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The Project Controls Manager’s Survival Guidebook

Leslie E. McMullan, FAACE

ABSTRACT

Projects are increasingly complex with greater demands on project management and project controls. Qualified resources are often limited as projects grow in size and complexity. The stakes are high in cost and schedule performance on mega projects around the globe. The project controls manager is considered the right hand of the project manager on all matters related to cost, schedule and risk management. What tools and skills does the project controls manager need in this dynamic and challenging environment to not only survive but thrive? While procedures and processes exist in estimating, planning, cost control and other technical areas, the literature is light on project controls management. This presentation discusses the role of the project controls manager and includes insights, what to watch for, traps to avoid, and other essentials of project delivery.

Key Words: Project controls manager, project delivery, FEL, governance, shaping, secondary change

Introduction

In today’s global economy, project delivery continues to be challenging in terms of project size, scope, location and organization. The project controls manager also faces a changing landscape. There are often shortages of qualified project controls professionals. Project controls has a vital role in controlling cost, schedule and scope and in providing value. Lack of project controls can impact the business model by delays, higher costs and missed opportunity. There are dangers and pitfalls. In a changing market it is survival of the fittest and “it is a jungle out there”. The project controls manager could use a guide to provide tips and tools for successful project delivery.
The PCM Role

Project controls has been called the dashboard for project management and the navigation system for cost and schedule. The potential for the success of a construction project has been attributed in large part to the quality of the project controls system and staff assigned who are referred to as the “eyes and ears of management” (1). At the top of the project controls organization is the project controls manager (PCM), leader of the various disciplines within the project controls and services. The core traditional services of project controls include estimating, cost control and planning & scheduling. Some companies expand this to include risk management and other services such as information management and project administration in a project services group.

The PCM is a senior role requiring technical experience, practical work experience as well as leadership and management skills honed over time. It has traditionally taken years to reach this level of expertise. The ideal career path for the PCM is through cross-training in the disciplines of estimating, cost control and cost engineering and planning and scheduling.

One role description states that “the PC manager orchestrates the combined functions that enable managers in their own firm and the Owner’s, to anticipate necessary changes to keep the project on schedule and within budget. One of the main responsibilities of the PCM, like most managers, is to enable subordinate professionals to best do their jobs”. Effective interaction with people is also identified as critical to success (2).

References for the overall technical skills required can be found in documents published by AACE International and located on the website including skills and knowledge of cost engineering, the cost engineer’s notebook, recommended practices, the total cost management framework and certification study guides. The management and other “soft skills” are at least equally important for success.

Leadership

Leadership capability is a prime pre-requisite. Some of the characteristics of leaders include being action-oriented, having a tolerance for ambiguity and change, having a vision, objectives and priorities. The project controls manager also needs to consider the development of the project controls team and manage any conflict. Good communication and professional credibility are essential traits.

The top four characteristics of admired leaders have been identified through an international survey as honesty, being forward-looking, inspiring and competent (3).

If the PCM is to survive as a manager, delegation of work and authority to qualified senior staff is essential to avoid becoming a bottleneck. Effective managers help their staff come to a resolution on issues brought to them without taking on the problem directly. They promote teamwork, collaboration and keep all staff informed with regular team meetings. They give credit and celebrate successes as a team.
The Big Picture

Project controls managers need to have that overview that comes from experience, being able to see the “big picture”, spotting trends, trouble spots and where the team needs to give attention (4). This type of thinking helps keep the project on target by not losing focus, motivates and promotes teamwork by keeping the team informed with better understanding of how their works fits with that of others. Persons who have this ability are able to embrace and deal with complex ideas, learn from their experiences and gain insight from others by being able to filter information. Maintaining this approach, the PCM is better positioned to provide the leadership and foresight to the project controls and project team and anticipate necessary actions to keep the project on schedule and within budget. The PCM provides an overall check and balance and quality control overview on the reports and documentation being issued by the controls team along with the senior department leads.

