Software Requirements Specification

For

Tracking System with CCTV

Version 1.0

Prepared By:
TEAM CPE

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1 Introduction:

1.1 Product:

This Software Requirement specification (SRS) describes the description of all functions, specifications, external behaviors, design constraints, requirements (functional and non-functional) and other factors necessary to provide a complete and comprehensive description of the smart home security system.

The requirement document will include some details about the problem or the need for the tracking device system as well as the solution specifications or what is expected from the system.

1.2 Scope:

The scope of the tracking device system is to provide security and safety features for the car it is implemented to and it should be able to provide additional information on the tracker's surrounding using the implemented CCTV feature.

1.3 Intended Audience and Reading suggestion:

This SRS is useful for developer, user, external guide and internal guide so it focuses on the requirement, functionality, design and analysis of the system. It is suggested that SRS structure section read first then proceed the other sections. Each of them can easily understand how to use our software product by reading this SRS.

1.4 Document Convention:

- Main section title:
  Font: Times New Roman Face: Bold Size:16
- Sub Section Title:
  Font: Times New Roman Face: Bold Size:14
- Other Text Explanation:
  Font: Times New Roman Face: Normal Size:12

1.5 References:

- SRS template http://www.volere.co.uk/template.htm

1.6 SRS structure Overview:

Firstly, the table of contents are displayed that shows how the document outlines are organized. The introduction mentions the product, scope, intended audience, readers suggestions, document convention and some links that define how to make a professional SRS. The overall description describes the product perspectives, product features, user classes, the components of the system, constraints and assumptions.

2 Overall description:

2.1 Product Perspectives:

Latest technology application is used in tracking device system with CCTV. User can view all the sensor and the event occurs through the CCTV. As we see Figure 1 The tracking device system consist of externally connected device such as a camera, gps unit, and control panel unit. The whole system is controlled via internet and it is monitored by a company and the total system is connected through a designated server.

