Technical Infrastructure Monitoring (TIM)

and

CCC

TS Workshop
May 4, 2004

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Outline

- Introduction to TIM
- Architecture
- Redundancy and availability
- Integrating TIM in CCC
- Project status and planning
- Conclusion

Introduction to TIM

- Control system for technical infrastructure
  - Technical Control Room (TCR)
  - CERN Control Centre (CCC)
- Replaces current operational Technical Data Server (TDS)
- Standard CERN hardware & software components for cost reduction and support optimization
- Standardized user interfaces for smooth integration in CCC

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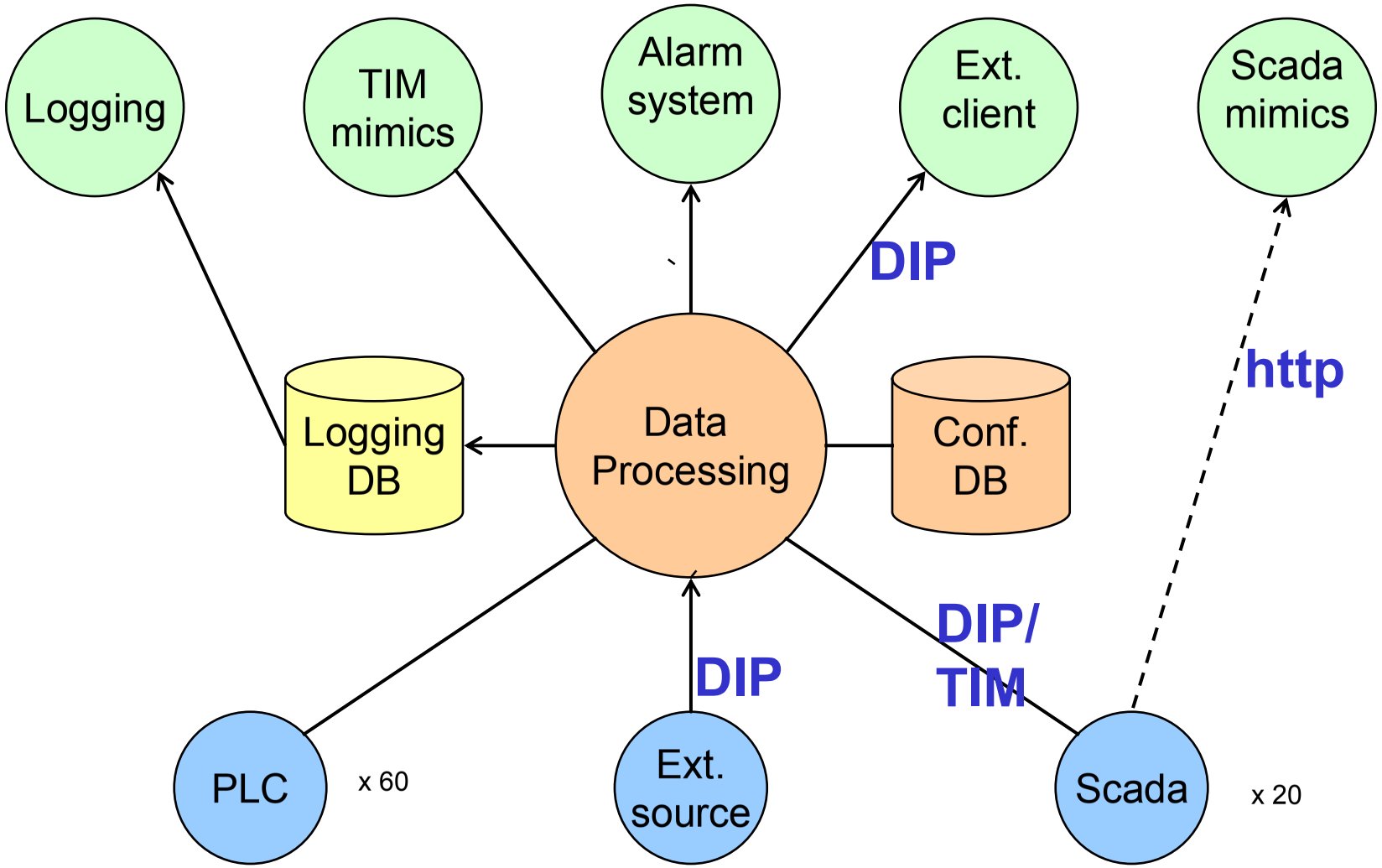
TIM Functionality

- Data acquisition from heterogeneous equipment
  - TS (electrical distribution, water, safety)
  - External (magnets, RF, vacuum, cryo…)
- Mimic diagrams
  - Applications for fast accelerator start-up (GTPM)
  - Overview diagrams where no specialist view is available
  - Navigation to proprietary system interfaces
- Alarms
  - Single alarm list for CCC
- Logging
  - Archiving data
  - Display of archived data in histograms

