

Getting Your KM Ducks in a Row – Aligning KM Strategy, Project KM Objectives, Outcomes and Outputs

Kersti Nogeste

Doctor of Project Management (DPM) candidate

RMIT University, Melbourne, Australia

and

Principal Consultant

Project Expertise Pty Ltd

PO Box 464 Collins Street West, Victoria 8007 Australia

Email: knogeste@projectexpertise.com.au

Abstract

Project stakeholders can improve the likelihood of agreement about project success, including delivery of a project's KM outcomes by defining and aligning a project's KM objectives, outcomes and outputs to the organisation's KM strategy. This paper describes a method for documenting expected project outcomes as outcome profiles that include the outcome name, definition statement, owner details, expected benefits, beneficiaries, benefits realisation timeframe, project outputs, means of assessment, dependencies and risks.

Key words: knowledge management, outcomes, outputs, project management, alignment

1 Introduction

1.1 Definitions

For the purposes of this paper, knowledge is considered an intangible asset/outcome, and the term "expected project KM outcome/s" is used to refer to "expected project knowledge outcome/s".

The paper specific definitions are based on the following broader definitions :

- A tangible (asset/outcome) is one in which "the primary value is in the physical artefact. It is the value of the artefact that distinguishes it from other products." (Wideman, 2001).
- An intangible (asset/outcome) is one in which "the value is in its intellectual property. Although there is some physical result, this is not the essence of the asset. The essential feature is new information and its physical aspect is only a vehicle for its conveyance and transformation" (Wideman, 2001).
- According to Guthrie, "often the terms, intangibles, knowledge resources and intellectual capital are used to refer to almost the same concepts" (Guthrie & Johanson, 2003).

1.2 An Increasing Focus On Intangibles

Organisations increasingly recognise that achievement of their strategic objectives including maintaining and improving their competitive advantage is dependent on the development and management of both their tangible and intangible assets (Future and Innovation Unit, 2001). Intangible assets currently considered to significantly influence an organisation's future include relationships, knowledge, leadership and communication, culture and values, reputation and trust, processes, skills and competencies (Future and Innovation Unit, 2001).

Whilst recognising that "case studies and cross-sectional analyses have provided evidence that intangibles are the fundamental source of competitive advantage for business firms in most industries." (Garcia-Ayuso, 2003), it is also acknowledged that this successful management is reliant upon "a new managing approach where intangibles are in the limelight" (Guthrie & Johanson, 2003) and that this form of successful management is reliant on continuing work by researchers and business managers, to develop, implement and disclose methods for the visualisation, measurement and management of intangibles within companies (Garcia-Ayuso, 2003).

It is therefore the purpose of this paper to contribute to this need for continued work by describing how intangible project outcomes, and project KM outcomes in particular, can be better visualised (identified and defined), measured and managed (delivered).

1.3 Planning For Project Success

The means by which stakeholders assess project success vary. They may refer to different sets of data, or even when referring to the same set of data, interpret it differently, according to their particular perspective, potentially leading to different assessments of the project's success (Rad, 2003).

So, project stakeholders can improve the likelihood of common agreement about project success, including the delivery of a project's expected KM outcomes by collaborating to clearly define and communicate project objectives and expected outcomes. In addition, project managers and their team members need to ensure that project resources and activities generate outputs that align with expected outcomes so that their efforts satisfy the project objectives.

Expressed in this way, the stakeholder defined project objectives and outcomes provide a top-down perspective of the project and the project team defined activities and outputs provide a bottom-up perspective of the project. To ensure alignment of both perspectives, the project objectives, outcomes, outputs and activities need to be linked together. These linkages can be depicted in terms of a hierarchy or network model, with the project objectives at the top of the model, followed in turn by project outcomes, outputs and the activities and resources that generate them.

Sample network/hierarchy models include the definitions provided by the Guide to the Project Management Body of Knowledge (PMBOK Guide), the logical framework method (LFM), the definitions provided in the UK Treasury department's "Green Book" and two models proposed by Ward and Elvin (refer Appendix 1 for further details).

