

# Future Libraries

Workshops Summary and Emerging Insights



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—Gregory Hodkinson, Chairman

## Contacts

**Julian Diamond**  
Associate Director  
Information Management  
julian.diamond@arup.com

**Kim Sherwin**  
Senior Librarian & Knowledge Specialist  
Arup University  
kim.sherwin@arup.com

**Chris Luebke**  
Arup Fellow and Director  
Global Foresight + Research + Innovation  
chris.luebke@arup.com

**Josef Hargrave**  
Associate  
Foresight + Research + Innovation  
josef.hargrave@arup.com

**Elisa Magnini**  
Researcher  
Foresight + Research + Innovation  
elisa.magnini@arup.com

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# ARUP

13 Fitzroy Street  
London W1T 4BQ  
arup.com  
driversofchange.com  
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# Introduction

Libraries are going through a renaissance, both in terms of the social infrastructure they provide and in terms of a diversification of the services and experiences they offer. In corporate environments they are playing an increasingly important role in the provision of collaborative and diverse workspaces. In communities they are evolving into hubs for education, health, entertainment and work. Libraries are encouraging people back into the physical space, through the integration of, for example, cafes, free Wi-Fi, maker spaces or child care programs. In addition, the “walls” of libraries continue to expand beyond the physical space, with online resources, social media, crowdsourcing and mobile services changing how collections and services are accessed and shared while on the go.

However, these trends are not uniform across all regions, countries and contexts. In many parts of the world, access to libraries is still not the norm. Even in developed regions, not all libraries are capable of delivering the change required to survive and thrive in the long-term. Funding shortages and replacement through online service are obvious risks facing smaller,

more local libraries. Despite these risks and uncertainties, trends shaping the future of libraries have the potential to reshape and reinvigorate the role they play in public, academic and corporate settings.

This report explores some of the key trends shaping the future of public, academic and corporate libraries. It outlines the implications on future design, operation and user experience; and suggests what we may expect to see, feel and do in the library of the future.

**social**

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# Workshops

The research and thoughts presented in this report emerged from a series of collaborative workshops held in London, Melbourne, San Francisco and Sydney. These were attended by a multitude of library stakeholders with backgrounds in the design, operation and management of libraries. Each workshop began with a broad set of trends. Participants were split into groups and asked to select those trends most relevant to them. Selections were made based on personal interest, background, perceived importance, and regional relevance.

Discussions about the future of libraries varied in the different regions. The session in Sydney focused predominantly on the role and function of the libraries, while San Francisco explored the future design and operation of the library building. The workshops highlighted a broad range of trends and issues that could play a role in shaping future libraries, and have an impact on their design, operation and user experience. The following pages summarise some of the key issues discussed in the workshops.

## London

4th March 2015

## Melbourne

5th March 2015



### SPACE

In times of increased funding restrictions, libraries need to balance the desire for new technologies and interactive services with maintaining and upgrading basic infrastructure.

A developed 'digital infrastructure' will support libraries in moving their physical collections into suitable spaces accessed through the application of automation and robotics. This will allow the repurposing of the space to accommodate diverse human activities.



### OPERATION

Due to rapid technological turnover, digital collections are growing in number and diversity, posing issues of curation and conservation.

There is a growing need to embrace alternative operation and funding models, such as integration of council services, absorption of libraries into cultural hubs and collaboration with commercial partners.

As discovery experiences are increasingly dominated by technology, staff will need to be prepared with the necessary skills. Along with investments in training, the integration of specialised staff is an opportunity to improve library services.



### USER EXPERIENCE

The increased use of social media will support libraries in their curation role by opening collections to larger and more engaged audiences. It will also enable access through exclusive paths to deep and trusted resources.

The role of librarians as research mentors will facilitate the discoverability of increasingly complex and hybrid collections.

Librarians will continue to ensure patrons find a level of serendipitous discovery in their research, which they would not be able to experience with the aid of search engines alone.



## San Francisco

12th March 2015

Flexible and adaptable spaces, partly commercialised, such as sponsored and curated spaces, rentable spaces suitable for businesses, and spaces for events would contribute to the economic sustenance of libraries and help maintain accessibility and services for those who are most vulnerable, such as the homeless.

Collaboration between library staff and patrons will be an opportunity to create virtuous circles beneficial to user engagement and intensive use of resources.

A wide range of opening hours would be ideal to address the needs of different age groups.

Intuitive access to information through hybrid experiences, both in physical and digital spaces, will require an integration of expert human curation, digitally personalised content and navigable space.

## Sydney

12th March 2015

The physical space of the future library will need a greater level of flexibility and appropriate up-to-date equipment to accommodate diverse functions, including assisted research, exhibitions, informal meetings, individual and collaborative study, curation of rare resources and access to community services.

Future libraries will be required to improve their identity and visibility inside the communities or organisations they serve. This will mean more attractiveness in terms of spatial design, as well as a greater level of participation of librarians in the life of the community or the business of their organisation.

Engagement with stakeholders and with local organisations could be an important source of funding and partnerships to attract more visitors.

## Key Implications

- Space and locations for diverse functions and user needs
- Flexibility and adaptability
- Deployment of robotics and smart systems
- Integration of interactive elements
- Sustainable retrofitting

- Skills update
- Issues for curation and conservation
- Alternative funding
- Alternative operation models
- Community engagement

- Engagement through social media
- Mentoring, curation and discoverability
- Personalised content
- Seamless digital and physical experiences
- Participatory service design

# An Ecosystem for Future Libraries

In the following section, salient trends and implications are analysed extensively, with the aid of user stories and case studies.

User stories provide potential scenarios and highlight significant features of library experiences in the year 2025.

