



**Cyprus International University**

Faculty of engineering  
Department of Software Engineering  
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## **Masked Face Recognition System (MFR) Business Case**

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V1

## Table of Contents

1.0 REVISION HISTORY .....	3
2.0 STATEMENT OF PURPOSE .....	3
3.0 BUSINESS OBJECTIVE .....	3
4.0 CURRENT SITUATION AND PROBLEM/OPPORTUNITY STATEMENT .....	4
5.0 CRITICAL ASSUMPTIONS AND CONSTRAINTS .....	4
5.1 CRITICAL ASSUMPTIONS.....	4
5.2 CRITICAL CONSTRAINS.....	4
6.0 ANALYSIS OF OPTIONS AND RECOMMENDATIONS .....	5
6.1 IDENTIFICATION OF OPTIONS.....	5
6.2 COMPARISON OF AVAILABLE OPTIONS.....	5
6.3 RECOMMENDED OPTION.....	5
7.0 PRELIMINARY PROJECT REQUIREMENTS .....	6
7.1 TARGET BENEFIT.....	6
7.2 OUTPUT.....	6
7.3 STACKHOLDERS.....	6
7.4 WORK PLAN.....	6
7.5 RESOURCES.....	7
8.0 POTENTIAL RISKS .....	8
9.0 APPROVAL SIGNATURES .....	8

## 1.0 Revision History

Name	Date	Reasons For Changes	Version

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## 2.0 Statement of Purpose

The purpose of this document is to justify the commitment of resources to MFR project. This document describes (a) the business objective, (b) the current situation and problem, (c) a list of critical assumptions and constraints, (d) an analysis of possible solutions and recommendations, (e) the preliminary project requirements, (f) the budget estimates and financial analysis, (g) a schedule estimate, (h) a list of potential risks, (i) a section with approval signatures, and (j) an appendix section.

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## 3.0 Business Objective

AZFCO. is a company started by three university students in North Cyprus, aims to create a technology similar to (God eye) based on high security network (Blockchain).

MFR project is little chunk of our system as the God eye technology based on the facial recognition and having a stable masked facial recognition as sub system worked within God eye system will increase the accuracy and efficiency of the system at all.

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## 4.0 Current Situation and Problem/Opportunity Statement

Normal facial recognition systems have ability to recognize not covered faces, so this technology can be used as a personal security system such iPhone face ID, Lock and unlock the doors using face recognition, and etc.

If we need a system for public control like the systems that is used in China for public control, we need a system that is stable, accurate, and high efficiency but the current facial recognition technology is breakable because who want to make a crime will cover his/her face with a mask and the current technology is unable to recognize masked faces, so the criminal will simply get away with his crime, So we need a system meet this specifications and unbreakable, so using a masked facial recognition system will add this advantages to the main system and we will have a high accurate system and using the blockchain networks for the system communication will make the system unbreakable.

This masked face recognition technology can be used as a sub system within God eye technology using the blockchain networks for communicating and chainlink technology to collect off-chain data, here we are talking about closing the gap of the security, accuracy and efficiency.

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## 5.0 Critical Assumptions and Constraints

### 5.1 Critical Assumptions

- We assumed Chainlink - Kadena blockchain bridge will be ready in 1-2 weeks.
- One of the weak points of the system is the system smart contract we assumed the smart contract will be free bug, so no one can use these bugs to break the system.

### 5.2 Critical Constraints

- Chainlink technology: We are forced to use Chainlink technology which allow us to collect off-chain data and pass it through the blockchain to increase the security, we are forcing to use this service provider because they have the most mature technology for off-chain data.
  - External dependencies: The system smart contract depends on having a bridge between Chainlink blockchain and Kadena blockchain.
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## 6.0 Analysis of Options and Recommendations

The analysis of options depends on the scenario in which the customer wants to use the system. Using the system for public control is completely different from analyzing options if the system is used to open and close doors, so we will assume that the system will be used for public control.

### 6.1 Identification of Options

- Option 1: Enact laws prohibiting the wearing of masks and the winter hats that can be used to cover the face.
- Option 2: Using masked face recognition system with the normal internet networks.
- Option 3: Using normal face recognition system with the blockchain networks.
- Option 4: Using masked face recognition with the blockchain networks.

