Low Clearance Ahead: Can Predictable IT Crashes Be Avoided?

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Just how many warnings are needed to prevent an accident? Apparently for many driving trucks and RVs under the Norfolk Southern–Gregson Street Overpass in Durham, North Carolina, multiple low-clearance signs, an LED warning sign, and flashing lights aren’t enough. Since two, the one-foot, eight-inch bridge—nicknamed the “Can Opener” for the numerous vehicle tops it has sheared off—has been the site of more than one thousand height-related accidents. Drivers who have slammed into the bridge routinely claim they never saw the warnings.

Over the past several years, a steady stream of IT projects, especially in government, have similarly ignored multiple warnings not to launch and have ended up crashing into their own analogous can openers. In some cases, like the Canadian government’s new C$309.5 million Phoenix payroll system that went live in February 2016, the costs of repairing the resulting wreckage are exceeding the costs of development. Phoenix has for well over a year managed to botch the payments of more than 150,000 Canadian government workers, or about half. As of the end of July 2017, there was still a backlog of some 228,000 improper payments needing to be sorted out.

Eliminating the backlog will take some time, since nearly as many new cases of improper payments are occurring as are being cleared up.

Canadian Prime Minister Justin Trudeau belatedly admitted that his government “didn’t pay enough attention to the challenges and the warning signs on the transition we were overseeing.” After originally promising that the payroll system would be fixed by October 2016, the government is now expecting—or perhaps hoping—that Phoenix will rise from the ashes sometime in 2019.

The Phoenix fiasco is by no means unique. For instance, who can forget the disastrous rollout of HealthCare.gov,
the US government’s health insurance exchange website, in October 2013, despite 18 well-documented warnings over the previous two years that the site wasn’t ready.9

A perplexing question is why so many decision makers persist in launching an IT system even when (1) there are multiple warning signs that doing so is rash, and, (2) knowing that if the launch doesn’t go well, thousands of vulnerable lives are going to be adversely impacted. Unsurprisingly, there’s a kaleidoscope of programmatic, socioeconomic, and psychological reasons. Rare public insight into these causes can be found in a recent report by the auditor general of Ontario, Canada, Bonnie Lysyk, detailing the decisions by senior executives in the province’s Ministry of Community and Social Services to prematurely launch its Social Assistance Management System (SAMS).10 The report will make any true IT professional cringe.

A “PRETTY SEAMLESS ROLLOUT” TURNS UGLY
SAMS was launched 11 November 2014 without much fanfare, but within weeks became front-page news across Canada as major operational problems emerged. SAMS was a replacement for a case management system that had been in use since 2002 but was no longer fit for purpose.

The original plan was to roll out SAMS in March 2013, but the go-live date had to be postponed three times because of on-going functionality and reliability issues. Difficulties converting the existing case management system data into a format that SAMS could use were especially vexing. Having correct client-data conversion was obviously vital, as SAMS would be a “big bang” implementation—once it went live, the existing system would be shut off with no going back. The development problems encountered were reflected in escalating project costs, which rose from an initial C$202 million to C$242 million.

The final decision to launch SAMS was made in October 2014, with Ontario’s Community and Social Services Minister, Helena Jaczek, confidently telling a provincial legislative committee a week before the launch, “I feel fairly confident that the new system will have a pretty seamless rollout.”11 However, once SAMS went live, it quickly became clear that its seams were unraveling. The vast majority of the 11,000 SAMS caseworkers complained that it was much more stressful to use than the case management system it replaced.12 Malfunctions were so numerous that social services offices across Ontario lambasted SAMS, with some so frustrated that they even vainly called for it to be shut down until it was fixed.13

The ministry tried to downplay the difficulties, claiming that system bugs were being “eradicated quickly.”14 Yet, the technical problems continued to pile up well into 2015, forcing the ministry to commission an outside study focused on identifying ways to fix SAMS’s “transitional issues.”15 In October 2015, Jaczek, in releasing the completed transition plan, admitted that some C$52 million had been spent so far on addressing the various problems with SAMS since its launch the previous year.16 She insisted that only “small fixes” were now needed and that SAMS was “stable and doing the work it’s intended to do.” However, the report on SAMS released by Auditor General Lysyk in December 2015 was far less hopeful. It noted that as of 31 July 2015, nine months after SAMS went live, there were still 771 outstanding defects, with many more yet to be identified. For instance, some 11,500 calls to the SAMS help desk hadn’t been reviewed, and these calls typically identified where software defects were within the system. More troubling, the report noted, SAMS was fundamentally poorly designed, forcing caseworkers to spend more time struggling with the software than with helping clients. Operability would continue to be a sore point for both caseworkers and clients until the system’s design flaws were addressed, for which there was no plan in sight.

