

# Increase the success of Governmental IT-projects

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## Abstract

*Large and grand IT projects seem to fail worldwide. Several studies researched the indicators of success and failure on a national level, but there is little international comparative research. What if governments could apply international lessons learned when starting their IT projects? We assessed the factors of success of 110 projects in the Netherlands by the project benchmark resolution method of the Standish Group and compared large governmental and small projects to an international sample of the Standish database.*

*This study supports the relation between the Dutch IT Projects and the international sample of the Standish Group, thus offering an opportunity to learn from international projects when applied to the large and grand governmental IT-projects and small IT-projects in the Netherlands. Acknowledging international post-mortem lessons learned could raise awareness of applying an international project resolution benchmark in the prenatal phase of IT-projects.*

**Keywords:** *IT Project, project benchmark resolution method.*

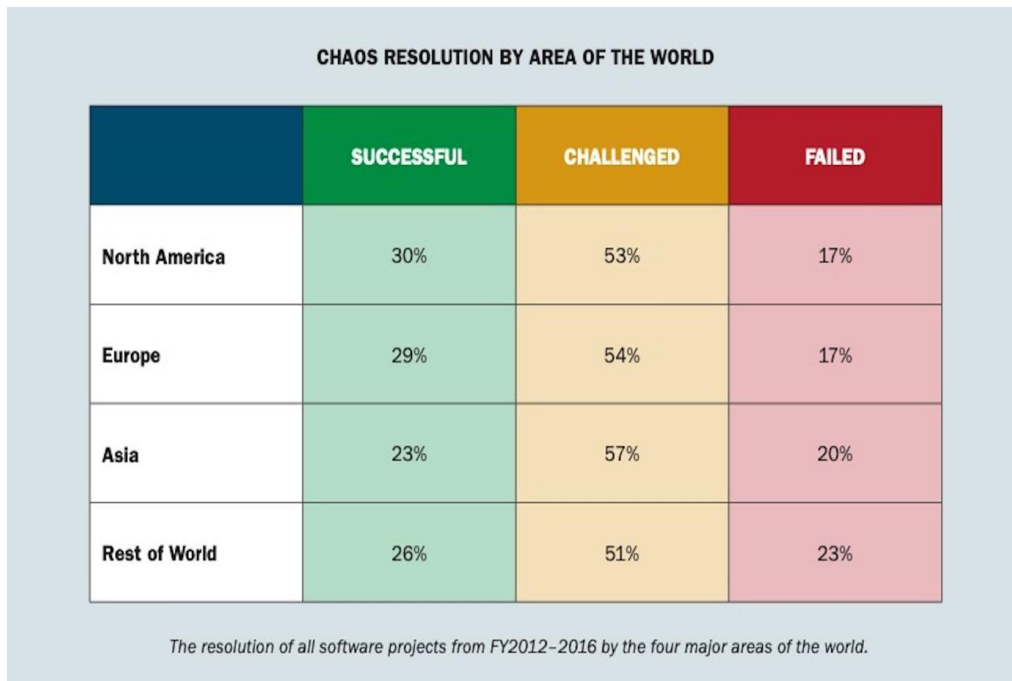
## 1. Introduction

Large governmental IT projects seems to fail worldwide (Payne, 2018), (L. Anthopoulos, 2018). Several studies researched the indicators of success and failure on a national level (Standing, 2013) (Dijk, 2013) (Beenker, 2004), but there is little international comparative research.

Recent Dutch headlines show continued relevance of increasing the success of Governmental IT-projects: *“IT-projects at the Dutch Tax office led to a delay when collecting inheritance tax (RTL News, 2017), Dutch Government fails in IT-projects: failure at all levels (Bremmer, 2018), Failed IT-project at the Dutch government fails, government successfully claims 21 million euros from IT-vendor Capgemini (Hoeffnagel, 2018).”* Because IT-projects are still failing, thus losing hundreds of millions of euros in the process, there is a need for international comparative research on IT-projects.

The Standish Group is researching IT-projects for over twenty-five years, in this timeframe they’ve analyzed over hundred thousand projects. Using this data, they defined several factors that contribute to the success in IT projects (The Standish Group, 2015). Their evaluations cover countries all over the world as shown in Figure 1. Success and failed IT projects per region taken from the bi-annual CHAOS reports (The Standish Group, 2016). The results

below show that there is a difference in success rates for projects executed in different regions of the world. The resolution in Europe and North America are quite similar.



