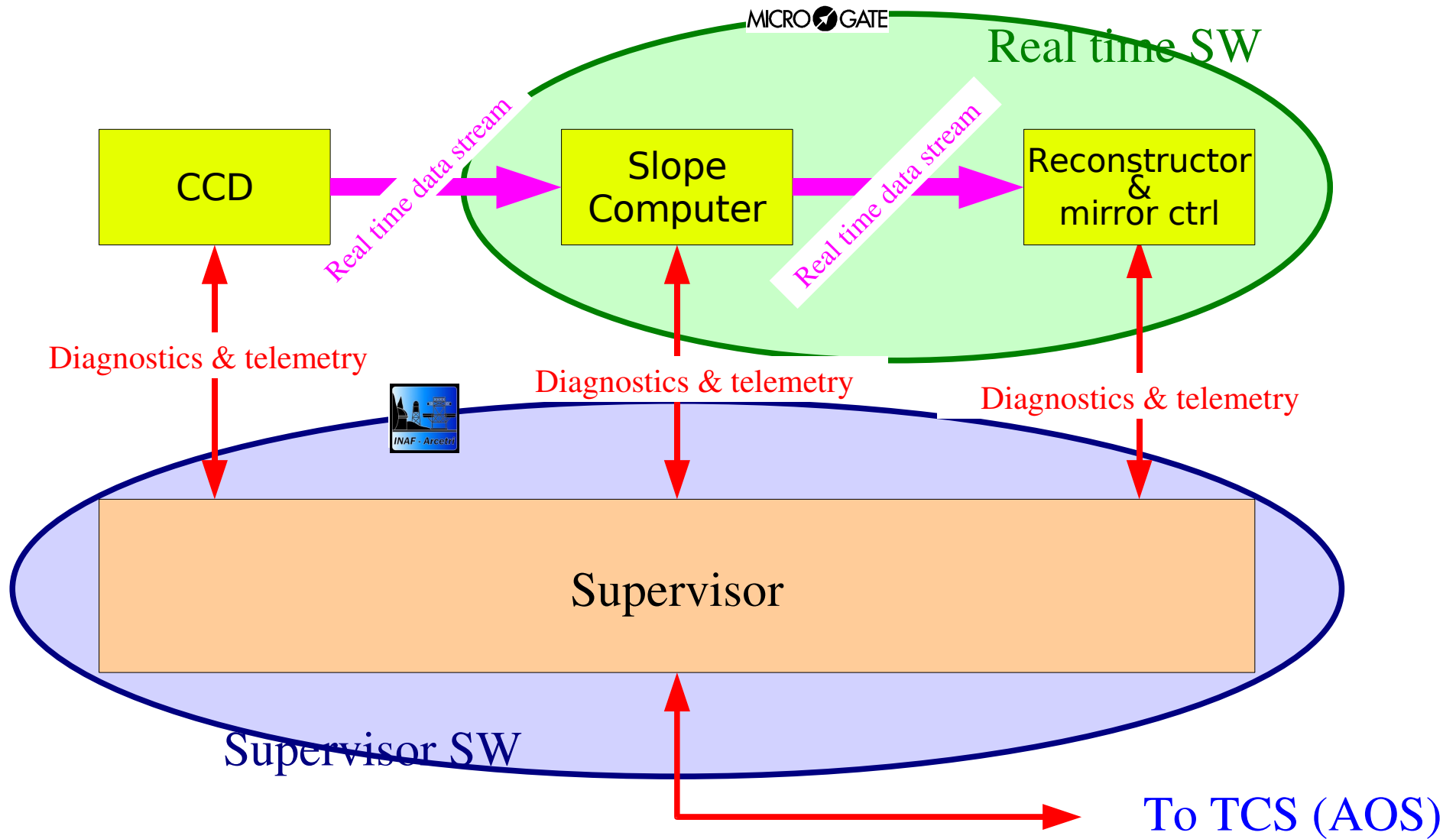

Oct 3rd 2006

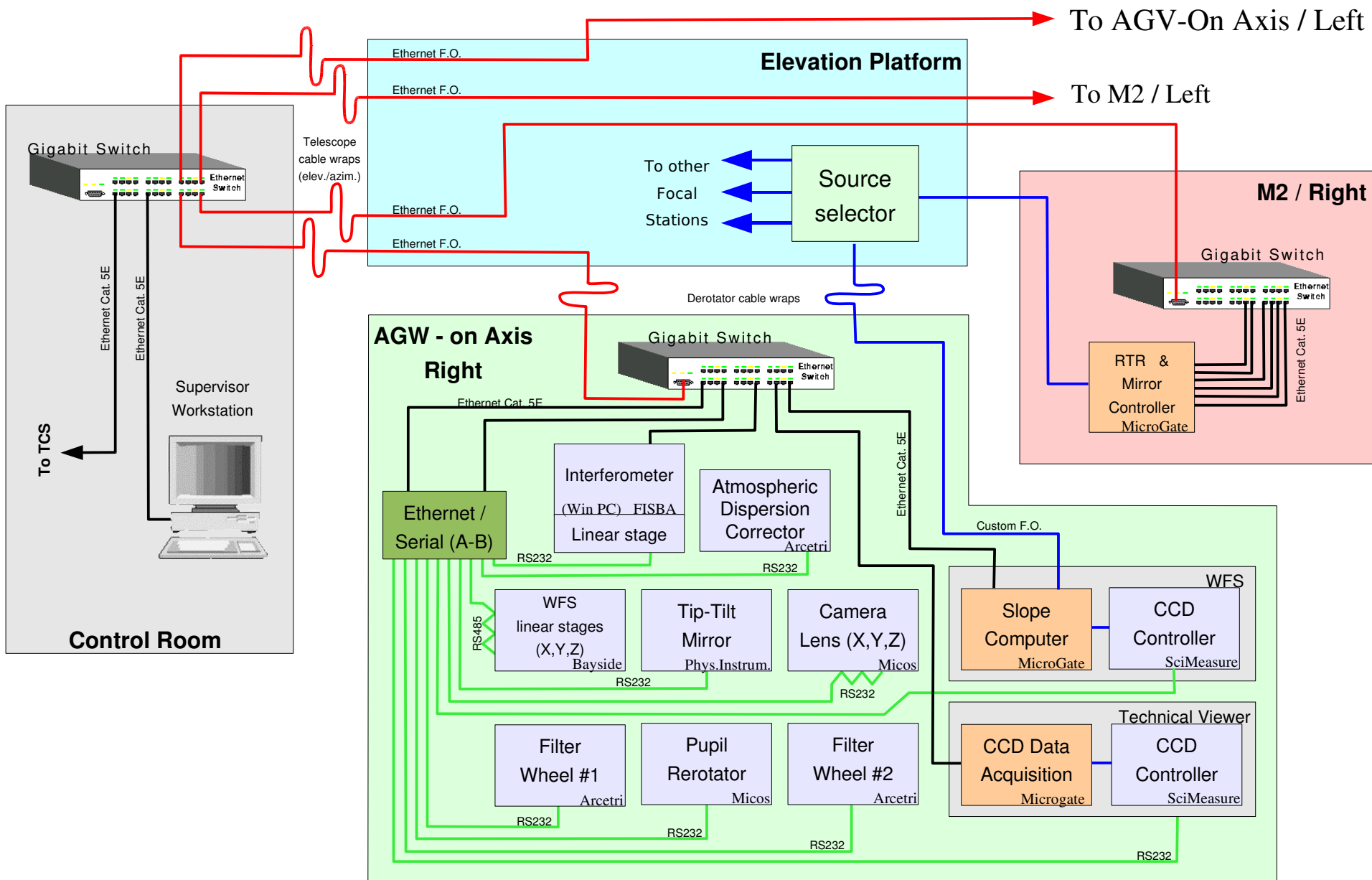
LBT-AO Software Architecture

Luca Fini

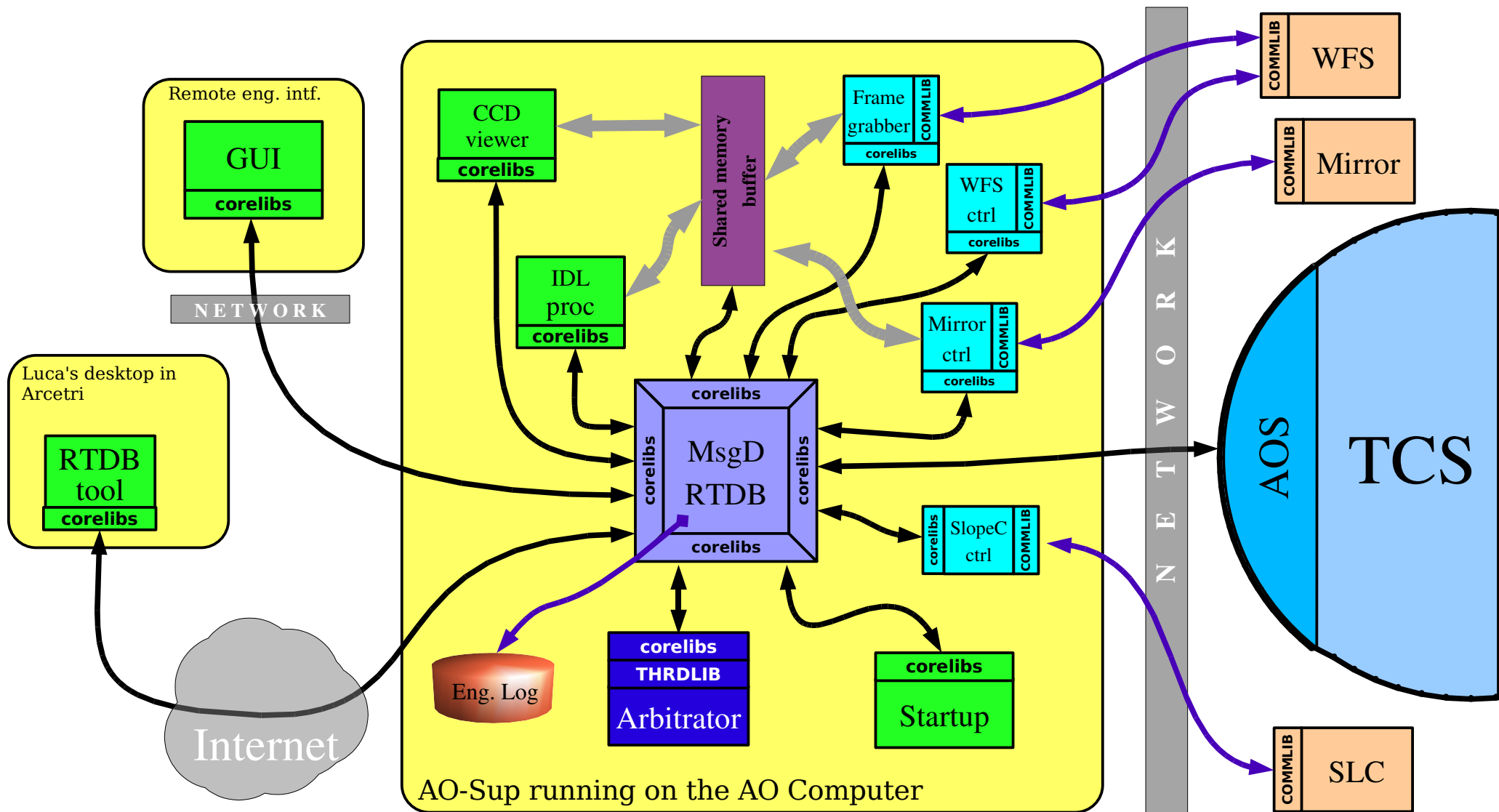
System architecture



AdOpt data communication layout



Supervisor architecture



Supervisor outline

- Extremely modular
 - Components (processes) are totally decoupled
 - Components communicate via messages
- Language independent
 - Components can be coded in any language
- Components may be added and removed at will
 - E.g.-1: some of them will be needed in the lab only and will not be delivered at the telescope
 - E.g.-2: “quick & dirty” components can be added/removed while the system is running

MsgD-RTDB

Message Dispatcher and (soft) Real-Time Database

- **Routes messages between components (MsgD)**
