The Successful Project Profile

A Monograph, by Stacy Goff

1+Person Small

1 Team Medium

Multi-team Large
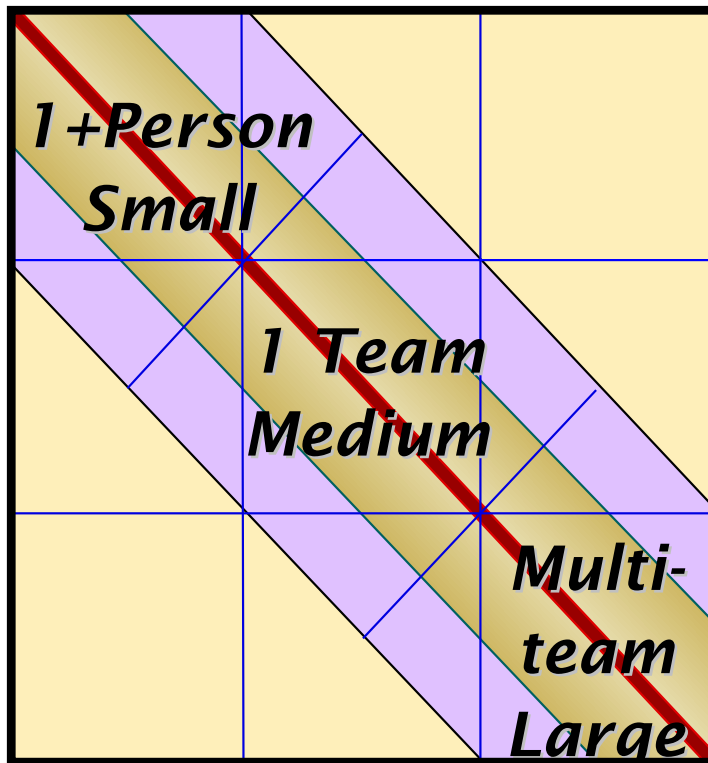
A. Introducing the Successful Project Profile

Executive Overview and Contents

Do you think you've got an impossible project due date? Trying to plan a prioritized Portfolio of Projects, Initiatives and Programs? Determining your peak Resource requirements for this year?

Given a good estimate of the required hours work effort of each of your projects, you can use the Successful Project Profile to help answer those questions. You can then use that information to improve project communication and risk management.

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B. Why a Successful Project Profile?

Projects demonstrate equilibrium between work effort, duration and staffing that is remarkably similar to the Volume, Temperature, Pressure relationship we learned in Physics. If one factor changes, there is a predictable resulting change in one or more of the others. Attempts to hold constant the others in the face of change in any one, places the project (and its parent organizations) at risk.

Thus, to speed early planning (from Portfolio Planning through Project Initiation), and to reduce risk and improve communication, we have for 35 years used the Success Profile with project teams, executive management, and others.

Given one or more good estimates of project effort (which should reflect initial, traceable measures of Scope), here are the management information needs the Successful Project Profile supports:

Key Project Management Information
- The natural duration your project's work effort should require.
- The ideal staffing for the work effort.
- The best way to organize or structure a team for the work effort.
- The most appropriate role and work emphasis of the Project Manager.

Additional Communication and Risk Management

Success Profile Analysis provides risk management and communication benefits as well:
- An understanding of the risks caused by duration, staffing and/or authority constraints, and a visual model with which to illustrate those risks.
- Improved communication with your customer and management about your project's trade-offs. You can use the chart to focus the communication.
- A project management approach that scales to the size of the project, with proper staffing, duration and authority.

With an easy-to-use graphic tool that has instant "face validity" for most people who are exposed to it.

C. Project Size Ranges

To do Success Profiling, we start with an initial forecast of project Effort. Given that effort, some categorization of project size ranges is useful: Projects of different size ranges have different key characteristics. For example, use this table to find the ideal duration and staffing ranges for your project, based on its effort estimate. By the way, our metrics *always* include the time of internal customers or clients in our estimates.

