DS 2009: revision

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What makes things special?

- normal software failure
- ⇒ errant behaviour not accommodated by other parts of the system
- ⇒ a cascade of the failure that is spectacular

Fundamental characteristics

1. concurrent execution of components
2. independent failure modes
3. transmission delay
4. no global time

Implications:

2, 3   can't know why there's no reply—node/comms. failure and/or node/comms. congestion

4   can't use locally generated timestamps for ordering distributed events

1, 3   inconsistent views of state/data when it's distributed

1   can't wait for quiescence to resolve inconsistencies

Guidelines for design

- don't depend on tine—force causality
- don't expect the other end to be there
- minimise coupling and interactions
- use aggressive caching, for reliability as well as for performance
- simpler is better