PROFESSIONAL ENGINEERING MANAGEMENT

- MANAGE THE PROJECT AS IT WOULD BE IN INDUSTRY
- CREATE AWARENESS IN VARIOUS AREAS OF PROFESSIONAL ENGINEERING ACTIVITY

PROJECT MANAGEMENT

- SENIOR PROJECT - FORMALIZED TO INCLUDE AN INDUSTRIAL STYLE
- PORTIONS OF PM SELECTED AS TOOLS IN SENIOR PROJECT

PROJECT MANAGEMENT

- P.M. HELPS INSURE SUCCESS OF THE PROJECT
- MOST COMPANIES EMPLOY A P.M. STYLE OF MANAGEMENT
- IMPORTANT TO YOUR ENGINEERING TRAINING TO EXPERIENCE P.M. TECHNIQUES

PROJECT MANAGEMENT

- PLANNING
  - SPECIFICATIONS/REQUIREMENTS
  - THE PROJECT PLAN - WBS & CHARTS
  - RISK ASSESSMENT
- PM FUNDAMENTALS
- EXECUTION – TEAMWORK & MONITORING
- VERIFICATION

PROJECT MANAGEMENT

APPLY PROFESSIONAL STYLE TO:

- PLANNING
- B. EXECUTION
- C. MONITORING
- D. COMMUNICATION

NEED FOR PROJECT MANAGEMENT

- MANAGERIAL APPROACH TO INTERDEPENDENCY, COMPLEXITY, AND CHANGE

- CONSIDERS A PROJECT AS A SYSTEM OF INTERRELATED TASKS IN A CHANGING ENVIRONMENT

NEED FOR PROJECT MANAGEMENT

PM BALANCES THE THREE ULTIMATE GOALS OF A PROJECT:

- SCHEDULE
2. BUDGET
3. PERFORMANCE

PROFESSIONAL PROJECT MANAGEMENT HAS MANY FACETS

- PLANNING INCLUDES TASK ESTIMATION AND CONTINGENCY THINKING
- EXECUTION INCLUDES TEAMWORK AND LEADERSHIP ABILITIES
- MONITORING INCLUDES PAINFULL REVIEWS
- COMMUNICATION INCLUDES PROF WRITING, CLEAR SPEAKING, & GOOD LISTENING HABITS
- ALL ARE INFLUENCED BY ORGANIZATIONAL STRUCTURES

PROJECT MANAGEMENT

A PROJECT IS A TEMPORARY ENDEAVOR UNDERTAKEN TO CREATE A UNIQUE PRODUCT OR SERVICE

N0T AN EXERCISE TO MAKE BUSY WORK OR TO JUST DO SOMETHING

PROJECT MANAGEMENT IS THE APPLICATION OF KNOWLEDGE, SKILLS & TECHNIQUES ON PROJECT ACTIVITIES IN ORDER TO MEET OR EXCEED EXPECTATION

PROJECT MANAGEMENT

INDUSTRY EXPECTATION OF DESIGN PROJECTS

- **PROJECT PERFORMANCE THAT ASSURES COMPLETION ON TIME**
- **DEMONSTRATION OF OPERATING PERFORMANCE TO SPEC SHOWING THEIR MONEY WAS WELL SPENT**
- **P.M. CONSISTS OF TOOLS & TECHNIQUES TO FORCE A PROJECT TO COMPLETION ON TIME AND IN BUDGET**

SENIOR PROJECT EXPECTATION

1. TO COMPLETE YOUR PROJECT TO SPEC AND TO THE SATISFACTION OF YOUR TECHNICAL ADVISOR WITHIN THE SEMESTER TIME FRAME

2. TO PERFORM THE TASK USING PROJECT MANAGEMENT TECHNIQUES

3. TO COMMUNICATE PROFESSIONALLY DISCUSSING REQUIREMENTS, PROGRESS AND COMPLETION IN A CLEAR AND CONCISE MANNER

"WHY DO PLANNING?"

- FIRST OPPORTUNITY TO ENVISION TASKS THAT FIT ALLOCATED TIME FRAME
- IDENTIFY POTENTIAL PROBLEM AREAS
- REDUCE RISK
- INSURE COMPLETION SUCCESS
- PROVIDE DIRECTION WHEN PROBLEMS ARISE

PROJECT PLANNING

PURPOSE IS TO DETERMINE HOW THE PROJECT WILL BE ACHIEVED:

- **WHAT MUST BE DONE**
- **WHO WILL DO WHAT**
- **WHEN WILL TASKS BE DONE**
- **HOW MUCH WILL THEY COST**

PROJECT PLANNING

- MINIMIZE UNCERTAINTY
- AVOID COST & SCHEDULE OVERRUN
- HELP TO INSURE PERFORMANCE ADHERENCE

PLANNING – APPROACH

- PREPARE A DETAILED TASK LIST CALLED A WORK BREAKDOWN STRUCTURE
- A LOGICALLY THOUGHT-OUT LIST OF THINGS TO BE ACCOMPLISHED – AS DETAILED AS POSSIBLE
- PREPARE A SCHEDULE (GANTT) CHART

