New Age Robotic Systems

❖ New Age Robotic Systems
❖ Highlighting their applications
❖ Relevance
❖ Examples

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Introduction

What are New Age Robotic Systems (NARS)?

- Advanced robotics integrated with AI, IoT, and smart technologies
- Designed for autonomous or semi-autonomous functioning
- Capable of sensing, analyzing, and interacting with the environment

01

Warehouse Robots

Warehouse robots enhance efficiency and precision by automating tasks using specialized hardware and software. The controller is the core unit, executing programmed instructions.

Evolution

1961 – General Motors introduced 'Unimate', the first industrial robotic arm.
Today – Robots handle navigation, object recognition, and inventory management.

- Amazon Sequoia Robots
- Fetch Robotics
- Skoda (Czech Republic)

Benefits

- **Automation in inventory management**

This reduces human error, optimizes stock levels, and ensures timely replenishment, leading to improved overall efficiency.

- **Robotic picking systems**

These systems can locate and retrieve items from shelves, significantly accelerating order fulfillment and improving reliability.

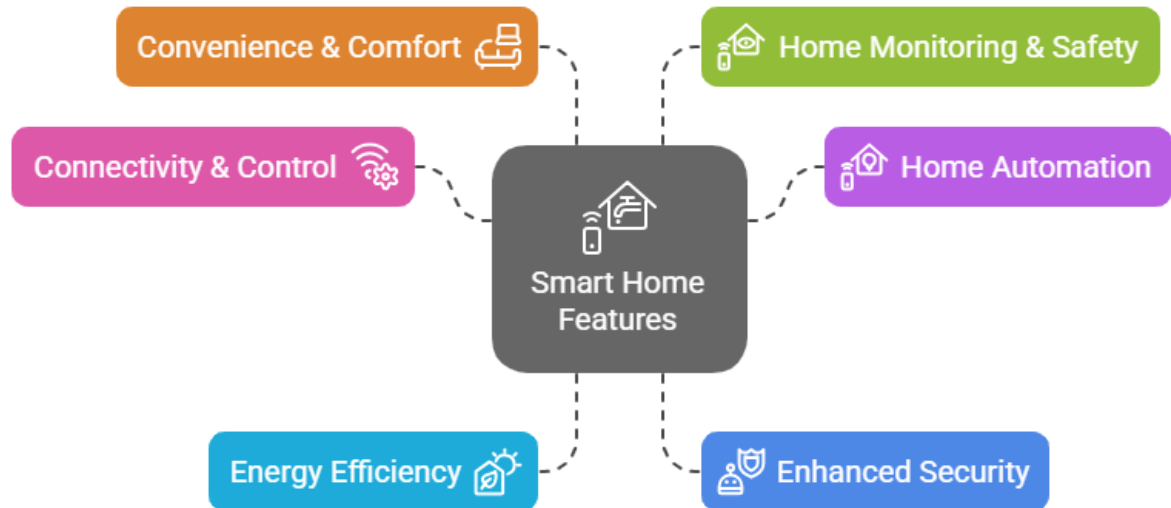Speed, efficiency, and accuracy in logistics

02

Smart Homes

Smart homes, also known as automated or connected homes, are equipped with advanced technology and connectivity that allow homeowners to control and automate various household systems and appliances.

Enhances energy efficiency by optimizing energy consumption through smart thermostats and appliances.

Key Features of Smart Homes

Convenience & Comfort

Home Monitoring & Safety

Connectivity & Control

Smart Home Features

Home Automation

Energy Efficiency

Enhanced Security

03

Smart School

A Smart School is a modern educational institution that seamlessly integrates technology, connectivity, and innovative systems to enrich the learning experience and boost academic outcomes.

Smart Schools create a dynamic, personalized, and intelligent learning environment.

Transforming Education with Smart School Innovations

Data-Driven Decision-Making

Uses data analytics to track performance and tailor instruction.

Personalized Learning

Offers adaptive platforms for customized and self-paced learning.

