The front-end of projects
A systematic literature review and structuring
By Authors: Terry Williams, Hang Vo, Knut Samset & Andrew Edkins (2019)
The paper presented here assembles extractions and observations by R. Max Wideman, FPMI

Introduction

Last month,[1] August, we published Part 2 of my paper *When does a project actually start?* In it I observed:

> " In this Part 2, I try to find some solid information on what that "Front End" should involve and when does it occur relative to the question: *When does a project actually start?* In this way, I hope to draw attention to what I believe to be one of the most important gaps in our knowledge of the typical project management methodology."

Then, lo and behold, this massive research report of some 30,000 words on the subject of *The front-end of projects* was brought to my attention. This thoroughly-researched paper proves to be the answer to the very questions I was asking and even more firmly convinces me that we've got the starting point of the project life span (cycle) all wrong. The start of the project life span should[2] include all front-end activities, even if the particular project is subsequently abandoned. After all, the span of the project life cycle should be the life of the project – not just the life of the project manager!

Important Note: *The Report* presents itself as applicable to all projects. However, many of our extracts from *The Report* have been edited to facilitate continuity and easy web reading. Nevertheless, the research reported on suggests to us that the findings are essentially based on, and for, medium to large projects in the construction sector involving significant infrastructure.

The objectives of the authors' report[3]

The dedicated literature on the front-end is sparse: although the front-end has been shown to be critical to the strategic success of the project, this phase of the lifecycle is not well understood. This paper presents the literature on the concept of the front-end, and defines a temporarily ordered structure of generic processes that form the 'front-end' and how these fit together as a coherent whole.

Max's approach to this commentary

Instead of a typical "book review" type commentary, I have chosen instead to simply extract what I believe to be major examples, together with comments, of the work to be expected in the front-end. If you like, it is the homework that should be conducted, before launching the actual creation of the intended asset. Because the reduction of a 30,000-word document to one of a mere 4,000 is a significant challenge, I have chose to omit all cross references to the papers covered in the study. For appropriate references, please refer to the original document in the link provided.

Hence the target audiences for these extracts and comments are project managers in general and project management educators and standards creators in particular. To facilitate easy on-line reading I have

found it necessary to do a certain amount of editing, rather than making direct quotes.

About the authors[4]
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Original structure of The Report[5]

The authors' report summarizes the results of a comprehensive systematic literature survey on the front-end of a project, commissioned by the Project Management Institute. It reports on the findings of a systematic review of publications published mostly between Jan 2006 and Sep 2017. It aims to investigate what defines the 'front-end' of a project, examine what generic processes comprise the 'front-end' and how these fit together as a coherent whole. The search was planned in 2016 and initiated in 2017. An appendix shows the specific search strings employed and the results.

The search string searches were conducted in stages. In Stage 1, the authors searched using a primary group of 15 term combinations including the central term 'front-end' and similar words. In Stage 2, they searched for an exploratory group of 23 term combinations that related to 'front-end' to a certain extent. In this way, the 43,000 original papers were reduced to 4500 and then to 367 papers.

As the authors studied these papers, in Stage 3 they identified key papers and used citation indices to search systematically for good papers that cited them and looked for any particular key references used. This resulted in a final set considered for the study comprising 524 papers, which formed the basis of the full survey report delivered to PMI, which is over 50,000 words long. The linked reference file quoted above is about 30,000 words, including all links.

What is the front-end?[6]

According to the authors, the definition of the 'front-end' of the project is bound up with the definition of what a 'project' is. Morris (2016) distinguishes between those that see the front-end as the vital 'shaping' part of a potential project, and those that see the project only starting once the 'front-end' is completed. Edkins and Smith (2012) note that there is no agreement on the definition, but conclude that there is

agreement (and evidence) that: 'the early stages of a project are one of the primary points where strategic success or failure for the project is set'. For what can happen in the "front-end", see Table 1.

