



Author: Francisco J. Germosén Pérez
 Advisor: Rafael A. Nieves Castro, PharmD.
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Abstract

In a place where a consumable product is developed certain levels of health and safety parameters must be present to ensure the quality level of the product that is later sold to the consumer. Starting at the receiving stage there is a process to ensure that the materials and ingredients received from the suppliers meet the required health and safety standards that were previously agreed. Before being used in production the materials and ingredients are inspected and the Certificate of Analysis relevant to the delivery is evaluated and approved. But this process can on occasion have delays because of the need for input from various individuals and the need to travel from one point of the facility to another for the task to be completed. With the implementation of programs like Microsoft Lists and Power Automate a workflow can be developed and integrated into the process in such a way that the need of constant travel and the idle time related can all be made unnecessary. A Microsoft List and Workflow were step up to work in unison with each other, so that the actions required would solve themselves without the need of additional input other than the initial submission. As a result, this would help improve efficiency and help hasten the completion of the process.

Introduction

In the food production industry, there needs to be certain procedures that help ensure the materials and ingredients used in production meet the required quality standards of food and safety. When a product is sold to a consumer the expectation is that the product will not cause any type of harm after consumption, thus the need for parameters that control quality and food safety levels. Organizations like OSHA, FDA and ISO all evaluate different aspects of the operation at PET Plastics LLC to ensure that the operation maintains a certain standard level. Thus, processes are developed and put in place which helps to provide a clear view of the way the activities are required to be executed to ensure that all the parameters of quality are followed. With procedures in places the documentation can be saved and filed with which the organization can demonstrate that the quality and food safety standards are met before that materials and ingredients are used in production.

Background

Automation can help update how workflows and record keeping are utilized in any given endeavor. Automation can provide a more direct route to completing the tasks stated in a workflow. Idle times can be reduced, and personnel efficiencies can be increased by simply developing an automated workflow that can be programmed to commence once the command has been given. The automated workflow will continue to operate continuously until the objective has been completed.

To understand the benefits of a modernized form of document approval and record keeping, it is important to understand some of the characteristics and executions that such a tool can provide. A tool like this can provide a quicker process upon which the flow of signature gathering is optimized and waiting times can usually be reduced. In addition, there is an organizational factor that must be considered, the filing system would become digital and easier to secure and maintain organized. Most companies that currently use a system such as this one are mostly focused on keeping track of legal documents, such as, FDA, OSHA, and ISO, which are normally required by government agencies.

Problem

Per the companies' current process for receiving and storage for materials AL-P-CS-7001, most materials used in the water line production require that the Certificate of Quality (COQ) or Certificate of Analysis (COA) be validated by the company's Quality department upon arrival and before used in production. Currently the process is done strictly with hard copies of the documents, where they are physically delivered, approved, and later achieved with the rest of the documents related to the delivery. In our modern digital society, we are experiencing a new age of Automation, and with the help of modern technologies we can implement new ways to make the process of document approval faster and more efficient.

Methodology

The Lean Six-Sigma tool known as DMAIC methodology can help facilitate project design and include the continuous improvement aspects of a Lean Six Sigma project. The DMAIC methodology divides into five (5) phases

- Define**
 - The main problem and the needs are identified.
- Measure**
 - Data on the problem is gathered, and the causes of the problem are identified.
- Analyze**
 - The data of the problem is evaluated to understand what viable solutions there could be.
- Improve**
 - Viable solutions will be identified and chosen based on which can provide the better end results.
- Control**
 - The proposed solution is implemented, and the testes begin to see the execution in hands of the users, provides the opportunity to fix any problems that may present themselves before full integration.

Figure 1: Phases of DMAIC Methodology

Results and Discussion

DEFINE PHASE

The Define phase the main problem and the needs are identified.

- Approval required before use
- In person approval process
- Idle time in process, if approver is not available
- Physical hard copy record keeping and filing system

Objective: To develop an automated workflow that allows for a continuous process after the initial entry has been submitted. This will work digitally and notify the approver(s) upon entry submission. Also, provide a digital storage area for approved entries.

