

**Successful Implementation of
Six Sigma
A Champion Overview
Section 5
Project Management
Ljubljana, Slovenia
April 6, 2004**

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Famous J. M. Juran Quotes

“All quality improvement takes place project by project and in no other way!”

“A Project is a problem scheduled for solution!”*

*To be precise, it should be a chronic problem

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Six Sigma: Project Based!

- Six Sigma is project based for very good reasons:
 - **A Results-Driven Program:** Bypass lengthy preparations. Aim directly at quickly accomplishing measurable gains
 - Introduce improvements incrementally in support of specific goals
 - People learn by doing
 - The psychology of quick successes: success creates encouragement and optimism that it is possible to change
 - **Use empirical evidence:** Learn from facts and measurements, what works and discard what doesn't!
- Well managed projects produce tangible results

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What is Wrong with Activity-Centered Programs?

1. **Not Keyed to Specific Results**
2. **Too Large Scale and Diffused**
3. **Delusional Measurements:** Confuse measures of activities with performance
4. **Bias Towards Orthodoxy, Not Empiricism:** Programs based on faith, not evidence of success

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Results-Driven Six Sigma Programs

- Six Sigma: Focus on achieving *specific, measurable, operational* improvements within a few months
- Examples of specific measurable goals:
 - Increased yield
 - Reduce process variability
 - Reduced delivery time
 - Increased inventory turns
 - Improved customer satisfaction
 - Reduced product development time

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Benefits of the Six Sigma Approach

1. Companies introduce process innovations only when needed

- Require managers to prioritize projects that can achieve the targeted goals
- Just-in-Time introduction of changes
- Improvements introduced to support specific goals

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Six Sigma Benefits

2. Empirical Testing Reveals What Works:

- Because each innovation introduced sequentially links to goals that can be established
- It is relatively easy to assess what works and what doesn't
- By constantly assessing how each initiative contributes to meeting the goals, management act on fact rather than faith

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Six Sigma Benefits

3. Frequent Reinforcement Energizes the Improvement Process:

- Frequent success is a powerful motivator
- Quick tangible results boost the morale of employees
- Results build confidence
- Success encourages management to extend the programs to other areas

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Six Sigma: Benefits

4. Management creates a continuous learning process:

- Learning by building on lessons of previous phases
- Each project is a testing ground for new ways of managing, measuring and organizing for results
- Management can gradually develop a foundation of experience on which to create organization-wide performance improvements

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Project Management

General overview: what is involved

1. Managing Projects individually
2. Managing Projects collectively
3. Overcoming problems

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Project Management: *Individually and Collectively*

- **Projects Collectively**
 - Strategic improvement goals
 - Deployment
 - Projects
 - Resources
 - Progress review
 - Recognition
 - Rewards
- **Projects Individually:**
 - Nomination
 - Screening
 - Selection
 - Charter/Mission statement
 - Project teams
 - Life cycle of projects:
 - » Diagnosis
 - » Remedy
 - » Control – hold on to the gains
 - » Cloning

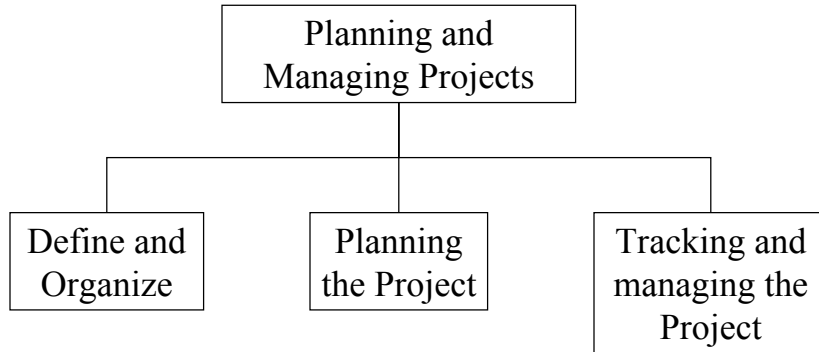
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Project Management



