

OUFTI - 1

Design of the On-Board Computer of the Belgian OUFTI-1 CubeSat



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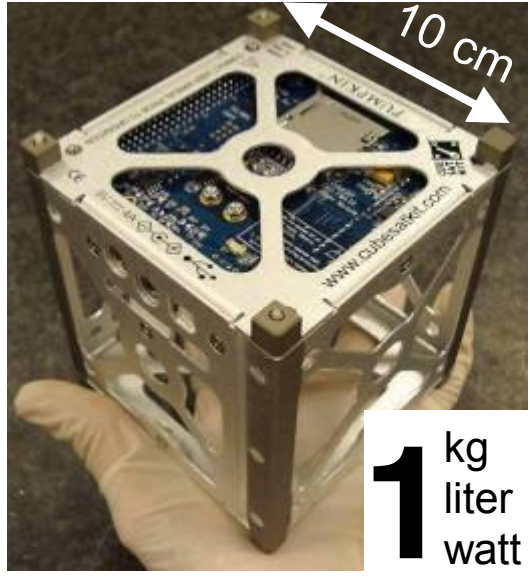
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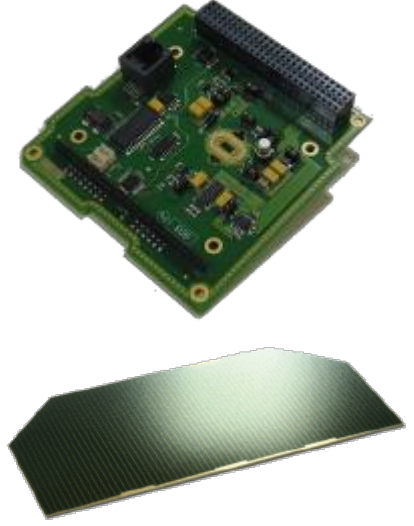


1. **OUFTI-1**
2. Two OBCs for OUFTI-1
3. Real Time Operating System
4. Software architecture
5. Conclusion

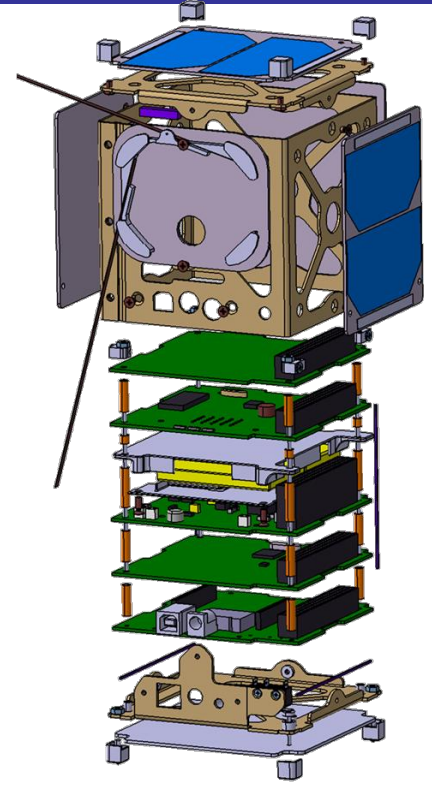
OUFTI-1



CubeSat standard



Three payloads

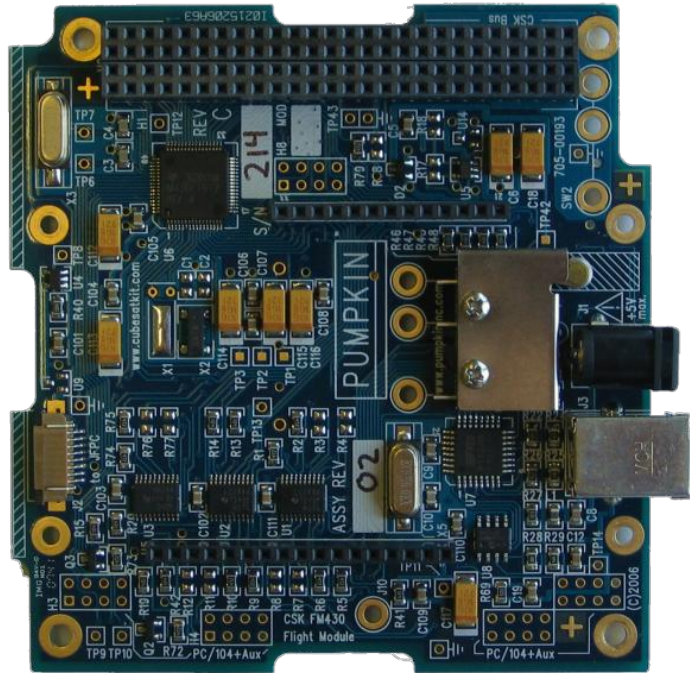


Subsystems developed by students

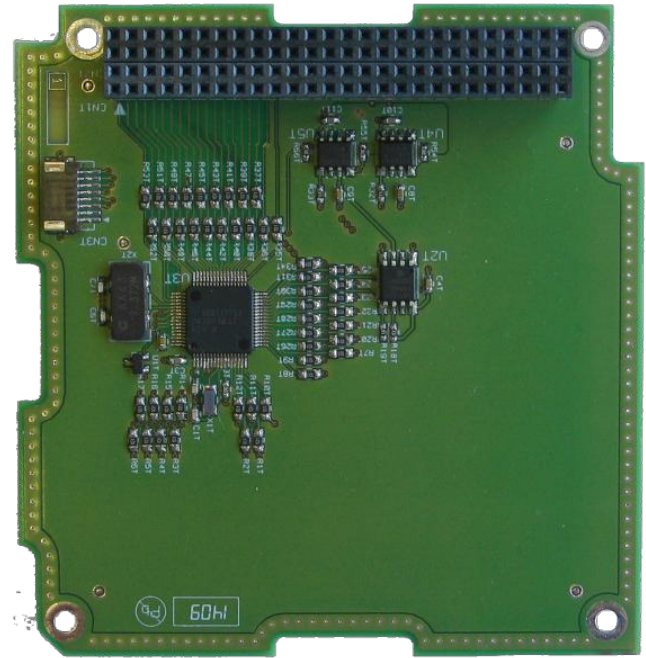
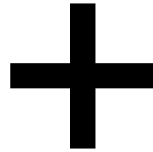


