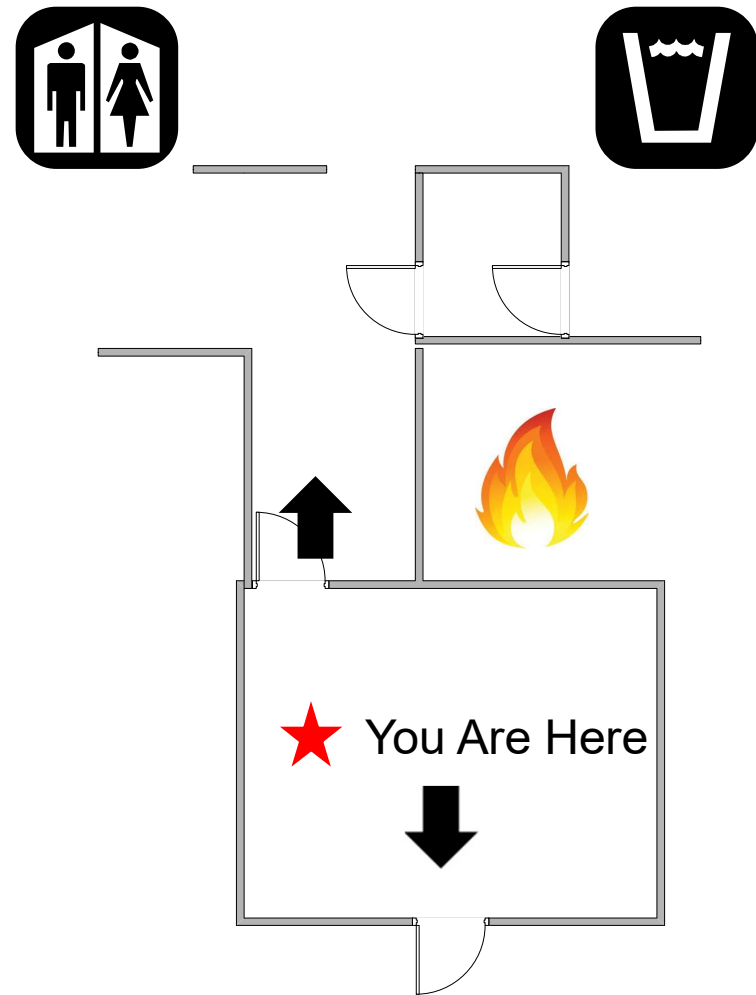


USMC Lean Six Sigma Green Belt Training



Administration

- Starting / ending times
- Restrooms
- Refreshments
- In case of fire muster at:
- Lunch / Breaks
 - Respect our time together – return from breaks/lunch on time.
 - Cell Phones / electronics turn off or on vibrate.
 - Handle outside business on breaks.
- Class evaluations
- Parking Lot
- Terminology Sheet



Parking Lot next to Pool



Course Agenda

- Introduction
- Lean Six Sigma Module
 - ✓ Define
 - ✓ Measure
 - ✓ Analyze
 - ✓ Improve
 - ✓ Control
- Training Closeout
- Final Exam



Notional Agenda

Monday

- Intro
 - Facilitating
- Simulation Round 1
- Define Phase
 - Charter
 - SIPOC
 - Voice of the Customer
 - Communication Plan
 - Develop/Execute Plans

Tuesday

- Measure Phase
 - Walk the Gemba
 - Data Collection
 - Value Stream Mapping
- Analyze Phase
 - Data Tools

Wednesday

- Analyze Phase
 - Data Tools
 - Statistics
 - Statistical Process Control
- Improve Phase
 - Lean Principles

Thursday

- Simulation Round 2
- Improve Phase
 - 5S
 - Poka-Yoke
 - Standard Work
 - Visual Workplace
 - Implementation
- Simulation Round 3

Friday

- Control Phase
 - Control Plan
 - Sustainment
 - Benefits
 - Design for Six Sigma
- Training Closeout
- Final Exam



Introductions



1. What is your name?
2. Where do you work?
3. Briefly explain one of the questions from the “What Can Lean Six Sigma Do for Me?” sheet.



Why Use CPI?

“There are four purposes for continuous process improvement: easier, better, faster, cheaper – and they appear in that order of priority.” – Shigeo Shingo

1. **Easier** – Reduce frustrations for employees, work smarter; not harder.
2. **Better** – Make a process more efficient / effective, improve quality.
3. **Faster** – Reduce lead time to fulfill customer demand.
4. **Cheaper** – Reduce cost to customer.



Course Learning Objectives

- Be familiar with the objectives, tasks and deliverables for each phase of the Define, Measure, Analyze, Improve and Control (DMAIC) framework.
- Understand the principles of Lean Thinking.
- Understand how the DMAIC framework is used to address process improvements.
- Be familiar with some of the most commonly used Lean Six Sigma tools.
- Be prepared to apply some of the most commonly used DMAIC tools on a Rapid Improvement Event (RIE) or project.



Course Goals

At the end of this course you will be able to:

1. Understand Lean Six Sigma (LSS)/Continuous Process Improvement (CPI) tools and how to apply them to identify and eliminate waste in your job.
2. Lead and Facilitate Projects or Events to attack and solve current day problems.
3. Understand the impacts of the Triple Constraints on processes.
4. Assist Black Belts on Command-wide Projects and Events.



What Can Lean Six Sigma Do for Me?

At the end of this course you will be able to:

- ✓ Recognize areas for tremendous improvement in your workplace setting.
- ✓ Identify and begin to eliminate waste in your job.



Learning Objectives: Introduction

- Identified how the Triple Constraints impact both projects and processes.
- Understand the high level concepts of Lean, Six Sigma and the DMAIC framework.
- Explain team roles and responsibilities, including Green Belt practitioner, team leader, facilitator, etc.
- Understand useful tools for generating ideas, organizing ideas and picking the best idea from a list.



Journey to Effective Learning

“Fear makes the wolf bigger than he is.”

