The UK Digital Preservation Awards and Their Implications for China: Postprint

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Abstract

[Purpose/Significance] This study provides reference and inspiration for China's digital preservation undertakings by analyzing the development history of the UK Digital Preservation Awards and examining the themes of award-winning projects. [Method/Process] This study employs web-based investigation and literature review to systematically sort out, summarize, and synthesize the development history, award distribution, award categories, and five main themes of the Digital Preservation Awards. [Results/Conclusion] The development of the UK Digital Preservation Awards and its award-winning cases offer four key insights for advancing China's digital preservation undertakings: Conduct digital preservation research and cultivate digital preservation talent; Comprehensively protect digital resources to maintain the integrity of digital memory; Establish relevant societies to enhance social awareness of digital preservation; Draw upon advanced research findings in digital preservation and strengthen sharing and cooperation.

Full Text

Preamble

Title: The UK Digital Preservation Awards and Their Implications for China

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Abstract

[Purpose/Significance] This paper analyzes the development of the UK Digital Preservation Awards and examines the themes of award-winning projects to provide reference for China's digital preservation initiatives.

[**Method/Process**] Through web-based and literature surveys, this study systematically reviews the evolution, awarding patterns, and category structure of the Digital Preservation Awards, and summarizes five major thematic areas. [**Result/Conclusion**] The development of the UK Digital Preservation Awards and its winning cases offer four key insights for China's digital preservation efforts: (1) promote digital preservation research and cultivate specialized talent; (2) comprehensively protect digital resources to maintain the integrity of digital memory; (3) establish professional societies to raise social awareness of digital preservation; and (4) draw upon advanced research outcomes while strengthening sharing and cooperation in digital preservation.

Keywords: digital preservation; digital preservation awards; digital resources

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Digital resources constitute fundamental assets in the information age, and their preservation has become a critical factor in safeguarding human civilization's memory and enhancing national competitiveness. Digital preservation refers to the long-term effective storage of digital resources and ensuring their perpetual accessibility. In the information era, digital resources are growing exponentially with rapidly evolving types and update speeds, yet current theoretical and practical levels of digital preservation fall far short of expectations across sectors. Consequently, digital preservation has garnered attention from national institutions, research organizations, and enterprises alike.

To advance digital preservation, several countries have established dedicated awards, such as the UK's Digital Preservation Awards, the US National Digital Stewardship Alliance Innovation Awards, and Australia's National Archives Awards for Digital Excellence. While the US award is limited to nationals or projects with national participation, and Australia's award targets government agencies, the UK Digital Preservation Awards is open to global participants, making it more representative. Therefore, this study selects the UK Digital Preservation Awards as its research subject.

The Digital Preservation Awards were established by the UK's Digital Preservation Coalition (DPC), founded in 2002 as a non-profit membership organization with 23 formal members and 52 associate members, funded primarily through membership fees. With a vision to preserve humanity's digital heritage, the DPC has implemented numerous initiatives, including the Digital Preservation Awards. In 2004, the Awards were launched under the Conservation Awards, aiming to address the UK's digital preservation challenges through international cooperation while contributing to global digital memory and knowledge preservation.

After 13 years of development, the Awards system has matured. By 2017, seven editions had been held, honoring 17 outstanding projects and individuals, including renowned initiatives like PREMIS (Preservation Metadata Implementation

Strategies) and Internet Archive founder B. Kahle. Both the Awards' evolution and the winning projects offer valuable lessons for China's nascent digital preservation efforts. Currently, only Liu Hui has examined the DPC's strategic planning, making this analysis of the Awards' development and thematic patterns particularly timely for informing China's digital preservation research and practice.

2. Development of the Digital Preservation Awards

2.1 Historical Evolution

Established in 2004 to recognize outstanding contributions to digital preservation, the Awards have evolved over 13 years from a sub-category under Conservation Awards to an independent honor with a sophisticated structure [Figure 1: see original paper]. Initially a single award, it has expanded into a system comprising six sub-awards: Education and Communication, Research and Innovation, Commercial Sector, Talent Development, Digital Heritage, and Preservation Coalition. This development reflects the Awards' maturation and the growing prominence of digital preservation research, as well as increasing recognition of excellence in the field.

By 2017, 17 exceptional projects and individuals had received the Digital Preservation Awards , selected through rigorous evaluation by expert committees comprising distinguished scholars and industry professionals. Awardees receive a trophy, certificate, and £2,500 cash prize, funded primarily by the DPC with additional sponsorship from organizations like The National Archives and the Netherlands Coalition for Digital Preservation.

