

Selling Planning, Coordination, and Scheduling to Management and Operations

How can the crucial maintenance functions of planning, coordination and scheduling be sold to management and how can all departments be convinced to follow the procedures necessary to capture the full benefit of planning and scheduling? The first challenge is to gain managerial approval to fund planner positions, train the staff, and build databases of crucial support information. The second challenge is to gain true commitment from Operations, Purchasing, Storeroom, and other organizational units.

SELLING MANAGEMENT

Within most organizations, the battle for funding is extremely competitive. Maintenance begins with two strikes because the function is poorly understood and therefore under appreciated. Why invest in a function that is viewed only as a “necessary evil”? The second strike is that on the surface maintenance does not contribute to the “bottom line.” In the traditional “Who adds value?” analysis maintenance doesn’t seem to add value.

In fact, investments in maintenance yield significant returns and do add value. We must sell our contributions; which are capacity assurance, reliability, and customer satisfaction at lower unit cost. Often we must edu-

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cate before we can sell. Understanding precedes appreciation. Facts and quantification are necessary to gain managerial attention. This drive for facts justifies the need for the CMMS (Chapter 17).

WORK SAMPLING

When the necessary information to make your case is not available from CMMIS (computerized maintenance management information system), Activity Sampling becomes the alternative vehicle. For the uninitiated, this technique uses random observations of the maintenance work force with categorization by nature of each observation (Figure 1.1). Sufficient observations must be made to gain statistical reliability (approximately 700 per population). This means that if you consider the entire maintenance organization as a single population, only 700 observations are necessary. However, if the desire were to separate mechanics from electricians on each of three shifts, 4200 observations would be required to gain statistical reliability.

When this technique is applied, both the time of day that observation tours are made and the path of the tour must be randomized to avoid bias. If observers travel only the aisles, they will observe a disproportional amount of travel.

Sampling results can be used to show management the amount of technician capacity lost for lack of proper preparation of maintenance jobs. If maintenance is still in the reactive mode, results will approximate those shown in Figure 1.1, which compares typical sampling results for reactive maintenance with results for pro-active environments. The percentages presented reflect a number of studies in a variety of industries.

If the management team will not accept the data presented as being representative of the local environment, a site-specific sampling is needed.

The 35% direct work in reactive mode versus the 65% direct work in pro-active mode provides a simple but clear justification for establishment of a Planning, Coordination, and Scheduling function (Figure 1.2). Two supervisors, each with a ten person crew but without planner support will have only seven full-time equivalents “pulling the wrenches” to complete work.

The same two supervisors with planner support (even if it was established without a headcount increase) will have 12.4 full-time equiva-

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Figure 1.1 Typical Maintenance Worker's Day - Reactive versus Pro-Active

	Reactive without planning & scheduling	Proactive with planning and scheduling
Receiving Instructions	5%	3%
Obtaining tools and materials	12%	5%
Travel to and from job (both with and without tools and materials)	15%	10%
Coordination delays	8%	3%
Idle at job site	5%	2%
Late starts and early quits	5%	1%
Authorized breaks and relief	10%	10%
Excess personal time (extra breaks, phone calls, smoke breaks, slow return from lunch and breaks, etc)	5%	1%
Subtotal	65%	35%
Direct actual work accomplished (as a percentage of the whole day)	35%	65%

Figure 1.2 Simple Justifications For Planner Position

Two Crews without planning		Two Crews with planning	
2	Supervisors	2	Supervisors
0	Planner	1	Planner
20	Total Craftspeople both crews	19	Total Craftspeople both crews
35%	Direct work percentage	65%	Direct work percentage
7.0	Equivalent Full Time workers	12.4	Equivalent Full Time workers

Improved Output from Planning and Scheduling 77%

lents pulling wrenches. This is a net productivity improvement of 77%, which is a fine return from any investment.

Another way to appreciate the advantage of job planning is to depict what happens within an individual job without planning. Technicians jump into the work without forethought. Shortly they encountered a delay for lack of a spare part, tool, or authorization. This sequence may be repeated several times before the job is completed. In the planned mode, the needs are anticipated and provided for before a technician is assigned. The comparison is graphically presented on the next page.