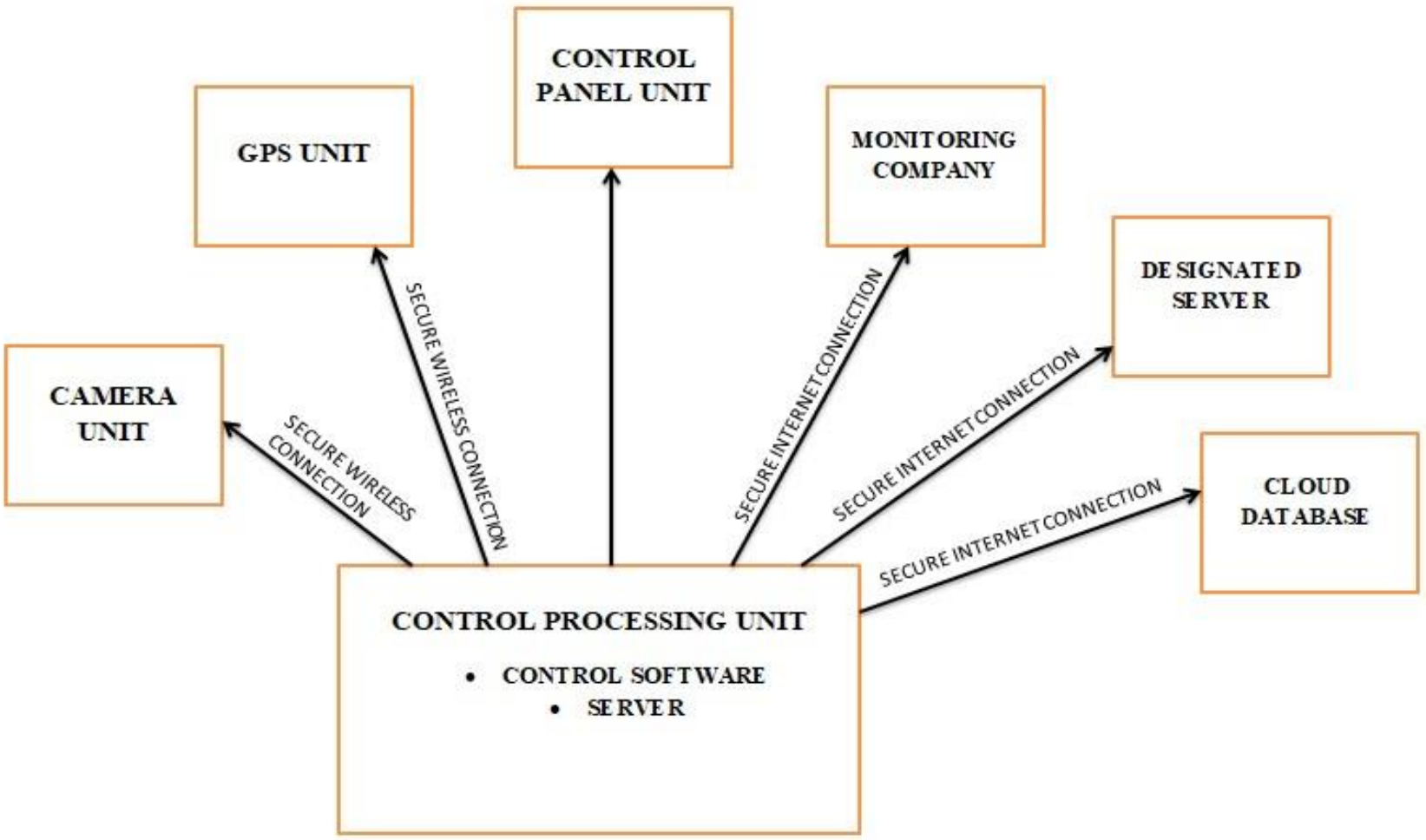

Figure 1 : Deployment Diagram

2.2 Product Features:

- Tracking device system with CCTV will focus on security and surveillance system. The security features include:
- User can also change all security methods through the control panel.
- Surveillance features that include connecting to a camera placed within the system
- Panning and zooming the particular cameras.
- Displaying the view of the camera through the control panel.
- All recordings of the cameras are captured and store in cloud database.
- The system generates reports according to user needs.
- Cloud database stores all the gps location and session events with time and date.
- On alarming condition system send call and message to user and emergency departments like police and fire departments.

2.3 User/stakeholders classes and characteristics:

- **User:**
  The target end user who counts on the Tracking device system with CCTV to provide surveillance and security to the car. Users canonly access the system to arm/disarm the system.
- **Monitoring and Cloud Personnel:**
  The people in charge of all monitoring and cloud services in case of security breach or any problem occur, in which they are responsible to notify the end user.
- **Authorities:**
  Whenever the alarming system activates the system can send call and message to user and other authorities.

2.4 Operating Environment and hardware descriptions:

The tracking device system with CCTV is a network of wireless connections for the wireless container hardware devices like sensors. All are controlled through the physical control panel providing that there is a secure login mechanism. All devices in the system communicate through the wireless protocols.

These are all devices are communicated via the designated server and also with the monitoring and cloud storage service's servers as well. The hardware is shown in the Fig 1 that explains the subsystems that are attached to the tracking device system with CCTV and application software as well.

2.4.1 Sensors and Actuators:

There are different sensors such as motion sensor, gps and actuators like cameras are communicating directly with the central processor when configured to do so with the system..

2.4.2 Control Panel:

All hardware devices output are display on the control panel and simply user can activate and deactivate the system through the control panel as well. Until user can also disarm the system when the device is not in use.

Thus the panic command is the exception ,which is in this case ,any input that is interrupted gets cancelled and not saved such as when entering a new password at first time. Any command transfer to the corporate server and receive result from the server.

2.4.3 Cameras:

The device takes the image and videos from the different areas and store it into the cloud storage.

2.5 Design and implementation constraints:

Because the user can control the settings through control panel special care of security should be implemented so as to prevent the outsiders from hacking and possible the disarming the whole system and robbing it. In that case someone tries to break the security system before begin inside the system by default notification send to the user.

