

2. Requirements, Constraints, And Standards

2.1 REQUIREMENTS & CONSTRAINTS

Functional Requirements:

- Display capacity of parking lots.
- Display capacity within lots.
- Incorporate a secure payment portal.
- Enable reporting of issues (misparking, blockages, etc).
- Enable saving of spots.
- Enable a portal to manage a lot (toggle payment, resolve issues, etc).

Non-Functional Requirements:

- Easy to use interface (for parkers and admins).
- Consistent behavior (reliable app, server, and hardware).
- Quick use of key features.
- More details that are also intuitive (but may not be at the forefront of the app).
- Visually appealing (app and hardware).
- Modular hardware (deployable).

2.2 ENGINEERING STANDARDS

Engineering standards are important because they prevent errors and ensure thoroughness in the final design. These standards give guidelines to maintain the health and security of others.

Relevant IEEE Standards

1. IEEE 3156-2023 - "IEEE Standard for Requirements of Privacy-Preserving Computation Integrated Platforms"
2. IEEE 1686-2022 - IEEE Standard for Intelligent Electronic Devices Cyber Security Capabilities
3. IEEE 802 - Family of Networking Standards

IEEE 3150-2023 provides various requirements for multi-computer systems. The standard specifies security and performance requirements to ensure private and accurate computations.

IEEE 1686-2022 provides requirements relevant to cybersecurity in Intelligent Electronic Devices. These include Internet of Things applications, and specify how to ensure data is protected between nodes.

IEEE 802 includes a variety of standards relevant to networking. These standards ensure compatibility between both ends of the communication as well as reliability.

Reviewing different technical standards resulted in several relevant to our project. One standard we looked at was regarding energy conservation. We will have many cameras polling data, so we must use intelligent algorithms and designs to reduce energy expenditure. Another standard we found was regarding preserving users' data. Our cameras could impose a security risk by collecting video footage of people. We must ensure our data is secure and the preservation of people's privacy when

developing our systems. The third standard we looked at was IT security standards. We will have a payment method which will require use to maintain the security of users data and finances.

Looking at the standards, the team all came to similar conclusions regarding standard choices. One additional standard was added by a member of our team, which was quality insurance. Our hope with this project is to complete a product for companies to implement. We must ensure that our product doesn't impact our company's reputation or turn away customers. This goal is accomplished by deploying our best work and not allowing mediocracy.

We will implement our chosen standards by employing power saving, encrypting data, and using trusted transaction services. These methodologies will keep our project within our chosen standards, ensuring we keep people's and the world's safety as our first consideration.