Operational Excellence Methodology –
Operational Transparency

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In our everyday life, we all have objectives. Usually, the objectives are associated with obligations from work or from our personal life. Regardless of where the objectives come from, our tendency is to fulfill them as fast, as much, and as best we can. Operational excellence is the state of achievement for the works we do to fulfill our objectives. The operational excellence framework and its associated methodology were developed to provide the necessary implementation guidelines and practices to enable the achievement of the desired objectives at work. There are 6 steps in the operational excellence methodology:

Step 1 - Create a “burning” desire for success

Step 2 - Turn “desires” into objectives for success

Step 3 - Mastering the capabilities for achieving the desired objectives

Step 4 - Achieve greatness in execution

Step 5 - Ensure the Operational Transparency

Step 6 - Continuous Improvement

In the following paragraphs, the step 5 of the methodology – the “Ensure the Operational Transparency” will be discussed in details; with guidelines and practices for ensuring the excellent execution of the necessary tasks/operations, to achieve the company success through its operational excellence capabilities. A company will not achieve operational excellence without the establishment of the “operational transparency” to support the execution of its tasks/activities/operations.

Step 5: Ensure the Operational Transparency

“What gets measured gets done. What gets measured and fed back gets done well. What gets rewarded gets repeated” - John E. Jones
Do you measure things in your company? What exactly do you measure and why do you measure it? What is your rationale for measuring the things you measured? Is it because measuring is just the right thing to do? Or is it to manage and improve your capabilities capitalization?

To properly manage the operations/activities in the capitalization of the needed, you need to have the up-to-date implementation progress/status to monitor against the planned targets/goals, and to make corrections or change directions if necessary. You need to establish and use a system of measurements/metrics to help you to focus on the critical issues. This system must provide up-to-date information for all the appropriate levels of the company so the collected measurements can be put into use effectively. Complete visibility into operations with fact-based information is fundamental to managing operational performance and ensuring continuous improvement.

**Operational Transparency**

Operational transparency, in this context, refers to the setup where the key information about the executions and associated results is readily available for use to ensure the progress toward the desired objectives. Transparency is the state in which all relevant execution information is fully and freely available to all who need to know. Operational transparency context includes the visibility of the operations performance and the analysis capabilities for the implementation status/progress. Transparency is also a trust building mechanism generally used to "open up" the books or practices of a company to stakeholders with a "right to know". Operational transparency is very important and desirable because they provide many benefits:

- It improves the bottom line by reducing implementation cost and improving productivity and effectiveness.

- It allows the alignment of the implementation activities to the plan and the desired objectives.

- It permits implementation of the objectives on a continuous basis (no pause to resolve unplanned issues).

- The measurement of process effectiveness and efficiency provides a rational basis for selecting and prioritization of what process improvements to make.

- It allows managers to identify best practices in an organization and expand/share their usage elsewhere.
• The visibility of the implementation status/results supports better and faster budget decisions and control of processes in the organization - This helps to reduce implementation risk.

• The visibility provides accountability and incentives based on real data, not anecdotes and subjective judgments; this serves for reinforcement and the motivation that comes from competition.

• It permits benchmarking of process performance against outside organizations.

• Collection of process cost data for many past projects allows us to learn how to estimate costs more accurately for future projects.

• If you are in a US Federal agency, it's the law. The “Government Performance and Results Act of 1993” requires a strategic plan, and a method of measuring the performance of strategic initiatives.

• It enables the improvement of operational excellence for your company.

One important aspect of operational transparency is the availability of feedback information relative to set targets and objectives. The feedback information allows the making of the right decision or the taking of appropriate corrective actions if necessary - feedback measurement gains true value when used as the basis for timely decisions. The other emphasis of the operational transparency is not just to know how the implementation is performing but to enable it to perform better. The ultimate aim of the operational transparency is to improve the implementation performance of the company. If you can get the implementation performance measurement right, the data you generated increases the chances of achieving the implementation efficiently and effectively.

