

## 1. Introduction

### Problem Statement:

IBM Quality Engineering Department (QED) plays the main role in the quality maintenance of storage and appliances. It is essential to ensure the effectiveness and responsiveness of data flow and communication of various quality issues. Our group was tasked to study the End-to-End (E2E) Process of IBM QED and propose a unified solution for the optimization of the data management system.

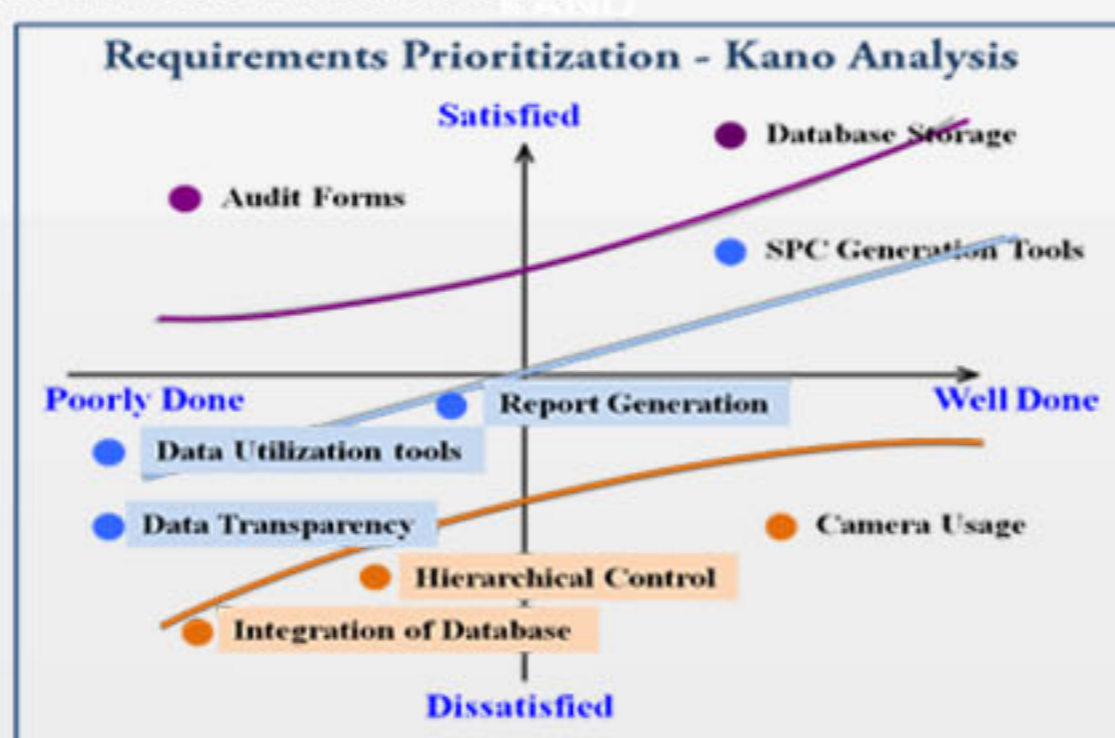
### Main Objectives and Deliverables:

- > E2E Process Mapping and Quantification Study
- > Data Management System Efficacy Quantification
- > Propose the Most Suitable Data Management System



