

Under-Spend: An Earned Value Analysis of 60 Projects in the Sahel

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IMPORTANT: This analysis is ONLY as accurate and up-to-date as the data in internal reporting systems.

Abstract

Earned Value Management (EVM) is a rigorous and widely used analysis technique that provides valuable information about projects' costs and schedules. A brief introduction is provided in this paper.

Two superficially similar projects in the Sahel are compared using EVM, and then conclusions are shared for all of the analyzed projects. EVM is used to answer the following questions:

1. How is each project progressing?
2. How significant is the under-spending?
3. Is each project using resources efficiently?
4. Is there a way to compare the projects to each other?
5. How much funding is necessary to complete each project?

KEY FINDING: If present trends continue, most Sahel projects will complete reasonably close to their original budget but take longer than planned.

KEY FINDING: Only 26 of 60 projects contained data suitable for analysis. Progress tracking systems need improvement.

KEY FINDING: EVM provides a useful way for Field Coordinators and Area Directors to determine which projects need additional focus. Dev Reps may use it to assess future investment opportunities.

Introduction

Seed Company is a \$40M/year grant-making organization affiliated with Wycliffe Bible Translators. It encourages, funds, and monitors over 800 minority language¹ development projects per year, scattered around the world. The projects are generally planned and ran by local nationals. They report quarterly to Seed Company about finances and progress.

Many translation projects that Seed Company sponsors are struggling with under-spending. They have approved budgets but are not spending available funds. This has negative implications for investor relations and Development Representative workloads. This paper is an analysis of sixty projects in the Sahel area. It uses the Earned Value Management technique to rank the projects and look for insights into underspending.

The Sahel is the semi-arid region of Africa south of the Sahara Desert and north of the tropical coastal region. It stretches from Guinea in the west to the Red Sea on the east. As a practical matter, it encompasses most of the countries overlapping these regions.

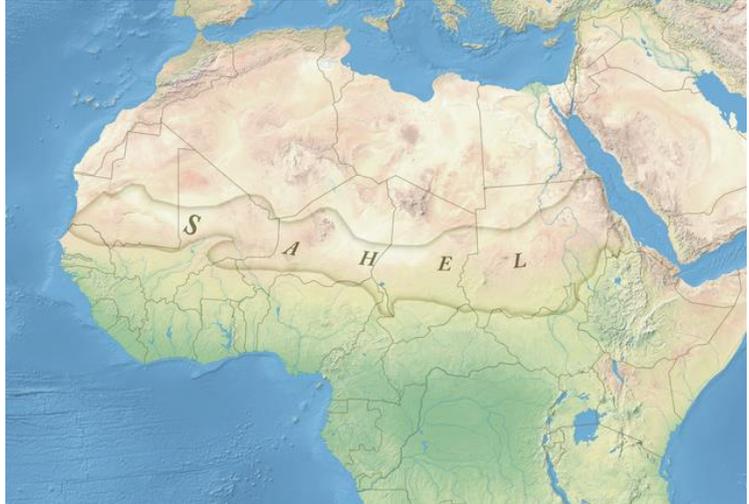


Illustration 1: Map of the Sahel. Wikimedia Commons, the free media repository.

Redaction

In keeping with standard and established Seed Company policy regarding projects in sensitive areas, this paper has been redacted from the original. The redactions are of specific project names and a few other details for safety purposes. Redactions are noted with square braces:

[REDACTED]

Methodology

Earned Value Management (EVM) is a mathematical technique widely used to measure performance and progress of projects in an objective manner. It is included in the Project Management Institute's PMBOK standard. EVM is academically rigorous and is commonly used in the largest projects. It is standardized as ANSI EIA 748-B.

¹ There are 7099 living languages in the world. The top 10 languages (Chinese, Spanish, English, Arabic, Hindi, Bengali, Portuguese, Russian, Japanese, and Lahnda) combined are spoken by slightly less than half of the world's population. (<https://www.ethnologue.com/statistics/size>)

See the Inputs and Outputs sections for descriptions of key values and computations used in Earned Value Management.

Assumptions

- 1 All projects in Seed Company's record-keeping system are up to date as of mid-July 2017.
- 2 The ProjectExpenseVariance and LanguageProgress reports are accurate reflections of field reality.
 - 2.1 The expense value on the ProjectExpenseVariance report is derived from transfers to the field + direct charges. (An example of a direct charge is a new computer purchased & billed in the United States, then shipped to the project overseas.)
 - 2.2 There is a many-to-many relationship between languages and projects. Seed Company tracks budgets per project but progress per language. This analysis assumes that each language comprises an equal part of the project budget.