Adapted from HBS, 1996

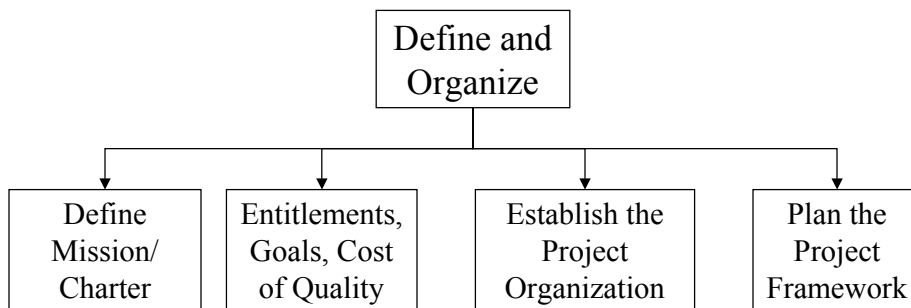
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Define and Organize



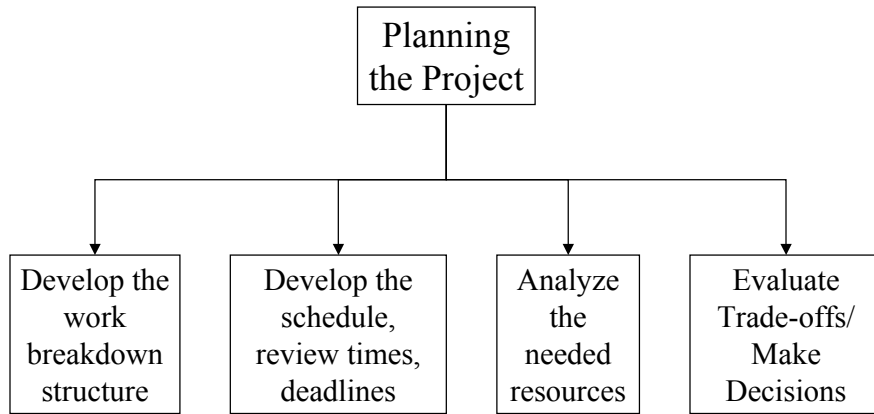
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Planning the Project



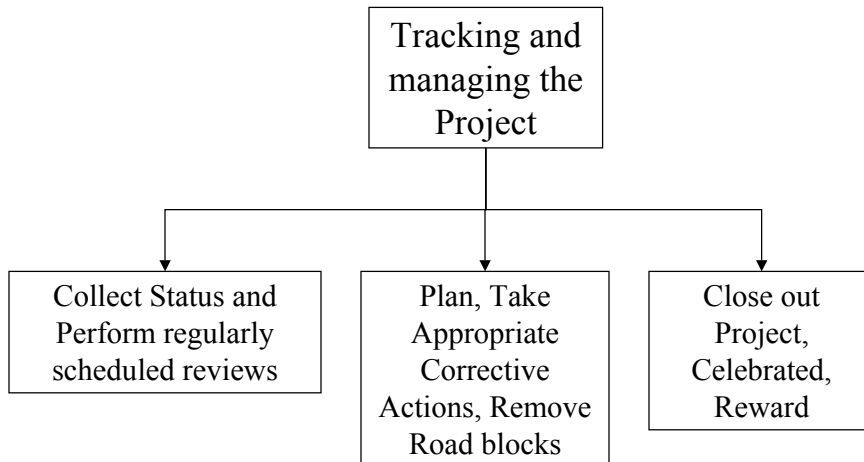
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Tracking and Managing



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Project Tasks: Individually

DMAIC:

- **Define:** Verify and clarify the project need and mission
- **Measure and Analyze:** Diagnosing the causes
- **Improve:** Provide a remedy and prove its effectiveness
- **Control:** Institute controls, hold on to the gains and hand over to operations