Project Size	Effort	Duration	Ideal Staffing	Project Manager Role
Small	8-360 work-hours of effort	0 – 3 months	1 person @ 25% "with a little help from my friends".	1) Worker and 2) Coordinator
Medium	361-3600 work-hours of effort	3 - 6 months	3-7 people, @ minimum 50% of the time.	1) Leader and 2) Worker
Large	3601-24K work-hours	6 - 12 months	7-24 people, @ full-time, in one or more teams of 4-7.	1) Manager and 2) Leader(s)
Initiative	Over 24K work-hours	staged	Multiple smaller projects with appropriate staffing for each.	1) Director and 2) Communicator

Several key insights to the size ranging chart above deal with the relationship of size ranges to duration, ideal staffing, and the role of the Project Manager. Any disconnect, or entry that is not in the same Project Size line, represents unnecessary project risk. For example, if I have a Large project that I staff as a Medium one, I have added Risk. Or, if I have too aggressive a due date for that Large project, e.g., one that should take 8 months that I try to do in less than 6 months, I have again added risk. Finally, if I try to use a Project Manager Role of 1) Worker and 2) Coordinator on a Medium project, I have added unnecessary risk.

Size Ranges Background

We originally developed this size-ranging based on studies with our customers in the early 1980's. We were helping several of them improve their portfolio management and project management methods, and to mine their project history to improve estimating accuracy in Information Systems projects.

We found that the size-range classification worked with most other customers and application areas as well, ranging from Aerospace/Defense to Pharma—as long as we made certain adjustments for time-driven factors such as Clinical Trials.

Some of the insights we gained with this Size Ranging include the following:

- Significant variance from any factor in the above table adds risk, and usually adds avoidable project cost.
  - For example, a Large project, needing to be done in significantly less than 6 months, or considerably more than 12 months adds risk and potentially, excessive cost.
  - Similarly, severely understaffing a project not only adds risk, it tends to make it cost more, and take longer.
- The selection of project management methods one should most focus upon tends to change with those size ranges.
- Another example: A Project Manager of Medium projects, who is promoted to manage Large projects because of his or her success, **must change the role** and actions he or she plays, to succeed in the new project size.

Other Size Ranges

Our selection of size ranges is just one of many reasonable size classifications, and it may differ from yours.

For example, in one Defense-related customer organization, the Chief Engineer defined a "Small Project" as anything less than a billion dollars!

D. Reading The Successful Project Profile

Now we move from our Size Ranging table on the previous page to a more complex graphic. The Successful Project Profile chart on the following page demonstrates a balance between key factors, or "vital signs" of successful projects.

Across the top of the chart we see project effort, in hours. Note that the scale is non-linear, for reasons explained later. This scale is segmented according to our three project sizes, Small, Medium and Large. Down the left is a scale that reflects project Duration. Across the bottom is another scale, showing the minimum resources, at a minimum allocation, the project needs.

The *Success Diagonal* is the line running from the upper left to the lower right of the chart. This diagonal provides the key to the staffing and duration that will (all else being equal) produce a project with the:

- Highest quality
- Lowest cost
- Ideal duration, and
- Lowest risk.

The further your project is from the success diagonal, the lower your project efficiency and effectiveness will be.