The award-winning entities demonstrate several key trends. First, participation in digital preservation has diversified beyond traditional memory institutions like universities and LAMs (libraries, archives, and museums). While these constitute the "core circle," the Awards also encourage "potential circles" comprising commercial organizations and individuals, fostering a more pluralistic and complementary digital preservation ecosystem. Second, the Awards reflect globalization trends in digital preservation, with winners from multiple countries. Third, the field exhibits three-dimensional development, encompassing not only theoretical research and technological innovation but also education, communication, and coalition-building, showing both horizontal expansion and vertical deepening.

2.2 Award Categories

The Digital Preservation Awards currently feature six categories, plus a special 10th Anniversary Award issued in 2012 to honor exceptional contributions between 2002-2012.

(1) Education and Communication Award: Recognizes significant efforts to enhance workforce capacity or equip policymakers with necessary digital

preservation skills and knowledge. It targets training programs, courses, activities, or empirical research projects that support technological development and have impacted or will impact digital memory preservation.

(2) Research and Innovation Award: Honors major technical or intellectual achievements that effectively reduce barriers to digital preservation. As digital challenges multiply, this award recognizes breakthrough tools, frameworks, or ideas with significant impact on preserving future digital memory.

(3) Outstanding Digital Preservation Activity in Business Award: Celebrates exceptional digital preservation tools and methods in the commercial sector. Since organizations across sectors generate vast digital resources daily, this award encourages their active participation in preservation efforts.

(4) Outstanding Student Work Award: For student projects that lower digital preservation barriers, aiming to stimulate student interest and recognize exceptional work including articles, coursework, project reports, and dissertations.

(5) Digital Heritage Award: Recognizes practical applications of preservation tools for endangered digital objects. Focusing on understanding risks and ensuring proper management rather than pure innovation, this award honors tangible efforts to permanently preserve digital memory.

(6) Digital Preservation Coalition Partnership Award: An individual lifetime achievement award recognizing sustained and significant contributions to digital preservation.

3. Thematic Analysis of Award-Winning Projects

Award-winning projects represent cutting-edge research and practice across digital preservation subfields. This analysis organizes exemplary cases into five thematic areas to inform China's digital preservation efforts.

3.1 Theme 1: Innovation and Development of Digital Preservation Technologies

Technological innovation provides the foundation for digital preservation. In 2012, the DPC awarded the Research and Innovation Award to the Planets project (Preservation and Long-term Access through Networked Services), an EU-funded initiative addressing core digital preservation challenges. Planets achieved breakthroughs in four areas: First, it established an integrated emulation framework compatible with original data, software, and operating systems, enabling access to legacy data in modern environments, with support for operating systems and applications dating back to the 1980s. Second, it improved metadata description languages by developing XCDL (Extensible Characterisation Description Language) and XCEL (Extensible Characterisation Extraction Language) based on XML, providing more expressive power than existing tools like DROID and offering universal structures for diverse digital objects. Third,

it expanded the PRONOM registry with a searchable database containing technical information about digital formats, preservation tools, and their operational details. Fourth, it developed SIARD (Software Independent Archiving of Rational Databases), an open relational database storage format and conversion software suite now recognized as Switzerland's standard for database transfer to archives. Planets also advanced project planning and cost control in digital preservation.

The bwFLA project (Baden-Württemberg Functional Long-Term Archiving and Access), a collaboration between Germany's University of Freiburg and partners, pioneered cloud-based emulation (EaaS). This approach reduces institutional barriers to accessing preserved digital assets, enabling interaction with emulators running original environments. EaaS facilitates authentic preservation of digital culture, enhances accessibility, and enables replication, verification, and citation of scientific experiments. Its distributed service model allows preservation institutions to plan long-term preservation of specialized digital objects.

3.2 Theme 2: Web Archiving Resource Construction and Access

With rapid updates, massive content, and simple interaction models, web resources are vital digital assets and intelligence sources. However, research shows the average lifespan of web information is only 44 days, spurring web archiving research and practice—one of digital preservation's most mature areas.

In 2016, the DPC presented its first Partnership Award to B. Kahle, founder of the Internet Archive (established 1996). The Archive has preserved 279 billion web pages, 11 million books and texts, 4 million audio recordings, 3 million videos, 1 million images, and 100,000 software programs, with numbers growing rapidly. Its user interface, the Wayback Machine, provides universal access to historical web pages. As a reliable preservation partner, the Archive offers Archive-It services enabling organizations to collect, catalog, manage, and search preserved content, with over 400 partners across 17 countries.