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Two OBCs for OUFTI-1

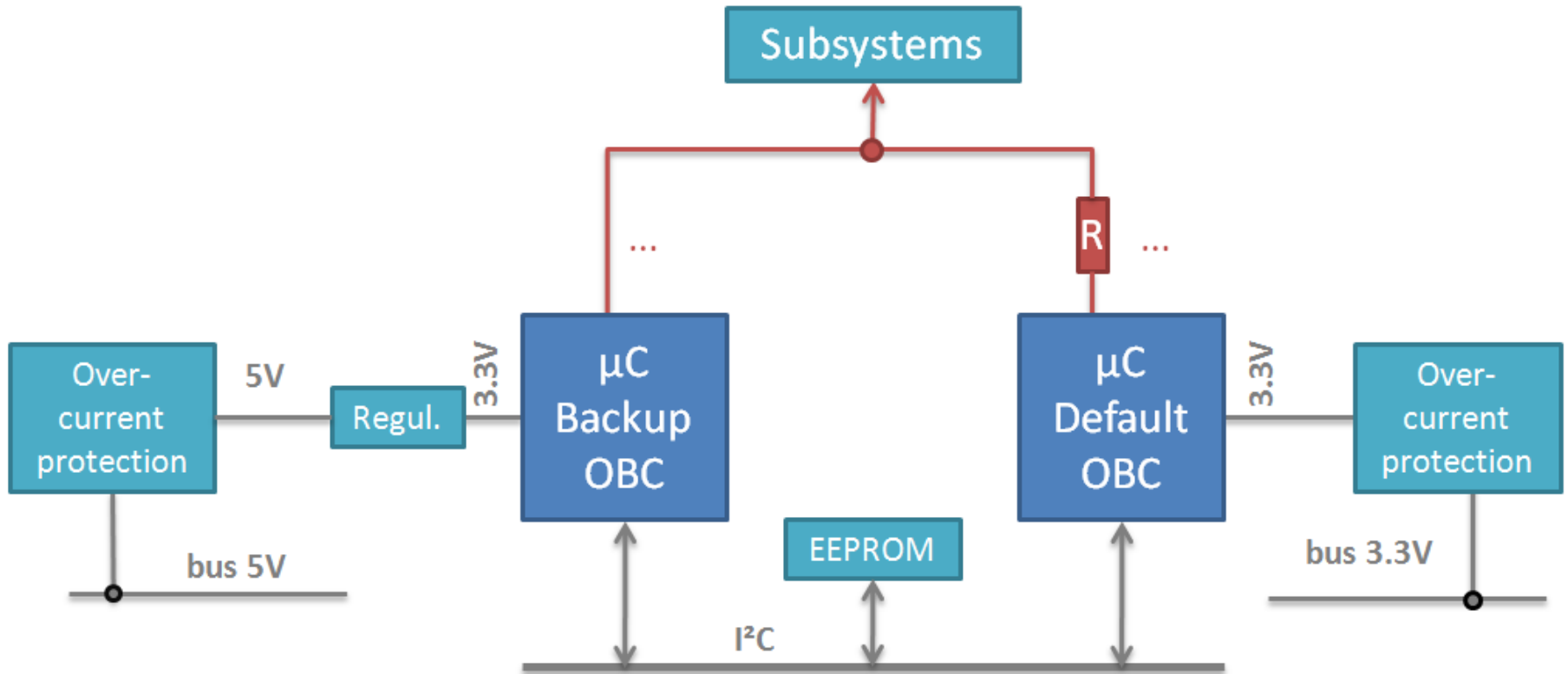


Backup OBC



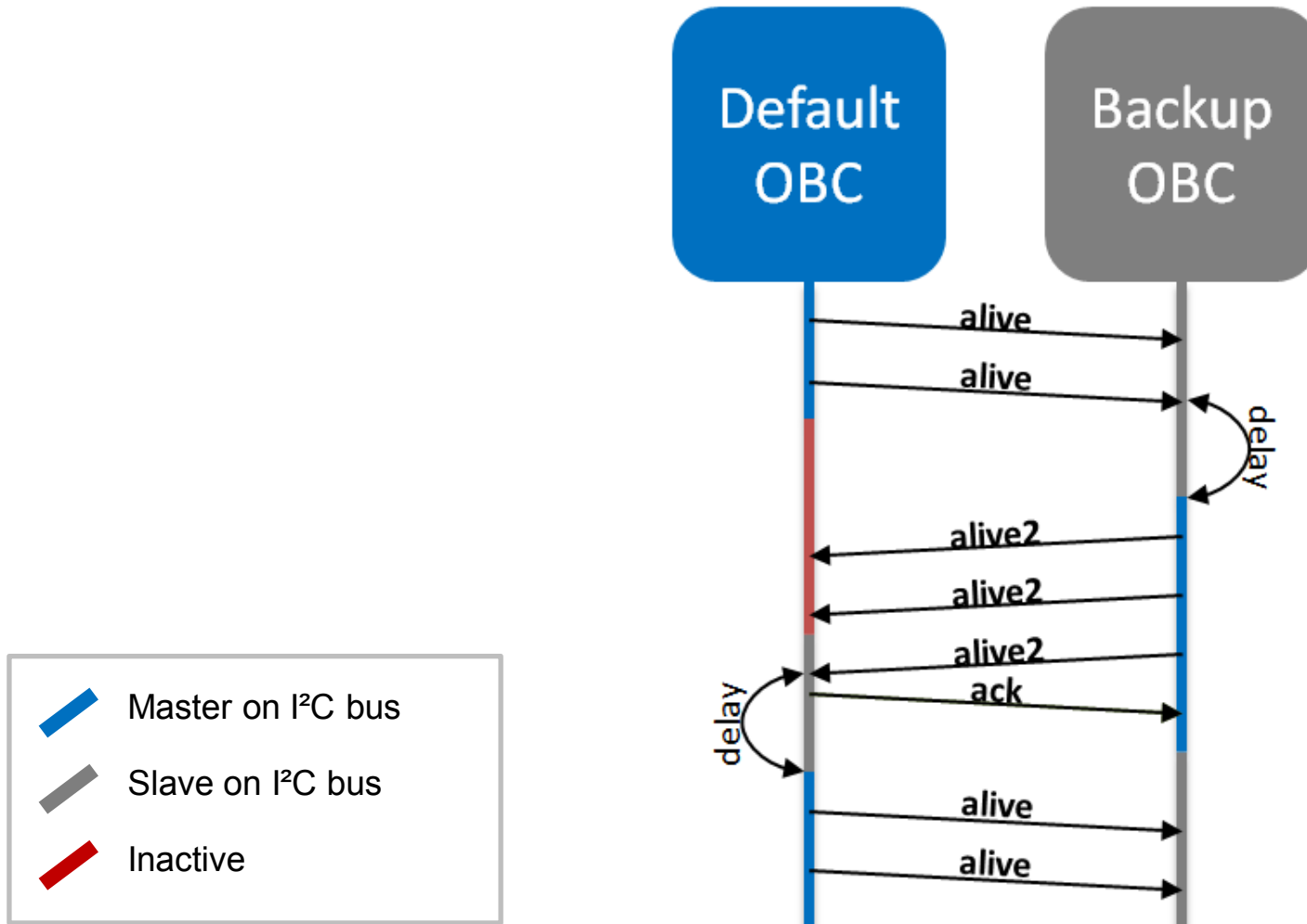
