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# Multimedia projects and the optimum choice of individuals and teams

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**Abstract**

Project teams that lack sufficient resources are unlikely to be effective in their task irrespective of their individual and combined abilities. Correspondingly, teams with inappropriate ability are unlikely to complete a development task well irrespective of the resources placed before them. This paper summarises an evaluation study of 28 multimedia development projects undertaken by individual teams to determine the effectiveness and efficiency of various approaches to contracted multimedia development. The study adds information to the growing body of knowledge about the contribution individuals make to the successful completion of projects. The research undertaken for this paper provides an analysis of the roles and role-playing processes that individuals and their inclusion into project teams contribute in the development process. The development processes involved in multimedia production parallel those of conventional project management wisdom, and serve as a reminder of some of the forgotten requirements of any project process.



*Keywords:* Managing projects; Teams; Individuals

## 1. Introduction

Any project with serial operational processes tends to use functionally defined teams coordinated by a project manager to produce a final outcome. As time to market pressure has increased there has been the tendency for the deployment of conjoint development using cross-functional teams. In these conjoint teams, functionally qualified individuals perform tasks concurrently with tasks of other members.

Many reasons have been offered to explain the failure of a particular project [1–6]. However, most of these issues can be interpreted as a failure of the project system including management, marketing and issues within a project team [7]. Organisations don't make products, people do. Usually, it is the assembly of individuals into a team that is the basis for a project to be undertaken in a timely fashion [7–15]. Many assumptions exist as to the nature of an efficient and effective project team. However, there are some fundamental properties of teams that influence the project process in terms of efficiency and effectiveness. The determination of which properties factor in good and bad outcomes presents a significant research challenge [3,16]. As noted by Cooper and Kleinschmidt [2], when comparative research is undertaken at the project level the subtle factors such as culture and climate have a tendency to be lost in their level of significance in terms of how they affect outcomes.

If individuals and their assembly into teams are important factors in successful or unsuccessful project activity, then factors that relate to individuals and the team's achievement of outcomes needs to be examined. There are at least three such characteristics that relate to individuals and teams; these are capacity, competency and capability that in particular combinations should yield optimum development for project outcomes. Capacity refers to the adequate frequency of resources delivery that are brought to bear on a project to produce a completed outcome [17]. Capacity directly affects throughput time. Hence, capacity may be viewed as the operational capability of an individual or organisation. The capacity of a project determines the maximum available operative capability within a particular period of time. In this sense, the higher the available capacity, the higher the productivity and the shorter the time to

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completion. Capacity utilisation will have at least three qualitative dimensions [18]:

- Precisional: defined as the percentage of error or deviation from tolerance of the process at a particular level of load.
- Dimensional: defined as the load the system can handle to maintain a defined level of precision.
- Variational: defined as the level of operational flexibility remaining for a given load and level of precision.
- These properties reflect on the amount of waste of capacity during a project.

Competency and capability have been used interchangeably to describe organisational factors that are important to organisation success [19–21]. However, in the context of this paper, competency and capability are separate dimensions of the success factor. Competency is the specification of knowledge and skill; it is the explicit knowledge gained through training and refers to the level of 'know-what' and the 'know-when' to apply the what. Capability refers to the tacit knowledge gained from experience and is the level of 'know-how' and 'know-why' to complete a particular task. Further, when applied to a project, competency and capability are mutually dependent on each other since competency could not be applied without some capability and in turn, capability would have little effect without competency.

At the level of the individual, there are at least two components of competency [22,23], and three components of capability. It is assumed that over time, competencies and capabilities are gathered incrementally and assimilated to provide, in the best case, a talented individual. The two components of competency are:

- Practitioner Competency: the ability to practice a particular task or related set of tasks.
- Methodology Competency: the ability to know what to do with the practitioner competency.

These two competencies are the result of explicit knowledge transfer from previous learning. These competencies are skills that can be codified and reside in user manuals, texts and standard operating procedures.

