

COCOMO-1 Model Cost Estimation for Home Automation System

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02 June 2024

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# 1. Introduction

This report presents the details of the Home Automation System project, aimed at designing and developing a user-friendly system for remote control and monitoring of household appliances. The project utilizes IoT technology, Arduino microcontrollers, and modern web and mobile development frameworks to create an efficient and reliable solution for enhancing home automation capabilities.

# 2. Project Breakdown

The project consists of the following components:

* Frontend (React Native): 15,000 - 20,000+ LOC
* Backend (Node.js with Express.js and MongoDB): 15,000 - 20,000+ LOC
* Arduino (C/C++): 5,000 - 10,000+ LOC
* Total Estimated LOC Range: 50,000+

# 3. Basic COCOMO

**Input Values:**

* Estimated Size (KLOC): 50+
* Constants:
  + a=3.0a = 3.0a=3.0
  + b=1.12b = 1.12b=1.12

## **Effort Calculation:**

## **Development Time:**

## Staff Size:

## Productivity:

# 4. Intermediate COCOMO

## Cost Drivers:

* Required Software Reliability (RELY): High (1.15)
* Size of Application Database (DATA): Low (0.94)
* Run Time Performance Constraints (TIME): High (1.11)
* Memory Constraints (STOR): Nominal (1.00)
* Analyst Capability (ACAP): High (0.86)
* Programmer Capability (PAC): High (0.86)
* Use of Software Tools (TOOL): Very High (0.83)
* Required Development Schedule (SCED): High (1.04)

**Effort Adjustment Factor (EAF) Calculation:**

## Effort, Development Time, Staff Size, and Productivity (Using EAF):

* **Effort (E):** 122.6 person-months
* **Development Time (D):** 18.9 months
* **Staff Size (N):** 6.49 persons
* **Productivity:** 0.408 KLOC/person-month