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The Capability Maturity Model Integrated, or CMMI, is a method of reviewing and moderating existing organizational processes in order to ensure they are operating at peak efficiency (Carnegie Mellon University, 2007). That is, the CMMI sits above all other existing processes and offers a way for owners of said processes to check that they are implementing their systems correctly. Its primary benefit is at the resource level, ensuring each process is provided with the correct tools and inputs needed to produce quality output. However, CMMI is not a process unto itself; it is a way of generating high level checklists to ensure existing processes operate correctly. This, in turn, leads to its primary drawback of introducing additional complexity into systems if not used correctly.

At the domain level, processes can be reviewed using CMMI methodologies for industry best practices. Each process is reviewed, or appraised, and given a maturity level based on the CMMI levels of maturity (e.g. initial, managed, defined, quantitatively managed, or optimized). Qualifying for a maturity of level three or higher means that a process is providing quality, repeatable, output which is useful to the organization. The complexity comes from relying too heavily on industry best practice, even if best practice is not relevant to a given process orientation. For instance, forcing a best practice onto a process, even if that results in introducing defects elsewhere in the organizational chain, thereby causing inferior services or products to be produced.

As stated, CMMI is a way of generating checkpoints for existing processes. Examples of processes that CMMI can integrate with are PSP, TSP, and Six Sigma. Each of these methodologies provides process models used with very specific target audiences in mind, and may not fully integrate themselves with the overall corporate strategy. That is, the methodologies used may be appropriate to a subset of an organization, or even to the organization as a whole, but do not fully integrate into all aspects of quality management as it relates to customer satisfaction.

The Personal Software Process (PSP) and Team Software Process (TSP) are methods of developing quality software from the very start of a project (Humphrey, 2000) (Davis & Mullaney, 2003). Software engineers are made responsible for the quality of their own work, which then makes the overall team responsible for the quality of work, as a group. CMMI easily integrates into this methodology by providing guidance and checkpoints insuring engineers and teams are provided with the correct resources and tools at the appropriate time. Moreover, CMMI ties in the individual team efforts with the overall corporate process goals, ensuring that each engineer’s input is relevant and useful for the overall output of the organization.

Six Sigma is a top down methodology usually driven by the executive and focused on decreasing manufacturing or service defects. Additionally, it is heavily driven by statistical metrics, which are used to pinpoint and eliminate deficiencies (Evans, 2010). CMMI, on the other hand, is used to establish best practices across existing processes. Using the CMMI levels of maturity, organizations are able to gradually increase process maturity across each business domain. That is, CMMI is more focused on process improvement towards best practice, whereas Six Sigma is about decreasing defects, real or perceived, across the organization as a whole (Carnegie Mellon University, 2007) (Evans, 2010) (Nayab & Scheid, 2011).

To say CMMI is better than Six Sigma, or that Six Sigma is better than CMMI is to miss the entire purpose of either methodology, to increase organizational quality thereby reducing costs and rework. Neither is “better” than the other, in fact, using both together would, and should, be considered the “better” option to consider. Each offers methods the other lacks in filling process gaps and resolving organizational quality deficiencies.

For example, using CMMI methodologies an organization can ensure that each process is using industry best practice for the given domain. Six Sigma can then confirm that the process correlates and aligns with quality output, removing any deficiencies caused by improper process placement, regardless of industry best practice. CMMI appraisals will then have to take into account Six Sigma evidence that best practice does not work, thereby ensuring maturity regardless of previous CMMI requirements. In this, CMMI acts as a hypothesis, Six Sigma then proves or disproves the hypothesis, removing any unforeseen red tape which would have arisen from forcing industry best practice where it is not required.

As shown, CMMI is a step ladder, or guiding principle structure towards process quality output. It integrates with any existing processes, providing a way to check off that processes are operating at peak efficiency. However, CMMI is not a brow beater, it accepts that best practice is not always correct practice and aligns itself when quality is shown elsewhere. Provided that CMMI is used as a tool to measure, evaluate, and improve other processes, it should be able to integrate with any methodology.

Reference

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