As the diagram on the following page shows, emerging trends have been clustered into four main areas that explore possible roles future libraries could embrace:

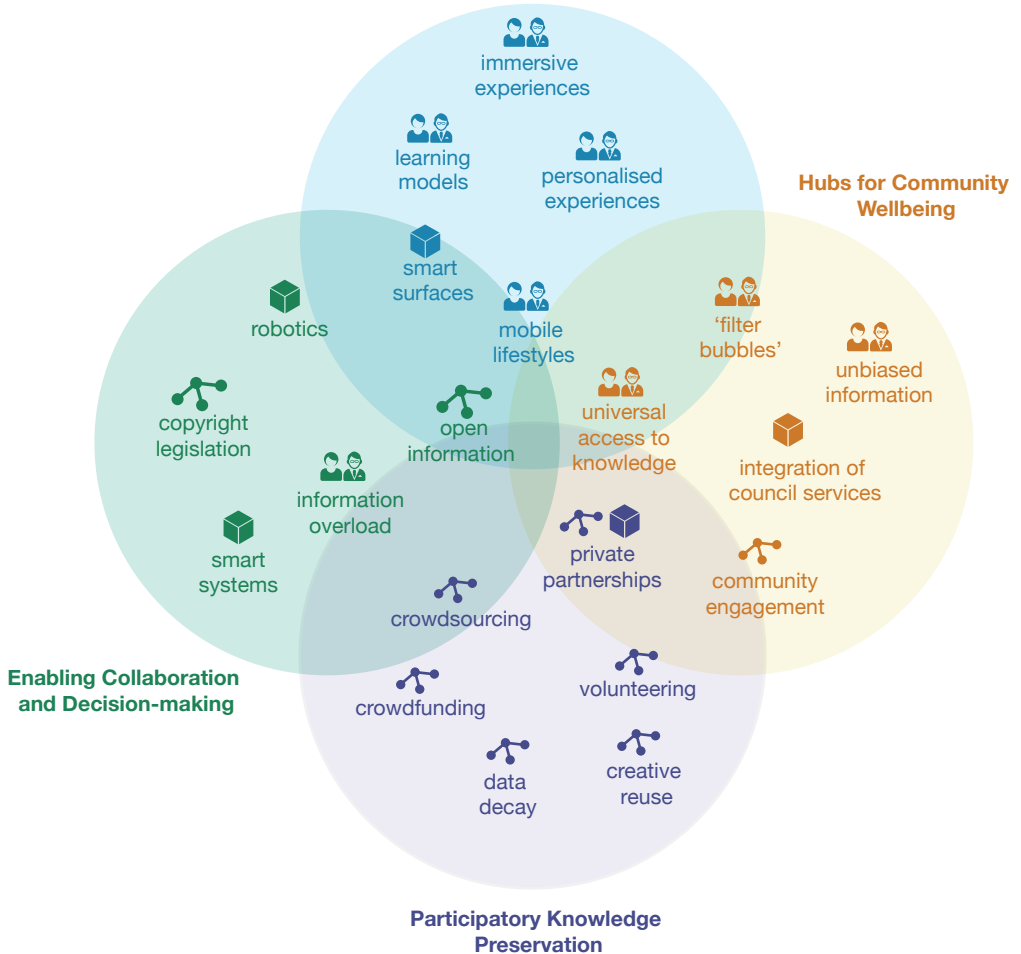
Participatory Knowledge Preservation




Enabling Collaboration and Decision-making

Hubs for Community Wellbeing

Seamless Learning Experiences

## Seamless Learning Experiences



-  space
-  operation
-  user experience

## Participatory Knowledge Preservation

*“I think there’s a whole infrastructure that has to be not only created, but invented and sustained in order to make sure the knowledge that we’ve been digitizing is retained and reusable over a long period of time. Otherwise, we’ll have denied ourselves what is the most important potential I can think of – to have all the knowledge of human-kind at our fingertips.”*

—Vint Cerf, Guardian Activate London, 2013

Libraries have had the historical role of being places for the preservation of knowledge. Looking forward, librarians in many regions will have to cope with shrinking resources and increasing challenges to their role posed by technology. Whilst there are notable exceptions, such as South Korea investing ₩552 billion (\$493 million) between 2009 and 2013 to open new libraries<sup>1</sup>, policies of austerity are resulting in the alarming tendency to erode funds for the operation of libraries in many countries. In the UK, for example, 324 libraries have been closed since 2011 due to government cuts.<sup>2</sup> At the same time, the exponential proliferation of digital media, which characterises the post-Gutenberg information era, will create new challenges for the acquisition and curation of coherent collections that are relevant and available to the public. In this adverse context, it will be critical for librarians to identify alternatives for funding and operation. The potential use of social media, as well as alternative funding and operation models, will need to be considered as ways of providing sufficient human and financial resources for the flourishing of future library services.

