BUILDING THE PUBLIC VALUE OF FREE/OPEN SOFTWARE: DISCOURSES OF RELIABILITY

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From Mars Rovers to electric power grid controllers to online voting schemes, "reliability" is a widely-held virtue for software-intensive systems: a system should be dependable and behave as designed. There is intense debate about the social costs and benefits of reliability and about approriate means of achieving it. One increasingly popular discourse is organized around free/open source software (F/OSS).

For many partisans of F/OSS the best path to reliable, secure software technology is maintaining the transparency and openness of software artifacts and their development processes. In part, F/OSS communities construct the public value of open software and open sharing processes by connecting them to reliability. Many F/OSS projects have developed tools, methods, processes, and culture to sustain this openness---and thus reliability---concretely. These range from 'freedom-maintaining' software licenses (GPL) to open code repositories (CVS) and bug-reporting systems (Bugzilla), to norms of interaction and collaboration among developers. In this paper we analyze, empirically and critically, the putative connection between openness, reliability and public value in F/OSS communities. Specifically, we examine:

1. How discourses of public value for open processes and artifacts are based on socio-logics of reliability assurance, what arguments are used, and how these arguments are structured with respect to actual technical practices.

2. How the complexity of distributed software artifacts, information representations, and collective processes conditions and provides real limits to idealized practices for understanding and correcting reliability failures.

3. How F/OSS communities resolve discrepancies between modes of representation embodied in formal tools and normative processes, on the one hand, and actual representational and sense-making practices, on the other.

The philosophies, practices, and rhetorics emerging from F/OSS communities are already extending to fields far beyond software---for instance to artistic design, publishing, knowledge organization, and commerce. Better understanding the socio-logics and public discourses of F/OSS will improve the realism of analytic claims about software, and, by extension, our understanding of "reliability" and claims about it in many other arenas.