GLONASS System Time Scale

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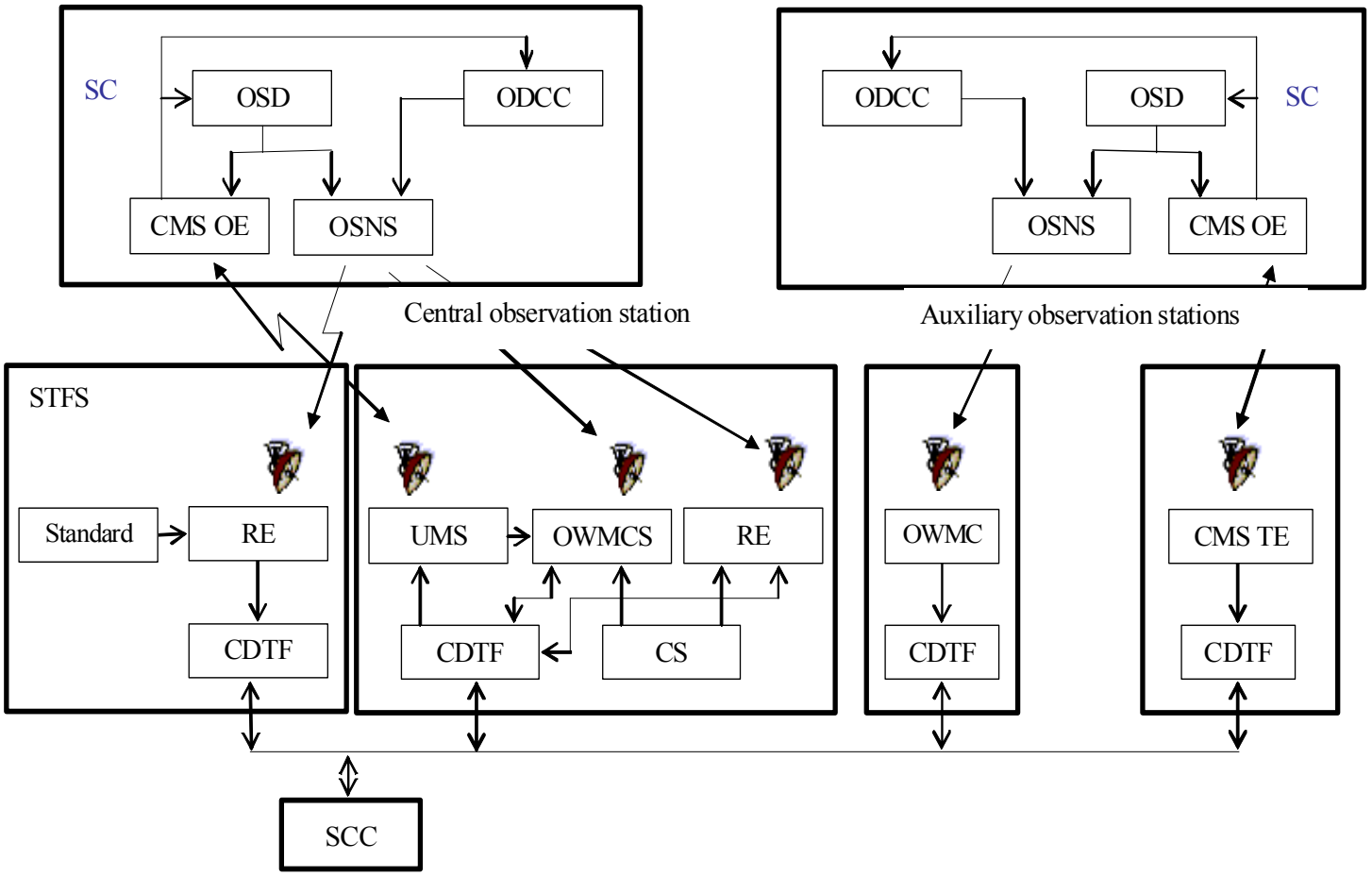
ICG – 5, Turin, Italy
18 – 22 October 2010

Block Diagram of GLONASS Synchronization System



OSD Accuracy Parameters:

- operating frequency of a reference oscillator - 5 MHz;
- relative error of frequency reproduction for continuous operation mode (instability δ) over measurement intervals t_m , sampling intervals t_s, observation intervals t_0 , no more than:

$2 \cdot 10^{-11}$ for t_m =1 s, t_s = 1 s, t_0 = 100 s;
$5 \cdot 10^{-12}$ for t_m =100 s, t_s = 100 s, t_0 = 20 min;
$5 \cdot 10^{-13}$ for t_m =1 h, t_s = 1 h, t_0 = 12 h;
$1 \cdot 10^{-13}$ for t_m =1 days, t_s = 1 days, t_0 = 10 days;

GLONASS system time scale

is generated as a continuous time scale based on the time scale of the Central Synchronizer (CS).

- When correcting UTC(SU) by plus or minus 1 second, the corresponding CS time correction is being performed.

CS Accuracy Parameters

Relative frequency error (no more than)	$\pm 3 \cdot 10^{-14}$
Daily frequency instability (no more than)	$2 \cdot 10^{-15}$
Systematic frequency change (drift) (per month)	$(1..3) \cdot 10^{-15}$

SC TIME SYNCHRONIZATION

For locking the SC time on STS with nanosecond accuracy are provided:

- determination of SC time offset relative to the CS time and transformation of the results obtained to the values of SC time offset relative to STS;
- joint processing of values of SC time offset relative to STS over some observation interval for estimating SC time drift parameters and predicting for the specified time interval;
- generation of frequency/time corrections (FTC).

The evaluation of SC time drift parameters (relative to STS) is being performed using algorithm for processing the results of determining the time scales offset based on the generalized least-squares technique (LST) for 48-hours observation interval.