

# ALMA Common Software Basic Track

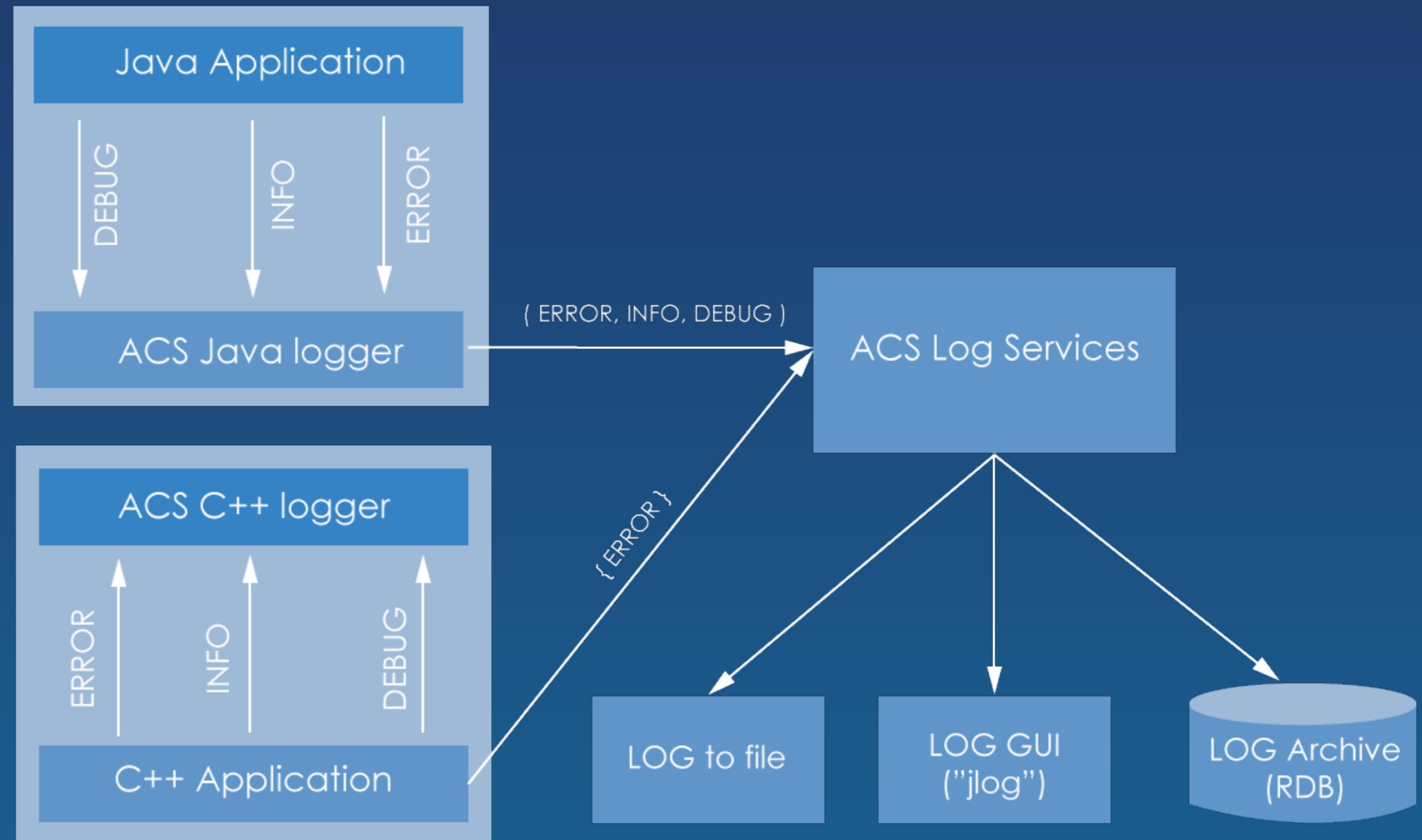
## Logging and Error Systems



# Logging system conceptual overview

stdout:

INFO  
ERROR





# Logging system

- ✧ The logging system provide
  - ✧ status and diagnostic information
  - ✧ historical archive
  - ✧ filtering capabilities by level/audience
- ✧ Several logging levels:
  - ✧ Trace (1), Delouse (2), Debug (3), Info (4), Notice (5), Warning (6) , Error (8), Critical (9), Alert (10), Emergency (11), Off (99)
- ✧ Three logging audiences (orthogonal to log levels):
  - ✧ ENGINEER, OPERATOR, SCILOG
- ✧ They are essential for post-mortem analysis
- ✧ They are normally intended for developers and operators



# Logging system

- ✧ Logging service:
  - ✧ Transport through a notification channel
  - ✧ Graphical user interface to visualize them in runtime or offline (jlog)
- ✧ For later processing can be:
  - ✧ written to file
  - ✧ stored in DB
- ✧ For high performance / robustness:
  - ✧ Transparent caching
  - ✧ Transfer asynchronously in batches
- ✧ Transparent insertion of additional data:
  - ✧ host / container names
  - ✧ thread name

Warning: Every logging client considerably slows down the logging system! Congestions can lead to a logging service crash



# Repeat guards: preventing log flooding

- ✧ Conveniently reduce number of executions of identical activity
  - ✧ e.g. Logging of same log message, e.g. “incident detected”, N times/s
  - ✧ Can be used for other activities, is wrapped around activity
- ✧ Configurable based on:
  - ✧ Number of executions
  - ✧ Time interval
  - ✧ Combinations of both



## Log entry example

```
<Debug
  TimeStamp="2002-10-7T13:44:16.530"
  Host="tel.hq.eso.org"
  Process="bacitTestServer"
  Thread="main"
  Context=""
  File="bacitTestClassImpl.cpp"
  Line="205"
  Routine="BaciTestClass::~BaciTestClass
>
```



