

David E. Figueroa Quiñones <sup>1</sup> Hector J. Cruzado, Ph.D.<sup>1</sup>

<sup>1</sup>Universidad Politécnica

## I. Background & Introduction

Manufacturing Environments are very dynamic. Resources have to be managing in the most effective way. Even though most manufacturing processes are very repetitive, each situation presents a very unique set of characteristics that requires ingenuity and effectiveness. One of the most extreme scenarios is during production ramp ups. Production ramp ups are defined as the production increase of a specific product [1]. Even though most of the time, the product and process that is involved in the production ramp-up are well known to the organization, the amount of production requires new strategies to achieve them. Most organizations tend to encounter several problems to manage it properly. Project Management Discipline has been recognize as one of the most successful disciplines to manage time. Techniques such as Work Break Down Structure (WBS) and time schedules have proven to be effective on the execution of project managements. The objectives of this study were the improvement of managing and planning phases during production ramp-ups, methodology and protocols. Other objectives were the standardization of training requirements. Objectives were achieved by the proposal of a general methodology based on the Project Management Approach.

## II. Materials & Methods

The proposed model includes two primary phases: the Evaluation Phase and the Execution Phase. On the Evaluation Phase, all aspects of the business are carefully assessed to create a detail profile of the actual condition of the impacted areas by the increase in production or ramp-up. This profile will include the evaluation of key organizational components. As shown on Diagram 1 during the evaluation phase, the actual process capability will be evaluated. Process capability is assessed by the identification of how many process SME's are currently available and how much time they will be with the company. In terms of equipment and machinery, service life and actual condition of machines and equipment will be assessed. Based on this assessment decisions in terms of outsourcing services or buying new equipment will be taken.

A second important point that is evaluated is the production commitments or timelines during the production ramp-up process as shown on Diagram 1. Managers evaluates the aggressiveness of these commitments and important decisions such as re-negotiation of deadlines with costumers are performed and how much time it will take to achieve controlled processes with Cpk values of 1.33 and Six Sigma. The last step, as shown on Diagram 1, for the evaluation phase, is the determination of a baseline capability levels that new and existing employees should possess as a minimum to help the organization meet schedule and quality requirements. In this step manager determines the baseline capability levels that new and existing employees should possess as a minimum to help the organization meet schedule and quality requirements. In order to succeed training needs are identified by the evaluation of which are the necessary trainings depending on the nature of the organization and how intense these trainings will be.

