

# Project Excellence or Failure? Doing is the Best Kind of Learning

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**Abstract**—Project management<sup>1</sup> has been around for decades, and has also evolved over time. Likewise, the author has worked for a few decades in Industry with a prime focus on project management. Various flavors and even evangelists exist, from PMI<sup>2</sup>, IPMA<sup>3</sup>, Prince2<sup>4</sup>, Agile<sup>5</sup> and more. The author has had experiences with several of these flavors. Unfortunately for many years, a substantial amount of projects still does not deliver on time, on budget or worse do not create the value expected. It has been published in various media and type of organizations, from research to industry and government for example by organizations such as The Standish Group and others. It seems that despite of all the project evaluations, we have not learned from all those past projects. Nor did all the development in methods and tools help us overcome this problem, or it might be due to other factors such as the human factor, as has been subject of the Dutch National Research Group (DNRG<sup>6</sup>) on Project Management under the umbrella of IPMA. Why does this problem keep manifesting itself? And of course the question arises, how do we learn best? Time to rethink project management?

The current article intends to provide Young Professionals some tips or at least food for thought, based on a personal retrospect based on just a few cases from the author's past experiences. In particular, it aims to give the members of the IEEE Young Professionals a perspective for a bright future, given the large number of technological, innovation, societal projects, and business ventures expected as we enter the era of digital transformation.

**Key words:** Project management, program management, design thinking, human factors, learning, innovation, 21st century skills

## INTRODUCTION

**A** KEY issue or question regarding project management still remains unanswered, why do a large percentage of all projects undertaken still fail. This has been reported for many years since 1994 in the Chaos Report by the Standish Group as also

referenced by Gaynor (see [6]), Mulder (see [10]) and Hastie and

Wojewoda (see [8]). To that end it needs to be clarified that Standish uses a classification in three categories: successful, challenged and failed. Successful means the project has ended with satisfaction, according to budget and timelines. Challenged means too late, over budget or delivered but with insufficient functionality or quality. For the last class, failed projects are those that are stopped and/or the deliverables (systems) have not been put into operation, hence no value is created. The author has had the dubious privilege to have experienced all these categories of projects.

<sup>1</sup> In the current article the author refers to both project- and program management whenever the singular construct project management is used.

<sup>2</sup> PMI—Project Management Institute, [www.pmi.org](http://www.pmi.org)

<sup>3</sup> IPMA—International Project Management Association, [www.ipma.world](http://www.ipma.world)

<sup>4</sup> Prince2—Projects IN Controlled Environments, <https://www.axelos.com/best-practice-solutions/prince2>

<sup>5</sup> Agile: [https://en.wikipedia.org/wiki/Agile\\_management](https://en.wikipedia.org/wiki/Agile_management)

<sup>6</sup> IPMA DNRG: <http://www.ipma.nl/dnrg-pm/>

Mulder [10] presented the results of the 2014 research findings, conducted over 50,000 projects by Standish, in a special NGI-NGN<sup>7</sup> session on Sept 17th 2015 at the University of Applied Sciences Utrecht, the Netherlands. The results presented in that session showed that only an approximate 40% of projects undertaken in various industry sectors were successful according to the definition of the Standish research. There was an improvement in the success rate of 28% in the year 2000 as was emphasized by Gaynor [6]. In that special session a best practice guide for evaluating IT projects was also launched by Bronzes [1], providing insight into the various evaluation methods and tools available and comparing these projects. Of course the purpose of any evaluation is the learning and to improve for the next iteration, phase, project, program, or business venture for that matter and ultimately our society at large. To that end, the author does value the mandatory steps review and retrospective and the daily standup as described in an Agile framework, such as Scrum<sup>8</sup>. From a control systems theory perspective this is logical, getting better results through agility corresponds with more optimal timing parameters in control system feedback loops [5], in this case managerial control loops. As also reported by Standish even in Agile projects the average success rate was just about 42% and with the remark that smaller projects have a much higher likelihood of success than larger ones.

