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NavIC : Indian Regional Navigation Satellite System

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Abstract

Today's world become a vast network for global communication. Advance earth stations and network connectivity services makes the critical transmission to reach their intended targets efficiently and instantly. Satellite communication plays very important role which was introduced in 1945. With this advancement ISRO launches his new mission name as IRNSS that stands for **Indian Regional Navigational Satellite System** . This program comes into existence in 2005 and aim to provide high accuracy and position comparatively GPS. It is a system provide service area around 1,500 km and position accuracy of less than 20 m .

In the present , there are total 7 satellite that was launched and located in earth and this operation is known as NavIC (Navigation with Indian. Constellation.) . These satellite helps in marine and arial navigation , visual and voice navigation assistant to drivers.

Keywords :- Navigation System , Satellite Communication , ISRO , IRNSS , GPS , Mobiles

INTRODUCTION

Satellite Navigation came with a vast change in the navigation world and opened various opportunities. to provide high precision in timing and position. SAC is working on IRNSS and GAGAN parallel.

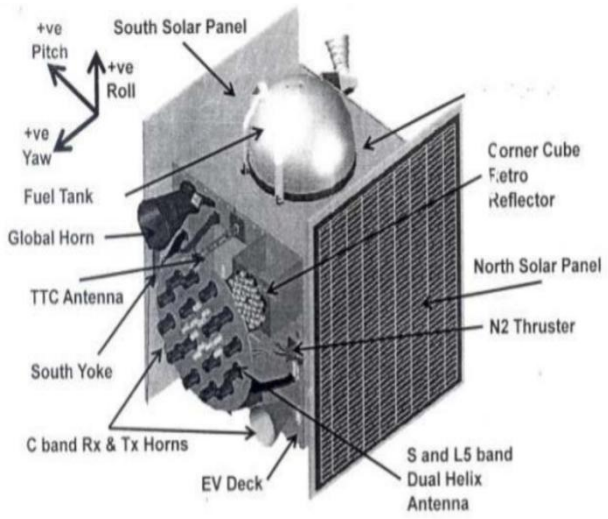

Fig 1:- Navigation system

The services provided for navigation are :

Standard position services :- this service is used for all the users.

Restricted services :- This is provided to only authorized users.

NavIC offers a route framework which is

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professed to give a precision of superior to anything 10 meters, giving it a noticeable advantage over GPS which has a precision of 20-30 meters. Its essential range is likewise reached out to 1,500 km outside our outskirts, alongside a more extensive Extended Service region. The framework is likewise expected to offer military-based route to approved clients over a scrambled association.

The main advantage of IRNSS is that only 4 satellite is needed to view the ground level while IRNSS provide all 7 satellite visible to ground receiver all the time and cover india and its neighbour countries.

IRNSS ARCHITECTURE

ISRO is additionally helping chipmaker, Qualcomm for the advancement of chipsets with coordinated with NavIC, in this way empowering future cell phones to be offered with an inherent NavIC framework.

There are three major forms of IRNSS that is : Ground , Space and User

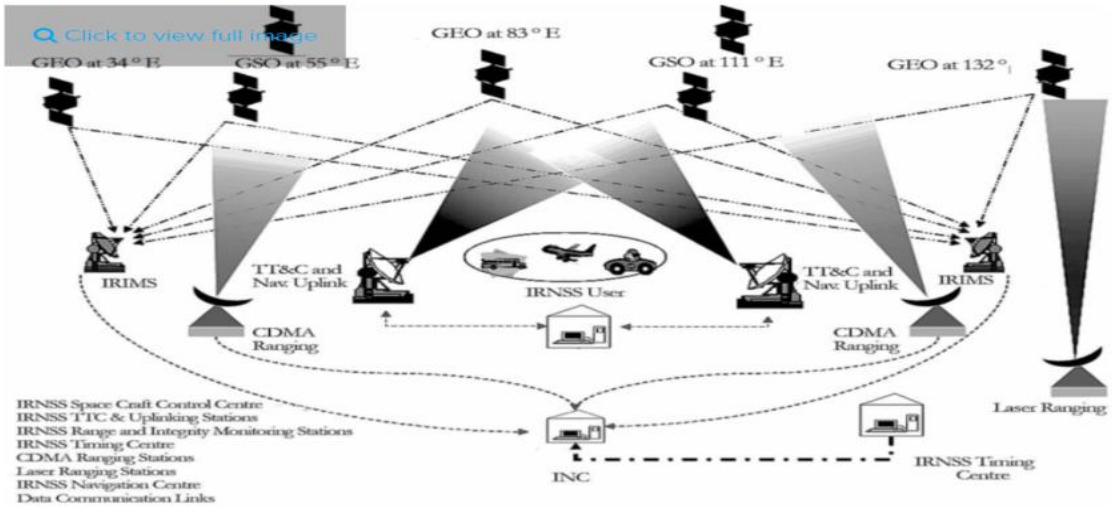

Fig 2:- Architecture

IRNSS DEVELOPMENT

India has danced into the world class club of nations that have their own route frameworks with the dispatch of the seventh satellite of the GPS framework, NAVIC. With NAVIC, ISRO has not just brought to us something else to be pleased about, however will make it simpler to have increasingly exact route offices. An essential contributing component towards the inclination of NavIC over GPS is reliability. Since GPS is an American framework, it can't be as far reaching and easy to adjust as the NavIC since it is grown uniquely for the India.

