

# Project Brief

## Design Criteria and Target Specifications

Unwanted Entry (UE), and Restriction Zones

### *The Gentleman's Guild of Engineering Excellence*

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## **Table of Contents:**

1. Introduction
2. Recall: Problem Statement
3. Technical Benchmarking
  - a. Company: Kisi
  - b. Company: Genetic
  - c. Company: HID Global
  - d. Company: VIVOTEK
  - e. Feature: Geofencing
4. Design Criteria
5. Table of Design Criteria Metrics
6. Technical and Non-Technical Considerations
7. Conclusion

## 1. Introduction

This document details some results of technical benchmarking, useful in the refining of target expectations. Listed in this document are the interpreted positive and negative aspects of each product as system, as applicable to the specific use case of cloud controlled secure access. The goal of this document is to clearly define the list of design criteria that will be referenced throughout the ideation phase of this project, organized by priority, and further into functional and non-functional subgroups, with suggested metrics.

## 2. Recall: Problem Statement

**Private network users** need a way to **establish restriction zones** within a **cloud compatible security system that** can **identify, halt,** and **directly alert** relevant parties of **unwanted entry events**.

## 3. Technical Benchmarking

Company: Kisi

**Url:** <https://getkisi.com>

Pros:

- Cloud based
- Hardware Integrated Video Management System (VMS)
- Good features (Intrusion detection, real time alerts and remote lockdown)
- User friendly
- Real time analytics

Cons:

- Dependency on internet connectivity
- Limited hardware compatibility
- Complicated setup

Company: Genetic Inc

**Url:** <https://www.genetec.com>

**Pros:**

- Cloud based
- Flexibility (On-premises, hybrid or fully cloud based)
- Integrated AI analytic technology allowing rapid video analysis.
- Maintains functionality during network outages

**Cons:**

- Indoor focus
- Primarily Video centric

Company: HID Global

**Url:** <https://www.hidglobal.com/>

**Pros:**

- Wide range of products
- Smartphone compatibility
- Uses RESTful API architecture makes it easier for third part applications to integrate into the platform

**Cons:**

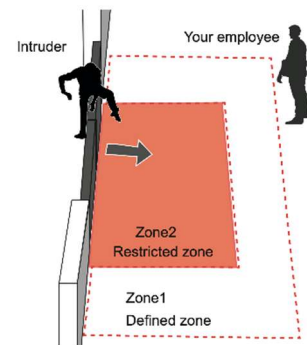
- Dependency on hardware for access,
- Less of an option for rugged industrial settings.

Company: VIVOTEK

**Url:** [https:// VIVOTEK.com](https://VIVOTEK.com)

**Pros:**

- Integrated AI analysis in video management system
- Cloud based
- Easy install, with simple hardware components
- Double zone system (Definition zone allows for proper security clearance, if definition zone is skipped, system is alerted.) go off.



**Cons:**

- Accuracy of whether the person crossed into a restricted zone is questionable.
- A lot of restrictions on what can be in the field of view of the camera and on what will be recognized as human. (possible security issues)

Technology: Geofencing

**Url:** <https://geofencing.com>

**Pros:**

- Versatile for many businesses and operations
- Wide applications (employee monitoring, asset tracking, etc...)
- Device access via cell tower, network access, WIFI, and Bluetooth.

**Cons:**

- Dependency on GPS, cellular networks or Wi-fi.
- Requires installation of affiliate applications and user permissions
- Battery intensive

## 4. Design Criteria

### Tabled Order of Design Criteria

Rank	Design Criteria	Metric
1	Location Tracking System	Meters from real location
2	Administrator Alerts	Alert response to device in seconds
3	Detection Accuracy	Accuracy per n/100 cases*, accuracy of date and time stamps
4	Acceptable Bandwidth	>10GHz*
5	Accurate memory storage	Quality and quantity of relevant data saved post-breach events.
6	Easy to use (Admins and Employees)	Time to operate as new user.

\* 10GHz bandwidth should be considered the minimum for industrial standards. A larger band spectrum ensures suitability for high-speed applications, in exchange for a slightly smaller range of operation.

\* Accuracy of n/100 cases will provide quantitative feedback as to the overall utility of the system. We aim to achieve as low an n-value possible by competitive standards.

## 5. Table of Design Criteria Metrics

	Success Rate	Meters	Seconds	Date	Status
Location tracking system (in zones)		Accurate to 1 meter			Less-Critical
Alerts Admins/security			Within 1 Second		Critical
Accurate in detecting entries (confirmed and suspicious)	Over 99%	Accurate 1-5 meters (depending on area dimensions. Ex: mines would be closer to 5m)	Within 1 Second	Saves time of entry into database.	Critical
Logs for entries for auditing (unwanted entries)				User defined	Semi-Critical
Easy to use (for admins and employees)			As fast as possible (0.5 second at most for secure entry)		Semi-Critical
Easy to set up				Under 2 days (ideally setup is less than a 1 day process)	Less-Critical

## 6. Technical and Non-Technical Considerations

Taking into consideration all pros and cons of a selection of current market products we arrange a list of the critical technical and non-technical considerations:

1. Real time data.
  - This project is especially interested in having little delay between event discovery and its reportage. This means high-speed communication between nodes, and their network control center.
  - Most of the security systems disclosed in this document place the greatest importance on video management and analysis. Having large scale systems may mean increased strain on the, so we must find ways to handle large quantities of video without losing their integrity.
2. Geolocating compatibility
  - We are concerned about the behaviour of security devices during power outages, given the technology heavy aspect of our solutions. Geofencing is reliant on cell towers, Wi-Fi and Bluetooth to establish its zones. Bluetooth-range geofencing is the most accurate for our purposes, so we must consider battery strain on user devices as well, given user permissions may need to be enabled.
3. Definition zones are an ideal method (VIVOTEK)
  - Setting double boundaries zones will work for most of our purposes. We are to continue to expand on this idea and apply it to a variety of settings. Geofencing is a good solution for outdoor environments, however, we may have to look more towards a video management solution for a greater degree of success indoors.
4. Smartphone Capability
  - HID global as a prime example, phones are very versatile as security devices. Our solution should consider this and attempt to gain permission from specific users, as well as allow them to use their device to access multiple access points as a secure user.

## 7. Conclusion

The main focuses of our proposed solution will be entry detection and rapid alerting of administrators & security. Should each function have reaction times within 1 second of event onset, proper security measures may proceed more effortlessly. With much technical information kept out of public reach, some of our metrics are interpreted as obviously relevant to user needs. As firsthand operational insights are procured, this document will be updated and refined to best represent the client/user's needs.