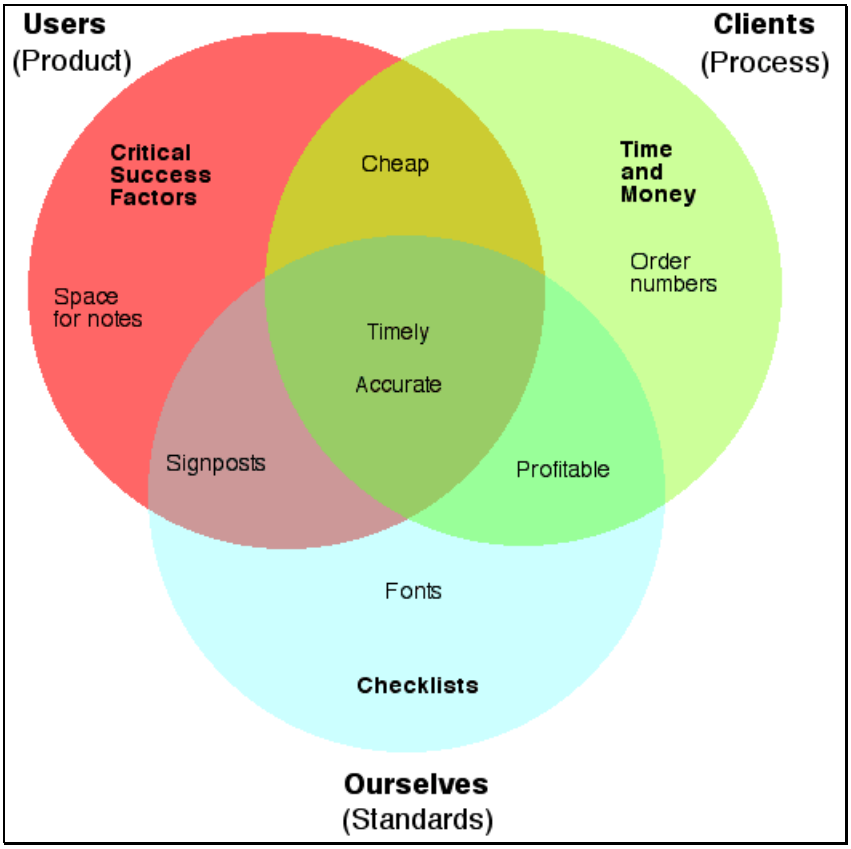
Proving Your Quality

You say you produce high-quality information products? Great, says your boss—prove it! Now what do you do? I have some ideas.

To frame the discussion, I start with Philip Crosby's eminently practical definition of quality as conformance to requirements.[1] I believe requirements come from three sources: our users, our clients, and ourselves, in that order. To prove the quality of your information products, then, you must demonstrate that you meet the requirements of these constituencies. As the figure shows, requirements can overlap. The best things to demonstrate are requirements within the "sweet spot" on which users, clients, and we all agree—for example, timeliness and accuracy.



To prove the quality of your documentation, you can argue by assertion—"It is of high quality because I say so"—or you can provide data. To provide data, you need to determine the requirements of your users, your clients, and yourselves, and measure your conformance to those requirements.

Objections to Measuring Documentation Quality

Although we recognize quality when we see it, the prospect of measuring documentation quality seems dubious. Many regard documentation quality as inherently immeasurable. Others see metrics as impertinent or inconsequential. Some find the prospect of measuring every page of output impractical. (My group, for instance, publishes ten thousand pages a year.) Finally, even if we had data, against what standards could we make comparisons?

We technical communicators consider ourselves unique and our work beyond measurement; we know our own field intimately, and everywhere we look we see shades of gray. (Le Vie responds to the idea of per-page productivity measurement by threatening to double-space.[2]) But Crosby observes the same reaction ("we are unique, and your notions of quality do not apply to us") everywhere he consults. It turns out that quality metrics are obvious by inspection in every field but your own. For example, software engineers think their work can't be measured, but the literature on software quality metrics is substantial. If your manager understands the theories of Watts Humphrey,[3] you can use the work of JoAnn Hackos[4] to translate them directly into documentation quality metrics.

It's important to decide what to measure. Easily measured attributes may not be important, and important attributes may not be easily measured.[5] Accuracy of information is probably the most important single attribute of a document; accessibility (the ability of readers to find information) is also important, but one is independent of the other. As Hueberger[6] points out, if you measure independent variables, even a few metrics quickly home in on important aspects of quality. To offer a sports analogy, only five simple metrics, batting average, home runs, assists, errors, and stolen bases, thoroughly qualify baseball players. (For the mathematically minded, consider how few terms in a Fourier equation bring convergence.) Two simple metrics, the number of errors per thousand procedural steps and the number of false statements per thousand declarative sentences, would seem to capture the entire attribute of accuracy. I suspect that only two or three independent metrics will suffice to capture any given quality attribute.