# Logging system configuration

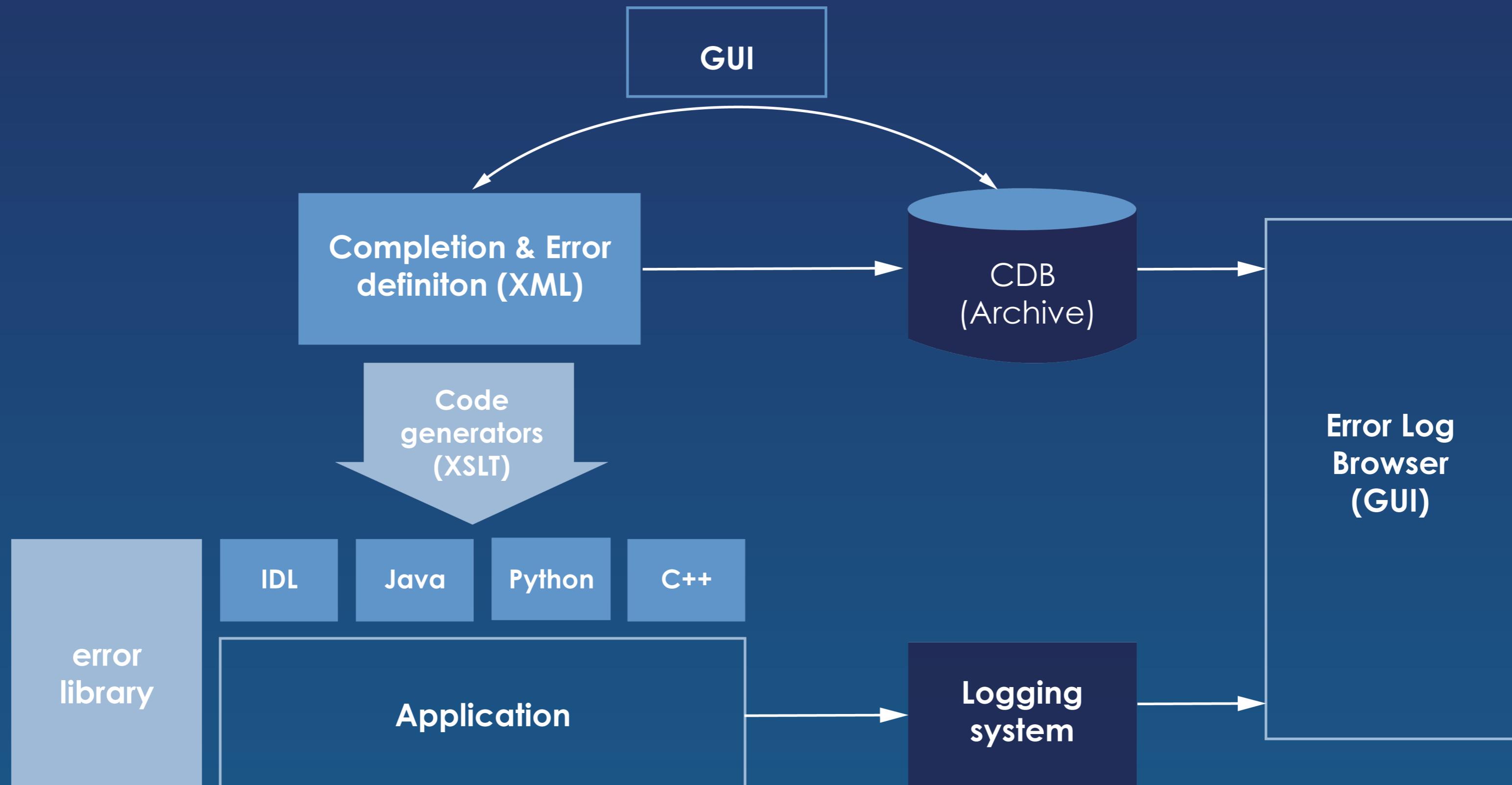
- ❖ Default configuration
  - ❖ log TRACE and above levels
- ❖ Optional environment variables can set per-process log levels
- ❖ CDB can set per-process log levels / per-logger level
- ❖ Tools to dynamically change log levels in running system
- ❖ Environment variables:
  - ❖ Log level for console: `$ACS_LOG_STDOUT`
  - ❖ Central logging level: `$ACS_LOG_CENTRAL`
  - ❖ Log file name: `$ACS_LOG_FILE`



# Error system

- ✧ ACS: faults or errors are a situation that requires handling
- ✧ Handled by developer
- ✧ Helpers (acserr.idl):
  - ✧ Completion
    - ✧ Not critically failed execution / execution OK
  - ✧ Errors
    - ✧ Critically failed execution
    - ✧ ACS (CORBA) exceptions predefined in XML  
(ACSErrTypeCommon.xml, ACSErrTypeCommon.idl)
- ✧ Error propagation → Error trace
  - ✧ Chaining of Completions
  - ✧ Chaining of errors / ACS exceptions
  - ✧ Possible across process boundaries

# Error system conceptual overview



not yet available



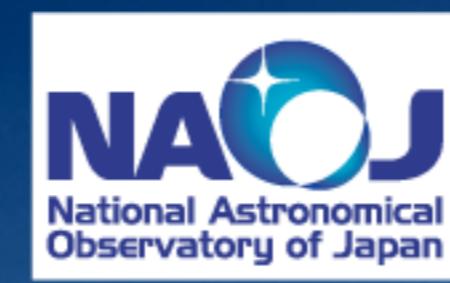
not part of error



## Resources

- ✧ Logging and Archiving:
  - ✧ [http://www.eso.org/projects/alma/develop/acs/  
OnlineDocs/Logging\\_and\\_Archiving.pdf](http://www.eso.org/projects/alma/develop/acs/OnlineDocs/Logging_and_Archiving.pdf)
- ✧ Definitive guide to logs and errors
  - ✧ [http://almasw.hq.eso.org/almasw/bin/view/HLA/  
LoggingErrorAlarmsGuidelines](http://almasw.hq.eso.org/almasw/bin/view/HLA/LoggingErrorAlarmsGuidelines)
- ✧ And of course, the source code

# Questions?



## Acknowledgements

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