Digital Humanities and the Sustainable Development Goals: a reflection for Information Science

Humanidades Digitais e os Objetivos de Desenvolvimento Sustentável: uma reflexão para a Ciência da Informação

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Abstract

This study aimed to investigate Digital Humanities projects that may be aligned with the 17 2030 Agenda Sustainable Development Goals. The study is characterized as an exploratory and descriptive research, and as for its investigative procedures, it is a documentary research, which analyzed 40 Digital Humanities projects. We have found that approximately 51% of the analyzed projects carry out actions and services that contemplate SDG 11, especially target 11.4 aiming to strengthen, protect and safeguard cultural heritage. Digital Humanities projects are the practice of combining emerging digital and computational tools with humanistic studies, and they can be aligned with all SDGs in an interconnected and interrelated way.

Keywords: Digital humanities. Projects. 2030 Agenda. Sustainable Development Goals.

Resumo

O estudo visa investigar projetos de Humanidades Digitais que possam ser alinhados com os 17 Objetivos de Desenvolvimento Sustentável da Agenda 2030. O estudo caracteriza-se como uma pesquisa exploratória e descritiva, e quanto aos seus procedimentos investigativos, é uma pesquisa documental, que analisou 40 projetos de Humanidades Digitais. Constatou-se que aproximadamente 51% dos projetos analisados realizam ações e serviços que abordam o ODS 11, especialmente a meta 11.4, que busca fortalecer, proteger e salvaguardar o patrimônio cultural. Entretanto, pode-se ver que projetos de Humanidades Digitais são práticas que combinam ferramentas digitais e computacionais emergentes com estudos humanísticos, podendo ser alinhados com todos os ODS de forma interligada e inter-relacionada.

Palavras-chave: *Humanidades digitais. Projetos. Agenda 2030. Objetivos de desenvolvimento sustentável.*

Introduction

The 2030 Agenda covers the environmental, social, and economic dimensions of Sustainable Development, consisting of 17 Sustainable Development Goals (SDGs), with 169 universal targets, whose progress is monitored by 231 global indicators (Organização das Nações Unidas Brasil, 2015).

In this context, governments, institutions, organizations, and civil society have been working towards achieving the 2030 Agenda SDGs. With the same goal, many areas of knowledge, among them Information Science, have debated and studied how they can contribute to and support the 2030 Agenda.

According to Costa and Alvim (2021), we can see the evolution of the 2030 Agenda and its academic, professional, and social relevance among Information Science researchers in several countries around the world. Research, such as that presented by Nolin (2010), already indicated the need for Information Science to connect concepts such as information and information society to the concept of sustainable development, with two distinct parts: information for sustainable development ("seen as a resource for the project of sustainable development") and development of sustainable information ("creating sustainable information and communication technologies").

In turn, Kamińska, Opalinski, and Wycislik (2022) present a study where they identify the main areas within Information Science that have linked and/or explored sustainability issues in their research. In this regard, areas such as information and ICT and education stand out, unlike others such as collections management, sustainable buildings construction, cultural heritage preservation and facilitation of open access to it.

However, it will be necessary to establish a scientific debate with scientific areas that have been emerging and occupying more and more space in the interest of the international scientific community, mainly seeking to support and present solutions to humanity's urgent needs.

Therefore, Digital Humanities has been consolidating itself as an area of research closely related to Information Science. Digital Humanities have characteristics, according to Pimenta (2016, p. 22), of "[...] a kind of hybrid field not only of study and research, but of teaching, and especially of access to information and innovation".

To reinforce this, Andrade and Dal'Evedove (2020, p. 441) explain that there is a "[...] certain consensus in the scientific community" in viewing Digital Humanities "as a transdisciplinary field that involves research and practices of Humanities and Social Sciences as it relates to the digital environment", referring mainly to "the promotion of access to information, data, and knowledge production".

Andrade and Dal'Evedove (2020, p. 441) further point out that Digital Humanities "emerge as a contemporary movement that seeks support in computing technologies to remain up-to-date in convergence with the goals of today's society".

Thus, seeking to relate the 2030 Agenda with Digital Humanities, this study questions: How can Digital Humanities support the achievement of the 2030 Agenda SDGs? Thus, this study aims to investigate projects, actions, and studies on Digital Humanities that may be aligned with the 17 SDGs. We take into account that one of the aspects that advocate the 2030 Agenda goals is the use and access to technologies and innovations to achieve Sustainable Development.

Digital Humanities and the 2030 Agenda:
a reflection for Information Science

With the emergence of research that showed the advent of an area that brought, at its core, the combination of traditional scientific problems of social sciences and humanities and the investment in solutions based on the use of techniques, methods, and practices of computing and information technologies, Digital Humanities quickly gained space in the scientific debate of areas such as Information Science.