The Establishment and Use of a Measurement System

“Are we there yet? This was the question my kids repeatedly asked me when we were on a long trip. What seems to be a humorous question from the kids become many real serious questions for all of us in our every-day business operations: Have we completed our tasks? Have we achieved our objectives/targets/goals? Are we making progress? To answer these questions, we need to have measurements/metrics defined, measured, and tracked against expectations. Without a well thought-out and carefully planned and executed set of meaningful and actionable metrics, we can be overwhelmed with the number of metrics to implement, the volume of data to collect and analyze, and the confusion and lack of focus in putting the metrics information into actionable improvement.

The foundation for an effective operational transparency setup is the establishment of the measurement systems for use by all stakeholders. It is
essential to define the objective for the measurement systems; this will enable the smooth establishment of the measurement program. As in any effective program, the measurement program will require a strategy and a plan. The strategy addresses the implementation critical success factors, and the plan which should be flexible and evolutionary in addressing the step by step implementation of the measurement program. The following tips help to ensure the effective establishment of the measurement systems:

- **Secure the desire, support and Executive sponsorship**: The desire, support and Executive sponsorship are essential for the success of the measurement program; they should be active and genuine. Executives should actively sponsor and participate in the program to make sure it happened. It is crucial that they convey the message that the measurement program is very important for the company operational excellence and is the key for business success; and they intend to utilize the results of the measurement program to manage the company operations.

- **Adequately allocate resources for the measurement program implementation**: Assign qualified support staffs with dedicate resources/time to facilitate and direct/coordinate the implementation of the measurement program – forming a measurement core team. The dedicate staff – the measurement core team should provide expert guidance and oversee the establishment and use of the metrics as well as the tools supporting them.

- **Get the right people involved in the measurement program**: Although measurement program is often described as a top down approach, it does not mean that upper management defines the metrics and hands their plan over to the staff for execution. Upper management provides guidance and direction by making available clearly defined project and organizational goals. The measurement core team coordinates the definition for the measurement goals and ultimately, the metrics. The measurement core team will also need to coordinate this task among several projects to ensure consistency of some metrics across projects. This activity would be driven by a higher organizational need for consistent metrics to improve activities such as cost estimating or benchmarking. The right people must be involved in every phase of measurement program implementation.

- **Document, train and communicate the measurements (metrics)**: Document, train and communicate the measurements/metrics to staff and management is critical to the program’s success. Documentation for the measurements/metrics and proper training about them enables the staff to understand and use the /measurements/metrics in their operations. This will establish a foundation for operational data by which managers and staff can use to manage the business activities.
• **Ensure the use of measurements (metrics) as part of company operations:** Collect and use of measurements/metrics should be an integral part of everyone’s job. It must become an accepted part of the organizational culture; everyone is expected to take an active role. Measurement activities need to be integrated with the development lifecycle.

• **Emphasize the project level measurements (metrics):** Focusing on the project level measurements/metrics enhances the project managers’ ability to effectively manage projects. Aspects of project management that are enhanced include: estimating, scheduling, planning, scope change management, risk assessment, and post project reviews. Focusing on the project level measurements/metrics will also provide the feedbacks to the staff that often collect the data.

• **Do not use measurements (metrics) for other purposes:** The fastest way to derail the measurement program is to use the measurement results for other purposes not related to the goal; this is especially true when such measures are misused to assess the productivity of individual team members or as a basis for individual awards. This can occur when someone other than the goal owner interprets the measurements, perhaps with their own hidden agenda. Individuals have little control over many primary factors that influence project outcomes such as productivity and quality. Measuring the performance of individuals tends to focus on the individual as the "cause" of high or low productivity or quality – which is not true. Measure individuals causes a breakdown in the trust relationship among team members and between the project team and management, often resulting in actual data collection being skewed to influence the outcome and degraded data integrity, which can also cause detraction from the team-work which is required for success.

• **Select, analyze and report measurements (metrics):** Selection/definition of meaningful measurements/metrics, rigorous and accurate analysis of data, and clear and concise report of the implementation progress/status measurements/metrics are the key success factors for the measurement program. In selecting meaningful measurements/metrics, the audiences for them must be clearly identified. Audiences' objectives and targets/goals must be taken into consideration for the measurement/metric selection; the selected measurements/metrics must be reviewed with them and must meet their objectives and goals. Analysis tools such as Pareto, Cause-and-effect, fishbone, histogram diagrams, etc. should be used in the interpretation of the collected measurements/metrics. Measurements/metrics report needs to present/communicate to management and staff timely and regularly so to increase the effectiveness of their use in managing business operations.
• **Ensure that measurement is viewed as a tool, not the end goal:** Measurement should aid, rather than hinder, the company operations. Do not get so focused on metrics and measurements that you lose sight of the operation itself. Leaders must work diligently to keep the focus on the business operations, project, product, or process-focused improvement goals rather than the stockpile of measures collected.

