SUMMARY

The objectives of this thesis work was to develop a tool to analyze the key performance indicators, to convey the precise monitoring of OEE, to provide decision makers with visibility and analytics of a manufacturing system and to assist the end user to gain insight into data and make effective decisions faster.

All of these objectives were met by developing a web application using Node.js for server side, React for client side and Access database as a data layer.

All the indicators required by the end user in order for them to gain insight on the data have been either directly queried from the database or been calculated otherwise. These indicators were divided into two major groups: tactical and operational. Two dashboards were created based on these groups and the destination users for these dashboards are differentiated by their roles. Tactical dashboard is for more high level, tactical decision makers while operational dashboard is intended for shop-floor operators. Of course, there is no limit on who can access which dashboard, meaning that both role groups have access to both dashboards. Figure 15 shows the list of indicators displayed on each of the dashboards.
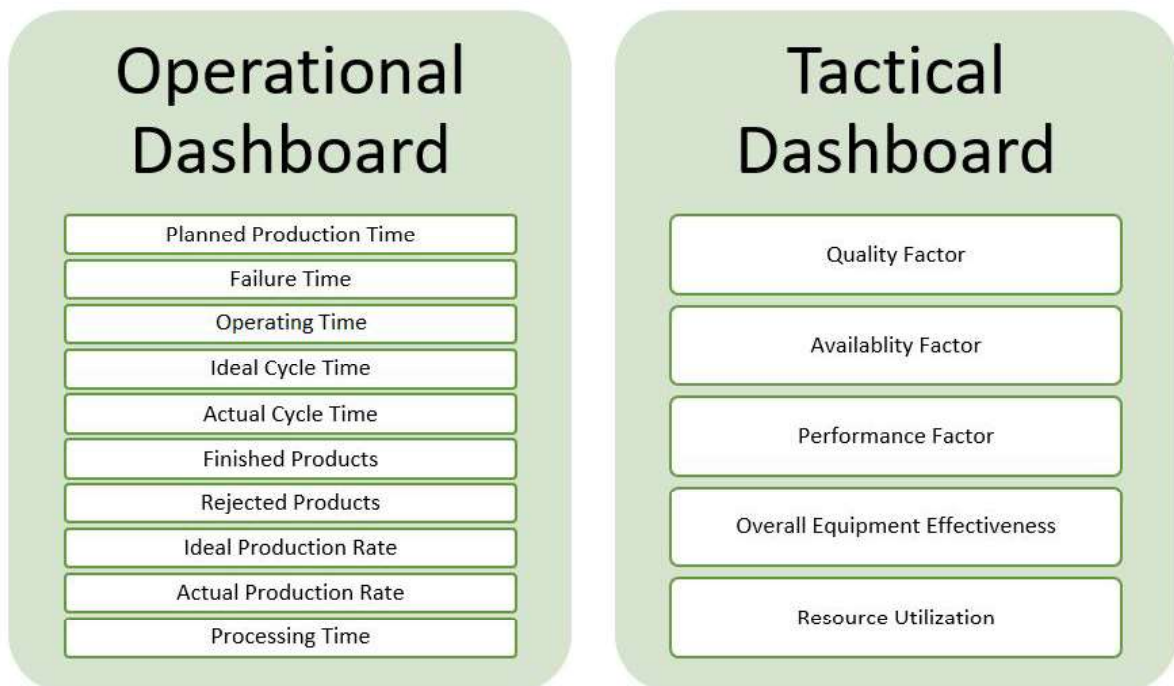
Figure 15 list of indicators on different dashboards

It is important to note that, since React was used as a frontend framework for this application, it is easily possible to use the same codebase and make mobile applications, as React has native

approach. Only several configuration adjustments will need to be made, since React and ReactNative syntax is the same.

Stretch target of this project was to make website dynamic and changing according to the new requirements. The idea to manually download and upload Access database to the website was proposed. This idea was partially met, it is possible for the end user to download and see based on which database the analysis is made. While all the indicators are accessed by React using GraphQL endpoint, there was created a separate REST endpoint for downloading the file. The second part of the stretch target is to make it possible for the end users to upload newer databases directly from the UI. Unfortunately, this functionality has not yet been implemented.

To summarize in one sentence, all objectives of thesis were met and stretch target was half-way done.

Further Development

At the moment, newer Access databases are manually exported from Festo MES computer. Even if the upload functionality of the dashboard was working, it would b=not be very comfortable for the end user to manually do all this work every time something changes in the system.

For future, it would be great if newer Access files are automatically exported from the computer and then automatically uploaded to the dashboard's server. This would, in the end, make an actual, live visualization of the manufacturing processes.