

Postprint on Knowledge Management Services Practice at the Illinois Fire Service Institute Library

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Abstract

[Purpose / Significance] This paper introduces the process of creating and developing the Illinois Firefighter Line-of-Duty Death Digital Image Collection Database (IFLODD) by the University of Illinois Illinois Fire Service Institute (IFSI) Library. [Method / Process] The paper details the content and process of the library's knowledge services from aspects including IFLODD's establishment, data collection, data processing, user utilization, and maintenance and upgrades. [Results / Conclusion] IFLODD represents the user-driven management philosophy of the IFSI Library, providing reference and inspiration for professional libraries to serve users and enhance knowledge management services.

Full Text

Preamble

This article introduces the process of creating and developing the Illinois Firefighter Line of Duty Deaths Digital Image Collection Database (IFLODD) at the Illinois Fire Service Institute (IFSI) Library. [Method/Process] The article details the library's knowledge services from IFLODD's creation, data collection, data processing, user engagement, maintenance, and upgrades. [Results/Conclusion] IFLODD exemplifies the user-driven management philosophy of IFSI Library, providing a reference for professional libraries to serve users and enhance knowledge management services.

Keywords: special library; academic library; knowledge management; user services; database construction; database management; case study; IFLODD; firefighters; line of duty death

1. Establishment and Background of IFLODD

The Illinois Fire Service Institute (IFSI) Library's creation and continuous development of the Illinois Firefighter Line of Duty Deaths Digital Image Collection Database (IFLODD) represents a case of library knowledge management services that transcend traditional library offerings and meet genuine user needs. Since its establishment in 2007, IFLODD has become a popular database that has strengthened the connection between IFSI Library and fire departments across Illinois.

In 2007, IFSI Library received a \$20,500 Library Services and Technology Act (LSTA) grant from the Illinois State Library for the project "Honoring Our Heroes: Developing the Illinois Firefighter Line of Duty Deaths Digital Image Collection Database (IFLODD)." The project's goal was to collect, organize, digitize, and preserve historically and culturally valuable materials related to over 900 Illinois firefighters who died in the line of duty [1], resulting in a comprehensive online database. The database's initial prototype began as a memorial book compiled by former IFSI Deputy Director D. Clark, which chronologically listed all known line-of-duty death incidents among Illinois firefighters [2].

Line-of-duty deaths are an unfortunate reality in firefighting work. IFLODD aims to collect highly specific metadata about incidents to identify trends and patterns. Since many firefighters are visual learners, the database also provides various information visualization features. For example, users can create charts showing the age ranges of firefighters who died from stress/overexertion. Currently, no other firefighter line-of-duty death database allows users to combine detailed information with visual learning tools. The Illinois Library Association (ILA) featured the IFLODD database as a representative grant project in its association reports, and the database has also been recognized by the Scout Report and Newberry Library Genealogy News [2].

The creation of IFLODD also serves the core user base of IFSI Library. Many national firefighter line-of-duty death databases have formal definitions of "in the line of duty" to determine whether a firefighter falls into this category. The information included in IFLODD is primarily based on input from fire departments. If a fire department states that a firefighter died in the line of duty and wishes to enter this information, IFSI Library will not question their decision. Allowing fire departments to make final determinations about firefighter information in IFLODD enables the library to strengthen relationships with its core users and include firefighters who might be rejected by other line-of-duty death databases. Additionally, IFLODD allows fire departments to write their own incident summaries, giving them better control over how fallen firefighters are memorialized.

