facilitator helps the group with process. Often, this split leadership approach pays big dividends in terms of group development and success.

Some team leaders decide to facilitate their own meetings. Performing the roles of both team leader and facilitator can be difficult, especially where there is passion for an issue. If that is your choice, however, you may refer to the facilitator checklist for guidance.

Team leaders who develop good facilitation skills can foster an environment where people remain open and engaged. Two techniques may help:

- **Listen first:** Although leaders often ask for other thoughts, subordinates or team members may simply nod in agreement. To overcome this, listen first. Find out what your co-workers think before sharing your own opinion. Set the tone by simply saying, "I'd like to first hear what each of you thinks about this."
- **Acknowledge emotion:** Confront emotion when it arises and get to the facts behind it. Pretending someone isn't upset will close group communication. (See also the section on managing conflict.)

Project Management

Team leaders should have a working knowledge of project management skills. To begin with, they must be experts in teamwork; they must build teams, guide group development and manage conflict. Knowing the four project phases, collectively known as the project life cycle, can help team leaders manage the overall process more effectively:

- **I**nitiating
    - Selecting a project
    - Drafting a charter
    - Developing guiding statements
    - Determining scope
- **P**lanning
    - Formally identifying the work required
    - Ensuring adequate budget, personnel, and resources
    - Scheduling
    - Assessing risk
- **E**xecution
    - Managing resources
    - Managing changes
    - Monitoring status
    - Communicating
- **C**lose-out
    - Evaluating
    - After-action reporting
    - Saving records
    - Celebrating

A Closer Look at Project Phases

Initiating

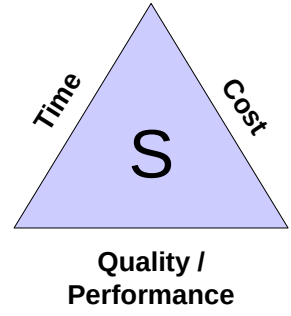
Before embarking on a project, be sure to ask questions such as: Why is this project important? What is the business case for this project? Are there other projects with a higher priority? Will senior leadership support this project? Will customers and other stakeholders be happy that you are working on this project?

Once a project has a green light, formalize project details through a charter. A charter can help ensure support and alignment, and help avoid potential pitfalls. For more information on charters, see the tool section

In order to ensure project success, senior leaders and project managers must maintain control over project scope. Scope creep happens when a project grows too large, becomes too difficult to earnestly complete, and can derail the best laid plans.

Project Control

- In order to maintain control of the scope of the project (S), you must have control over at least one key factor: Quality, Cost, or Time
- Consider: What key factor drives your project?



Planning

Planning includes identifying the work, resources, performance requirements, and time required. Identify work by completing a work breakdown structure (WBS) or by using another planning tool. See the tool section for more information. Work should be broken down to the appropriate level of detail, typically into 80 hour or smaller segments. The 80-hour rule can help project managers maintain control of the project by promoting check-in after task completion.

Consider also task dependencies, in addition to the personnel, resources, and time required. A task is dependent upon another task when another task must be completed before that task can be started. Task dependencies and project requirements will impact the overall timeline.

Execution

Execution means getting the work done. During execution, senior leaders and project managers must ensure communications between all concerned parties and carefully consider any proposed changes along the way. Scheduling regular team briefs with key stakeholders can help avoid any problems.

Close-Out

Closing out a project properly can help teams determine how well they met project outcomes and identify opportunities for improvement. By developing the ability to plan and implement projects, managers can enhance overall organizational performance.

For more in-depth coverage of project management principles beyond the scope of this guide, see the additional resources section.

FACILITATIVE LEADERSHIP

Facilitate:

- To make easy or easier
- To lighten the work of, assist, help
- To increase the ease of performance of any action

Webster's New World Dictionary

Facilitators help teams achieve their goals through the use of team tools, disciplined problem-solving techniques, and continuous improvement methods. They apply good meeting management principles, give and receive feedback, and learn to make adjustments.

A facilitator focuses on team upkeep. They guide, teach, and encourage the team. Ultimately, facilitators should work themselves out of a job, where the group no longer needs their assistance. A facilitator's role is to help the group with process, not to try to influence the content and final product of the group.

Key Roles & Tasks of Facilitator

Key Roles of Facilitator	Tasks
Coach the Team Leader *coaching the team leader in the process of accomplishing the meeting objectives*	• Conduct one-on-one planning with team leader • Provide agenda guidance • Provide feedback to the team leader
Facilitator *using methods to solicit ideas so each member participates in generating ideas, interpreting findings, developing solutions, and making decisions*	• Clarify team members' roles • Facilitate agenda. For example: ♦ Warm-ups ♦ Ground rules ♦ Idea generation ♦ Decision-making ♦ Data collection methods ♦ Data analysis • Monitor sequence of model • Focus team on task at hand • Monitor stages of group development • Manage group dynamics and individuals • Cultivate cooperation. For example: ♦ Mediate ♦ Encourage ♦ Enforce ground rules ♦ Coach
Trainer *training team members*	• Provide just in-time (JIT) training on: ♦ Models and tools ♦ Team roles and responsibilities ♦ Continuous improvement concepts

Facilitator Behaviors

To be proficient in the previously mentioned roles of effective facilitators, you may find yourself needing to practice one of the following behaviors:

The Facilitator . . .

- guides the group through a predetermined process/agenda
- encourages group members to participate
- focuses and refocus the group on common goals and tasks
- ensures an environment of mutual respect amongst group members
- explains their role and how they can help the group
- assesses the group's progress and commitment for a given task and suggests alternative approaches as needed
- suggests agenda topics and approaches to most efficiently and effectively help the group meet its goals
- records group ideas in a way that allows participants to see and build on ideas
- trains group members on new tools and techniques just-in-time
- enforces the group's ground rules when they are violated
- energizes the group through a positive and enthusiastic attitude
- manages conflict and helps the group find win-win solutions

One of the most common and helpful roles you may find yourself in as a facilitator is as a **discussion moderator**. In this role you're primarily an observer who ensures that group members have an equal opportunity to contribute ideas and differ with each other. When ideas are introduced in their simple form, they often need time to take shape and be further developed before anyone has an opportunity to shoot them down. While it may seem contradictory, it's also important to allow for a healthy amount of

differing when ideas are moving along and the group seems committed to them. This will help the group avoid the common pitfall of "groupthink." This term was coined to describe a state when a group is moving along so efficiently that no one dares contradict or slow the momentum.

Another important reason to be a discussion moderator is that you usually find equal numbers of introverts and extroverts in any group. Extroverts often thrive in group settings because they find it natural to think aloud and build on other peoples ideas. Introverts are often at a disadvantage in most group settings because they are usually more reflective and hesitant to shout out ideas. They like to have extra time to process information. Excellent facilitators realize this and make adjustments to maximize the contributions of introverts while not slowing down the contributions of the extroverts.

Two facilitator behaviors help to encourage participation and protect ideas. These are gate opening and safe-guarding:

- **Gate opening:** Provide quiet individuals the opportunity to participate. Some people will not cut another person off and will wait for a quiet moment before speaking. In some meetings, there are little to no quiet moments. Create an opportunity like, "Petty Officer Gonzales, what do you think about this?"

- **Safe-guarding:** Ensure that individuals have a chance to finish their thoughts. When ideas begin to flow quickly, some members begin before others have finished. Not everyone has the ability to present a complete and polished thought off the top of their head. Safe-guarding might sound like: "Before we move ahead, let's give Ms. Jones a chance to finish her thought."

Facilitator Checklist

The following checklist can help you align with senior leadership, plan effectively, conduct productive meetings, and ensure action and follow up.

Prior to Alignment Meeting

- ❑ Research information on group
- ❑ Consider possible warm-ups
- ❑ Gather reference material (PIG, etc.)
- ❑ Review tools
- ❑ Prepare a contract
- ❑ Arrange meeting with team leader

Alignment Meeting

- ❑ Review contract—modify as appropriate
- ❑ Establish purpose, goal, and/or desired outcome
- ❑ Determine scope
- ❑ Get background information on team
  - o Consider optimal size, composition, and representation
- ❑ Develop an agenda (see section on agendas)

Before Meeting

- ❑ Gather supplies
- ❑ Ensure room is set up. (Optimal layout, equipment, etc.)

During Meeting

- ❑ Review agenda—modify as appropriate
- ❑ Establish or review:
  - o Roles
  - o Secondary facilitation
  - o Ground rules
  - o Parking lot
  - o Group expectations
- ❑ Conduct warm-up activity or icebreaker as appropriate
- ❑ Conduct meeting
  - o Follow agenda
  - o Use timekeeper
  - o Monitor group dynamics
  - o Demonstrate facilitative leadership
  - o Record group memory
  - o Use tools appropriately
  - o Check parking lot
- ❑ Close meeting
  - o Develop action plan
  - o Review accomplishments
  - o Review agenda
  - o Clear parking lot
  - o Develop future meeting plans
  - o Conduct meeting evaluation

After Meeting

- ❑ Discuss meeting evaluation with team leader
- ❑ Follow up on contract
- ❑ Ensure action plans and minutes are developed
- ❑ Develop plan for next meeting

Facilitator Pitfalls

As you become more familiar with the facilitator behaviors, it's important to avoid some of the common mistakes many novice facilitators make:

The Facilitator should **AVOID**:

- taking sides on an issue the group is discussing
- passing judgment on ideas that are generated by group members
- contributing ideas without prior group approval
- being inflexible to the changing needs of the group
- being the center of attention
- talking too much

The Facilitative Leader

Often you may find yourself in charge of a group with no formal facilitator assigned. This is common because people are so busy in the Coast Guard and can rarely dedicate themselves full time to a group outside their usual job functions. Realizing the benefits of the facilitator role, Team Leaders are encouraged to take on some or all of the facilitative behaviors mentioned previously. While this can be a challenge, the best Team Leaders do this naturally. They already know where they stand on an issue and are committed to getting the best ideas from their Team, for often, these are the ideas from the workers who are most likely to implement them.

Note: If you find yourself favoring the Facilitative Leader role it's important to let the group know when you're stepping out of your Facilitator Role and into a leader or group member role.

MEETING MANAGEMENT

Good meetings are key to good management; they allow effective processing and sharing of information. Often, however, meetings are ineffective and inefficient. They waste time and resources and cause frustration, low morale, and poor performance. To create an environment that promotes effective meetings, team leaders and facilitators must manage many different dynamics.

Effective Meetings
Regardless of the purpose of a meeting, effective meetings have many of the same ingredients:

- A focus on what needs to be done
- A focus on how it can best be accomplished
- A focused goal / clear outcomes
- A focused agenda with specific time allotments
- Clear roles, responsibilities, and standards of behavior
- Balanced communications and participation
- Evaluation of meeting effectiveness

Planning a Meeting

Successful meetings require proper planning. A good rule of thumb is to spend one hour planning for each hour of meeting time. Sometimes more time may be spent planning a meeting than actually conducting it.

There are numerous formats for an agenda. The following checklist contains some of the most typically found items:

Agenda Checklist

Answer these questions before developing the agenda:

- What is the purpose and desired outcome(s)?
- Is a meeting necessary to achieve the desired outcomes?
- Who should attend? Invite the minimum number of people required to achieve the desired outcome.

Develop agenda. An agenda should include:

- ❑ Date, starting, *and* ending times
- ❑ Location
- ❑ Purpose of the meeting
- ❑ All known desired outcomes
- ❑ Develop or review ground rules
- ❑ Agenda items. The following are possible items to consider:
  - Warm-ups
  - Mission review
  - Assignments & scheduling
  - Report of findings
  - Next steps
  - Presentations
  - Review previous meeting's minutes
  - Model and/or tool selection
  - Progress report/status
  - Interpretation of findings
  - Organizational communications
  - Just-in-time training
- ❑ Person responsible for each item
- ❑ Time allotted for each item
- ❑ Assigned roles (team leader, facilitator, recorder, timekeeper)
- ❑ Time for meeting evaluation

Team Member Roles

In any effective team, the group members take on added responsibilities with regards to the content of the group discussion as well as the process. Many Facilitator and Team Leaders find success in sharing responsibility for the group's success using the following roles:

- Timekeeper
- Scribe
- Recorder
- Co-Facilitator
- Meeting Chairperson/Coordinator
- Subject Matter Expert

Ground Rules

Ground rules reflect *team values* and create an *environment for achieving common goals*. They clarify responsibilities, describe how meetings will be run, and express how decisions will be made.

Ground rules allow facilitators, team leaders, and groups to hold their own feet to their own fire. For ground rules to be effective, follow these simple rules:

1. Develop ground rules during the first meeting and get consensus.
2. Remind the group that everyone is responsible for group behavior.
3. Revisit them regularly. Ground rules are living documents that may be changed or added to as groups mature.
4. Ask the group to periodically gauge their own effectiveness and make corrections as needed.

Sample Ground Rules
☑ We're here for the same purpose, we respect each other
☑ It's okay to disagree
☑ Share all relevant information
☑ Solicit others' ideas
☑ Listen as an ally
☑ Everyone participates, no one person dominates
☑ Share responsibility
☑ Honor time limits, Start on time
☑ Base decisions upon data whenever possible
☑ Choose right decisions over quick decisions
☑ Strive for consensus

Parking Lot

One of the most effective tools a group can use to keep a meeting on track is a parking lot. A parking lot is a place where issues that are important but not relevant to the topic at hand can be parked out of the congestion of discussion. Issues can be brought back in to the discussion, when appropriate, or reviewed at a later time. A parking lot serves as a visual reminder that each individual idea is important and will not be lost or ignored.

At the beginning of a session:

Post a blank piece of chart paper on the wall and write "Parking Lot" across the top. Place the parking lot near a room exit. This will serve as a reminder and allow people to post any off-topic thoughts they might have as they go on break. During the session warm-up, possibly during or just after a discussion of ground rules, discuss the concept of a parking lot and how to use it.

During a session:

If the group strays from the agenda, ask the group if they would like to spend more time discussing the issue or place in the parking lot. Ask the person who initiated the issue to write it up using one "sticky-note" per thought. Also, ensure that the parking lot is cleared at regular, agreed-upon intervals.

At the end of a session:

Meeting discussions are typically not held simply for discussions sake, so follow-up is key. Review parking lot items at the end of each session. Like other parking lots, a meeting parking lot can be the last place you focus on before departing and leaving the discussion behind. In this way, the group can ensure that important thoughts are not lost. To review, simply read each item and ask, "Has this issue been addressed or is further discussion and/or follow-up needed?" If the group desires further discussion, coordinate an appropriate time. Get confirmation from the group on the disposition of each item.

IDA Boards

A related concept is to break the parking lot into different parking boards. One tactic is to use three boards labeled "**I**ssues, **D**ecisions, and **A**ctions" often referred to as "**IDA**." The **IDA** method can help groups to effectively convert discussion into action and document meeting outcomes.

- The **I**ssues board is like a standard parking lot. It consists of those slightly off topic or extraneous issues that come up during the meeting discussion. The issues list could also contain those issues that are "out of reach" but need attention (these items may be later documented under Decisions or Actions).
- The **D**ecisions board simply documents decisions made by the group during the course of the meeting.
- The **A**ctions board is for next steps related to each issue and/or decision.

As with other parking lots, end-of-meeting review is important.

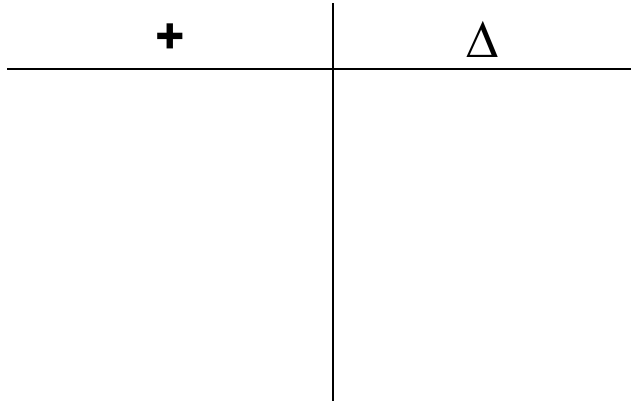
- When reviewing each issue on the list, ask: "Have we covered it?" "Do we need to cover it?" and "When should time be spent covering it?"
- When reviewing the decisions list, the opportunity exists to dig deeper and look at each decision and ask, "What is the change or benefit of this decision?" Groups might also take time to review and discuss each decision to gauge and set the expectation for follow-through.
- The actions list contains the overall impact of the meeting. In reviewing the actions list, assign specific steps, names, dates, and reporting/follow-up for each item. (See also action planning.)

To improve team and meeting effectiveness, there must be a continuous cycle of evaluation and action planning. Evaluation methods include *round robin* and *consensus discussions*, a *plus/delta*, and *meeting surveys*. While participative discussion following a facilitated meeting can be the best source of actionable feedback for the facilitator, not every group is eager to discuss their own improvement opportunities. Effective methods to obtain feedback are a *plus/delta* and *meeting surveys*.

Plus/Delta

A plus/delta can help a team identify what went well along with opportunities for improvement. It typically takes place after a meeting review and any closing remarks.

To perform a plus/delta, first ensure that each participant has access to sticky note pads and a pen (a fine-tip permanent marker works well in this case). Then draw two columns on flip-chart paper, as illustrated below, one labeled "+" and the other labeled "Δ" (the Greek symbol for delta, meaning change).



Ask each participant to take two separate note pages from the sticky pads. Ask them to write a "+" on one and a "Δ" on the other. On the plus have them provide a comment on something they thought went well and should be continued. On the delta have them provide a comment on something that perhaps did not go well and could be improved for the next meeting. Emphasize that the delta symbol indicates change; in this case what is being asked for is a specific way to improve. A meeting delta could include a request for an additional resource like new instructional material or a more robust explanation of a decision-making tool, it could even make an overall process improvement suggestion. A delta is constructive criticism that is 95% constructive and only 5% criticism. The goal behind writing a delta statement should be to not only highlight an opportunity for improvement, but to propose a solution or a corrective course of action.

Typically participants are most comfortable when the flipchart stand is placed near the door so they can simply post their notes (without names) in the appropriate column on the flipchart as they leave the room following the meeting. At some point, however, the group should review the feedback and create an action plan for improvement.

Feedback is of little worth if it is not seriously considered and followed up on. Work to ensure that strengths listed in the plus column will continue in future meetings. Legitimate concerns must be addressed and deltas worked on so that they can become pluses in future meetings.

Meeting Surveys

Meeting surveys provide the benefit of quantitative measurement of meeting performance, as well as specific focus areas that groups sometimes avoid discussing, such as interpersonal skills. Using meeting surveys can help groups track their progress over time and diagnose specific factors that hinder group performance.

Surveys such as the one below tend to be more effective if completed anonymously and compiled by a trusted party, perhaps an outside facilitator. Asking participants to provide written comments regarding their ratings can help groups link specific behaviors to ratings. Once results have been compiled, they should be shared with the group. The group can then analyze the data and formulate specific action plans for improvement.

Instructions: Rate any area that your team is currently working on, plus some general areas that are useful, such as satisfaction with decision quality, staying on track, etc

Effectiveness Focus Area	Rating		
Listening	More than one talking	1 2 3 4 5 6 7 8 9 10	One at a time
Meeting Planning	Disorganized	1 2 3 4 5 6 7 8 9 10	Well planned
Staying on Task	Many side trips	1 2 3 4 5 6 7 8 9 10	Focused
Use of Agenda	No agenda / not used	1 2 3 4 5 6 7 8 9 10	Agenda used
Satisfaction with decisions	No buy in	1 2 3 4 5 6 7 8 9 10	Ready to implement
Participation	Some dominant	1 2 3 4 5 6 7 8 9 10	All involved

GROUP LEADERSHIP

All groups follow predictable stages of group development on their journey toward becoming self-sufficient, high-performing teams. These stages are known as form, storm, norm, and perform. Different factors such as group maturity, personnel changes, and alteration of group goals or work conditions can impact whether a team progresses or regresses. Group leaders—whether a team leader, a facilitator, or a team member providing informal leadership—can help teams navigate through the hazards of group dynamics and achieve group goals.

