Huawei Smart Stadium

Huawei Smart Stadium Design Document

Prepared for

Huawei

Last Updated: 18-07-2019

Version Draft

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Revision and Signoff Sheet

Change Record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Author | Position | Version | Change Reference |
| 18.07.2019 | Hany F. Mohammed | Architect | 0.5 | Modified Version. |

Reviewers

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| Name | Version Approved | Position | Date |
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1. Logical View
   1. Overview

These are the different modules of the system, with integration overview with other systems.



* 1. Details
     1. Stadium Entries
  + Each stadium entry will be composed of multiple gates.
  + Each gate will have the following components
    - A physical [turn style] gate (*or similar*), controlling the access (*provided by the customer*).
    - [Access Controller] controlling the physical gate to be opened or closed.
    - [Pad with Camera]
      * Will be used to access the [Access Controller] using [Dry Contact] protocol.
      * Will be used to capture the person face, authenticate it by comparing it with the white list synchronized from the system controller (ROMA), to allow access or deny it.
      * Will be responsible to sync attendance records with the same system to sync the [pass by] attendance records.
    - [QR Reader]
      * will be responsible for decrypting the QR printed on the ticket / FAN / employee, and send it to the system controller responsible for understanding the schedules and events (Gate Pro), which acts as the other module [Face Recognition] for keeping track of events times and access policies for both FANs and Employees.
      * If the access was granted, this component will not be responsible to contact with the [Access Controller] directly, but rather will ask [Gate Pro] to open the controller using the dry contact protocol used between [Gate Pro] and [Access Controller].
    1. [System Controllers]

The gate components will be dealing with 2 [System Controllers], where they provide similar functionalities, but to control their relevant hardware.

* + [ROMA / FR]
    - Used to validate face recognition for different other systems.
    - Used to sync white list of attendees, based on data extracted from the running sports events, their tickets, and the staff working at those time frames.
    - Used to sync attendance records, and pass it to the underlying systems, used to display these data according to their dashboards and reports.
    - Used to communicate with the [Pad] to sync whitelist and attendance records.
  + [Gate Pro]
    - Used to sync white list of attendees, based on data extracted from the running sports events, their tickets, and the staff working at those time frames.
    - Used to sync attendance records, and pass it to the underlying systems, used to display these data according to their dashboards and reports.
    - Used to communicate with the [access controller] open the gate based on requests coming from the [QR Reader].
    1. [Integration Layer]

this will be the main layer used to sync and integrate with all of the existing systems, and sync between all of them

* + It will need to integrate with [ROMA] for periodic synchronization, and for real time queries related to face recognition.
  + It will need to integrate with [Gate Pro] for periodic synchronization.
  + It will need to integrate with any external service provided by the customer or the government to support validating FANs or facilities data, for the FANID system once needed.
  + It will need to integrate with [TAM Pro] for periodic synchronization, and for real time queries related to face recognition.
  + It will need to integrate with [FAN ID] for periodic synchronization, and for real time queries related to face recognition.
    1. [TAM Pro]
  + It’s the system responsible for managing work shifts for stadium employees, and tracking their attendance times.
    1. [FAN ID]
  + It’s the system responsible for managing events schedules for FANs, and reserving their tickets.

1. Physical View
   1. Overview



* 1. Details
     1. Controllers
* Servers:
  + [VM.Controller-ROMA]
  + [VM.Controller-GatePro]
* Will contain the logical components:
  + [ROMA]
  + [Gate Pro]
* Will integrate with the following components.
  + PAD through Network/VPN.
  + QR through Network/VPN.
  + Access Controller through Network/VPN.
  + Integration Services.
  + DBs
* Recommended to have the following specs
  + Windows Server 2016 (*or later*), with IIS 10.x (*or later*).
  + RAM: 16+ GB
  + Processor: 4+ Cores
  + NOTE: for ROMA (*pending Huawei’s confirmation*)
* Network
  + VPN network (*for Hardware access*).
* Platform
  + .Net Framework 4.6+
    1. Integration
* Servers:
  + [VM.Integration]
* Will contain the logical components:
  + [Integration Service Layer]
* Will integrate with the following components.
  + ROMA.
  + Gate Pro.
  + External services through VPN.
  + Backend systems (FAN ID & TAM Pro)
  + DBs (FAN ID & TAM Pro)
* Recommended to have the following specs
  + Windows Server 2016 (or later), with IIS 10.x (or later).
  + RAM: 16+ GB
  + Processor: 4+ Cores
* Network
  + VPN network (for external systems).
* Platform
  + .Net Framework 4.6+
    1. Backend
* Servers:
  + [VM.Backends]
* Will contain the logical components:
  + [TAM Pro]
  + [FAN ID]
* Will integrate with the following components.
  + Integration Services.
  + DBs (FAN ID & TAM Pro)
* Recommended to have the following specs
  + Windows Server 2016 (*or later*), with IIS 10.x (*or later*).
  + RAM: 16+ GB
  + Processor: 4+ Cores
* Network
  + Nothing special.
* Platform
  + .Net Framework 4.6+
    1. Database
* for ROMA (*pending Huawei’s confirmation*).
* SQL Server 2016 (*or later*).
* High Availability is recommended.