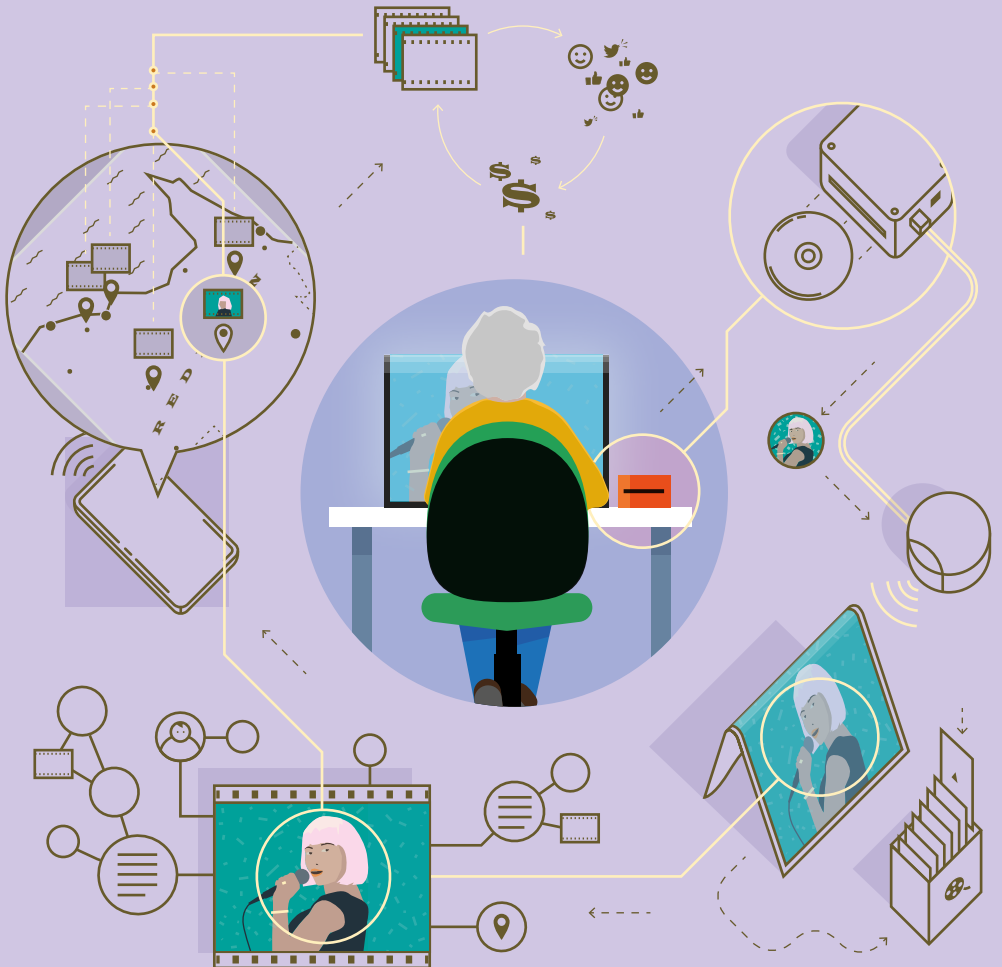
**Case Study:**

## Flickr: The Commons

A growing number of libraries and archives are posting their digitised visual content onto *The Commons* on Flickr. The initiative was launched in 2008 with a pilot project in partnership with The Library of Congress in Washington, D.C. The Commons platform has been created to enable a wider audience to access otherwise hidden archives. As a result, volunteer Flickr visitors have been tagging and adding information to photos uploaded by librarians, making them more discoverable for other online users and achieving something that was previously impossible for few librarians managing vast archives of physical photos.

# Caitlin, 70

Caitlin is a recently retired actress living in Sydney. Willing to continue cultivating her passion for the silver screen, she joined a volunteering programme at the Cinematic Arts Library. She spends her typical day at the library helping with the re-digitisation process and engaging with the community sponsoring the programme.



Caitlin meets her team. This morning they will be converting a series of 100 backstage photographs from an obsolete format to the current standard. The Cinematic Arts Library is one of the few institutions in the country still retaining the necessary equipment to decode formats generated two decades before.

The team selects some exemplar pictures to be uploaded onto the Cinematic Arts social platform. Caitlin tags the photos with the limited information gathered from the original captions and publishes her post. A few minutes later the comments box gets animated with a fervid conversation aiming to determine the exact date and location of when the photos were shot.

Caitlin joins a meeting with a member of the local council to discuss an initiative they have in mind to promote cultural tourism. The council would like to create an app that displays some of the re-digitised pictures in the urban environment using beacons to connect with visitors' personal devices.

Caitlin checks the weekly progress for the funding of next month's re-digitisation programme on the crowdfunding platform that the library subscribes to. She is happy to see that hundreds of generous backers have outnumbered the amount of money originally pledged. This will allow for a larger amount of images to be converted and ease the arduous selection process.

### Emerging Trend: Data Decay

Continuous and relentless advances in technology in the past decades are leaving behind a growing amount of data in a disparate range of formats, such as floppy disks, VHS and zip archives. As software formats become outdated, data gets lost. This phenomenon, known as Data Decay or Bit Rot, is preventing information from being passed on to the next generations. “This is a serious, serious problem, and we have to solve that.” Says Vint Cerf, one of the fathers of the Internet.<sup>3</sup> As the natural preservers and organisers of knowledge and records, libraries need to ensure all these formats of data are accessible both today and in the future. Technical skills and the availability of appropriate tools will be decisive for librarians to provide these services.

### Emerging Trend: Alternative Funding

As libraries are experiencing a lack of funding in many regions, they are increasingly reliant on alternative operation and funding models. One solution being pursued is the privatisation or private partnership of public libraries. This can help in up-keeping library services but poses challenges on ensuring continued equal access to libraries. Likewise, some libraries are introducing income-based subscription fees or considering the involvement of volunteers to stay open. Crowdfunding is also seen as a valid alternative to fund libraries. Social lending sites offer an opportunity for a growing number of philanthropists to make micro-investments, which are fuelling a wide range of independent projects. Librarians will need to work in synergy with the communities or institutions they serve to design strategic initiatives and demonstrate the value that they provide.

