VLT control software overview

The VLT control and common software is the work of the following ESO staff

in the VLT software group in Garching
(now Software Dept. of Technical Division)

E.Allaert, P.Biereichel, F.Carbognani, G.Chiozzi, M.Comin, P.Duhoux, G.Filippi, B.Gilli, B.Gustafsson, R.Karban, J.Knudstrup, A.Longinotti, W.Pirani, G.Raffi, S.Skole

and colleagues who are now at Paranal:
R.Abuter, R.Amestica, F.Delgado, M.Kiekebush, I.Munoz, T.Phan Duc, R.Rojas, S.Sandrock, R.Schmutzer, A.Wallander, K.Wirenstrand

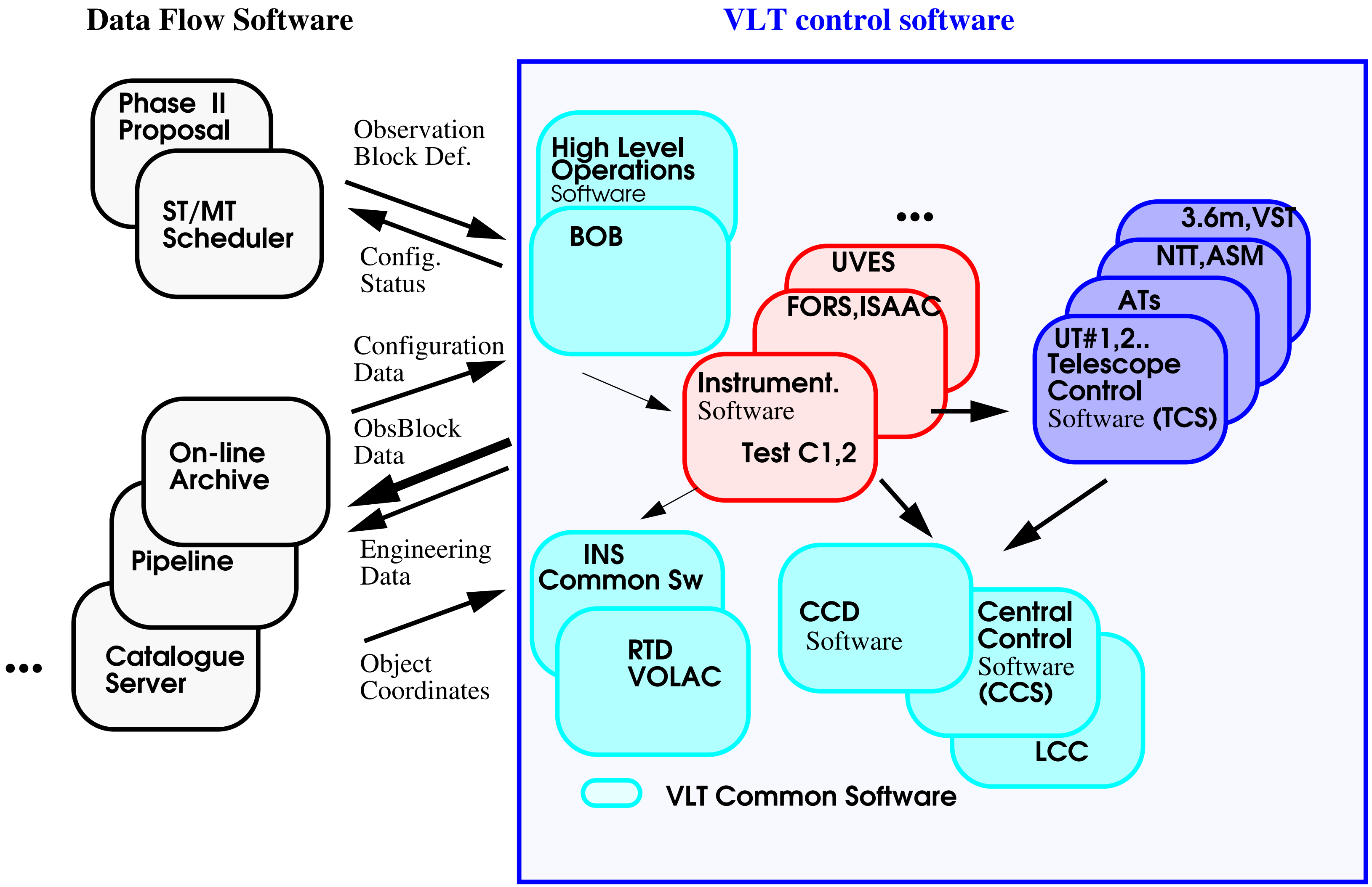
+ other colleagues of ESO for FIERA(A.Balestra, C.Cumani, R.Donaldson) and active optics (L.Noethe)