Scenario A: Let's use the Successful Project Profile chart to help find the appropriate duration for a sample project, with an estimated effort of 1000 hours.
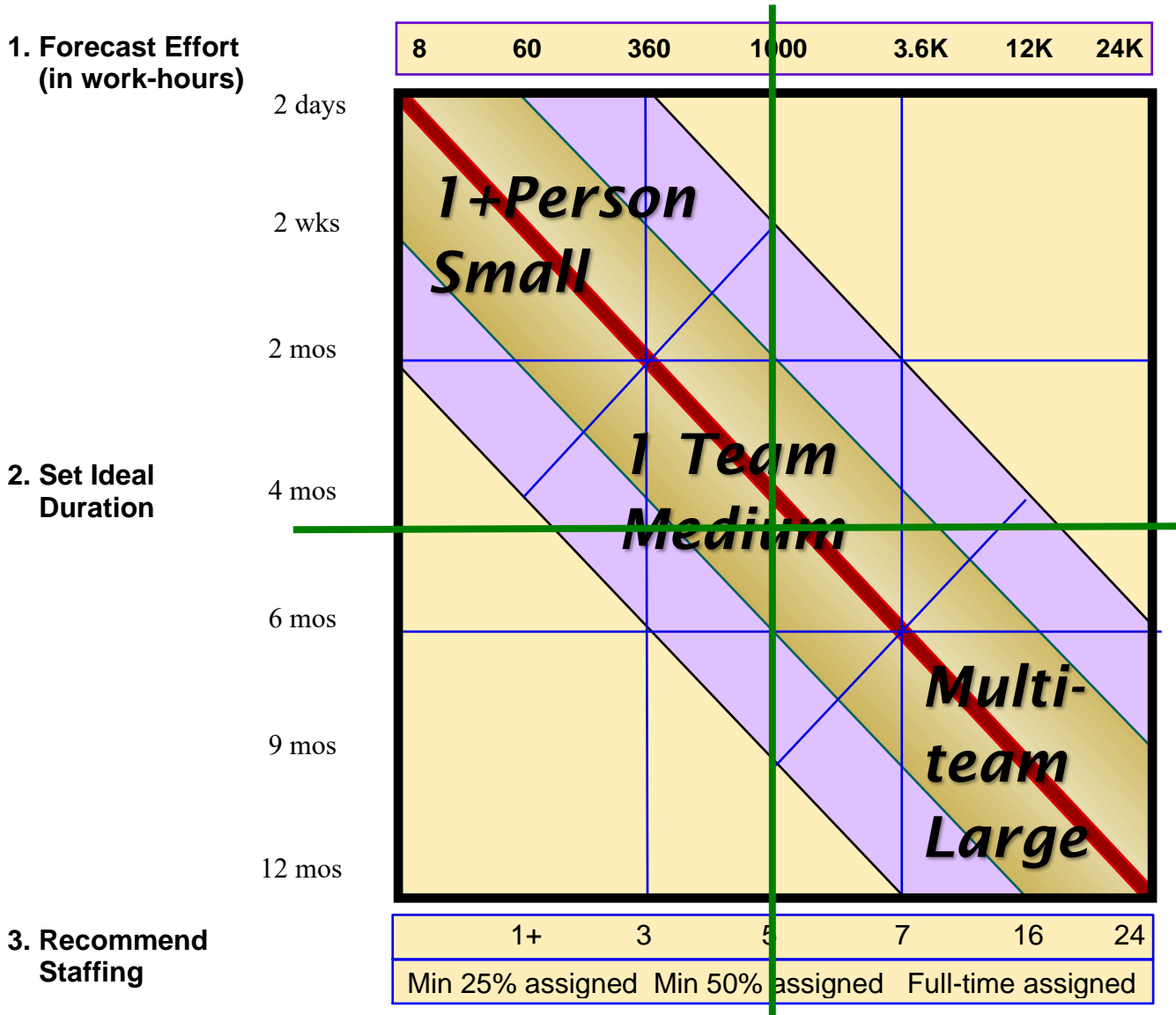
Steps For Use
This table explains how to find the success diagonal for the Scenario A sample project:

Step	Explanation
1. Find the project's estimated work-hours on the Forecasted Effort scale across the top of the chart. Draw a vertical line down from that point.	Note where your vertical line crosses the Success Diagonal. The success diagonal reflects the optimal balance of effort and duration for a project of any size.
2. Find the *ideal* project duration, by noting where your first (vertical) line intersects the success diagonal. Draw a horizontal line at that duration point.	The ideal duration of this 1000 hour project (as shown by the green horizontal line) is 4 months. If that is acceptable, then you are in great shape. Later, we will discuss variances from the ideal.
3. Continue your vertical line from step 1 down to the Recommended Staffing row.	This identifies the staffing level your project needs to be successful in the recommended time frame. In this case, we need at least 5 half-time people (having the right skills).
4. Besides determining ideal staffing and duration, use this diagram to evaluate your options if the due date is above (earlier than) or below (later than) the expected duration. Both are dangerous!	Options for meeting a tight due date: ◆ Reduce scope ◆ Extend the due date ◆ Increase percentage of available time ◆ Put your best people on the job.
5. Document any variance between the ideal, and what is expected for the project.	This gives you a chance to argue for increased flexibility, to improve success.

D. Reading The Successful Project Profile, continued

Shown below is the Successful Project Profile chart. Use it to identify your project's ideal duration and staffing.

1. Forecast Effort (in work-hours)

8	60	360	1000	3.6K	12K	24K

2 days

2 wks

1+Person Small

2 mos

2. Set Ideal Duration

4 mos

1 Team Medium

6 mos

Multi-team Large

9 mos

12 mos

3. Recommend Staffing

1+	3	5	7	16	24

Min 25% assigned   Min 50% assigned   Full-time assigned

Compare Ideal With Expected:

Ideal Duration: [   ]   **Expected Duration:** [   ]

Ideal Staffing: [   ]   **Expected Staffing:** [   ]

Why the Comparison?

