MODERNIZATION

CLEARING A PATHWAY TO SUCCESS

THE STANDISH GROUP

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INTRODUCTION

In a recent engagement we evaluated the order processing application of one of our clients. This organization takes orders around the world, 24/7. Orders come in from the company's website, call centers, faxes, and bulk e-mails. Much of the process is manual, and inventory is constantly out of balance. The new proposed order processing application would automate a great deal of the processing and improve inventory control. It is estimated that the current system is costing the company $5,000 a day in lost orders, extra labor, and additional inventory. The sooner the new system is deployed, the sooner the firm will reap savings.

The current system has hampered the organization's ability to increase its competitive advantage, extended time to market for new, innovative products, and increased the risk of falling behind competitors as well as not meeting compliance regulations.

Our client is currently using an IBM z10 mainframe system for running its order processing application. The company has found it too expensive and difficult to modify and maintain the application. It is also one of the last applications running on the IBM mainframe. The application consists of two million lines of COBOL/CICS code. The company plans to upgrade the application and reduce total cost of ownership by running it on commodity hardware and software.

The company has three choices for upgrading the order processing application: rewrite the application from scratch using new tools and techniques, buy a package off-the-shelf, or modernize the current application. The organization solicited bids to upgrade the application, which we reviewed. There were three bids for each type of upgrade. The average bid for new development was $10 million for a three-year project. The average bid for a package was $5 million and a two-year implementation project. The average bid for a modernization project was $3.5 million and just a one-and-a-half-year project. Because of the lucrative payback all three methods had a positive return.

INTRODUCTION

The organization was concerned with both long-term and short-term gain and reduced risk, both for business and technology. Cost was a concern, but not an overriding one. Politics took center stage. There were three distinct camps: new development, package, and modernization. All three camps had hardened and seasoned political constituents. Each camp presented valid reasons why the organization should go with its preferred method. Management was anxious to get the project started, but wanted everyone to feel good about the decision. We were brought in to break up the logjam and help aid in the decision process. We used several of our specialized tools to come up with our analysis.

Our CHAOS Project database gave us the cost, risk, gain, and reasons for success and failure. We were able to match all three methods against the profile, with a 90% match of the 120 attributes of more than 100 projects. Since 1994, The Standish Group has been studying research project success factors and best practices. We have 10 factors of success and each success factor has 10 best practices. We've assigned each best practice with weighted points. A perfect score would be 100 points, however the top 30 best practices add up to 50 points. Our TCO database gave us the operating costs for the application running on commodity hardware versus the IBM z10. A special CICS project database allowed us to verify the project cost.

The purpose of this report is to provide the reader with a fair comparison of differences between rewriting, buying a package, and modernization of a software application. The comparison includes information on their cost, risk, and reward. This report is broken into five sections: case comparison, new development, application package, modernization, and proof points. Much of this report is based on the CHAOS Research project on the creation and implementation of application software. The Standish Group has been the leading provider of project management research and reporting since the introduction of the first CHAOS Report in 1994. These 16 years of cumulative CHAOS research encompass more than 70,000 cases of completed IT projects. Through Standish Group's CHAOS Research programs, we have hosted more than 500 workshops, as well as countless one-on-one interviews, focus groups, project assessment sessions, and executive retreats. The current CHAOS report is an online resource and is continually updated. As of the writing of the report, the organization had not made a decision. We were not asked for and are not making any recommendations at this point, but the information was presented to help the organization make the most informed decision possible.

AFTER YOU READ THIS REPORT, WHAT WOULD YOUR DECISION BE?

MAINFRAME VS. COMMODITY

BASIC COST ($000)	MAINFRAME	COMMODITY	DIFFERENCE	DIFFERENCE
Hardware Cost	$321	$73	($248)	-77%
Software Cost	$192	$26	($166)	-86%
Manpower Cost	$645	$85	($560)	-87%
Maintenance Cost	$132	$56	($76)	-58%
Other Cost	$282	$53	($229)	-81%
Total Basic Cost	$1,572	$293	($1,279)	-81%
APPLICATION COST ($000)				
Basic Cost	$1,572	$293	($1,279)	-81%
Software Infrastructure	$400	$201	($199)	-50%
Database & Systems Admin	$554	$332	($222)	-40%
Application Maintenance	$926	$314	($612)	-66%
Other Cost	$218	$90	($128)	-59%
Total Operating Cost	$3,670	$1,230	($2,440)	-66%

OPERATIONAL COST OF OWNERSHIP

The table shows the current cost of the mainframe and the estimated cost of the commodity platform running the order processing application. The operational cost for each of the methods is relatively the same. We will be using this operational cost for all three cases for the TCO and ROI analysis. This represents a one-year operating cost using a three-year lease/write-off scheme for software and hardware. Please note: The cost to operate the commodity platform to test and run in parallel is added to the ROI calculation for each case.

Note: All currency amounts in this report are in thousands of US dollars ($000).

CASE COMPARISON

In comparing the resolution results of all three cases, modernization stands out as having the highest chance of success and the lowest chance of failure. Application package implementation is also favorable to success, but more likely it will be a challenged project. However, the package implementation is twice as likely to fail as the modernization project. The largest risk for the organization is the new software application development. It is six times more likely to fail than the modernization project and three times more likely to fail than a package implementation. New software development projects of this size have a poor track record in general, and only organizations with a very high-quality project environment have success.

RESOLUTION RESULTS COMPARISON

RESOLUTION	CASE 1: APPLICATION DEVELOPMENT	CASE 2: PACKAGE APPLICATION	CASE 3: MODERNIZATION
Successful	4%	30%	53%
Challenged	47%	54%	39%
Failed	49%	16%	8%

The resolutions of projects in all three cases.

COST OVERRUN COMPARISON

RESOLUTION	CASE 1: APPLICATION DEVELOPMENT	CASE 2: PACKAGE APPLICATION	CASE 3: MODERNIZATION
Below 20%	43%	22%	46%
20% to 50%	21%	36%	29%
51% to 100%	10%	29%	14%
Over 100%	26%	13%	11%
Our Estimate	44%	47%	34%
Current Estimate	$10,000	$5,000	$3,500
Parallel Testing	$1,230	$1,230	$1,230
Average Overrun	S4,000	$2,000	$1,000
Estimate with Overrun	$15,230	$8,230	$5,730

The cost overruns in all three cases.