The following chart will help you to both recognize group dynamics and lead more effectively:

Stages of Group Development

Stages of Group Development

	Form	Storm	Norm	Perform
Group Characteristics	• Uncertain • Tentative • Serious • Goals unclear	• Conflict • Team organizing • Goals still unclear • Hostility • Defensive	• Committed to task • Conflicts resolved • Harmony • Sense of team pride	• Fully functional • Self-organizing • Flexible • Innovative
Team Member Behaviors	• Talkative • Polite • Fearful • Anxious • Optimistic • Seeking belonging	• Disagree • May resist demands of teamwork and homework	• Comfortable • Sense of belonging • Share willingly • Enjoy work • Work earnestly	• Function well together • Understand others' views • Experience personal growth
Leader's Tasks	• Give clear direction • Get members acquainted • Create positive atmosphere • Assign straight-forward, simple tasks • Sensitive to members' need for direction	• Open up conflict • Move toward negotiation and consensus • Get members to assume more tasks responsibly	• Let team assign own tasks • Provide direction • Hold celebration • Encourage team to review own goals and progress • Listener and facilitator	• Participate • Consult • Inspire • Be involved in tasks as needed • Keep communications and information flowing • Reinforce and celebrate achievement • Provide new vision
Output	• Little gets done	• Low	• Moderate to high	• Very high
Facilitation Tasks	• Organize • Teach • Establish ground rules • Set standards • Set goals • Manage expectations	• Listen and observe • Enforce ground rules • Manage conflict • Advise • Intervene as needed	• Provide feedback • Affirm • Coach • Encourage	• Foster consensus • Coach • Cheerlead • Withdraw

Managing Conflict

Working with people who have diverse backgrounds, experience, and opinions provides a rich array of insight and opportunity; however, some sort of conflict may be expected. Webster's Collegiate Dictionary defines conflict as a "mental struggle resulting from incompatible or opposing needs, drives, wishes, or external or internal demands." These different needs and desires drive individual, and ultimately, group behavior.

Sometimes, conflict is good. Conflict can prompt us to examine our views at a deeper level. When this happens we may see things from a different perspective and change our opinion. Conflict may also lead to solutions that take into account many perspectives, prompt more buy-in, and are more likely to succeed.

Without early intervention, however, conflict situations can escalate quickly from an open and interactive dialogue to an emotionally-blinded, adversarial approach to problem solving. Many conflict situations are, in reality, disputes which can be resolved using proper skills and tactics. A longer, ongoing adversarial situation may be defined as "conflict" and are commonly comprised of multiple individual disputes. Looking at conflict from this perceptive, managing conflict becomes an active process of assessing the dynamics of the situation, strategizing a management approach, implementing this approach, and reassessing the situation.

ORGANIZATIONAL PERFORMANCE

Improving organizational performance requires us to examine what we do and how we do it. Often, we focus on what we are directly involved in and never stop to ask, "Is this the right thing to do or the best way to do it?"

The **Commandant's Performance Excellence Criteria (CPEC)** asks us to do that—every day. It asks that we challenge assumptions about how we work, continually find ways to improve, satisfy our customers, and produce performance results. Performance results begin with daily work processes.

To improve any work process we must:

- Understand the mission (business) of the unit
- Know the end-users (customers) and their requirements
- Clearly define the current work process
- Identify the output(s) of the process
- Measure the effectiveness and efficiency of the process
- Continually look for improvement opportunities

The rest of this guide presents information, techniques, and tools that will help you discover what the right thing is to do and the best way to do it.

Peter Senge, author of three blockbuster business books and hundreds of insightful articles, and the founder of the Society for Organizational Learning, suggests that the successful organization of the future will be the company that can learn the fastest. Indeed, one might argue that the future is here and ample evidence exists of the truth of his assertion. What Senge means by "learn" is to act, observe the results, reflect, adjust, and act again *intentionally seeking a different result*. Rinse and repeat.

The company that can get through this learning cycle quickly and most efficiently—a learning organization—is the one that will survive and thrive in the long run. In order for an organization to develop this capability it must master five disciplines:

- Personal mastery – individuals must understand themselves and their discipline, and be able to direct their own actions toward a desired goal.
- Mental models – individuals must be able to create useful but simple representations of reality—the causes and effects of actions—that can be used to test ideas. Groups must be able to identify and integrate their individual models into one that explicitly represents their consensual view of reality.
- Shared vision – groups must share the same model of the desired future state so their individual actions can create synergy even when not consciously coordinated.

- Team learning – teams must be able to learn in the fashion suggested above. An army platoon is the archetype of team learning; through a process known as an After Action Report team members reflect, in a blame free environment, about what worked, what didn't, and what new or different actions can be tried next time … along with their predicted and intended results.
- And—drum roll please—the *fifth discipline*, **systems thinking**.

Systems thinking achieves its position by being the discipline that integrates the other four. Each alone is interesting, and you may remember many fads that relate to these disciplines: visioning, the personal insight interventions of the 60s and 70s, a host of team development exercises, and the like. One reason they were short lived is that they were narrowly specific and not integrated into the broader system of learning and change. Each had value, but could not survive alone. All must be considered in a broader context—the system in which they operate. Systems thinking is the integrator.

What is *systems thinking*?

It's hard to create a single definition, because the term refers to a paradigm, a method, a language, and a set of tools—all for the purpose of constructing better mental models, simulating them more reliably, and communicating them more effectively.

Systems thinking is a way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behavior of systems. The discipline helps us see how to change systems more effectively, avoid unintended consequences, and to act more in concert with (rather than in opposition to) other processes that make up even larger systems.

Then what is a *system*?

A system is any group of interacting, interdependent, related parts that form a complex and unified whole, that whole having some purpose. It exhibits properties (or produces results) in excess of the sum of the properties of its components. The excess is created by the structural organization of the parts.

To *assert* that something is a system requires identifying the excess properties; to *explain* a system means to explain how the organization of the parts produces the excess.

Some quick examples: a car is a system made up of individual parts, none of which provides the property of "self contained transportation" until the parts are assembled in the right structure, with the right sequence and timing of activity, etc. A toolbox full of tools is not a system, but merely a collection, since it would be rare that the tools would be interdependent. Even though they may be unified in purpose (woodworking, for example), they are not interdependent and don't create any results just by being to together in the right order. On the other hand, a carpenter and a toolbox full of woodworking tools *may* act like a system when combined with materials and a blueprint (purpose). A football team and a toaster are systems, as is a marriage. A system can be part of a larger system. A bowl of fruit would not normally be considered a system, nor would a customer database, nor would an elevator full of people, though an elevator and a person *do* comprise a system. But it is the interaction of the person with the elevator, not the interaction of the people with each other that creates the system's behavior.

The budget process is a system. The hiring process is a system. A small boat is a system. Most Coast Guard units are systems that have lots of parts, including people, and many different purposes. As you might expect, the parts often have to be rearranged (different structural organization) in order to pursue different purposes. But once you put the parts together in a

certain way, the behavior of that system is determined in large by that structure. That is a critically important characteristic of systems: the behavior of a system, how it operates and what it produces, is determined by its structure.

Characteristics of systems:

- Every system has a purpose within a larger system.
- A system has properties that only emerge when the parts are assembled.
- All of a system's parts must be present for the system to carry out its purpose optimally.
- A system's parts must be arranged in a specific way to carry out its purpose. Any other arrangement would yield a different result. (Thus Einstein's warning about the folly of doing things the same way while hoping for a different result.)
- The outputs of systems depend on the inputs and the relationships and feedback among the parts.
- Systems remain in balance by acting on their feedback.

What makes systems thinking different from other ways of thinking?

Just one contrast can point out the difference. *Analytic thinking* is the process of systematically disassembling something in order to understand it. Break it down into increasingly smaller parts that grow more understandable as they are removed from the complexity of the whole. This is a standard method for solving a problem: divide and conquer. Mechanical and electronic devices are good examples: disassemble a car, for example, to find out of what parts it is made. But in its disassembled form, it isn't a car (system), but a collection of parts. The parts only provide the excess or emergent property of transportation when they are properly connected together—no specific part carries the specific property of transportation.

In contrast, *systems thinking* recognizes the emergent property as crucial to understanding the system. This is particularly true of non-mechanical systems (e.g., people, corporations, other life forms, workgroups, Coast Guard units). You may understand cows (or at least the theory of cows) better by disassembling them, but *cow-ness*, including *life*, is not a property of any particular part of the cow (ok, there's DNA, but …). Cutting a cow in half does not produce two small cows, but two halves of a dead cow. Disassembling it destroys the emergent property, which can no longer be understood or even recreated by merely studying the parts.

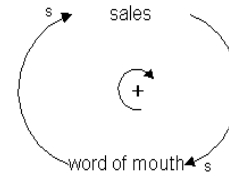
How can systems thinking be used for process improvement?

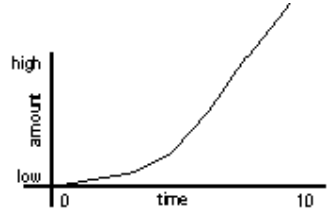
1. Find out who knows the most about the process. Get that group of people together.
2. Listen to the stories people tell about what works and what doesn't. Have each person describe the problem from his or her point of view.
3. Draw graphs of behavior over time (BOT). Select a time horizon that allows you to see long-term patterns as well as short-term activity. The graphs should be of something quantifiable that matters. This can be one graph of a key output, or many graphs of related factors. For more information on behavior over time graphs go to http://www.pegasuscom.com/botgraphs.html.

4. When everyone agrees that the behavior has been described fairly well, start working backward to find out what is causing it. This step can be as simple as asking repeatedly

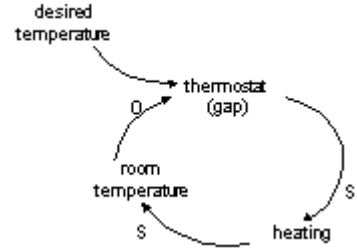
"… and what causes that?" or "… and why is that?" It can also be as complicated as using a computer-aided system dynamics modeling and simulation package. More likely it will be somewhere in between. An excellent and easily learned method is called *causal loop diagramming*. Measurable quantities (stocks) are connected together by their inflows and outflows (flows), and the controlling feedback loops are connected in such a way as to control the flows. After a while these diagrams form patterns that look familiar and share certain archetypal features. Two types will be shown here, and an extensive web-based discussion may be found at http://www.pegasuscom.com/cld.html and http://www.pegasuscom.com/landl.html or at http://www.clexchange.org/.

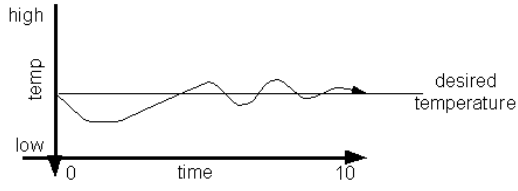
5. One very common structure reflects the concept of "snowballing." "No matter what we try it just keeps getting worse!" "This business is growing like rabbits!" This pattern is reflected as a loop that reinforces the behavior, like that on the right: as sales increase, if the customers are happy word of mouth advertising increases; as word spreads, it creates more sales, which further increases word of mouth advertising … and so on in a continuously reinforcing loop. The behavior over time might look like that on the left.





6. A second common type of structure (loop) is the balancing loop. These abound in nature, but can be understood by thinking of something with which we all have some experience: a thermostat. A heating *system* is controlled by a thermostat. We set the desired temperature on the thermostat, and when the temperature falls below that point it sends a signal to the heater to come on. That heats the air in the room. Eventually the temperature in the room equals the thermostat setting, and the thermostat turns off the heater. Though our goal is to maintain a stable temperature, the system actually tends to oscillate, more like the BOT on the left. This is caused by an inevitable delay between when the room temperature increases and the thermostat sends an "off" signal to the heater.





7. Often, once the basic structure of a system is described in a causal loop diagram, opportunities to change that structure (install balancing feedback, remove or compensate for delays, etc.) become more evident. And recalling one of the characteristics of a system noted above, if you want to change the behavior (outcomes) you probably have to change the structure!

> *You can't improve a process until you can control it … and you can't control it until you* understand it.
> *Jim Hines, MIT, 1996*

8. Making change then can become an experimental process: decide what you want the output of the system to be, build your *mental model* of what will have to change to produce that output, change it, compare your result to the intended result, adjust your mental model to take the new information into account … and try again. In true causal loop fashion, that brings us back to where we began: "What Senge means by "learn" is to **act, observe the results, reflect, adjust, and act again *intentionally seeking a different result***."

Reflections, laws, helpful hints, and afterthoughts

- Cause and effect are often separated in time and space.
- Actions have both intended and unintended effects.
- Today's problems are yesterday's solutions.
- The harder you push, the harder the system pushes back.
- Some systems are stable and tend to seek a certain value if disturbed. Other systems are in equilibrium, but any disturbance could cause them to tip into a reinforcing loop in a positive direction, or in a negative direction. Sometimes it's hard to tell which is which.
- Systems sometimes react so as to show improvement before things get worse. Short-term or obvious solutions may actually make the problem worse.
- The easy way out often leads back in.
- The cure can be worse than the disease.
- Faster is slower.
- Small changes can bring big results, but the areas of highest leverage are often the least obvious.
- There is no blame.
- There is no "away." When you "throw it away" it goes somewhere; you may need to expand the boundary of your system to see that.
- Everything is connected to everything else.
- You can never do just one thing.

- There is no such thing as a free lunch.
- Look for high leverage points.
- Nothing grows forever.
- Don't fight positive feedback; support negative feedback instead.
- There are no simple solutions.
- There are no final answers.
- Every solution creates new problems.
- Loose systems are often better.

Picture this scene. After a year of marriage, a couple discovered that he liked to be cool while sleeping, and she liked to be warm. Solution: an electric blanket with dual controls, one for each side. He can make his side cooler, and she can turn up the heat on her side! Now sneak in one day and reverse the controls, so that hers is on his side of the bed and vice versa. He gets in bed and turns the heat down. She gets in bed and turns the heat up. He gets warmer (remember, she made *his* side warmer), and she gets cooler. She cranks it up even more, and he sets his side on "frigid." Take a shot at drawing the causal loop diagram for this *system*.

The Voice of the Customer

Whatever your job may be, you provide a product or service for someone else—your customer. Your work group or unit's success comes from providing products or services that meet customer needs.

Who are your customers? Consider three types of customers: end-user customers, broker customers, and fixer customers. End-user customers are those people who ultimately use your work group or unit's product or service. These are the most important customers to keep in mind. Broker customers are those people who transform a product in some way between you and the end-user customer. And fixer customers are those responsible for product maintenance. Each type of customer will have different requirements.

In addition to customer types, consider customer segments. Different customer segments may also have different requirements. Boater segments, for example, might include recreational boaters, fishing vessels, and merchant mariners. A Servicing Personnel Office may look at the different needs of officers, enlisted, active duty, reservists, members of other services, and dependents.

To determine how well you are meeting customer needs, you must first understand the product or service characteristics the customer considers most important. Using the critical-to-quality (CTQ) tree summarized in the tool section is one effective method. The CTQ tree can help you identify key drivers of product or service satisfaction, as well as key performance measures. The customer requirements matrix is another effective tool. It allows you to identify the gaps between what you provide and what the customer expects, and prioritize product or service improvement efforts.

Key Quality Characteristics Customers Want in a Product (Garvin, 1988)

- Performance – Basic product operating characteristics
- Features – Added touches
- Conformance – Accuracy or match with expectations
- Timeliness – Available
- Reliability – Consistent performance over time
- Serviceability – The ease of repair
- Durability – A measure of product life
- Aesthetics – How a product looks and feels
- Reputation – Perceived quality

10 Key Characteristics Customers Want in a Service (King, 1979)

- Reliability – Consistency of performance and dependability
- Responsiveness – Willingness to provide service, timeliness of service
- Competence – Possession of required skills/knowledge
- Access – Approachability and ease of contact
- Courtesy – Politeness and respect
- Communication – Keeping customers informed so they understand
- Credibility – Trustworthy, believability
- Security – Freedom from danger, risk or doubt
- Understanding – Makes an effort to understand the customer's needs
- Tangibles – Physical evidence of service, clean neat appearance of personnel

Work as a Process

All work efforts are part of a process, not an isolated event. All performance gaps, or problems, are related somehow to a work process. A process is a series of work steps that change inputs into outputs. Customers are the end-users of the process. They are the ones who can tell you if your process is effective.

The following "SIPOC" diagram illustrates the concept of work as a process:

Suppliers and customers can be from within your own work group or unit, another Coast Guard unit, or outside the Coast Guard. Just as a supplier's output becomes your input, your output becomes your customer's input. Your customer may have a customer as well. This string of processes forms a system. When assessing process performance, it's important to know what is happening both upstream and downstream. Process mapping can help you identify opportunities for improvement. See SIPOC and Flow Charts in the tools section for more information.

Key Idea:
All performance gaps, or problems, are related to a work process. Yet, even when people understand this concept, they tend to think in terms of isolated problems, not the process. In order to address root causes of problems, and not symptoms, we must understand the voice of the process.

Performance Elements

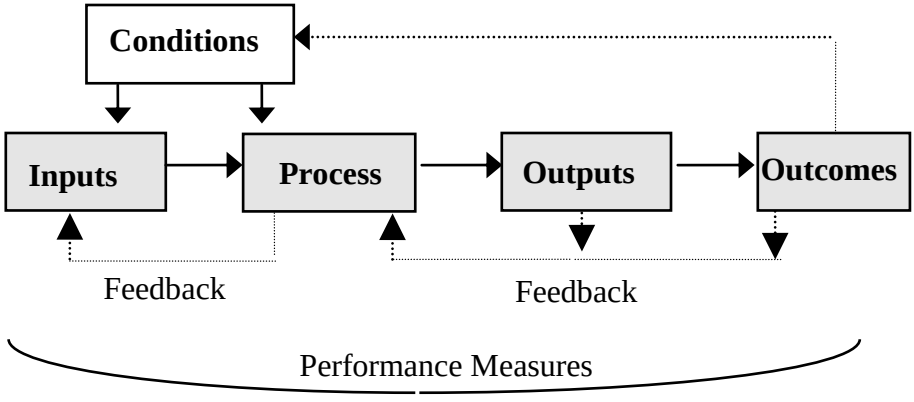
The effectiveness and efficiency of processes depend on more than the procedural steps within the process itself. To properly examine a process, a team should consider all of the performance elements:

Outcomes	The benefit that the command/staff/organization seeks to achieve or influence—the eventual process and output effect.
Outputs	The immediate products, services, or information produced.
Inputs	The resources needed for the process to operate.
Conditions	Factors that influence the availability of inputs and the operation of the process.
Feedback	Solicited or unsolicited comments from others regarding the process, outputs, and outcomes.
Performance Measures	Systematically collected quantitative and qualitative data on the effectiveness and efficiency of the process.

The table on the next page shows examples of elements that may factor into the performance of a process.