Why do we provide a comparison between ideal and expected duration and staffing? To give you a reason to discuss why there is a gap, because a significant variance (25% or more) between the ideal case with the expected case is one of the greatest risks your project could face.

E. Less-Successful Profiles

So far, so good. Sometimes things don't work out as well as you hoped. Let's look at a few examples, and see what the Successful Project Profile chart has to say.
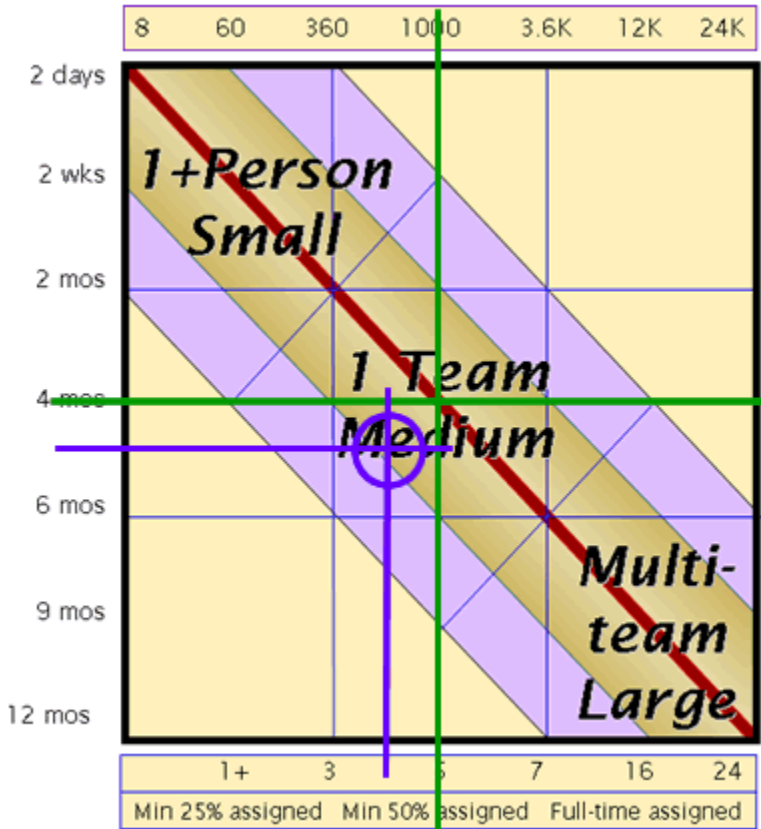
Scenario A, continued: Our example effort estimate is 1000 work-hours. When you go to your manager to get the 5 half-time project team members, she says she can't give you 5; could you use just 4, instead?

There are two ways to reflect this reduced-staffing. One way is draw the staffing line (the vertical purple line, at left), measure the distance between ideal staffing and your available staffing, and to draw a duration line that is that same distance away from ideal duration. See the chart at left, showing the ideal in green, and the staff-constrained version in purple.

OK, so what does this mean? Interpreting the results on the chart, we see that the project will take 5 months, rather than 4. Not only that, but here is a new piece of information: Because we are now off the Success Diagonal, there is impact: in fact, history shows that project cost tends to increase by 10%-15% for being in that wider, golden band, rather than right along the Success Diagonal.

The other way to reflect this reduced staffing is great for those who remember (and enjoy) Geometry. You still draw the available staffing line, as above, but find the duration by drawing a right angle off the success diagonal until you meet your staff-constrained line. Either way, you get the same results.

Building a Formula

At one point, we worked with a formula to reflect this ideal relationship between effort, duration and staffing, together with the two ranges of less-successful projects. We abandoned that effort for several reasons, including:

a) This is intended to be a *guideline*, rather than a precision instrument, which the formula suggested; and
b) It appeared that people get more engaged in analyzing their project if they actually draw the lines on the chart.

Scenario B: Let's look at another less-successful project scenario. Our second example is a project with an effort estimate of 3600 work-hours. This one needs to be done in just 4.5 months: the Successful Project Profile suggests that it should require 6 months.

As we can see from the chart on the facing page, this project could possibly be done, if we had 15 or so full-time team members. But notice that we are now out in the third band, the lavender one, and *much further away* from the Success Diagonal.

E. Less-Successful, continued

In this third band, project risk tends to increase, quality tends to go down, and project cost tends to increase by 25% or more. If in fact the due date is inflexible, there are smarter things for the project team to consider, including reducing project scope to something you can finish within the timeline.