1. User Stories
   1. Conceptual

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **System** | **Sub System** | **Module** | **Component** | **User Story (US)** | **Use Case (UC)** | | **Comments** |
|  |  |  |  | **US** | **Role** | **UC** |  |
| TAM PRO | TAM PRO | Users | Security | User login | System | User login | Note: will not use ROMA for logging-in ~~FR API : login~~ |
| Profiles | Registration | HR | acquire and validate image of staff member through the registration process | Note: Recommended images with clear images, light illumination, and pure color background, like of passport photo |
| System | validate is of blacklist or not with [Face Recognition] API | FR API : Person-retrieval by Image API |
| Match Attendance Policy | HR | Query and Select Attendance Policy with [Face Recognition] API | FR API : Obtain Attendance Policy.  And then TamPro should remember the value of parameter "id" and “tag\_id\_list” from response. |
| System | Create Attendance Policy | FR API : Configure attendance policy |
| Match Access Policy | HR | Query and Select Access Policy with [Face Recognition] API | FR API : Obtain Access Policy  And then TamPro should remember the value of parameter "id" and “tag\_id\_list” from response |
| System | Create Attendance Policy | FR API : Configure attendance policy |
| Activate profile | Admin | activate the staff profile |  |
| System | Send approved images (related to approved staff members) with [Face Recognition] API | FR API : Add Staff  [Note] The value of parameter "tag\_id\_list" of the staff is gotten from the value of  [HSS\_STAFF\_002.001] and [HSS\_STAFF\_003.001] |
| Update Profile Info | HR | acquire and validate image of staff member through the profile update process |  |
| System | Send approved images (if changed and approved) with [Face Recognition] API, to update existing FR data if the staff had been activated | FR API : Update Staff Information |
| HR | Match Attendance Policy |  |
| HR | Match Access Policy |  |
| Profile De-activation / Delete | Admin | deactivate / delete profile from [Face Recognition], related to given TamPro profile, if the staff had been activated | FR API : Delete Staff |
| Attendance Records | Attendance Records | Synchronize staff attendance data | System | query the Staff information with [Face Recognition] API at 24:00(e.g.) every day | FR API : Attendance Record |
| Show Dashboard Attendance  Statistics | System | should report weekly/monthly/yearly as dashboard |  |
| Users | Blacklists | Synchronize data of blacklist | HR | create, read, update and delete blacklist |  |
| System | send approved images (related to approved blacklist members) with [Face Recognition] API case by case | FR API : Blacklist: Users can create, update and delete blacklist |
| FAN ID | FAN ID | Users | Security | User login | System | User login | Note: will not use ROMA for logging-in ~~FR API : login~~ |
| Profiles | Registration | Admin | acquire and validate image of FAN ID member through the approval process | Note: Recommended images with clear images, light illumination, and pure color background, like of passport photo |
| System | validate is of blacklist or not with [Face Recognition] API | FR API : Person-retrieval by Image API |
| Activate profile | Admin | Approve / Activate | activate Fans in Fan ID and label “activated” |
| Update Profile Info | FAN | acquire, validate, and update image of FAN ID member through the profile update process |  |
| deactivate profile | Admin | Deactivate |  |
| Events | Tickets | Booking ticket | System | Get images (related to activated fan members) and associate them to entry points while booking ticket with FAN ID account | [Notes]   1. ticket classes should be configured, each with set of stadium entries. 2. if specific class is associated with multiple entries, we should choose the nearest entry to the reserved seat. 3. all of these configurations, should be set in the [Integration Service Layer] |
| System | Reject ticket service if the fan is of blacklist with [Face Recognition] API for all visitors while booking ticket | FR API : Person-retrieval by Image API ("identity" is BLACKLIST). |
| System | Send all approved images (related to approved visitor members) based on the event with [Face Recognition] API after closing ticket of the event (e.g. one hour before the event) | FR API : Adding visitor  [Note] One API of “Adding visitor” maybe not support 100,000 visitors once. We should import visitors’ information by multi-times based on actual situation if it couldn’t be done in 1 hour and 1 time. |
| System | create Access policy (According to time point of the event) and associate them to entry points, visitors, and the event | FR API : Create Access Policy  entry points : device\_id\_list  visitors : tag\_id\_list event : id  [Note] Device should be created, updated, deleted through the portal of face recognition platform in this version. In the future, it should be integrated by 3S if necessary, for ticket and TAM business. |
| Entries | create scheduled events and associate them to entry points | Admin | create scheduled events and associate them to entry points |  |
| update scheduled events and associate them to entry points | Admin | update scheduled events and associate them to entry points |  |
| System | send notifications to all fans associated with the modified event |  |
| Access | Synchronize visitor access data | System | should query the access information of Fans or other visitors if the event over | FR API: Access Record |
| System | should delete all visitors’ information after the event over | FR API: Delete Visitors |
| System | should delete Access Policy after the event over | FR API: Delete Access Policy  event: id |
| Show Report Access Statistics | System | should report weekly/monthly/yearly as dashboard |  |
| Users | Blacklists | Synchronize data of blacklist | Admin | create, read, update and delete blacklist |  |
| System | send approved images (related to approved blacklist members) with [Face Recognition] API while creating, updating and deleting blacklist case by case | FR API: Blacklist: Users can create, update and delete blacklist |
| Integration Service Layer | Integration Service Layer |  |  | create scheduled events and associate them to entry points | Admin | create scheduled events and associate them to entry points | Note: could be accomplished via configurations, or extra screens to be developed in [FAN ID] |