

The Staggering Impact of IT Systems Gone Wrong

Explore the many ways in which IT failures have squandered money, wasted time, and generally disrupted people's lives

The world has relied on large-scale IT systems for decades, but we still haven't learned how to prevent and avoid major glitches and failures. Here at *IEEE Spectrum*, we've been writing about such failures for 10 years (first in the oft-cited article "[Why Software Fails](http://spectrum.ieee.org/computing/software/why-software-fails)" (<http://spectrum.ieee.org/computing/software/why-software-fails>), and later in the [Risk Factor](http://spectrum.ieee.org/blog/riskfactor) blog (<http://spectrum.ieee.org/blog/riskfactor>)).

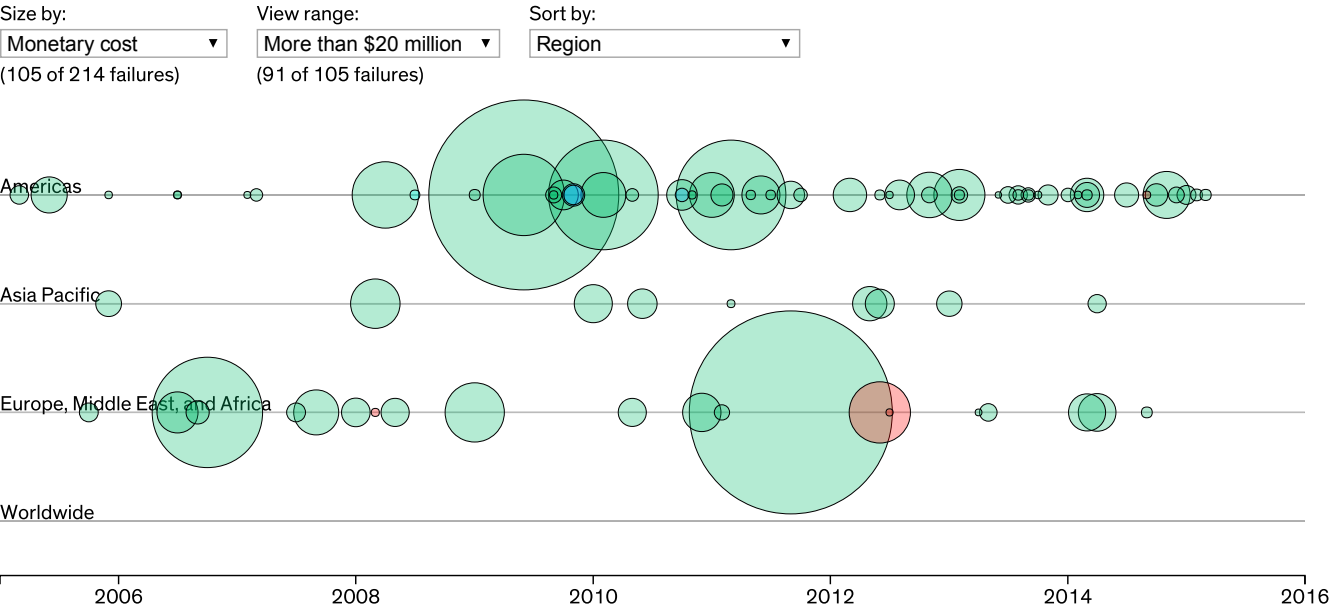
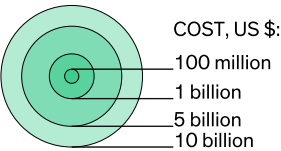
Now we're taking a step back to look at the bigger picture. We've scoured our archives to create a rogues' gallery of the most notable, interesting, and emblematic failures from the past decade. We've included a diverse assortment of failures, which means there's no single metric for measuring their impact. Some, like failed IT system upgrades or modernization projects, have straightforward financial consequences. Others, like operational outages and disruptions, are better measured by the time wasted and the number of people affected.

Keep in mind that the failures below are just the tip of the iceberg. They're just a tiny fraction of the hundreds of incidents we've covered in *Risk Factor*, and an even smaller fraction of the global total. A complete list would be several orders of magnitude larger.

