

# ODS Toolbox



Development toolbox  
for operational display systems



© DFS Deutsche Flugsicherung GmbH

# Productivity and performance in HMI development

Barco's ODS TOOLBOX is a proven ATC software solution that enables a team of experts to create high-performance HMI applications while keeping development time and cost at a minimum. Display systems developed with ODS TOOLBOX allow visualizing an almost unlimited number of highly dynamic objects in near real-time. ODS TOOLBOX merges a variety of external information, such as flight plan or track data, radar sources, map data, and weather data.

## ••• User-friendly operation

The kernel, Development Components, Service and Application Components of ODS TOOLBOX offer HMI experts a wealth of possibilities.

## ••• Productivity without boundaries

ODS TOOLBOX is the only ATM oriented development toolkit out there. That's why the prefabricated ATM components of ODS TOOLBOX can give your HMI team a productivity boost.

## ••• Unprecedented performance

The exceptional performance of ODS TOOLBOX allows displaying an almost unlimited variety of highly dynamic objects without loss of performance.

## ••• A secure investment

With its portability across all major operating and graphics platforms, ODS TOOLBOX is ready for the future.

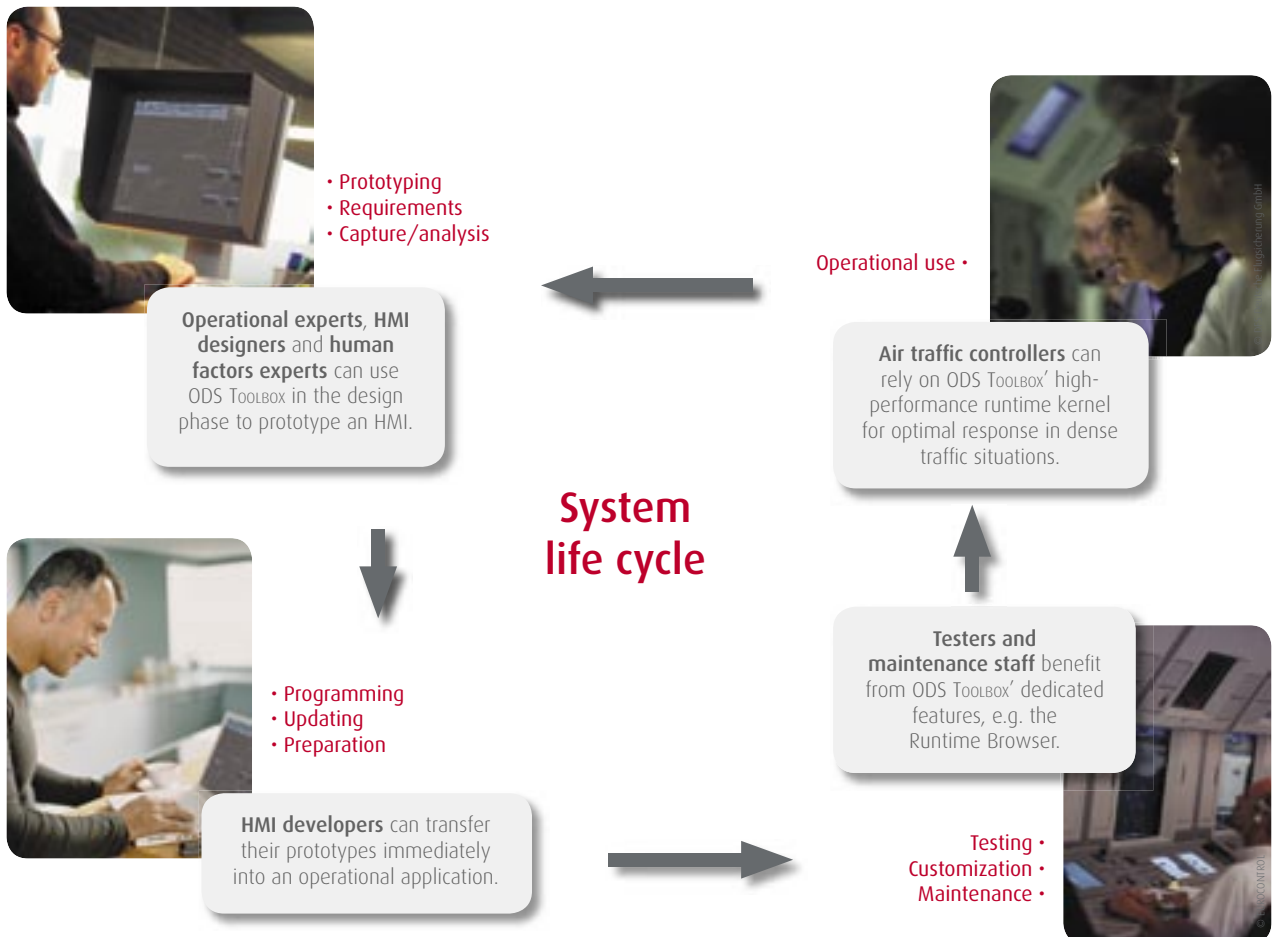
## ••• The ATC reference

ODS TOOLBOX is the result of 15 years of development. Barco's HMI toolkit has always been driven by customer requirements. Major ANSPs and integrators worldwide have made ODS TOOLBOX what it is today. Still fully customer focused, Barco is committed to provide you with an HMI solution for operational display systems that best fits your needs.



## One team, one toolbox

As no other company, Barco understands that HMI creation is a team effort. With ODS TOOLBOX a team of experts (HMI developers, HMI designers and air traffic controllers) can seamlessly go from prototyping to operational usage. This evolutionary software development cycle allows to always take user requirements into account, even in early phases of the project.





## User-friendly operation

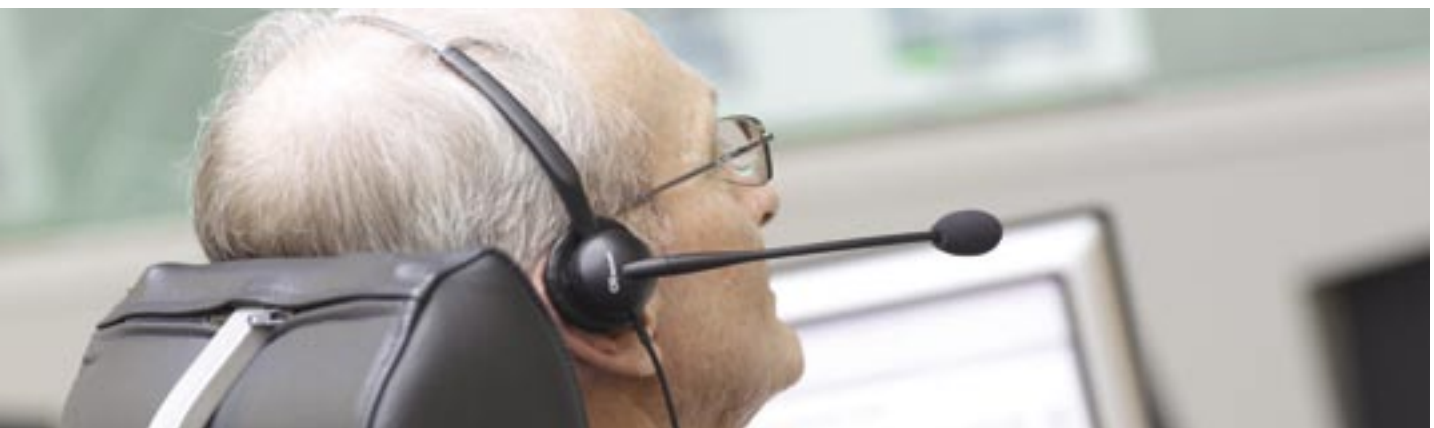
### A modular approach

Kernel, Development Components, Service and Application Components of ODS ToolBOX form a modular complex. Service and Application Components can be deployed independently from each other. On the basis of this selection, ODS ToolBOX offers numerous options of possible combinations among its diverse components.

