

# Brainstorming:

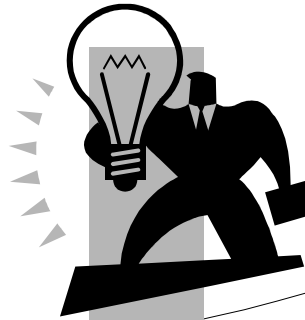
## Generating Creative Ideas to Address Project Challenges

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## Today's Goals

- **Determine what brainstorming is and when to use it.**
- **Learn techniques for:**
  - Managing virtual and face-to-face brainstorming sessions.
  - Meeting preparation.
  - Generating and recording ideas.
  - Categorizing and expanding ideas.
  - Prioritizing categories.
  - Reporting and using brainstorming ideas to help your project.



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# What is Brainstorming?

- **Brainstorming techniques help a person or group quickly come up with ideas and make decisions.**
- **Sessions can be:**
  - Formal, informal, or a combination.
  - Quiet, loud, or a combination.
  - Use physical, virtual, or a combination of meeting venues.
- **In Six Sigma we use brainstorming to:**
  - Generate project ideas and customer requirements (Kano models).
  - Determine project benefits and data sources.
  - List stake holders and process steps.
  - Identify causes and effects on Ishikawa diagrams.
  - Find ways to compress timelines and still achieve objectives.
  - Boost team moral as they work together and take ownership of their ideas to solve problems instead of gripe. This can be a fun and effective way to get absent project owners and team members re-engaged.



# Meeting Preparation

**Effective brainstorming starts with good meeting preparation.**

- Define and agree on the brainstorming goal.
- Create appropriate logistics for the brainstorming session.
- Set meeting ground rules.
- Other best practices to improve your success.



# Meeting Preparation

- **Define and agree on the brainstorming goal.**
  - Obtain group understanding.
  - Use simple, but specific goals.
  - Brainstorm one goal per session.
  - Aim for 3 times as many ideas as participants.
- **Create appropriate logistics for the brainstorming session.**
  - Where, when, and time allotment is crucial.
  - Target and invite people or groups based on the brainstorming goal.
  - Planned activities should consider group dynamics.
  - Foster early interaction to ensure buy-in throughout the session.

# Meeting Preparation (continued)

## Set ground rules:

- Everyone participates.
- Respect participants, ideas, and confidentiality.
- Be creative in your setting and tools.
- <http://www.businessballs.com/stressmanagement.htm>
- <http://www.mindtools.com>
- Select method(s) depending if using a virtual or physical meeting location.
- Define roles and responsibility.
- Set time limits.



# Meeting Preparation (continued)

## Other best practices to improve your success:

- Ensure everyone is invited to speak and disagree.
- Actively include remote participants.
- Recognize everyone by name.
- Clearly exhibit goal visually for focus.
- Use multiple teams and leverage idea interaction.
- Avoid “wordsmithing”. Capture the idea in the speaker’s words and move on.
- Use visualization or word association to make the session more relevant.  
Note: This can be a powerful technique, but use with caution! Productive meetings can turn into gripe fests.
- Keep group small and diverse when possible. 4 to 6 members maximizes effectiveness.



# Generate and Record Ideas

## Effective brainstorming requires ideas.

### • 2 Informal Techniques

- Yell out
- Hybrid

### • 9 Formal Techniques

- 6-3-5
- Stepladder
- Delphi
- Charette (Wagon)
- 5 Whys
- Starburst
- 6 Hats
- SWOT
- Karl’s best of everything method© 5-Read-Discuss



# Generate and Record Ideas

## Informal Techniques

- **"Yell out"** and write it on a white board is the most common technique.
  - Benefits:
    - Fast with little preparation needed.
    - One person's ideas can stimulate generation of other ideas.
    - Can be done on flip charts, white boards, or electronic chat rooms.
  - Risks:
    - Some ideas may not be shared due to self censoring, shyness, fear, etc...
    - Tendency to jump into refining, re-interpreting, and critiquing ideas instead of just getting ideas on the board.
    - One or two people may dominate or "yell" out the most ideas.
    - People can get distracted, get off focus, or have side conversations.
    - Too loud for open office setting.
- **Hybrid** approach where each person generates their own list of ideas silently for 5 minutes. Use "yell out" to build a consolidated list of unique ideas.
  - Gives everyone a chance to contribute.
  - Leverages off other ideas to generate more ideas.
  - Provides for quiet and talking thinkers.



