Hyper-Optimisation and the Fast Crash

When systems act faster than anyone can watch, slack is what is left.

Efficiency removes slack. Slack absorbs shocks.

The second reviewer, the slower setting, the person who must sign. Each looks like waste until the case nobody planned for.

The cost arrives once in several years. The saving arrives every quarter.

20 min

to sell 75,000 E-Mini contracts, about $4.1 billion

The same seller's earlier programme took more than 5 hours. The algorithm targeted 9% of volume "without regard to price or time". SEC and CFTC staff report, 2010.

49%

of volume in 14 seconds, firms trading among themselves

About 27,000 contracts changed hands for a net of about 200. Volume rose, and nobody was taking the risk. SEC and CFTC staff report, 2010.

$460M

lost by Knight Capital in about 45 minutes

4 million executions in 154 stocks, 397 million shares. SEC order, October 2013.

One server of eight. No second reviewer.

- Old Power Peg code still on server eight
- No written procedure for a second check
- No control comparing orders out with orders in

Tight coupling turns small faults into large ones.

Perrow's idea from *Normal Accidents* (1984): many interacting parts and little time between cause and effect.

A fast fault in a slow system is a bug. In a coupled one it is an event.

Agents that respond the same way at once.

"If AI agents respond similarly to the same prompts or triggers, they could amplify volatility in stress."

Sarah Breeden, Bank of England, June 2026. A forecast, not yet a documented case.

Five places to keep slack.

- A pace limit
- A second reviewer on change
- Independent reconciliation
- A stop control with a named owner
- A manual mode that still works

Name an owner for each piece of slack, and test the stop control while nothing is wrong.



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