



# The Case For Applied Project Management

A WHITE PAPER PROVIDED TO ASPE BY DAVID CACCAMO

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As with the introductory courses in most branches of learning, beginning level Project Management classes are specifically designed to introduce students to the wide range of theoretical and practical topics that make up the discipline. This is, obviously, the necessary first step in learning any subject – the definition and classification of the material.

Unfortunately, the down side of the survey course approach is that in attempting to take in this full range of disciplinary topics, the student must necessarily bypass trying to gain mastery in any one topical area. For example, he or she learns about what a critical path is (and probably how to calculate it through simple examples), but as to how to actually manage a project once that path is identified, the coursework is silent.

Just as unfortunately, follow-on courses may add little to the new practitioner's understanding of project management in that these are often primarily tool-oriented training sessions. That is, they teach the student how to input data into some computerized program (Microsoft Project, Primavera, etc.) in order to calculate and display pertinent information, but this increased efficiency of calculation is offset by the student's lack of understanding of just what the numerical and graphical outputs signify. Instructors often remark of their surprise in finding that fairly senior level managers who regularly prepare sophisticated analytical reports about their project's status have little or no understanding of the underlying theory behind the reports. Most of the time this is probably not an issue; but when it does become one, it can be with devastating consequences to the project. The project manager of a major construction project recently found himself completely caught off-guard by the "sudden" realization (and in the last few months of the project) that final delivery was going to be significantly delayed. But the information had been there all the time. His understanding of the information was what was lacking.

If we look at the major issues in project management, several learning areas stand out as especially important topics requiring greater understanding. In no particular order these include:

1. stakeholder management
2. the collection of requirements
3. schedule construction and management
4. risk planning
5. cost control

Stakeholder management is more than hand-holding. It all starts with the identification of all of the project's key stakeholders, the analysis of their individual expectations, and the determination of general strategies of management. One major issue for success is the PM's recognition that stakeholders often do not know exactly what their priorities are. Assisting the stakeholders in clarifying and articulating their expectations, priorities, and requirements is key to successful management.

If a satisfying stakeholder expectation is a major goal of the project manager, then the collection of the stakeholder requirements is a necessary first step. Requirements collection is primarily a facilitating process, using not only the general facilitating tools that every manager should possess, but also using tools, which are specific to the requirements gathering process. These business analysis techniques include such things as context diagrams, activity diagrams, swim lanes, and use cases. Without these tools, the collection of requirements is, at best, a hit or miss affair.

As was alluded to above, understanding the importance of the critical path is more than knowing how to calculate one. Managing to the critical path means understanding the importance of risk, specifically how the risks of the individual project activities combine to create the risk for the project as a whole. Managing to the critical path means understanding that the non-critical path cannot be ignored and therefore implementing techniques that ensure proper attention is paid to these other activities. And managing to the critical path means understanding how to produce reliable activity time estimates (PERT, Monte Carlo, etc.) that properly compensate durations for the expertise of the team and work/non-work inefficiencies.

If there is one knowledge area that is most often ignored in project management, it is probably that of risk. Notions such as negative and positive risk are seldom considered on small to medium sized projects. Qualitative analysis often means little more than an admission of lack of detailed knowledge, and quantitative analysis is totally lacking. If risk is an integral element of schedule development, then the lack of proper risk planning also means a de facto lack of proper scheduling as well.

Key to cost (and schedule) control is the practice of Earned Value Management. If the calculations that come from EVM are to be interpreted with more than simple thumb rules, an understanding of the underlying theory behind the calculations is important. Issues such as when the various calculations are definitive (or perhaps more importantly, when they are not) and which computational method should be chosen for a particular cost estimating instance cannot be adequately addressed unless the PM understands how each formula was developed, including its underlying assumptions. And applying EVM to an actual project requires an appreciation of how responsibility and variance accounting can be combined.

The Applied Project Management course offered through ASPE was designed specifically to address each of the above areas. It is an attempt to provide a bridge between the

practitioner's simple recognition of a methodology and the ability to actually apply that methodology to a particular project management situation. Each of the above areas is addressed from both a theoretical and a practical perspective. The theoretical background acquaints the student with the "whys" and "whats" of the topic – *why* should this methodology be applied in this particular situation; *what* does a particular value or reading signify? The practical perspective illustrates them at a level of detail more appropriate for actual implementation in a project. For example, project activity duration estimates are made not only with PERT formulas but also with computer-based Monte Carlo analysis that is both fully discussed in class and rigorously demonstrated through in-class exercises.

### **Specific methodologies demonstrated and practiced in class include:**

- Stakeholder analysis through paired analysis
- Construction of Context Diagrams
- Drafting of Use Cases
- The use of Critical Chain Project and Feeding Buffers to manage risk and resources
- Crashing using Linear Programming (Excel based)
- Monte Carlo analysis (problem setup and execution) (Excel based)
- Qualitative Risk Analysis
- Decision Analysis using both decision tree and Monte Carlo methodologies
- Expected Monetary Value utilization with Active Acceptance strategies (self-insurance)

For the student, the outcome of this class is a thorough understanding of a toolkit of specific techniques and methodologies that immediately can be applied to real-world project situations. As an added benefit, the student will also now possess a conceptual foundation that should lead to a greater understanding of the Project Management discipline.