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**Batch: A3**

**Problem definition:**

The increasing threats to wildlife habitats, biodiversity loss, illegal activities such as poaching, deforestation, and human-wildlife conflicts pose significant challenges to conservation efforts, ecological balance, and sustainable development. Traditional monitoring methods are often inefficient, time-consuming, and costly, limiting the ability to collect real-time data, identify critical areas, and implement effective interventions. Therefore, there is a pressing need for an integrated, technology-driven solution that leverages drones, cameras, sensors, data analytics, and collaboration to enhance wildlife monitoring, conservation management, research, education, and stakeholder engagement.

**Project Scope:**

The project aims to develop a comprehensive Remote Wildlife Monitoring and Conservation Application that encompasses:

Aerial surveillance using drones equipped with cameras and sensors for habitat monitoring, wildlife tracking, and environmental assessment.Installation of camera traps and sensor networks across strategic locations within protected areas, wildlife corridors, and critical zones. Data collection, analysis, visualization, and reporting functionalities to support conservation planning, management interventions, and policy development.

Collaboration and stakeholder engagement initiatives to foster partnerships, knowledge sharing, capacity building, and community involvement.

Education and outreach programs to raise awareness, promote conservation literacy, and encourage public participation in wildlife conservation efforts.

**Choice of Process Model:**

For the development of the Remote Wildlife Monitoring and Conservation Application, the Iterative and Incremental Development Model will be chosen. This model allows for continuous improvement, feedback loops, flexibility, and adaptability throughout the project lifecycle. It enables stakeholders to prioritize requirements, address emerging challenges, integrate new technologies, and refine functionalities based on user feedback, technological advancements, and conservation priorities. The iterative approach facilitates incremental delivery, risk mitigation, quality assurance, stakeholder engagement, and alignment with evolving needs, objectives, and constraints.

**Roles and Responsibilities:**

**Project Manager: Overall coordination, planning, execution, monitoring, and control of the project activities, resources, timelines, budget, and stakeholders.**

**Technical Lead: Architectural design, technology selection, system integration, development frameworks, tools, platforms, and technical quality assurance.**

**Data Scientist: Data collection, preprocessing, analysis, modeling, visualization, insights generation, predictive analytics, and data-driven decision-making.**

**GIS Specialist: Spatial data management, mapping, visualization, spatial analysis, geographic information systems, and environmental planning.**

**Drone Operators: Aerial surveillance, data capture, image acquisition, video recording, flight planning, safety protocols, and equipment maintenance.**

**Field Researchers: Camera trap deployment, sensor network installation, wildlife monitoring, habitat assessment, data collection, and field observations.**

**Community Engagement Officer: Stakeholder collaboration, partnership development, capacity building, training, education, outreach, and communication.**

**UI/UX Designer: User interface design, user experience optimization, interactive prototypes, usability testing, accessibility, and visual aesthetics.**

**Quality Assurance Team: Testing, validation, verification, bug tracking, issue resolution, performance optimization, and quality control.**

**GUI based Implementation of one Module(one use case)**

**Module: Aerial Surveillance and Habitat Monitoring**

**Functionality:**

**Display live drone footage, images, and sensor readings from selected wildlife habitats, protected areas, and critical zones.**

**Enable users to navigate, zoom, pan, and interact with the aerial maps, layers, markers, and annotations.**

**Provide access to historical data, trends, patterns, alerts, and notifications related to habitat changes, wildlife sightings, human activities, and environmental threats.**

**Allow users to configure settings, filters, parameters, and preferences for data visualization, analysis, reporting, and sharing options.**

**By focusing on this module, stakeholders can monitor wildlife habitats, assess environmental conditions, track endangered species, and identify conservation priorities effectively.**

**The GUI-based implementation will enhance user engagement, data accessibility, visualization capabilities, and decision-making support for conservation initiatives.**