

ABSTRACT

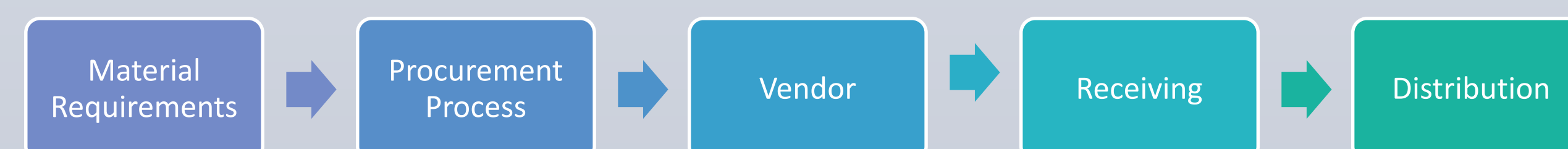
Supply Change Management (SCM) processes are critical to meet customer requirements and construction schedule. SCM is responsible for procuring all the necessary material to support construction activities. The main purpose of the project was to increase the material availability position. The project was completed at a shipyard in the United States that builds warships. The methodology used to achieve the objective is DMAIC (Define, Measure, Analyze, Improve, Control). Multiple simulation model scenarios were evaluated to determinate the best solution. The recommended solution was a phased approach with multiple changes. It showed to be a cost-effective way to increase the material availability support position.

INTRODUCTION

In the shipbuilding industry, Supply Chain Management (SCM) processes are critical to meet customer requirements and construction schedule. The study subject for this project is a shipyard in the United States that builds warships for the Navy. The shipbuilding construction processes require thousands of piece parts to be combined based on schedule. At a high level, SCM is responsible for procuring all the necessary material to support construction activities.

Currently, there are delays in the production areas due to material not being available when needed. A delay in production will cause an increase in cost and risk to the expected completion date. The material lifecycle process is based on five main steps. Each one of these steps contribute to the material availability support position.

Material Lifecycle:



Problem Statement:

- Material is not available when needed to support operation activities

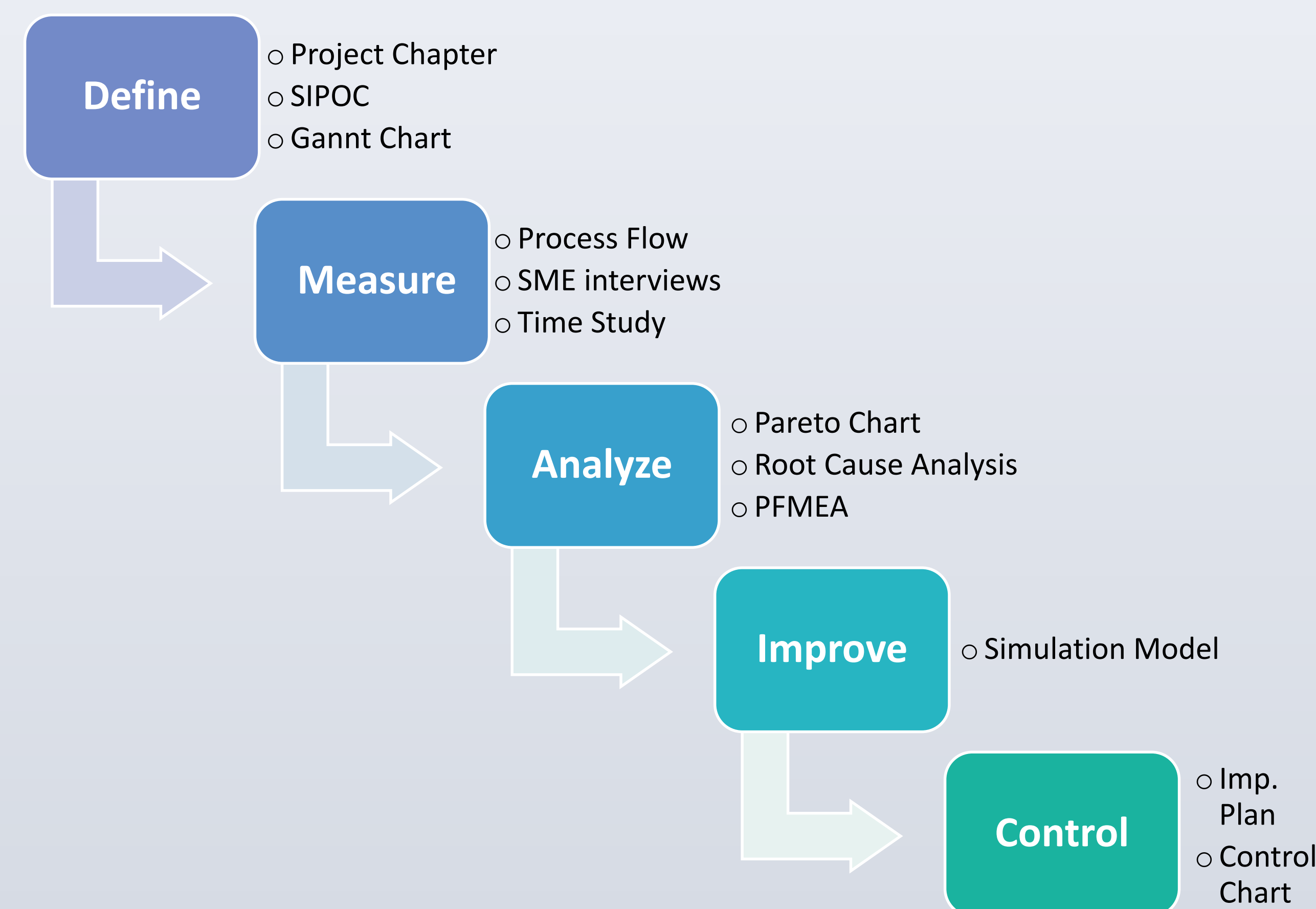
Objective:

