

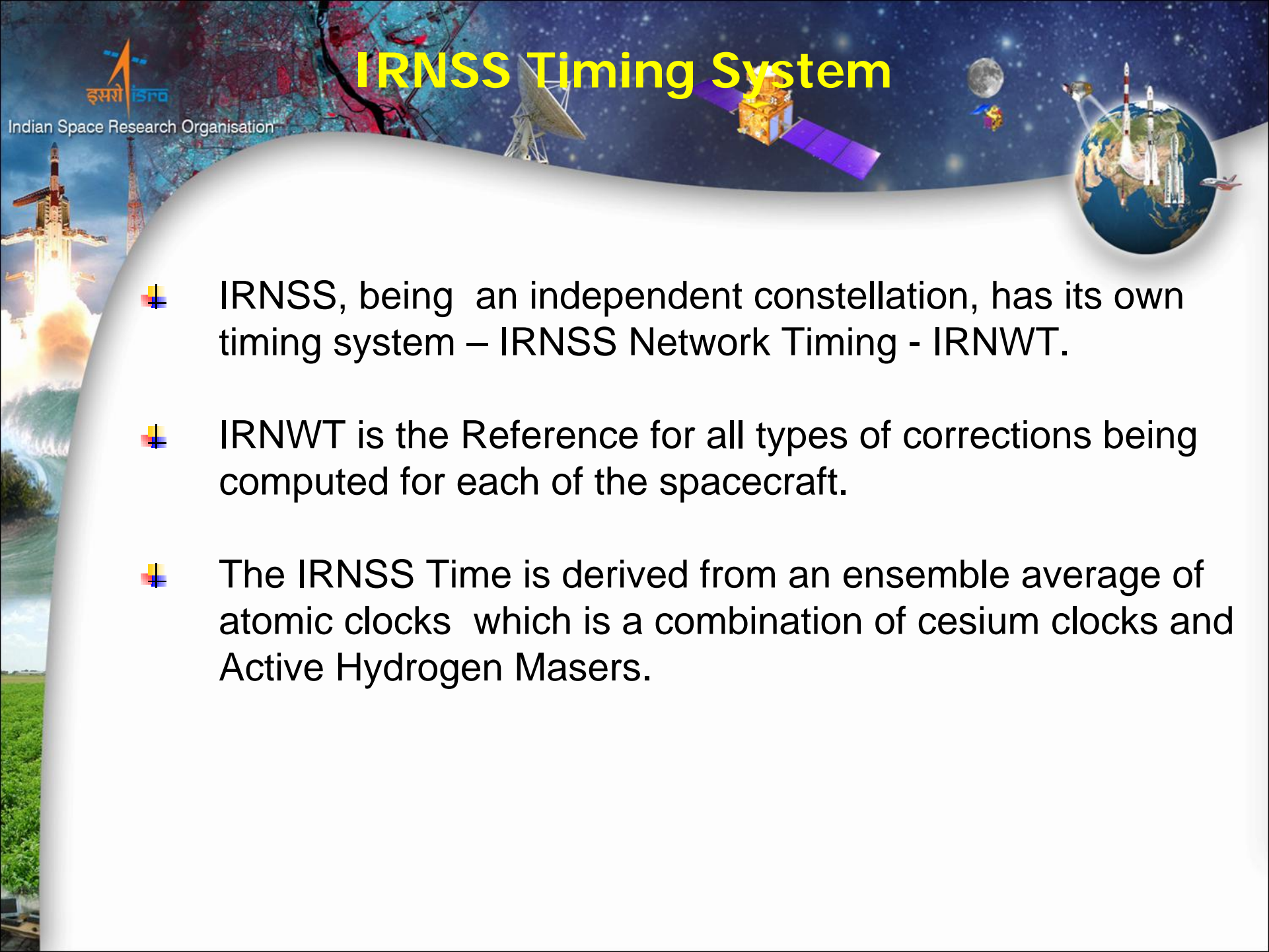
The background of the slide is a collage of space-related images. It includes a satellite with purple solar panels, a rocket launch, a satellite dish, a satellite in orbit, the Earth with a rocket and satellite, and a view of the Earth from space. The text is centered on a white, curved shape that overlaps the background.