The principles of these models are summarised in the following diagram :

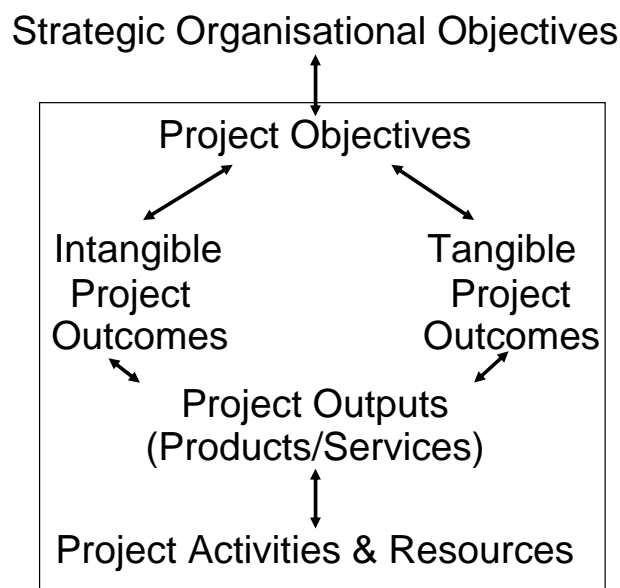


Figure 1: Project Hierarchy Model

1.4 Outcomes And Benefits

The relationship between outcomes and benefits warrants particular attention because the practice of benefits management has been identified as an increasingly important (HM Treasury, 2003) complementary practice to project management which whilst often neglected (Ward & Elvin, 1999) is capable of contributing directly to project success (Ward & Elvin, 1999).

The UK Office of Government Commerce (OGC) definition of benefits management is "the identification of potential benefits, their planning, modelling and tracking, the assignment of responsibilities and authorities and their actual realisation as a result of investing in business change" (Office of Government Commerce, 2003). In these terms, a project can be considered a "business change investment", with benefits management placing increased focus on projects delivering the outcomes and related benefits required to achieve project objectives. Focussing attention on benefits highlights the role of project outputs as a means of achieving specific benefits, rather than the outputs being "ends" in themselves (Kippenberger, 2000).

So, with reference to the abovementioned models, benefits management provides the means of identifying, defining, managing and monitoring the links between project benefits and project outputs (because outputs are used or operated and hence deliver benefits) (Reiss, 2000).

The following diagram illustrates the relationship between project outputs, outcomes and benefits :

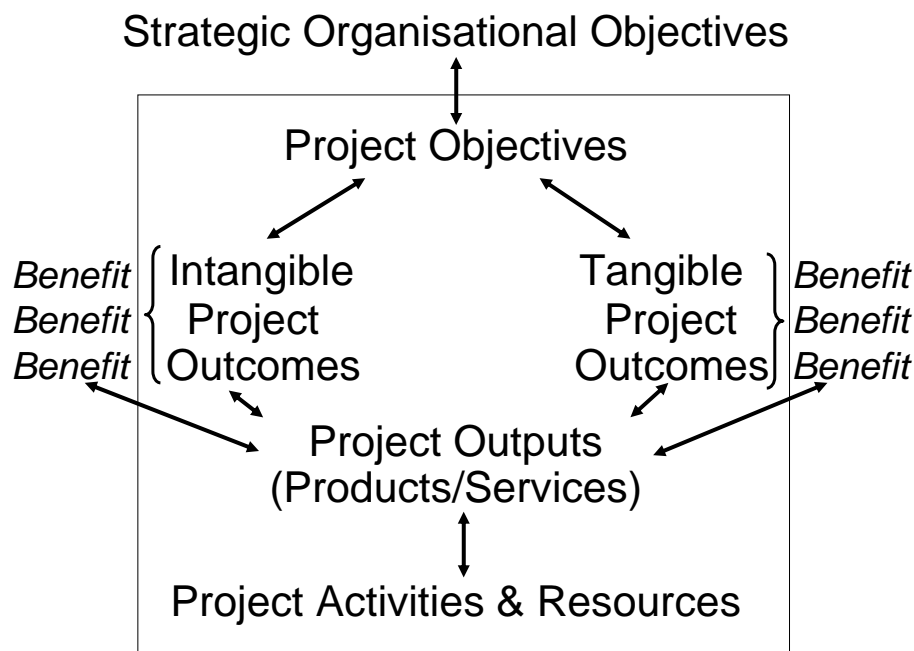


Figure 2: Project Hierarchy Model including Benefits

The initial benefits management step of identifying and defining benefits results in the development and documentation of a benefit profile (Kippenberger, 2000) (Reiss) that includes a definition statement and identifies the owner, benefits realisation schedule, means of measurement, financial valuation, dependencies and risk estimates.