### Flexible layering mechanism

ODS ToolBOX enables to display several layers containing e.g. background maps, map objects, radar information, and dynamic objects.

Operators can decide to make each layer and the contained objects visible or invisible, filter layer contents, or adjust brightness and color. In addition, specific graphics hardware for overlay and underlay are supported.





DFS, Bremen Control Center



**Kernel**

The Kernel is the basis of the ODS TOOLBOX architecture. It handles the entire object management of all data and display objects and provides the major functionality to control the dynamic behavior of the user interface and the various objects.



**Application components**

Barco's ODS TOOLBOX offers a variety of ATC specific application components with increased functionality. ASTERIX communication, radar track visualization and map & weather visualization are just a few examples of components that make your work a lot easier.



**Development Components**

The Development Components include the ODS TOOLBOX Designer and several utilities and tools for simulating and debugging ODS TOOLBOX applications. These utilities and tools enhance the ODS TOOLBOX facilities by debugging and tracing techniques, a Runtime Browser, and an application simulation environment. Among others, the application simulation environment allows to run an ODS TOOLBOX dialog without compilation.





# Productivity without boundaries

## Following your intuition

ODS TOOLBOX allows more intuitive GUI design than ever before. The new ODS TOOLBOX Designer component offers a variety of browsers, resource and layout editors that support an intuitive, interactive design of an ODS TOOLBOX dialog. It allows an immediate execution of the user interface without compiling and linking, which is ideal for rapid prototyping.

## Easy to learn dialog language

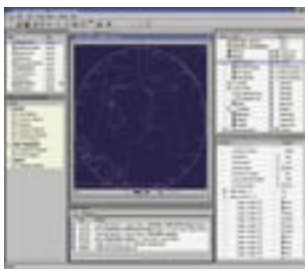
The ODS TOOLBOX dialog language allows you to implement application logic extremely fast. The language is powerful, yet easy to learn. No compilation or linking is required.

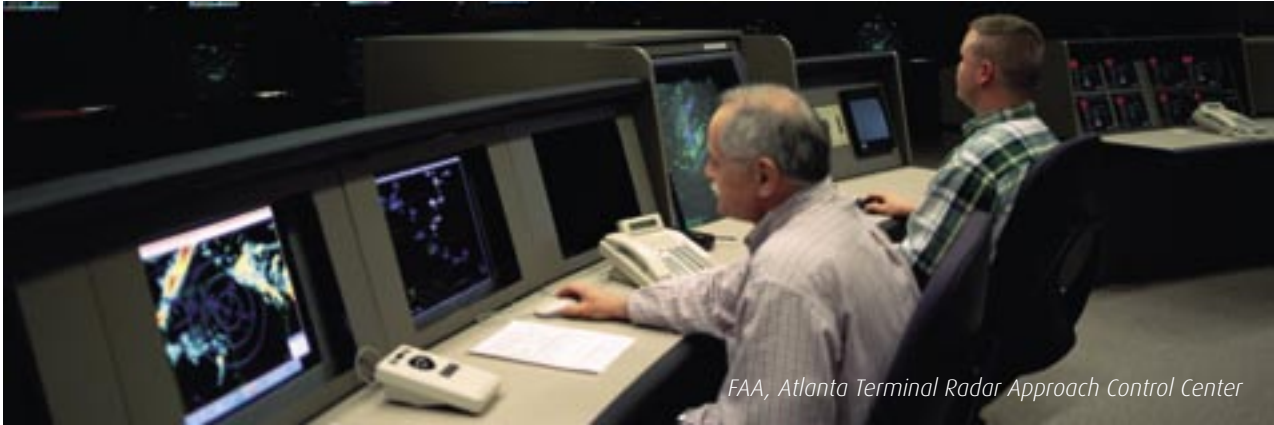
## A comprehensive tool set

ODS TOOLBOX provides best-performance runtime libraries for interactive graphics, communication and data handling, and prefabricated building blocks for traffic management systems.

