

# Trends & Issues in Library Technology

IFLA IT Section Newsletter

December 2019

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## Report on IFLA WLIC 2019 IT Section Satellite Conference

**Frank Seeliger**, Library Director, University of Applied Sciences Wildau, Berlin, Germany

**May Chang**, Library CTO, University of Cincinnati, United States



We are happy to report the successful completion of the first conference on the use of robots in libraries. The event held on 21-22 August 2019 – “*Robots in Libraries: Challenge or Opportunity?*” – was sponsored by the IT Section and hosted by University of Applied Sciences Wildau, Berlin, Germany.

We had a total of 40 participants from 15 countries (China, Czech Republic, Estonia, Finland, Japan, Luxembourg, Pakistan, Nepal, Singapore, South Africa, Spain, Turkey, USA, and the host country Germany had participants from cities such as Berlin, Hamburg, Leipzig and Stuttgart). The main venue was the Audimax on the Wildau Technical University of Applied Sciences campus near Berlin.

The program had 10 presentations/lectures, a World Café, and two guided tours. The informal atmosphere of the event particularly during the breaks was very conducive to the intensive discussions about the ethical and possible use of robots in libraries and information services.

Three different robots also participated and were shown off and tested in the lobby area during the breaks. These included the Nao and Pepper robots from SoftBank Robotics, TORY from MetraLabs, an industrial robot (Mitsubishi) and the Pepper version called Wilma as a humanoid robot in the Wildau University Library. Participants could test the Nao reading robot by reading one of the German or English children's books and then answering the robot's questions.

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## From the Editor...



Dear Colleagues,

This issue is a special edition featuring a few personal reflections from delegates of IFLA WLIC 2019 in Athens, Greece as well as the 2019 Satellite Meeting in Wildau, Germany. These personal reflections are not only stories of their IFLA experiences but also stories of how conferences connect professionals, encourage knowledge sharing, and create new ideas in this day and age of technologies quickly shaping all areas of librarianship. Some of the discussion topics include artificial intelligence, robots, and big data in libraries.

I would like to thank the authors for taking the time and effort in sharing their invaluable insights and my special thanks to May Chang, our IT Section Chair, and Kathi Miniard from University of Cincinnati Libraries for their guidance and assistance in bringing this newsletter to life.

To all readers, I would like to extend my wishes for a warm and peaceful holiday season.

Michelle Ryu, *Editor*  
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## Delegating Library InvenTORY to RFID Robots at Max Planck Luxembourg Library

### Juja Chakarova

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The word 'robot' was coined by the Czech writer Karel Capek in 1921, and it derives from 'rabota' (work) and 'rabu' (slave). The word implies that a machine could do your work following your orders and thus be your slave. Slavery is a shameful fact of the past, but will we also see robots heading to freedom as in many science fiction works?

Having those fears, Isaac Asimov postulated in his short stories 'I, Robot' (1950) three laws of robots, to which he added a zeroth law. According to them, a robot has to obey orders, may not injure a human being and may not harm humanity. While these laws are regarded today as the basis to develop an ethical framework for the production and use of robots, some legal instruments need to be developed. The combination of autonomous robots and artificial intelligence will soon enable robots to be self-learning and unpredictable, hence the need for regulation on what is allowed, ethical and where is the point of no return becomes crucial.

Modern librarians are called to become information and knowledge managers, however they are also requested to deal with a lot of routine tasks like labeling, shelving and making inventory of the collection, to name a few. Shouldn't we delegate these repetitive assignments to robots and save our time for more important missions?

In 1987 Michael Gorman formulated the so called 'drift-down theory' to describe the organization of tasks within the library. It aphoristically says that:

- No professional should do a task which can be performed by a paraprofessional;
- No paraprofessional should do a task which can be performed by a clerical staff;
- No human being should do a task which can be performed by a machine.

The drift-down theory calls for rationalization by reconsidering all library tasks in light of their purpose and effectiveness. Gorman advises that any task should be performed at the lowest possible level at which it can be accomplished. Gorman also advises the elimination of 'needless drudgery'. In the last 40 years of library automation, we have witnessed the implementation of the third point in Gorman's theory to a certain extent—now machines maintain and sort our catalogue, help with processing loans and provide reference services.

With the exponential development of information technology and telecommunications since the beginning of the 21st

century, are we about to witness some new trends in this regard to make sure that really no human being should do a task, which can be done by a machine and what kind of machine?