Default OBC

Two OBCs for OUFTI-1



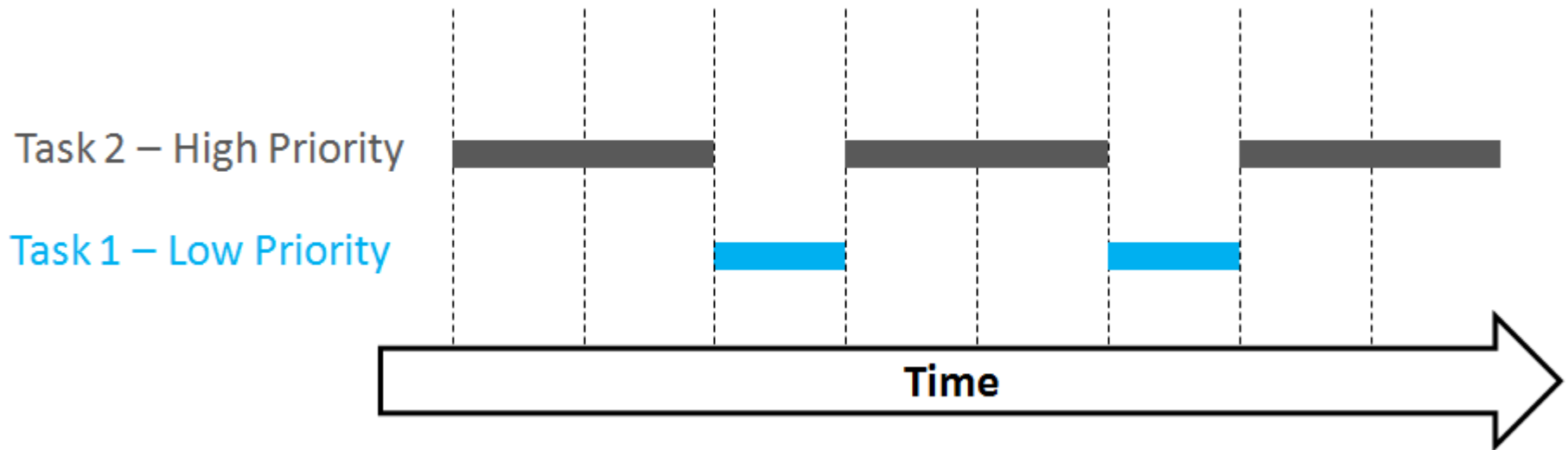
Two OBCs for OUFTI-1

- Redundancy management through I²C bus.

