

State of Health Monitoring of the IMS Network

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CTBTO Preparatory Commission



P4.5-333

The IDC Operations Section makes daily use of operation tools to oversee and manage the Operation of the IMS network and the communications between the PTS and station operators. Some tools and their features are already available to station operators through Single-Sign-On (SSO). As part of the COVID-19 resilience enhancement, new features and functionalities are under development to facilitate station operators with notifications, monitoring, and troubleshooting of IMS station incidents and communication between PTS and station operators. Different monitoring tools, including the PTS centralized monitoring tools, the monitoring capabilities for station operators with a large number of stations, station operator tools for a single or a small number of stations, and the Station Standard Interface (SSI) at IMS stations, will complement each other. All these tools will make the monitoring of the IMS network more reliable and incident identification and resolution more efficient and thus contribute to achieve as the highest possible overall IMS network data availability, data quality, and data surety.



Station	Category	Status	Value	Unit	Time
Station 1	Category 1	OK	100	%	10:00
Station 2	Category 2	Warning	80	%	10:01
Station 3	Category 3	OK	120	%	10:02
Station 4	Category 4	Warning	90	%	10:03
Station 5	Category 5	OK	110	%	10:04
Station 6	Category 6	Warning	85	%	10:05
Station 7	Category 7	OK	130	%	10:06
Station 8	Category 8	Warning	95	%	10:07
Station 9	Category 9	OK	140	%	10:08
Station 10	Category 10	Warning	100	%	10:09



PTS: Supervision and Coordination of Network Operations

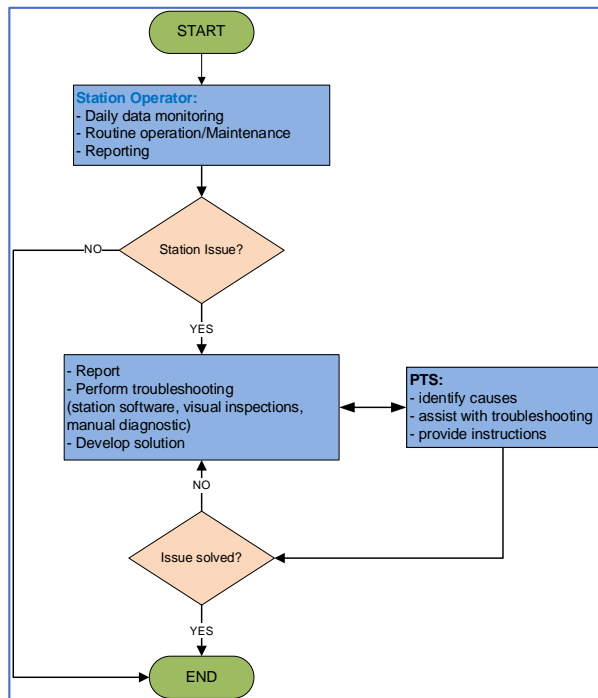
- Concluding agreements, arrangements, or contracts with SO;
- Coordinating operations through reporting and messaging system;
- Providing assistance as needed;

SO: Operation and Maintenance of Individual IMS Station

To ensure station is operating properly, meeting Data Availability, Data Quality, and Data Surety requirements;

- Filling the proper reports;
- Scheduling Preventive Maintenance;
- Providing timely troubleshooting;
- Conducting timely repair in case of Unscheduled data outage;
- Reporting any unauthorized access to the station facilities;