Once the benefit profiles are defined, a benefits management strategy should be defined to ensure ongoing benefits management, including assignment of planning, monitoring and realisation responsibilities (Kippenberger, 2000). Because of the reliance on operational staff for post-project benefits to be realised/maintained, responsibilities should be assigned to a combination of project and operational staff (Kippenberger, 2000).

1.5 Aligning Project Knowledge Management Outcomes

A number of authors (Christensen and Bang 2003, Chua 2003, Dawson 2000, Lang 2001, Martensson 2000) refer to the strong link between an organisation's strategic objectives, its approach to KM and expected KM benefits. Therefore, based on these references it can be inferred that the relationship between a project's KM objectives, outcomes, outputs, activities and resources could be defined according to the project hierarchy model proposed above.

An organisation's approach to knowledge management may take a number of forms, depending on the perspective taken. Two sample theoretical perspectives are

- i) The individualistic (Martensson, 2000) or personalised (Christensen & Bang, 2003);
- ii) The holistic (Martensson, 2000) or codified (Christensen & Bang, 2003).

Where the individualistic and personalised perspective focuses on an individual's knowledge (Martensson, 2000) and how it is transmitted from one individual to another, and may therefore be managed by an organisation encouraging the creation and sharing of knowledge via social networks, mentors and open/informal meeting areas (Christensen & Bang, 2003). The holistic and codified perspective focuses on the knowledge itself (Martensson, 2000) and does so, by providing a "framework and structure of knowledge sharing" based on the premise that it is preferable for explicit knowledge be to be shared and not belong to individuals (Christensen & Bang, 2003).

These perspectives may in turn also influence an organisation's definition of KM to be biased towards either information or knowledge management, where information management (the management of digitised information) can be considered to be a subset of knowledge management, "which deals with all aspects of how people in organisations are enabled in performing knowledge-based functions" (Dawson, 2000).

So, an organisation's KM perspective will influence its KM strategy, objectives and processes and outcomes and also in turn, those of its projects. Therefore it is important for project stakeholders to clearly define KM within the project context. This is a means of ensuring that the project's KM objectives and outcomes align with those of the larger organisation, since only relevant objectives and outcomes will provide the organisation with the expected benefits (Martensson, 2000).

2 A Method For Identifying And Defining Intangible Project Outcomes, Including KM

2.1 Background

The increasing focus on intangibles combined with the need for clear alignment between project outcomes and outputs and the improved definition of project success criteria, including expected benefits, prompted the definition of the author's doctoral research; to develop a method for project stakeholders to better identify, define and document intangible project outcomes. The doctoral research included a series of five (5) action research case studies that iteratively refined such a method.

During the course of the case studies the method evolved from individual project stakeholders identifying and defining intangible project outcomes during structured interviews, through groups of like stakeholders identifying and defining intangible project outcomes during structured group interviews to finally, a workshop based method for key project stakeholders to collaboratively identify and define intangible project outcomes. In parallel the documentation of intangible project outcomes evolved from a set of individual/group interview records through to a set of collaboratively defined outcome profiles.

The earliest versions of the method driven off individual and group interviews left the author with the formidable task of transcribing the voluminous interview records and then reconciling various stakeholders' lists of intangible project outcomes. Upon review, this approach provide far too laborious be used in real-life situations and inappropriately made the interviewer responsible for reconciling project stakeholder expectations.