Connectivity and Networking

Provides high-speed internet and secure Wi-Fi for seamless communication.
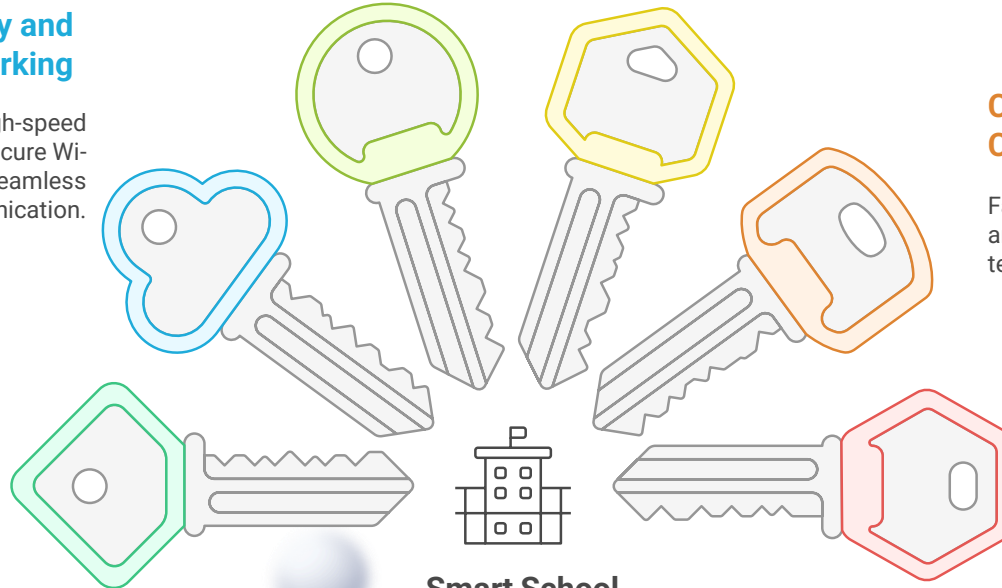
Collaboration and Communication

Facilitates interaction among students, teachers, and parents.

Technology Integration

Incorporates digital devices and software to enhance learning experiences.

Smart Campus Infrastructure

Optimizes resource use and enhances security with intelligent systems.

Smart School Elements

04

Autonomous drones

Autonomous drones, also known as Unmanned Aerial Vehicles (UAVs), can operate independently using AI, GPS, and onboard sensors. They are designed to navigate obstacles, follow programmed routes, and perform tasks without human intervention.

Diverse Applications of Autonomous Drones

Aerial Photography & Videography
Used in media for capturing cinematic visuals, ads, and documentaries.

Agriculture
Support crop monitoring, spraying, and plant health analysis with advanced sensors.

Search & Rescue
Locate survivors using thermal imaging and navigate hazardous areas in emergencies.
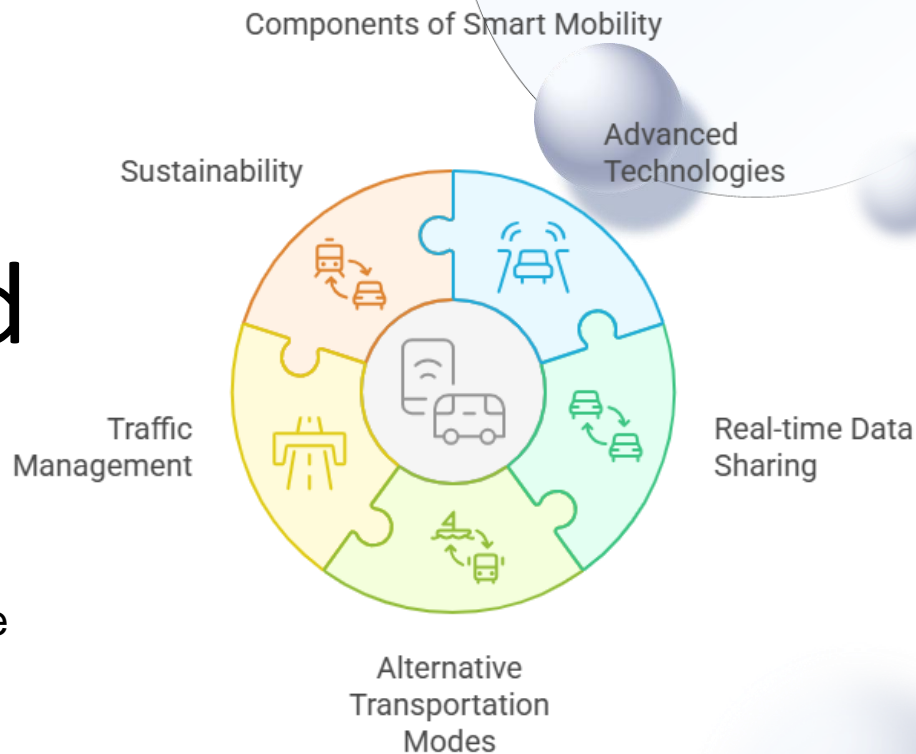
Military & Defence
Aid in surveillance, threat detection, battlefield logistics, and swarm warfare strategies.