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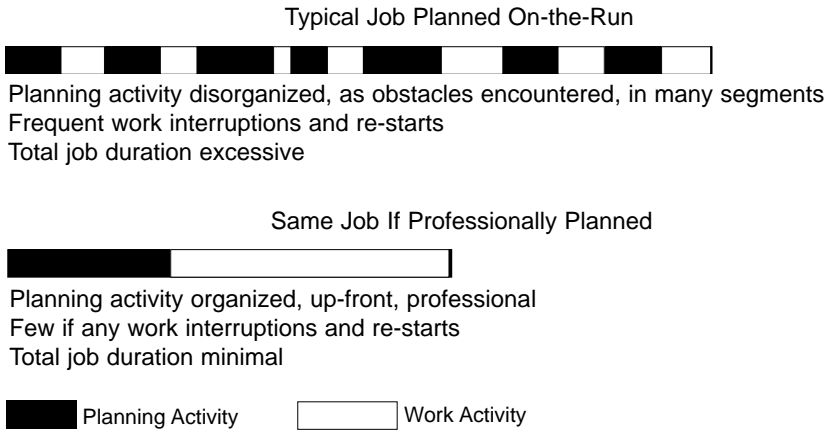


Figure 1.3 Professional Planning Versus Planning on the Run

Each dollar invested in planning typically saves three to five dollars during work execution and the duration of a planned job is commonly only half as long as that of an unplanned job. This improvement should be reinvested into “Maintenance Excellence and Asset Reliability,” instead of taking it out in the form of cost reduction. This counsel relates to the “Maintenance Iceberg (Figure 1.4).” There are far greater bottom-line contributions to be gained from asset reliability than from “mere” maintenance cost reduction. This approach is also more saleable to the maintenance work force. By committing themselves to asset reliability, they protect the future of their jobs. If the managerial focus is on cost reduction, improved productivity works the maintenance crew out of overtime and possibly their job. This is the common fear of “Labor”.

Another issue needs to be clarified. It is necessary to communicate with and sell management in terms they relate to. It is inconsistent with the “Integrated Maintenance Management Partnership” introduced in the Preface of this book to justify each element of the maintenance improvement process individually. The justification for any of the twenty-one building blocks of the “Maintenance Arch” individually is in fact ... **Zero**. Individually, these blocks are just tools. Together they provide a process for asset reliability and continuous improvement; their justification is ample to meet any ROI (return on investment) hurdle.

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The Maintenance Iceberg

Principle 6: A holistic approach to maintenance excellence should be pursued rather than narrow pursuit of maintenance cost reduction.

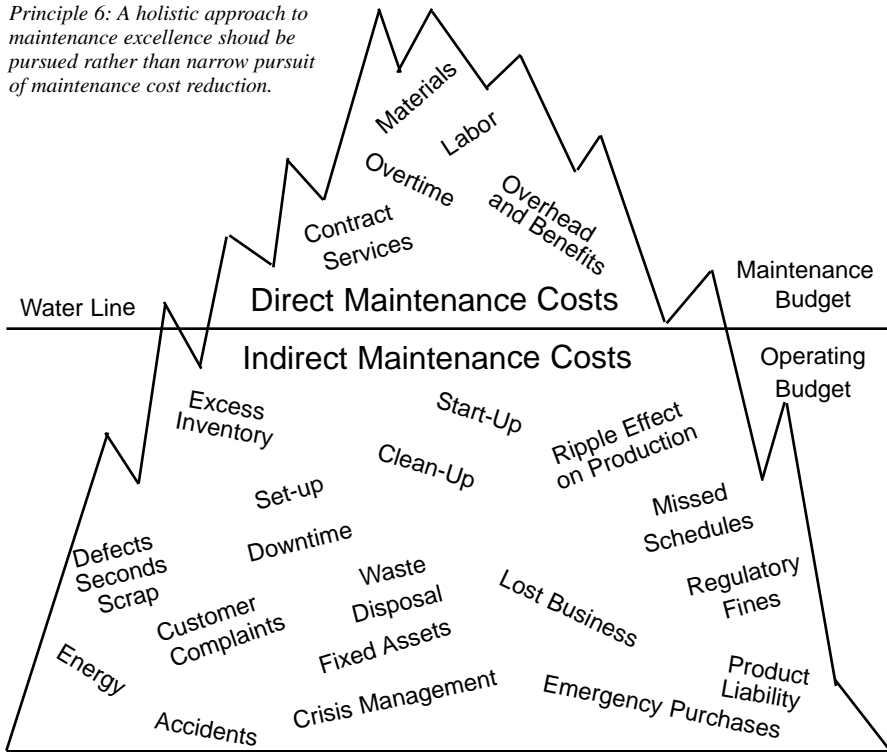


Figure 1.4 The Maintenance Iceberg

SYMPTOMS OF INEFFECTIVE JOB PLANNING

The following frequent symptoms clearly show the ineffectiveness of maintenance resources when operating in a reactive rather than proactive mode. Delays encountered by mechanics are the norm. For lack of proper preparation, much time is lost:

- Gaining detailed knowledge of the required work
- Obtaining permits
- Identifying and obtaining material, blueprints, tools, and skills required for completion of assigned work
- Delivering the above inputs to the job site
- Waiting for required spare parts that are not in stock

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Due to insufficient thought when requests are written, operating personnel often must alter jobs in progress, causing delays and drop in productivity. Technicians may arrive at a job site on time only to wait for their supervisor, or someone else, to contact the requestor or other operating person for clarification of the requested work. Often the operations department does not have the equipment ready or refuses to release it, despite having previously agreed to the schedule.