MEASURE PHASE

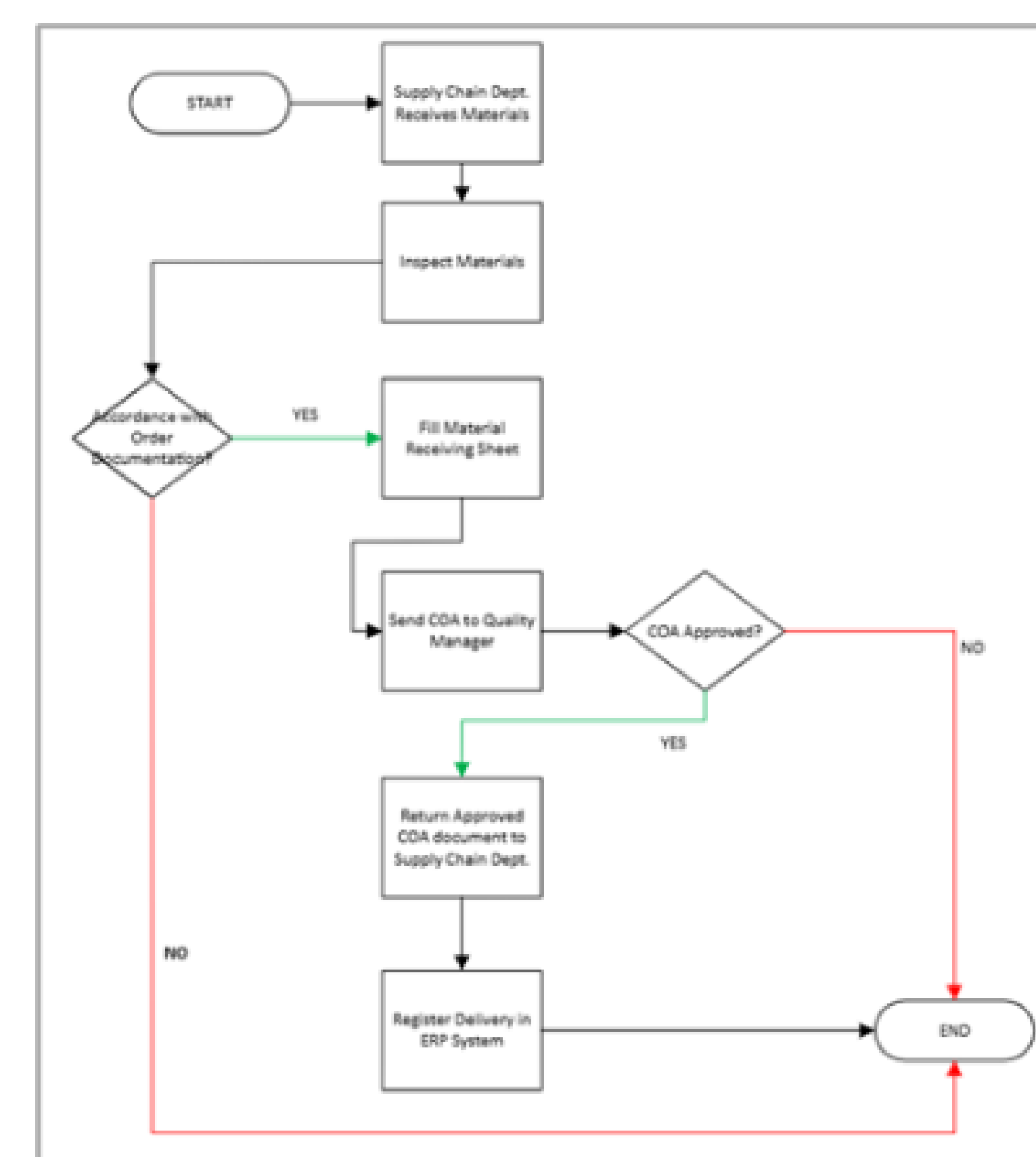


Figure 2: Process Map for the Receiving of Materials

Results and Discussion (cont.)

Suppliers (S)	Inputs (I)	Process (P)	Outputs (O)	Customers (C)
External suppliers / vendors	Materials (per materials, specifications)	1. Receive materials	Approved materials available for production/usage	Production Department
Logistics/Transportation companies	Supplier documentation (Quality Control delivery notes)	2. Inspect packaging and materials	Inspected materials (environmental, physical)	Quality Department
Quality Manager (per COA approval)	Certificate of Analysis (COA)	3. Load materials into production area 4. Send COA to Quality Manager for approval 5. Return approved COA to Supply Chain Dept.	Approved and approved COA in ERP system	Logistics Department
	ERP system access	6. Register order in ERP system with approved documentation	Updated inventory records	Procurement Department