– German Proverb

- ✓ Function as a team.
- ✓ Everyone participates with equal voice.
- ✓ High level of participation needed for success.
- ✓ Single discussions (respect the speaker).
- ✓ *All* ideas welcome.
- ✓ **Ask questions, take notes. You are 7 times more likely to remember when you write it down.**
- ✓ Continuous process of learning and development.
- ✓ Relate concepts to your processes.
- ✓ **Have fun!**



Change Management

“Probably the most dangerous phrase that anyone could use in the world today is that dreadful one:

‘But we’ve always done it that way.’”

– Grace Hopper (Rear Admiral and Computer Scientist)



Change Management

“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.” – Charles Darwin

Change Management Purpose

Improve the effectiveness and efficiency of the organization.

- Process Improvement Culture Development.
- Continuous quest for excellence.

Change Principles

- Change is continuously occurring.
- Process required to manage change.
- Ongoing process - not a stand alone project



Change Management Barriers

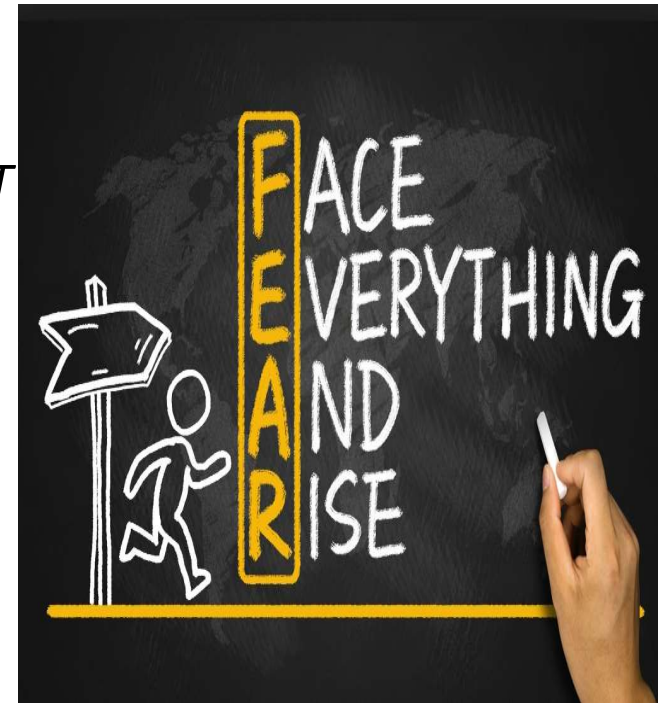
- **Change resistance (Fear)**
- Excuses / scapegoats
- Culture of privacy (keeping quiet about problems)
- **Politics and bureaucracy**
- Authoritarian, autocratic management
- Little to no employee empowerment
- Empire building



Success Factors for Change

Building a Culture of Change with a systematic approach to:

- **Change Management** starts with the culture of the organization, not a stand alone project.
- **Communication** ensures that everyone knows *WHAT* they should be working on and why it is important for organizational success.
- **Metrics** ensure that everyone knows what performance measures matter and if progress is being made.
- **Accountability** ensures that the right actions are rewarded and the wrong actions (or inaction) are identified and corrected.



Organizations need a process to manage change
Lean Six Sigma is the vehicle for change management!



Lean Review

Tools and Methodology to:



Eliminate Waste

**WAR
ON
WASTE!**



Improve Flow

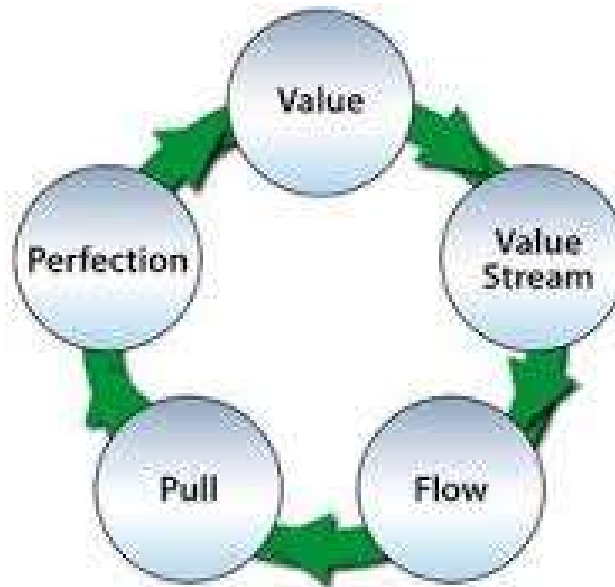
By using:

Pull/Kanban	5S + 1	Value Stream Mapping	Standard Work	Set Up Reduction
Just-in-Time	Little's Law	TAKT Time	Poka-Yoke	Batch Reduction
Visual Controls				



Lean Review – Lean Principles

- **Value** specified from the customer's perspective.
- The **Value Stream** has been identified for each service.
- The product / service **Flows** without interruptions.
- The customer can **Pull** value through the process.
- Continuous pursuit of **Perfection**.



* Womack & Jones 1996



Lean Review – 5S

5S: A Tool to Achieve the Future State

- **5S** is a process and method for creating and maintaining an **organized**, clean, and high-performance workplace.
- **5S** is the **foundation** for continuous improvement, zero defects, cost reduction, and a more productive work space.
- **5S** is a **systematic** way to improve the workplace, our processes and our products through employee involvement.
- **5S** enables anyone to **distinguish** between normal and abnormal conditions at a glance.



Lean Review – 5S + 1

Each step of 5S
builds upon the next.



