

Caribbean Digital Library Initiatives in the Twenty-first Century: the Digital Library of the Caribbean (dLOC)

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INTRODUCTION

Almost sixty years ago, the value of a Caribbean collection was proposed by Dr Eric Williams, world-renowned scholar, historian and first Prime Minister of Trinidad and Tobago, when he outlined the idea of a 'West Indian Library' (a collection of all libraries in the region) that would 'command respect, even when compared to such collections as the British Museum, the Bibliothèque Nationale de Paris and the Library of Congress'. He did recognize at that time it was 'hardly a practical proposition, however, though it may be possible at some time in the future to



Figure 1: Map of the Caribbean
Source: <http://dloc.com/map>

envisage a deliberately planned regional collection' (Williams, 1952).

The Caribbean

The definition of the Caribbean for the purposes of this paper would be that of the membership of the Association of Caribbean University, Research and Institutional Libraries (ACURIL), that is, 'those countries in the Caribbean basin, mainland countries including the Guianas, and the States of United States of America, which border on the Caribbean Sea or the Gulf of Mexico'. The countries which number about forty are separated by sea and represent a population of over 40 million people (Renwick, 2002). This area is referred to as the Caribbean and circum-Caribbean by the Digital Library of the Caribbean (dLOC) (Figure 1).

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BACKGROUND TO DIGITAL INITIATIVES

Development

Digital initiatives may include digital libraries, digital repositories and digital archives. Versions of digital libraries were envisioned since the early twentieth century, by persons like H. G. Wells in 1938, Vannevar Bush in 1945 and J. C. R. Licklider in 1965. The technical and engineering basis laying the foundation for digital libraries started in the 1960s prior to the development of the World Wide Web (Lynch, 2005). Project Gutenberg, which started in 1971 and boasts of over 33,000 free e-books in 2010, could be considered one of the earliest digital libraries (Hart, 1992; Project Gutenberg, 2010). But it was not until around the year 2000 when evolving Information and Communications Technologies (ICTs) allowed, not only for creating the digital content itself, but the increased and easier communication necessary for partnerships to thrive and greater ability to attract appropriate funding.

Definition

Time is taken to define a digital library as misconceptions continue to exist. It is not merely an automated library, access to bibliographic electronic resources or having a library website. In an early attempt, the Digital Libraries Federation (<http://www.diglib.org/dlfhomepage.htm>) defined 'digital libraries' quite aptly:

Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities (Waters, 1998).

This definition provides a snapshot of how ambitious and complex the issues are when setting up and maintaining one, especially when the required level of ICTs and expertise is considered.

Digital libraries build on and supplement basic library functions i.e. they manage large

amounts of information in electronic format, handle diverse types of information (text, audio, video and so on), make information services available to a wide public, but require cooperative input from partner institutions and users. The content can be made up of scientific publications (housed in institutional repositories), electronic theses and dissertations, educational resources, special collections, heritage collections, government and administrative information and basic development information (serving grass root needs) (Rose, 2007).

Key Functions/Features

Abid (2007) suggests that to manage digital collections calls for many skills and, whereas traditional librarians are mainly concerned with selection, collection, organization, preservation and providing access, information technology (IT) skills are needed for database management and retrieval.

The basic objectives of these initiatives are increasing access to materials in terms of time available and quantity as well as preservation. But a digital library, if serving the purpose of supplementing a traditional library, should be more than search, access and preservation, it should also be about use. Digital libraries should feature a high degree of selection of resources and provide services that meet criteria relevant to their mission. They should be collaborative, adaptive, reflective of the communities they serve and contextual. So, too, digital libraries need to distinguish themselves from Web search engines in the manner that they add value to Web resources (Lagoze et al., 2005).

Interoperability between digital initiatives is also important as it allows for maximizing the sharing material and treats with the optimizing of use of resources in places where individual libraries cannot afford the technology. Open access and, often, open source facilitates it all.

A digital library, whether called a virtual library, electronic library or a library without walls, is no longer a new concept, but it has not taken off in large numbers, and neither has there been a single overarching all-in-one project to which all materials of the entire world or an entire

region are featured. The World Digital Library (<http://www.wdl.org/en>) has 1,350 items at the Library of Congress. Of these, 325 items are in the Latin America and the Caribbean section with 55 items or less than 20% of the content related to the Caribbean currently (World Digital Library, 2010).

DIGITAL INITIATIVES IN THE CARIBBEAN

The Caribbean

There are many issues faced in setting up and managing digital collections in the Caribbean. One of the basic challenges to the implementation and sustainability of any overarching regional Library is the nature of the territories themselves. The Caribbean can be defined in several ways, for example, by:

- language (e.g. English/Spanish/French/Dutch-speaking countries)
- race (e.g. Caucasian, Afro- or Indo-Caribbean)
- history (e.g. various countries occupied by the British, Spanish, French, Dutch, Danish, Knights of Malta or Jews)
- land mass (ranges from St. Maarten (34 sq. km) to Cuba (110,860 sq. km) ('The World Factbook', 2009))
- population (ranges from Montserrat (5,118) to Cuba (11.4 m) ('The World Factbook', 2009))
- location (e.g. Windward/Leeward islands)
- politics (e.g. democratic/socialist)
- political status (e.g. colony/independent)
- economics (e.g. Small Island Developing States (SIDS), tourism-based economies, least developed/more developed)
- geological origin (e.g. volcanic or limestone islands)

This complexity affects all spheres of activity – whether economic, educational, political, cultural or social.