• **Let the data be interpreted by the people involved:** Just as those involved in product or business development need to be part of the definition team; involved people need to be part of the interpretation of the measurement results. Interpretation of measurements(metrics) should be done by the people who represent the viewpoint of the goal, i.e., the goal owners. This does not mean that others are excluded from the interpretation process; the goal owner, however, leads the interpretation process. Without such direct involvement, the measurement process tends to break down, as people tend to view it as extraneous to their real work.

• **Automate the collecting, analyzing and reporting of measurements (metrics):** A proper implementation of a measurement system will likely cause the needs for collecting, analyzing and publishing large amounts of data and information. Providing meaningful, actionable visibility into implementation operations isn’t easy. Given the amount of information that is generated on a daily basis out of numerous and varied implementation streams, company is struggling to aggregate and present that information in a way that helps decision makers to rapidly analyze progress status, business conditions, and make decisions in a highly dynamic environment.

This challenge can be addressed through the simplification of the measurement effort with a smaller number of key simple measurements(metrics), or through the application of automation for the tasks of collecting, analyzing and reporting of measurements(metrics). Automation will reduce the required work load and help to expedite the transformation of data into useful measurement information. There are many tools available (e.g. spread-sheets, databases, data query systems, etc.) for this automation purpose. Internally developed tools can also be utilized for the measurements(metrics) program automation until a permanent standardized solution can be found.

The above guidelines provide a good overview of the important items in the establishment of a measurement systems and how to make it effective. We will go into more details for some of them so you can do an effectively implementation later.

**Selecting Meaningful Measurements/Metrics**
Selecting meaningful measurements is a very crucial step in the establishment of a measurement program. A small set of simple but effective measurements/metrics can:

- Provide objective information throughout the implementation. This reduces the ambiguity that often surrounds complex and constrained operations.

- Provide Indicators to help managers to identify, prioritize, track and communicate implementation issues at all levels within the organization.

- Provide Status of implementation operations and deliverables. Measurements/metrics help to answer questions such as “Is the implementation on schedule?” or “Is the deliverables ready?” etc.

- Objectively identify potential problems as risks to be assessed and managed. Existing problems can be better evaluated and prioritized. Measurements/metrics foster the early discovery and correction of technical and management problems that can be more difficult or costly to resolve later.

- Help the decision maker to assess the impacts of decisions objectively and make informed trade-offs to best meet project objectives and to optimize software project and product performance.

- Provides an effective rationale for selecting the best alternatives to planned activities

**GQM (Goals Questions Metrics)**

GQM (Goals Questions Metrics) is a well-known, industry standard goal-driven method for developing and maintaining a meaningful set of measurements/metrics that are tied to business objectives. The approach was developed by Dr. Victor Basili and colleagues during the 1980s in conjunction with their work at the NASA Software Engineering Laboratory (SEL), and later popularized by Bob Grady of Hewlett Packard Company for use in the quality improvement community. GQM approach emphasizes the alignment with organization business and technical goals as the driven factors for the selection of meaningful measurements/metrics. The GQM process starts with organizational objectives and goals, from these objectives and goals, additional information for measurement goals will be defined, then questions related to these measurement goals are identified and discussed by the team to ensure clarity and alignment for all on the business objectives. Collected information related to business objectives then drives the definition/selection of metrics that provide answers to the questions.

The GQM process steps are:
**Step 1**: Develop the understanding background for the corporate, division and project business goals. Brainstorm the business objectives and goals that you are trying to achieve. Break the identified business objectives/goals into smaller chunks as needed so that they are:

- Specific and understandable
- Within your power to attain
- Measurable
- Appropriate chunk size with a stretch fixed time period
- Prioritize and choose a small set of objectives/goals

To get the needed information, ask questions such as:

- What do we want to achieve?
- What are our organization business objectives/goals? What do they meant to you?
- Do we have any specific objectives/goals?
- Is there any dependency on company level objectives/goals?