Simple Under-Spend

Intuitively, spending less money seems like a good thing. But if it causes the organization to exert too much effort on unnecessary investment, this can unduly stress the Development Team. It also skews administrative cost ratios and raises potential audit compliance issues on designated funds. The Seed Company's goal is the same as the Project Management Institute PMBOK standard: that actual spending matches planned spending.

$$\text{Planned Value (PV)} = \text{Budget At Completion (BAC)} * \text{Planned \% Complete (PPC)}$$

$$\text{Simple Over/Under-Spend} = \text{Actual Cost (AC)} - \text{Planned Value (PV)}$$

A simple approach to the under-spend issue is to multiply the overall budget by the planned complete value to generate the amount that the project should have spent by this date², and then compare that to actual spending. Indeed, it turns out that nearly all of the Sahel projects are under-spent by this measure. Appendix B contains the simple under-spend data for this analysis.

However, this gross under-spend masks a distressing lack of insight. There is a big difference between a project which has only spent 25% of its budget because it isn't doing anything and a project which is just being fiscally frugal and efficient.

It would be helpful to know things like:

- How significant is the under-spend?
- Are there any trends?

² This computation is one of the key metrics of Earned Value management, called Planned Value; see below for more details.

- Which projects are better or worse?

Earned Value Management provides a toolset for answering these questions by considering another important variable: Earned Value. Planned Value tells us how much the project planned to get done. Earned Value tells us how much work the project actually accomplished. “Are we doing what we said we would?”

Progress Tracking Systems Need Improvement

The Sahel Area team has 60 open projects in July 2017. However, one or more of the key inputs are missing for just over half of them. These have not been included in this analysis.

The un-analysable projects fall into three broad categories:

1. Internships
2. Non-written translation (Stories, Oral, Trauma-healing)
3. Transitions and brand new projects

For transitions³ and brand new projects, there simply isn't sufficient financial data available yet. Seed Company's financial oversight systems for projects seem to provide good data in appropriate formats and quantities. The projects which lacked this were just too new to have a track record yet.

However, Seed Company's systems and methodology for tracking progress are not at the same maturity as its systems for tracking finances. For Internships and non-written projects, Seed Company lacks strong metrics for judging progress, and there was no easy way to generate a “% Complete”.

Even some of the traditional written translation projects struggled with good progress tracking. A sophisticated methodology has been built in the Plan and Progress spreadsheet, but is not carried over to the newer online app. The data points look similar but lack key behind the scenes “business knowledge” of what the tracking data actually means, which prevents correct calculation. With its newer systems, Seed Company has lost abilities that it once had. UBS's ParaText 8 promises to automate some of this in the future, but additional work is needed in Seed Company's internal systems as well.

On projects which are continuations of previous work⁴, Field Coordinators must choose how to initially account for work already completed. This requires judgment calls on complex issues. The existing systems don't facilitate this entry, and even if they did, the choices will necessarily be somewhat arbitrary.

Lastly, updating progress is rarely high on anyone's TODO list. Additional emphasis on this

³ Transitions would potentially have ample data, but the systems seem to be treating them as a new project from a reporting standpoint. It is possible that a custom EVM report could take this into account.

⁴ Some projects pick up where a previous effort left off. It might be a recent Seed Company-sponsored project, or it may have been done many decades in the past. This category encompasses a wide variety of situations.

mundane chore would enable more accurate future analysis.

Inputs to EVM

One of the major advantages of Earned Value Management is that it requires only a limited set of data in order to compare otherwise different projects in a way that is “apples to apples”.

This analysis needs only four inputs:

1. **Budget At Completion (BAC)** – The full budgeted cost of the project when all pre-planned expenses over its lifetime are included. Seed Company calls this “SC Lifetime Field Budget”.
2. **Actual Cost (AC)** – How much money has been spent on the project to date? See the Assumptions for an important note about how this has been calculated for this analysis.
3. **% Complete (PC)** – How many of the project's goals have actually been accomplished to date?
4. **Planned % Complete (PPC)**⁵ – How many of the project's goals were planned to have been accomplished by now?