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# Generate and Record Ideas

## Formal Techniques

- **6-3-5**
  - A team of 6 has 5 minutes to silently write 3 ideas on a note card.
  - Pass the card to the next person who has 5 minutes to write 3 more ideas.
  - There is one rotation per team member.
  - A team of 6 generates 18 ideas.



- **Stepladder**
  - State the brainstorming goal before getting together as a group.
  - Choose 2 members from the core group to discuss the problem.
  - After a set time, add a 3<sup>rd</sup> member to present their ideas to the first 2 BEFORE hearing the ideas that have already been discussed. After all 3 stated their ideas, then they can discuss options together, expounding and adding ideas.
  - Repeat the same process by adding a 4<sup>th</sup> member, then another, etc.



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# Generate and Record Ideas

Formal Techniques (continued)

- **Delphi**

- Similar to Step Ladder, but the facilitator keeps members and ideas anonymous.
- Stepladder involves face-to-face meetings, so group membership is known.
- Delphi takes longer and requires more preparation than the Stepladder.
- Delphi is used for major decisions that need input from a large number of people. Stepladder works best with smaller groups for a wide range of decisions.

- **Charette (Wagon)**

- Organize into small groups of equal size.
- Assign a scribe for each group.
- Groups work on the same issue, different parts of an issue, or multiple issues.
- Ideas generated by one group are carted over to the next group by the scribe to be built on, refined, and prioritized.
- Only the scribe moves from group to group.



- **5 Whys**

- Participants ask a series of "Why" questions to get to the root of an issue quickly.
- The first "Why" prompts another "Why", and so on.
- Often this tool is used in combination with the "yell out" approach.



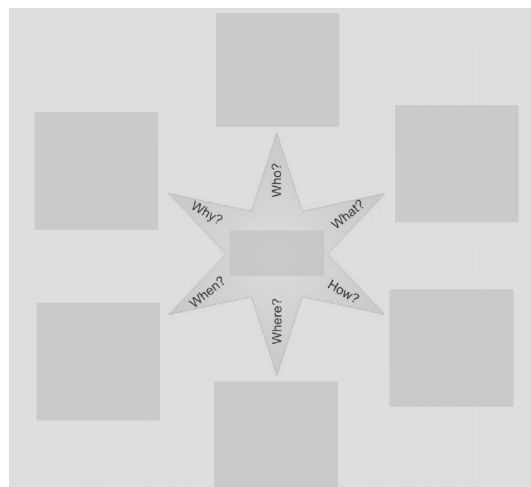
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# Generate and Record Ideas

Formal Techniques (continued)



Starburst Template from Mind Tools.

**Starburst** uses 6 questions to generate and clarify ideas about a problem statement in the middle of the star.

Ideas in each outside box are categorized by the question answered. Look for categories crossing multiple boxes to find root causes and key points.

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# Generate and Record Ideas

Formal Techniques (continued)

## 6 Hats to help your team look at decisions from 6 different perspectives.

### •White Hat:

- o Analyze available information to see what you can learn from it.
- o What are the trends, data gaps, etc... Uses Six Sigma or other data analysis methods.

### • Red Hat:

- o Look at the problem using intuition, gut reaction, and emotion.
- o What solutions seem to make sense or could be a good solution.

### • Black Hat:

- o Look at things pessimistically. Ask what could go wrong.
- o This is great for filling out Failure Modes and Effects Analysis (FMEA) and Risk Mitigation Plans.
- o Good for validating implementation plans and seeing the realism of expected project benefits.

