

From undistracted to instant reading and back: Prototyping a new digital library service

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Abstract:

New technologies and digital services influence the current forms of reading, and public libraries respond to these possibilities by offering new services based mainly on ebooks. The constraints resulting from the recent waves of the COVID-19 pandemic have reinforced this trend. This work introduces the development process of new library services based on open web books experimentally developed at Masaryk University and the Municipal Library of Prague. Our initial research focused on people's behavior when reading a book in a browser, on elements of user interface interactions, and the overall context of reading on different types of devices, especially mobile. Through a Research through Design approach, qualitative inquiry, and prototyping, we have identified patterns in reading behavior and library users' needs, to which we have responded by designing a new service. We converted the new service concept into interactive prototypes in the Figma tool, which we further tested and iterated. The research supports reading in the digital world and brings new information about reading behavior in the age of instant digital services.

Keywords: web books, next-book, Research through Design, design thinking, libraries, digital reading

1. Introduction

Our paper focus on how libraries can use participatory design approaches and new technologies to prototype new digital services and digital reading. Using the case of the Municipal Library of Prague (MLP), we want to show how the library experimented with new technology during the global pandemic COVID-

19 to make books accessible to new groups of readers regardless of the location of its branches.

Several authors have described how libraries can be considered infrastructures capable of interacting with, offering services to, and working to empower different kinds of individuals and communities of people (Newman et al., 2010; Jerkov et al., 2015; Williment, 2020; Mattern, 2014). Lately, innovative technologies have a more fundamental role in supporting these dynamics (Ylipulli et al., 2017).

A participatory culture pushes for creating activities with communities usually not belonging to the library field (e.g., events with gamers) and implementing participatory planning tools. In addition to the traditional activities of books and multimedia content lending, libraries nowadays also offer programs, services, and spaces to support citizens in learning, making, and (co-)creating (Nicholson, 2019), allowing them to use and design new technologies (Mersand et al., 2018). Courses and training sessions are offered on various topics, primarily digital and media literacy (Ylipulli & Luusua, 2019). Sometimes these activities are organized using participatory approaches, allowing sharing of skills and experiences between the participants (Jerkov et al., 2015). These activities aim to support citizens' empowerment to make them more aware of the use and consequences of new technologies. Ylipulli & Luusua (2019) highlight how technological empowerment activities can arise from participatory design. The results achieved at a local level can acquire sustainability over time through the stable presence of libraries (Holappa et al., 2018; Minyaev et al., 2018; Pouke et al., 2018; Ylipulli et al., 2017).

The current context of digital reading

In the literature concerning electronic books in libraries, digital technology is also an important topic. A robust debate focuses on comparing reading experiences on paper and electronic devices from various points of view (Cull, 2011). Hupfeld and Rodden (2014) reflect on the role of the book in people and community interactions. The authors point out that e-reading technologies are "unsocial by design," as they do not allow the reader to perform those "social" activities that paper books allowed: the construction of the self (through confrontation with the other) and the construction of relationships with other people. Concerning this topic, Gruning (2018) underlines that designers should find a solution to the problem of the immateriality of digital books. This characteristic precludes the visibility of these objects and consequently its relationship with social use and identity construction.

Due to the intense monopolization of e-reading, there is little development in digital reading and book-handling practices. Hardware limitations or content restrictions limit further development and preserve electronic books in a form that resembles a paper-based book. The standardization may help readers in the transition to digital reading. However, it also helps stabilize the market for (e-)book distributors, and the e-reading market seems to have hit its ceiling (Bogost, 2021). Because of this, we assume there is a wide gap between the

possibilities of digital networked reading and actual reading practices, both in individual and social dimensions. Ebooks are often considered to be (or even made to be) a lower quality product, derived from primarily produced printed versions and stripped of their unique visual characteristics. (ibid.)

Scientific and popular discourse that frames „ebook wars“ as paper vs. screen not only surfaces inconclusive results (Fontaine et al., 2021) but, more importantly, misses the broader context of print vs. web — instead of focusing only on the individual reading experience, we need to grasp the much more complete and more significant change brought into reading by changes in the distribution of information.

Such change in perspective allows us to jump from focusing on hardware comparison (paper, e-ink, tablets, phones, voice readers) to analysis and development of software (reading interactions and affordances, analytics, changing behaviors), assuming that widely used hardware (phones, tablets, and computers with high-quality displays) are viable reading devices. This change also enables non-monopoly web book providers (e.g., libraries) to bring change into mostly consolidated ebook markets.