Total Cost Management Approach

The expression “he who fails to plan, plans to fail,” attributed to Sir Winston Churchill, is most appropriate in project management and controls. The work done in the project in the shaping phase and development phase from conception to feasibility stage-gates sets the tone for what is to come in the implementation phase. The pre-sanction period is also known as the front ending loading (FEL) stages. This asset planning phase is recognized and addressed in AACE International’s total cost management (TCM) process which includes the functional processes for strategic asset management and functional processes for project control. This framework is defined as the application of professional and technical expertise to plan and control resource, costs, profitability and risk in the format of annotated process maps (5).

The steps required in “doing the right project” are explained in the process maps of the strategic asset management guideline and "doing the project right" are described in the project controls section.

There is a myth that project controls or cost engineering begins with the notice to proceed or execution phase. On the contrary, planning and scheduling, cost estimating, change management, risk management and cost control all start early in the shaping and development process as the project moves through different stage-gates from conceptual to order of magnitude, pre-feasibility and feasibility stage to eventual sanction and notice to proceed.

As the greatest single influence on cost is scope of work, the project front end shaping and the early detailed engineering has major impact as often illustrated on charts that depict declining influence on cost as the project progresses through engineering, procurement and construction.
The Adventure Begins

To be successful in the role as project controls manager requires careful planning and preparation. Where do you begin? What should you be checking for? Survival requires a proactive approach and getting to know the territory.

To prepare for the mission, you will need the following:

- A team: a well-seasoned and highly collaborative control team who know the territory
- Directions: scope of work, project execution plan (PEP) the project controls plan, baselines, WBS, project commitment structure (PCS), milestones to guide the way
- Tools and Equipment: project management systems, methodology (procedures), guidance notes, instructions
- Survival gear: early warning systems, risk management, trending program
- Antidotes: best practices, communication, management control loop

The following is a closer look at some of these aspects:
Building the Team

As a controls manager, the selection of the team is one of the most important decisions that you will make. Your success and that of the project is dependent in large part on the quality and experience of your team. It is important to have the right mix. The leads in planning, estimating, cost control and risk management are the pillars within the organization that the PCM counts on for their technical expertise, quality assurance and department management. In some instances, when a team has been inherited or put in place prior to a PCM’s arrival, this needs careful review and consideration. Perform a skills inventory of the entire team and make adjustments or provide a training program as required.

International projects with multiple project controls locations (home office and site) provide a challenge with the team often comprised of owner and consultant team resources including team members of different origins and backgrounds.

For an owner organization when a consultant/contractor is engaged, it is important to have a highly experienced group of project controls experts who can provide review and tracking of the work performed by the EPCM contractor as well report on owner scope responsibilities. This will depend on the size of the project, whether the owner is self-managing the work in whole or part. Industry experience attests to need and benefits of adequate owner teams, bringing in both project and operations expertise.

Virtual teams require special attention and many companies have invested in technology to provide video-conferencing and “virtual presence” rooms to allow teams to communicate and collaborate. Remember, however, that face to face meetings and site visits are also required to be effective.

Figure 2: Typical organization and roles.
No Controls without Collaboration

The project controls team is the most collaborative group on the project due to the nature of their work in planning and scheduling all facets and phases of the project, measuring progress against all phases, cost control, estimating, forecasting, and trending by WBS and commitment package. The team interfaces with engineering, procurement, contracts administration, finance, operations and business owners, business improvement and other stakeholders. The question has been asked, who controls cost and schedule? The answer is really that the complete project team has influence including the project manager, area managers, engineering, procurement and construction managers, project controls and the owner’s management and operations teams. While the lead planner and area planners and schedulers have produced the CPM schedule, it can only be created and signed off as the project baseline with the collaboration, input and agreed accountability of the project team members. It is not then seen as a project controls document but a baseline schedule that all on the project team are accountable for at their respective authority level to deliver. The PCM must have an excellent understanding of how all functions and phases of the project work and interface (i.e. between engineering disciplines, the procurement cycle) and understanding of the potential gaps and trouble spots.