Data for this whitepaper was collected in mid-July from the ProjectExpenseVariance and LanguageProgress reports. This process required repeated manual running of the reports. A custom-made EVM report could extract similar data from Seed Company systems with higher efficiency in the future.

Appendix C contains the input data for this analysis.

Overview of EVM

Earned Value Management is able to produce a variety of metrics which may prove useful in analysis. The index numbers may be compared or ranked even when the projects are quite different.

Earned Value Management gets its name from the comparison of *Planned Value (PV)* to *Earned Value (EV)*, which is at its core. These lead to the *Cost Performance Index (CPI)* and *Schedule Performance Index (SPI)*, which measure how efficiently the project is spending money and how quickly the work is being accomplished.

Each project is judged only by its own planned budget (“How much did we spend/get done?” vs “How much did we say we were going to spend/get done?”). In a project that is on time & on budget, both CPI and SPI are exactly 1.0 (one). Less than one is bad, while greater than one is generally good.

Another useful metric for translation projects is *Estimate To Complete (ETC)*. If present

⁵ Depending on how the data is organized, PC and PPC may be one or two numbers. Because of the organization of the SC data, it was most convenient to use two numbers. This does not affect the output or conclusions.

performance trends continue, how much money is it actually going to take to finish this project? This may be vastly different than the budgeted amount.

The following are some common Earned Value metrics, how they are computed, and what their implications are for translation projects:

	Metric	Formula	Explanation
	<u>Key Metrics</u>		
PV	Planned Value	BAC * PPC	How much work did we plan on accomplishing by now?
EV	Earned Value	BAC * PC	How much work did we actually accomplish?
CPI	Cost Performance Index	EV / Actual Cost (AC)	How much work is being done compared to what we said would be done for this amount of money? (> 1 = good)
SPI	Schedule Performance Index	EV / PV	How efficiently are we progressing compared to our planned schedule? (> 1 = ahead of schedule)
	<u>Secondary Metrics</u>		
CV	Cost Variance	EV - AC	The difference between the value of the work we've actually done and how much it has actually cost us. (> \$0 = good)
SV	Schedule Variance	EV - PV	The difference between the value of the work we've actually done and the work we scheduled. I.e. how far behind or ahead are we? (> \$0 = good)
	<u>Completion Projections</u>		
EAC	Estimate At Completion	Budget At Completion BAC / CPI	If present trends continue, how much is the project going to cost when complete?
ETC	Estimate To Complete	EAC - AC	If present trends continue, how much more money will be needed in order to finish the project?

	Metric	Formula	Explanation
VAC	Variance At Completion	BAC - EAC	How much over or under budget will the project be at completion?

Appendix D contains the output data for this analysis.

Earned Value Analysis of the Sahel



IMPORTANT: This analysis is ONLY as accurate and up-to-date as the data in internal reporting systems.

Twenty-six Sahel Area projects appear to contain sufficient data in internal reporting systems to analyze them using Earned Value Management. These are all written translation projects with various goals.

[REDACTION: The two projects of focus have been relabeled AAA and BBB.]

AAA and BBB

Let's begin by considering two projects, the AAA (#21095) and the BBB (#20154). These projects are both in West Africa and were originally scheduled to last three years. The AAA is an Initial Goals project based on [REDACTED], while the BBB is a [REDACTED]. The AAA's total budget is \$70,088 over three years, while the BBB are budgeted at \$74,119. As of July, 2017, the AAA are scheduled to be 61% complete while the BBB should be 86% complete.⁶

The AAA have only spent \$17,050 while the BBB have spent \$43,719, but the BBB are schedule to be further along (86% vs 61%), so both are significantly under-spent relative to what they were scheduled to spend by this time. The AAA are under-spent \$25,704 while the BBB are under-spent \$20,023.

⁶ See the section "What now?" for a discussion of the accuracy of this data. This study assumes that Seed Company reports are accurate.

#	Project	BAC (SC Lifetime Field Budget)	Planned % Complete (PPC)	Actual Cost (AC)	Planned Value (BAC * PPC)	Simple Over/Under Spend (AC - PV)
21095	AAA	\$70,088	61%	\$17,050	\$42,754	-\$25,704
20154	BBB	\$74,119	86%	\$43,719	\$63,742	-\$20,023

The AAA and BBB appear to be broadly similar projects in many ways related to scope, size, and finances, even though they have different goals. Seed Company would like to be able to compare the projects and answer the following questions:

1. How is each project progressing?
2. How significant is the under-spending?
3. Is each project using resources efficiently?
4. Is there a way to compare the projects to each other?
5. How much funding is necessary to complete each project?