PLANNING – CHARTS

- PDM - PRECEDENCE DIAGRAM METHOD
  - NETWORK LOGIC DIAGRAM WITH ARROWS SHOWING DEPENDENCIES

2) PERT - PROGRAM EVAL. & REVIEW TECHNIQUE
   - SEQUENTIAL NETWORK LOGIC & WEIGHTED AVERAGE DURATION ESTIMATES WITH DEPENDENCIES

3) CPM - CRITICAL PATH METHOD
   - MIN, MAX & MOST LIKELY TIMES
   - LOCATES THE PATH OF TASKS CRITICAL TO COMPLETION

PLANNING - CHARTS

- **GANTT (BAR) CHART**

  PRESENTS TASKS FROM WBS WITH TIME FRAME – MAY OR MAY NOT SHOW DEPENDIENCIES

5) **MILESTONE CHARTS**

   - PRESENTS COMPLETION DATES OF MAJOR ACTIVITIES

GANTT CHARTS

- MOST COMMONLY USED
- NAMED FOR HENRY L. GANTT IN (WW 1) SHOWING STATUS OF MUNITIONS INDUSTRY
- NOTICED TIME WAS A COMMON DENOMINATOR

GANTT CHARTS

- PROGRESS EASILY SEEN IN EACH BAR'S STATUS WITH RESPECT TO TIME
- HORIZONTAL SCALE DIVIDED INTO TIME UNITS
- VERTICAL SCALE - PROJECT WORK ELEMENTS, TASKS, ACTIVITIES, WORK PACKAGES

GANTT CHARTS

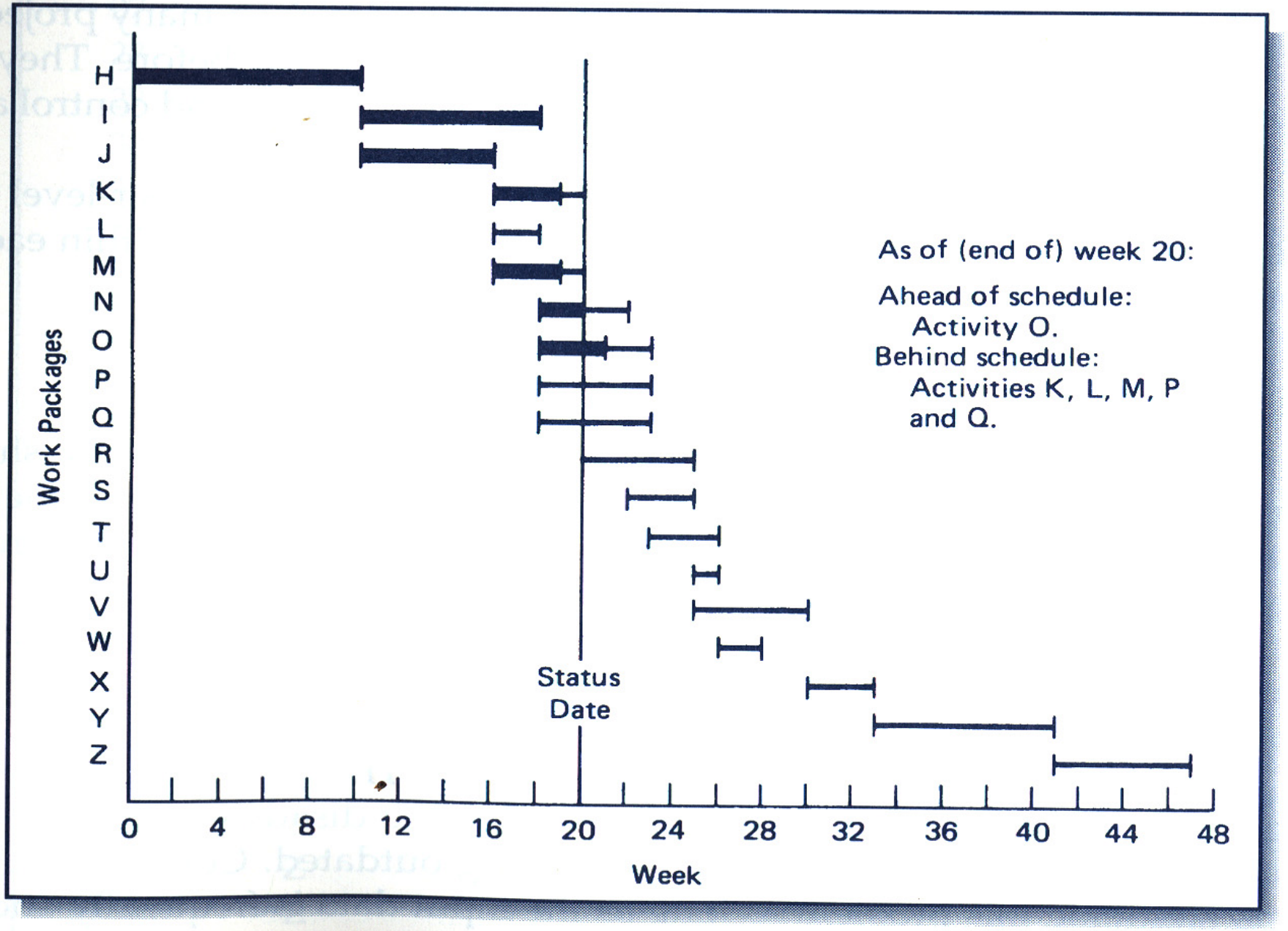
- START & COMPLETION TIMES AT BEGINNING AND END OF EACH BAR
- PREPARE AFTER A WBS ANALYSIS
- TEAM CAN MAKE TIME ESTIMATE BUT SHOULD DEFER TO MOST KNOWLEDGEABLE TEAM MEMBER

GANTT CHARTS

- ALL PROJECTS HAVE TASK PRECEDENCE RELATIONSHIPS

- DETERMINE TASK AND PRECEDENCE <u>BEFORE</u> COMPLETING CHART

Gantt chart for LOGON project showing work progress as of week 20.