05

Smart Transportation and Mobility

Integrates advanced technology and innovative solutions to create more efficient, sustainable, and convenient transportation systems.

Components of Smart Mobility

Sustainability

Advanced Technologies

Traffic Management

Real-time Data Sharing

Alternative Transportation Modes

Benefits

- **Driver assistance technologies**

Bridge the gap to full autonomy, offering features like adaptive cruise control, lane-keeping, and automated parking. They boost safety and driver confidence by minimizing human error.

- **Autonomous vehicle features**

They use sensors, cameras, and AI for real-time decision-making. With object detection, collision avoidance, and self-navigation, they enable safe, driverless travel and have the potential to revolutionize transportation.
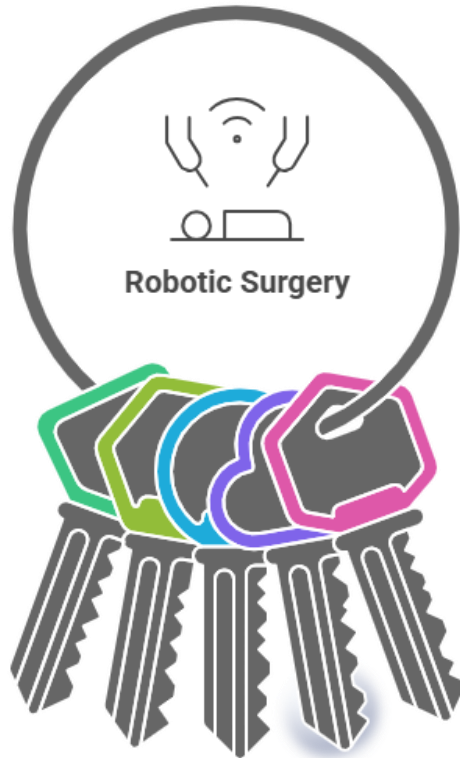
06

Healthcare Robotics

Key Features of Surgical Robotics System

Robotic Surgery

Enhanced Precision
Converts surgeon's movements into precise, scaled motions for better control.

3D Visualization
Provides high-definition magnified views to navigate complex anatomy.

Minimally Invasive Surgery
Reduces pain, recovery time, and complications with smaller incisions.

Remote Surgery
Allows surgeons to operate from distant locations, improving accessibility.

Augmented Reality Support
Assists in navigation and decision-making with virtual overlays.

Benefits

- **Better Surgical Outcomes** – Fewer complications, faster recovery, and reduced hospital stays.

- **Expanded Surgical Capabilities** – Allows complex procedures with improved access to hard-to-reach areas.

- **Less Trauma & Pain** – Smaller incisions minimize tissue damage and post-surgery discomfort.

- **Remote Medical Expertise** – Patients in remote areas can receive advanced surgical care.

- **Medical Training & Simulation** – Provides a safe environment for surgeons to practice and refine their skills.

Relevance of NARS

Relevance of NARS

• Increased Efficiency – Robots streamline processes in manufacturing, logistics, and healthcare.

• Labor Shortages – Automation compensates for workforce gaps in labor-intensive industries.

• Precision and Safety – Reduces human errors and enhances workplace safety.

• AI and Machine Learning – Enables intelligent decision-making and adaptive learning in robotics.

• IoT and Connectivity – Facilitates seamless data exchange for real-time operations.

In summary, NARS are revolutionizing various sectors, from warehouses to healthcare. Their integration promotes efficiency, safety, and improved quality of life, making them essential in modern society.