Capability is the degree of application, through discretion and judgement, of knowledge and skill to produce a standard of required performance [24]. The components of capability are an evolving set of knowledge vectors that relate to hunches, feelings, know-how and know-why. These capabilities could be called project-enabling skills, as they are the skills related to successfully undertaking project practice and include:

- Systematic Capability: the ability to link current work to a strategic output.
- Learning Knowledge Capability: the ability to understand a problem then deploy self-learned solutions reflectively for a successful outcome.
- Business Centred Capability: the ability to consider individual work output to profit like outcomes.

Because these capabilities are gathered over time, there will be at any given time a certain level of capability that can be deployed dependent on the mental and cognitive processes of an individual and are defined as [8,25]:

- Current Potential Capability is the maximum level of capability available by an individual team member at any given time that relates to the project being undertaken.
- Current Applied Capability is the actual level of contribution being applied by an individual to a specific task.
- Future Potential Capability is the predicted level of potential capability of an individual at some time in the future. (Length of service directly relates to quality of output. That is, the longer the term of service the better the skill and the better the quality of output.)

However, at any degree of capability there are three basic requirements in an individual [8]:

- General intelligence
- Competency
- Perceptual speed

Hence, it is unlikely that tacit skills can be quickly transferred if an individual does not have a basic understanding of the explicit skills necessary to undertake a particular type of work and can confidently undertake the basic skill requirement without having to refer to a mentor.

Tacit knowledge transfer works best with groups of individuals with a common explicit competency or interest and aims at significantly improving four factors in a group [8].

1. The group output will be better, the more capable the average member. Although a group comprised of low ability members has little likelihood of producing a high quality outcome, it is rare to find that a high-ability group produces a poor quality outcome.

2. Team productivity is the result of a simple sum factor of pooled performance. The greater the interdependence of individuals the greater the group productivity beyond simple summation (the whole will be greater than the sum of its parts).
3. If team members are performing tasks in series, the team output will only be as fast as the weakest member in the chain.
4. If the team's performance depends on uncovering the correct answer, then team performance will be as good as its best member.

Project output then, should be able to be characterised by the competency and capability of its players if such projects were able to focus on the variables of the individual players and their response to the team environment.

## 2. Context of the research

In 1998 the Australian National Training Authority (ANTA), on behalf of the Australian Government, proposed an initiative aimed at a multiple developer approach to online training. Part of this initiative was the development of a set of multimedia products that could be combined to support a broader training strategy. These products involved some form of multimedia that would be available to training providers as a standalone training package or be integrated into existing training strategies for learner development [26,27].

A total of 28 development projects were undertaken. Each project had a common contract, common development objective, common outcome performance measure, common development time to role-out but different project teams.

## 3. Research question

The author was appointed by the project owner to assess issues relevant to the success of a project team. Thus, the primary research question was:

- What are the important factors within a project team that maximise the opportunity for a successful project in terms of cost, timeliness and product quality?

Hence, from this research it was expected that, in the contracting of future multimedia development projects of this type appropriate selection criteria could be used to maximise the benefit to the owner.

## 4. Research methodology

This study involved a detailed examination of the processes undertaken by 28 product development teams. The Australian National Training Authority (ANTA) through the use of a two-stage tendering process determined the sample size. Firstly, interested parties were asked to provide a concept of the product in response to a tender scope. From this process a smaller number of developers were then given the opportunity to submit a tender to develop a multimedia-training product appropriate to particular competencies within a Training Package. In the *Toolbox Initiatives Series One*, there were 102, 'Expressions of Interest' received from which 29 organisations were invited to submit a full tender. In the *Toolbox Initiatives Series Two,* there were 107 'Expressions of Interest' received from which 39 were invited to tender.

The process produced a short list of preferred proposals by the Selection Panel. The criteria used in evaluating tender proposals in the *Toolbox Initiatives Series One* were:

- Capacity of the tendering organisation to undertake the project
- Usefulness to the training system of the product to be developed
- Quality and project management processes of the tendering organisation

In the *Toolbox Initiatives Series Two,* the Selection Panel added two more criteria for evaluating the tender proposals. They were added because of the recommendations made by the Evaluation Team to improve the ability of the tendering organisation to deliver an improved outcome [27]. The two additional criteria added were:

- Content development (sources/strategies/personnel), and
- Value for money: a measure of economy examining the ability of tendering organisation to deliver the best outcomes for each project dollar.

