



THE PROJECT START-UP CONUNDRUM

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ABSTRACT

The 'conundrum':

- Projects are delivered by Teams but, each new project team requires significant time (and effort) to assemble, coalesce and grow into a powerful unit.
- The first 10% to 20% of a project's life is the period when it is easiest to influence its overall outcome in a positive way and derive the maximum cost benefits.
- This is the conundrum – at the time when the project team can exert the greatest influence on a project's overall success (for the lowest cost), the team itself is at its least effective!!!

Strategies to mitigate the conundrum

- Provide support to the project team to minimise the time required for it to grow into an effective unit
- Expand the role of the Project Office to include specific project "Start Up" responsibilities
- Train (or develop, or contract) a specialist project "Start Up" taskforce to assist in the critical initial phases of a project and progressively hand over to the permanent team



THE CONUNDRUM

1. Projects are delivered by 'project teams' but all teams take time to form and become effective.
2. The first 10% to 20% of a project's life cycle is the most critical in terms of its overall success.
3. By the time a project reaches 20% completion, its overall trend and performance will not change significantly through to the end. If there is any change, the trend usually gets worse.

The conundrum is that at the very time a project team can do the most to positively influence their projects outcome; the team its self is at its least effective.

THE PROJECT ENVIRONMENT

Hard Hat -v- White Collar Business Environments

Projects are becoming a way of doing business in a wide range of organisations outside of the traditional areas of construction and defence. Typically, these 'white-collar' organisations seek to implement projects within a matrix structure relying on the benefits derived from 'project teams' and 'project disciplines' to deliver the expected returns from the businesses' investment in a 'projectized' way of working. But are these businesses setting out to fail??

Hard hat project industries (eg building) by their very nature tend to have:

- a workforce that is used to moving between projects (but normally only works on one at a time),
- management personnel that are used to moving to new situations and creating new project teams,
- corporate systems that are focussed on supporting the project teams on site,
- clear separation between their various projects (eg building sites).

White-collar project industries, including most IT&T businesses cannot by their very nature have many of the advantages set out above. Projects in most white-collar 'projectized' businesses:

- draw their workforce from the general business (functional areas / management),
- have project staff committed to working on several projects at the same time,
- appoint project managers based on their general management / industry skills,
- have corporate systems that are focussed on supporting the business (not project specific),
- have very little physical separation between their various projects.

The difference between the two overall business environments is not the focus of this paper and is not of itself a reason for projects to succeed or fail. However, in a white-collar environment, the success of a project is far more dependent on the effectiveness of its project team than is the case in 'hard hat' industries.

The project team on a building site know their future career prospects are directly tied to the success (or failure) of their current project. They also know they have to work with the other people on site to



deliver it and generally speaking, most of the senior team members have done the same thing many times before. It's a very simple environment in a culture that is totally project focussed. This is particularly important if the project runs into difficulties, all of the site team now their futures are directly linked to the success of the team and the project; they have nowhere to hide!

The project team working in the matrix environment of a white-collar business have a much more difficult time. Team members may not see the project as their most important issue. People's career prospects are influenced by a range of factors outside of any one particular project. The physical environment does not force loyalty and commitment to a particular project team (in fact people can successfully avoid working on "bad" projects). To create an effective project team in these circumstances requires skill, commitment and most of all, time, but as noted above, time is the one thing the project team lacks.

ANALYSIS OF SELECTED FACTORS

This paper will look at a number of factors which make the environment in which 'white-collar' projects operate significantly more complex and subtle than the 'hard hat' environment. The conclusion to be drawn from these factors is, we would suggest, that the successful start up of a 'white-collar' project requires a far earlier and greater commitment of skills and resources than an equivalent 'hard hat' project.

The focus of this paper is almost exclusively directed towards 'white-collar' projects and factors selected for analysis have been limited to:-

- The effort required to successfully establish a project team.
- The ability of the project team to influence project outcomes.
- The hidden workload associated with starting a project.
- The impact of early trends and perceptions on the projects overall chance of success.