+ colleagues who left + SERCO support in house

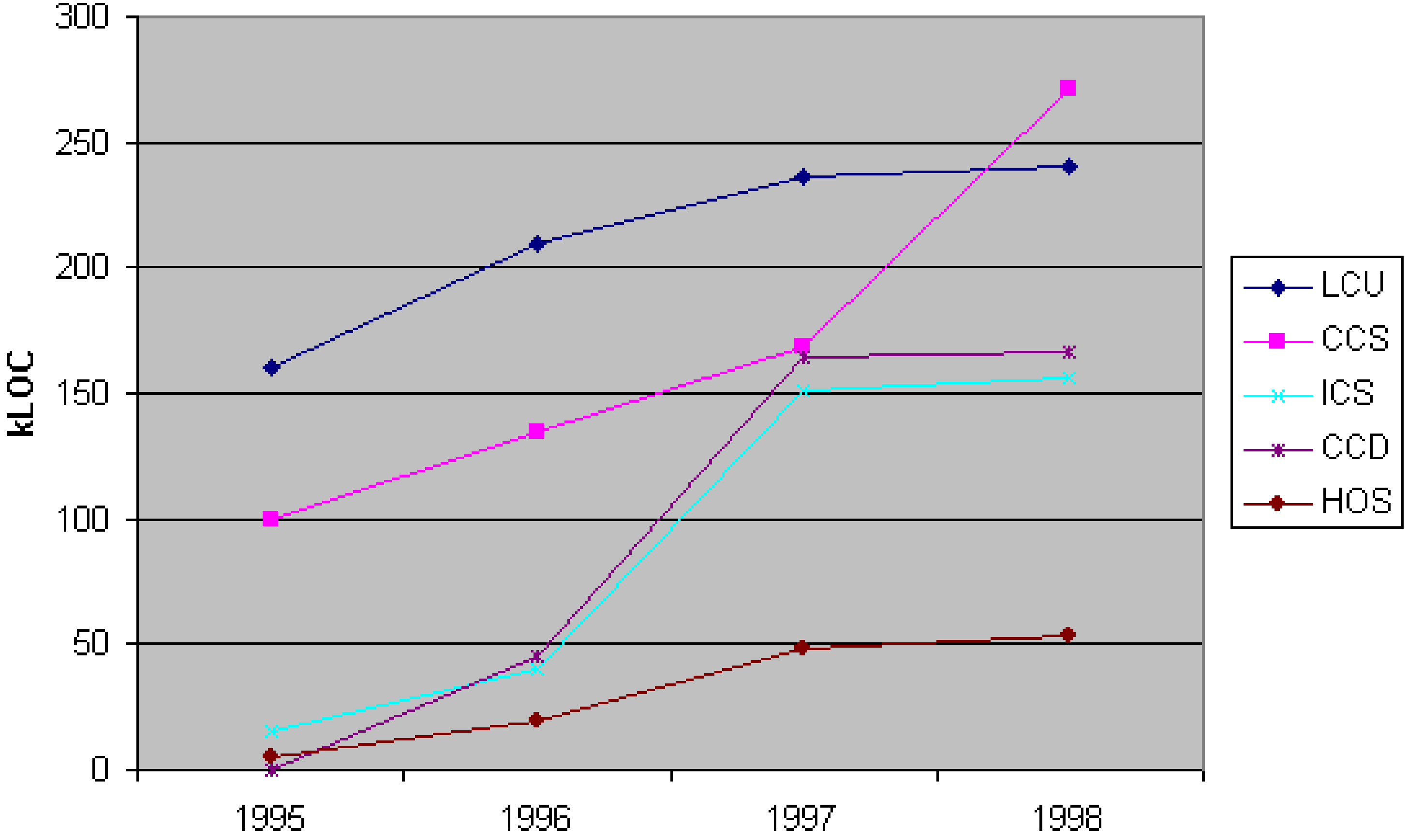
+ Industry (SoftBel + Contractors for m1, m2, encl) + Consortia (FORS) + Institutes (AOT for UVES)

+ Interfaces with DMD Division (responsible for Data flow software - to be presented on Friday).