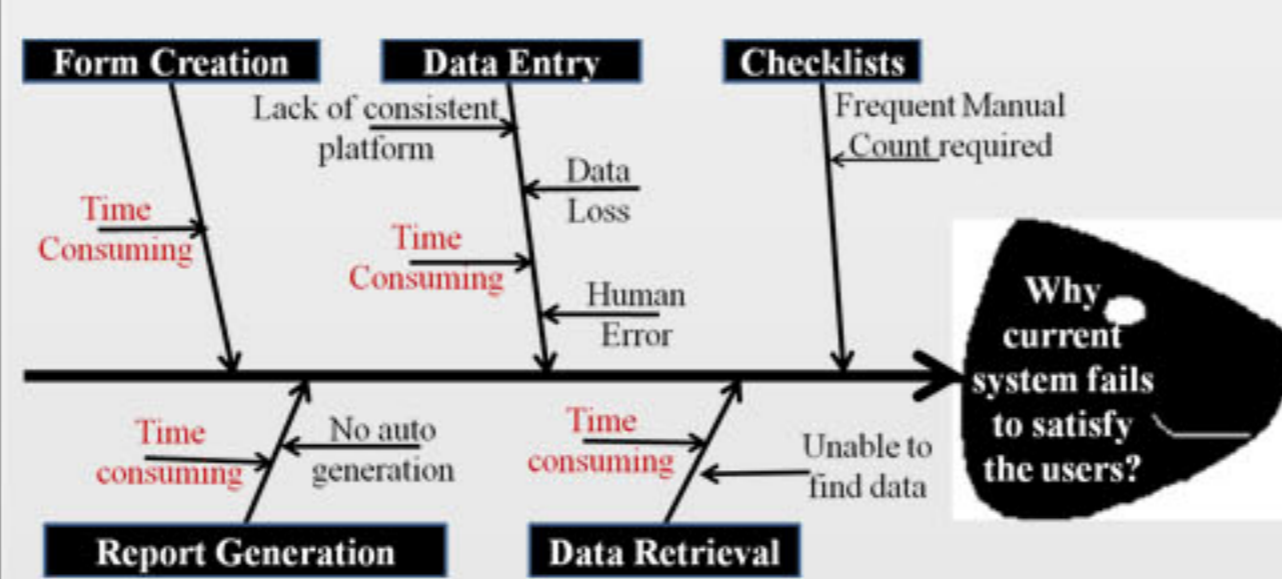
## 2. Problem Identification

Customer Requirements were analysed and prioritized using Kano Analysis which compare the current database performances as well as the customer satisfaction level.