How is each project progressing?

The LanguageProgress report indicates that the AAA should be at 61% but are only at 16%. The BBB should be at 86% but are only at 71%. At a superficial glance, both projects are behind schedule and may be in trouble.

Earned Value Management paints a more complex picture. The AAA had planned on spending \$42,754 (61% of their \$70,088 lifetime field budget). The BBB had planned on spending \$63,742 (86% of their \$74,119 budget). These are their *Planned Values (PV)*. In reality, the AAA have spent \$17,050 while the BBB have spent \$43,719 (*Actual Cost AC*). Both are significantly under-spent from their plan.

#	Project	BAC (SC Lifetime Field Budget)	Planned % Complete (PPC)	Actual Cost (AC)	Planned Value (BAC * PPC)	% Complete (PC)	Earned Value (BAC * PC)
21095	AAA	\$70,088	61%	\$17,050	\$42,754	16%	\$11,214
20154	BBB	\$74,119	86%	\$43,719	\$63,742	71%	\$52,624

However, a better question might be, “How are they doing compared to how they planned to be doing?” Multiplying the project budget by the actual progress reveals how much *Earned Value (EV)* the projects have generated: \$11,214 for the AAA and \$52,624 for the BBB.

How significant is the underspending?

Earned Value is an important metric. Instead of asking, “How much money have they spent?”, the question becomes “How much value have they delivered?” The AAA have spent \$17,050 but only generated \$11,214 of value, while the BBB have spent \$43,719 but have generated \$52,624 of value.

By this more sophisticated spending analysis, called *Cost Variance (CV)*, the AAA have not under-spent at all, but rather overspent \$5,836! The BBB, on the other hand, have actually under-spent, \$8,905, but only because they have delivered more value for their budget money.

#	Project	Actual Cost (AC)	Earned Value (BAC * PC)	Cost Variance (EV - AC)
21095	AAA	\$17,050	\$11,214	-\$5,836
20154	BBB	\$43,719	\$52,624	\$8,905

Is each project using resources efficiently?

Knowing the Planned Value and the Earned Value allow calculation of a number of other useful metrics. The ratio of Earned Value to Actual Cost is the *Cost Performance Index*, or *CPI*. This is a number that tells how efficiently the project is getting its work done. In an ideal project, the CPI is 1.0 (one). A CPI less than one is spending more money than budgeted to do the planned work. A CPI of greater than one indicates that the work is getting done with less money.

The AAA's CPI is 0.66 while the BBB's is 1.20. Another way of looking at this is the AAA are only getting 66 cents worth of work for every dollar spent while the BBB are getting \$1.20 of planned work for every dollar actually spent.

#	Project	Earned Value (BAC * PC)	Actual Cost (AC)	Cost Performance Index (EV / AC)
21095	AAA	\$11,214	\$17,050	0.66
20154	BBB	\$52,624	\$43,719	1.20

Is there a way to compare the projects to each other?

The CPI is computed relative only to what is in an individual project's plan, but it is an index, not a dollar value. This means that it can be compared legitimately across projects. The CPI says that the BBB are almost twice as efficient in their work as the AAA!

The ratio of Earned Value to Planned Value is another helpful metric called the *Schedule Performance Index (SPI)*. CPI measures how efficiently a project spends money, but SPI measures whether it is getting work accomplished on time.

In an ideal project, the SPI is 1.0 (one). An SPI less than one indicates that the project has not

completed as much as they planned on; they are behind schedule. An SPI of greater than one indicates that the project has completed more work than they planned on at this point; they are ahead of schedule. The AAA's SPI is 0.26, while the BBB's is 0.83. Both projects are behind schedule: the BBB slightly, but the AAA badly.

#	Project	Earned Value (BAC * PC)	Actual Cost (AC)	Cost Performance Index (EV / AC)	Planned Value (BAC * PPC)	Schedule Performance Index (EV / PV)	Schedule Variance (EV - PV)
21095	AAA	\$11,214	\$17,050	0.66	\$42,754	0.26	-\$31,540
20154	BBB	\$52,624	\$43,719	1.20	\$63,742	0.83	-\$11,118

What does it mean that the BBB's CPI is good but their SPI is bad? The BBB are not doing as much work as planned, but the work they are doing is being completed cost-efficiently. They will take longer than planned to complete but will finish under budget.