According to Professor Richard Susskind and his son and co-author, Daniel Susskind, such machines will be 'increasingly capable machines', as stated in their book, 'The Future of the Professions' (Oxford, 2015). The author builds on his 30 years of experience as a lawyer who has seen many transformations even in his own profession. His research focuses on the professions of lawyers, consultants, teachers, medical doctors and others. These professionals are traditional gatekeepers of the knowledge, which are sophisticated and require human interaction to be transmitted or exercised. When the intelligent systems were introduced, some parts of their jobs are now delegated to machines. For example, patients can have their diagnoses made by various advanced technologies and even advised by Watson lately. Clients of a tax return consultant fill in electronic forms and have their dues calculated by a specialized software in a second. Students access Doodle or other e-learning platforms and no longer need the usual teacher presence.

Based on the existing trends, Susskind predicts the decline of the professions in their traditional forms known today. Intelligent systems – or as he calls them 'increasingly capable machines' - will incorporate the knowledge and the rules to deliver impartial advice or service. Susskind turns his critical sight to different tasks from each profession and identifies which ones might be taken by intelligent systems and when. The authors predict that "our professions will be dismantled incrementally". Ultimately, technology will transform the future of all professions.

Susskind's predictions do not explicitly exclude the profession of librarians. Could we turn our magnifying glass to our tasks today and ask ourselves which tasks might sooner or later be entrusted to intelligent systems? How far can we go to automate all repetitive tasks, routines and even more sophisticated assignments?

With the introduction of computers and Internet, library catalogues were converted into machine readable formats and then to online available catalogues, or just OPACs (Online Public Access Catalogues) nowadays. With the introduction of RFID (Radio Frequency IDentification) systems in our libraries, librarians no longer need to be present when our users borrow materials. The Library can operate 24/7 while

librarians can do other things than processing returned books. What shall be our next step then?

Libraries are expected to regularly perform a full or partial inventory check of their print collections. The purpose of the inventory check is to identify which items are missing, so that they can be replaced or purchased, before they become out-of-print or not available at all. The inventory check is an exercise that can take many months and involves all library staff and assistants. It is mostly done manually, even when a handheld RFID scanner is used. I should here mention that there are two standards for RFID tags – HF (high frequency) and UHF (ultra high frequency). At the Max Planck Institute Luxembourg (MPI) Library we use UHF tags for the books.

A labor-intensive task such as an inventory check could definitely make use of an automated system and I had imagined a robot would already have been created for this type of task; however, this was not the case in 2016.

Recently we established LIKE – a Lab for Innovation, Knowledge and Exchange – to test new ideas and devices in our library. After testing numerous hand-held devices for the inventory check, I came across the robot, TORY, who at that time was not aware of his possible career in libraries. TORY was running an inventory check every night in a big department store. TORY was developed by MetraLabs, an innovative company from Ilmenau, Germany.



TORY – the night shift librarian at MPI, Luxembourg

TORY has so far been used mainly in big department stores to scan the stock of clothes and MetraLabs was not aware that libraries might also need it. TORY works during the night, but is also certified as being harmless to people. At the MPI Library, TORY conducted a full inventory of an area of two halls (500 m<sup>2</sup>) with 34,800 books in just one hour! The accuracy of his (or her) reading was 99.11%. The findings were of enormous help for our library. We identified some missing and misplaced books.

The results of our TORY test were presented at the IFLA WLIC Satellite Meeting, 'Robots in Libraries: Challenge or Opportunity', in Wildau, Germany from August 21-22, 2019. We also presented the findings of our survey, 'Robots in Libraries'. The materials from this presentation will be included in the forthcoming book along with all of the conference papers.

MetraLabs constantly improves the capacity of TORY. A new version has just been released – TORY is already equipped with 16 antennas which has improved his reading accuracy and speed. We are looking forward to testing the updated TORY in our library.

While many librarians are willing to use a robot for the inventory check, some are concerned about the high cost of robots. I suggest that libraries which are geographically close to each other or belong to a consortium could consider using the same RFID standard, so that the tags are compatible and could share one robot. Sharing a robot for routine tasks is an economically viable solution for libraries as it saves thousands of man-hours. More than 50% of our survey respondents indicated that they are still conducting inventories manually in a full or partial capacity. In some cases this exercise needs 800 and even 1,000 working hours. Based on the results of our survey, the return on investment is one to two years. Delegating the inventory task to robots is a preference expressed by 70.91% of our survey respondents; however, the most favourite task to delegate to a robot is locating misplaced books (80% of the respondents). The robot's help will save a considerable amount of time for the library staff.

