PRODUCT DEVELOPMENT

BEST PRACTICES REPORT

METRICS MACROTRENDS

Over the past decade, concurrently with industry initiatives to reduce product development variability and cycle times, product development metrics and measures have been undergoing a quiet revolution. Anyone active in this field can identify the increased importance that metrics are receiving in the areas comprising the management science of product development. Metrics are now taking their place alongside other actively pursued topics such as VOC, Product Definition, and Teams to name a few. This is no surprise; in fact, it was inevitable. In this article, we will take a look at the big picture of what is happening with metrics and measurement in product development.

Generically speaking on the topic of processes, including the overall product development processes and the many sub-processes within it, process improvement always follows three distinct phases. The first phase of improvement is *"Process Monitoring."* This phase involves the gathering of initial data and the creating of initial measures to attempt to identify the sources of process variation. Phase II is *"Process Control."* This phase results in the application of the relevant subset of information from Phase I that correlates highly with improvement, enabling limited predictive abilities. Ongoing incremental improvement efforts that continuously take finer and finer cuts at the problem areas eventually result in specifying the particular information that is necessary in order to limit variation. While mistakes may still occur, variation is reduced and eventually controlled. Phase III, the final phase of process improvement, is *"Self Corrective Process Control,"* sometimes referred to as "Statistical Process Control." This phase results in either the expert application or automation of process control, where and when it is needed, to almost completely limit variation. At the conclusion of this third phase, the process is fully controlled. One could also say, using the nomenclature from one of the popular SEI Capability Maturity Model for Software, that the process is fully mature – a "Level 5."

METRICS MACROTREND #1: Over time metrics and measures for a subject area go from more general to more specific, concurrently with going from broader ranging to more focused.

METRICS MACROTREND #2: Over time measures and metrics for a subject area first increase [Phase I], then decrease [Phase II], then increase again [Phase III].

METRICS MACROTREND #3: Over time metrics and measures for a subject area will move from measuring process immaturity to measuring process maturity, concurrently with going from probabilistic to deterministic.

METRICS MACROTREND #4: Over time metrics and measures for a subject area will move from reactive [Phase I] to predictive [Phase II], and then eventually to proactive [Phase III].

The above "Metrics Macrotrends" follow the laws of math and physics and models could be derived that would predict what was going to happen to the populations and nomenclatures of metrics over time. This is not the case, however, with *all* Metrics Macrotrends. Some Macrotrends follow the norms of our society and business world. These are the areas that should receive the greatest attention of management and change agents as they will not 'just happen,' as if by themselves. The politics of our industrialized society often drive illogical behavior and values.

To provide an adequate backdrop for the next Macrotrends we need to consider a few well-known "laws of conduct" of professional industrial behavior. First, on an individual basis, people resist being measured. It is a source of pressure and conflict as the measurements are made visible. People love it and hate it; in reality they resist it. Secondly, while measurement is directed from the top it is usually implemented from somewhere significantly below the top. Implementers know better than to measure their boss's levels (or their boss's boss's levels), and so measurement is directed downward in the organization. While optimization may occur in places, sub-optimization of the whole is the result. Thirdly, and most importantly for product development measurement, our Taylor-based society (where Marketing passes to Engineering who passes to Manufacturing) has an entire systems infrastructure to support "chimney measurement" but not cross-functional measurement. Bucking the system is too hard and tiring. As a result, measurements will first be created within the existing chimney frameworks. Finally, what counts is to measure results. What constitutes "results" is hard to define, never mind measure. It is easiest to measure what one sees, usually tasks. The task itself is rarely questioned. It is simply optimized or automated. This principle spawned the process reengineering revolution (initiated in the mid 1980s by my former employer, Index Systems/Group) that is still going on today.

METRICS MACROTREND #5: Over time metrics and measures will move from the people who do not have bottom-line responsibility to the people who do have it.

METRICS MACROTREND #6: Over time metrics and measures for a subject area will measure at low levels in the organization and eventually rise to be balanced at all levels.

METRICS MACROTREND #7: Over time metrics and measures for a subject area will be functional and will then evolve to cross-functional.

METRICS MACROTREND #8: Over time metrics and measures will evolve from measuring tasks to measuring the processes themselves, which will only then cause the desired results to be attained.

The moral of the Metrics Macrotrends is to incorporate the last four into corporate thinking immediately. The last four are the most 'influencable'. Mastery of all eight Macrotrends will shorten the path and reduce the cost of achieving product development process maturity. As a whole, Metrics rank with VOC on the list of tools that have a high correlation with product development process success. Master your metrics.**P**~D~

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