Schedule Variance (SV) is another way of looking at the same information. It is the difference between the Earned Value and the Planned Value. Numbers below zero are bad and above zero are good. The AAA's SV is -\$31,540, while the BBB's is -\$11,118. At first glance, it might be tempting to treat this as a third way of figuring under-spending. However, it is actually a measure of schedule, not cost. As previously stated, the AAA are badly behind schedule while the BBB are slightly behind.

How much funding is necessary to complete each project?

The last set of metrics which are helpful in this situation are the completion metrics. *Estimate At Completion (EAC)* is figured by comparing the original budget to how efficiently the project is working (CPI). If present trends continue, the entire AAA project will cost \$106,563 and the entire BBB project will cost \$61,576.

Given what they've already spent, the *Estimate To Complete (ETC)* for the AAA is \$89,513 (more than their entire original budget), while the BBB need only \$17,857 to finish. That's a handy number for a Dev Rep to know! The AAA will need \$36,475 over and above the original budget of \$70,088, while the BBB will spend \$12,543 less than originally estimated (*Variance At Completion (VAC)*).

#	Project	BAC (SC Lifetime Field Budget)	Cost Performance Index (EV / AC)	Estimate At Completion (BAC * CPI)	Actual Cost (AC)	Estimate To Complete (EAC - AC)	Variance At Completion (BAC - ETC)
21095	AAA	\$70,088	0.66	\$106,563	\$17,050	\$89,513	\$36,475
20154	BBB	\$74,119	1.20	\$61,576	\$43,719	\$17,857	-\$12,543

While the AAA and BBB projects might look similar to begin with, in reality they are performing significantly differently. The AAA will need a different approach than the BBB. Likewise, the progress reports from the Dev Reps to investors should level-set differently about the two projects.

The Broader Sahel...

These same techniques hold true in the broader picture for all of the Sahel projects. The Cost Performance Index and Schedule Performance Index may both be directly compared across projects to determine which ones are performing well and which ones are ahead of schedule.

Are Sahel Projects Delivering Good Value?

Of the 26 Sahel projects with data available for analysis, 10 had CPIs above 1, indicating that they are efficiently delivering good value for their investment. 6 more had CPIs above 0.85, indicating they could improve but were still performing reasonably. 10 had CPIs below 0.85, indicating that they were performing poorly; for every dollar invested, less than 85 cents worth of work was being done.

Of the poor performing projects, there were a cluster around 0.66 CPI and another cluster at the bottom around 0.10. It is worth investigating to see if there are common reasons they are struggling. It is likely that the data available in internal reporting systems for the ones around 0.10 was incomplete or the projects were too new for any trends in data.

Are Sahel Projects On Schedule?

Only 2 Sahel projects had SPIs of 1 or more, but many more were in the upper .80's and .90's, indicating they were only slightly behind schedule. There was a fairly even spread of projects down to an SPI of 0.62. Then there was a sharp cliff, with 9 projects below 0.35.

Are Sahel Projects Going to Complete On Budget?

Because of their CPIs, 10 Sahel projects will complete under budget, while 16 will complete over budget, but 15 of them will complete near their budget. Most of the outliers are probably caused by inconsistent data, but if not, some of them require drastic intervention.

It is possible to predict the amount of additional money necessary to complete each project, and in some cases this value is quite different (either above or below) the originally budgeted amount.

Conclusion

If present trends continue, most Sahel projects will complete reasonably close to their original budget but take longer than anticipated.

As detailed in the “Progress Tracking Systems Need Improvements” section, Seed Company needs improved systems to track project progress.

What now?



IMPORTANT: This analysis is ONLY as accurate and up-to-date as the data in internal reporting systems.

It cannot be reiterated strongly enough, this analysis is only as good as the data it is based on. It would be poor judgment to take action solely based upon internal reporting systems. The best people to use this data are the Area Directors and individual Field Coordinators, who are familiar with individual projects and can validate and verify before taking action on issues.

