SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade
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UNIT IV: INTRODUCTION TO AUTOMATED, CONNECTED AND INTELLIGENT VEHICLES

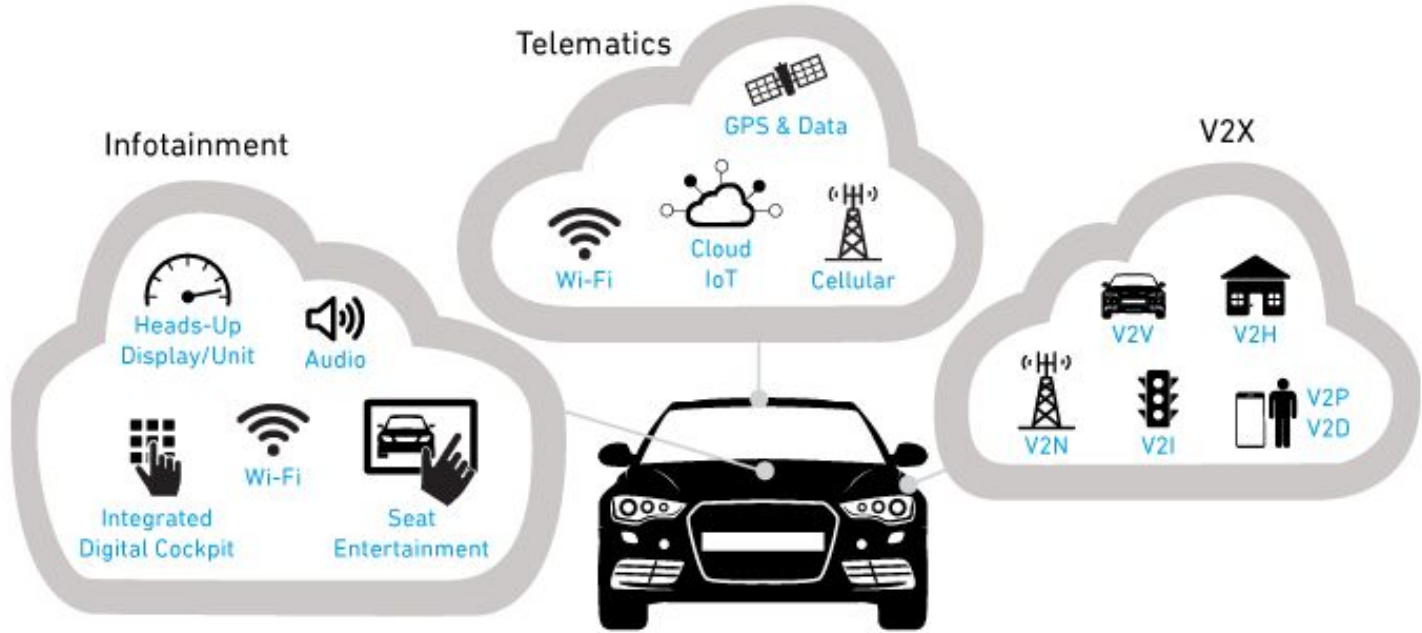TOPIC: **Connected Car Technology**

Introduction

- **What is a Connected Car?**
  A vehicle equipped with internet access and communication capabilities with other devices.
- **Why Connected Cars?**
  - Enhancing safety, convenience, and efficiency.
  - Paving the way for autonomous driving.

Key Features of Connected Cars

- **Infotainment**: Streaming media, navigation, apps.
- **Safety**: Emergency calls (eCall), crash notifications.
- **Vehicle Health Monitoring**: Diagnostics, predictive maintenance.
- **V2X Communication**: Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I).
- **Remote Control**: Lock/unlock, start, and monitor via smartphone.
- **Autonomous Driving**: Seamless integration with ADAS.

Technologies Powering Connected Cars

- **IoT (Internet of Things)**: Links the car to the digital ecosystem.
- **5G Connectivity**: Enables ultra-fast and low-latency communication.
- **AI and Machine Learning**: Improves decision-making and personalization.
- **Cloud Computing**: Stores and processes vast amounts of data.
- **Cybersecurity Measures**: Protects vehicles from hacking threats.
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Benefits of Connected Cars

- **Safety**:
    - Real-time traffic updates.
    - Enhanced collision avoidance systems.
- **Convenience**:
    - Hands-free operation, voice commands.
    - Automated parking and routing.
- **Efficiency**:
    - Reduced fuel consumption.
    - Optimized navigation routes.
- **Environmentally Friendly**:
    - Integration with electric vehicles (EVs).

Challenges in Connected Car Technology

- **Cybersecurity Risks**
- **Data Privacy Concerns**
- **High Costs of Implementation**
- **Infrastructure Requirements**
- **Interoperability Issues**

Puzzle: Fun Fact Quiz

Question:

Which of the following is NOT a feature of connected cars?

1. Real-time traffic updates
2. Self-cleaning exterior
3. Vehicle diagnostics
4. Remote start

Puzzle: Fill in the Blank

Question:

Connected cars rely on _____ technology to communicate with other vehicles and infrastructure.

