3R SYSTEM

R-SYS Recording, Replay and Investigation System

Key features

Modular design

Multi - source / channel recording

Comprehensive configuration and supervision (CMS)

Technical and investigation - replay client

Replay client - Radar Data Display

Player - self extraction

New features

3R SYSTEM

KEY FEATURES

365/24/7 operation

Multi-source, multi-channel, Voice/VoIP/Video/Data/Ambient

ATM/ATC oriented monitoring and diagnostics (status, notification, alert), SNMP support

Incident Management toolsdeveloped with Air Traffic Inspectors

User-rights system and comprehensive log system

Time and/or meta-data record search capability

Central system management

Distribution and accessibility across the network

Reliable NTP Time synchronization

Non-intrusive solution

Developed in compliance with ICAO Annex 10,11 and Doc 4444

Compliant of the latest recommendation ED-137 vol 4. and ICAO 9896

State-of-the-art recording solution with a robust HW platform designed for recording, long-term storage and replay of multiple sources such as audio, video & data recordings.
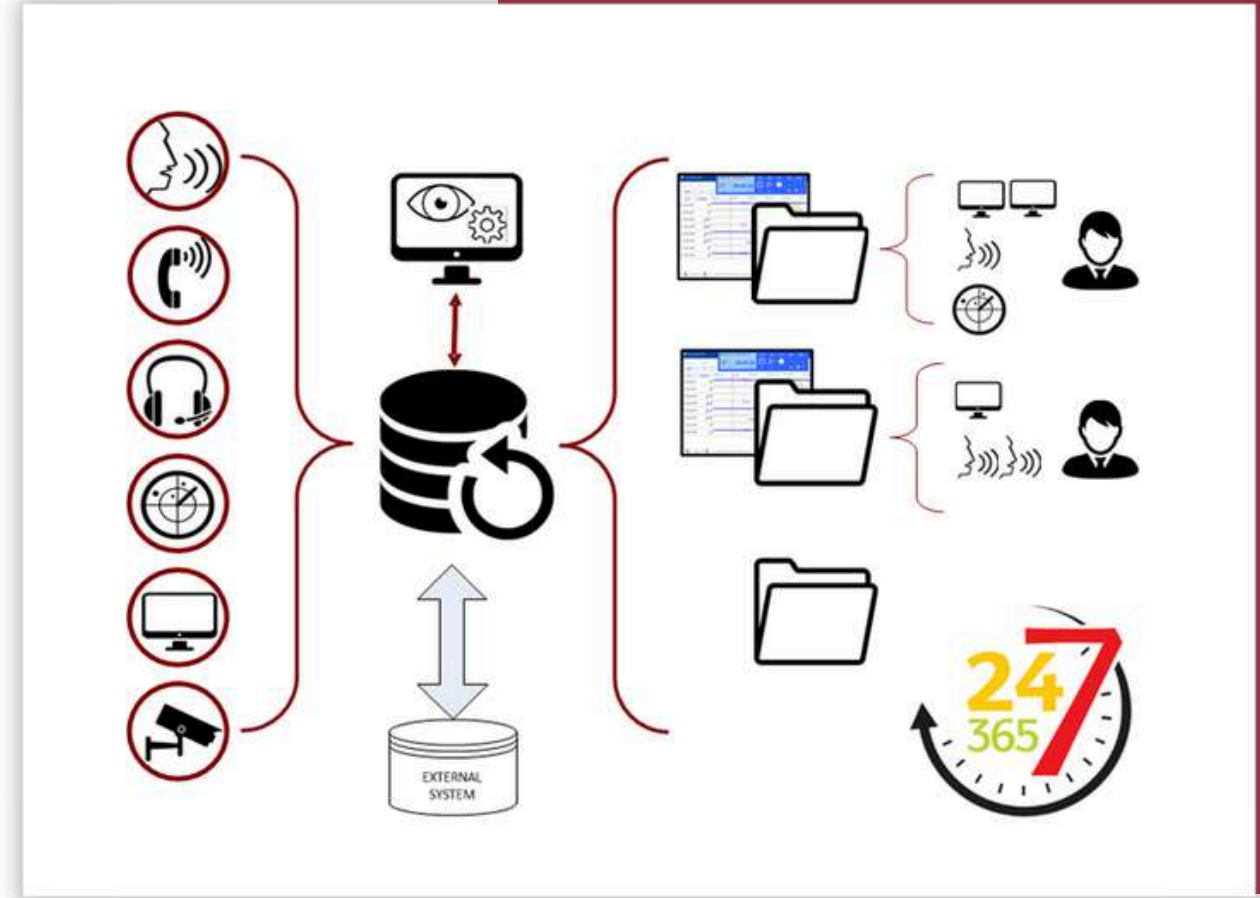
3R SYSTEM