In summary, the 28 project teams were selected because the Selection Panel deemed that they scored better than other tenders based on the criteria provided. The successful project teams were then sent contracts specifying what was to be developed and by when.

The research was part of a larger research effort into the development of online learning product and included evaluation of the contribution many organisational and national policies make to a particular initiative.

The online learning development initiative involved the implementation of a national policy through a

competitive tender process. A small team was appointed to evaluate every facet of the process from policy development, tender, bidder selection, development of team structure and the capacity and capability of teams to complete their project contract in a set period of time (10 months). The evaluation team had a consistent contact with all stakeholders over the period and undertook several types of detailed evaluative analyses on all players and stakeholders' involved [26].

The process employed by the evaluation team relied on the determination of four criteria [28–33]:

- Context: to define the operational paradigms within the organisation.
- Input: to identify and assess system capability and capacity constraints.
- Process: to identify and assess the efficiency and effectiveness of processes.
- Product: to examine the relationship between the objectives, context and processes and outcomes.

Six surveys were conducted on each development team. Other surveys were conducted on the organisation supporting each team and the other stakeholders with interests in the projects. The contract between the Government and each organisation was made available to the evaluation team prior to the commencement of each project. Linked to this contract were particular milestones for the project deliverables, set in the timescale to provide the stakeholders with information as to the probability of the completion of each project against the contracted deliverables. The evaluation process was aimed at providing all stakeholders with a timely and independent assessment of the need for decision intervention in each project. The evaluation team also evaluated the government management practices relevant to the project contracts. The stages and evaluation activities are presented in Table 1.

The main items against which surveys were undertaken included:

- The exact specification of the project.
- The target of the product.
- The project methodology to be employed to produce the product.
- The project issues with respect to delivery platform and intellectual property management.
- The project plan.
- Quality assurance processes to be employed.
- Experience of each member of the development team.
- The risk management plan.
- The development cost.

Teams were assessed for their capability to undertake the given task for the given level of capacity available at any point in time through the project. Assessment of capability was based on the comparison of problem solving approach and by each member of each team and ranked relative to the best performing team. Capability was defined as the degree of application, through discretion and judgement, of knowledge and skills to produce a standard of required performance. The components of capability included systematic capability, learning knowledge capability and business centred capability. From the research process, the evaluation team could assess relative capability of each project team and the capabilities of the various levels of management to support their team. In addition, it was possible to determine capacity constraints that acted as limiting factors relevant to the performance of otherwise capable teams.

The study applied the criteria developed by Guba and Lincoln [30] and Marshall and Rossman [31] to argue the soundness of the methodology. In particular, they suggest that credibility, transferability, dependability and confirmation are the criteria that should determine the soundness of qualitative research.

Data triangulation was achieved by using multiple sources of data, including multiple cases and multiple types of data from each case. In this study there were distinct points at which information was gathered, forming the "Chain of Evidence". The points for examination were:

- Relevant policy and related documentation;
- Interviews with policymakers

Table 1
Evaluation activity

| Stage | Description | Week | Evaluation assessment activity |
|---|---|---|---|
| 1 | Project initiation | 1 | Contract and its interpretation by all stakeholders |
| 2 | Team relationships | 6 | Assessment of working relationships |
| 3 | Problem assessment | 18 | Development of strategies likely to improve the probability of honouring the contract |
| 4 | Half-way | 20 | Milestone of contract deliverables |
| 5 | Three-quarter-way | 30 | Probability of completion of contract: reasons why and why not |
| 6 | Delivery position | 40 | Quantification of the degree of completeness against contract. Reasons for or against successful completion |

- Interview with contract owners and owner representatives
- Telephone interviews, questionnaires and on-site visits with the development project managers and development teams and individual team members
- Questionnaire to unsuccessful tenderers
- Interviews with product evaluators and user representatives

This criterion examined whether the conclusions of the study were reasonable based on the data collected and whether another researcher would come to the same conclusions [31]. As long as rigorous methodology was employed throughout, the results could be used to develop an analytic generalisation via "explanation building" [33]. The aim of this method was to build an explanation of the findings, that is, to develop and test a hypothesis that explained the causal relationship identified between the independent and dependent variables. Cassell and Symon [28] argued that case studies allow for the development of "detailed knowledge ... about the process underlying the behaviour and its context". The generalisations are expressed as research questions and then tested within the context of the population used in the study.