GANTT CHARTS ADVANTAGES

- CLEAR PICTORIAL MODEL OF THE PROJECT
- SIMPLE FOR PLANNER & USER
- PROGRESS SEEN BY DARKENING BARS
- CLEAR DETERMINATION OF WHICH TASKS ARE AHEAD AND WHICH ARE BEHIND SCHEDULE

GANTT CHARTS
DISADVANTAGES

- NO EXPLICIT INTERRELATIONSHIPS SHOWN
- DOES NOT REVEAL THE EFFECT OF ONE WORK ELEMENT FALLING BEHIND ANOTHER
- MONITORING SUCCESS DEPENDS ON FREQUENCY AND RELIABILITY OF UPDATED BARS

PLANNING – RISK ASSESSMENT

- **IDENTIFY CAUSE AND EFFECT**
  - **WHAT COULD HAPPEN AND WHAT WOULD RESULT?**

- **ALTERNATELY - IDENTIFY EFFECTS & CAUSE**
  - **WHAT OUTCOMES ARE TO BE AVOIDED OR ENCOURAGED & HOW MIGHT THEY OCCUR?**

RISK ASSESSMENT APPROACH

- DETERMINE WHICH RISKS MAY AFFECT THE PROJECT PROGRESS OR SCHEDULE

2) NATURE OF PROJECT HAS A LARGE AFFECT

  - PROJECTS USING PROVEN TECHNOLOGY ARE INHERENTLY LOWER RISK THAN THOSE NEEDING INNOVATION OR INVENTION

- ARRANGE WBS TO REDUCE RISK

RISK ASSESSMENT APPROACH

- QUANTIFY RISKS THAT HAVE A RANGE OF OUTCOMES
  - ONE RISK EVENT MAY HAVE MULTIPLE EFFECTS AND MAKE A BIGGER PROBLEM

5) MAKE A CONSCIOUS DECISION ON THE NEED FOR A CONTINGENCY PLAN

PROJECT MANAGEMENT

PLANNING

- DEVELOP A CONCEPT & PROPOSE IT
- DEFINE PROJECT INCLUDING SPECS, REQ'S
- MAKE A DETAILED TASK PLAN

EXECUTION

- MONITOR WITH MULTIPLE STATUS REVIEWS
- CONDUCT PERIODIC PROJECT REVIEWS
- VALIDATE FINAL PERFORMANCE

COMMUNICATION

- INTERIM PROJECT REPORT
- FINAL PROJECT REPORT & ORAL PRESENT.

SENIOR PROJECT & PROJECT MANAGEMENT

P.M. TOOLS – IF VIEWED AS A PROJECT AID, YOU WLL SEE:

a) THEY INSURE SUCCESS

b) GAIN EXPERIENCE TO WHAT YOU WILL EXPERIENCE IN INDUSTRY

c) PROPER MANAGEMENT OF THE PROJECT SHARES EQUAL BILLING WITH THE TECHNICAL COMPONENT

PROJECT MANAGEMENT FUNDAMENTALS

- MUST HAVE SPECS. OR REQUIREMENTS TO KNOW WHAT YOUR TARGET IS AND WHEN YOU ARE DONE
- MILESTONE AND PROJECT COMPLETION DATES ARE NON-NEGOTIABLE
- CONSTANT MONITORING OF THE PROJECT PLAN IS ESSENTIAL

PROJECT MANAGEMENT FUNDAMENTALS

- GOOD TEAMWORK IS KEY TO SUCCESS
- PROJECTS WITH OUTSIDE DEPENDENCIES MUST HAVE BACK UP PLANS
- THE PROJECT PLAN MUST HAVE ONE SUB LEVEL OF DETAIL, i.e.
  - CIRCUIT BOARD DESIGN
    - LAYOUT
      - FABRICATION
        - CONFIRMATION TESTING

PROJECT MANAGEMENT FUNDAMENTALS

- PROJECT PLAN REQUIRES INDIVIDUAL TEAM MEMBER ASSIGNMENTS
- PLAN AHEAD, PREPARE ALTERNATE APPROACHES AND FOCUS ON MEETING REQUIREMENTS IN THE TIME ALLOCATED

PROJECT MANAGEMENT PRINCIPLES

INITIAL PHASE - CONCEPT DEFINITION

- CONCEPT TALKS ABOUT THE PROBLEM TO BE SOLVED AND THE SCOPE OF THE PROJECT TO SOLVE IT. HOW FAR WILL THE PROJECT GO AND WHAT WILL BE INVESTIGATED

- CONCEPT INCLUDES PRELIMINARY OBJECTIVES WHICH MAY CHANGE AS THE TASK IS FURTHER DEFINED

- CONCEPT DOES NOT INCLUDE A DETAILED PLAN OF "HOW" OR A FINAL SPECIFICATION OF THE PRODUCT OR A LAYOUT OF THE TASK DESCRIPTION

