

# Cognitive Principles, Cognitive Power

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## Emergency Response Teams

An emergency planning director within a nuclear power facility was concerned that his response team was not performing well during certification exercises. In particular, it seemed that everyone was overloaded.

Senior management expressed the view that it was not possible to increase staffing because space was already limited. What was needed was labour-saving technology to ease the workload.

A cognitive design group observed an exercise in progress and, following the exercise, interviewed a number of the staff. They identified a high number of hand-offs and a number of information bottlenecks. The flow of information to key decision-makers was inefficient. A number of the staff had a poor appreciation of their own roles, of who made key decisions, and how information was supposed to flow through the team.

The cognitive design group made a number of recommendations. They recommended reorganising the room layout to put people who interacted with each other near each other, they recommended that team leaders clarify team member roles and explicitly identify those who would make the key decisions, and they recommended the use of after-action reviews.

One key recommendation was to consolidate staff positions, which resulted in a substantial reduction in staff numbers. So, the workload problem was resolved not by adding staff or inserting special technologies but by reallocating the work into more efficient work packages.



Not one of the recommendations involved the introduction of new technology.

All recommendations were implemented. The next exercise ran much more smoothly. There was far less noise and confusion. Staff members asked fewer questions because their situation awareness had improved. Key decision-makers were able to expand their time horizons and found themselves thinking ahead instead of reacting to problems. Paradoxically, work load decreased dramatically despite the reduction in staff.

Source: Klinger, D. W., & Klein, G. (1999). Emergency response organizations: An accident waiting to happen. *Ergonomics in Design*, 7(3), 20-25.