MODULAR DESIGN

Modular system architecture

Capability to be integrated to a 3rd party system representing an advantage of utilizing existing recording platform

Seamless integration with all ERA's ATM/ATC and Sensors solutions

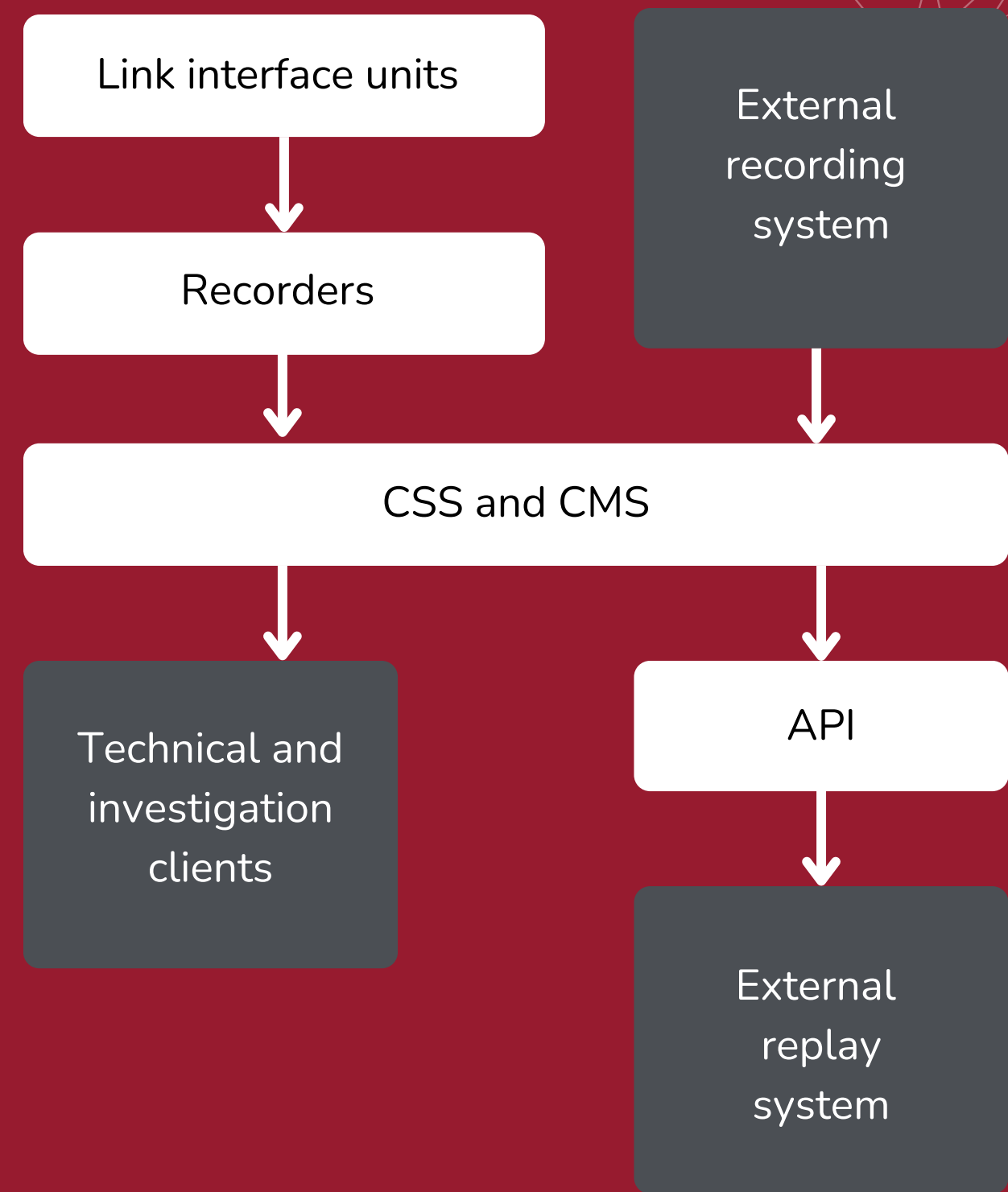Rich API library to support interoperability with other systems

