A note on management integration in project contexts

By Alan Stretton

INTRODUCTION

For some time I have been uneasy about how management of integration in the project context is handled in the literature – mainly because it does not connect well with my own experience. Recently I was introduced to some work on project integration by an old colleague, Ted Tooher, which has helped give me a better understanding of the problems and opportunities involved in effective integration on projects, and has prompted me to pen this commentary.

INTEGRATION AND MANAGEMENT

Management at large

It appears to me that the key job of all managers is integration. This is the raison d'etre for having managers in the first place, and it is implicit in most of the classical definitions of managers. For example, Allen 1962 said

> ….we can define a manager as someone who is so placed organizationally that only
> he has the perspective, objectivity, and balance with respect to the varying and sometimes conflicting needs of his subordinates.

In this definition, the focus of management integration is decision making in the sense of providing overall balance to contributions by subordinates. Other definitions often imply other forms of integration, although seldom explicitly.

Another way of looking at the situation is to ask the question, "If the manager is not acting as an integrator, who is?"

The functions of management which are commonly depicted as being involved in management at large (and thence in management integration) are commonly depicted as being planning, organizing, leading, and controlling (e.g. Allen 2004, Mukhi et al 1988), or something very similar (e.g. Koontz & O'Donnell 1978). These can then be regarded as the manager's integration tools.

Project management

Project managers are widely regarded as integrators. For example, the *PMBOK Guide* (PMI 2013a) has had project integration management as one of its knowledge areas since the 1996 edition. The APM Body of Knowledge (APM 2012) has a major section on Integrative Management.

The components of these two management integration units are shown in the following table, with an attempt at roughly aligning APM components with those of PMI 2013a.

PMI 2013a	***APM 2012***
4. Project integration management	3.1 Integrative management
4.1 Develop project charter	3.1.1 Business case
4.2 Develop project management plan	3.1.5 Planning
	3.1.4 Organisation
4.3 Direct and manage project work	3.1.3 Information management
	3.1.6 Stakeholder management
4.4 Monitor and control project work	3.1.2 Control
4.5 Perform integrated change control	
4.6 Close project or phase	

Although they are substantial differences in the detailed components, both have elements of the broader management functions of planning, leading, organizing and controlling, just discussed in the previous section.

In my experience, the actual task of integrating things in practice may well start with the types of activities depicted in PMI 2013a and APM 2012, but the nitty-gritty of it involves much more detailed activity than is spelt out in these standards (or elsewhere in the literature for that matter). Tooher 2010 is also skeptical about the effectiveness of these approaches.

> The standard approach of integrating project management functions using a project management plan (PMP) is rarely effective as it relies on integrating separate plan components with little connection in reality and usually without a common structure.

In the following I draw on two papers by Ted Tooher (Tooher 2009, 2010) which address the integration issue in more immediate ways.

First, we identify two elements of project management integration.

PRIMARY ELEMENTS OF PROJECT MANAGEMENT INTEGRATION

There are evidently two primary elements of management integration in the project context, which are often strongly linked.

Internal integration

One primary element is managing the internal coordination of the project management functions prior to the delivery of the product or service into its environment. The functions to be integrated (which are termed knowledge areas in the PMBOK Guide) include scope, time, cost, quality, human resources,

communications, risk, procurement and stakeholders. This context will be called Internal Integration in the following discussions.

External integration

The other primary element is ensuring that the product of the project is properly integrated into its environment in the delivery stages, which can be described as External Integration. Just what External Integration entails depends very much on the type of project, the nature of the product and/or service delivered, and whether or not this has its own operational life cycle, as with asset delivery, for example.

Linked internal and external integration

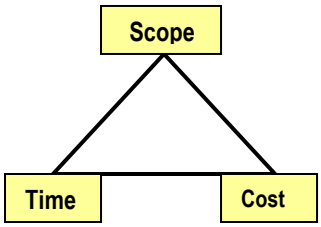
Many, if not most, decisions made in the internal integration element can influence outcomes in the external integration element. This particularly applies when the product of the project is an operational asset, which has its own life cycle after delivery. For example, cost saving in capital expenditure in the internal integration element may result in increased running costs, staff levels, and the like, during the asset life cycle. Similar considerations apply to most of the knowledge areas nominated under Internal Integration.

