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Guideline for easy installation & configuration of the integrated shipboard system



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1 Introduction

Eurofleets+ facilitates open free of charge access to a unique fleet of state-of-the-art research vessels, AUVs and ROVs from European and international partners. This is arranged by competitive transnational access (TA) calls. A Data Policy has been adopted which aims at making Eurofleets+ research data to be findable, accessible, interoperable and reusable (FAIR). Therefore, marine data management is an integral part of the Eurofleets+ approach and is implemented in synergy with SeaDataNet, a leading pan-European infrastructure for marine data management, involving NODCs as core partners. More details about the data management approach can be found in Deliverables D1.3 - Eurofleets+ Data Management Plan and D9.5 - Eurofleets + data sets catalogue.

One objective is to give users e-access to underway and operational information and data from sailing research vessels during the Eurofleets+ TA cruises by means of the EVIOR platform. Moreover, it is planned to give discovery and public access to research data sets as collected and processed by research teams during the TA funded cruises, after the research teams had the necessary time for processing and analysing the collected observations and samples.

This deliverable comprises the guideline for easy installation & configuration of the Eurofleets Automatic Reporting System (EARS) V3 integrated shipboard system

The deliverable is kept separate from the actual guidelines, which can be found here:

Server installation:

- Technical: <https://github.com/naturalsciences/ears3-server/blob/master/readme.md>
- Virtual machine:
<http://datahub.utm.csic.es/files/wl/?id=VSdOEI6Opfl0HWcOE6irB8RJQVqzFDKt&path=EARS%20V3&mode=list>

Web and client application usage (D3.9):

- <http://datahub.utm.csic.es/files/wl/?id=VSdOEI6Opfl0HWcOE6irB8RJQVqzFDKt&path=EARS%20V3&mode=list> or
- https://github.com/naturalsciences/ears/releases/download/3.0.0beta/EUROFLEETS_WP3_D3-3_handbook_ears_fe.pdf

2 Possible configurations of the EARS system

The core release of the EARS V3 web server is openly available on <https://github.com/naturalsciences/ears3-server>. This is packed as a Docker container and includes all peripheral software to let the server run, ie. the database (postgres 12), the server application (tomcat 9) and the individual binaries (ears3.war, ears3Nav.war, acquisition-launcher-1.1.0-SNAPSHOT.jar files) of the EARS V3 components. With Docker, users don't have to worry about installing the database etc., as Docker takes care of this with a few command line commands. This core release has extensive installation documentation as a markdown file (<https://github.com/naturalsciences/ears3-server/blob/master/readme.md>).

This is a technical installation and is only intended for technical users on Linux (it has not been tested on Docker for Windows). For the first installation, Docker will also attempt to download java 8, postgres 12 and tomcat 9 Docker images if they are not yet installed (which is very unlikely). These downloads together run in low gigabytes and can therefore only be performed on an office pc (for instance for testing) or on the ship with good and stable bandwidth.

For these reasons, the EARS V3 Docker containers are distributed in an Ubuntu 20 Linux Virtual Machine (VM, VirtualBox, Hyper-V or VMWare). The VM must be available on ship's LAN, is provided by CSIC and kept up-to-date with future releases of EARS V3. Additionally, a VM has the following benefits:

- The vessel-to-shore transfer is easier to organise. The RV operator technicians can choose to transfer the navigation data from the VM to an on-shore CSIC data hub server if the data is not available via on-shore web services;
- The position datagram conversion can be incorporated in the VM, freeing the RV technicians from doing this;
- The ears system is easier to deploy in any environment, even purely Windows (through Hyper-V);
- VPN access to the server allows for troubleshooting and data access.

From this information we have derived two user profiles:

- (expert) You program a middle layer to capture the GPS/weather/thermosalinometry datagrams to be transformed to the EARS datagram format, and send it to the ears server, and install the linux Docker images from the documentation on github. The datagram format is detailed on the github readme page;
- (easy) You install the virtual machine with EARS V3 server that is programmed by CSIC to already understand your RMC NMEA datagram format and you program a middle layer to capture the weather and thermosalinometry datagrams to be transformed to the EARS datagram format yourself.

Operators of vessels hosting Eurofleets campaigns are free to select their profile and are guided towards the easy profile. Only basic Linux knowledge is needed (type password, type setup command). For users outside of Eurofleets+, the virtual machine cannot be provided.

The operators install the server based on the manuals first and interventions are only for emergencies, for which remote access is useful.

The manual is adapted by CSIC to suit the specific situation with every operator. A generic manual is available here:

<http://datahub.utm.csic.es/files/wl/?id=VSdOEI6Opfl0HWcOE6irB8RJQVqzFDKt&path=EARS%20V3&mode=list>. This manual contains also a brief introduction on how to use the EARS desktop client and web application.⁴