Establishing Project Teams

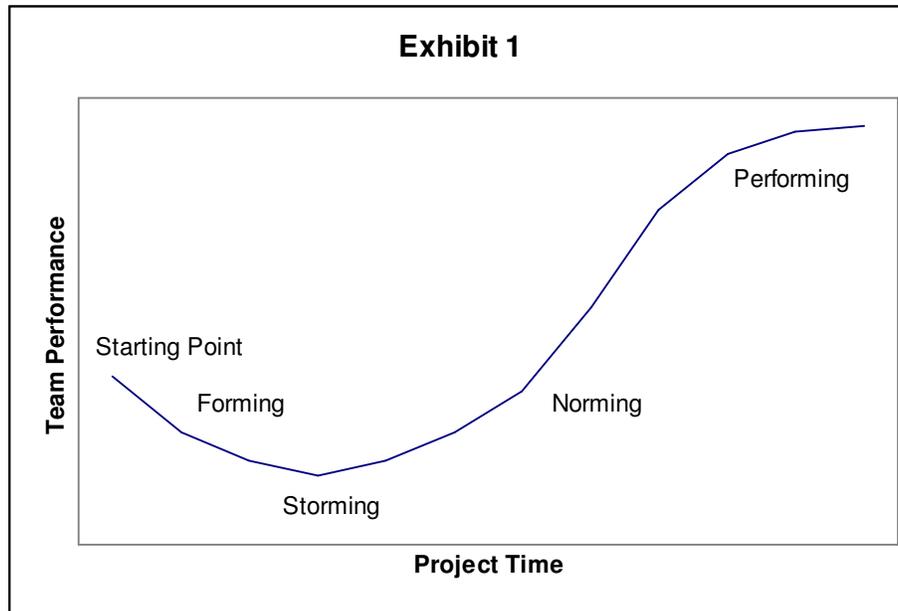
A committed team can achieve remarkable feats in almost any area of endeavour; however, it is widely recognised that successful teams do not occur by accident. Successful teams are created by design! Successful organisations support their successful teams by providing effective leadership, focus and coaching (both inside the team and in the general business environment). These organisations also allow adequate time for their teams to develop and grow. Once a team is together and successful, they ensure their teams continued success by giving regular attention to the important facets of team growth and management.

Section 9.3 of the PMBoK is devoted to 'Team Development' and refers to the wide body of knowledge in general management writings relating to teams and team development. The scope of this paper is not intended to canvass the extensive range of information referred to in Sect. 9.3 with one key exception. Virtually every authority on group behaviour and team building agree on two points.

1. Creating an effective team requires the input of significant effort, particularly in the early stages of its development.
2. The productivity of team members drops during the early stages of team formation as the team invests time and effort into creating its self.



One of the more widely accepted models for team development is that of Tuckman (1965). Tuckman identified four stages of group development; Forming – Storming – Norming – Performing. It is acknowledged that every team will not necessarily go through all four stages (some will only pass through three) and the loss of productivity in the early stages (Forming / Storming) will not be as great in some teams as others. These factors influence the amplitude of the graph in Exhibit 1, they do not change its overall shape.



Other aspects of team formation include issues associated with obtaining adequate staff for the project and team members completing commitments and obligations to other projects. Failing to provide adequate resources to facilitate the formation of the 'project team' during its start up phase has the potential to significantly impact the overall success of the project. Particularly when considered in conjunction with the team's ability to influence project outcomes and the workload associated with establishing the project's infrastructure.

The Teams Ability to Influence Project Outcomes

The opportunity for a project team to influence its projects outcome is greatest at the start. At start-up opportunity to make changes is high, whilst the cost of change is low. As the project progresses, the cost of change progressively increases and the opportunity for change progressively decreases. These trends are not absolute but there is a direct correlation between the ease of change and the cost of change. In this context, 'change' relates to alterations in the project's overall baseline including:

- Scope (requirements, design, methodology/processes)
- Cost (budget, contract price, procurement)
- Time (phase and overall delivery schedule)
- Quality (stakeholder expectations, contracted requirements)

Early in a project there is always greater opportunity for the project team to influence all of these aspects. As the project progresses, all of the above become more fixed, more documented and eventually built, with a corresponding increase in the cost of any change. The problem confronting project teams and project management is that early in a project's life cycle the information needed to base change decisions on is often limited and the project team is still developing the necessary capabilities to deal with the change process effectively.



Ability to Make Changes

Changes to a project are not necessarily bad. The right changes at the right time can deliver major benefits to the project's stakeholders in terms of reduced life cycle costs, enhanced performance and/or increased value. In fact, any project that incorporates analysis and design processes is intended to cause positive changes to the project's overall outcome (at least at the detail level).