Modular HW & SW design

Configuration as required by, performance, operational and safety specifications

Distributed System with SOA (Service Oriented Architecture)

Recording, monitoring and diagnostic and replay sub-systems connect network components

Monitoring and diagnostics of all recording components available in its network

```
Link interface units                 External
        |                            recording
        v                             system
    Recorders                            |
        |                                v
        +------------> CSS and CMS <------+
                          |       |
          +---------------+       +-------+
          v                               v
    Technical and                        API
    investigation                         |
       clients                            v
                                      External
                                       replay
                                       system
```

3R SYSTEM

MULTI-SOURCE / CHANNEL RECORDING

Analogue voice channels

VCS Operator positions

Ambient microphones

Radio receivers

Phone lines Q.23

POTS

Digital voice channels

E1, ISDN

VoIP SIP (active / pasive), ED137B/C Vol. 4 compatible

Data streams

System radar tracks in various formats

Other UDP/IP data-streams

Video channels

ATCO screens recording VGA/DVI (up to 4K)

IP, CCTV camera recording

NTP server

3 and more sources

3R SYSTEM

COMPREHENSIVE CONFIGURATION AND SUPERVISION (CMS)

Real time HW and SW monitoring and diagnostic of all system modules

Configurable statistics on Vopice and Data recording channels

Alarm Management

On-line Audio/ Video channel activity monitoring

File/data management on Central Storage

User-friendly HMI for system configuration

Components/Stations maintenance mode

Central configuration with configuration archive/history support

User / User Group profiles administration
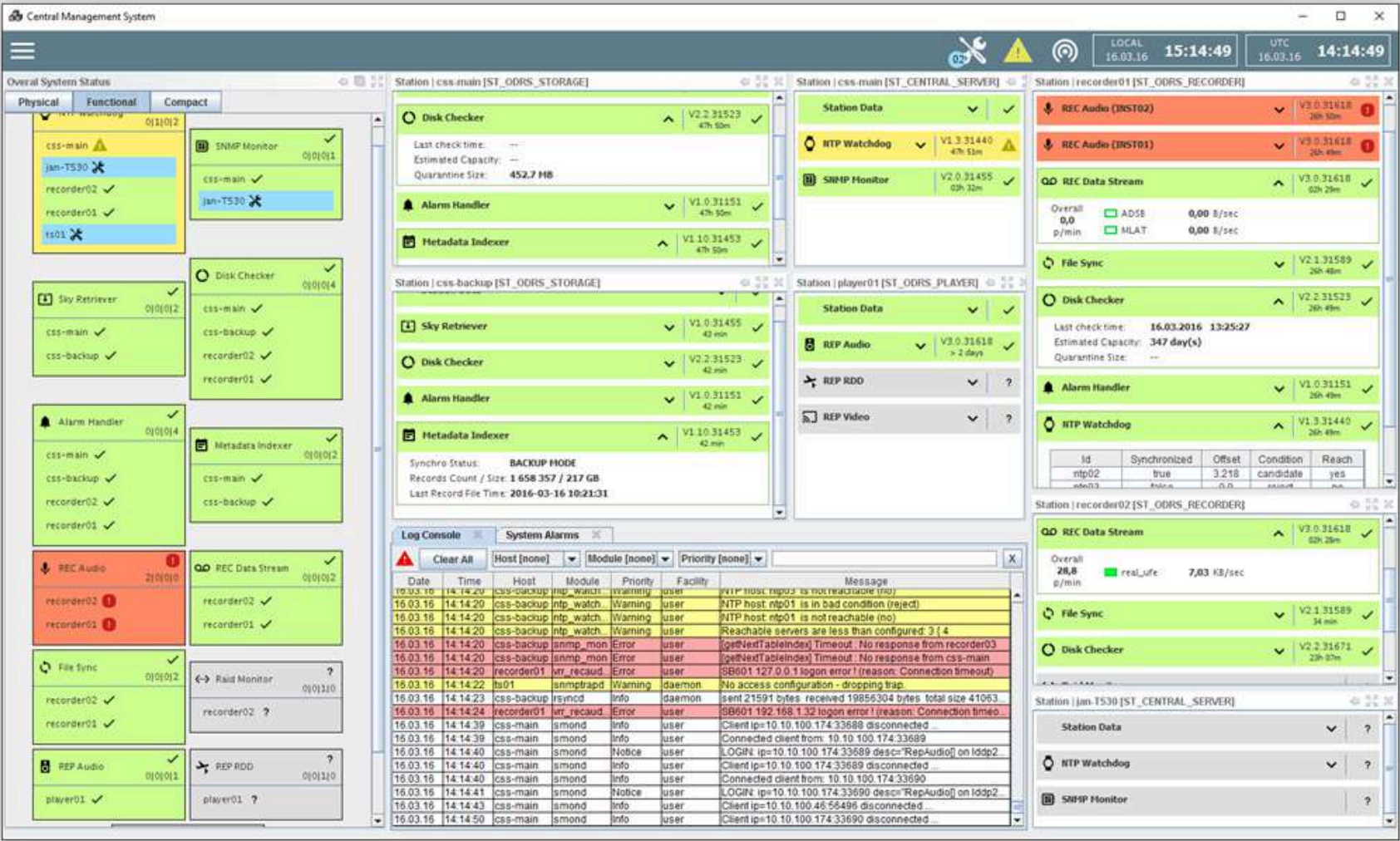
3R SYSTEM