Goal	Metric	Current Status	Target
Increase Material Availability	Support Position *	90%	95%

$$* \text{Support Position} = \frac{\text{Support}}{\text{Support} + \text{NonSupport}} * 100$$

METHODOLOGY

The methodology used for this project is a Lean Six Sigma tool called DMAIC. A specific procedure is used for each phase of this approach.



RESULTS AND DISCUSSION

The team considered more than five scenarios to evaluate three main outputs; material availability support position, workforce utilization, and lead-time. The scenarios include variables such as vendor lead time, ordering quantity and frequency, material requirement release, workforce volume, among others. Analyzing the changes in the metrics from the scenarios of the current state, the team was able to determine which combination of scenarios would create the biggest positive impact.

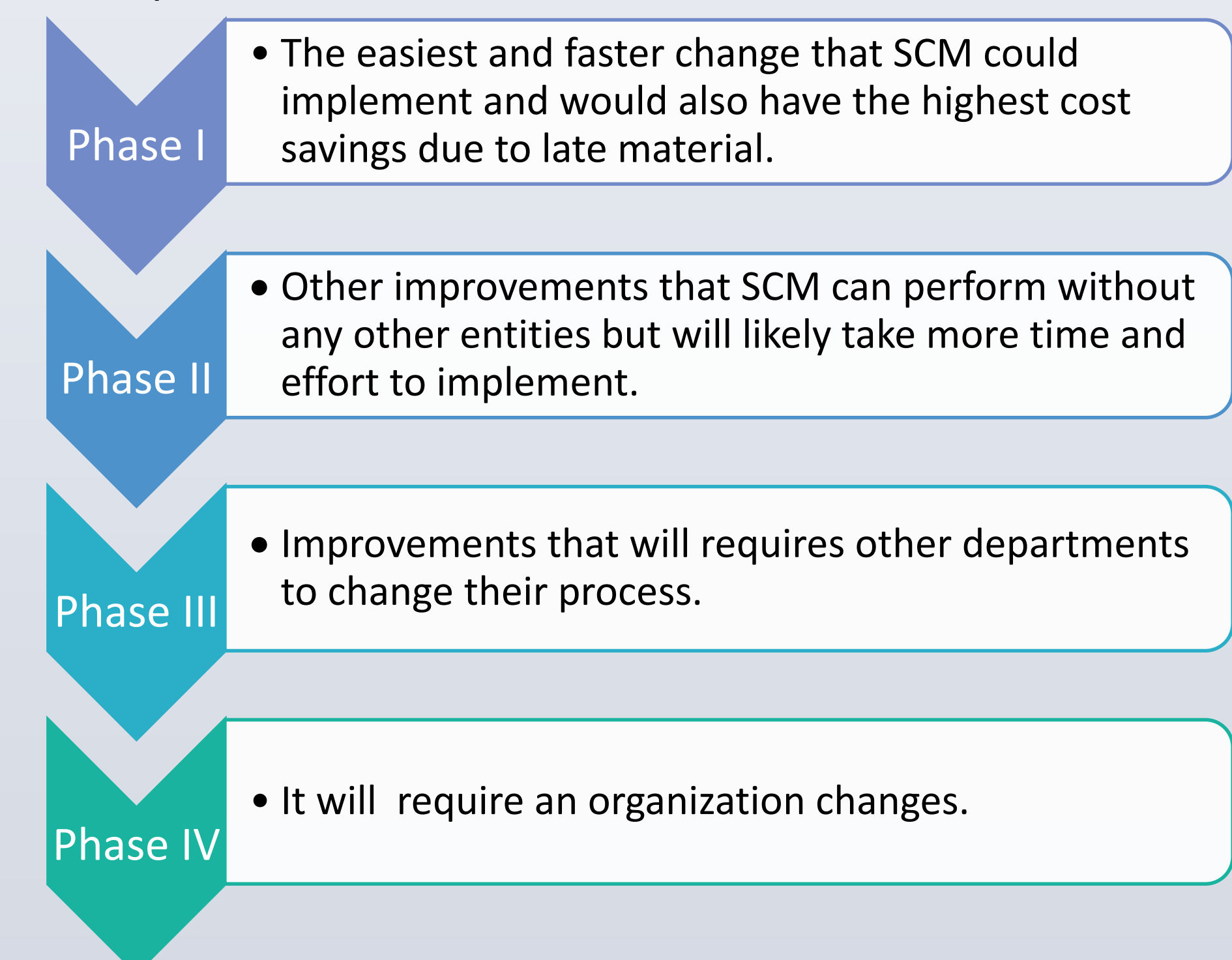
When evaluating all the scenarios' outputs, Scenario B had the greatest positive impact on the material availability support position metric, increasing from the current state by 6%. Scenario B includes an increase in the window for material request and new formula to calculate vendor lead time estimation.