The number of craftsmen does not match the magnitude of the job (possibly too many ... possibly too few). Participation of support craft is not anticipated, or workmen are of the wrong craft skill, or have arrived in the wrong sequence (e.g., millwrights arrive before electricians have disconnected equipment).

Craftsmen have no prior knowledge of detailed job task breakdown and are left to decide how to do the job and what materials are required; they then either leave the job site to get materials from the storeroom or stand by and wait for them to be delivered. Even more disruptive is after a job is started, it is discovered that some required parts or materials are not in stock and must be purchased outside the plant (with extra cost for express delivery). The job is halted in a state of disassembly waiting for the items to arrive.

Craftsmen cannot develop work rhythms because of interruptions and delays encountered, causing them to hop from crisis to crisis without completing jobs already in progress.

Maintenance works in standby mode waiting for the next emergency while supervisors become dispatchers of response to breakdowns. Communication is faulty and incomplete throughout the process; taking many guises including failure to satisfy the originator (what was wanted was not what was done), frayed tempers, frustration over wasted efforts, downtime delays, makeshift repairs and prolonged quality problems. All of which result in higher overall costs.

Maintenance personnel in the trenches know the frequency of these occurrences, but managers are often unaware. Mismanagement is highly visible on a daily basis. Shouldn't this be a wake-up call for management?

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CONVEY THE MANY BENEFITS THAT ACCRUE TO EACH STAKEHOLDER

Stakeholders are people in positions having an interest in the way maintenance is conducted. To sell PLANNING, COORDINATION, AND SCHEDULING you must convey the benefits that accrue directly to each stakeholder of the “partnership.”

Planning, coordination, and scheduling provide significant benefits to management by:

- ◆ Providing a central source of information concerning the condition of equipment, the associated maintenance workload, and available resources to perform it.
- ◆ Improving employee safety
- ◆ Improving regulatory compliance
- ◆ Working to achieve the optimal economic level of maintenance in support of both short and long range operational needs
- ◆ Challenging the need for work requests of questionable value and justification
- ◆ Accurately forecasting labor and material needs, thus permitting immediate recognition of labor shortages and excesses with steps taken to level peak workloads
- ◆ Establishing expectations for what is to be accomplished each week by the maintenance payroll investment (forty hours of productive work from each maintenance worker) and analysis of variations from expectations
- ◆ Improving efficiency through anticipation of needs and avoidance of potential delays
- ◆ Providing factual data, measurement, analysis of efficiency, and identification of variations from expected performance
- ◆ Providing information identifying problem areas that require focused attention
- ◆ Reducing total unit cost of maintenance while improving customer service, condition of equipment and facilities through better use of labor and materials,
- ◆ Increasing useful life of fixed assets

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- ◆ Improving preparation, management, and control of major shutdowns, outages, and turn arounds

Planning, coordination, and scheduling confer significant benefits on operations and production when they:

- ◆ Provide orderly procedures for requesting, preparing, executing, and closing out maintenance support
- ◆ Provide close and continual coordination between operations and maintenance with a single point of contact for all emergency and scheduled work whether pending, in-process, or completed
- ◆ Maintain accurate backlog status
- ◆ Facilitate anticipation of required repairs before they become emergencies
- ◆ Coordinate the cooperation necessary to provide essential maintenance resources at times when operations can best relinquish the associated equipment capacity
- ◆ Apply technical knowledge and experience to the analysis of each plannable job
- ◆ Increase equipment availability
- ◆ Minimize downtime and interruptions to operations

Planning, coordination, and scheduling is a boon to Maintenance Supervisors when they:

- ◆ Define and measure workload, permitting advanced determination of staffing required in a given area or of a given skill
- ◆ Establish realistic priorities
- ◆ Identify the best methods and procedures
- ◆ Anticipate and preclude bottlenecks and interruptions
- ◆ Coordinate manpower, materials and equipment including:
 - Coordinated crafts
 - Parts and materials
 - Special tools and equipment
 - Shop and other support

