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# Taxonomy of technology in galleries, libraries, archives and museums

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## TAXONOMY OF TECHNOLOGY IN GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS

Taxonomy is a state of identifying hierarchical relationships within a category. Taxonomies are useful for organizing information for both internal and external consumption. Within a company, taxonomy can be used for classifying documents into categories such as proposals, contracts, letters, and briefings. A taxonomy could involve just filing documents by year or could be a more complicated classification. Each taxonomy is designed to categorize items within just one dimension. For example, home improvement stores have taxonomies of their products. Tools are classified into power tools and hand tools, and hand tools classified into products like hammers and wrenches, and then further broken down into different brands and sizes of wrenches. Taxonomies have limitations as they cannot represent relationships across different domains; they can only define categories within a domain. Read more at <https://www.earley.com/blog/what-difference-between-taxonomy-and-ontology-it-matter-complexity>.

Taxonomies could be difficult to define and in actual fact are defined broadly by the classifier in most cases. Many companies exist that sell taxonomies for use in various industries. A taxonomy of technology could be one in which technology is broken down into different components such as industrial technology, information and communication technology, assistive technology, and transportation technology as some examples. The taxonomy of technology in galleries, libraries, archives and museums (GLAMs) will look at the categories of technology used in these institutions currently and also speculate on what the taxonomies could predictably be in the future.

It is apparent that technology in many GLAMs are gradually going futuristic, and relying less on manual means, but making use of equipment that takes advantage of the newest technologies. Artificial intelligence, use of robotics, augmented, virtual and mixed reality is the norm. Assistive technology is not left out of the GLAMs as well. The trend is for these technologies to be used in greater numbers and for

multiple purposes in serving clients. Indeed the face of library and Information services workers is changing as their skill sets are changing as well. The taxonomy of librarians' skills is expanding to meet the future technology needs evolving. Robots are a great way to get people's attention and raise their interest in technology and most importantly in the library. Librarians are therefore acquiring necessary skills in robotics and could even be learning to build robots that can be developed in-house and inexpensively. Those academic libraries with engineering schools may have an edge in working closer with students and department.

### Taxonomy of Information Technology

A few trending technologies popular in recent times and likely to continue trending well into the future with improved developments are highlighted. The Boston Children's Museum, in collaboration with the BUILD Initiative that has developed a 'construction zone' that stimulates creativity, problem solving, tool use, visual spatial thinking skills and even physical skills. (<https://bostonchildrensmuseum.org/exhibits-programs/exhibits/construction-zone>) This initiative is part of a national effort that advances state work on behalf of young children, their families, and communities that have a project and a network of providing technology based services. The new project will expand over a three-year timeline. "Together with participating museums and libraries, they will maintain and improve existing networks in Massachusetts; scale pilot efforts in South Carolina and Virginia; launch new grassroots museum and library networks in Iowa, Mississippi, and New Mexico; and develop methods for network sustainability within and among the states" (<https://tokentaxonomy.org/why-collaboration-is-critical-between-policy-and-tech-communities/>).

Artificial Intelligence (AI) and machine learning (ML) have become the "go to" technologies for businesses whether they want to boost productivity, increase customer engagement, or drive digital transformation. According to Gartner's 2019 AI and ML Development Strategies survey, 59% of respondents said they have deployed AI, and those companies that have, on average, are running four AI or

ML projects. Artificial intelligence projects are definitely on the increase in libraries. Processes involving technology are being developed to involve use of artificial intelligence. Robotics is becoming the order of the day and GLAMs are having services that are controlled or serviced by robots to make service delivery easier. The general trend is such that "tech giants like Apple, Amazon, Facebook, Google, and Microsoft have been buying up AI and ML companies for a decade. Salesforce acquired AI-startup MetaMind in 2016, marketing intelligence company Datorama in 2018, and BI firm Tableau in 2019. Intel spent \$2 billion to acquire Israel-based AI chip maker Habana, which develops deep learning accelerators for the data center." See more at <https://www.zdnet.com/article/these-five-tech-trends-will-dominate-2020/>

John Garland, digital librarian and independent consultant, helps us look at how libraries are using technology to improve services for customers today. Innovative libraries are using digital tools to make services easier to use and access; inspire and inform, and help customers learn new skills. It is therefore expected that in future some of the following trends would be added to GLAM. And in particular, libraries.