Lean Review - 8 Types of Waste

Identify and Eliminate these Wastes:

T Transportation
I Inventory (Excess)
M Motion
W Waiting
O Over-Production
O Over-Processing
D Defects
&
U Under Utilization of people



Six Sigma Review

Tools and Methodology to:



Eliminate Defects

**WAR
ON
VARIATION!**



Reduce Variation

By using:

Measurement Systems
Analysis

Pareto Charts

DMAIC

Statistical
Process Control

Value Stream
Mapping



**Six Sigma
Toolbox**

Analysis of
Variance

Histograms

Control Charts

Voice of the
Customer

Cause and Effect
Diagrams



Lean Six Sigma Defined



Lean

Eliminate Waste

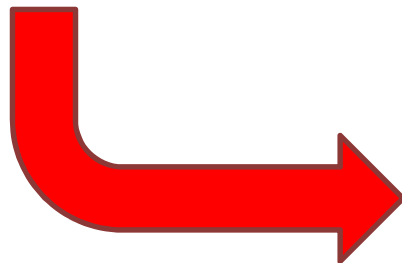
Improve Flow



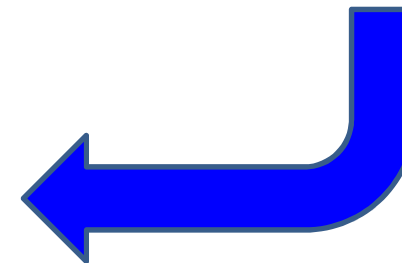
Six Sigma

Reduce Variation

Eliminate Defects



Lean Six Sigma



**Together providing the customer with the best possible Value
in Quality, Cost and Time**



DMAIC Methodology

Define

➤ *IDENTIFY OPPORTUNITY*



Measure

➤ *DESCRIBE AS-IS CONDITION*



Analyze

➤ *IDENTIFY KEY CAUSES*



Improve

➤ *PROPOSE & IMPLEMENT SOLUTIONS*



Control

➤ *SUSTAIN THE GAIN*



Validate & Replicate Changes



Project Management Constraints

Triple Constraints of Projects

- Quality (Better)
 - ✓ Clear and Specific
- Time (Faster)
 - ✓ Amount of time to complete process tasks
- Cost (Cheaper)
 - ✓ Money and Effort
- Prioritizing Constraints
 - Should be based on the view of the customer.



Where Can We Use Lean Six Sigma?

If your internal and external customers experience any kind of **defects, mistakes, errors, delays, or slowness of service**, then Lean Six Sigma can be used to make your processes **Easier, Better, Faster and Cheaper**.

Examples of areas where Lean Six Sigma can be used are:

➤ **Administration**



➤ **Information Systems**



➤ **Equipment Maintenance**



➤ **Services**



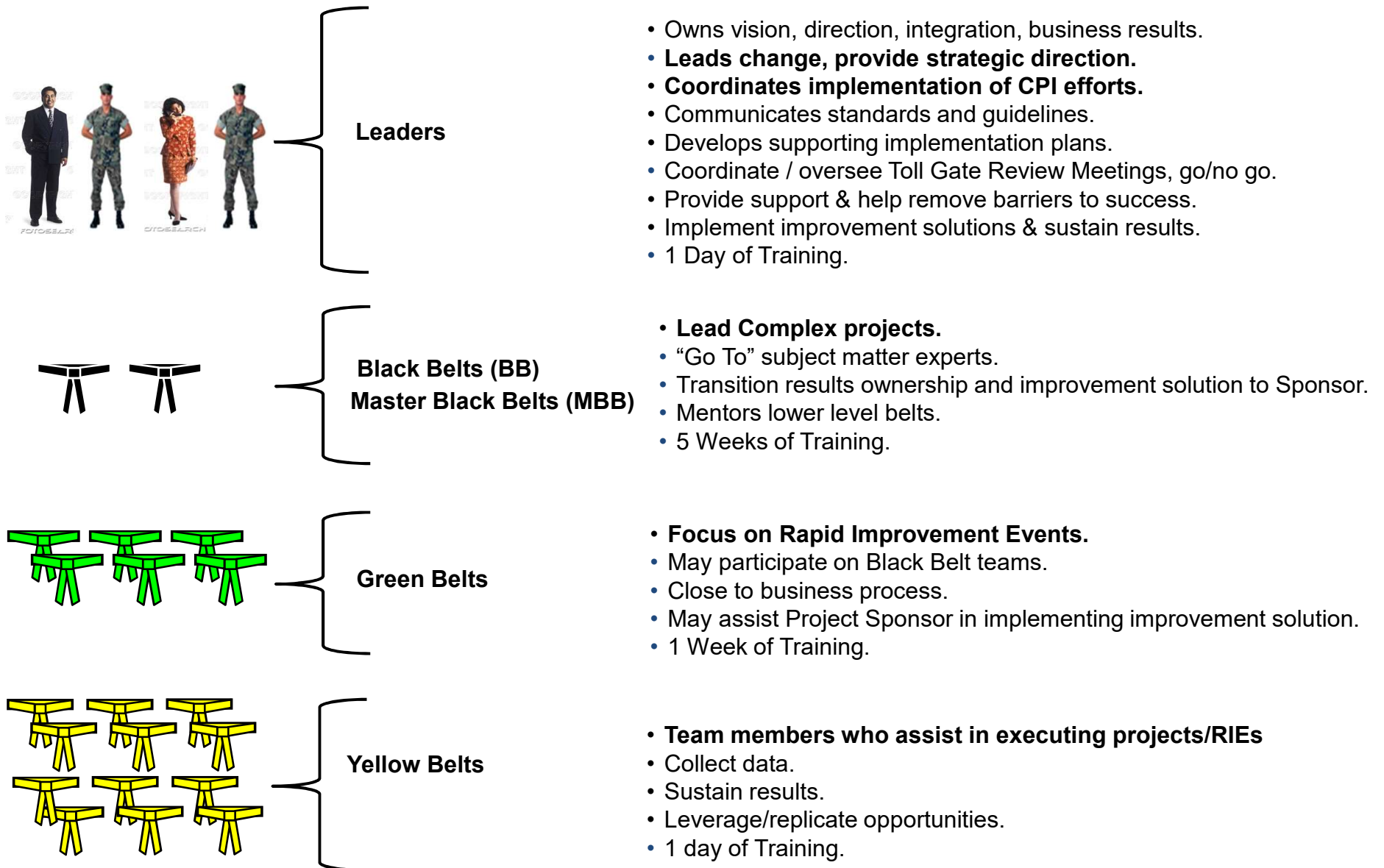
➤ **Logistics**



➤ **Food and Drug**



MCINCR-MCBQ Command Level Infrastructure



Team Member Responsibilities

As a Green Belt you're expected to:

- ✓ Act as an change agent for the organization you're a member of and not yourself.
- ✓ Ensure communication is maintained with the groups you represent.
- ✓ Participate in CPI events.
- ✓ Become familiar with the basic CPI tools, LEAN and Six Sigma.
- ✓ Assist in project reviews.
- ✓ Function in teams between 2 and 8 members



Critical Elements for CPI Implementation

- **Leadership commitment.**
- CPI improvement events aligned with the organizational strategy, objectives and customer requirements.
- **A can do attitude!**
- Program training & support.
- Sharing information and knowledge.
- **Learn by doing, with use comes comfort.**

**“Learning and not doing is the same as not learning.
Knowing and not doing is the same as not knowing.”
– Stephen R. Covey**



Facilitation



What is Facilitation?

