Integrated and holistic project assessment for a library website redesign

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Introduction

Working on projects of varying size, scale, and complexity is a constant in libraries. While it's valuable to assess project work to learn and improve, it can be difficult to figure out what to focus on in project assessment. And with more complex projects especially, the things you want to measure are often multidimensional and do not fit into a single assessment method.

For the University of Michigan Library's 2-year website redesign project, assessment was integrated into the work and timeline from the start. The goals for the assessment plan were to be able to measure the legacy website against the redesign across a variety of metrics, as well as know how well the structure of the project team worked and whether our internal communication and outreach were successful. We used a combination of formative and summative assessments, while also employing programmatic strategies for how we worked and built the site to support achieving the desired outcomes. In the end, the redesigned website demonstrated significant improvement over the legacy website across the board.

This website redesign demonstrated that building assessment into a project plan from the beginning benefits the project as a whole and makes the assessment manageable and meaningful. The lessons learned are broadly applicable to library assessment work, especially for time-bound projects.

Context

The University of Michigan is a public R1 research university with three campuses, the main being in Ann Arbor. The university employs nearly 30,000 people and in 2022 enrollment topped 51,000.[1] The University of Michigan Library is in fact multiple libraries on the Ann Arbor campus and supports academic programs across campus, as well as Michigan Medicine, the University's academic medical system. At the time of the redesign, there were roughly 450 library employees, not including student employees. The library is consistently ranked as one of the top academic research libraries in North America and holds more than 8.5 million print volumes and has a deep history in the work of digital library collections.[2]

Legacy website

The library's website (https://lib.umich.edu) was nearly a decade old when the website redesign project started in earnest. It was built in Drupal 7 and made extensive use of the Organic Groups module[3] for both structure and editing access permissions. In

practice, this meant the website was essentially made up of over 100 "mini" websites. The site's overall information architecture — the practice of "organizing, structuring, and labeling content in an effective and sustainable way"[4] — was minimalist. This made it difficult to maintain the content, resulting in inaccuracies and duplication. In addition, several other applications had been built into the same Drupal instance, making the technology even more complex to manage and update.

Following significant research and consideration of both these technical limitations and expected content needs, we decided to start completely from scratch for the new website.

Project scope

The work of the website redesign project included:

- Deciding on new technical infrastructure for content management, front-end development, and hosting.
- Researching and developing a new information architecture.
- Updating the overall visual aesthetic of the website and creating all new interface designs for a range of page templates.
- Touching every piece of page content by either completing edits, combining existing pages, or writing new content.
- Shifting our website content authoring and strategy from a distributed model with some central oversight to a centralized one where a small number of people can create content and edit.

With the prominence of the University of Michigan Library, the broad and varied audiences who use the website, and the numbers of stakeholders within the library, the redesign was a significant project requiring strong organizational buy-in.

Project team and timeline

The website redesign team was led by me (web project manager and content strategist) and included members representing front and backend development, design, communications, user experience research, physical spaces, and accessibility. Team members came from three different departments across the library, with the majority from Library Information Technology (LIT).[5]

The team was split into sub-teams for content, development, user experience and design, and accessibility, with some members on more than one sub-team. A Core Team of myself, two developers, our senior UX strategist, and our communication and marketing officer served as the point of coordination.

We kicked off in July 2018 and finalized the assessment plan in October 2018, with adjustments made in summer 2019. The new website launched on July 21, 2020. A

small subset of the original project team worked on outstanding development, documentation, and other wrap-up work — including completing assessment activities and the final report — through October 2020.

Anytime "we" is used in this paper, I am referring to the collective efforts of our project team.