### Emerging Trend Crowdsourcing and Creative Reuse

As our lives are increasingly linked to the digital world, social media platforms are gaining speed. The amount of people using social media is projected to almost double, reaching 2.55bn by 2017.<sup>4</sup> The use of social media to engage with patrons is quickly becoming a common custom. In most cases, social media is the best means to keep patrons informed about services offered and upcoming events. More and more librarians are also exploiting the potential of social media to make once inaccessible archives available to the public and crowdsource precious information about digitised items. This is shifting the debate from the struggles of digitisation to opportunities of collaborative curation and creative reuse.





**Case Study:**

## Libraries on Kickstarter


Kickstarter is a crowdsourcing platform whose mission is to connect micro-investors with independent creatives to make their projects come to life. On March 3, 2014, Kickstarter passed \$1 billion in pledges by a total of 5.7 million backers from 224 countries.<sup>5</sup> Between 2013 and 2014 more than 150 library-related projects have been successfully funded on Kickstarter.<sup>6</sup> Librarians ask for funds to extend the collection of their library, to buy new equipment or to give their patrons access to 3D printers. Funded projects also include free mobile libraries and podcasts to share ideas and innovate the library profession.

## Enabling Collaboration and Decision-making

*“The next library is a place, still. A place where people come together to do co-working and coordinate and invent projects worth working on together. Aided by a librarian who understands the Mesh<sup>7</sup>, a librarian who can bring domain knowledge and people knowledge and access to information to bear.”*

—Seth Godin, 2011

Libraries are and will continue to be places where information is accessed and new knowledge is created. This fosters personal development for individuals and facilitates innovation for organisations. In the emerging knowledge economy, new value is created in highly collaborative environments by using immediately digestible information. Net-native generations are developing a dependence on demand-ready information. This is happening in a context where new knowledge is made available to the public at an exponential rate thanks to cheaper technologies and increasingly flexible intellectual property legislation. For future libraries, this will mean providing users with spaces where meaningful interactions can take place and where people can easily access curated information both in physical and digital form. Robotics and big data, when applied both to spatial design and to information management, have the potential to disrupt the traditional balance between storage and collaborative spaces. This can provide opportunities to create more liveable and diverse solutions. Such diversity will be key to achieve a good level of flexibility, which will accommodate the demands and aspirations of hyper-diverse users. The challenge for librarians will lie in a deeper understanding of users' needs, in order to provide them with relevant information. Librarians will need to consider new skills, greater collaboration and a multi-disciplinary approach to their profession.



The book collector in the Mansueto Library

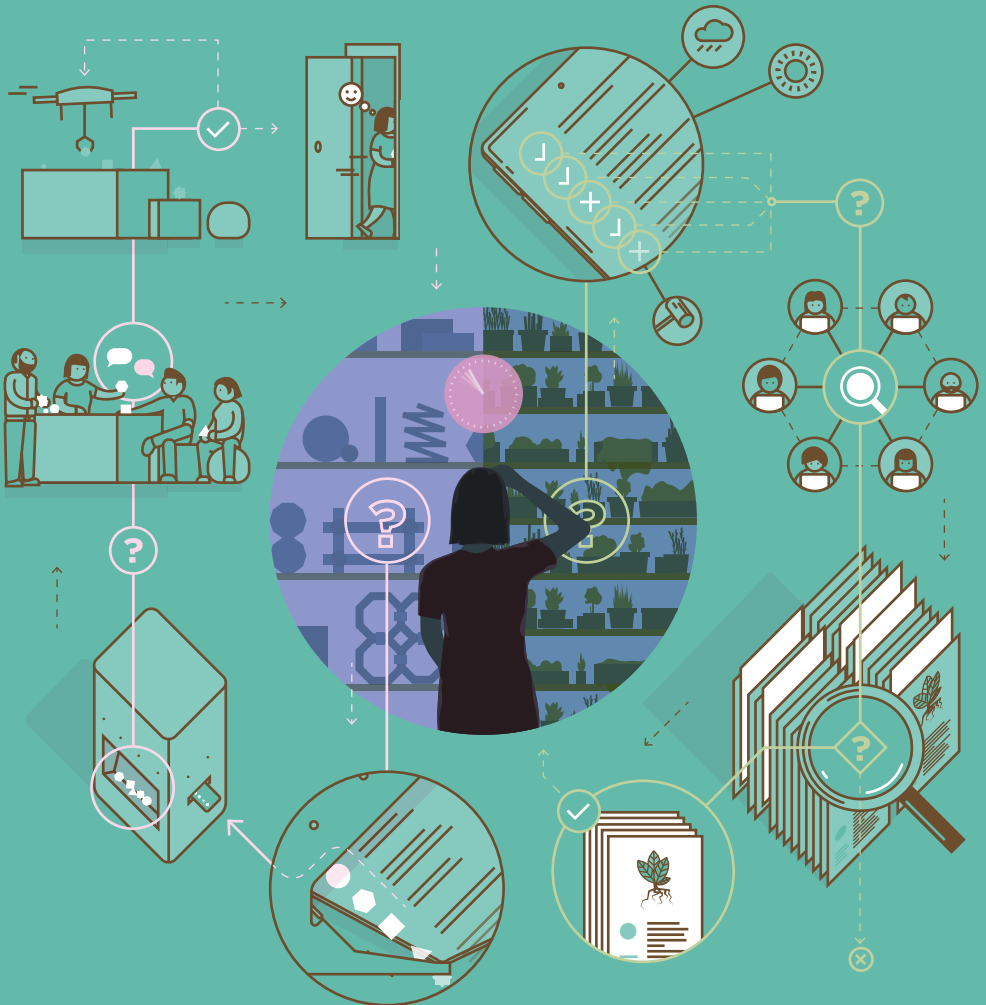
**Case Study:**

# University of Chicago Librarian Bot

The book collection of the Joe and Rika Mansueto Library at the University of Chicago is conserved in an underground storage space set to ideal temperature and humidity conditions. The five storey archive can only be accessed by custom-designed robot cranes which, prompted by librarians' requests, can retrieve any of the 3.5 million tomes in minutes.<sup>8</sup> Books can then be enjoyed in a fully day-lit environment enclosed in a glass and steel dome above ground.