## 5. Results

Projects were grouped (A–F) according to the collected characteristics, that upon completion of each project, were determined to have had some effect on the completion quality of the project in some way. The three most important common sub-characteristics, found in this research, for each level of an organisation undertaking a project are listed in Table 2. These characteristics are defined for the:

### 5.1. Leader

- Networked: has a personal knowledge of peers who can offer help.
- Involved: could spend some time actively participating in the operation of the project.
- Strategic Focus: can relate the project as being part of the process for the organisation to achieve its goals.

### 5.2. Project manager

Project Planning Skill: a prior history of tacit knowledge of planning like projects.

- Knowledge of Task: a prior history of tacit understanding of like projects.
- Active Involvement: ability to be time committed to a project.

### 5.3. Developers

- Using Existing Product: are using an extension or adaptation of an existing product that at least some of the team had previously developed.
- Customer Literate: had some form of direct contact with the customer at the start and subsequent stages of the project.
- Direct Project Link: had a direct communication and involvement link with other members of the team, rather than acting as a sub-contractor that worked only with the project manager or leader.

The most important characteristic that affected quality in terms of delivered cost, time or functionality was found to be "using existing product". Using this as a score value of 10, each of the other characteristics were ranked relative to the characteristic of using existing

Table 2
Overall approach to a project[a]

| | Leader | | | Project manager | | | Developers | | | Score |
|---|---|---|---|---|---|---|---|---|---|---|
| | Networked | Involved | Strategic focus | Project planning skill | Knowledge of task | Active involvement | Using existing product | Customer literate | Direct project link | |
| *Weight factor* | | | | | | | | | | |
| | 7 | 4 | 2 | 9 | 9 | 8 | 10 | 7 | 9 | |
| *Team type* | | | | | | | | | | |
| A | 7 | 4 | 2 | 9 | 9 | 8 | 10 | 7 | 9 | 65 |
| B | | 4 | | 9 | 9 | 8 | 10 | 7 | 9 | 56 |
| C | 7 | 4 | 2 | | 9 | | | 7 | | 29 |
| D | 7 | | | | 9 | | 10 | 7 | | 33 |
| E | 7 | | | 9 | | 8 | | 7 | | 31 |
| F | | | | | | 8 | | | | 8 |

[a] Where an element was present, teams received the full weight factor.

product. The summed values of characteristics presented for teams were then used to allocate each team to a type as shown.

One of the management issues that is always raised when organisations undertake IT development projects is the "back-hole giving too little and too late" phenomenon. That is, these projects may end up costing far more than intended and have less functionality as well as being delivered well after the promised date. Of the project types listed in Table 2:

- Projects of Type A were completed on time and well within cost.
- Projects of Type B were delivered on cost.
- Projects of Type C and D were delivered on time.
- Projects of Type E had major quality problems but handed off the project, slightly late, with components uncompleted.
- Projects of Type F required legal settlement.

## 6. Discussion of results

From the organisational issues highlighted in this research and for a product development project to have maximum opportunity of success the following factors are fundamental:

1. The organisational leadership must be involved and networked. Networking means that the role has a good knowledge of people in the industry for which the product is being targeted. This information can be useful if the development stalls due to a resource problem, as the network can be exploited to obtain short-term resource solutions.
2. The project manager needs to have technical skills and knowledge of the technology involved as well as being a capable manager. The technical skill requirement has become lost in the majority of literature on product development. In projects of Type F, a professional project manager was appointed, but had no technical knowledge of IT. Although endless numbers of GANTT charts were produced, the project manager had no understanding of the interrelationships that existed in this type of development.
3. The project team must have previously worked on like projects. It would be imagined that this would be an obvious point, however, having a team of champions does not necessarily result in a champion team. Severe stress was evident in teams coming together for the first time and working on a project, which was a new type of development for several members.