As Mulder [10] further clarified, it is important to take some nuance into consideration when reading and interpreting the Chaos Reports. From the context and perspective of

information technology driven projects, the value-add of information technology must come at first place for the organization prior to the success or failure of a project in terms of the agreed functionality and cost of time. Simply because a project that is successful according to these criteria, does not add value per definition to an organization.

Hence the question to consider remains that with all these available project management methodologies, frameworks, knowledge and experience, why do so many projects still fail? What is it that we are overlooking? Are there other key success factors, frameworks, tools, methodologies we as professionals, in management and engineering, should consider and take into account? Or might those be more strongly related to the human factors as for example described by Wong [16] and Ciccotti [3]. Wong described the most challenging issues project managers face are 1) motivating a diverse workforce, 2\_ facilitating team decisions, 3) resolving interpersonal conflicts, 4) managing difficult people, 5) strengthening team accountability, 6) communications and, 7) improving one's own leadership. Ciccotti made reference to every person's six basic human needs that drive our thoughts and behavior. Or as Ciccotti phrased it: "The key to understanding the behaviors of others is rooted in the understanding of oneself".

The conclusion of this section is that there is still much room for improvement. And in order to realize that we must continue to learn.

## LEARN TO DARE

The first tip deals with daring and stepping out of one's comfort zone. It does take some "dare" to step into a project when you only have limited knowledge on the subject or experience for that matter. But the author suggests that it is worthwhile.

Speaking from personal experience, and possibly of greater value to the student members, the first project the author was involved in was as a student in 1986. This first real project came to shape after the author had done the so-called Laboratory Task as part of the master program of the Electrical Engineering curriculum at Delft University of Technology in the area of sensors and robotics. The logical path would have been that the thesis would be in the same area or field. This is where the first conscious project was conceived from the perspective of the author and where the result had significant impact, triggered by the question whether all the author had learned to date, would suffice to undertake any other project in any other area, in this case as a thesis- and graduation project. The question was transformed into action, and an open application letter, requesting a one-year project was sent out. This yielded 7 offers from 7 companies in 7 different areas. A choice was made, and this then leads to a contract for one year with NCR<sup>9</sup> Systems Engineering on a completely new subject field: the introduction of smart cards (next generation payment chip cards) and the impact thereof on NCR's security architecture in their products. The lesson that has remained most valuable is the appreciation of what corporate standards can do to enable the development of products with geographically separated organizations (system engineering laboratories in various parts of the world): it allows for effective and efficient communication between dispersed teams. Similar to in-company standards, the author was allowed to see how international standardization works, visiting VISA<sup>10</sup>

<sup>7</sup> NGI-NGN, the Dutch Computer Society, [www.ngi-ngn.nl](http://www.ngi-ngn.nl)

<sup>8</sup> [https://en.wikipedia.org/wiki/Scrum\\_\(software\\_development\)](https://en.wikipedia.org/wiki/Scrum_(software_development))

<sup>9</sup> NCR—National Cash Register, manufacturer of Electronic Funds Transfer systems and Point of Sale systems; <http://www.ncr.com/>

<sup>10</sup> VISA Inc., best known for its credit cards, provides products, systems and services to banks and other financial institutions that are member.

headquarters in London for the INTAMIC<sup>11</sup> working group where NCR participated in as manufacturer in the Supplier Liaison Group and learn on VISA's view on managing security risks from a business perspective; the business case approach on risk versus security measures for a company that handles trillions of dollars per year.

Having standards is one thing, truly applying them and adhering to them is quite another as the author learned in subsequent years through experience, by each time stepping into many new other organizations and many new other fields after said graduation project. That is certainly what made the difference in the perspective of the author, sometimes popularly phrased as walk the talk and or by the catch phrase lead by example.

Just as a practical example of standards in the daily work process of a system engineer in the case of NCR, thinking about "RASUI" (Reliability, Availability, Serviceability, Usability, Install capability) when drafting a functional specification is mandatory for the involved engineers. If a system engineer had not thought these through and documented these while conceiving a new product, service or feature, there was no need to request for a formal review of the specification document by the Quality Assurance department. Obviously the need for this type of information is for others in the total life cycle of a product. Those that need to purchase spare parts, or those that need to train the service engineers and so on. Understanding there are more stakeholders involved than at first glance, is an important element for effective collaboration and/or if one wants to become engaged in management.