Castro (2019, p. 37) points out that we can view the "plurality" of Digital Humanities "[...] in its interdisciplinary characteristic" as "[...] a facilitator for an accommodation between areas, themes, and objects". Addressing the field of Information Science, Paletta (2018, p. 161) comments that, currently, Digital Humanities can assist in the "search for informational solutions and services in the digital age and network society".

Pimenta (2016, p. 31) explains that Information Science must focus and relate its studies to what Digital Humanities advocate, because, according to the author, "[...] a field whose information, its organization, along with technology and its 'public' orientation have not failed to give us signs of growth in recent years". Regarding Digital Humanities, Pimenta (2016, p. 30) describes that "[...] they are a self-reflective field capable and willing that the application of digital technologies aimed at the Humanities is itself the researcher's object of investigation".

In this context, reflecting on the insertion of humanitarian approaches in scientific areas, specifically relating them to Sustainability and Sustainable Development, becomes necessary for Information Science, which can be aligned by Digital Humanities. However, it is essential to understand what the terms "sustainability" and "sustainable development" mean.

Despite the growing discussion of the terms "sustainability" and "sustainable development", both in academic discourse and in business circles, in public policies of interest to civil society in general, which even engage with Digital Humanities, "[...] there is no consensus on what exactly the term Sustainable Development means, or what exactly Sustainability is, and what they aim to achieve" (Edmond; Morselli, 2020, p. 23).

The globally accepted concept of Sustainable Development was presented by the World Commission on Environment and Development in 1987, which stated that Sustainable Development presupposes a development model that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987).

Currently, due to numerous events, humanity has been discussing how we can make our lifestyles more sustainable, seeking to prevent the acceleration of climate crisis, social inequality, and extreme poverty. With this in mind, international organizations have been carrying out awareness and mobilization actions so that all people, companies, governments, academics, and civil society in general reflect on the consumption of our natural resources, with the aim of ensuring that the next generations can use the same resources in a conscious, responsible, and lasting way.

Reinforcing this perspective, Geraldo and Pinto (2020) point out that Information Science, as an area that studies, manages, and organizes means of disseminating and using information, must also be inserted in the issue of sustainability, seeking to supply the informational needs of a sustainable society. Thus, in reflecting on a more humanitarian Information Science, the field must align with the global goals, such as the 2030 Agenda SDGs.

Methodological Procedures

This study is characterized as an exploratory and descriptive research, in which an extensive survey was carried out in national and international websites as well as the Around DH in 80 days platform, an initiative led by researcher Alex Gil (c2023), which mapped 80 digital humanities research projects around the world, with the aim of searching for scientific references, experience reports, documents, reports, and publications from scientific institutions that develop Digital Humanities projects. In this context, this study is characterized as a documentary research in terms of its investigative procedures.

The sources of information collected from Digital Humanities projects underway in 2023, from North America, Latin America, Europe and Asia, in order to meet the objective of this study, which is to investigate projects, actions and studies on Digital Humanities that may be aligned with the 17 SDGs of Agenda 2030, were: (a) Cambridge Digital Humanities (University of Cambridge Digital Humanities, 2022)— 11 projects; b) The European Association for Digital Humanities (2022) — 10 projects; *Universidade de São Paulo* (USP, University of São Paulo) — Digital Humanities (Research Groups) — 06 projects; and Around HD in 80 days database — 14 projects. A total of 40 projects were selected and assessed.

The collection sources above were chosen because they are the platforms that contain the most Digital Humanities projects as well as having detailed information about the creation, execution, and operation of the project. For analyzing the projects, it was taken into consideration that each one had to meet the following conditions: having digital assets, technological infrastructure, offering services and utilities. Moreover, it was also considered that they had to be open access projects and highlight collaboration as a criterion for their development.

As demonstrated, this study analyzed 10 (25%) projects from Cambridge Digital Humanities; 10 (25%) from The European Association for Digital Humanities; 06 (15%) from USP - Digital Humanities (Research Groups); and 14 (35%) from the Around DH in 80 days database.

In order to meet the objective of the study, the data and information triangulation method was used, comparing the information on the objectives and focus of the analyzed Digital Humanities projects with what each of the 17 SDGs of the 2030 Agenda advocates. The final objective is presenting projects aligned with the Global Goals and, consequently, demonstrating how Information Sciences linked to Digital Humanities can support the 2030 Agenda SDGS.

Decrop (2004) states that data triangulation means considering the same phenomenon, or research question, from more than one data source. Thus, information from different angles can be used to corroborate, elaborate, or illuminate the research problem, limiting personal and methodological biases and increasing study generalizability.