Libraries in the times of COVID-19 pandemics

The recent pandemic of COVID-19 pushes libraries to redesign the configuration of these interactions and rethink how digital technologies can support the change of libraries' role and what new issues may arise.

During the early waves of the epidemic in 2020 and 2021, many libraries were forced to close their branches and buildings, making it impossible for users to access books, study materials, digital technologies, and space to work. An important question has emerged: “How can libraries reimagine their collections of books, videos, audio recordings, newspapers, magazines?” (Jones, 2020). Jones (2020) suggests considering libraries as platforms for accessing information, regardless of their analog form. Some initiatives emphasize placemaking outside the libraries - for example, outdoor programs and installations (Lenstra & D'Arpa, 2022; Lenstra et al., 2022). Other case studies have shown that libraries have been able to very quickly transform community activities traditionally organized in their branches into online programs, even in contexts such as STEM learning and DIY making (Kim et al., 2020). In addition, some libraries have begun to provide entirely new services such as data access and reporting (Mandel, 2022), book chat and readers' advisory services (Lockley et al., 2021; Bolland, 2021), or providing remote tech support to users (Thompson, 2021). Libraries have also begun to use new communication and marketing tools (Rysavy et al., 2021). A significant change has also been made in the availability of a range of virtual services to a greater spectrum of users (Banks et al., 2021).

The case context: Municipal Library of Prague

According to many authors, the pandemic has further highlighted the need for libraries to create and make available digital collections (Warren, 2020). During the first wave of the pandemic, the number of downloads of electronic books from the Municipal Library of Prague (MLP) increased by more than 400 % compared to the same period of the previous year (source of information: MLP statistics). The Municipal Library in Prague acts as a publisher for most of the library units, so it can not only assign ISBNs to the books but also the owner of a license that allows the books to be distributed free of charge (Hartmanová, 2017). The increase in the interest in ebooks brought the need to tackle several problems facing the users of this technology, particularly the limited accessibility of ebook formats that rely on specialized software and hardware and the lack of services that support communities in digital reading.

Following the survey results conducted in 2020 among MLP users, the unavailability of devices for reading ebooks could be a significant barrier to using digital books (Stejskal et al., 2021), and the type of device affects the reading experience (Prokop & Stejskal, 2021). Different devices for reading ebooks vary between age groups of library users. Youth read ebooks using smartphones, tablets, laptops, or PCs, with an e-reader ranked last (Stejskal et al., 2021). The library thus faced the challenge of providing not only electronic books but also accessible, usable, and valuable digital services for its users.

According to De Moor and Assem (2013), cooperation with universities is a logical partnership for library inter-sectoral social innovations. Cibin et al. (2020) point to the role of intermediaries who can play the role of ‘translators of interests and meaning between worlds of design and use’ in the context of social innovation’ (Cibin et al., 2020, p. 11). Together with a university research group specializing in service design, acting both as an innovation partner and intermediaries, the library prepared a project for the Czech Technology Agency to discover ways to (re)design community online services. The integral part of the university team were developers, designers, and analytics from an informal non-profit organization that developed an open web format for digital books and next-book. The next-book form of web books became the primary prototyping tool for creating new services accessible regardless of locality.

Next-book as an ebook format and a prototyping tool

In 2021, MLP started to adopt a new open platform for its ebook collection: the next-book (Next-book, 2021). Next-book is a tool that enables the creation of books published natively in the open (worldwide) web environment. The basic design principle behind next-book-based web book as a singular object is the optimization for focused reading of books, allowing full use of the digital platform on an individual and social level. The application is based on accepted web standards, uses current standards developed by the W3C (WPUB manifest), and uses advanced web tools (React, Hugo, Node.js). The web is the most widely used reading environment, and as such, it gets the most support from various communities, such as online businesses, governments, browser vendors, and standardization bodies.

E-readers always used web technologies: either openly (EPUB) or in a closed-off environment (formats used by Amazon, Apple). Due to their proprietary nature or the limited hardware capabilities back in the first decade of the 21st century, those technologies were limited. They split off from the primary standards of the web itself. Even though EPUB has moved towards web standards since then (W3C Community Group, n.d.), a standard web browser has not been a popular viewing device.

