| Reconstructing the development of legacy database | | | | | | | | | | |
|--|---|---|---|--|---|--|---|--|--|---|
| platforms | | | | | | | | INSTITUTE of Museumand Library SERVICES | | |
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| 1 | an Herbarium ion databased | Personal computer sys mainframe operating sy programs like TAXIR of | tems began to replace vstems, making | | | | | | | TAXIR |
| Database curation to support future collection migration Through the "Migrating Research Data Collections" project, we are working to better understand and support data collection migration and change over time. We are developing case studies of database migration at a number of memory institutions, first focusing on Natural History Museums (NHMs; Thomer, Rayburn and Tyler, 2020; Thomer, Weber and Twidale 2018). | cons mark relea | SE hits dBASE II sumer is | 1986 1989 dBASE Ashton- III+ Tate stock is falls by launched 43% in response to dBASE IV 1988 dBASE IV is launched | Ashton-Tate sues FoxPro for copyright infringement 1991 Ashton Tate sold to Borland for \$439 million | | | | | 2017 dBASE PLUS 11 released | ♦ dBase |
| | | Initial design For similar to Sof dBASE II. rele Developed Mul due to gaps in Fox their market. | Ashton-Tate Asl tware tries to buy sug ases FoxPro. for ti-User infr | hton- Tate Microsoft merged with copyright Fox Software ringement | 1995 FoxPro changes from a procedural language to an object-oriented language | 2004 Visual Formula Position of FoxPro. | ased, disbands | La ite Fo | onts eration of exprosis in a second content of the content of th | 2020-2025 Planned obsolescenc Microsoft Visual FoxPr |
| In developing our case studies, we have found that there are surprisingly few published histories of database platforms and software – particularly for domain- or museum-specific platforms. Additionally, documentation of the function and format of legacy systems can be quite hard to find. This has motivated our efforts to reconstruct the development history of the data systems described by our study participants in interviews. The timeline presented on this poster has been developed through review of academic publications (if any) and other documentation of these data systems. Much of this has been found through digital archival research (e.g. the Internet Archive's Wayback Machine). The full dataset, with references, underlying this timeline is available at bit.ly/36vaEoM We are using this resource to contextualize the evolution of the data systems in each of our case studies, and we further hope this work will be of interest to others studying infrastructure development and change. | | First version released, originally called Nutshell and owned by Nashoba | Nashoba declined a Microsoft offer to buy Filemaker 1988 | Filemaker versions released for both Macs and Windows | | but of FileMaker bile | | 2011 Continued popularity U.S. public schools, universities and government agencies | Can exchange data with SQL databases. Has functions for JSON and API requests. | FileMaker. An Apple Subsidiary |
| | | Mid 1980's Project Omega and a precursor Access. Not as dBASE, so not y | to Microsoft efficient as | released. First 7.0 major of t relational Offi | crosoft Access Micros became part increas the Microsoft maxim | | 2007 MS Access rolls ut a new feature allowing it to connect to SharePoint | | 2018 Access 2019 is scheduled to be released as part of Office 2019 suite. | A |
| | | | | MySQL was Foreated by a foreated by a | 995 1998 irst code Windows or My SQL version released released for Windows 95 1996 Version 3.19 is released | | Sun Microsystms | 2010 Oracle acquired Sun Microsystems | 2018 Version 8.0 Released. Supported until April 2026 | MySQL. |
| | Late 1970's The University Melbourne, the Museum of Viethe Australian work to develor electronic systemuseums | ne National release ictoria and mentior Museum, the precop an Softwar | atabase is d from the previous led work. This is cursor to KE e | Website v created. T had evol | was KE Software K itan website to lived includes for KE information on press. why KE nain Textpress is se is better than MS | ge Software is willing of provide assistance or the "Year 2000" roblem | 2007 Growing adopt Emu by a wide organizations: galleries, histo societies, libra universities an corporations, b gardens and h | e variety of purc museums, art by A rical Swe ries, com d colleges, potanical | EMu KE Emu hased currently xiell, hosts 200 dish sites in 13 | XE SOFT Wase |