Therefore, a revised method was defined where a group of key stakeholder representatives collaboratively identify, prioritise and define intangible project outcomes in a workshop situation with the goal of documenting the intangible project outcomes as outcome profiles. This revised method was then applied to three (3) additional case study research projects. One (1) of these case studies involved the author working directly with a project officer conducting a project to assess the feasibility of a state police force assigning liaison officers to work with indigenous communities. The author's contribution was to document the intangible project outcomes identified and defined by fifteen (15) community meetings co-facilitated by the project officer (along with a representative from the police force's aboriginal liaison unit). The outcome profiles were used as the basis of identifying the link between project outcomes and outputs and hence the resources required to generate the outputs. The two (2) remaining case studies involved the author working directly with key project stakeholders of a crime prevention project and a health promotion project, applying the method described in the following section.

2.2 Overview

As described above, based on the author's experience to date with a number of doctoral level research case study projects, the recommended method for identifying and defining project outcomes, including project KM outcomes comprises the following steps :

- i) Identify Stakeholders
- ii) Schedule & Conduct Introductory Meeting
- iii) Conduct Workshop
 - Identify and Prioritise Project KM Outcomes
 - Define Project KM Outcomes
- iv) Link Project KM Outcomes to Project Outputs
- v) Define/Review Project Outputs

2.3 Identify Stakeholders

The initial step is to identify the stakeholders who will be responsible for identifying, prioritising and defining the project's KM outcomes. The stakeholders should include the project sponsor, key stakeholders including project steering committee members and "resource managers" (those people assigning their staff to the project) and operational staff representatives. Operational staff representatives should be included in this group because they will be responsible for ensuring the ongoing (post-project) realisation of benefits delivered by project KM outcomes.

2.4 Schedule & Conduct Introductory Meeting

Based on the author's research findings, it is recommended that a meeting be scheduled with the stakeholder group to review, discuss and agree upon :

- i) The hierarchical relationship between project objectives, tangible and intangible project outcomes (including knowledge), their benefits and project outputs.
- ii) Project success being somewhat dependent on the delivery of project outcomes, including KM outcomes.
- iii) Outcome profiles providing an acceptable means of documenting intangible project outcomes, including knowledge.
- iv) A date, time and place to conduct the workshop, that comprises the following two steps:
 - Identify and Prioritise Project KM Outcomes
 - Define Project KM Outcomes

Based on the author's research findings, it is recommended that

- i) Both the introductory meeting and follow-on workshop be scheduled as agenda items of the stakeholder group's regular meetings. This approach will increase the likelihood of stakeholder attendance and also send a clear message that the identification and definition of project KM outcomes is part of the group's operating agenda (Thornbury, 2003). If the stakeholder group does not meet regularly, then special purpose meetings will be necessary.
- ii) The introductory meeting and workshop be conducted at separate times to allow project stakeholders time to think about project knowledge outcomes prior to the workshop.
- iii) A workshop be conducted, rather than project stakeholders being individually interviewed. If the stakeholders are interviewed individually or as sub-groups, their priorities may vary and the facilitator is then posed with the challenge of reconciling the various stakeholder priorities as well as consolidating individual stakeholders' feedback. In the author's experience it has been found to be far preferable to meet the stakeholders as a group, in terms of both generating common project specific definitions of project outcomes and doing so efficiently.

2.5 Conduct Workshop

2.5.1 Workshop Introduction

The two-step workshop is expected to generate descriptions of as many project KM outcomes as can be discussed during the available workshop time. These descriptions comprise an input into the project management activities and also the project/organisation benefits management strategy, if it exists.

If it is not possible to collect all of the required information for every project KM outcome during the workshop, then follow-up action items need to be documented and agreed, including who is responsible for providing what information to whom and by when.

2.5.2 Identify And Prioritise Project KM Outcomes

The purpose of this initial workshop step is for project stakeholders to name, briefly describe and prioritise the expected project KM outcomes. The Outcome Names and brief Outcome Definition Statements defined in this step are used as the basis of the expanded definitions completed in the following step. There are two (2) main reasons for prioritising the knowledge outcomes. Firstly to gain common agreement amongst stakeholders and secondly, to ensure that that the remainder of the workshop focuses on the knowledge outcomes of greatest importance to the project.