Breaking down the cost overrun, we see 75% of the challenged modernization projects are over budget by 50% or less. In comparison to modernization, 62% of the new development and 58% of package applications had a cost overrun of 50% or less. In contrast, 42% of package applications have overruns greater than 50%. Only a quarter of modernization projects have overrun rates greater than 50%, and 38% of new development projects exceed overruns of 50%. Our estimates indicate that the average cost overrun is: Case 1, 44%; Case 2, 47%; and Case 3, 34%.

In breaking down the time overrun, we see 80% of the challenged modernization projects are 50% or under the target delivery date. In comparison to modernization, 47% of the new development and 59% of package applications had a time overrun of 50% or less. In contrast, 53% of application development had time overruns greater the 50%. Only 20% of modernization projects had time overruns greater than 50% and 41% of package application exceeded overruns of 50%. Our estimates indicate that the average time overrun is: Case 1, 44%; Case 2, 45%; and Case 3, 29%.

TIME OVERRUN COMPARISON

RESOLUTION	CASE 1: APPLICATION DEVELOPMENT	CASE 2: PACKAGE APPLICATION	CASE 3: MODERNIZATION
Below 20%	28%	27%	59%
20% to 50%	19%	32%	21%
51% to 100%	30%	31%	12%
Over l00%	23%	10%	8%
Our Estimate	44%	45%	29%
Estimate in Months	36	24	18
Average Overrun	16	11	6
Estimate with Overrun	52	35	24

The time overruns in all three cases.

CASE COMPARISON

In comparing the ROI history, we see that 52% of modernization projects reported high ROI, while only 11% of new application development projects and 34% of package application projects reported high ROI. Almost a quarter of application development projects reported low returns, versus 11% for modernization and 9% for package applications. Two-thirds of new development projects had an average return versus 57% for packages and 37% for modernization.

Comparing the estimated return on investment among all three cases, we see optimistically that Case 3: Modernization has the lowest cost with the highest return. If we look at it pessimistically, Case 1: Modernization still has the lowest cost with the highest return. Case 3: New Development has the highest cost and lowest return, in being both optimistic and pessimistic. The payback period is extended well beyond most organizations' attention span and business strategies. It is because of the long time frames that many of these types of projects are canceled before they have a positive resolution. Case 2: Package Application sits in the middle between Case 1 and Case 3.

EXPECTED ROI COMPARISON

ROI	CASE 1: APPLICATION DEVELOPMENT	CASE 2: PACKAGE APPLICATION	CASE 3: MODERNIZATION
High	11%	34%	52%
Average	66%	57%	37%
Low	23%	9%	11%

The expected return in all three cases.

In general, the comparisons between modernization projects and new development or package application projects are both stark and dramatic. Modernization projects are mechanical and suited for contemporary IT organizations and the state of their project management capabilities. Modernization projects avoid the harder project management activities such as gathering user requirements and receiving the executive attention that new development projects necessitate. Modernization projects also avoid the gap analysis, user retraining, process changes, code modifications, and user rejections that package applications endure. With application modernization projects, user training is very minimal and generally there are no modifications. Further, users are generally more receptive because their methods and processes are not disrupted. The objectives of modernization projects are clearly stated and easily measured.

In measuring the order processing modernization project against the CHAOS Factors of Success, The Standish Group sees many reasons to be confident. The top three reasons projects fail or overrun (lack of user involvement, executive support, and clear business objectives) will have little impact on this project's outcome. Since the modernization project is contained to the IT department, there is very little worry regarding emotional maturity issues. Scope is also contained to migration and testing. Like an agile process, the application grew with small iterative changes and user instruction during the last 25 years. The rest of the CHAOS factors and best practices coincide with the strengths of the organization. The new development or package application projects do not enjoy these qualities.

ESTIMATED ROI COMPARISON

COMPARISON	OPTIMISTIC			PESSIMISTIC		
Return on Investment	Costs	5-Year Gain	Payback in Months	Costs	5-Year Gain	Payback in Months
Case 1: New Development	$11,230	$0	68	$15,230	$0	90
Case 2: Package Application	$6,120	$6,490	42	$8,230	$1,755	55
Case 3: Modernization	$4,730	$9,820	32	$5,730	$7,000	40

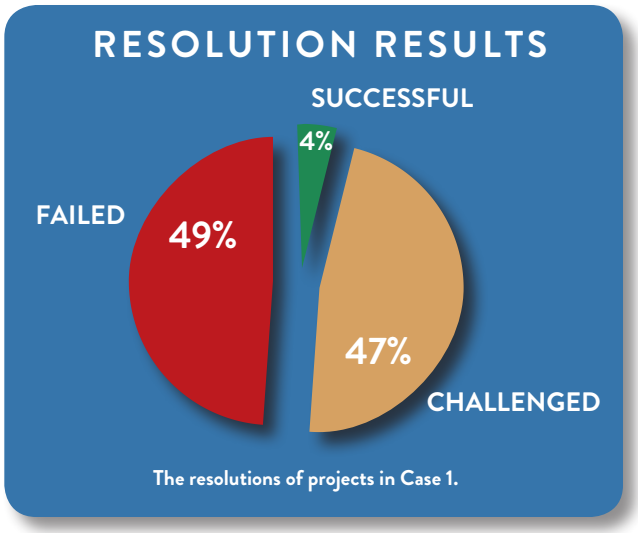
The estimated ROI in all three cases.

CASE 1: NEW APPLICATION DEVELOPMENT

The team proposing development from scratch using modern tools and techniques completed the project profile and environmental assessment for the proposed new order processing application. The Standish Group reviewed the project case and responses to the clarification follow-up telephone call. We matched the case against our database of more than 70,000 projects. The results are a statistical picture of projects that closely matched the proposed new project. In addition, the project assessment was used to more fully understand the project environment and to make observations from both the project database history and the proposed new project.