Identifying and agreeing the change with the project stakeholders is always easier early in the process. As time progresses, people become committed to particular solutions and processes are put in place to procure and deliver those solutions. These commitments make negotiating and implementing change far more difficult and eventually (to all practical purposes) lock off the opportunity for change.

By way of a simple example, let's consider the opportunity to change the foundation system proposed for a new building:

- Before the engineering design starts, making the change is very straightforward; there is nothing significant in place to alter.
- Once the engineering design contract has been let, the opportunity for change decreases, there is a need to change the design contract and (depending on the timing) change design documents produced by the engineer.
- After the construction contract is in place, the proposed design change would also need to be agreed with the contractor as a variation (and possibly with the subcontractor responsible for the foundations).
- As the foundations are installed, the opportunity for change is significantly and progressively reduced.
- Once the building has been constructed on top of the foundations, the opportunity for change is effectively eliminated.

Similar reductions in the opportunity to make beneficial changes to a project occur with every aspect of every project, both 'hard hat' and 'white-collar'. The only variable is the rate of reduction over time (Refer Exhibit 2).

Cost of Change

All changes have two cost aspects; there is the benefit derived from the proposed change and the expenses incurred as a consequence of making the change. The benefits of a proposed change can take many forms:

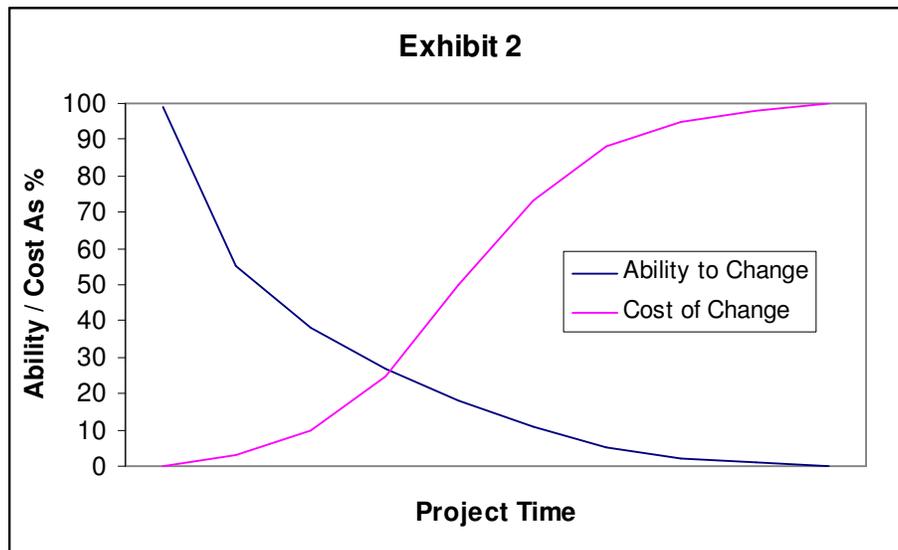
- Reduced life cycle costs (eg lower maintenance or operating costs).
- Increased returns on from the project (eg increased rental income, earlier project completion).
- Reduced project delivery costs (eg lower implementation costs).
- Intangible improvements (eg Stakeholder satisfaction, environmental improvements)

Generally, the value of the benefit is constant irrespective of the timing of the change (with the obvious exception of benefits derived by an earlier project completion).

The expenses incurred by the project as a consequence of the change, generally increase significantly as time progresses. If we consider the proposed changes to a building's foundation discussed above, the cost of changes made early in the process are minimal. By the time the building contractor is involved there are significant cost penalties associated with changes to contracts and documentation.



Once the construction has started, the cost of changes become prohibitive with delay costs, demolition costs and reconstruction costs involved.