When identifying project KM outcomes, project stakeholders could choose to consider the following

- i) The organisation's KM perspective e.g. individualistic/personalised or holistic/codified;
- ii) In the absence of a consistent organisational KM perspective, what the project specific KM perspective will be, and from that derive project KM outcomes;
- iii) Whether the outcomes are information management or knowledge management outcomes;
- iv) Depending on the KM perspective, whether the outcomes will relate to one or both explicit and tacit knowledge (recognising that a complete approach to KM needs to address both). Within a project context of limited duration, stakeholders should acknowledge that accumulated experience indicates that it is generally easier to focus on the management of explicit knowledge, rather than tacit knowledge. KM "quick hits" will be more achievable from management of explicit knowledge, rather than the management of tacit knowledge. Therefore, given the temporary nature of projects, project stakeholders also need to consider the elapsed time available to achieve project KM outcomes. Although this does not mean that the management of tacit knowledge should be ignored – but it must be recognised that it is more difficult to implement tacit knowledge management (Heath, 2003). The recommended means of managing tacit knowledge vary from Heaths recommended step-wise approach (Heath, 2003), where a schema is used to capture tacit knowledge., through to Kreiner's proposal (Kreiner, 2002) that tacit knowledge is best managed "in tacit ways" rather than in "conventional terms".

- v) Whether project KM outcomes are to benefit only the organisation's operations or both its operations and planned and existing projects (Disterer, 2002).

2.5.3 Define Project KM Outcomes

The second step of the workshop comprises project stakeholders using the following list of sample benefits profile criteria to define each project KM outcome :

- i) KM Outcome Name
- ii) Outcome Definition Statement
- iii) Owner (Beneficiary)
- iv) Benefit Description
- v) Benefits Realisation Schedule
- vi) Roles and Responsibilities
- vii) Measures
- viii) Required Project Outputs
- ix) Dependencies
- x) Risk Assessment
- xi) Financial Summary

i) KM Outcome Name and Outcome Definition Statement

The KM Outcome Name and Outcome Definition Statements are outputs of the previous workshop step.

ii) ii) Owner (Beneficiary)

Benefits profiles conventionally identify a single "management" owner. However, ownership of project KM outcomes needs to be considered from the perspective of the knowledge workers who care about the knowledge and own the means of producing (Kreiner, 2002) and/or using the knowledge (Lang, 2001).

iii) Benefit Description

Stakeholders should decide if the benefits of the project's KM outcomes are to improve the organisation's operational efficiency or to provide a long-term strategic advantage (Heath, 2003).

iv) Benefits Realisation Schedule

From a project perspective this schedule is important, since it will highlight the short and mid-term benefits expected to be delivered within the intentionally limited duration of the project and also the longer term benefits that will rely on project stakeholders other than the project team, to be realised.

v) Roles and Responsibilities

e.g. Staff members assigned to a project as user/business representatives, provide the project with a means of transferring existing and new/changed knowledge between the sponsoring organisation's operational units and the project (Disterer, 2002).

vi) Measures

The American Productivity and Quality Center (APQC) considers there to be three main types of KM measures (American Productivity and Quality Center, 2001b)

- Anecdotal e.g. war stories, success stories;
- Quantitative e.g. growth;
- Qualitative, often extrapolation of anecdotal measures.

vii) Required Project Outputs

As with all other aspects of the outcome definition, the prevailing KM perspective will also guide the definition of required project outputs. Sample project outputs that will support the flow of knowledge between a project, its sponsoring organisation's operational units and other projects, include (Disterer, 2002):

- Documented lessons learned;
- A project profile;
- Project issues log (including documented resolutions and resolution timeframes);
- Project team members' contact details (during and after the project);
- Contact details of individuals and organisations (e.g. professional organisations) external to the sponsoring organisation who assisted the project to meet its objectives;
- Employee Learning Contracts, driven by employees' professional development goals (Isaacs, 2001), (Sullivan, 2001) ;
- Contract staff project exit plans that describe how knowledge gained by contract staff will be passed on to the sponsoring organisation's employee/s prior to the contract staff departing from the project/organisation (Stainsby, 2001).