That failing, *identify the time-sensitive smaller portion* of scope that could be completed by the due date. Or, put a **smaller** number of your **best skilled** team members on the project. Or, break the project into portions, and run it with concurrent teams, and spend the additional Project Management time to coordinate the results of each.

With management support, clever project management and expert staff, we could probably compress the schedule to 4.5 months, but we must reduce scope to cut duration beyond that. Or, maybe you have no flexibility with scope, due date or resources. At least being aware of the risks earlier gives you useful information about managing those risks.
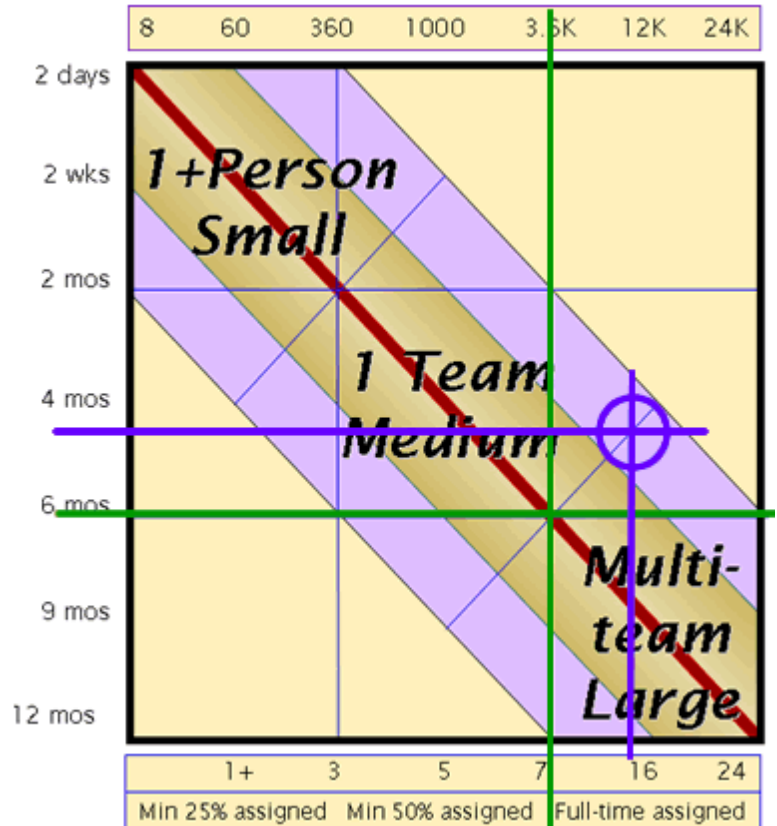
F. Additional Applications

We've seen the use of the Successful Project Profile for typical successful and less-successful applications. Let's explore a few more situations.

The Yellow Zone
The area on the Successful Project Profile that is furthest away from the Success Diagonal is in yellow. It reflects the area of consistent project failure. You don't want to go there—although many less-successful teams do.

A Tennis Analogy: For those who have played tennis, here is an analogy about the way the Success Diagonal works. Successfully staffing and scheduling a project right on the Success Diagonal is like hitting the tennis ball right on "the sweet spot". In tennis, the result: power and accuracy are optimal. The case is similar with projects and the success diagonal.

In tennis, hitting the sweet spot, but still on the strings: power and accuracy are diminished a bit. In fact, the further away you are from the sweet spot, the bigger the diminishment. It is the same in the project situation, if you are away from the Success Diagonal, and in that first, golden band—just like our Less-Successful Scenario A.

Small Projects
Small Projects do not really follow the Success Diagonal very well. This is the case for many reasons, including the fact that they are often subject to changes in priority, so they sit and wait while higher-priority efforts are completed. Small Projects are included in the Successful Project Profiles chart primarily for purposes of completeness.

Still, Small Projects should be completed in the 2+ month timeframe, and it is especially important to complete them quickly, because we consistently find them to be the least-well managed of all project sizes.

And, take note: In many organizations, Small Projects consume over half all your project effort, so you should manage them best of all!

G. Strategies for Managing Your Success Profile

Here we discuss how to use the Success Profile for projects of different sizes.