For each identified business goals generate the associated measurement goals and develop the description for them. The measurement goal description should include the information which related to:

- **Object**: The object for the measurement – the product or process under study; e.g., testing phase or a subsystem of the end product
- **Purpose**: Motivation behind the measurement goal (why); e.g., better understanding, better guidance, control, prediction, improvement
- **Focus**: The measurement attribute of the object under study (what); e.g., reliability, effort, error slippage
- **Viewpoint**: Perspective of the measurement goal (who’s viewpoint); e.g., project manager, developer, customer, project team
- **Environment**: Context or scope of the measurement program; e.g., project X or division B
With the good understanding for the background information about the business and measurement objectives/goals, one is ready to go further in the gathering of more detailed information about the measurement goals.

**Step 2:** Generate questions that will get the necessary answers to define those measurement goals as completely as possible. The purpose of this step is to clarify and refine the measurement goals, moving from a conceptual level to an operational level by posing questions. By answering the questions, one should be able to conclude whether a goal is reached. The questions help identify interpretations of the goal that may exist among the stakeholders as well as constraints imposed by the environment. The questions would typically get at all of the nuances and perceptions relating to the goal, addressing both perceptions of the measured object and the context or environment in which it will evolve. This is essentially a process of stakeholders converging on a common understanding and interpretation of the goal at the appropriate level of abstraction.

If questions are too abstract, the relationship between the metrics and the question may be muddied. If they are too detailed, it becomes more difficult to get a clear interpretation of the goal. In many instances, particularly where the purpose of the goal is to understand or characterize the process or product, questions may need to be broken out into many sub-questions to drive appropriate identification of metrics. The implementing organization may tailor this step of the process as needed to ensure that the level of questioning is sufficient to drive the identification of the right metrics.

**Tips:**

- Brainstorm a list of questions for each measurement objective/goal - What do we need to ask in order to get information we need to manage to this measurement goal?

- Synthesize, sort and prioritize the questions to get to a core set of questions whose answers will give you sufficient information to effectively manage toward these goals

**Questions to ask to know more about the requirements for the measurements/metrics**

- What are we going to do to achieve the identified objectives/goals?

- What do we want to know about the identified objectives/goals?

- How do we know we are implementing the planned activities for the identified objectives/goals?
• How do we know we do the right things?

• How do we know we achieve the set objectives/goals?

• If we achieve those defined objectives/goals, what are the expected results? How those results are look like? Feel like?

• When do we need the metric data? etc.

**Step 3**: Specify the measures needed to be collected to answer those questions and track process and product conformance to the goals. This step is about examining how the questions could be answered. Once goals are refined into a list of questions, metrics need to be defined that provide all the quantitative information to answer the questions in a satisfactory way. Stakeholders, those directly involved with the object of the goal, must be directly involved in the metric identification step as well as the Question step. Direct involvement of these stakeholders minimizes ambiguities and false assumptions and contributes to the overall consistency and completeness of the metrics identification.

Make sure that measurements/metrics chosen should be specific to what you are trying to measure, not generic measurements/metrics that you collect just because they can be collected, and remember that choosing the wrong metrics causes extra effort collecting and reporting on the wrong data and often results in having to collect more relevant measurements/metrics after-the-fact.

**Tips**: Brainstorm for measurements/metrics that will provide answers to the questions about the identified measurement objectives/goals. Reduce the list to a small set of essential measurements/metrics based on the following considerations:

For ease of collection

• Reliability

• Usefulness – easy to understand

• Breadth of coverage

• Credibility with key targets

• Present-ability/communicability

Apply the following tests to the selected measurements/metrics; a good measurement/metric should satisfy many/most of the tests:
• **Behavior Test** - Use these questions to ensure that the measurement/metric will cause the right behavior:

  o Is this metric consistent with the goals of the organization?

  o What are the negative behaviors that could result if we encourage this measurement/metric?

  o Are the behaviors encouraged in consistent with how individuals and teams are rewarded?

  o Are the behaviors encouraged in consistent with the organizations culture?