Another important point to remember is that there is “no controls without authority”. Project controls support and understanding must come top down at the business and project management level for the project controls function to be effective.

Project Controls Collaboration

Figure 3: Collaboration with Project Controls
**Mapping the way - The Project Controls Plan**

The project controls plan is an important document as it embodies the strategy for project controls and describes the people, systems and tools to be deployed. The plan typically manages stakeholder expectations and provides a roadmap for cost and schedule control. It also describes the interfaces with all parties required to effectively contribute to the project controls performance, from engineering to procurement and construction. It is a prime reference document along with the project scope of work, project execution plan, estimate and schedule. It provides the team line-up and framework for a successful project launch and set-up of systems and processes.

**Baseline Documents – The Point of Reference**

The baseline documents of budget and schedule with basis of estimate and basis of schedule are key references for the project controls manager along with other scope and execution documents. At times there is turnover of personnel during the study phase and even during the execution phase of the project so that those developing the documents or approving them may no longer be associated with the project. If the PCM is inheriting these baselines it is important that a complete review takes place and that these documents are thoroughly understood. Knowledge of reference documents is essential for effective management of change (MOC).

**Reporting for Control**

The classic monthly progress report typically falls under the oversight of the PCM. It is important to keep stakeholders informed and to provide an overall progress status, key issues and actions of the project at each cut-off date. It can also be a trigger point for further action. More current daily and weekly reports, however, provide the real “finger on the pulse” of the project and the element of control so necessary for cost and schedule.

Many firms also issue an abbreviated pre-formatted summary report is standard format of a few pages within days after period cut-off for a concise summary of project progress and key performance indexes.

In an effort to manage their projects geographically and globally, companies are looking to systems that will provide portfolio management and enable them to see trends on a higher level and then drill down as required. These have been called executive information systems or portfolio management systems, typically with a benchmarking approach. Using a dash board format for reporting, they allow the owner or contractor organizations to view leading indicators and drill down into areas of concern. These executive level systems typically are part of or sit on top of project management systems.

As PCM, do not fall into the trap of spending the majority of your time “reporting” but rather on analysis of the data and focusing on contributing to the management of the cost and schedule. Get assistance to prepare quality presentation material for your review with stakeholders.
Common Project Toolkit

An integrated project management system with modules for all phases of the project including estimating, cost control, planning, project measurement and document control from engineering through construction and commissioning is essential. These systems are often illustrated on an integrated wagon wheel diagram, showing the interfaces. In the digital age, project management systems are also interfaced with exterior systems such as Owner financial systems, planning software, engineering tools and operations data repositories. The application of building information modeling (BIM) and 4D (linking 3D model with schedule) and 5D (linking 3D model and database with estimating) is becoming progressively common (6).

Major projects cannot be effectively managed on standalone spreadsheet reports. The key is to ensure on-going personnel are trained so that effective use is made of such systems. Standard procedures and guidance notes are also a requirement that can be used across the organization, whether consultant or owner.

One of the greatest assets for the PCM is a standardization of company tools and systems across the projects. Consultants and owners alike strive to provide common standards such as:

- Corporate project controls policies
- Standard procedures and guidance notes
- Common WBS and commodity coding structure
- Integrated suite of project management software
- Portfolio project reporting
- Key performance Indexes and dashboards
- Training programs

These documents and tools contribute to productivity, transfer of resources in a global environment and a framework for success in capital spending and control. They are a ticket to providing world class project controls in conjunction with qualified and experienced personnel. Companies should continually test and assess their effectiveness in project controls.

