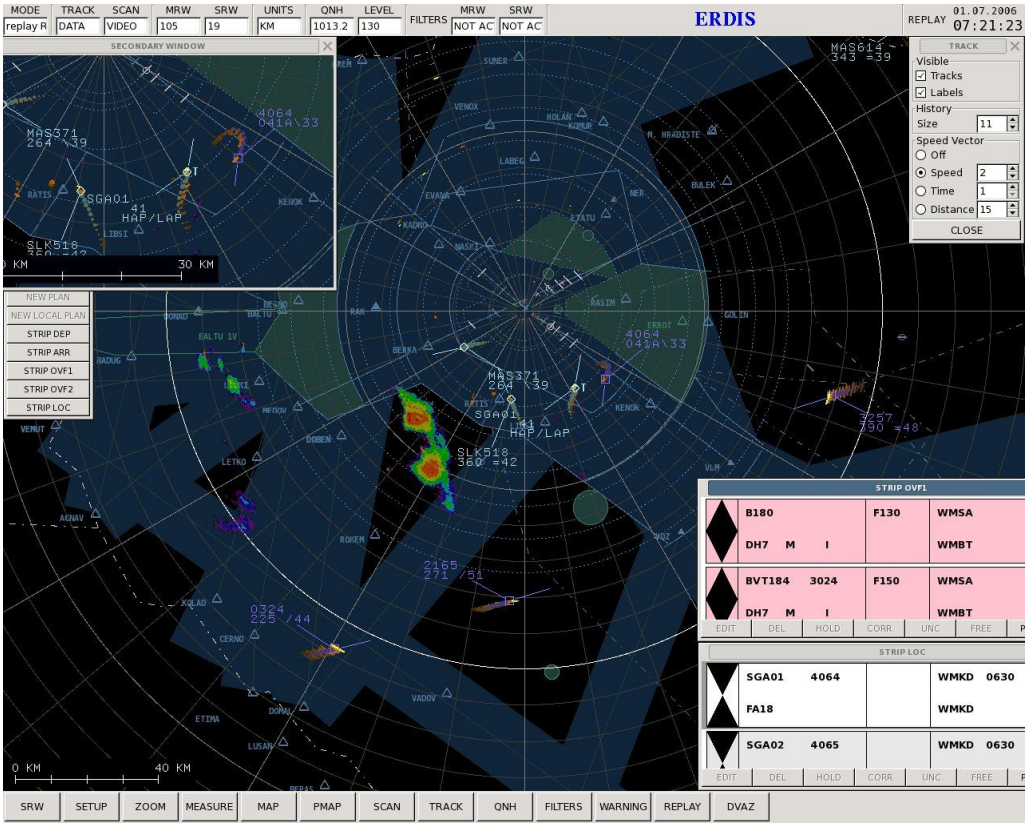
ERDIS - ELDIS RADAR DISPLAY SYSTEM



ERDIS - ELDIS Radar Display System – it is an ATC Centre system developed by the ELDIS Pardubice company, designed for the ATC centers, i.e. ACC, APP and TWR working positions..
ERDIS is an important element of the ATC systems, which crucially participates on establishing and outfitting the set of means for the air traffic control in the air space of the regional control centre and in the terminal controlled airport area.
ERDIS ATC Centre system, integrated with other ATC related systems (ASR/MSSR Approach/En-Route Radars, 3-D radars, ADS-B receivers, AFTN Message System, Master Clock, METEO system, ...) provides the equipment and facilities for management of air traffic.

