Lamenting the loss of Planning/Scheduling skills

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Overview

Planning/Scheduling was once a career in its own right. Contributing to it's demise was the development of PC based scheduling software, particularly Microsoft Project with "anyone can schedule" marketing. Also contributing to the demise are the Professional Associations such as AIPM and PMI demoting Planning/Scheduling skills to a subset or stepping stone to those of a Project Manager.

Particularly evident in Business and IT projects, the lack of Planning/Scheduling skills is having a significant impact on project delivery success. This paper reflects on the skills and attributes of effective Planner/Schedulers and provides business with a roadmap for skills development.

Author

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Introduction

Being a Planning/Scheduling specialist, who can still remember counting through CPM networks by hand, the advent of the PC has had a hugely beneficial impact on my ability to plan. At the same time however, the PC has also seemed to have killed off the career of which I was once so proud to be a part of.

In some industries, such as Defence and heavy Engineering, Planning/Scheduling is still considered a specialised career. In others, such as Business and IT, Planning/Scheduling does not have the same recognition. It is often considered either a junior Project Management role or worse still, one step up from a Project Administrator.

This paper explores the loss of Planning/Scheduling skills over the last 20 years, focusing on Australian Business & IT projects, includes a number of observations by the author, and suggests a roadmap for skills development. The paper proposes a shift away from the "anyone can schedule" culture perpetrated by the marketing arms of scheduling tool vendors.

Defining Planning/Scheduling

There is a difference between Planning and Scheduling. Some consider Planning to be the "art", Scheduling the "science". Others associate Planning with "thinking", Scheduling with "tools", especially the Gantt chart. A clearer definition we give is that Planning is associated with the "how" whereas Scheduling is associated with the "when". Responsibilities align with Planning, Resources with Scheduling.

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Planning, from a PMBOK perspective, covers all 9 domains, not just Time. Using our definition of "how", it clearly explains why the Project Management Plan (PMP) covers how Risks will be managed, how Costs will be managed, how Procurement will be managed, and how other PMBOK domains will be managed. A significant amount of the planning in this context is typically done by the Project Manager, since this planning is broad and is very much about "how" the project will be managed. The Planner/Scheduler will have input into the Scope, Time, Resource and Cost domains but works within this broader framework.

The plan for delivery of the project is the focus of the Planner/Scheduler, it is a subset of the Project Management Plan. The scope, the approach, the schedule and the resource plan are the main deliverables (and possibly the cost plan if it is an EVM environment). Ownership of the plan remains with the Project Manager, the Planner/Scheduler is their resource.

We have spent years trying to educate industry on the difference between Planning and Scheduling. Some understand but many do not, explaining why recruiters and employers continually combine or confuse the two. For that reason this paper uses the collective Planner/Scheduler rather than separating out. We think of a Planner as a more senior role, a Scheduler more junior role. Definition of skills will be covered in more detail later in the paper.

Historical perspective

Formal Critical Path Method (CPM) techniques evolved in the 1950s and 1960s although their roots could be traced to the early 1900s. One could argue that Planning skills must have existed in order to build the pyramids and other ancient structures. With the advent of the computer in the late 1950s, CPM became a practical application for the emerging technology. It wasn't until the development of the Micro computer in the late 1970s and IBM's PC in the early 1980s that scheduling software became viable for business.

From 1983 onwards scheduling software flourished, particularly when Microsoft launched the Windows version of Project in 1990. Marketed as "easy to use" and "anyone can schedule", Microsoft Project became the dominant mass market scheduling tool for Business. Its popularity seems to have stemmed from a combination of market dominance, flexibility (which arguably undermines standards) and familiar look and feel.

During this time other more robust tools such as Primavera, Micro Planner and Open Plan maintained their position and differentiated themselves as being tools for "real" Planner/Schedulers. Ironically they have gained a

reputation from others for being overly complex, expensive and difficult to use.

Mature or "real" Planner/Schedulers could still use Microsoft Project to schedule properly, but had to be very careful in doing so. Getting consistency across a business using Microsoft Project is difficult, due mostly to it's flexibility. Unfortunately, as Microsoft Project has evolved, the tool has moved further and further from "real" scheduling with the latest 2010 version including manual scheduling and more of an "Excel" user experience. Manual scheduling promotes typing in a date and/or clicking and dragging the bar, not the use of logic.

Also, with the advent of EPM tools in the 2000s, most tool vendors have recognised the need to integrate to Microsoft Project. EPM tools typically include additional control and reporting functions, but their focus with respect to scheduling has been to support tracking, information summarisation and communication more so than Planning.