1965

1970

1975

1996-1999



MUSE

Specity

1978-1981

Julian Humphries

develops the idea

of MUSE while

obtaining a

graduate degree

at the University of Michigan

Trends and observations Surprisingly, the oldest database mentioned by our participants was not a commercial platform, but rather, was TAXIR, an information system developed to share taxonomic descriptions. TAXIR was developed in the 1960s – a full two decades before the launch of any of the other systems. This underscores our previous observation that

1988-1992

3-year NSF grant

received by Julian

Humphries to

the software

further improve

1992-1995

Muse to new

hardware

platforms

1993

Adopted by more than 20

NHMs nationally

3-year NSF grant

awarded to adapt

Most of the NHM-specific databases were initially funded by the National Science Foundation. Additionally, several grew out of the same research groups and grants; for instance, both Muse and TAXIR were developed by researchers at the University of Michigan, one of whom went on to build Specify at the University of Kansas. We hope to build on this observation to further explore the evolution of the biodiversity informatics community as a subset of the NHM community in future work.

NHMs were quite early adopters – and indeed, innovators – in database technology and information systems.

In general, the commercial databases were less well documented than the NHM-specific databases. Where we found documentation for commercial systems in the form of technical specifications and archived websites, the NHM-specific platforms are typically documented through grant proposals, user manuals, and academic publications. In both cases, there is a clear need for more systematic archival of documents describing these platforms' evolution and technical specifications.

Few of the defunct platforms we surveyed reached their "end of life" in a particularly intentional way; rather, they simply went out of business with little warning. Memory institutions must take heed of this legacy, and be sure to plan for their collections management platforms' demise, as well as adoption.

1980

1999-2002 3-year NSF grant awarded to Specify to create tools that assist in \$860,181.00. It research analysis natural history Specify 1.0 collections

is available

2.5 year grant from NSF to

Julian Humphries and Jim

Beach (founder of Specify)

for development and

support of the MUSE

Specify another 3-year grant for is stated in the and synthesis of proposal that the software used by 55 collections.

2000-2003

Specify awarded another 3-year

NSF Grant for \$897,508.00 to

keep Specify current with

commercial software

components

1999-2003

NSF Awards Arizona

State University a 3-

2000

2002-2205

NSF awards

112 biological research collections. Awarded a 5-year NSF grant for \$2,085,906.00.

2005-2010

Software supports

2016-2019 2010-2016 Awarded a 3- year Awarded a 6-year NSF grant for \$1,858,718. Supports 189 U.S. collections located at 90 institutions.

Software is used by

collections to digitize,

manage and publish

specimen holdings

2013-2017

2015

data.

284 U.S. research

NSF grant to derive and implement a business model to financially support its core software engineering and technical support activities. 2016

2019 Specify still open source, now managed by a consortium that charges for collection management

year grant for Networking our Research Legacy; Infrastructure to Document, manage, and Access Ecological Data. 2009

2005

Idea of Symbiota

presented at various

biological conferences

nationally

Arizona State Symbiota adds a University awarded a variety of modules 3-year grant to to their platform, develop a computermaking it much based identification more suitable to system for plants and the needs of their animals. community

2008-2012

2010

NSF awards Symbiota a 3-year grant for \$283,231.00 to assist in the development of Symbiota2

2018-2021

2020

2018 NSF funding for Specify ends

SYMBIOTA

2025

References

1985

1990

Thomer, AK, Rayburn, A, Tyler, ARB (2020). Three approaches to documenting database migrations. 15th Annual International Digital Curation Conference. Thomer, A. K., Weber, N. M., & Twidale, M. B. (2018). Supporting the long-term maintenance of natural history museum databases. Proceedings of the Association for Information Science and Technology. **Acknowledgements**

1995