TIM Software Architecture



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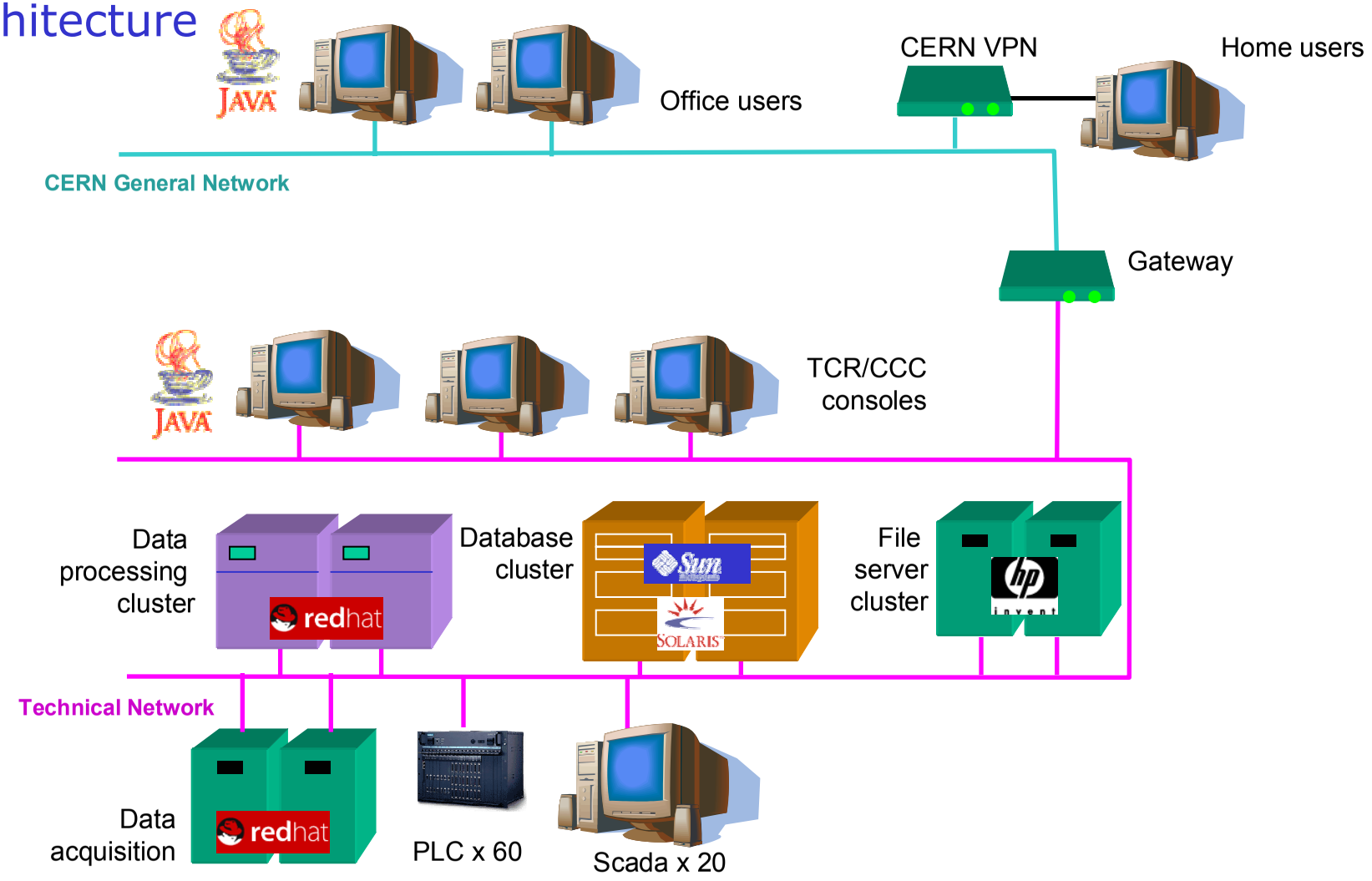
TIM Hardware Architecture



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TIM HP racks

Redundancy & Availability

- Design for 99% availability
  - Safety Integrity Level (SIL) 1
  - Development, configuration and maintenance guidelines
- Redundant
  - Processes
  - Servers
  - Disks
  - Racks
  - Electrical supplies
  - Network components