One of the most important ambitions of the next-book is to close the gap between reading physical and electronic books from aesthetic, typographical, social, and usability points of view, meaning that the next-book could be equally competent as an artifact the reader regularly returns to.

Typographical and aesthetic standpoints present several challenges. First, web typography leaves much desired when trying to emulate printed typography. The limiting factors are mainly technological — HTML and CSS are solid and capable tools but struggle when confronted with rather harsh requirements of book typography. One of the problems is the unreliability and instability of typesetting — the text needs to reflow and adapt to different screen sizes and devices, which, if done fully justified similarly to a printed book, would create disproportionately high hardware requirements and therefore should be defined optionally at the level of browser (Etemad et al., 2022). Similarly, correct hyphenation is limited based on language and browser environment, making fully justified book typography even more problematic. In its current version, Next-book utilizes only left-aligned text and implements as many typographic rules as possible to make the text look pleasant and eliminate the most distracting elements. That is considered a sufficient starting baseline for a reading experience which should be expanded upon whenever possible.

Secondly, the next-book allows similar visual approaches to the aesthetic level to those available in the printed environment. Thanks to the next-book being a web page at its core, text, headline, and other textual element styles can be defined, including font, size, indentations, and margins. It allows designers to define book identity from cover page to internal structure and stylings similar to how they would work on the printed counterpart, even by creating an electronic version of a printed book with an identical design. Moreover, next-book does not discourage using interactive or animated elements, allowing for an even more comprehensive range of artistic expression that can substitute for the materiality of printed books.

The social function of books is an aspect of the matter that requires the most follow-up work and research. The already mentioned missing inherent identity construction mechanism due to the immateriality of electronic books (Gruning, 2018) is something that the next-book cannot solve on its own and needs to lean on third-party tools and services that can provide this functionality. Speculative and other similar approaches might be utilized to address these challenges. On the other hand, the next-book team plans to incorporate tools for social reading, including shared annotations and highlights in the near future versions.

Next-book interface is adapted for extended multisession reading. Its default settings allow the user to seamlessly switch between scrolling and paging (e.g., the text is split into page-like screens that the user can flip through) reading modes. The advanced functions include writing annotations and highlighting. Moreover, the settings provide several options for accessibility — font size adjustment, color, and contrast settings. Next-book interface is adapted for extended multisession reading. Its default settings allow the user to seamlessly switch between scrolling and paging (e.g., the text is split into page-like screens that the user can flip through) reading modes. The advanced functions include writing annotations and highlighting. Furthermore, the settings provide several options for accessibility — font size adjustment, color, and contrast settings. By moving books to the open web — e.g., using openly standardized web technologies and targeting browsers on various devices as book-reading portals, next-book provides a predictable, malleable, and rapidly developing platform that allows experimentation.

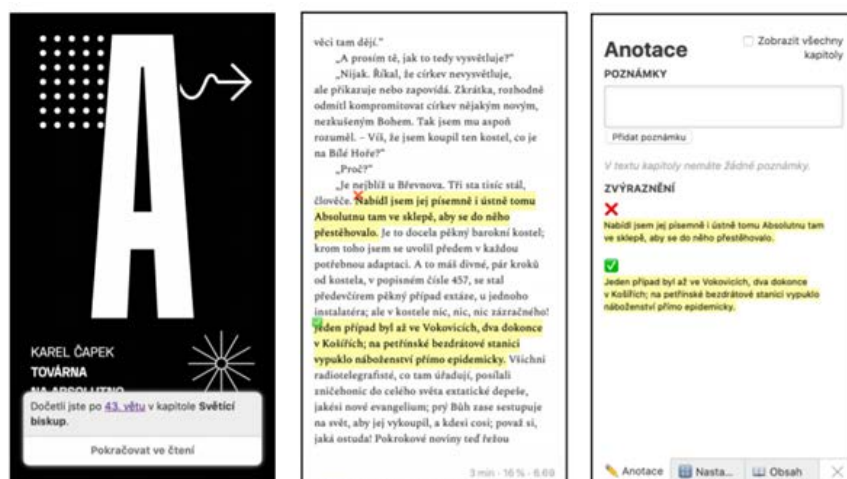


Figure 1: Example of next-book views (mobile view)

The design challenge

The main design challenge of this paper is: “How can a library use web books to improve the accessibility and usability of its leisure reading services in non-location-based communities?”. We decided to use human-centered design methodologies and research through a design approach to answering the question. The primary research tool was the web book (the next-book platform). This technology allowed us to experiment with new forms of digital reading.

