Cost Estimation for Sensor Collection App

I will use the Function Points method we learned in the lecture to estimate the cost and timeframe for the app.

Function Points

- **External Inputs (EI)**:
  - Sensor Selection (1 EI, Low)
  - Add Sensor (1 EI, Low)
  - Remove Sensor (1 EI, Low)
  - Start/Stop Data Collection (1 EI, Low)
- **External Outputs (EO)**:
  - Display Selected Sensors (1 EO, Low)
  - Confirmation Messages (Add/Remove/Start/Stop) (1 EO, Low)
- **Internal Logical Files (ILF)**:
  - Selected Sensors List (1 ILF, Low)
- **External Interface Files (EIF)**:
  - Backend Service for Data Submission (1 EIF, Low)

Function Type	Count	Weight (Low)	UFP
External Inputs (EI)	4	3	12
External Outputs (EO)	2	4	8
External Inquiries (EQ)	0	3	0
Internal Logical Files (ILF)	1	7	7
External Interface Files (EIF)	1	5	5
Total UFP			**32**

Cost Estimation

Adjusted productivity rate for Python: 8 hours per FP.

- **Effort (hours) = AFP × Productivity Rate = 32 × 8 = 256 hours**
- Average hourly rate: 55.-/hour
- Total Cost = Effort (hours) × Hourly Rate = 256 × 55.- =14’080.-

Lines of Code

Average LOC per Function Point for Python: 55 LOC/FP
Total Lines of Code (LOC) = Total Function Points × Average LOC per Function Point
Total LOC = 32 FP × 55 LOC/FP = 1,760 LOC

Summary:

- **Total Function Points (FP)**: 32
- **Effort**: 256 hours
- **Cost**: 14'080.-
- **Lines of Code**: 1,760 LOC

Estimation Using Widget Points

- **Identify and Classify Widgets**:
  - **UI Elements**:
    - Sensor Selection Dropdown (1 WP)
    - Add Sensor Button (1 WP)
    - Remove Sensor Button (1 WP)
    - Start/Stop Data Collection Button (1 WP)
    - Display Selected Sensors List (1 WP)
    - Confirmation Messages (1 WP)
- **Calculate Total Widget Points (WP)**:
  - Total WP = 6
- **Determine Effort and Cost**:
  - Average productivity rate: 10 hours per Widget Point.
  - **Effort (hours) = AWP × Productivity Rate = 6 × 10 = 60 hours**
  - Average hourly rate: CHF 55/hour.
  - **Total Cost in CHF = Effort (hours) × Hourly Rate = 60 × 55 = CHF 3,300**

Summary:

- **Total Widget Points (WP)**: 6
- **Effort**: 60 hours
- **Cost in CHF**: CHF 3,300

As we can see, calculating the cost and time with widget points rather than function points leads to a much different estimate. This is most likely because it doesn't consider the more complex aspects of the program (inputs, outputs, inquiries, files, and interface) and instead focuses on the rather simple & easy frontend.