For collecting data on the projects, the technique presented by Triviños, in 1987, was used as a systematized representation of triangulation that has specific application steps. Thus, Figure 1 below presents, in a schematic way, the triangulation used to obtain the results of this study.

As we can see in Figure 1, the execution of triangulation was based on a study by Triviños (1987), in which, to collect data on the projects' objectives, the author highlights using primary data collection techniques, such as reading the projects in their entirety and identifying the objectives and results obtained. For primary data treatment, the author does not define the data collection techniques. It is understood that they can be verified through all the collection techniques already mentioned and even, for example, through content analysis, since they are basically data that indicate characteristics of the preparation and execution of analyzed projects in relation to the 169 targets of SDGs.
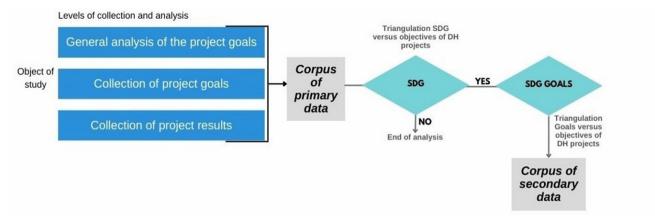
Figure 1 — Data triangulation .
Source: The authors (2022), based on Triviños (1987).

Thus, triangulation used different sources of evidence, which are analyzed together, in which the research findings were based "on the convergence of evidence from different sources of information, thus enabling even the analysis of qualitative and quantitative data" (Yin, 2001).

Results and Discussion

Tables 1, 2, 3 and 4 present the Digital Humanities projects that were analyzed, indicating the SDGs and, respectively, the goals that each project contemplates from the 2030 Agenda.

As presented in Table 1, the Casebooks (Austria) project conducts studies of astrologers' medical records, which are made available in a digital environment with the goal of using practical digital tools for accessing, studying, and analyzing the data in a framework of engagement with interested researchers. Thus, we can see that this project can be aligned with SDG 3 (Good Health and Well-Being) of the 2030 Agenda, as it provides access to important information on the history of medicine practice for researchers and other interested people and institutions. Therefore, this is in line with targets 3.b and 3.d (Support research and development, and improve early warning systems for global health risks).

Table 1 — Research collection sources: Cambridge Digital Humanities.

Project	Related SDG	Related universal target(s)
Casebooks	3	3.b and 3.d
Ghost Fictions	9	9.4 and 9.5
IFTE	5, 9 and 10.	5.b, 9.1 and 10.2
Islamicate Manuscripts	11	11.4
Watermarks	4 and 9	4.2, 4.b and 9.1
Faust Shop	11	11.4
Online Chopin Variorum Edition	4 and 11	4.2, 4.b and 11.4
Mapping The Jewish Communities Of The Byzantine Empire	11	11.4
Visual Representations Of The Third Plague Pandemic	3	3.d
Epsilon	9	9.5 and 9.c

Source: Research data (2022).

Table 2 – Research collection sources: The European Association for Digital Humanities.

Project	Related SDG	Related universal target(s)
Darian Teach	4 and 9	4.2, 4.b and 9.5
DH.arc projects	4	4.2 and 4.b
1914-1918-online	11 and 17	11.4 and 17.9
@note	9	9.5
A world of Possibilities	11	11.4
AC/E Digital Culture Annual Report	11	11.4
ACT	11 and 16	11.4 and 16.10
ALCIDE	9	9.5
Archive Alert	11	11.4
Biblissima	11	11

Source: Research data (2022).

Table 3 – Research collection sources: USP - Digital Humanities (Research groups).

Project	Related SDGs	Related universal target(s)
Carolina (*Corpus Aberto para Linguística e Inteligência Artificial,* Open *Corpus* for Linguistics and Artificial Intelligence)	4 and 11	4.2, 4.b and 11.4
M.A.P. (*Mulheres na América Portuguesa,* Women in Portuguese America)	5	5.b
Catalogação, descrição e edição de documentos impressos em língua alemã na Brasiliana Digital (Cataloguing, describing, and editing German-language printed documents in Brasiliana Digital)	11	11.4
Edições filológicas e processamento automático de textos na Brasiliana Digital (Philological edits and automatic text processing in Brasiliana Digital)	11	11.4
Implementação de bancos de dados para dicionário biobibliográfico de viajantes portugueses na biblioteca Brasiliana USP (Database implementation for a biobibliographical dictionary of Portuguese travelers in the Brasiliana USP library)	11	11.4
O processamento digital de imagens e a descrição de documentos iconográficos na Brasiliana Digital (The digital processing of images and the description of iconographic documents in Brasiliana Digital)	11	11.4

Source: Research data (2022).