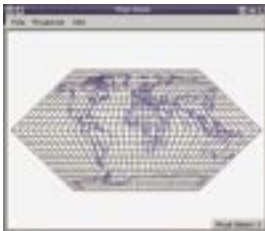
## Easy re-hosting

ODS TOOLBOX provides ideal support for a migration process. It includes effective tools to easily re-host existing display functionality to modern hardware and software platforms.





# A full range of ATM components



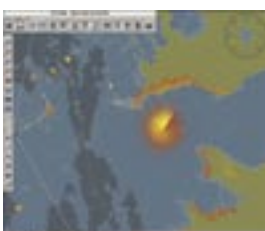
*Proj4 component*



*Video component*



*NIMA (NGA) component*



*GIRadar component*

## Application Components

### Base Component

This component makes the implementation of large HMI applications simple and comfortable. It includes a sample application in source code demonstrating the ODS TOOLBOX coding techniques.

### Geobase Component

The Geobase Component provides a comprehensive set of objects to handle and display objects with geographical latitude/longitude coordinates.

### Proj4 Component

This component provides an object-oriented wrapper for the Proj4 geographic transformation library. A large and extendable set of standard projections ensures that the required projection can be integrated.

### GIBase Component

ODS TOOLBOX comes with an OpenGL interface for extremely high-performance, hardware-accelerated 2D and 3D graphics.

### Video Component

The video component provides an interface to receive and display video stream data from cameras, TVs, webcams, and other video sources, that may be combined with other graphical components of the ODS TOOLBOX.

## Service Components

### Color Server/Color Service

This component allows for a flexible allocation, adaptation, and sharing of color resources including blinking, brightness control, and transparency

### Multi Display

With the Multi Display functionality, you can place windows on different displays across the network and drive several screens with one mouse and keyboard

### GI Radar Component

This component visualizes digital radar video.

- superior performance using onboard OpenGL processing power of modern graphics adapters
- superimposing multiple radar video sources for actual 'blip' and afterglows, correctly projected on the map
- mixing video and radar (image fusion)

### NIMA (NGA) Component

This component provides an interface to maps, objects, data, and formats as maintained by the National Geospatial-Intelligence Agency (NGA, former NIMA). It reads, handles, and displays several formats as specified by NGA.

### Communication Converters

Two ready-made components for an easy integration of external data sources are available: The ASTERIX Component provides an interface to the ASTERIX format of Eurocontrol, the ASN1 Component allows to receive and send messages in ASN.1. Apart from these ready-made components many other proprietary formats can be supported.

### ODS Window Manager

The ODS Window Manager features extended functionality, such as window priorities, protected screen, area management and alert functions.



## Unprecedented performance

### Compiled languages

For highest machine code optimization, ODS TOOLBOX has been written in standard C++ using the latest system compilers on the supported platforms. This results in significantly better performance compared to the use of interpreted languages or virtual machines.

### OpenGL support

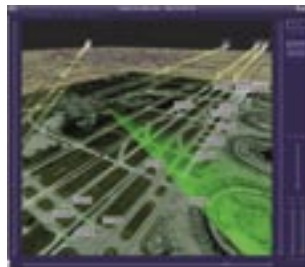
ODS TOOLBOX comes with an OpenGL interface for extremely high-performance, hardware-accelerated 2D and 3D graphics. This keeps the main CPU free for business logic tasks. Transparency, anti-aliasing and 3D drawing are just a few clicks away. With ODS TOOLBOX, you are ready for future ATC developments.