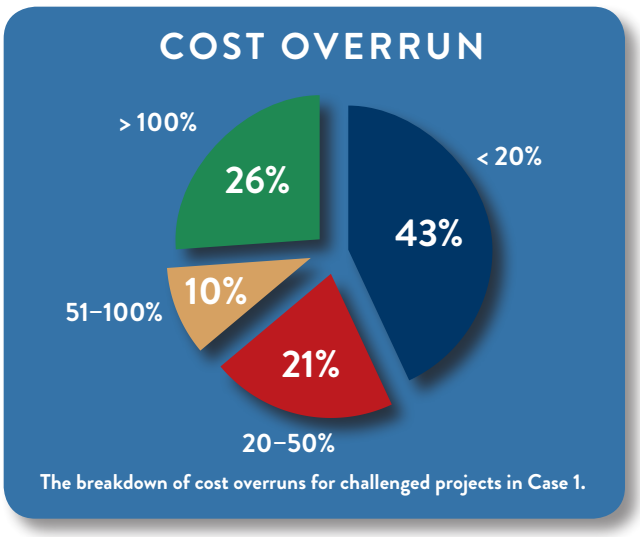
We were able to match the order processing case with 90% of the success attributes in more than 100 cases in the CHAOS database. Project resolution results in Case 1 indicate that there is a 4% chance that the project will come in on time, on budget, and not lacking critical features. Forty-seven percent of the projects that match the case were considered challenged, meaning they were completed, but not on time, on budget, or with all the expected quality and features. In less than half the projects (49%), the users either rejected the application or the organization stopped the project before completion.

Twenty-one percent of Case 1's challenged projects were over budget by 20% to 50%. The Standish Group estimates that challenged projects in Case 1 will have an average cost overrun of 35%, which would increase the project cost by $3.5 million dollars. Further estimating analysis indicates the cost of the application will be greater than the average bid by about 20% to 40%, for a cost of $12 to $14 million. Such an overrun will cause the risk to increase dramatically and the payback period to grow from almost six years to seven and a half years. The time will also expand, and the likelihood of losing the executive sponsor and key staff and project support personnel increases.



The resolutions of projects in Case 1.

Thirty-eight percent of challenged projects were late by less than 20%; another 19% were 20% to 50% late. Thirty percent of challenged projects were 51% to 100% late. Thirteen percent of challenged projects in Case 1 were over 100% late. The Standish Group estimates that challenged projects in Case 1 will have an average time overrun of 46%, which would increase the project time from three to four years. This would put much pressure on the return on investment. Challenged projects within the Case 1 set had a feature deficiency rate of 26%.



The breakdown of cost overruns for challenged projects in Case 1.

Most organizations are looking for a fast payback period and high rates of return to justify new software development projects. One-third of organizations want payback within one year; 41% want less than a two-year payback. Nineteen percent will accept a three-year payback. However, only 6% will tolerate a greater than three-year payback. In Case 1, a two-thirds majority reported low actual return on investment from their projects. Twenty-three percent reported an average ROI, while only 11% reported high returns. For Case 1, the return on investment does not begin until the project is complete, tested, and in operation. That is estimated to be three years.

Our analysis indicates that our client is optimistic that the project would come in on budget and on time. If that were the case, the payback period would be six to seven years from the start of the project. Of course, this is a highly unlikely event. If you include parallel processing and most likely cost overruns of $2 to $4 million, the payback period could easily be a decade or more. There is a way the organization could mitigate these costs by drastically reducing scope and adopting the agile style, but how this may affect the outcome is beyond this analysis. In any case, such reduced scope would be less than the current order processing application and therefore have reduced user benefit.

CASE 1: NEW APPLICATION DEVELOPMENT

Over the past 25 years, the cost associated with software development has shifted from 80% of the cost for developers and 20% for nondevelopers, to 20% for developers and 80% for nondevelopers. The growth in application complexity is the main reason for this shift. Automatic tools have increased programmer productivity, and offshore development has reduced coding cost by an order of magnitude. However, overall costs have not come down, but rather have increased. Project management overhead, sophisticated requirements gathering, converting requirements into detailed specifications, load and performance testing, and other activities have driven up both scope and complexity. This, in turn, has driven up overall project costs.

CASE 1: RETURN ON INVESTMENT

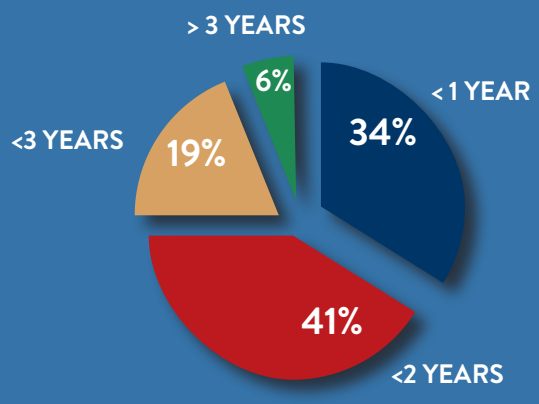
ITEM	TYPE	CURRENT	PROPOSED	PERIOD
Application Development	Cost	$0	$3,000	One Time
Parallel Testing	Cost	$0	$1,230	One Time
Computer Operation	Cost	$3,670	$1,230	Yearly
Order processing & Inventory control	Savings	$0	$1,800	Yearly
Five-Year Gain	$0			
Payback Period Months	68			

The estimated ROI with a 68-month payback and a five-year gain of zero. This assumes no cost overrun, but includes parallel processing.

There were so few successful cases that match the client's project profile that we could not come up with common success factors and correspond them with the assessment. Projects that were challenged showed similar assessment scores to the organization, in the low 60s. Common factors for both the Case 1 project set and our client's organization included good scores in general project management mechanics. Both also had good scores on financial and risk management. However, the common stress factors among the failed projects in the Case 1 set and the client organization are troubling. Both our client organization and the failed project set showed poor scores on the top three project success factors: user involvement, executive support, and clear business objectives.