Statistical information about firefighter line-of-duty deaths comes from numerous sources, such as the National Institute for Occupational Safety and Health (NIOSH) and the National Fallen Firefighters Foundation (NFFF) of the U.S. Fire Administration, which collect data on Illinois firefighter line-of-duty

deaths and create online databases. However, the information provided in these databases can vary significantly, and each source has its limitations. The “Fire Fighter Fatality Investigation and Prevention Program” database maintained by NIOSH provides in-depth technical details about individual line-of-duty death incidents but covers only a small fraction of all fallen firefighters. Furthermore, the reports do not include fire department names or firefighters’ names. In contrast, the NFFF Memorial Database contains a more comprehensive list of fallen firefighters but focuses less on incident details and more on the lives of firefighters and their families. Comparing the two, the NIOSH database serves a “lessons learned” function, while the NFFF database serves a memorial function. IFLODD, with comprehensive records dating back to 1857, functions both as a memorial repository for Illinois fallen firefighters and as a “lessons learned” database, thus combining the strengths of both NIOSH and NFFF databases [1].

2. Features and Development Process of IFLODD

As a memorial database, IFLODD includes digitized photographs of fallen firefighters and oral history interviews with people who knew them, reflecting its design philosophy of providing diverse data about each firefighter and their death. Each record contains searchable metadata fields such as firefighter’s department, age range, cause of death, duty type at time of death, and incident location type. This enables users to search for firefighters using specific criteria, such as all firefighters engaged in emergency vehicle operations at the time of death. This search functionality is useful not only for the public but also for researchers and fire instructors.

IFLODD is not a static database; it continuously seeks more information about fallen Illinois firefighters to become as comprehensive and valuable a tool as possible. This expansion depends largely on direct information provided by firefighters. Due to the database’s personal nature, direct referrals are particularly important for IFLODD. When firefighters are introduced to IFLODD by colleagues they trust, they become more willing to participate in all activities related to IFLODD, such as using the database, providing data, information, and images. By building trust with fire departments and firefighters, IFSI Library has successfully identified previously unknown firefighters and supplemented additional information for those already included.

Collaboration and statistical work with over 75 Illinois fire departments have been crucial for database development. IFSI Library’s affiliation with the Chicago Fire Department (CFD) has been particularly important. IFSI Library has documented over 580 fallen CFD firefighters, many of whom had never been publicly recorded. In 2018, IFSI Library completed a multi-year project that added 1,040 digital images to Chicago firefighter records, significantly improving IFLODD records for Chicago firefighters and increasing the total number of images in the entire database by over 130 percent. The project also used information from images to write 41 new incident summaries and update

23 existing summaries with new information. The added images include official photos of CFD personnel, images of their line-of-duty death incidents, photos of firefighter memorials, and photos from firefighters' funerals [1].

IFSI Library collects IFLODD information from Illinois fire departments, including personal photographs, newspaper articles, department records, and memorial photos of fallen firefighters. Fire departments participate in oral history interviews to share their knowledge of fallen firefighters. To protect respondents when discussing heavy topics, IFSI Library follows strict standards established by the University of Illinois Institutional Review Board for human subjects research. These interview activities help IFSI Library build personal connections with fire departments, and respondents and departments typically express gratitude for this documentation work and are willing to talk and provide information in familiar environments and places related to the fallen firefighters.

Visiting librarians are willing to talk with any firefighters present about IFLODD and the services IFSI Library provides to firefighters statewide. By visiting fire departments, librarians can directly discuss services IFSI Library offers, including free interlibrary loans and reference assistance. The deputy director and archivist's visits to local fire departments are crucial for prompting firefighters to connect with IFSI Library, visit the library, and become lifelong learners [1].

When firefighters choose to engage with IFLODD and begin contacting IFSI Library, related inquiries are handled by the IFSI Library Deputy Director and Archivist. Having a consistent contact person ensures that fire departments and users receive consistent and timely responses to IFLODD questions. A fixed contact also helps build trust between IFSI Library and fire departments and reduces the likelihood that firefighters or IFLODD family members will need to repeat previous inquiries. The ability to provide continuous and personalized attention to everyone involved in IFLODD is a hallmark of this popular, experience-based knowledge project.

In addition to interactions with Illinois firefighters and fire departments, IFLODD has become a valuable information source for families of fallen Illinois firefighters. IFLODD's relatively older firefighter records are particularly sought after by users in the United States because they cannot find relevant information from other sources. One moving example involved IFSI Library staff using IFLODD information to help a woman find a firefighter's grave; the firefighter had rescued the woman's pregnant mother from a fire, giving her the opportunity to pay respects to the person who saved her life. Another example involved library staff using IFLODD information to help a user find a photo of his grandfather—a firefighter murdered on duty—to give as a gift to his grandmother.