SO: Monitoring of Individual Station



Interfaces

SOH Tool

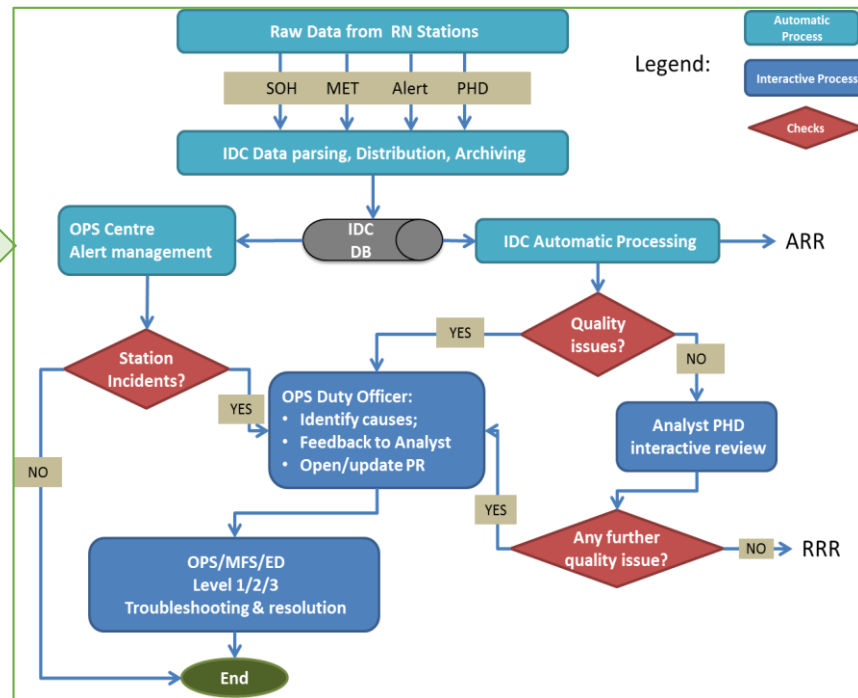
IRS

DOTS

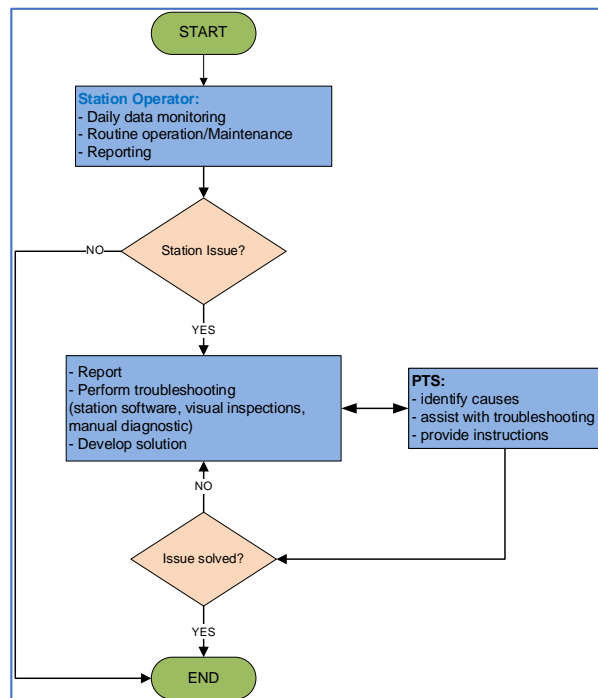
PR Tool

SOPET

PTS: Monitoring Process for the RN Network



SO: Monitoring of Individual Station



Interfaces

SOH Tool

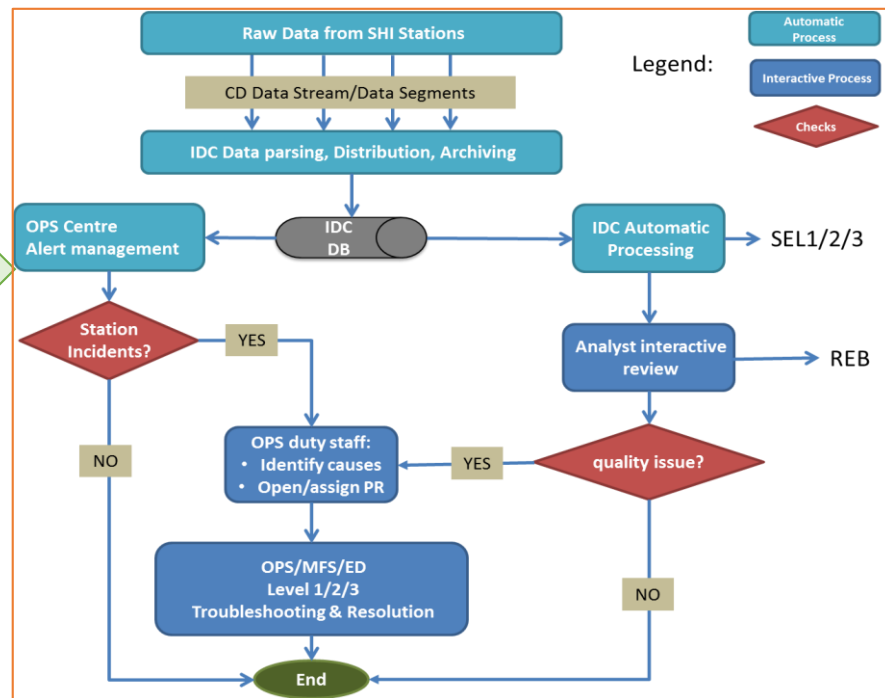
IRS

DOTS

PR Tool

SOPET