To begin exploring the timeline, select one of the circles below.

You can also:

- Change the “Size by” menu to reveal failures with other types of impacts.
- Change the “View range” to reveal failures currently too large or small to display.
- Use the “Sort by” menu to change how the failures are categorized.



When we looked back over the decade, several themes became impossible to ignore:

- Modernizing IT Systems Is Difficult and Expensive
- Digitizing Health Records Is Difficult and Expensive
- Banks Rely on Unreliable Technology
- Even Brief Stock-Exchange Glitches Are Costly
- Even Brief Air-Travel Glitches Are Costly

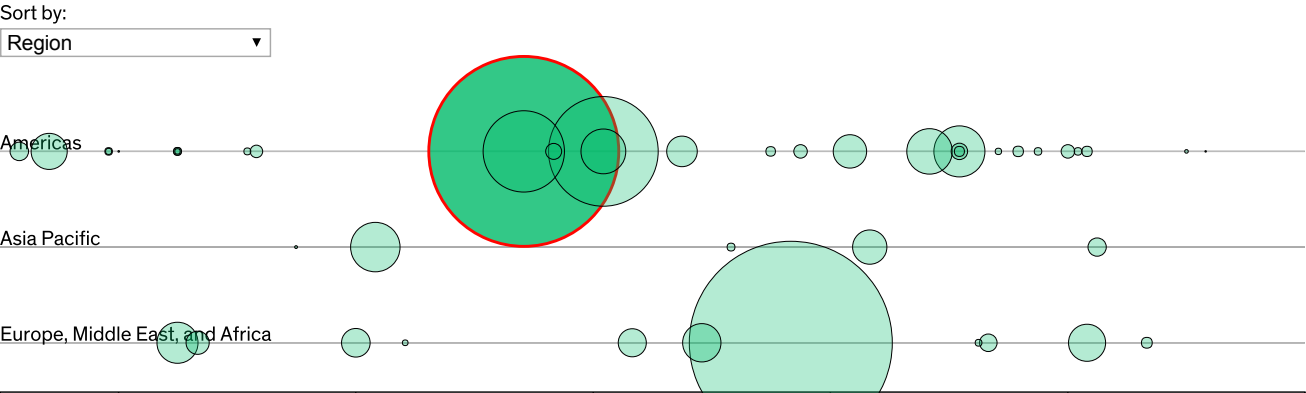
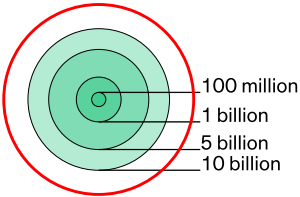
MODERNIZING IT SYSTEMS IS DIFFICULT AND EXPENSIVE

June 2009

Impact: US \$18 billion

\$200 Billion U.S. Army Future Combat System Program Terminated

\$18 billion was spent before cancellation. [Read More \(http://spectrum.ieee.org/riskfactor/computing/it/us-army-future-combat-systems-program-formally-terminated\)](http://spectrum.ieee.org/riskfactor/computing/it/us-army-future-combat-systems-program-formally-terminated)



2006

2008

2010

2012

2014

2016

Governments in many parts of the world have embarked on IT modernization efforts, either replacing a legacy IT system or combining a large number of systems into one. In the United States, several states have tried and failed to improve their various social welfare and unemployment systems. Similarly, the U.S. Department of Defense has been trying to modernize its payroll and logistical systems, which has led to billions of dollars in project cancellations and cost overruns. The United Kingdom has also seen a number of costly governmental IT infrastructure modernization projects go off the rails as well, like the National Identity Register project, which was scrapped in 2010 at a cost of £257 million (about US \$394 million).