TECHNICAL AND INVESTIGATION - REPLAY CLIENT

Up to 20 clients at the same time

LINUX based application, Reliable OS guaranteed for Mission Critical Scenarios

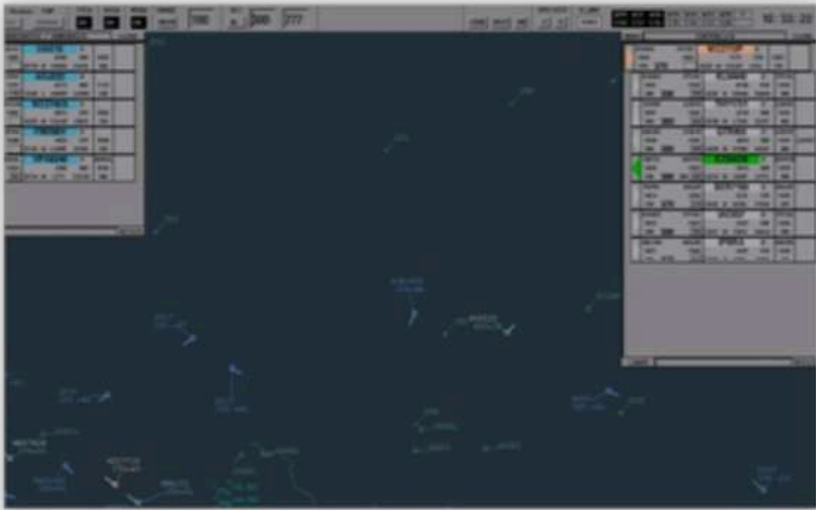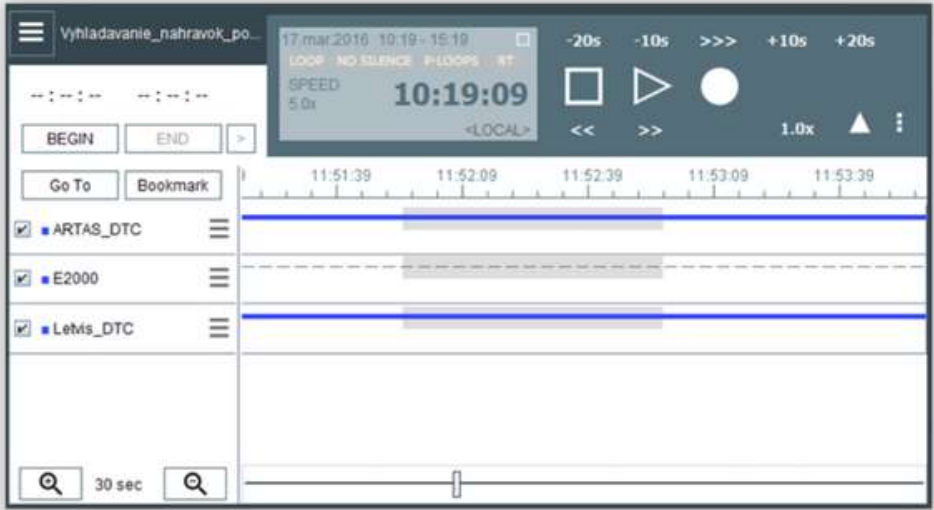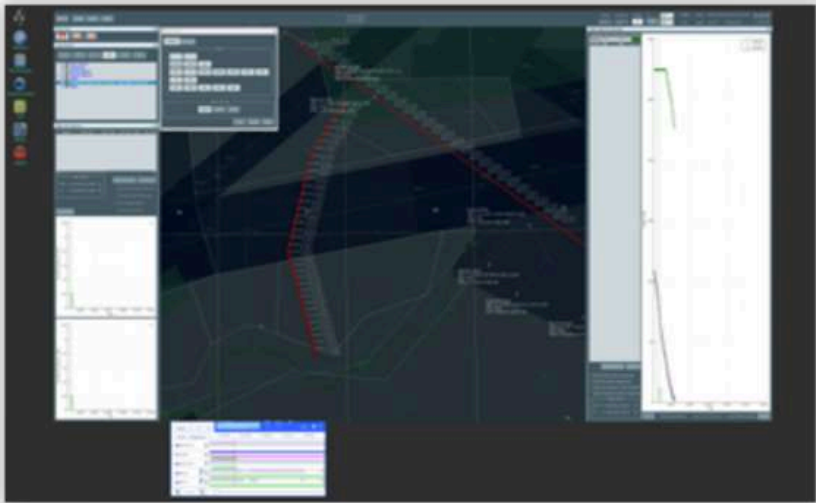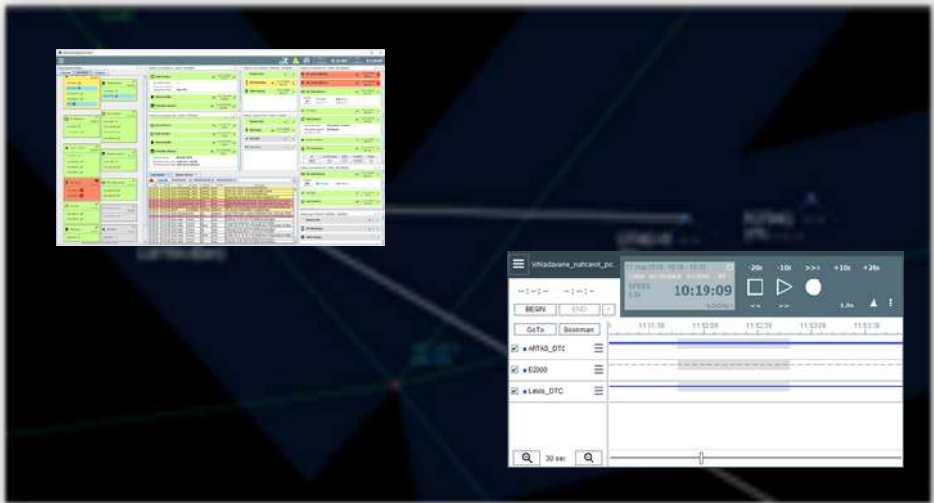Investigation Case / Project support