410630304. **Methodology**

The methodological framework of the research plan is based on the Design thinking framework (Razzouk & Shute, 2012) and the Research through Design approach (Zimmerman et al., 2007). Design thinking is seen as a way to find and effectively solve problems (Bell, 2018; Culén & Gasparini, 2015). It uses the same tools as HCI or UX, but its unique value proposition derives from the holistic approach to problem-solving and philosophy (Luca & Ulyannikova, 2020). In practice, the design thinking approach means that library services can be viewed as endless prototypes and iterations serving a community of readers and users (Bech-Petersen, 2020).

A related concept to design thinking is service design. Service designers consider service a system composed of touchpoints, i.e., elements of the service's contact with the user and processes that may be invisible to the user. From a service design perspective, library processes appear 'as systems rather than individual service components' (McLaughlin, 2015, p. 55).

Design methodologies cover various methods, from experimental research to analysis, ideation, prototyping, and testing. These phases tend to be referred to in different ways; for example, a design thinking model called Double Diamond (Design Council, n.d.) works with phases named 1. Discover, 2. Define, 3. Develop, 4. Deliver. IDEO (2015) has created a customized methodology for libraries, where they refer to the phases as 1. Inspiration, 2. Ideation, and 3. Iteration.

Prototyping and Research through Design approach

Another approach also associated with design thinking in libraries is an approach referred to as rapid prototyping (Meier & Miller, 2016). Prototyping and iteration are one of the main principles of design approaches. They form an integral part of the so-called design mindset (IDEO, n.d.).

In the academic literature, mainly focused on HCI, the term Research through design (Zimmerman et al., 2007) is emerging to address the iterative nature of design approaches. Clarke (2019) has synthesized the elements of design epistemology. She shows that using these elements characterizes librarianship and that it is, therefore, necessary to talk about design epistemology as a fundamental cognitive starting point for librarianship. According to Clarke (2019, p. 28), 'the need to shift the narrative from "library science" to "library design" is clear'. In developing new library services, we agree that the Research through Design (RtD) approach provides a better opportunity to describe and understand the process of creating a new service.

Research design

We chose the Design Council's Double Diamond (Design Council, n.d.) as the main framework guiding design research, mainly because of its systematic nature and because it has already been used in the context of academic research (Martins, 2017; Banbury et al., 2021; Pyykkö et al., 2021).

The research-design process was iterative and consisted of several phases (Fig. 2):

- interviews with internal stakeholders;
- interviews with MLP users and readers and web book testing;
- analytical and ideation workshop based on the results of testing;
- user testing of the new service concept.

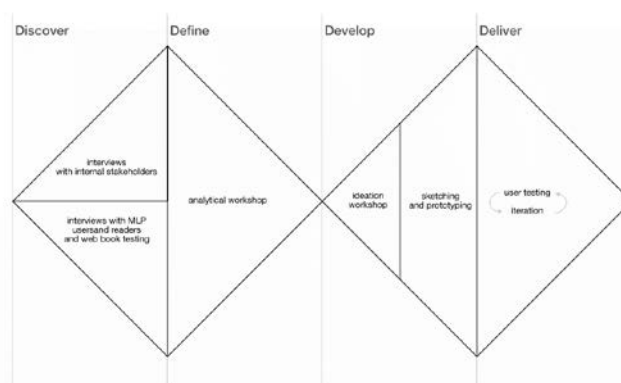


Figure 2: Design process of developing a new service in the library

Interviews with internal stakeholders

According to Kim (2020), when designing a new service, it is essential to establish a shared, interest-driven purpose to incorporate community-of-practice members' interests and identify shared values. These conversations also help align activities with a collective social goal related to civic and political outcomes (Kim, 2020).

Six in-depth interviews were conducted with key informants of MLP. They were the E-library Project Manager (EPM); the Press Officer (PO); the Head of the Digitization Department (HDD); the Master Technical Officer (MTO); the Methodologist for Cultural & Educational Activities (MCEA); an employee with expertise in Content Editing and Licensing (CEL). These people were employed or collaborated with MLP. These interviews helped us understand how ebooks and next-book can be improved to support the design of new digital community services from the point of view of the libraries.