Table 4 – Research collection sources: Around DH in 80 days.

Project	Related SDGs	Related universal target(s)
Eastcree.org	11	11.4
Maker Lab in the Humanities	4 and 9	4.b and 9.5
Texas Slavery Project	11	11.4
Vectors	9 and 10	9.5 and 10.3
Afrolatin@Project	10 and 11	10.3 and 11.4
Virtual Library	11	11.4
Memories of Austral Patagonia	4 and 11	4.7 and 11.4
The Digital Library of the Caribbean (dLOC)	11	11.4
National Palace Museum Virtual Museum	11	11.4
Frog in a Well	11	11.4
Digital Harlem	11	11.4
Canterbury Earthquakes Digital Archive – CEISMIC	11	11.4 and 11.5
Aluka	4	4.1 and 4.7
Zamani	15	15.1

Source: Research data (2023).

Regarding the Ghost Fictions project (United Kingdom), the goal is to encourage deeper critical engagement with machine learning by humanities researchers and more public debate about the role of AI in culture and society. This is in line with SDG 9 (Industry, Innovation and Infrastructure), in which target 9.5 aims to enhance scientific research and upgrade technological capabilities, and target 9.4 seeks increased resource-use efficiency and greater adoption of technologies.

The IFTe project (Ireland), which is a network of intersections of feminism, technology and Digital Humanities, addresses a critical challenge in contemporary society and culture, specifically in gender imbalance in computational practices and systems. In this case, the project is an interesting way to support SDG 5 (Gender equality) and SDG 10 (Reduced inequalities), especially targets 5.b (Enhance the use of enabling technology), in particular information and communications technology, to promote the empowerment of women, and 10.2 (Empower and promote the social, economic and political inclusion of all, irrespective of age, sex). Furthermore, it promotes equitable innovation (target 9.1 of SDG 9).

Regarding the Islamicate Manuscripts project (United Kingdom), they work specifically with treatment and access to history and culture, in which they trace the movements of Islamic manuscripts before the point of institutional acquisition in cases where this history has not been recorded, in order to create a better understanding of provenance in relation to multiple acts of ownership, appropriation, and acquisition over time. Thus, we can make a connection with SDG 11 (Sustainable cities and communities), where target 11.4 aims to strengthen efforts to protect and safeguard cultural heritage.

The digital approaches to the capture and analysis of Watermarks (United Kingdom) project uses innovative computer vision and image techniques to provide insight into the organization and chronology of a body of manuscript material, in which it is realized that the software is open source and addresses a real gap in the analysis of virtual archives, available to all cultural institutions. Thus, it supports SDGs 4 and 9 of the 2030 Agenda (Quality Education - Inclusive Innovation), especially regarding targets 4.2 and 4.b (Equal access to inclusive and safe education). It also supports target 9.1, promoting inclusive innovation.

The Faut Shop project (United Kingdom) engages with users in augmented spaces from an aesthetic and affective perspective in online actions, drawing on a mediated theatricality space, examining digital dramaturgy and digital aesthetics in cross-reality performance. Thus, it connects with SDG 11 (Sustainable cities and communities), where target 11.4 aims to strengthen efforts to protect and safeguard cultural heritage [...] (Organização das Nações Unidas Brasil, 2015).

Regarding the Online Chopin Variorum Edition project (United Kingdom), it provides digital images of manuscripts and early editions of selected works by Polish composer Fryderyk Chopin. Its main aim is to facilitate and enhance the comparative analysis of these primary sources, achieving a degree of flexibility beyond existing printed editions of Chopin's music and of any composer to date. Thus, it collaborates with SDGs 11 and 4 (Sustainable cities and communities - Quality education), in which target 11.4 aims to strengthen efforts to protect and safeguard cultural heritage [...], in addition to targets 4.2 and 4.b (Equal access to inclusive and safe education).

Regarding the Mapping the Jewish Communities of the Byzantine Empire project (United Kingdom), we can see that this project aimed to map the Jewish presence in the Byzantine empire using Geographic Information Systems (GIS). Information (published and unpublished) about Jewish communities is collected and compiled, and data incorporated into a GIS available online. Users are able to create maps according to their own specifications. Thus, it also supports SDG 11 (Sustainable

cities and communities), in which target 11.4 aims to strengthen efforts to protect and safeguard cultural heritage [...] (Organização das Nações Unidas Brasil, 2015).

