SUMMARY OF KEY POINTS AND TERMINOLOGY – Module 13

- Numerous methodologies for improvement have been proposed over the years. These include the Deming cycle, FADE (Focus, Analyze, Develop, and Execute), Juran's breakthrough sequence, and creative problem-solving. How one approaches problem solving is not a critical as doing it in a systematic fashion.
- The **Deming cycle** is a problem-solving methodology that consists of four elements: plan, do, study, and act. It is based on management by fact, continuous improvement, and organizational learning principles and has had much success in Japanese companies prior to being adopted throughout the world.
- Juran's breakthrough sequence consists of proof of the need, project identification, organization for breakthrough, the diagnostic journey, the remedial journey, and holding the gains. These steps represent a common sense sequence of discovery, organization, diagnosis, corrective action, and control.
- The creative problem solving process consists of six steps: understanding the "mess," finding facts. identifying specific problems, generating ideas, developing solutions, and implementation.
- The **Seven QC Tools** for quality improvement are flowcharts, run charts and control charts, check sheets, histograms, Pareto diagrams, cause-and-effect diagrams, and scatter diagrams. These tools support quality improvement processes and problem-solving efforts.
- A **flowchart** or **process map**, identifies the sequence of activities or the flow of materials and information in a process. Flowcharts help the people who are involved in the process understand it much better and more objectively by providing a picture of the steps needed to accomplish a task.
- **Backward chaining** is a process of building a detailed process flowchart by starting with the outputs – customer requirements – and moving backward through the process to identify the key steps needed to produce each output, and finally stopping when the process reaches the supplier input stage.

- A **run chart** is a line graph in which data are plotted over time. Run charts show the performance and the variation of a process or some quality or productivity indicator over time in a graphical fashion that is easy to understand and interpret, identify process changes and trends over time, and show the effects of corrective actions.
- A **control chart** is simply a run chart to which two horizontal lines, called **control limits** are added: the **upper control limit (UCL)** and **lower control limit (LCL)**,
- **Data sheets** are simple columnar or tabular forms used to record data. **Check sheets** are special types of data collection forms in which the results may be interpreted on the form directly without additional processing.
- A **histogram** is a basic statistical tool that graphically shows the frequency or number of observations of a particular value or within a specified group. Histograms provide clues about the characteristics of the parent population from which a sample is taken. Patterns that would be difficult to see in an ordinary table of numbers become apparent.
- A **Pareto distribution** is one in which the characteristics observed are ordered from largest frequency to smallest. A **Pareto diagram** is a histogram of the data from the largest frequency to the smallest.
- A **cause-and-effect diagram** is a simple, graphical method for presenting a chain of causes and effects and for sorting out causes and organizing relationships between variables.
- **Scatter diagrams** are the graphical component of regression analysis. While they do not provide rigorous statistical analysis, they often point to important relationships between variables.
- A **kaizen blitz** is an intense and rapid improvement process in which a team or a department throws all its resources into an improvement project over a short time period, as opposed to traditional kaizen applications, which are performed on a part time basis.
- **Poka-yoke** is an approach to mistake-proofing a process by using simple inexpensive devices or procedures to reduce inadvertent errors in performing work. Poka-yokes may be applied to both manufacturing and service delivery processes.

- **Process simulation** is an approach for building a logical model of a real process, and experimenting with the model to obtain insight about the behavior of the process or to evaluate the impact of changes in assumptions or potential improvements to it.
- People are vital to process improvement activities. Compared to the technical tools for gathering and analyzing data, the "soft skills" – those that involve people – such as project management and team facilitation, are more difficult to teach and learn. Some of the essentials elements for effective process improvement from a people perspective are a *shared vision* and *behavioral skills*. Both team members and team leaders need training and education in the soft skills to effectively manage process improvement activities.