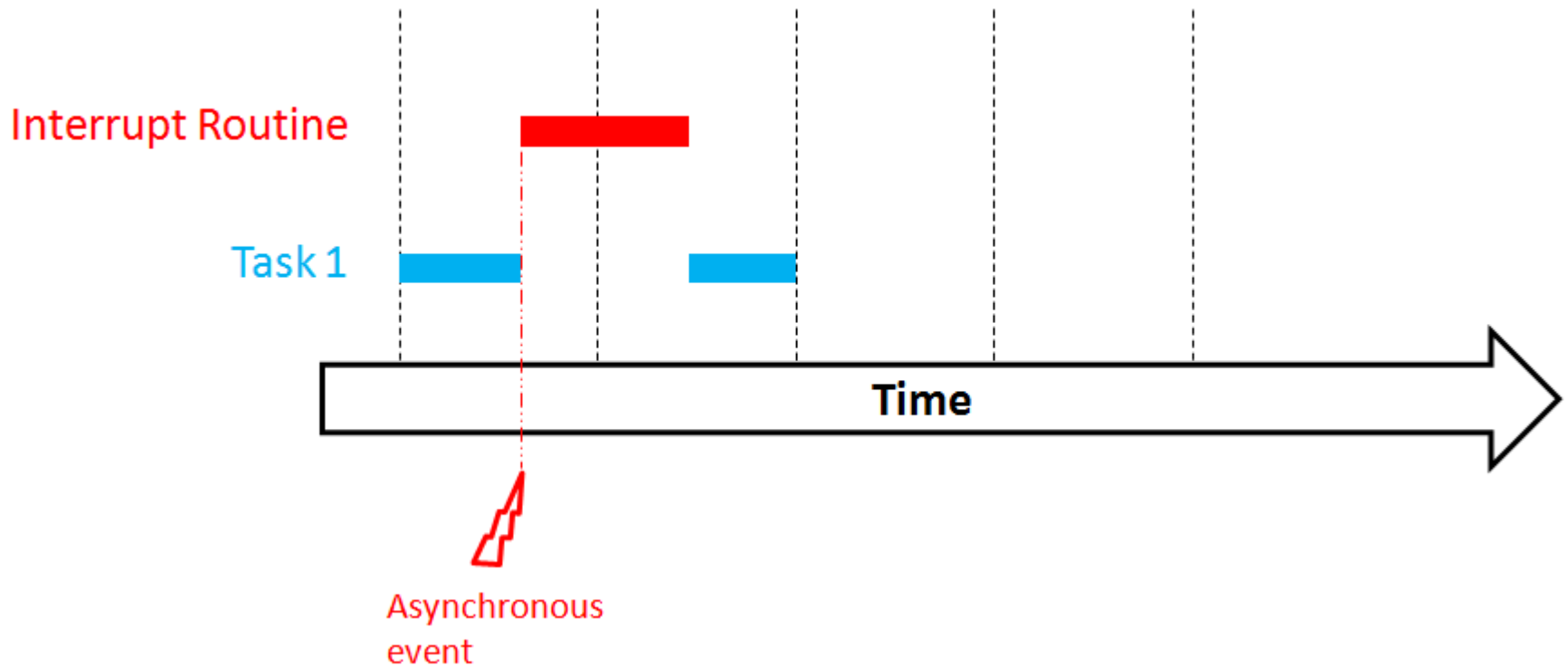


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- Multi-tasking



- Deterministic



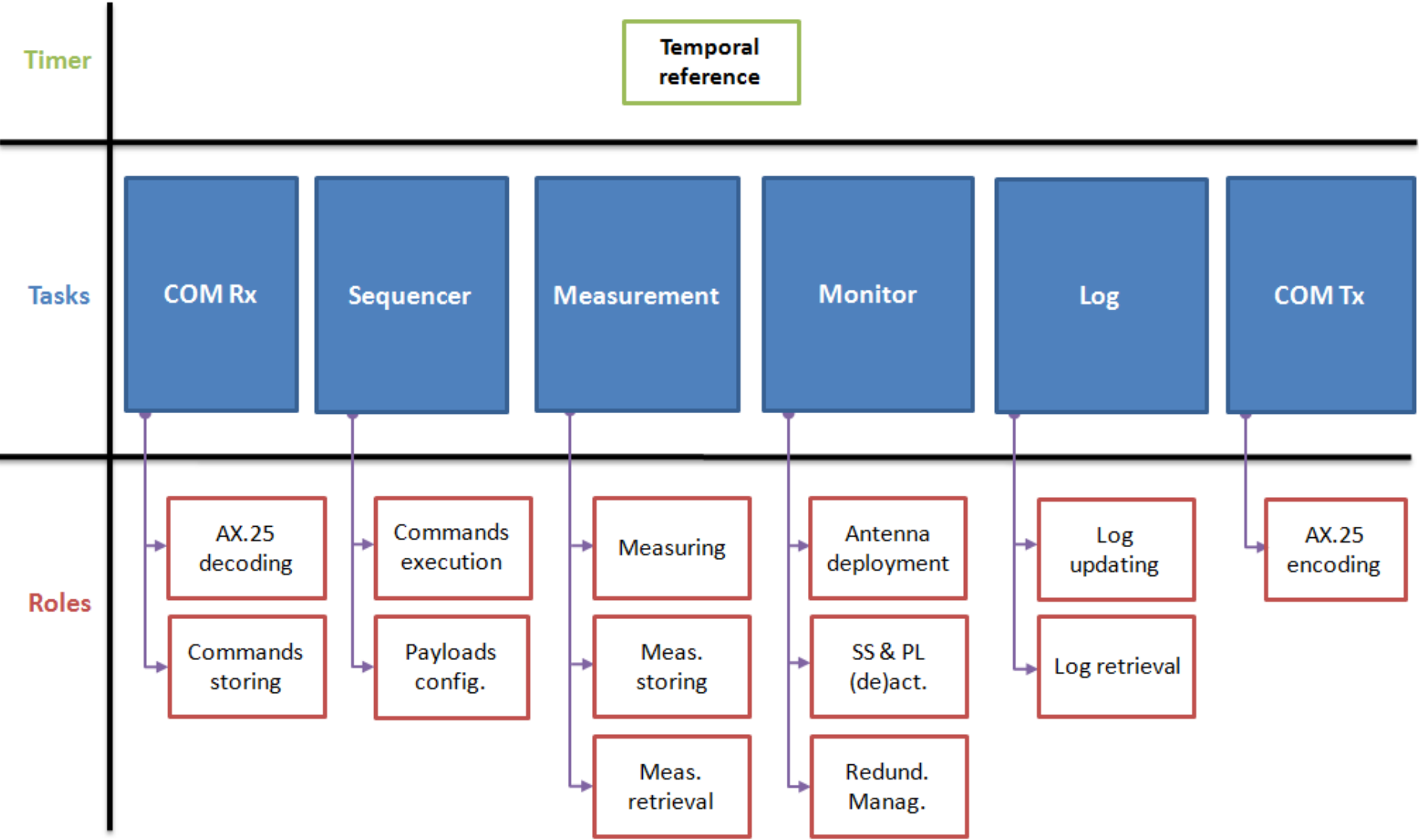
- Why FreeRTOS ?
 - Free
 - Open Source
 - Lightweight
 - Known to be reliable
 - MSP430 compatibility