### Highly dynamic objects without loss of performance

ODS TOOLBOX features a powerful grid drawing engine that is optimized for highly dynamic traffic situation displays. Systems developed with ODS TOOLBOX are therefore able to display an almost unlimited number of highly dynamic objects without any loss of performance.

### Multi-threading support

To provide higher performance and more responsiveness, ODS TOOLBOX makes use of its multi-threading interface. This enables HMI developers to separate functionality into different independent threads.





## A secure investment

### Ready for the future

ODS TOOLBOX is fully based on standard software architectures, which ensures a perfect protection of your investment. In addition, ODS TOOLBOX is portable across all major operating platforms (including Unix – Solaris, HP-UX, AIX; Linux – RedHat, SUSE; Windows 2000/XP) and across all major graphics systems (including X11, Windows GDI, OpenGL).

### Fine-tuned by and for the ATC community

ODS TOOLBOX is the result of 15 years of graphics programming and experience in the ATC domain. Along this roadmap, ODS TOOLBOX was developed according to the requirements of leading ANSPs and integrators, such as Eurocontrol, FAA, EADS and Lockheed Martin.

### Customer oriented services

Barco provides flexible and dedicated support services around the clock. Whatever service level you require, be it help desk support or on-site engineering support, we are committed to assist in maintaining the successful operation of your system.



### Training

For efficient use of ODS TOOLBOX, Barco offers customer-specific training courses. Hundreds of software engineers and operational staff have successfully participated in our courses and significantly improved their daily work with ODS TOOLBOX. The course is structured in a modular way so it can be customized to fit specific customer needs.

### Support

ODS TOOLBOX customers have access to an electronic user help desk system for managing problem reports. In case of problem reports, solutions or workarounds are quickly available. Maintenance contracts guarantee prompt reaction times, a sophisticated help desk system and provision of a software release scheme suited to your operational needs.



## The ATC reference

ODS ToolBOX is the HMI development solution of choice for Air Navigation Service Providers and system integrators worldwide. With more than 3,500 ODS ToolBOX based working positions in operation today, Barco's ODS ToolBOX has changed the way air traffic controllers manage the sky.

### Air Navigation Service Providers:

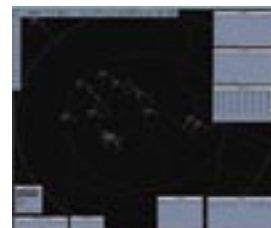
- Albania
- Argentina
- Austria
- China
- Croatia
- Czech Republic
- Denmark
- Estonia
- Finland
- Germany
- Hungary
- Ireland
- Kazakhstan
- Korea
- New Zealand
- Norway
- Portugal
- Scotland
- Sweden
- United Arab Emirates
- Uzbekistan

### System integrators:

- EADS
- INDRA
- Lockheed Martin
- Thales
- VNIIRA OVD
- Tokimec

### Research centers:

- Eurocontrol Experimental Centre
- Technical University of Dresden
- Technical University of Berlin
- University of Salzburg
- FAA Research, Development and Human Factors Laboratory (RDHFL)
- Mitre
- Embry-Riddle Aeronautical University (ERAU)