DIGITIZING HEALTH RECORDS IS DIFFICULT AND EXPENSIVE

February 2013

Impact: **US \$1.3 billion**

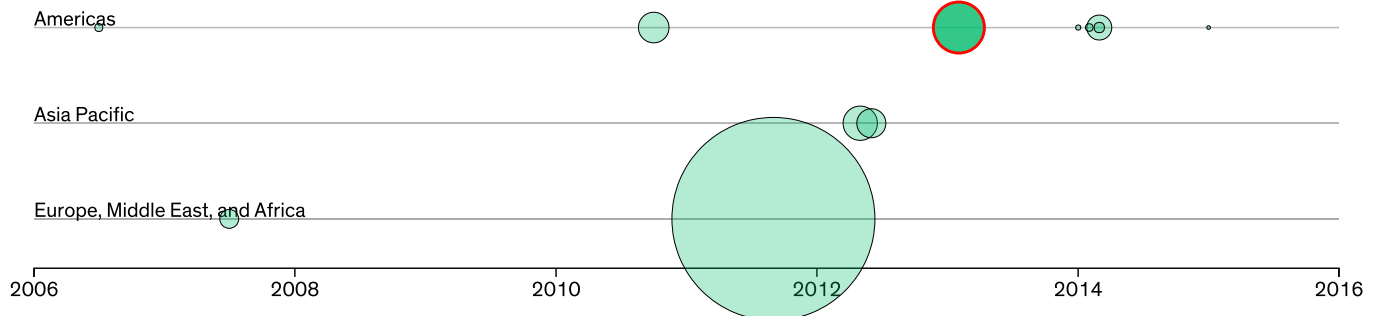
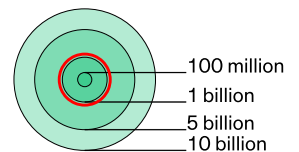
DOD Cancels Interoperable Electronic Health Record System Project

\$1.3 billion was spent before cancellation.

Sources: [1] (<http://www.defense.gov/transcripts/transcript.aspx?transcriptid=5187>) [2] (<http://www.ihealthbeat.org/articles/2013/8/29/va-pentagon-spent-at-least-13b-on-canceled-joint-ehr-system?view=print>)

Sort by:

Region ▼



The governmental push for the increased use of health information technology has also led to a number of major IT project fiascos in Australia, the United Kingdom, and the United States. The U.K.'s attempt to create a national electronic health record system, for instance, was canceled in 2012 after more than £11 billion (about US \$17 billion) was spent, whereas the plan to combine the electronic health record systems of the U.S. Department of Defense and the Veterans Administration came to naught after spending \$1.3 billion. The Affordable Care Act of 2009 also led to some spectacular health IT project failures in Hawaii, Oregon, Maryland, and Massachusetts, not to mention major problems at the federal level.

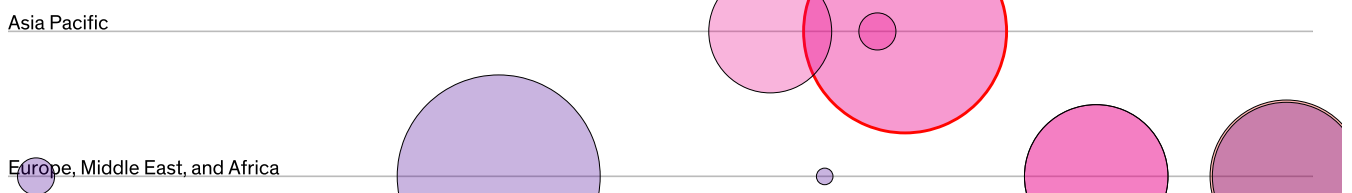
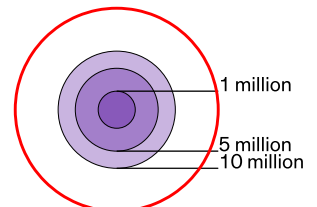
BANKS RELY ON UNRELIABLE TECHNOLOGY

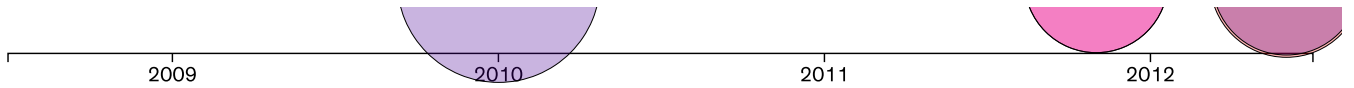
April 2011

Impacts: 10 days, 30 million people

Korea's NH Bank Computers Crash

30 million account holders were affected for days. [Read More \(http://spectrum.ieee.org/riskfactor/computing/it/south-korean-banks-weeklong-system-failure-affecting-30-million-an-inside-job\)](http://spectrum.ieee.org/riskfactor/computing/it/south-korean-banks-weeklong-system-failure-affecting-30-million-an-inside-job)