Search & Filtering
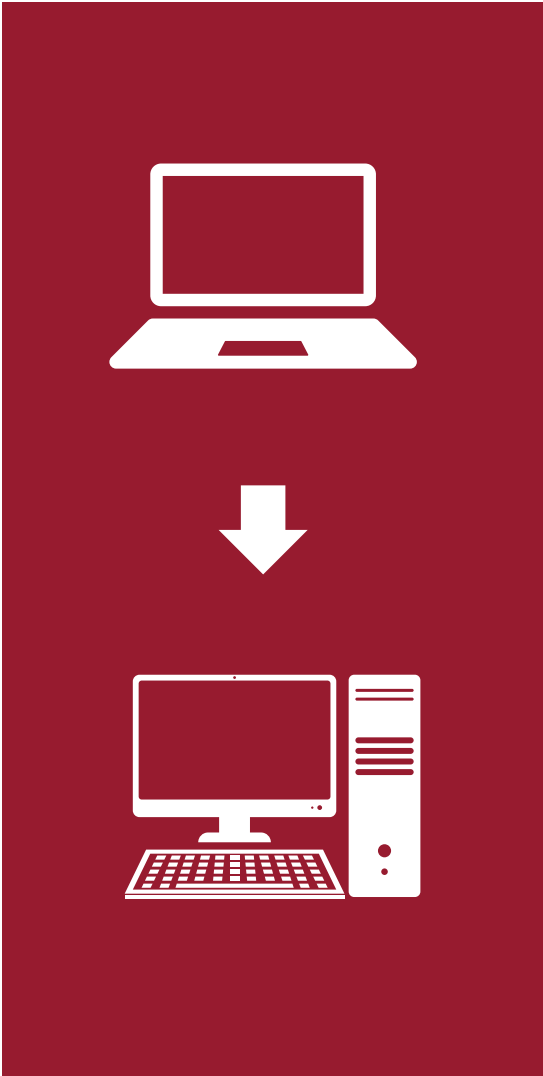
Playback

Quarantine

Transcription

User MMI adjustment

Customizable user HMI

REPLAY CLIENT – RADAR DATA DISPLAY

Data Stream Replay Control

Presentation of radar data output in form of tracks and labels simultaneously with audio/video records

Display of different types of maps, points, lines and polygons defined and selected by user