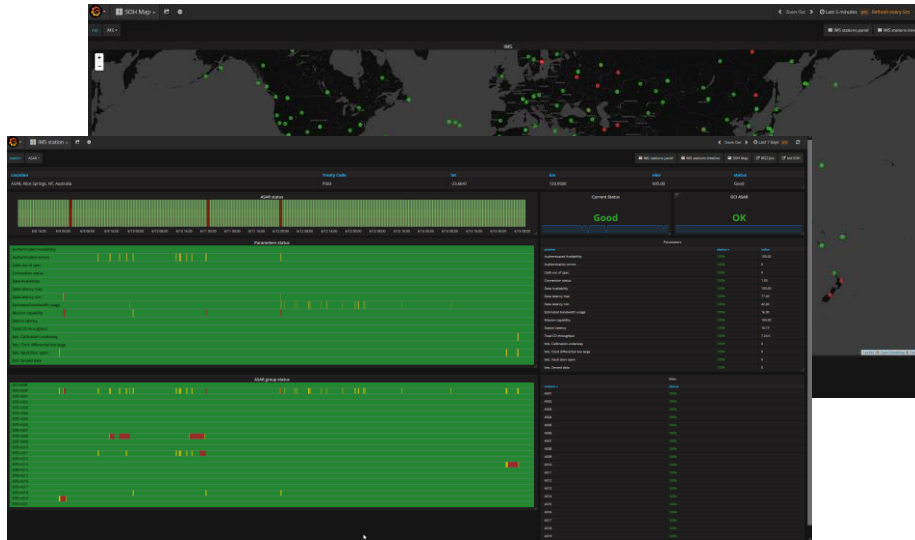
PTS: Monitoring Process for the SHI Network



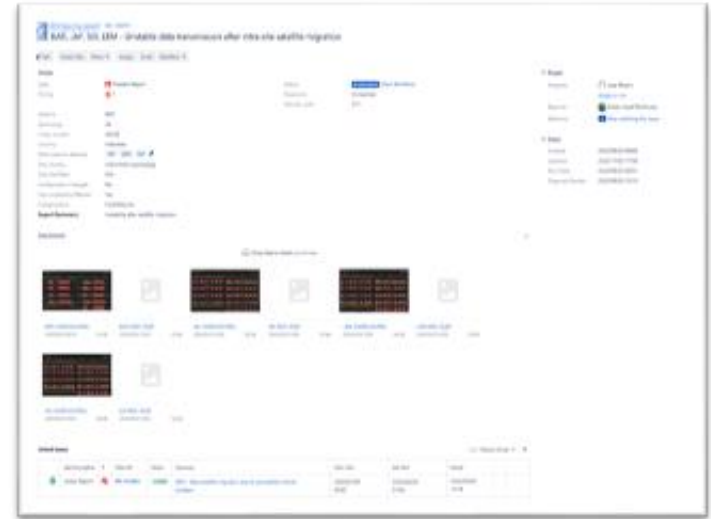
PTS Monitoring and Communication Tools

State of Health Monitoring (SOH)

This allows the Operations Centre to view the overall state of health of the IMS network and drill-down to individual components of stations.