Justification and need

As noted above, the Caribbean shares a colonial past with several European countries and, hence,

is multicultural, multi-religious, multi-ethnic, and multilingual). The effect of these features can be seen as encumbrances in terms of developing regional digital initiatives. They do reflect the rich diversity which enhances the research material and allow increased visibility of 'our unique and rich indigenous resources to the national and international digital arena' (Francis, 2008).

As some Caribbean countries are among the most indebted in the world (International Monetary Fund, 2011), limited and declining resources in libraries throughout the Caribbean make the option of digitization and collaboration a favourable one to make materials widely available, assist with preservation, and share the costs.

There are many difficulties in knowing what are the holdings of the various libraries, archives or museums, even within a language group. Due to the colonial heritage of the region, much of the historical information resides in libraries outside the region and in various languages. Within the Caribbean, often no single institution may have a complete collection; collaborative collection building helps to fill those gaps and bring collections together from varied libraries and archives to achieve the higher goal of providing a more complete history. The latter is important as it complements the call for greater publishing (today we can use this to mean online materials as well) as noted below:

There are insufficient materials on the Caribbean by Caribbean people. This may be to a large extent because of a lack of self-appreciation among Caribbean people as a result of their Colonial past—a feeling that what they have to say is not worth documenting. Of course, [V. S.] Naipaul and similar writers who are held in high esteem discount this idea, but more books are needed that build self-esteem: more biographies, more books that put achievements by the Caribbean people on the world stage and show that they are comparable if not better in some areas. The mix of cultures and genes are the basis for their "Caribbeanness" and their achievements should be celebrated by being recorded (Renwick, 2002).

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For countries which are coming of age and need to find solutions to developmental issues, digital libraries can play a vital role in enabling research of current and possibly new or even previously inaccessible topics. This should be for both Caribbean studies and Caribbean science, however, funding for science tends to be utilized in other projects, not the information kind.

The region is susceptible to natural disasters like hurricanes, volcanoes, earthquakes and, though not in recent times, tsunamis. The need for preservation of materials, whether from natural disasters and environmental degradation from tropical conditions or safeguarding rare and unique materials cannot be emphasized sufficiently. All the countries have these concerns but policies, practices and priorities vary widely and often only the librarians are the ones most aware and concerned but they do not control financing and have limited authority. The cost of transport around the Caribbean is very high, making physical visits to relevant institutions expensive and time-consuming. For these reasons, digital initiatives can play a crucial role in making information available online and protecting it for future use.

However, Abid (2007) queried whether advanced ICT exacerbates the digital divide thus widening the gap between researchers in the developing world and the rest or whether it was an opportunity to move on from the print collection with digitization being a key technology. In agreement with the latter, digital libraries have been described as the 'killer app.' for bridging the gap between the haves and the have-nots (Witten et al., 2001).

Creating a digital resource is not a panacea as, throughout the region, intermittent power, low levels of computer and Internet/information literacy, limited bandwidth and access to computers are issues which arise. The Caribbean has an Internet penetration of 23.2%, lower than the world average of 28.7% and only two Caribbean countries, Jamaica and Barbados are included in the top 58 countries with over 50% Internet penetration, as at June 2010 (Miniwatts Marketing Group, 2010a, 2010b). This, however, has not prevented the initiation of several digitization projects as those involved saw the opportunity to increase

visibility and preservation of, and improving access to, unique Caribbean resources as imperative.

Examples of current digital initiatives¹

- UWI space (<http://uwispace.sta.uwi.edu/dspace>) was developed by The University of the West Indies (UWI) St. Augustine Campus Libraries to manage both digital collections and an institutional repository. Using open source software, Dspace, started with historical photographs of (UWI) St. Augustine campus and in 2002 a fund was obtained from the Reed Foundation to digitize The Colonial Bank Correspondence, 1837-1885, and the Diaries of Sir William Young, Governor of Tobago, 1807-1815 (Ramnarine-Rieks, 2007). Today, there are over 8,000 items accessible with a similar amount already scanned and awaiting metadata input. UWI St. Augustine Campus Libraries did not become a partner though involved in the early dLOC meetings.
- The UWI Mona Library Digital Collection (<http://library-contentdm.mona.uwi.edu/index.php>) uses the commercial software, CONTENTdm, to provide access to over 1,300 items in 10 collections, including the UWI historical photographs, Cousins Hereward Postcards, Erna Brodber, Elsa Govia and Roger Mais Collections.
- The Caribbean Digital Library (<http://www.eclacpos.org/cdl/cdl.asp>), which is part of the Caribbean Knowledge Management Portal at the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC), Subregional Headquarters for the Caribbean, uses open source software, Greenstone, and open standards to partner with other stakeholders to provide an authoritative, Web-based gateway to substantive planning information for the Caribbean (John, 2007). It consists of links to Caribbean documents already available on the Web which have been organized in 27 broad subject headings (John, 2004).

¹ Descriptions mainly taken from the project websites.