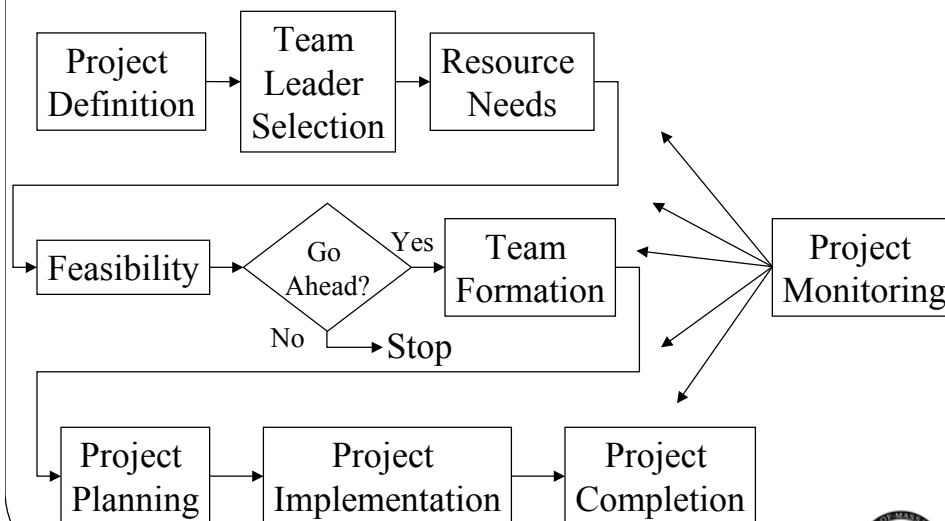
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Project Management Basics



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Project Definition: Charter Statement

- A project is a series of activities designed to achieve a specific outcome within a given budget and time frame
- Clearly defining the charter and objectives is often half the battle
- Charter Statement:
 - Define mission, charter and objectives
 - Be concise, brief and to the point; brevity is a virtue
 - Examples:
 - » Reduce the rate of incorrect invoices
 - » Reduce the number of errors in personal information files
 - » Reduce amount of scrap and spillage on production line
 - » Improve the machine utilization
 - » Reduce down time

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UMass Six Sigma TEAM CHARTER

<i>Process Impacted</i>	<i>Process Impacted Cost/Revenues</i> <i>(projected \$ over next 12 months)</i>						
<i>Black/Green Belt</i>	<i>Telephone Number</i>						
<i>Champion</i>	<i>Department</i>						
<i>Start Date</i>	<i>Target Completion Date</i>						
Element	Description	Team Charter					
1. Process:	The process in which opportunity exists						
2. Project Description:	Describe the project's purpose and scope						
3. Objective:	What improvement is targeted and what will be the impact on Rolled Throughput Yield (RTY), Cost of poor quality (COPQ), etc. ?		Baseline	Goal	Entitlement	Un	
			RTY				%
			COPQ				\$
	???				Per		
					or		
	Benefits of productivity improvements	Payback				\$	
4. Economic Results: <i>(in 2003 Dollars)</i>	What is the improvement in performance (e.g. rework rates and cost reduction) anticipated and when?						
5. Team members:	Who are the full-time members and any expert consultants?						
6. Project Scope:	Which part of the process will be investigated?						
7. Benefit to "Customers"/UMass	Who are the final customers? What benefits will they see? What are their most critical requirements?						
8. Schedule:	Give the key milestones/dates. M- Measurement A- Analysis I- Improvement C- Control Note: Schedule appropriate safety reviews.	Project Start					
		"M" Completion					
		"A" Completion					
		"I" Completion					
		"C" Completion					
	Safety Reviews						
	Project Completion						
9. Support Required:	Do you anticipate the need for any special capabilities, hardware, tools, etc.?						