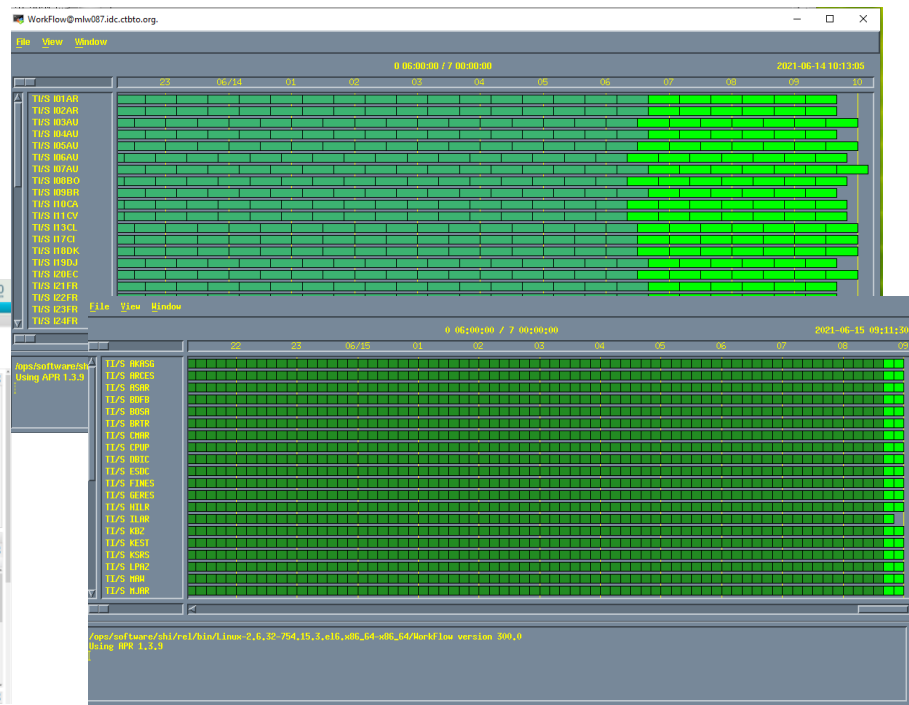
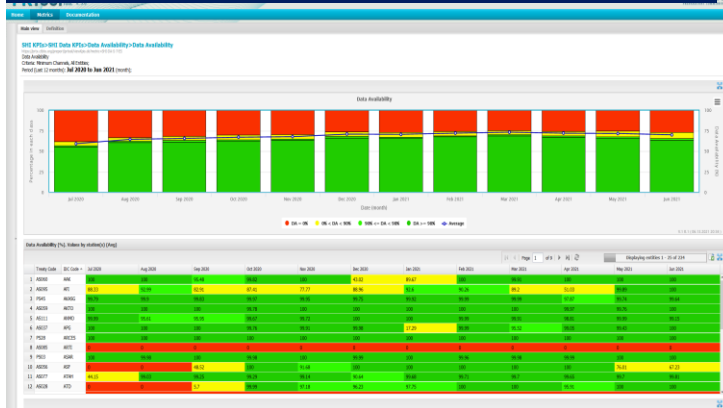


IMS Reporting System – IRS



PTS Monitoring and Communication Tools

The Station performance statistics over a certain time interval for a number of Key Performance Indicators (KPIs): Data Availability (%), Authenticated, Unauthenticated); Data Timeliness (%); Mission Capability (%); and Data Quality (%)(Constant values, Data gaps).



Disclaimer: The views expressed on this poster are those of the author and do not necessarily reflect the view of the CTBTO

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IRS:

- Maintenance Levels are introduced in accordance with IMS manual.
- Other improvements made to help cross-monitoring of the overall network status.