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- The International Labour Organization Caribbean Digital Library is posted by the ILO Decent Work Team and Office for the Caribbean (<http://www.ilocarib.org.tt/>). It is a collection of key ILO publications and documents which focus on labour and workplace issues of the Caribbean region. Subjects covered include labour and employment, industrial relations, decent work, small enterprise development, gender, HIV/AIDS and Labour market information (International Labour Organization, 2010).
 - MANIOC (<http://www.manioc.org>), officially launched in 2009, is a digital library developed by the Université des Antilles et de la Guyane, specializing on the Caribbean, the Amazon, the Guyana Plateau and regions or areas of interest related to these territories. The collection contains thousands of materials: digitized texts, audio, video and iconographic references to cultural, social, economic or political historical events. MANIOC has several private and public partnerships as Conseil général and Ville de Pointe-à-Pitre in Guadeloupe, Conseil général in French Guyana, Fondation Clément in Martinique. MANIOC is an open access initiative to heritage and scientific information. The dLOC has a memorandum of understanding with MANIOC through a new agreement with the Collaborative Initiative for French North American Libraries (CIFNAL) which was set up to make more French material accessible (Digital Library of the Caribbean, 2010b).
 - La Banque Numérique des Patrimoines Martiniquais (BNMP) (<http://www.patrimoines-martinique.org>) is a portal to extensive archival material on the cultural heritage and history of Martinique digitized by the Conseil Général de la Martinique (Morddel, 2010).
 - La Biblioteca Digital Puertorriqueña (<http://bibliotecadigital.uprrp.edu>) at the University of Puerto Rico is a digital archive of primary sources, valuable artwork comprising various cartoons, posters, drawings, photographs, maps, manuscripts, books and other publications. It includes photographs of the invaluable collection of pictures from the newspaper *El Mundo*.
 - There are two institutional repositories in Puerto Rico: the Digital Repository of the University of Puerto Rico (<http://repositorio.upr.edu:8080/jspui>) and the Digital Repository of the Agricultural Experiment Station at the University of Puerto Rico (<http://136.145.83.33:8000/jspui>).
 - The Trinidad and Tobago Digital library (<http://library2.nalis.gov.tt/infofiles/cgi-bin/library.exe>) was started by the National Library of Trinidad and Tobago (NALIS) in the late 1990s (Kangalee and Greene, 2007). Today it comprises over 40,000 items in 7 collections: Julian Kenny Collection; Port-of-Spain from then to now; Historical Society Collection; Caribbean Journal Index; Wayne Berkley Collection; Bill Trotman Collection and the (Trinidad and Tobago) Newspaper Collection.
 - The Virtual Health Library (<http://regional.bvsalud.org/php/index.php?lang=en>) was initiated by the Latin American and Caribbean Center on Health Sciences, also known by its original name Regional Library of Medicine for Latin America and the Caribbean (BIREME, acronym in Portuguese) (<http://regional.bvsalud.org/local/Site/bireme/I/descricao.htm>). A number of regional English-speaking countries are involved in the initiative. In 2000, the Trinidad and Tobago Virtual Health Library (TT VHL) held its first stakeholders meeting and the website (<http://www.vhl.org.tt>) was launched in 2005.
- It must be noted that there are several Latin American and Caribbean studies departments in various universities in the United States, Canada and Europe², some of which have digitized collections with content on the Caribbean, for

² The Latin American and Caribbean studies programmes were set up in Europe subsequent to the Parry Report in 1965 (Craske and Taylor, 2011) and in the US subsequent to the Title VI of the National Defense Education Act (NDEA) of 1958 (United States Department of Education, 2011).

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example Florida International University, Latin American and Caribbean Center (<http://cas-group.fiu.edu/lacc/index.php>) and the University of Florida, Center for Latin American Studies (<http://www.latam.ufl.edu>). The University of Miami Libraries provides the Cuban Heritage Collection (<http://merrick.library.miami.edu/digitalprojects/chc.php>).

One example of an initiative that is no longer vibrant but is worthy of mention is the El Dorado Virtual Library of Iberoamerica and the Caribbean at the Universidad of Colima, Mexico (<http://eldorado.ucol.mx>), a wide-ranging project which started in 1999 with assistance from the United Nations Educational, Scientific and Cultural Organization (UNESCO) to bring together input from the National Libraries of Latin American and Caribbean Countries (Feria, 2007; Feria and Machuca, 2004). It came to end due to a lack of financial support in 2008 but a great deal of work went into the technological support and, according to an e-mail from Feria in 2010, 'it has inspired technological training models, virtual libraries, methodologies for on-line services, content production and management, operation, monitoring and evaluation of digital services'.

Challenges to the implementation of digital projects

At a UNESCO/NALIS sponsored 'Caribbean Digital Libraries Workshop' in 2007, presenters discussed the challenges and opportunities afforded by digital projects. Pitti (2007) noted that funding and a lack of resources affect the ability to acquire the technology, server space, hardware, software, experts and expertise, and the maintenance of projects. Politics can affect the organizing, management, governance and oversight. He stressed that technological challenges are complex and continuously evolving. He felt that collaboration may help overcome the resource, intellectual and technological challenges; however, collaboration and setting up partnerships are in themselves a challenge. He raised, as well, the intellectual (staff who can do cataloguing and metadata, systems administration, database technologist and database

entry specialist) and ethical issues, for example, how to treat with selection criteria, access and preservation.

Fernandez-Aballi (2007) highlighted the legal issue of ensuring the veracity, accuracy and authenticity of digital objects created if they are to serve as surrogates of the original source materials, especially for past events, in terms of archives.