Survival Gear

The early warning systems such as robust trending and forecasting and risk management systems can provide a heads up of future potential risks as well as imminent trends that can be mitigated to result in favorable outcomes. Key performance indexes (KPIs) are also valuable to pinpoint deviations in control chart format. Being able to benchmark the project to others is also an important point of reference and one of the important tools, not just at completion but during the lifetime of the project. The TCM process model based on the plan-do-check-access (PDCA) management or control cycle is one of the cornerstones of the iterative project controls process, aimed at continuous improvement. The continuous performance assessment, trending and variation tracking and implementation of mitigation actions when required to keep the project on track is at the core of the project control cycle.
**Antidotes**

An antidote in this context is a remedy to resolve project issues such as a good dose of best practices, expert assistance and other steps to counteract variations and keep the project on track. On a project where different groups have become “tribal “or working in silos with poor communication, additional training or even organizational changes may be necessary to improve the situation. Issues require speedy intervention.

**Communication**

One subject that comes up in virtually every survey on reasons for project shortfall is lack of communication at all levels in the project. Regular team meetings and information sessions are required. Some of these can come in the form of lean meetings, discussing KPIs and key actions around a white board. Others are in-depth schedule, trend, risk and change management meetings. A roles and responsibilities plan and communication plan is essential.

Whether presentation of an estimate or schedule to business unit management or project status report at a stakeholder meeting, the ability to get ideas across and manner of speaking are all extremely important for senior controls staff.
Project controls managers at times need to present news or information to those who may not want to hear it. The PCM is obliged professionally to report factually and transparently. Some of the abilities of a cost engineer and by extension the PCM, have been identified as having the excellent technical understanding, proven communication skills, able to deliver the news (good and bad) and having integrity, leading by example (7). Bad news is never welcome but if early enough then it can be mitigated and the outcome controlled.

**Profile of a Project Controls Manager/Leader**

1. Excellent technical understanding
2. Proven communication skills
3. Able to deliver the news
4. Having integrity, lead by example

Figure 5: Qualities of a PCM

**Under the Microscope**

The PCM has a high level of accountability. In addition to direct accountability to the project manager and senior management, there will be a series of project quality audits, financial audits, peer reviews, functional audits, owner audits, SOX audits, health checks and other reviews that may take place. This is in addition to stakeholder reporting at many levels. Audits can provide timely insights, flag potential gaps and good advice. Prepare for these in such a way as to provide data electronically and minimize the downtime of the project team. Cold eyes review or project “health checks” can be very valuable to the PCM and management team.

**Successful Launch**

A key success factor is the launch of the project into full-blown execution mode with the lead personnel on board, procedures and workflows in place, computer systems fully implemented and reporting systems engaged and baseline documents at the appropriate level of detail and
ready for use. If projects stumble at the launch, it can have a knock-on effect that can impact progress and performance. The project control’s manager and the project controls team have a weighty responsibility from both the owner and consultant’s team to ensure this happens. An approach taken by some is to bring in added specialists in the front end to ensure a successful start of the project. It makes sense, for example, to bring in computer and system specialists to help implement and provide training, however, having the permanent project leads in place under an experienced PCM is the first priority. There should be no empty boxes on the organization chart for key project controls personnel at project kick-off.

At the other end of the project, the PCM is expected to successfully close out the project with a completion report as well as providing project benchmark cost and schedule data in prescribed detail.

**Read the Fine print**

The PCM must be well versed in all contract terms and conditions that relate to scope, cost, schedule and change management, cash flow and other financial and legal issues. The PCM must be well versed in the key aspects of the prime services contract including rates, expenses, overhead and profit as well any other schemes. The contract definitions are essential reading, especially definitions of trends and scope changes as well as the timing and eligibility for a modification to cost and schedule.

**Change Management – the Iceberg Effect**

Inadequate change management is often cited as a major cause of poor project performance. What makes it difficult is the interface required by so many stakeholders in the team, the detection of a change, the timing for evaluating and processing of the change and the ultimate impact on contractor resources, cost and schedule. Even more difficult to assess beyond the primary change is the impact of secondary change that had have a multiplying effect on the initial impact. A project may be half way through with project growth allowances and contingency relatively intact or declining gradually as planned when major cost increases seem to appear out of nowhere in a tsunami of change orders. The culprit is often undetected scope creep and the lack of understanding of the cascade of impacts brought on by the misunderstood wave of secondary change. Projects can literally die a death by a thousand cuts due to the volume of changes and the cumulative effect. Many changes management systems suffer from the “iceberg effect” in which the only the tip of the iceberg or change is seen.