Element	Examples
Outcomes	Effect on mission(s), program goals, and/or the local community; employee, customer, and stakeholder satisfaction; community response; customer use of products and services
Outputs	Boardings, inspections, identification cards, skilled trainees, health care services, directives and policies
Inputs	Equipment, funding, materials, information, skilled labor, requests for service
Conditions	Management priority, organization values, employee behaviors, work environment, policies, support systems, weather
Feedback	Customer and stakeholder feedback, metrics, news reports, independent studies
Performance Measures	Customer satisfaction, on-time-delivery, organizational requirements, quality, cost, cycle time, productivity and waste. See the next section for more information.

The following Work Context diagram which builds on the "SIPOC" diagram shows how the elements work together.



To meet and exceed customer and mission requirements, you must develop meaningful effectiveness and efficiency measures:

Effectiveness measures indicate how well process outputs meet customer and mission requirements. Measures of effectiveness include customer satisfaction, on-time-delivery, organizational requirements, and quality.

- **Customer Satisfaction** is a soft measure of how the customer perceives your product or service.
- **On-Time-Delivery** is a measure of how often the desired process output is delivered when the customer wants it.
- **Organizational Requirements** are measures of how well your outputs meet requirements of stakeholders that are not necessarily your customers. Organizational requirements measures are a subset of quality measures.
- **Quality** is a measure of how well your outputs meet important requirements or needs, such as reliability, features, etc.

Efficiency measures indicate how well you are meeting your customer and mission requirements with a minimum use of resources. Measures of efficiency include cost, cycle time, productivity, and waste.

- **Cost** is a measure of fiscal stewardship.
- **Cycle Time** is a measure of the time a service or product takes to move from the beginning of a process to the end.
- **Productivity** is the ratio between output and input, as illustrated in the formula P = O/I (where P = productivity, O = output, and I = input).

- **Waste** is a measure of the non-value added activities and resources used to meet customer/mission needs. There are seven types of waste:
    - Overproduction
    - Transporting
    - Unnecessary Inventory
    - Waiting
    - Inappropriate processing
    - Unnecessary motions
    - Defects

How do you determine if your metrics indicate good results? It depends. How are similar organizations performing? Or if there are not similar organizations, how are organizations with similar processes performing? When broken down into simple processes, such as conducting an inspection, launching a small boat, shipping a part, and so on, it becomes easier to make like comparisons. Relevant **Comparison Measures** allows a unit or workgroup to set meaningful goals and determine whether they are truly a best-in-class or world-class organization.

Why collect data?

To improve a process one needs to understand the quantity and quality of a current condition, employ a strategy to improve the current condition, and assess the effectiveness of any changes. To do this, data can and should be collected for these reasons:

1. Accountability
2. Establish a baseline to analyze future trends
3. Assess attainment of goals/objectives
4. Determine reasons for success or failure
5. Comply with standards
6. Serve as a basis for timely action (or appropriate inaction)
7. Effective Communication

> **Key Idea:**
> *Data are like garbage—you best know what you're going to do with it before you start collecting it!*

What can be evaluated?

Anything! But, do not conduct evaluation without forethought or the cost can quickly outweigh the benefits. Consider evaluation an investment and clearly identify the who, what, when, where, why, and how evaluation will be conducted.

Types of data

The ability to understand a condition is dependent on the type and method of the information being collected. Data used to evaluate performance comes in two forms: quantitative and qualitative. Each data type has associated strengths and weaknesses and collection methods that need to be considered when designing a method to understand current conditions and assessing future outcomes.

Quantitative Data

Quantitative data are generally what comes to mind when thinking about assessment. Simply defined, quantitative data are the result of measurement, the process of changing words into numbers. Quantitative data tend to be used for systematic statistical analysis with a goal of verification. Examples include choice or scale items such as:

Example 1.	What is your current age? _____
Example 2.	Use the below scale to answer the below questions: 1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree A. ____ Morale in my department is high.
Example 3.	What is your gender? 1.Female 2. Male

Types of Quantitative Data

Investigating deeper into these examples leads to another question, are these items measuring the same type of data? Data can be classified into two types: continuous and discrete. Continuous data (example 1) are measured on a continuum, e.g., age; time; weight; number of units produced per hour; dollars spent; or test scores. Alternatively, discrete data are not continuous, that is, they are merely counts, e.g., number of females in a unit (example 3). To put it a different way, if you want to ask "what is the average number of X" you are referring to continuous data. If you want to ask "what is the percent of X's occurrence" you are referring to discrete data. The type of data measured is directly related to the types of statistical analyses that can be conducted. What about example 2?

Say example 2 provided us with the following results after sampling 10 students:

Example 2.	A. ____ Morale in my department is high.				
	1. Strongly Disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree
Results:	0	1	0	1	8
	Average Rating = 4.6				

This shows that scale responses can fall into a gray area. They are technically discrete, each item is an independent response, but are generally considered continuous data as there is an implied underlying continuity (strongly disagree to strongly agree). As a side note, continuous data are considered more robust than discrete data because continuous data allow for more complex analyses and can easily be converted into discrete data (groups), while the inverse (discrete to continuous) is not possible.

Qualitative Data

While quantitative data answers the question "how many" or "what amount," another question is left unanswered: "why?" An average score may be sufficient in some situations, particularly when conducting systematic or programmatic analyses, but in many cases this is not enough information to make meaningful changes or improvements. Qualitative data improves our understanding by clarifying the underlying rationale for quantitative ratings. In other cases, such as focus groups or interviews, qualitative data is preferred as it provides rich feedback with specific examples, ideas, and reasons. In the above example, it would be useful to know why students felt what they learned will help them on the job. Was it due to the content of the instruction, the materials used, or the manner in

which information was presented? In other words, quantitative data are associated with an end result or product while qualitative data are associated with the understanding the process of a phenomenon.

The best data collection tools use a *combination of quantitative and qualitative data* to capture a full picture of a phenomenon.

Methods of Collection

There are a number of data collection techniques that each differ in their collection method, delivery, and cost. The advantages and disadvantages associated with three techniques: Surveys, Interviews, and Focus Groups are displayed below.

Data Collection Technique	Survey	Interview	Focus Group
Delivery Method	Paper, Internet	Face to Face/Phone	Group Session
Advantages	•Primarily quantitative. •Objective data collection and analysis.	•Primarily qualitative. •Rich, experience laden information) •Flexible-questions can be guided by previous responses	•Obtain a large amount of information in a short time •Results are understandable by lay people
Disadvantages	•Do not explain "why" •May get superficial responses •Statistical analysis can be overwhelming to some	•Time to conduct •Volumes information •Analysis is subjective and time consuming	•Non-natural setting •Requires a facilitator •Participants may be influenced by other participants presence
Preparation Time	Moderate	High	Low
Time to Conduct	Low	High	Moderate
Time for Stakeholder	Low	Moderate	Moderate
Time for Analysis	Moderate	High	Low

Guidelines for Data Collection Methods

General Considerations

Plan ahead! Know what questions you want to ask ahead of time and ensure the data collection method you select will answer those questions. It is difficult to go back and collect more data.

Think about the population you are interested in. How will you sample from this group of people? Do you ask everyone to participate or only select a few? There are a number of sampling techniques available to use, the most common being using a random sample of all possible participants or selecting a specific group to participate. See 'further reading' for more information on sampling. Regardless of the sampling method, make sure participants know what is expected of them and what you plan to do with their data. There are federal regulations to ensure a participant's rights are protected. Simply stated, this protection ensures participants will remain anonymous, have the right to terminate at any point, data will remain confidential, and their responses will not affect their job or performance evaluations (unless clearly stated otherwise). Also, remember a participant's time is valuable. To get the most valid and meaningful data, be sure to not overtax participants with questions that do not meet your objectives

It is usually helpful to run a pilot or small test study prior to the full data collection to work out any problems. By using a practice study you will benefit both through participants clarifying potential problems and in your collection technique or process. This is of particular importance if you are collecting qualitative data (interviews or focus groups) to ensure you are familiar with your questions. Regardless of the data collection techniques, it is important to always try to avoid confusion when possible. Ask clear, singular, focused questions and use simple language (no acronyms, 'big words')

Individual data collection tools have some additional points to keep in mind:

Survey

- Keep the rating scale the same as often as possible. At minimum, keep the direction of the scale the same, generally right to left (bad to bad, dislike to like)
- Avoid using double negatives
- Try to keep the number of questions as brief as possible
- Make sure choices mare mutually exclusive and capture the entirety of possible answers

Interview

- Build rapport with the interviewee
- Stay neutral
- Read the interviewee for nonverbal cues
- Conclude with one last question

Focus Group

- Start with broad themes/issues for discussion
- Create an open and trusting environment—no ideas are wrong
- Remember responses are based on group consensus, not individual response

Other Considerations

The type and method of data collected have additional considerations. To be effective, select a method which meets the following criteria based on current conditions and needs. Remember any data collected should be:

- Timely
- Related to the process
- Collected systematically
- Precisely defined

Effective Data Collection Strategy

Answering the following questions will allow you to develop an effective strategy for collecting data.

- What do we want to accomplish by collecting the data?
- What data is needed to achieve this goal?
- Where in the process should we collect data?
- What sampling scheme should we use?
- How much data (samples/data points) are needed?
- When/how long should data be collected?
- How will we record the data?
- Who is responsible for collecting the data?
- Is the collection method simple and efficient?

What To Do With The Data?

Once you have collected data you need to do something with the results. If you leave collected unanalyzed you have not only wasted time and money but leave questions unanswered, i.e., why even collect the data in the first place?

The method of data collection generally dictates what analysis can be done. Of course, while planning the evaluation you should have thought about what objectives/questions you wanted answered and how to analyze data to answer these questions. This guide several examples of analytical and graphical tools to describe and display your data. Decisions must be made relatively quickly, accurately, and presented in a manner that is easily and effectively understood by all audiences.

Data Analysis

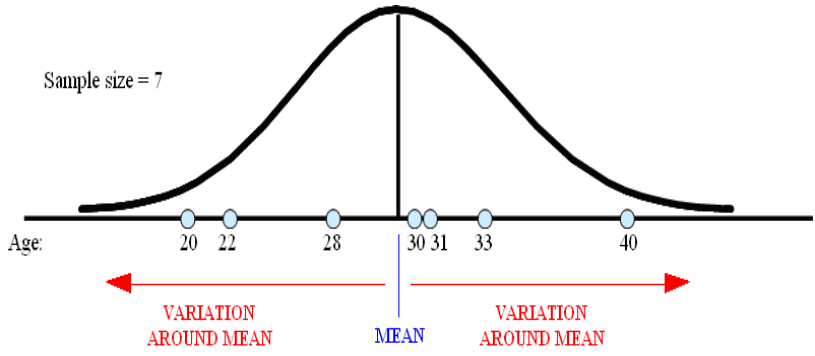
An in-depth explanation of data analysis is beyond the scope of this book; however, several simple tools are available to analyze your data. Briefly, there are two analytical tools descriptive analysis and inferential analysis. Descriptive statistics describe the sample[1] and inferential statistics are used to determine relationships between samples. This guide will only cover descriptive statistical tools.

As mentioned, the types of descriptive statistics used is dependent on the type of data collected, i.e., discrete or continuous. When describing data, the goal is to use one number (or fewer numbers) as a summary for a larger group of data. In the case of discrete data, this summary generally takes the form of frequencies and percentages. Frequencies are counts of each category while percentages are a standard metric for comparing frequencies by dividing frequencies by the total number of cases (participants). When reporting percentages, *always* include the sample size or frequency to help the reader correctly interpret the statistic. For example, the statement '75% of all employees are dissatisfied with their work environment' is more meaningful if 100 individuals were sampled as opposed to 4.

For example, in Example 2, 80% of the participants stated they strongly agreed that morale is high.

[1] Specifically, the sample is an estimate of the target population from which the sample came from, e.g., a sample of Coast Guard Reservists are meant to represent the population of *all* Reservists in the Coast Guard.

Continuous data allows for more complex analysis. Two pieces of information are needed to describe continuous data taken from a sample: a measure of the data's middle point a measure of variability or spread. The most common measures used are the mean (average or middle point) and standard deviation ("average" variation around the mean), though other measures exist. In the example below, the ages for 7 participants are 20, 22, 28, 30, 31, 33, and 40. The mean score is 29.1 and the standard deviation is 6.7.



Spreadsheet and statistical packages, such as Excel, MINITAB, SPSS, and SAS can all compute descriptive (and inferential statistics). A note of caution, though simple to use, these analysis packages assume the user understands the assumptions underlying statistical tests and can accurately interpret the results. Consult a statistician or analyst prior to analyzing data with computer applications.

One final note, qualitative data should also be analyzed. The most common procedure for analyzing qualitative data is to use a content analysis. Content analysis requires an analyst to read through comments, interviews, or other collected text and determine common themes or patterns within the data. These themes usually presented in terms of frequencies.

Displaying Data

Statistics such as frequencies and means provide evidence to support decisions, but these decisions are not always easily made from lists of statistics. Graphically representing statistics can provide a simple and powerful way to help interpret results. Two types of statistical displays are table and figures.

Tables provide a mechanism to summarize groups of statistics in a specific location. Tables can also be used to represent qualitative data, such as the themes derived from a content analysis or focus group exercise.

Some considerations when developing tables:

- Tables should have labeled titles and column headings
- Titles should be descriptive but not overly wordy
- Column heading should include units of measurement
- Data should be arranged in a logical order
- Align decimal points and be consistent with the number of decimal points used. Usually 1 or 2 decimal points are sufficient
- Use the space underneath a table to describe anther other notes or explanations within a table.
- Do not use too many borders. Generally, a border around the column headings and at the bottom of the table are sufficient

Table 1. Years on Active Duty

	Mean	SD
Years Active (Range 0 to 20)	5.2	6.4

Sample size = 52

Table 2. Gender Distribution

	Freq	%
Male	48	95.1
Female	4	4.9

Note: 2 cases missing

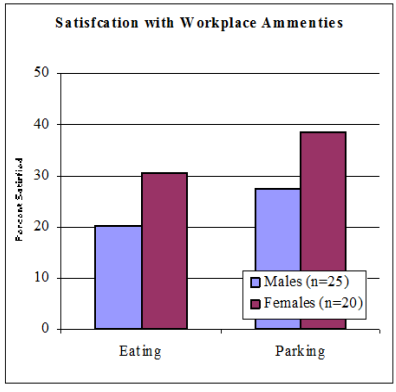
Table 3. Considerations of Facilitators

Tips	Pitfalls
Not affected by outcomes	Personality types
No personal agenda	Hidden agenda

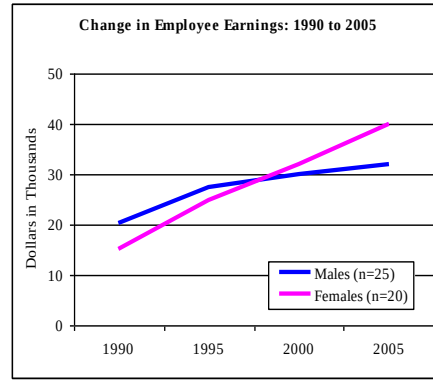
Table 4. Content Analysis of User Feedback

Report 1 (# Comments)	Report 2 (# Comments)
Benefits (50) • Easy to read (30) • See the "big picture" (18) • Nice photos (2)	Benefits (23) • Just enough detail (14) • Appropriate for audience (9)
Concerns (22) • Not enough detail (30) • Wrong customer/audience (6)	Concerns (15) • Difficult to read (10) • Poor transitions between sections (5)

Figures include any other type of visual representation of data beyond a table. It can include a graph, chart, drawing, photo, or another graphical depiction of data. Figures take more time to create than tables but a good figure can explain a vast amount of information with just a glance. Graphs are used to show relationships. Common graphs include bar charts and line charts.



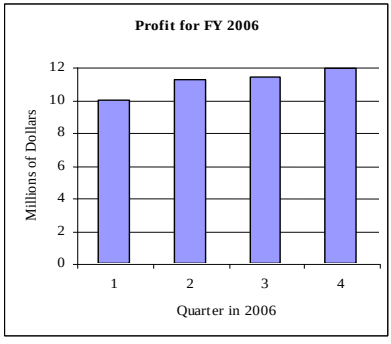
Bar Chart

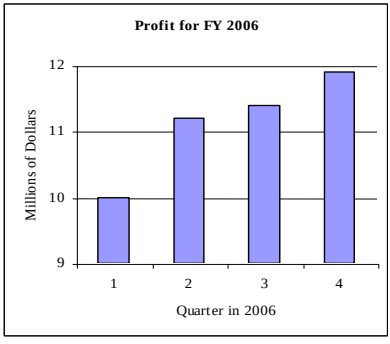


Line Chart

The most effective figures incorporate the following considerations:

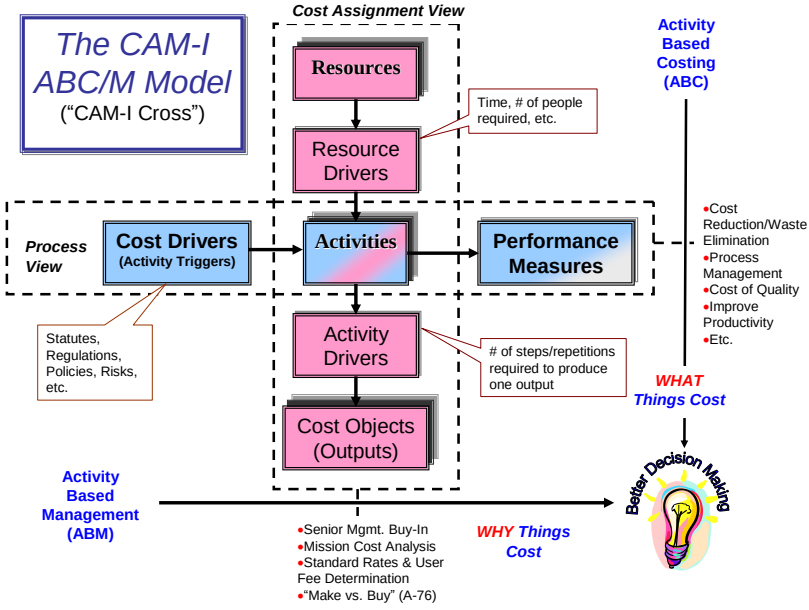
- All axes are labeled with units of measurement
- Titles should be descriptive but not overly wordy
- Fonts should be similar to what is used in other text, though generally smaller and bolded to identify labels
- Gridlines can help a reader interpret results
- Do not use too many colors and be mindful of color blindness (be careful using blue and yellow or red and green to display different groups)
- Note the scale. Scales can be altered to emphasize or diminish results. This is why it is important to label axes (see below)





With the simple guidelines presented here and throughout this guide you can begin to better understand any process and use the results to make meaningful changes and improvements. For more information regarding data collection, analyses, and display, see the additional references section.

ABC focuses on work; it measures the costs of work activities and the products and services that satisfy customers, influence outcomes, and achieve goals. ABC-derived data supports activity and strategy planning and prioritization. ABC systematically organizes Coast Guard work into discrete activities and allocates overhead as that activity requires and consumes it. ABC makes the full costs of activities, products, and services both apparent and transparent; and enables better-informed decision-making on the basis of efficiency (e.g., cost/unit, cycle time) and cost-effectiveness (return on investment).



