Capital Projects
By Paul Barshop
(A book review by R. Max Wideman, FPMI, FCMI)
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Introduction

This book has a sub-title that reads: "**What every executive needs to know to avoid costly mistakes and make major investments pay off**".[1] That sounds like a good recommendation. And as we get into the book, we find that author Paul Barshop's intent is to make a convincing case for applying the concept of a Stage-Gate process to the project's basic technological life span.

Moreover, as that sub-title indicates, the book is aimed squarely at the executive level of an organization conducting a project, or contemplating doing so, especially where the project is of significant capital value. Unfortunately, as the author notes, this topic is sometimes met with some skepticism with comments like: "Oh no – not another presentation on the stage-gate process!"[2]

Paul Barshop explains it this way:[3]
> "… the fact is, it is the only approach that has ever been shown to work long term. A more complete name is the 'stage-gate project development and delivery process' [see Figure 1]. The process contains five distinct stages with gates between the first three stages, which are referred to as the *front-end* of the process. Each stage has a set of requirements for the work to be completed in that stage. That work is used by executives at each stage-gate to decide whether the potential benefit from the project justifies the expense for completing the next stage. The Define gate is the point in the process when executives authorize the full budget to complete the project." [Editor's Note: Approval of the Define gate results in project Execution, which includes the preliminary work of Detailed Design.]
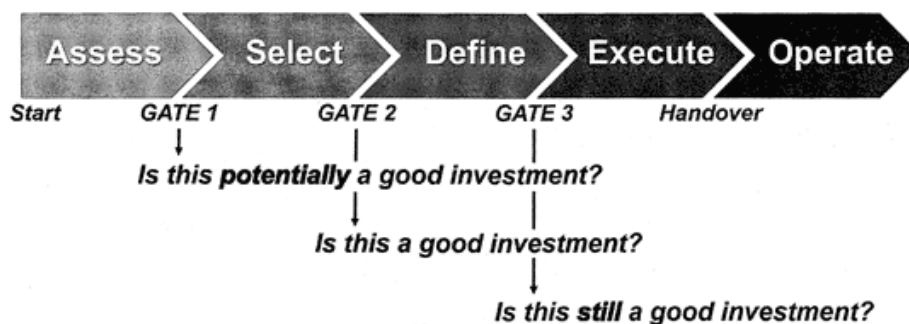

Figure 1: The Key Questions Asked and Answered at each Stage-Gate[4]

At this point, we think that Paul might just as well have responded: "So do you want to control the project cost or don't you?"! The fact is that once a project is initiated, i.e. at the Start point, the project travels through time whether we like it or not. That is, unless we actively stop it. Of course if we don't care about the cost, we can sidestep all of this, and withdraw from any cost responsibility. But then, that is not even project management, let alone best practice.

And yet, a surprising number of folks in the project management community either do not concern themselves with the so-called *front-end* work, or do not consider it a part of so-called project management. We suspect that there are a number of reasons for this, such as:

1. It is somebody else's responsibility.
2. It is a part of the "Project's Life *Span*" and not a part of the traditional "Project Life *Cycle*" as promoted by most professional associations.
3. The detailed content of the Stage-Gate process is dependent upon the type of project in question. That is, it has to relate to the management of the technology involved, and hence is the responsibility of the project's technical manager, rather than the project's management.

And yet, in reality, successful project management (of a single project) is highly dependent on the work done by whom-so-ever-that-may-be, and is ***the essential bridge between Single Project Management and the Management of the Technology.***

In our view, author Paul Barshop succeeds admirably in getting his message across, by using simple explanations and extensive practical examples. Indeed, his book does provide a valuable lesson, especially to corporate executive levels, including anyone whether "executive" or not but charged with the responsibility for the conduct of a large-scale project. The book is written for the private sector where: "capital projects are investments of substantial company resources to develop, to improve, or to refurbish an asset that is expected to generate cash flows for more than one year."[5] Nevertheless, the advice provided is equally applicable for those in the public sector, or even the not-for-profit sector. Failure of projects in these areas may not be measured in terms of "value erosion"[6] like the private sector, but can certainly be measure in terms of loss of popularity and future voting patterns.

About the author

Paul Barshop is a Director of IPA Capital Solutions, a new IPA business initiative to provide hands-on support to clients implementing changes to their capital project development and delivery systems to improve performance. Paul was IPA's Chief Operating Officer from 2004 to 2015. He previously served as Director of IPA's Netherlands Office from 2000 to 2004, serving European and Middle Eastern clients. Paul joined IPA in 1994. In his early years at IPA, he served as Quality Manager and Project Analyst. Paul holds an M.S. in Business Administration from Boston University, Boston, Massachusetts and a B.S. in Chemical Engineering, New Mexico State University, Las Cruces, New Mexico.