As a concrete example of this, the analysis indicates that the AAA are under-performing while the BBB are over-performing. Based upon available report data, that is a valid conclusion. However, discussions with the AD and FC reveal that the AAA have actually accomplished more than indicated because Seed Company's progress reports currently measure only direct translation while ignoring "Other Goals" such as startup tasks. The BBB performance, on the other hand, may be overstated because of how previous work was credited and because timeliness of their financials is difficult (several different organizations' reports must be integrated).

Future Improvements

A carefully designed report could make assembling Earned Value Management analysis much easier. In fact, Seed Company's systems appear to contain information to produce historical EVM reports that may shed additional light on project efficiencies.

EVM depends upon accurate financials and accurate progress. Seed Company has excellent financial controls and reporting in place. It has basic progress measurement for traditional written translations, but it is sometimes out of date. It lacks rigorous tracking of progress for internships or non-traditional projects such as oral translation.

There is a many-to-many relationship between languages and projects. Seed Company currently tracks budgets on a per-project basis but progress on a per language basis. This analysis assumes that each language in a project contributes an equal amount to its costs. In an ideal world, these would be tracked at the same level.

With additional experience, it should be possible to fine-tune Seed Company's EVM analysis to establish data-driven benchmarks indicating at which CPI and SPI levels project managers should become concerned.

Appendix A: Raw Data URL

The spreadsheet containing the raw data is located at

[https://docs.google.com/spreadsheets/\[Redacted\]](https://docs.google.com/spreadsheets/[Redacted])

Appendix B: Simple Under-Spend Data

		Budget At Completion	Actual Cost	Planned % Complete	Planned Value	Simple Over/Under Spend
Account Number	Name	BAC	AC	PPC	PV	
		From Reports (SC Lifetime Field Budget)	From Reports	From Reports	BAC * PPC	AC - PV
21144	[Redacted]	\$113,399	\$19,314	28%	\$31,752	-\$12,438
20374	[Redacted]	\$87,471	\$36,728	82%	\$71,726	-\$34,998
20324	[Redacted]	\$94,804	\$31,578	55%	\$52,142	-\$20,564
26232	[Redacted]	\$579,064	\$227,612	77%	\$445,879	-\$218,267
20224	[Redacted]	\$257,352	\$95,991	96%	\$247,058	-\$151,067
25711	[Redacted]	\$491,392	\$425,587	52%	\$257,489	\$168,098
26994	[Redacted]	\$171,053	\$92,355	99%	\$168,915	-\$76,560
26192	[Redacted]	\$453,070	\$208,104	87%	\$394,171	-\$186,067
20376	[Redacted]	\$63,428	\$7,737	30%	\$19,028	-\$11,291
21095	AAA	\$70,088	\$17,050	61%	\$42,754	-\$25,704
25360	[Redacted]	\$261,419	\$244,587	100%	\$261,419	-\$16,832
26593	[Redacted]	\$153,516	\$128,678	100%	\$153,516	-\$24,838
21064	[Redacted]	\$93,065	\$85,246	90%	\$83,759	\$1,488
20705	[Redacted]	\$116,194	\$35,019	35%	\$40,668	-\$5,649
26743	[Redacted]	\$238,123	\$178,497	98%	\$233,956	-\$55,459
25440	[Redacted]	\$166,321	\$168,669	100%	\$166,321	\$2,348

		Budget At Completion	Actual Cost	Planned % Complete	Planned Value	Simple Over/Under Spend
Account Number	Name	BAC	AC	PPC	PV	
		From Reports (SC Lifetime Field Budget)	From Reports	From Reports	BAC * PPC	AC - PV
26202	[Redacted]	\$300,195	\$204,131	100%	\$300,195	-\$96,064
26943	[Redacted]	\$111,883	\$76,379	93%	\$104,051	-\$27,672
28300	[Redacted]	\$359,794	\$330,020	100%	\$359,794	-\$29,774
26693	[Redacted]	\$57,233	\$45,948	98%	\$56,088	-\$10,140
26913	[Redacted]	\$242,465	\$78,586	53%	\$128,506	-\$49,920
20154	BBB	\$74,119	\$43,719	86%	\$63,742	-\$20,023
20454	[Redacted]	\$64,660	\$37,534	100%	\$64,660	-\$27,126
20765	[Redacted]	\$317,604	\$114,462	96%	\$303,312	-\$188,850
20375	[Redacted]	\$125,529	\$58,308	86%	\$107,955	-\$49,647
21066	[Redacted]	\$111,185	\$19,474	36%	\$40,027	-\$20,553