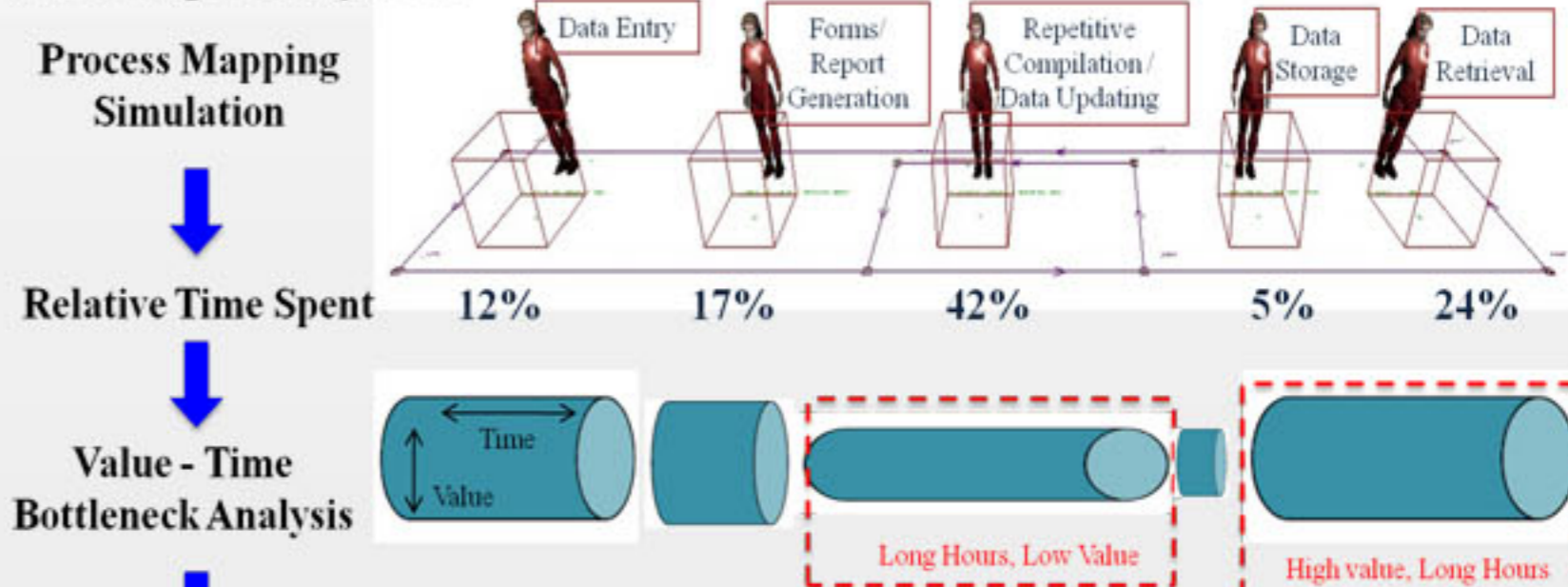
## 3. Root Cause Analysis

Fishbone Diagram was used to access the causes of customer dissatisfaction with the current data management system. It was found that engineers and technicians were dissatisfied due to the predominantly manual processes and repetition of work done.



## 4. Process Analysis

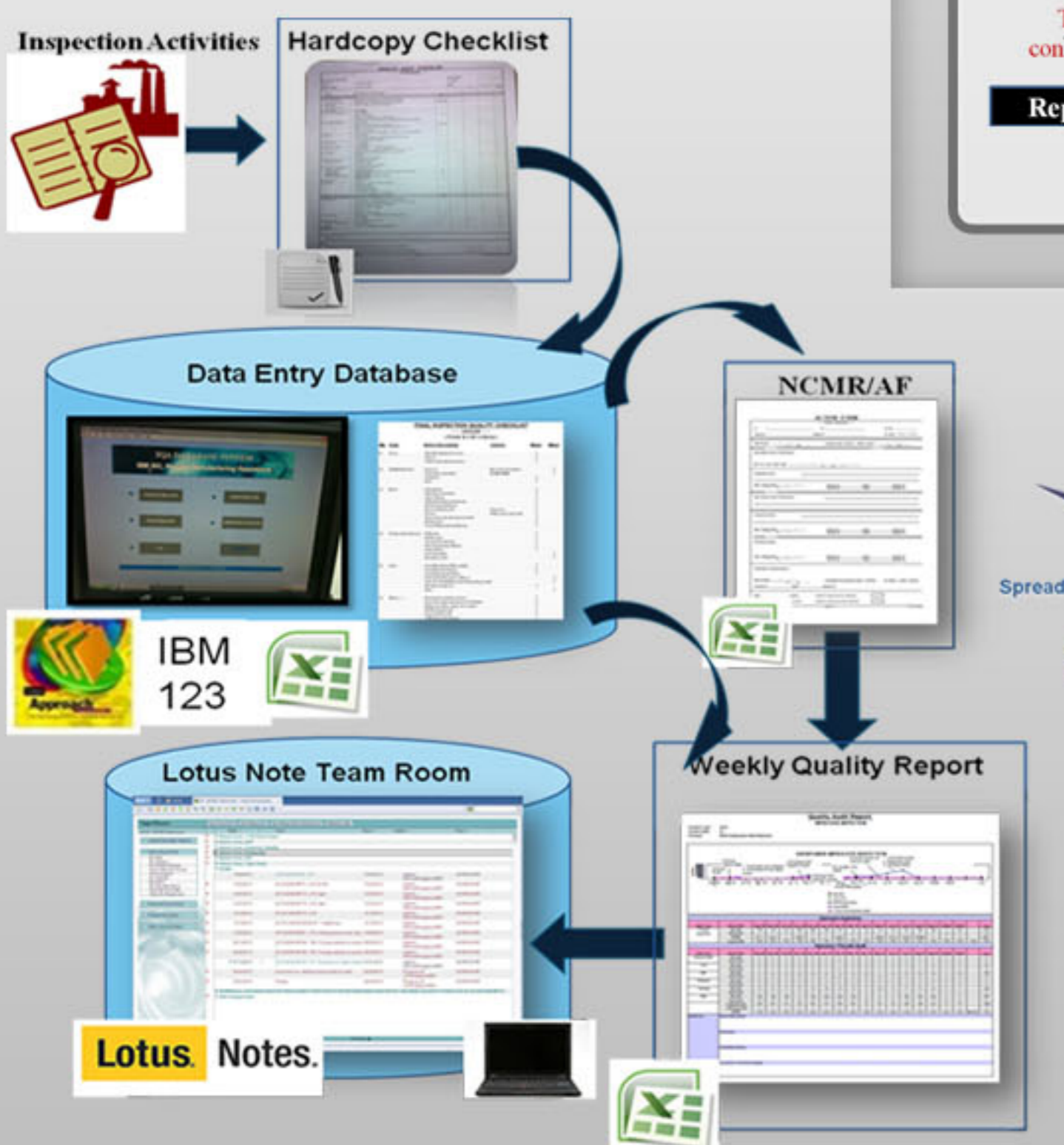
The main tasks performed by engineers and technicians were mapped into the E2E processes. Simulation was run using automod to capture the distribution of relative time spent in the various processes. It was found that most of the time were spent in low value and repetitive tasks. "5-Why analysis" was then performed to capture the root cause. It was found that the bottleneck is caused mainly by the lack of an integrated data management system.



