Appendix 1

Hardware and Software Implementation

RFID tracking for animals

Radio Frequency Identification Tracking is a wireless technology used to identify and monitor objects through radio waves. A tag or microchip is attached to animal or inside the animal which has a unique ID number that can be read by a RFID reader as mentioned by radio waves. This ensure the safety of the animal as it is tracked and can be seen if its acting normal and staying within its parameters

There are two main types:

Passive RFID: No battery; activated by the reader. Common in pet microchips.

Active RFID: Has a battery; can transmit signals over longer distances. Used in livestock tracking.

Dependant on the animals and the environment this can differ.

Thermal Imaging Cameras

This allows a further monitoring of animal health, such as injuries, infections and poor circulation. As well as this, this can be used to not disturb nocturnal animals without disturbing them

Another reason this should be implemented is that it can be addition to the security as it can detect animals in total darkness/fog, situations where it is visibly difficult to view the animal.

Hardware Kiosks

Hardware Kiosks should be implemented around the environment as a help guide to help with individual issues. For instance, their current location, connect to central systems

Scan QR codes for certain animals and redirected to a page which includes the facts about the specific animal

VR

Some animals within the zoo are purposely held by a shield as they can be unsafe and only used for visual purposes. A VR system should be implemented where they can be able to interact with such animals and have 100 percent safety. They are able to behave and act towards animals which is impossible to do in reality, exciting the individual.

Robots

In the 21st century this is one of the most anticipated uses of technology. This is an expensive investment; however, it does make the atmosphere look more visually appealing. Withing the environment there will be other leisure places like food places which the robots can be used making it the environment unique and ultimately attracting more customers.

Emerging Technologies

Data Analytics/Analysis

Operational Efficiency

* Predictive analytics helps forecast visitor numbers, allowing better staffing and resource planning.

Revenue Growth

* Analysing visitor spending patterns (e.g., food, merchandise, ticket upgrades) helps tailor promotions and pricing strategies.
* Identifies peak times and popular exhibits to guide investment and marketing.

Strategic Decision-Making

* Data from surveys, foot traffic, and social media informs decisions on exhibit redesigns, new attractions, and partnerships.
* Helps justify funding and grants by showing measurable impact.

Integrated Ticketing & Visitor Management Systems

Modern zoos are increasingly adopting integrated payment and booking technologies to enhance operational efficiency and improve the visitor experience. These systems typically involve the integration of Point-of-Sale (POS) platforms with ticketing, retail, and food services through secure APIs.

Key Features:

* Mobile and contactless payments (e.g., Apple Pay, Google Pay, NFC-enabled devices)
* Online booking
* Real-time updates on availability, offers, and visitor flow

Benefits to the Organization:

* Enhanced data collection for revenue analysis and strategic planning
* Improved customer targeted marketing
* Increased revenue through upselling and cross-service bundling

Benefits to Visitors:

* Faster entry and reduced queuing times
* Convenient access to tickets, memberships, and services via mobile apps
* Personalized offers and experiences based on previous visits or interests

Benefits to Animal Welfare:

* Efficient visitor flow reduces noise and overcrowding near sensitive enclosures

Meeting Different User Needs

A Website which follows the legally mandatory requirements for accessibility. The website has to be perceivable, Operable, Understandable, Robust.

I looked at different zoos within England

A screenshot of a website

AI-generated content may be incorrect.

Yorkshire Zoo

This website is easily accessible and shows the tabs at the top making it easily visible.

A screenshot of a computer

AI-generated content may be incorrect.

Chester Zoo

This website is also easily accessible.

| **Legislation** | **Description** |
| --- | --- |
| **GDPR** | If your website is offering goods or services to those located in the European Union, Iceland, Norway, Liechtenstein, Switzerland or UK you must comply with the sweeping privacy laws generated by the General Data Protection Regulation. Complying with the GDPR starts with a comprehensive privacy policy that details what, how, when, and where data is collected. |
| **CCPA** | The California Consumer Privacy Act is a data privacy law that regulates how businesses worldwide are allowed to handle the personally identifiable information of California residents. The CCPA is primarily focused on privacy and intent to require that you present a cookie policy that explains what data you collect and how you and or third parties use them. More on cookie consent solutions below. CCPA is also known for their unique definition of the term "sale", and if your website is in business of selling personal information this is the one you should study closely. |
| **CPRA** | In November 2020, an addendum to the CCPA was put in place that strengthened the depth and breadth of California's data privacy requirements. The California Privacy Rights Act is a powerful data privacy law that affects the privacy and notice requirements for websites that may be accessible to consumers in California. The CPRA expands on the CCPA by requiring businesses that share personal data to fully compliant with all privacy laws. Previously only websites that sold data had to be compliant. The CPRA goes into effect Jan 1, 2023. |
| **COPPA** | The FTC enforces the sweeping Children's Online Privacy Protection Act to help protect children's safety by keeping them safe online. COPPA website regulations require that websites obtain consent from parents before collecting personal information from kids underage of 13. |
| **CalOPPA** | In addition to basic GDPR rules, other legal requirements for websites include complying with provisions of California's Online Privacy Protection Act. Your privacy policy must use word "privacy" in a direct link from website's homepage and reveal third-party information regarding any device which collects data. |
| **EU Cookie Law** | The EU Cookie Directive (otherwise known as either EU Cookie Law or privacy Directive) requires websites have dedicated cookie policy and get consent from users before storing cookies on their computer smartphone or tablet. Designed to protect data, it strives to make users aware just how much information is shared when they browse the internet and ensures informed choice regarding whether or not to allow it to be stored. |
| **Eraser Button Law** | The Privacy Rights for California Minors in Digital World Act (also called Eraser Button Law) applies to websites that allow users underage... *(text cut off)* |