The Visual Representations of the Third Plague Pandemic project (United Kingdom) presents visual representations of the Third Black Death Plague Pandemic by collecting and analyzing photographs as well as other visual documents. The central role of the project is shaping both scientific understandings and public perception of infectious disease epidemics in the modern era. In this context, the project is linked to SDG 3 (Good Health and Well-being), especially target 3.d (Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction, and management of national and global health risks) (Organização das Nações Unidas Brasil, 2015).

Finally, the Epsilon project (United Kingdom), shown in Table 3, promotes and supports the digital creation, delivery, and preservation of scientific correspondence. It was designed to link documents from multiple sources for research and cross-analysis. Thus, it is in line with SDG 9 (Industry, Innovation and Infrastructure), as it supports the significant increase in access to Information and Communication Technologies (target 9.c), and target 9.5 (Enhance scientific research, upgrade technological capabilities [...]) (Organização das Nações Unidas Brasil, 2015).

Regarding Table 2, the Darian Teach project (Ireland, Denmark, Greece, Austria, Serbia, The Netherlands, Luxembourg, Switzerland) can be aligned with SDG 4 (Quality Education) and SDG 9 (Industry, Innovation and Infrastructure), specifically target 9.5 (Enhance scientific research, upgrade technological capabilities [...]) (Organização das Nações Unidas Brasil, 2015), since it shares and reuses computational resources in a tool for people to publish their teaching materials and for others to use them in their own teaching. Its content is designed to be accessed by students, especially those who do not have access to digital arts and humanities education and training as well as educators who can incorporate the content into their own course offerings (targets 4.2 and 4.b - Equal access to inclusive and safe education).

The DH.arc projects (Italy) is a platform where collaboration is encouraged, ideas are exchanged, approaches and experiences are discussed, and training is provided for Digital Humanities skills. As such, it may be in line with SDG 4 (Quality Education), since this goal aims to ensure inclusive and equitable quality education, and promotes lifelong learning opportunities for all people (targets 4.2 and 4.b - Equal access to inclusive and safe education).

As for the 1914-1948 online project (Germany), it provides access to online references about the First World War, and it is a collaborative project of researchers interested in the subject, including more than 50 countries, based on semantic wiki technology. Hence, it supports SDG 11 regarding target 11.4 (Strengthen efforts to protect and safeguard cultural heritage [...]) (Organização das Nações Unidas Brasil, 2015), in addition to using the collaborative methodology of partnerships of numerous institutions, which is in line with SDG 17, especially with target 17.9 (Enhance international support for implementing effective and targeted capacity-building).

The @note project (Spain) promotes collaborative creation on literary works by scientific communities, thus allowing readers to add annotations to enrich texts for research and learning purposes. Thus, it supports SDG 9 by enhancing scientific research, upgrading technological capabilities (target 9.5).

The purpose of the A World of Possibilities project (Switzerland) is to reconstruct the evolution of modal meanings from the prehistory of the Latin language until the 7th century. In this project, they work with linguistic annotations of a selection of modal markers in a diachronic corpus of Latin literary and documentary texts. Thus, it supports SDG 11, target 11.4, by strengthening

efforts to protect and safeguard cultural heritage. In the same case, also supporting SDG 11 target 11.4, the AC/E Digital Culture Annual Report project helps professionals and creators in cultural sectors understand how to incorporate digital technologies into their work. The cultural sector gains the skills and capabilities to actively work on the internet and provide it with cultural content, giving culture a prominent presence in the large virtual public space.

The ACT project (Amsterdam) collects information from yearbooks, program books, performance dates, writers and directors gathered in an online database. There, it is possible to receive cultural information from European networks and Amsterdam's identity as a creative city. As such, it is possible to make a connection with SDG 16, especially target 16.10, by protecting and providing access to information, and SDG 11 (target 11.4), aiming to strengthen, protect, and safeguard cultural heritage.

Regarding the ALCIDE project (Italy), it is designed to help humanities scholars analyze large amounts of data, such as historical sources and literary works. As such, it enhances scientific research, upgrades technological capabilities, which is in line with target 9.5 of SDG 9 (Industry, Innovation and Infrastructure).

As regards the Archive Alert project (Greece), it promotes the strengthening, protection, and safeguarding of cultural heritage, thus being in line with target 11.4 of SDG 11 (Sustainable Cities and Communities), since it allows individuals, entities, groups, and organizations to report archives and/or other cultural material that promotes cultural heritage.

Similarly, the Biblissima project (France) aims to facilitate access to data for historians of ancient texts, and it focuses primarily on the study of the circulation of books and the transmission of texts from the 8th to the 18th century (Strengthening, protecting and safeguarding cultural heritage - target 11.4 of SDG 11).