### 6.1. Creative climate

Organisational structures are the visible artefacts of what can be termed organisational culture. Culture is a complex concept but it basically equates to the pattern of shared values, beliefs and agreed norms that shape individual and team behaviour. For such organisational structures to be effective in it is generally agreed that a creative climate must exist, at least, in some part of the organisation.

Building a creative climate involves systematic development of appropriate organisational structures, communication policies and procedures, reward and recognition systems, training policy, accounting and measurement systems and deployment of strategy. The problem with the notion of a creative climate, or even individual creativity, is that the term is ambiguous. Creativity will take on a unique definition for each individual trying to implement it. In the management context then, the term creativity is unbounded and hence, may not be able to be managed in its strict sense.

Creativity can be described in terms of the dimensions of competency and capability for a given capacity, and each of these dimensions is manageable. Each dimension may be independently resourced to accommodate differing phases and conditions within the project process. The management issue then becomes one of establishing the best starting condition for a team to undertake a product development project. Such conditions are suggested in Table 3, and discussed in terms of the players involved.

### 6.2. Project manager

In most cases the project manager was drawn from within the host organisation. In this situation, project success directly related to the degree to which the project manager was allowed to focus on the given project. In several instances, the project manager assumed a part-time role on a number of concurrent projects. Hence, the project manager simply collected data for the time charts and budget, and reacted to situations rather than proactively managing the project. In all instances where part-time project managers were involved, the projects were delivered late.

In order to overcome the project management resource constraint, some organisations opted to outsource the role to a professional project manager. Where this person had considerable technical knowledge of the technologies to be incorporated in the product and with excellent project management experience and able to establish good rapport with the team, the project was completed successfully. In two instances, the individual outsourced project manager was highly experienced in managing projects but lacked an understanding of the technologies involved. In both cases, the develop-

Table 3
Profile characteristics of a capable team of starting base competency

| Leadership | Project manager | Outsourced project manager | Team | Individual | Outsourced individual |
|---|---|---|---|---|---|
| Does not manage fine detail | Experienced in like projects | Outstanding project completion | Espirit-de-corps | Talented | Outstanding technical capability |
| Involved | Technically competent | Technically competent | Varied talent | Sharing | Project focussed |
| Good decision capability | Well networked | Comfortable with new team environments | Experienced in like projects | Technically competent at given task | |
| Good contract management capability | History of successful project management | | Worked well together before | Committed to project | |
| | Full time | | Strong problem solving capability | Well networked | |

ments ran into trouble in the later stages of the projects, due to items that should have been part of the critical path, but everyone assumed someone else was taking responsibility for informing the project manager of its importance. No one had thought about these items until they surfaced, and none had raised them as issues when the planning stages were operating.

One of the important characteristics of a successful project manager was the high degree to which they were networked outside the organisation. This proved important where internal resources, either technical or personnel, might not have been sufficient to deal with an emerging problem. In this situation and with the "networked" project manager, help tended to be "just a call away".

### 6.3. Leadership

Apart from the project manager, two other leadership roles were identified from this research; organisational, with general leadership responsibility and functional with specific technical areas of responsibility. In the larger organisations involved in the research project, it was usual for a senior manager (CEO) to be responsible for the organisation and have no detailed involvement or even passing interest in the particular product development project. In this instance it was a functional manager (say Project Manager) who took primary responsibility for the project on behalf of the organisation. The importance of the organisation and functional leaderships roles is discussed below.

In the case of smaller organisations, the division of leadership roles became increasingly merged as the organisation became smaller. In some instances, organisational or functional leadership delegated the entire project to the project manager. Hence, the project manager lost focus, due to spending many hours with stakeholders working on peripheral issues. In this case the project managers became part-time managers, with the outcome associated with this approach to project management.

