



KAMARAJ IAS ACADEMY
Only IAS Academy by Grandson of "Per. unthalaivar 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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