**Earned Value**

Earned value management (EVM) is a key concept as it is by the use of consistent and accurate measurement that project progress against targets are established and it often forms the basis of compensation to vendors and contractors. A practical and accurate earned value is essential in order to establish project status and costs incurred. It is the springboard to establish resources and costs to complete the project and validate the forecast final cost. Earned value
templates are used for engineering deliverables, whether 3D models, drawings, specifications and other deliverables with application rules of credit (RoC) to assess progress. Procurement progress is established with milestones including vendor engineering, material ordered, received in shops, fabricated and shipped to site. Construction formats may include quantities installed, physical progressing templates by commodity types or package milestones or a combination thereof, depending on the type of contract. Pre-commissioning and commissioning is typically measured by system.

A project without a robust earned measurement system or inappropriate rules of credit risks an overvaluation or undervaluation of progress, each with its own consequences. Proper earned value analysis permits and on-going evaluation of Productivity Factors (PF). Those projects with progress over reported or that attract a significant volume of growth can be penalized by a sawtooth on the progress S curve or backslide late in the project that can seriously impact credibility and both cost and schedule.

**Forecasting**

A myth at times propagated, is that “if you forecast it, you will spend it”. On the contrary, the theme of total cost management in its early days was to control costs before they occur by forecasting and then mitigating. Project controls with its trending and forecasting of cost and schedule has always been focused on managing risk, long before risk management became a specialty in its own right.

Without proactive forecasting and trending the project is running blind and ends up without advance intelligence to control or avoid cost and schedule variance. It is then followed by forensic analysis.

Good trending systems are live and projects require frequent trend meetings to review trends by category including approved, pending, potential and other very early trends. Forecasting must be supported by the project management database and reporting system in modules for managing contracts administration and cost control.

The point to watch for here is that just because a trend system is in place, it does not mean that all major trends are being detected. At times this is due to lack of full knowledge of the scope by those added after the study phase. They may not recognize a trend or scope change from base scope. The key in a clear understanding of the scope and what constitutes a change. Training is required progressively throughout the project on the change management process.

**Mega Projects – A Different Kind of Animal**

In the world of major projects, mega project are the norm and becoming larger all the time. The PCM needs to be aware of the special nature of such projects. There has been much anecdotal evidence about these types of projects in the industry. Projects which may seem to be generally on track on the surface can slowly slip. Basic flaws may have existed for some time, even before a project started and eventually becomes evident
by the pressures of project execution. This state can be caused by outside interference, the volume and chain reaction of project changes, unrealistic budgets and baseline schedules or even ill-conceived mitigation measures to deal with cost and schedule pressures. These influences can produce ripple effects which are not easy to detect at the time and cope with completely (8).

Other causes of failure commonly recognized in various Industry sources include inadequate project scope definition, organizational structure, ill-defined roles and responsibilities, project team inexperience often resulting in the turnover of personnel, leadership issues, impaired communication, overzealous cost cutting measures in the early stages, schedule fast tracking and a general lack of adequate planning. Location and resource availability are also often noted as prime issues. If the root causes are recognized and understood early, deviation can be prevented or at least controlled with assertive action.

