

The

Pocket Guide

for those Daring Enough
to Take Responsibility for

Large Industrial Projects

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Foreword

As the title of this guide clearly indicates, it addresses a subject which is not for the faint hearted. The management of Large Industrial Projects is not a subject which is classically taught, as such, at college. Not only is it a very challenging subject in itself, but it is also one for which the available academic basis is quite limited, to non-existent, since the classical project management tools one can learn the use of, in themselves, do not begin to tell you how to run, successfully, a Large Industrial Project.

Yet, Large Industrial Projects have been around for a long time! To name but a few: the Egyptian pyramids, the European cathedrals or the Asian temples, and, more recently, the development of air- and space crafts, or deep water oil fields. We can admire the results of those past and present undertakings, but evaluating and measuring how successful they have been in terms of execution is more difficult. The use of large numbers of enslaved prisoners is no longer a solution, nor is the promise of heavenly recompense! Return on investment for the owners, safety and environmental performance or technical reliability are a few of the key success factors measured in today's environment, and which are there for all to see. Hence the need for those undertaking such projects and taking responsibility for them, to be daring individuals, on top of also being competent and creative.

So, why is it that there is so little by way of commonly accepted management methods to run Large Industrial Projects? Perhaps because such a subject does not lend itself well to an academic approach? Or because academic knowledge would be of little use to

the daring individuals who are running Large Industrial Projects and are focused on immediate action? Hopefully, such a lack of accepted methods is not simply because too few Large Industrial Projects are actual successes that can be measured in real time.... But, perhaps it is because there are just too many facets to capture, from too many angles. Here, one is dealing with Knowledge, Know-how and Behaviour, and, more importantly, with the interaction between those three elements. So, who should write about Large Industrial Projects? Engineers? Operators? Or Psychologists? Jean Pierre Capron is of all of that, and much more!

I first met Jean Pierre Capron when he was a Non-Executive Director of the company where I was the COO; I was dreading his questions during Board meetings, as they homed in, without fail, on the critical issues, for which I was not always sure I had the answer. When, a few years later, I was asked to run another company involved in the execution of Large Industrial Projects, most of which were in serious trouble, I asked Jean Pierre Capron to help me sort out the mess, and, to my amazement, he accepted! He is a daring man!

Jean Pierre Capron has run large organizations, in many different environments, and held very senior management positions. Uniquely though, he has kept his ability to home in on what matters in terms of execution and delivery, his appetite for investigating complex situations and looking for the root cause of issues, and his enthusiasm for leading from the front the implementation of solutions. This is why this guide is such an interesting tool: because of who wrote it. It contains a large amount of the experience of someone who not only understands Large Industrial Projects and how they are evaluated, but has also run them, has sorted many out, and has made them into successes. Even more remarkable is the fact that

those who have worked with him and learned from him, continue to perform remarkable things within ever more daring Large Industrial Projects. This is clearly the most valuable endorsement.

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A Word from the Author

Having spent a good part of my professional life in enterprises and organizations devoted to managing large projects of the industrial sort, once retirement was upon me, I felt the urge to reflect on the factors and circumstances that led sometimes to success, sometimes to failure.

In the course of my readings, I chanced on a book by Derek Wood, published in 1975, titled "*Project Cancelled*." In it, the author examines the numerous programs launched and abandoned by the British aviation industry during the years after World War Two. The sense that this rather dry reading leaves you with is that, ultimately, nothing is more wasteful than turning a bunch of brilliant engineers loose on any number of ambitious challenges without first having defined the objectives, set deadlines and milestones and put in place constraints to channel all that exuberant energy.

That said, based on my experience in the field, I am equally certain that an approach too focused on accounting and bureaucracy sterilizes talent and condemns ambitions as well as outcomes to mediocrity.

Perhaps, like Monsieur Jourdain, I have been speaking prose without realizing it¹; but, one thing leading to another, I wound up asking myself where

1 [Note from the Publisher] Reference is made to the "Bourgeois Gentleman", a classic comedy by Molière, where an uneducated shopkeeper intends to turn gentleman and realizes that he has been speaking prose all along. This dumbfounds him greatly and makes him marvel even more on his superior personal talents.

exactly the right balance between creativity and discipline lies; and if I could deduce some principles of good management from my professional experience in projects that would be of value under all skies and in most fields of industry.