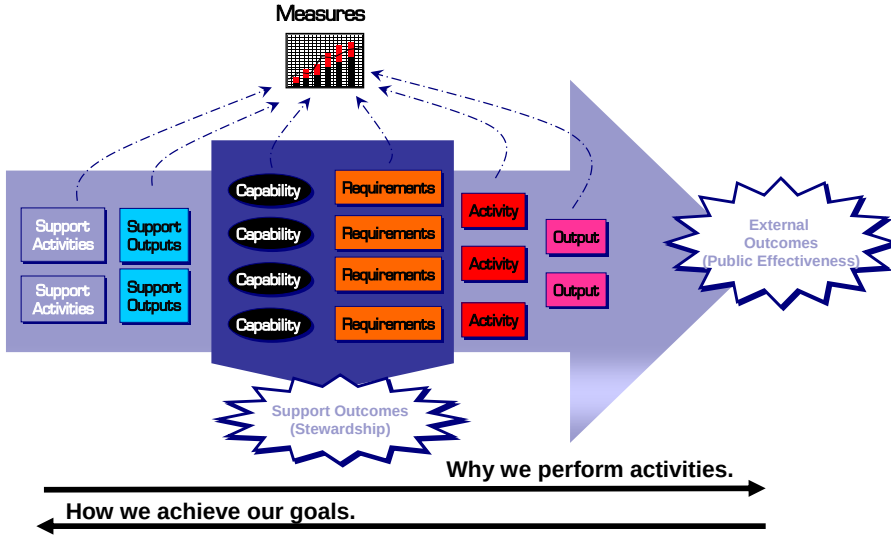
Source: Used with permission of the Consortium of Advanced Management, International (CAM-I)

ABC Deployment

Both the Atlantic and Pacific Maintenance and Logistics Commands (MLCLANT and MLCPAC) have established ABC systems to better measure and understand support costs. All MLCPAC Integrated Support Commands (ISCs) have software licenses, training, and computer support for an initial effort to deploy ABC methodologies. The MLCLANT support community has a similar effort underway. Other support units will follow. The Marine Safety and Environmental Programs piloted ABC at Headquarters and two field units—Marine Safety Office (MSO) New Orleans and Activities Baltimore—between 1997 and 1999. Lessons learned were applied at Sector St. Petersburg (MSO Tampa/Group St. Petersburg) and then at Sector Corpus Christi to support risk management. Follow-on efforts will continue at other units.

The UPLM is a detailed "cognitive mapping" tool that will be primarily used by program analysts, to capture the cause-and-effect relationships between Coast Guard capabilities, requirements, activities, outputs, and goals/outcomes achieved. The UPLM clarifies the relationship between operational performance (risk management) and support (readiness management). It demonstrates alignment between Coast Guard work activities, outputs (products and services) and the goals, or purposes, for which the work is performed. It is fundamentally an activity-based model (see ABC) and provides a framework for metrics.

Unified Performance Logic Model (UPLM)



Some Definitions:

- **Activity –** A unit of work with a beginning and end leading to an output
- **Output** – A product or service desired by a customer that is produced by an activity or a process. Examples

include: a mariners license, a strategic plan, a completed SAR case.

- **Outcome** – The public benefit that the Coast Guard seeks to achieve or influence (e.g., Maritime Safety—a reduction in deaths associated with maritime transportation, fishing, and recreational boating).
- **Readiness -** Measure of USCG ability to execute mission requirements IAW standards
- **Standard –** Designated parameter or expectation of performance. Standards should be established based on systematic assessment of requirements and should be updated to reflect changing conditions.

The UPLM shows how activities convert resources into readiness (Authorities, Competencies, Capabilities, and Partnerships). And it shows how readiness is consumed to influence public outcomes across the performance spectrum (awareness, prevention, protection, response, and recovery) to achieve Coast Guard strategic goals.

Building the UPLM is a complex, ongoing, and detailed effort to identify activities the Coast Guard performs (work), the outputs produced (products and services), the goals they are intended to influence, and the cause-and-effect relationship between all. The UPLM will facilitate and support:

- Causal *Analysis*
- Organizational and Performance Metrics *Identification* and *Alignment*
- A Standardized, Disciplined Planning and *Management Lexicon*
- *Development* of the Mission-Oriented Information Systems Architecture (CIO-designed Enterprise Architecture)

Deciding what to work on can be a difficult task. Whether a team seeks to improve its own processes or management faces multiple improvement opportunities, the question, "where do we start?" must be answered. Whatever the choice, the project must be worthwhile. In other words, it must be:

- **Important—**there is no point in working on a problem that nobody cares about. Is there a business case?
- **Achievable—**is the scope of the project too large?

Projects don't have to be huge to be important—a series of small improvements can make a big difference. Small projects can help spark other ideas and show employees how to make a significant change. Solving an easy problem provides the experience needed to tackle tougher ones.

Consider these factors when deciding on a project:

- **Customers.** Satisfaction, relationships, complaints, trends in behavior, requirements, etc.
- **Organizational Goals.** What's important to management?
- **Other Stakeholder Expectations.** Employees, community, neighbors, suppliers, etc.
- **Productivity.** Costs in money, labor, material, and equipment, etc.
- **Mission Performance.** Meeting or exceeding customer expectations, productivity goals, or standards.
- **Organizational Assessment.** Such as Commandant's Performance Challenge, Commandant's Quality Award, Organizational Assessment Survey.
- **Strategic Challenges.** Preparing for the needs of your operating environment.

The DMAIC model is a robust, systematic continuous improvement approach that consists of five phases: **D**efine, **M**easure, **A**nalyze, **I**mprove, and **C**ontrol. DMAIC offers a method that focuses on meeting customer requirements, includes gates after each phase to ensure organizational alignment, and emphasizes project prioritization.

DMAIC Phases and Major Steps	
Define	1. Form team, develop charter 2. Identify customers, their requirements and expectations 3. Define project boundaries (start/stop) and perform cost-benefit analysis 4. Map the current process
Measure	5. Develop data collection plan 6. Collect data and determine types of defects and metrics
Analyze	7. Determine current capability and identify gaps 8. Perform root cause analysis 9. Identify variation
Improve	10. Create innovative solutions based on analysis 11. Develop implementation and pilot plan 12. Pilot new process 13. Assess results of pilot and address gaps
Control	14. Develop, document and implement an ongoing monitoring plan 15. Institutionalize the improvements by modifying systems and structures (staffing, training, incentives) 16. Communicate the results

DMAIC Roadmap:

Define

1. **Form team, develop charter**
   - ❒ Define project objectives
     - o Is there a business case?
     - o What is the problem?
     - o What is the goal, in measurable terms? Triangulating the business case, problem, and goal is key.
     - o What is the scope of the project?
     - o What is the background?
     - o Who is the sponsor?
     - o Who is on the team? Team selection is critical.
2. **Identify stakeholders, their requirements and expectations**
   - ❒ Obtain customer input
     - o What is the voice of the customer?
     - o What are the critical-to-quality requirements?
   - ❒ Identify other stakeholders
     - o Perform a stakeholder analysis
3. **Define project boundaries (start/stop) and perform cost-benefit analysis**
   - ❒ Identify the first and last step of the process associated with the problem you are addressing
4. **Map the current process**
   - ❒ Start with a macro-level flowchart, and then do one with enough detail to understand the performance challenge
   - ❒ Identify/verify key process outputs and customers who use them, key inputs and suppliers who provide them
   - ❒ Identify/verify the factors that most influence the process

Measure

5. Develop data collection plan

- ❒ Check and validate existing measures

6. Collect data and determine types of defects and metrics

- ❒ Consider measures of effectiveness and efficiency

Analyze

7. Determine current capability and identify gaps

- ❒ Is the process capable of performing to requirements?

8. Perform root cause analysis

- ❒ Identify all gaps, root causes, or symptoms which are beyond your knowledge or control

9. Identify variation

- ❒ Examine how the processes associated with the root causes are performing

Improve

10. Create innovative solutions based on analysis

- ❒ Generate lots of ideas, then select the one (or more) most promising change(s) to make based on the identified gaps and root causes

11. Develop implementation and pilot plan

- ❒ Consider time, cost, and quality requirements

12. Pilot new process

- ❒ Test the process out before implementing a full-scale change

13. Assess results of pilot and address gaps

- ❒ Did the new process perform as expected?

Control

14. Develop, document and implement an ongoing monitoring plan

- ❒ Choose valid and reliable measures

15. Institutionalize the improvements through the modification of systems and structures (staffing, training, incentives)

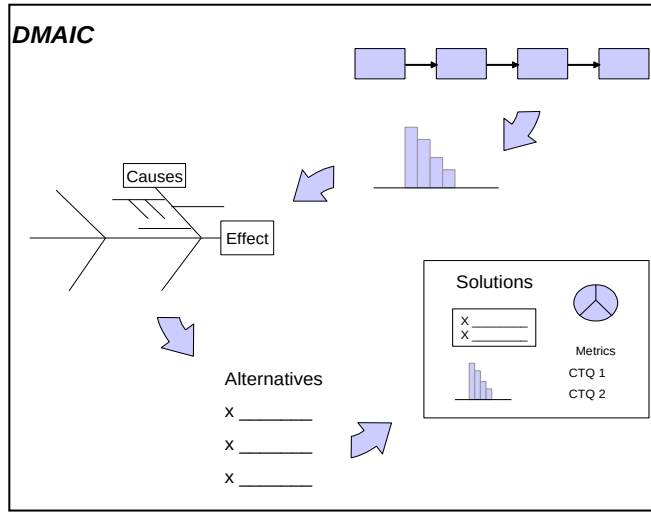
- ❒ Consider Commandant's Instructions, Standard Operating Procedures, checklists, etc.

16. Communicate the results

- ❒ Consider different methods such as presentations, posting of results, and e-mail

Conduct a gate review after each phase is complete. During a tollgate review, the team leader/team should meet with the senior champion. Together, they should review progress and ensure that no steps have been missed.

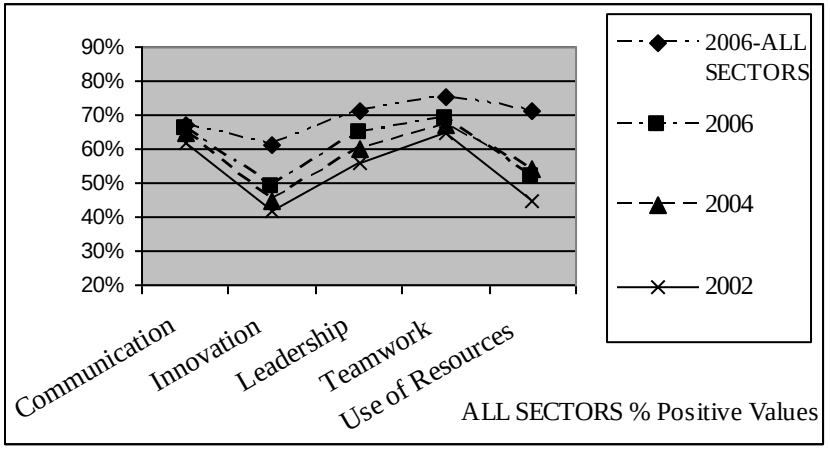
For in-depth DMAIC model information beyond the scope of this guide, consult the Six Sigma references in the additional resources section.



The CG Organizational Assessment Survey (CG-OAS)

The CG-OAS is a biennial survey conducted in the January-March time frame; the Coast Guard first used it in 2002. The CG-OAS is an extensive survey that all Active Duty, Selected Reserve, and Civilian members/employees are asked to complete. This survey is the cornerstone of the Human Resources Directorate's assessment process. The CG-OAS contributes to performance improvement by:

- Assessing Coast Guard organizational strengths and weaknesses;
- Providing a basis for effective management, planning, and evaluation of organizational initiatives and strategies;
- Establishing measures to benchmark and evaluate change in organizational performance over time;
- Measuring key indicators relevant to the Government Performance and Results Act (GPRA) and the Commandant's Performance Excellence Criteria (CPEC);
- Providing government and private sector comparative data;
- Providing commands/staffs comparative data for unit type or communities.



CG-OAS results are used by the Chain of Command, Command Master Chiefs, Rating Force Master Chiefs, program managers, civilian personnel, Reserve Component managers, and many others. CG-OAS data gives these decision-makers a better understanding of the issues and concerns affecting Coast Guard people. Our regular CG-OAS use will provide results and trends to track the success of a wide range of local and service wide initiatives.

Coast Guard wide results and tools to work with those CG-OAS results are located on CG Portal. A CO/OINC or their designated representative can get unit-specific results by contacting COMDT (CG-1B2), Mr. Paul Redmond (see global list), to gain access to unit level results. In addition, regional Organizational Performance Consultants (OPCs) can work with leaders to better understand command-specific results and to develop an action plan to improve in selected performance areas.

The CG-OAS gives all but the smallest units a way to track and respond to unit-level issues with quantifiable information. And, it gives senior leaders and program and community managers valuable information with which to lead and manage their areas of responsibility.

Coast Guard Business Intelligence (CGBI)

Business Intelligence is a standard industry term that refers to a set of processes and tools to collect and analyze business data and transform it into organizational knowledge and—ultimately—wisdom.

The Coast Guard currently has numerous business intelligence initiatives underway. COMDT (CG-095) is partnering with HQ directorates and field users at all levels to combine the "best" of these initiatives to deliver a CGBI system that we can rely on and readily use. CGBI seeks to provide access to dependable data, standard measures and robust analyses in a repeatable manner to make fact-based decisions possible. The CGBI motto is: *One Source. One Answer. One Coast Guard.*

- CGBI includes readiness, activity, and performance measures for every member, unit, and community accessible through CG Portal. The "Business Intelligence" tab provides access to information relevant to individuals, units, and the Service.

Business Intelligence principles:

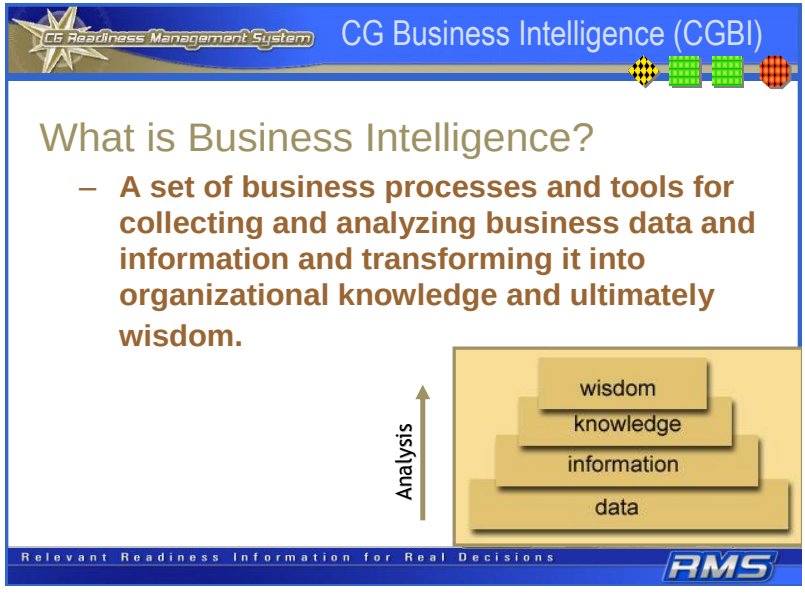
- Organizations run best on accurate information;
- Unit-level people provide 99% of that information; responsibility for accurate input rests with every Coast Guard member; and
- Every piece of information should be collected only once and it should be nearly effortless to collect, analyze, view, and use.

CGBI extracts data from existing Coast Guard systems like Direct Access, AOPS, ALMIS, TMT, etc., which are mandated by COMDT to be the repository for their respective information.

These are called source systems. In almost all cases, members in various Coast Guard commands enter data into those source systems. CGBI does not 'own' the data, merely centralizes the data and displays it to everyone in a consistent manner.

Many commands and programs have traditionally kept homegrown databases and spreadsheets in order to store, view and retrieve data. The problem with this approach is that each collects and stores different data in various methods (Excel spreadsheets, Access databases, etc.), which forces individualized training at each command/staff and does not allow information sharing between commands/staffs. To allow good data stewardship, each command, staff, and member is asked to enter the data into the official source system. Those that ensure reliable and timely data input will reap full CGBI benefits of accurate and useful information with which they and other decision-makers can confidently make use of.

One Source. One Answer. One Coast Guard.



We recognize the potential for individuals to solve organizational challenges by ingeniously applying their talents and existing resources. The Commandant's Innovation Council champions Innovators by revealing and illuminating their ideas and evaluating them for Coast Guard-wide implementation. The Council acts as a catalyst for change in *Mission Execution* and *Mission Support*. The Council seeks to promote an innovative Coast Guard culture; identify enabling technology; champion innovative solutions; and improve Coast Guard key processes.

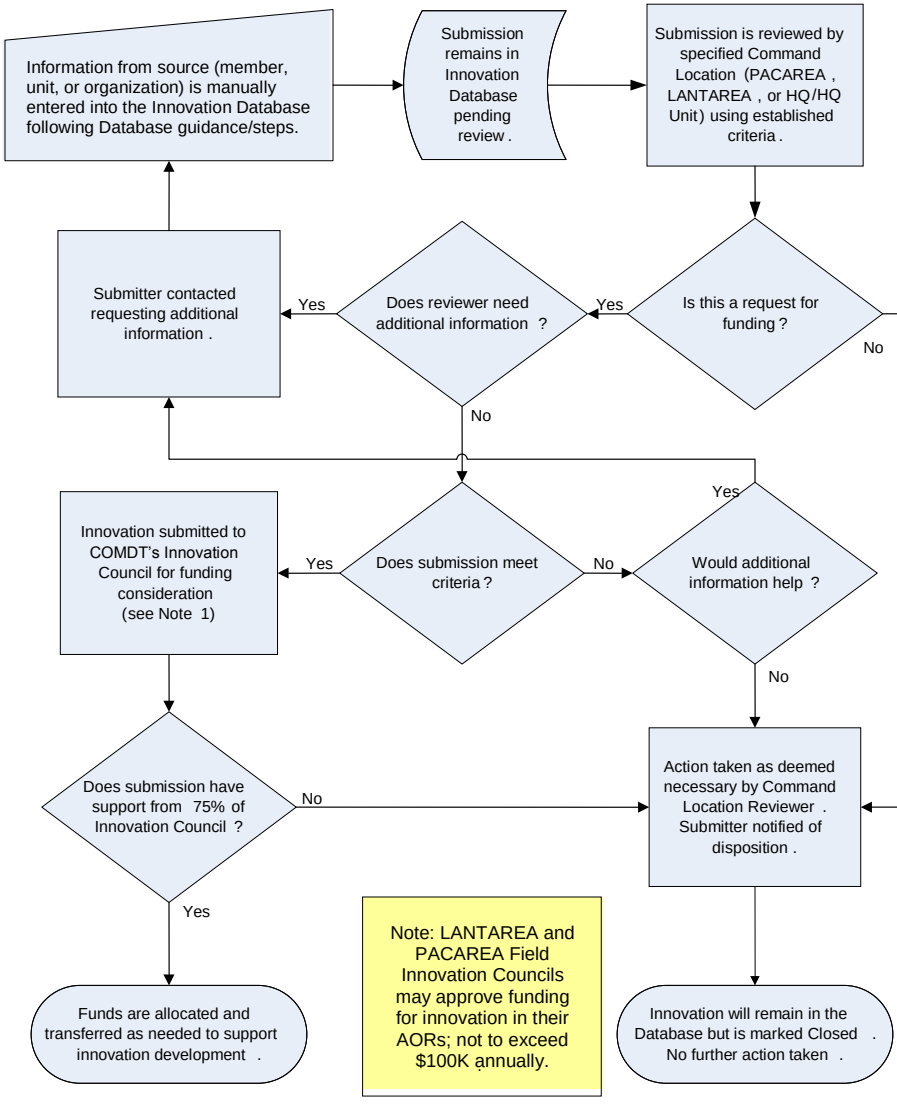
Our Innovation Initiative was formally established in NOV 2000. Since its inception, the Innovation Council, which reports directly to the Coast Guard Chief of Staff, provides cross-programmatic advocacy to Coast Guard people, units, and programs while promoting an innovative culture that entertains all ideas to resolve organizational challenges.