viii) Dependencies

The realisation of dependencies can 'make or break' the delivery of project outcomes. Therefore it is important for them to be given due consideration. Project stakeholders may wish to consider the following dependencies :

- If knowledge is to be shared between the project, sponsoring organisation and other planned or existing projects, there will be a dependency on project team members having access to operational and/or other project personnel, processes or systems (Disterer, 2002).
- Verbal communication competencies capable of supporting the useful flow of tacit knowledge e.g. metaphors (Lang, 2001).

ix) Risk Assessment

A relatively simple means of conducting the risk assessment is to assess the effect, impact and probability of each dependency not being realised and then define contingent or mitigative actions to reduce the risk.

x) Financial Summary

As for the definition of non-financial measurement criteria, project stakeholders need to be aware that the definition of the financial summary will be dependent on the organisation's KM maturity.

For organisations in the early stages of KM maturity, the American Productivity and Quality Center (APQC) recommends that KM related Return on Investment (ROI) be "captured indirectly and by extrapolation" (American Productivity and Quality Center, 2000) and that "ROI calculations alone are not enough to institutionalise KM as a way of working", so that it is necessary for project stakeholders to support KM as a "calculated leap of faith... not purely a return on investment (ROI) calculation." (American Productivity and Quality Center, 2000).

To guard against cynicism that project stakeholders might express towards these recommendations, it is important that project KM outcomes are "inextricably linked to improving the business" (American Productivity and Quality Center, 2001a).

2.6 Link Project KM Outcomes To Project Outputs

This post-workshop step of the method links the priority KM outcomes defined in the workshop to project outputs.

If the method is used in the planning stages of a project, then it will assist the delivery of project KM outcomes to be integrated into the development of project outputs. If the method is used to review project outputs, it will assist to evaluate the delivery of project KM outcomes by project outputs.

Refer to Appendix 2, which is a sample form used by the author to cross-reference project outcomes including KM outcomes, to project and (post-project) operational outputs.

2.7 Define/Review Project Outputs

Having linked project KM outcomes to one or more project outputs, each of the outputs needs to be defined/reviewed in turn, depending upon whether the method is being used to plan or review project outcomes.

This is the point in the method where standard project management practices are engaged to define/review the activities required to generate each project output, along with the resources required to support the activities such as skill level, time and available budget.

3 Conclusion

Achievement of organisational strategic objectives is dependent on the development and management of both tangible and intangible assets, with an increasing need for management methods that will assist intangible assets, such as knowledge to be visualised, measured and managed.

The method described in this paper, responds to this need by providing project stakeholders with an efficient, effective, repeatable method for identifying and defining (visualising), measuring and delivering (managing) intangible project outcomes including knowledge, by applying a combination of project management, knowledge management and benefits management principles.

References

- American Productivity and Quality Center. (2000). *Successfully Implementing Knowledge Management - Best Practice Report - Executive Summary*. Retrieved 5 January, 2004, from http://www.apqc.org/portal/apqc/ksn/SIKMexsum.pdf?paf_gear_id=contentgearhome&paf_dm=full&pageselect=contentitem&docid=102668
- American Productivity and Quality Center. (2001a). *Embedding KM : Creating a Value Proposition*. Retrieved 4 January, 2004, from http://www.apqc.org/portal/apqc/ksn/Embedding%20KM.pdf?paf_gear_id=contentgearhome&paf_dm=full&pageselect=contentitem&docid=106883
- American Productivity and Quality Center. (2001b). *Measurement for Knowledge Management*. Retrieved 4 January, 2004, from http://www.apqc.org/portal/apqc/ksn/Measurement%20for%20KM.pdf?paf_gear_id=contentgearhome&paf_dm=full&pageselect=contentitem&docid=106946
- Baccarini, D. (1999). The Logical Framework Method for Defining Project Success. *Project Management Journal*, 30(4), 25-32.
- Christensen, K. S., & Bang, H. K. (2003). Knowledge management in a project-oriented organization : three perspectives. *Journal of Knowledge Management*, 7(3), 116-128.
- Dawson, R. (2000). Knowledge capabilities as the focus of organisational development and strategy. *Journal of Knowledge Management*, 4(4), 320-327.
- Disterer, G. (2002). Management of project knowledge and experiences. *Journal of Knowledge Management*, 6(5), 512-520.
- Future and Innovation Unit. (2001). *Creating Value from Your Intangible Assets* (Report). London, UK: Department of Trade and Industry (UK).
- Garcia-Ayuso, M. (2003). Intangibles - Lessons from the past and a look into the future. *Journal of Intellectual Capital*, 4(4), 597-604.
- Guthrie, J., & Johanson, U. (2003). Intangibles and the transparent enterprise : new strands of knowledge. *Journal of Intellectual Capital*, 4(4), 429 - 440.
- Heath, J. (2003). Harvesting and using corporate knowledge. *Work Study*, 52(4), 184-189.

