Technology Disaster Response and Recovery Planning

A LITA Guide

EDITED BY

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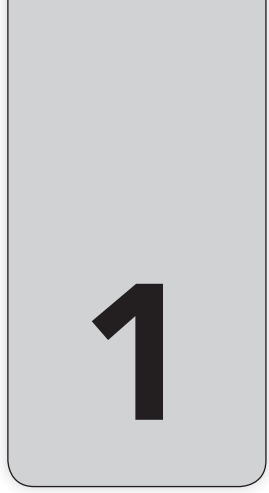

PART 1

Creating the Technology Disaster Response and Recovery Plan

Chapter One

What Could Go Wrong? Libraries, Technology, and Murphy's Law

Mary Mallery

Libraries depend more and more on technology to provide essential services. There are Internet and social media sites, electronic resources, and digital collections; our staff and public infrastructures of PCs, tablets, laptops, and peripherals; and of course the ubiquitous integrated library system (ILS). As technology becomes more essential to everyone's life, this variety of devices, data, and software will grow more complex, as will the many ways that disasters, both natural and manmade, can cause loss of services and resources. Yet most library disaster plans focus on response and recovery from collection and facilities disasters, such as fire and flood.

But how do you begin to draft a comprehensive plan? This LITA Guide will provide readers with a step-by-step, blow-by-blow process to create a Library Technology Disaster Response and Recovery Plan. It includes sample checklists and templates, tools and solutions for promoting collaborative services to enable digital library continuity, and case studies and lessons learned from successful efforts in recovering from library technology disasters.

This LITA Guide includes chapters from contributing authors who have experience and practical advice to share about various aspects of library technology disaster response and recovery planning. The topic will be of great interest to tech-savvy staff—systems librarians, electronic resources librarians, digital collections librarians, data management librarians, emerging technology librarians, and library administrators—as well to librarians who wish to transition into these new careers and to library students. The target audience is academic library staff,

with librarians and information professionals in other types of organizations as a secondary audience.

DEFINITION OF TERMS

Librarians were the first to create systematic means of indexing and retrieving information, and as such they have always been in the forefront of the use and development of information science technologies. Technology disaster planning has been and continues to be essential to our field. But which technology do we focus on for our plan, and what constitutes a technology disaster? Let's start out by defining our terms.

What Is Technology?

The word *technology* comes from the Greek *techne,* meaning *skill* or *art*, which includes a vast array of possibilities. For example, long ago, fire was a technology. All libraries use technology to do their work these days, and we depend on it. If we don't have a plan to respond and recover and continue our work in the event of technology failure, when the fire goes out, we will be left in the dark. When we talk about library technology, are we referring to the hardware, software, peripheral devices, or everything mechanical? What about the infrastructure, such as the electrical grid or the telecommunications network—the oxygen that makes the fire possible? Or what about the data—the fuel that makes the fire burn long or fizzle out? These days, when we talk about technology in the library, we talk about *systems,* because technology is not just one device or program but a complex integrated network of many technologies that depend on one another to work effectively.

What Is a Disaster?

The word *disaster* comes from the Latin for "ill-starred." In the old days, a disaster was considered to be the predetermined outcome of inevitable bad luck. These days, however, we believe in self-determination, and that planning will keep away bad luck. Or, as Cassius says to Brutus in Shakespeare's *Julius Caesar,* "The fault, dear Brutus, is not in our stars, but in ourselves." Today, we can plan to moderate the effects of disasters and create networks of experts and services that will help

us to respond efficiently and recover effectively, even if the disaster that strikes is not the one we feared.

There are many kinds and causes of disaster, both natural and manmade. There are large-scale natural disasters, such as the 2011 tsunami in Japan that caused the Fukushima disaster, and small failures of technology design, such as the O-ring failure that caused the Challenger explosion in 1986. Large or small, natural or manmade—in complex systems, all the dominoes will fall in a cascade because of one tipping point failure.