PLANNING PHASE

2ND PHASE - PROJECT DEFINITION

- DEFINITION FOCUSES ON SPECIFICATION COMPLETION TO QUANTIFY THE "WHAT"
- IF HARD NUMBER SPECS CANNOT BE PROVIDED, FUNCTIONAL REQUIREMENTS MUST BE PRESENTED
- IF YOU DON'T HAVE A SPEC, YOU CANNOT DEMONSTRATE PROJECT COMPLETION

SPECIFICATION - BENEFITS

- THE CLARITY WILL REVEAL MISUNDERSTANDINGS
- COMPLETENESS WILL REMOVE CONTRADICTORY ASSUMPTIONS
- THE RIGOR WILL EXPOSE NECESSARY DETAILS
- THE EFFORT FORCES DETAILED THINKING
- PROVIDES THE BASIS TO TRACK CHANGES

PROJECT DEFINITION

- PREPARE WORK BREAKDOWN STRUCTURE TO AS LOW A LEVEL OF DETAIL AS POSSIBLE
- DETERMINE INDIVIDUAL RESPONSIBILITIES BASED ON EXPERTISE, ABILITY & MOTIVATION
- PREPARE SCHEDULE USING GANTT CHART
- PREPARE BUDGET ESTIMATE

PLANNING PHASE

- **THE TASK PLAN IS DETAILED TO THE LOWEST LEVEL THAT CAN BE COMPREHENDED**
- **THE PROJECT PLAN IS PRESENTED USING A S/W PACKAGE LIKE *MICROSOFT PROJECT* OR EQUIVALENT**
- **IT MUST BE UPDATABLE TO SHOW PROGRESS OVER TIME ACROSS THE VARIOUS TASK BARS OF A GANTT CHART**

EXECUTION PHASE - TEAMS

- REQUIRES A LEADER. MAY MOVE AROUND DURING THE COURSE OF THE PROJECT
- EACH TEAM MEMBER HAS A ROLE WITH SPECIFIC TASK ASSIGNMENTS – RESPONSIBLE TO TEAM
- THE TEAM LEAD ORGANIZES THE TASKS AND REPORTS WITH HELP FROM OTHER MEMBERS
- THE TEAM LEAD IS GIVEN OVERALL DIRECTION AUTHORITY BY THE OTHER TEAM MEMBERS & IS RESPONSIBLE TO PRESENT ONGOING REPORTS

EXECUTION PHASE - MONITORING

- COMPARE ACTUAL PROJECT PERFORMANCE TO PROJECT PLAN
  TIME & COST

- IF DISCREPANCIES EXIST, CORRECTIVE ACTION MUST BE TAKEN, I.E. WORK ARROUNDS

- MODIFY SCHEDULE TO INCLUDE CORRECTIVE ACTION

EXECUTION PHASE

VERIFICATION

SPECIFIC TASK WITHIN THE PROJECT PLAN REQUIRING A DEFINITION ON HOW THE ORIGINAL SPECIFICATION OR SET OF REQUIREMENTS WILL BE PROVEN

THIS IS THE CULMINATION OF THE PROJECT DEMONSTRATING SATISFACTORY COMPLETION

COMMUNICATION & REPORTING

- INCLUDES WRITING, SPEAKING & PRESENTING
- NOT JUST TECHNICAL WRITING
- LISTENING IS VERY IMPORTANT AS WELL

COMMUNICATION & REPORTING

PROGRESS REPORTS – TEMPLATE:

- WHAT WAS PLANNED TO HAPPEN ?
- WHAT ACTUALLY HAPPENED ?
- WHAT PROBLEMS WERE ENCOUNTERED?
- WHAT WORK-AROUNDS WERE EMPLOYED TO STAY ON PLAN?
- DO ANY PROBLEMS THREATEN COMPLETION?

PROGRESS REPORTS – CON'T.

- **MUST INCLUDE AN UPDATE TO THE PROJECT PLAN USING THE GANTT CHART DEVELOPED IN THE PROJECT DEFINITION**

PROJECT REVIEWS

- THE CONTENT OF THE PROGRESS REPORTS USED AS BASIS
- TEAM PRESENTS VERBALLY
- PLAN MUST BE UPDATED & PRESENTED
- ONE HELD DURING EACH HALF OF THE SEMESTER – SIGN UP TBD
- ENTIRE TEAM ATTENDENCE MANDATORY
- NOT INTENDED AS A TECH REVIEW UNLESS AN ITEM AFFECTS SCHEDULE

INTERIM PROJECT REPORT

- IS A MAJOR MILESTONE

- PRESENT FINAL SPECS & PLAN
- INCLUDE PLAN AS GRAPHIC DISPLAY IN THE NARRATIVE

- DO NOT PRESENT AS A RENDITION OF EVENTS LIKE A DIARY. FOCUS ON SPECS AND THE PROJECT PLAN

- AVOID WRITING IN THE FIRST PERSON

- THE FINAL VERIFICATION APPROACH MUST BE CLEARLY DESCRIBED

FINAL PROJECT REPORT

- MAJOR MILESTONE -- CULMINATION OF THE PROJECT
- MUST EMPHASIZE ORIGINAL REQUIREMENTS
- VERIFICATION IS THE PROOF OF PROJECT COMPLETION AND THE HIGHLIGHT OF THE REPORT
- PRESENT THE ORIGINAL PROJECT PLAN WITH WORK-AROUNDS AND EXPLAIN ADJUSTMENTS