# Susan, 27

Susan is an architect working in a large firm specialising in green infrastructure. She is working to a tight deadline on a proposal for a green wall in Singapore. In a few days she will need to submit alternatives for usable plants and for the support structure to be integrated within the existing building. Fast decision-making is key for the success of the project and Susan hopes the library and information management services offered by her company will help her.



The production of open source bio-engineered plants has boomed in the last two decades. Long gone are the times when only few well-equipped corporate laboratories could produce patented species. Thanks to the recent introduction of flexible licensing legislation and the spread of cheaper technologies, independent engineers can easily access genomes of existing organisms and create and share thousands of new diverse ranges of plants to be used for different applications and responding to different needs.

Susan needs a quick shortlist of plants that would be suitable for Singapore's climate conditions, and will meet the strict local legal requirements. She sends details of her constraints to the library and information management team. The team has access to the global OSPPD (Open Source Plant Patent Database) and can use powerful search engines to combine complex systems of requirements. In a short time, a shortlist of twenty plants is delivered to Susan, complete with all the necessary details.

The next step for Susan is identifying a list of materials for the support structure so she organises a workshop to come up with some ideas. Before the meeting, she retrieves a stock of material samples from the material library. She scans her list and in seconds a robot delivers the samples requested to the table Susan booked in the library's collaborative space. After a very productive session, Susan scans the shortlisted material samples for her records and walks away to her next meeting. At the end of the day the library's drone goes around to inspect the space. It detects and collects all unshelved items and puts them back in their allocated space in storage.

### Emerging Trend: Open Information and Copyright Legislation

Widespread public connection to the Internet is creating a demand for unrestricted access to information. A growing number of academics are contributing to this open access movement by self-archiving their articles or publishing open journals. At the other end of the spectrum, commercial publishers of content continue adopting largely anachronistic licensing models, generating issues of access and affordability for many libraries, and leading to an information divide. Copyright legislation is also struggling to keep up with the fast pace of the digital world. Creative Commons is attempting to address this issue, but it is not a complete solution.

### Emerging Trend: Information Overload

According to the CEO of Google, Eric Schmidt, we create as much information in two days, as we did from the dawn of civilization up until 2003.<sup>9</sup> This data can provide valuable information both to patrons and librarians to help identify innovation opportunities, transform the management of assets, enhance interaction with stakeholders, and make sure that key risks to a business are pro-actively managed. On the other hand, the availability of immense amounts of data can be overwhelming for human decision-making and productivity. In view of this, the research, management and curation skills of librarians will grow in importance to facilitate the usability of information and to make quality information more digestible.

### Emerging Trend Smart Systems and Robotics

There is a growing trend for Building Management Systems that have the capability to automate, monitor and control the conditions of a building; from the heating and cooling, to the use of electric lighting and shading devices. Systems can be programmed to alter states conditionally, monitor and identify faults, and communicate to maintenance staff. Intelligent robots and the Internet of Things will play a greater role in automated systems. Networks of connected devices, embedded in building components, will create a greater level of automation and enable a more efficient interaction with the environment. With increasing volumes of items in need of storage and the shrinking availability of space, the application of programmed machines can optimise the design of archives, resulting in space and energy savings, as well as optimisation of retrieval systems.

**Case Study:**

# Future Library by the Stavros Niarchos Foundation

The Future Library is a non-profit organization funded by a grant of the Stavros Niarchos Foundation. Between 2011 and 2013 Future Library created nine media labs in public libraries across Greece with the collaboration of Google and the Mozilla Foundation.<sup>10</sup> The initiative aims to connect Greek public and municipal libraries with a sustainable network, which will be linked to the National Library of Greece once it is relocated to Stavros Niarchos Cultural Center in 2016.<sup>11</sup> Google is contributing to the project by advising on spatial design solutions and engaging with librarians to help them become proficient with their tools, to achieve an ideal synergy between highly skilled humans and sophisticated search engines.<sup>12</sup>

## Hubs for Community Wellbeing

*“Libraries are still fundamentally about equality of access, reading, information and learning. You can reinterpret that and modernise sensitively, according to local needs.”*

—Ciara Eastell, President of the Society of Chief Librarians, 2013

*“When a library is open, no matter its size or shape, democracy is open, too.”*

—Bill Moyers, “The Public Library”, 2014

Libraries have a key role to play in community identity. They provide a connection to resources, knowledge and services in an egalitarian way. Many libraries will serve disadvantaged communities and they are central to providing equal access regardless of ethnicity, age, gender and sexuality. They are non-judgmental places, places to explore the world anonymously, privately and securely away from the pressures of the world outside. They are community hubs, to exchange ideas, to open minds and to provide shelter and companionship. Whilst the digital world moves at a fast pace and libraries support this connection; those who seek solace in the physical place are enriched by the opportunities a library, as a community hub, can provide. New design, functions and purpose of the physical space are inevitable, but what remains as a constant is the equal access for all and the opportunity to broaden ones’ horizons.





**Case Study:**

## San Francisco Central Library Homeless Programme

In a city with more than 7,000 homeless people, the central public library in San Francisco, was the first one to employ a full-time social worker in 2009. About 15% of the total 5,000 daily visitors of the library have nowhere else to go. Homeless patrons seeking a shelter find access to information about their rights and necessary legal resources, guided by professionally trained staff. The programme resulted in the permanent housing of more than 150 formerly homeless citizens and the entitlement to social services for another 800.