The Memento project, funded by the US Library of Congress and Mellon Foundation and awarded in 2010, focuses on integrated access to multiple preservation repositories. Unlike the Internet Archive's entity-based service, Memento uses metadata harvesting protocols to aggregate resources from 15 entities including the Internet Archive and UK Web Archive. Its "Time Travel" service and Chrome-based plugin enable convenient date-based retrieval of historical web pages without specifying particular repositories, significantly facilitating access to web archives.

3.3 Theme 3: Preservation of Special Digital Resources

While web pages receive broad attention, some digital resources like email and video games lack widespread appeal but hold significant value for specific users. The Awards recognize preservation practices for these special resources in particular contexts.

The University of Manchester's Carcanet Press Email Preservation Project won the 2014 Digital Heritage Award. Carcanet, an early British poetry press, holds email archives containing correspondence with renowned poets, critics, editors, translators, and artists—crucial resources for scholarly research. The project ingested over 215,000 emails with 65,500 attachments into an institutional repository, complete with technical, preservation, descriptive, and structural metadata for comprehensive indexing.

The project offers several lessons: First, its forward-looking approach anticipated future research use despite current access restrictions due to data and copyright issues, investigating researcher needs and developing visualization experiments for future access methods. Second, it ensured authenticity and integrity by defining email characteristics that guarantee accessibility regardless of time or migration, preserving both PST format archives and decomposed files in MSG, EML, XML, and MHT formats. Third, it established five object types and four workflows, coding tools to streamline ingestion. Fourth, it demonstrated strong sharing consciousness by publishing process reports and open-sourcing code on GitHub.

Video game preservation presents even greater challenges. Glasgow University student A. Bachenll's 2014 Outstanding Student Work Award research surveyed UK independent game developers, contradicting previous findings that developers lacked preservation interest. His work demonstrated their willingness to collaborate with broader preservation communities, including academic institutions and game community projects, highlighting the need to protect these culturally and historically significant digital artifacts.

3.4 Theme 4: Digital Preservation Education and Communication

The Education and Communication Award, established when the Awards became independent in 2012, underscores DPC's commitment to education. The University of London Computer Centre (ULCC) won in 2012 for its Digital Preservation Training Programme (DPTP), which teaches skills for preserving and managing digital files through lectures, discussions, practical exercises, and assignments. DPTP offers tailored courses at beginner and intermediate levels, both face-to-face and online, with curriculum updates reflecting research hotspots like web archiving. While not free, DPC regularly provides scholarships to encourage participation.

The 2014 Education and Communication Award honored A. Brown for his contribution to digital preservation handbooks. *Practical Digital Preservation: A How-To Guide for Organizations of Any Size* serves as an operational manual whose distinctive feature is its audience—not limited to archival professionals but addressing organizations seeking to improve digital collection and preservation capabilities. The book provides detailed step-by-step guidance with case examples, serving as an essential reference for non-traditional memory institutions.

The Transforming Archives/Opening Up Scotland's Archives project by The National Archives and Scottish Council on Archives represents education integrated with university programs and internships, offering personalized training plans to develop archival professionals with both archival science backgrounds and digital preservation technical skills—fundamentally addressing the gap between archival scholars lacking technical expertise and technicians lacking archival knowledge.

3.5 Theme 5: Coordination, Cooperation, and Efficiency

The importance of digital preservation has prompted numerous organizations to initiate projects, but lack of coordination often leads to redundant research and inconsistent metadata standards, wasting resources.

The Planets project united 16 prominent European organizations—including major libraries, archives, universities, and technology companies—to reduce duplication and deepen division of labor. Through coordination, they developed universal metadata description languages, open database storage formats, and format conversion software, preventing future technical issues and resource waste from format incompatibility.

The Netherlands Coalition for Digital Preservation (NCDD) received the 2016 Research and Innovation Award for its "Constructing a Network of National Facilities Together" program. Advocating that "cooperation is the norm, independence is the exception," NCDD developed a national digital preservation infrastructure framework through case studies, field research, and scenario analysis. The framework identifies shared and organization-specific elements, providing scalable models and implementation steps for short- and long-term development, demonstrating how collaboration enhances effectiveness and efficiency.

4. Implications for China's Digital Preservation

After more than a decade of development, the Digital Preservation Awards offer important insights for China's still-nascent digital preservation efforts across research, talent development, top-level design, advocacy, and cooperation.

4.1 Conduct Digital Preservation Research and Cultivate Talent

Research and innovation form the foundation of digital preservation. The Awards consistently emphasize this area, with winning projects enhancing format extensibility and tool universality. While China has achieved theoretical and practical progress, challenges remain: unclear classification strategies, outdated storage technologies, underdeveloped user behavior research, and incomplete policies and regulations. Practically, China's National Archives Administration has piloted the National Electronic Records Receipt and Long-Term Preservation System, and the National Library launched the WICP web archiving project in 2003, but overall practice remains limited.