The auto industry turns out millions of units every year, and Detroit tracks manufacturing defects, but not by examining every car. Instead, they pull a few cars off the assembly line and tear them apart looking for problems. As described by Deming[7] in general, and Miller[8] for documentation, statistical quality control is the science of sampling the output of a process ("spot checking") to determine overall quality. In any event, exercise restraint in measurement; the fewer things you measure or the smaller your sample size, the more practical.

Documentation quality standards do exist, and I survey them at the end of this paper, but they represent aggregate, general guidelines only. Applied to individual projects or people, they might as well be arbitrary and capricious. To understand your own circumstances, I recommend benchmarking,[9] competitive analysis, or establishing your own baseline. For example, the best measure of whether hiring an editor is a good investment or not is to establish a baseline of editorial errors and then see if the editor reduces them. (The editor can also guard against double-spacing.) Rather than drive toward an arbitrary metrical goal, establish the performance of your processes, then drive improvement.

Proving Product Quality for Your Users

Quality to users is demonstrated through feedback and usability testing. Customer satisfaction with your information products proves their quality. Unfortunately, no company has the resources to poll its entire user base or evaluate all its products after the fact. Furthermore, user reactions are both subjective and non-predictive.[10] Finally, it's not enough to produce one high-quality document; to be effective, you must do it consistently. You therefore need measurements that will predict acceptance of your documents by users, and apply those measurements to every document you produce. You must make good work the norm.

Though easily overlooked, awards objectively demonstrate accomplishment. For example, we no longer have to claim without evidence that the STC journal, *Technical communication,* is a high-quality publication; we can point out that it has won this year's Grand Award for publication excellence from APEX. Have your documents won any STC or other awards?

The more powerful your metric, the more persuasive your argument. A metric that includes several independent factors is a composite metric. For example, readability is a composite metric combining sentence length and syllable length—still measuring a small and controversial aspect of whether a document is readable and thus usable, but a more powerful measurement nonetheless. A better metric would be timing how long it takes typical readers to read passages of your text, which would synthesize all the elements of readability, including format and logical organization.

There is broad agreement on the attributes of documents that satisfy users. The following table compares three lists of product quality attributes. One was developed by the authors of *Developing Quality Technical Information: A Handbook for Writers and Editors;*[11] one was a list of critical success factors I developed from users of Digital Equipment's networking-product documentation in 1992;[12] and one is the T.E.A.M. index™ developed by Bibus.[13] The most extensive list, the STC International Technical Publication Competitions judging form for manuals,[14] measures 48 attributes in six categories (including all the attributes tabulated here) and ties attributes to specific elements of documents. I doubt that the needs of any target audience will exceed the STC list.

Attribute	*Developing Quality Technical Information*	Digital Equipment (Jong)	T.E.A.M. Index (Bibus)
Accessibility (retrievability)	✓	✓	✓
Accuracy	✓		✓
Completeness (sufficiency)	✓		✓
Organized appropriately	✓	✓	
Visually effective (layout, illustrations)	✓	✓	
Concreteness	✓		
Correct and appropriate style	✓		
Clarity and concision	✓		
Task orientation	✓		
Indexes		✓	
Maintainability			✓

Proving Process Quality for Your Clients

The quality requirements of clients are simple—they want "good stuff, cheap." Benchmarking (competitive analysis), the systematic comparison of your product to that of the leader in your field, is an absolute demonstration of process quality. (Sheffield[15] provides a detailed roadmap.) Short of benchmarking, you need to demonstrate that your processes are consistently followed.

Hackos[16] characterizes organizations by their ability to produce documents of consistent quality. She has developed an assessment model for documentation organizations, which you can use to determine your organization's capability.

In software engineering, quality is upheld through testing, auditing, and the use of standards. Documentation is the same. Quality to clients is assured through a consistent process of planning, review, and approval. Fisher points out that you can design documentation processes to directly address documentation quality attributes.[17]

Good processes tend to drive out simple errors. For example, suppose you measure typos per page and decide the error rate is too high across the organization. How can you reduce it? Introduce spell-checking as a process step; establish a typo-intolerant culture; ensure enough time to complete drafts; hire an editor. (In fact, simply hiring an effective editor ought to improve a whole range of metrics: typos per page, percentage of passive-voice sentences, readability.) How can you reduce the number of errors per 1,000 procedural steps? Introduce a process of technical review; insist on hands-on documentation; reduce post-design changes. In fact, if you have a strong process of technical review in place, I would argue that you likely have error-free documentation even without measuring technical errors.

