Challenges in Building Productivity Baseline

by

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Agenda

- Abstract
- Overview on Baseline
- Typical Steps
- Challenges
- Conclusions
- Questions
Productivity baseline being a crucial asset to the organization, we need to be very precise and assertive about the information used to build the baseline.

Base lining productivity provides a bird’s view of:

• How the organization is performing across technologies and platforms.
• Aids the organization in deal support.
• Provides introspection to the management of performance.
• Aids in making strategic decisions for internal development of the organization.

This paper addresses the challenges to ensure and build strong productivity baseline of an organization.

Highlights:

• Define projection criteria for baseline.
• Mechanisms to collate projects.
• Criteria to categorize projects into technology and platform.
• Guidelines to segregate effort to maintain accuracy.
• Techniques to avoid any skewing of baselines.
• Provide pointers to analyze the baseline results.
A **baseline**, simply defined is a reference point that establishes the current capability of the organization in a particular operating parameters such as productivity, effort variance etc.

- An organization can have one organizational baseline with supporting or supplemental baselines in each engagement or business unit or operating group as may be required.
- Most customers in outsourcing deals insist that the vendor / service provider demonstrate a year on year increase in productivity.
- Productivity Baseline is a metric which comes to everyone’s mind when the question arises to do estimation for new work. The complete cycle of establishing a productivity baseline is a responsible structured exercise which every organization has to invest in building a strong foundation.
Steps:

- Identify the internationally acclaimed methodology for productivity baseline
- Define project Selection Criteria
- Project Collection
- Measure Size of filtered projects
- Productivity Analysis
- Formulate Baseline
- Refresh Baseline over a period of time.
Challenge #1 : Formulating a Clear Business Goal

- What are the business goals of the organization? How would these translate or tie to an increase in productivity? How much of an increase in productivity is feasible? What tools and methods need to be put in place to measure, analyze and improve productivity?

Solutions:

- The message that has to go out across the organization could be an illustrative message like this: “In today’s competitive marketplace, it is important any organization has a reasonably accurate of the productivity of its various operations. The productivity baseline plugs this critical gap in an organization’s IT portfolio that of being able to determine its own productivity and be able to take steps to improve based on that.

- Insight into market trend to compare the productivity externally.

- Next is to focus on the area of concern. Is it in a specific technology that needs to determine productivity? Is the customer expectation in a specific area? Who will sponsor it? What is the richness of the data in that particular technology area?
Challenge # 2 Identifying the Baselining Methodology

There are multiple ways to create a productivity baseline. Challenge is to create a simple, relatable baseline that can be understood by everyone.

Solution: The methodology of baselining has several flavors. One of the simple general methodology is listed below:

- Take x data points or samples. Take the FP size for each sample, divide by effort to get productivity. The scope of the effort to be used in the denominator gives us the productivity for that lifecycle.
- Full lifecycle productivity = FP size of the release (final) / end to end effort
- Design productivity = FP size/ Design effort
- In general, phase-wise productivity = FP size/ Effort of the phase (s)
Challenge # 3: what should be the timeline for a Baseline

This is a challenge especially where one has to balance the need for quick wins as people are fond of or for a long-term sustainable productivity improvement program.

Solution: The timeline for a baseline depends on how quickly there is a need for a baseline. Competitive pressures generally require that an organization set up a sustainable baselining process as soon as possible. However, practical constraints such as availability of data, need for a buy-in, impact on delivery because of the need for interaction time with FP specialists may all be factors that would also impact on the timelines for the Baselining program.

Full-fledged baseline: This is the whole nine yards’ baseline. There are 30 data points or samples that have to be collected for this baseline. Hence FP sizing for 30 data points and divide by the effort for each will get the productivity of each data point. Median value of this productivity data set will get the median productivity of the target population or technology or platform that is being baseline.

Interim baseline: Sometimes there would not have the time or the richness of data to go in for a full-fledged baseline. In that case, instead of 30 points, intermediate solution would be to go in for 15 points to form what is called an Interim Productivity baseline. An interim productivity baseline will still be good enough to give an indicative productivity trend.
Challenge #4: Type of Baseline

Solution: There are several types of baselines that can be created in an organization. Few of the main types of baselines are discussed below:

Based on the goal:

- Development or enhancement baseline – to determine the development productivity of the development shop in the organization.
- Capacity maintenance baseline - to determine the no of FTEs required to support an application’s maintenance
- Organizational Baseline: this is a baseline at the organizational baseline that takes a set of samples from around the organization in each technology or platform as the case may be
- Technology baseline: This is created where the organization needs performance benchmarks or productivity benchmarks by technology. Usually, this is the most common method of creating an organizational baseline
- Platform based baseline: sometimes it may be required to determine the productivity on a platform (Mainframe) as opposed to a specific language. An example, is
- Domain-based baseline – Have a baseline that is domain based such as one for Finance applications
Challenge #5 : Criteria for base lining (Project selection criteria)

The challenges are in deciding which projects to take as part of the baselining sample set.

Solution:

• The criteria for selection of projects are linked to other parameters such as the type of baseline and also to the average size of projects in the organization. For example, projects usually have a mixture of technologies. The challenge then arises as to what is the primary technology of a project. One thumb rule followed is to decide or categorize the technology of the project based on the proportion of effort. For example, if a project that has both Java and DW and if the proportion of effort for Java is 70% then the project is deemed to be a Java project for inclusion in a Java baseline, if it meets other criteria.

• Take help of SMEs from capability to categorize a project if the existing document guidelines and criteria tools are not sufficient to determine the technology.