Hence there is a way of working that either is or is not part of the culture of an organization. This particular theme has come back multiple times in many other project management experiences of the author in various organizations, related to such elements as Total Quality Management (TQM), Software Process Improvement (SPI) processes as triggered by Capability Maturity Model (CMM) in the nineties, and Operational Excellence or more modern and current methodologies as Agile development teams or Design Thinking. Understanding the way of working of an organization, or across organizations and their differences, understanding indeed the many stakeholders involved with even contradicting needs and agenda's is an important skill you need to acquire. Moreover, even understanding the omissions in the chain or network that comprises the ecoSystem, is of great value. If not only for improvement of the situation you will run into. But you will have to dare to speak up and place the finger on the sore spot if so needed.

The conclusion of this section and for the author over the course of his career, has been that daring does get rewarded. Obviously it does imply you will not make friends with all involved, but your values addition will be recognized and appreciated.

### LEARN ON THE JOB

Of course there is formal learning. But the amount of lessons learned on the job should not be ignored. In fact, the author strongly suggests to use all your senses maximally to create the highest gain from learning every day on the job.

The anecdote below deals with what happens when a project comes into difficulties and starts to get attention from the Senior Management? Evidently, there is something seriously wrong to have come to such

state, no doubt about that. To make this statement more tangible or visible to the Young Professional readership, this is where at some point in time along the life cycle of the project the proverbial trouble hits the fan and the ugly truth surfaces.

In this second case of a tunnel project implemented in the Far East, there were multiple factors leading to such situation of getting attention of the Senior Management. The project spanned from the civil works and concrete construction, to all of the software control systems, including a classical mimic wall and all of the Tunnel Technical Installations (TTI) that are there for the safe and secure operation of the tunnel. Initially the author was engaged on this project for just some 6 calendar weeks to arrange for the needed Test Specifications, but reality made it over 60 weeks. The project was managed by the main contractor in a classical waterfall manner, out of the Netherlands, but clearly suffered from omissions of information in preceding stages. The author was then engaged to manage and secure the so-called Factory Acceptance Test to be conducted successfully at the system integration site of a subsidiary of the main contractor in Italy. It became clear, along the process of arranging for the Test Specifications, that much information was missing in the Detailed Design Specifications, let alone in the documentation of the preceding stage. In hindsight it was not really a surprise the subsidiary development organization ran into trouble trying to build and integrate it all, adding up the factor that their native language was not English (language classes were taken) and that this type of large project was a primer for them, further lacking tooling for managing all the reported trouble reports for example and managing the work that came out of it. And with communication lines between Italy, the Netherlands, the UK, USA, Spain, Hong Kong and some more

<sup>11</sup> INTernational Association for Micro circuit Cards

countries, where parts of systems came from both other subsidiaries and suppliers, speed of communication as we know it nowadays was not an enabler at the end of the eighties. And when Senior Management gets involved, the focus may shift to the wrong direction of finding the proverbial black sheep, or to decapitate the courier of bad news.

The conclusion of this section can best be described by the following. As the most senior consultant of the company explained to the author when the author left this particular tunnel project: "What you have seen, experienced and learned on this single project on technology, on management and on politics, took me a whole career time span. Appreciate the learning and experience you gained on this project". Whereas this was the very first large scale international project that the author worked on that received Senior Management attention, it was certainly not the last one. Evidently it took the author some more time and more project experience to truly value the words said at that moment in his early career years.

## LEARN BY FORMAL TRAINING

In this section the author places his experience in formal training into perspective. Undoubtedly formal training has great value. It would not have been possible for the author to have done the jobs and projects he did without the knowledge gained from his formal education. But in retrospect, in particular for all post-academic courses since obtaining the MScEng degree, in the perception, experience and opinion of the author, there is even more value to be gained if a course participant has had prior experience on the subject of the course. As it allows one to better see a course into full perspective: of one's personal experience, in the framework of the course, the material, the concepts provided in such course.

It then also allows for the discussion and debate with the other course participants to even learn more from one another, from their perspectives and experience. This actually has been the greatest value the author has derived from the various management courses in his past.