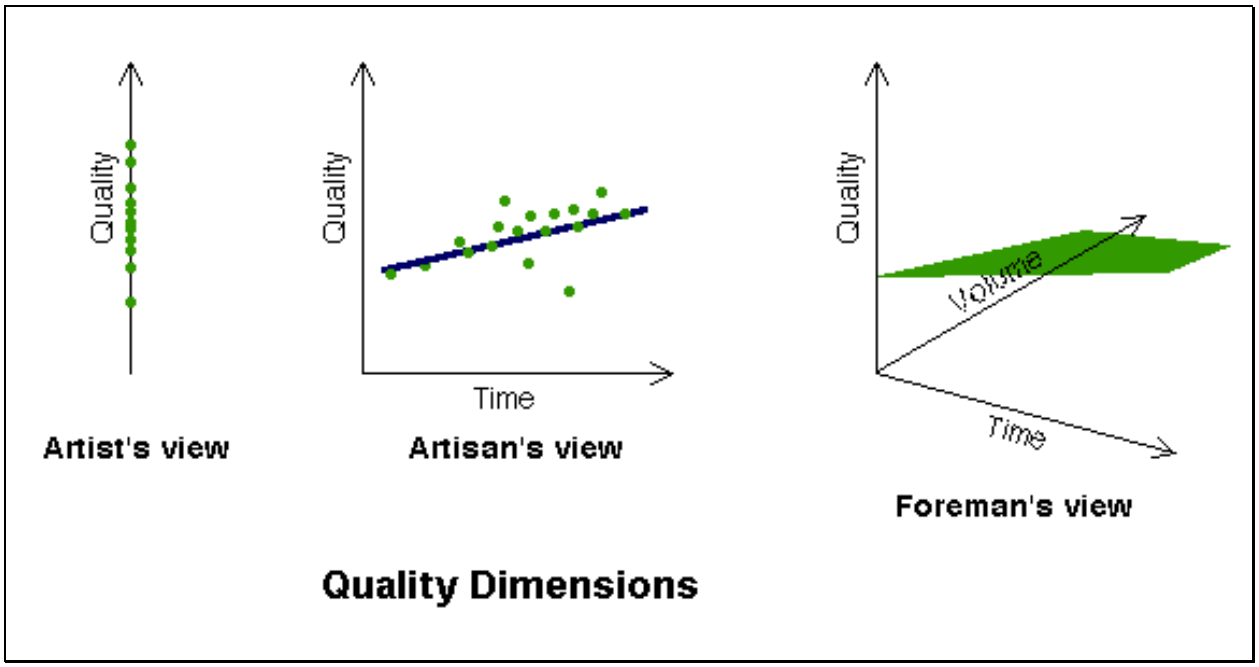
Process metrics are abundant and simple. We tend to view them suspiciously because we fear being measured against each other. But almost all errors (Jaehn recently estimated 85%) are rooted in process, not personnel.[18] Metrics only become meaningful with a statistically valid sample size—in other words, at the level where the process is being measured, not the individual. (I have detailed the futility of measuring individual productivity.[19]) On the acceptance of this point depends the success of the entire undertaking of measurement!

While the cost of production is directly and easily measurable (hours or dollars per page), the benefits (such as reduced support calls per user[20]) are much more difficult to assess. Rather than incurring the expense of inspection to catch and remove errors, a high-quality development process removes sources of errors.

When it's impossible to inspect every item manufactured, a statistically valid sample is inspected instead. Analogously, we could subject a random sample of output—perhaps five percent of total pages—to rigorous examination, leaving the rest alone. By plotting the number of errors over time, variations from the norm could be detected, studied, and eliminated. To a culture that revolves around reading every word, editing samples sounds radical, but it is efficient.

Proving Professional Quality for Ourselves

Personal quality is what satisfies us as professionals. Do you consider yourselves artists, artisans, or factory workers?[21] As shown in the following figure, your organization's self-image determines if quality improvement is even possible. Individual artists, turning out unique products, see quality is one-dimensional; quality-improvement efforts in an artist's colony will founder. Artisans, turning out a series of products to the best of their abilities, see quality as two-dimensional; quality improvement will work, but only on an individual basis. A factory, turning out a high volume of work at a consistent level of quality, has a three-dimensional view of quality; here quality improvement can succeed. (By the way, this is why attempts to evade metrics fails: you can't do it over time and in quantity.)



