

# RDD

## RADAR DATA DISPLAY

# COMSOFT

# PRODUCT INFORMATION

RDD is COMSOFT's cost-efficient operational radar data display system. The latest engineering methods contribute to its open architecture and high scalability, which allow RDD's adaptation to a wide range of operational and technical environments.

The powerful RDD system is extremely flexible, both with respect to the easy integration into a large variety of customer environments, as well as with respect to the large number of supported application scenarios.

Based on its broad scalability, ranging from stand-alone to networked solutions, the system can be ideally profiled as operational working position for tower, approach and en-route applications.

RDD can also be supplied together with COMSOFT's high quality mono- and multi-radar tracking package (RPX). This elevates RDD to a powerful all-in-one solution for airports and airfields.

RMD (Radar Monitoring Display) is the real-time technical monitoring version of the RDD product family. It comprises low level analysis functions, a raw plot display, as well as logging features and a multi-channel correlation display.

### HIGHLIGHTS

- Powerful operational controller working position
- Utmost connectivity with regard to radars, networks, other systems
- Cost-efficiency by use of COTS hardware and software
- User interface adaptable to customer requirements
- Mono- and multi-radar tracking extension package
- Dedicated system for technical monitoring available
- Support of Mode S and ADS-B targets



# FUNCTIONAL FEATURES

## GENERAL DISPLAY FACILITIES

- Target type selection
- Lower and upper height band filtering
- On-line source selection
- Flightplan and code-callsign correlation
- MADAP and ARTAS support
- Display of weather and meteo information
- Dynamic zooming and off-centering
- On-line selection of trail history, speed vector, label information and size
- All standard features for display of label information
- On-line selection of map information
- Multiple colored map layers (runways, approach lines, TMA, CTR, nav aids, restricted zones, geographical information)
- Interactive color adjustment
- On-line channel selection
- QNH correction
- Compass rose, range rings, Halo (Zone of Protection)
- Support of direction finders
- Optional electronic flight strip support

## CONNECTIVITY

- Support of a wide variety of interfaces, protocols and data formats
- Possibility of various input and/or output combinations between the above
- All types of LAN and serial line connections
- All standard protocols
- Full ASTERIX support, as well as support of many other data formats
- On request, adaptation to further customer interfaces, protocols and radar data formats
- Support of ISDN, PSDN, PSTN and Dial-Up lines

## MULTI-CHANNEL PROCESSING

- Display of plot and track pictures
- Simultaneous processing and display of different data sources
- Independent online selection of radar data sources
- Support of immediate channel switch to a fall-back chain

## SCALABILITY

- Scalable from low-cost single PC-based solution
- to high-end workstation cluster solution, with independent client services for air situation pictures (see right-hand page)
- Portable solution available

## PLATFORM

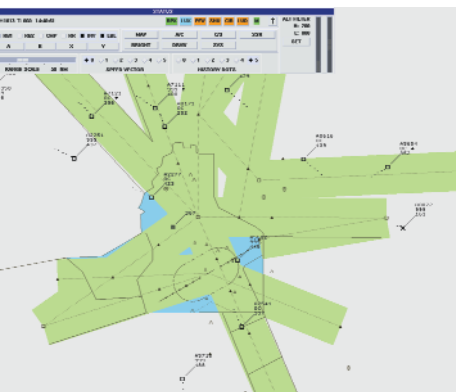
- Industrial PC technology: main stream, continuously improved standard environment
- UNIX operating system: outstanding performance, connectivity and reliability
- X Windows/Motif: highly flexible and scalable graphical user interface; high performance engine available

## CUSTOMIZATION

- Flexible system design with regards to modification and extension of user requirements
- Maintenance and adaptation to new system environments can be performed by the customer (e.g. additional radar channels, new maps, modification of configurations)

## OPTIONAL TRACKING PACKAGE (RPX)

- Real-time software package for mono- and multi-radar tracking
- Available as integral part of RDD or as stand-alone solution
- High-precision local and system tracking for up to 16 radar sources
- 400 local tracks per radar and up to 1200 system tracks
- Kalman filters
- Optimized plot-track association
- Permanent use of all available radars (exceeds mosaic-based approach)
- Interface to flight plan data processing
- Highly adaptable to a variety of formats and protocols (support of all RDD formats)



# SYSTEM CONFIGURATIONS

Based on RDD's versatile architecture a large number of application scenarios and areas of use are possible. Below, some of the more common system configurations, ranging from stand-alone solutions to integrated RDP systems, are shown. These configurations can be tailored in a very flexible way to the customer's environment and requirements at the time of installation.

## STAND-ALONE TRACKING & DISPLAY SOLUTION

As input for a stand-alone solution RDD requires a single radar, which may be either local, or remotely linked, e.g. via a dial-up line. Optionally, FDP or direction finder information is included. RDD performs high quality tracking and provides a supreme display picture. This solution may be most suitable for small airports and airfields.

## REMOTE TRACK SERVER DISPLAY

RDD can directly be connected to large track servers, like MADAP or ARTAS. Thus, it is very cost-efficient, as it can take advantage of the

powerful RDP infrastructure available in Europe. At the same time, it allows an air situation picture based on a large radar coverage to be obtained. All standard ASTERIX track formats are supported.

## CLIENT-SERVER RDP CLUSTER SOLUTION

The RDD LAN solution provides the utmost degree of scalability in terms of the number of working positions and performance. Tracking is performed on a redundant central RPX track server running on a PC or workstation platform. Displays are connected via Ethernet or FDDI and may be tailored in a very flexible manner to their use in tower, approach or for en-route control.

