

NavIC (Navigation with Indian Constellation)

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In news- The Indian government is pushing smartphone makers to enable support for its NavIC navigation system in new devices sold in the country from 2023.

About NavIC-

- NavIC is the name of the **independent stand-alone navigation satellite system of India**.
- This **system was earlier known as IRNSS** (Indian Regional Navigation Satellite System).
- The name **NavIC was coined** by the Hon. Prime Minister of India on the occasion of completion of the constellation in April **2016**.
- It was developed by the Indian Space Research Organisation (ISRO).
- **NavIC was originally approved in 2006** at a cost of \$174 million. It was expected to be completed by late 2011, but only became operational in 2018.
- **NavIC consists of eight satellites** and covers the whole of India's landmass and up to 1,500 km (930 miles) from its boundaries.
- Currently, NavIC's use is limited. It is being **used in public vehicle tracking in India**, for providing **emergency warning alerts to fishermen** venturing into the deep sea where **there is no terrestrial network connectivity**, and for tracking and providing information related to natural disasters.
- **NavIC, like any other navigation satellite system, consists of three segments:**
 - Space segment: Consists of the constellation of

satellites.

- Ground segment: Consists of a network of ground stations that generate navigation data to be uplinked to the satellites, and subsequently to be used by the user receiver for aiding in position computation.
- User segment: Consists of the users utilizing the navigation signals for the purpose of position, navigation, and timing.
- The main difference between GPS & NavIC is the serviceable area covered by these systems.
- **GPS caters to users across the globe and its satellites circle the earth twice a day, while NavIC is currently for use in India and adjacent areas.**
- **Like GPS, there are three more navigation systems that have global coverage** – Galileo from the European Union, Russia-owned GLONASS and China’s Beidou.
- QZSS, operated by Japan, is another regional navigation system covering the Asia-Oceania region, with a focus on Japan.
- India’s 2021 satellite navigation draft policy stated the government will work towards “expanding the coverage from regional to global” to ensure availability of NavIC signals in any part of the world.
- India says NavIC is conceived with the aim of removing dependence on foreign satellite systems for navigation service requirements, particularly for “strategic sectors.”

GAGAN & NavIC-

Following are the major differences between GAGAN and NavIC systems:

GAGAN	NavIC
An augmentation to the GPS	An independent stand-alone navigation system

Provides integrity information	Does not provide integrity information
Provides safety-of-life operation support	Does not support safety-of-life operations