3. Knowledge Processing Workflow in IFLODD

Information collected for IFLODD is entered into the database following a specific workflow (see Figure 1 [Figure 1: see original paper]). Each firefighter has

both an incident record and a firefighter record in the database. The incident record contains metadata about the firefighter's death incident (such as incident location, incident type) and an incident summary or narrative of the incident that led to the firefighter's death. The incident summary is written in a Word document with HTML tags added to display the text correctly in the database. The firefighter record (see Figure 2 [Figure 2: see original paper]) contains metadata about the firefighter (such as name, cause of death), which is entered into the database. If there are images or audio files from oral history interviews, this information is saved with appropriate metadata in the firefighter record. The final IFLODD record contains varying amounts of information depending on the available information about the firefighter and their death incident, but all records contain at least the firefighter's name and their fire department. The IFLODD database can be accessed for searching through the IFSI Library webpage (see Figure 3 [Figure 3: see original paper]).

4. User Feedback and Dissemination of IFLODD

User feedback has been important for IFLODD's growth and continuous development. The previously mentioned addition of over 1,000 images from the Chicago Fire Department was primarily driven by user requests for more visual materials. User feedback has been overwhelmingly positive. One fire department was so impressed with IFLODD that it decided to use the database during its annual "Safety Week" training to show firefighters the multiple causes of death among Illinois firefighters in the line of duty. IFSI staff also appreciate the database's functionality—the ability to quickly look up a firefighter. One staff member commented: "The ability to easily and conveniently verify the database is a key factor in ensuring that data gaps can be promptly identified." He noted that when using IFLODD, the convenient interface allowed him to quickly identify two firefighters missing from the database. The following are authentic feedback from IFLODD users and librarians who use IFLODD data to provide reference services: (1) "Wow! Thank you so much for your hard work! I know my grandfather was an amazing man, and I'm sorry I never got to meet him. Now I feel like I can at least learn more about him. Thank you again so much!" (2) "Thank you for your assistance and for all your efforts for the fallen firefighters." (3) "This research you have provided for our family is invaluable! We are so grateful."

As a database built on trust and relationships with fire departments, IFLODD's most important growth mechanism is direct word-of-mouth among firefighters and fire departments. If one fire department talks about having used or currently using IFLODD through IFSI Library, other fire departments become more willing to access, use, and provide data for IFLODD. Additionally, IFLODD is prominently featured on the IFSI Library website at <https://www.fsi.illinois.edu/content/library/IFLODD/>, allowing fire departments to easily find and use IFLODD through the IFSI website. IFLODD also appears in many IFSI Library promotional materials, and the library regularly

collaborates with the IFSI Course Office to include information about the database in all student manuals used for IFSI courses.

In spring 2020, as the COVID-19 pandemic spread across the United States, firefighters began encountering the novel coronavirus. In April 2020, three Illinois firefighters died from COVID-19 complications contracted while on duty. To maintain IFLODD's adaptability and relevance, the library modified IFLODD's structure to document firefighters who died from COVID-19 and allow users to specifically search for firefighters who died from the virus. IFLODD records for these three firefighters were created, including incident summaries, extensive metadata, and firefighter images as well as information and images from their funerals. Keeping IFLODD updated and reflecting issues facing fire services helps maintain the strong relationship between fire departments and IFSI Library, which is essential for this user-driven database.

As of April 2021, IFLODD has become the most comprehensive database collecting Illinois firefighters who died in the line of duty. The database contains records on 906 firefighters from Illinois, including 706 line-of-duty death incident summaries. IFLODD also contains 1,524 digital images and 14 oral history interviews. Since its creation, IFLODD has consistently been one of the most visited sections of the IFSI Library webpage, with nearly 125,000 unique visitors, and IFLODD's impact on IFSI Library cannot be underestimated. Through its widely accessed website, exhibitions at firefighter memorials, and most importantly through direct interactions with local firefighters, IFLODD has continuously increased the library's visibility. IFLODD has become IFSI Library's brand, enjoys high recognition among library user communities, and has become one of the library's core knowledge management projects.

