

## A Dozen Potential Problems to Check in Real-Time Embedded Systems

1. Mathematical operations, especially fixed point (scaled integers)
2. How are expected errors handled?
3. Does the Risk Analysis or FMEA identify other potential errors, which aren't handled?
4. Hardware Interfaces
  - Initialization
  - Noise on sensor (and other) inputs
  - Power up and power down behavior
  - Power usage (sleep) modes
  - Watchdog timer
  - ADC and DAC turn-on delays
  - EEPROM interface
5. Resource Usage (RAM, ROM, and EEPROM must also be adequately sized)
  - Adequate stack for worst case
  - Intermediate data
  - Data shared between Interrupt Service Routines and application
  - Data shared between tasks of different priorities
6. Any possibility of deadlock
7. Schedulability of all tasks
8. Maximum task response times
9. Other task timing constraints (jitter, end-to-end requirements)
10. Non-deterministic structures
11. Task precedence constraints
12. Uncontrolled priority inversion