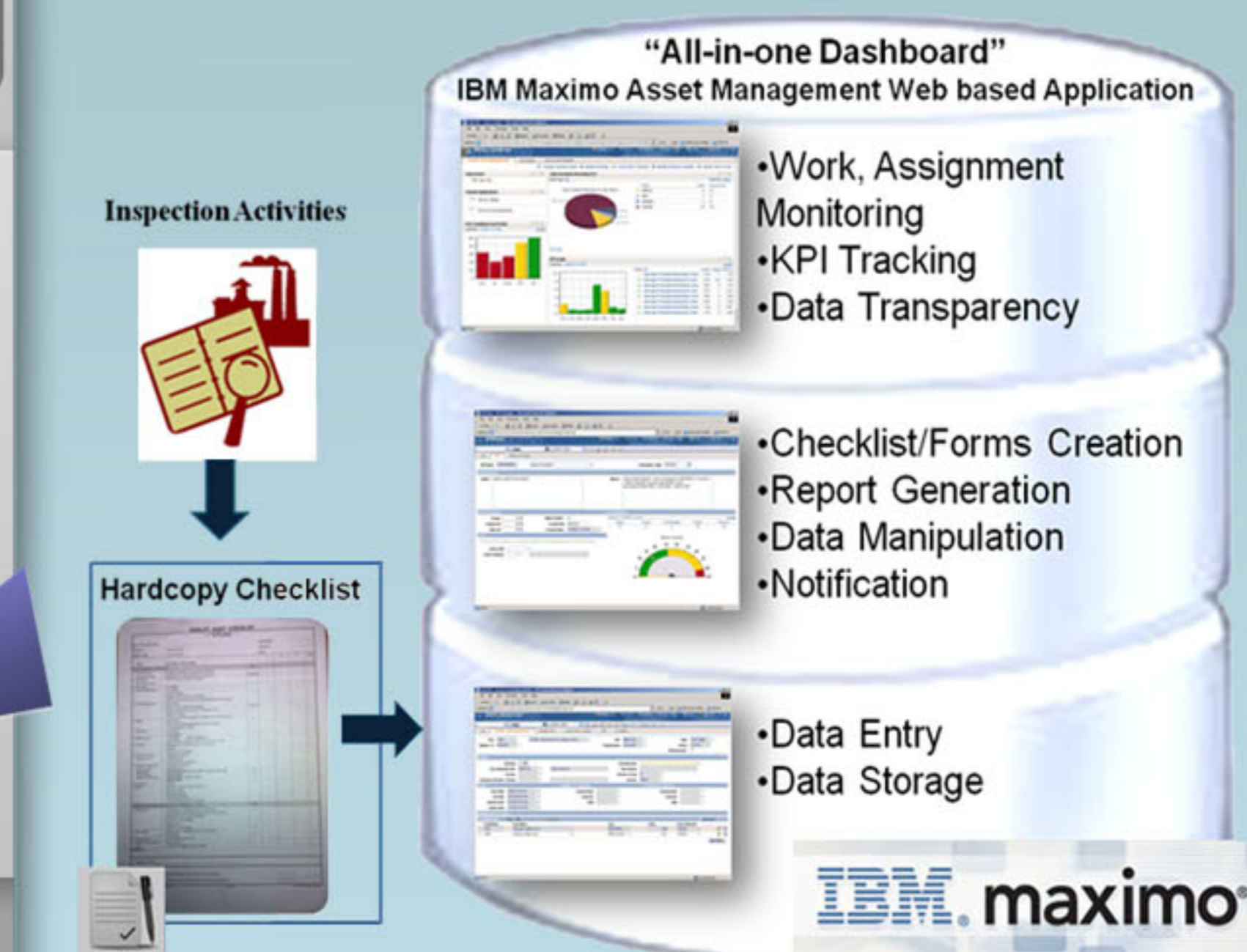
### 5-Why Analysis

- Manual counting, repetitive data updating and retrieval
- No systematic linkage between data generated
- Data are stored in different database in the end-to-end processes
- There is no common platform for data manipulation in the end-to-end processes