A set of activities that helps a group of people understand their common objectives and assists them to achieve it within a reasonable timeframe and without destructive confrontations.



What is a Facilitator?

“A good facilitator guides and assists the journey of a team in arriving at decisions to achieve a goal.” – Alec McPhedran

DOES...

- Ask questions to get the team to make decisions.
- Asks for ideas about how to accomplish task.
- Observes and provides feedback.
- Ensures everyone's input is heard.

DOES NOT...

- Tell the team what to do.
- Advocate their view on how to accomplish task.
- Do the task.
- Let 1 or 2 voices dominate discussion.



Facilitation

Green Belts need to learn facilitation to:

1. Improve presentation skills.
2. Improve skills in dealing with diverse groups of people and moving them to consensus.
3. Engage a group and get everyone involved.
4. Make meetings more productive.
5. Develop collaborative leadership skills.

Facilitation skills are easily transferred to your primary duties.



Green Belt Responsibilities

Under the guidance of a Black Belt Mentor:

- **Lead, schedule, plan, and facilitate CPI events.**
- Assist team with out briefs.
- Capture results, lessons learned, & future opportunities.
- Normally works for the Project Sponsor and may be part-time or full-time.
- Train & mentor team members.

**“The new leader is a facilitator, not an order giver.”
- John Naisbitt**



Facilitation Skills

- ✓ **Maintain the focus of group discussion.**
- ✓ Manage team conflict.
- ✓ Create a collaborative environment for participants.
- ✓ Help generate ideas.
- ✓ Clarify and communicate meeting expectations.
- ✓ Enable agreement through consensus.



Managing vs. Facilitating

Managing

Ensuring available resources



Making decisions



Assigning tasks



Directing



Installing controls



Measuring results



Allocating rewards



Facilitating

Ensuring optimum use of resources

Getting the team to make decisions

Clarifying roles & responsibilities; getting the team to assign tasks

Influencing, negotiating, mediating, teaching

Clarifying boundaries

Helping team measure its results

Reinforcing, encouraging, helping celebrate successes



Definition of a Team

To be a team, you must...

1. Work intensely with one another to achieve a specific common goal or objective.
2. Shared outcomes and goals (risk and rewards).
3. Specific roles for each member.
4. Structure and rules.



What Teams Need for Success

- Agreement on and commitment to goals.
- **Clearly defined roles and accountabilities.**
- Good processes for getting work done.
- Opportunity to learn from mistakes.
- Clear communication of what each team member needs from the others.
- Commitment to the principles of equality.



Communication

➤ Verbal Communication

Made up of spoken and written words.

➤ Non-Verbal Communication

Made up of tone of voice, body language, gestures, eye contact, facial expressions and proximity.



Verbal Communication

It's important to be mindful of your verbal communication. Clarity of speech, remaining calm and focused, being polite and following some basic rules of etiquette will all aid the process of verbal communication.

Positive cues

- Calm voice
- Reinforcement
- Listening
- Asking questions

Negative cues

- Speech too loud / soft
- Interrupting
- Selfish / Dishonest conversations



Verbal Communication Exercise

Team member, Ben, has been a valuable asset. He's always the first to volunteer and speaks up at every opportunity, but doesn't listen to others' ideas. He sometimes speaks forcefully in an attempt to exert control and even takes the lead on group activities without being asked.

How can you ensure a good team process and team member involvement?



Non-Verbal Communication

It's important to observe your body language (non-verbal communication) for the impact it has on the team.

The team members will tend to read your body language, interpret it, and react to it.

Positive cues

- Eye contact (positive interest)
- Smiling (encouragement)
- Leaning forward (positive interest)
- Nodding yes (agreement)

Negative cues

- Evasive glances (discomfort)
- Slouching (disinterest)
- Shaking head (no agreement)



Non-Verbal Communication Exercise

It's the first day of your Kaizen / RIE and one of your key team members, Sally, has hardly spoken a word. She sits silently, with her arms crossed and won't make eye contact. You are depending on her expertise and need her ideas.

As the facilitator, what can you do to encourage her participation?



Effective Brainstorming

An effective brainstorming session:

- Develops highly creative solutions to a problem.
- Invites the experience of the group into play.
- **Unlocks innovation.**
- Brings team members together.



Brainstorming Effect

The sum of the product of the whole team together is greater than the accumulated sum of each individual added together.



Brainstorming Tips

- Rapid generation is the aim.
- **Build on others' ideas.**
- No such thing as “wild” or “bad” ideas.
- Chaos can be fun.
- Take pride in your ignorance.
- Always forget to combine (don't group ideas).
- Laughter fans the flames of creativity.



Affinity Diagram

Affinity Diagrams:

- A way to organize a large set of ideas.