Meanwhile the professional associations such as the Project Management Institute (PMI) and the Australian Institute of Project Management (AIPM) use the Project Management Body of Knowledge (PMBOK) as the basis of their accreditation. Industry has also embraced the UK Office of Government Commerce (OGC) PRINCE2. In providing accreditation, these associations are seeking to develop Project Management as a profession. As part of defining the profession however, they relegated the schedule to be a subset of Project Management and considered the role of Planner/Scheduler as a stepping stone to Project Management.

It is interesting that the associations took that approach, particularly given their methodologies and standards are all built around Planning. Up until the 1980s, Planning/Scheduling was a recognised specialty, there were whole departments of career Planner/Schedulers. In the 1990s, as scheduling was considered a function of Project Management, the scheduling departments were lost as business downsized. More recently as Project Management Offices (PMOs, the P also may refer to Programs or Portfolios) become popular, experienced Planner/Schedulers are once again in demand.

Over the last 15 years, studies on Project Failure such as the often quoted CHAOS[4] study pointed to ongoing failure of IT projects. With average cost overruns of around 33%[5], a common contributor is the over run in schedule. While there are many reasons discussed, poor planning, estimating and control are amongst them.

Recent discussions at the AIPM PMO Special Interest Group[6] and in on-line forums[1] show a common theme, Planning/Scheduling skills are sadly lacking in business and IT.

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Interestingly, the highly skilled Planner/Schedulers known to us understand the economic reality of supply/demand, so have tended to take on contract roles earning a relatively high income compared to their Project Manager colleagues.

Standards (or lack of)

For many years there has been a lack of standards with respect to scheduling. While partly covered by the various EVM and Work Breakdown Structure (WBS) standards, it wasn't until 2007 that saw the PMI release their Practice Standard for Scheduling[7]. The Standard focuses on the schedule artefact rather than the approach taken to building it, covering in detail the definition of the data elements. The standard is a collection of industry thought, built by a committee. While some aspects are open to discussion and debate, we consider it sound and recommend it's use.

Following PMI's Practice Standard for Scheduling, the PMI also released their Scheduling Professional (PMI-SP) accreditation[8]. Through a combination of work experience and an examination (similar approach to the PMP accreditation for Project Managers), participants are formally assessed. The accreditation takes an integrated approach, covering other PMBOK content such as Procurement and Quality as it relates to the schedule. The PMI-SP is realistically only achievable by Senior Planners but it is an important recognition by the PMI of the discipline specialty.

The AIPM does not recognise scheduling as such but does have a Certified Practising Project Practitioner (CPPP), which is more of a junior Project Manager recognition. The only other formal accreditation for Planners we have found is the Association for the Advancement of Cost Engineers (AACE) Planning & Scheduling Professional (PSP) accreditation, although it has been described by some as quite onorous[2] and again only achievable by Senior Planners.

Other than those published by organisations such as ours, ad-hoc self managed business accreditation, and a multitude of tool based training certificates, there are still a lack of accreditation standards, particularly for mid level and junior Planner/Schedulers. Without standards it is difficult for an organisation to assess their maturity against any recognised benchmark, provide professional development programs for staff and it is difficult for training organisations to structure training material.

Integration complexity

Planning/Scheduling cannot live in isolation, there are many areas of integration requiring experienced Planner/Schedulers to consider domains beyond just time.
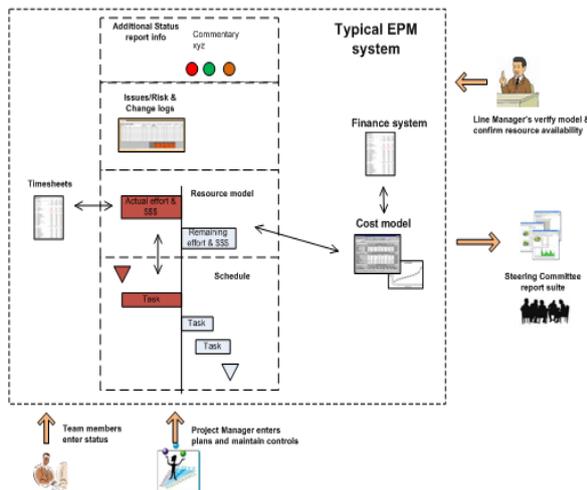

Diagram 1 – Typical EPM system

The Integration domain within PMBOK covers how the eight other domains integrate with each other, and to a lesser extent how they integrate to the rest of the organisation. Scope change, for example, is an integration challenge typically involving scope, procurement, resources, cost and

schedule. Planner/Schedulers must be aware of these integration issues.