Table 3 presents the projects carried out by the *Grupo de Pesquisas em Humanidades Digitais* (Digital Humanities Research Group) at USP (Humanidades Digitais,2022), in which the Carolina (*Corpus Aberto para Linguística e Inteligência Artificial*, Open *Corpus* for Linguistics and Artificial Intelligence) project (Brazil) develops systems that advance the state of the art of natural language processing for Brazilian Portuguese. Therefore, it focuses on text prospection, metadata preparation, and development of computational tools for the corpus. It supports SDGs 4 and 11, and targets 4.2 and 4.b (Equal access to inclusive and safe education), and 11.4 (Strengthen, protect and safeguard cultural heritage), respectively.

The M.A.P. (*Mulheres na América Portuguesa*, Women in Portuguese America) (Brazil) project is a collective activity with female professors and researchers from USP, in which they carry out research that unfolds in several categories with the main goal of giving voice to women who lived in Portuguese America during this period. This project aims to give a larger audience, through Digital Humanities tools, access to the material and data obtained from the research. This is in line with the 2030 Agenda SDG 5, specifically target 5.b (Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women).

About the projects: *Catalogação, descrição e edição de documentos impressos em língua alemã na Brasiliana Digital* (Cataloguing, describing, and editing German-language printed documents in Brasiliana Digital) (Brazil); *Edições filológicas e processamento automático de textos na Brasiliana Digital* (Philological edits and automatic text processing in Brasiliana Digital); *Implementação de bancos de dados para dicionário biobibliográfico de viajantes portugueses na biblioteca Brasiliana* USP (Database implementation for a biobibliographical dictionary of Portuguese travelers in the Brasiliana USP library); and *O processamento digital de imagens e a descrição de documentos*

iconográficos na Brasiliana Digital (The digital processing of images and the description of iconographic documents in Brasiliana Digital), they develop and provide access to and the performance of cultural linguistic research using computational resources. In doing so, they are supporting SDG 11 target 11.4, which aims to strengthen, protect, and safeguard cultural heritage.

The eastcree.org project (Canada) is a website dedicated to the East Cree language[4], part of the Algonquian language family spoken in northern Quebec, Canada, in the James Bay area. The site is intended as a resource for Cree language teachers, literacy instructors, translators, linguists, and anyone with an interest in the East Cree language. The site was established in 2000 and reports continued growth, containing a wide variety of content. The intention of the site's creators is to find a balance between standardization and respect for speech diversity. They support target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage).

About the Maker Lab in the Humanities project (Canada), it is perceived to be a mix of a humanities research lab and a collaborative makerspace - a project that offers its team of graduate students and faculty opportunities to build projects through various modes of knowledge making (e.g., programming, mark-making, data modeling, 3D printing, speculative design, prototyping, and new media production). The design approach to humanities is influenced by popular maker spaces as well as fields such as experimental art, interaction design, and media archaeology, in line with target 9.5 of SDG 9 (Industry, Innovation and Infrastructure), and target 4.b of SDG 4 (Promote vocational, information and communication technology, technical, engineering, and science programs).

Texas Slavery Project (USA) is a project about the history of slavery in Texas (USA), which recounts a crucial moment in the region, when it went from a Mexican province to an independent republic, mainly because of the desire of Anglo-Saxon settlers to own slaves. With a database of slaves and enslaved people from the Republic Era (1837-1845), the information can be separated by counties or amalgamated across the region. In addition to this, there is a graphical interface so that the information can be visualized in a meaningful way. There are also dynamic, interactive maps showing flows of slaves and slaveholders over time. And through digitized original documents, the site brings together a corpus composed of everything from personal writing to journalism to legal documents. Thus, contributing to target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage).

The Vectors project (USA) maps the multiple contours of daily life in an unevenly digital age, crystallizing around themes that highlight the social, political, and cultural challenges of our increasingly technologically mediated existence. It presents key debates across subjects, including globalization, mobility, power, and access issues. When operating at the intersection of culture, creativity, and technology, the project focuses on the myriad ways that technology shapes, transforms, reconfigures, and/or impedes social relations, both past and present. Using a peer-reviewed format and under the guidance of an international board of directors, the project features submissions and specially commissioned works composed of moving and still images, voice, music and sound, computational and interactive structures, social software, among others as an example of support for target 9.5 of SDG 9 (Strengthen scientific research, enhance technological capabilities) and target 10.3 of SDG 10 (Ensure equal opportunities and reduce inequalities of outcomes).