PROJECT MANAGEMENT SUMMARY

- MAKE A DETAILED SPEC OR REQUIREMENTS LIST & PLAN, BREAKING THE TASKS DOWN TO THE LOWEST UNDERSTANABLE LEVEL
- STICK TO THE PLAN
- MAKE WORK-AROUNDS WHEN PROBLEMS ARISE, BUT STAY ON PLAN

- **STAY FOCUSED ON THE PRIORITY OF VERIFICATION TO PROVE COMPLETION**
- **PERFORM AS A TEAM -- LEADER AND CONTRIBUTORS , EACH PERSON HAS A DEFINED ROLE -- NOT SATISFACTYORY TO SAY " EACH OF US WAS INVOLVED IN ALL THE PARTS"**
- **COMMUNICATE CLEARLY & CONCISELY WITH A FOCUS ON THE SPEC AND THE PLAN**

PROFESSIONAL CONTRIBUTION TO GRADE

- TEAM'S ABILITY TO MAINTAIN THE ORIGINAL PLAN
- ABILITY TO CREATE WORK-AROUNDS WHEN PROBLEMS ARISE. MAINTAIN THE CONTENT OF THE ORIGINAL PLAN IN SPITE OF PROBLEMS
- ABILITY TO PRODUCE A CONVINCING PROOF THAT ORIGINAL SPECS WERE MET
- ABILITY TO COMMUNICATE CLEARLY AND PROFESSIONALLY IN ALL THE REPORTS AND PRESENTATIONS

CONSIDERATIONS for S/W PROJECTS

- **PREPARE A REQUIREMENTS DOCUMENT**
- **LAY OUT TASKS SO PROGRESS CAN BE SEEN**
- **USE SOME FORM OF MODULAR DESIGN SO PERCENTAGE OF COMPLETION CAN BE EASILY SEEN**
- **DO NOT USE GENERAL COMMENTS AS 'DEBUGGING'. THEY HAVE NO DEFINED END**
- **PREPARE A TEST SPEC THAT DEMONSTRATES SATISFACTORY PERFORMANCE**

PROFESSIONAL ENGINEERING WRITING

" IT IS A GOOD THING, PERHAPS, TO WRITE FOR THE AMUSEMENT OF THE PUBLIC, BUT IT IS A FAR HIGHER AND NOBLE THING TO WRITE FOR THEIR INSTRUCTION, THEIR PROFIT, THEIR ACTUAL AND TANGIBLE BENEFIT "

Mark Twain, "Curing a Cold"

NEED FOR GOOD WRITTEN COMM

- ENGINEER'S PREDOMINANT PRODUCT

  - PAPER –

  - UP TO 30% OF WORKTIME IS WRITTEN

- ENGLISH CLASS

  -LITERATURE APPRECIATION STRESSED

  - NOVEL IS ENTERTAINMENT

  - KNOWLEDGE DISPLAY NOT TECH WRITING

- ENGINEERING REPORT

  -CONVEY SIGNIFICANT INFORMATION

  -SUPPORTED WITH MINIMUM ARGUMENT

  -REMOVE NON-ESSENTIAL NOISE

NEED FOR GOOD WRITTEN COMM

- ABSOLUTELY VITAL TO ACTIVELY DEVELOP SKILL IN WRITING AS A PROFESSIONAL ENGINEER
- PROJECT SUCCESS WILL DEPEND ON IT
- MUCH COMMUNICATION WITH UPPER MANAGEMENT IS IN WRITING
- CAREER SUCCESS DEPENDS ON THE QUALITY OF YOUR WRITING

GOALS OF TECHNICAL WRITING

- CLARIFY & EXPLAIN DEVELOPMENTS FOR BOTH THE WRITER & READER
- PLAN NEXT STAGES
- CONVEY INFORMATION
- WRITING IS CENTRAL TO ANY DESIGN ACTIVITY:
  - WRITTEN PROCEDURES AID IN FIXES
  - PRODUCT MANUALS ALLOW QUICKER REPAIRS

TECHNICAL WRITING OVERALL GUIDELINES

- **ESTABLISH THE AIM – WHAT INFO IS NEEDED**

2) **CONSIDER THE READER – INFO THEY NEED TO KNOW MUST REACH THEM**

3) **DEVISE THE STRUCTURE – CLEAR , ORDERLY, ACCESSIBLE, DISTINCT SECTIONS**

- **DRAFT THE TEXT, EDIT & REVISE**

-CHECK FOR CLARITY & EFFECTIVENESS

USE OF DIAGRAMS

- **DIAGRAMS MAY BE MUCH BETTER THAN WORDS**

- **<u>BUT</u> --- CARELESS DESIGN WILL LOSE BENEFIT**

- **ADD INFORMATIVE LABELS, TITLES, HIGHLIGHT KEY ENTRIES AND REMOVE UNNECESSARY INFO.**

THINGS TO AVOID

- ERRORS IN SPELLING & PUNCTUATION
- ERRORS IN MEANING – USING THE WRONG WORD
- LENGTHY OR RAMBLING SENTENCES
- LONG WORDS UNLESS ESSENTIAL TO MEANING
- JARGON – THE ASSUMPTION THAT THE READER KNOWS WHAT YOU'RE TALKING ABOUT
- WORDINESS

