

Paper
What is Quality?
Published here September 2013.

Another long-running discussion on LinkedIn¹ has raised questions surrounding the subject of "Quality". The original question was: "Do you think 'Quality' first or 'Project Management' first?" This question is of course ambivalent, as we shall see, but that didn't stop a range of ardent responses from some of the best brains and talent in the business. As a result, collectively, these responses amount to a valuable lesson on the subject. And this is our attempt to capture the most interesting observations.

What is the generally accepted definition of just plain "quality"? According to the *Proximity/Merriam-Webster U.S. English Thesaurus*, and other similar on-line Thesaurus, quality may be viewed from several perspectives.

As an adjective:

1. Meritoriously near the standard or model and eminently good of its kind
2. Of the very top quality

As a noun:

1. The highest stratum of a society
2. A usually high level of merit or superiority
3. A level of excellence or distinction
4. A degree of excellence
5. Something that gives especial worth or value
6. Inherent and distinctive
7. Rating or positioning in relation to others (as in a social order, community, class, or profession)
8. A peculiar and essential character, nature, or feature

From these we see that so far as common understanding goes, there are two distinct implications. Most of these definitions give the impression of something being near the top on a scale of "goodness". Only nouns #7 & 8 imply quality as being anywhere on a scale of poor to best. This finding is important because it very much colors our understanding of the topic in relation to project management.

Demming, Juran and Crosby

Demming, Juran and Crosby are probably most recognized as the pioneers in the subject of quality **management**. But from the very beginning, quality has always meant different things to different people.

William Edwards Deming (1900 – 1993) was one of the first to think about quality in modern times, especially quality in management. Deming was an American statistician, professor, author, lecturer and consultant. From 1950 onwards, he taught top managements in Japan how to improve product and service quality through various approaches to design and testing, including the application of statistical methods.² His focus was on "the efficient production of the quality that the market expects"³ and is perhaps best known for his "Plan-Do-Check-Act" cycle.

Joseph M. Juran (1904 – 2008) also wrote extensively on the subject of quality, and was invited to Japan in 1954, where his particular ideas flourished. He is principally remembered as an evangelist for quality and quality management.⁴ His focus was on "Fitness for purpose" as defined by the customer.

Philip B. Crosby (1926 – 2001) started out in quality as a test technician. Subsequently, as a businessman and author, he contributed to management theory and quality management practices by focusing on "Zero defects" through "doing it right the first time". In fact he believed that an organization that established a quality program would see savings returns that would more than pay off the cost of the quality program and hence promoted the idea that "quality is free".⁵

There have been many others in the field, of course, perhaps most notably Peter Drucker (1909 – 2005) who proclaimed that: "Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for."⁶ Drucker was, of course, speaking about operations management, as this sentiment clearly does not apply to project management.

In fact, what all of these fine gentlemen were talking about is run-the-business, or business-as-usual, management. And the establishment of a culture of individual quality ownership, pride in workmanship and satisfaction with the end product was, one way or another, their collective aim. As a result, "quality management" has become well established at the corporate level.

Only around the 1970s have efforts been made to transfer these ideas to the project management environment.

Academic perspectives

So what does the project management industry say about "quality"? Here are some samples.

PMBOK Guide V.5: "Quality – The degree to which a set of inherent characteristics fulfills requirements."⁷ This definition is followed by ten entries where quality is used as a qualifying adjective. In the body of the document, quality is treated as one of the Knowledge Areas under the heading of "Project Quality Management".⁸ However the *Introduction* states in part that "Managing a project typically includes, but is not limited to: Balancing the competing project constraints, which include Scope, Quality [etc., and] The relationship among these factors is such that if one factor changes, at least one other factor is likely to be affected. For example, if the schedule is shortened, often the budget needs to be increased to add additional resources to complete the same amount of work in less time. If a budget increase is not possible, the scope or targeted quality may be reduced to deliver the project's end result in less time with the same budget amount."⁹ Clearly, the PMBOK takes the position that scope and quality are two separate variable inputs.