The culture of an organization can seek out errors (quality control), not allow errors (quality assurance), or work continuously to improve quality (total quality management).[22] Even staffing and retention policies can affect quality, for good people tend to do good work, and people experienced with your methodology tend to execute it better. If you staff with people who know how to do good work, have done good work in the past, and want to do good work, and if you give them the tools and training and then get out of their way, you are assured of good results. Hosier[23] gives a good description of how TQM applies to documentation groups.

Personal quality can best be shown by demonstrating adherence to group standards. Do you have a style guide, and if so, does everyone follow it? It's the best checklist you have, that and the checklist in your editor's head. Checklists guard against many classes of error at once. *Developing Quality Technical Information: A Handbook for Writers and Editors* is an entire book of best-practice checklists.[24]

Appendix: A Survey of Quality Metrics

The following table surveys documentation quality metrics published in the last ten years. There is considerable overlap. This is not an exhaustive list; nor is it an endorsement of any of the metrics listed. It would be unreasonable to use all these metrics at once. The metrics you should consider, and the standards you adopt, depend on your readers, your processes, and your staff.

Class	Attribute	Metric	Standard	Comment	Source
Product	Clarity	Typos per thousand words	0	Easily measured using spelling checkers	Jong
Product	Clarity	Percentage of active-voice sentences	90%	Microsoft Word grammar checker	Hunter[25]
Product	Clarity	Percentage of sentences with logical conditions			
Product	Clarity	Percentage of task-oriented headings			Krull[26]
Product	Clarity	Number of jargon words per 100 pages	Minimize	The more terms needing definition, the less clear the text	Jong
Product	Clarity	Flesch-Kincaid readability index	Grade 8-12	Measure samples only; do not use as sole metric	
Product	Clarity	Time to read selected passages	Varies		Jong
Product	Accuracy	Errors per thousand procedural steps	0	Determined through technical review	
Product	Accuracy	Errors per hundred declarative sentences	0	Determined through technical review	
Product	Accuracy	Review comments per page		Determined through technical review	Atkinson *et al*[27]
Product	Accuracy	Customer complaints	0	Depends on active customers	
Product	Accessibility	Index entries per page	2-4	Measured by inspecting finished index or counting markers in source	
Product	Accessibility	TOC entries per page	1-3	Measured by inspecting TOCs	
Product	Accessibility	Exhibits per page	0.5	The more exhibits (illustrations, tables, and examples), the more approachable the document	Jong
Product	Completeness	Support calls per hundred users on information not documented	0	Improving documentation quality can reduce support calls	Atkinson *et al*[28]
Product	Satisfaction	Average score on customer-satisfaction survey	None	Directly but subjectively measures customer satisfaction; results not applicable generally	
Product	Ease of use	Average number of steps per procedure	7	The longer the procedure, the more difficult to complete without user error	
Product	Ease of use	Time to complete task	Varies	Determined through usability testing; results task-specific; use customer feedback to validate standards	Hammar[29]
Product	Ease of use	Percentage of tasks users successfully complete	90%	Determined through usability testing	Hosier[30]

Class	Attribute	Metric	Standard	Comment	Source
Process	Accuracy	Percentage of procedures and examples verified	100%	This can be a QA or Test review function	Fisher[31]
Process	Consistency	Percentage of documents with doc plans	100%	Tracking adherence to process encourages compliance	Jong[32]
Process	Consistency	Percentage of documents reviewed	100%	Tracking adherence to process encourages compliance	
Process	Consistency	Percentage of documents approved	100%	Tracking adherence to process encourages compliance	
Process	Consistency	Percentage of documents archived	100%	Tracking adherence to process encourages compliance	
Process	Predictability	Estimated versus actual project size	1		Atkinson *et al*[33]
Process	Predictability	Actual versus estimated project schedule	1	For software projects, the typical value is over 2	Romaine[34]
Process	Accuracy	Total number of review comments in second review versus first review	<1	Volume of review comments should decrease at each stage	Fisher[35]
Process	Productivity	Total review time in hours per 100 pages		Should be stable within organization	
Process	Productivity	Writing hours per page		For the entire process, industry average is 3-8 hours per page, varying by type of document	Gordon[36]
Process	Productivity	Illustration hours per illustration			
Process	Productivity	Editing hours per page			
Process	Productivity	Production hours per page			
Professional	Maintainability	Number of styles and fonts used	Minimize		Bibus[37]
Professional	Maintainability	Consistent presentation and style		Variation confuses readers and reviewers	

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