VLT Control Software overview



VLT Common Sw L.O.C. (*) (no TCS & ASM, no Instruments)



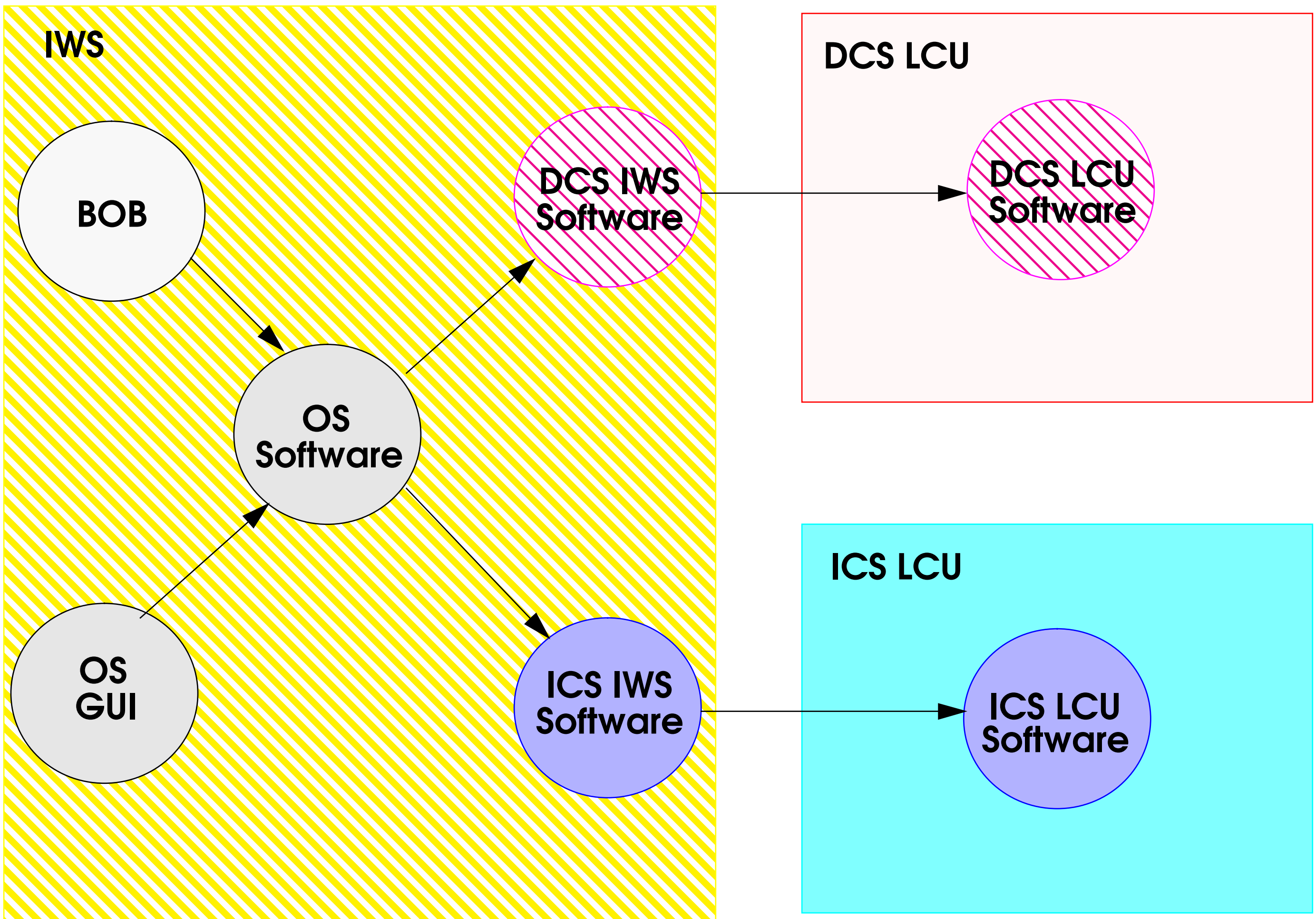
(*) Line of Code of Releases, including comment lines, but excluding test software (about same size) **Total = 900 K** Lines of code of common sw

~ 1400 K Lines of code of software in operation at UT1

Definitions and standards

- **IWS**. *Instrument Workstation*
  - Unix - Target workstations: HP .
  - Standard software: *Central Control Software* (CCS)
    Note: full CCS required, no CCS-lite
- **LCU**. *Local Control Unit* controlling a VLT subsystem.
  - VME-based (2 kinds of CPUs)
  - VxWorks +*LCU Common Software* (LCC)
  - Standard boards and drivers (CPU, I/O, motor control)
- Embedded on-line software (optional)
  - Needs ESO approval
  - runs on target CPUs *below* the LCU level
  - dedicated to special tasks
  - No Common Software available