Strategies For a Small Project

If the project is a small project, use our Small Project Guide, and its Small Project Document File. It down-scales the project management methods to just those needed for small projects. Limit the first phase, including requirements definition, to two days duration, both to set a sense of urgency, and to avoid defining a larger project. If you spend as much as a week, including requirements definition, you would be in danger of defining a medium-sized project!

The primary role of the Project Manager is as worker; the secondary role is to lead or coordinate 2-3 others (perhaps increasing during the Deliver Phase), who are available at least 25% of their time, on the days they work on this project.

Strategies For a Medium Project

Complete a Medium project within six months with a team of 3-7 half-time members:

1. Assure that the Duration and Resources are consistent with the Success Profile.
2. Assure that you have the proper Project Manager role: Leader, and part-time worker.
3. Collapse the typical Life Cycle into four phases, with four milestone reviews.
4. Set up **one** team: one Project Manager and 3 - 6 team members (depending on project size) at a *minimum* of half-time availability (and access to more, at times they are needed).

Strategies For a Large Project

The most important Critical Success Factor for large projects is to deliver functional product within one calendar year. These additional strategies will assure your success:

1. Assure that the Duration and Resources meet the success diagonal profile.
2. Assure that you have the proper Project Manager role: Manager and Leader.
3. Set up one to four teams, based on the Large Project's size: One Project Manager with Team Leaders, each having individual teams. A competent and effective Project Manager can manage one to four teams, as long as each Team Leader also demonstrates all the needed PM Competences.
4. Use a five-to-seven-phase Life Cycle. Add the activities and tasks needed to complete each Work Package. If you have two or more teams, assign separate teams working concurrently to sub-projects or functional areas, then merge and review their efforts at the Key Results or Work Package level.

Strategies For a Project That Is Not On or Near the Success Diagonal

Correct the situation, or fail! And if you choose to correct it, do so early, not later!

Strategies For Failure

Some managers put a very large team on a multi-year Initiative or Program, without producing staged or phased deliverables. The usual consequence of this action:

- The project is late; perhaps never completed
- The project is over budget
- The project is subject to a great number of changes after the first year
- The resulting quality is lower than expected; your Customer is extremely dissatisfied.

Excellent leadership *can* reduce the risks of very large Initiatives and Programs. However, you will manage them better when you break them into Large and Medium projects, each offering incremental business results.

H. Background and Success Profile Development

Its Origin

Our biggest customer was a Financial Services company in New Jersey. In an early 1980's Estimating workshop, we had mentioned a formula published by Lawrence Putnam, about the ideal duration of an Information Systems Project being the cube root of the effort, in work-months. Executive management was intrigued with this, and asked a number of questions. With a bit more research, we found that Putnam's formula was only valid for projects that were 36 work-months, and greater. Too bad, because half the company's projects were smaller than 36 work-months.

We were working with this company to help them to improve their Systems Engineering and Project Management processes and skills; and ultimately, their project portfolio delivery. We had already established baseline measurements of throughput, efficiency, and consistency of process. We had been impressed with their uniquely complete and accurate project tracking, and project history (rare in too many companies even today, 30+ years later).

We were already mining this company's project history, to produce better early scope measurements based on Comparison Estimating (comparing early scope measures to projects in history). So we added to the project a proof of Putnam's concept and assessment of the formula's validity in projects smaller than 36 work-months.

The initial results were inconclusive, as we did scatter-diagrams of effort against duration. There was no pattern, except for some interesting groupings, of projects. Then someone suggested that instead of charting all projects equally, we should give each a dot based on its success. Thus, more successful projects would have a larger dot.

This brought up the question, "How do you measure success?" Is it the old, "on time, within budget"? Or, does it relate to business benefits achieved? To customer satisfaction? Both because it was fairly all-encompassing, and because the information was largely available in the Project History, we chose a subjective evaluation by three groups: Executive Management, Customer (we called them Clients back then), and Project Team.

The Aha Moment!

When we charted the scatter-diagram again with the increased data, we saw two things: first, the logical groupings were more evident, mostly along the Effort scale. Secondly, there was a very clear correlation between Effort and Duration, in the form of a curved line from zero to 4320 effort hours (36 work-months at 120 hours per month), and beyond. And, that 4320 effort hours mark roughly correlated to Putnam's original formula!

To straighten the curved line, we varied the Effort and Duration scales. That is why they are non-linear today on the Successful Project Profiles chart. The original chart had its 0,0 point at the lower left; it was several years later that we switched it to the upper left.