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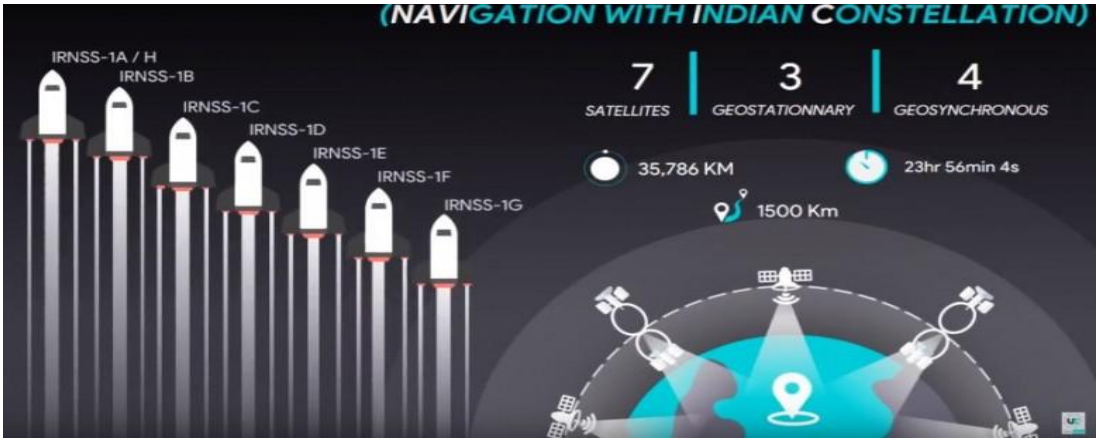

Fig 3:- IRNSS Development

S.No.	Name of Satellite	Launch Date	Information
1.	IRNSS 1-A	23rd July 2013	First satellite with the cost of 1.25 Billion at Satish Dhawan space center.
2.	IRNSS 1-B	4th April 2014	Second satellite works in L5 & S band of mass 1432kg with 1,660 watt power.
3.	IRNSS 1-C	16th October 2014	Launch Vehicle (PSLV) rocket from SDSC Sriharikota with lift-off mass of 1425.4kg.
4.	IRNSS 1-D	28th March 2015	Powered two solar array cell with power 1,660 watt with cost 14 Billion.
5.	IRNSS 1-E	20th January 2016	It provide navigation, tracking and mapping services.
6.	IRNSS 1-F	10th March 2016	It was propelled on board a PSLV-XL rocket bearing flight number C32
7.	IRNSS 1-G	28th April 2016	launched by PSLV-C33 into a sub GTO with C-band tranponder of mass 1425kg.
8.	IRNSS 1-H	31st August 2017	Damaged due to failure of PSLV-C39.
9.	IRNSS 1-I	11th April 2018	Launched with PSLV-C41

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CHALLENGES

Navic, being a maverick, couldn't get designations in the L1 and L2 groups yet were apportioned L5 and S groups. in this lies the issue. While most present day non military personnel recipients will utilize L1, L2C and L5, they can just get the Navic L5 flags however not the S band signal. Further, S band is cleared for RDSS (RNSS is a subset) just for Region 3 (Asia and Oceania) by ITU. It is for auxiliary use in region1 (Europe and Africa). This implies the S band can't be comprehensively utilized.

While ISRO has conquered these issues by building up an appropriate beneficiary and recieving wire blend, the inquiry is will the cell phone industry get this?

SCOPE

NAVIC can give the administration traffic information, which can help with the arranging of new framework. It can likewise help with geo-labeling and perceiving, which territories need increasingly open administrations.

Isro, as indicated by a report in the Economic Times, will be tying up with telephone creator Xiaomi to fuse its chips to run route framework in its telephones. Qualcomm has consented to deliver chips for Isro. While most cell phones come furnished with US- controlled GPS, this will be one of only a handful scarcely any endeavors by a national space organization to work together on a business scale. Isro itself will create answers for safeguard, yet for business activities, it intends to rope in different players.

ISRO is additionally helping chipmaker, Qualcomm for the advancement of chipsets with coordinated with NavIC, in this way empowering future cell phones to be offered with an inherent NavIC framework.

CONCLUSION

NAVIC (Navigation with Indian Constellation), which is India's indigenous worldwide route satellite framework, is relied upon to become operational soon. The Indian Regional Navigation Satellite System (IRNSS) will before long supplant GPS. IRNSS would be helpful in land, ocean and air route and will take into consideration visual and voice route for drivers.

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stage to us.

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