*Adacel, MaxSim ATC Simulator, FAA, USA*



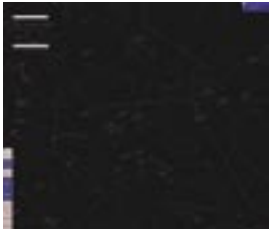
*MATIAS, Hungary*



*TUI, Germany*



CAAC, Beijing Control Center



*KADS, Karlsruhe, DFS, Germany*



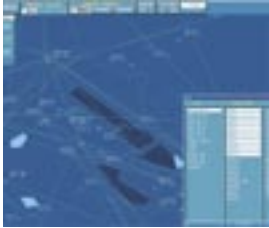
*Eurodisplay, DFS, Germany*



*Austro Control, Austria*



*STARS, FAA, USA*



*ANS, Czech Republic*



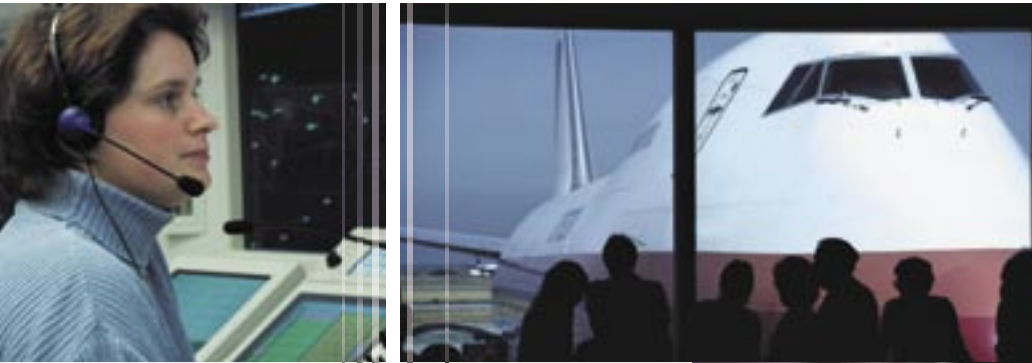
*SkyLine, New Zealand*

**Quality Assurance**

Barco's software development follows the highest quality standards, based on guidelines of DIN EN ISO 9001 as well as AU 250 and AQAP 150 of the "V-Modell" (standard for the Federal Republic of Germany). Barco Orthogon GmbH is ISO 9001- 2000 certified and maintains a Quality Management System for the scope of development, marketing and sales of software products and projects in sensor data processing and visualization for operational ATC and surveillance systems.

Barco Orthogon GmbH's Quality Assurance process covers the entire life cycle of the software products starting from planning and design of features over coding conventions and configuration management to delivery tests. In the course of the configuration management process the version planning and version management for a multitude of deliveries and customers is handled to ensure long-term maintenance for each and every single version that is in operation worldwide.

## About Barco



Barco provides a full breadth of proven products and services that support controllers, operators and aircrews in making air traffic safer and more efficient. Always keeping its eye on the future, Barco provides its customers today with innovative components for the advanced working positions of tomorrow. Barco's full range of component solutions extends from sensor interfacing and information distribution over information processing and visualization to recording, archiving, playback and system management. Applying the know-how built up over the years, Barco can provide a wide scope of services from consultancy on visualization architectures to after-sales maintenance.

Barco combines its worldwide experience in traffic management and its commitment to advanced research and development to deliver optimum price/performance technical solutions. Moreover, Barco follows a personalized approach, making sure that our visualization solutions are tailored to your specific needs. Barco shares your strategic view, understands the technical risks and manages the complete product life cycle from concept and design to manufacturing and lifetime support. This results in low-risk solutions for your long-term commitments.



In search of continuous improvement

1006 © Barco 2006

Technical specifications are subject to change without prior notice

[www.BarcoAirTraffic.com](http://www.BarcoAirTraffic.com)

Barco  
Pres. Kennedypark 35  
B-8500 Kortrijk, Belgium  
Phone: +32 56 233 960  
Fax: +32 56 233 013  
E-mail: [sales.airtraffic@barco.com](mailto:sales.airtraffic@barco.com)

Barco Orthogon GmbH  
Hastedter Osterdeich 222  
28207 Bremen, Germany  
Phone: +49-421-20 12 20  
Fax: +49-421-20 12 29 99

BarcoView, LLC  
3059 Premiere Parkway  
Duluth, Georgia, 30097-4905, USA  
Phone: +1 678 475 8000  
Fax: +1 678 475 8100  
E-mail: [sales.barcoview-a@barco.com](mailto:sales.barcoview-a@barco.com)

Contact one of the above  
for your local sales office