Interviews with MLP users and readers and web book testing

Understanding users and their needs is an essential principle of human-centered design. According to Luca and Ulyannikova (2020), the unique feature of design thinking is 'empathy which enables designers to create services for the user. The

user interviews and user testing were the primary method of user-oriented research in the first phase of service development. Eleven respondents participated in the interviews and testing. Recruitment was conducted through MLP communication channels. Interviews were conducted online, and participants used their devices and could choose which device they preferred to use for reading. Eight women and three men participated in the research. In seven cases, participants used Android, in two instances Linux, in one case Windows, and one case MacOS. Testing was conducted through the Lookback app and analyzed in the Dovetail application.

The interviews were semi-structured - initially including questions on reading behavior, reading habits, and digital reading habits. The interview was transcribed and analyzed. Open coding and focused coding were used in the analysis. In the second half of the research session, we included user testing of the current form of the next-book. This part was recorded as a video, and then the transcript was analyzed together with the video. A combination of structured, open, and focused coding was used.

Analytical and ideation workshop based on the results of testing

Design workshops offer users and other stakeholders an adequate opportunity to participate (Ozkaynak et al., 2021). Gasparini (2020) uses design workshops as the primary form of design interventions and reflection. According to Gasparini (2020), this approach allows the library to integrate newly learned design practices with existing ones.

The research findings from the previous phase were followed up with three workshops - first with the internal project team and then with an extended team involving critical stakeholders from the library. The first workshop was primarily analytical and aimed to make sense of previous interviews and user testing data. The second workshop was ideation, followed by a third - sketching and prototyping workshop. Fifteen people participated in the workshops - representatives of researchers, designers, decision-makers, and essential stakeholders. The outcome of the workshop series was a concept for a new service. The workshops were also conducted online in the MS Teams and Miro environment.

Proof of concept and user testing

User testing is the most common way to validate new designs within a human-centered design. User testing is becoming more prevalent in librarianship, and there is a growing number of studies using this method (Comeaux, 2012; Dominguez et al., 2015; Dease et al., 2020; Durante & Wang, 2012). For example, Thomas et al. (2021) applied user testing to research open textbook adaptation in a similar context.

The sketches of the new service were then refined into an interactive prototype in Figma. By the date of the text submission, proof of concept has been tested with four internal stakeholders from MLP and five readers. Testing was

conducted in the MS Teams environment, and analysis was processed in Dovetail.

410630352. **Results**

Findings from the interviews with internal stakeholders

The conclusions summarize the interviewees' views on ebooks and what they can do. During the interviews, we found three different representations and meanings of ebooks and digital libraries in the context of MLP:

First of all, digital books can support the library in accomplishing its traditional and more comprehensive institutional mission, which is making cultural assets accessible and “[...] providing the widest possible readership with the largest possible number of titles, with the least possible barriers” (CEL). In addition, ebooks can also support activities aimed at preservation since, as described by PO and EPM, libraries generally allow citizens access to publications that may no longer have commercial use but are still in demand. In this traditional approach, books are mainly considered content, and users are mostly imagined as individual passive recipients, just interested in finding and reading books.

Secondly, respondents are interested in using digital books to develop more interactive relationships with communities. Library already has various digital contents, as described by HDD, since most of the Czech works with a free license can already be downloaded from the library website. At the same time, EPM underlines that its objective is “to find a new way to present the books to the people.” As MCEA stressed, the MLP e-library cannot offer (community) services other than just allowing the readers to download ebooks in the selected format. For this reason, it is necessary to imagine an interaction with the users and the communities that does not end with the download itself. We can notice that this change implies the movement to a different representation of the ebooks that become a tool supporting interaction, where users are not considered just as individuals but also as part of communities.

Finally, the digital library is imagined as a guarantor and enabling platform. For PO, the main goal of the e-library should be to offer a place where the quality of the books (in terms of processing and visual pages) is guaranteed. MTO underlines the possibility of imagining the e-library as a publisher of unknown or new authors. Similarly, HDD states that the e-library should function as a separate brand - publisher & distributor. In these cases, an e-library is imagined as an infrastructure that works with ebooks as artifacts and where users can become producers of these artifacts whose realization would not be possible outside of this context.

The second and third types of ebook representations best fit the extended capabilities of the web-book and next-book formats, so these ebook representations were used as starting points in subsequent service development phases.