Future efforts must tackle technical challenges, develop strategies suited to China's context, and improve efficiency to ensure secure long-term storage. Research on user behavior should optimize preservation strategies while providing quality services. Legal frameworks must be strengthened to support long-term preservation.

Talent cultivation requires both academic and continuing education. Universities should offer comprehensive digital preservation curricula covering theory and technology, encouraging student participation in research and practical projects. For professionals, targeted on-the-job training should strengthen theoretical knowledge and practical skills, encouraging advanced study to expand the talent pool.

4.2 Comprehensively Protect Digital Resources and Maintain Digital Memory Integrity

Comprehensive protection does not mean preserving all digital resources, but rather ensuring special resources are not overlooked and clarifying responsibility to avoid duplication.

Three tasks are essential: First, define preservation scope by establishing value assessment principles based on content worth, using selective preservation to evaluate and classify resources. Second, prioritize special digital resources—such as email and video games—that may be technically difficult or lack broad utility but constitute indispensable parts of digital memory. Third, clarify responsibility 主体. National cultural memory institutions like libraries and archives should preserve national digital resources, though current division of responsibilities remains unclear. For organizational and personal digital resources, China should encourage non-traditional memory institutions and individuals to participate, as they can make significant contributions.

4.3 Establish Relevant Societies and Promote Digital Preservation Advocacy

Digital preservation requires extensive resources and continuous updates that no single country or institution can accomplish alone. The UK and US have established leading organizations like DPC and the National Digital Stewardship Alliance. China, still in early stages, would benefit greatly from professional societies that convene experts and disseminate knowledge and best practices. Given that Chinese digital preservation research concentrates in library and archival science, a digital preservation committee under the Chinese Library Association or Chinese Archives Society could coordinate national efforts.

Advocacy should target both public and professional audiences. As digital archives proliferate in personal and family collections, archives should intensify digital preservation education alongside existing outreach efforts like Shenyang Archives' family archives website. Establishing digital preservation awards could further stimulate enthusiasm, attract societal attention, and provide direction

for the field—mirroring the UK Awards' success in mobilizing global participation.

4.4 Learn from Advanced Research and Strengthen Sharing and Cooperation

Numerous excellent digital preservation projects exist domestically and internationally, with early international leaders sharing most results publicly (e.g., Planets, bwFLA, Carcanet email project). China should actively adapt these achievements to its context, leveraging latecomer advantages to advance its capabilities.

Domestically, organizations should strengthen sharing and cooperation to avoid redundant development and regional disparities, as seen in digital archives construction. Collaborative research can optimize resource allocation and improve efficiency. Internationally, China should pursue "bringing in" and "going out" strategies: attracting experienced foreign organizations to contribute expertise while actively participating in international projects to absorb best practices. Cooperation is essential for rapid development, as demonstrated by Planets' multinational achievements that solved participants' problems while contributing globally.

References

[1] Ma Feicheng. People's Daily: Preserving China's Digital Memory [EB/OL]. [2017-07-25]. http://opinion.people.com.cn/n1/2016/0304/c1003-28170894.html.

[2] BOTE J, FERNANDEZ FEIJO B, RUIZ S. Digital preservation cost: a cost accounting approach [J]. Learning organization, 2013, 20(6): 419-432.

[3] Liu Qing, Kong Fanlian. China's web information archiving and comparison with foreign countries: based on the National Library WICP project [J]. Library and Information Service, 2013, 57(18): 80-86.

[4] China WEB Information Museum [EB/OL]. [2017-07-26]. http://www.infomall.cn/.

[5] HSBC Global Digital Archive System (GDA) [EB/OL]. [2017-07-30]. http://www.dpconline.org/events/digital-preservation-awards/hsbc-global-digital-archive-system-gda.

[6] Liu Hui. Characteristics and implications of the UK Digital Preservation Coalition's strategic planning [J]. Library Science Research, 2014(2): 89-91, 58.

[7] Wan Ling. Latest developments in foreign digital resource long-term preservation and implications for China [J]. Journal of Library Science in China, 2004, 30(2): 22-26.

[8] Liu Ailing. Analysis of subject division for long-term preservation of digital information in network environment [J]. Library and Information Service, 2010,

54(3): 97-100.

[9] Nie Yunxia. Research on foreign digital heritage long-term preservation practice and promotion strategies [J]. Journal of Information Resources Management, 2013(1): 38-45.

[10] BROWN A. Practical digital preservation: a how-to guide for organizations of any size [M]. London: Facet Publishing, 2013.