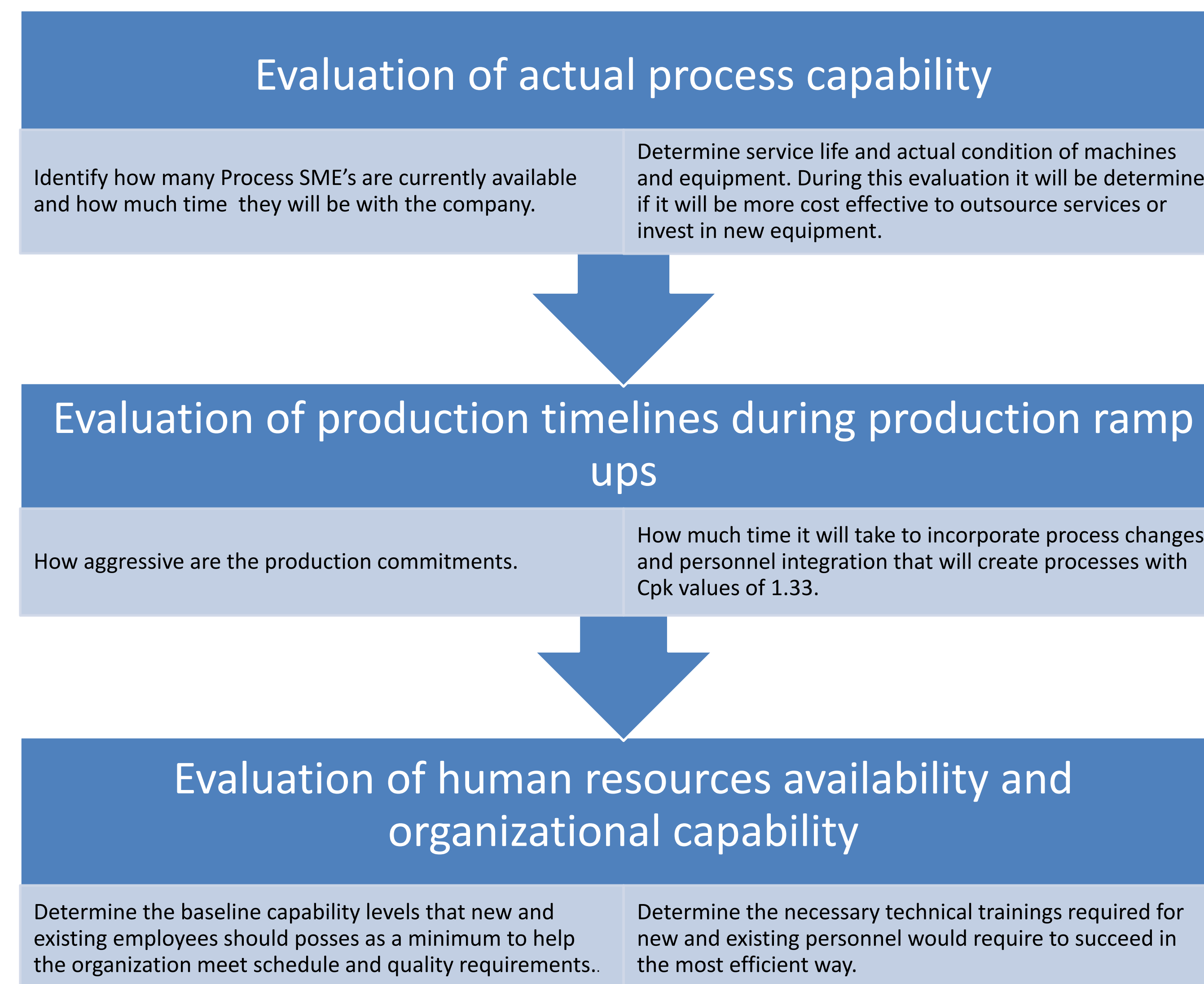


Diagram 1. Evaluation Phase

As a first step mentioned on Diagram 2 will be required to develop project schedules and define the necessary tasks to achieve excellence during production ramp-up. All necessary steps to develop a robust process that will create a process with CPk values of 1.33 will be determined as tasks and will be assigned timelines to achieve it. Constant reviews with the costumers will be performed to have on board the costumer. To complete successfully these phases will be required tools and strategies capable of delivering the required results.

A very useful strategy that helps answers one of the most important questions of the evaluation phase is the Work Break Down Structure (WBS). WBS is a strategy developed for the Project Management Discipline. It has been developed to determine each task necessary to complete any kind of projects. The WBS is developed between the owner of the project and the different SME's of the tasks that will be performed during the project to make sure that all necessary tasks are covered. During the evaluation phase a WBS will be used to identify all necessary trainings tasks, equipment and machinery installation and major overhaul activities required and the actual process capability. To execute it, Managers, Process SME's and support personnel will have regular meetings in which based on their experience and details of the extent of the production increase will be defined the necessary steps. After the main questions from the Evaluation Phase are answered (What, Where, When and How) the focus will be shifted to the execution phase techniques.

Gantt Charts provides big quantities of information related to tasks schedules. It also provides very important information such as start and finish dates for specific task on the project management discipline. On the models execution phase this technique proves to be very successful. By using Gantt Charts Human Resources Managers, Training development managers, Maintenance Managers, Project Managers and Manufacturing Managers could track easily by detail the progress of the tasks that were defined through the WBS. Time lines for each activity will be determined by the SME's of each affected process, equipment or training.