PHILOSOPHY: Innovation is not a new concept, just as improving efficiency and effectiveness are age-old objectives; across private and government sectors, leaders search for new ways to get better results. The Innovation Initiative aids leaders in this goal through processes that seek-out, promote, and help implement ideas to improve effectiveness. The Council aggressively acts to prioritize and champion competing innovative projects and enables Field Innovation Councils to ensure Coast Guard-wide alignment and implementation.

PROCESSES: To further the Innovation Initiative goals, the Council uses the following processes:

- Innovation Venture Capital Fund: Funds innovative solutions to organizational challenges; supports the annual Innovation Exposition; and Captain Neils P. Thomsen Innovation Awards program. Members and units may submit proposals to the Commandant's Innovation Council via the Innovation Database, where proposals are evaluated for technical,

Innovation Venture Capital Fund Decision Process



business, and resource merit. See the Innovation Council website for guidance at http://www.uscg.mil/innovation/.

- Innovation Exposition: The annual Expo is designed to bring together Team Coast Guard, industry, and other Government agencies to establish open dialogue among technology users, innovators, academia, Research and Development Centers, and Coast Guard support elements to promote innovation. The Expo typically focuses on major Coast Guard challenges and agendas consist of the full range of issues pertaining to Homeland Security and other Coast Guard mission areas. Annual Innovation Exposition information is promulgated via ALCOAST at the start of each calendar year.
- Captain Neils P. Thomsen Innovation Awards: These Awards recognize individuals or teams for their ability to develop creative ideas that result in successful implementation of an innovative solution. Four types of individual and/or team awards exist: (1) Science or Technology; (2) Operations or Readiness; (3) Administration, Training, or Support; and (4) the Commander Joel Magnussen Innovation Award for Management. Award winners are announced at the annual Innovation Exposition. Additional information on the Award Program, including nomination procedures, is published in COMDINST 1650.8 (series), Captain Niels P. Thomsen Innovation Award and is announced each year via ALCOAST.

Questions or Comments: Questions should be directed to COMDT (CG-095) via email to: innovation@uscg.mil or through the Innovation Council site at http://www.uscg.mil/innovation/.

TOOLS

As used here, "tools" refers to techniques used to guide and organize group or individual thoughts. Successful groups or individuals must become adept at identifying the most effective tool for a given situation.

A cornerstone of any performance improvement initiative is to get the ideas of the people involved. People get excited about contributing to efforts that make things better, especially when those efforts involve their work areas or processes. The tools and techniques presented in this section will help you:

- Identify customer requirements
- Generate ideas
- Pare down a list of ideas
- Prioritize ideas
- Make decisions
- Collect, display, and analyze data
- Plan effectively

What is it: Often, projects evolve from meeting discussions and decisions. Action planning helps ensure that what is decided upon actually gets done.

How to use it:

Top section:
When a decision is made at your meeting that a certain project or task needs to be done, write the project description in the *Action Item* box. Extra action planning sheets may be used for large projects. Then, in the box *What Demonstrates Completion*, identify specific outcomes. Finally, in the Champion box, write in the name of the project manager, process owner, or person responsible for the overall task.

Bottom section:
Continue by listing each task description in the *Steps to Achieve Desired Outcome* column. Once a person is identified to spearhead the task, that person becomes accountable for ensuring that the task is completed and his or her name is written in the *Who* column. Finally, the deadline agreed upon by all concerned is written in the *When* column.

Helpful hints:

- To ensure accountability, use specific names and dates.
- Break work down into manageable chunks. The 80-hour rule is a rule-of-thumb that recommends assigning chunks that require less than 80 hours to complete.

Action Plan

Action Item:		
What demonstrates completion:		
Champion:		
Steps to Achieve Desired Outcome	**Who**	**When**

When using this approach, a good rule-of-thumb is to involve the person responsible for completion of a given project in deciding the *Steps to Achieve Desired Outcome* and *When* it gets done. Also, be sure to formally document the plan and periodically review its status with stakeholders.

Affinity Diagram

An affinity diagram organizes verbal information into a visual pattern. An affinity diagram starts with specific ideas and helps you work toward broad categories. This is the opposite of a cause-and-effect diagram, which starts with broad effects and works toward specific causes. Use either technique to explore all aspects of an issue. Affinity diagrams can help you:

- Organize a list of factors that contribute to a problem.
- Identify areas where improvement is most needed.

How to use it:

Identify the problem. Post the problem or issue in a location where all team members can see it.

Generate ideas. Use index cards or sticky-back notes to record the ideas.

Cluster your ideas (on cards or paper) into related groups. Use questions like "Which ideas are similar?" and "Is this idea somehow connected to any others?" to prompt ways to group ideas together.

Create affinity cards. For each group, create a card that has a short statement describing the entire group of ideas.

Cluster related affinity cards. Put all of the individual ideas in a group under their affinity card. Then group the affinity cards under even broader groups. Continue to group the cards until your grouping becomes too broad to have any meaning.

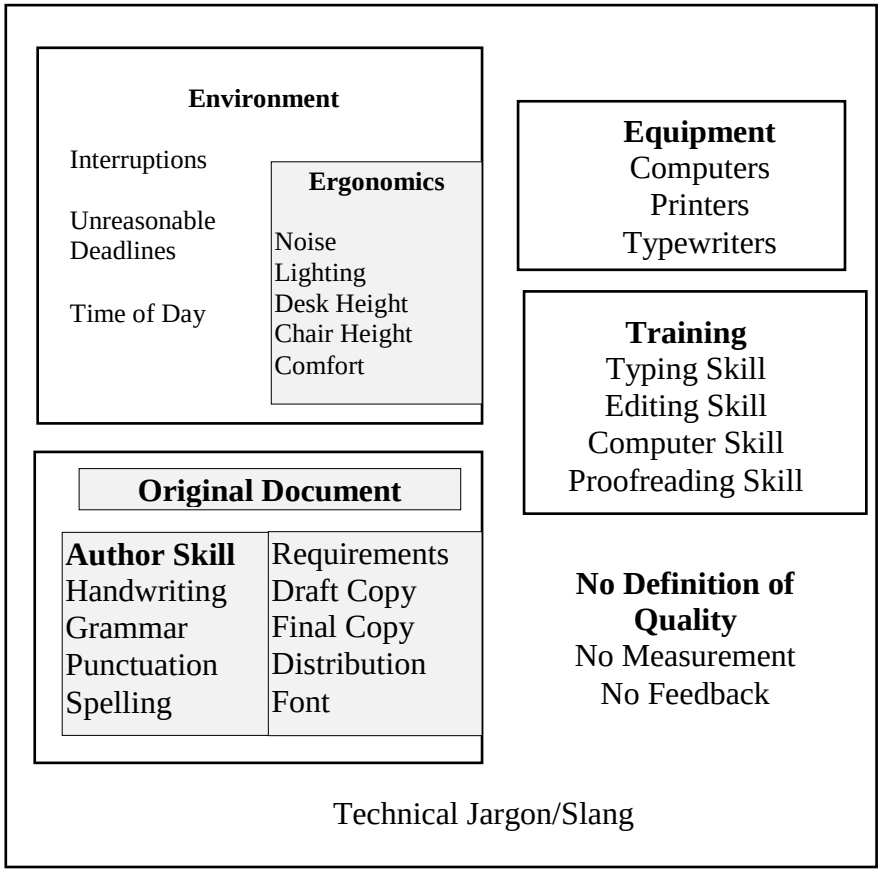
Create an affinity diagram. Post all of the ideas and affinity cards. Draw outlines of the groups with the affinity cards at the top of each group. The resulting hierarchical structure will give you valuable insight into the problem.

Affinity Diagram

A publication team wanted to reduce the number of typographical errors in their program's documentation. As part of a first step, they conducted a brainstorming session that produced the following list of factors that influenced errors.

Computers	No Feedback	Proofreading Skill
Lighting	Typewriters	Chair Height
Comfort	Desk Height	Time of Day
Technical Jargon	Interruptions	Handwriting
Grammar	Slang	Spelling
Draft Copy	Punctuation	Distribution
Font	Final Copy	Editing Skill
Computer Skill	Typing Skill	No Measurement
Printers	Unreasonable Deadlines	Noise

The following affinity diagram helped them to focus on areas for further analysis.



Tips for keeping ideas flowing

Use 3x5 cards or sticky-back notes to record your ideas: This allows you to cluster similar thoughts, eliminate duplications, and use a "silent" version of any of the techniques listed in this section. This can be helpful when issues carry a lot of emotion.

Be creative! Don't limit suggestions or ideas early on in discussions. Encourage people to think creatively. Ask "What if?" and visualize the desired state if you could do anything you wanted. Ask "If I were the Commandant…"

During your idea-generating sessions:

- Change seats…views can be affected by where people sit in relation to others.
- Avoid cliques…encourage people to sit with those whom they don't know.
- Review the data or ideas periodically – encourage further input.
- Rotate groups and/or members to provide a fresh perspective.

Make it clear you want EVERYONE to participate!

- Create an open climate.
- Work to develop a group consensus.
- Don't evaluate…concentrate on getting many ideas.

HAVE FUN!

Brainstorming

Brainstorming is a technique, generally used in a group setting, to quickly generate a large number of ideas about a specific problem or topic. It can help encourage creative thinking and generate enthusiasm, as well as avoid the "paralysis of analysis" by holding the evaluation of ideas until a group has identified different possibilities.

How to do it:

The goal of brainstorming is to generate ideas. Before you start, remind everyone in your group to postpone judgment until after the brainstorming session is completed.

- Post the problem or topic where all participants can see it.
- Write all ideas on the board and do as little editing as possible.

There are three different types of brainstorming techniques: structured, unstructured, and silent. Each technique has different pros and cons.

In structured brainstorming:

- Solicit one idea from each person in sequence.
- Participants who don't have an idea at the moment may say "pass."
- Each person has an equal chance to participate, regardless of rank or personality.
- Spontaneity can be limited. It can sometimes feel rigid and restrictive.

In unstructured brainstorming:

- Participants simply contribute ideas as they come to mind and can build off each other's ideas. The atmosphere is very relaxed.
- Less assertive or lower-ranking participants might not contribute.

In silent brainstorming:

- Participants may write ideas individually on Post-It® notes or small slips of paper. Collect the papers and post them for all to see.
- Individuals cannot make disruptive "analysis" comments during the brainstorming session and the process provides confidentiality. This can help prevent a group from being overly influenced by a single participant or common flow of ideas.
- The group can lose the synergy that comes from an open session.

An ideal approach is to combine two of these methods. For example, begin the session with a round of silent or structured brainstorming, then finish with an unstructured period.

The result of a brainstorming session is a list of ideas. If this list is too long, the group can pare it down with a tool such as multi-voting or prioritize it with a tool such as nominal group technique.

Points To Remember About Brainstorming:

Never judge ideas as they are generated. The goal of brainstorming is to generate a lot of ideas in a short time. Analysis of these ideas is a separate process.

Don't quit at the first lull. All brainstorming sessions reach lulls, which are uncomfortable for the participants. Research indicates most of the best ideas occur during the last part of a session. Encourage the group to push through at least two or three lulls.

Try to write down all of the ideas as they were presented. When you condense an idea to one or two words for ease of recording, you are doing analysis. Analysis should be done later.

Encourage outrageous ideas. While these ideas may not be practical, they may spur a flow of creative ideas. This can help the group break through a lull.

Try to have a diverse group. Involve process owners, customers, and suppliers to obtain a diverse set of ideas.

After brainstorming:

- Reduce your list to the most important items.
- Combine items that are similar.
- Discuss each item on its own merits.
- Eliminate items that may not apply to original issue or topic.
- Give each person one final chance to add items.

Charter

A charter is a tool that can help groups:

- Determine a business case for a project
- Define the problem
- Focus the goal
- Establish project scope
- Facilitate buy-in from key stakeholders
- Identify project milestones, metrics, and resources
- Clarify linkages to strategic and mission objectives
- Identify if others are working or have worked on the problem
- Identify potential aids or barriers

There are many different styles of charters, but most have the same basic information:

Title:

- Team Name – Be descriptive

Key Stakeholders:

- Those key individuals or constituent groups that will be affected by or can impact the success of the project

Champion:

- Senior leader and project sponsor

Problem Statement:

- Describe what is wrong: "The Pain"
- When and where do problems occur?
- What is the size and impact of problem?
- Use specific business metrics.
- Would customers be happy if they know we are working on this?

Goal Statement:

- Define the improvement objective for Critical to Quality.
- Start with a verb – Reduce, Eliminate, Control, Increase.
- Tends to start broadly – Should include measurable target. Should NOT prescribe solution.

Business Case and Project Scope:

- Why is project worth doing?
- How does this positively impact our clients?
- What is the bottom-line financial impact?
- What process is being improved?
- Why is it important to do now?
- What are the consequences of not doing?
- How does this fit within the business or process priorities?

Scope:

- What are the boundaries of the process?
- What is out of bounds for the project?

Project Milestones / Metrics / Resources:

Milestones:

- Discuss project milestones and dates.
- Discuss key dependencies and other matters that affect project execution.

Metrics:

- Specify the primary and secondary metrics for the project.

Resources:

- Who will need to be on the team?
- What resources will be needed other than money?

Background:

What Strategic Objective does this project help drive?

- List the Strategic Objective(s) this project helps drive / accomplish.

What Mission Objective does this link to?

- List the specific Mission Objective(s) this project directly links to.

Is anyone else working or has anyone worked on this problem/opportunity?

- Yes/No (All project sponsors or project managers must ensure that this is not a duplicative effort.)

Where did you look?

- List the other contacts that you checked with to ensure that this is not duplicative work.

What did you find?

- Briefly state what was learned.

Aids:

- What will help this project be successful?

Barriers:

- What will hinder success?

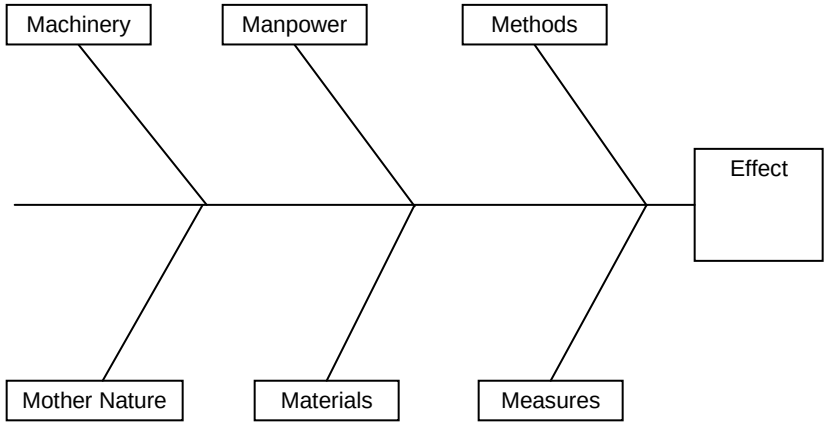
Cause-and-Effect Diagram

A cause-and-effect diagram graphically illustrates the relationship between a given outcome and all the factors that influence this outcome. Sometimes called an Ishikawa or "fishbone" diagram, it helps show the relationship of the parts (and sub-parts) to the whole by:

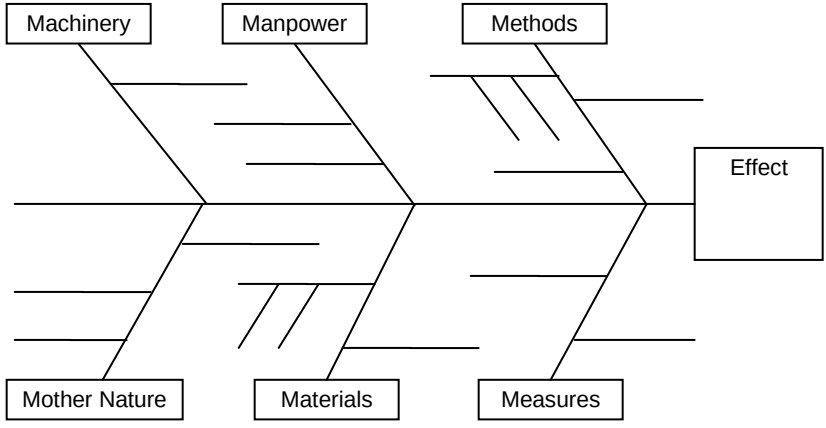
- Determining the root causes of a problem.
- Focusing on a specific issue without resorting to complaints and irrelevant discussion.
- Identifying areas where there is a lack of data.

How to use it:

Specify the problem to be analyzed. State the problem in quantitative terms (e.g., "50% of employee performance reviews are not submitted on time). This helps teams avoid finger pointing by focusing on facts rather than opinions. Place the problem statement in a box on the right side of the diagram. Then list the major categories of the factors that influence the effect being studied. The "6 Ms" [methods, manpower (personnel), materials, machinery, mother nature (environment), and measures] are commonly used as a starting point: These six categories are six key sources of variation in any process.



Identify factors and sub factors. Use an idea-generating technique to identify the factors and sub-factors within each major category. An easy way to begin is to use the major categories as a catalyst. For example, "What methods are causing…?" Keep asking why to flush out root causes.



Identify significant factors. Look for factors that appear repeatedly or have a significant effect according to data available. A sub-factor may be the root cause of all your problems. You may also decide to collect more data on a factor that had not been previously identified.

Check Sheet

A check sheet is a form you can use to collect data in an organized manner and convert it into readily useful information like Pareto charts or histograms. With a check sheet, you can:

- Collect data with minimal effort.
- Convert raw data into useful information.
- Translate opinions of what is happening into what is actually happening. In other words, "I think the problem is…" becomes "The data says the problem is…."

How to use it:

Clearly identify what is being observed. The events being observed should be clearly labeled. Everyone has to be looking for the same thing.

Keep the data collection process as easy as possible. Collecting data should not become a job in and of itself. Look for the easiest approach; simple check marks are easy.

Group the data. Collected data should be grouped in a way that makes the data valuable and reliable. Similar problems must be in similar groups.

Be creative. Try to create a format that will give you the most information with the least amount of effort.

Check Sheet Example

Check Sheet

Help Desk Complaints

	Mon	Tue	Wed	Thu	Fri	Totals
Long wait	~~𝍸~~ III	IIII	II		II	16
Poor customer service	~~𝍸~~ I	II	III	II	II	15
No help	IIII	I	I		I	7
Totals	18	7	6	2	5	38

Consensus Cards

Consensus cards allow team leaders, facilitators, and group members to visually see where the group stands on an issue; help a group examine all viewpoints; and keep the group focused.

How to use them:

Simply buy enough four-color packs of 3 X 5" recipe cards so that each person gets one card of each color. Typically, the cards come in green, yellow, red, and either blue or purple. Assign uses to each color as listed in the table below.

Consensus Cards	
Color	**Use**
Green	Agree, "I can support this."
Yellow	Unsure or need more information
Red	Disagree, "I can't support this."
Blue or Purple	Wildcard, use for breaks or when groups are beating a dead horse.

Ask group members to weigh in on an issue by holding up a green, yellow, or red card, as appropriate. Require that all members hold up a card. This ensures that those who are on the fence make a choice.

A good approach is to allow the minority, which will often hold yellow or red cards, to voice their perspective. Explore the reasons that they are unsure or disagree with the issue. Allowing the minority to state their viewpoint may help the group develop a solution that is inclusive of many perspectives and avoid groupthink. A key facilitative question to ask is "What concern, if addressed, would cause you to change your yellow vote to green or red vote to yellow?"

