

Executive summary

1. The systems approach to organisational accidents seeks to identify all sources of error contributing to the eventual adverse outcome. A distinction is made between the active failures which are the immediate precursors of the event (and which are the traditional focus of accident investigations) and latent failures, which involve systemic weaknesses that lay dormant within the system until exposed by sharp-end failures.
2. We assessed the feasibility of applying the systems approach to the investigation of road traffic accidents.
3. A model of road traffic accident causation (SMoRTA) was developed, from which a checklist of the information required to carry out a systems analysis of road traffic accidents (CLoRSS) was generated. Two existing European accident investigation databases were identified, and their contents were assessed against the CLoRSS checklist.
4. Naturally, in both cases the nature and extent of the data collected was determined by the original remit of the researchers, which was not to collect data to support a systems analysis. Thus, while both databases include a lot of information, it was concluded that neither was sufficiently comprehensive to support analysis using the systems approach.
5. The UK DTLR's On The Spot (OTS) database, maintained by the TRL and Loughborough University, offered the most promise, and it is possible that their data collection could be supplemented to allow such an analysis. **We recommend** this as a useful way of developing this work, depending on successful negotiations with the DTLR and TRL to extend the data collected.
6. One clear gap in both databases is in terms of detailed human factors information. It would be very useful to know the types of human failure that occur in the genesis of an accident, particularly whether they are mostly mistakes or intentional risk-taking. The Dept. of Psychology has a great deal of expertise in that area, but the focus has always been on the driver. **We recommend** a study looking further back in the trajectory of an accident, searching for latent failures and classifying them as errors or violations.
7. On the roads, in contrast to high reliability organisations, there are no mechanisms for investigating near misses, and thus few opportunities for 'organisational learning'. **We recommend** the funding of a study examining the feasibility of effectively collecting near miss data on the roads.
8. Comparison of the data available, and the data that would be necessary to support the systems approach, showed that the areas with a lack of data are those for which no-one is really responsible. No one body in Europe, or indeed on a worldwide basis, has overall responsibility for road safety. This contrasts with the co-ordinated

approach to safety found in most high reliability organisations. This lack of overall responsibility makes the detection of latent failures and the co-ordination and maintenance of defences problematic.

9. Transport, i.e. keeping the system going, is the clear priority in any road system, and safety is a secondary consideration. This arises in part because it is difficult to conceive of the road system as an 'organisation' with an overarching vision of the requirements of all the different types of 'managers' and 'employees' involved (individual road users, companies, manufacturers, local authorities, emergency services, government).
10. In principal, the best opportunity to develop a co-ordinated approach to road safety, one that would be amenable to a systems approach, could be found in developing countries where efforts to improve road safety beyond the most basic level are just beginning. The FIA Foundation/WHO programme on Traffic Injury Prevention in Low and Middle Income Countries appears to offer that opportunity, and we recommend that the possibility of extending this work in that direction is considered.
11. The development of in-car technology systems will require careful monitoring to avoid the introduction of latent failures into the system. It is likely that new technology will alter driving behaviour in ways that are not yet predictable. At the moment it is unclear what body/authority will have responsibility for that monitoring.