More particularly, ERDIS ATC Centre system provides the following functions :

- *Processing of primary, secondary and combined plot/track information received from all connected radars including ADS-B data and 3-D radars,*
- *Automatic/manual processing of flight plans related data and electronic strips handling [ICAO Europe / Asia Pacific standards],*
- *Presentation of system tracks associated or not with their flight plan information,*
- *Flight Plan Track generation and display*
- *Other external data processing (communication with adjacent ATC Centres, External Clock, METEO, NOTAM, etc .data processing) [ICAO Europe / Asia Pacific standards specification],*
- *Air Situation Recording and Playback including voice communication and all activities of the controllers on particular workstations (interactive and passive playback mode)[EUROCONTROL standards],*
- *Overall system monitoring and control,*
- *User friendly HMI for all Controller workstations [follow EUROCONTROL recommendation],*
- *Safety Net functions (MSAW, STCA, DAIW) [EUROCONTROL standards],*
- *Integration with other ATC, GCI, SOC systems.*
- *System is fully duplicated (LAN, data processing servers, recorders, interface equipments)with uninterruptible SWITCH-OVER technique.*
- *Time synchronization using NTP international standard*

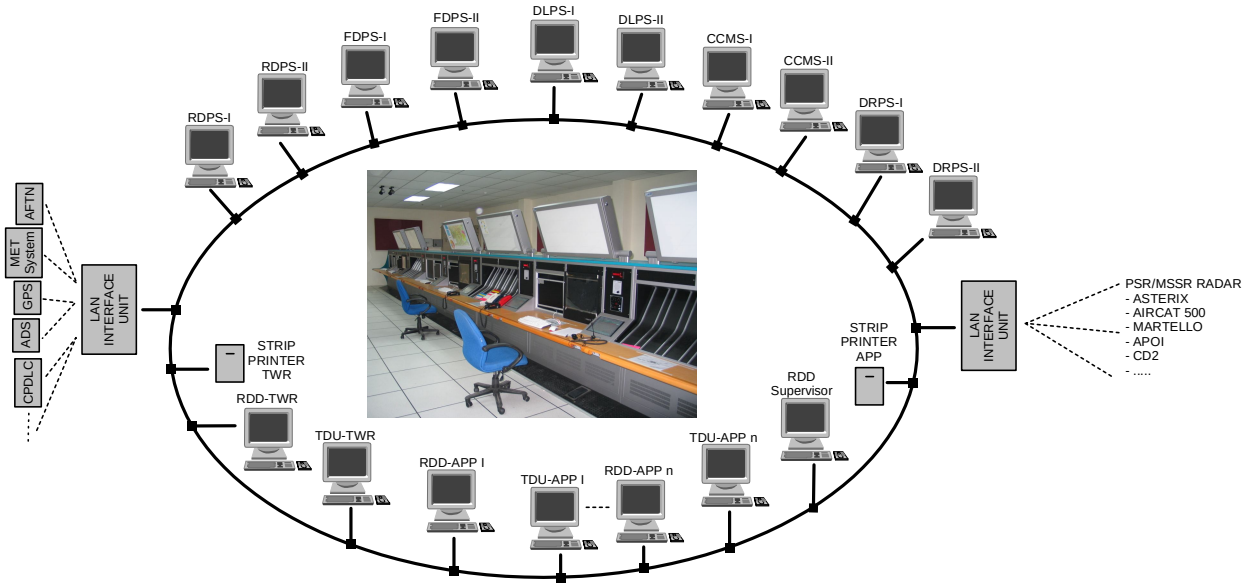
Input / Output Data Interfaces

Reception, processing, displaying and recording:

- Non-processed (AD), processed (MTD) and METEO (7 intensity levels) analogue video signals from the airport PSR primary surveillance radar,
- Radar plots/tracks data from the PSR, SSR, MSSR and 3-D connected radars supporting standardized and non-standardised formats (ASTERIX, EV-720, EV-760, AIRCAT 500, MARTELLO, APOI, CD2,.) [LAN, VSAT, RS-232, RS-422, … interfaces],
- ADS-B, ADS-C plot/track data supporting standardized ASTERIX formats [VSAT, RS-232, RS-422, … interfaces].
- AFTN and OLDI, AIDC data – automatic/manual exchange of flight plan related data [RS-232, RS-422, … interfaces]
- QNH and other METEO informations (METAR, SPECI, TAF) – automatic/manual update [RS-232, RS-422, … interfaces]
- NOTAM – automatic/manual update [RS-232, RS-422, … interfaces]

Data output to other connected systems : (Data integration)

- Standardized or non-standardised system tracks/ local tracks data outputs (ASTERIX, EV-720, EV-760, SOC format, other required formats described in Interface Control Document) [LAN, VSAT, RS-232, RS-422, … interfaces],.