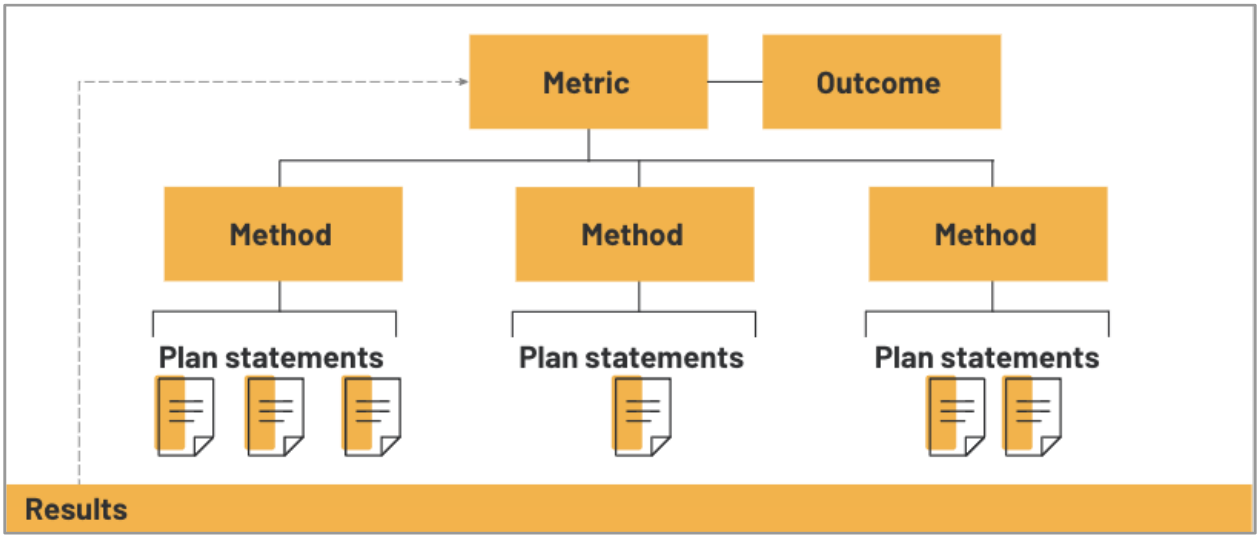
Brief technical details

The redesigned website was built using decoupled architecture. The content management system is Drupal[6] and the front-end is built using Gatsby,[7] a static site generator. Pushing changes to the site requires building and deploying it. All pages generate on initial page load for optimal performance once you're on the site.

Assessment plan structure

The first six months of the project were focused on foundational work, including developing the assessment plan. Once created, the plan activities were integrated into our project timeline and planning. It uses a structure (Figure 1) of metrics, outcomes, methods, and plan statements. This facilitated connection back to the ongoing project work. As we had results, those mapped back up to metrics.

Figure 1. Tree hierarchy diagram of the website redesign assessment plan structure.



Metrics

The assessment plan was split into seven metrics with a desired outcome (Table 1).

Table 1. Metrics and outcomes

#	Metric	Outcome
1	Usability	The library website has intuitive navigation, is easy to learn, and is efficient and enjoyable to use.
2	Accessibility	The library website is accessible for all our users, regardless of their mental or physical abilities.
3	Mobile experience	The library website provides an equivalent, optimized experience across screen sizes.
4	Content authoring experience	The website content authoring experience allows flexibility within structure (i.e., within the page layout designs), provides clear fields for adding content, and is optimized for usability.
5	Site performance	The website will consistently have a mobile performance score of 80+ and desktop performance of 99 or 100, as well as average page speed on both mobile and desktop according to PageSpeed Insights.
6	Project management and structure	A public beta of the redesigned website was available in January 2020 and a new site launched in May 2020. The Website Redesign Project Team felt there were clear expectations, reasonable timelines, and ample opportunities to provide input throughout the project.

#	Metric	Outcome
7	Internal communication and outreach	U-M Library staff were informed throughout the course of the redesign and prepared for the change when the site launched. They also felt their voices were heard throughout the process.

Methods

Each metric had a set of methods that we would use to assess it. Methods were not regimented, but instead used to broadly capture what research methods, practices, or overarching work would be used to assess success against the desired outcome for that metric. There were 23 total methods across the seven metrics. These are listed in the "results by metric" section.