 - Uses Unix sockets
 - Custom protocol designed for efficiency
 - Centralized logging facilities
 - Simplified component architecture
 - Drop-in component scheme
- **Central repository for shared variables (RTDB)**
 - Unified access to information and data
 - Easy synchronization of tasks
 - Supports notification on data change
- **Shared memory buffer management**
 - Provides facilities to define and use O.S. provided shared buffers
 - Used for bulk data exchange (e.g.: diagnostics)
 - “Best-effort” and “off-line” data modes

Core Libraries

- `Msglib`

- Message exchange between components and MSGD.
- Ad Hoc protocol

- `Rtdbllib`

Built over `msglib`

- Variable repository management
- Create, read, write, delete, ownership
- Goal: time efficiency

- `Buflib`

- Shared buffer management
- Creation, attach, detach
- TBD: network access support

Thrdlib

- Threaded application support

Threading necessary to manage complex message exchanges (e.g.: unsolicited messages, variable change notification and the like) is hidden by the library.

- Message queues, handlers

Easy implementation of applications which are both client and servers.

- Built over msglib, rtdbllib, buflib

Supervisor Components

- BCUCtrl family
 - MirrorCtrl
 - SlopeCompCtrl
 - FrameGrabCtrl
 - TTCtrl
- Motor Controllers
 - SimpleMotorCtrl
 - StagesCtrl
- WFSCtrl
- Engineering UI's
 - Command based
 - Graphical
- IDL controller
- Mirror Diagnostics
- PyModules
- Scripts

A O S

- Interfaces AO-Sup to the TCS
- AOS functions: CAN 486f004, 486f006
- See next talk