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UMass Six Sigma TEAM CHARTER

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			RTY		
			COPQ		
			???		
	Benefits of productivity improvements	Payback			

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Team Leader Selection

- Should not be a “warm body” (I.e.someone we can spare because he/she is not busy or needed somewhere else)
- Should be well respected technically and managerially – high integrity
- Organized, effective, able to meet deadlines, flexible and adaptive
- Able to handle conflicts, consensus builder, leader
- Good communication skills
- Willing to work hard

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Resources

- Resources = Money + people + equipment + time
- How many people are needed?
- What type of skills are needed?
- What facilities, materials, equipment, software, etc. are needed?
- How much time will it take?
- What is the total cost of the project?
- Are sufficient funds and people available?

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Feasibility

- Is it possible to complete the project successfully with the available resources and time?
- Are there other projects going on competing for the same resources?
- Is the schedule realistic?
- Can the problem be solved?
- What are the constraints?
- Is the project aligned with the strategic plan?
- Will the project run into major resistance to change or political roadblocks. If so what can be done about it? Does the project have a powerful enough sponsor (Champion) to solve the political problems

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Team Formation

- Team size: $2 \leq \# \text{ People} \leq 6$
- Need diversity of skills: One person can have multiple skills/roles
 - Planner and Coordinator
 - Critic
 - Idea person/innovator/creativity
 - Computer person/software/statistics
 - Implementer/ can-do person
 - Team builder
 - Communicator
 - Assurer of high professional standards
 - Recorder/note taker/documenter
 - External contacts/politics
- All team members must possess a team spirit (no soloist, no prima donna's)

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Project Planning

- Listing activities
- Grouping activities
- Check for gaps
- Create a plan or a Network with time lines
- Make a Gantt chart

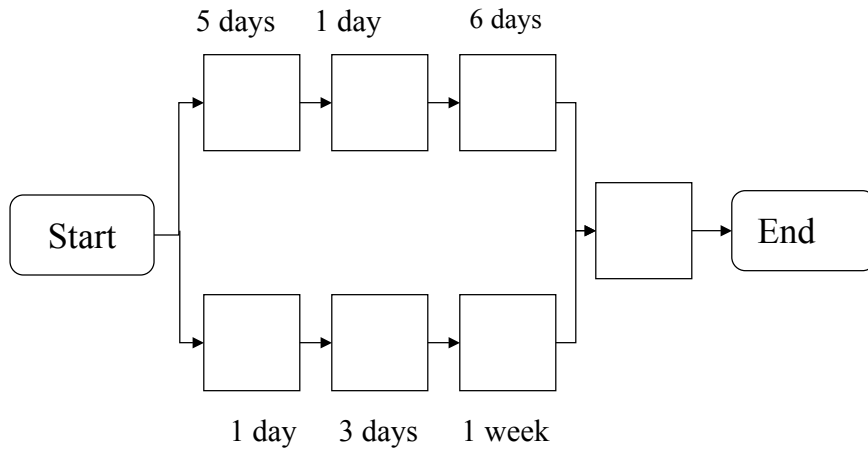
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Planning Network



Critical Path: the loop with the longest cumulative time

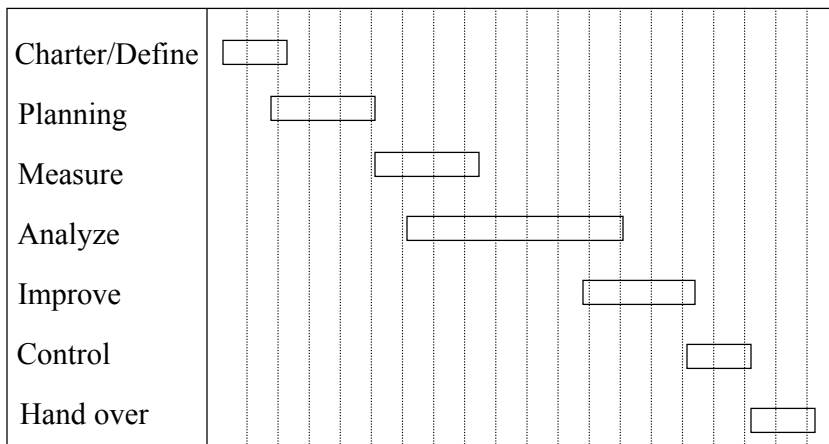
Slack: the difference between the critical path time and current path