The Wildcard

Using a wildcard, such as a blue or purple card, can remind groups that they are overdue for a break or signal the group that the discussion is heading into the weeds.

Often a timekeeper will keep track of agreed-upon breaks. (An often-used rule-of-thumb is ten minutes of break for every fifty minutes of meeting.) Sometimes, however, the group will get engaged and forget the time. A blue or purple card can serve as a reminder to take time to recharge.

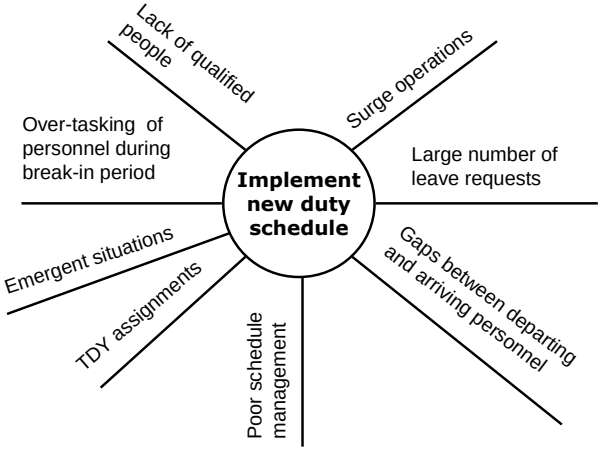
When used as a “don’t beat a dead horse” card, the blue or purple card can signal that it’s time to move on. A good approach is to let the person talking finish their thought, then ask the group if the issue has been sufficiently addressed, needs to be discussed further, or put in the parking lot.

Contingency Diagram

The contingency diagram is a way to capitalize on negative thought. It helps leaders consider all the potential negative "contingencies" of a future goal or program. Also, by thinking of all the ways a problem can get worse or continue unchecked, a group can develop an action plan to overcome any barriers.

How to use it:

Step 1. Place a goal or problem in the center circle.
Step 2. Draw lines outward from the circle and brainstorm:
- What will cause this situation to get worse or continue?
- What will prevent (or sabotage) your desired state?



Step 3. Formulate a plan with specific actions to prevent these obstacles.

A prevention/action checklist can be developed by taking each obstacle identified and brainstorming ways to prevent it from happening. Here is an example using some of the obstacles identified in the contingency diagram:

Prevention/Action Checklist	
Obstacles	***Corrective Actions***
A. Poor scheduling	1. Set a deadline for input prior to scheduling. 2. Identify when personnel are not available. 3. Assign standby in case of emergent issues.
B. Over-tasking of personnel during break-in period	1. Modify the break-in process to have reporting personnel break-in full time under the guidance of the duty supervisor. This will shorten the cycle time of the process and increase the number of qualified personnel. 2. Monitor the break-in process through measures of efficiency and effectiveness. Communicate these measures to the crew.
C. Gaps between arriving and departing personnel	1. Identify potential gaps by systematically reviewing career intention worksheets and e-resumes. Post transfer dates on the unit's master calendar to create a clear picture. 2. Use the command concerns process to communicate unit needs to detailers before the transfer season. 3. Monitor the number of filled billets and quality-of-match and communicate these measures to the crew.

Plans such as this can help leaders define or improve a process, as well as address any gaps that may exist in the implementation of a future program. See the section on performance improvement for more information.

Control charts are the next step from run charts; they help users determine if a process is in Statistical Process Control (SPC). Control charts use mathematically derived upper and lower control limits. Statistically, 99.73% of all stable process results fall between these limits. Control charts show unwanted process changes that appear as abnormal points on a chart. The process is said to be in "statistical control" when the data vary randomly within the upper and lower control limits.

Control limits are not tolerance or specification limits; rather, they are mathematical functions of how a process actually performs. Thus, it is possible for a process to be in statistical control but operate outside tolerance.

The control chart type you use depends on the type of data you collect. There are several types of control charts; each has an appropriate use and inherent strengths and weaknesses. Control chart selection is beyond the scope of the PIG; however, the X-Bar chart on the next page is an example of the most commonly used chart and shows individual process outputs.

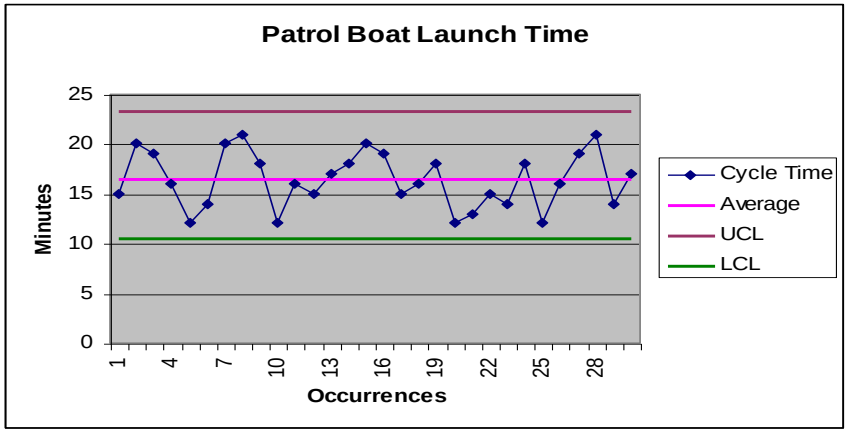
The chart, with upper and lower limits, shows that the (fictitious) maximum time to get underway is 21 minutes—within the upper limit. However, it is probable that this process will generate a result that is unsatisfactory to USCG standards. To prevent such an occurrence, this cutter would need to change its process.

While the most common sign of special cause variation is having a single point above or below the upper and lower control limits, there are other indicators. These observations indicate the presence of special cause variation:

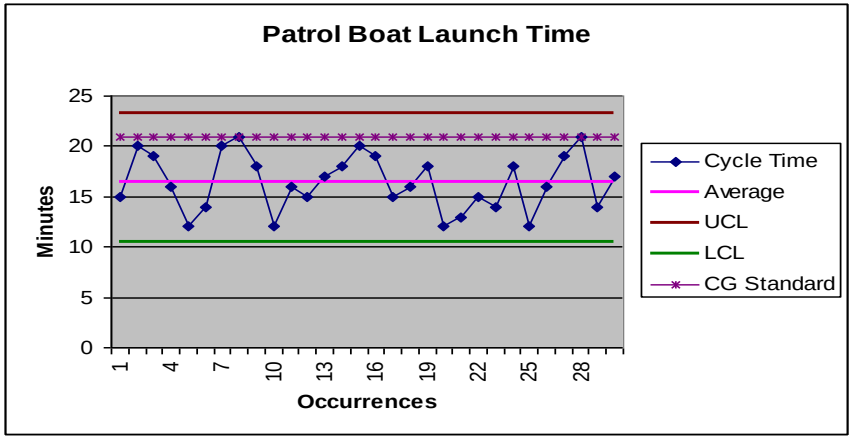
- ☒ 1 or more points outside the control limits.
- ☒ 7 or more consecutive points on one side of the centerline.
- ☒ 6 points in a row steadily increasing or decreasing.
- ☒ 14 points alternating up and down.

Special cause variation should be investigated and the cause removed if possible; however, process redesign is not required if the process is stable and within acceptable limits (standards). Treating special cause variation as common cause variation, and vice versa, can have disastrous effects on performance results.

The below chart shows the launch times for this unit have not been affected to date by special cause variation.



This chart shows the Coast Guard maximum limit is inside the control limits. It is likely this process will eventually produce a result that is unacceptable. Process redesign may be in order.



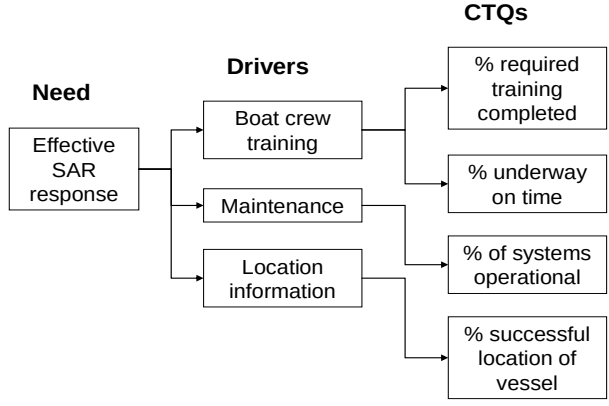
Critical-to-Quality Tree

A critical-to-quality (CTQ) tree enables you to take a "soft" customer need and break it down into more tangible customer requirements.

How to use it:

Begin with an overall customer need. Examples of needs are on-time delivery, good customer service, or as illustrated below, effective search-and-rescue response. Then identify the key drivers that support your unit's ability to supply that need. Finally, identify the metrics that allow you to measure how well those drivers are performing. Use "hard" numbers such as wait time or number of defects over "soft" measures such as customer satisfaction survey response indicators. CTQ measures often provide input to a unit or workgroup's strategic planning process and can be used to drive process improvement projects.

Voice of the Customer, Critical-to-Quality (CTQ) Tree



Customer Alignment Questions

Customer alignment questions generate information about how well your processes meet your customer's needs. To establish some agreed-upon performance requirements, ask these four questions:

- What do you need from me?
- What do you do with what I give you?
- What are the gaps between what I provide and what you need?
- What do I give you that you do not want or need?

How to use them:

These questions will allow you to discover what your customer's needs, wants, and expectations may be for the service, product, or information you are supplying. By understanding how your customer is using your output, you can better align your process capabilities with what your customer wants. Knowing if there are gaps and what the impacts of those gaps are can provide improvement opportunities. Asking a customer what they don't want or need can help you reduce unnecessary work.

Once you obtain this information, you may want to establish a baseline to better determine which direction to take. You may also establish a formal, repetitive feedback system if it will help in continuous process improvement.

Customer Requirements Matrix

A customer requirements matrix can help suppliers identify the characteristics of a product or service that drive customer satisfaction and evaluate opportunities for improvement.

How to use it:

Begin by identifying quality characteristics—key requirements of a product or service as defined by the customer. Then, ask the customer to rate the importance and performance of each quality characteristic. Performance is a rating of how well you are doing as a supplier (see below example). Armed with knowledge in these areas, you can calculate the gaps in performance, and then multiply importance and the performance gap to identify opportunities for improvement.

Voice of the Customer, Customer Requirements Matrix

ISC Anywhere Dining Facility:

Quality Characteristic	Importance	Performance	Gap	Total
Healthy food choices	5	1	4	20
Hot food	5	3	2	10
Friendly service	3	3	2	6
Cleanliness	4	4	1	4
Appearance of physical facilities	2	4	1	2

Importance: 5 = very important, 1 = not very important
Performance: 5 = excellent, 1 = poor
Gap = top performance rating – performance rating
Total = importance x gap

Decision Matrix

A decision matrix, or prioritization matrix, is used for selecting one option from several possibilities. It involves selecting criteria by which the items will be judged and using them to make an acceptable decision. It can be used to choose a single problem or solution from a list.

How to use it:

Generate a list of options using an idea-generation tool, then pare the list down to a manageable few.

Choose criteria. Once the list of criteria is generated, the team needs to discuss and refine the list to the five or six that the team believes are the most important. Often-used criteria include:

- Effectiveness
- Feasibility
- Capability
- Time requirements
- Cost
- Enthusiasm (of the team and of others)

Weight the Criteria. After the criteria are identified, the team assigns a relative weight to each criterion based on how important that criterion is to the situation. There are different ways the solutions can be graded against the criteria. One way is to answer with a yes/no, but problems might arise if two different solutions receive the same number of yes/no votes.

Another way is to rate the criteria on a scale in relation to each of the options. The option with the highest, or lowest depending on the scale used, point total might be the option the group decides to focus on first.

Draw a grid. Create the grid with the criteria across the top and the options along the left side.

Decision Matrix Example

	Criteria #1 (weight value)	Criteria #2 (weight value)	Criteria #3 (weight value)	Score
Solution #1				
Solution #2				
Solution #3				

Evaluate Choices. Evaluate each choice against the criteria.

Calculate Weight Values. Multiply each choice's rating by the weight. As Nancy Tague states in her book *The Quality Toolbox*, "The choice with the highest score will not necessarily be the one to choose, but the relative scores can generate meaningful discussion and lead the team toward consensus."

Flowchart

A flowchart is a graphic representation of the major steps of a process. It can help you:

- Understand the complete process.
- Identify the critical stages of a process.
- Locate problem areas.
- Show relationships between different steps in a process.

How to use it:

Identify the process. Define the start point and finish point for the process to be examined. It is sometimes helpful to refer back to the SIPOC model to do this on a macro level.

Describe the current process. Lay out all the process steps from beginning to end. Use the symbols shown on the next page to improve clarity.

(Optional) Chart the ideal process. Try to identify the easiest and most efficient way to go from the start block to the finish block. While this step isn't absolutely necessary, it makes the next step easier.

Search for improvement opportunities. Identify the areas that hinder your process or add little or no value. If you did the optional step, examine all areas that differ from your ideal process and question why they exist. Consider measures of effectiveness and efficiency.

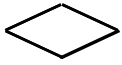
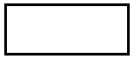
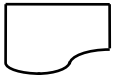
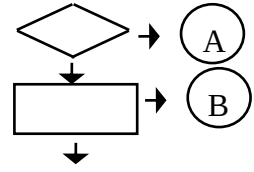
Update your chart. Build a new flowchart that corrects the problems you identified in the previous step.

Helpful hint:

Put the steps of your process on index cards or sticky notes. This lets you rearrange the diagram without erasing and redrawing.

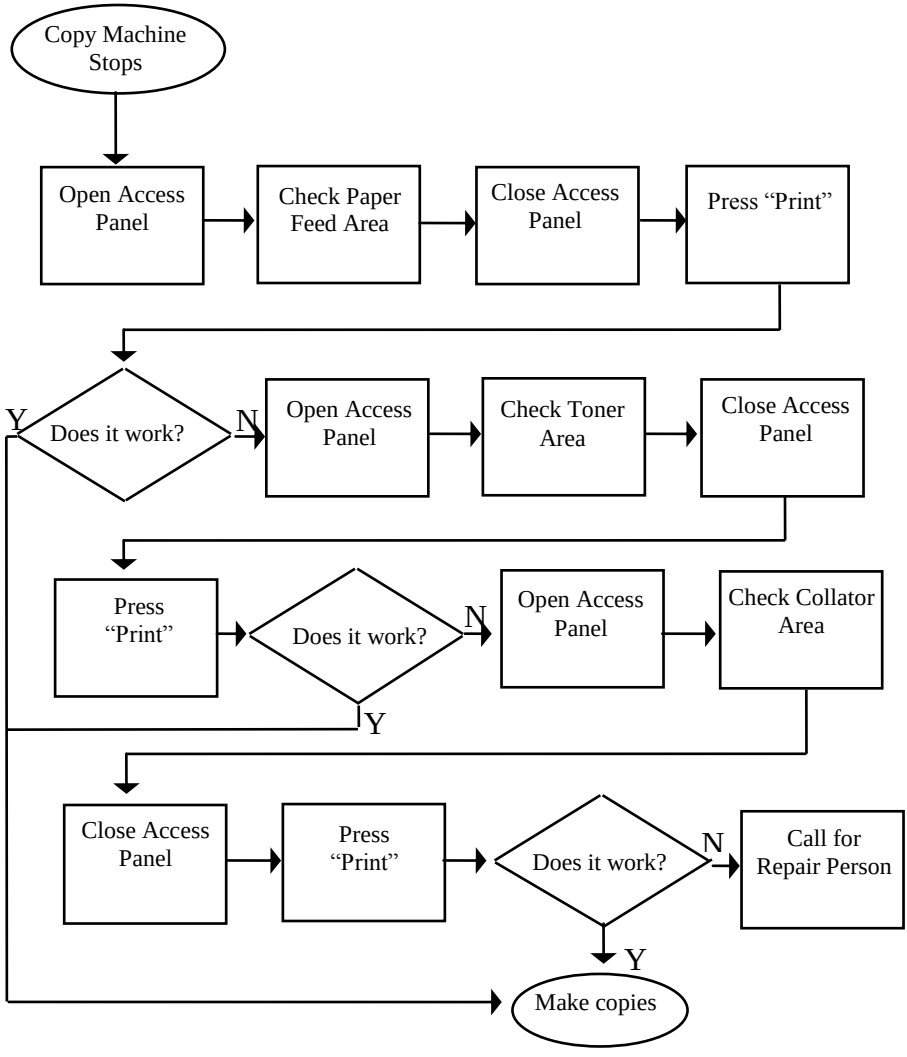
Note: It is sometimes more efficient for the group to develop the major elements of the process than for an individual or sub-group to create a more detailed and aesthetically pleasing flowchart.

These are standard flowchart symbols:

This symbol...	Represents…	Some examples are…
	Start/Stop	♦ Receive trouble report ♦ Receive input from supplier
	Decision Point	♦ Approve / Disapprove ♦ Accept / Reject ♦ Yes / No
	Activity	♦ Drop off travel voucher ♦ Open access panel
	Document	♦ Fill out a trouble report
	Connector (to another page or part of diagram.)	
	Database	♦ Coast Guard Business Intelligence (CGBI)

Flowchart Example

Before it was eventually replaced, a copy machine suffered frequent paper jams and became a notorious troublemaker. Often, a problem could be cleared by simply opening and closing the access panel. Someone observed the situation and flowcharted the troubleshooting procedure used by most people.



Force Field Analysis

Force field analysis helps identify key forces that promote or hinder the solution of a problem or the achievement of a goal.

How to use it:

Define the objective. Place the problem or goal to be analyzed in the upper right corner of the chart.

List the forces. List the key factors that promote or hinder the achievement or your goal or the resolution of your problem. Groups should use an idea-generation technique. Use two lists: one for promoting forces and one for hindering forces.

Prioritize. Prioritize the forces in each list according to their relative impact on the problem or goal. You can use nominal group technique or some other decision-making tool.

Implement. Create an action plan to minimize the key hindering forces and maximize the promoting ones.

Force Field Analysis Example:

Goal: Get a College Degree

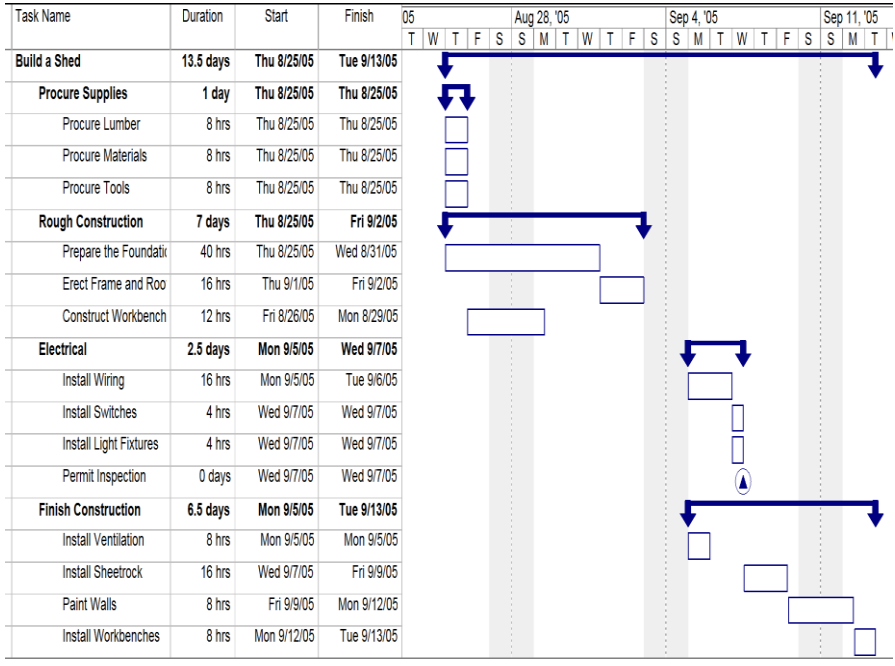
Promoting	Restraining
• Unit support • ESO support • Tuition assistance • Family support • Credit for military experience & courses	• Job responsibilities • Operational tempo • Hard to study at home • Family responsibilities • Poor study habits

Gantt Chart

A Gantt Chart depicts an overall project timeline, lists tasks required for project completion, and visually illustrates task dependencies. Project managers often include other key information such as task responsibilities (who is responsible for task completion) and resource requirements.