It was however not until in the midst of the author's second project, in the late eighties early nineties, again with Senior Management attention that the author attended a formal course on Management for Young Engineers [14], providing an insight into the broad spectrum of management. However, it was very much the experience to-date that the author brought into the course that was valued by the course leaders and led to new opportunities and invitations.

After many years of practice and experience in projects and programs with values over hundreds of millions of dollars, the author was mandated to do a Prince2 course to overcome today's digital selection criteria of hiring agencies or human resource departments. The Prince2 course leader did ask the question, why author followed the course at all, as the course leader's perception was that he could learn so much more from the course participant. However, it appears that many organizations derive more trust and certainty from a single bit tick in the box for something like Prince2 rather than understanding the true value a person brings based on their experience. Time will tell and learn us in future if this manner of operation is effective. A digital filter is certainly efficient.

There are of course the developments such as those in the European e-Competence Framework (eCF) that seek to embrace formal knowledge, experience and behavior for the purpose of selecting staff and some results from that framework in

practice from three (3) cases/ organizations have been recently described by Olde-Hartmann [11]. The purpose of the eCF model is to foster the mobility of the knowledge workers in the information technology sector in Europe by making the various roles and functions in that industry comparable. As such a shift is taking place from mere knowledge to level of competences. However as Gaynor [6] pointed out there are few organizations that have or provide reliable databases that house the needed competencies of staff to match the need of the projects, let alone of key people.

Obviously formal courses and experience can amplify each other, as is also surely recognized and implemented by various course providers. And there is no silver bullet, nor one size fits all problems, a phrase now well-known from Brooks [2], re-iterating his more complete formulation: "There is no single development, in either technology or management technique, which by itself promises even one order of magnitude improvement within a decade in productivity, in reliability, in simplicity". This evidently also applies to Agile as pointed in the more recent Standish reports as presented by Mulder (see [10]), Hastie and Wojewoda (see [8]).

Sometimes it is worthwhile to look into a completely different direction, as the author experienced being the case with an edX DelftX Massive Open Online Course (MOOC) on Delft Design Approach [4]. Providing insight in how to understand and design solutions using a, previously unknown to the author, large toolkit from design engineering based on understanding the interaction needs of users: experience interaction design. Or as the course curriculum explained: it provides a set of methods from Delft University of Technology to teach the participant how to get from understanding the



user in context to defining a meaningful design challenge and—in the end—deliver a great design. The course challenges the participant to experience the design process himself and reflect on their work with the help of other students, the teaching staff and industrial experts.

As a reader, ask yourself, would the average project manager be stimulated to follow such course or would you have been? The author would suggest that this is highly doubtful but it would surely recommend so, to look beyond the borders of the obvious. Likewise, and just as a further example, would the reader consider the combination of Open Innovation and Defense industry as an oxymoron at first instance or not? Evidence that it actually works can be found in [15] where Wilkinson describes the Niteworks Partnership including the Ministry of Defense in existence since 2003 using an open innovation and collaboration model for the purpose of finding strategic systemic solution to complex problems in the UK Defense. Wilkinson strongly advocates that the methods and processes developed in the Niteworks Partnership are relevant in many other domains than the Defense Industry. A similar argument on the applicability in many other domains is provided by Groen [7] where it concerns Dutch government ICT project and project contingency paradigm.

To conclude this section, sometimes one needs to seek lessons or information beyond the current perceived borders. This may be on the borders of formal and on-the-job learning, on the borders of separate industry areas or government entities, or even on the borders of your own mainstream skill set and those of others. Dare to look beyond that what is known to you, dare to look outside that comfort zone.

## FOOD FOR THOUGHT

There are many more cases and projects the author could present from his almost 30 years of past experience, or from (recent) research and literature, but as always and also in this case there are limitations, now limited by space. Hence, by no means is this article intended to be complete or exhaustive. As for the Young Professionals, you are invited to set or translate your dreams of the future into what-if scenarios, in a brainstorming manner: "What could I learn or achieve if I did action X, Y or Z". Based on the author's experience, which indeed does not equal any form of scientific research, some recommendations are presented for your consideration:

- Do not step back from projects in trouble, you may even want to seek them.
- Dare to undertake projects you have never done before as opposed to staying in your comfort zone.
- Learn quickly from your own mistakes and learn even faster from the mistakes of others.
- Dare to experiment in a short cycle manner.
- Follow uncharted paths and opposed to standard chartered paths.
- Think outside of the box or even better think without a box at all.
- Embrace a just-do-it mentality instead of waiting for all success factors of any kind to be present on a silver plate.

