System/Software Maintenance and Operations (M&O)

Overview

- Modern software solutions are highly intricate pieces of technology that require regular updates and maintenance.

- It is a common notion that software costs are a one-time expense that is incurred when the software is being developed/purchased. This is not the case.

- Industry experts estimate that over 90% of all costs related to a relatively modern piece of software are the regular maintenance costs that are often not accounted for.

Maintenance Activity Types

Corrective Maintenance

- Corrective software maintenance involves work done to troubleshoot problems that the software might experience.

- Costs due to modifying software to correct issues discovered after initial deployment usually accounts for 20% of all program/software maintenance costs.

Adaptive Maintenance

- Adaptive maintenance involves updates or changes made to the system/software to meet industry standards.

    - Examples:
        - changes to divisional program policies
        - changes in federal regulations and or reporting
        - changing a cloud provider
        - switching to another operating system
        - introducing new software integrations, etc.

- Both planned, routine version upgrades, as well as unexpected security fixes fall under this category.

- Costs due to modifying a software solution to allow it to remain effective in a changing business environment makes up approximately 25% of all software maintenance costs.

Preventative Maintenance

- Introducing changes to prevent deterioration of software, avoid disruptions, or make it more stable and reliable.

- Among the most common preventive maintenance activities are code optimization and updating software.

- Costs due to improving or enhancing a software solution to improve overall performance is generally 5% of software maintenance costs.

Enhancing or Perfective Maintenance

- Enhancing software performance and usability
  - updating the user experience and or user interface

- Adding new functional or reporting requirements
  - ex: adding a new business rule or creating/modifying an existing report

- The need to achieve cost savings
  - ex: optimizing cloud resources

- Enhancing software performance
  - ex: optimizing storage use for quick access to relevant data

- Costs due to improving or enhancing a software solution to improve overall performance is generally 45% or more of software maintenance costs

Cost Considerations

Influencing Factors

- Software type, its complexity, availability, and fault tolerance requirements
- Depth of program/business activities
- Federal reporting requirements, changes, and updates
- The number of application users
- A software's dependence on external servers (cloud or physical)
- Scope of maintenance activities and chosen pricing model
  - ex: price per ticket, monthly subscription fee, time and material (T&M), etc.
- Maintenance team composition and the team members' seniority level.
- Chosen support coverage (days and hours)
  - ex: 8/5, 12/5, 24/5, 24/7

Sources

Accessed February 2023

1. ScienceSoft USA Corporation, "Software Maintenance Costs – How to Estimate and Optimize" n.d., Software Maintenance Costs