How to use it:

Begin by identifying the work that must be accomplished. Once the work is listed, plot the time required for each task. Be sure to note which tasks are dependent on others, and if the required resources are available at that time. The overall plot can help managers determine the total project time required and monitor task completion.



Histogram

A histogram is a bar graph that shows the central tendency and variability of a data set. Histograms are sometimes referred to as frequency distributions. A histogram can help you:

- Understand the variability of a process.
- Quickly and easily determine the underlying distribution of a process.

How to use it:

Determine the type of data you want to collect. Be sure that the data is measurable (for example, time, length, speed, etc.).

Collect the data. Collect as many measurable data points as possible. Collect data on one parameter at a time. Check sheets may be used, but are not the only way to collect data for a histogram.

Count the total number of points you have collected.

Determine the number of intervals required. Use this table to determine how many intervals (or bars) the graph should have.

If you have this # of data points…	***Then use this # of intervals***
less than 50	5 - 7
50 - 99	6-10
100 - 249	7 - 12
More than 250	10 - 20

Determine the range. Subtract the smallest value in the data set from the largest. This value is the range of your data set.

Determine the interval width. Divide the range by the number of intervals. Round up your answers to a convenient value. For example, if the range of the data is 17 and you have decided to use 9 intervals, then your interval width is 1.88. You can round this to 1.9 or 2.0. It is helpful to have intervals defined to one more decimal place than the data collected.

Determine the starting point of each interval. Use the smallest data point value as the first interval starting point. The starting point for the second interval is the sum of the smallest data point plus the interval width. For example, if your smallest data point is 10 and the interval width is 2, then the starting point for the second interval is 12. Label intervals along the horizontal axis.

Plot the data. Count the number of data points that fall within each interval and plot this frequency on the histogram. Keep in mind that each data point can appear in only one interval. For example, if your first interval begins with 10.0 and the second with 12.0, then all data points that are equal to or greater than 10.0 and still less than 12.0 are counted in the first interval.

Points to remember:

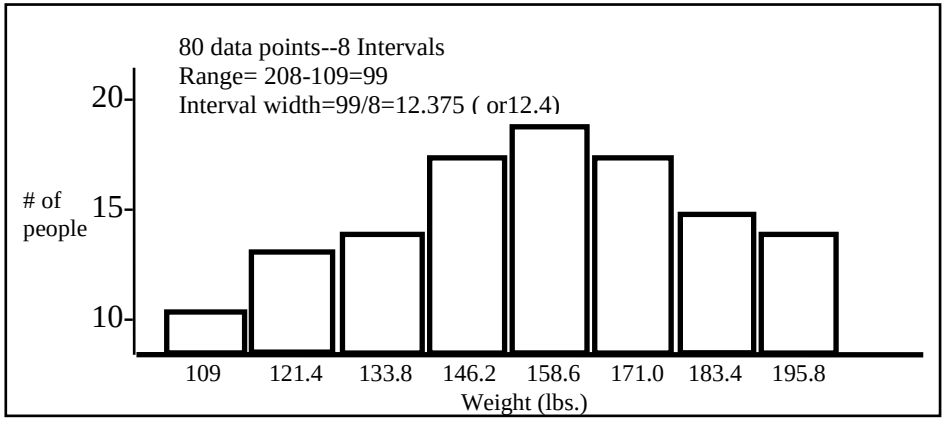
- Each data point appears in one and only one interval.
- The number of intervals can influence the pattern your data will take.
- Don't expect the histogram to be a perfect bell curve; variations will occur. Ask yourself if the picture is reasonable and logical. And be careful not to let your preconceived ideas influence your decision unfairly.

Histogram Example

The weights of 80 Coast Guard members are laid out in this table:

208	180	159	163	159
155	180	165	149	127
159	171	141	190	159
153	181	180	137	161
115	156	173	165	191
159	109	179	145	144
150	206	166	188	165
127	130	172	180	147
145	150	156	171	189
190	200	208	169	139
130	128	155	185	166
165	187	159	178	169
147	150	201	128	170
189	163	150	158	180
139	149	185	129	169
175	189	150	201	175

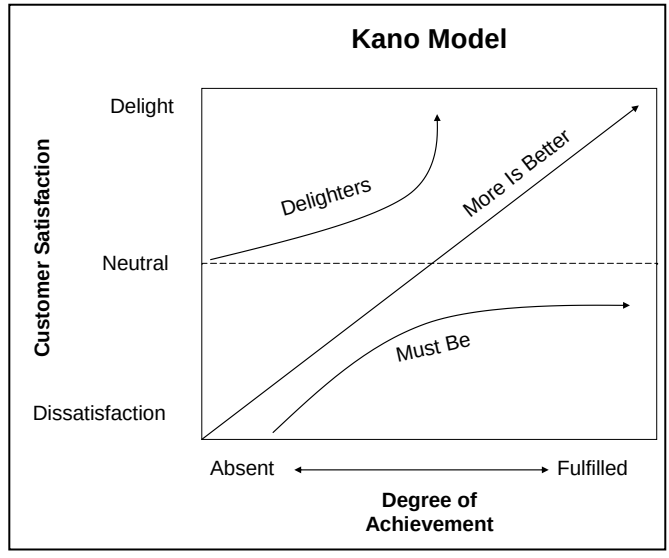
The points are distributed on a histogram as follows:



The Kano model examines factors that contribute to customer satisfaction. Some factors, if not fulfilled, lead to dissatisfaction, but if fulfilled will not delight the customer. For example, if a car does not run or is not reliable, that will lead to dissatisfaction. However, a car that runs will not delight the average person.

There are also features where more is better, such as car features like air conditioning, power windows, seats, and door locks, a CD player, etc. These factors may lead to dissatisfaction, but also, in the case of a fully loaded car, contribute to delight.

Finally, there are delighters. In terms of today's cars, these might include GPS, luxury upgrades, or others that make the buyer say "Wow!" Delighters are determined by customers, not suppliers.



Next consider television sets. In the 1950s, few TVs had a remote control; remotes were delighters back then, especially for the kids who were constantly being told to get up and change the channel! Today a remote is a must-have item, not having one may lead to dissatisfaction, but having one will not necessarily lead to delight—although features integrated into newer remotes may add that "Wow!" factor.

Multi-Voting

Multi-voting is a way for a group to determine which items in a list are most important. This technique helps you:

- Pare down a larger list into a manageable few
- Separate the vital few items from the important many

How to use it:

Combine like items. This prevents the splitting of votes for essentially the same thing.

Letter the choices. This makes tabulating the votes easier.

Use the half-and-half rule. Each person gets a number of votes equal to approximately half the number of items on the list (10 votes for a 20-item list). Then each person gets up to half the number of votes to place on any one item (if each person has 10 votes, then the maximum number they can assign to one item is five).

Vote. Have each member vote privately on a slip of paper for the items they believe have high priority.

Compile the votes given to each item. If planning is done beforehand, this can be time for a group break! You could put a mark beside each item for every vote it receives.

Reduce the list. Highlight the items that received the most votes.

Helpful hints: Multi-voting is best suited for larger groups and long lists. Its simplicity makes it quick and easy to use. Be sure to get consensus on the final results. This is not a final decision-making tool!

Multi-Voting Example

District staff elements attended a lot of meetings at different locations around their district. They complained because meetings conducted at these locations were not always as productive as they might have been. The Chief of Staff called a meeting to improve the situation. A brainstorming session produced the following list of reasons for unproductive meetings:

List of Reasons for Unproductive Meetings
A. No agendas
B. No clear objectives
C. Going on tangents
D. Too much time
E. Too much protocol/politics
F. Wrong people
G. Not enough data provided before meeting
H. No administrative support
I. Roles of participants not clear

To reduce this list to a manageable size, each member was given five votes (approximately half of the total number of items). Each member was allowed to assign a maximum of three votes to any one item.

The problems received the following votes:	
A. ////	F. /////
B. //	G. ///// /////
C. ///	H. //
D. ///// /////	I. ///// ///
E. ///	

The group then decided to focus on problems D, G, and I.

Nominal Group Technique

Nominal group technique is a structured method to prioritize items in a list. This method uses priorities of each group member to discover the overall priorities of the group. Nominal group technique helps you:

- Prioritize a list of ideas.
- Make decisions using inputs from all participants.

How to use it:

Assign a letter to each idea. For example, for seven ideas, you would assign the letters A through G.

List the letters. Have each person in the group write the assigned letters on a piece of paper.

Prioritize the lists. Have each person prioritize their list by writing a number beside each letter. If there are seven ideas, then "1" is written beside the letter corresponding to the most important idea. This is repeated for each number until "7" is written beside the letter corresponding to the least important idea. Each number (1 though 7) is used only once by each group member.

Compute the group total for each letter. The letter with the lowest score is the idea with the highest priority, and the letter with the highest score has the lowest priority.

Nominal Group Technique Example

The following office problems were identified in a brainstorming session:

A. Ineffective organizational structure
B. Poor communications outside the office
C. Lack of training
D. Poor communications within the office
E. Unclear mission and objectives
F. Poor distribution of office mail
G. Lack of feedback on reports on management

Each group member then wrote the letters A through G on a piece of paper and prioritized each problem from 1 to 7 (lowest to highest), using each number only once. The results were summarized as follows:

	Person						
Problem	**1**	**2**	**3**	**4**	**5**	**Total**	**Priority**
A	6	5	7	5	6	29	2
B	3	2	4	1	3	13	5
C	1	1	2	2	2	8	**7 Highest Priority**
D	4	4	5	6	4	23	4
E	7	7	6	7	5	32	**1 Lowest Priority**
F	2	3	1	3	1	10	6
G	5	6	3	4	7	25	3

Pareto Chart

Pareto charts are bar charts used to separate the vital few from the trivial many. The Pareto Principle is a rule-of-thumb, which states that: "20 percent of the problems have 80 percent of the impact." The 20 percent of the problems are the "vital few" and the remaining problems are the "trivial many." A Pareto chart can help:

- Separate the few *major* problems from the many possible problems so you can focus your improvement efforts.
- Arrange data according to priority or importance.
- Determine which problems are most important using data, not perceptions.

How to use it:

Use existing metrics or collect new data on the process. Be sure the units of measure are consistent throughout your data. Select attributes to be charted so that any given occurrence will fall into one **AND ONLY ONE** category. Check sheets are great sources of data for building a Pareto.

Label the chart. Label the units of measure on the left vertical axis and the categories of problems on the horizontal axis.

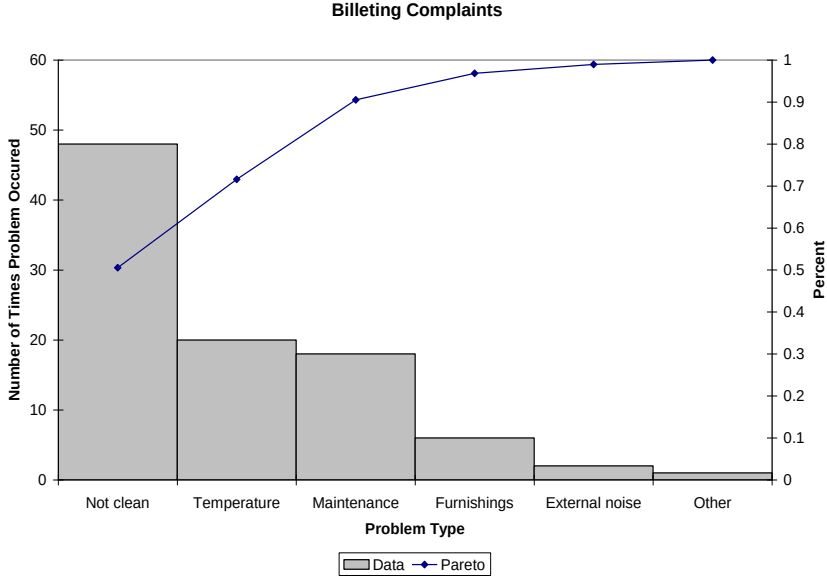
Plot the data. Order the categories according to their frequency, not their classification. Use a descending order from left to right. Categories that appear infrequently, or in comparatively small numbers, can be grouped together in an "Other" category.

Optional. You can place a line that represents a cumulative total above the bars along with a percentage scale along the right vertical axis.

Points to remember:

- Determine which type of measure is most important ($, #, %, etc.) and clearly mark these units on the chart.
- Order categories from left to right, in descending order, to highlight impact.
- If the "Other" category accounts for more than 25% of the problem, a good rule-of-thumb is to break it down.

Pareto Chart Example:



Progressive Analysis. Progressive analysis takes one category from the Pareto chart and breaks it down into its subparts, progressing from the general classifications to the specific. It is used when the category has many subparts to it that might be affecting it. The resulting bar graph is a Pareto chart which can then be broken down even further.

Project Requirements Table

A project requirements table can help prioritize tasks in terms of musts, wants, and nice-to-have items and establish project scope.

How to use it:

Simply list the project customer requirements in the "musts" column and deliverables that the customer wants, but are not requirements, in the "wants" column. Then, list items that would delight the customer in the "nice" column. Customer requirements, as well as time and resource constraints, will help guide project scope.

Below is a sample, completed Project Requirements Table:

Project: Build Storage Facility		
Musts	**Wants**	**Nice**
❑ 5,000 sq. ft. ❑ Secure access ❑ Separate unit storage cages ❑ Heavy-duty shelving ❑ Large garage door ❑ Energy-efficient lighting ❑ Fire equipment	❑ Air conditioning ❑ Garage door opener ❑ Water fountain	❑ Finished interior ❑ Light sensors

Project Responsibility Matrix

A project responsibility matrix can help project managers coordinate the completion of tasks.

How to use it:

List all tasks for the project under the tasks column. If necessary, use additional sheets. Typically, project managers will assign the same letter or number used to identify tasks from a work breakdown structure (WBS) or other planning tool. Then list the project team members or other individuals that will complete or support the completion of each task under the project contributors heading. Consider also those individuals that must be notified prior to task start. To fill out the matrix, assign the appropriate task responsibilities to each person.

The example below depicts typical headings and values.

Project:	Revision Date:			Completion Date:		
Manager:	**Project Contributors:**					
Tasks:						

Responsibility: 1 = Key Role, 2 = Support Role, 3 = Must Notify

Run Chart

Also called a trend chart, a run chart is a graph that shows the changes in a process measure over time. It can help you:

- Recognize patterns of performance in a process.
- Document changes over time.

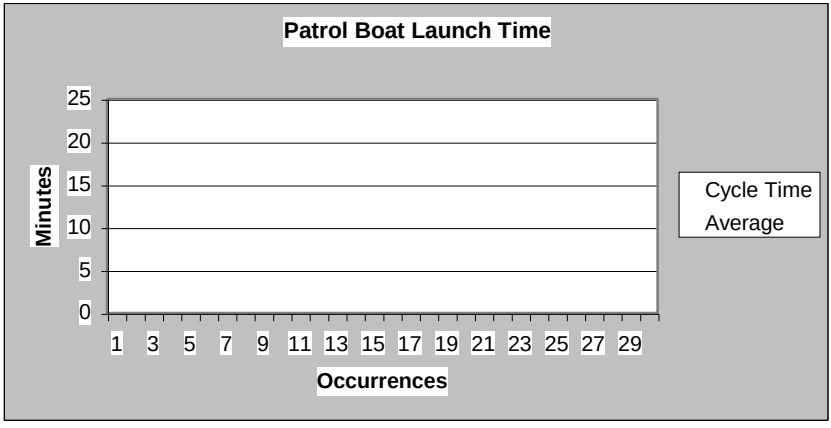
How to use it:

Construct the chart. Label the vertical axis with the key measurement of the process being measured.

Collect the data. Collect data for an appropriate number of time periods, in accordance with your data collection strategy.

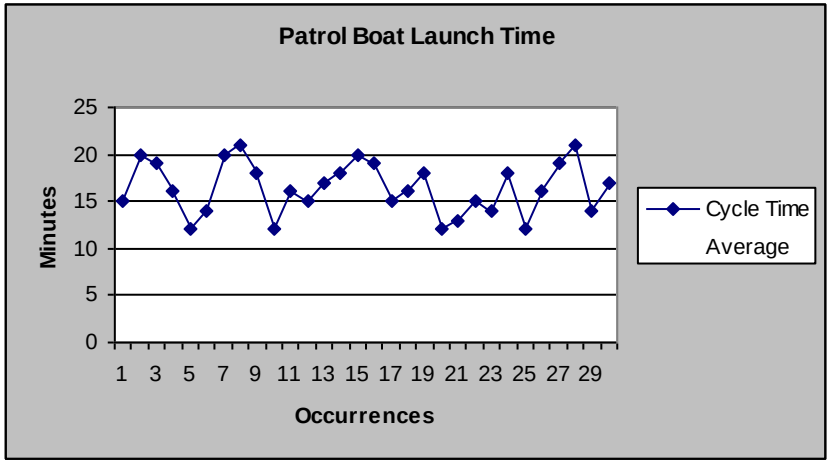
Plot the data. Plot each data point on the chart. Calculate and plot the average. This provides a reference for drawing conclusions about individual data points.

Interpret the chart. Use your knowledge of the process.

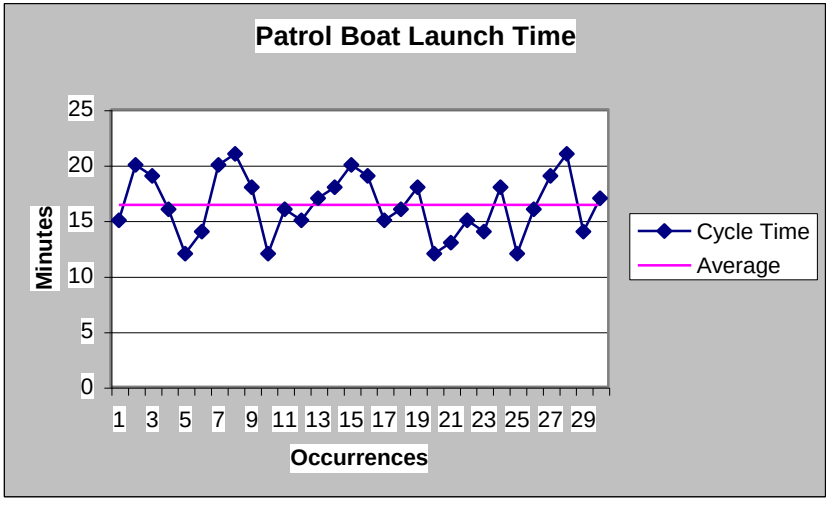


Step 1: Construct the chart. In this case, the unit is looking at its launch time in minutes.

Step 2 (not shown): Collect the data. Data collection is often done on a check sheet, logbook, or spreadsheet.



Step 3: Plot the data. Each data point is plotted on the chart in the order it was collected (as it occurred in time).



Step 4: Calculate and plot the average. The average is the sum of all the data points divided by the number of points.

