

Critical Systems Engineering 2001

Week: 9 and 10

Course topic: Human and Social Factors in Critical Systems Design

Objective: To discuss how human and social factors influence the dependability of critical systems and to introduce a discussion of ethical issues for software engineers.

Essential reading:

Background reading: Report of the failure of the London Ambulance System (available for downloading)

Web resources: <http://info.comp.lancs.ac.uk/year3/notes/options/365/index.htm>

Self-test:

1. Explain why 'human error' is a problematic term.
2. Describe the 'human errors' that may occur at different stages of the system development process.
3. What is the distinction between skill-based and rule-based tasks?
4. Give 3 examples of different types of human error that may occur.
5. Why is recovery from knowledge-based errors difficult?
6. What social factors may influence the dependability of a system that is being developed or used.
7. Explain why good leadership is importance for good group performance.
8. Give 4 reasons why human cognitive capabilities must be considered in user interface design for dependable systems
9. Explain why the user interface for critical systems must be designed to cope with failure situations.
10. What is a computer-aided despatch system?
11. List 3 procurement problems that arose in the LAS CAD system.
12. What system problems arose with the LAS system?
13. Briefly describe 4 areas of professional responsibility.
14. Why does unethical behaviour by an employer pose ethical challenges for engineers?
15. Under what circumstances might it be ethical to release a safety-critical system that has not been properly tested.