# Overview of the Timing system planned for IRNSS

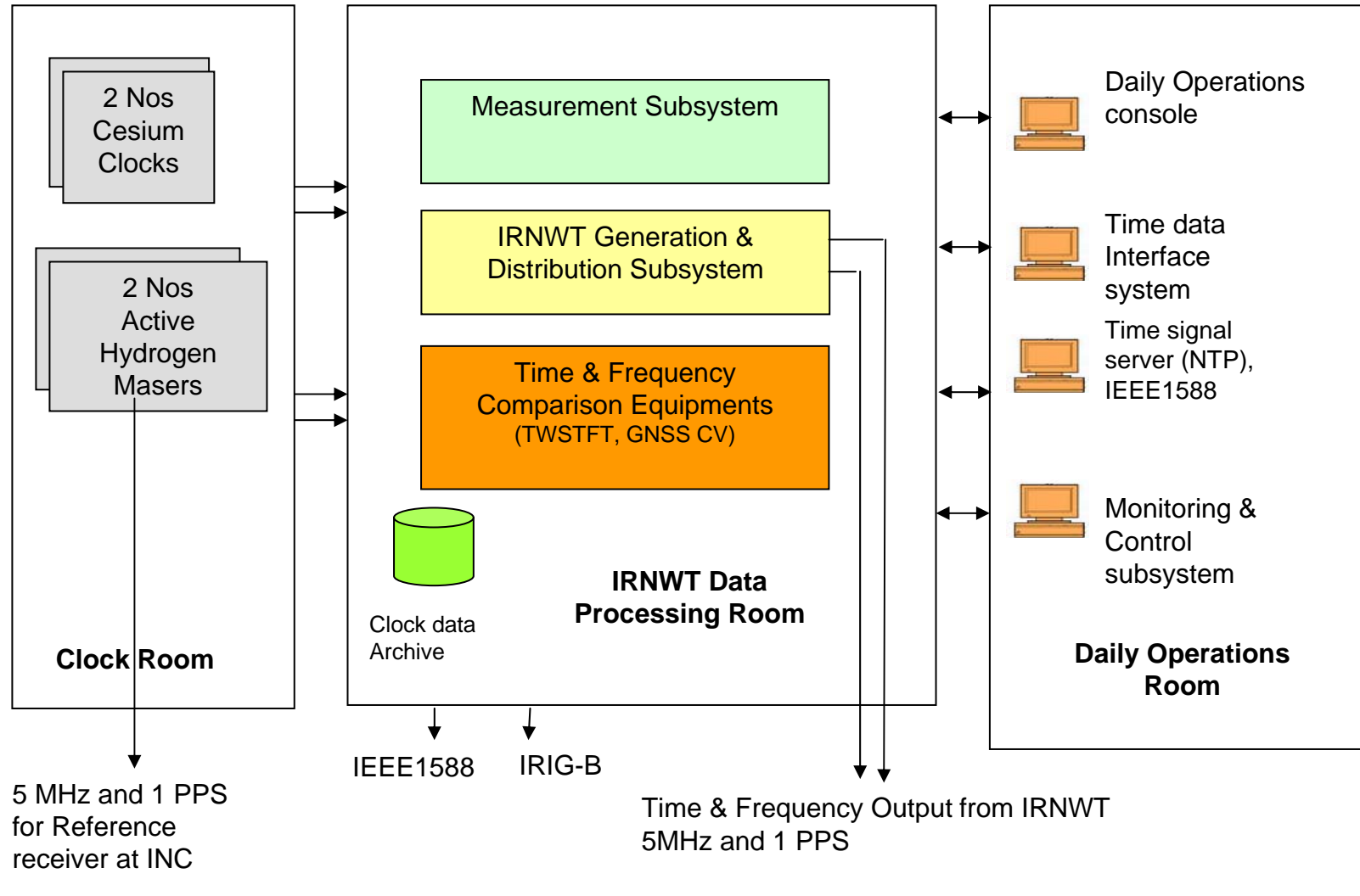
N. Neelakantan  
Director

Satellite Communication and Navigation Programme  
Indian Space research Organization  
India

