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# MILU, the three middleware user interface

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## Description of the Work

MILU is a repackaging of the user-interface software provided by gLite, ARC and the Globus Toolkit (version 4), providing access to the functionality of all three middlewares concurrently.

Extensive testing and an ingenious use of UNIX tricks allow MILU binaries to run on a large variety of Linux distributions (CentOS, Debian, Ubuntu, etc.), including some that are not supported by the original upstream middleware packages.

MILU is packaged as a single archive that users can extract and install into their home directories by running a single shell script; no super-user privileges or technicalities are needed.

MILU is distributed with a configuration ready for use for several VOs; new configurations can be added by the users (and we encourage submission upstream, so that more people can benefit from pre-packaged configuration).

## Conclusions

We believe that MILU, possibly extended in the future to include the EMI “unified client” to be, can have an impact for the users and developers belonging to emerging communities, as a lower-level tool upon which more sophisticated Grid access mechanisms can be built.

We believe there is a need for a tool like MILU:

1. To provide a smooth transition between different middleware systems, e.g., when the old software still needs to be around as the new one is too immature to completely replace it, or when two infrastructures with different access methods have to be bridged.
2. To provide a preconfigured environment that can satisfy the needs of the average scientific user, who does not care about the technical details and only needs a tool that “just works”.

## Impact

MILU is already in use by the EUIndiaGrid and the e-NMR VOs, plus other groups of local grid users; we shall briefly report on how their usage has steered the development of MILU and how its features facilitated interoperability between Grids.

We think that MILU could be interesting to community developers, in addition to non-technical users, who have been historically the target audience of MILU. Indeed, MILU can be the ideal tool for quickly enabling Grid client access on a Linux machine, for the purpose of rapid prototyping a new tool, or for deploying test/debug instances of running services.

## Overview (For the conference guide)

The Miramare Interoperable Lightweight User Interface (MILU) is a unified command-line client software providing access to: gLite, ARC, GT4 Grids aimed at scientist end-users. MILU is a Plug&Play software supported on variety of Linux distributions. It comes with a complete configuration for several VOs; a single command allows switching among them. MILU allows concurrent usage of different grid infrastructures from a single Linux host; and thus is an ideal foundation for more complex scientific gateways.

In this talk we shall briefly survey the architecture of MILU, the main technical challenges in implementing it, and report on its usage experiences gathered in the EUIndia and e-NMR communities and as a production user interface.

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