[11] Wu Zhenxin. Research on digital object fixity in long-term preservation [J]. New Technology of Library and Information Service, 2014, 30(11): 1-9.

[12] FARQUHAR A, HOCKX-YU H. Planets: integrated services for digital preservation [J]. International journal of digital curation, 2007, 21(2): 88-99.

[13] Wu Zhenxin, Qi Yan, Fu Honghu, et al. Infrastructure, intelligence, innovation: launching data science research - IDC2013 conference review [J]. New Technology of Library and Information Service, 2013, 29(7): 13-21.

[14] bwFLA - Emulation as a Service [EB/OL]. [2017-07-27]. http://bw-fla.uni-freiburg.de/.

[15] Wu Zhenxin, Fu Honghu, Li Wenyan, et al. Review of the 10th International Conference on Preservation of Digital Objects (iPRES2013) [J]. Library and Information Service, 2014, 58(4): 127-135.

[16] About the Internet Archive [EB/OL]. [2017-07-28]. https://archive.org/about/.

[17] WayBack Machine [EB/OL]. [2017-07-28]. https://archive.org/.

[18] Memento Depot [EB/OL]. [2017-07-28]. http://mementoweb.org/depot/.

[19] Time Travel [EB/OL]. [2017-07-28]. http://timetravel.mementoweb.org/.

[20] 2010 Digital Preservation Award [EB/OL]. [2017-08-29]. http://www.dpconline.org/advocacy/awards/dp-award-2010.

[21] BAKER F. Carcanet press email preservation project phases 2-3: final report [R]. Manchester: The University of Manchester, 2014.

[22] LOWOOD H, MONNENS D, VOWELL Z, et al. Before it's too late: a digital game preservation white paper [J]. American journal of play, 2009, 2(2): 139-166.

[23] KRAUS K, DONAHUE R. "Do you want to save your progress?" the role of professional and player communities in preserving virtual worlds risks to video game longevity [J]. Digital humanities quarterly, 2012, 6(2): 1-18.

[24] DPA 2014: Game Preservation in the UK by Alasdair Bachenll, University of Glasgow [EB/OL]. [2017-08-24]. http://www.dpconline.org/events/digital-preservation-awards/game-preservation-in-the-uk-by-alasdair-bachenll-university-of-glasgow.

[25] BACHENLL A, BARR M. Video game preservation in the UK: independent games developers' records management practices [J]. International journal of digital curation, 2014, 9(2): 139-170.

[26] ULCC Announces Arkivum Partnership [EB/OL]. [2017-08-20]. http://ulcc.ac.uk/news/ulcc-announces-arkivum-partnership.

[27] The National Archives and Scottish Council on Archives: Transforming Archives/Opening Up Scotland's Archives [EB/OL]. [2017-09-09]. http://www.dpconline.org/events/digital-preservation-awards/tna-scottish-archives.

[28] NCDD: Constructing a Network of National Facilities Together [EB/OL]. [2017-09-09]. http://www.dpconline.org/events/digital-preservation-awards/constructing-a-network.

[29] Zhang Xiaohua. Visual analysis of digital preservation research progress in China [J]. Information Research, 2015(12): 36-40.

[30] National electronic records receipt and long-term preservation system construction pilot project passes acceptance [EB/OL]. [2017-11-18]. http://news.eastday.com/eastday/13news/auto/news/china/u7ai2991931_{K4}.html.

[31] Xu Kuan, Ren He. Research on content value judgment basis for long-term preservation of digital resources [J]. Library and Information Service, 2013, 57(13): 72-75.

[32] Family Archives Website [EB/OL]. [2017-11-22]. http://www.jtdaw.com/index.html.

[33] Intellectual Freedom Award [EB/OL]. [2017-08-05]. http://www.ala.org/aasl/awards/if.

[34] Zhou Lingling. EU strategic deployment for long-term preservation of digital resources [J]. Information Studies: Theory & Application, 2010, 33(3): 125-128.

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The Digital Preservation Awards and Its Enlightenments to China

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Abstract: [Purpose/significance] To provide reference for digital preservation of China, this paper analyzes the development of Digital Preservation Awards (DPA) in the UK. [Method/process] This article tries to introduce and study DPA in five subtopics with network surveys and literature surveys. [Result/conclusion] Four enlightenments are proposed: research on digital preservation and foster talents in digital preservation research; maintain the integrity of digital memory; call for the establishment of relevant societies, and improve the social awareness; take advantage of the advanced research results,

share the results and participate in national and international cooperation actively.

Keywords: digital preservation digital preservation awards digital resource

Note: Figure translations are in progress. See original paper for figures.