## 5. Current Data System

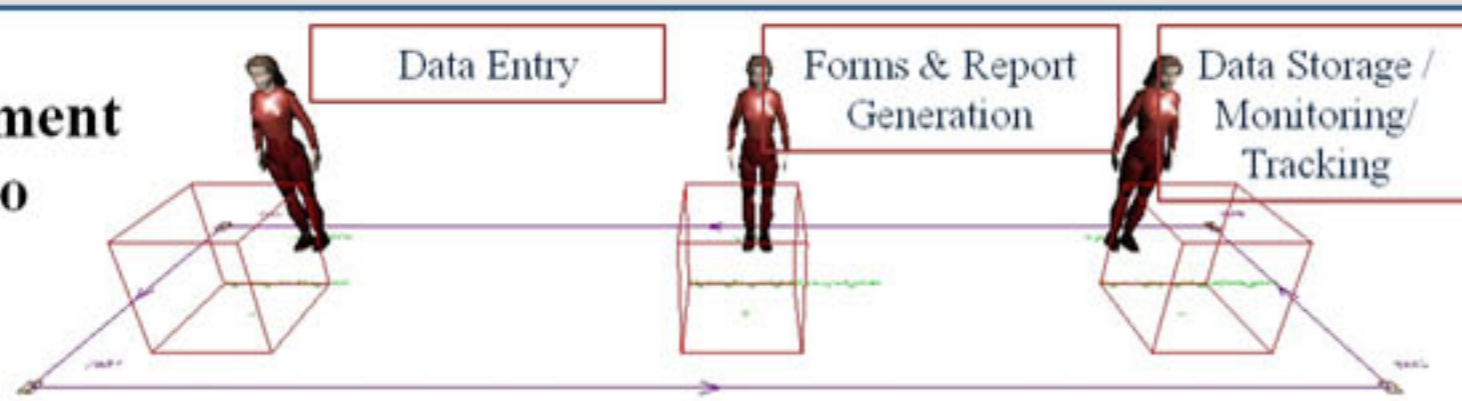


## 6. Maximo Data System



## 7. Process Improvement Assessment

### Process Improvement Using Maximo Simulation

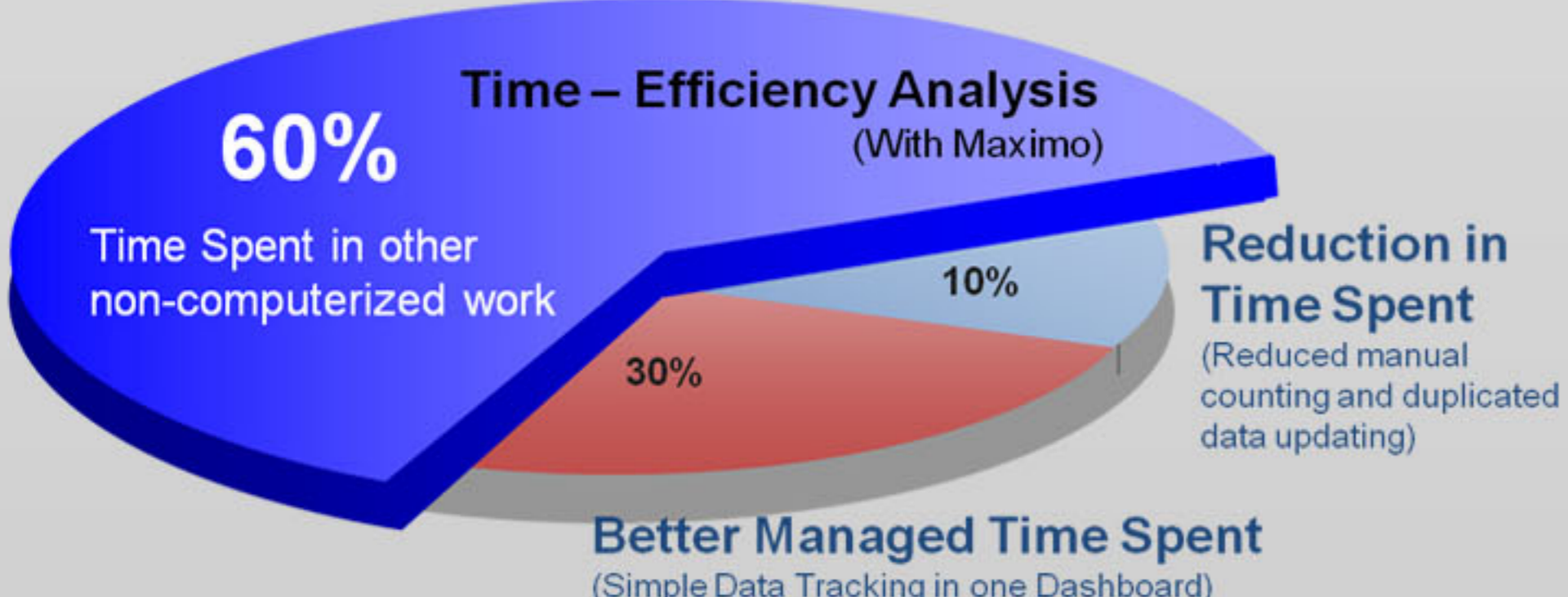


### Time-Reduction Analysis

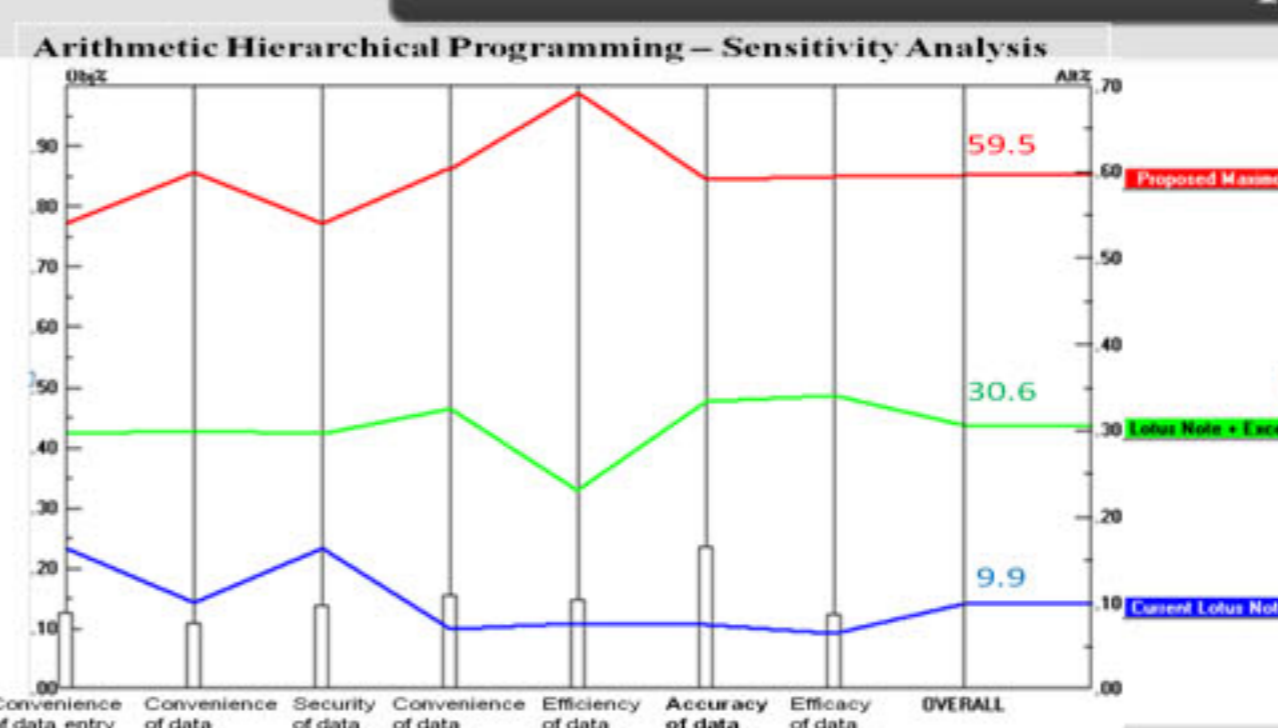
Total Time Reduction = (Time Spent<sub>current</sub>/Technician - Time Spent<sub>new</sub>/Technician) \* No. Technicians + (Time Spent<sub>current</sub>/Engineer - Time Spent<sub>new</sub>/Engineer) \* No. Engineers = **2554.9 Hr/year (9.91% Reduction)**

### Cost-Benefit Analysis

Total Cost Reduction = (Time Spent<sub>current</sub>/Technician - Time Spent<sub>new</sub>/Technician) \* No. Technicians \* Salary<sub>technician</sub> + (Time Spent<sub>current</sub>/Engineer - Time Spent<sub>new</sub>/Engineer) \* No. Engineers \* Salary<sub>engineer</sub> = **\$32,885.60/year**  
 Investment Cost = **\$10,000 (One-off cost spent)**  
 Total Saving (First Year) = **\$23000 (6.93% Reduction)**