#	The front end is where . . .	Explanation
1	The initial idea emerges.	Where does the idea for the project come from, what is it based on, whose interests would it serve, who would pay for it?
2	Complexity and underlying problems and needs are analyzed.	It is important to look at the context where it emerges, and the various complex and uncertain factors on which it depends.
3	The first estimates of costs and benefits are made.	Early estimates are important to evaluate the project although these will become refined as project concept is identified (see also item 9)
4	The stakeholders' preferences and incentives become visible.	These can be complex, and stakeholders can be in complex structures.
5	There is very little information.	The front-end is characterized by scant information available about the, as yet ill-defined, project. The danger is that decisions are based on an overload of detailed, but uncertain information up front, rather than carefully selected facts and judgmental information relevant to the essential issues.
6	Uncertainty is at its highest.	Below we describe how this uncertainty can be navigated, and possible scenarios of the future considered. Before the project is defined, the use of highly-refined 'heavyweight' project risk management is not yet possible.
7	The opportunity space is/should be explored.	Frequently, the choice of a conceptual solution is made without systematically scrutinizing the opportunity space up front. This partly explains the well-noted 'rush to solution'.
8	The conceptual alternatives are carved out.	Note that in discussing the shaping of large engineering projects, the seeds of success or failure are planted early. A key to success lies in the choice of concept.
9	First estimates are refined, as the concept is developed.	The focus is often on the final cost estimate (the budget), while the trend of early cost estimates are overlooked during the project front-end development. Hence, consideration of optimism bias and strategic misrepresentation are ignored.
10	Stakeholders are recognized.	The affected parties could/should have a chance to have some impact on decisions. This is a source of some-times vital feedback, often forgotten, and illustrates the non-linearity of the process.
11	The project is situated within a wider strategy/project portfolio.	The selection and prioritization of a new project requires consideration of the portfolio view.
12	The foundation is laid and the main decisions are made.	At this point, a Go/No-Go decision (i.e. the determination to proceed with or relinquish a project) can be reached.
13	'Quality at entry' can be secured.	In other words, the project definition can be of high-quality and confidence can be placed in the project's successful delivery.

Table 1: Front-end content summary[7]

Discussion of the Table 1[8]

A project results when an organization or party has a desire to achieve a particular change or outcome. When this desire is sufficiently specified and formalized, a person or organization is nominated and/or delegated to undertake a defined project. The organization that initiates the project and desires the project outcome has been called the 'permanent organization' although the terminology varies. This is in contrast to the extensive literature around the phrase the 'temporary organization' for the entity that undertakes the project. The strategic role of the 'front-end' is in defining what the project is to achieve, establishing its feasibility and shaping project 'success', as defined in terms of strategic performance rather than deliverables.

This brings in the need for recognizing the 'drivers' for what may become the project: opportunities (achieving something desirous) and problems (resolve something that is harming or troubling). The two key words here are 'strategy' and 'context'. It is important to understand that the project 'emerges' from some form of consideration. This can be actively encouraged or unexpectedly apparent. Whether active or passive, all projects are the result of some form of consideration and sanction.

The key players can be considered as the 'who' as in asking 'who is driving the project?' One has to then ask 'and why?'. The 'who' drives the front-end and is someone from the organization that has a desire to achieve a particular change or outcome. That organization will have to put in place project governance to oversee the project, and is distinct from the 'project management' to be involved. Hence, the 'who' is most typically from outside the project management function. While much of the understanding of what goes on in the front-end is still unclear and poorly understood, what is clear is that it is project management's role to deliver the (so far undefined) project.

Generally, the point at which the front-end finishes is considered to be the point at which final sanction is given to authorize the project. This discussion also points to what is perhaps a gap in knowledge in our field. There has been much work on what organizations need to do and why (well-grounded but treating projects as entities that realize strategy) and internal study within well-defined projects

The front-end is where these two come together: the project does not sit alone, but within an environment and context that defines the need and context for the project. The 'front-end' is what defines the joining together of these, and sets the scene up to passing the project over to 'project management'.

Why is the front-end important?[9]

Part of the object of the front-end in some systems is to prepare a project for funding approval or sanction and some version of a stage-gate approach. The importance of the front-end decision-making phase in securing projects' long-term success is now increasingly recognized. So, the interest in the front-end as a discrete part of the management of the project (noting that we technically are managing a phase that is before the project formally exists) is justified from the downstream results. The literature seems to be clear that an emphasis on a careful and thorough front-end phase is essential to project and portfolio success.

The particular importance of the front-end is because critical decisions are made during this phase. A key advantage of this phase is the clarity with which the fundamental reasons for the project can be

addressed, before the confusion between achieving 'project delivery' success and 'project outcome' success is encountered.

Several authors show that early pre-acquisition activities can significantly reduce cost and schedule growth, and that projects with better scope definition have had improved cost and schedule performance. On the negative side of the argument, work on 'early warning signs of problems' suggests that 'Roots of problems in later project phases are found in processes and decisions at the front-end of projects'. Indeed, evidence suggests that the top reason for project failure is poor pre-project-planning, including 'lack of ability to manage the front-end very well'. Moreover, inadequate construction input during the front-end results in the fragility of plans regarding constructability.