Findings from the interviews with MLP users and readers

The interviews included questions on reading behavior, reading habits, and digital reading habits. We found five essential aspects of reading behavior connected with using electronic books from the answers.

First, readers often consider ebooks the most affordable and accessible option. Ebooks are very easily and quickly accessible to readers through various services (including download platforms) or shared storage: “I have my mobile phone always at hand, I have it in my small handbag, I can download the book there at any time, I can start reading at any time. This is probably the most important thing for me” (anonymous respondent). In addition, owning a reading device, whether an e-reader or a mobile phone, means choosing a book immediately before reading, according to their mood and state of mind. They do not have to read only the book they have with them. “If I think of an author or something, I just look it up, download it, and I can read straight away” (anonymous respondent). The availability of ebooks also means that in some cases, ebooks are perceived as books to try out: “I might download a book that I do not know what it is at all, that someone recommended to me, and if I like it and it is something I am going to read more than once, I will get the paper version” (anonymous respondent).

Second, reading takes place in many contexts with minimal time and space. Respondents reported reading on the way to work, before sleeping, and in all leisure moments. In such cases, it is necessary to adapt the forms of reading to the situation and context, as the example of our next respondent shows: “I read a bit secretly at work. I have this mobile phone that I hide” (anonymous respondent).

Third, reading is an episodic process and often takes place across devices. Our respondent describes a very similar situation: “When I was on the train, I read on my Kindle, and that is what I read the most, and if I did not have my Kindle with me and I was somewhere for a while, I opened my phone” (anonymous respondent). However, such adaptation and device switching can also cause technical problems and require advanced knowledge of formats on the user's part.

Fourth, even digital reading contains social elements. Our respondents reported situations where they recommend and share books: “I got the book through an exchange because I have some contacts where we exchange books” (anonymous respondent).

The fifth finding from our interviews is that ebooks do not satisfy all the senses. Respondents missed, for example, the better quality of illustrations, the physical materiality of the book, the emotions associated with flipping through the book, and other content that is overlooked in the electronic format: “All of that together, the quotes or things like that on the cover, it makes the [paper] book feel enjoyable, you kind of enjoy it more” (anonymous respondent).

Outputs from the analytical and ideation workshop

It has been well described that the electronic format of books brings new possibilities for reading. Findings from our interviews with MLP readers who use ebooks have further helped us think about the experience of e-reading in the context of web-based books (next-book format). The identification of essential opportunities and ideas was carried out in an analytical and ideation workshop with the participation of representatives of the university, the library, and other experts and user representatives. During the analytical workshop, we identified a large number of opportunities falling into seven main categories (a comprehensive collection of recommended school reading in the form of ebooks; a virtual reading club promoting collaborative reading in an online environment; A web portal of literature books for a specific target group with the possibility of thematic selection; Reading short excerpts of literature in leisure moments directly on the mobile phone; Enriching books with additional multimedia, links and curated commentaries to help with book selection as part of the MLP ebook catalog).

We evaluated the discovered opportunities according to the level of effort and expected impact. As a result of the analytical workshop, the decision was made to develop a service allowing the reading of short excerpts from literature in combination with the librarian's role as curator.

Based on analytical and conceptual workshops, a concept for a new service was defined, which should meet the following parameters:

- reading on a mobile device;
- reading short excerpts (up to 15 minutes);
- use of content from the MLP digital library - books licensed by the library and free works (mainly contemporary Czech and Slovak fiction and classical literature) and connection to existing MLP services, especially web books in the form of next-book.

The service should then offer readers:

- professional help from librarians with the selection of fiction;
- the possibility to use any moment for reading (e.g., while waiting for public transport);
- reading for free, without registration, at the click of a button (the principle of having a library everywhere).

Prototyping Beletrion: From a web book collection to a new digital library service

The concept, with the title Beletrion (Fig. 3), was gradually developed into prototypes, from low-fidelity to high-fidelity versions: from hand-drawn storyboards through the design of user journeys in Miro and interactive mock-ups in the Figma environment to coded working prototype (www.beletrion.cz).