- Options:
    1. Satellite
    2. V2X
    3. Bluetooth
    4. NFC

19EEE309 / ELECTRICAL VEHICLE SYSTEMS / R.SATHEESH KUMAR / AP / EEE

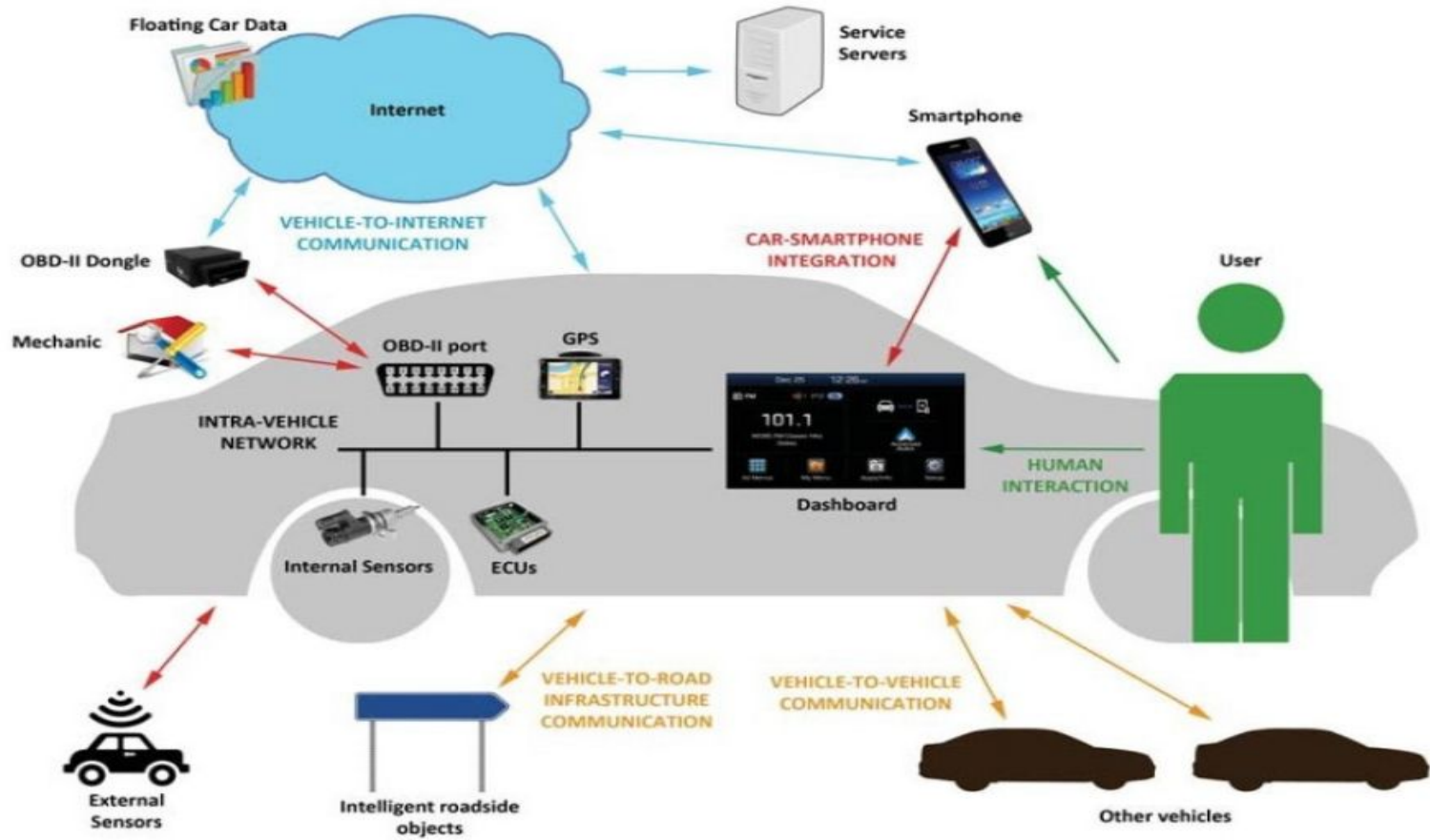**Future Trends in Connected Car Technology**

- **Autonomous Vehicles**: Full integration with self-driving systems.
- **Vehicle-as-a-Service (VaaS)**: Subscription models replacing ownership.
- **Blockchain for Security**: Securing data and transactions.
- **Augmented Reality Dashboards**: Enhanced user experience.
- **Energy-Efficient Solutions**: Green technologies for connected EVs.

Case Study

Case Study Title: Tesla's Connected Car Ecosystem

- **Key Features**: Over-the-air updates, Autopilot, and seamless app integration.
- **Impact**: Revolutionized the automotive industry with its connected car innovations.
- **Visual**: Tesla interface or charging station

Conclusion

- **Summary**:
  Connected car technology is transforming how we drive,
  making transportation safer, smarter, and more sustainable.
- **Call to Action**: Explore how connectivity will shape the future
  of mobility.

…THANK YOU