# RMD (RADAR MONITORING DISPLAY)

COMSOFT's RMD is a specialized RDD version for real-time technical monitoring. RMD's main function is the native processing and depiction of the different radar channels received via serial or LAN links. Its fields of application include center-based or on-site surveillance and radar analysis, as well as system monitoring and supervision. The following is an exemplary list of RMD features and tools:

**MULTI CHANNEL DISPLAY**  
with display overlay and automatic correlation of different radar sources for both plot and track data.

**NATIVE DATA PROCESSING**  
for many radar types, including ASTERIX. Allows analysis and back-tracing of data down to binary level.

**BROAD CONNECTIVITY**  
Allows integration into almost all existing ATC environments. RMD can act as SNMP manager.

**RADAR DATA BASE MANAGER**  
Basis for Automatic Radar Recognition. Defines coordinates

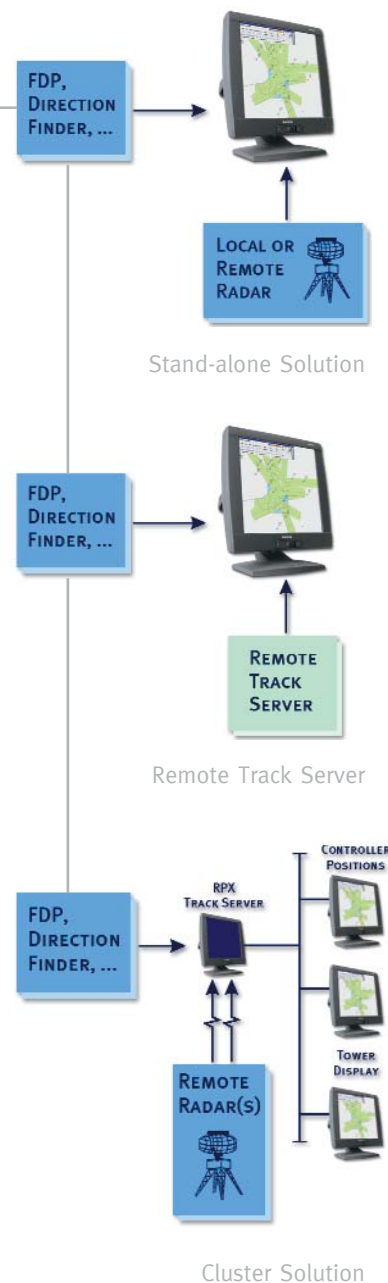
and other characteristics of managed radars.

**RECORDING & REPLAY TOOL**  
Allows interactive recording and replay with dynamic speed (ranging from 0,5 to 4 times speed).

**FILTERING TOOL**  
Flexible user-defined radar data filtering.

**TRANSITION & DELAY TIME ANALYSIS**  
applies to recorded or live data.

**ACOUSTICAL & VISUAL ALERTS**  
for monitored systems, e.g. radar status, test transponder.



**LOGGING FUNCTION**  
Recording of interactively selected data (selected flights, special target types, geographical areas). Analysis, replay and export of logged data.

**TEXTUAL & SPREAD-SHEET ANALYSIS**  
Analysis, viewing and export of recorded radar data in various pre-processed formats.

**EXTENDED TRAIL HISTORY**  
for selected flights up to 100 updates.

# TECHNICAL DATA

Platform	- Intel server - HP or Sun workstation
Display	- Standard color display 17" - 21" - 1280 x 1024 pixel resolution - Optionally with up to 29" - 2048 x 2048 pixel resolution - Ideally suited to operate with Barco ISONA™
Operating System	- POSIX compliant UNIX - UNIX SVR 4.2, Solaris, HP UNIX, DEC OSF/1, Linux
GUI	- X Window System with OSF/Motif extension
Interfaces	- LAN environment: FDDI/Ethernet - Serial line connections: V.11 (RS 232), V.24 (RS 422)
Formats	- ASTERIX local plot and track picture (Cat. 1, 2, 16, 34, 48), local weather (Cat. 8), MADAP system picture (Cat. 0, 3, 9), ARTAS (Cat. 30, 62, 252) - RDIF, CAA, CD2, EUROCONTROL, AIRCAT
Protocols	- TCP/IP, ISO TP4/CLNP, LLC 2a, HDLC X.25, HDLC LAPB, HDLC Frame Level, Byte Sync



R2D2®

# APPLICATIONS & REFERENCES

## RDD FOR LVNL AT IMPORTANT REGIONAL AIRPORTS

- COMSOFT's tower application is operational at Maastricht-Aachen and Rotterdam airport. RDD is the first operational display system supporting the ARTAS V.4 format.

## RDD FOR SLOVENIAN CAA

- Several RDD tower displays are operational throughout the country, depicting the air situation processed by the integrated RPX.

## RMD FOR UK NATS AT GATWICK

- COMSOFT's RMD systems are responsible for technical monitoring of all UK radars.

## RMD FOR LVNL AT AMSTERDAM SCHIPHOL

- At Amsterdam ATCC an RMD monitors all available radar streams. In this configuration the system connects to an immense range of external interfaces.

## RMD FOR AUSTROCONTROL AT VIENNA

- RMD permanently supervises all radar data feeds, as well as the front-end communication in the fallback and the main system.

## RMD FOR ANS OF CZECH REPUBLIC AT PRAGUE

- The ANS RMD was designed to interface with a large scale radar data recorder. Aside from live depiction, RMD also provides direct access to the recorder's archives.

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# RELATED PRODUCTS

RDD can be ideally extended by R2D2®, an integrated radar/voice recording and replay system. R2D2® is based on a scalable COTS hardware and supports a multitude of

interface alternatives in terms of radars and voice connections. Its scope of application ranges from small tower-based applications to large center-based solutions.