### 6.4. Organisational leadership

In the case of organisational leadership the role behaved as either supportive, in the sense of ensuing adequate capacity was available, or fully delegative, with only a governance interest in the project. Most supportive organisational leaders were aware of the political or marketing value of the project to the organisation as a whole. However, in two instances, the supportive role developed further through their becoming directly involved in the project in the role of directing allocation of resources at "appropriate" time points. Both organisations were relatively small (less than 30 people). In one instance, the organisational leader performed in both leadership roles. It could be argued that this leader had no capability to undertake either role, as the project failed to deliver on time and on cost and completion was some 12 months late. In the second instance, the organisational leader, recognising the marketing value of the project to the organisation, provided a "cleared" pathway for team response to timeline and technical issues; this project was delivered within the timeline of the contract.

### 6.5. Functional leadership

This leadership role was most successful when they were well respected by all players, delegated effectively and supported the team and the task at hand. In two cases the leader micromanaged the projects in spite of appointing an adequate project manager. In these cases, the teams quickly lost focus on the timeliness factors and the projects ran over budget at cost to the host organisation.

Bureaucratic management systems were present in about half of the projects. Leaders in their particular bureaucratic system, who were able to provide empowerment to the product development team and help maintain project focus through buffering the system

issues for the team, enabled successful projects to operate. This suggested that this organisation form could deliver results as effectively as more academically respected organisational forms.

### 6.6. Teams

Various combinations of project team were provided. Team structural composition varied from fully outsourced, composite outsourced-insourced but assembled in-house, in-house teams that had worked together for a long period of time and newly assembled teams from in-house resources. For a team to be successful it must be productive. Hence the research considered internal and external issues affecting a team in terms of the effect on productivity. Issues considered were capacity of the team to perform, tacit capability, level of talent and level of conflict.

Where teams had a comfortable working relationship between all players and a definite team culture, it was expected and confirmed that such teams were effective and productive. However, the major problem related to a predetermined approach to problem solving. Although such teams were in a development environment associated with innovation, they had become specialists at a particular approach and not "innovative about solutions". It seemed likely that more effective and efficient approaches were not considered. In a sense this would appear a reasonable approach to limiting risk associated with a new approach, and this would be reasonable in a static development environment. However, the environment is not static and skill redundancy is a major issue. Without an innovative approach to innovation, skill redundancy has a high probability of occurrence with individual members of an established team.

The worst possible team environment occurred when there was a combination of an ineffective project manager and non-resident team members. The "tyranny of distance" reinforced negative aspects associated with communication barriers and led to project breakdown.

The advantage of outsourced members came from a "cross-fertilisation" of ideas and approach to the project task. In this type of team the human resource role of the project manager proved essential in the management of composite teams.

Team structure itself affected the resource management task of the project manager, as shown in Table 4. Three important factors, human resource (HR) skill, time management skill and technical skill were identified as specific competency components of the project manager in addition to the competencies expected for application to a project. The three skill dimensions were required to be applied differently dependent on the structure of a particular team.

Teams were assessed for their capability to undertake the given product development task for the given level of capacity, relative to the performance of a Type A team, throughout their project. The components of capability included systematic capability, learning knowledge capability and business centred capability. Following from these definitions, it was found that learning knowledge capability: the ability to understand a problem then deploys self-learned solutions reflectively for a successful outcome had four dimensions:

Table 4
Levels of skill management of team by a project manager

| Team structure | HR skill requirement | Time management skill | Technical skill |
|---|---|---|---|
| Composite close | Medium | High | High |
| Composite remote | High | Low | High |
| In-sourced new | Medium | High | High |
| Established | Low | Low | Low |

1. Procurement Capability: the skill to search, and obtain resources for optimum outcome.
2. Innovation Capability: the skill to adjust resources and technology flexibly for optimum outcome.
3. Adoption Capability: the skill to quickly integrate new resources into the project for optimum outcome.
4. Adaptation Capability: the skill to adjust existing resources and integrate them into the project optimum outcome.