PROFESSIONAL ENGINEERING WRITING

WRITING OF A PROFESSIONAL ENGINEER SHOULD BE

CLEAR, CONCISE & COMPLETE

PROJECT WORK FOR A PROFESSIONAL ENGINEER

- ACTUAL TECHNICAL WORK WILL BE SMALL COMPARED TO ESTIMATING, REPORTING, SPECIFYING, SELLING, TECHNICAL INTERFACING AND VERIFICATION
- CLEAR COMMUNICATION IS ESSENTIAL FOR A SUCCESSFUL ENGINEER
- P.M. IN ONE FORM OR ANOTHER IS USED BY MOST COMPANIES ACROSS THE COUNTRY. IT IS IMPORTANT FOR YOU TO BUY INTO ITS USE.

- ESTIMATES & PLANS ARE AT BEST EDUCATED GUESSES. THINGS GO WRONG. BUT END DATES USUALLY DO NOT CHANGE UNLESS MAJOR SPECS ARE NOT MET.
- IT IS IMPORTANT TO BE FLEXIBLE WITH WORK-AROUNDS
- CONSTANTLY MAKE CONTINGENCY PLANS FOR WHAT CAN GO WRONG PARTICULARY FOR TASKS NOT IN YOUR CONTROL
- MURPHY IS ALIVE PARTICULARLY IN NEW DEVELOPMENT PROJECTS

- KEEP FOCUSED ON THE ORIGINAL SPEC REQUIREMENT
- MAKE GOOD USE OF YOUR TIME EVEN IF YOU ARE WAITING FOR OTHER THINGS TO HAPPEN. BE CONSCIOUSLY AWARE OF YOUR PRIORITIES AT ALL TIMES
- BE AWARE THAT ALTHOUGH WE ARE NOT FOCUSING ON FINANCIAL MONITORING, IN FACT IT PROBABLY SUPERCEDES EVERYTHING ELSE IN INDUSTRY
- ALL TEAMS MUST SIGN UP FOR PROJECT REVIEWS

ORGANIZATIONS & P.M.

LINE MANAGEMENT

- **PATTERNED AFTER MILITARY ORG**
  - **HEAD (GENERAL)**
  - **CHAIN OF COMMAND – EXEC.,CAPT, SARG.**
  - **WORKER (SOLDIER)**
- **TYPICAL INDUSTRIAL SET-UP**
  - **HEAD (CHAIRMAN)**
  - **CHAIN OF COMMAND – CEO,V.P.'S, GENERAL MGR.**
  - **LOCAL (DEPT HEAD & WORKER)**

LINE MANAGEMENT

- ORGANIZATION INTENDED TO COMMUNICATE VISION FROM TOP MANAGEMENT TO WORK FORCE IN AN EFFICIENT MANNER
- FACILITATE REPORTING BACK TO DETERMINE SUCCESS
- ONE'S SUCCESS IS DETERMINED BY RANK

THE MATRIX

- ALTERNATE FORM OF MANAGEMENT
- SPECIFIC DISCIPLINES EXTRACTED FROM LINE AND PLACED IN TEAMS
- FOCUS ON PROJECT COMPLETION AND MINIMIZATION OF TIME
- MAINTAIN CLEAR CUSTOMER REQ. CONNECTION

THE MATRIX

- PROJECT MANAGER REPORTS TO TOP MANAGEMENT

- MANAGEMENT'S INTEREST - FINANCIAL
  - PROJECT FUNDING
    - ON TIME COMPLETION
      - MARKET FORCAST
  - PRODUCT PERFORMANCE INCLUDING COST

HYBRID ORGANIZATION

- MOST COMPANIES HAVE SOME FORM OF MIX BETWEEN LINE AND MATRIX
- LINE IS MAINTAINED THROUGH SEVERAL LAYERS
- TEAMS FORMED FROM FUNCTIONAL GROUPS

HYBRID ORGANIZATION

- PROJECT LEADERS ARE SELECTED FROM THE DISCIPLINE THAT SUITS THE PROJECT
- PERSONNEL REMAIN CONNECTED TO THE FUNCTIONAL GROUP AND ARE "ON LOAN" TO THE PROJECT
- PROJECT MANAGER MAY RANK EQUIVALENT TO A GENERAL MANAGER OR HIGHER

THE HYBRID ORGANIZATION

- PROGRAM MANAGER IMPLIES RESPONSE BEYOND THE TECHNICAL PROJECT
- INCLUDES FINANCIAL, MARKETING, MANUFACTURING OR OTHER AREAS
- PROJECT MANAGER IMPLIES A MORE LOCAL RESPONSIBILITY – SOME OF ABOVE BUT NOT ALL
- TEAM LEADER USUALLY IS AT THE TECHNICAL PROJECT LEVEL ONLY

TEAM MEMBER CHARACTERISTICS

- A MATURE OUTLOOK IS NECESSARY
- TWO BOSS SYNDROME
  - PROJECT LEADER
  - FUNCTIONAL LEADER
- PERSONNEL REVIEWS -- INPUT FROM TEAM LEADER & FUNCTIONAL BOSS
- FUNCTIONAL GROUP LEADER REVIEWS – PERSONAL GROWTH IS MEASURED AND MERIT RAISE EMINATES HERE