### 6.2 Comparison of Available Options

- Option 1: Cannot banned the medical masks due to the spread of viruses, also cannot banned the winter hates due to the low tempter in many counties such as Russia.
- Option 2: With this we have solved the problem of masked faces, but our system is still simply hackable (breakable).
- Option 3: This is how we solved the problem of safety, but we still have the problem of masked faces.
- Option 4: This is how we solved the problem of safety, and the problem of masked faces.

### 6.3 Recommended Option

Replacing old technology by a new one is easier than taking any actions or enact laws because the laws can be broken but the decentralization in god eye system or even MFR system (part of god eye system) is very hard to be broken (Closer to being unbreakable).

## 7.0 Preliminary Project Requirements

### 7.1 Target Benefits

- Masked Face recognition system for locking and unlocking the door
- Masked Face recognition system as part of god eye project for public control
- Masked Face recognition system can be used for face passport (Biometric passport)
- Solving the problem of inability to recognize masked faces which means solving of huge crimes.

### 7.2 Outputs

- Masked Face Recognition System
- Alternative authentication method, RFID system
- Blockchain connection to data transfer and validation

### 7.3 Stakeholders

<u>Stakeholder</u>	<u>Document</u>	<u>Format</u>
Ahmad Jawabreh	Project Status Report	Email (Protonmail)
Zaid Mohtaseb	Hardware connection maps	Hard Copy
Ferhat Bal	Project Source Code	GitHub

### 7.4 Work Plan

<u>Milestone</u>	<u>Expected Completion Time</u>
<enter milestone here>	<specify expected completed time here in specified format>
Lessons learned report	05/25/2006
<Add rows as necessary>	

## 7.5 Resources

Hardware Part	Version	Piece	Price
Microcontroller	Arduino UNO R3 Kit	1	880 TL
Microchip ports Extenders	74HC595	2	5.25 TL
Ethernet Port	ENC25J60	1	107.5 TL
LCD Screen	1.8inch	1	219 TL
Power Cable	GePro UM-85	1	34.2 TL
Red Led	Red Led Package	1	3.5 TL
NFC Keychain	13.56 MHz	2	4.55 TL
RFID Card	125 kHz	2	4.55 TL
Breadboard	Normal	3	21 TL
Battery	9V	1	9.45 TL
Ticket NFC	13.56 MHz	5	4.2 TL
Jumper Cable Kit	M-M	2	19 TL
RFID Reader	RC522	1	31 TL
Green Led	Green Led Package	1	3.5 TL
Resistors	Resistors Kit	1	56.33 TL
Temperature Sensor	DH11	1	31.3 TL
Welding Gun	ZD 23 30W	1	103 TL
Gas Sensor	MQ-2	1	28.4 TL
Double Faced Pertinax	7*9 cm & 8*12 cm	1	33 TL
Camera	ESP32-CAM	1	157.5 TL
Soldering Tin	1.60 mm 100 g	1	75.7 TL
Multimeter	Marxlow DT-830D	1	51 TL
<b>Total Cost</b>	<b>1885 TL</b>		

## 8.0 Potential Risks

Understand how the system algorithm exactly working.	If the people understood the exact working mechanism of the system they can cover the features that is used to recognize the masked face.
If the system will be used for public there is a risk to give wrong reports.	Using the system in public control and especially in countries such as China that all of the people there they share the same facial features so the system should be well trained on like this scenario.
Breaking the system bridge.	One of the weak point on the system is our smart contract so there is a possibility of breaking the system through the smart contract so we will use trusted auditing company (CertiK) to audit our smart contract
Understand how the system algorithm exactly working.	If the people understood the exact working mechanism of the system they can cover the features that is used to recognize the masked face.
. If the system will be used for public there is a risk to give wrong reports.	Using the system in public control and especially in countries such as China that all of the people there they share the same facial features so the system should be well trained on like this scenario.

## 9.0 Approval Signatures

*As project manager on MFR Project, I have reviewed the information contained in the Business Case and agree to its content.*

Name	Position	Signature	Date
Ahmad Jawabreh	Hardware Specialist - Smart Contract Developer		12-05-2022

The signatures above represent stakeholders' agreement and acknowledgement of the information contained in this document.