The ultimate winner, though, will be our user – either the research or the public community, as librarians, we will leverage this saved time to stay in contact with the users and improve the service. As Melvil Dewey put it in 1926, 'our great function is to inform or to inspire or to please'. There is a strong probability that the library robot dream will become reality.

*P.S. I would be grateful if you could share your library robot experience with us. ■■*

## Personal Reflections and Learning Outcomes from 2019 IFLA WLIC

### François-Xavier\* Boffy

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My participation in IFLA started in 2014, when I attended WLIC for the first time in Lyon, France. Two years later, I discovered eastern USA thanks to a WLIC 2016 satellite meeting in the University of Chicago on “Data in Libraries: the Big Picture”, which led to great experiences personally and professionally! With WLIC 2019, it was a great privilege to visit the wonderful city of Athens as a new member of the IT Section Standing Committee.

I have always wanted to dedicate myself to sharing my knowledge and empowering people in information management. My first attempt in achieving this was done through game design! I believed games are one of the most effective tools in education. I graduated in French Literature and Film Studies then worked for a short period in the videogame industry. Because of the deep instability of French game companies from 2001 to 2002, I decided to look for more stable jobs. So I worked as a teacher first and finally graduated in Library Management.



In 2010, I got my first job in libraries as a library curator. Because of my "geek" background, I looked for IT positions and I was lucky to land on this opportunity at one of the major French universities -- Claude Bernard University Lyon 1. Over time, my long-term interests have grown in metadata and data issues. After discovering linked data perspectives during my librarian internship at Lyon 1, I have always wanted to advocate for an enhanced data modelling reflection in

information technologies, because user services depend deeply on data infrastructures. For this reason, I became involved with the Big Data Special Interest Group (SIG) in 2019.

When you have curiosity, IT is a wonderful meeting or mash-up point – it leads to service design, to cognitive sciences, to knowledge management challenges, to intellectual property topics and to economic, social and ethical questions. IT is deeply embedded in our daily lives. How did live videos burst out in social media in 2018? It's easy to find IT aspects. How did artificial intelligence become one of the hottest topics in 2019? IT is clearly involved.

The most recent example of the versatility of IT can be seen from multiple signs and public calls for taking an action against climate global warming and environmental pollution. As an IT department, we deal continuously with technical choices that have an environmental impact: between a tablet and a laptop, which is a more optimal device to deploy in an active learning classroom in terms of the environmental footprint? We can digitize the whole end of the year dissertation submission process, but is it feasible from a sustainability point of view?

Everybody should have seamless knowledge about sustainability as well as the environmental footprint of our activities and our equipment. We generally know that IT has some environmental costs, but how much is “some”? Many blog posts or papers have been written about this issue, but we are in need for a short and useful communication strategy for every single library, from school to public, academic or national library. I believe we can build it within a year: some other partners and librarians have already joined this project, we are continuing to gather resources and are working on appropriate communication methods. Participation is still open. I welcome your thoughts and suggestions!

\*François-Xavier (pronounced “fran-soa-xa-viey”) ■■

# Infinite opportunities at IFLA conferences: A case study of successful library projects at an academic library following IFLA WLIC

## Helen Cheung

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### Abstract:

IFLA WLIC conferences provide a great platform for librarians around the world to exchange ideas, create new knowledge, develop international standards, and make life-long connections. This article will discuss how a librarian and a library team at a theological college in Hong Kong has benefitted from IFLA conferences in developing two IT-based projects to support the teaching, learning, and research activities of library users worldwide. The two IT-based projects are: "MH Global Classroom," which provides online religious courses to users in over 110 countries, and "Learning Multiple Literacies with VR and Drones," a joint library project between Hong Kong and Japan.