THE LAUNCH DECISION: RATIONALIZING AWAY THE RISKS
Ministry executives knew full well that their big-bang approach to rolling out SAMS was risky, the audit noted. To mitigate the risk, the project plan sensibly called for a thorough testing of SAMS prior to launch to ensure its functionality worked and the converted data was clean, as well as robust training of the caseworkers using the new system. The significant difficulties encountered after SAMS went live obviously showed that the risk mitigation plan failed.

Lysyk understandably wanted to know why the ministry’s Executive Committee approved the SAMS launch.
The committee offered four reasons. First, the next available date to do so with minimal disruption was spring 2015, but this was also when contract negotiations were going to be held with the Ontario Public Service Employees Union, which represented many SAMS caseworkers. The rollout, therefore, would probably have to be delayed until those negotiations were completed, which might be summer. Second, the caseworkers were trained on SAMS in spring 2014, and any further delay would likely cause them to forget their training. Third, there was concern that after three aborted launches, any further holdups would make the project—which was costing C$20 million per quarter—vulnerable to being canceled outright and begun anew. Fourth, a risk assessment conducted a few weeks prior to launch recommended going live even with some known deficiencies.

Lylysk found this reasoning “overly optimistic,” which is polite government-speak for delusional. Her conclusion is easy to understand given what the audit revealed about the astonishing true state of SAMS at its rollout.

As part of the pre-launch risk assessment, the SAMS project staff had developed a readiness-to-go-live scorecard consisting of 18 criteria against which to measure the system’s current performance. The audit found that the committee decided to approve the launch even though SAMS met only one of those criteria. One criterion, for example, was for 100 percent of the test scenarios to be executed using converted data, yet none of these tests were actually performed.

In addition, the audit found that the committee knew 418 serious defects had been identified in SAMS. Workarounds existed for 217 of them but were unknown to the caseworkers, who had been trained on an incomplete version of the system. The committee regarded the other 201 existing defects, for which there no workarounds, as acceptable.

Furthermore, the audit discovered that the SAMS project team had failed to share important information with the committee prior to launch—namely, the discovery of another 319 serious defects—“because they had started developing solutions or fixes for them.” The auditors were perplexed why this somehow made the defects exempt from disclosure. The project team also suggested it had performed more thorough SAMS testing using converted data, and uncovered far fewer problems, than it actually had. Nevertheless, the audit concluded, that didn’t absolve the committee from its highly dubious decision to go forward with SAMS.

**COULD THE BUNGLED SAMS LAUNCH HAVE BEEN PREVENTED?**

In response to Lylysk’s report, the ministry promised that on future IT projects it would “ensure that all information that is provided to decision makers will include a complete and accurate status of system readiness.”

But would more information truly have prevented the SAMS launch? The odds are against it, given the programmatic, socioeconomic, and psychological issues involved.

After all, only three options were available to the committee when deciding whether to roll out SAMS that November: cancel, delay further, or launch. Canceling the project was clearly a nonstarter—the ministry had already committed too much time, financial resources, and political capital in SAMS to give up now. A fourth postponement also wasn’t financially or politically palatable, as that would’ve meant explaining the reasons and in turn exposing the system’s poor state of readiness to public scrutiny, no doubt leading to calls by the political opposition, media, and other critics for its cancellation. Delaying further was out of the question, therefore, unless there were ironclad technical reasons for not launching.

In fact, there was no defined technical “line in the sand” preventing SAMS from launching. The audit report states, for instance, that the “go-live criteria did not specify [the] overall acceptable number of serious defects.” Instead, the Executive Committee was obviously willing to rationalize away the high number of defects and justify multiple launch criteria shortfalls without digging fully into what those shortfalls meant in terms of operational consequences.

Moreover, the programmatic environment wasn’t conducive to actively managing risk. The audit took SAMS project managers to task for inadequately overseeing contractors, as well as taking positive internal reports at face value while resisting more circumspect views. For instance, an independent audit of the system’s readiness was proposed a few months before the November go-live date, but project managers said it was unnecessary given the expertise of the contractors preparing for launch—expertise that had previously been found wanting.