Further study showed that not only were the groupings we had observed related to project team size, and we researched the differences between projects of different scale, to find, to no surprise, that there were significant differences in success-rates between those we felt were "right-staffed", and those that were "thinly staffed"-- especially on the Client side. Because we already had hunches about the impact of the right staffing level, this was cool!

Transferability?

Next came the obvious question. The process worked for one company (this was long before CMMi, but this was a very mature enterprise): would it work for others? We spent the next five years testing it against dozens of other Information Systems organizations, as well as everything from Manufacturing, to Aerospace and Defense, and Pharma. With some adjustments (perhaps a *Corporate Culture Adjustometer*). **It worked for them all!**

Small Projects
The Small Projects were all over the board. In the initial version, we actually used a cloud for that range, because there were too many variables besides an effort-duration relationship to reflect anything else.The biggest single factors in Small Project success appeared to be priority, priority volatility, and levels of Client involvement.

H. Background and Success Profile Development, continued

The 1st and 2nd Bands
Soon after we observed the phenomenon of the "Success Diagonal", we acknowledged that success is not binary: there exist successful projects, and gradients of such. Barry Boehm had an insight. A project could be successful, but cost more than it needed to, based on certain factors. Some factors involved the competence of team members in their assigned roles. That in turn tied to our Competence Model, developed to not only reflect the impacts of varying competence in the te3am, but also to measure improvements. Some factors involved external constraints, such as an unrealistically tight due date (effective Project Managers try never to have inflexible deadlines) with no control over other factors. Even varying numbers of annual vacation days in international projects add uncertainty to our models.

The foundation was laid to rate the success potential for projects that (ala the tennis analogy) are "out of the sweet spot". Much of our "metrics" around these 1st and 2nd bands are "gut reaction", rather than research-based. But, they tie in to proven research, and are useful as "rules of thumb" regardless. And, any practitioner will immediately find resonance with their insights. But, just as with the tennis analogy used above, these "bands" constructs are gradients, not fine-lined models. The further you get from the Success Diagonal, the greater the chance that you will experience the cited project measures of failure.

Beating the Model
There are many ways to beat the model, most of them intuitively obvious. It is clear to us, from many years of application, that the smartest way to "get more for less" is to put your best skilled people on the most-important scope, and then to deliver it quickly. But here is the interesting aspect. Putting your best-skilled people on the project significantly lowers the effort (while tending to also increase the quality)!

Another way to "beat the model" is to produce only the most-needed Scope. However, even in the early 1980's, we determined that few projects have a great grasp of the scope needed to produce the business benefit until Delivery and Closure of the project—by which time it is often too late. Many of our methods and processes have gone far to reduce that problem for our customers over the last 24 years.

Still another way to win is the power of effective Project Leadership, from project managers to their managers 2-3 levels up. This is so powerful that we funded an evaluation model for effective Project Leadership in the late 1980's. We found that the right interpersonal skills, personal style, process competences and follow-through could result in twice to four times the performance from the same team—based greatly on stellar Middle Managers—while much of current practice in middle-management some organizations tends to *get in the way* of project performance.

The Bottom Line
The Successful Project Profile has now served projects unchanged for over twenty-five years. Thousands of successes.

Initiatives and Programs
You will observe that the Successful Project Profile ends at 24,000 hours of effort and 12 months duration. This is for several reasons, not the least of which is the need to deliver something within one year in most of today's projects.

This does not mean that we don't recommend that you do larger initiative and Program efforts. Instead, break these larger efforts down into projects and subprojects, each subproject fitting correctly on the Success Diagonal.

Example:
We've assisted in the structuring of many very large Programs, and audited many others. One example in the 1980's was an unspecified Manned Mission to another planet. At peak, there were 5000 people working on Work Packages in the Program plan. And every subprogram, project and subproject—except one—fit along the Success Diagonal.

The one sub-program that did not fit on the Success Diagonal? A mid 1980s research and development project to develop and perfect an ion drive engine. Curiously, that was finally accomplished (by Europe) in the Summer of 2006.

I. Nuances and Insights

Continued use of the Successful Project Profile for over 30 years has resulted in many questions about its provenance, our assumptions, and practical use. Here we lay out some of the questions and observations we have responded to.

1. Hours in a Day, and in a Month

We use 6 project-chargeable hours per day, and 120 project-chargeable hours in a work-month. We know that most organizations use something closer to 176 hours per month. However, our work is consistent with Barry Boehm's COCOMO and COCOMO II model. We recognize that in that 176 hours there are breaks, paid holidays, and non-project-productive time.