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Gantt Chart

Time: weeks



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Project Implementation

- Launch the actual project: Communicate the charter, goal, objective, plan and schedule to the team – motivate the team
- Fine-tune the project plan and schedule with input from the team
- Work actively to build a team that takes advantage of each individual skills and where each member takes personal responsibility for doing their part to make the projects a success
- Encourage free flow of information: Don't kill the messenger of bad news – allow constructive criticism

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Preparing Project Review Reports

- It is essential that there are regularly scheduled project reviews
- All team members should know when these reviews are scheduled and should understand their role in producing the materials for the report

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Team Work Issues During the Project Implementation

- Encourage two-way communication
- Listen to others: Be interested in what other people have to say
- Share knowledge
 - Tell the team what they need to know but also more so they understand the big picture. This allows them to better think about what they need to do and help them be creative
 - Meet often with team members individually and as a group

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Tracking Progress

- Never relax control even when it looks like the project is going according to plan
- Ask the team for ideas about how the project can be accelerated
- Compare current status, schedules, milestones and budgets against the original plan
- Use the regularly scheduled reports to create deadlines for team members

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Project Reviews

- Projects should be reviewed by
 - The Champion on a weekly basis
 - Business Unit management on a monthly basis
 - Six Sigma Council on a quarterly basis
 - Six Sigma Council, Unit management and Champion by the end of the project
- For each of these reviews the project team should prepare a (PowerPoint) report:
 - The weekly reports are summarized into the monthly report
 - The monthly reports are summarized into the quarterly report
 - The quarterly reports are summarized into the final report

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The Project Review Meetings

- Use the project report to develop the agenda: No meeting should ever be called without an agenda
- Prepare the review carefully with PowerPoint slides, graphs and statistics
- Schedule fixed start and ending times
- Require punctuality
- Use agenda to keep the meeting on track
- All meetings should end with a list of action items and a delegation of responsibilities
- End the meeting by summarize the action items (to do's)
- Take minutes of the meeting

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Dealing With Project Team Problems

- Dealing early and directly with interpersonal team problems often prevent them from becoming larger and unmanageable
- Diagnose the root cause of the problems
- What may not sound rational may in fact be, if the reasons are understood
- Listen carefully to concerns raised by all team members – listen to all parties
- Discuss the problems impact and, if significant, look at the options
- Keep all informed, communicate, be fair
- If needed, seek outside help from a neutral party

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Projects Collectively

- It is the responsibility of upper management, the Six Sigma Council and the Champions to manage the projects collectively
- Project Management Collectively involve:
 - Outlining Strategic improvement goals
 - Deployment plans
 - Project selection
 - Resource allocation
 - Education and training
 - Progress review
 - Recognition
 - Rewards

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Projects Collectively: Strategic improvement goals

- Management must begin by identifying the performance improvements that are most urgently needed and set measurable goals to be achieved in a given short time
- The projects must be aligned with the overall strategy of the company

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Six Sigma Project Selection Process

1. Project nomination
2. Project selection
3. Project charter statement
4. Publication

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Nomination of Projects

Topic	Traditional	Six Sigma
Products	Manufactured goods	All products, goods and services whether for sale or not
Processes	Processes directly related to manufacturing	All processes: manufacturing, support, business, administration
Customers	Clients who buy the products	All who are affected, external and internal
Industries	Manufacturing	All industries, service, government
Cost of poor quality	Cost associated with deficient manufacturing goods	All costs that would disappear if everything were perfect

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Project Examples

1. Improving the precision of sales forecast
2. Reducing cycle time for new product development
3. Increase success rate in bidding for business
4. Reducing the time to fill orders
5. Reduce sales cancellation
6. Reducing errors in invoices
7. Reduce the number of delinquent accounts
8. Reduce number of defecting customers in an insurance company
9. Improve on-time arrival rate (airline)

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Sources of Nomination

- Customer dissatisfaction reports
- Evaluation of competitive quality
- Sales force reports
- Service call reports
- Field failure analysis
- Accounting data on cost of poor quality
- Looking in the scrap bin
- Analysis of transactional data: business data mining

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Nomination Mechanism

- Call for nomination: invite all employees to forward proposals
- Making the rounds: Specialists or management visit departments and talk to people
- Council members: Extensive research, data analysis and interviews
- Work force: Often time they know best -- don't ignore them!