Interestingly, the PMBOK states that: "*Quality* and *grade* are not the same concepts. Quality as a delivered performance or result is 'the degree to which a set of inherent characteristics fulfill requirements (ISO 9000)'. Grade as a design intent is a category assigned to deliverables having the same functional use but different technical characteristics. The project manager and the project management team are responsible for managing tradeoffs associated with delivering the required levels of both quality and grade. While a quality level that fails to meet quality requirements is always a problem, a low grade of quality may not be a problem."¹⁰

Incidentally, "Grade" (presumably of quality) is defined in the Glossary as "A category or rank used to distinguish items that have the same functional use (e.g., 'hammer') but do not share the same requirements for quality 'e.g., different hammers may need to withstand different amounts of force'.¹¹

If you can get your mind around all of that, you are doing well! Nevertheless, it is clear that PMBOK

treats "Quality", whether of "inherent characteristics" or of "grade" as something that can be varied separately from "scope", where "scope" is defined as "The sum of the products, services, and results to be provided as a project."¹²

International Standard ISO 21500 Guidance on project management takes a similar position. It does not discuss quality as a separate knowledge area, but it does recognize "quality" as a separate "constraint"¹³ along with scope, schedule, resources and cost.¹⁴ "Quality" is recognized as a subject group that includes "the processes required to plan and establish quality assurance and control."¹⁵ In fact it is one of several "baselines for carrying out the project"¹⁶ that may be subject to change.¹⁷ Just like the PMBOK, there are three project management process groups, namely Plan Quality, Perform quality assurance, and Perform quality control.¹⁸ The purpose of Plan quality is to determine the quality requirements and standards that will be applicable to the project, the deliverables of the project and how the requirements will be met based on the project objectives.¹⁹ This wording is very similar to the PMBOK, but ISO 21500 does not mention, perhaps wisely, the subject of "grade".

Industry perspectives

The Rational Unified Process (RUP) defines "Quality" as: "The characteristics of an artifact that satisfies or exceeds a defined and accepted set of requirements, is assessed using defined and accepted measures and criteria, and is produced using a defined and accepted process."²⁰ Clearly the authors of this definition had two dimensions in mind: The quality of the end product (as an outcome) and the quality of the workmanship that went into the process of its creation (as an input).

But perhaps the best explanation of the whole case is the following definition of Quality Grade: "A particular attribute of an item, product or service, that meets all minimum project requirements but that may be specified according to a class ranging from 'utility' (purely functional) to 'world class' (equal to the best of the best)."²¹

Tom Mochal, President of TenStep,²² Inc. takes a rather different view of Quality. He looks at it from the perspective of Cost versus Benefits, which is the rationale for discussing quality in the first place. In a recent "Tip of the Week"²³ he said in part:

"The Cost of Quality"

Building quality steps in the schedule adds a certain amount of effort and cost to the project. However, these incremental costs will be rewarded with shorter timelines and reduced costs throughout the life of the solution. Examples of the project cost of quality include: Deliverable reviews; Creation of the Quality Management Plan; Client approval; Testing; Quality control standards; Audits; Checklists; Quality Control and Quality Assurance Groups; and Gathering metrics.

The Benefits of Quality

The costs of quality must be weighed against the benefits of providing a quality solution. Whereas many of the costs of good quality show up in the project, many of its benefits, i.e. cost savings, show up over the entire life span of the solution. The benefits of quality include: Although an initial higher cost for a quality process, less rework means saved time and cost; Fewer defects means increased client satisfaction; Less rework means higher productivity; Less rework also means higher project team morale; Higher quality of the solution means fewer returns, less warranty work, fewer repairs, etc.; Higher

quality over the life of the solution also means less support and maintenance costs and a happier client."

In short, if you spend more time and cost focusing on building a better quality product during the project, the long-term cost of operating and supporting that product may be dramatically reduced. That is to say nothing of reduced aggravation over stoppages, outages and failures, all of which can erode client satisfaction, the objective of the project in the first place.

LinkedIn Discussion Group views

Notwithstanding the foregoing, what did the folks on the LinkedIn discussion have to say? Niranjana K R, an experienced QA professional, started the discussion with "Do you think 'Quality' first or 'Project Management' first?" Here are some of the more enlightened responses.²⁴

Shim Marom says: Niranjana, interesting question. You could, if you wanted, make this a generic question and apply it to any professional discipline. I guess this question has two dimensions. On one hand it is about the process of producing the project's products and on the other hand it is about the project's products themselves. From my perspective, the role of the PM is to focus on the quality of the process, i.e. ensure that the process of producing the outputs is a "quality" process. As far as the quality of the outputs, that's a matter of complying with the specifications. It is not the role of the PM to determine quality considerations for the output but rather meet the expectations, requirements and specifications and deliver based on them.

Steve Kennedy says: Working in an organization that is ISO9001 certified, means the question is somewhat irrelevant.

Shim Marom replied: The interesting thing about ISO9001 is that it is all about 'plan what you will do and do what you have planned'. If your plan is wrong you will get the wrong outcomes [including] a wrong quality outcome.