Data Processing

All data are processed in particular servers, depend on actual configuration can be number of servers reduced and functionality is maintained.

- RDPS - Radar Data Processing Server process selected input radar data including Mode-S and ADS-B data , generate composite multiradar information (system tracks)
- Detection STCA (short term conflicts), MSAW (minimum safe altitude warning) and DAIW (danger area infringement warning).
- FDPS – Flight Data Processing Server process all types of flight plan related information on AFTN network (AFTN, OLDI, AIDC)
- AIDS – Aeronautical Information Data Server receive and process aeronautical data (NOTAMs), meteorogical broadcast messages (METAR, SPECI, TAF), aerodrome information, aeronautical charts
- DLPS – Data Link Processing Server control processing of Data Link information (CPDLC, ADS-B, ADS-C)
- DRPS – Data Recording and Playback Server system objective documentation provide:
  - Synchronized data recording and replaying, incl. voice communication channels, data links, flight information
  - Recording of Executive and Planar position screens for objective documentation (video stream),
  - Data recording at RAID field and archiving on external media (DVD, DAT tapes, ...).
  - Exporting replayed situation to the AVI file,
  - Special playback mode used for replay of Executive and Planar workstation screens.
- CCMS – central control and monitoring system – SNMP agents are used for monitoring of all workstations in the system.

ERDIS System Characteristics

- The system is open, extendable, configurable, safe.
- Multithread UNIX system are used.
- The system meets standards and recommendations of EUROCONTROL for ATC systems.
- User friendly and configurable HMI (Human Machine Interface).
- ERDIS system is designed for H24 continuous operation.
- Dual LAN compatibility for system reliability and data security enhancement.
- Data and communication servers use automatic uninterruptible MASTER - STANDBY switching system for the hot-swap backup safety.
- Sectorisation system (logical and physical sectors) with target controlling support and activation of the targets hand-over capability between logical sectors.
- Multi-layered Display – defined layers and his overlapping.
- Anaogue video signal and meteo transparency.
- System maps generated using MapGenerator application off-line with capability for lines, polygons, rings, texts,…
- Private maps generated on-line by operator
- Restricted and special area maps on-line creation, activation and deactivation.
- Operational and bypass mode of controller workstations depend on system/local track and Flight plan data availability.
- System tracks presentation – positional symbol with configurable label (M3A, MC, M2, M1, secure mode, Callsign, ground speed, heading, climbing indication, Mode-S information, Flight Plan related informations).
- On-line recomputation and presentation of Flight Level / Altitude depend on actual QNH and Transition Level (Transition Altitude).
- Dynamic Labeling – Cursor-sensitive expansion of track labels, Limited, Normal and Extended label
- Manual and automatic label anti-overlap function.
- Track / Flight Plan Correlation – Automatic or manual association of FPL and system track data.
- Dynamic Zoom and Off- centering – Supported by mouse and/or keyboard.
- User-defined Views – Selectable and configurable through intelligent toolbar buttons.
- Picture In Picture Display.
- Cursor Lines – Approximating arrival time, distance, track and altitude.
- Prediction Vector – Speed and heading .
- Flight route and Flight Plan track display availability.
- Target past position displaying (sequential quenching of analogue video signal, digital targets position – “History dots”)
- Colour-coded Tracks – Configurable colour coding for tracks (Emergency, Warnings, Correlated, Non-correlated, Controlled, Selected, etc.)
- Distance measurement vectors.
- Alarm Generator – Emergency (SSR: 7500, 7600, 7700) or STCA, MSAW, DAIW warnings.
- Flight Plan Database – Containing active and repetitive flight plans.
- Flight Plan Editor – Integrated easy-to-use editor (detailed/short form).
- Displaying flight strips list and electronic strips,
- Paper strip printing support.
- Data and voice recording and playback.

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