**Planning and Scheduling Tips**

- Schedules must be fit for purpose and appropriate for all phases and levels
- Develop realistic schedules to avoid the cost of chasing unattainable targets
- Know the difference between a planner role and that of a scheduler
- Always prepare a basis of schedule
- Ensure proper schedule levels, logic and maintenance
- Respect baseline and implement a schedule scope change protocol
- Keep the level III network to a controllable level of activities for update
- Make sure schedules are resource loaded with hours and quantities
- Closely follow and report on critical and near critical paths
- Ensure that dictionaries are maintained for all commitment packages
- Run schedule risk analysis program but first validate schedule
- Include schedule contingency
- Ensure team collaboration and accountability for schedules and milestones
- Fully understand the cost of “recovery” schedules and schedule crashing
- Flag late vendor drawings and documents; check vendor data requirement dates
- Be aware of the interdependencies of engineering disciplines that cause delay
- Check for expediting of vendors & their subs to avoid surprises in delivery
- Ensure bid packages have key construction dates and pre-commissioning sequence
- Insist on contractor level IV schedule and resource loading per contract agreement
- Use the last planner® concept as included in lean construction as practical to get input down to the level of those performing the work (e.g. typical on shutdowns)
- Use earned value systems for all execution phases with well-defined rules of credit
- Understand the reporting methodology and root causes for productivity factor (PF) fluctuation in engineering and construction

**Estimating Tips**

- Understand the five basic estimate classes & input and appropriate methods for each type (i.e. factoring, parametric methods, semi-detailed, detailed quantity-based, etc.)
- Establish WBS and use standard commodity resource codes (CRCs)
- Have an estimate plan for every estimate; this manages expectations and input/output
• Have a change management system in place in the study phases to flag quantity and cost variances; don’t wait until the end of the study to present a major cost variance
• Ensure that there is an estimate checklist and estimate progress tracking method
• The basis of estimate is the key reference document for presenting the estimate
• Understand productivity assumptions for the site locations and labour crew rates
• Be familiar with key ratios and benchmarks to interrogate the estimate; benchmarks and key metrics are a must for estimate review
• Prepare well for the internal estimate and client estimate review; have the person best able to communicate the estimate lead the presentation
• Ensure the estimate in a database to be able to generate standard analysis reports and “slice and dice” the estimate
• Estimators are required beyond the study phase throughout execution to evaluate changes and contractor requests; this aids decision-making and saves considerable cost

**Cost Control Tips**

• Use the total cost management approach; control costs before they occur
• Understand scope and basis of the budget and packaging
• Plan what can be trended at different stages in the cost control plan; a rolling trend
• Scope = quantities = cost; the scope of work is key to trending and control
• Trend meetings are a must, not optional and to be attended by the senior managers
• All forecast changes are trends; those that are outside of scope also affect the budget
• Insist on proper budget and forecast change variance analysis (by wbs and package)
• Use the cost control system to collect benchmark data for quantities, hours & costs
• Take care when converting the estimate to cost report that the integrity of the coding structures are not lost; remember this is how benchmarking data will be collected
• Keep a trend log system to provide governance and an audit trail
• Change management: keep it current and watch for the secondary impact of change
• Be aware of the typical growth areas – bulk commodities, labour productivity construction indirect costs, EPCM contractor and owner accounts
• Use the Pareto Principle 80 – 20 rule to focus on the major cost items
• Respect project governance for approval of commitments and use the approval and award cycle to validate scope, budgets, price breakdowns and forecasts by package
• Reassess project contingency and growth allowances frequently and follow the contingency drawdown curve closely
• Collect historical benchmarking data throughout the life cycle

**Risk Management Tips**

• The risk register is a live document
• Risks include both threats and opportunities
• Use a risk coding structure to capture risks by type
• Initial brainstorming is to raise ideas, not necessarily resolve in the initial meetings
• All ideas are welcome and it may take several rounds to come up with the initial list
- Used a qualified risk management facilitator
- Risk checklists can be used but with caution so as not dissuade open thinking; each project has at least some unique features
- Risks must have owners, action plans and timelines
- The risk management process involves iteration, with regular planned reviews
- Use the risk register in part to evaluate contingency or reserve
- Establish risk champions
- Use a standard company-wide register system whenever possible so that risks can be rolled up to a higher level in the firm

