

Technology deployment to identify road defects

Prelims: Current events of national and international importance

Why in news?

In order to identify road defects, the National Highways Authority of India (NHAI) will deploy advanced sensors and data acquisition systems across 23 States.

- The NHAI will install **cutting-edge sensors & data collection systems** to detect road problems, such as potholes and cracks, throughout 23 states.
- **Aim** - To improve road quality, safety, and commuter experience by enabling data-driven maintenance and planning.
- **NSV vehicles** - Network Survey Vehicles (NSV) are fitted with advanced technology for high-resolution road surface mapping and creating a detailed profile of the road's condition.
- **Equipped with** - Advanced sensors and data acquisition systems, including a 3D laser-based system, a global positioning system (GPS), and an electronic device that measures an object's acceleration and angular velocity.
- **AI-based portal** - The collected data is uploaded to NHAI's AI-based "Data Lake" portal, examined by the group of NHAI professionals.
- **Road Asset Management System (RAMS)** - The information collected at regular intervals is stored for future reference and technical purposes in RAMS for supporting long-term infrastructure planning and management.
- **Data collection frequency** - For all highway projects with 2, 4, 6, or 8 lanes, data will be collected will start before road development work starts, and thereafter, with a gap of 6 months.
- **Use of collected data** - It will help to make decisions on maintenance, asset management, infrastructure planning, and improving the safety and efficiency of the country's National Highways network across the country.

Quick Fact

Data Lake Portal

- **Launched in** - 2020.
- It is a ***cloud-based platform*** provides a single, centralized repository for all project-related information, helping NHAI to become a fully digital organization that uses artificial intelligence.

e-DAR Project

- **e-DAR** - electronic Detailed Accident Report
- It is an initiative to create a national, ***digital database*** of road accidents.
- **Nodal Ministry** - Ministry of Road Transport and Highways (MoRTH)
- **Funded by** - World Bank.
- **Black spots** - The NHAI has also been identifying “black spots” based on the accident reports received from the concerned State governments.
Until March 2025, 13,795 black spots identified on the National Highways in the country.

References

1. [The Hindu | NHAI to deploy 3D sensors to identify road defects](#)
2. [PIB | Data Lake](#)