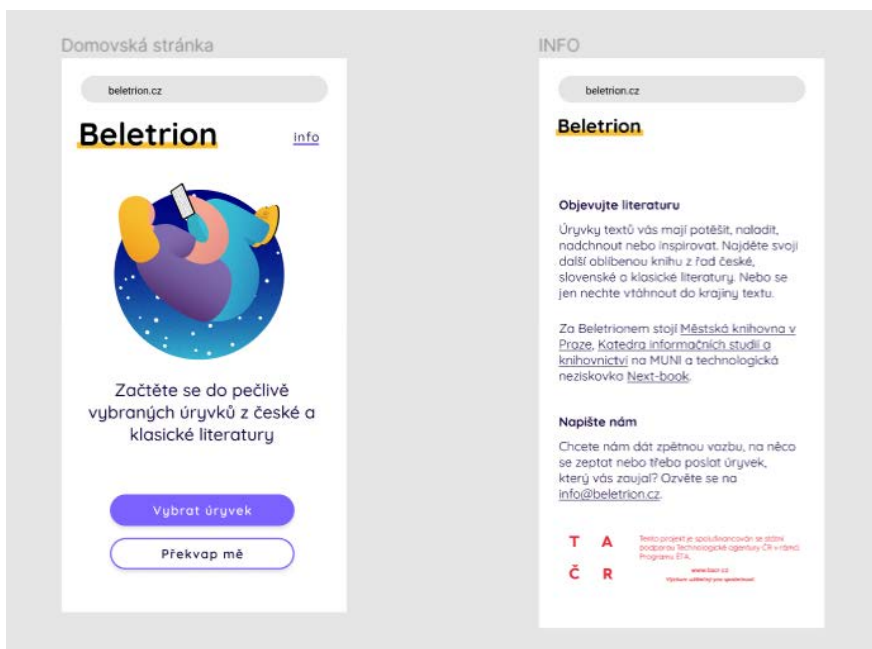


Figure 3: High-fidelity prototype of the new reading service

The main product proposition of Beletrion is to offer readers the experience of reading fiction in the context of their everyday online interactions. Based on carefully curated selections from librarians, readers can read emotionally powerful book excerpts and then decide whether to continue reading the entire web book or have the app generate a new excerpt (see Fig. 4).

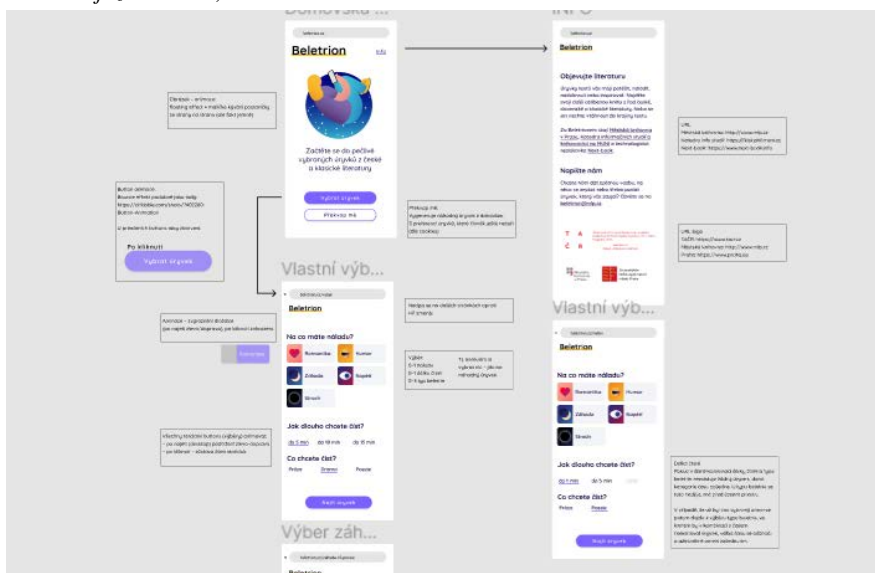


Figure 4: The user-flow of the new reading service

All prototypes were progressively tested with both users and librarians to ensure usefulness, accessibility, and user experience, and service operability and sustainability on the library side. Data collection is currently being conducted to help the library better understand reader behavior when using the app.

410630256. Discussion

In this paper, we described the development of a new library service based on design thinking and Research through design principles. The starting point for thinking about the new service was the situation of the COVID-19 pandemic, which, among other things, challenged the library to rethink its benefits for the user community. The service aims to support readers in non-location-based communities and tries to be as responsive as possible to the changes in reading behavior associated with digital reading.