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[4] Is a language of an indigenous people located in North America between the northern United States and Canada. Source: https://www.wikiwand.com/pt/L%C3%ADngua_cri

The Afrolatin@Project (Chile) aims to raise awareness and promote digital curation of the Afro-Latin/Afro-descendant experience to ensure the preservation of their histories and cultures, and build support for the current struggles of Afro-descendants in the Americas and the Caribbean by facilitating collaborations and programs that promote grassroots studies and activities. It develops digital tools that strengthen research and support ongoing documentation and archiving of histories and experiences in the Americas and the Caribbean. The project performs a productive intersection of social justice work with historical and heritage work in a digital environment, combining current news with an archive of the past to provide a sense of community, supporting target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage) and target 10.3 of SDG 10 (Ensure equal opportunities and reduce inequality of outcomes).

Virtual Library (Colombia) is a program that makes materials, content, and information, mainly about Colombia or Colombian authors, available to the world. The library contains materials in different formats, organized in thematic collections. On the site, books, images, sound and video files, interactive pages, online exhibitions, thematic projects, and educational materials can be found, contributing to target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage)

The Memories of Austral Patagonia project (Argentina) seeks to collaborate in building memories of Patagonia, from the point of view of public documentary sources, daily life, and subjectivities. Currently, the archive presents material from the first half of the 20th century from cities in southern Patagonia for use in research, the educational system, and the community at large, supporting target 4. 7 (Ensure that all students acquire the necessary knowledge and skills) and 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage)

The Digital Library of the Caribbean (dLOC) is a cooperative digital library for resources from and about the Caribbean, providing access to digitized versions of Caribbean cultural, historical and research materials currently held in archives, libraries and private collections. dLOC`s diverse partners serve an international community of scholars, students, and citizens, working together to preserve and provide enhanced electronic access to cultural, historical, legal, governmental, and research materials in a common web space with a multilingual interface, thus assisting in achieving SDG 11 target 11.4 (Strengthen, protect, and safeguard cultural heritage).

The National Palace Museum Virtual Museum (Taiwan) is regarded as the largest repository of rare manuscripts, cultural artifacts, paintings, sculptural works, calligraphic scrolls, and antiquities in the Chinese-speaking and East Asian world. The Virtual Museum - accessible in English and Chinese - offers a 3D tour of its buildings and halls. Some of the objects in its permanent collection can be studied through rich descriptions, robust metadata, and high-resolution images, helping to achieve target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage).

Frog in a Well (Japan) is a collaborative WeBlogger dedicated to East Asian History, publishing open-source academic blog articles, scholarly reviews, and peer-to-peer commentary on Japanese, Chinese, and Korean culture and history. It also contributes to the achievement of target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage).

Digital Harlem (Australia) is part of a collaborative research project (University of Sydney) on everyday life in Harlem between 1915 and 1930, carried out by four historians from the Department of History at the University of Sydney. The project focuses on the lives of ordinary residents through the use of legal records, supporting target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage).

Canterbury Earthquakes Digital Archive (CEISMIC) (New Zealand) is inspired by digital archive projects such as the 9/11 Digital Archive (USA). CEISMIC is an open access archive that can

be used to commemorate, build community, research, and prepare for the future. It was founded in 2011 shortly after the February earthquake, and is being developed by the University of Canterbury's Digital Humanities Program with support from a consortium of New Zealand`s leading research and cultural heritage institutions. The CEISMIC archive content is very broad and includes stories and photographs, video, audio, newspapers, community newsletters, academic articles, archaeological reports, government data, television and radio news, heritage records, objects and ephemera. It currently includes some 75,000 items, many licensed for reuse under Creative Commons contributing to target 11.4 of SDG 11 (Strengthen, protect, and safeguard cultural heritage) and target 11.5, seeking to significantly reduce the number of deaths and the number of people affected by disasters.

The Aluka (Africa) project is an international collaboration working to build a "digital library of scholarly resources from and about Africa". Aluka is part of JSTOR and is freely available in Africa. While the site is an academic resource with many submissions intended for use in the undergraduate classroom, the materials are also valuable for high school and graduate students, thus contributing to target 4.1 (Ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes) and 4.7 (Ensure that all students acquire necessary knowledge and skills) of SDG 4.

Zamani (Africa) is a project dedicated to the heritage of the space domain in Africa, as its surroundings are documented to create a record that can be used for conservation, preservation, and restoration, being a sustainable funding model and is available to subscribing institutions. Data types on the site include 3D models, laser scans, plans (sections and elevations), GIS, 3D landscape and remote sensing models, contextual images and video, stereo pairs, and panoramas, thus supporting SDG 15 target 15.1 (Ensure the conservation, restoration and sustainable use of terrestrial ecosystems).

With the analysis of all the projects in this study, presented in Tables 1, 2, 3 and 4, we can see that all of them have the potential to contribute to the SDGs. However, no indication or mention of support for these global goals was found in any of the projects analyzed.