• Document guidelines after talking to SMEs from technical capabilities.
Challenge #6: Criteria for Effort segregation

Solution:

• A frequent challenge is also how to segregate onshore and offshore effort. If the project was executed seamlessly by both offshore and onshore it is difficult to segregate the effort. In that case, it is better to not consider the project for inclusion in a baseline. However, if the offshore and onshore efforts are part of the same organizational effort, need to determine end-to-end productivity.

• Yet another challenge is when the project has both contractors and employees. How would you determine the productivity of the organizational staff? Here the query arises as to what constitutes the organization. If the organization is always going to have a certain proportion of staff, then it is certainly appropriate to consider all the staff in the organization including contractors and their effort while calculating productivity.
Challenge #7: attributes to collect along with project documents

Solutions:

• This depends on what analysis needs to be done at the end of the base-lining exercise. The whole goal of the baselining program is to look for meaningful trends in the productivity data and also compare it with other parameters to discern correlation.

For example, if there is a need to correlate the defect rate in a project; notify the projects to collect defect data in advance so they are able to share with us. Even though defect data are normal, default data which are captured in projects, notifying the projects in advance makes the process of getting it post the function point sizing easier. Similarly, if one wishes to correlate the absenteeism in a project with the productivity, it would be required to notify the projects in advance to track the same. Usually with the closure of a project, it is difficult to obtain such project-specific data since the project resources may have moved.
Challenge #8: Validating the data and documentation received

Solutions:

• Validating the data received in a project is an exciting challenge. Quick check is required if the project is fit for FP sizing or not. The documentation provided should encompass all information required for FP Sizing.

• Capacity Baseline: Focuses are baseline the number of resources required to support (Production support) various sizes of applications across various platforms.

• Technology/Platform Baseline: Enhancement documentation should clearly articulate the functionalities added, changed and deleted. Also the conversion effort done to enable the enhancement or the project.
Challenge # 9: Formulate a Productivity baseline after analysis

There are various tools available to calculate the median of the data points for each technology/platform

- Median is the best measure to derive productivity from multiple data points.
- Standard deviation of the data points gives the amount of spread. This is an indicator to show the range of data that is accumulated.

Solution: Box plot is one of the methods to eliminate the low and higher outliers and calculate the median of the data points. This is better explained by a sample box plot.
Challenge # 9: Formulate a Productivity baseline after analysis

Sample box plot:

Median - 0.216 FP/PD

OUTLIERS
Challenge #10: Which benchmark to benchmark against?

Solution: Best approach for an organization is to formulate its own baseline and use the baseline derived metrics to arrive at various strategic decisions.

• Every organization needs to give a thought on what would be the benchmark. The benchmark depends on the measure or metric that is chosen and external benchmarks has diverse parameters which may might not be application in their current organization.

• For example, most of the universal benchmarks are denominated in terms of Function Points. If however, an organization wishes to benchmark its productivity in terms of LoC, that too is available but in a relatively limited number of databases. Example, if you are a European organization, you would tend to look for a database of benchmark that has a lot of European data in it. To compare with your European peers. So when selecting a benchmarking database, pl discuss with the benchmark provider about your requirements. However, Pl does your due diligence before you enter into a specific benchmarking arrangement with the provider.

• If you as a service provider that is mostly involved in only design, code and test work, then it would be better to benchmark against a database which the DCT productivity.
Challenge #11 : Data Privacy Issues

**Solution:** Clients are very specific of the data shared outside the project. FP Sizing requires all relevant project documentation which would be against client specific NDAs. (Non Disclosure Agreement). The best possible solution is to perform FP Sizing in the project bay adhering to Project specific NDAs. This option would involve addition budget allocation to ensure the FP Experts travel or relocation for a temporary period. Proper planning and foresight during budgeting will help in avoiding any budget over run.
Challenge # 12 : Availability of SMEs & awareness on FP Sizing

Solution: Every project selected for baselining need to have SMEs worked on the project to confirm the understanding of the project/enhancement. Availability of the SME becomes crucial while sizing application as well since the application owner/SME can confirm the complete functionality of the application, interfaces to other applications etc. Along with this there might be third party applications which are being sized. SME would need to confirm the % of functionality customized and supported by the team. Percentage of functionality which is not being used but present in application.

• Awareness of FP for the SME will help in articulate the information exactly required for FP sizing. This will reduce the effort spent by SME since SME would not be wasting any time explaining technical stuff which is irrelevant for FP sizing.
Challenge # 13 Translation Issues

Solution: There would be projects where the documentation of the project would not be in English. Need to get this relevant documentation translated to English. Before initiating the translation exclude all projects which are not FP sizeable.

- Budget for translation cost involved so the there are no over runs in baselining program.
- SMEs involved in the project might not know English, then a translator would be required to get all information translated and clarified to finalize the counts.
Challenge #14: How many Baselines to have in an organization?

Solution:

• This is an interesting question related to the challenge #4 we discussed above and reserved for the tail-piece. If you are a single-location IT shop with a defined set of customers, it makes sense to have a single, organization-wide baseline in each of your key servicing technologies.

• Example, to communicate to the external world and your top leadership, you might wish to have one single overarching baseline in each of your key technologies or platforms. You might then need one for each of your development centers, so as to spur the improvement of productivity in each of those locations based on their own local productivity data. Again, if there is a key engagement which you wish to retain and where the client has expectations, it might be worthwhile to measure productivity continuously and formulate a baseline. This will help the engagement leadership baseline and improve their productivity targets.
Conclusion

• No one size fits all approach for a Baseline
• Crystallize your business goal or imperative that drives the type, timeline and methodology for your base-lining Program
• Remember, baselining program is only the means to an end. The real outcome should be tangible improvement in productivity.