Different control systems in the CCC

	TIM	Accelerator Controls	Cryogenics	Vacuum
Server hardware	**HP ProLiant, Sun fire** *AB/CO, IT/CO*	**HP ProLiant, Sun fire**	**HP ProLiant**	**PC-shop server**
Server software	**OC4J, SonicMQ, Oracle** *IT/DB, AB/CO, IT/DB*	**OC4J, SonicMQ, Oracle**	**PVSS**	**PVSS**
Mimics diagrams	**JViews** *TS/CSE, AB/CO*	**JViews + own**	**PVSS**	**PVSS**
Alarm system	**LASER** *AB/CO*	**LASER**	**PVSS, LASER**	**PVSS, LASER**
Data logging	**LHC/TCR** *AB/CO, TS/CSE*	**LHC/TCR**	**PVSS,LHC/TCR**	**PVSS,LHC/TCR**

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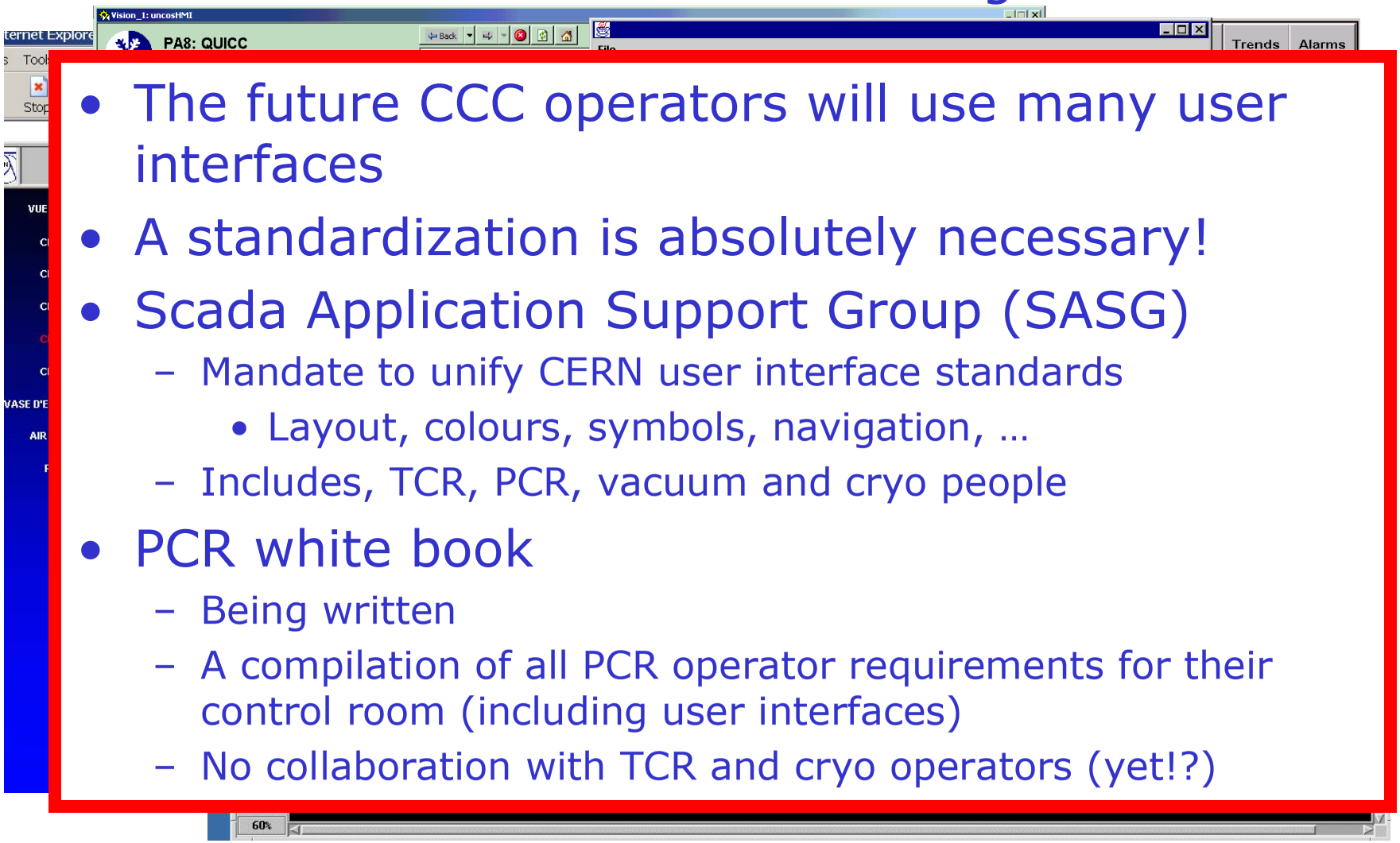
Standardized mimic diagrams



- The future CCC operators will use many user interfaces
- A standardization is absolutely necessary!
- Scada Application Support Group (SASG)
  - Mandate to unify CERN user interface standards
    - Layout, colours, symbols, navigation, …
  - Includes, TCR, PCR, vacuum and cryo people
- PCR white book
  - Being written
  - A compilation of all PCR operator requirements for their control room (including user interfaces)
  - No collaboration with TCR and cryo operators (yet!?)

