

## APPENDIX C. TOTAL INFORMATION QUALITY MANAGEMENT CONCEPTS

The following sections present background necessary to understand the evolution of thought in quality management. Section C.1 notes the change caused by the shift in focus from an intrinsic definition of quality, and the corresponding thinking that it cannot be managed to achieve total quality, to the focus on the customer and the achievement of total quality management. Section C.2 gives a proper understanding of quality standards based on customer needs and expectations and not on artificial goals.

### C.1 EVOLUTION OF QUALITY – FROM INTRINSIC TO CUSTOMER CENTRIC

The United States manufacturing industry operated in a steady state from the end of World War II until the late 1970's, when it suffered a revolution caused by a redefinition of quality. The new paradigm of quality owed its creation to the Japanese manufacturing industry's application of Dr. W. E. Deming's principles of quality. Before this revolution, quality was thought to be "product intrinsic" and therefore achievable by after-the-fact inspection (the "quality control" school of thought). If the product was defective, it was either sent back for correction (re-worked) or disposed of (scrapped). However, this approach directly increased costs in three ways: first, the added cost of inspection; second, the cost of re-work; third, the cost of scrap. In those cases where inspection was based on samples (not 100% inspections), there were also the costs of delivering a defective product to a customer (including dissatisfaction and handling of returns). Dr. Deming questioned the quality control approach and affirmed that quality can best be achieved by designing it into a product and not by inspecting defects out of a finished product. He indicated that inspection should be used at a minimum and only to determine if there is unacceptable variability, and advocated a focus on improving the process in order to improve the product. Also, he centered his definition of quality on the customer, not the product. He indicated that quality is best measured by how well the product meets the needs of the customer.

Dr. Deming's approach, used since the early 1960's,<sup>24</sup> was also based on the "PDCA" approach (continuous process improvement) developed by W. Shewhart,<sup>25</sup> and the Total Quality Management approach developed by P. B. Crosby.<sup>26</sup> M. Imai incorporated the proactive PDCA approach in his Kaizen and Gemba Kaizen methods of continuous process improvement in which everyone in the organization is encouraged to improve value-adding processes constantly to eliminate the waste of scrap and rework, and in which improvements do *not* have to cost a lot of money.<sup>27</sup>

### C.2 THE "ACCEPTABLE QUALITY LEVEL" PARADIGM

Philip Crosby makes the business case for non-quality: "There is absolutely no reason for having errors or defects in any product or service."<sup>28</sup> "It is much less expensive to prevent errors than to rework, scrap, or service them," because the cost of waste can run as much as 15 to 25 percent of sales.<sup>29</sup>

Crosby further states:

"Now what is the existing standard for quality?"

"Most people talk about an AQL—an acceptable quality level. An AQL really means a commitment before we start the job to produce imperfect material. Let me repeat, an *acceptable quality level is a commitment before we start the job to produce imperfect material*. An AQL, therefore, is not a management standard. It is a determination of the status quo. Instead of the managers setting the standard, the operation sets the standard...."

"The Zero Defects concept is based on the fact that mistakes are caused by two things: lack of knowledge and lack of attention.

"Lack of knowledge can be measured and attacked by tried and true means. But lack of attention is a state of mind. It is an attitude problem that must be changed by the individual.

"When presented with the challenge to do this, and the encouragement to attempt it, the individual will respond enthusiastically. Remember that Zero Defects is not a motivation method, it is a performance standard. And it is not just for production people, it is for everyone. Some of the biggest gains occur in the non-production areas."<sup>30</sup>

The same is true for information quality. Larry English's analysis concludes that the costs of non-quality information can be as much as 10 to 25 percent of operating budgets and can be even higher in information intensive organizations.<sup>31</sup> In the absence of a set information quality standard, the standard is as simple: "If information is required for business processes, what is the business case for errors or omissions when creating it? There is absolutely no reason for errors or defects in any information you create if that data is needed for other processes."<sup>32</sup>

The approach to reach the appropriate level of quality, or quality standard, for an information group, is to establish a customer-supplier agreement. These agreements are tailored to the situation and to the specific needs of the customers of the information, both short and long term, and are signed and monitored by both the providers and customers of the information. Over time, these agreements can be improved to drive out the costs of waste due to scrap and rework. However, before an agreement can be put into place, the producing processes must be in control; that is, they must have predictable results. If the processes that produce needed data are not in control, the first customer-supplier contract needs to include a "Standardize-Do-Check-Act" to define the processes and put them in control. Once the processes are in control and its results are predictable and known, the parties have the proper foundation to reach an agreement for the quality target in the next time period.