Steven Hutchinson says: I see Project Management as a specialized extension of the business management effort. Management establishes the project to produce a result that provides a benefit in proportion to the cost. If this equation does not provide the right answer then you do not have a [viable] project. A project must provide a result that meets the requirements (Quality), in the time allotted (Schedule), for the money that is available (Budget). If any of the three requirements are too far out of synchronization then the results most likely will not provide the results that are expected. The Project Management activity must provide the planning, negotiation, staffing, sales, purchasing, communications, and monitoring for the project just as the business management team provides these activities for the business. Quality has no purpose if there is no business producing a product. Businesses cannot sell their product for long without quality being built into the end result.

Gary Fortune says: The fact that quality is critically important is *not* in question. Still, reality does alter cases. Sometimes, "good enough" today is *far* superior to perfect tomorrow, even if we can only get half of what we truly seek. Typically, Emergency projects, Military projects, and even recovery projects fit this need. I like to assess each project based upon all elements of *need*, including client industry, organization environment, cost, budget, quality, deliverables, risks, regulatory elements, etc. Then I develop a "Project Plan Concept" that integrates my best effort at an *optimal* balance to get as close as possible to the project owner's current and future preferences. This is based upon their understanding of both quantity and quality of project features and benefits they are funding. The world is not perfect. We

cannot take our time; we do not have unlimited resources; we can not see the future, etc., so we just do the best balance we can, and *always* based upon the unique peculiarities of each individual project.

Niranjana K R says: I am of the firm belief that we should add value to customer requirements and delight him/her. If the customer is not aware of what he is entitled to get because of his set of requirements, then PM should educate him/her.

Shim Marom replied: Not really. Are you suggesting that the client is wrong to request something that in your mind is low quality but, perhaps, in the client's mind is exactly what they are willing to pay for? Quality is not an absolute term that can be quantified in absolute units of measure. Provided that you are not providing a product that breaks legal or other regulatory thresholds you cannot justify delivering anything other than what the customer is contracting you to deliver. I also can't see how it is the role of the PM to educate the client. The PM can advise and provide suggestions but at the end of the day the PM's responsibility is about delivering to requirements without applying any judgment on their validity or correctness.

Khader Abu Al-Eis says: If the employer (owner) treats their employees well, then the employees become loyal, more productive, and produce better quality product. However, the problem comes when the client is not your employer. The quality here is what the client asks for. Or from what I have seen from my experience in the highway industry, the contractor will give the minimum effort required to meet the specified quality. The contractor could produce better quality, but that would cut into the company's profit.

Jeff Porterfield says: Quality does not come from a process; it comes from an attitude, a culture that permeates the very fiber of a corporate structure. Quality awareness cannot be driven top-down into an organization. It needs to be grown from the bottom up.

David Hatch says: As someone who was trained in the Crosby Quality concept I have a slightly different view of quality than most on this thread. Quality is nothing more than what is needed by the customer. If the project delivers what the customer needs then nothing else really matters. The trouble with most projects, especially ICT²⁵ driven projects, is that they constantly seek to deliver their own vision of what the customer needs rather than what is actually needed. Then they blame the customer when what they deliver isn't used in the way they think it should be used, even though the customer didn't need it in the first place. The end result might appear clever, but if it's not what the customer needed then it's not a quality solution.

What have we learned?

Clearly, "quality" (unqualified) means different things to different people because it depends on their perspective. This in turn depends on a number of factors:

- In common usage "quality" may imply "of a superior nature", or it may refer to some notional scale such as from "poor" to "excellent".
- In business management "quality" may reflect on the cultural attitude of the organization ranging from minimal performance to pride of workmanship and ownership of the results.
- In reference to delivered products or services "quality" may refer to superior features or performance.
- In terms of project management, "quality" may refer to the degree of excellence in managing the project, or it may refer to the dedication of the workers producing the product, or it may refer to

the superior features or performance of the project's end goal. In the case of the latter, this may be reflected in the benefits to the sponsoring organization in the short term such as immediacy of competitive sales with an earlier break-even point. Or it may show up in long-term benefits through lower service and maintenance costs, and so on.

Thus, "quality" is an ambiguous term that needs careful qualification for any meaningful discussion.

But our specific interest is in the application of "quality" to project management. Here again we have a problem because, as reflected in the LinkedIn discussion, it depends on the type of project and the conditions under which it is being executed. For example, is the work being conducted under the owner/sponsor's direct supervision, or is it being conducted under contract? What are the priorities of the project: scope perfection, a deadline, or absolute budget value? And then, what is the environment in which the product or service going to be used – is safety a priority for example?