Used:

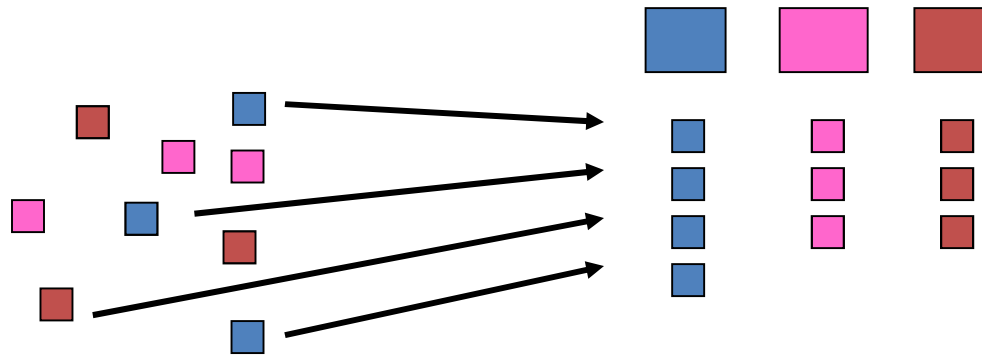
- After brainstorming sessions.
- Analyzing customer comments.
- Identifying common themes.



Affinity Diagram

Rules:

- Start with one. Find another. Put it there.
- No discussion of why.
- Resolve conflicts with duplicate stickies.
- Question very large groups.
- It's over when movement stops.



Prioritization Tools

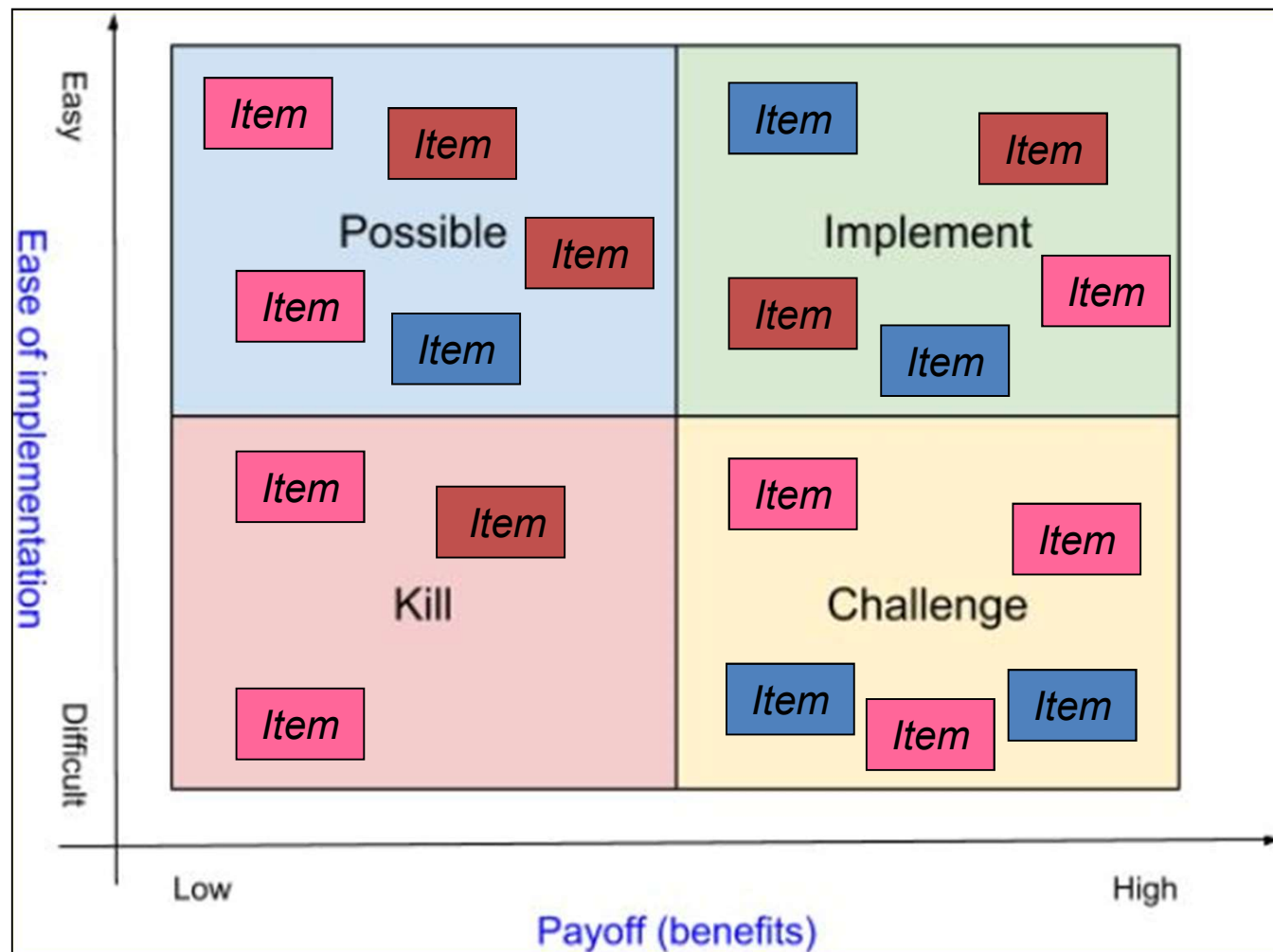
PRIORITIES

- PICK Chart
- Nominal Group Technique (NGT)
- Idea Weighting/ Dot voting



PICK Chart

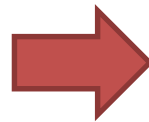
Pick Chart – a “Payoff” matrix for ranking / prioritizing ideas



Nominal Group Technique

A consensus planning tool that helps prioritize options. Rankings are collected from all participants, and aggregated.