Table 1: SIPOC for the Receiving of Materials

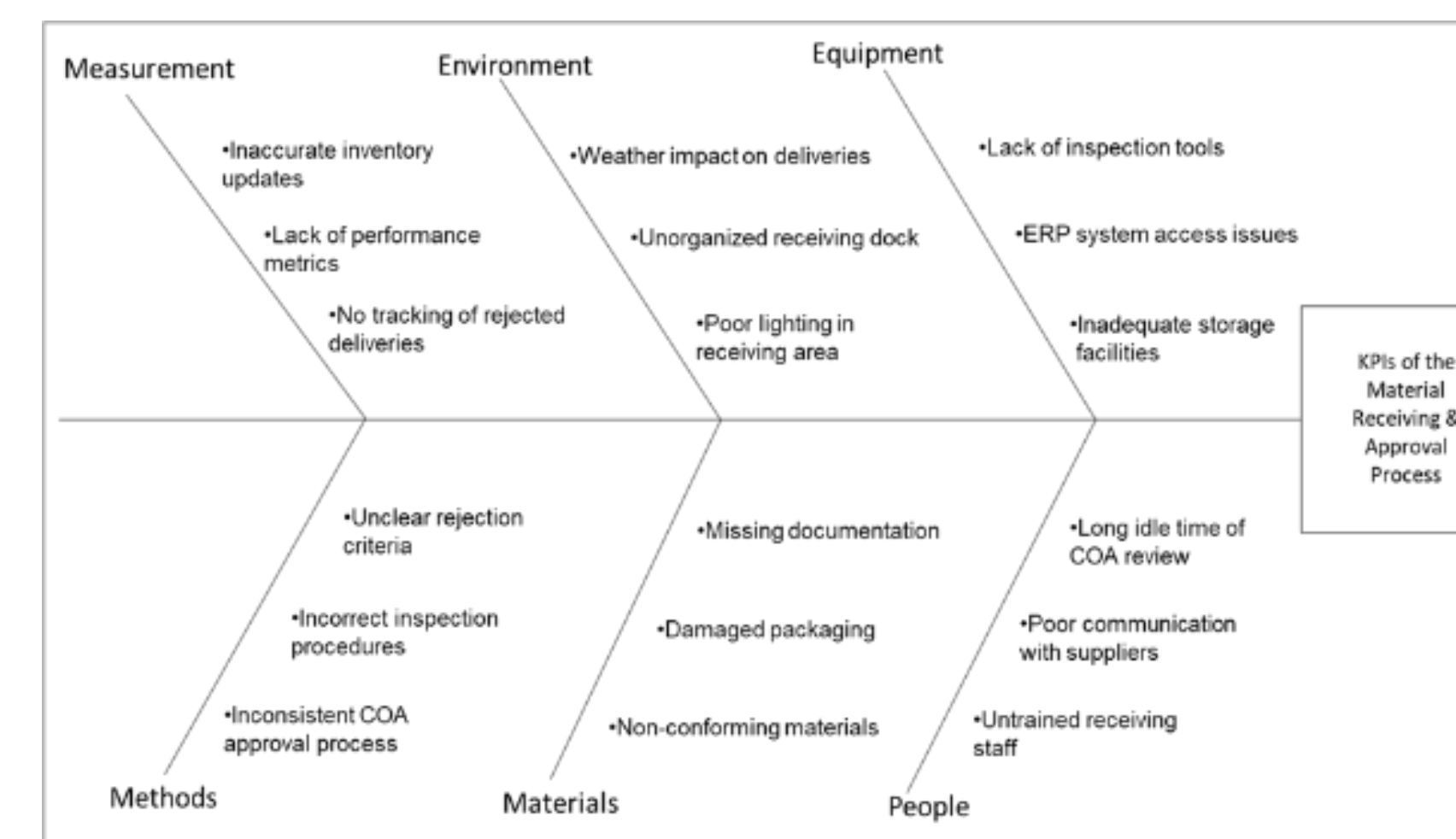


Table 2: Fishbone KPIs for the Receiving of Materials

ANALYZE PHASE

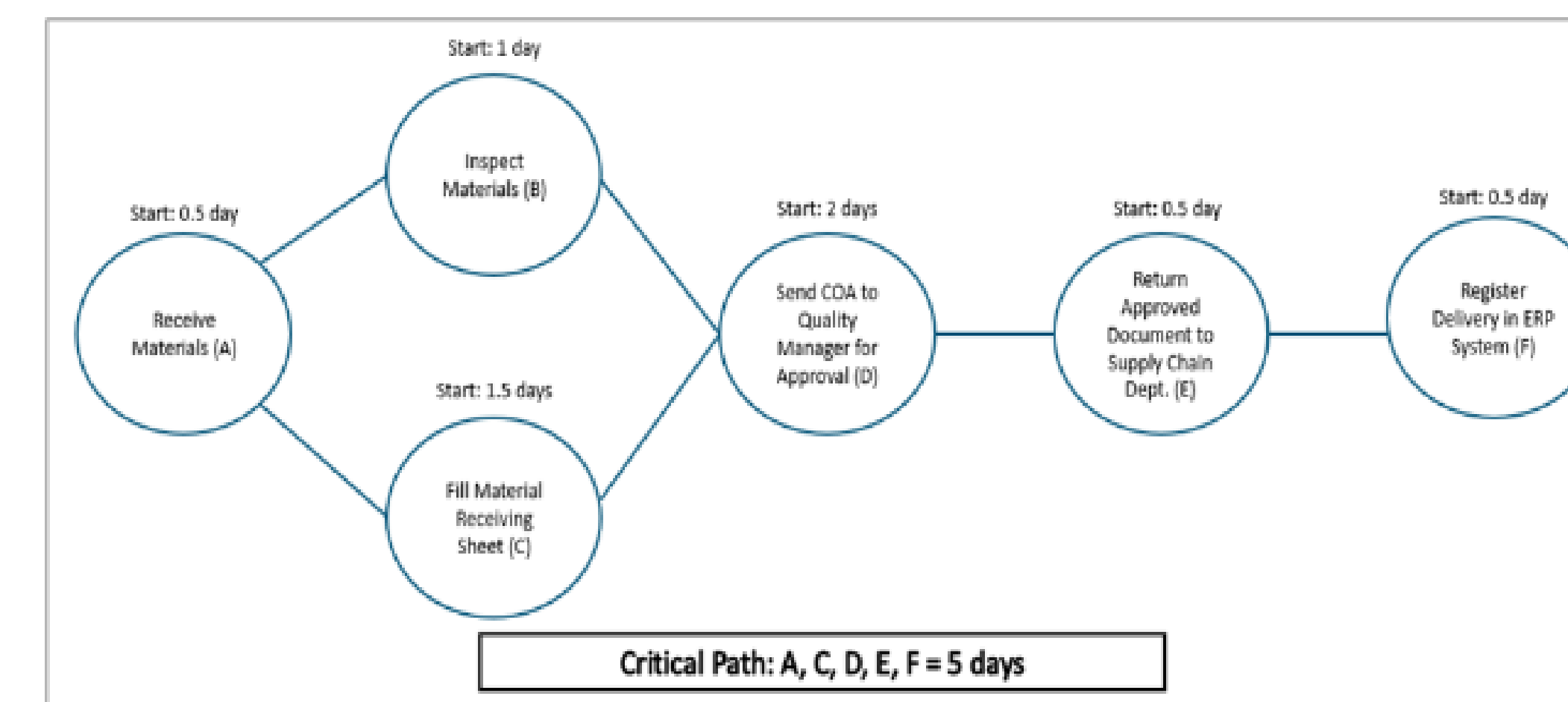


Figure 3: Critical Path for the Receiving of Materials

IMPROVE PHASE

Descripción de Documento	Item Class	Código y Descripción del Material	Lot(es)	Fecha de Recibo	Fecha de Expiración	Approval
TAPAS AZULES	Tapas	60030404 (TAPA AZUL)	04252025	April 25	April 25, 2026	Approved
Ingrediente: 3046	Ingrediente	123456789 TEST		June 17	June 30, 2026	Approved
COA PREFORMAS	Preformas	60074000	030725	March 7	March 7, 2026	Approved

