RECFACES

ID-FIT

TECHNICAL DESCRIPTION

IDFT.TI.DOC.990

CONTENTS

1 INTRODUCTION (PURPOSE)

Id-Fit is a biometric software product intended to prevent unauthorized use of customer bracelet and to optimize fitness-club staff.

Id-Fit ensures the following possibilities:

- **Optimization of the staff**
  Biometric identification ensures process automation of access control which reduces costs on service staff, accelerates work and eliminates errors which have been often raised before due to the human factor.
- **Protect from unauthorized user of fitness-bracelets**
  To prevent unauthorized use of customer bracelet, additional verification is implemented at the entrance of center by facial biometrics.
- **Increase of fitness-centers service level**
  Use of advanced technology increases fitness-center reputation and ensures comfort for customer by reducing time on entrance/exit process.

Id-Fit benefits:

- **Economy.** Due to low cost of system service and to optimize costs of staff;
- **Comfortable interface.** Simple and user-friendly interface for center staff/partner/support;
- **Universality.** Possibility to integrate Id-Fit product with third systems due to open API. Additional and simple connection from 2 to 10 cameras in verification mode.

2 SOFTWARE DESCRIPTION

2.1 SYSTEM COMPONENTS

For the correct functioning of the System, the following minimal set of equipment is required:

- Server
- Customer PCs
- Cameras and terminals

The detailed description of the equipment recommended characteristics is indicated below.

2.2 ARCHITECTURE

The System consists of the following components:

- **Id-Fit Core —** System server part consisting of separate services and including System settings interface, recognition algorithms, database and reports;
- **Id-Fit Tracker —** video pre-processing server;
- **ACS Adapter —** service ensuring data exchange between systems and sending notification;
- **Id-Fit application —** System part responsible for interaction with terminal on passage and access control in offline-mode;

System may be integrated:

- With ACS
- With tracker relay of tourniquet or any passage device
- With terminal

- With Wiegand

System architecture schemes for different uses are presented below.

When integrating only with ACS, Id-Fit system with ACS-Adapter ensures data synchronization on people or any other information.

Id-Fit System recognizes person's face on passage which fixed by camera and ensures sending events on access requests into ACS. ACS determines person's access and sends an appropriate command on relay of tourniquet or any other checkpoint equipment.

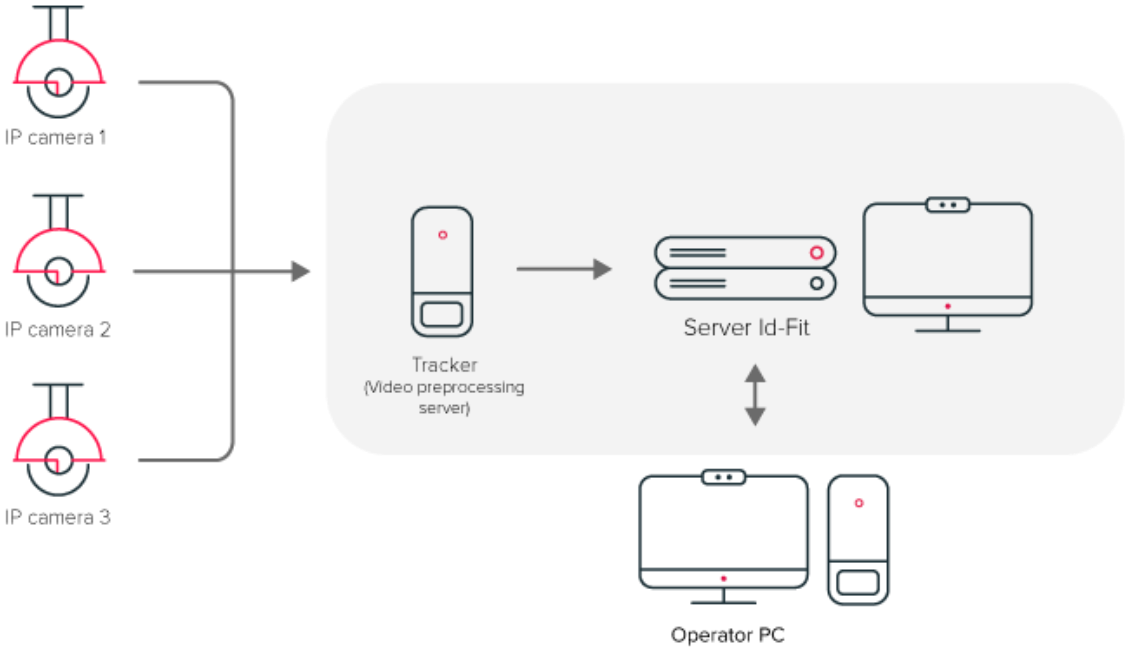

Figure 1. Schematic diagram of the connection of the System components

2.3 TECHNOLOGIES

System is developed with the following programming languages and software:

- Golang
- C#
- AngularJS
- RabbitMQ
- Nginx
- PostgreSQL
- Redis

2.4 LIST OF ID-FIT CORE SERVICES

Id-Fit Core contains the following service:

Table 1. Id-Fit Core service description

Service	Description	Port
Nginx	Web-server and mail proxy server	80, 443, 23231
PostgreSQL	Free object-relational database management system (DBMS)	5432
RabbitMQ	Service runs queue data	15672
Redis	DBMS on class No SQL with open source code	6379
mi-controller-acs	Service ensuring business integration with several external ACS (access management) and realizing request routing to appropriate ACS adapters	6666
mkv-server-report	Service responsible for report creation. It consists of report on age and gender	11084
mu-server-api	Notification service	11090
mkv-server-url-shortener	Service to reduce URL	11092
mas-server-api	Management service providing API to process data on devices, applications, cameras.	11101
mas-server-settings	Server main purpose is to store and to send configuration to modules. Such service always first starts of all services. In case of false run, System is not run.	11102
mfs-server-api	Storage and operation with photos service.	11300
mfs-server-thumbnail	Service to operate with thumbnail photos of file storage	11301
mi-sender-email	Sending to email service	11400
mi-sender-http	Sending message by http service	11401
mi-sender-smsmodem	SMS sending service	11402
mkv-server-admin	User interface for System administration module	11500
mkv-server-api	Service contains API methods to operate with System basic functionality	11501
mkv-server-auth	Authorization in System by entering login and password service	11502
mkv-server-ws	Back-end for application work with customer via WebSocket	11503
backup-client-server-api	Backup service	11506
monitoring-server-windows	Service to monitor windows services state	11507
logging-server-api	Log service	11508
event-configuration-api	Settings of System events processing service	11510
event-storage-server-api	System events processing server	11511
svg-converter-api	Service to convert images	11513
mkv-client-profiles-import	Service to import profiles	11514
mi-bus-rodos10-controller	Service to integrate with rodos relays	11521
mmpd	Service to manage detection process	11600

modi-image-worker	Photo processing service (crop/resize, etc).	11700
modi-server-api	Service to process discrete images	11701
modi-ubda-tevian-[01-04]	Service for processing photos: searching faces and creating biometric templates	11710 y [01], 11711 y [02], 11712 y [03], 11713 y [04]
mrp-server-api	Service providing API to process data when operating with video streams	11800
mrp-matching-tevian-go	Service ensuring facial recognition on presented images	11806
mrp-server-broker	Service to manage queue requests to comparison algorithms	11821
ms-server-filecache	Service ensuring file cash	11900
support-server-api	Monitoring service permitting to operate with metrics and dashboards	11901
mkv-scheduler-api	Service operating with tasks on schedule.	11910
video-restreamer-server	Service to retransmit video stream from pre-processing video servers (trackers)	40000, 40001

One of the server requirements for installing the Id-Fit Core software package is the absence on the server of the software specified in the table above and the presence of free ports indicated in the table.

3 REQUIREMENTS FOR CORRECT WORK

3.1 ID-FIT SERVER

It is recommended to install the Id-Fit Core on the server. Server characteristics directly depend on the number of cameras processed by the System. An approximate calculation for the most common values is presented in the table below.

Table 2. Server requirements

Number of cameras	CPU (Core)	RAM (GB)	HDD(GB)	SSD(GB)
1	5	16	600	240
2	6	16	700	240
3	8	16	700	240
5	12	32	800	240
7	14	32	900	240
10	18	64	1000	240

Operating system: Windows 10 Pro (2004 and later, according to the end date of the operating system support), Windows Server 2016/2019 and later. If you have the “Windows 10 Pro N” OS edition installed, you have to additionally install the “Media Feature Pack” component. The account (login/password) (including for a remote user) must remain unchanged throughout the installation. The account (login/password) must allow upgrading privileges to Administrator if necessary.