**Figure 1. Success and failed IT projects per region**

By applying the Standish project resolution benchmark method and the factors of success (The Standish Group, 2015), we were able to assess over 140 projects in the Netherlands and compare those projects to an international sample from the Standish database. The project benchmarking method<sup>1</sup> proved to be an effective method to analyze projects

## 2. Problem Statement & Research Approach

For decades many large and grand IT projects within the Dutch government fail. The court of auditors, in Dutch De Algemene Rekenkamer, investigated the causes for (partially) failed IT projects and concluded that the government is not in control (Algemene rekenkamer, 2008). The outcomes are often challenged, the delivery of agreed results within time and on-budget remains elusive and the value of IT-projects is considered disappointing (Bronsgest, 2016). For these reasons the Dutch parliament held parliamentary hearings in 2014 to investigate large governmental IT-projects. One of the conclusions of the committee on IT-projects, chaired by senator Elias, was that the Dutch government loses between one to five billion euros on a yearly basis in IT-projects (Tweede Kamer der Staten-Generaal, 2014). One of the outcomes of the committee was the founding of the Bureau of IT Assessment (in Dutch Bureau IT Toetsing: BIT), this independent authority performs risk assessments

<sup>1</sup> A video instruction of the Standish project resolution benchmark method is available at: <https://www.youtube.com/watch?v=cRPOPmhyrcs>

on governmental IT-projects above five million euros. With the BIT in place a reduction in failed projects was expected. But as described in ‘Meer vorm dan inhoud’ (Bronsgest, 2016) only one third of the projects is completed successfully.

Most researchers in the Netherlands focus on Dutch IT projects and a limited number of case studies (Groen, 2015), (Dijk, 2013), (Bronsgest, 2016). In this study we applied the project assessment method and data collection of The Standish Group, based in Boston, U.S.A. The Standish Group maintains an extensive international research database for organizational profiling, skills assessments and project resolution benchmarks. This primary research database contains over 50,000 detailed case descriptions of IT-projects, covering 1,000 organizations.

## 2.1 Looking abroad

Most European member states, like the Netherlands have a separate auditing organ that assesses large and grand national governmental IT-projects. Although the national auditing agencies in Europe mention international IT-project research findings in their reports, the focus is on projects executed in the member state itself (Bureau ICT toetsing, 2018).

In Germany the federal court of auditors addressed (Mertens, 2012) the Standish Group findings in their report, but the only to mention the state of affairs of IT projects in the US industry in 1999. The report did not apply international findings to the public sector in Germany (IT-Projekte der Bundesregierung, 2006).

The same holds for post-mortem assessments of governmental IT-projects in other countries. Well known assessments of failed Governmental IT projects are for example the Australian hearings on the Health payroll system project in Queensland<sup>2</sup> (Beyond Software, 2018) or the U.S. Coast Guard electronic health record system project<sup>3</sup> (Healthcare IT News, 2018).

In such post-mortem assessments of large and grand governmental IT-projects international lessons, such as the Standish factors of success, could have been transposed to the prenatal phase of governmental IT-projects.

## 2.2 Research objective and questions

The objective of this study is to analyze the factors of success of IT-projects from an international perspective. Thus, researching the possibility of applying international post-mortem lessons learned and international project resolution benchmarks in the prenatal phase of IT-projects on a national level.

The initial research question was: To which extend are success indicators in large and grand Dutch IT projects in government related to the international sample of The Standish Group, and can these findings be applied to Dutch IT projects in government?

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<sup>2</sup>[http://www.healthpayrollinquiry.qld.gov.au/\\_data/assets/pdf\\_file/0014/207203/Queensland-Health-Payroll-System-Commission-of-Inquiry-Report-31-July-2013.pdf](http://www.healthpayrollinquiry.qld.gov.au/_data/assets/pdf_file/0014/207203/Queensland-Health-Payroll-System-Commission-of-Inquiry-Report-31-July-2013.pdf), retrieved 1-3-2019.

<sup>3</sup><https://www.gao.gov/assets/690/689565.pdf>, United States Government Accountability Office, retrieved 1-3-2019.

After the analysis of large and grand Dutch IT-projects in government, we extended our research by incorporating small projects in Netherlands.

### **3. Method of Benchmarking**

Based on market research and feedback from expert interviews we selected the Factors of Success (The Standish Group, 2015) as a metric to compare large (>6 Mio. USD) and grand (>10 Mio. USD) Dutch governmental projects to the International sample. This approach for measuring large and grand projects differed from the method The Standish Group uses in the project resolution benchmark but allowed for an increase of the volume of samples. The project resolution benchmark (PRB) we used in the comparison of small projects is identical to the PRB method of The Standish Group. Regarding the rating of the success indicators a one to five scale was applied. The sum of each sample was then compared with the international sample of the one thousand projects from the CHAOS database (The Standish Group, 2016).