Hybrid practices of reading and their implications for public libraries

Building a new service for the online environment, in the case of the Beletrion concept, is based on careful work with book excerpts and quick reading in different contexts. Some authors use the term hyper reading for skimming, scanning, fragmenting, and juxtaposing texts (Pianzola, 2021) and put these practices as opposed to deep and undistracted reading. The premise of Beletrion is that book excerpts can serve as a suitable motivator to read the whole book. After reading an excerpt, readers are redirected without additional barriers to an open web-based book in the next-book form that opens in a browser and is

tailored for focused reading with minimal distractions. Further research is needed to determine how cognitively challenging the transition from instant to undistracted reading of the book (and back) is. Some experts have pointed to a reduction in individuals' ability to concentrate. Would not a service like this encourage unfocused and rapid content consumption instead of focused and reading flow? Further research should focus on this area as well.

Hybrid reading is altering media and devices according to context. The user can choose to read the book on paper, mobile phone, or e-reader. The reading behavior depends on the situation's social context. It is influenced by social field properties and interactions with other actors, including non-human actors.

Social, digital reading: implications for the further development of Beletrion and next-book

We see significant potential in implementing open technologies such as Next-book and Beletrion in libraries to support the social functions of reading. Providers of similar services can experiment with offering more interactive experiences. Adding additional functionality to the next-book, for example, would allow readers to tag emotionally powerful passages, which could then become selected passages in Beletrion. The service would then move closer to other reader-driven curation services. Other Beletrion functionalities could add additional elements of social interaction - for example, user ratings of book excerpts and more.

The data on reading behavior can then be used to develop the service further, recommend book excerpts, or further modify the interface and features of Beletrion itself. The sociality of reading and reading behavior in the digital environment can be characteristic of other digital content providers and are relatively hidden and pervasive (Pianzola, 2001). On the other hand, some ebook formats and the devices used to read them can be actual black boxes that put the readers' privacy at risk (Wicker & Ghosh, 2020). For this reason, the transparency offered by next-book and the fact that it is an open-source technology could support libraries in their effort to become guarantors of ebook quality

Research through Design in library practice

Using the principles of design thinking, service design, and Research through Design allowed us to rethink library services in the changing context of the pandemic situation, considering the library's capabilities and processes for handling books in the library and reader behavior and habits user experience. Product development practices do not always combine well with existing library processes and workflows. Therefore, we consider it essential to pay attention to this aspect of the new service development in the following project evaluation.

A concept for a rather innovative service was developed and is currently in the implementation phase. The evaluation of the implementation is scheduled for the next few years. Still, we can already see that the way the library works

internally is changing along with introduction of the new service. The library uses simple and low-tech materials to prototype future, more complex services. New working groups have been initiated, including community groups; these aspects help design more accessible services and programs for different groups of readers in general (Kim, 2020). Online design workshops helped connect librarians with university representatives and users' representatives to discuss possible future library services. There is an increased focus on the user and their involvement in designing the new service.

410630736. **Conclusion**

First, we worked with people involved in managing the library activities to understand their representation of ebooks and digital libraries and collect insights to improve the next-book and design potential new community services. Second, we conducted qualitative research with MLP users to understand their reading behavior and habits. Third, we identified the opportunities for developing a new service based on a web book format that can support the library and librarians' visions within non-location-based communities and digital environments. Fourth, we introduced the concept of new services tailored to the online environment. Developing a new idea of an instant snippet-based reading service also brings several issues regarding reading books independent of library location that need to be approached with critical care. In the paper's final part, our research and design activities allow us to formulate some reflections concerning libraries and digital reading.

However, we also acknowledge that further research needs to be done to understand these topics: How can public libraries traditionally connected to local communities provide services that support digital reading that is non-location based? What are user groups included and excluded? How are library users' reading behaviors changing concerning the digital reading phenomenon? Moreover, how do libraries need to change their processes to design meaningful digital services that support reading? All of these questions deserve further and deeper exploration.

Acknowledgment

The research was carried out as part of the "Redesigning Library Services 2020: web-books" project. The project (TL04000391) is co-financed with support from the Czech Technology Agency under the Programme Eta.

The authors would also like to thank the Municipal Library of Prague, Aneta Nejezchlebová, and Jakub Tesař, who enabled the deployment of the new format of web books in the electronic library; Richard Olehla, Jana Trnobranská, Jitka Řeháková, and others, who participated in the design workshops and meetings; Kristína Ježíková, Daniela Luňáčková and Alexandra Jakobová for their participation in the web design, user research, design workshops, and user testing.

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