### From outbound ideas to developing worldwide library projects:

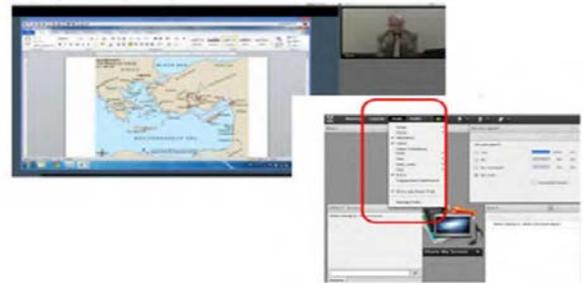
IFLA conferences always facilitate a wide range of discussions in library-related fields, in information technology, space and equipment, library services, management, and user education. My first IFLA conference was in 2014 in Lyon, France and my second was in 2015 in Cape Town, South Africa. The programs offered by IFLA conferences enable me and my team to think globally, participate in knowledge exchange, and think about how to create a better world. Therefore, when my college, Ming Hua (MH) Theological College in Hong Kong needed a centralized online teaching system, we aimed to develop this "MH global classroom" with our IT department and using existing software in the market to enable seamless communication between educators and learners around the world with interactive and collaborative facilities. So far, the "MH global classroom" has been used by over 110 countries to attend our online courses. For more information about the "MH global classroom," please refer to the conference paper that was presented at IFLA WLIC, in Columbus, Ohio, in 2016 (<http://library.ifla.org/1563/>).

### Ideas gained from IFLA conferences:

- Usability of the system
- Use of IT to facilitate collaborative teaching and learning
- Support learning activities globally
- Library as a link between learners and educators

### Ming Hua Global Classroom

(<http://gclass.minghua.org.hk/>)

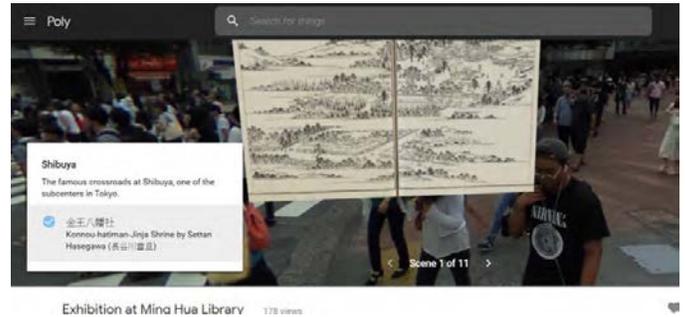
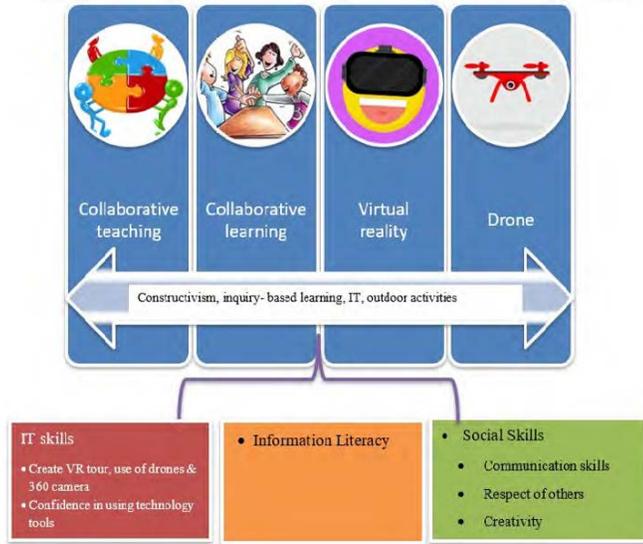


### IFLA library visit & the innovative VR/drones project:

IFLA WLIC conferences not only provide informative seminars, but also offer attractive library visits which enable a glimpse to real library work experiences. When I attended the library visits in Wrocław, Poland in 2017, I took a 360 degree camera. As this was a new camera, I was eager to use it. When a coach bus took us around the libraries, our tour guide introduced us to the culture of Poland with a folk song. The rhythm of the song impressed me the most and I wondered how I could use the beautiful 360-degree images of Poland with audio as a learning material for our library users/students. Therefore, when I returned to Hong Kong, I started to develop a conceptual framework using easy-to-use IT tools, such as 360 degree cameras, Google VR tour creators and drones to support inquiry-based learning as well as enhance users' skills in technology.