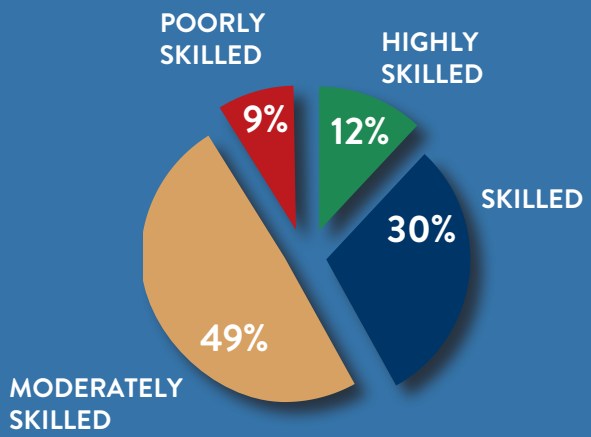
Based on CHAOS definitions, the client's project has a high likelihood of failure or of being challenged with a large overrun. Communication and collaboration scored weak and are a real liability. Stakeholder and executive sponsor management is another area of vulnerability. Project, risk, and financial management are areas of strengths. While the budget for Case 1 is $10 million, nonbudget items such as user time and lost productivity, executive time, and IT compliance could easily add another 35% to 40% of hidden costs. A project of this size will require 5,000 to 10,000 decisions. The organization's weak executive decision skill is the most glaring area of concern.

DESIRED PAYBACK PERIOD



The expected payback period that executives demand for new software projects.

DECISION DISTRIBUTION SKILLS



The general skill level of executive sponsors in the distribution of decision power to team members.

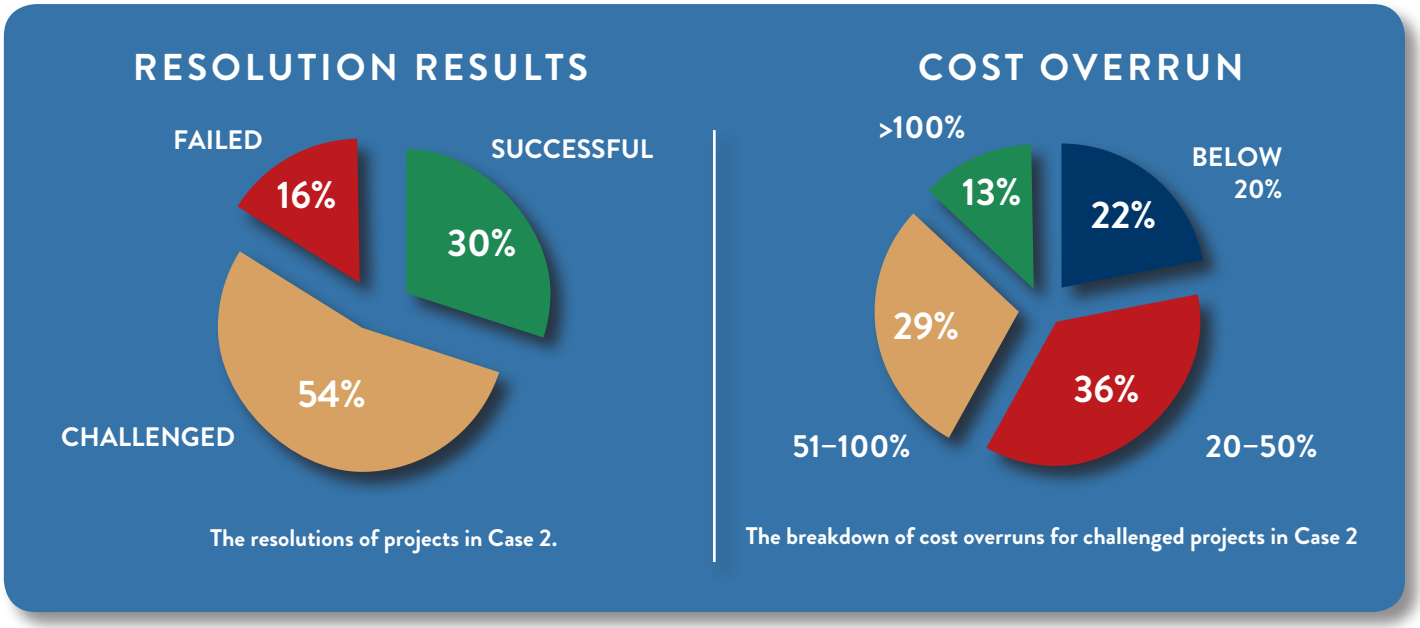
CASE 2: COMMERCIAL APPLICATION PACKAGE

As in Case 1, the team proposing to replace the current order processing system with a commercial off-the-shelf (COTS) package with moderate modifications completed the project profile and environmental assessment. The Standish Group reviewed the project case and responses to our clarification follow-up telephone call. We matched the case against our database of more than 70,000 projects. The results are a statistical picture of projects that closely matched the proposed new project. In addition, the project assessment was used to more fully understand the project environment and to make observations from both the project database history and the proposed new project.

We were able to match the COTS order processing case with 90% of the success attributes in more than 100 cases in the CHAOS database. Project resolution results in Case 2 indicate that there is a 30% chance that the project will come in on time, on budget, and with most of the critical features. Fifty-four percent of the projects that match the case were considered challenged, meaning they were completed, but not on time, on budget, and with the expected quality and features. There is a 16% chance the users will either reject the application or the organization will stop the project prior to completion.

Thirty-six percent of Case 2's challenged projects were over budget by 20% to 50%, while 29% were over budget by 51% to 100%. The Standish Group estimates that challenged projects in Case 2 will have an average cost overrun of 39%, which would increase the project cost by $2 million. Further estimating analysis indicates the cost of the COTS application will be around $8.2 million. Such an overrun will cause the risk to increase and the payback period to grow from three and a half years to over four and a half years. The time will also expand, and the likelihood of losing the executive sponsor and key staff and project support personnel increases.

Twenty-seven percent of challenged projects were less than 20% late; another 32% were 20% to 50% late. Thirty-one percent of challenged projects were 51% to 100% late. Ten percent of challenged projects in Case 2 were over 100% late. The Standish Group estimates that challenged projects in Case 2 will have an average time overrun of 47%, which would increase the project time from two years to two and a half years. Again, this would put much more pressure on the return on investment. Challenged projects in the Case 2 set have no feature deficiency, but the average organization will make 30% to 40% business process changes.



CASE 2: COMMERCIAL APPLICATION PACKAGE

In looking at the Case 2 examples, we see 34% reporting high ROI. Fifty-seven percent reported an average ROI, while only 9% reported low returns. For Case 2, the return on investment does not begin until the project is complete, and that is estimated to be two years. Our analysis indicates that if the organization is optimistic and the project comes in on budget and on time, then the payback period would be 68 months from the start of the project. Of course, this is not a sure thing. If you include parallel processing and mostly likely cost overruns of $1 to $2 million, the payback period could easily be another year or two.

