



KAMARAJ IAS ACADEMY
Only IAS Academy by Grandson of "Perunthalaivar Kamarajar"

Kavach 4.0

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Why in news?

The Union Ministry of Railways is set to **fast-track the deployment of the latest version of its indigenous anti-collision system, Kavach 4.0**, with plans to issue tenders for installation in 20,000 locomotives this year.

About kavach scheme:

- Kavach is a cab signaling train control system with anti-collision features.
- Indigenously developed
- Developed by **Research Design and Standards Organisation(RDSO)**.

Components of Kavach:

Kavach setup consist of **three essential components**.

1. **First Component:** **Radio Frequency Identification (RFID)** technology into the tracks.
2. **Second Component:** The **locomotive, serving as the driver's cabin**, is equipped with RFID readers, a computer, and brake interface equipment
3. **Third Component:** It encompasses radio infrastructure, such as **towers and modems**, strategically installed at railway stations.

Applications:

It has been designed to assist locomotive pilots **in avoiding Signal Passing At Danger (SPAD)** and **overspeeding**.

The system can **alert the loco pilot, take control of the brakes and bring the train to a halt** automatically when it notices another train on the same line within a prescribed distance.

The device also continuously relays the signals ahead to the locomotive, making it useful for loco pilots in low visibility.

It also **controls the speed of the train by an automatic application of brakes** in case the loco pilot fails to do so.

It helps the loco pilot in running the train during inclement weather conditions such fog as dense.

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