

Given the description of a very large project as described below, discuss the use of each of the following approaches to develop this system. You should work within your groups.

1. Waterfall
2. Parallel Development
3. RAD Phased
4. Agile

Your discussion should consider the following:

1. Pros
2. Cons
3. General breakdown of how the SDLC would be performed; specifically mentioning system capabilities and the order of priority they may receive in the process.

Have a single member of the group upload the discussions and be sure to list all members who participated in the group for this activity.

## Project Title:

### Smart City Initiative: Integrated Urban Infrastructure and IoT Systems Development

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## Project Overview:

The Smart City Initiative is a multi-phase project aimed at transforming our city into a fully connected, data-driven, and sustainable urban environment. By leveraging advanced Internet of Things (IoT) technologies, data analytics, and AI, the project will integrate critical urban infrastructure, including traffic management, public safety, energy grids, waste management, and public transportation, into a cohesive ecosystem.

The goal is to improve the efficiency, sustainability, and quality of life for residents through the real-time monitoring of resources, predictive analytics, and automated systems. The project will involve deploying smart sensors, creating interconnected networks, and establishing a central data management platform to provide actionable insights for city administrators and residents alike.

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## Project Goals:

1. **Improve Urban Mobility:** Implement smart traffic management systems to reduce congestion, optimize traffic flow, and improve public transportation services.
  2. **Enhance Public Safety:** Deploy IoT-based surveillance systems, smart lighting, and emergency response technologies to increase security and reduce crime rates.
  3. **Increase Energy Efficiency:** Establish smart grids to optimize energy consumption across the city and incorporate renewable energy sources into the grid.
  4. **Optimize Waste Management:** Use smart bins and predictive analytics to streamline waste collection and reduce operational costs.
  5. **Environmental Sustainability:** Implement smart water and air quality monitoring systems to track environmental health and enforce sustainability initiatives.
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## Project Scope:

1. **Smart Traffic Management:**
  - Install IoT sensors at key intersections and highways to monitor traffic in real-time.

- Implement adaptive traffic signal systems that adjust based on traffic conditions.
- Launch a mobile app for citizens to get live traffic updates and route suggestions.
- Integrate with public transportation systems for real-time schedule adjustments.

## **2. Public Safety Systems:**

- Deploy an IoT-enabled surveillance network across key areas to enhance security.
- Install smart streetlights with motion sensors to reduce energy consumption and improve nighttime safety.
- Implement AI-based emergency response systems that notify authorities in case of incidents.

## **3. Smart Energy Grids:**

- Deploy smart meters for residential and commercial buildings to monitor energy usage.
- Integrate renewable energy sources, such as solar and wind, into the city's main grid.
- Create a central energy management system to balance energy loads and prevent outages.

## **4. Waste and Water Management:**

- Install smart waste bins with sensors to track fill levels and optimize collection routes.
- Develop a waste management analytics dashboard for real-time monitoring and reporting.
- Deploy water quality sensors to detect contamination levels and optimize water resource management.

## **5. Environmental Monitoring and Sustainability:**

- Install air quality sensors across the city to monitor pollution and provide early warnings.
- Use data analytics to identify pollution hotspots and propose actionable solutions.
- Implement IoT systems for monitoring urban green spaces and improving biodiversity.