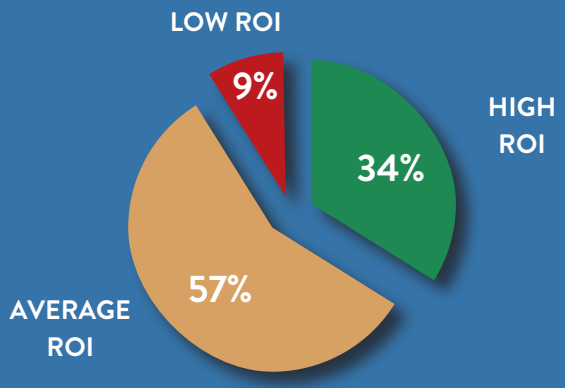
There are some major activities in a package implementation that cause many significant decisions; these are around what features are selected, parameters, data conversions from existing database sources, code modifications, business process changes, and user training. In any package implementation there is always user conflict around changing the application code or the business process. One of the reasons we see great success in package implementations for start-ups or new divisions is because there is not an entrenched process. With mergers, we have seen major delays and problems around an organization's attempt to have a single operational process for common items such as ordering, inventory, customer service, and other business areas.

Common success factors among the Case 2 projects and our client include project management expertise, risk, and financial management. One major common success factor is the alignment between the application software package and the current business process. While moderate modifications are planned, keeping them to absolute essentials will increase the overall chances of success and minimize overruns. This seems to be an area of strength for this project and is a very good indicator of success. However, the biggest reason for project success is a speedy decision process. Successful projects were led by an executive sponsor and stakeholders who made rapid decisions. In contrast, this is a major problem for our client.

Projects that were successful had an average assessment score in the 70s, and the assessment score for our client's COTS team was 55, which is 5 points lower than the application development team. Common stress factors for challenged and failed projects in Case 2 again showed poor scores on the top three success factors: user involvement, executive support, and clear business objectives. The organization scored low in the soft skills: stakeholder management, change management, and requirements understanding.

Based on CHAOS definitions, the Case 2 project has a high likelihood of being challenged with a moderate overrun. Success seems well within the realm of possibility, and outright failure is remote. As in Case 1, stakeholder and executive sponsor management is an area of vulnerability. Project, risk, and financial management are areas of strength. While the budget for Case 2 is $5 million, nonbudget items such as user time and lost productivity, executive time, and IT compliance could easily add another 50% to 60% of hidden costs. A project of this size will require 3,000 to 5,000 decisions. Again, the organization's weak executive sponsor decision skills is the most glaring area of concern and will most likely cause the project to overrun both the budget and time.

ROI EXPERIENCE



The expected experience payback within the Case 2 set of projects.

CASE 2: RETURN ON INVESTMENT

ITEM	TYPE	CURRENT	PROPOSED	PERIOD
Package	Cost	$0	$500	One Time
Implementation	Cost	$0	$4,500	One Time
Parallel Testing	Cost	$0	$1,230	One Time
Computer Operation	Cost	$3,670	$1,230	Yearly
Order Processing & Inventory Control	Savings	$0	$1,800	Yearly
Five-Year Gain	$6,490			
Payback Period Months	42			

The estimated ROI with a 42-month payback and a five-year gain of $6.5 million. This assumes no cost overrun, but parallel processing.

CASE 3: MODERNIZATION

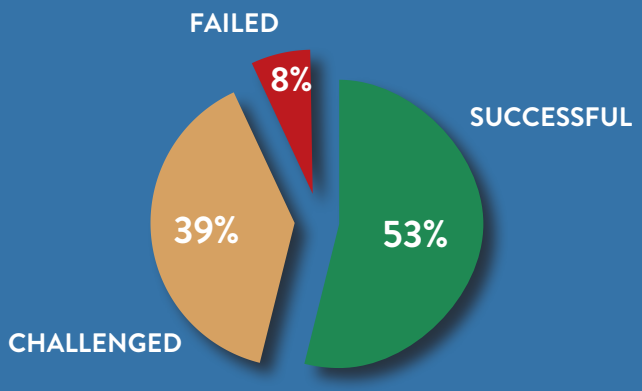
As with Case 1 and 2, the team proposing to modernize the current order processing application with added features and moderate modifications completed the project profile and environmental assessment.The Standish Group reviewed the project case and responses to our clarification follow-up telephone call. We again matched the case against our database of more than 70,000 projects. The results again gave us a statistical picture of projects that closely matched the proposed new project. In addition, the project assessment was used to more fully understand the project environment and to make observations from both the project database history and the proposed new project.

We were able to match the order processing modernization case with 90% of the success attributes in more than 100 cases in the CHAOS database. Project resolution results in Case 3 indicate that there is a 53% chance that the project will come in on time, on budget, and with most of the critical features. Thirty-nine percent of the projects that match the case were considered challenged, meaning they were completed, but not on time, on budget, or with the expected quality and features. There is an 8% chance the users will either reject the application or the organization will stop the project prior to completion.

Seventy-five percent of challenged projects that matched in Case 3 were under budget by 50% or less. Forty-six percent were under 20% overrun. The Standish Group estimates that challenged projects in Case 3 will have an average cost overrun of 36%, which would increase the project cost about a million dollars. Further estimating analysis indicates the cost of the modernization project will range from $3.5 to $4.5 million. Such an overrun will cause some risk to increase and the payback period to grow from less than three years to three and a half years. The time will also expand, and the likelihood of losing the executive sponsor and key staff and project support personnel is increased slightly.

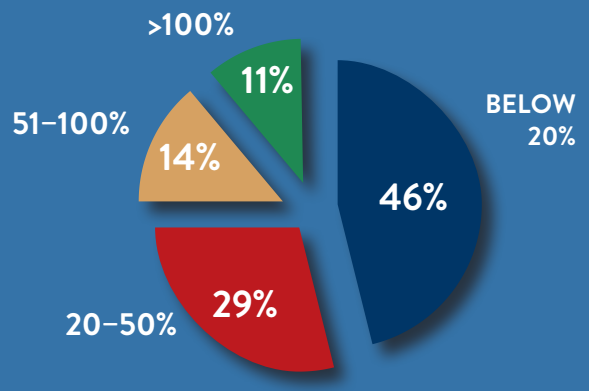
Fifty-nine percent of challenged projects were less than 20% late; another 21% were 20% to 50% late. Twelve percent of challenged projects were 51% to 100% late. Eight percent of challenged projects in Case 3 were over 100% late. The Standish Group estimates that challenged projects in Case 3 will have an average time overrun of 30%, which would increase the project time from 18 to 24 months. This would have an effect on the return on investment. Challenged projects in the Case 3 set have no feature deficiency.