**Resources for PCMs**

The PCM is not alone when it comes to resources. While scarce years ago, these have evolved over time. Some of these are listed as follows:
- Corporate policies and practices for capital spending
- Lessons learned across the projects
- Project controls centralized leadership
- Communities of practice
- Professional associations with certification programs, technical libraries and references
- Industry best practices or recommended practices
- Project Controls symposiums and seminars internal and external
- Company “colleges” or “academies” for project management and controls
- Company Symposia and PCM Forums
- Career development programs
- Social Media
Lessons learned

There have been many excellent papers, studies and material on the internet that have identified the reasons why good projects can go bad. It is important for project controls managers to reflect on these causes and to be able to identify and help mitigate. There are both leading indicators such as design issues and scope creep as well as lagging indicators such as cash flow. By studying lessons learned, the PCM can be forearmed.

Functional Project Management

In most companies the project controls manager has been assigned to the project by the corporate functional lead. That person is also the mentor and can be a “help line” in case of issues or dispute with other team members. The functional corporate lead as shown in Figure 2 is also tasked with ensuring that there is a level of quality assurance. In cases where the PCM may have reached a stalemate at the project level, the senior functional manager is a good source of assistance.
Communities of Practice

A community of practice is defined as a group of professionals with a common goal or set of objectives around a common theme, in this instance project controls. It may stretch across the corporation, bringing common knowledge across different business groups. The CoP can be a powerful source of knowledge sharing and influence for change and standardization. A PCM Forum can be established for all PCMs in the organization to share lessons learned and discuss common interests and topics.

Social Media

Many companies have an internal communication system and there are various social media in which forums and discussions take place on project controls similar to a community of practice. Discussions can be held on unlimited project control topics.

Professional Associations

Professional associations for cost engineers such as AACE International with its many professional certification programs have provided a touchstone for those establishing a career in this business when few, if any college or university programs existed. Other well-known associations such as the project management institute (PMI), the construction industry institute (CII), the engineering & construction risk institute (ECRI) and others provide an on-going source of technical material and training opportunities. These all have professional website, publications and training materials.

Best Practices

Best Practices are defined as the procedures and policies that allow a business to outperform all other in a particular business process and a method, process or activity and that is believed to be more effective at delivering a particular outcome than any other technique, method or process. Best practices have also been described as practical techniques gained from experience that organizations may use to improve internal processes. One of the features of a world class project controls organization is the ongoing identification and implementation of best practices. These practices improve the predictability and the effectiveness of the project controls team. The AACE International recommended practices that are frequently used as a point of reference for firms developing internal procedures.

Life-long learning

The PCM, like most other professionals, must keep on top of their game and have a pursuit of life-long learning as new ideas through technology and management theory and styles come into the picture. For example, lean construction techniques, agile management and other evolving concepts and the latest software and technology.
Conclusion

The project controls manager role is one of the key positions on the project organization chart responsible for the oversight of business aspects of the project, primarily cost, schedule and risk that are pivotal to the success of project delivery. The PCM will have typically gained substantial experience on projects working in cost engineering, estimating, cost control, planning & scheduling and risk management. The PCM is the right hand to the project manager on all cost, schedule and progress issues and responsible for the project controls team. The role includes technical skills but also very strong communication and leadership skills in this senior management position, promoting cost and schedule awareness on the project.

In addition to “hands on” project experience, the project controls manager can benefit from professional associations such as AACE International and PMI with recommended practices, technical guidance and process maps and professional certification programs. Assistance is also to be found with internal company policies, processes and training programs, mentoring and coaching programs, lessons learned and communities of practice. Academic programs can be also consulted for specific courses along with references from further materials such as the Project Control Manager’s Survival Guidebook that provide tips to the PCM for successful project delivery.
References

1. Project Control for Construction, Construction Industry Institute, Study RS6-5
2. AACE International website aacei.org, Career/Mentoring Center, Careers in Project Controls, Project Controls Manager, (2011).

Recommended Reading

1. AACE International Recommended Practices, starting with 11R-88 Required Skills & Knowledge of a Cost Engineer.

Les McMullan
Rio Tinto
les.mcmullan@riotinto.com