## 8. User Satisfaction Improvement

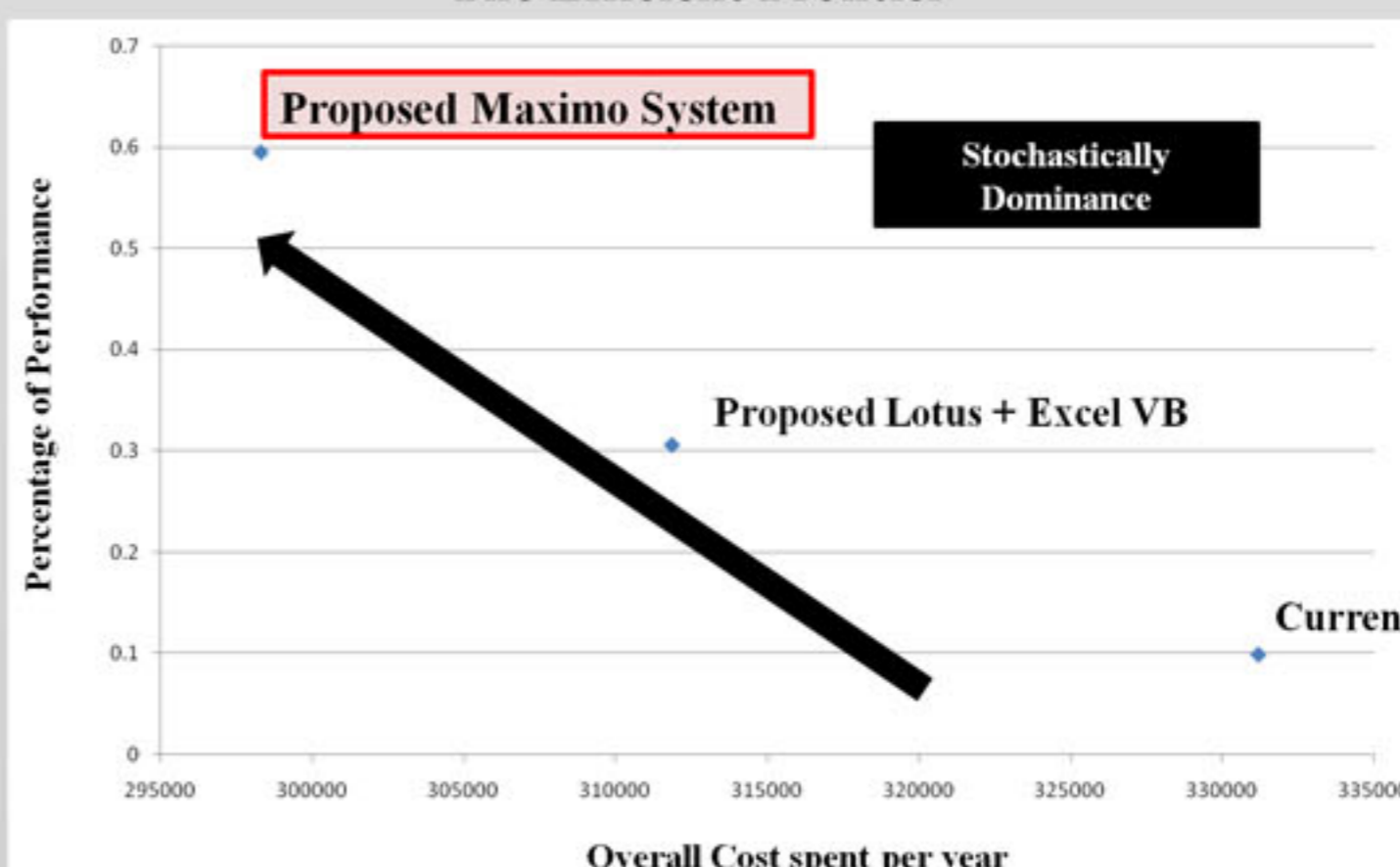


Initially, 2 alternatives were proposed as replacement of the current data system:  
 > Lotus Note + Excel VB  
 > Maximo

Using the AHP for sensitivity analysis, it was found that Maximo performed better in fulfillment of customer requirement for all aspects.

## 9. Conclusion

### The Efficient Frontier



2 Factors were accessed in the Process Improvement Analysis:  
 > Total time saving  
 > Overall user satisfaction

These factors were the main considerations in deciding the optimal data management system. Judging from both the quantification and qualitative analysis, it is concluded that Maximo is an optimal data management system that should be adopted at the IBM Quality Engineering Department.