Our study was executed in 2016-2018 using a comparative analysis with two samples, namely 20 large and grand projects in Dutch government and 90 small (<1 Mio. USD) non-governmental projects. The sample of 90 small projects resulted from a masterclass course in resolution benchmark analysis (The Standish Group, 2018) at the Erasmus University in Rotterdam, in the Netherlands. The benchmark analysis provided an overview of the organizational profile, rating of skills and projects characteristics. Information for large and grand projects was gathered using public information from the IT Dashboard (Rijks ICT-Dashboard, 2018), BIT-reports and newspapers.

Because the success indicators defined in The Factors of Success are subjective to interpretation, arguments and facts had to be supplied for each indicator. These arguments and facts were validated by adjudicators of The Standish Group. This adjudication led to one set of 30 projects in the small sample to be discarded due to disbelief in the data. The reason the set had to be replaced was that an almost 95% success rate in the execution of projects was deemed unrealistic by the adjudicators.

### **4. Findings of our study of Dutch IT-projects**

The sample of small projects show a success rate (on time, on budget and on target) of 75%, while the large and grand projects only complete successfully 10% of the time. The average over the two researched samples creates a success rate of 43%. In the CHAOS Report which is based on thousand projects of various sizes, an average success rate over all the project sizes is calculated at 45%. The factors of success analysis on the large and grand projects shows moderate and poor skill ratings on most of the indicators.

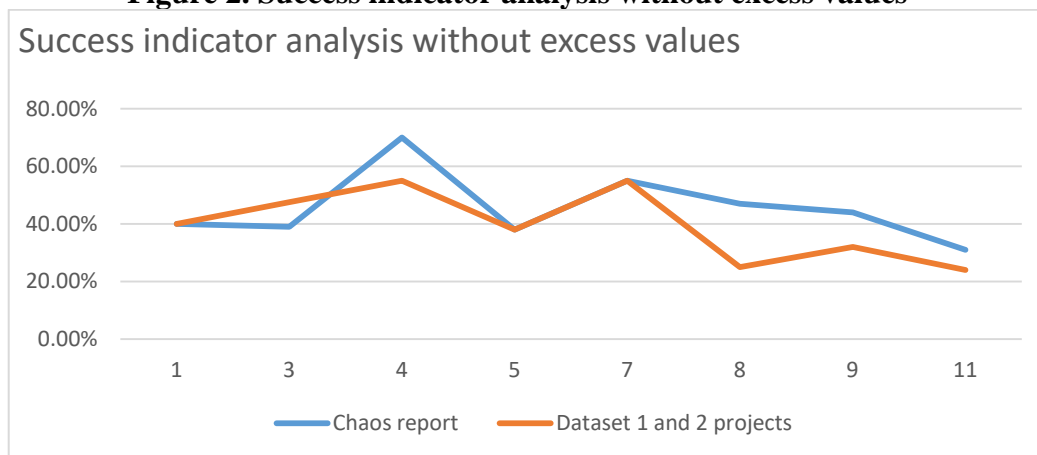
In the successful projects from the CHAOS database the rated success indicators shift from predominantly poor and moderate to between moderate and highly skilled. When comparing success indicators of the researched samples within the CHAOS database a similar pattern is discovered

**Table 1. Factors of success in large and grand projects**

	Factors of success, large and grand projects			
Modern Successful	Highly	Skilled	Moderate	Poorly
Executive Sponsorship	5.3%	21.1%	42.1%	31.6%
Emotional Maturity	0.0%	7.7%	46.2%	46.2%
User Involvement	5.3%	5.3%	52.6%	36.8%
Optimization	10.0%	15.0%	45.0%	30.0%
Skilled Resources	5.0%	15.0%	65.0%	15.0%
Execution	10.0%	0.0%	25.0%	65.0%
Tools & Infrastructure	10.5%	26.3%	31.6%	31.6%
Agile Process	0.0%	11.8%	17.6%	70.6%
Project Management Expertise	5.0%	10.0%	50.0%	35.0%
Clear Business Objectives	10.0%	15.0%	35.0%	40.0%

In the researched samples three excessive values stand out; on target, project size and complexity. Only two of the projects could keep the planning and deliver the project on target. The project size was only incorporated for finished projects. Complexity was impacted by the research domain in which most projects must be delivered within the current architecture. Figure 2 shows the results of the success indicator analysis for the CHAOS database and the samples without the excess values. As seen in figure 2 the rating on the factors of success for the Dutch IT projects are similar to the results of the Standish Group.