With the advent of EPM systems, the schedule may also need to integrate to Timesheeting (actual effort and hence cost), Estimates to complete (effort and cost), Milestone reporting, Resource Management and other more complex reporting functions. If there is an EVM environment, integration may also be needed between the schedule and the EVM engine. Integration in this context may involve common coding and periodic data exchange as well as aligning Work Packages and Planning Packages. The scheduling level of detail becomes a key aspect of such integration and the experienced Planner/Scheduler must be able to provide guidance.

The other area of integration complexity involves people and politics. The ability (or inability) by an organisation to formally estimate, manage investment, gain agreement/approval, manage a Baseline and report realistic forecasts all lead to complexity for a Planner/Scheduler. Terminology use or misuse plus policies inconsistent with industry best practice provide complexity. Commercial and political considerations will often place enormous pressure on Planner/Schedulers.

Organisational Scheduling maturity

A simple organisational scheduling maturity model is outlined below. The model helps to rank an organisation broadly using the PMI Scheduling Standard as a high maturity benchmark.

Low maturity – Basic Gantt chart style of schedules are built mainly by Project Managers, in an ad hoc manner. While some schedules may be mature, the majority are likely to be date rather than logic driven, are rarely updated (probably only using % complete) with milestone forecast dates in reports not taken from the schedule but from subjective judgement.

Medium maturity – Schedules are more likely to be built using durations and logic, most updated (using actual dates and remaining duration) with occasional consideration of resources. There is likely to be minimal integration between reporting systems and Baseline will be used ad hoc if at all. Milestone forecast dates in reports are more likely

to be taken from the schedule but manually extracted.

<u>High maturity</u> – Fully integrated, consistently structured schedules with resourcing of tasks for at least the critical resources. Schedules are more likely to be manually levelled to ensure "doability" and are likely to be formally checked for schedule quality. Baseline is maintained with consistent, schedule driven Status reporting. Float/critical path analysis is done regularly and is included in reports. Schedule history and analysis is included in Lessons Learned/Post Project Review.

Depending on current and target organisational scheduling maturity, different standards, guides and training programs will be required to develop skills. Maturity growth will require a formal change program and significant senior management support, it will take years not months to achieve.

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Skills and attributes of effective Planner/Schedulers

Experienced Planner/Schedulers have a unique blend of attributes. They fluctuate between extremes[3] of:

- Big picture vs Detail – while seeing and understanding the overall project objectives and vision, they must be comfortable working with detailed tasks, durations and logic

- Leading vs Following – providing leadership and direction in the Planning approach, but following the actual plans and will of various Subject Matter Experts to ensure they "own" the schedules

- Ambiguity vs Precision – given nature of projects and rolling wave Planning, experienced Planners must work with both ambiguous data as well as precise data

- Simplicity vs Complexity – while a great advocate of keeping things simple, at times detailed logic on large schedules can get quite complex. A good Planner/Scheduler can identify and implement the right balance between the two extremes

- Patience vs urgency – while often dealing with busy and difficult people, experienced Planner/Schedulers must know when to push and know when to back off, bearing in mind planning deadlines. Using a great deal of astuteness they must be able to drive yet be patient and listen, a difficult blend. This is further complicated by the lack of authority.

Regardless of the above, common to most effective Planner/Schedulers are the following:

- Communication skills – Both written and verbal, communication skills are arguably the most important skills needed by effective Planner/Schedulers

- Experience in an industry and/or type of project – whilst experience can be supplemented through mentoring and coaching, previous project experience is recognised as a major contributor to a Planner/Scheduler's success

- General knowledge in relevant areas such as Project Management methodologies (eg PRINCE2), development methods (eg Agile, SDLC), Testing, Requirements, Change management

- Visualisation skills, aligned to imagination, good Planners can "see" the project throughout the project life cycle and can translate that to schedule tasks and dependencies

- Logical thinking – Planner/Schedulers who think logically have a huge advantage when working with logic driven tools

- Tool skills – Computer software is so common today that people with high levels of computer skills will be more likely to be effective in scheduling

- General soft skills when working with people, including the ability to influence and to manage stakeholder expectations

- The ability to plan and run both meetings and workshops

- High levels of personal information and time management skills

Covered above but unique to planning are the ability to facilitate workshops, get people to collaborate and gain consensus as a group, the ability to communicate strategy and the ability to focus on risk to the organisation as a whole.