SOH:

- Alert Manager will be available to SO => facilitate SO to take proactive action
- Make other features available to SO => Allow SO to have more comprehensive overview of station status

SOPET:

- Provide access to SOPET through SSO:
- SO can create Operation report for all its stations in selected period.
- MR: O&M plans to be available to compile MRs to facilitate submission and review of MR.
- Create SSR through the interface.

Maintenance level **None**

Improvement to IRS

- Level 1: routine preventive maintenance and servicing; preliminary diagnosis of faults and corrective maintenance tasks of a minor nature, such as replacement of parts and assemblies.
- Level 2: more extensive or complex corrective maintenance activities.
- Level 3: complete overhaul or re-engineering of equipment.

SOH Alerts (SHI)

No matching issues found.

SOH Alert Management

No matching issues found.

This Results After Alerts not addressed SHI													
ID	Key	Station	Technology	Transter	Serial	Serial Date	Channel	Serial Number	Link to Data	Link	Alert Class	Country	
ALPS-150871	1502	AS	AS093	INSTR	2021-06-15 07:00	2021-06-15 07:00	SOH-Station	RS-150871	0	SOH-Station	RS-150871	RS already opened	Russian Fed.
ALPS-150885	1504	AS	AS097	INSTR	2021-06-12 20:45	2021-06-14 07:00	SOH-Station	RS-150871	0	SOH-Station	RS-150871	RS opened	Namibia
ALPS-150885	1502	IS	IS14	INSTR	2021-06-11 13:35	2021-06-12 08:45	0	SOH-Station	RS-150871	0	RS already opened	China	
ALPS-150878	1501	AS	AS042	INSTR	2021-06-07 19:40	2021-06-07 20:00	70,888	SOH-Station	RS-150871	0	RS already opened	Indonesia	
ALPS-150858	15080	IS	IS128	INSTR	2021-06-01 13:30	2021-06-02 00:00	70,888	SOH-Station	RS-150871	0	RS already opened	Niger	
ALPS-150858	1501	IS	IS121	INSTR	2021-06-01 00:00	2021-06-01 04:10	0	SOH-Station	RS-150871	0	RS already opened	Argentina	
ALPS-150871	1504	IS	IS113	INSTR	2021-05-31 16:00	2021-05-31 17:10	0	SOH-Station	RS-150871	0	RS already opened	China	
ALPS-150858	15040	AS	AS070	INSTR	2021-05-23 13:00	2021-05-23 00:10	0	SOH-Station	RS-150871	0	RS already opened	New Zealand	
ALPS-150858	15040	IS	IS124	INSTR	2021-05-19 09:20	2021-05-19 10:00	0	SOH-Station	RS-150871	0	RS already opened	Korea	
ALPS-150858	1501	IS	IS127	INSTR	2021-05-18 07:44	2021-05-19 10:00	70,174	SOH-Station	RS-150871	0	RS opened	South Africa	

Select Station Summary Report

Station code: Choose station from:

Status:

Start month: 2020-06

End month: 2021-06

SOPET Interface for SSR

SSR Reviews of all stations for which has in R2SR

Station Code	SRID	Start date	End date	Last review	Status	Date of last action	View	Review	Finalize	Delete
150871	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150878	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150885	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150871	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150878	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150885	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150871	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150878	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				
150885	2021-05-18	2020-05-19	2021-05-18	Inactive	Partially reviewed	2021-05-14				

- Inputs from station operators are appreciated for their requirements of new features to:

- ❖ Facilitate notification, monitoring, troubleshooting of station incidents
- ❖ Enhance communication between PTS and station operators
- ❖ Create station performance report

Send recommendations to Support@ctbto.org with the subject “Inputs for monitoring tool development”

- Test New Features before moving to Product Version

- ❖ Selected station operators will be contacted by PTS to test new features before publishing any new product version

(Thanks to station operators who are willing to support this project)