Book Structure

The content of this book is set out in twelve chapters as follows:

1. Falling short of Expectations: How Executives Struggle to Deliver the Value from Their Capital Projects
2. Why the Stage-Gate Process Is the Best Tool Executives Can Use to Get Mot Value fro Their Capital Projects
3. The Project Frame: Understand the Opportunity before Starting a Project
4. The Critical Project Sponsor Role
5. The Single Most Important Thing an Executive Can Do To Make Any Capital Project Succeed: Define Clear Objectives
6. The Executive's Role In Building and Supporting High-Performing Teams
7. Project Definition: The Fundamental Capital Project Concept Every Executive Must Understand
8. It's Going to Cost How Much!?! A Guide to Help Executives Avoid Capital Cost Surprises
9. Using A Project Steering Committee to Improve Executive Decision Making

The book has a total of 212 pages that also contain a limited number of figures and tables. It also includes a Glossary of Terms relevant to the contents of the book. Apart from a tendency towards paragraphs that are overly long,[7] it is well written in a clear and simple style making it easy reading. For some, it may be too easy, but that should not be allowed to detract from the core message that is well summarized in his final chapter. In our view and experience, the book documents well established, realistic and sound advice.

What we liked

The author makes no bones about his intent. He says:[8]
> "I will show you what you can do to increase the probability of a successful project, make your portfolio pay off as expected, and, critically, reduce the chances of the disaster project that loses all the capital investment and gets executives fired."

And:
> "Capital projects actually create value when the benefits from the asset created or modified by the project exceed the project cost. The most common method for measuring the added value of a project is the net present value (NPV) generated by the project. … [Simply put it] is the amount of shareholder wealth created from a capital investment after accounting for the total cost of the investment and the time value of money."[9]

Unfortunately,
> "Most projects create less value than expected."[10]

Indeed, the author claims that in a study of 431 completed industrial sector capital projects, the average project delivered 22 % less NPV than was forecast when the project was funded.[11] Further, schedule overruns are not the main culprit as might be expected. Rather, the breakdown of value erosion is attributable to three categories in descending order:
1. Demand for the product was lower than expected
2. The cost and/or schedule were overrun, or
3. The facility did not perform as expected
4. Or some combination of all three.

Author Paul Barshop insists that the Stage-Gate Process is the right and best way to optimize the probability that the project will deliver the value promised. As shown in Figure 1 presented earlier, the process is simple and straightforward. It starts when some one is assigned to investigate ways to produce a new product (for example). The process ends when the production capability is put into service.
> "Moreover, the process works — when it is used correctly."[12]

Essentially, the intervening gates shown in the Figure 1:[13]
> "… allow executives to control the project's progress through the process. The process is managed by a project governance structure that assigns different executives specific roles and responsibilities, creating checks and balances needed for good project decision making."

Paul then goes on to explain why "Causes of Value Erosion Often Start Early".[14] Executives throughout a company have a huge influence on how well the initial work on a project is done. Paul claims that the

stage-gate process is the best tool for countering this situation and for achieving all the goals executives have for capital investment, namely:[15]

- Directing capital to the most attractive, most important investment opportunities
- Maximizing the value from each capital project that is funded, and
- Controlling the risk of financial loss or reputational damage.

Paul then goes on to explain how the whole front-end process should work and, as indicated by the book's Table of Contents quoted earlier, provides guidance on how to approach the many major issues that have to be faced. In doing so, he comes down heavily on the importance of the Project Sponsor's role, choosing the right type of person for the job and when that person should be appointed.[16]

Downside

Paul claims that his research shows that the early stages of a capital project life span tend to be done with less rigor and discipline than the later stages. In other words: "Executives just do not pay enough attention to the formative stages of the project".[17] To be fair, the number of projects that actually make it through the Front-End to Execution will only be a small proportion of the number of possibilities initially investigated. One in ten on average is often cited. Therefore, executives are in the unenviable position of guessing which projects are the ones worth giving more detailed attention.

While the issue of executives' attitudes is sometimes inferred in Paul's book, it is not expressly addressed. In other words, the attitudes of executives responsible for operations or "Business as Usual" (BAU) are not the same as the attitudes of executives responsible for the management of major projects. For example, as we wrote back in 2003,[18] the business community believes in understaffing which it can prove is generally good business most of the time.[19] In many organizations, project front-end work is considered a part of general management and hence it, too, tends to be understaffed.

In contrast, large projects by their nature are uncertain and hence contain risks the management of which requires extra effort. For a project to be under-resourced, especially in the front-end, not only magnifies the risks, but also sets a project up for potential failure. This potential inevitably conflicts with the recommendation to introduce more effort, especially executive effort, as espoused by promoters of the Stage-Gate process. Thus, the very mindsets of the two types of management, i.e., between BAU and PM are diametrically opposed.