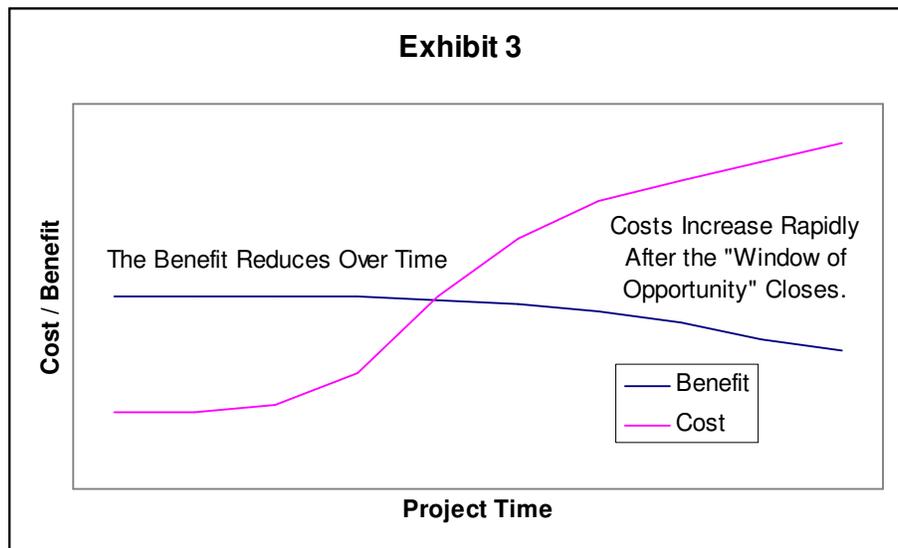


It therefore follows that the overall cost benefit of a change can quickly move from being a positive for the project to a cost negative (and often time negative), simply by the effluxion of time. Even in situations where the change is unavoidable, the cost to the project of the change increases as time passes.

Exhibit 2 is based on examples in a paper by Professor Vernon Ireland (AGSEI) entitled 'Organisations Embrace Project Management'. The chart shows the decline in the opportunity for change and the increase in the cost of change over time. This graph is typical for most projects although the gradients of the curves will change.

Exhibit 3 charts the cost / benefit for a single change over time. The benefit remains relatively constant (although it may decrease over time in some circumstances). The cost of the change starts to rise steeply as soon as rework is required.





Pressure on Teams Caused by Change

Change creates pressure on the project team. This pressure comes from several different directions:-

- Early in a project the opportunity for beneficial change is greatest but the knowledge required by the team to make effective change decisions is at its lowest.
- The ability of the team to assess and process changes is lowest early in the project. The capability increases as processes and personnel become established.
- The support offered by the team to its individual members is lowest at the beginning and increases over time (in successful teams).

This factor is central to the 'Project Start-Up Conundrum'. The time when the team can make its biggest contribution to the overall project outcome by effectively embracing, analysing and managing change is the time when the team is at its least effective.

Project Management Workload

The issue often overlooked by organisations establishing a project team is the very high workload (and specialist skills) required to establish the framework within which the project team will operate. In practice, many teams are required to establish their own working structures, which in turn define the shape of the team. This can be a circular process and become very inefficient. If not handled effectively, this issue can be another major contributor to the 'Project Start-Up Conundrum'.

Establishing most project systems and structures requires the input of significantly greater skill and effort than managing them once they are in place. This is in part caused by normal 'learning curve' issues but is also inherent in many project processes. Some typical examples include:

- Developing a project schedule requires far more effort and skill than statusing an agreed schedule. (As does the development of the WBS, chart of accounts, resource plan, communications plan, etc.)
- Developing an effective project team requires far more effort and skill than keeping an effective team performing.
- Identifying and understanding all of the project stakeholders is often a major exercise.



- Firming up the projects scope and deliverables and establishing a change management system is more difficult than operating the change management system.
- Identifying risks and defining risk mitigation strategies is a major item during many project start-ups.
- Writing procurement contracts requires more skill than administering them.

These issues are significantly different from the progressive build up of effort required to manage the project's deliverables. The project plans (mentioned above) will document the increases in staffing and expenditure needed to accomplish the projects objectives and hopefully these resources will be made available as required.

The solution to this issue is (fortunately) much simpler than finding a solution to the overall conundrum. Organisations can have support groups (eg a project office) in place to make the necessary skills available to a project when required and can develop practices and procedures to assist in the start up processes.

Project Trends

The impact of the 'Project Start-Up Conundrum' can have serious long-term consequences for a project. Most project managers are familiar with both "good" and "bad" projects. Anecdotal evidence and experience suggest that a "good" project will continue to be successful through to the end (barring any major disasters). Similarly turning around a "bad" project is generally recognised as being a very difficult process.

Hard evidence to support this proposition for typical Australian projects is missing. However, one can easily understand the reluctance of skilled and experienced project staff to work on a project that is perceived as being a failure. The extrapolation of this reluctance into an under skilled team and continuing poor results is not difficult (particularly in a matrix management environment where people have the opportunity to influence their next assignment).