# Loh Ki, 40

Loh Ki is a librarian working in a local library in a neighbourhood of Taipei, which is subject to a recent regeneration plan. The current premises of the library are quite dated, and signs of time are causing major energy and financial waste. For this reason, the library will be relocated in a new building part of one of the residential developments, a few blocks away. Loh Ki and his colleagues are very excited about this opportunity and want to use it as an occasion to re-design their service offering.



Loh Ki wants to make sure that the new-born local community is given a chance to contribute to the re-design of the library. He presents his idea of a collaborative workshop to the building management and to the local council, where he finds warm support. As it was already in the councillors' plans to integrate more services in the new library, they are happy to test local interests.

The event takes place in the empty spaces of the new library and is joined by long-standing patrons and curious new residents. Some patrons, talking to new residents, recall that time when there was a flood. Then the library was the only place where they could have free access to computers with an internet connection, whilst their homes were uninhabitable. Other elderly patrons mention how helpful the library was when that big password-theft scandal alarmed everyone and Loh Ki organised a course about internet security.

After some chatting, a young couple, who have just moved to the area, approach Loh Ki. They have in mind to open a small business and they need a space to work, meet collaborators and access information about the local opportunities and legislations. They are soon joined by one of the GPs working in the area. He would like to use the library to keep the community informed about health issues and he thinks he could also use the library spaces to receive new patients. The day after the event, Loh Ki has another meeting with the council. Everyone is impressed by the positive response of the community. The foundations have been laid for the next steps and a draft business plan is produced, accounting for flexible and future-proof spaces.

**Emerging Trend:**  
**Universal, Unbiased  
and Secure Access to  
Knowledge**

Knowledge is a form of wealth and a pathway to prosperity. An increased dependence on digital access to information raises concerns related to privacy, ownership and affordability. Privacy of information is often governed by legislation. However, there is often a lag with the emergence of new technologies and platforms. Owners of platforms through which information is accessed hold the power to influence this availability. “Filter bubbles” can shield people from opposing viewpoints or information that challenges their beliefs. Critics argue this could polarise populations and create social divisions. Universal access to knowledge is particularly important in developing countries that have lower rates of formal education and limited access to digital technologies.

**Emerging Trend:**  
**Culture and  
Services Hubs**

The ever-growing migration to urban areas is followed by a redistribution of investments, which coagulate in dense urban areas, leaving peripheral communities isolated. In either of these contexts, there is a growing trend towards the convergence of services related to community wellbeing in library spaces. In developing urban areas, local authorities invest funds for the creation of flagship knowledge centres, that juxtapose traditional library spaces and spaces for creative activities such as experimenting with new technologies, incubating a new business, or even rehearsing with a band. On the other hand, isolated communities are looking to the integration of cultural and social services in library spaces, in the attempt to stabilise visitor numbers and funding. This is influencing the way library spaces are designed; flexibility is becoming a fundamental requirement as it accommodates diverse activities that can stretch beyond current predictions.

**Emerging Trend**  
**Community  
Engagement**

Stakeholder engagement can help organisations find out what social and environmental issues matter the most, in order to improve decision-making and respond to a rising demand for localism and community ownership. Community-led design can be a powerful tool in seeking solutions to complex issues. It gives stakeholders a say in decision-making. As traditional libraries begin to change shape into digital or joint-use libraries, the ways of maintaining and developing local identity will need to be reconsidered. Engaging with local communities can help to catalyse this process. The use of social media for community engagement is also emerging: social platforms are being used by a large number of institutions to crowd-source spatial design solutions and information to create improved user experiences.



**Case Study:**

## Ferguson Library #whatlibrariesdo

In the autumn of 2014 the city of Ferguson in Missouri, USA was hit by an escalation of violence following the shooting of Michael Brown. During the most difficult days, unlike most public and private service providers, the local public library decided to keep its doors open to the public and served as a catalyst for the relief of the whole community. As the news went viral on social media with the hashtag #whatlibrariesdo, the library received a wave of support, raising more than \$175,000 USD - almost half its annual budget - in less than two days.

## Seamless Learning Experiences

*“A nice, warm destination for families, children and adults that can merge education and entertainment makes it something you want to take part in. Many people’s aspirations these days are wrapped up in their consumer experiences, so it becomes important to benchmark other things to those experiences to compete and win.”*

—Jonathan Douglas, director of the National Literacy Trust, 2013

Demographic and lifestyle changes, together with disruptive technologies, are radically reshaping how learning is delivered and accessed. Learning is increasingly becoming an embedded component of our professional and personal daily routine, rather than being relegated to the first two decades of our life. Lifelong learning can be casual or formalised and is enabled by the omnipresent on-the-go access to information provided by personal devices. As libraries are quintessential places for learning, the spaces they inhabit and the services that they offer will face unavoidable transformations.

In the future, the boundaries between personal devices and the built environment will blur and physical spaces will be impregnated with new layers of information and content to be activated at users’ disposal. Digital contents will be customisable by conscious users or by automated algorithms creating a personalised stream of recommendations.

The integration of these technologies in library spaces and services will determine their ability to be part of a global conversation and to respond to users’ expectations.