Socioeconomic factors also influenced the committee’s decision to launch prematurely, such as not wanting to pay for both SAMS development and continued operation of the current case management system, which was devouring the C$5 million in promised annual savings from implementing SAMS. In addition, the Ontario government’s reputation was already severely tarnished by numerous other recent embarrassing IT project failures, like the C$1 billion eHeath fiasco, and it could ill afford yet another one.

The audit report likewise depicts both SAMS project managers and the Executive Committee succumbing to several classic psychological decision traps including escalation of commitment, the sunk-cost fallacy, and confirmation bias. Two in particular predominated.

The first decision trap was plan-continuation bias, also known as “get-there-itis,” a fixation on accomplishing an objective regardless of warning signs to the contrary. Just like drivers surprised after slamming...
into Durham’s “Can Opener Bridge,” SAMS project teams and ministry officials didn’t seem to register multiple red flags that SAMS was in trouble until it was too late.21

The second decision trap was what NASA Inspector General Paul Martin has dubbed “Hubble psychology”: the belief by managers that even if a project isn’t meeting its cost, schedule, or technical objectives, subsequent success will erase any memory of these earlier problems.22 This happened with the Hubble space telescope, which was late and over budget and required a costly post-launch repair mission but is considered a spectacular success today. In SAMS’s case, Hubble psychology was magnified by its being a “burn the ships” project. Once the system was launched, there was no going back: its shortfalls would have to be fixed, regardless of cost. As with Hubble, who would remember SAMS’s deficiencies, especially given that few remembered those of its predecessor? In such an environment, it’s not surprising that the SAMS project team withheld critical launch information from the Executive Committee. And given that no one has ever been disciplined for unprofessional conduct, signaling the ministry’s tacit approval that the ends justify the means, it’ll likely recur in future IT projects.23

ARE THERE ANY REALISTIC SOLUTIONS?
The SAMS audit report, with minor edits, could easily describe most botched IT system launches, as well as highlight the same programmatic, socioeconomic, and psychological justifications. Consider, for instance, recent audit reports on the Los Angeles Unified School District’s My Integrated Student Information System (MiSIS),24 National Grid USA’s New York gas companies’ back-office support system,25 and the Australian Queensland Health payroll system,26 all of which ended up costing significantly more to fix than to develop despite multiple warnings that they weren’t ready to go live. Although a full audit of the Phoenix payroll system has yet to be published, it would be highly surprising if the same factors weren’t at play, including not learning from prior mistakes launching SAMS.27

In the commercial sector, the marketplace rapidly disciplines companies that launch their IT systems prematurely, as British utility Npower,28 United Airlines,29 and Avon in Canada,30 among many other examples, have found out to their cost. The same can’t be said of government IT systems. Those dependent on such systems must suffer the consequences of IT failure without recourse, unlike, say, airline customers who can choose another carrier. The SAMS audit report unambiguously documents that the costs of the system’s poor performance on those who would be impacted didn’t factor into the Executive Committee’s launch decision.

In writing about Hubble psychology at NASA, Inspector General Martin pointed out that warnings of trouble with a project are routinely ignored without much consequence to those managing it. He asserts that government agencies must find a way “to reward managers for good stewardship of [project] resources as enthusiastically as [they do] for successful technological achievements and to hold managers appropriately accountable for mismanagement of resources.”22

Martin’s recommendation is sensible but in practice very difficult to implement in government. NASA has yet to find a way to reward managers for not turning a blind eye to project risks, and decade-plus-long efforts by the UK government against overoptimism in IT projects haven’t been encouraging.31

However, holding managers and executives accountable for mismanage-

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ment of IT project resources could be easier and ultimately more effective. For instance, why not make go/no-go criteria public, along with their ratings and who rated them, several weeks before a planned launch? It’s hard to believe the Executive Committee would have approved the SAMS rollout if the project managers had had to defend in a public hearing the absence of pre-launch test scenarios. As distressing audit report after audit report has shown, keeping such criteria and their status hidden from view until an ex post facto accounting isn’t an effective deterrent to poor decision making.

Government IT projects also must ditch green-yellow-red reports that measure progress against an imaginary plan for red-yellow-green reports that measure progress against an uncertain reality.32 Project assessments should convey how well problems are being solved instead of encouraging deceptive assurance that the project is conforming to a plan everyone knows is and always has been flawed.

Finally, all costs, not just financial ones, of a botched launch must be accounted for and published. Proven metrics, such as quality-adjusted life years (QALYs), could be used to assess the potential impacts of an IT system rollout gone bad on those most affected.33 Such impacts go beyond “inconvenient,” a term used by Minister Jazek when SAMS was badly floundering.34

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