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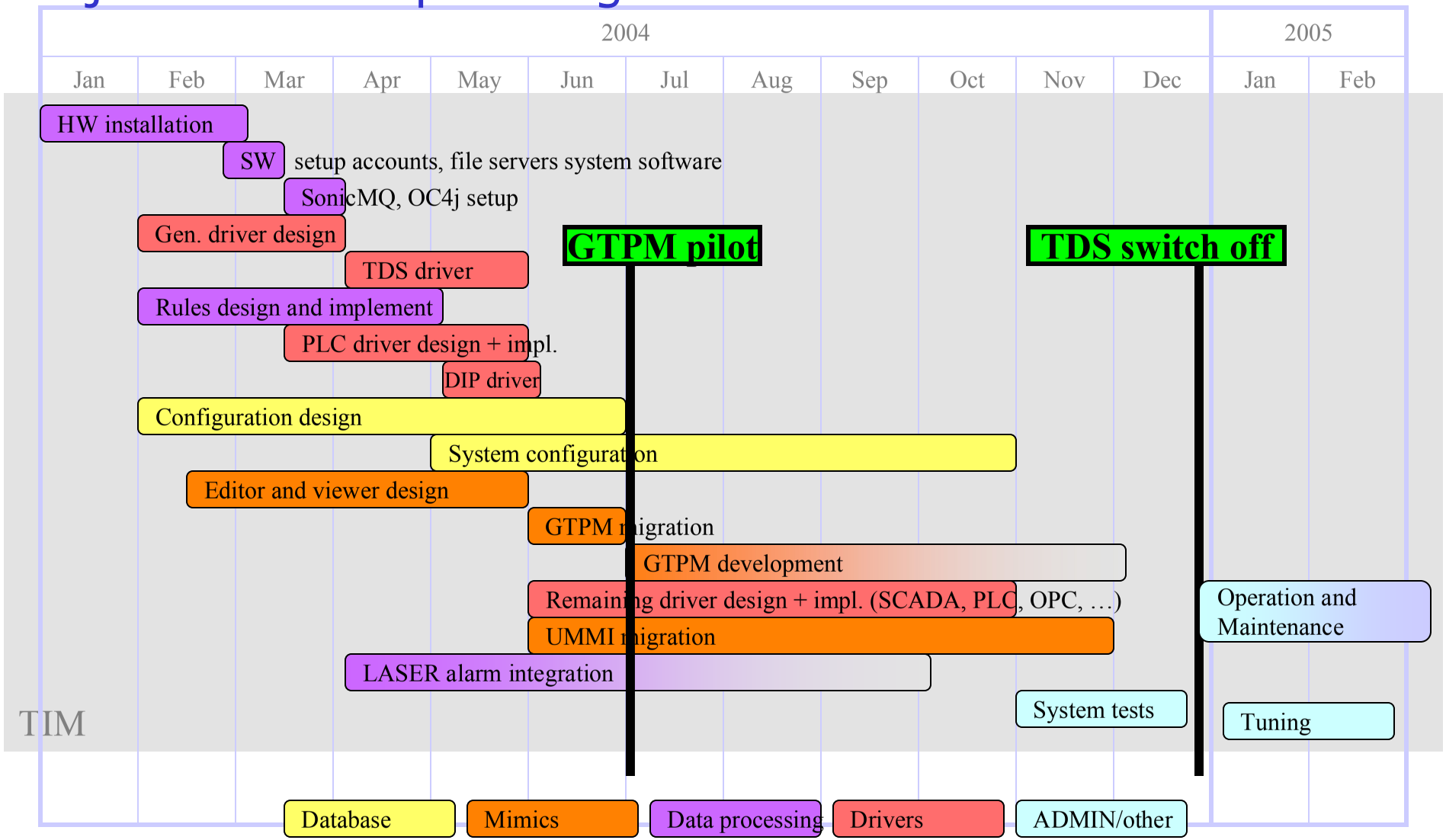
Project status & planning



Conclusion

- Integration in CCC
  - TIM Hardware and Software architecture choices made in view of integration
  - Must be integrated with other systems in CCC
    - Safety, access, accelerator, cryogenics and vacuum controls
  - CCC operator consoles must be agreed by **all** future operators
    - Choice of operating system
    - User interface standards
    - AB operations white book
  - Successful integration depends on departmental commitment and inter-departmental collaboration
- Availability
  - System designed for 99% availability, but
  - Overall availability depends on the connected systems
- Planning
  - On time, pilot in July and switch off TDS in December
- Budget
  - 20 % below budget (grouped purchasing and own development)

More information on TIM