Building on the success of IFLODD, IFSI Library created a new digital database containing the list of Illinois Firefighter Medal of Honor and Medal of Valor recipients [1] to provide additional knowledge management services that complement IFLODD. The Illinois Firefighter Medal of Honor and Medal of Valor are the highest awards given to Illinois firefighters, presented for acts of bravery and selected annually by a ten-member Illinois Firefighter Medal of Honor Committee. Since 1994, the awards have been presented to Illinois firefighters and simultaneously honor fallen firefighters through the Illinois Fallen Firefighter Memorial and Medal of Honor Ceremony.

IFSI Library created the Illinois Firefighter Medal of Honor and Medal of Valor database partly due to IFLODD's success and also because information about previous award recipients was difficult to locate. Searching online for previous recipients' names requires browsing through multiple press releases and newspaper articles to find a complete list of award recipients. Finding information about early award recipients is even more difficult, with little or no information available in many cases. To better honor these firefighters' bravery, IFSI Library decided to create an easily searchable online database. In fall 2011, IFSI Library staff, student employees, and volunteers began investigating and compiling previous recipients, attempting to create a complete list of Medal of

Honor and Medal of Valor recipients. Through years of online research, newspaper research, and various other sources, the library began collecting information on recipients from each year since 1994.

The Illinois Firefighter Medal of Honor and Medal of Valor database is freely accessible through an online portal provided on the IFSI Library website. The database allows users to search recipients by name, firefighter's agency, rank, gender, award year, incident city, firefighter's duty type, and other criteria. The database's goal is to provide rich metadata for each recipient so users can more easily find firefighters through partial information, and researchers or fire instructors can compile information based on very specific criteria. For example, researchers can search for all recipients of the "firefighter rescue" type to see how many firefighters were recognized for actions saving other firefighters.

The Illinois Firefighter Medal of Honor and Medal of Valor database has identified over 291 recipients. In addition to identifying recipients, the database includes over 110 incident summaries detailing firefighters' actions. While adding new recipients each year, the library also supplements other information that remains scarce beyond names and award years, so the database continues to grow. To ensure continuous updates while leveraging users' extensive personal knowledge, each record contains a link allowing users to contact the library at any time to provide more information about a firefighter [1]. In addition to ensuring firefighters' heroic actions are recognized, the Illinois Firefighter Medal of Honor and Medal of Valor database provides more valuable information. By comparing all recipients with IFSI staff records, the library discovered that over 35 recipients are or were IFSI instructors, and over 90 percent of recipients are or were IFSI students. This previously unknown information is valuable to IFSI Library's parent organization—the Illinois Fire Service Institute (IFSI)—as it demonstrates the achievements of current and graduated students [3].

IFSI Library has also created another knowledge management service project based on IFLODD: the Reflections Oral History Project, which preserves the knowledge and experience of retired firefighters. Through oral history interviews, experienced firefighters share their experiences, what they have learned, and what they want others to learn. In addition to permanently documenting these firefighters' experiences through comprehensive interviews, information from the Reflections Oral History Project is used to acquire experiential knowledge while the library integrates this knowledge into IFLODD, allowing more users to share and access information. Through two-way feedback with users, IFSI Library commemorates and learns from Illinois firefighters who died in the line of duty.

In summary, IFLODD embodies IFSI Library's user-driven management philosophy, not only helping IFSI Library increase user engagement but also building deep trust and cooperative relationships between IFSI Library and the firefighter community through IFLODD.

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Author Contributions

Ruan Lian: Topic selection, research framework development, final manuscript approval; David Ehrenhart: Data compilation, manuscript writing; Diane Richardson: Provided revision suggestions and edited the paper; Liu Shuyi: Data compilation, manuscript writing.

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