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- Off-site job preparation to minimize downtime
- Equipment access
- ◆ Preclude delays that would otherwise occur after work has begun due to waiting for information, materials, equipment, other skills, tools, etc.
- ◆ Establish expectations for the maintenance work force through provision of a detailed job schedule for the entire week, with individual time-lines as appropriate, thereby furnishing a control vehicle by which maintenance supervisors can monitor progress throughout the work day and work week
- ◆ Integrate preventive/predictive maintenance into the overall schedule
- ◆ Provide accurate promises that can be fulfilled
- ◆ Increase quality of output
- ◆ Control overtime
- ◆ Monitor job status
- ◆ Provides more time for direct job site leadership

Both Purchasing and Stores win when planning, coordination, and scheduling:

- ◆ Improve accountability for all parts and material
- ◆ Insure that parts are ordered with adequate lead time, reducing the number of emergency purchases and cost of express freight
- ◆ Optimize maintenance inventory
- ◆ Improve information available for equipment specification

EMPHASIZE THE MAINTENANCE DELIVERABLES

Maintenance is far more than a “necessary evil, ” because it contributes in ways that are crucial to the success of the entity ... as depicted in Figure 1.5.

Few drivers of the maintenance workload are discretionary. If maintenance is not funded and sized, employees are maimed or killed, our environment is destroyed, jobs are lost, management is fired, and the entity fails.

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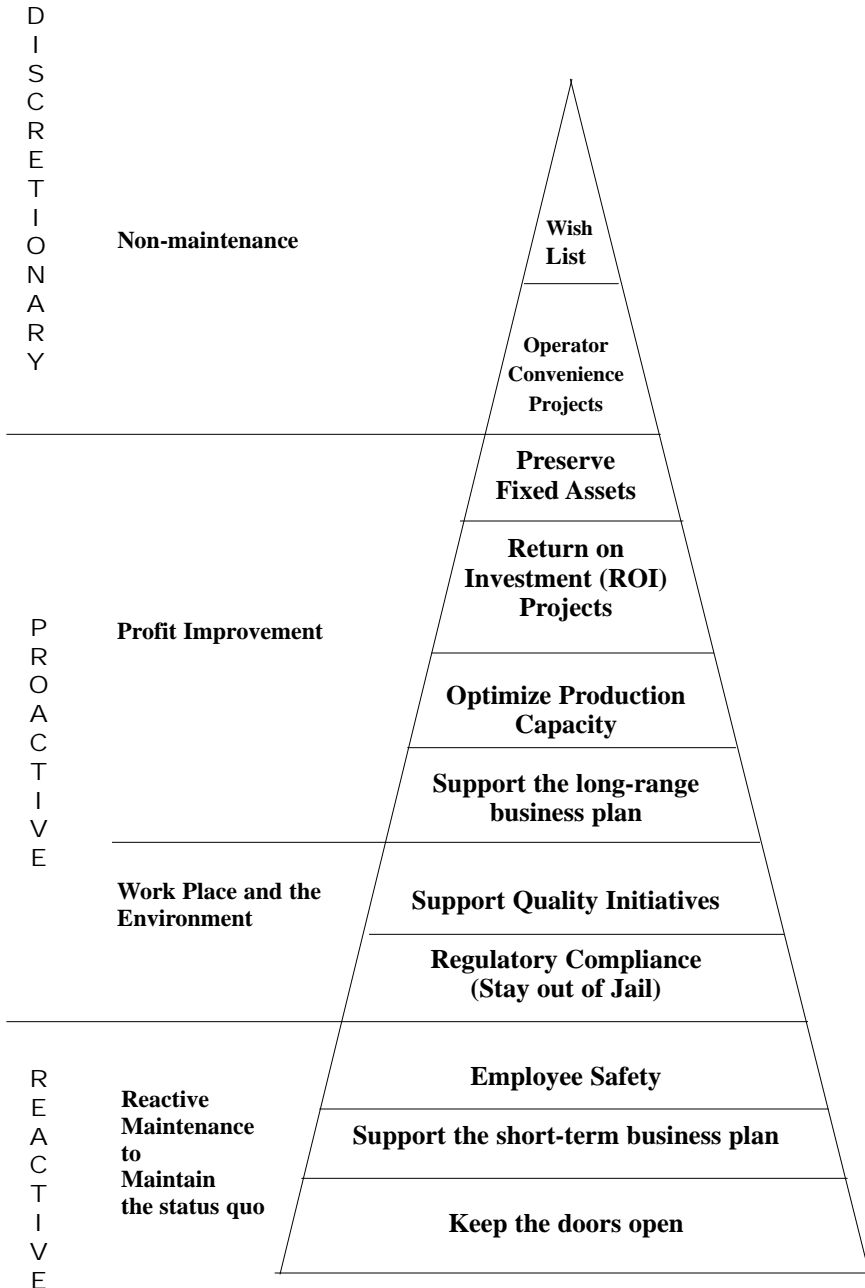


Figure 1.5 Build Up of The Maintenance Budget