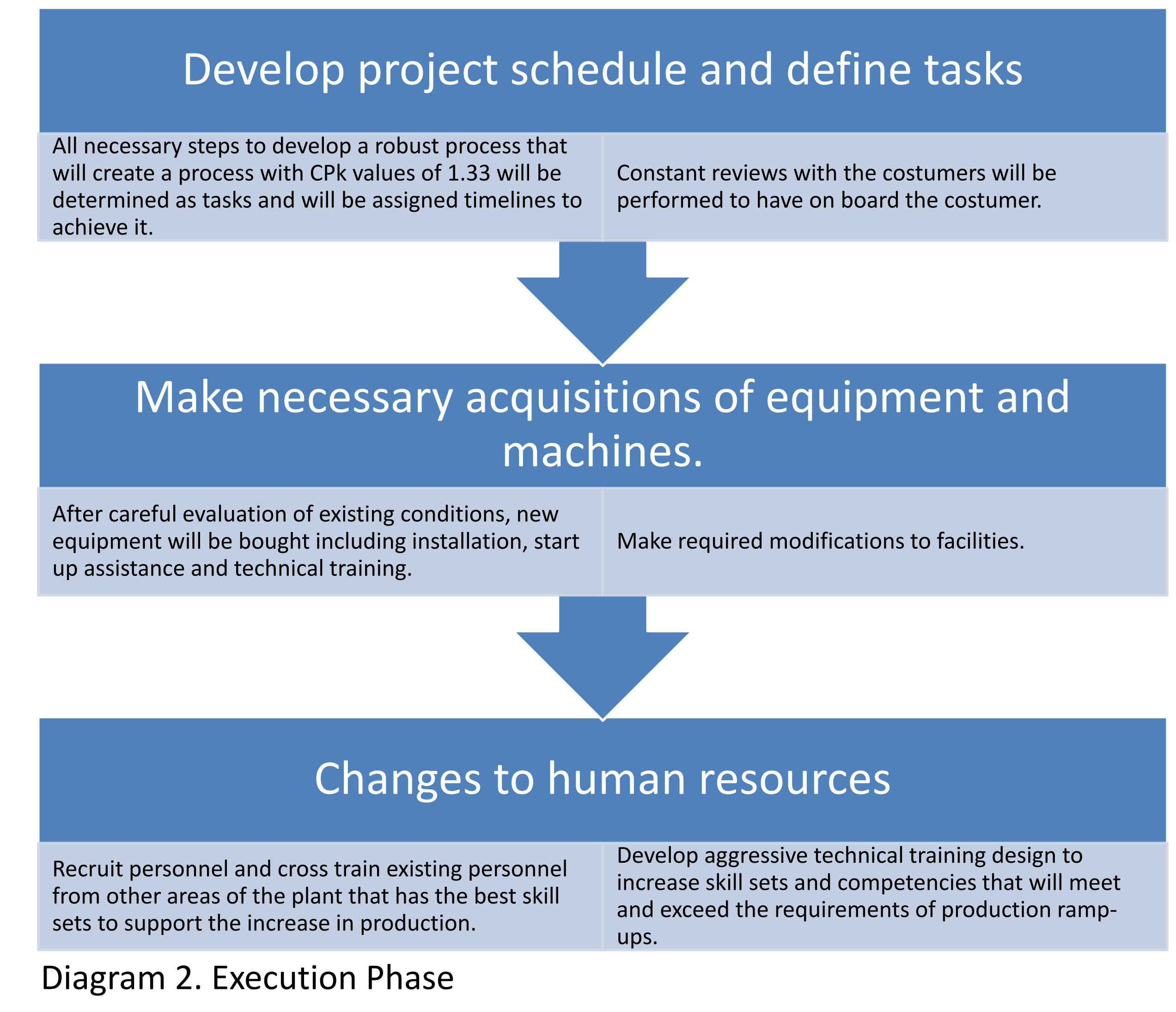


Diagram 2. Execution Phase

## III. Discussion

During Production Ramp-Ups companies encounters many challenges that many times it ends in not meeting production commitments and ultimately harming the existing business. Each organization has a particular environment that makes it difficult to find a guideline or model that will fit all companies. Then intention of this model is to apply several project management tools that provide an efficient approach to the production ramp-up scenario.

Production Ramp-up process has been divided into two simple and universal phases, evaluation and execution phases. Both phases are developed to be a universal fit for any kind of organization by incorporating general aspects such as training requirements, hiring, equipment installation and time management.

## IV. Bibliography

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