As we enter the era of Digital Transformation, it is the current belief of the author there will be a continued need for project management and engineering management, contrary to what the Agile evangelists may want you to believe. Given the large amount of technological-, open innovation- and societal projects and impact on business and governance to be expected even in the near future, with Internet of Things (IoT),

Big Data, Smart Cities, Smart Industry, Smart Transport, Smart HealthCare and more, in an ever more connected and more complex world, the author suggests this seems reasonable to expect. That does not say all project management methods will remain as they are today, more likely there is synergy to be achieved from the various flavors and by incorporation of past and future research findings. It is time for the Young Professionals to embrace these challenges in Technology & Engineering Management and to support the advancement of technology for humanity.

## CONCLUSION AND DISCUSSION

The current article is not intended to be complete nor exhaustive in any shape or form. Stating that the current article, and in particular any of the real-life practical cases, presented scientifically proven arguments would not be appropriate at all. The current work merely presented a brief overview of part of the experience of the author in project management, leading to some recommendations for the Young Professionals to consider. The current article foremost intends to provide food for thought, to engage into and foster a discussion with the readers. From discussion with different perspectives comes better insight, starting from the position that we agree to disagree.

We learn from our errors, but do we really? While we learn as individuals, do we indeed do the same as organizations, or even better as society? Of course any form of education or training on beforehand can help avoid any individual and the organization one works for from running into the obvious pitfalls. But in the perception of the author there is nothing that can compare against real life experience to put it more boldly. Hence do not be afraid of projects even if you have not completed a project management course, and for

sure not from projects into trouble, as they are the greatest place to learn from and to make a positive contribution that will be appreciated. Obviously this is not intended to stimulate ignorance of any sort; quite the opposite. Part of stepping into new territories will often allow for quick and fast learning of what it is all about. We further need to become aware and conscious that 21st century skills do differ from the past century, where knowledge needs to be strongly augmented with skills, attitude and behavior; clearly articulated by Trilling and Olde-Hartmann ([13], [11]), 'we need to be learning to innovate and innovating learning'.

Whereas in the perception of the author and in the introduction of the current article the author raised the question why after decades of development in project management the majority of projects still do not live up to expectation, the alternative perception is of course that project management research is still in its early stages as pointed out in [12]. The article also states that new research may help establish new and different conceptions on project

success and failure beyond the traditional success factors, to develop more refined contingency frameworks, which may then lead to and enable future project managers to less rely on heuristics and may lead to a new application of "project management design". Of similar nature is the recent research done by Groen [7], addressing contingency measures and a new contingency paradigm in Public ICT based projects, the process of e-Government Project Escalation. Groen reports that already for 30 years there is a need for a new approach when it comes to Public ICT projects in the Netherlands. This also leads in [7] to the question of: "how to obtain as soon as possible signals that agreed project plans are not going to work as planned and is the responsible management both capable and willing to intervene". Time to rethink project management and innovate?

The question of success and failure factors will remain for some time, even though research on that question and variations thereof has been performed and lead to many recommendations. The question

being still: "Why do projects still fail at such large rates". Or as Sauter, Reilly, and Shenhar [12] phrase it, in studying success against failure we also need to ask the question "was it the right management to the situation, the task and the environment". Indeed, more research on this subject is needed, including how we educate and learn this type of management being project management, if the rates of success should rise to the 98% level. And since the business case of risk of failure versus measures to be applied has not become accepted as far as the author is or has been made aware of, research may need to step up as may the adoption of the results thereof in practice.

In keeping with Kruisman and Donath [9], the end of the current article serves a similar purpose as the end of their video fragment. The author for sure does not have the monopoly on all the wisdom, but is foremost ready to learn from his mistakes.

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