



ECCAIRS 5 – Technical Course

Architecture



Uniting Aviation
On
Safety | Security | Environment




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Standards and Platforms

Industry Standards

- Microsoft Windows Operating System, 32-bit and 64-bit OS
- Support for relational database systems (SQL Server, Oracle)

Front end



- Microsoft Windows Family (XP, Vista, 7)
- Web Browser for WebDAS (support for major ones)

Back end

- Microsoft Windows Family (2003, 2008 Server) for Repository
- SQL/Oracle interface to DBMS, Oracle on Non-Windows servers allowed
- IIS6.5 & IIS7+ for WebDAS




2






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Minimal System Requirements

Common (Hardware and Software)

- Intel or AMD, 2 GHz or higher, dual core recommended
- 2 GB RAM or more
- 250 MB disk space
- Suitable Microsoft Windows version
- Microsoft .NET Framework 4

3



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Minimal System Requirements

Server side

- 4 GB RAM or more
- In multi-user systems with large amount of data, multi-processor systems are recommended to increase response times from database and from server
- Web Services and/or DCOM (no protocol needed for standalone install)
- 350–500 MB disk space for database components
- Up to 300 KB database space per occurrence
- The *Attachment Management* has additional requirements (see documentation)

Small
medium
large



4

The diagram illustrates the software architecture of the ECCAIRS system, organized into three main layers from left to right:

- Extension:** This layer contains the **User Interface** and **Taxonomy** components.
- ECCAIRS Common Framework:** This central layer is divided into two main sections:
 - Abstraction:** A vertical bar on the left side of this section.
 - Implementation:** The right side of this section, which includes:
 - Windows Browser, WebDAS Browser, Grapher, Other ...:** These are the client applications.
 - ECCAIRS API:** A horizontal bar representing the interface between the client applications and the framework.
 - Security, Data base access, File access:** These are the core services provided by the framework.
- Database:** This layer contains the **Relational (High performance) database**.

Arrows indicate the flow of data and interaction:

- An upward arrow from the **Extension** layer to the **ECCAIRS Common Framework**.
- A double-headed arrow between the **ECCAIRS Common Framework** and the **Database** layer.
- An upward arrow from the **Database** layer to the **ECCAIRS Common Framework**.





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Software Architecture in Words

ECCAIRS Common Framework (ECF)

- Software platform providing the functionality
 - Configuration tools
 - Data exchange
- Totally “transport domain” independent
 - Not related to a particular domain (aviation, maritime, rail, ...)
 - Can serve as standard data acquisition platform for any kind of event
- Developed for both Server and Client
- In the current version, ECF is a **32-bit application**
 - ECF uses external components that are still 32-bit
 - Some connectivity protocols work only in 32-bit



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Software Architecture in Words

Taxonomy Extensions

- Provide **Dictionary** and **Taxonomy**
 - Dictionary for data definition
 - Taxonomy for data organisation
- By installing a specific extension, "transport domain" dependency is obtained
 - Aviation, maritime, rail, etc.
 - In principle any kind of events can be covered (e.g. medical)
- Provide structure for Data Storage
 - Database tables, links between data elements, etc.

7

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Software Architecture in Words



Taxonomy Extensions (cont'd)

- Provide layout for data presentation (User Interface)
 - Screen, paper, etc.
- Extensions are installed only on Server system
 - Components are automatically propagated to clients upon need

Database (Relational, High performance)

- External to ECF
- Used only for data storage
- No direct access needed/foreseen

8

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Folder Structure (Windows 7)



[d:]\Program Files\Eccairs5

- Installation folder (default)
- This is [d:]\Program Files (x86)\Eccairs5 on 64-bit OS

[d:]\ProgramData\Eccairs 5

- Repositories
 - Repository configuration files (profiles, View definitions) – no editing
- Settings
 - Web Services configuration (ports, URL), Logging configuration (Monitor, Trace), Working area configuration (UI settings)
- Logs, Traces
 - Stores logs and trace files

9



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Folder Structure (Windows 7)



[d:]\Users\<Login User>\AppData

- Local\Eccairs 5\Settings
 - Personal Eccairs Browser and connection settings
- Local\Temp\Eccairs5
 - Folder set by *Working area configuration* (see previous slide)
 - Temporary data
- Roaming\Eccairs 5
 - Cached copies of repository profiles

Back

Next

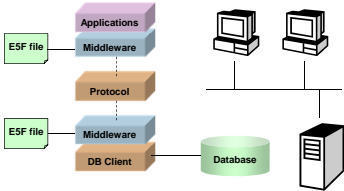
10



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Implementation



Typical implementation (Workstation and Server)



Back

Next


11



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Implementation

1 Workstation (stand-alone)



Back

Next

12