RESOLUTION RESULTS



The resolutions of projects in Case 3 .

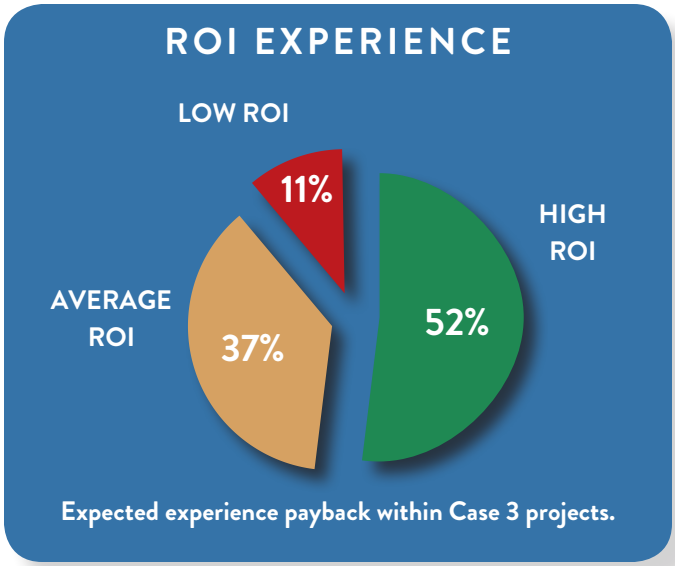
COST OVERRUN



The breakdown of cost overruns for challenged projects in Case 3.

CASE 3: MODERNIZATION

In looking at the Case 3 projects, we see 52% reporting high ROI. Thirty-seven percent reported an average ROI, while only 11% reported low returns. For Case 3, the return on investment does not begin until the project is complete, and that is estimated to be one and a half years. Our analysis indicates that if the client organization is optimistic and the project comes in on budget and on time, then the payback period would be 31 months from the start of the project. Of course, this is not a sure thing. If you include parallel processing and most likely cost and time overruns, the payback period could easily be another four to five months.



Expected experience payback within Case 3 projects.

There are generally two phases to modernization projects: migration and enhancement. The major activities in a modernization migration phase are mostly mechanical. Major activities include code conversion, data source conversion, refactoring, rehosting, quality control, and testing. Most notable are the activities that are not performed, such as requirements documentation and user involvement, executive sponsorship, steering committee meetings, stakeholder meetings, user training, and hundreds of other time-consuming details. There are few decisions required, and those are focused on the mechanics and technical areas. The estimate for the migration phase is nine months. The enhancement phase is more like that of microprojects. The first two microprojects are the real-time inventory update and compliance modules. Other enhancement activities include: improving the user experience, replacing small modules, integrating open source, improving security, and other components.

Common success factors among the Case 3 projects and the client include project management expertise, risk, and financial management. The client scored highly for technical skills, which is a key attribute for these types of projects. Projects that were successful had an average assessment score in the 50s, and the assessment score for the client team was 58, points lower than the package team (60 points) and higher than the application development team (55 points). The reason that organizations with low scores can succeed in a modernization project is they avoid the key failure items. The biggest factors of success are user involvement, executive support, and clear business requirements, which account for 50% of the assessment scores.

There were no common stress factors for challenged and failed projects among Case 3 and the organization. Challenged and failed projects showed poor mechanics execution, including project management expertise, skilled resources, and poor tools and infrastructure. These are strengths of the organization, not weaknesses. The other reasons for challenged and failed projects are overreaching, data quality, and unusual languages. These do not seem to be an issue for our client. Overreaching of added features and requirements is the most dangerous obsession. This obsession can turn an easy and straightforward project into a difficult and complex one. The organization has to watch out not to overreach.

CASE 3: RETURN ON INVESTMENT

ITEM	TYPE	CURRENT	PROPOSED	PERIOD
Migration	Cost	$0	$3,000	One Time
Upgrade	Cost	$0	$500	One Time
Parallel Testing	Cost	$0	$1,230	One Time
Computer Operation	Cost	$3,670	$1,230	Yearly
Order Processing & Inventory Control	Savings	$0	$1,800	Yearly
Five Year Gain	$9,820			
Payback Period Months	32			

The estimated ROI with a 32-month payback and a five-year gain of $9.8 million. This assumes no cost overrun, but parallel processing.

Based on CHAOS definitions, the Case 3 project has a high likelihood of being successful or challenged with a small overrun. Failure is only a remote possibility. The organization's project management and technical skills are outstanding. The order processing modernization project characteristics favor the more mechanical project environment skills. The budget for Case 3 is $3.5 million. There are very little nonbudget items, such as user time and lost productivity, executive time, and IT compliance. We estimate that nonbudget items for Case 3 add about 10% to 15% of hidden costs. A project of this size and type will require only about 200 to 300 decisions. This limited number of decisions favors a positive outcome.

PROOF POINTS

PROJECT ASYST

Applied Industrial Technologies is a leading industrial distributor of bearings, power transmission components, and other industrial products. OMNEX is a homegrown enterprise distribution application. Fifteen years ago, this application was developed by a small staff and quickly became the core of AIT's IT services. During the next 15 years, AIT incrementally added programs and functionality to rival the likes of SAP's or Oracle's ERP distribution systems. However, the system was tailored to the exact business operations and business processes of AIT. The application was written in COBOL; it was developed for use by industrial sales, specialized using green screen technology. The sales professionals adapted quickly to the original system because it had limited functionality and slowly added new functionality. However, new sales associates found the system difficult and intimidating.

In 2005, AIT set out to modernize OMNEX and started a project call Asyst. The focus of the project was to replace the green screens with a modern graphical user interface (GUI) and provide integration with the company's web presence for the sales professionals. Five developers worked on the project for less than one year, and the first major rollout occurred in late 2005. Applied continued adding incremental functionality, and the project was completed in the spring of 2010, slightly ahead of schedule and under projected costs. The new user experience cut the learning time for new sales associates from two years to two weeks.