Collection building involving issues of content organization, access, delivery, preservation, networking, interoperability, selection of platforms and development of user-friendly navigation and searchable interfaces was discussed by Rimkus and Kesse (2007).

Kangalee and Greene (2007) stressed the issues of insufficient trained staff, high turnover of staff, identifying items for digitization and the need for subject experts to index content. They suggested using subject experts to get the metadata suitably described, selecting items already in the public domain to stem copyright issues or having to negotiate with rights holders, to use open source software to build expertise without major financial commitment, to maintain archival quality of digital scans, to adopt and adhere to technical standards to ensure quality and persistence and to use offsite back-up.

Sorting copyright issues can be time-consuming and, in some cases, futile. Resolving the holder of the copyright can be difficult, if not, impossible when it appears that no one really knows much, there is little documentation and inadequate legal guidelines. National laws vary greatly – for example 50 years protection in some countries to 95+ years in others. Information posted on the Internet raises other questions: does it matter where the material is posted, published, digitized, or the servers located? Do you go with the place of least coverage or most coverage?

Lynch (2005) claimed that though it is called a digital library, the challenges it provides go far beyond the capacity of librarians to manage as one central issue is that of intellectual property (IP) which, he states, could be too important to be left to librarians who could be seen as merely one stakeholder in the process of managing digital libraries.

Two issues affecting technical expertise in the Caribbean are the 'Brain-drain' where qualified persons (many on national scholarships) are lured abroad by better salaries and working conditions as well as a seemingly higher quality of life and keeping up-to-date with the rapidly evolving technology. The latter requires that you run as fast as you can and opportunities for continuing education or training are fairly limited, not easily accessed or are costly and time consuming as low bandwidth for Internet access, high cost of equipment and expensive travel affect the extent and degree of the possibilities.

DIGITAL LIBRARY OF THE CARIBBEAN (dLOC)

In the beginning

Building on the merit of dreams, like that of Dr Eric Williams, noted earlier, and the newly-realized capability to fulfil such dreams, the idea for the dLOC was first shared with regional librarians and enthusiastically received at the ACURIL conference held in Trinidad and Tobago in May 2004 (Rogers, Marsicek, and Kesse, 2005).

The first planning meeting with interested parties was held two months later in Puerto Rico where detailed governance plans were established and potential funding ideas were explored. Based on a prototype project between the libraries in the University of the Virgin Islands (UVI), Florida International University (FIU) and the University of Florida (UF)³ to build a shared digital library, the 'United States Virgin Islands History and Culture Collection' (<http://dloc.com/iuvi/about>), the plan for the dLOC was described as a 'regional cooperative project' to increase access to Caribbean research resources, build technological capacity, advance Caribbean studies and develop new research initiatives (Kesse, Marsicek, and Rogers, 2007).

³ According to the Farmington Plan, University of Florida was given the responsibility for collecting materials on the Caribbean (Kisling, 2007; Williams, 1953).

Features

Today, the dLOC is described as 'an open access, multi-institutional, multilingual, international digital library' (Wooldridge, Taylor, and Sullivan, 2009). But it is more than just a digital library as it also provides access to archives, private collections and repositories from over 20 partners. It provides users with access to Caribbean cultural, historical and research materials that support Caribbean studies. It plays a role in strengthening local digitization projects in individual countries, provides a digital asset management system, and external back-up for digital files (Figure 2).

While some content was 'born digital,' the holdings are primarily made up of items digitized and submitted by partner institutions. Types of collections include but are not limited to: newspapers, archives of Caribbean leaders and governments, official documents, documentation and numeric data for ecosystems, scientific scholarship, historic and contemporary maps, oral and popular histories, travel accounts, literature and poetry, musical expressions, and artefacts (Digital Library of the Caribbean, 2011).

The dLOC system infrastructure has been developed to serve the users and the partners who provide their materials. The advanced library support includes a trilingual interface, intuitive navigation, searching by topical collections and cross-searching of all partner materials as well as enhanced librarian and user features, namely, advanced, faceted, map and full-text search capability; browsing by creator/contributor, geographic (countries, partner collections, publishers, subject (all, geographic, topical) and titles; multiple views for all items (for example page images, zoomable images, pdf downloads, Flash 360⁰ views, Google maps); and thumbnails of all covers. These features allow several points of entry for searching and browsing thus making the interface very user-friendly and materials easy to retrieve (Loving, Sullivan, and Taylor, 2010). Additional features include MyLibrary, Bookshelves, RSS feeds and the ability to save searches or share content using social media.

In addition, there is a high level of digitization support that has been developed for submitting materials including the dLOC Toolkit, Metadata

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Figure 2: dLOC Homepage

Source: <http://dloc.com>

Encoding and Transmission Standard (METS) editor and the mydLOC interface which allows self-submission of material and online metadata editing of all items by an institution or collection (Loving, Sullivan, and Taylor, 2010).

Benefits

The dLOC provides greater access to physically dispersed collections and to rare and unique items. Technical support has allowed, from inception, Google and other search engines to retrieve, not only the content of dLOC, but that of partners' collections as well. In 2009, there were over 6 million page views (Wooldridge, 2010) and, in 2010, 1,298,224 pages of content (Digital Library of the Caribbean, 2010a). With an average of about 80,000 hits per month there were as few as 56,000 to as many as 133,000 hits in one month. The website provides detailed statistics on its usage and contents.