In these circumstances, the impact of the 'Project Start-Up Conundrum' can be particularly severe with early problems leading to a perception of a "bad" project, leading to staffing problems and shortages compounding the Start-Up Conundrum. This generates a downward spiral that can be very difficult to break out of if the overall business is not managed in a way that proactively supports all of its projects.

Research in the USA during the first part of the 1990s on major defence contracts tends to support this argument. D. S. Christensen & S. Heise (1993) sampled 155 defence projects that were using C/SCSC for reporting progress (cost performance) to the Department of Defense. Their report found that the 'Cost Performance Index¹ (CPI)' on these projects did not change by more than 10% from the net cumulative value measured at the 20% completion point through to the completion of the project. When the CPI did change, it usually got worse. Whilst a projects CPI is not directly related to the staffing issues being discussed in this paper, the persistence of a trend once it is established is supported by this research².

¹ **Cost Performance Index** (CPI) is the cost efficiency ratio of Earned Value (EV) to Actual Costs (AC), ie, between the value of work achieved to date and the actual cost of accomplishing that work (or in CS² terms BCWP / ACWP). For more on earned value see: <https://mosaicprojects.com.au/PMKI-SCH-040.php>

² The generalisation of this research (known as the 20% rule) has subsequently been largely discredited. However, for the selected 155 projects used in the research, the proposition that the overall outcome is largely set in the first few months holds.



The reason negative trends tend to persist can be demonstrated by the ‘Mathematics of Losing’. When a project is behind schedule (as measured by the Schedule Performance Index³² or SPI), regaining lost ground can be very difficult as the following example demonstrates: -

- The current Project Status shows an SPI of 0.8, this translates to a production rate of 80% or in colloquial terms, the project is losing 1 day per week (based on a 5-day week).
- To simply stop losing time, the SPI on all future work has to be increased to 1.0, this represents an increase in the SPI of 0.2 which is the same as saying:
 - The rate of production must increase by 25% (0.2 / 0.8)
 - Every worker on the project needs to produce an additional 1.25 days worth of production each week
- To recover the losses incurred to date in the same timeframe (from now) as it took to incur the losses the project needs to reverse the loss and achieve an equivalent amount of gain

$$0.8 + 0.2 = 1.0 + 0.2 = 1.2.$$

This means the SPI needs to increase to 1.2, which represents an increase in the SPI of 0.4 from its current base. This is the same as saying: -

- The rate of production must increase by 50% (0.4 / 0.8)
- Every worker on the project needs to produce an additional 2.5 days worth of production each week (or a total of 7.5 days of production per week!)
- To recover the losses incurred to date in the half the timeframe it took to incur the losses the SPI needs to increase to 1.4. This represents an increase in the SPI of 0.6 which is the same as saying:-
 - The rate of production must increase by 75% (0.6 / 0.8)
 - Every worker on the project needs to produce a total of 8.75 days of production per week!

Resolving the above problem is not easy, simply adding more resources to the project will usually make matters worse⁴ and replacing the underperforming team with a new one simply regenerates the whole ‘Start-Up’ Conundrum. One thing is certain, however, reversing a negative trend becomes progressively more difficult the longer it is allowed to develop.

MITIGATION STRATEGIES

The ‘Project Start-Up Conundrum’ is largely a function of the complex environment in which most ‘white-collar’ project operate. However, as soon as an organisation recognises that the ‘Project Start-Up Conundrum’ exists it is able to implement strategies to mitigate its effects. Some of the options available to a business to manage and/or mitigate the ‘conundrum’ include:

- Project Start-Up Teams
- Expanding the role of the ‘Project Office’ and/or
- Making effective use of temporary external resources.

These options are discussed briefly below.

³ **Schedule Performance Index** (SPI) is the schedule efficiency ratio of Earned Value (EV) to Planned Value (PV), ie, between the value of work achieved to date and the value of work scheduled to be achieved to date (or in CS² terms BCWP / BCWS). For more on earned value see:

<https://mosaicprojects.com.au/PMKI-SCH-040.php>

⁴ Ref. Brooks – *The Mythical Man Month* see:

https://mosaicprojects.com.au/WhitePapers/WP1020_Time_Boxing.pdf



The key facet of all of these options is the provision of additional Project Management skills, experience and resources that focus on initiating and planning the project and providing support to the negotiation of key early contracts.