The nature and need for the front-end process is made clear enough in Paul's book, but is the message powerful enough to persuade the senior executives in most organizations? On this point, for the reasons we have just explored, we are rather doubtful. Moreover, to become an executive with significant power and responsibility you need to be self assured, self confident, probably extrovert, and capable of beating the competition. In which case, you are not going to take a lecture on a front-end process lightly.

Rather, we think that the front-end process should be made a part of standard project management offerings and appear in international project management standards. After all, the stage-gate process is applicable to all large projects of all types, whether in infrastructure construction, administration, manufacturing or technology, and whether to organizations are private, public or not-for-profit. In other words, the front-end process should be a part of project management best practice. Then, and only then, might more executives be willing to heed the message.

Summary

Perhaps the best way we can summarize the contents of Paul Barshop's book is to quote the sub-headings of his last chapter: *Executive Role, Executive Control – 12 Essential Rules*. These Rules are as follows as follows:

Rule #
1. Use the Stage-Gate Process
2. Start by Framing the Project
3. Ensure Project Sponsor Involvement
4. Develop Clear Objectives
5. Invest in Owner Teams and Provide the Support They Need
6. Reach a Strong Level of Project Definition
7. Factor the Accuracy of the Capital Cost Estimate into Decision Making
8. Set Contingency in Accordance with Project Risk
9. Build an Effective Steering Committee
10. Use a Robust Risk Management Process
11. Keep the Stage-Gates Strong
12. Be Coachable

Each of these rules is explained in detail in the book's chapter 12.

R. Max Wideman
Fellow, PMI

Postscript

As readers may recall, it is our practice to submit our book reviews to the author for comment before publishing, to ensure that we have not made any errors of fact. In this case, Paul Barshop has made these interesting observations that are most welcome.

> "Max
>
> Thank you for the very thorough review. I believe you have captured the book quite well. I only have some minor comments are in the Downside section (as I am sure is very common!).
>
> For IPA's clients anyway, the percentage of projects that get weeded out during the front-end is less the 1 in 10 figure you cite. Reliable data are hard to get, but the number is closer to 50 percent, rather than 90 percent. Industrial companies tend to screen projects out prior to entry into the first phase of the stage-gate process (SGP). Once a project makes it into the SGP, there is a pretty good chance the project will make it to authorization.
>
> Still, I think your point that the executive position tends to be understaffed is valid, making it a challenge for executives to perform their role early in the SGP. The way to combat this problem is for the project management organization to offer the support needed to minimize the burden on executives.
>
> I also agree that executives tend to be self-confident, which can get in the way of accepting the need and seeing the benefits of the SGP.

In your last paragraph, you say 'the front-end process should be made part of the standard project management offerings' … 'Then, and only then, might more executives be willing to heed the message.'

This may work, but I am not convinced. Many IPA clients have made the front-end process and the SGP a corporate requirement, yet these same companies struggle to get a sufficient level of executive participation. I do not think it is enough to overcome the barriers you listed (understaffing plus self-confidence).

Thank you again for the review.

Paul"

Note that Paul says: "Industrial companies tend to screen projects out prior to entry into the first phase of the stage-gate process (SGP)." In other words, there is an even earlier gate, perhaps unofficially, than that shown as Gate 1 in the illustration presented earlier.

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[1] Barshop, Paul, *Capital Projects*, John Wiley & Sons, Inc. Hoboken, NJ, USA, 2016, book cover

[2] Ibid, p17

[3] Ibid

[4] Ibid, p179

[5] Ibid, p3

[6] Ibid p8. Value erosion occurs when what was actually delivered by a project is lower than what was promised when the project was funded.

[7] Examples of overly long paragraphs can be found at pp6, 68, 78, 98-99 and 186

[8] Ibid, p3

[9] Ibid, p6

[10] Ibid, p7

[11] According to a footnote on page 7, the projects were from 64 different companies in 11 different industrial sectors, located around the globe, and ranging in size from $100 million to $20 billion. Over confidence in the market forecast by executives is a common source of value erosion, page 9. In the Editor's experience, this so-called "over confidence" is often fueled by the desire of one or more executives to get the project approved and started.

[12] Ibid, p11

[13] Ibid.

[14] Ibid, p12.

[15] Ibid, p19

[16] Ibid, see Chapter 4

[17] Ibid p13.

[18] See http://www.maxwideman.com/papers/principles/discussion.htm First Principles Generally, Issue #1, 2nd paragraph

[19] According to Marie Scotto in his book: *Project Resource Planning*, Chapter 13, Project Management Handbook, Jossey-Bass, 1998