One of the benefits of involvement is free digital preservation for partner items submitted to dLOC for housing. They are kept in the Florida Digital Archive (FDA) where at least one

other remote storage archive (currently in both Chicago and San Diego) is utilized to ensure content survival against hurricanes, earthquakes, fires and other disasters. Both FDA and UF migrate content forward based on media, hardware and format obsolescence; and both new and old formats are archived (University of Florida Libraries, 2010). In the Caribbean Newspaper Digital Library (CNDL) project, the preservation of newspapers implies savings not only for acquisitions but for holding cost and long-term preservation.

An example of the benefits to all parties is that which UF gets out of providing technical support to dLOC. According to Erich Kesse, though UF bears the cost of the technological development and training, apart from the access to all the dLOC's content (which it could not get on its own or from any commercial venture) it profits from the publicity and input gained from its support of a high profile project (the dLOC) which in turn makes it more successful in seeking grant and donor support. Having dLOC content on UF systems means that its program-

mers receive input from partner institutions on how best to support research using dLOC (to work with the content to make it text searchable, to data-mine it, to place content on maps, to match dLOC content with other content, and, overall, to make it do what researchers want digital libraries to do).

Of the various digital initiatives that have arisen over the last decade, dLOC is the one that is first, if not the only one, identified by many librarians and academics in various countries of the Caribbean. It is not a household name but other initiatives are less well known and mostly popular among niche groups of scholars and researchers and, often, within a single language group. The dLOC has persevered thus far whilst other equally ambitious projects have either lapsed or reduced to a much narrower scope. For the dLOC, the political, cultural and language issues affect not only the type of material provided but all of the mechanisms to do so: the coordination, collaboration, presentation and access issues. The dLOC has been described as thriving for a number of reasons: it has proven to be trustworthy, flexible, responsive, adaptable, accommodating, willing to evolve, proactive, dynamic, empowering and has demonstrated goodwill to its partners by initiating humanitarian efforts.

Successful attributes of the dLOC

Building trust through Collaborative Governance and Partnerships

Collaborative governance is one of the unique features of the dLOC. This model was developed under the founding directors of the initial project: Catherine Marsicek (former Librarian, FIU), Judith Rogers (Librarian, UVI) and Erich Kesse (former Librarian, UF) in collaboration with the initial dLOC partners: Archives Nationale d'Haïti, Caribbean Community Secretariat (CARICOM), National Library of Jamaica (NLJ), La Fundación Global Democracia y Desarrollo (FUNGLODE), and Universidad de Oriente, Venezuela.

Collaboration works when institutions are willing to contribute in their areas of strength. The dLOC started with US libraries having the know-how (technical, managerial, planning, and

leadership skills) and experience in obtaining funding who wanted greater access to the unique resources of the Caribbean and Caribbean libraries, who in their turn wanted greater visibility, wider access and preservation for their resources as well as to build their technological capacity. It has worked successfully as all parties derive benefits and maximize use of limited resources.

Challenges with governance usually stem from slow or no feedback from partners so the initial model of collaborative governance was based upon an Executive Committee composed of one member from each partner institution and one from each of the support institutions.

Building partnerships is a crucial part of the dLOC administrative activity. The dLOC facilitates members from inception by having minimal standards to join, namely, having Caribbean content and a willingness to share, to comply with standards and designate a representative. Also facilitating contribution is that partners are allowed to belong to more than one digital library as membership is non-exclusive. A few of the initial partners already had their own local digital libraries in process when they joined dLOC.

Today there are 17 Caribbean and 8 US partners (Figure 3).

One of the key reasons for success has been dLOC's ability to be flexible, respond and evolve as circumstances change. This can be illustrated in changes made to the governance structure over the years. In 2009, as the number of partners had increased, it was agreed to elect an Executive Board of 7 partner members and 3 US member representatives, a more amenable size to focus on the decision-making and policy aspects. The Executive Board meets at the Annual ACURIL conference, and uses conference calls and a listserv to keep in touch during the year.

Another flexible arrangement is the possibility of a one-off contribution by 'unofficial' partners, that is, institutions which wanted to have their content digitized and available but not join the dLOC officially. Examples are El Pilar Maya Reserve, Instituto de Ciencia y Tecnología Agrícolas (ICTA, Guatemala) and the Research Institute for the Study of Man (RISM). The latter contributed a large number of English



Figure 3: dLOC partners
Source: <http://dloc.com/dloc1/partners>

Caribbean newspapers, for example *Tapia* and *Dominican Star*.

Building trust with Collaborative Collection Building

Like Europeana (<http://www.europeana.eu>), the Library of Congress's National Digital Newspaper Program (NDNP) (<http://www.loc.gov/ndnp>), MANIOC and the El Dorado Digital Library, the dLOC has a collaborative approach to collection building.

The Caribbean countries, having been colonized, are concerned with reason about losing their patrimony as they have lost control of many of their items of national pride and historical documents. They fear losing ownership and control, of appearing incapable of managing their collections, of losing status in the region and wondering what is the hidden agenda of the other parties. Within dLOC, partners retain ownership of the material they provide. This works towards building trust and increased cooperation and contribution. Content can be presented to

users either as dLOC material or partner custom homepages with wordmarks showing ownership.