Individual Suggestions



Group Discussion
and Merging of
Items



Ranking of Items



Nominal Group Technique (NGT)

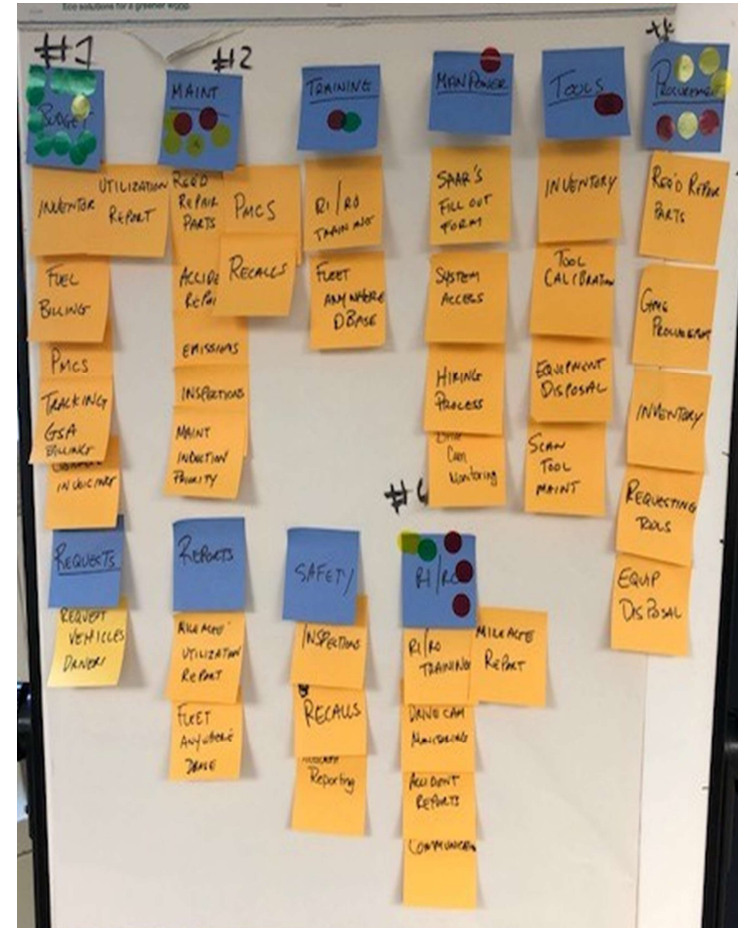
OUTPUT

ID	Item	Participants				Total
		#1	#2	#3	#4	
1	Sales distribution system	3			1	4
2	Brand		1			1
3	Financial strength			3		3
4	Customer loyalty					
5	Social media					
6	Leadership team		2	2	3	7
7	Project management	2				2
8	Product development			1		1
9	Customer service center					
10	Software Systems	1	3		2	6



Idea Weighting/ Dot Voting

- **Idea Weighting / Dot Voting** - Give each person in the group 3 self-stick dots. Instruct each person to choose their priorities, using "all 3 dots." Color dots will be weighted. Green-3, yellow-2, and red-1. Therefore, majority of dots would indicate top priority when tallied. Some items will have no dots.



Voting Methods

- ✓ Voting
 - To reach a manageable amount of ideas.
- ✓ Single Voting
 - Single vote for favorite idea.
- ✓ Multi-Voting
 - Vote for top three (or four, or five...).
- ✓ Sign-Up Voting
 - Secret ballots counted by facilitator.



The result is a short list identifying what is important to the team.

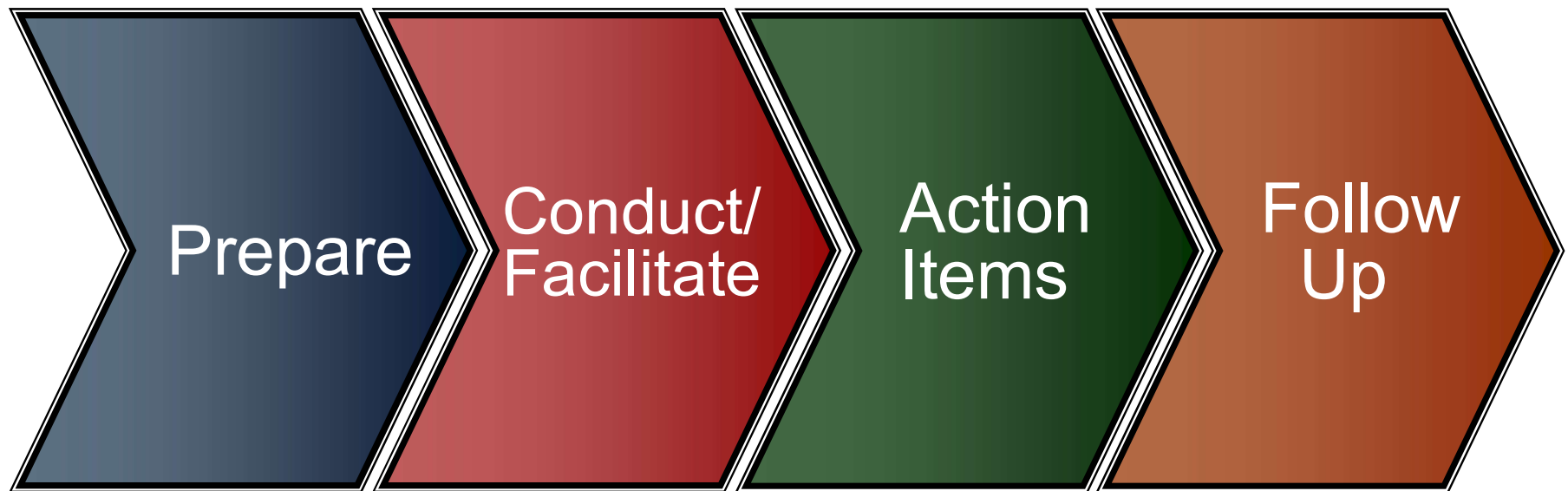


When Should a Team Use Voting Methods?

- Whenever a brainstorming session has generated a list of items that is ***too extensive*** for all items to be addressed at once.
- To provide a quick and easy way for a team to identify the most popular or highest priority items on a list, those that are worthy of ***immediate attention***.