The following components must not be pre-installed on the server:

- PostgreSQL
- RabbitMQ
- Redis
- Web server that uses ports 80 and 443

3.2 CAMERA INSTALLATION

- The camera must be fixed using the special bracket supplied to minimize the blurring caused by the movement of the camera. It is allowed to mount the camera on a tripod; the camera installation height is from 1.5 to 2 m.
- The recommended camera placement: a person looks at the camera and moves towards it or across the camera's line of sight.
- Screens, interactive kiosks, boards, banners should not block a person moving.
- For recognition and identification purposes, it is required to use cameras with varifocal lenses.
- The lens focal length must be in the range from 9 to 40 mm.
- The camera tilt at the end of the face detection area should be within 15 deg.
- The optimal camera height above the floor is 2.2 m, it is desirable that the beginning of the face detection area is located further than 8.0–8.5 m.
- If cameras are mounted indoors, uniform and constant level of illumination must be provided. For proper facial recognition, indirect lighting must provide such conditions, when visitors' faces have uniform illumination without shadows or glare. The recommended light intensity is about 300 Lux (minimum 150 Lux, maximum 600 Lux).
- At the beginning of the process of facial recognition, it is required to mount and configure a camera so that the size of an adult's face is about 160x160 pixels (the line of sight is more than 2 meters in width — a little wider than the width of outstretched arms).

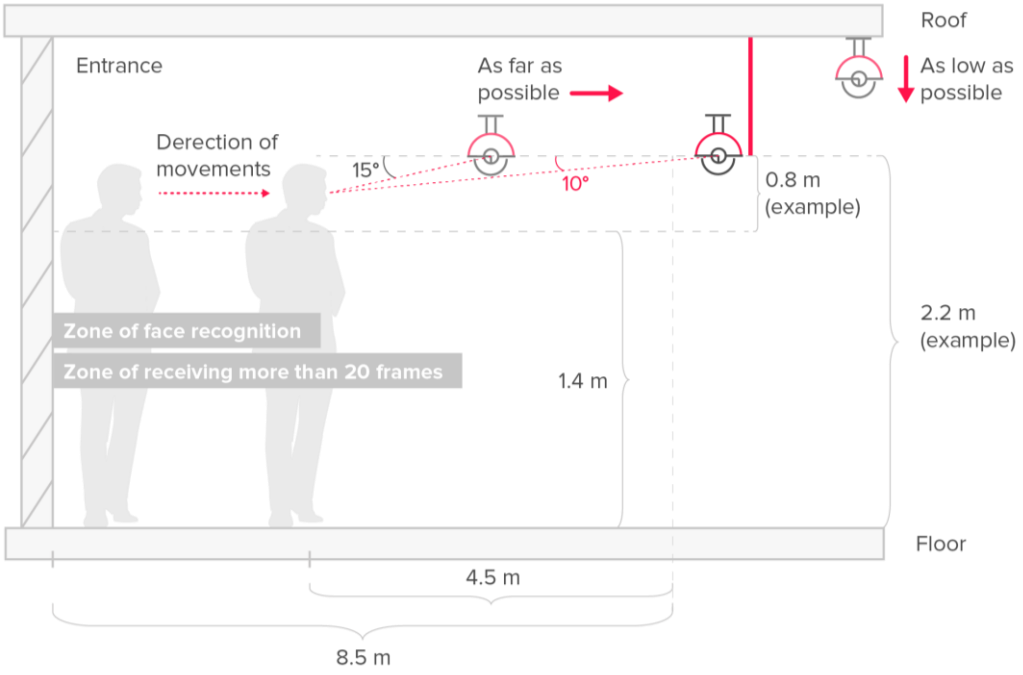

Figure 2. Camera location in the vertical plane

4 LANGUAGE SUPPORT

The Id-Fit software is a multilingual solution that allows you to choose from the following language options:

- English (by default)
- Spanish

The list of available languages can be expanded upon request.

5 DOCUMENTATION LIST

- Id-Fit Administrator's Guide
- Id-Fit Operator's Guide

6 SOFTWARE MANUFACTURER

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