EGOS User Desktop
A Generic User Interface Framework for Ground Segment Software

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What is EGOS User Desktop (EUD)

- Framework for building rich client graphical user interfaces
- Integration platform for GUI components
- Targets primarily ground data systems
- Provides powerful set of common GUI components used in ground segment
- ESA’s fundament for new generation graphical user interfaces in the European Space Operations Centre
- In mission operation since 2013
Background

- ESA is in the process of modernising its ground data systems infrastructure
- Main motivation for this step is:
  - Obsolescence of existing implementations
  - Removal of dependencies from COTS products
  - Cost reduction through re-use
- Main drivers/objectives are:
  - Usage of state-of-the-art open sourced technologies
  - Platform independence (Linux/Windows)
  - Sharing of common implementations across systems and domains
  - Harmonisation of user interfaces look & feel
EUD Overview

- Implemented in Java™
- Based on Eclipse™ RCP*
- Uses exclusively Opens Source Software
- Runs on multiple platforms and OS
EUD Features

- Pluggable integration platform for User Interfaces
  - granularity of pluggable UI component referred as "Display"
  - technically an Eclipse RCP 'View' or 'Editor' plug-in
  - RCP compliant Views run in EUD w/o modifications
  - allows to easily integrate third party views
  - extended View base class available from EUD for added value from EUD facilities
  - can be used as 100% replacement of the AbstractViewPart
EUD Features (cont.)

- Set of commonly used Displays (11 in total)

AND

GRD

MIMIC

MATRIX
EUD Features (cont.)

- Extended widget library
  - E.g. Time/Date chooser composite, navigation composite, data table, ...
- Set of standardized interfaces for data provision of displays
- Integration and communication with the back-end through adapters
Architecture

Custom EUD Application

Application specific configuration

Application specific Displays

Application specific EUD Interfaces

Backend specific Adapters

Backend System

EUD Generic Displays

Alphanumeric

MIMIC

Graph

XY Graph

Live Message

History Message

Action Executor

System Control

System Explorer

Parameter Displays

Scrolling Param

Matrix

EUD Core

Core & Utility Libraries

UI Widgets & Composites

Display Management

Session Management

EUD Interfaces

Parameter Service

Message Service

Scripting Service

System Control

Persistent Storage

Session Service

Eclipse Framework

RCP

EMF

GEF

GMF

BIRT

Data Flow
Current Status

- EUD Framework mature since 2011
- Majority of ground systems GUIs are now EUD-based
- Used as replacement GUI for existing systems
  - SCOS-2000
  - SIMSAT
  - NIS
  - FARC
- Used for new developments
  - ARES
  - GSMC
  - FIDES
  - GSSC
  - MPSF
  - ...
Current Status

- Ongoing Developments
  - MATIS
  - SPMON
- Planned Developments
  - GFTS
  - DARC
  - DABYS
EUD Telemetry Desktop (EUD-TMD) in operation (GAIA)
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ARES (Offline Mission Analysis)
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Benefits

- Very positive acceptance by the users
- Harmonized Look & Feel throughout different applications
- Reduced learning effort
- Features added for one application get available for others
- Cross compatibility of display definition files across domains
  - ODDE <-> MCS <-> SIMSAT <-> ARES <-> GSMC
- Flexible assembly of displays for an application
- Multi-system, multi-platform
- No license cost
Future Plans

- Web-EUD (ongoing)
  - Use EUD through a web browser
  - Usage of Eclipse RAP allows to run EUD as Web application as is, with only minor adjustments to the code base
- More generic displays
  - Density distribution display
  - Spectral analysis display
  - 3D Graphs
  - ...
- Usage in more systems (e.g. EGS-CC)
Web-EUD

Chemical Propulsion System

- More generic displays
- Density distribution dis...
Lessons Learned

- Initially lot of effort required to consolidate functionality across domains (discussions, meetings, reviews)
- Agile development approach appeared to be crucial for success
- Implementation of adapters for legacy system may be tedious
Thank you for your attention.