Tooher has commented that integration of project performance with asset operational performance is rarely done in a systematic way, with the exception of value management techniques used in some jurisdictions to optimize the whole of life cost.

This commentary is primarily concerned with internal integration, but with the above caveat about its links with external integration.

INTERNAL INTEGRATION

Integrating scope, time and cost



On many projects, particularly in US defence, integration of scope, time and cost is commonly undertaken using Cost and Schedule Control System Criteria (C/SCSC), and is achieved by utilizing a standard Work Breakdown Structure
(WBS).

However, Tooher 2009 reports that the use of the WBS to achieve integration between these three component functions is not common in some other industries, including construction, IT and process engineering. He says,

> Typically the design scope WBS is different from the cost plan headings, and the schedule is another list again, so that integration fails at even the simplest level.

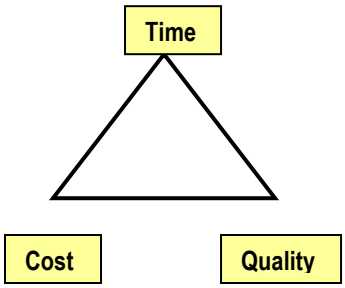
> The major reason for this fragmentation of responsibility is that each specialist contributor has their own system, and rarely is it a standard system used across all contributors in a project. Even commonly available PM systems do not require
>
> integration of cost, scope and time, let alone consideration of linking risk, quality and procurement to a standard WBS for a project.

The way to achieve integration of scope, time and cost is clearly through a common WBS. On complex projects, it is difficult to see how effective integration could be achieved without it. But evidently this is not done nearly as often as one might reasonably expect it would be.

As is also indicated in the above quotation, Tooher indicates that other component functions of project management could/should be integrated using a standard project WBS as the common link. However, he sees little movement in that direction.

There are a couple of well known diagrams in the literature which are concerned with interconnections between some component functions, and providing balance between competing functions, which appear to have some relevance for integration

Integrating time, cost and quality?



This particular project management triangle is one of the most familiar diagrams in the project management literature. Its general intention is to illustrate that these three component functions of project management are intimately
interconnected, that changes in any of them involve tradeoffs with the others, and that there is a need to balance these competing forces.

However, when it comes to integrating these three, we are missing a WBS of the scope, and thence an effective integrative mechanism to link the three.

Additionally the quality component tends to represent something of a problem. As Prieto 2012 says

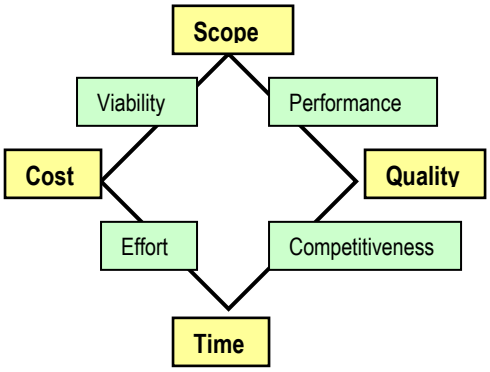
> Control bases include estimate, schedules and various definitions of fit for purpose or quality.

In this quotation, Prieto signals that what constitutes quality can be seen in different ways. Is it related simply to the deliverable, or to the longer-term performance of the ultimate facility, asset of service provided? It is often not really possible to dissociate the two, so that external integration can strongly influence aspects of internal integration.

Tooher is particularly concerned with two different views of quality as represented in the literature. One view is represented in the above diagram, which Tooher sees as equating quality with scope. The other, and he regards as the more commonly held

view, is that quality is concerned with meeting or exceeding customer expectations in terms of functionality, affordability, and timeliness.

Integrating scope, time, cost and quality?



Turner 1993:12 added scope to time, cost and quality to develop his scope/ quality/ cost/ time diamond. With this model we would have a WBS of the scope to act as the integrator between the first three. However, we still have the problem of defining quality in the most meaningful way, and then getting it integrated with the other three.

