Design Method for highly available Embedded Systems

Motivation
Wind energy has shown the fast rate of growth in past few years. Offshore wind turbines have many advantages: reduced environmental impact, higher capacity factor etc... These complex systems need to be highly available to reduce the additional maintenance costs.

Modeling of wind turbines in Simulink/Matlab
A wind turbine and its controller will be modeled in Simulink/Matlab. The model will be used to simulate the normal operation of the wind turbine as well as the faults, which can occur in reality such as sensor faults, actuator faults, system faults or controller system faults.

Fault-tolerant embedded System
The traditional design process has to be changed in order to integrate the safety analysis. The system must satisfy real-time requirements while it still achieves specified requirements in the presence both of hardware and software faults.

Goals:
- Design method of software for high availability system (wind turbine)
- Software tools and basic architecture for the design process
- Reuse of existing code
- First prototype for evaluation

Bachelor / Master Thesis available:
www6.in.tum.de/Main/ResearchWind