**Case Study:**

## Moscow Metro Digital Library

A virtual library of Russian classical literature was opened in fall 2014 in some of the 195 Moscow metro stations. Nearly 2.5 million annual passengers have free access to a selection of novels by authors such as Pushkin, Chekhov and Tolstoy. Commuters can scan codes disseminated in the stations with their personal mobile devices and explore a virtual catalogue of more than 100 publications, with no need to register to the service. Users also have the option of suggesting new publications to be added to the collection.<sup>15</sup>

# Pete, 32

Pete is a Finnish chef who lives in Barcelona with his partner, a talented financial analyst, and his two sons. Thanks to his partner's support, Pete recently decided to quit his job to spend more time with his sons and have a chance to visit Finland more often. After a couple of months at home, Pete realises he still has a lot of free time between his family trips to Finland. He decides to use this opportunity to fulfil the dream he gave up in his youth to learn coding. Pete is looking for a flexible course that will allow him to study where he prefers, while still providing opportunities for face-to-face learning.





When picking up his sons at the library, Pete notices an advertisement for a coding course on the library's digital notice board. Intrigued by the introduction, Pete asks the librarian for more information. The librarian introduces him to the online portal of the university that is offering the course. The programme is free and customisable, with online courses alternated with bimonthly gatherings that require a small fee. Pete enrolls with no hesitation.

Pete goes through the course reading list and finds a good number of e-books he can borrow from the library, together with a tablet he can use to start practising coding. The day after, Pete leaves for a week in Finland with his family. On the train to the airport, Pete logs into his online account and starts watching videos and reading about theory bases for computing on his tablet. As he watches more videos, Pete's account builds up a stream of recommendations about literature and other students who have similar interests.

Back home, a week later, Pete has a look at the Barcelona forum on the course's page to see if any other students are in town. There he notices some students are organising evening learning sessions at his local library, so he decides to join them the next day. Once at the library, Pete is curious to know what the others think about the code he has created so far, thus he slides his worksheet from his tablet onto the table's e-surface so that everyone can have a look. Other students start tapping on the table and adding comments and references. After a productive evening, Pete saves the improved version of his code on his tablet and saves the date for next week's meeting.

### Emerging Trend: Immersive Personalised Experiences

Libraries strive to differentiate their offering in the face of increasing user expectations, and are making efforts to innovate around the user experience they offer to provide well designed services. People want to design their own personalised space where they can access favourite sites, materials, bookmarks and images. Immersive experiences are rich, virtual online environments that allow learners to be engaged in a self-contained artificial or simulated world while experiencing it as if it was real. This can involve applications such as game-based learning, simulation based learning and virtual 3D worlds. Access to information can happen in any location or time zone and can replicate any environment.

### Emerging Trend: Learning Models

Educational institutions are operating in an environment with growing expectations for IT-enabled learning and research. Cheap digital technologies can now provide innovative opportunities to enhance teaching, learning, research and the management of organisations and also improve employability in an increasingly digital economy. Lifelong learning – the voluntary, and self-motivated pursuit of knowledge throughout our lives – is today an established phenomenon. The majority of learning now occurs informally outside the classroom. A shift away from traditional spaces to e-learning can enable less resource heavy solutions, for example, they might require less physical space and minimise waste from printed materials. With this shift, the role of the library might evolve from one supporting learning to increasing learning opportunities facilitated by the library.

### Emerging Trend Mobile Lifestyles

Nomadic and mobile lifestyles are changing the way people work and access information. The borders of traditional working environments are fading, whilst an increasingly diverse workforce seeks more informal and convenient spaces to meet and collaborate. New technologies are key facilitators for these new working models. Augmented reality, smart devices and surfaces make information ubiquitously available, and their integration in smart systems, blurred between physical and digital space, makes access to information and collaboration a seamless experience. These expectations of innovative experiences stretch beyond the workplace into all forms of learning and information access, such as libraries.



**Case Study:**

# Microsoft Future Vision

In the future world envisioned by Microsoft's office labs, everyday objects are filled with digital capabilities.<sup>16</sup> A coffee cup can display the temperature of its content, electronic newspapers have the material qualities of paper, while functioning like e-readers. Glass and clear surfaces are used as displays and information flows in a continuous stream from personal devices onto objects furnishing the environment. In Microsoft's fictional world, collaboration and access to information are natural interactions transcending spatial and temporal distance.



# Looking Forward

The role of libraries will significantly change in the coming years, driven by demographic changes, rising urban migration and technological advances. In the future, libraries will serve more culturally diverse and physically dense communities under the pressure of limited resources.

Integrating a wider range of public and commercial services in their offering will help libraries remain vital and relevant to their communities, especially in more isolated contexts. Physical interaction will remain a key demand of users, despite the opportunity for ubiquitous and constant information access offered by technology. Libraries indeed play a fundamental role in granting access to essential resources to those who do not have the means themselves. Furthermore, they provide an opportunity to practice and experiment with exclusive technologies. Community engagement will help in developing services specifically targeted to users' demands and aspirations.

Library spaces will need to be flexible and adaptable in order to stimulate collaboration and social interaction, while still enabling quiet reflection and serendipitous discovery. To cope with a lack of space and conservation requirements, robotics and automation can be deployed to achieve cost-effective solutions for storage and physical archives.

As access to technology spreads and the quantity of information generated grows exponentially, the mentoring expertise of librarians will become more crucial in supporting education, research and well informed decision-making. Whilst some would argue that the advancing sophistication of algorithms could give digital curation the potential to replace the librarians' function, having skilled professionals with the knowledge of when and how these resources and tools are best deployed still enables more complete and effective outcomes.

The fast pace of technological advances is challenging the training and skills of the librarian. A more open disposition to collaboration and a multi-disciplinary approach will be key to stimulating the urgent process of innovation. Integrated networks and cooperation between libraries will be critical in creating a shared infrastructure that has in the potential to reduce costs and save unnecessary effort.