It was observed that some teams were formed from individuals with reasonably similar learning knowledge capability profiles and this resulted in a skew of approach to capability deployment. Regardless of individual capability, teams with a balanced capability appeared to have been more able to complete projects successfully. Hence, teams of Type A had a capability advantage over team types with a more biased capability in that for Type A teams approaches to solutions more easily tended to shift depending on the problem. That is, in a Type A team profile, particular individuals could contribute new approaches to solution pathways; in this sense, such teams were 'innovative about innovation'. More biased team profiles tended to use a similar collective approach to solution generation and in this sense were less innovative about innovation than the Type A team.

## 7. Discussion and implications

The research undertaken that contributed to this paper provides some insight into the relative importance of personal and team attributes to the product develop-

ment process. The research was able to elucidate certain individual and team capability factors and their link to development outcomes as compared to other multivariable factors contributing to success or failure.

There is an old saying that goes something like, tell me and I will forget, show me and I may remember, involve me and I will understand. Capability develops from participating in work that is relevant to a project. The research described in this paper provided useful insight into the roles of organisational leader, functional leader, project manager, the project team and the individuals that form the team. It seemed natural to describe people in a Type A team as ''being talented''. However, the Type A team had an optimum level of capacity to enable competent people who were capable of performing at their optimum for maximising a project outcome. The relationship between capacity, competency, capability and talent are shown in Fig. 1.

Thus, it has been shown in the research for this paper that for a project to be successful, the project manager and the team must have the overall attribute of ''talent'', i.e. some balance of capability, competency and capacity. It was found that capability has at least four knowledge dimensions including ability for innovation, procurement, adaptation and adoption. Individual members in the development team may exhibit significant bias in favour of one or more of these dimensions. However, if the team as a whole is to be successful the capability bias of particular members requires effective management to provide balance. Where time is a significant constraint it is important to select project teams that have a strong capability to adapt or adopt existing knowledge to the project and maximise the benefit of the experience effect.

There is a continual drive for organisations to improve the way in which projects are formulated, developed and implemented. It also seems that many organisations hold some belief that by following standard project practice and appointing any competent person as a project manager and developing budgets and graphical representations of the project, that is applying competency, then a project will be successful. Clearly, this is not the case, as a competent team of low capability will deliver a poor quality project. The issue now becomes one of identifying the capability factors and their quantity required for a particular project and the assembly of the best optimum of team capability. To some extent a highly capable and competent team will bring a certain level of ''in-kind'' capacity to a project such that there is a bonus to achieving shorter time and or lower cost to the project.

The outcomes of the research have been applied to three non-multimedia projects involving a reengineering of an organisation, a manufacturing equipment installation as well as an information systems installation. In all cases attempts were made to assemble a team with a Type A profile. Hence, a full-time project manager was chosen who had managed, in a relatively short time before, a match to the project in hand and a team assembled with similar and successful individual project experience to the project in hand. In all cases the projects were delivered on time, within budget and to the clients' satisfaction. However, more research is required to test the generalisability within different project contexts.

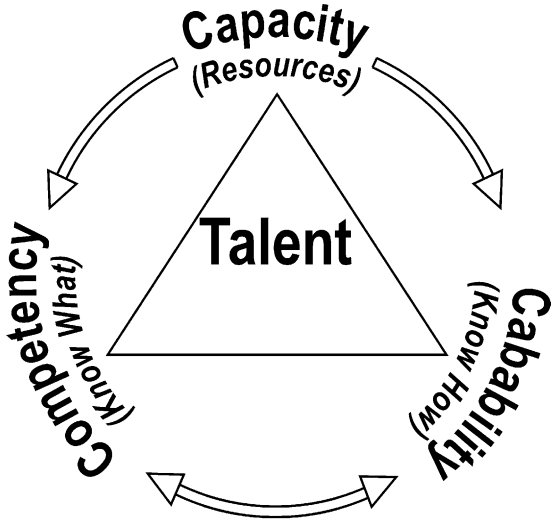


Fig. 1. The factors affecting talent.

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