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Project Selection

- Criteria for first BB/GB projects (while learning):
 - Chronic problem?
 - Feasible?
 - Measurable in money
 - Significant: BB: saving > \$250,000); GB: savings > \$125,000
- Additional Criteria for Projects thereafter:
 - ROI
 - Amount of potential improvement
 - Urgency
 - Ease of technical solution: easier projects often should take precedence
 - Health of product line: Obsolete vs. thriving
 - Resistance to change: Favorable reception vs. resistance

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Providing Cost of Poor Quality Figures

- By Estimate:
 - Quick and dirty calculations; takes less time
- Experience shows that estimates are sufficient
- Provide hard and soft numbers categorized as such
- Finance and accounting departments can often provide invaluable help

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Reaching Consensus on Selected Projects

- Nominations screened by sub-councils using criteria
- Use Pareto principle (vital few vs. useful many) to make “short list”
- Six Sigma council makes final determination
- Must assure upper management's buy-in and willingness to provide necessary resources to solve the problems (time off, investments in new equipment and permission to make interventions in ongoing processes)

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Deployment Plans

- Phase 1:
 - Initial BB and GB training
 - Initial project hopper
 - First wave reviews and project completion
- Phase 2:
 - Selection of more projects
 - Further training
 - Develop a rigorous review program at all levels
- Phase 3:
 - Make Six Sigma the way we do business

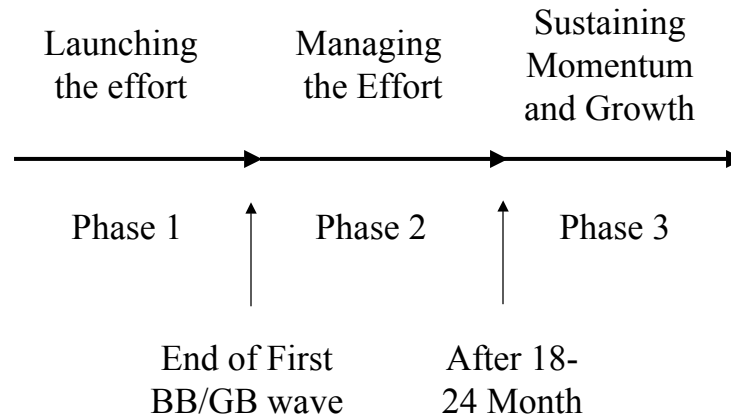
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Institutionalizing Six Sigma: *The Three Phases*



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Project Reviews Collectively

- Upper managements key responsibility after launching a Six Sigma effort is to make sure the projects are successfully completed
- The best way to assure this will happen is to conduct progress reviews, set milestone and monitor the projects
- The organization should develop a comprehensive company wide tracking system

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Project Reviews Collectively

- GB and BB team leaders are responsible to the Champions to make progress on the projects
- The Champions are responsible for the success of the projects to the Six Sigma council
- The Six Sigma council is responsible to Upper management
- At each of these levels there should be regularly scheduled review meetings

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Conclusion

- Organizational change is facilitated by projects
- Projects have a high mortality rate: Unless carefully managed the projects may never be completed
- To improve the success rate we need careful project management individually and collectively
- Project reviews and reports are the key tools for keeping projects on track and on to successful completions

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Topics for Group Discussion

- How does the project review system work at your company?
- How can the system be improved?
- Do Champions have enough time to meet on a weekly basis with the GB's and BB's?
- Do Champions meet on a weekly basis with the GB's and BB's?
- How can we change the system to make it work better?

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