**Figure 2. Success indicator analysis without excess values**



## 5. Conclusions

This study supports the relation between the Dutch IT Projects and the international sample of the Standish Group, thus offering an opportunity to

learn from international projects when applied to the large and grand government IT-projects and small IT-projects in the Netherlands. Acknowledging international post-mortem assessments could raise awareness of applying these lessons learned and the project resolution benchmark in the prenatal phase of IT-projects. As a result, from this study, The Standish Group has updated their project resolution benchmark<sup>4</sup> method and made it available for international self-service assessments.

During the interviews with the project managers responsible for the 30 projects, which were discarded due to the almost 95% success rate, it turned out that this organization took the findings from The Standish Group to heart and actively managed the skills, competences and approach described in the factors of success.

Coming back to the decision of the adjudicators to discard these 30 projects, it was still the right thing to do to leave out this sample. Because data pollution by including projects from an organization that was already leveraging international experience by applying the factors of success into practice, was prevented.

## **5.1 Applying the ‘winning hand’ of successful projects**

According to the Standish Group there are five things you need to do to create a “winning hand” for project success. First, a project needs to be small. This means six team members (maximum) with a time box of six months or less. Second, the process must agile, such as the Scrum methodology. Third, the agile team must be highly skilled in both the agile process and the technology. Fourth, the product owner or sponsor must be highly skilled. And fifth or last, the organization must be highly skilled at emotional maturity

If you do these five things and do them well you have an 81% chance that a project will come in on time and on budget, with satisfied customers. You have only a 1% chance the project will fail and only an 18% chance it will be challenged in some way or other. More importantly, the project will have a 64% chance of returning very high to high value and only a 15% chance of returning no to low value. If you do not do these five things well, however, the chances of a failed, challenged, or low-value result increase. On the other hand, everything else you do (outside of these five things) is most likely a waste of time and money or has very low to negative impact.

Now let’s look at the opposite spectrum, or a losing hand. First, it is a large project with hundreds of team members. Second, you use waterfall methodology with a mature process. Third, the team is moderately to poorly skilled in the process and technology. Fourth, the product owner or sponsor is also moderately to poorly skilled. Fifth, the organization has moderate to poor emotional maturity skills. If you do have these things you will have a 1% chance that a project will come in on time and on budget, with satisfied customers. You have a 64% chance the project will fail and a 35% chance it will be challenged in some way or another. More importantly, the project will

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<sup>4</sup> Overview of the Project Resolution Benchmark:  
<https://www.youtube.com/watch?v=cRPOPMyrcs>

have a 79% chance of returning very low to no value and less than a 10% chance of returning high value

**Figure 3. Winning hand versus losing hand**

WINNING HAND VERSUS LOSING HAND					
	SUCCESSFUL	CHALLENGED	FAILED	HIGH VALUE	LOW VALUE
WINNING HAND	81%	18%	1%	64%	15%
LOSING HAND	1%	35%	64%	9%	79%

Results of a winning hand versus a losing hand. A winning hand is defined as: a small, agile project with a skilled team, sponsor, and an emotionally mature environment. A losing hand is defined as: a large, waterfall project with an unskilled team, sponsor, and an emotionally immature environment. The results are a segment of the 25,000 projects in the CHAOS database from Fiscal Year 2012 to 2016. Success is defined as OnTime, OnBudget, and with satisfied customers. Challenged is defined as late or overbudget, with less than satisfied customers. A failed project is always canceled before resolved, or resolved and not used.

(source: THE WINNING HAND, CHAOS REPORT, The Standish Group, 2016)

Let’s look at how we got to the winning hand. Project size has always been a major element in the CHAOS research. It was clear from the very beginning of the CHAOS research that size was the single most important factor in the resolution of project outcome. It is also clear that the larger the project, the less valuable the return rate. In many cases larger projects never return value to an organization. The faster the projects go into production, the quicker the payback starts to accumulate.

We often hear people say, *“The size is the size, and the size is dictated by the requirements.”* This is far from the truth. One of the major advantages of Value Portfolio Optimization is to break up large software projects into multiple small projects, with early delivery for success, quicker return on value, and greater customer and user satisfaction. The Standish Group has found that most software projects only require a small team for a short duration in order to deliver value to the organization; only in very rare cases do projects need to be bigger and longer.

## 5.2 Further Research

Further research will focus on how to implement the factors of success in practice.

Though our findings regarding the 30 IT-projects in one company indicated positive effects by managing their IT-project by explicitly applying the factors of success, this sample size is insufficient to draw rigor conclusions about the way to implement the factors of success.

Further research therefore is required to investigate the way of managing IT-projects by applying the factors of success and the project resolution benchmark.

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