Text mode serialization

This document is now partly outdated, because the abitrator communication is moving towards using ICE. This is the status as of the UAO release:

- **AO arbitrator: fully using ICE**
- **WFS Arbitrator: supports both old and ICE interface, most clients using ICE**
- **AdSec Arbitrator: supports both old and ICE interface, most clients using the old interface**

When all clients will move to ICE, all the following info will no longer be relevant, and the #ifdefs can be removed from the code.

When the LBTO team decided to move the TCS to 64 bit machines, we discovered the incompatibility of binary message serialization algorithms in the boost library (used for the communication with the arbitrators, both from AOS and internally to FLAO). We thus decided to adopt "text mode" for the serialization of messages which would allow the intercommunication of AOS (64 bit) with 32 bit FLAO Supervisor. When we tested the text serialization mode we also discovered that the standard boost library does not support text serialization of *NaN* or *Inf* values, so we added some code to manage the case.
Here follows a resume of the changes to be made to FLAO software in order to use text mode serialization.

What was modified

The modification of source code covers two aspects:

1. The substitution of two functions: **binary_iarchive** and **binary_oarchive** with the corresponding **text_iarchive** and **text_oarchive**. This was done by using an **#ifdef** construct.
2. Using a proper wrapper for float/double values in order to serialize properly *inf* and *NaN* values which are used in the code.

Then we modified some makefiles in order to allow the selection of the wanted serialization mode.
Note 1: The modifications in the FLAO code was originally made with conditional compilation because we did not know whether the modified code would work before testing. Now the code seems stable and we do not see reasons to go back to binary serialization in the future, so furter code can be modified more easily doing the simple substitutions quoted above.
Note 2: The reference SVN URL for the code is:
svn+ssh://adopt.arcetri.astro.it/aogroup/svn/AOSupervisor/trunk

Most of the files can be retrieved from there after an inspection to see if there are modifications other than those described below.

Affected files

Here is a list of files modified to support text mode serialization and the NaN wrapper. See the code in SVN or the twiki page at:

http://aowiki.arcetri.astro.it/FLAO/TextModeSerialization

for the detailed diffs.

./makefile.gen
./GUI/cc.pro
./lib/aoapplib.cpp
./lib/AOApp.cpp
./lib/aoapplib.h
./lib/arblib/adSecArb/AdSecPTypes.h
./lib/arblib/adSecArb/AdSecCommands.h
./lib/arblib/aoArb/AOPTypes.h
./lib/arblib/base/Serializator.cpp
./lib/arblib/base/SerializableMessage.h
./lib/arblib/wfsArb/WfsPTypes.h
./lib/AONanWrapper.hpp
./getserializationflags.py
./getboost.py