Disasters are not just physical phenomena; they affect the whole system. Therefore, a holistic approach and an understanding of the dependencies of modern life are essential to a good disaster plan. Both the environmental and emotional effects of a disaster must be taken into account in planning.

MURPHY'S LAW

When we talk about disasters, we usually think of fire, floods, or earthquakes, but technology disasters can have many more causes than these. The problem can be as simple as ants blocking up a circuit board or "bugs" in the system, but if it causes the system to fail, and we depend on that system, the results can be disastrous.

The story goes that what is known as Murphy's Law was first coined by an American aerospace engineer in 1949. The classic version of Murphy's Law is: "Whatever can go wrong will go wrong." Anyone who works with or depends on technology should keep this adage in mind. It also helps to acknowledge that you cannot anticipate all technology failures. You may never know what may cause the next outage, but you can try to be prepared to mitigate the circumstances so that it does not turn into a disaster.

KINDS OF TECHNOLOGY AND FAILURES

The Y2K bug was the first time that my library's systems department became aware of how much we depended on software and time-stamped databases to maintain our operations, from the integrated library system to the human resources payroll system to even the elevators in the building.

In the twenty-first century, library technology has expanded to include global networks, and as the scope of the technology becomes larger and more complex, the dependencies that our systems rely on for day-to-day operation become more at risk of single and multiple points of failure.

My library has a Collections Disaster Response Plan, which we update on a regular basis. Recently we had an unanticipated technology disaster when there was an air-conditioning outage in the university server room, which caused us to lose access to our digital collections. The consequences of this simple problem had a huge impact on user access to resources, which made us realize how much the library depends on technology to deliver services and host resources. These days, all libraries need a Technology Disaster Response and Recovery Plan in addition to a Collections Disaster Response Plan.

BACKGROUND LITERATURE

The literature on disaster planning for library print collections is well-established and continues to grow. When I searched for model technology disaster response and recovery plans, I found that there was a great deal of literature that focuses on library collections (e.g., Miriam Kahn's classic *Disaster Response and Planning for Libraries*[1] which was updated in 2012 to include more information about library technology systems, electronic resources, digital communications, and social media). However, I found very little library literature technology disaster response and recovery planning.

There are many more technology-focused resources in business literature, such as the American Management Association's *Disaster Recovery Handbook*.[2] Librarians could learn a great deal from business managers, but the library universe's dependence on technology—especially on cloud-based databases—makes the literature of information management systems even more relevant.

National organizations, such as the Heritage Preservation Trust, the Conservation Center for Art and Historic Artifacts (CCAHA), and the Northeast Document Conservation Center (NEDCC), offer workshops and online tools to assist libraries and cultural heritage communities with risk assessment and response and recovery planning for print collection disasters. For example, NEDCC received an Institute of Museum and Library Services (IMLS) grant to create the online tool dPlan, which is profiled in chapter 3. Most recently, the National Network of Libraries of

Medicine has begun the NN/LM Emergency Preparedness and Response Initiative, which provides free online workshops and templates for disaster risk assessment and emergency planning.

FIRST STEPS IN TECHNOLOGY DISASTER RESPONSE AND RECOVERY PLANNING

A one-step-at-a-time approach to disaster response and recovery is optimum. Miriam Kahn introduced the idea that disaster response entails four phases; these are good principles to keep in mind approaching any kind of disaster. They are:

- Phase 1: Respond to Notification
- Phase 2: Assess the Damage
- Phase 3: Begin Rescue and Recovery
- Phase 4: Recovery Process: Resumption of Services; Restoration of Cash Flow; Recovery of Materials[3]

In contrast, in technology and systems administration, Disaster Response and Recovery Plans are split into three parts: Mitigation, Continuity, and Recovery. The UCLA Social Science Data Archive Disaster Recovery Plan presents one of the best examples and offers this explanation of the three main sections:

> The first section, Mitigation, outlines activities the Data Archive will undertake to ensure emergency preparedness and to protect its assets. These activities include risk assessment, an inventory of assets and equipment, backup policies and procedures, standards, training, and the maintenance of the plan.
>
> The second section, Continuity, is concerned with the activities the Data Archive will undertake to ensure continued access to its products and services with minimal disruption in the event of an emergency. This section contains a list of important contacts, references, and relevant department, and campus documents that outline specific emergency procedures.
>
> The final section, Recovery, details the steps the Data Archive will undertake to restore full functionality after an emergency. This section

includes guidance on restoring and using key applications and technologies.[4]

Chapters 2 through 4 in Part 1 of this LITA Guide will help you work through these steps one at a time to build and maintain a Library Technology Disaster Response and Recovery Plan based on this three-part structure. Part 1's concluding chapter provides an in-depth look into future trends in cloud computing in library technology and maps out its role in disaster mitigation, response, and recovery planning.

You don't need a different plan for every technology your library uses, but you do need a comprehensive Technology Disaster Plan that:

1. provides an inventory of technology (hardware, software, and data) with a risk assessment for each
2. describes simple incremental prevention and restoration procedures for each risk
3. identifies training and communication procedures for the plan
4. schedules the iterative process of reviewing and updating the plan on a regular basis

Part 2 of this LITA Guide focuses on practical uses of library technology disaster planning, or what I like to call "Managing Techmageddon." Two experienced professionals provide detailed case studies of recent large-scale technology disasters and discuss how lessons learned have helped to improve technology disaster planning for libraries.

You never know when or how disaster might strike, but with a Technology Disaster Response and Recovery Plan that is integrated into your library's budget and strategic planning policies, your staff will know what procedures and accommodations are in place to weather the storm, and you can be confident that library services will be disrupted as little as possible as a result of any disaster that may come your way.

NOTES

1. Miriam B. Kahn, *Disaster Response and Planning for Libraries,* 3rd ed. (Chicago: ALA Editions, 2012).

2. Michael Wallace and Lawrence Webber, *The Disaster Recovery Handbook: A Step-by-Step Plan to Ensure Business Continuity and Protect Vital Operations, Facilities, and Assets* (New York: American Management Association, 2004).
3. Kahn, *Disaster Response.*
4. UCLA Social Science Data Archive Disaster Recovery Plan (August 2010), p. 4–5, www.sscnet.ucla.edu/issr/da/_images/Disaster.Recovery.Plan.docx.

RESOURCES

IFLA Preservation Section Disaster. Preservation and Conservation. Useful Resources. www.ifla.org/preservation-and-conservation/useful-resources.

Kahn, Miriam B. *Disaster Response and Planning for Libraries,* 3rd ed. Chicago: ALA Editions, 2012.

Library of Congress: Emergency Preparedness, Response, and Recovery website. www.loc.gov/preserv/emergprep.

National Network of Libraries of Medicine (NN/LM) Library Disaster Readiness Test. http://nnlm.gov/ep/2014/08/05/how-ready-is-your-library.

New Jersey State Library Disaster Planning Resources. www.njstatelib.org/services_for_libraries/resources/disaster_planning.

Northeast Document Conservation Center (NEDCC) Emergency Response Framework for the Cultural Community COSTEP). www.nedcc.org/free-resources/costep. The COSTEP Framework is a planning tool designed to bring together cultural institutions with emergency management agencies and first responders. It provides a blueprint for preparing for area-wide disasters and building alliances with federal, state, and local emergency management agencies.

Tanner, Simon. "Do You Understand Your Digital Ecosystem?" *When the Data Hits the* Fan (blog). September 26, 2014. http://simon-tanner.blogspot.co.uk/2014/09/do-you-understand-your-digital-ecosystem.html.

UCLA Social Science Data Archive Disaster Recovery Plan. August 2010. www.sscnet.ucla.edu/issr/da/_images/Disaster.Recovery.Plan.docx.

Wallace, Michael, and Lawrence Webber. *The Disaster Recovery Handbook: A Step-by-Step Plan to Ensure Business Continuity and Protect Vital Operations, Facilities, and Assets.* New York: American Management Association, 2004.

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