Map archive/database - display maps based on current replay time

Display of basic and enhanced Mode S information

Measurement of horizontal / vertical distance for track-to-track, track-to-map object (CTR, TMA), track-to-points, point-to-point
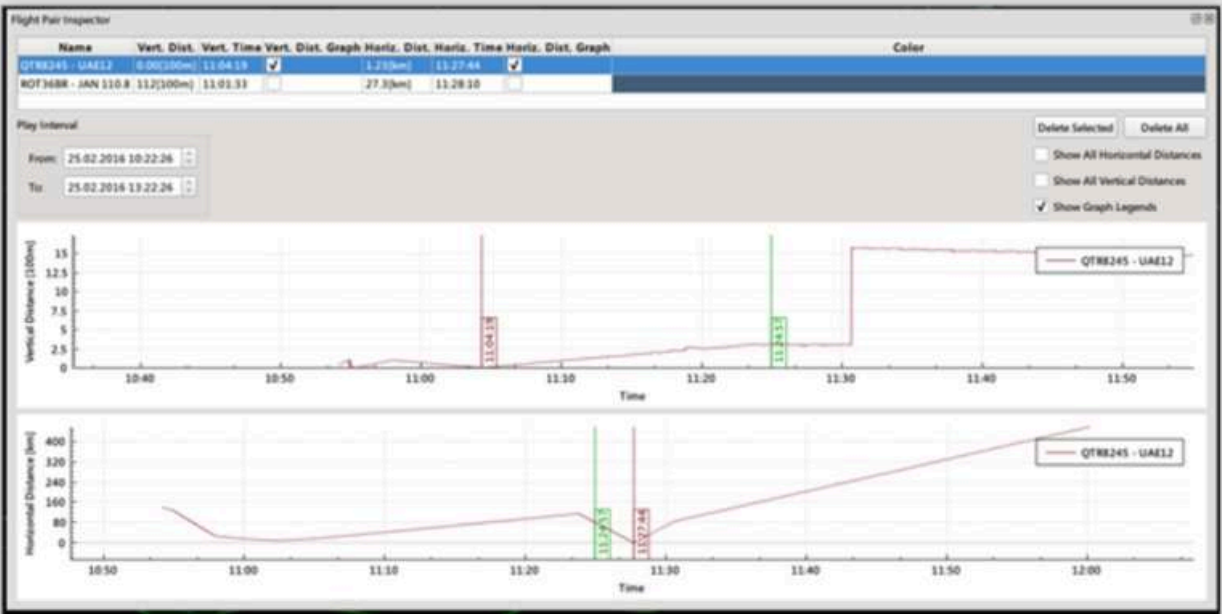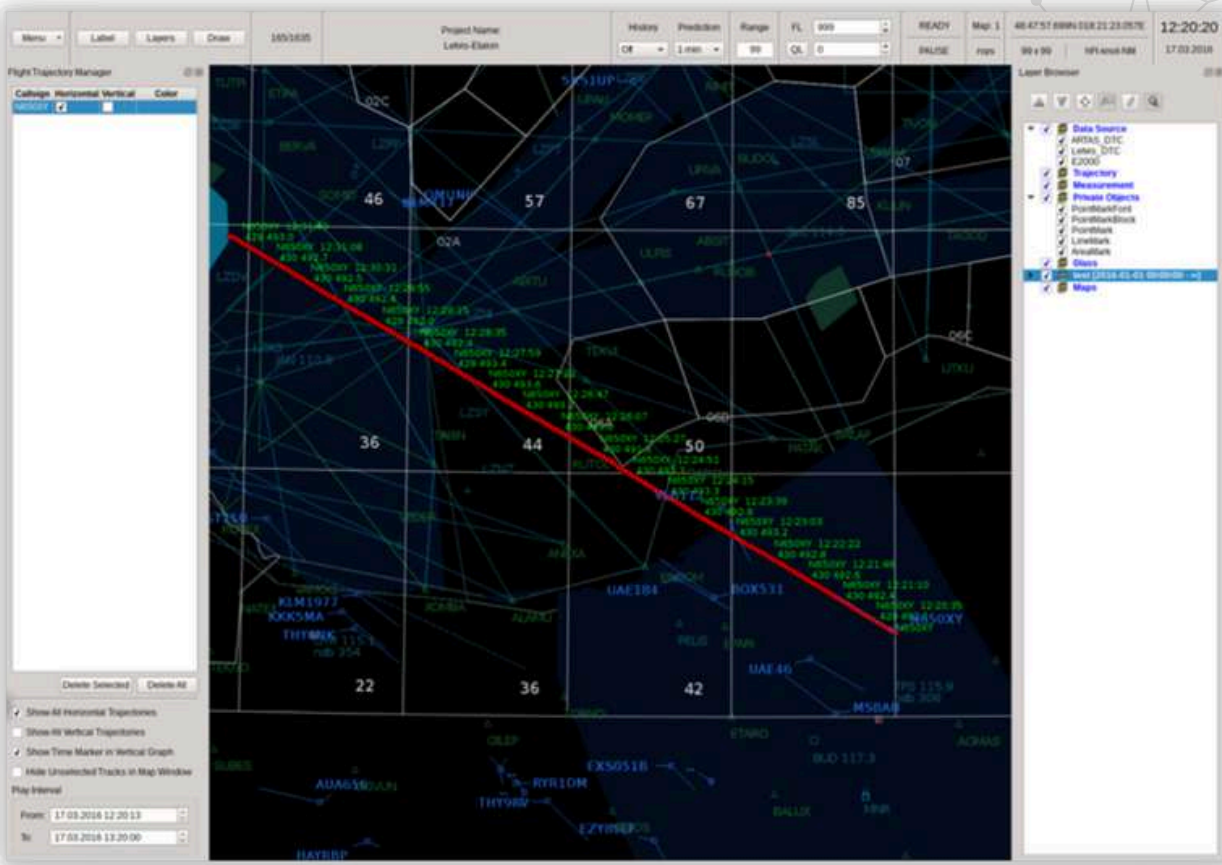
Filtering by altitude, Mode S, SSR code

Track label configuration (Basic and Extended)

Display of track history/future, vertical and horizontal trajectory analyzer

Track Pair Analyzer analysis of separation between a pair of tracks

Data stream export to "RDD video" and static screenshots

PLAYER – SELF EXTRACTION

Independent (standalone) external player application to replay exported data outside ODRS environment

Player binary (one file) contains all exported data from audio, video and data-stream channels

Enables play selectively or at once up to 5 video channels, up to 8 audio channels with individual volume control per channel and possibility to mute