While improving the overall material availability support position, the cost due to schedule delays will be reduced. When evaluating possible improvements and solutions, the team estimated potential costs of implementation and expected savings. Moreover, the team suggested various methods and metrics such as control charts to assist with measuring and monitoring future efforts by SCM and to increase the material availability support position.

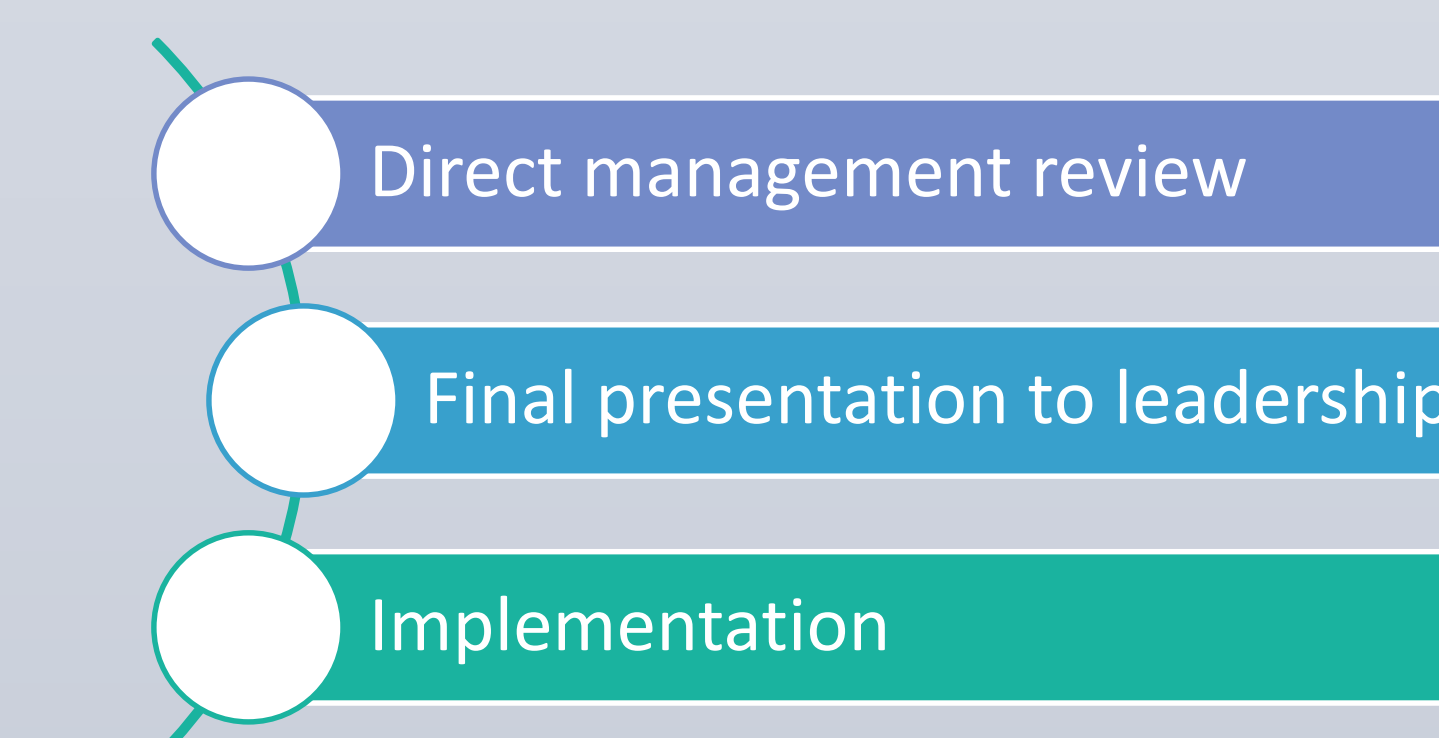
CONCLUSION

Due to many potential implementation factors for the different scenarios, particularly the ones that would involve different departments, the team suggests rolling out improvements in phases. The first two phases can be completed under SCM without involvement of other departments or manpower changes.

The phases are as follows:



NEXT STEPS



ACKNOWLEDGMENT

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