TEAM MEMBER CHARACTERISTICS

- REVIEW RATING STRONGLY INFLUENCED BY PROJECT LEADER'S RECOMMENDATIONS
- PERSONAL COMMITMENT NECESSARY OTHERWISE STRESS OF TWO BOSSES WILL EVENTUALLY CAUSE A PROBLEM
- POLITICS BETWEEN GROUPS AND TEAMS CAN ALSO INFLUENCE ONE'S THOUGHT PROCESS
- ABOVE INFLUENCES CAN DETRACT FROM A PERSONAL INTEREST IN TECHNICAL MATTERS

MATRIX SUMMARY

- TEAMS AND TEAMWORK
- ABILITY TO PERFORM WITHIN VARIOUS GROUPS
- MEET COMMITMENTS
- BE FLEXIBLE AND MOVE WHERE NEEDED
- GO BEYOND WHAT IS "JUST ENOUGH"

MATRIX SUMMARY

- DEMONSTRATE DEPENDABILITY
- COMMUNICATE CLEARLY AND CONCISELY – SEVERAL ORG TIERS ABOVE YOU ANALYZING YOUR RESULTS
- DEMONSTRATE LEADERSHIP
- DEAL WITH THE TWO BOSS SYNDROME

MATRIX & PROJECT MANAGEMENT

- P.M. IS THE METHODOLOGY WITHIN THE MATRIX
- THE MATRIX PROVIDES PROJECT LEADERS FOR THE TECHNICAL RUNNING OF THE PROJECT
- THE MATRIX PROVIDES PROGRAM MANAGERS FOR MULTIPLE PROJECTS

LEADERSHIP & PROJECT MANAGEMENT

- LEADERSHIP IS ABOUT CREATING VISION
- HAVING THE ABILITY TO TRANSLATE VISION INTO REALITY AND TO SUSTAIN IT
- PROJECT LEADERSHIP IS THE ABILITY TO GET THINGS DONE THROUGH PEOPLE
- INVOLVES PROVIDING CLEAR DIRECTION TO ACHIEVE SPECS WITHIN BUDGET & TIME BY DEVELOPING TEAMWORK

LEADERSHIP & PROJECT MANAGEMENT

- LEADERS NEED DIFFERENT SKILLS & STYLES AT DIFFERENT PHASES OF THE PROJECT LIFE CYCLE

- LEADERSHIP IS A PERSONAL CHOICE NOT EVERYONE MAKES

- STEMS FROM AN INTERNAL DRIVE TO EXCELL
- SOME CHOOSE TO BE FOLLOWERS NOTHING WRONG WITH THAT

PRINCIPLES OF PROJECT LEADERSHIP

- HAVE VISION, COURAGE, & COMMITMENT
- DEVELOP TECHNICAL PROFICIENCY
- KNOW YOURSELF & SEEK IMPROVEMENT
- KNOW YOUR TEAMMATES & SUPPORT THEM
- COMMUNICATE EFFECTIVELY TO KEEP PEOPLE INFORMED

PRINCIPLES OF PROJECT LEADERSHIP

- EMPHASIZE LONG TERM PRODUCTIVITY
- ENCOURAGE GROUP PARTICIPATION
- MAKE SOUND TIMELY DECISIONS
- EMPOWER THOSE AROUND YOU

PRINCIPLES OF PROJECT LEADERSHIP

- MATCH SKILLS TO NEEDS
- LISTEN EFFECTIVELY & ENCOURAGE NEW IDEAS
- GIVE POSITIVE F.B. & RECOGNITION
- SEEK RESPONSIBILITY AND ACCEPT ACCOUNTABILITY

LEADERSHIP THEORIES & MODELS

BASED ON:

- **PERSONAL TRAITS – INTELLIGENCE, MATURITY**
- **PERSONAL BEHAVIOR – WHAT THEY DO**
- **REACTION TO EVENTS – CAUSE AND EFFECT**
- **ONES OWN PERSONALITY – CHARACTERISTICS**
- **NEED TO INFLUENCE OTHERS -- CHARISMA**

- **YOU NEED TO DEVELOP YOUR OWN STYLE BASED ON YOUR VALUES AND MANY OF THE ABOVE**

LEADERSHIP QUALITIES

L LISTEN TO TEAM MEMBERS AND THE CUSTOMER – BUILD TRUST AMONG ALL

E ENCOURAGE ALL TEAM MEMBERS -- MOTIVATION

A ACT AS A COHESIVE TEAM -- INSPIRE TO HIGH PERFORMANCE

D DELIVER THE DELIVERABLES – MEET REQ

LEADERSHIP & THE PROJECT LIFE CYCLE

- PHASE A – FEASIBILITY (PRE FORMULATION)
- MAJOR ATTRIBUTE & EMPHASIS
  - SENSE OF VISION
    - CONCEPTUAL - SEES THE BIG PICTURE
      - ANALYTICAL
- LEADERSHIP STYLE -- BLEND
  - VISIONARY
    - CREATE FUTURE
      - EMPOWERMENT
        - EXPANSIVE