In project management planning, obviously you first have to have some idea of what the outcome is that you are planning, i.e. the scope. But then you need to know the quality grade of that scope and sometimes the quality of the workmanship that will go into the product. In a global market, different cultures will produce different results. Only then can you realistically estimate the time to do the work and the consequential cost.

That's why we strongly believe that the so-called "knowledge areas" should be presented in that order: 1. Scope, 2. **Quality**, 3. Time and 4. Cost. While it may not be a big deal to some, by not assembling the subjects in that order in the PMBOK Guide, the Guide's authors do miss an important opportunity to make the point. That criticism is especially pertinent for those new to project management and are learning the discipline of the first time.

You can find a good illustration of the relationships between scope, quality, time and cost, as well as between product and project management in an opportunity/risk environment here:

<http://www.maxwideman.com/papers/conceptdraw/pro.htm>.

We do not agree with those who insist that quality is automatically a part of scope and typically a "given". In practical specification documents, it may be convenient to include the quality requirements in with the scope description, but that quality is, nonetheless, subject to different degrees, meaning that it is a separate variable. Take a simple example like building a house. It may appear exactly like what the client wants, but it could be very well built, or it could be just well built, or worse, poorly built. These are three variations in quality and presumably the poorly built house will be cheaper. Hence, unless the project manager sees that quality is specifically and separately identified, the chances are that the outcome will be a poorly built house.

Conclusion

In all the discussions, it is clear that very strong opinions exist. Some are born of tradition, others are born of convenience, and still others are born of lack of clarity and understanding. In any discussion, especially of a topic as subjective as "quality", it is important to be clear on the definitions as a basis for that discussion. Having done that, "sticking to your guns", as some of the eminent contributors on the LinkedIn discussion have done, is unquestionably a valuable project trait for a project manager. But just make sure you are sticking to the right guns!

However, to answer the original question: "'Quality' first or 'Project Management' first?" in the sense of which discipline *came* first, the answer is most likely "corporate quality management". In the sense of which discipline is highest in the pecking order, again the answer is "corporate quality management" since it is somewhere near the top rung of the ladder. However, in the sense of which discipline should be tackled first in the life span of a project, the answer is equally clearly "project management". That's because, like scope, cost, and time, quality management is a subset of project management.

Nevertheless, at the end of the day, interest in quality, in all its forms, outlasts all the other attributes by determining the potential duration of the life of the product.

R. Max Wideman

¹ Over 260 entries as of 7/28/13

² Wikipedia http://en.wikipedia.org/wiki/W._Edward_Demming, accessed 7/28/13.

³ Wikipedia [http://en.wikipedia.org/wiki/Quality_\(business\)](http://en.wikipedia.org/wiki/Quality_(business)), accessed 7/28/13

⁴ Wikipedia http://en.wikipedia.org/wiki/Joseph_M._Juran, accessed 7/28/13

⁵ Wikipedia http://en.wikipedia.org/wiki/Philip_B._Crosby, accessed 7/28/13

⁶ Wikipedia [http://en.wikipedia.org/wiki/Quality_\(business\)](http://en.wikipedia.org/wiki/Quality_(business)), accessed 7/28/13

⁷ A Guide to the Project Management Body of Knowledge (PMBOK® Guide) Fifth Edition, Project Management Institute, PA, 2013, p556

⁸ Ibid, p227

⁹ Ibid, p6

¹⁰ Ibid, p228

¹¹ Ibid, p542

¹² Ibid, p562

¹³ In the case of scope and quality as inputs, "constraint" refers to the limiting boundaries to be recognized in the project.

¹⁴ *International Standard ISO 21500 Guidance on project management*, ISO, Geneva, 2012, p8

¹⁵ Ibid, p13

¹⁶ Ibid, p15

¹⁷ Ibid, p16

¹⁸ Ibid, pages 26, 27 and 27 respectively.

¹⁹ Ibid, p16.

²⁰ Wideman Comparative Glossary of Project Management Terms v 5.5 [D04791] in RUP 2000.

²¹ Project Management Guidelines (Private BC Corporation), 1995

²² Tom Mochal's background: From 2002 to the present (2013) he is President of TenStep, Inc., a company focused on his unique project management methodology development, training and consulting. He is head of The TenStep Group, a network of TenStep branches supporting the TenStep process languages around the world.

²³ The Cost and Benefits of Quality, January9, 2013.

²⁴ As of 7/21/13 there were over 260 comments. Those that have been selected have been edited for brevity.

²⁵ Integrated Circuit Technology