• **Definition Test** – Use these questions to gather complete information for the measurements/metrics:

  o Do we know what 'good' performance is?

  o Is the measurement/metric common with other measurements/metrics used elsewhere?

  o Is the definition clearly defined?

  o Is the measurement/metric objective? Is it quantifiable as much as possible?

  o Are the people whom the measurement/metric measures able to improve it?

  o Does the measurement/metric promote learning and continuous improvement?

  o Does the definition and formula for the measurement/metric provide visibility to what drives the measurement/metric?

  o Is the measurement/metric owned by the decision makers who use it?

  o Does the measurement/metric point people in the right direction for corrective action?

  o Is the measurement/metric easily and objectively verifiable?

  o Is the measurement/metric validly measuring what it was intended to measure?
• **Communication Test** - Use these questions to ensure the ease-of-communication for the measurements/metrics:

  o Will the measurement/metric be accepted at all levels at which it is used?
  
  o Will the measurement/metric show favorable results when things improve?
  
  o Is the measurement/metric presented in both numerical and graphical form?
  
  o Can the measurement/metric be summarized in an aggregate form for reporting upwards?
  
  o Is the measurement/metric reported out at the level of the organization that can do something about improving what the measurement/metric measures?

• **Formatting Test** - Use these questions for the format of the measurements/metrics:

  o Is the measurement/metric easy to apply?
  
  o Does a numerical formula exist?
  
  o Is the data to construct the formula readily available?
  
  o Is it cost effective to gather the data and calculate the formula?
  
  o Is the formula constructed so that it is easily understood?
  
  o Has the type of graph for displaying the measurement/metric been identified?

**Step 4**: Develop mechanisms for data collection. Once the measurements/metrics are identified, one can determine what data items are needed to support those measurements/metrics, and how those items will be collected. The measurement/metric provides insight regarding how the data needs to be organized in order to be meaningful to the viewer/recipient of the information. A significant amount of planning is necessary to provide the detailed procedures for data collection that support the identified measurements/metrics.

It is important to train individuals involved in data collection to ensure that they understand why the data is needed, how it is going to be used and how their action contributes to the overall validity of the data collection process.
**Step 5**: Collect, validate and analyze the data in real time to provide feedback to projects for corrective action. This step presumes that data collection follows the defined and adopted procedures. It is often a continuous (or periodic) process rather than a one-time activity. However, it is only a means to an end. Data collection is a worthless process if one does not do anything with the data. The focus needs to be on preparing the data for optimal usage. Regardless of the collection medium, data needs to be validated before it is used for analysis. Ask questions to have enough understanding of how to best collect and track the selected measurements/metrics:

- **Collecting metrics**
  - Do you know how the data will be collected?
  - Who will collect the measurements/metrics?
  - How often to collect measurements/metrics?
  - How much measurements/metrics data to collect?
  - Where to keep the measurements/metrics data?
  - Has the person who will collect the measurement/metric data been identified? etc.

- **Tracking/reporting measurements/metrics**
  - Has the person who will calculate and plot the measurement/metric been identified?
  - Has the person who will report the measurement/metric been identified?
  - Can the measurement/metric be calculated and reported without delay?
  - Will the measurement/metric be available to those who need it?
  - Will the measurement/metric be reported at a pre-agreed frequency?
  - Who are the audiences for the measurements/metrics report? etc.

Automation can assist, but it cannot replace all forms of data collection and validation. The key is to minimize the overhead imposed on the people who are required to provide data while ensuring that they understand the significance of their data collection effort.
Validation consists of checking the data collected for correctness, completeness and consistency. Completeness is the most significant data collection problem. What does one do with a form that is only half completed? How does one ensure that all instances of data are actually captured? These, and similar questions, need to be addressed in planning the measurement program so that there is a proper course of action available to those people tasked with validating. Once validated, it is important to store the measurement data in such a way that it can be accessed for varying analysis and reporting purposes.

Analysis is about organizing the data and preparing the metrics for presentation to the stakeholders to address the questions pertaining to the measurement goal.

Some form of feedback is required to communicate measurement results to the appropriate stakeholders. These sessions are focused on the measurement goal and reviewing the measurement results to answer the questions posed in step 2 of the GQM process. The project team can then decide on corrective action when progress toward goals is not deemed adequate.