General VLT instrument Sw architecture



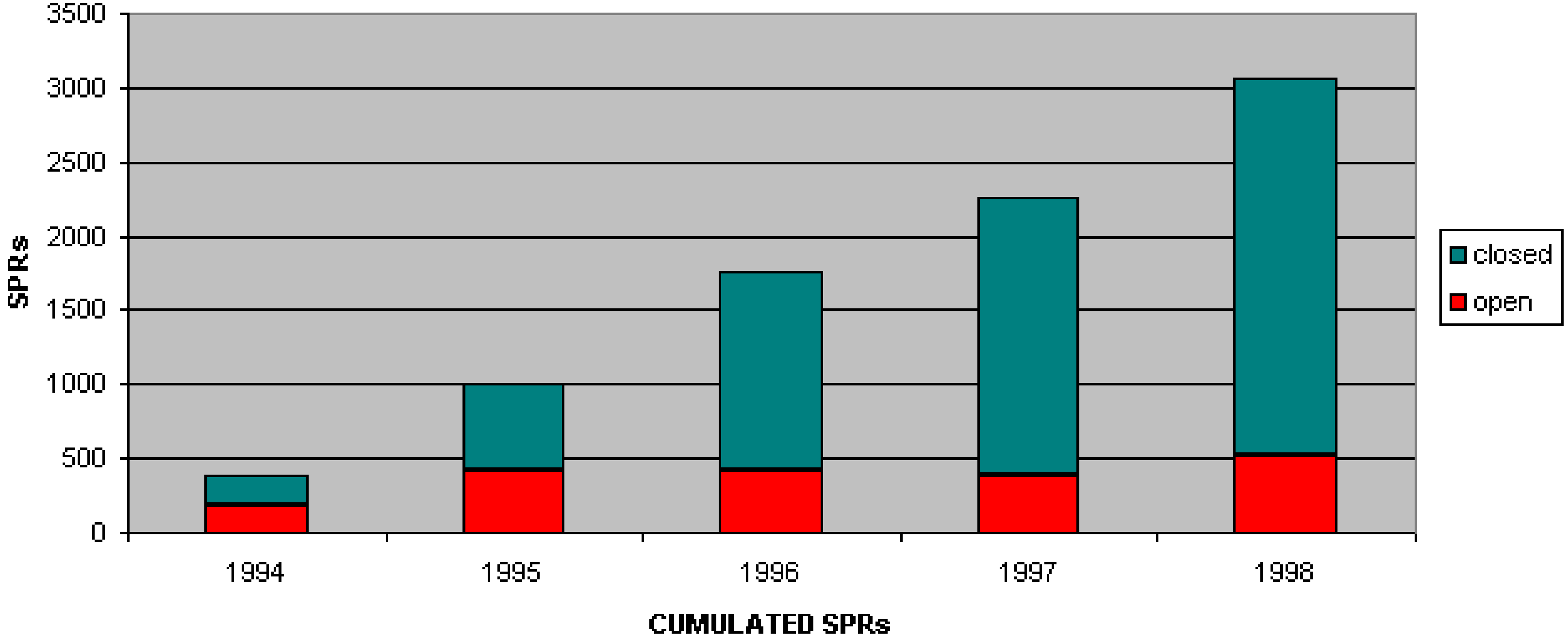
Software engineering

Procedures and standards are enforced with:

- Releases (2 per year since 95). Allowed incremental development and maintenance => **keeps software aligned at all sites** (Rules embedded in common software)
- Formal reviews of software spec's/design
- Standards for documentation and programming
- Automatic tests (in routine use at every release)
- Code configuration management (cmm) in Garching also for Paranal, FORS, AOT
- Software Problem Reports (SPR), often upgrades. Encouraged: a formal way to submit problems, but also proposals for improvements.
- Software Configuration Control Board (SCCB) (bi-weekly with Paranal) to agree among Divisions on VLT control sw SPRs for next Release.

VLT Software Problem Reports

- ported to Action/Remedy tool (Web access)
- 3000 SPRs (problems and upgrades) since `94
- Critical SPRs done immediately (before Release)
- **There are No critical SPRs open on VLT UT1**
- 500 open SPRs correspond to a Release content



Evolution of VLT common software releases:

Release Oct.98:

- CCS on HP-UX 10.20 and Solaris 2.4
- CCS-lite also on Solaris 2.5.1
- LCC support for PowerPC on VxWorks 5.3 (Tornado)

Internal release Feb.99:

- CCS/LCC Y2K compliancy

New standard cards:

- PowerPC VME CPU card (MVME2604331- 32 MB) (recommended choice)
- VME ATM card (CETIA CPMCATM-5155MA)
- Reflective memory (fast communication between LCUs- typical 1-2 us latency) (VMIC VMIVME-5567)

Release Oct.99:

- CCS on HP-UX 10.20 (no more on Solaris)
- CCS-lite complete with WS-WS scan system on HP-UX 10.20, Solaris 2.6
- LCC support for ATM LCU card
- Tcl/Tk 8.0 & GNU tools 2.8
- FIERA based on CCS-lite (instead of full CCS) (CCD group)
- ic0 -> icb (instrument common software base module)
- JAVA interface (for internal use, towards P2PP)

Goal:

– support new releases of OS software and tools
– no upgrades, only problem fixing
– new products