Even where the 'front-end' is not mentioned as such, one author found 42 different causes for project failure, many of which can be grouped as project initiation (e.g. unclear success criteria, changing sponsor strategy, poor project definition, unrealistic project baselines, incomplete requirements, inadequate estimating, unrealistic expectations, commitment escalation). Where the front-end is not given sufficient resource (including money, time and degree of intellectual focus) and it is rushed, there is a danger that it is simply put onto a register or into a portfolio, providing the opportunity to place pressure on the permanent organization for both continuing existence and resource attention.

In certain sectors, such as industrial, oil and gas and extractive sectors, the emphasis is explicitly on the front-end such as in Front End Loading (FEL) and is there to force the minimization of the chances of later problems.

What are the roles and responsibilities in the front-end?[10]

There are a number of different roles in the frontend, but there are no agreed definitions. Hence, clarity is needed in distinguishing between the front-end, as embedded in the permanent organization and the front-end project environment being set up for the project delivery team. The former is interested in the strategic benefits that are outcomes from the project, while the latter is tasked with producing the project deliverables.

#	Roles	Explanation
1	Owner	… is the (permanent) organization or person who ultimately derives the strategic benefits from the project
2	Sponsor	Still at the level of the permanent organization, still looking at the strategic benefits of the project rather than the immediate project deliverables, it is considered best practice to have one individual responsible for the delivery of the strategic benefits.
3	Project Manager	This is perhaps the clearest role, tasked with delivering the outputs of a project.
4	Communities & the public (stakeholders)	The behavior of secondary stakeholders' may change during the project lifecycle and hence their potential to influence the project management's decision-making
5	Users/Beneficiaries	… are those who will directly use or benefit from the project.

Table 2: Roles in the front-end[11]

What should the front-end embody?[12]

The environment

As we consider the genesis of a project, we need to look at the context where it emerges. A project does not exist in isolation but is dependent on various factors (both internal and external) that are complex and uncertain. Analysis of the project environment can facilitate the project to position itself carefully to its environment and align its objectives and management.

During the front-end, decisions are made at the intersection between the 'professional' and 'political' parties and where legislative priorities might have a greater impact than rational decision making judgment.

Within the public domain, major public projects may act as a political decision-making process. That is, politicians may use such a neutral administrative mechanism to execute the policies adopted by the elected legislative bodies. The political environment thus impacts the project indirectly through the strategic context of the organization created by the decisions made by the top management.

During the front-end of major public projects, the formation of project strategy and consequent significant decisions are not usually made solely by individuals. Rather, they reflect the 'social geography and politics' of decision-making groups. They may also show the negative impacts of political biases, preferences, and pressures on the estimation of project costs and benefits.

The Business Case or Project Proposal[13]

Early in the project lifecycle, the importance of a well-written Business Case, sometimes referred to as Project Proposal, is well recognized. In general, professional bodies consider the Business Case as essential for any project or program, although many organizations are reluctant to assert that they follow this advice. Key aspects of the document may be summarized as follows:
   a) The Business case captures the quantitative and qualitative justification for the initiation of a project or program;
   b) It is prepared during the early stages of a prospective project as a basis for the decision on the feasibility of the project;
   c) It can range from voluminous, comprehensive and well-structured, to brief and informal;
   d) It assesses the cost, benefits, timescales, and risk of alternative options, or the option of doing nothing, and provides a rationale for the preferred solution;
   e) It establishes baselines against which the project progresses and success can be measured;
   f) It is a living document to reflect the change of the project environment; and
   g) It is initiated by the executive or manager above the project level (maybe with the assistance of the project manager), re-evaluated at the end of each project phase gate or critical decision point, and maintained throughout the project lifecycle by the project manager.

In the UK, the HM Treasury recommends the 'Five Case Model' as a standard for the development of Business Cases. It is used extensively within central government departments and their agencies. The model sets out to establish a case for investment by preparing five key cases: strategic, economic, commercial, financial, and management.

Our authors identify three main elements of project control provided by a Business Case:

1. The evaluation and prioritization of project proposals;
2. The on-going monitoring of the feasibility of evolving projects; and
3. The tracking of benefits realization following the project's closure.

Project selection and go/no-go decisions[14]

The literature generally assumes that a project has come out of planned consideration within an organization. There are different circumstances where a project is driven by extreme contexts such as emergency contexts, risky contexts, and disrupted contexts. In reality, the selection process for projects is 'complex, less structured, and affected by chance'. It is often influenced by biased or insufficient analysis as well as political priorities.