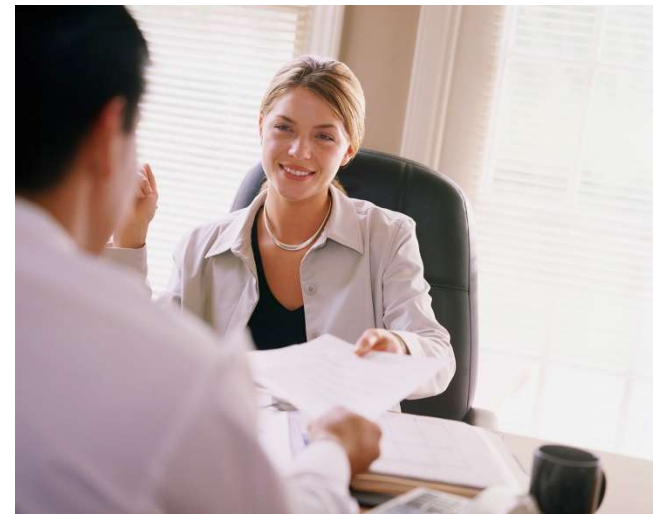
How to Run Effective Meetings



Effective Team Meetings – Step 1

Prepare

1. Include appropriate team.
2. Talk to subject matter experts.
3. Reserve meeting space.
4. Prepare any materials.
5. **Conduct gap analysis.**



Conducting a Gap Analysis

1. Determine what they need to know.
2. Determine what they do know.

Determine level of CPI knowledge.

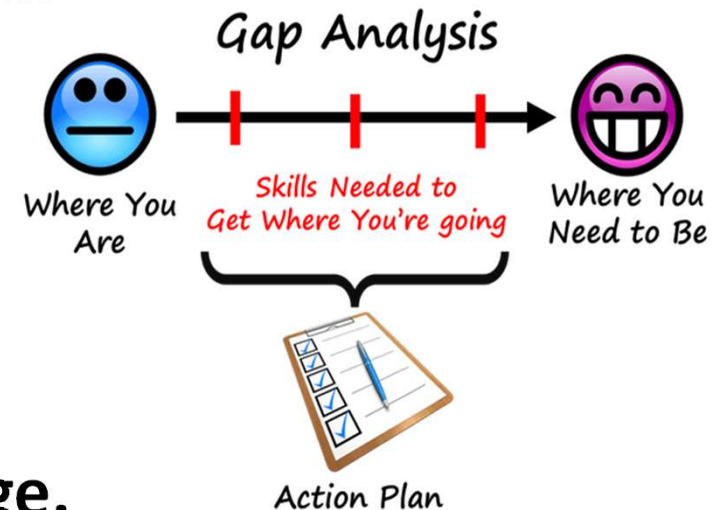
1. Previous CPI team experience.
2. Previous belt training.

Determine process level knowledge.

1. Are they SMEs?
2. Do they participate in the process or outside the process?

Determine experience with cross-functional teams.

3. Identify the knowledge gaps.



Team Training for Projects / Events

Initial

- ✓ Ideally, before the event.
- ✓ Provides a foundation to the event.
- ✓ Take the least amount of time needed, application will prove more reinforcement than a practice exercise.

Just-in-Time

- ✓ Tool-driven; apply as needed.
- ✓ Should take no longer than 30 minutes.



Training Questions to Consider

- Who is your target audience?
- What training methods will be effective?
- Who should deliver the training?
- Where should the training be held and when?
- What training materials are needed?
- What are your CPI cultural barriers?



Prepare an Agenda

Agenda

1. Purpose / goal
2. Date
3. Place
4. Desired outcomes
5. Start / Stop Times



Effective Team Meetings – Step 2

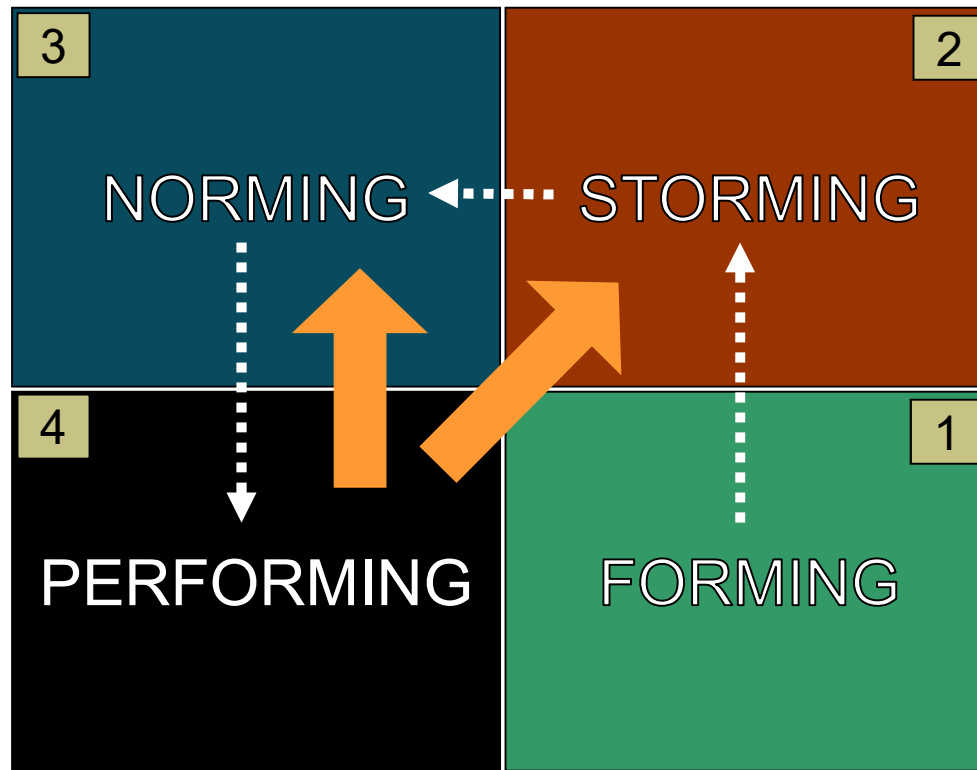
Conduct / Facilitate

- **Develop ground rules.**
- Assign roles (i.e. scribe, timekeeper).
- Reiterate / clarify purpose of event.
- **Ensure group maintains focus.**
- At the conclusion of the event, review outcomes and get agreement.
- **Record action items.**



Stages of Team Growth

Be aware of changing team members in the middle of project.



Team Dynamics are important!



Team Growth Exercise

It's day three and tension is high. Lou and Robin are not listening to each other. Both are frustrated and the unproductive debates have led to sarcasm and personal attacks. The other team members are hopeful that you, the Green Belt, can help the group come to a consensus and implement a strategy.