2. Cross Multiplying

Some people look at the chart and attempt to cross-multiply it. For example, in our Scenario A, we used a 1000 hour effort estimate. We said we needed five half-time people for four months. Even with our 120 hour month, cross-multiplying results in 5 people * .5 time * 120 hours in a month * 4 months , or 1200 hours. This has come up repeatedly in practical use. What is the difference? Here is the key: We say we want *minimum availability* of 5 people, half time, for four months. Anyone who has done resource scheduling will understand that you cannot apply all resources, all their available time. In fact, that 83% utilization rate is very aggressive; most Medium projects with non-interchangeable resources are lucky to get 50% utilization.

3. More Staff at Lower Availability

OK, so 5 people, half time. How about 10 people at quarter time? Isn't that the same? No way! According to our metrics, each team member you add "costs" you another 5% of your time just to keep them engaged. Thus there is a significant cost involved in staff availability that is less than our guidelines. For an extreme example, how would you like 25 people at 10% availability? Here is another challenge with part-time assignment: if I'm available quarter-time, is that 1.5 hours a day, or all day several days a month? How can one coordinate teamwork with tiny slices of time? Even with our half-time minimum recommendation, we want the Project Manager to have some control over when that half-time is applied, even to the point that, "I don't need you at all this week, but need you full-time next week".

4. Fewer Staff, Full Time

Well, if Full-time is the preferred availability for Large projects, why not use full-time on Medium ones, too? OK, as long as I still have the recommended number of team members. Why? Most projects require a broader range of skills than I could get (for our Scenario A example) from 2.5 full-time team members.

5. What is the Basis For the 10% and 25% Added Costs? We made 'em up.

It is intuitively obvious that there are additional costs, and seldom is this questioned. There are citations in some disciplines that suggest that in some cases the cost is significantly greater. For example, Boehm says that a due date that is 75% or less than "ideal" adds 43% to project cost. However, that is for Information Technology projects, and should be validated using your own internal project history.

6. A Guideline, Not Precise Measurement
In all our years of use of the Successful Project Profile, we have made it clear that this tool is a guideline, not an absolute and precise instrument. One does not change potential of success by moving a tenth of an inch further from the Success Diagonal. At the same time, it is useful as a double-checking Risk Management tool for Managers whose team has "Crashed the Model" to show how the impossible project could be done on time. It is only an additional tool for effective Executives, Portfolio Managers, Functional and Resource Managers, and Project Managers.

7. Why Has This Not Been Published?
Some of our customers have paid us not to publish it, treating the Successful Project Profile as their trade secret, a competitive advantage. Today, those agreements have now all lapsed. This model has been available for 25 years as part of our Information Technology and Universal Project Management Methodologies, and embraced by hundreds of companies and government agencies, in over 40 nations.

J. Citations

Boehm, Barry W. *Software Engineering Economics*, Prentice-Hall, 1981.
Putnam, Lawrence H. Software Cost Estimating and Life-Cycle Control: Getting the Software Numbers. Computer Society Press, IEEE Computer Society, 1980.
Goff, Stacy A. and Myers, Daniel. *THE Guide, an Information Systems Delivery and Project Management Methodology*, 1985, 1987, 1990, 1993, 1995, 1997, 2000, 2002, 2004, 2006, 2007.

K. About Stacy Goff

Stacy A. Goff, *the PM Performance Coach*, has coached and inspired tens of thousands of project and program managers, and hundreds of organizations, on five continents, for over forty years. A Project Management practitioner since 1970 and consultant since 1982, he has also been a strong contributor to professional organizations such as IPMA® and PMI® since 1983.

He is a co-founder and past-president of IPMA-USA, and 2011-2014 Vice President of Marketing & Events for IPMA, the International Project Management Association. In September, 2015, he was named an IPMA Honorary Fellow.

Mr. Goff brings a results-oriented approach to Project Management coaching, consulting, and training. His in-sight for the needed PM Competences, and his delivery of effective training translate to improved project performance. In his working life, he combines his Project experience with sensitivity for the interpersonal skills are-as— the human aspects of projects.

In his papers, presentations, workshops or in consulting, he combines his project experience with strategic link-age for all projects and programs. His insights for strategic alignment, have provided competitive advantage for his clients for over 40 years. His business result: measurably increased PM Performance.

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