Play control functions (play /pause/stop, jump forward/backward)
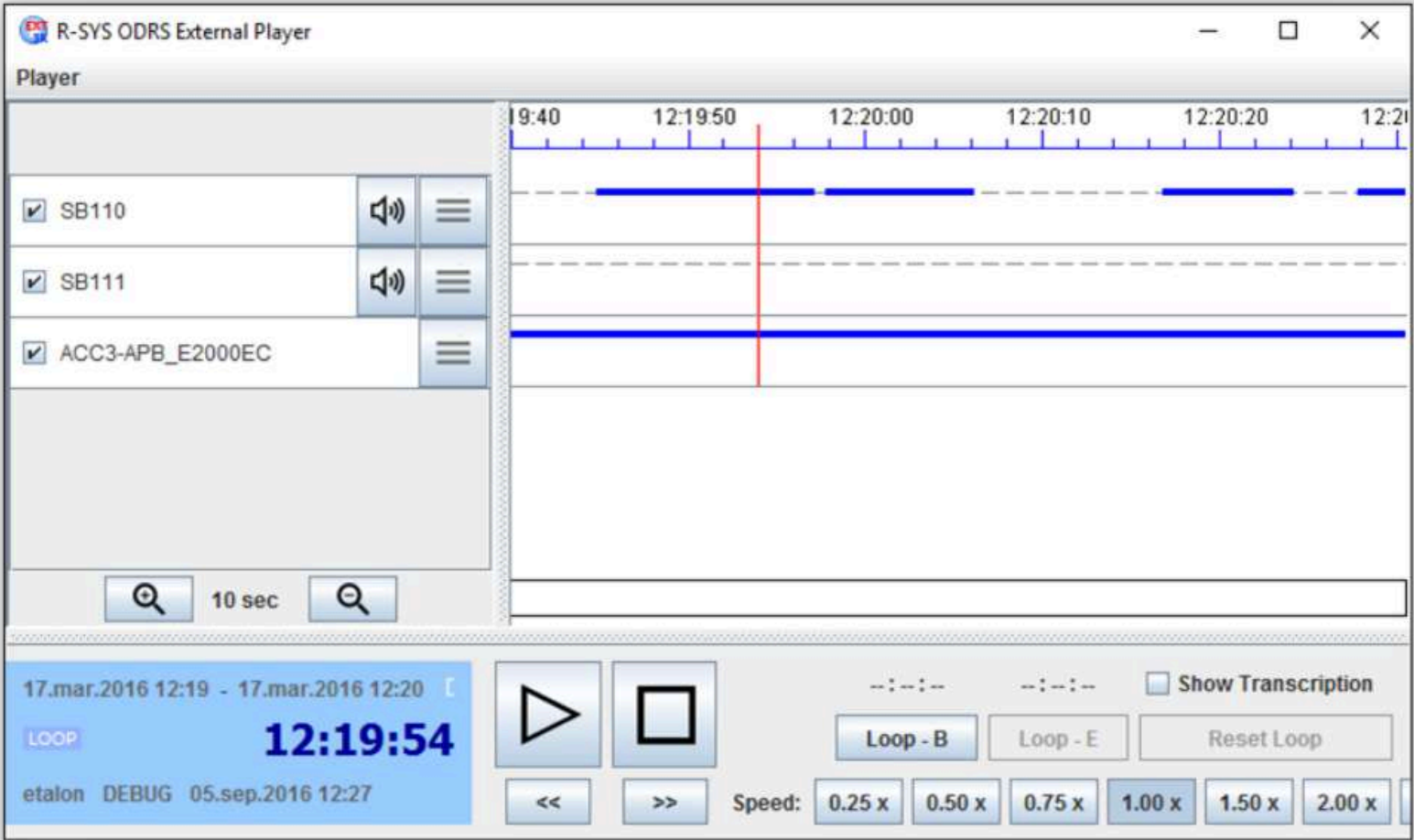
Displays playback position indicator on timeline

Enables change speed of playback

Loop support (create/cancel)

Show created/exported transcriptions according to actual play time ("subtitles")

Password protection in order to authorize access to playback of exported data

Supported operating systems
Windows (7, 8.1, 10), Linux (various distribution)

3R SYSTEM

NEW FEATURES

WebReplayClient – deveopment of new type of user working position for comprehensive records replay via web interface

WebAPI - a standalone module that provides data recorded by the 3R system for playback to a third party

ERIS DART – direct interfacing of a tool for analyzing data records of various surveillance data sources (PSS, PSR/SSR, MSSR, MLAT, …)

Analysis of the detection probability over specified period of time and show limits of coverage

Analysis is possible for particular source or receiver as well as for selected (or all) sources

Filters applicable within the analysis - i.e. for different Flight levels, aircraft identifiers and so on

Results of analysis, i. e. limit of coverage, is possible to shown graphically on the display with map background

It is possible to make comparison of coverage between sources

It is possible to calculated radar performance from Positional Accuracy point of view - Slant Range (bias, gain, noise std. deviation), Azimuth (bias, noise std. deviation)