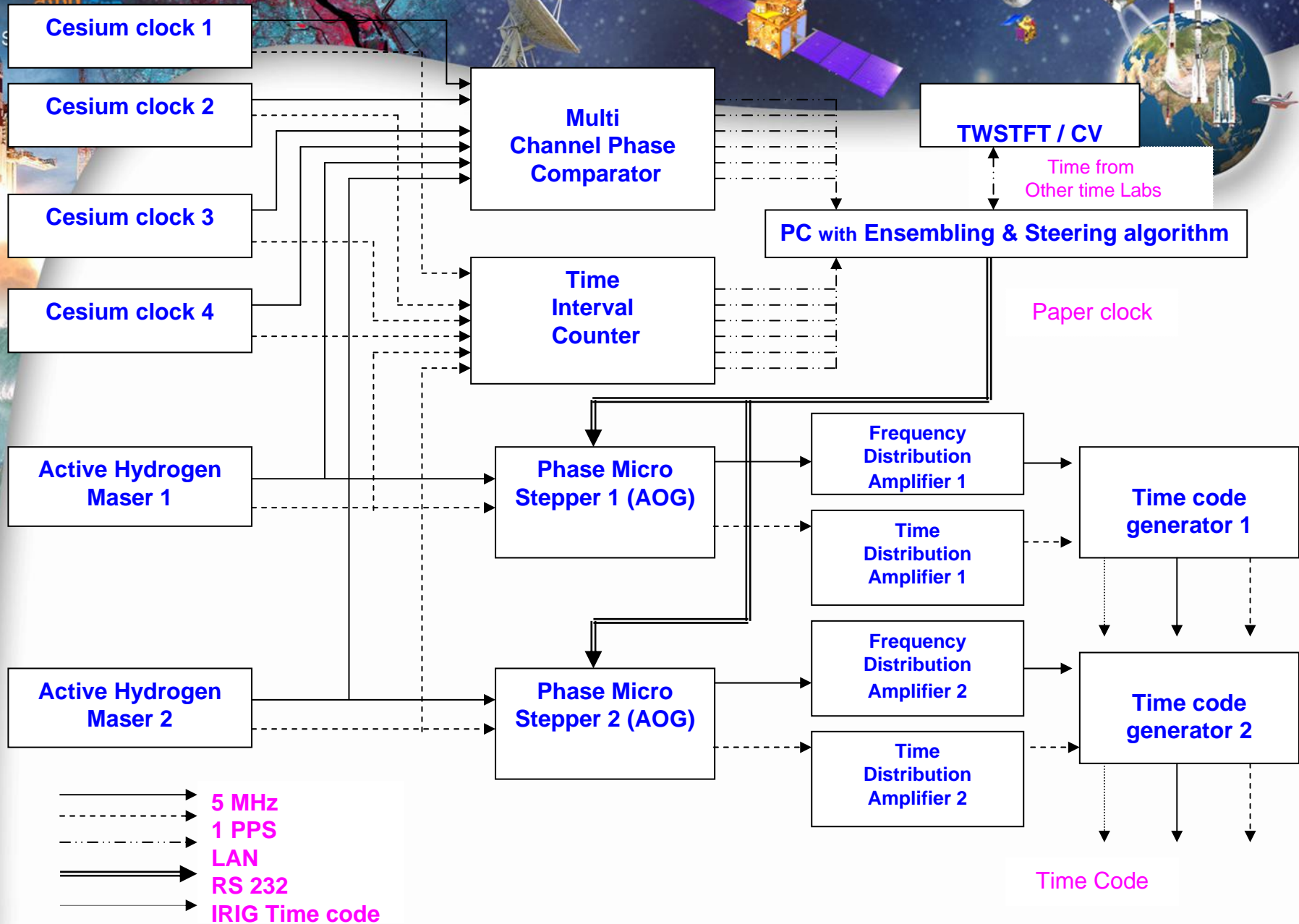
# IRNSS Timing System

- 
- The background of the slide is a collage of space-related images. It includes a satellite in orbit, a rocket launch, a globe with a satellite, and a satellite dish. The text is overlaid on a white, curved shape that resembles a satellite component.
- ✚ IRNSS, being an independent constellation, has its own timing system – IRNSS Network Timing - IRNWT.
  - ✚ IRNWT is the Reference for all types of corrections being computed for each of the spacecraft.
  - ✚ The IRNSS Time is derived from an ensemble average of atomic clocks which is a combination of cesium clocks and Active Hydrogen Masers.

# IRNSS Timing System



# Concept of Time Generation for IRNSS



# IRNSS Timing System

	Performance Parameters	Measurement value
1	Frequency Stability, per day	$5.0 * 10^{-15}$ ADEV
2	Frequency Offset, per day	$5.5 * 10^{-14}$ , $2 \sigma$
3	Uncertainty in  TAI-IRNWT	Less than 20 ns, $2 \sigma$
4	Uncertainty in IRNWT without steering to TAI, for 10 days	Less than 20 ns, $2 \sigma$
5	IRNSS Timescale is referenced to a standard time scale, with corrections to convert from satellite to system time scale, using the standard coefficients.	



Indian Space Research Organisation



**THANK YOU**