CHRYSALIS PROJECT

The Bureau of National Affairs (BNA) is an independent publisher of legal analysis. Its subscription and billing management systems did not reflect the current business. The system was designed around a print delivery method, which BNA grew over 50 years. Changes, such as web delivery, were difficult to make and took a long time. It required more than 100 customer service representatives to support the current application. BNA had 250 marketing people selling its products. The current system did not let the salespeople enter orders, check status, or generate leads. Rather than modernize the existing application, BNA's solution was to build a brand-new system from scratch using modern development tools and waterfall project management techniques.

BNA tried four times to replace the subscription and billing management system. Each time the project ended in cancelation and failure. There were few things done right in the project from a project environment standpoint. Granted, BNA had a staff that knew the technology and could develop and support it. And the organization had good project managers and many of the right project tools. But that was not enough to make it successful. The organization had a very poor environment to execute projects. BNA also had a tendency to continually increase scope, delay decisions, and stray from its core principles.

PROOF POINTS

PROJECT SERVICE

iRobot, a leader in robots for military and law enforcement, had no automated way of tracking what types of failures were plaguing the robotic units that were being sold to end users. Additionally, it was difficult if not near impossible to know who had what unit and where it was. These robotic units were being sold into the government and deployed with various military combat units. Additionally, soldiers would field strip some units and swap parts to make repairs while they were on missions. Then they would send the robot along with boxes of parts back to the company's service organization to determine what caused the failure.

The solution was to implement Oracle Service Call and Depot Repair. The project plan was established, which included milestones for specific functions, as well as lunch and learns for the end users to be taught as the project progressed. The VP in the government division was the executive sponsor. The consultants' jobs were to do the software installation and make any small changes that may be necessary, and conduct the lunch and learns each week through the duration of the project. However, by Standish measurements the project failed. The project failed because of three of the Five Deadly Sins: Abstinence, Arrogance, and Ignorance.

PROJECT MODERNIZATION

In 1999, the State of North Dakota formally created the Information Technology Department (ITD) from the Central Data Processing Division and other departments within the state's executive agencies. The purpose is to support the state's IT and communication requirements and to enjoy the benefits of a consolidation of efforts. In 2004, ITD decided to get rid of its IBM mainframe and move to commodity servers mainly because of the high cost of software from IBM, CA, and other mainframe software suppliers. In order to replace the mainframe with commodity servers the state would need to migrate more than 100 mainframe applications.

The State of North Dakota had a variety of online and batch mainframe applications throughout its many agencies and departments. Most of the mainframe applications were developed using Natural and COBOL languages. The project modernization was scheduled to take two years at a cost of $4 million. The project started in March of 2007 and was completed in September of 2008 at a cost of $3.6 million. One of the big surprises of the project was the ease of converting the code to the commodity servers, which took much less time than planned. The other surprise was that testing took much longer than planned.

PROOF POINTS

GAME PROJECT

In 1997, the Bellagio in Las Vegas was only a few months from opening. Steven Wynn wanted to replace the aging hotel reservation system. He also wanted the hotel reservation system to be fully integrated with a new advanced gaming application. A few years prior to the opening of the Bellagio, Mirage Resorts, Inc., started on the new integrated hotel and casino project. The new application would be state-of-the-art using the latest in commodity hardware and software. Mirage used advanced waterfall project management techniques and tools. It had a very thick requirements document with modeling and prototyping. Mirage hired an all-star staff to develop the integrated hotel and gaming application.

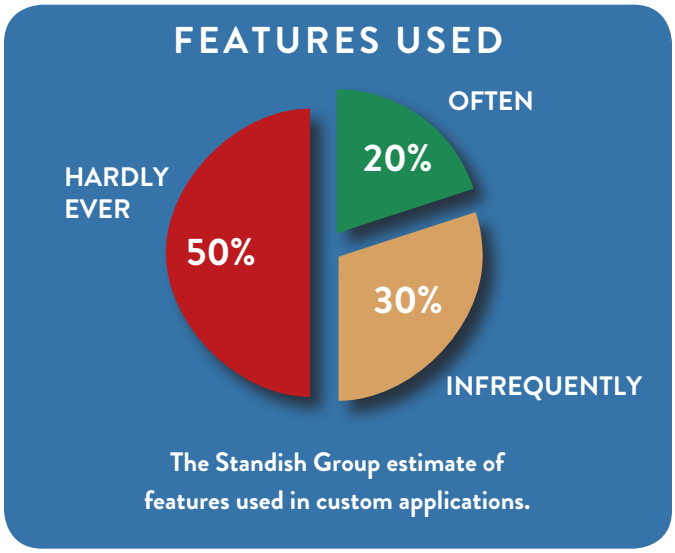
The project suffered from constant changes and increased scope elegance (creep). The underlying software infrastructure and development tools, while state-of-the-art, were immature. The infrastructure and development software were fraught with bugs, documentation errors, and diminished functionality. The project languished and was restarted a couple of times. Staff was replaced, and executive sponsors either bailed out or became very discouraged. However, no one spoke for the user, and in the end the product was unusable. At the end, Bellagio opened with the same software that was running on Mirage Resorts' other properties: the Mirage Hotel and Treasure Island.

ACUTE PROJECT

Owens & Minor is one of the leading suppliers of acute-care medical and surgical products for the healthcare industry. In the early 1980s, Owens & Minor purchased a distribution software package to run on a standard IBM mainframe infrastructure including CICS and DB2. During the next 25 years the organization added new and needed functionality until the system was a full-blown ERP system. However, by the mid-2000s the system needed a major overhaul. For example, a customer representative may need to look through a dozen green screens just to find a simple answer for a client. This would task the system during peak times that required more processing MSUs at an increased cost. In addition, the base rising costs of the IBM mainframe platform were making it too expensive to continue.

Owens & Minor looked at its options: The company could either upgrade the package to a new version or buy a different package. In either case, it would need to modify either the application or its business processes. The company would also lose the 25 years of incremental changes, which was a real asset to the business. Owens & Minor decided to modernize the application and run it on commodity hardware and software. The project took three years and cost $9 million. Owens & Minor reduced its operating costs by $6 million with an 18-month payback. More importantly, customer service could provide answers in one screen and other users readily accepted the new system as they were not impacted and required no training.