 www.freeRTOS.org

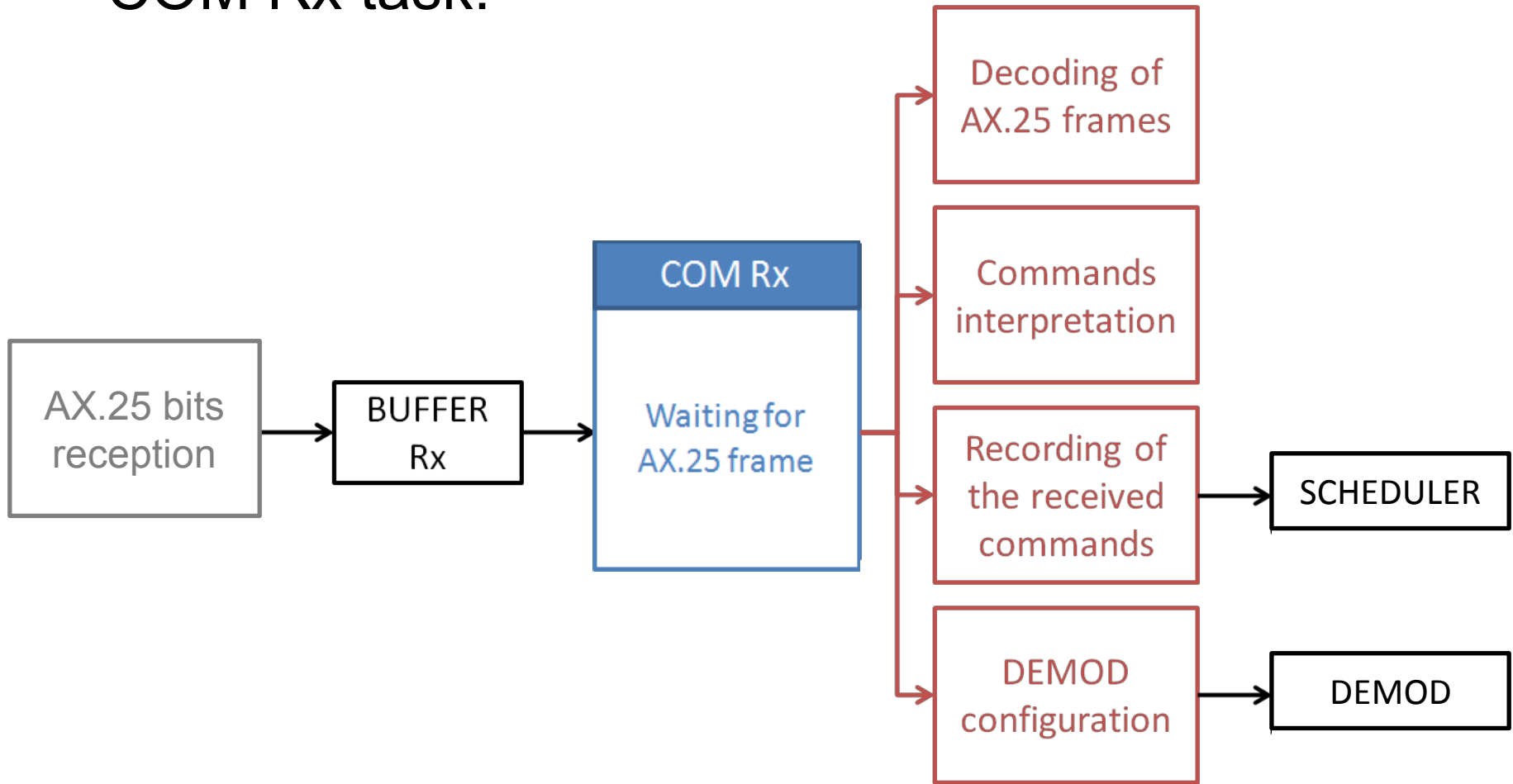
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Software architecture



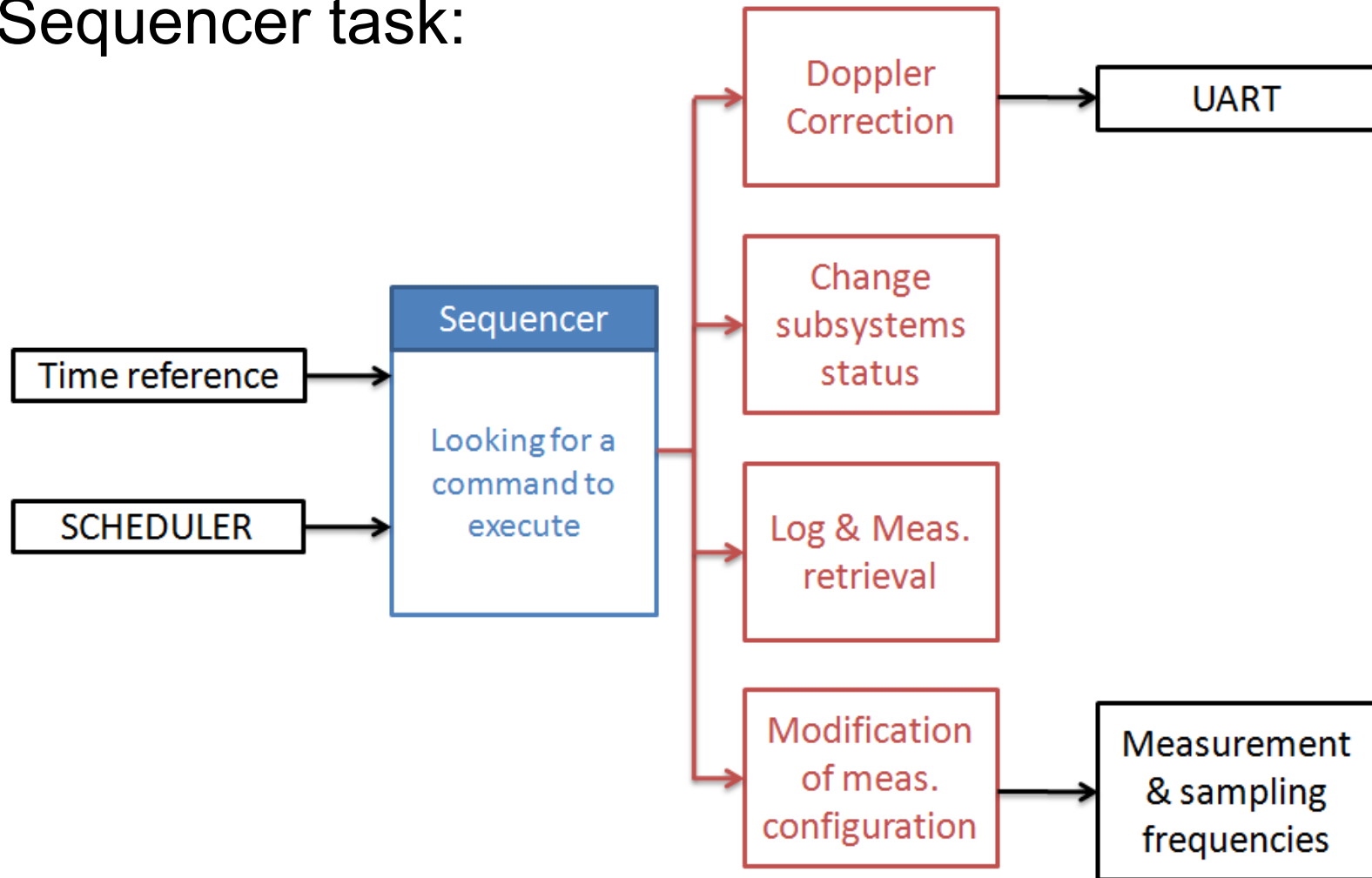
Software architecture

- COM Rx task:



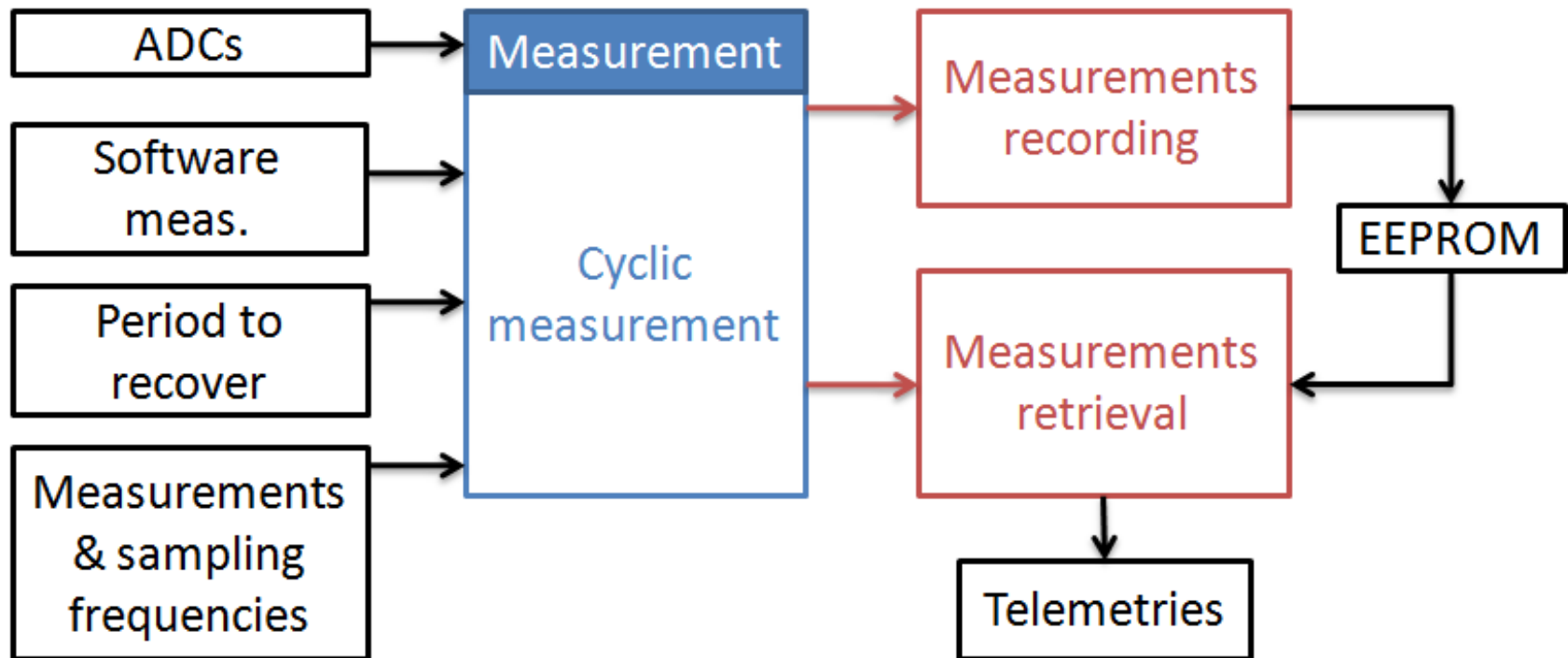
Software architecture

- Sequencer task:



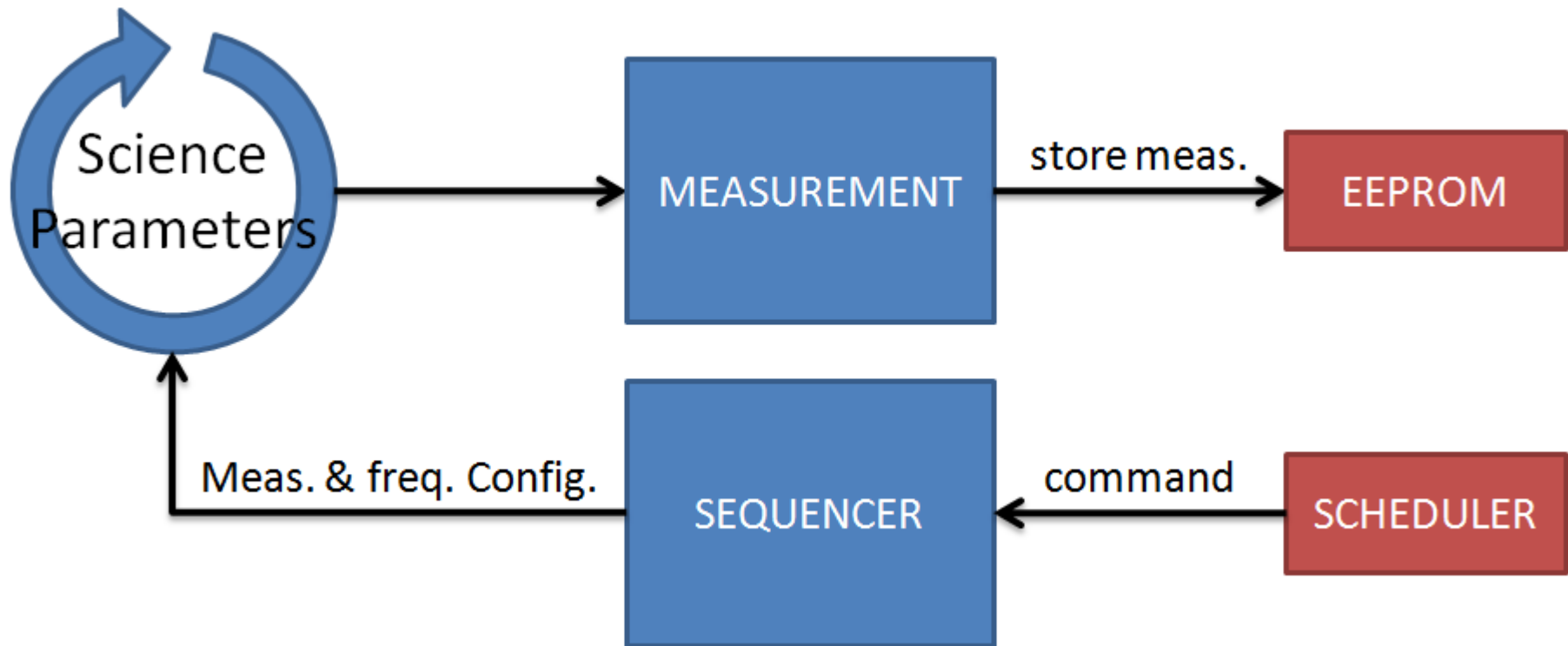
Software architecture

- Measurement task:

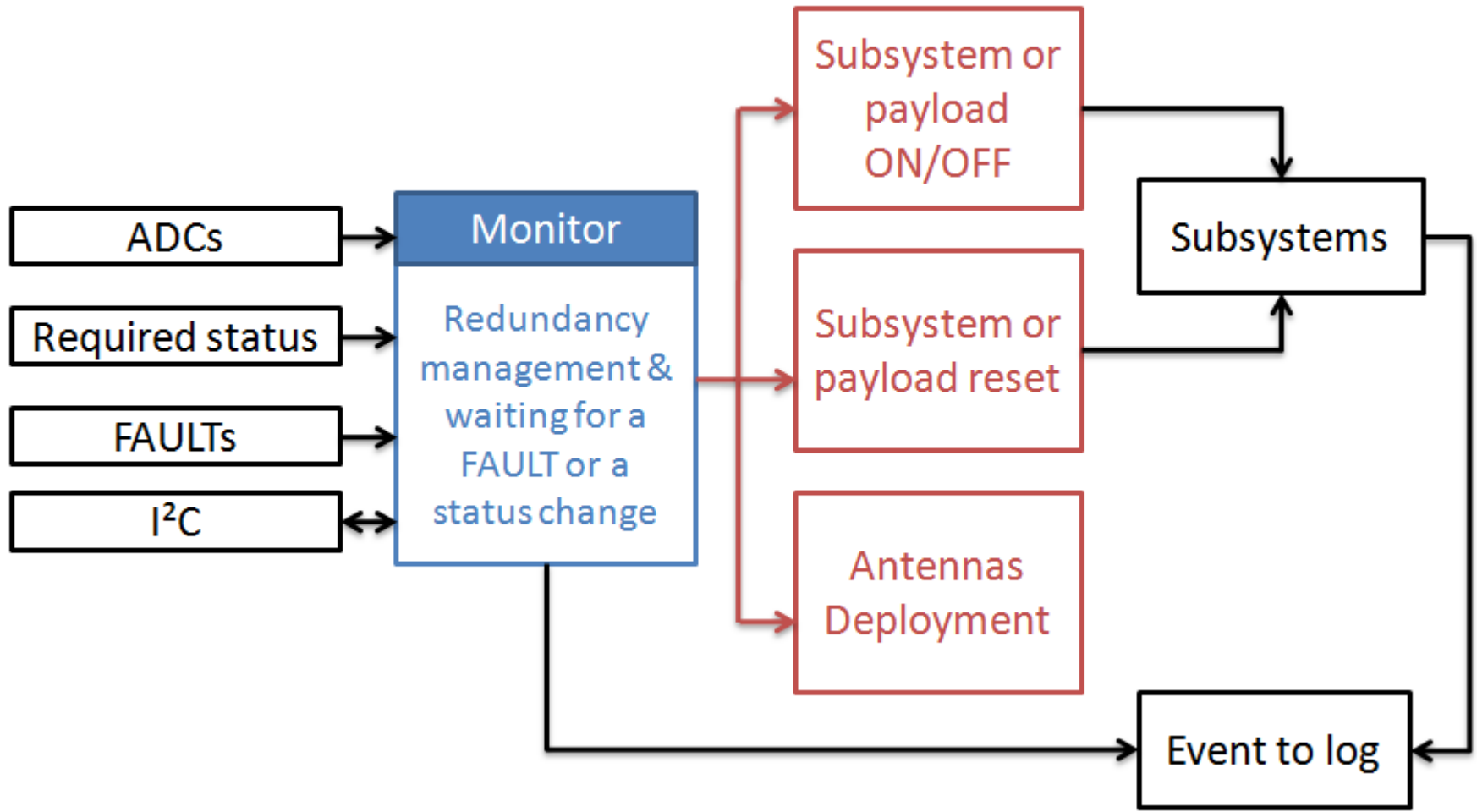


Software architecture

- Measurement task:

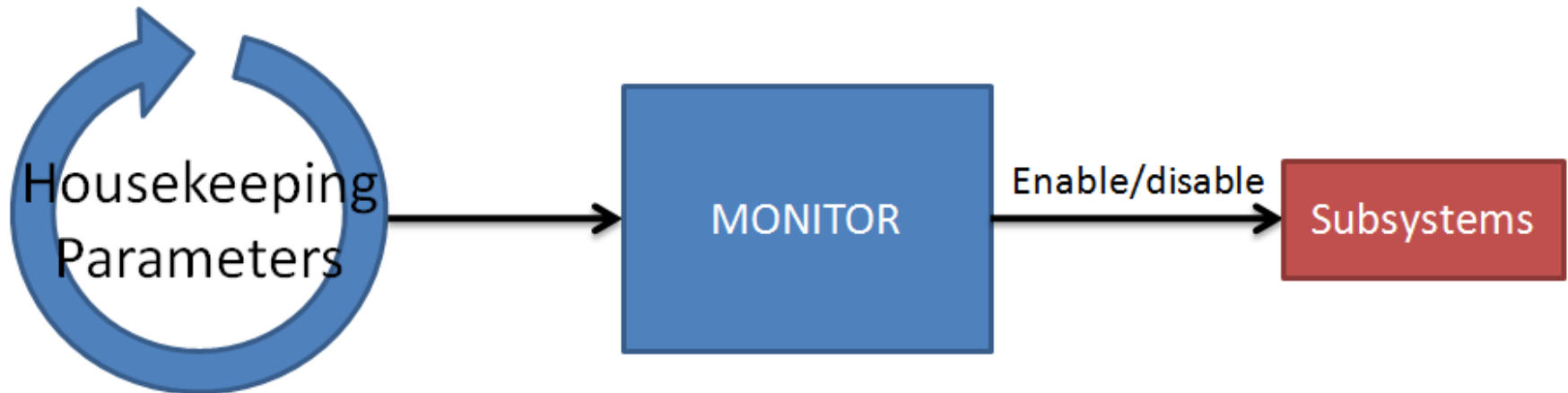


Software architecture



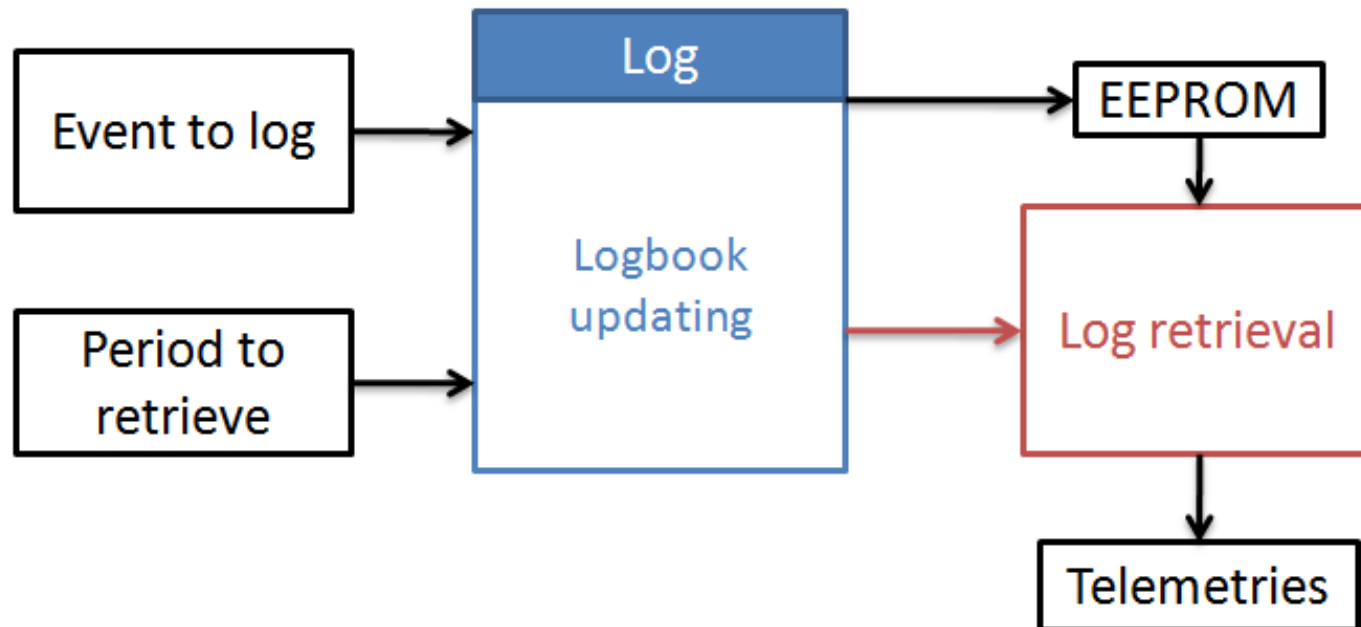
Software architecture

- Monitor task:



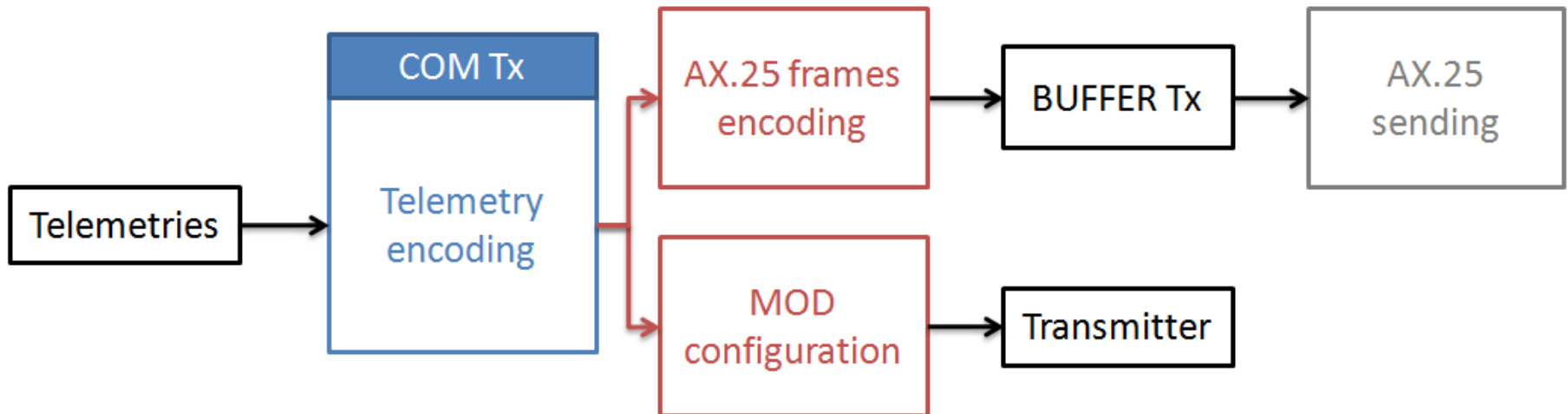
Software architecture

- Log task:



Software architecture

- COM Tx task:



Conclusion

- Two is better than one...
- Task distribution and priority definition have to be carefully chosen





Thank you for your attention !