Figure 4: Microsoft List for COA Approval

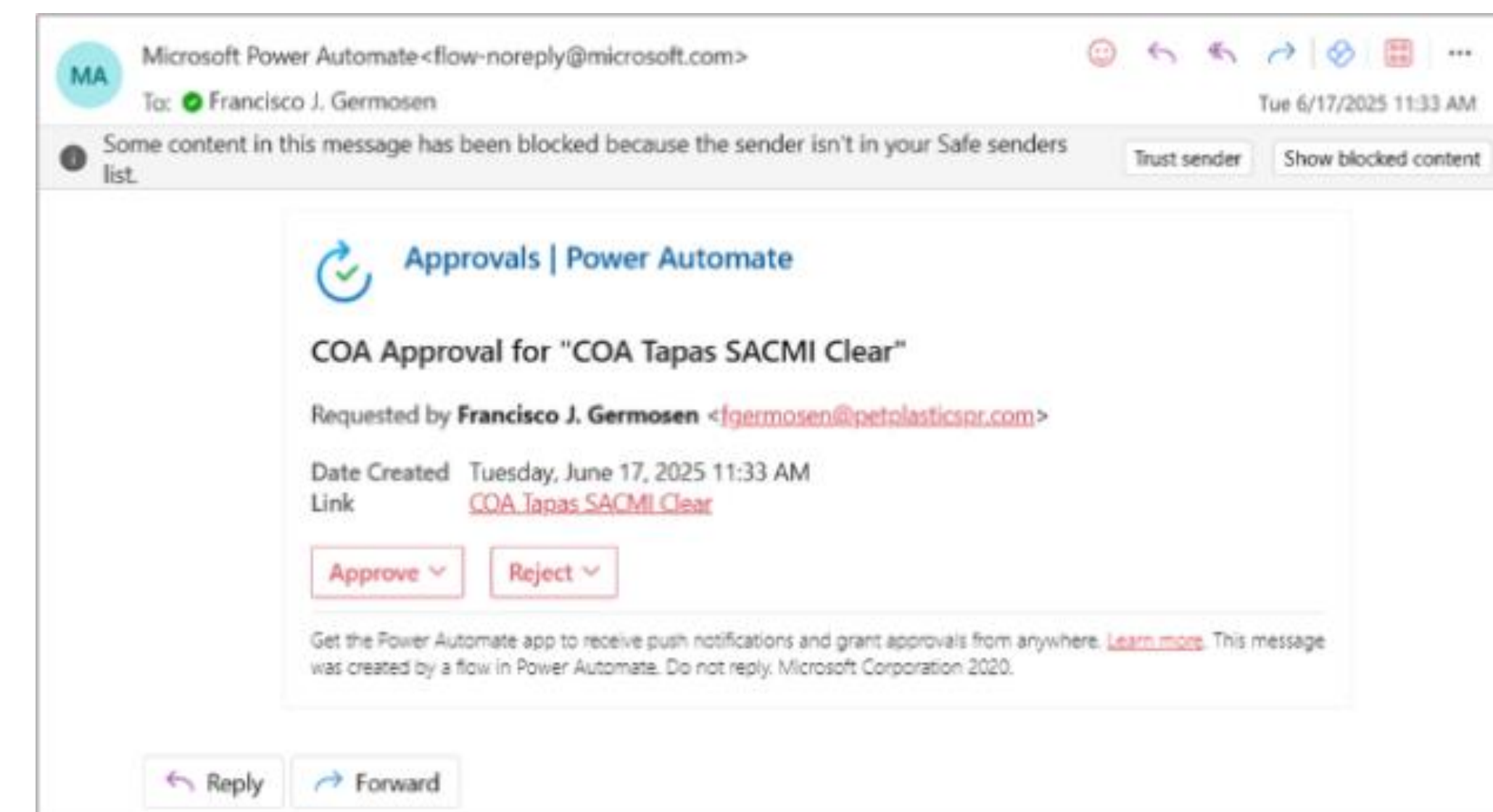


Figure 5: Email Received for Approval

An automated workflow would be created using technology already available to the organization, with Microsoft List and Power Automate Workflow. In the List, an entry for the delivery can be created where the details and relevant documentation would be attached, and available for later revision. The workflow would continue working until the final status of the entry reads "approved".

CONTROL PHASE

Certain parameters of control are set to be in place for this new improved activity in the process. First, the Microsoft List upon which the entries are made can only be accessed via SharePoint to which only the Supply Chain Department and Quality Department have access. Secondly, the entries themselves are set so that while "under review" or "approved" cannot be edited in anyway except by the List owners. Thirdly, the approved strategy has been set in the workflow so only the approvers listed will be able to approve or reject a new entry. The List will also provide a status update on the entry if an entry has not yet been approved the status will ready "under review" and "approved" or "rejected" depending to the decision. Lastly, a second approver was added, which will help increase the speed with which a decision on the approval of any given COA.

Conclusions

The use of new programs such as Power Apps, Power Automate, and Artificial Intelligence (like Copilot & ChatGPT) can help an organization lighten their workload and focus on more important activities that require more detailed inputs for them to provide value to the organization or a process. As more departments integrate the use of automation and artificial intelligence technologies in their daily tasks the more like will be that set objectives can be met faster and with a higher level of efficiency.

Future Work

- Introduce the use of Automated and Artificial Intelligence tools into the workplace
- Incorporate the use of automated workflows in the procedures of other departments.

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