Universidad de Guadalajara

Centro Universitario de los Valles

Subject: Software Configuration Management

Teacher: Dr. Omar Ali Zatarain Gurán

Author: Patricia Guadalupe Gutiérrez Constantino

Change 1. Electronic payments

Description: Allow membership through online payments with credit card, debit card or PayPal.

Objectives:

Automate the membership renewal process.

Reduce the administrative burden of payment management.

Improve the user experience with online payments.

Impact of Change:

Factor	Description
Technical	Requires payment API integration and database adjustments.
Economic	Costs associated with payment and development fees.
Temporary	Development time is approximately 4 weeks.
Security	For secure payments, compliance with regulations is required.

Impact on Software Architecture

A payment management module will be added.

The database will be updated to record transactions.

The interface will be modified to include payment options.

Phases

State	Impact
Design 0- 25 %	Can be integrated from the foundation, facilitating implementation.
Mid-Development 50-75 %	Requires adjustments in the database and backend, with a moderate impact.
Final Stage 75 %	Not recommended, as it could compromise system stability before delivery.

Strengths

- Good development team with defined roles

Weaknees

- cost for payment devices such as terminals

Opportunities

- Expansion of the system for selling products within the gym.
- Implementation of recurring payments with automatic memberships.
- Reducing the administrative burden.
- Facilitates payment to customers, avoiding face-to-face procedures.

Threats

- Time and cost for segurity .

Change 2. Rewards

Description: Introduce a points system that rewards frequent gym attendance.

Objectives

- Increase customer motivation and loyalty.
- Generate valuable data on usage habits.
- Differentiate the gym from competitors.

Impact of the change

Factor	Description
Technical	Requires adding a table in the database and new backend logic.
Economic	Moderate development cost.
Time	May extend development by 3 weeks.
Security	No major risks, but requires validations to prevent misuse.

Impact on Software Architecture

- Creation of a new table to store customer points.
- Backend module for point calculation.
- Interface adjustments to display reward progress.

Phase

State	**Impact**
Design 0-25%	Can be structured correctly without affecting other functionalities.
Mid-Development 50-75%	Can be implemented without too many complications, though it requires database adjustments.
Final Stage 75%	Not recommended, as it would affect system stability before delivery.

Strengths

- Good development team with defined roles

Weaknees

- Implementation and testing may take longer than estimated.

Change 3. Facial recognition

Description: Implement facial recognition as an alternative to the fingerprint reader to improve security and speed of access.

Objectives

- Increase security and prevent access fraud.
- Improve user experience with a faster system.
- Reduce dependency on fingerprint readers.

Impact of the change

Factor	Description
Technical	Requires greater data processing capabilities.
Economic	High cost due to additional hardware and biometric data storage.
Time	Extends development by at least 6 weeks.

Security	Privacy regulations on biometric data must be met.

Impact on software architecture

- Implementation of a facial recognition model.
- Storage and encryption of biometric data.
- Adjustment of the authentication process for facial recognition.
- Updates to the user interface for facial registration and authentication.

Phases

Cases	Impact
Design 0-25%	Can be planned architecturally, but requires significant additional resources.
Mid-Development 50-75%	High risk of affecting other functions; may slow development and require additional hardware.
Final Stage 75%	Not recommended, as it could delay system launch and create stability issues.

Strengths

- Good development team with defined roles

Weaknees

- Requires investment in additional hardware (high-quality cameras).
- May fail in low-light conditions or changes in the user's appearance.
- Higher storage and processing consumption in the database.

Opportunities

- Application in other sectors such as offices or sporting events.

Threats

- development time and cost and security recognition.