Models of cooperation, in order to encourage collaboration and sustainability, have to be flexible and accommodating so the dLOC allows multiple ways of providing content acknowledging the various levels of technology at partners' institutions. Partners may:

1. Contribute digital content to dLOC's centralized repository via FTP or another form of Web transmission.
2. 'Snail mail' dLOC hard disks, CD-ROMs, DVDs, or other digital media containing items for submission.
3. Make their digital collections available to dLOC in compliance with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) (Digital Library of the Caribbean, 2011).

The dLOC is an example of the region taking some responsibility for its content. Previously,

the region gave away its information resources in order to make them available internationally and in turn paid to access the downstream products.

Managing Copyright issues

The dLOC, showing understanding of the complexity of the Caribbean and related copyright issues, does not make any claim to ownership of the materials it hosts and serves in its collection. It is expected that partner institutions can best determine if a resource is in the public domain or negotiate the permissions for online distribution and are, therefore, responsible for researching and ensuring compliance regarding copyright issues of the materials they are sharing with dLOC. The holding institutions retain all rights to the resources and only grant dLOC non-exclusive digital distribution rights for non-commercial educational use. If the copyright status of an item online is challenged, it is immediately removed and attempts to seek permission are undertaken. If a user seeks to use an item in a publication or in another commercial use, he/she must contact the holding institution. There is a standard form (available on the Digitization page (<http://dloc.com/dloc1/digit>) on the dLOC website) which is used to request copyright permissions.

In the Caribbean Newspaper Digital Library (CNDL) (<http://dloc.com/cndl>), a sub-collection of the dLOC, there is a waiting period between 1 month and 5 years, which depends on the frequency of the publication and other factors, before placing current content online. It has been found that making back publications available online builds brand awareness and encourages people to subscribe to the current content.

Securing Substantial Funding

So far the financing of the dLOC has been successful. It was initially funded for the period 2005-2009 by the United States Department of Education's Technological Innovation and Cooperation for Foreign Information Access (TICFIA) Program (<http://www.ticfia.org>) using US Federal funding. TICFIA has developed some 30 digital initiatives since 1999 in different regions in the world. According to Brooke Wooldridge, dLOC's project coordinator, most

TICFIA funded projects are not shared governance and the dLOC may be used as a model for future TICFIA funded projects because it appears to be working well.

A second grant covering 2009-2012 was secured from TICFIA for the Caribbean Newspaper Digital Library (CNDL). The dLOC also receives great administrative support and leadership from FIU (in partnership with the UVI and UF) as the dLOC coordinator is based there (any institution willing to host the dLOC project coordinator could be expected to support any shortfall in grant funds).

Being proactive, dLOC is already considering plans for the period beyond the second TICFIA funding. Of crucial concern is the funding of the post of project coordinator as this role is pivotal in ensuring the sustainability of the venture. Currently, the financing model includes grant, private (donors of money for specific projects) and partner institutional support providing content (i.e. labour and resources for digitization and metadata). In joining content development needs (for example enhanced searching) with technology development, dLOC can use this as justification to procure further grant funding. Another possibility for financing may be membership fees or commercialization (where it does not violate the founding principle that the content remains free in the Caribbean).

Extensive Technical Support and Training

The dLOC is completely standards compliant, fully harvestable and will migrate forward as the technologies evolve. Its technical infrastructure, which includes: highly advanced OCR/text conversion (\$60,000), zoom image technologies (\$25,000), and a sophisticated digital library interface (\$150,000 annually), is provided by the UF Digital Library Center (UFDC) in association with the Florida Center for Library Automation (FCLA) (Wooldridge, 2010).

The dLOC's willingness to grow, develop and adapt to changing circumstances, all qualities of sustainable projects, is illustrated in how it treats with the software basis for the enterprise. The dLOC is committed to using open source software having started with Greenstone ([ALEXANDRIA, 22\(1\), 2011](http://</p></div><div data-bbox=)

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www.greenstone.org) with its support for multiple language capability. New software has had to be created to cope with the degree of technical support needed to establish and maintain the rapidly growing website and provide the level of functionality needed. Using UF's extensive resources, customized software, SobekCM (<http://dloc.com/sobekcm/architecture/overview>), was developed. Currently, to improve search functionality, there are plans to change to Apache Lucene/Solr Java-based software.

Training for dLOC partners is integral to its operations. In some cases, dLOC has been able to collaborate with partners to acquire funding both for state-of-the-art digitization equipment and on-site training from its expert staff (4-5 persons at the UFDC). Since 2007, to build capacity in partner institutions, dLOC has provided equipment to 6 partner institutions and has provided access to technology and training for about 350 persons at 14 partner institutions (Wooldridge, 2010). Its approach to developing local capacity is extensive in that training and follow-up support (via Skype or telephone calls) is dynamic and empowering, thus demonstrating much goodwill – this was enthusiastically corroborated by the CARICOM member, Maureen Newton. As the number of partners continues to increase, online training videos are being developed for new partners and on-site visits will be used for troubleshooting or advanced training.

Encouraging Usage

It might be said that one of the reasons for the success of the dLOC is the treating of the project as a 'library' and not an 'IT' project. An IT approach would violate Ranganathan's Third Law 'Every book, its reader' as it would simply ensure that the items are online and searchable. But a library approach treats with user needs and encourages use of the resources in as many ways as possible, thus 'with increasing access to more resources and more ways to search for them, every book or information source can make its way to its appropriate user' (Cloonan and Dove, 2005).

