

# MISQ Archivist

## High Reliability in Digital Organizing: Mindfulness, the Frame Problem, and Digital Operations

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### Abstract

Organizations facing high risks and operating in purely digital domains, such as computer security and many financial services, must meet two, contradictory goals: they need to identify digital threats at scale and speed while also avoiding errors that result from automated processing. Research on high-reliability organizations has identified multiple challenges in reaching these goals simultaneously, because automation often renders organizations' operations "mindless" and unable to cope gracefully with changing, complex situations characteristic of high-risk domains. In digital operations, a special challenge arises from the "frame problem" connected with the inability of algorithms to adapt to environments not identified within their developers' initial cognitive frames. An exploratory, theory-generating case study was conducted within a computer security company (F-Secure) to examine how organizations acting in digital domains may achieve high reliability by mitigating the frame problem. This article examines digital organizing of the epistemic and pragmatic features of operations, along with arrangements of these that respond to the frame problem. Collective mindfulness is identified as emerging in such a sociotechnical setting via a carefully layered, systemic constellation of (human) mindful and (digital) mindless operations while the organization's core operations remain digital and algorithmic. The findings point to heretofore unexplored reliability challenges associated with digital organizing, alongside several relevant ways to overcome/mitigate them.

**Keywords:** High-reliability organization (HRO), digital operations, digital HRO, mindfulness, malware protection, frame problem