- HM Treasury, UK. (2003, 16 January 2003). *The Green Book - Appraisal and Evaluation in Central Government*. Retrieved 6th August, 2003, from <http://greenbook.treasury.gov.uk/>
- Isaacs, J. (2001). Contracts and intangibles. *Meeting*. Melbourne, Australia.
- Kippenberger, T. (2000). Managing the business benefits. *The Antidote*(27), 28-29.
- Kreiner, K. (2002). Tacit knowledge management : the role of artifacts. *Journal of Knowledge Management*, 6(2), 112-123.
- Lang, J. C. (2001). Managerial concerns in knowledge management. *Journal of Knowledge Management*, 5(1), 43-57.
- Martensson, M. (2000). A critical review of knowledge management as a management tool. *Journal of Knowledge Management*, 4(3), 204-216.
- Office of Government Commerce. (2003, October 2003). *Successful Delivery Toolkit*. Retrieved 21st February, 2004, from <http://www.ogc.gov.uk/sdtoolkit/workbooks/benefits/benefitsmgt.html>
- PMI. (2000). *A Guide to the Project Management Body of Knowledge* (2000 ed. Vol. 2001). Newtown Square, Pennsylvania: Project Management Institute.
- Rad, P. F. (2003). Project Success Attributes. *Cost Engineering*, 45(4), 23-29.
- Reiss, G. *Project Selection and Benefit Management*. Retrieved 6th August, 2003, from <http://www.e-programme.com/download/272,1,Project> Selection and Benefit Management
- Reiss, G. (2000). *Benefit Management - A Paper for Congress 2000*. Retrieved 13 November, 2001, from http://www.e-programme.com/articles/benefit_management.htm
- Stainsby, T. (2001). Contracts and intangibles. *Meeting*. Melbourne, Australia.
- Sullivan, J. (2001). Contracts and intangibles. *Meeting*. Melbourne, Australia.
- Thornbury, J. (2003). Creating a living culture: the challenges for business leaders. *Corporate Governance*, 3, 68-79.
- Ward, J., & Elvin, R. (1999). A new framework for managing IT-enabled business change. *Information Systems Journal*, 9(3), 197 - 221.
- Wideman, R. M. (2001, May 2001). *Wideman Comparative Glossary of Project Management Terms v2.1*. Retrieved 22 November, 2003, from http://www.pmforum.org/library/glossary/PMG_O01.htm

Appendices

Appendix 1 – Project Network/Hierarchy Models

PMBOK Guide

The PMBOK Guide defines project objectives, outcomes and outputs as follows :

- Project Objectives are the quantifiable criteria that must be met for the project to be considered successful. Each quantifiable criteria includes an attribute (e.g. cost), metric (unit of measure), and is expressed either as a single value or range of values (PMI, 2000).
- Project Outcomes are either tangible or intangible. The examples cited by the PMBOK Guide are tangible outcomes such as buildings and roads and intangible outcomes such as people who can effectively apply their training (PMI, 2000).
- Project Outputs are "any measurable, tangible, verifiable outcome, result or item that must be produced to complete a project or part of a project" (PMI, 2000).

So, according to this hierarchy, the objectives should be quantifiable, the outcomes may be tangible or intangible and the outputs are tangible.