How can you get this team to commit and take ownership?



Effective Team Meetings – Step 3

Action Items

- Assign tasks to participants.
- Determine due date.
- Document action items.



RACI Chart

R = Responsible – *The person who performs the action/task.*

A = Accountable – *The person who is held accountable that the action/task is completed.*

C = Consulted – *The person(s) who is consulted before performing the action/task.*

I = Informed – *The person(s) who is informed after performing the action/task.*

Step	Action/Task	Responsible	Accountable	Consulted	Informed
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					



Effective Team Meetings – Step 4

Follow Up

- Record meeting notes.
- Document outcome.
- Note agreements.
- **Track action items and timing.**
- Plan follow up meeting date.



Team Daily Checklist

RAPID IMPROVEMENT EVENTS

TEAM DAILY CHECKLIST

(Note: daily sequence of events is ONLY a GUIDE)

DATE:

LOCATION:

Day One.	Day Two.	Day Three.	Day Four.
<input type="checkbox"/> 1. Leadership Opening Comments <input type="checkbox"/> 2. Review team Charter and SIPOC <input type="checkbox"/> 3. Conduct Team Training as necessary <input type="checkbox"/> 4. Create Day 1 Plan <input type="checkbox"/> 5. Review Current State Process Map boxes as applicable, create necessary diagrams <input type="checkbox"/> 6. Waste Walk boxes as applicable, create necessary diagrams <input type="checkbox"/> 7. Complete Current Value Stream Map <input type="checkbox"/> 8. Create Ideal State Process Map <input type="checkbox"/> 9. Create Future State map <input type="checkbox"/> 10. Capture Improvement Measures and Compare to original Goals and Objectives to meet charter <input type="checkbox"/> 11. Prepare & Conduct Daily Team Leader Progress Report Out (TPR, Newspaper Improvements, Layouts, etc.) <input type="checkbox"/> 12. Team Leader/Co-Leader - How Late Do We Stay? <input type="checkbox"/> 13. Develop Plan for Day 2. <input type="checkbox"/> 14. Conduct 5-S Meeting as applicable. ** Team Leaders need to assign action items to specific people on the teams and require follow up reports on progress at a minimum of two hour increments.	<input type="checkbox"/> 1. Review Day 2 Agenda (Identify additional Waste Attacks as necessary) <input type="checkbox"/> 2. Assign Team Actions (i.e. create new cell layout, create new diagrams, capture future state measures, create TAKT/Cycle time bar charts and loading diagrams, create standard work combination sheets, etc.) NOTE: KEY HERE IS TO DIVIDE AND ACCOMPLISH <input type="checkbox"/> 3. Meet with any additional Stakeholders, review progress/plans & solicit ideas and concerns. <input type="checkbox"/> 4. After Lunch, review team accomplishments. Assign additional actions/support <input type="checkbox"/> 5. Notify support groups by 1:00 PM of required support <input type="checkbox"/> 6. Review Status/Accomplishment of Newspaper Items <input type="checkbox"/> 7. Prepare & Conduct Daily Team Leader Progress Report Out (TPR, Newspaper Improvements, Layouts, etc.) <input type="checkbox"/> 8. Team Leader/Co-Leader - How Late Do We Stay? <input type="checkbox"/> 9. Develop Plan for Day 3. <input type="checkbox"/> 10. Conduct 5-S Meeting as applicable. <input type="checkbox"/> ** Team Leaders need to assign action items to specific people on the teams and require follow up reports on progress at a minimum of two hour increments.	<input type="checkbox"/> 1. Review Day 3 Agenda (Assess current accomplishments to goals and objectives) <input type="checkbox"/> 2. Assign Team Actions (i.e. run new cell layout and debug layout accordingly, review standard work and debug work instructions as necessary, etc.) NOTE: KEY HERE IS TO ENSURE WE MEET THE GOALS AND OBJECTIVES - ARE WE ON TRACK? IF NOT, HOW DO WE GET THERE? <input type="checkbox"/> 3. Create Necessary Communication Aids (i.e. production control board(s), key Point Sheets, work combination sheets, etc. <input type="checkbox"/> 4. Develop & conduct 5-S and Safety Audit as applicable. (Ensure Audit Forms are Documented) <input type="checkbox"/> 5. Validate Accomplishments identified in Day 2 Item 2 (Create new diagrams/bar charts/instructions as necessary) <input type="checkbox"/> 6. Review Status/Accomplishment of Newspaper Items <input type="checkbox"/> 7. Prepare & Conduct Daily Team Leader Progress Report Out (TPR, Newspaper Improvements, Layouts, etc.) <input type="checkbox"/> 8. Team Leader/Co-Leader - How Late Do We Stay? <input type="checkbox"/> 9. Develop Plan for Day 4. <input type="checkbox"/> ** Team Leaders need to assign action items to specific people on the teams and require follow up reports on progress at a minimum of two hour increments.	<input type="checkbox"/> 1. Review Day 4 Agenda (Assess current accomplishments to goals and objectives - WHAT Actions are necessary to meet our goals and objective by end of the day?) <input type="checkbox"/> 2. Review Status/Accomplishment of Newspaper Items <input type="checkbox"/> 3. Assign Team Actions (NOTE: This is the day WE accomplish and operate to the future state) <input type="checkbox"/> 4. Develop & conduct 5-S and Safety Audit as applicable. (Ensure Audit Forms are Documented) <input type="checkbox"/> 5. Approximately 1:00 PM - Take appropriate after pictures and team pictures - Ensure all open actions are complete or have a plan for completion - Begin compiling NAVSEA RIE Packet Data <input type="checkbox"/> 6. Start Preparing for Final Presentation NOTE: DAY 5 IS FOR COMPLETING OPEN ITEMS AND CONDUCTING FINAL PRESENTATION PRIOR TO LUNCH <input type="checkbox"/> ** Team Leaders need to assign action items to specific people on the teams and require follow up reports on progress at a minimum of two hour increments.