Appendix C: Input Data for Sahel Projects

Account Number	Name	Budget At Completion	Actual Cost	% Complete	Planned % Complete
		BAC	AC	PC	PPC
		From Reports (SC Lifetime Field Budget)	From Reports	From Reports	From Reports
21144	[Redacted]	\$113,399	\$19,314	0%	28%
20374	[Redacted]	\$87,471	\$36,728	4%	82%
20324	[Redacted]	\$94,804	\$31,578	4%	55%
26232	[Redacted]	\$579,064	\$227,612	14%	77%
20224	[Redacted]	\$257,352	\$95,991	17%	96%
25711	[Redacted]	\$491,392	\$425,587	42%	52%
26994	[Redacted]	\$171,053	\$92,355	35%	99%
26192	[Redacted]	\$453,070	\$208,104	30%	87%
20376	[Redacted]	\$63,428	\$7,737	8%	30%
21095	AAA	\$70,088	\$17,050	16%	61%
25360	[Redacted]	\$261,419	\$244,587	82%	100%
26593	[Redacted]	\$153,516	\$128,678	75%	100%
21064	[Redacted]	\$93,065	\$85,246	82%	90%
20705	[Redacted]	\$116,194	\$35,019	28%	35%
26743	[Redacted]	\$238,123	\$178,497	73%	98%
25440	[Redacted]	\$166,321	\$168,669	100%	100%

Account Number	Name	Budget At Completion	Actual Cost	% Complete	Planned % Complete
		BAC From Reports (SC Lifetime Field Budget)	AC From Reports	PC From Reports	PPC From Reports
26202	[Redacted]	\$300,195	\$204,131	70%	100%
26943	[Redacted]	\$111,883	\$76,379	71%	93%
28300	[Redacted]	\$359,794	\$330,020	97%	100%
26693	[Redacted]	\$57,233	\$45,948	86%	98%
26913	[Redacted]	\$242,465	\$78,586	37%	53%
20154	BBB	\$74,119	\$43,719	71%	86%
20454	[Redacted]	\$64,660	\$37,534	76%	100%
20765	[Redacted]	\$317,604	\$114,462	59%	96%
20375	[Redacted]	\$125,529	\$58,308	80%	86%
21066	[Redacted]	\$111,185	\$19,474	38%	36%

Appendix D: Output Data for Sahel Projects

Primary Metrics

		Planned Value	Earned Value	Cost Performance Index	Schedule Performance Index
Account Number	Name	PV	EV	CPI	SPI
		BAC * PPC	BAC * PC	EV / AC	EV / PV
21144	[Redacted]	\$31,752	\$0	0.00	0.00
20374	[Redacted]	\$71,726	\$3,499	0.10	0.05
20324	[Redacted]	\$52,142	\$3,792	0.12	0.07
26232	[Redacted]	\$445,879	\$81,069	0.36	0.18
20224	[Redacted]	\$247,058	\$43,750	0.46	0.18
25711	[Redacted]	\$257,489	\$204,419	0.48	0.79
26994	[Redacted]	\$168,915	\$59,869	0.65	0.35
26192	[Redacted]	\$394,171	\$135,921	0.65	0.34
20376	[Redacted]	\$19,028	\$5,074	0.66	0.27
21095	AAA	\$42,754	\$11,214	0.66	0.26
25360	[Redacted]	\$261,419	\$214,364	0.88	0.82
26593	[Redacted]	\$153,516	\$114,369	0.89	0.75
21064	[Redacted]	\$83,759	\$76,313	0.90	0.91
20705	[Redacted]	\$40,668	\$32,534	0.93	0.80
26743	[Redacted]	\$233,956	\$173,234	0.97	0.74
25440	[Redacted]	\$166,321	\$166,321	0.99	1.00

Account Number	Name	Planned Value	Earned Value	Cost Performance Index	Schedule Performance Index
		PV	EV	CPI	SPI
		BAC * PPC	BAC * PC	EV / AC	EV / PV
26202	[Redacted]	\$300,195	\$210,137	1.03	0.70
26943	[Redacted]	\$104,051	\$79,437	1.04	0.76
28300	[Redacted]	\$359,794	\$349,000	1.06	0.97
26693	[Redacted]	\$56,088	\$49,220	1.07	0.88
26913	[Redacted]	\$128,506	\$89,712	1.14	0.70
20154	BBB	\$63,742	\$52,624	1.20	0.83
20454	[Redacted]	\$64,660	\$49,142	1.31	0.76
20765	[Redacted]	\$303,312	\$187,386	1.64	0.62
20375	[Redacted]	\$107,955	\$100,423	1.72	0.93
21066	[Redacted]	\$40,027	\$42,250	2.17	1.06