Unique to scheduling are the ability to interpret and represent activity in terms of traditional schedule tasks and dependencies. Schedulers will support Planners during schedule optimisation and refinement through to Baseline agreement since facilitating consensus is typically a Planner role.

Schedulers will drive the tracking, control and reporting activities, covering all aspects of status and reforecasting, critical path/float analysis, baseline maintenance and change control.

Planners will tend to provide the analysis functions, identifying potential problems by using instinct and drawing on past experience. Planners will drive corrective action planning and provide direct support to the Project Manager.
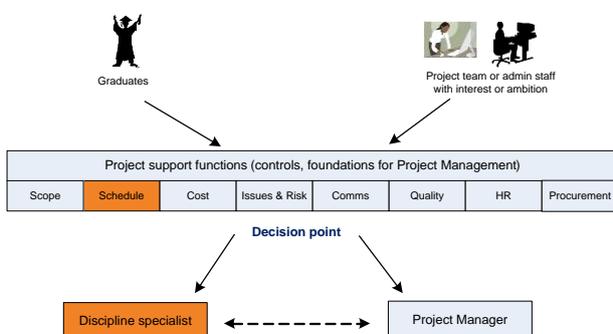

Diagram 2 - Career paths

Scheduling and Control are the first skills to be developed, planning and analysis skills take longer to develop. More experienced Planners will tend to grow from highly skilled Schedulers.

Roadmap for skills development

The following roadmap has proven effective for developing Planning/Scheduling skills.

1. Define a scheduling standard – without which it is very difficult to train or assess. The standard must also cover the use of the chosen tool(s). If not covered separately the standard must also cover scoping (WBS, Responsibility, Inter-dependency).

2. Promote a scheduling culture, where a greater level of schedule quality is expected. Include senior management in this culture to ensure they push back on poor data. Ensure the culture includes promotion of schedule ownership (by PMs and Team members).

3. Recognise an internal Planning/Scheduling expert. This person should be available to coach and support those less skilled as well as guide organisational scheduling maturity development. Work with HR to recognise the career path formally.

4. Implement a training program to up skill, not only Schedulers and the PMO but Project Managers (both senior and junior) as well as Steering Committee members.

5. Consider a graduate program, scheduling being an ideal 1st step in a Project Management career. After two years of scheduling/project support, graduates can then choose to either broaden their skills to follow a Project Manager career or focus and deepen their skills to follow a planning career.

6. Consider some sort of accreditation. Use PMI-SP for senior Planner/Schedulers and develop an internally recognised accreditation standard for more junior Schedulers.

Conclusion

Planning/Scheduling was once a popular career path but was lost during the 1980s and 1990s. Industry demoted Planning/Scheduling skills to be a subset of Project Management skills while software vendors promoted the "anyone can schedule" culture. Meanwhile Project Managers, through lack of skills and experience, produced poor quality schedules, forecasts and schedule status reports and were unable to analyse float.

Skills and attributes of an experienced Planner differ from those of an effective Project Manager, although a Planner/Scheduler can cross over to Project Management and visa versa. Scheduling is a common stepping stone to either career.

By developing scheduling standards and recognising accreditation, Planning/Scheduling can become a viable career path in its own right. With a common first two year graduate program, a recognised Scheduler role provides an excellent grounding whichever path is followed.

There is more than enough research showing that IT projects in particular are over running time and cost. By developing Planning/Scheduling skills business must be able to improve the success of their projects.

References:

1. LinkedIn Discussion threads, particularly in the AIPM and Earned Value Management groups

2. Presentation by Pat Weaver at Primavera Users Group meeting 22/9/10

3. Drawn from ideas contained within "Roles and Attributes of a Scheduler" paper by Mosaic (www.mosaicprojects.com.au)

4. CHAOS studies, Standish group 1994-2008

5. Jorgensen and Molokken , CHAOS survey review 2006

6. AIPM PMO SIG discussions

7. PMI Scheduling Practice Standard 2007

8. PMI-SP Scheduling Professional accreditation handbook available via PMI web site

Feedback

Thanks to Chris Dwyer, Cameron Agnew, Carol Elzink and Astrid Silberman for their review and feedback.

We would welcome further feedback and comments, please phone or Email the author directly via martin.vaughan@coreconsulting.com.au.