IN SUMMARY



In 1996, we did a study on 100 custom development applications to look at the functions and features requested, implemented, and used. The study was done in two steps.

STEP 1: We took an inventory of each feature and function.

STEP 2: We held user workshops to find out which features were used.

We learned that only 7% of features were always used, another 13% were often used, 16% were sometimes used, 19% were rarely used, and 45% were never used. The study was very long, difficult, and expensive. Using some automated tools and spot checks every couple of years, we found, to no surprise, that the numbers are relatively unchanged for most methodologies. Our current thinking is that 20% of features are often used and 50% of features are hardly ever or never used. The gray area is about 30%, where features and functions get used sometimes or infrequently. Requirements gathering, selecting, and implementing is the most difficult task in developing custom applications.

Over the years we have also evaluated the features used in package applications. Here we found less than 5% of the features and functions get used. In implementing a package application there is enormous pressure to get the value from it through the judicious use of these features and functions. There are literally thousands of decisions that have to be made during the life of a package implementation project. Our research shows that for every $1,000 in project cost, the organization will need to make 1.5 decisions. A million-dollar project will produce 1,500 decisions, while a $5 million project will have 7,500 decisions. During a typical medium-size ERP system implementation the organization will have to make more than 10,000 decisions. This is truly misery for people who don't like to make decisions.

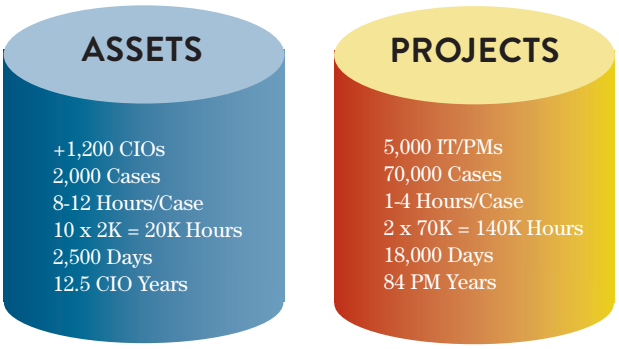
In contrast, modernization projects are pre-optimized. There are no process changes and little to no training. There are few decisions, and most of those decisions are on the project mechanics and not on the more fuzzy or difficult feature/function choices. There is little discord around requirements. For better or worse, the users get what they had before the modernization project, but improved and less costly.

Now, it is time to make your recommendation decision. Should the organization go with Case 1: New Application Development, Case 2: Package Application Implementation, or Case 3: Modernization? Please let us know your decision by e-mailing Jennifer@standishgroup.com.

MODERNIZATION: CLEARING A PATHWAY TO SUCCESS is based on a real customer engagement. The client organization completed three separate project assessments by three individual teams. The project assessment procedure asks about 120 questions with a follow-up interview. The Standish Group then measured this assessment data against our CHAOS database of more than 70,000 projects. These assessments are a standard service from The Standish Group. In addition to the individual project assessment, The Standish Group provides project environment assessments, executive sponsor assessments, and project management assessments. As of the writing of this paper, The Standish Group is looking at ways to speed up and improve the project decision process and how IT coaches executive sponsors. All data and information in this report should be considered Standish opinion, and the reader bears all risk in the use of this opinion. The Standish Group is available to assess your project and project environment.

ABOUT THE VIRTUALADVISOR®

The VirtualADVISOR® System is designed to improve the efficiency and value of IT performance, while increasing the delivery speed of critical applications and IT infrastructure. The VirtualADVISOR® System is a collection of proven wisdom-based management tools used by Standish Advisors (STARs) to help IT managers increase their understanding of their business and IT environment by providing case-based and enterprise-wide alternative solutions. Using highly advanced case-based reasoning technology, STARs are able to profile your project, application, or systems for total cost of ownership (TCO), return on investment (ROI), and risk against 70,000 project cases and 2,000 system cases. You can apply these cases against more than 100 applications and uses with over 20 system types, seven database types, and many types of middleware, making the VirtualADVISOR truly virtual. There are several major features that make the VirtualADVISOR an IT management system without comparison:



Freshness: The case database is always fresh and up to date; no case in the asset database is older than six months. Since the VirtualADVISOR is a web-based thin-client tool, new data is added and existing data is updated in the background. Therefore, each time a STAR runs a case for you, you are getting the most up-to-date results.

No Assumption: It is our database of actual cases that drives the conclusions; there are no assumptions used. Your case profile will match against cases in the database. Items in the database have been thoroughly scrutinized and categorized for importance. Each item has a dynamic weight to ensure the maximum relevance to your profile. Currently we are experiencing a 90% match rate.

Extensive: Each TCO case in the database takes about 50 hours of work to complete, usually by several people. This equates to 56 IT person-years of work for the initial database. Every six months we retire a number of cases and update all the rest, plus each month we collect downtime information for about another 40 person-years of IT effort. The project case database, which we accumulate, has about 50 IT person-years of work as well.

Diversity: While the VirtualADVISOR database represents more than 100 years of CIO, IT executive, and IT professional work, its real strength is in its diversity of input. More than 20,000 people have contributed to the database across 100 countries, countless industries, and a wide range of company sizes. This diversity of experience gives you a collection of expertise rather than one person's opinion or the opinion of a small group with their natural limited experience.

User Driven: The TCO was developed by user input; all data is collected from users and **NO** price data, performance, or any other input is derived from vendors. We do not use benchmarks or consultant opinions to calculate cost or risk. This makes the VirtualADVISOR a true unbiased source. The risk model was developed from 14 years of CHAOS University input and CHAOS data of more than 70,000 projects.

ABOUT THE STANDISH GROUP INTERNATIONAL, INC.

Since 1985 The Standish Group, the leader in spotting future trends, has been helping end users and vendors of technology solutions prepare for the future. The Standish Group delivers fast, consistent, reliable, independent IT advice built on a solid foundation of primary research. For further information visit our website at: http://www.standishgroup.com.

THE STANDISH GROUP

The Standish Group International, Inc. • 60 State Street, Suite 700 • Boston, MA 02109, USA • P: +1.508.760.3600