The dLOC has, from inception, been very

concerned about usage of its content. In order to make materials meaningful, topical collections have been developed within a subject area, so that users can find related materials easily. Noting that users have a preference for websites that are user-centred and are easy to use and navigate as well, dLOC has undertaken several usability studies (Sullivan and Ochoa, 2009). Enhancing navigational and searching features is used to encourage use, for example content is linked to maps.

Another unique feature to encourage use is that of the Scholarly Advisory Board (SAB). The Executive Board names the SAB whose members are recruited from organizations such as the Caribbean Studies Association (CSA), Haitian Studies and other entities representing Caribbean interests. It is comprised of seven Caribbean Scholars, whose responsibility it is not only to identify content for inclusion and possible partners, but to build strong thematic collections. The latter would help to develop connections across the content, thus make sense of and discover resources that may not happen by simply searching. One of the first thematic collections underway is 'Haiti, an Island Luminous', which will pair original documents with expert commentary from scholars highlighting key moments over the past 500 years in Haiti from the early indigenous peoples to the fall of Duvalier in 1986.

Intensive Outreach Efforts

The dLOC has managed to use attendance conferences and meetings as well as publications to market its work and content as well as attract partners. Over time, the founders, administrators and technical personnel have made concerted efforts to make presentations and publish articles on dLOC.

Partners are expected to promote dLOC resources just as they would their own library resources. As a strategy to increase use, dLOC is involved in introducing it as a classroom teaching tool, holding US nationwide lesson plan competitions; presentations and booths at local and national conferences; conducting scholarly lecture series; US regional primary and secondary teacher training workshops, for example

Integrating Technology and Area Studies: Discovering Caribbean Diversity; and collaborative group work encouraging teachers to use dLOC in their classrooms – the Teaching Guides collection now hosts 36 titles with over 6,500 hits.

Currently, most of the promotion for the dLOC occurs in the US and the Caribbean but new connections in Europe and Australia have started as well. Based on user inquiries, it can confidently be said that dLOC brings Caribbean content to users across the world.

Maintaining Strong Links

The ability and willingness of dLOC's project coordinator to travel to partner locations to interact in person, to provide instruction, develop personal relationships, troubleshoot technical issues and understand local problems which affect participation is a key effort towards securing sustainable partnerships.

Fernandez-Aballi (2007) highlighted the use of strong library associations to support digital initiatives. The regional library association, ACURIL, has a membership which reflects about 110 institutional members, 10 association members and 80 personal members (Renwick, 2002). The annual average attendance is about 250-300 persons mainly from the region and representing all kinds of libraries. From inception, dLOC has fully utilized the opportunities afforded by ACURIL's strong regional cooperation and resources sharing when it holds its General Membership Executive Board meetings as mandated by the dLOC bylaws (dLOC, 2009). It has used the networking opportunities to involve new partners and promote its contents widely by doing presentations, conducting workshops and usability studies at annual ACURIL conferences.

Building trust with humanitarian efforts

The dLOC is involved in humanitarian efforts among partner countries. It started the 'Protecting Haitian Patrimony Initiative' (<http://dloc.com/info/haitianlibhelp>) which works to facilitate communication, coordinate in-kind donations, and raise money for the preservation of at-risk library and archival collections after Haiti's devastating earthquake in January 2010.

The dLOC will house, temporarily at least, the Haiti Legal Patrimony Project (<http://www.llmc.com/HaitiOverview.asp>) by which the Law Library Microform Consortium (LLMC) and the Center for Research Libraries (CRL) has created a large-scale project to digitize a comprehensive collection of historical Haitian legal publications after the earthquake in 2010. The selected documents range from the 1801 declaration of independence and significant constitutional items to early twentieth-century statutes and government reports (Kerr, 2011).

CONCLUSION

Aristotle said 'the whole is more than the sum of its parts'. This most certainly describes collaborative digital projects where the contribution of many is greater than that of a single library operating on its own. A shared library reduces costs and no single physical library can satisfy all a researcher's needs but collaboration brings them closer to that goal. Digital libraries also support Ranganathan's Fourth Law which is to 'save the time of the reader' (Cloonan and Dove, 2005).

The dLOC is flexible, has mechanisms to ensure growth, is willing to adapt to change and assist in development (Haiti partnership). Maybe the dLOC is an example of the 'killer app.' which Witten suggested would bridge the gap between the haves and the have nots, especially when there is a high quality of technology and a high level of commitment of the people involved in the leadership and technical support of the US institutions and at the Caribbean partnership level. Those involved have been capable of contributing or availing themselves of the necessary training and committed enough to contribute consistently.

The dLOC's treatment of the needs of the partners and users is the best reflection of why it has been successful thus far. It includes partner members in the decision-making process, responds to their needs and makes every effort to make their involvement as easy as possible by training and providing extensive support in multiple ways. For users, there have been extensive technological developments to enable them to

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find relevant resources as well as creating various mechanisms to ensure that ‘relevant resources find their user’.

While acknowledging the tremendous potential benefits, Francis (2008) warns that ‘the technology has to be managed within the context and circumstances of the economies of these countries and of competing development interests’. So far the dLOC has not been called upon to test partnerships and policies, for example what if a partner withdraws – their content would lose visibility and preservation but what would happen to the users of that content? What happens if political issues develop between countries? Should there be a mirror for the site in another developed country – what would be the implications for policies and partnerships?