Step 5: Interpret the chart. In order to properly interpret your data, there are a few things you must know.

First, how was the data collected? Was it collected specifically for your purpose or as the byproduct of some other process? What emphasis was given to this data collection effort? Was it verified by a second collection method or source? These questions are important for data integrity. The closer your data is to reality, the better the analysis.

Second, you need to know if the process you are measuring is stable. In other words, did the same process generate all of your data? When multiple people accomplish the same objective, they often use different processes. If this is the case, your data will not be a true reflection of a single organizational process and your analysis may be affected as a result. Another example how a change process can be used to create a data set is initiating a process improvement effort. If, during the data collection, you alter the process (installing new machines or improving existing techniques), your data will need to be divided as shown on the following page.

A stable process will generate different values; this difference is called **variation**. **Common cause variation** is the difference in numbers generated by a stable process. **Special cause variation** generates a value outside of the normal range of numbers and will be discussed later.

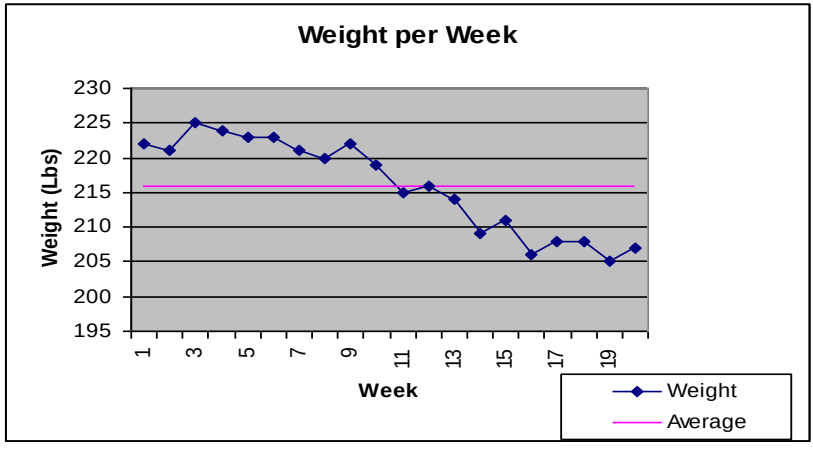
If the data integrity is satisfactory and the data-generation process was/is systematic and repeatable, it is time to interpret the chart.

To begin, look for signs that the process has significantly changed. There are three basic ways to do this:

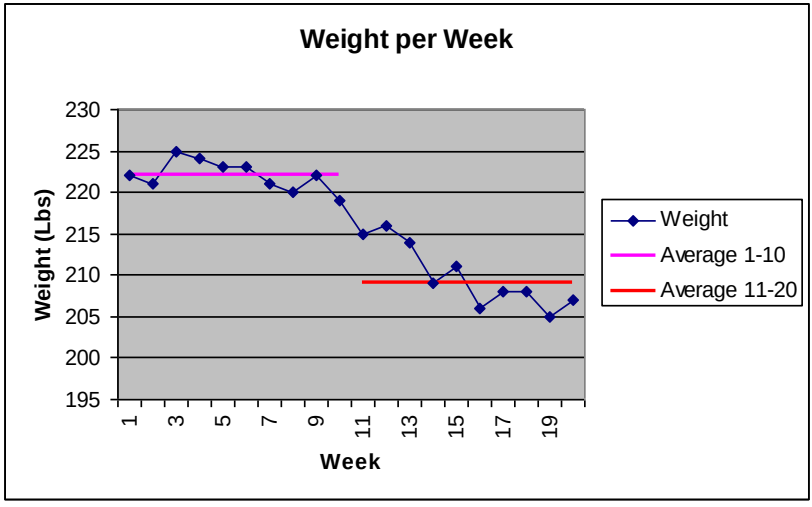
- Six points in a row that steadily increase or decrease.
- Nine points in a row on the same side of the average.
- Significant shifts in levels, cyclical patterns, and bunching of data points.

If any of these can be seen on your chart, explore what happened to your process to cause the change. Positive changes should be documented and institutionalized. Negative changes should be analyzed and their root causes corrected.

Next, identify the range within the data set. Is the difference between the highest and lowest points on the chart acceptable? Even if the chart shows only a few points too high or too low, you may need to improve or redesign the process. If the range is acceptable and the process is stable, there should be no need to change your system.



The above chart shows more than nine points above the average line indicating a change in the process. Root cause: In week 11, the individual measured on this chart began training for a marathon (a different process).



A more descriptive way to display the data might be to separate the stable process from the new process and assign each its own average. You should expect to see the second average drop as the new process stabilizes.

Scatter Diagram

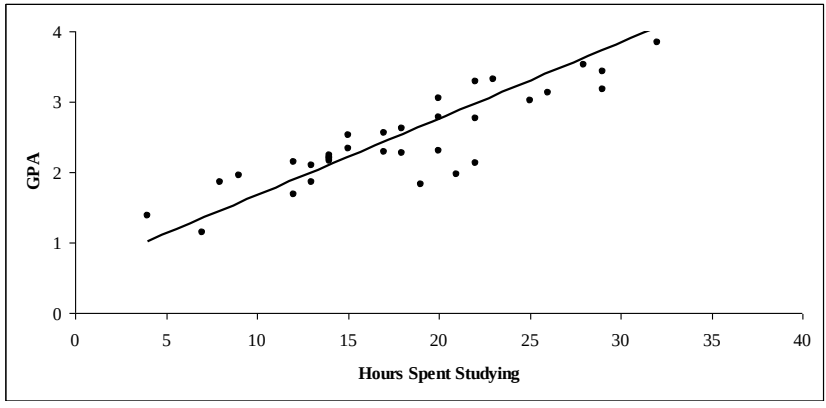
A scatter diagram is a graph that can reveal a possible relationship between two variables. Use it to identify possible causes of problems and to recognize how one important variable might be related to another.

How to use it:

Collect the data in pairs. A data pair consists of two different variables that appear to have a relationship.

Construct the graph. Label the horizontal and vertical axes in ascending order. Ensure that the values on the two axes correspond to the data pairs.

Plot the data. As you plot each point, look for patterns. Circle repeated points. The figure below gives an example.



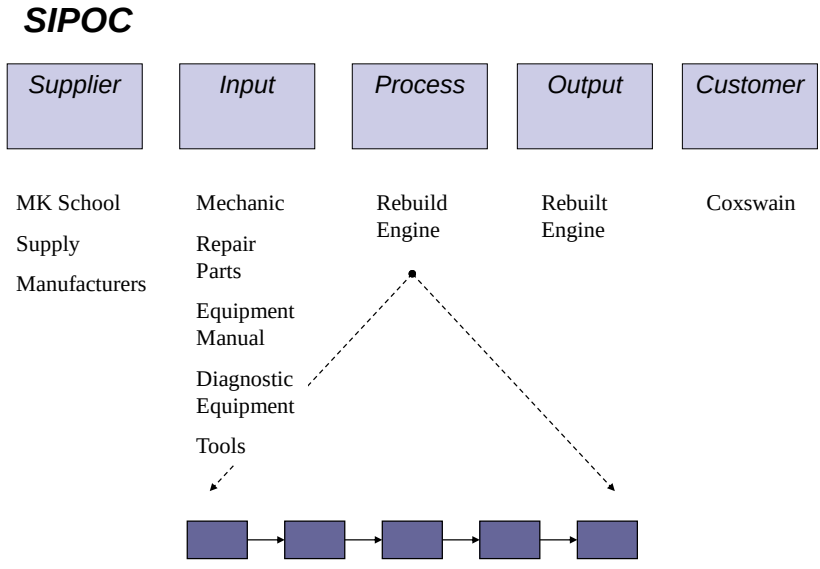
If there appears to be a relationship between two variables, they are said to be correlated. This means that a relationship exists, not that one variable causes the other. Further analysis using advanced statistical techniques can quantify how strong the relationship is between two variables.

SIPOC

SIPOC is shorthand for Supplier, Input, Process, Output, and Customer. It enables a group to identify customer requirements and factors that affect a given process.

How to use it:

Begin by describing the process you wish to examine in verb-noun format. For example: conduct boarding, fix equipment, or fill prescription. Next, create a high-level flow chart of the process. A good rule-of-thumb is to identify about 5-7 steps. A flow chart can help you visualize how inputs are transformed into outputs. Then list outputs; identify customers, customer segments, or stakeholders that receive each output; list inputs; and identify suppliers that provide each input.



A SIPOC can help you identify and address sources of variation which affect outputs and, ultimately, the customer. Variation is present in all processes. It comes from the inputs to the process and is also generated within the process itself. When identifying inputs to the process, it helps to consider the "6 Ms"—methods, manpower (personnel), materials, machinery, Mother Nature (environment), and measures—are six key sources of variation.

If, during an analysis of a process, you find that an input is a root cause of the problem, you must work with the associated supplier to correct the problem.

Measures of efficiency and effectiveness can you help monitor process health. See the section on performance measures for more information.

Stakeholder Analysis

Use a stakeholder analysis to identify stakeholders and potential risks during any project that involves change.

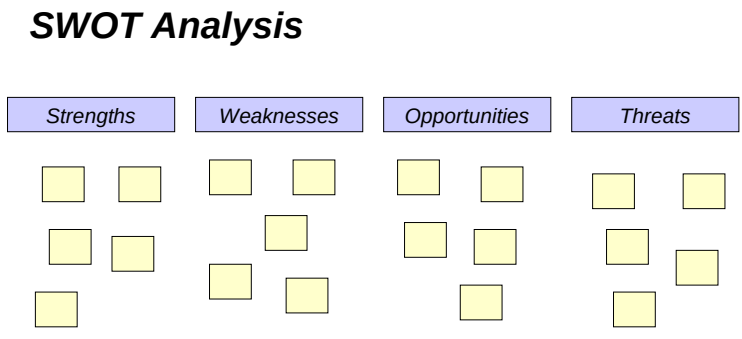
Names	Strongly Against	Moderately Against	Neutral	Moderately Supportive	Strongly Supportive

How to use it:

1. Plot where individuals currently are with regard to desired change (✓ = current).
2. Plot where individuals need to be (X = desired) in order to successfully accomplish desired change—identify gaps between current and desired.
3. Indicate how individuals are linked to each other; draw lines to indicate an influence link using an arrow (→) to indicate who influences whom.
4. Plan action steps for closing gaps.

SWOT Analysis

SWOT Analysis is a method of performing an environmental scan that is often used as an input to a strategic or project plan. It allows a group to capitalize on their strengths, identify weaknesses, take advantage of opportunities, and identify threats.



SWOT analyses take both an internal and external view. The strengths and weaknesses categories are looked at from an internal perspective (internal to the group or unit), while the opportunities and threats categories are looked at from an external perspective (external to the group or unit).

How to use it:

Two common methods for conducting a SWOT analysis are silent brainstorming and round-robin.

Silent Brainstorming Method

Silent brainstorming means that there is no discussion until the entire group stops brainstorming. Have each participant write their ideas on 3X5" Post-It® notes using fine-point permanent markers, one idea per Post-It®. Concentrate on one category of the SWOT at a time, and post the notes on a pieces of labeled chart paper as participants generate them. This way, participants can feed off of other ideas. Twenty minutes per category is a good rule-of-thumb for this method. Some of the best ideas will surface after a lull in activity, so avoid rushing the process. After the group has completed brainstorming, assign several members per category to group and label the items. Then check in with the group regarding the results.

Round-Robin Method

Label four charts: strengths, weaknesses, opportunities, and threats. Split participants into four groups and assign a chart to each group. Have group members write their ideas on 3X5" Post-It® notes using fine-point permanent markers, one idea per Post-It®. Have them post the ideas as they go. Assign a timekeeper and rotate groups so that they are assigned a new chart at previously agreed-upon intervals. Five minutes per category is a good rule-of-thumb for this method. As groups rotate, they must read the ideas generated by previous groups, then add their own ideas. After the entire cycle, assign several members per category to group and label the items. Then check in with the group regarding the results.

Why Technique

Asking, "why?" repeatedly allows you to peel away layer after layer of symptoms to get to the heart of an issue. This technique also helps you see how different causes of a problem may be related.

How to use it:

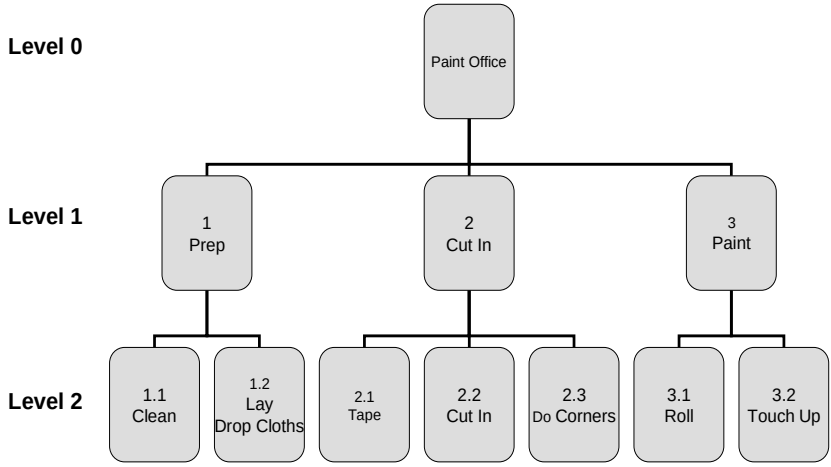
- Describe the problem in specific terms.
- Ask why it happens.
- If the answer doesn't identify a root cause, ask why again. You have identified the root cause when asking why doesn't yield any more useful information.

Points to remember:

- Always focus on the process/aspects of a problem, rather than on the personalities involved. Finding scapegoats does not solve problems!
- Answers to each successive "why" may require gathering additional information.
- A problem may have more than one root cause. In this case, the key is to address the causes that have the most impact.

A WBS is used to identify the work to be done and the scope of a project.

Work Breakdown Structure (WBS)



How to use it:

Prior to defining the work to be accomplished, gather relevant information regarding customer and stakeholder requirements, as well as available resources. Then, begin to identify the work that needs to be accomplished in appropriate sized chunks called "work packages." This is best accomplished in a small group setting, since different people will have a different perspective on the work that needs to be done. A simple way to accomplish this task is to use 3 X 5" Post-It® notes and chart paper. Arrange the Post-It® notes in a tree fashion.

There are two general approaches to identify the work: top-down and bottom-up. In the top-down approach, begin at Level 0 with the overall project. Then, break work down into categories beginning at Level 1 and down to further levels as appropriate. Typically, smaller projects will not go beyond Level 4. A good rule-of-thumb is to break each work package down so that each does not exceed 80 hours. This is known as the 80-hour rule.

Once the overall work is identified, a common way to formalize the WBS is to put it in outline format. Work packages can be identified by number, by levels, and by tasks. For example, tasks at Level 1 may be labeled 1, 2, 3, and so on; tasks at Level 2 may be labeled 1.1, 1.2, and so on. Each task can then be assigned appropriate personnel, budget, and a due date.

More complex projects may require the use of specialized scheduling tools such as activity network diagrams or Gantt Charts; other project planning or implementation tools; or project management software.

GLOSSARY

Acronym	What it means:	Description:
CPC	Commandant's Performance Challenge	A facilitated self-assessment done by Coast Guard units to assess their leadership and management practices compared to the CPEC.
CPEC	Commandant's Performance Excellence Criteria	The Coast Guard's management model based on the Malcolm Baldrige National Performance Excellence Criteria.
CQA	Commandant's Quality Award	A rigorous award program modeled after the Malcolm Baldrige National Quality Award. Commands/Staffs that achieve mature management levels through their CPC efforts can become eligible for this award program.
CTQ	Critical to Quality	Links customer needs from VOC data collection efforts and enables the project team to get more specific information that cascades in a "tree" format.
DMAIC	Define Measure Analyze Improve Control	Problem solving model used in Six Sigma Projects
DOE	Design of Experiments	A Six Sigma Tool used to test multiple causes in a systematic way so that causal relationships within a process can be determined.

Acronym	What it means:	Description:
DPMO	Defects Per Million Opportunities	Six Sigma represents 3.4 DPMO or 99.9997% accuracy. 3.8 Sigma represents 10,700 DPMO or 98.9% accuracy.
ESC	Executive Steering Committee	Sometimes used to describe the most senior management team in an organization. See also SMT.
FADE	Focus Analyze Develop Execute	A problem solving model introduced to the Coast Guard in 1991 by the consulting firm ODI.
FMEA	Failure Mode and Effects Analysis	Used to identify specific ways that a process, product or service may fail. Once this is understood, countermeasures can be developed to mitigate the potential failures.
NWG	Natural Working Group	A team that works around common processes or functions within an organization.
OPC	Organizational Performance Consultant	Internal Consultants with expertise in organizational assessments and development. They help commands and staffs implement Coast Guard management programs.
PDCA	Plan Do Check Act	The elemental problem solving model developed by Shewart in the mid 1900s to bring scientific problem solving discipline into management practices
QAT	Quality Action Team	A team chartered to work on solving a specific problem or improving a process.

Acronym	What it means:	Description:
QMB	Quality Management Board	Sometimes used to describe a team of mid to higher level managers in an organization who oversee improvement areas within a specific functional area.
SIPOC	Supplier Input Process Output Customer	A basic model used in process management activities to delineate all the components of a process.
SMT	Senior Management Team	Sometimes used to describe the most senior management team in an organization. See also ESC.
VA/NVA	Value-Added / Non Value Added	Used in process improvement to distinguish between the steps in a process that are most critical.
VOC	Voice of the Customer/Client	A 6 Sigma tool used to understand key drivers of customer satisfaction.
WIIFM	What's In It For Me	A key concept in change management, helps employees see why the change is important and can actually help them.

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TABLE OF TOOL USAGE Frequent • Occasional o

Tool	Generate Ideas	Collect Info	Analyze Info	Make Decisions	Display Info	Plan
Action Planning						•
Affinity Diagram	•		o			
Brainstorming	•					
Cause & Effect			•			
Charter						•
Check Sheet			o			
Consensus Cards				•		
Contingency Diagram						•
Control Charts			•	•	•	
Critical-To-Quality Tree		•				
Customer Rqmts Matrix		•	•			
Decision Matrix				•		
Flowchart			•			
Force-Field Analysis						•
Histogram					•	
Kano Model	•					
Multi-Vote						
Nominal Group Technique				•		
Pareto Chart			•		•	•
Project Rqmts Table						•
Proj Responsibility Matrix						•
Run Chart					•	
Scatter Diagram			•	•	•	
SIPOC			•			
Stakeholder Analysis						•
SWOT Analysis						•
Why Technique			•			
Work Brkdown Structure						•

TABLE OF TOOL USAGE (DMAIC) Frequent • Occasional o

Tool	Define	Measure	Analyze	Improve	Control
Action Planning	•	o		•	
Affinity Diagram		o			
Brainstorming			o	•	
Cause & Effect			•		
Charter	•				
Check Sheet		•			
Consensus Cards					
Contingency Diagram				o	
Control Charts		•	•		•
Critical-To-Quality Tree	•	•			
Customer Rqmts Matrix	•				
Decision Matrix					
Flowchart	•	•	•	•	
Force-Field Analysis				o	
Histogram		•	o		
Kano Model	•				
Multi-Vote				•	
Nominal Group Technique				•	
Pareto Chart		•	•		
Project Rqmts Table	o			•	
Proj Responsibility Matrix	o			•	
Run Chart		•	o		
Scatter Diagram		•	o		
SIPOC	•				
Stakeholder Analysis	•				
SWOT Analysis					
Why Technique			•		
Work Brkdown Structure	•			•	