This work became "Learning Multiple Literacies with VR and Drones (2018–2019)," which is a joint project between our library and two schools (SKH Tsang Shiu Tim Secondary School and SKH Li Fook Hing Secondary School) in Hong Kong and two academic institutions in Japan (Rikkyo University and the National Institute of Technology, Kochi College). Our aim was to help foster multiple skills (e.g. IT, information literacy and social skills) among secondary school and university students. This project has achieved great success to the benefit of students in Hong Kong and Japan. I also received the Hong Kong Library Association (HKLA) Biennial Award for it. The details of the project can be seen in this report of the HKLA. ([http://gclass.minghua.org.hk/helencheung\\_hkla\\_award.pdf](http://gclass.minghua.org.hk/helencheung_hkla_award.pdf))

**Framework of VR/drones project (Cheung, 2019)**



**“My VR Library” by SKH Li Fook Hing Secondary School**



(<https://poly.google.com/view/aS-DZn9aoy8>)

**University Students from Japan and Hong Kong**

“Historic and Present Tokyo” by Mr. Atsushi Miyazawa and Miss Nodoka Masaoka (Rikkyo University)

(<https://poly.google.com/u/0/view/1CWbHz7YaQr>)

**Absorbing new knowledge and making connections:**

As IT develops quickly, we librarians need to keep up to date with new and emerging technologies. Again, IFLA is a good place for this – including the Satellite Conference in Berlin, Germany in 2019 was “*Robots in Libraries: Challenge or Opportunity?*” This conference gave librarians like myself to learn from global experts and participate in discussions about the latest developments in robotics and AI use in libraries. This opportunity also helped us to build connections that may lead to potential collaborative library projects in the future.

**“My VR Library” by SKH Tsang Shiu Tim Secondary School**

(<https://poly.google.com/view/1kqpyhHlqJO>)



**To sum up:**

IFLA conferences open up a global gateway for librarians to transform ideas to create knowledge, develop innovative library resources and programs, facilitate collaboration and make connections. These conferences also provide great opportunities for us librarians to publish our work and pursue professional development. Therefore, there are always good reasons to attend an IFLA WLIC conference.



(<https://en.th-wildau.de/ifla-robot/>)

### Some videos:

Robots for book shelving, reading, tour guides, fun, etc.



(<https://gclass.minghua.org.hk/mhtclib.html>)

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### Continued from page 1

The speakers provided different focal points on the topic. The use of robots to automate routines such as RFID (UHF) inventory by autonomous vehicles scanning labels through antennas was discussed. The robot arm for automatically removing books from the shelves was also presented. Mobile robots make it possible to transport items between two locations and also to continuously pick up returned books.

With regard to the use of socially interacting and mostly humanoid robots, the lectures dealt with very different questions. Aspects such as ethical guidelines, where is the use meaningful, what sort of conditions are required for the meaningful use of these machines, what service should the machines provide, how should the library team be involved, were highlighted and discussed. Some libraries already use humanoid robots, with very different results. They support services, act like chatbots, bring fun and attractiveness to the library. Some use robots not only as eye-catchers, but also to

### Acknowledgment:

I would like to thank all participating parties and the Hong Kong Library Association for the MH library projects. I would also like to thank Ms. Karolina Sokołowska for giving us a wonderful tour in Poland; Ms. May Chang, Ms. Odile Dupont, and Ms. Michelle Ryu, who gave me the chance to publish in an IFLA (USA) conference paper and IFLA TILT Newsletter; and all volunteers at IFLA conferences, who are always so helpful.

### About the author:

Helen Cheung gained her PhD (IT in education) from the University of Hong Kong and MLIS from the University of Pittsburgh, USA. She is currently the librarian of HKSKH Ming Hua Theological College, Hong Kong, and an adjunct professional of Charles Sturt University, Australia. Email: [helen@minghua.org.hk](mailto:helen@minghua.org.hk) ■■

motivate people to learn programming and coding. Others rely on robots with similar intentions like FabLabs were started with 3D printers, laser cutters and so on. They want to give customers the transparent opportunity to learn about the new technology of robots. Other speakers discussed the use of Artificial Intelligence technology to help robots communicate better with humans.

At the final round-up session, the participants also considered it worthwhile to follow up on developments in robotics. Participants from University of Pretoria (South Africa) offered to host the event in 2020. The program would be broadened to cover a wider robotics ecosystem as it relates to libraries. As well, the publication of a conference volume is planned with DeGruyter, which will also contain further contributions from this field. All presentations were live-streamed and recorded, and will be available on the conference website (<https://en.th-wildau.de/ifla-robot/>). ■■

## SC Member Update from Chile

### María Loretto Puga, MLIS

Librarian

Library of National Congress of Chile (Biblioteca del Congreso Nacional de Chile (BCN)).