In this scenario, it can be seen that the SDGs included in the projects analyzed are SDGs: 3 (Health and Well-being) (2%); 4 (Quality Education) (15.7%); 5 (Gender Equality) (3.9%); 9 (Industry, Innovation and Infrastructure) (17.6%) 10 (Reduction of Inequalities) (3.9%); 11 (Sustainable Cities and Communities) (51%); 15 (Life on Earth) (2%); 16 (Peace, Justice and Effective Institutions) (2%); and 17 (Partnerships and Means of Implementation) (2%). SDGs 1 (Poverty Eradication), 2 (Zero Hunger and Sustainable Agriculture), 6 (Safe Drinking Water and Sanitation), 7 (Clean and Accessible Energy), 8 (Decent Work and Economic Growth), 12 (Responsible Consumption and Production, 13 (Action against Global Climate Change), and 14 (Life on Water) were not included.

When performing a geographic cut of HD projects developed in North America, Latin America, Europe, Africa, Oceania and Asia (Figure 3), previously selected for this study, it can be seen that there are similarities and differences in their goals, and potential to support the 2030 Agenda SDGs.

However, we have noticed that approximately 51% of projects carry out actions that contemplate SDG 11 (Sustainable Cities and Communities), especially target 11.4, aiming to strengthen, protect, and safeguard cultural heritage. Followed by 17.6% of projects, which carry out actions to strengthen scientific research and improve technological capabilities (goal 9.5), in line with SDG 9 (Industry, Innovation and Infrastructure), and with 15.7% of projects that address SDG 4 (Quality Education), as can be seen in Figure 2.

Figure 2 — SDGs covered by continent (2022/23)
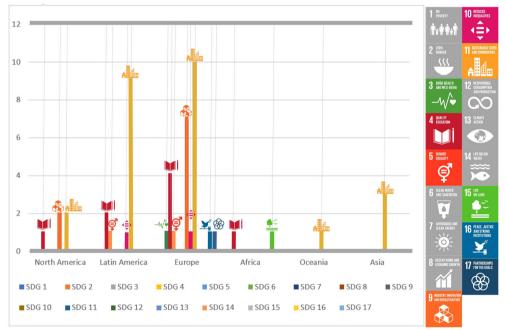Source: Research results (2022/2023)

Figure 3 — SDGs covered in the Digital Humanities projects analyzed (2022/2023).
Source: Research results (2022/2023).

However, when analyzing the results of the survey, it appears that most of the Digital Humanities projects selected for this study are more focused on safeguarding services of historical and documentary heritage, but it can be seen that all have possibilities and opportunities to support other sustainable services. In other words, they may encompass other SDGs, as presented in some projects as well as other 2030 Agenda SDGs/goals, as mentioned above.

Furthermore, there is an incipient lack of projects that support actions in the environmental and social dimensions of sustainable development, considering that one of the current central focuses that are highlighted in the 2030 Agenda is the need to combat the climate crisis, social inequalities and eradicate poverty.

Conclusion

Digital Humanities projects have great potential to be inserted in this global cause, aiming to support the 2030 Agenda. The targets about technology, information and innovation of the SDGs reaffirm recurrent themes in all agendas, plans and international treaties organized by the UN in the last 70 years.

Therefore, we highlighted the opportunities that Digital Humanities projects can provide, seeking to supply and comply with global sustainable development goals, in which actions of access and use of technologies, innovation, and information can be aligned in all dimensions of Sustainable Development, in an interconnected and interrelated way, as recommended by the 2030 Agenda SDGs.

With this, after analyzing 40 Digital Humanities projects from "Cambridge Digital Humanities", "The European Association for Digital Humanities", "USP - Digital Humanities" (Research Groups) and the database Around DH in 80 days, a record distributed in all continents of the planet, it is found that all projects have the potential to be aligned and support the SDGs. Thus, viewing Digital Humanities in this context, it is perceived as a practice of combining emerging digital and computational tools with humanistic studies in order to create new, interactive, integrative, innovative, inclusive, egalitarian, public, and sustainable ways to disseminate, access, and utilize research and findings.

However, as highlighted in this study, it can be seen that the projects analyzed are more focused on services to safeguard historical and documentary heritage, with a lack of projects that cover other sustainable services that support other 2030 Agenda goals and targets. Thus, we highlight the need to promote projects that support all dimensions of sustainable development, in an interconnected way, seeking to assist, inform and raise awareness in civil society about the need to combat the climate crisis, social inequalities and eradicate poverty, without "leaving anyone behind", as recommended by the United Nations 2030 Agenda.

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