### • Yellow Hat:

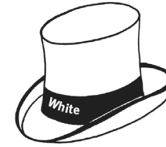
- o Opposite of a Black Hat. Think of all the positives.
- o Use to create an optimistic view of benefits and spot replication opportunities.
- o Listing all the good things keep the team moving forward when hitting roadblocks or delays.

### •Green Hat:

- o Round 1 is to develop creative solutions to a problem using anything goes thinking. Pretend budgets, time, resources, etc... are no issue.
- o Round 2 brainstorm 5 ways that could make each idea work. This prevents precluding an idea from consideration just because its new, innovative, or never tried. Years ago the horseless carriage we drive to work each day was new and innovative. So was the idea of children's hospitals or now inflating seat belts.

### •Blue Hat:

- o Meeting facilitators wear this hat as they direct their team to look at issues from each perspectives.
- o Ask your team to imagine physically putting on each hat and then use other brainstorming techniques to generate ideas.

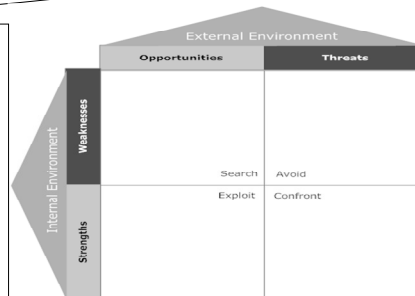


# Generate and Record Ideas

Formal Techniques (continued)

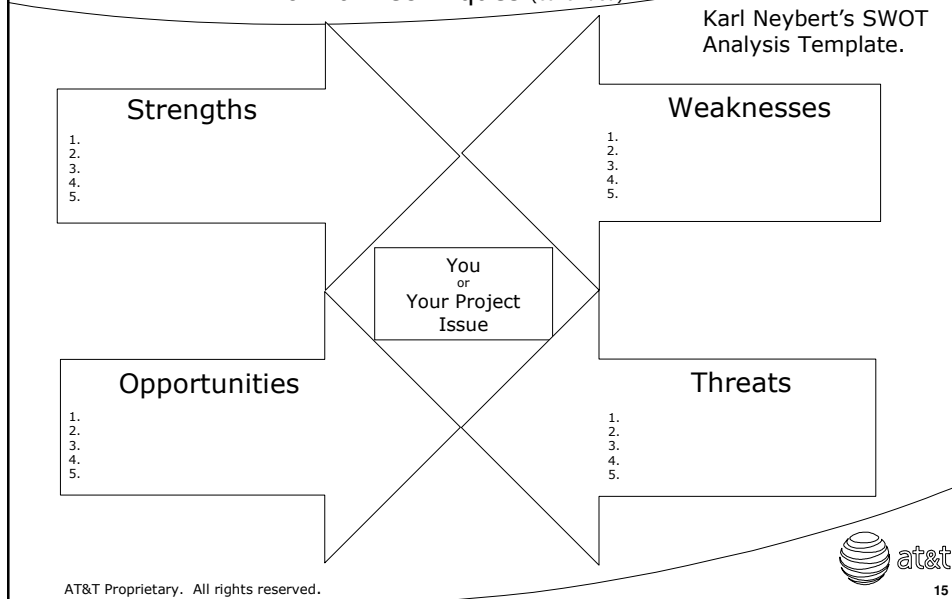
Similar to 6 Hats, these Mind Tools templates help your team brainstorm issues from multiple perspectives. SWOT diagrams list:

- Strengths** – What are you good at.
- Weaknesses** – Areas to improve.
- Opportunities** – New technology, processes, responsibilities, products, etc.
- Threats** – What others are doing that could adversely impact you or the project.



# Generate and Record Ideas

Formal Techniques (continued)



# Generate and Record Ideas

Formal Techniques (continued)

## Karl's best of everything method© 5-Read-Discuss.

- Each person silently generates a list of ideas for 5 minutes.
- Facilitator collects lists after 5 minutes and reads the ideas aloud in random order without stating who submitted them.
- Participants can add more ideas after all submitted ideas are listed on a white board or common chat room with duplicates removed.
- Benefits:
  - Fast with little preparation needed.
  - Everyone participates and anonymity preserved.
  - Works in groups where some people need silence to think and others need to talk.
  - One person's ideas can stimulate the generation of other ideas.
  - Can be done on flip charts, white boards, or electronic chat rooms.
- Risks:
  - Using multiple chat rooms with 6 or more participants can be challenging.
  - May encounter resistance do to unfamiliarity.