Project purpose & success criteria[15]

It goes without saying, that within an organization any project or program should have its goals and objectives in line with the organization's strategic plan. The 'fit' between an organization's strategic drivers of value and the configuration of its project management system helps determine the value it obtains from project management. So, central to the definition of a project is what we mean by project 'success', which turns out to be an 'ambiguous, inclusive, and multidimensional concept'.

In practice, there is no definition of 'success' that applies to all projects in all environments. The definition is dependent on perception and personal objectives and varies by project types, stages of the project life cycle, and nationalities. Moreover, public and private parties do not share a common perception of project success. Due to the multifaceted nature of project success, of which only some criteria are clearly quantifiable, it is typically not straightforward to measure success in projects.

In the front-end phase, we are in the process of project definition – ahead of formal sanction. Initially, we have needs that we (and other stakeholders) require to have satisfied. Success is therefore defined as the satisfaction of those needs. These can be described as project outcome success on the one hand, or project benefit success on the other.

[It is interesting to note here that in The Report, the authors tend to fall into the same trap like so many, namely that of confusing the difference between managing the project (process) and managing the development of the product (asset). These are not the same thing, indeed, far from it.]

Thus, project success criteria may be divided into tactical and strategic performance. Success in tactical terms typically means meeting the short-term goals of scope, quality, time and cost. These are measures of the project's management efficiency, and are fundamentally project management issues. Strategic success, on the other hand, focuses more on economic, societal and environmental matters. These embrace the broader and longer-term perspective of whether the project's outcome (asset) will have a sustainable influence and remain fit and compelling over the asset's lifespan.

In this approach, the project's success may be characterized by five main criteria. Only the first criteria reflects on the project management operational element.
1. Efficiency effectiveness: Could the outputs have been produced in a better way? Was the project well managed? Were the goals achieved? Did the output meet the goals?
2. Relevance: was the goal aligned with the needs of the organization, and was the product in context and useful to the organization?

3. Impact: Was the goal appropriate to the purpose of the organization?
4. Side effects (risks): What was the sum of the anticipated/unintended effects of the project? And
5. Sustainability: Will the positive impacts of the project continue longer-term?

Other topics covered in The Report[16]

Many other important topics that go into much more detail are also examined in The Report. Their headings are listed here for ease of reference.
- Stakeholder management
- Benefits/needs analysis
- Concept analysis and alternatives analysis
  - Uncertainty analysis
  - Complexity
  - The project appraisal/evaluation process
  - Project concept
- Assessment
  - Defining and estimating the project
  - Risk analysis
  - Technology assessment
  - Environmental assessment and sustainability
  - Project delivery system
- Setting up for successful project execution
  - Project finance
  - Project governance
  - Contract/procurement

One last observation in The Report caught my attention. Under the heading *Limitations of the study*,[17] the first sentence starts: "While this paper covers all projects, . . ." For me, this observation is not strictly true and to many can appear confusing. The Report focuses on significant projects but as I said in my *Introduction*, the research is essentially based on papers by authors discussing medium to large projects in the infrastructure construction sector. While this is a very large, costly and important project sector, there are many other areas of project management application that may have a quite different perspective on *The front-end of (their) projects*.

As I indicated before in my last paper, it is my hope that with all this knowledge being brought to front and center in our practice of serious project management, "official" standards will be updated and the rate of project successes will thereby be significantly improved.

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Footnote: I would like to express my appreciation to the authors for allowing me to paraphrase the observations in their paper in order to make a very important subject more readable to our many readers.

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[1] August, 2020
[2] Must include?

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[3] *The front-end of projects: a systematic literature review and structuring* – see authors and link in sidebar. An extract from Section 1, p1

[4] Ibid, Notes on Contributors, p20

[5] Ibid, extracted from Section 1, p1

[6] Ibid, extracted from section 3.1. RQ1, p2

[7] Ibid, Table 1, p3

[8] Ibid, section 3.1. RQ1, p2

[9] Ibid, section 3.2. RQ2, p4

[10] Ibid, section 3.3. RQ3, p5

[11] Ibid, p6

[12] Ibid, section 4, p5

[13] Ibid, section 4.1.2, p6

[14] Ibid, section 4.1.3, p7

[15] Ibid, section 4.2, p8-9

[16] Ibid, sections 4.2.3 through 5 on pages 8-18

[17] Ibid, section 5, p18