Project Start-Up Teams

If an organisation knows where their experienced 'project initiation' people are working the Start-Up team option becomes very attractive. Provided the business rules allow management to quickly assemble a group of experienced people to start a project, many of the issues defined in this paper are resolved. The key measure of success for the Start-Up team should be achieving a set of pre-defined 'start-up' processes followed by the handing over of the project to its delivery team in a quick and orderly way. The key skill set required of the Start-Up team is a detailed understanding of the business's Project Management processes in particular the project initiation and planning processes.

In this model, the Start-Up team is expected to use the collective experience of its members to undertake the major start-up processes such as developing the full project plan and undertaking key contract negotiations necessary to lay the foundations for successful projects. Another advantage of the Start-Up team approach is the coaching experienced Start-Up team members can provide to the more junior members of the project team as the handovers occur.

The major risk with a Start-Up team approach is ensuring the ownership of the project plan, contracts, etc are fully transferred to the project team as they come on board. Many of the advantages of this approach are lost if the project team feel obliged to revisit and rework all of the Start-Up team's endeavours. This issue can be minimised if the Project Manager is appointed right at the beginning and the roll in of the project team and roll out of the Start-Up team is managed over time.

The biggest draw back of the Start-Up approach is the disruption caused to other project teams and business areas by the sudden transfer of senior people into the Start-Up team.

Providing Project Office Support

An effective Project Office (PO) will always have an important role to play during the project start up phase. Most POs are already the custodians of corporate processes and procedures. Transferring this know-how to the project team and undertaking other support functions such as auditing the project plan are normal PO duties. From this starting point, using the PO as a positive force to mitigate the 'Conundrum' would be a relatively straightforward extension of existing skills and responsibilities.

Larger organisations that start new projects on a regular basis should consider resourcing the project office to carry much of the project start-up workload. The PO staff may not be as experienced as the Start-Up team members discussed above but they can be used with far less disruption to other facets of the business. The PO's internal 'start-up' team could be expected fill in any spare time they may have conducting project audits and mentoring roles and/or trouble shooting on current projects.

Utilising External Resources

The final option is to use external resources for a short-term contract to mentor and assist the project start up process. This option is particularly attractive if the project is outside of the business' "normal" project workload (allowing the import of specialist skills and knowledge transfer). The use of consultants could extend to a semi permanent arrangement whereby the contractor (or consultancy business) agrees to have people available at short notice and becomes familiar with the organisations way of doing business.

Areas where this approach can be applied with particular effect are assisting with team formation (where the presence of an external facilitator can be a major advantage) and in providing expertise to



assist with the development of the project plan (Scope, schedule, WBS, Resources, etc) and in negotiating key contracts.

The two major disadvantages of external resources are costs (which can be significantly higher than internal staff costs) and the consultants' potential lack of knowledge of the business's internal procedures and functions.

CONCLUSION

The Conundrum Defined

Whilst all projects must suffer some impact from the 'Project Start-Up Conundrum', the phenomenon is particularly noticeable in 'white-collar businesses running multiple projects within a matrix management structure. The conundrum is conflict between the following two statements:

1. The time a project team can exert the greatest beneficial influence on the project's overall outcome is during the first 10% to 20% of the project's life cycle. During this period, creative ideas and changes can deliver significant benefits to the project, its stakeholders and the projectized business for minimal cost (or for net cost savings).
2. Unfortunately, this is also the time when the project team is at its least effective. A significant portion of the project team's energy is occupied with its own formation and with establishing all of the processes and procedures needed to effectively manage its project. The quantum of 'knowledge' about the project, held by the team, is also at its lowest level and will only build with time. These two factors combine to reduce the effectiveness of every member of the project team to a greater (or lesser) extent.

Recommended Actions

Successfully starting projects on a consistent basis requires effective planning in advance. The business may not know precisely which project will start (or when) but it does know (or should know) "a" project will start soon followed by another and another.

By recognising the issues associated with the 'Project Start-Up Conundrum' and taking appropriate actions to ensure adequate resources with appropriate skills and experience are on hand to facilitate the project start-up processes the business should be able to significantly improve the success rate of its projects. The start up team (in whatever form is appropriate) should work with the project team to build success from the earliest stages of the project. The role of the start-up team being to provide the extra effort, skills and experience needed to overcome the 'Project Start-Up Conundrum' and then hand over to the project team and fade out of the picture as quickly as possible.



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