# Categorize and Expand Ideas

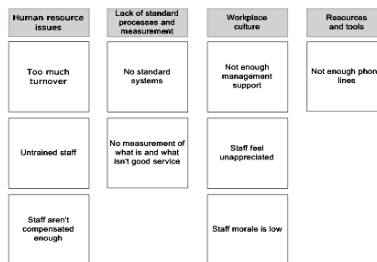
Sort ideas into 5-10 easy to remember categories / buckets.



# Categorize and Expand Ideas

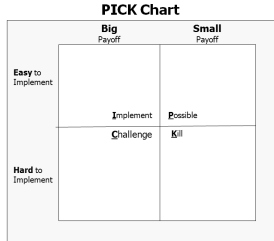
Organize ideas into 5-10 broad categories, sub-group if needed.

- Keeping categories simple.
- Probe and paraphrase to ensure understanding of all ideas.
- Avoid judging the value of the idea or "wordsmithing".
- Move out of scope items and undefined items to the "Parking Lot" for later review. **(Do not get rid of them because they could have relevance later.)**
- Use multi-colored pens, shapes, numbers, or move around sticky notes to identify like ideas.
- Use affinity diagrams to organize ideas into broad groupings of related ideas, causes, or effects.

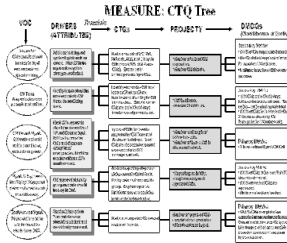
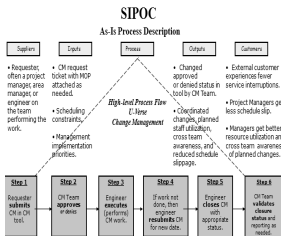
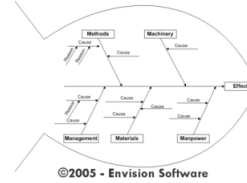


# Categorize and Expand Ideas

## Category Examples



These Six Sigma tools provide great idea categories.



### Cause and effect categories:

- Machinery / Equipment
- Manpower / People
- Methods
- Materials
- Measurement
- Mother Nature



# Categorize and Expand Ideas

## Category Examples (Continued)

**Brainstorm your own category list like I did to generate these examples.**

- Internal vs. External Customers
- Stake Holder
- Measurement System
- Methods and Procedures Steps
- Delivery Method
- Location
- Critical Path or Process Step
- Cost
- Health
- Speed
- Trust Level
- Organization
- Strengths vs. Weaknesses
- Level of control
- Likes vs. Dislikes
- Product Type or Ingredients
- Resources
- Organization or Pay Grade
- Date (Occurrence, Due Date, Delivery,...)
- Risk (Frequency, Impact, Detection, Mitigation, Transference,...)
- Oral Communication Type (Face-to-Face, Phone, Briefing, Lecture,...)
- Written Communication Type (Email, Report, Metric, Project Plan, MOP, Briefing,...)



# Prioritize Categories

- **Prioritize ideas as High, Medium, or Low.**
- **Determine priority using an informal “Yell Out” or formal multi-voting technique.**



# Prioritize Categories

## Informal Technique

- Use **H**igh, **M**edium, or **L**ow to prioritize instead of 1 to 10.
- Defined your priority criteria.
- Determine which categories could be worked concurrently.
- Use informal “yell out” approach to:
  - Rank categories.
  - Discuss (stated and hidden) reasons for priority.
  - Benefits:
    - Invites discussion.
    - Raises other considerations.
    - Builds consensus.
  - Risks:
    - Group think.
- 1 or 2 team members could over-influence decisions.