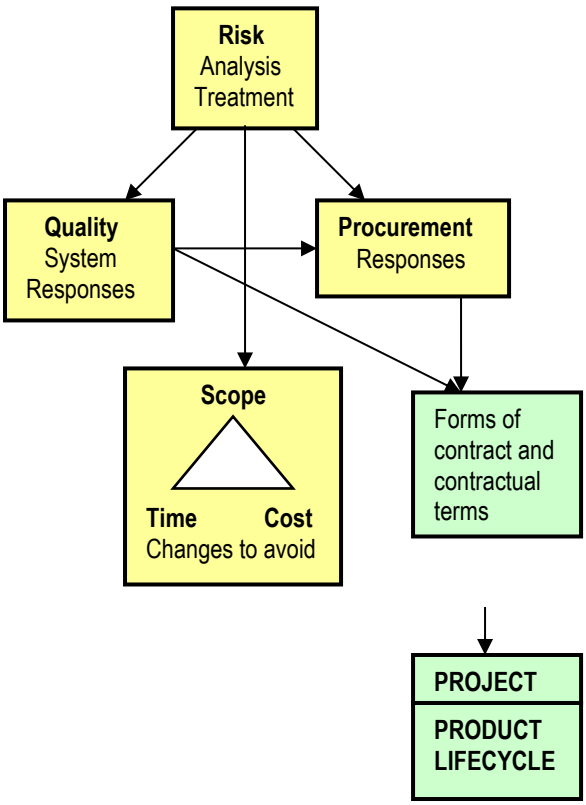
As we will see, Tooher associates the quality dimension with risk and procurement in a novel way. But, importantly, he uses a common WBS to provide the integrative linkage between all the project management functions.

We now look briefly at how Tooher approaches integration of quality, risk and procurement.

Integrating risk, quality and procurement

Tooher 2010 observes that,

In many project management office (PMO) environments there is a deliberate dispersal of the management of PM functions for project control including risk, quality and procurement to different specialists. …..



Tooher illustrates interconnections related to integrating these three function components of project management broadly as shown.

He says that the standard approach to quality management (ISO 9000) is to start with a risk analysis. This is also the standard approach to procurement (which is carrying design delivery and performance risk). Both quality and procurement are therefore tied to risk management, and are responses to risk treatment actions.

He has also suggested that the two remaining functions of project mgt. from PMI 2008a, HR and communications, can be integrated with the rest via an Organisational Breakdown Structure (OBS).

SUMMARISING

Overall, this commentary indicates that detailed project management integration, at least as it is represented in the literature, has a long way to go to become really efficient, or effective. An essential ingredient in attaining these objectives appears to be to apply a common Work Breakdown Structure (WBS) to all functional components of project management, supplemented by a corresponding Organisational Breakdown Structure (OBS) for project human resources and communications management.

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Alan Stretton is one of the pioneers of modern project management. He is currently a member of the Faculty Corps for the University of Management & Technology (UMT), USA. In 2006 he retired from a position as Adjunct Professor of Project Management in the Faculty of Design, Architecture and Building at the University of Technology, Sydney (UTS), Australia, which he joined in 1988 to develop and deliver a Master of Project Management program. Prior to joining UTS, Mr. Stretton worked in the building and construction industries in Australia, New Zealand and the USA for some 38 years, which included the project management of construction, R&D, introduction of information and control systems, internal management education programs and organizational change projects. He has degrees in Civil Engineering (BE, Tasmania) and Mathematics (MA, Oxford), and an honorary PhD in strategy, programme and project management (ESC, Lille, France). Alan was Chairman of the Standards (PMBOK) Committee of the Project Management Institute (PMI®) from late 1989 to early 1992. He held a similar position with the Australian Institute of Project Management (AIPM), and was elected a Life Fellow of AIPM in 1996. He was a member of the Core Working Group in the development of the Australian National Competency Standards for Project Management. He has published over 120 professional articles and papers. Alan can be contacted at alanailene@bigpond.com.au.