It can be expected to be relatively straightforward to link (tangible) outputs to tangible outcomes and quantifiable objectives. However, it can be expected to be more challenging to link (tangible) outputs to intangible outcomes and quantifiable objectives.

Logical Framework Method

The logical framework method (LFM) was developed by the American Aid Agency in the 1970s as a means of improving the management of development projects and is described by Baccarini (Baccarini,

1999) as comprising four levels of objectives - goal, purpose, output and input, where each of the levels is defined as

1. Project Goal Objective, where the project goal is supportive of an organisation's strategic goals.
2. Project Purpose Objective, which provides both a means towards the project goal and also of defining project outputs.
3. Project Output Objective, which is "the immediate, specific and tangible results or outputs produced by project activities. The outputs explain what the project will produce".
4. Project Input Objective, which is a combination of the resource inputs and activities required to generate the outputs.

According to Baccarini the initial two levels of the hierarchy - Project Goal and Project Purpose "together explain why the project is being undertaken" (Baccarini, 1999).

Baccarini describes the LFM as a "how-why" logic chain, with each level of the hierarchy linked together by a combination of the two questions "How is this to be achieved?" and "Why is this to be achieved?". The first of these questions helps build the lower levels of the hierarchy and the latter question helps to verify the hierarchy, when passing back towards the top (Baccarini, 1999). The asking and answering of these questions, provides both a "step by step conceptualisation of the important elements of a project" (Youker as cited by Baccarini, 1999) and also a clear demonstration of cause-and-effect by confirming that "the hierarchical relationships between the project objectives are logical and viable" and support the strategic goals of the organisation (Baccarini, 1999).

According to Baccarini, the project goal and purpose are defined by senior management responsible for the project, with the project team being responsible for reviewing the project goal and purpose in terms of their linkages to project outputs and inputs (Baccarini, 1999).

UK Treasury Department "Green Book"

The UK Treasury department's "Green Book" (Appraisal and Evaluation in Central Government) describes the relationship between objectives, outcomes, outputs and targets (measures) as a hierarchy. Where objectives are expressed in terms of outcomes, which "sometimes cannot be directly measured". Outcomes are expressed in terms of outputs which are "the results of activities that can be clearly stated or measured" and relate "in some way" to the desired outcomes. Targets define the measures used to assess the outputs (HM Treasury, 2003). This hierarchy is consistent with the PMBOK Guide in that the intermediate layer of "outcomes" may not always be able to be measured and can be inferred to correspond to the intangible outcomes referred to in the PMBOK Guide.

Ward and Elvin's Models

Initially, Ward and Elvin also propose a linear model that describes intent/objectives, outcomes (and their benefits) and content (changes) as being linked together in sequence, with content/changes delivering outcomes that in turn achieve benefits that satisfy the intent/objectives (Ward & Elvin, 1999). They then enhance this linear model so that it becomes a "benefits dependency network" capable of depicting many-to-many relationships between content, (enabling and business) changes, benefits and objectives (Ward & Elvin, 1999). In both of Ward and Elvin's models, benefits provide a detailed description of the implied outcomes (Ward & Elvin, 1999).

Appendix 2 - Outcome To Output Cross Reference

KM Outcome Name	Outcome Definition Statement	Project Outputs					Operational Outputs (Post-Project)				
		PO 1	PO 2	PO 3	PO 4	PO 5	OO 1	OO 2	OO 3	OO 4	OO 5

AUTHOR DETAILS

Kersti Nogeste (knogeste@projectexpertise.com.au) is a doctoral candidate at RMIT University (Melbourne, Australia) and an independent consultant project manager with industry experience gained in Australia and North America.

This paper is based on Kersti's recent doctoral research case studies that have generated an efficient and effective, repeatable method for project stakeholders to use, to identify and define project outcomes, such as knowledge.

The research case studies were conducted with state and local government projects in the Australian state of Victoria. Kersti is currently writing up her thesis for presentation later in 2004.

COPYRIGHT

© Copyright 2004 Kersti Nogeste – as sole author I grant the organisers of the 5th European Conference on Knowledge Management a licence to publish the paper in the Conference Proceedings.