Digital maker labs: These offer customers the chance to learn and use some of the most cutting-edge technologies around. From 3D printers, Computer controlled CNC routers, to hot presses for T-shirts and Laser cutter-engravers, Maker Labs (makerspaces) are popping up in many libraries. The trend is likely to increase and maker labs will not be too far away, being in most libraries around, moving forward!

Coding clubs: With digital and IT everywhere in our lives, there's been a real revolution in how technology is treated. Coding clubs teach children mostly how to make and use technology the way they want it. People are being taught how to code, and also how to solve problems and design solutions for the problems.

Digital storytelling: Libraries have always treasured the written word, whether on paper, microfilm, CD-ROM or web pages. Now libraries are working with writers and coders to create new interactive stories where the reader can become immersed and attempt to control the narrative flow. The written or spoken word is having

technology change its format of delivery and the experience of the reality of storytelling is changed to a digital one. Who knows what the next trends will be in the future!

Virtual reality: Many libraries, galleries and museums have started offering their users the chance to play, learn and explore other places just by sitting in the comfort of their space. These spaces are being used simultaneously and can deploy virtual reality to bring themselves closer to users by creating virtual tours of their spaces or even conduct virtual workshops and training. Virtual reality is also providing new, more immersive ways of telling stories and presenting objects and knowledge from the collection of GLAMs. The National Museum of Finland for instance, allows people to feel as though they were stepping inside a painting, whilst The Tate Modern took visitors inside Modigliani's Paris studio. Virtual Reality is certainly a trending technology.

Kacey Nichols in a January 15, 2020 post described the activity of the Children's Discovery Museum and the Normal Public Library collaborating to provide a programme called Books and Bots in the museum. The library and museum staff demonstrate the importance that technology can have on a child's development. The event gives children the opportunity to play with new learning development toys. Tech toys that are featured at the event include Dot & Dash, Kano Computer Kit, Tiggly and Ozobots. Each toy has different ways of teaching and can be played at any age. These tech toys are free to check out from the Normal Library. See more

at [http://www.videtteonline.com/features/children-s-discovery-museum-to-host-books-and-bots-friday/article\\_d3744a3e-37e8-11ea-8f89-f37a1baae7d6.html](http://www.videtteonline.com/features/children-s-discovery-museum-to-host-books-and-bots-friday/article_d3744a3e-37e8-11ea-8f89-f37a1baae7d6.html)

Mobile apps: These are trending right now, as people have access to their mobile devices constantly. More time is spent by people on mobile apps now. A mobile app can extend the library's services outside their physical borders and facilitate the interaction with patrons. Library apps are becoming the trend, so also Open libraries are being used to extend opening hours. Allowing remote access to the libraries after closing hours via technology is becoming the in thing, and using

streaming services is also trending. See more at <https://princh.com/current-technology-trends-in-libraries/#.XjQGBjJKiUm>.

## Future Prospects

Anis Uzzaman in a December 30, 2019 post discussed 10 projections of technology for the year 2020. The technologies included Robotics for agriculture, deployment of more Internet of Things (IoT) technology and demand for edge cutting technology, more aerospace technologies, and increased use of blockchain technology among others (See more at <https://venturebeat.com/2019/12/30/10-technology-trends-that-will-impact-our-live-s-in-2020/>). The different uses technologies can be and will be put to in the future cannot but affect GLAMs in one way or the other. It's trending!

It could be surmised that the taxonomy of technology in galleries and museums are similar because basically the technologies used in displaying content the users want are similar, however other categories of technology needed to deal with other functions of the institutions, like preservation of the content, storage and others could differ considerably. For libraries, the greater part of classes of technology used in them is akin to those in galleries and museums but widely different as well considering the nature of libraries in their service delivery. Archives have their own class of information technology which are deployed, that keep them unique. The technologies classified are improving dramatically daily and creating challenges for the professionals working in them. The taxonomy of technology will sooner than later redefine workspace, work levels, work ethics and work skillsets in 2020 and beyond. All of these technologies also provide new opportunities of collaboration between libraries, museums, and archives and even with other disciplines and industry. The trending is obvious!