Analysis and interpretation is an iterative step typically integrated with the progress reporting cycle of a project.

**Step 6**: Analyze the data in a postmortem fashion to assess conformance to the goals and to make recommendations for future improvements. This is the last step in GQM process which is about looking at the measurement results in a post-mortem fashion to assess goal attainment and also to determine lessons learned and what might be valuable to pass on to future projects.

Measurement/Metric data, when compared against the **baselines** and **trends** should provide the information about the progress/status of the measured item.

- What is the status of the adoption of the measured item?
- What is the result of the measured item?

Heuristics for evaluate the achievements should be defined for the collected metrics so decision can be made and appropriate actions can be taken.

When GQM is implemented to support an organization-wide improvement process, the experiences and lessons learned from each implementation are packaged in the form of policies, procedures and best practices, to support future projects and improvement initiatives and to help the organization achieve greater leverage from its measurement program.
The Availability and the Use of the Feedback System based on the Defined Measurement/Metrics

At the heart of the measurement system is the feedback system based on the defined measurements/metrics. The main purpose of the feedback system is the communication to management and staff the information about the implementation measurements/metrics. This implementation metrics information will be used to drive the business operations management, including the decisions for course/direction corrections when necessary; and the improvement actions when the opportunities arise. Acting on feedback received it critical to the achievement of operational excellence.

It is necessary to provide the measurements/metrics information to the people who provided or related to it. In many organizations, the measurements/metrics are gathered but the information is not sent back to the appropriate people (people who can take actions with regard to the measurement/measurements/metrics). By publishing the measurements/metrics, the company lets people know that the measurements/metrics information is at least being paid attention to; and also being valued by the management. More important is actually publishing management-level decisions based on the measurements/metrics—for example, "the company decided to take this strategy or these actions based upon the trends showed in the latest measurements/metrics information". If people see that the information is being used to make important decisions, they not only have an incentive to keep providing the data, they also have an incentive to provide the right data.

When communicating feedback internally, you have to get the right stakeholders engaged. Most important is the bottom-up communication - Provide a simple and intuitive dashboard and get the information in the hands of the “implementers (the people who will take actions) immediately, so that they can take action and make improvements. Communicate the summarized and get aggregated data at the management and the executive level for deciding strategic strategy and action decisions.

Feedbacks are necessary to drive changes - organizational and cultural change that produces growth and profit, driving superior business performance, the more feedbacks available the better possibility to evolve/improve the process. Effective change process needs to include.

- Feedback records with deficiency notations
- Trend analysis
- Corrective action process and criteria for action
• Audit process

• Management review process

Addressing the following questions is necessary for making the effective change:

• Are process feedback records created?

• Have the feedback records been analyzed for process deficiencies?

• Are the deficiencies analyzed for statistical significance?

• Are the deficiencies of statistical significance written up for corrective action?

• Is corrective/preventive action implemented?

• Is there an objective review of all processes to ensure the change process is working?

• Does management review all findings to ensure the change process is working — and that processes are evolving to meet or exceed organizational requirements?

Feedback is vital for operational excellence. It is the visible status/progress update to all stakeholders on how well the implementation is doing. To be effective, feedback needs to be accurate and prompt. It has to tell stakeholders where they are and what changes are needed to stay on track. It is much like a compass and map to the navigator of a boat. It shows you the relationship of where you are to where you want to go. It would be difficult to navigate without a map and compass.

**Summary**

Operational transparency is the cornerstone of organization operational excellence. The effective establishment and use of the measurements system is the key factor for the achievement of operational transparency.

Operational transparency status is achieved when the company fulfill the following requirements:

• The establishment and use of a measurement system

• The selection of the “right” metrics
• The availability and the use of the feedback systems based on the defined metrics

• The conduct of reviews by Executives and Management Staffs on the results and the progress status on the execution of company business and operational excellence strategies.

Metric data becomes information when it inspires action. When that information is easily and always accessible, an organization can be optimized around people acting in fully informed and aligned ways. With new insights for the time, cost and quality of the capabilities capitalization across the company, it becomes easier to address business imperatives/focuses that will improve operational excellence. Company also needs to ensure that operational issues are visible and addressed before they turn into costly problems.