2.6 User Documentation:

Once the system is completely implemented online help document will be created that guide the user with complete procedures and prototypes such as:

- Control panel settings
- Arming and disarming the system
- Disarming the alarm
- Call and message settings
- Admin user operating server
- Recorded and real time monitoring

2.7 Assumptions and Dependencies:

The system’s processor is wireless encrypted communication and operated using the power supply directly from the user’s base so it is operational procedure. The user has sufficient knowledge of the system. The product is installed correctly. Whoever can connect to the system all the modules and actuators are in enable mode.

3 System Features:

3.1 Functional Requirements:

3.1.1 R1-Authenticate User ID and Password:

The user can activate and deactivate the system when they login successfully throughout the controlpanel. If the user enters the wrong id and pass five times the system locked and activated after 30 minutes.

3.1.2 R2-Monitoring And Cloud Services:

All events occurred by sensors and actuators are stored in cloud service via the designated server. IP cameras recording is also monitored by monitoring company as well. All reports are generated whenever the user demands.

3.1.3 R3-Reports Generation:

The system works in this sequence that whenever a user wants to view the reports of sensors and actuators events the system allow the user to download the reports through the control panel. These reports are generated after every 6 hours. So the user has the facility to view and download the reports when they want.

3.1.4 R4-Proximity:

In case when the user is away from the system, then the userhas the facility to access the system.

3.2 Use cases description:

3.2.1 Main Success Scenerios:

Use Case number	UC-01
Use Case	Authenticate User Id and Password
Primary Actor	User
Goal in Context	Validate user ID and password That their user types
Precondition	1. Tracking device system with CCTV is configured and its operating well
Trigger	The user Decide to login to tracking device system with CCTV
Scenario	1. The user interaction with control panel 2. The user types User ID and password 3. System Validates user id and password
Exceptions	1. If the user id and password are appropriate, system allows the userto enter 2. If the user ID and password are not appropriate, the system shows error message and does not allow the user to enter
Priority	Essential, Must be implemented
When Available	First Increment
Frequency Of use	Regularly
Channel to actor	Via tracking device system with CCTV
Secondary Actor	None
Channels to Secondary Actor	None
Open Issues	1. User ID and password must be encrypted before sending.

4 Non-Functional Requirements:

4.1 Process Requirements:

4.1.1 Management requirements:

4.1.2 Implementation requirements:

- The system should be developed by using PHP language.
- The system should be developed by using Raspberry Pi.
- The database of system should apply for using PHP MySQL.

4.1.3 Standard requirements:

- The development process should be coherent with waterfall model.

4.2 Product requirements:

4.2.1 Usability Requirements:

- The average time for users to seek all feature of the user interface via Personal computer must be less than the onehour.
- The average time for users to seek all working on cooperating server and how the system interact via the internet mustbe less than the two hours.
- When a new person tries to input password the probability of making 3 errors must be less than 15%.

4.2.2 Performance requirements:

- **Static requirements:**
  1. The software requires only 30 MB of memory on the run time.
  2. The control software is limited to 200MB of hard disk space of the main processor for installation.
  3. The hard disk for recorded video file requires only 20 GB.
- **Dynamic Performance:**
  1. When the user watch camera monitoring procedures the delay between image and displaying image is less than the 500 milliseconds. The video codec is MPEG-5 requiring 0.7 GB for 7 hours recording with 7 frames.

4.2.3 Reliability requirements:

- There must be no anyone malfunction of signing on the web service. For example, if the username OR password are not correct, the server has never allowed the user to avail the service.
- Second, there is no malfunction in validating a PIN number of passwords, i.e. if the input code is not correct the control panel can't allow the user to use all features of the control panel.
- All possible fluctuations and errors must be handled and reported to the online service centers since their guarantee no system down, the systems automatically send recovery setting in some situation to the user.

4.2.4 Availability:

- The system operates 24 hours in a day. So there is no issue street that caused the program/software bugs

4.2.5 Plate from Constraints:

- The control panel system must use some operating system like Windows 10.

4.2.6 Modifiablity:

If a customer wants to add more functionalities e.g camera and sensors, through the programming effort it is done in just 1 week.