Secondary Metrics

Account Number	Name	Cost Variance	Schedule Variance	Estimate At Completion	Estimate To Completion	Variance At Completion
		CV	SV	EAC	ETC	VAC
		EV - AC	EV - PV	BAC / CPI	EAC - AC	BAC - EAC
21144	[Redacted]	-\$19,314	-\$31,752	#DIV/0!	#DIV/0!	#DIV/0!
20374	[Redacted]	-\$33,229	-\$68,227	\$918,200	\$881,472	-\$830,729

Account Number	Name	Cost Variance	Schedule Variance	Estimate At Completion	Estimate To Completion	Variance At Completion
		CV	SV	EAC	ETC	VAC
		EV - AC	EV - PV	BAC / CPI	EAC - AC	BAC - EAC
20324	[Redacted]	-\$27,786	-\$48,350	\$789,450	\$757,872	-\$694,646
26232	[Redacted]	-\$146,543	-\$364,810	\$1,625,800	\$1,398,188	-\$1,046,736
20224	[Redacted]	-\$52,241	-\$203,308	\$564,653	\$468,662	-\$307,301
25711	[Redacted]	-\$221,168	-\$53,070	\$1,023,046	\$597,459	-\$531,654
26994	[Redacted]	-\$32,486	-\$109,046	\$263,871	\$171,516	-\$92,818
26192	[Redacted]	-\$72,183	-\$258,250	\$693,680	\$485,576	-\$240,610
20376	[Redacted]	-\$2,663	-\$13,954	\$96,713	\$88,976	-\$33,285
21095	AAA	-\$5,836	-\$31,540	\$106,563	\$89,513	-\$36,475
25360	[Redacted]	-\$30,223	-\$47,055	\$298,277	\$53,690	-\$36,858
26593	[Redacted]	-\$14,309	-\$39,147	\$172,722	\$44,044	-\$19,206
21064	[Redacted]	-\$8,933	-\$7,445	\$103,959	\$18,713	-\$10,894
20705	[Redacted]	-\$2,485	-\$8,134	\$125,068	\$90,049	-\$8,874
26743	[Redacted]	-\$5,263	-\$60,721	\$245,357	\$66,860	-\$7,234
25440	[Redacted]	-\$2,348	\$0	\$168,669	\$0	-\$2,348
26202	[Redacted]	\$6,006	-\$90,059	\$291,616	\$87,485	\$8,579
26943	[Redacted]	\$3,058	-\$24,614	\$107,576	\$31,197	\$4,307
28300	[Redacted]	\$18,980	-\$10,794	\$340,227	\$10,207	\$19,567
26693	[Redacted]	\$3,272	-\$6,868	\$53,428	\$7,480	\$3,805
26913	[Redacted]	\$11,126	-\$38,794	\$212,395	\$133,809	\$30,070
20154	BBB	\$8,905	-\$11,118	\$61,576	\$17,857	\$12,543

Account Number	Name	Cost Variance CV	Schedule Variance SV	Estimate At Completion EAC	Estimate To Completion ETC	Variance At Completion VAC
		EV - AC	EV - PV	BAC / CPI	EAC - AC	BAC - EAC
20454	[Redacted]	\$11,608	-\$15,518	\$49,387	\$11,853	\$15,273
20765	[Redacted]	\$72,924	-\$115,925	\$194,003	\$79,541	\$123,601
20375	[Redacted]	\$42,115	-\$7,532	\$72,885	\$14,577	\$52,644
21066	[Redacted]	\$22,776	\$2,224	\$51,247	\$31,773	\$59,938

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About the Author



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Stephen Fierbaugh is a PMI-certified Project Management Professional (PMP). He holds an MA in Intercultural Studies with a focus on Information and Communication Technologies (ICT). Stephen has extensive experience with projects which involve cross-cultural communications and geographically diverse project teams. Past roles include Director of Software Development and Director of IT. Stephen also has six years of experience as a consultant with IBM Global Services.

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