There is work on developing new models for long term sustainability, on devising new projects that can be funded either locally or internationally, to continue providing training for digitization as a form of preservation both in person and online and to continue to reach out to scholars, libraries and archives to provide access to new content. One project would be to develop a culture of granting as digital libraries require large sums in addition to the recurrent expenditure of maintaining traditional libraries. Another challenge would be the continuing technical upgrades.

Endorsements of its commendable efforts so far are noted in reviews, for example the University of Buffalo Libraries faculty notes that the dLOC ‘is highly recommended for upper level undergraduates to professionals doing research on Caribbean culture and history’ (Ganster, 2010); and Intute, a consortium of seven British universities describes the dLOC as ‘an exceptionally valuable, and international, resource’ (Intute, 2010). Regarding the future, another review notes that ‘as impressive as the Digital Library of the Caribbean is now, it will only get more impressive later’ (Harpham, 2010).

LIST OF URLS

- La Banque Numérique des Patrimoines Martiniquais (BNMP) – <http://www.patrimoines-martinique.org>

- La Biblioteca Digital Puertorriqueña – <http://bibliotecadigital.uprrp.edu>
- BIREME – <http://regional.bvsalud.org/local/Site/bireme/I/descricao.htm>
- The Caribbean Digital Library – <http://www.eclacpos.org/cdl/cdl.asp>
- Caribbean Newspaper Digital Library – <http://dloc.com/cndl>
- Digital Libraries Federation (DLF) – <http://www.diglib.org/dlfhomepage.htm>
- Digital Library of the Caribbean (dLOC) – <http://dloc.com>
- Digital Libraries of the Caribbean (dLOC) Digitization page – <http://dloc.com/dloc/digit>
- Digital Library of the Caribbean (dLOC) Map – <http://dloc.com/map>
- Digital Library of the Caribbean (dLOC) Partners – <http://dloc.com/dloc1/partners>
- Digital Repository of the Agricultural Experiment Station, University of Puerto Rico – <http://136.145.83.33:8000/jspui>
- Digital Repository of the University of Puerto Rico – <http://repositorio.upr.edu:8080/jspui>
- El Dorado Virtual Library of Iberoamerica and the Caribbean at the Universidad de Colima, Mexico – <http://eldorado.ucol.mx>
- Europeana – <http://www.europeana.eu>
- Florida International University, Latin American and Caribbean Center (LACC) – <http://casgroup.fiu.edu/lacc/index.php>
- Greenstone – <http://www.greenstone.org>
- Haiti Legal Patrimony Project – <http://www.llmc.com/HaitiOverview.asp>
- The ILO Decent Work Team and Office for the Caribbean – <http://www.ilocarib.org.tt>
- Library of Congress National Digital Newspaper Program (NDNP) – <http://www.loc.gov/ndnp>
- Manioc – <http://www.manioc.org>
- Protecting Haitian Patrimony Initiative – <http://dloc.com/info/haitianlibhelp>
- SobekCM – <http://dloc.com/sobekcm/architecture/overview>
- Technological Innovation and Cooperation for Foreign Information Access (TICFIA) – <http://www.ticfia.org>
- Trinidad and Tobago Digital library – <http://>

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- library2.nalis.gov.tt/infofiles/cgi-bin/library.exe
- Trinidad and Tobago Virtual Health Library (TT VHL) – <http://www.vhl.org.tt>
 - United States Virgin Islands History and Culture Collection – <http://dloc.com/iuvi/about>
 - University of Florida, Center for Latin American Studies – <http://www.latam.ufl.edu>
 - The University of Miami Libraries: Cuban Heritage Collection – <http://merrick.library.miami.edu/digitalprojects/chc.php>
 - The UWI Mona Library Digital Collection – <http://library-contentdm.mona.uwi.edu/index.php>
 - UWI Space – <http://uwispace.sta.uwi.edu/dspace>
 - The Virtual Health Library – <http://regional.bvsalud.org/php/index.php?lang=en>
 - World Digital Library – <http://www.wdl.org/en>
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ABSTRACT

As a result of evolving Information and Communication Technologies (ICTs), digital libraries which allow for greater accessibility and preservation of information have been started in earnest in the last decade or two. Several digital initiatives have been implemented recently in the Caribbean, about 40 countries with diverse history, culture, language, religious and socio-cultural backgrounds. Affordable technology and infrastructure, networking and cataloguing expertise, enduring collaboration, workable governance mechanisms, intellectual property/copyright measures, adequate financing and ongoing training are imperative for the sustainability of these projects. One of the more well-known and well-regarded is the trilingual Digital Library of the Caribbean (dLOC) which was established to provide greater visibility of, and accessibility to, Caribbean materials in order to further Caribbean studies. The initial vision for the dLOC was outlined in 2004 at the Association of Caribbean University, Institutional and Research Libraries conference in Trinidad and Tobago. After successfully obtaining US Federal funding, four US Libraries and five Caribbean partners established a unique model of collaborative governance and collection building. With leadership and extensive technological development and preservation activities by several Florida Universities, the dLOC has provided support and training to its Caribbean partners, who together have met successfully many technological, intellectual and ethical challenges to Caribbean digital initiatives to produce a user-friendly interface with extensive search functionality. The dLOC, now a multi-institutional project with international usage, appears to have implemented sustainable practices; has proven to be trustworthy, flexible, responsive, adaptable, proactive and empowering; and has demonstrated goodwill through humanitarian efforts.