This little book was born of these reflections and I dedicate it to all those who, wearing a variety of hats, take responsibility for achieving one-of-a-kind engineering feats, either by size or complexity. They are the last adventurers of our modern times, those who continue to expand the limits of the known world and still believe in progress.

It is also a sincere and warmly-felt tribute to all those – site foremen, design engineers, auditors, contract lawyers or project managers – I had the good fortune of working with, in success as well as in doubt and hardships. Let this be a token of gratitude for their perseverance, their courage and their integrity.

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Introduction

It is common practice to characterize an enterprise by the sector of activity to which it belongs; in other words, by the nature of the goods and services that it furnishes to the economy. Hence, we speak of the energy industry, car makers, steel, electrical construction, electronics, telecommunications, also public works, media or financial services, etc... In France, as in many other countries, this forms the analytical framework for the statistical nomenclature and the complex superstructure of the industrial sectors, of the collective bargaining agreements and the professional associations (both of workers and of employers).

However, there is another point of view, based not on the nature of the goods and services that an enterprise provides, but on the processes it deploys for creating added value.

Ever since Adam Smith and his pin factory, everyone knows that the division of labor is one of the drivers of economic progress. Taylor and his scientific organization, Henry Ford and his assembly line and standardization, and then Toyota, with its kaizen and total quality, one after the other, they drew the full consequences from splitting up tasks and put in place today's universally adopted model of mass producing manufactured products at the least cost.

While this is so, the economy is not just about mass consumption: a "customized" approach may be called for to meet certain requirements. This is the case every time an economic agent's needs are uniquely his own and a ready-made answer cannot simply be picked from a catalog.

By way of examples, let me cite, in no particular order: public works, engineering, manufacturers of industrial equipment, implementation of large software systems, development of new product and models, public relations or advertising campaigns, film or theater productions and, more generally, all that has to do, directly or indirectly with the other engine of growth that is technological and cultural innovation... In all of these domains, every customer's order becomes a project in and of itself requiring an individualized approach.

The goal of the present work is to present some of the techniques to apply and rules to comply with, in managing complex projects stretching over several years, frequently in an international context. It will also attempt to identify certain practical precautions to guard against the inevitable bumps along the way or to limit their impact.

We will look mainly at large industrial investment projects, as they are the ones the author is familiar with, but it will be seen that a good number of the reflections we develop in that regard can be applied generally.

Following a quick overview of the different phases in the life of a project, we will address the following chapter headings in this order:

- Organizational structures to put in place at project level and for the company as a whole,
- Preparing bids, estimates and negotiating contracts,
- Project execution as such, with emphasis on sequencing the tasks to be performed, on pitfalls and traps to be avoided, on relations with the client, suppliers and subcontractors, and, more generally, the local environment,

- Close-out, with resolution of non conformities, warranty period, final acceptance, release of bonds and, if need be, with settlement of commercial, tax or customs disputes.
- Management controls, with business reviews, expenditures and commitments to date, progress measurement, estimate of what remains to commit and spend until completion, management of contingencies and other safety margins.

There is no basic difference between a client coming from inside the company or from outside. Both categories call for essentially the same principles of good management. Nevertheless, when the company is its own client, greater caution is called for. The absence of a formal contract with its legal constraints on the parties can in fact result in loss of references and impaired vigilance. It is the recognition of pervasive variances in their investment projects, among other reasons, that has led the majority of large industrial groups to outsource their internal construction departments, resorting instead to the services of construction and engineering firms.

Since the total quality canons apply universally, every project naturally must fit into the Time, Cost and Quality triangle:

- Quality is about meeting the client's specifications and achieving guaranteed performances, best practices relating to health, safety and environmental protection and compliance with applicable laws and regulations.
- Cost means meeting estimates and budget and researching the most cost-effective solutions for the client.

- Time means meeting contractual deadlines, mastery of planning and transparency concerning potential delays.