LEADERSHIP & THE PROJECT LIFE CYCLE

- PHASE B – CONCEPTUAL (FORMULATION)
- MAJOR ATTRIBUTE & EMPHASIS
  - LISTENING
    - ANALYSIS
      - ALIGNMENT
- LEADERSHIP STYLE -- BLEND
  - ANALYTICAL
    - LISTENER
      - CHANGE MASTER
        - CONVERGENCE

LEADERSHIP & THE PROJECT LIFE CYCLE

- PHASE C – DEVELOPMENT
- MAJOR ATTRIBUTE & EMPHASIS
  - PARTICIPATIVE
    - ACCEPTANCE
      - COMMITMENT
        - CO-OPERATIVE
- LEADERSHIPT STYLE – BLEND
  - TEAM BUILDER
    - POWER & INFLUENCE
      - INTEGRATOR

LEADERSHIP & THE PROJECT LIFE CYCLE

- PHASE D – EXECUTION

- MAJOR ATTRIBUTE & EMPHASIS
  - RE-ALIGNMENT

- LEADERSHIP STYLE – BLEND
  - DECISION MAKER
    - BALANCE TO WORK AND FUN
      - TRUSTWORTHINESS
        - SYNERGY OF TEAM

LEADERSHIP & THE PROJECT LIFE CYCLE

- **PHASE E - COMPLETION**

- **MAJOR ATTRIBUTE & EMPHASIS**
  - **PRODUCT TRANSFER & INFORMATION**

- **LEADERSHIP STYLE – BLEND**
  - **ADMINISTRATOR**
  - **CLOSURE**

LEADERSHIP -- SUMMARY

- LEADERSHIP STEPS OUT IN THE FRONT OF THINGS
- BUT IT DOES NOT OVERPOWER OTHERS ON THE TEAM; RATHER IT ENCOURAGES AND MOTIVATES
- IT ALWAYS GIVES CREDIT WHERE IT IS DUE
- IT CONFRONTS IN A CONSTRUCTIVE MANNER AND NEVER BECOMES PERSONALLY DESTRUCTIVE

COMMUNICATION AN ALTERNATE APPROACH

- GOOD COMMUNICATION IS A NECESSITY
- ENHANCES CAREER OPPORTUNITIES
- HELPS BUILD LEADERS
- CONTRIBUTES TO PERSONAL STATUS
- SENDS STRONG SIGNAL TO ORGANIZATION

ACTIVE LISTENING

- HIGHER ORDER FORM OF COMMUNICATION
- MORE IMPORTANT THAN VERBAL BECAUSE:
  - CONTRIBUTES TO TEAM BUILDING
  - GENERATES RESPECT
  - DEVELOPES LEADERSHIP STYLE
  - HELPS GET THE TASK ACCOMPLISHED
- GOOD LISTENING IS CRITICAL WHEN PARTICIPATING IN A TEAM

ACTIVE LISTENING

- CAN'T LEARN WHEN YOU ARE TALKING
- CAN HEAR IDEAS DIFFERENT FROM YOUR OWN
- MAKES THE OTHER PERSON TALKING – HEARD
- INVOLVES 'PLAYING BACK' SOME INFO YOU HEAR FROM THE PERSON SPEAKING

ACTIVE LISTENING

- REQUIRES ATTENTION WITH INVOLVED BODY LANGUAGE:
  - ACKNOWLEDGEMENT
    - PARAPHRASING
      - SUMMARIZING
- INVITES OTHERS TO:
  - SUGGEST SOLUTIONS TO BE TRIED
    - FORM THEIR OWN INTERPRETATIONS
      - DRAW THEIR OWN INFERENCES

ACTIVE LISTENING - MEANINGS

- OPEN AND SENSITIVE TO THE NEED TO LISTEN *AND* BE LISTENED TO
- LISTEN WITH *ALL* SENSES, NOT JUST EARS
- RECOGNIZE MANY LANGUAGES, SYMBOLS AND CODES PEOPLE USE TO EXPRESS THEMSELVES
- PRODUCE QUESTIONS, NOT ANSWERS

MEANINGS

- WELCOME DIFFERENCES
- RECOGNIZE OTHERS POINT OF VIEW
- OPEN TO CHANGE
- OVERCOME FEELING OF EMPTINESS WHEN CERTAINTIES ARE QUESTIONED
- BASIS FOR ANY LEARNING RELATIONSHIP

MEANINGS

- TAKES PLACE IN "LISTENING CONTEXT"
- ONE LEARNS TO LISTEN AND NARRATE
- EACH PERSON PRESENTS OWN INTERPRETATIONS OR THEORIES WITH ACTION, EMOTION, EXPRESSION
- UNDERSTANDING AND AWARENESS ARE GENERATED THROUGH DIALOGUE & SHARING

P.M. CONNECTION TO SENIOR PROJECT

- PROF. MANAGEMENT ENVIRONMENT
- WORK IN TEAMS WHERE EVERYONE CONTRIBUTES TO A SUCCESSFUL PROJECT
- CREATE PLANS & MAKE COMMITMENTS
- PREPARE WRITEN AND VERBAL REPORTS ON PROGRESS AND PERFORMANCE

P.M. CONNECTION TO SENIOR PROJECT

- PARTICIPATE IN PERIODIC REVIEWS
- FORECAST PERFORMANCE AND THEN DEMONSTRATE IT
- GRADUATE TO BIGGER THINGS AT THE END OF THE YEAR