IBM

BOM Analysis Tool – BAT

Minor Project

INTRODUCTION

The purpose of this document is to define scope and requirements of a BOM Analysis Tool – BAT for an electronic design house. The design house is engaged in producing new electronic designs regularly. While the CAD systems export the complete BOM in a CSV format, the BOM analysis process is manual and error prone.

The proposed system – BAT will assist teams in performing the BOM analysis by automating various steps for analysis.

This document is the primary input to the development team to architect a solution for this project.

System Users

The design and the supply chain teams of the electronic house will primarily use the BOM Analysis Tool, BAT.

Assumptions

1. Off-the-Shelf Part Master will be uploaded using a CSV file. This CSV file will contain 3 columns, viz. (a) Part Number, (b) Part Description, and (c) Prevailing Price.

2. BOM Analysis involves aspects like component life cycle analysis, supplier/vendor analysis, quality analysis, and pricing analysis. In this project, the scope will be limited to price analysis from sourcing perspective.

REQUIREMENTS

BAT will provide a web-based BOM Analysis Tool for sourcing and design teams. It will focus on pricing analysis. It will accept the BOM details exported from the CAD tool and allow the users to perform Pareto Analysis and What-if Analysis for prices.

Basic System Operation

Key elements of the system along with their basic operation are outlined below:

Upload Off-the-Shelf Part Master

The administrator will upload this master file. This file will have 3-columns viz. (a) part number, (b) part description, and (c) prevailing price.

Upload BOM

The BOM is received in CSV format from the CAD tool. The CAD tool produces 2-files, viz. (a) made-to-specifications part master and (b) an "Indented BOM". The made-to-specification part master has 2-columns viz. (a) part number and (b) part description. The indented BOM has 5-columns viz. (a) Parent Part Number, (b) Child Part Number, (c) Child Part Type (MTS: made-to-specification or OTS: off-the-

shelf), (d) Child Part's Unit of Measure (UOM), and (e) Child Part Quantity required in the Parent Part.

The upload form has fields for the "name of the design", "brief description", "made-to-specification part master file name" and "indented BOM file name". User enters these details and clicks the "save" button. Upon successful save, a new record for that design is created and the BOM data is uploaded for that design.

User will also be able to view his/her previously uploaded details in a list view.

Analyze BOM

User will select the design whose BOM needs to be analyzed. At this stage BAT will display the following:

1. A "summarized part list" of the design;

2. Total cost;

3. A Pareto Chart of pricing. This will help to determine which parts impact major part of pricing – a key input for price negotiations and cost management.

The user will also be able to perform "what-if" analysis by changing the unit price for the OTS parts used in this design. Note, this change will be a local change for analysis purpose and will not impact the main master data.

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A user-friendly interface needs to be developed to ensure
smooth usage of the system.
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About BOM

The bill of materials (BOM) is, in its simplest form, a list of parts or components required to build a product. Indented Bill of Material is a hierarchical bill of material listing, where each row lists the parent part (assembly or sub assembly) and child part, its UOM and quantity. Such a list reflects the structure of the product by each assembly/sub-assembly level. This indented BOM can be processed to produce a Summarized Bill of Materials that totals the quantities for each part used in every level. It does not represent the structure level by level.

About Pareto Chart

A Pareto Chart helps in identification of "vital few elements" that have maximum impact in a situation. It is named after Vilfredo Pareto, a famous Italian engineer, sociologist, economist, political scientist and philosopher.

In this project, it will help user to identify parts who contributes to the maximum percentage of cost. This way user will know the parts whose cost needs to be managed to control the overall product cost. Learn more about it at http://asq.org/learn-about-quality/cause-analysis-tools/overview/pareto.html URL.

DEVELOPMENT ENVIRONMENT

BAT will be developed as a web application using Java/JSP and DB2 database. Eclipse will be used as the IDE for the same. You may consider using a JavaScript framework like Prototype/Scriptaculous /jQuery. Use a suitable charting utility (e.g. High Charts or Google Charts) to draw a chart.