# Prioritize Categories

## Formal Techniques

- **Categories H, M, or L in silence. Facilitator tallies votes shares results.**
  - Discuss close votes to see if a consensus can be reached orally. If not silently revote on just those items in question.
  - Depending on cost, risk, and available resources, it may be better to give the higher priority for M to H borderline items.
- **Prioritize using multi-voting where each person is given 5 votes.**
  - Each person gets 5 votes to cast however they want. They can use all their votes for one or multiple categories.
  - First vote for High then Medium priority categories. Remaining categories get a low rank.
  - Before moving to the next voting round, remove prioritized categories.
- **Other multi-voting options include:**
  - Divide the number of categories by the number of priorities and then add two for the number of votes. For example, if you have 18 categories with 3 priorities (H, M, L), you get 8 votes. ( $18 / 3 = 6, 6 + 2 = 8$ )
  - Put the list of categories on a table and give everyone a bag of M&Ms. Explain they can to eat all the colors except (green) as their reward for active participation. They must use 5 (green) M&Ms to vote for their category priorities.  
Note: Watch out for peanut allergies.



# Prioritize Categories

## Multi-Vote Example – Round 1 for High Priority

Successful Job Predictors	
Category Name	Votes for Medium Priority
Leadership Direction	☺
Self Motivation	☺☺☺☺☺
Pay	☺
Accessible Relevant Training	☺☺
Current Written and Accessible Procedures	☺☺☺☺☺☺☺ ☆
Shift Schedule	☺
Tool Integration / Usability	☺☺☺☺☺ ☆
Available Staffing	☺
Customer Trust	☺☺☺
Planning Ahead	☺☺☺☺☺ ☆

In this example, a team of 6 were given 5 votes each for a total of 30 ☺ votes per voting round.  
(10 categories / 3 priorities HML + 2 is about 5 votes.)

Current Written and Accessible Procedures received 7 votes so it is clearly a high priority issue.

The next highest vote of 5 is tied between Tool Integration / Usability and Planning Ahead, so both are a high priority.

Self Motivation may be a High priority or it could be a Medium priority. This could be determined with group discussion and another round of voting where the top 3 ☆ priorities are removed.

On a real project, use a more descriptive name that includes the type of job.

Note: Data is not representative of any project and is for illustrative purposes only.



# Prioritize Categories

## Multi-Vote Example – Round 2 for Medium Priority

Successful Job Predictors	
Category Name	Votes for Medium Priority
Leadership Direction	☺☺☺☺☺☺ ☆
Self Motivation	☺☺☺☺☺☺ ☆
Pay	☺☺
Accessible Relevant Training	☺☺
Shift Schedule	☺☺
Available Staffing	☺☺☺☺ ☆
Customer Trust	☺☺

For round 2 the team of 6 were given 4 votes each for a total of 24 ☺ votes per voting round.  
(7 categories / 3 priorities HML + 2 is about 4 votes.)

High priority categories identified in round 1 are removed. Leadership Direction and Self Motivation are clearly medium priority and probably also Available Staffing.

Successful Job Predictors	
Category Name	Low Priority
Pay	No voting needed.
Accessible Relevant Training	
Shift Schedule	
Customer Trust	

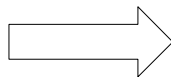
Remaining categories are low priority, so no round 3 is needed.

Note: Data is not representative of any project. Information is for illustrative purposes only.



# Report and Use Ideas

**In business, effective brainstorming requires ideas to be reported and used to achieve measurable goals.**



# Report and Use Ideas

- Document key results and action items in meeting notes.
  - Use discretion to maintain honest and open sharing of ideas.
  - Share with stakeholders and those who could not attend.
  - Set the expectation that the team reads the notes and provides additional thoughts prior to the next meeting.
- Incorporate results into the applicable tools.
- Determine if additional sessions are needed, why, when, and how.
- Do not wait too long between sessions.
  - Give few days to “sleep on it”, but not more than a week or participants forget issues.
  - Start each follow-up session with a reminder of key points to get the team into the “right” mindset so they can build on prior results.

# Questions