Email: mpuga@bcn.cl

My name is María Loretto Puga, and I work in the Digital Resources Department at the Library of National Congress of Chile (BCN). Throughout my career, I have worked on projects related to IT. My career at BCN began in 2006, when I got involved with a project in partnership with the Inter-American Development Bank (IDB).

Since then, I have been involved in a number of IT-related areas including digitization and information preservation. For example, the Chilean Encyclopaedia Project ([www.bcn.cl/estanteriadigital](http://www.bcn.cl/estanteriadigital)) is a history recovery work that compiles research projects in the field of science between 1948 and 1971. This project is considered one of the most ambitious editorial projects in our country as the scope ranged from paper preservation to digital preservation. It also ensures that this valuable historical information is accessible online while featuring resources on Chilean Political History ([www.bcn.cl/historiapolitica](http://www.bcn.cl/historiapolitica)), which is the most complete political history of the country. This work was carried out by using three main different information modelling tools: repositories, Wikipedia and other databases. These projects were perhaps the most notable projects in my career.

Another project that is still in the early stages is the Parliamentary Digital Library for Latin America and the Caribbean, which aims to preserve a part of the political history of the countries in this geographical area. As well, I am involved with building the metadata modelling sites of the BCN based on the internal repositories.



Library of National Congress Valparaíso

The Digital Resources and Cataloguing Departments have also worked on a number of projects, notably the migration of registers from Marc 21 format to Bibframe format. Since this project is still ongoing, we do not yet know how the project will impact our users. We anticipate the outcome of this

project will serve as the basis for the semantic visualization of our bibliographic records, since Bibframe has a structure based on the semantic web, allowing the integration of different internal and external resources.

This year, I worked on the UN Climate Change Conference of the Parties (COP) *Parliamentary Climate Change* website ([www.bcn.cl/cambioclimatico](http://www.bcn.cl/cambioclimatico)), which was created for dissemination, information and public awareness on climate change. This website is intended to facilitate universal access to the expert content and specialized analyses around climate change. Chile was going to be the host country of the COP 25 this year, before the social conflict took place.



Library of National Congress Santiago

BCN is characterized for being at the forefront in terms of IT in Chile, for example the Linked Open Data Project ([datos.bcn.cl](http://datos.bcn.cl)) has become part of this visionary and innovative work. Another project is the visualization of the budget data of the nation ([www.bcn.cl/presupuesto](http://www.bcn.cl/presupuesto)).

Additional innovative projects are underway in Chile. For example, we presented a pilot project to decentralize library lending at 2019 IFLA WLIC. This project is built upon a decentralized library lending system base with blockchain technology, Open Scientific data of National Commission for Scientific and Technological Research and the data from the University of Chile, to name a few.

In summary, I am very happy to serve as a new member of the IT Section Standing Committee and I'm grateful to our chair May Chang for her support and welcome. It is my first time as a member of a Standing Committee, so it is both a challenge and an opportunity to learn and work and contribute alongside excellent professionals. ■■



The Information Technology (IT) Section promotes and advances the application of information and computing technologies to library and information services in all societies, through activities related to best practices and standards, education and training, research, and the marketplace. The scope covers IT for creation, organization, storage, maintenance, access, retrieval, and transfer of information and documents for all types of libraries and information centers; IT for the operation of libraries and information centers; and, related management and policy issues. Of primary importance are applications of IT for supporting access to and delivery of information. In recent years, the use of technology in libraries have expanded to cover improved machine learning and AI techniques, digital humanities, and data analytics.

The section meets annually at the IFLA Congress; in between congresses, members collaborate with other Sections on programs and workshops. There are election ballots every two years as members complete their 4-year term. The IT Section is one of the largest in IFLA with over 300 members from nearly 80 countries, all types of libraries, and a range of disciplines. We welcome all members (<http://www.ifla.org/membership>).

The IT Section's website at <http://www.ifla.org/it> has news and resources regarding activities of the Section, session minutes, publications, and membership details.

The IFLA-IT email list provides a forum for members to exchange ideas and experience in the use of information and communication technologies in libraries. The list address is [ifla-it@iflalists.org](mailto:ifla-it@iflalists.org), and subscription is at <https://mail.iflalists.org/wws/info/ifla-it>.

The *Trends & Issues in Library Technology* (TILT) newsletter is published twice a year in June/July and December.

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