While the future is largely unknown, this research has demonstrated that the future is rich with opportunities for libraries and librarians in a world of rapid and continuous change. Adaptability and flexibility will be key to providing spaces and services that respond to user needs and expectations, while ensuring solid and viable operation models both today and in the future.

## Workshop Participants

### London

#### External

Anne Ashdown  
*TFPL*

Cathy Linacre  
*RICS*

Catriona Cannon  
*Bodleian Library, University  
of Oxford*

Diana Edmonds  
*Greenwich Leisure Limited*

Donald Lickley  
*TFPL*

Ian Heritage  
*Gerald Eve*

Maria Allan  
*King's College London*

Mark Taylor  
*CILIP*

Melissa Woolford  
*Museum of Architecture*

Rebecca Gediking  
*GLL*

Sarah Currant  
*British Film Institute*

Sheila Pantry  
*Sheila Pantry Associates*

#### Arup

Adam Pope  
Alan Mountain  
Andrea Beddard  
Elisa Magnini  
Francesco Anselmo  
James Griffith  
Josef Hargrave  
Julian Dawson  
Julian Diamond  
Mani Manivannan  
Olivia Greenstreet  
Richard Eeles  
Richard Waites  
Rob Harris  
Sophie Le Bourva  
Stuart Nutton  
Stuart Smith  
Susan Moore  
Verity Relves  
Vicky Hague

### Melbourne

#### External

Ben Conyers  
*State Library of Victoria*

Jennifer Khan  
*City of Melbourne*

Julia Selzer  
*Orica*

Mike Aulich  
*Australian Taxation Office*

Penny Jackson *Decanted  
Design*

Philip Kent  
*University of Melbourne*

Susie Moreton  
*Epworth Health*

#### Arup

Andrew Maher  
Claire Regan  
Greg Williams  
Jodi Downes  
Kim Sherwin  
Peter Bowtell  
Phil Alexander-Pye  
Stewart Bird

## San Francisco

### External

Erin Clinch  
*ARG*

Francis Gordon  
*CofLS*

Jane Chan  
*EHDD*

Leah Marthinsen  
*EHDD*

Mary Grace Houlihan  
*CofLS*

### Arup

Andrew Rhodes

Andrew Yesko

Arash Erfani

Becky Zegar

Chris Luebke

Dimple Rana

Frances Yang

Ignacio Barandiaran

Jacinda Ross

Jack Lim

Jacob Johnston

Jeffrey Dunn

Jonathan Gervais

Jonelle Simunich

Jose Goldaracena

Mark Summers

Martin Walker

Paul Switenki

Radha Mistry

Ritu Garg

Tyler Sheldon

## Sydney

### External

Ben Laing  
*Herbert Smith Freehills*

Cameron Morley  
*State Library NSW*

Diana Richards  
*Australian Library &  
Information Association*

Dimity Holt  
*Museum of Applied Arts  
& Sciences*

Elizabeth McKenzie  
*Australian Taxation Office*

Gillian Simpson  
*Australian Maritime Museum*

Jennifer Burrell  
*Blacktown Public Library*

Karen Johnson  
*Museum of Applied Arts  
& Sciences*

Karen Pymble  
*Australian Maritime Museum*

Katie Albright  
*Herbert Smith Freehills*

Kirrin Sampson  
*Australian Library &  
Information Association*

Linda Moffat  
*Australian Maritime Museum*

Lucy Hegarty  
*Westpac*

Mary Kelly  
*Sparke Helmore*

Rosa Cotrona  
*BVN*

Sarah Dundon  
*Department of Finance*

Sharlene Louey  
*City of Sydney*

Susan Shrubbs  
*Australian Catholic  
University*

Vicki McDonald  
*State Library NSW*

### Arup

Anne Kovachevich

Ayrley Strewé

Cynthia Wilson

Greg Williams

Hugh Gardner

Kim Sherwin

Lachlan Outhred

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Seattle Central Library. This striking building, conceived as a celebration of books, attracted over 2 million visitors in its first year.

## About Arup

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The people at Arup are driven to find a better way and to deliver better solutions for our clients.

We shape a better world.

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### Authors

Elisa Magnini  
Josef Hargrave  
Kim Sherwin

### Graphic Design

Elisa Magnini

### Illustration

Steven Scicluna

### Research

Elisa Magnini  
Kim Sherwin  
James Griffith

### Project Management

Josef Hargrave

## Contributors

### External

Fedele Canosa  
*Mecanoo*

Sebastiaan Kaal  
*Mecanoo*

Wolfram Lutterer  
*ZHB Luzern*

### Arup

Anna Pöyry  
Felicitas Zu Dohna  
Greg Williams  
Jennifer Greitschus  
Jonelle Simunich  
Mark Pearsall  
Radha Mistry

## Image Credits

p 23

2008-in progress

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Renzo Piano Building Workshop, architects in collaboration with Betaplan (Athens)

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Libraries are going through a renaissance, both in terms of the social infrastructure they provide and in terms of a diversification of the services and experiences offered. In corporate environments they are playing an increasingly important role in the provision of collaborate workspace and innovation. In communities they are evolving into hubs for education, health, entertainment and work.

This report brings to light significant trends that will influence the future of public, academic and corporate libraries and outlines the implications on their design, operation and user experience. It is the result of a collective exploration through series of workshop events held in London, Melbourne, San Francisco and Sydney, attended by experts in the design and management of libraries.

This piece of research presents a glimpse into the future. It explores what we may expect to see as the physical and the digital arena continues to evolve and aims to serve as a foundation for further discussion around the future role of libraries in the communities they serve.

# ARUP

13 Fitzroy Street  
London W1T 4BQ  
arup.com  
driversofchange.com  
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