Banks in both Australia and the United Kingdom have repeatedly experienced major IT outages due to underinvestment in their IT infrastructures. For example, in 2010, 8 million customers of the National Australia Bank found they had no access to their accounts for days, while 6 million customers of the Royal Bank of Scotland Group in the U.K. and Ireland experienced the same problem in 2012. Some RBS Group customers had no access to their accounts for weeks.

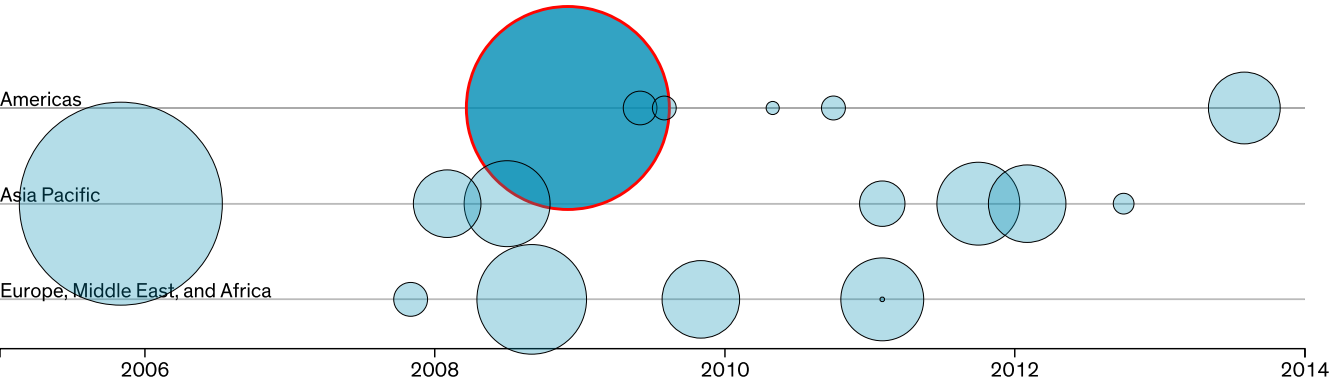
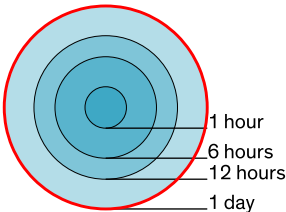
EVEN BRIEF STOCK-EXCHANGE GLITCHES ARE COSTLY

December 2008

Impact: **1 day**

Network Issue Closes Toronto Stock Exchange

The exchange is closed for a day by a network firmware issue. [Read More](#)
http://spectrum.ieee.org/riskfactor/computing/it/toronto_stock_exchange_resumes



Stock exchanges around the world—including Tokyo, Singapore, London, Mumbai, Toronto, Chicago, and New York—have seen their share of operational difficulties. The New York Stock Exchange experienced a “flash crash” in 2010 that saw the market drop almost 1,000 points and then rebound within minutes, while a rogue algorithm led the Knight Capital Group to lose US \$440 million in errant trades in about 45 minutes in 2012.

EVEN BRIEF AIR-TRAVEL GLITCHES ARE COSTLY

March 2008

Impacts: **US \$32 million, 10 days, 140,000 people**

New London Heathrow T5 Baggage System Melts Down

Six hundred thirty-six flights were canceled or delayed over the course a week and a half. Over 140,000 passengers and their bags were affected.

Sources: [1] (http://spectrum.ieee.org/riskfactor/computing/it/heathrow_terminal_5_a_bit_sham) [2] (<http://www.dailymail.co.uk/news/article-558913/Thousands-lost-Terminal-5-bags-burnt-owners-traced.html>) [3] (<http://www.parliament.uk/business/news/2008/11/heathrow-terminal-5/>) [4] (<http://www.cnn.com/id/23892979>)

