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## ZERO DEFECT MEANS ZERO INSPECTION

by Rene T. Domingo

There are types of quality management or philosophies by considering the company's emphasis on the four kinds of quality costs - external failure, internal failure, inspection or appraisal, and prevention. Another useful way of differentiating quality philosophies is by noting where inspection occurs or given importance in the entire process.

Diagram 1 shows the most common or traditional quality management style known as "Quality by Inspection". Here, most inspection, symbolized by the letter "I", occur at the end and beginning of the line, which in this example consists of three process manned by operators A, B, and C. The main objective of this set up is to prevent defects or non-conforming products from going into the market or hands of the paying customer by thoroughly inspecting and catching them before they are shipped or sold. Fulfilling this function is an entire department, often called Quality Assurance (QA) which acts as the representative of the customer. QA is normally independent of the production department whose output it checks, and may report directly to top management. Another objective of this set up is that with incoming inspection or receiving QA, defective raw materials are prevented from being unnecessarily processed down the line. Payment to the suppliers responsible are withheld accordingly. In many cases, to enhance reliability, double inspection may be applied in which the production department may do its own inspection of finished goods, which in turn is rechecked by QA as shown in diagram 2.

The major weakness of "Quality by Inspection" is that it does not prevent defects from being produced by every process, because checking is done and problems discovered only at the end of the production line. Feedback, necessary for problem analysis and prevention, is often late or not given at all to the erring process or department. Operators are not careful with their work since somebody is assigned to check and correct their mistakes anyway. Rework is often done at the end of the line without the knowledge of those responsible for the non-conforming products. Supplier development does not take place; suppliers are replaced or penalized based on delivery inspection results.

Diagram 3 shows some improvement in quality. Here, inspectors are deployed at the end of each process, making feedback to the responsible process faster. While this second set-up known as "Quality Control" requires more inspectors than the first set-up, defect prevention and operator responsibility are greatly enhanced. However, defects may not entirely be prevented, since the operator may just depend on the inspector assigned to him to check and catch his mistakes.

In diagram 4, we find no inspectors within and at the end of the line. Inspection is still done, but this time by the operators themselves, who are empowered to check their own work. Under this set up, each worker is highly motivated to do his job right the first time and responsible enough not pass down defects to the next process or operator which acts as his internal customer. Very high quality of both finished goods and work-in-process are achieved. For this set up to succeed, management has to empower workers, and give them intensive and continuous training on quality skills and attributes.

The highest and ideal form of quality management, known as "Total Quality" is illustrated in diagram 5. All inspectors are gone including the incoming inspector of raw materials. This set up is made possible through supplier partnership and development. Suppliers are trained by their customers in quality

management and process control. Supplier quality becomes so reliable that their raw material and parts deliveries can go straight to the customer's production line for immediate usage without the need for inspection and storage. The suppliers of Toyota, a practitioner of Total Quality Management and Just-in-Time, are known for this world class performance and capabilities.

The principles above can be applied even to service and administrative processes and operations; a company can dramatically improve service quality and speed using these steps. Just replace operators with clerks, tellers, etc.; replace products with documents, reports, invoices, reports, etc.; and replace inspectors with signatories, auditors, checkers, reviewers, controllers, etc.

By training all suppliers and operators to do their work right the first time, high quality at all stages can be achieved, thus making it possible for the company to reduce and eventually eliminate all forms of inspections. Zero inspection will subsequently result in lower operating costs, shorter manufacturing lead time, and lower inventories.

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# THE RISE AND FALL OF INSPECTION

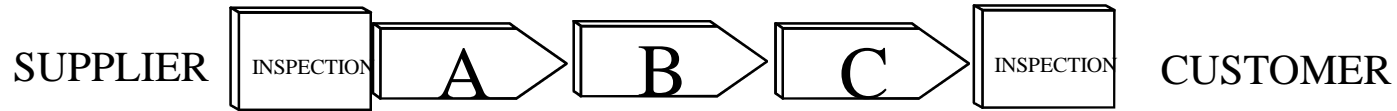


DIAGRAM 1

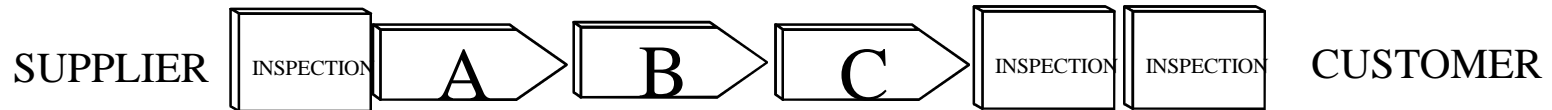


DIAGRAM 2

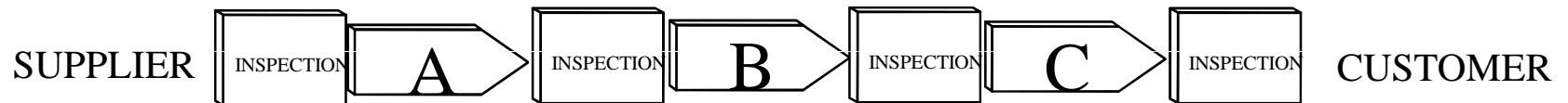


DIAGRAM 3

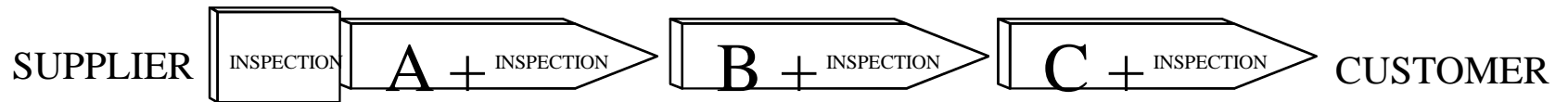


DIAGRAM 4



DIAGRAM 5