Plan statements

For each of the methods, we developed between one and three "plan statements." These statements reflected what we were going to do. They were directly connected to the project work and part of our planning. In some cases, the statements were specific tasks, while others stated an intention or practice. These are also listed in the "results by metric" section.

Results by metric

While it's not possible to include the full breadth of our research-based findings here — many generated individual reports — each plan statement along with a summary of what we did or learned is provided here by metric.

Metric 1: Usability

We conducted a range of user experience and usability research. Early work helped us understand our audiences and a variety of testing methods were used to both inform and validate our decisions.

Method 1: Understand primary audiences tops tasks and expectations

Plan statement: Conduct U-M User Priorities Survey using targeted sampling to better understand our primary audiences' top tasks and expectations when using the library website.

We conducted the survey with a sample of students, faculty, and staff in October 2018. The goal was to inform prioritization of common tasks and services, as well as know not only what users relied on, but also what kept people from using our legacy site. The

findings laid an important foundation for our research, testing, design, and content work.

Method 2: Pre and post first click testing

Plan statement: Conduct first click testing around top tasks using the legacy website to establish usability baseline and summarize insights/findings for redesigned site. Measures will include task success and time to tasks. Repeat with the new site prior to launch.

Based on the findings of our user priorities survey, we developed a set of "top tasks" to use in first click testing using Chalkmark.[8] We conducted the baseline test on the legacy site in 2019 and on the redesign prior to launch in 2020.

- Overall success rates improved from 64.2% to 83.5%.
- Lower scores (<50% success) disappeared in the 2020 test, while the 2019 test had 14 tasks with a success rate under 50%.
- Higher scores were more prevalent in the 2020 test with double the number of tasks (from 9 to 18) having a high success rate.

Method 3: Extensively test information architecture

Plan statements:

1. Conduct closed card sort on draft content groupings to validate work and support iteration before moving on to tree testing.
2. Conduct tree testing on draft information architecture, iterate and re-test as needed to finalize.

Based on draft groupings developed by the content sub-team, we conducted a closed card sort open to students, faculty, and staff using OptimalSort[9] in October 2018. These findings led to our first tree test of the proposed information architecture using our top tasks, conducted in Treejack[10] in December 2018. The "Research and Scholarship" site section emerged as the trickiest to organize, and an additional round of both tests was conducted to inform our final choices there.

Method 4: Ongoing usability testing

Plan statement: Ongoing usability testing of designs and site with diverse selection of primary and secondary audiences throughout the redesign process.

Beyond the specific initiatives described in the methods above, other testing efforts included:

- Tabling in spring 2019 to test several aspects of design prototypes.

- Research into location and hours needs, including a competitive analysis, engagement with front-line staff, and a prioritization survey exploring what information people most value.
- Exploration into user preferences for website header search box behavior, culminating in paired comparison testing.
- Survey about homepage hero images to learn how people react to different types.
- Usability study in spring 2020 to build our user research knowledge base of evidence and observe users using the near completed site.

Metric 2. Assessment

We conducted accessibility audits and tests, and integrated attention to accessibility across our team's work.

Method 1: Complete accessibility audits

Plan statement: Use full accessibility audit protocol to assess the current site. Look at homepage, header, footer, navigation, and representative selection of the top five page types (Page, Unit, Event, News/Announcement, Category landing page).

Our Digital Accessibility Team conducted a full audit of the legacy website in December 2018, followed by a light evaluation of the redesign post-launch. The legacy site audit was bad, with an average violation severity of major, 7 common violations across all pages, and 14 total unique page level violations. In the redesign evaluation there were zero violations and the report stated: "...the new library website is one massive accessibility win, especially when compared to the previous library website."

Beyond these human evaluations, Deque's axe Monitor[11] automated testing tool consistently gives the site a score of 100%.

Method 2: Embed accessibility into our processes and use the Design System

Plan statements:

1. Follow WCAG 2.1 (A and AA) guidelines and recommendations to make the website accessible to a wide range of people with disabilities.
2. Embed accessibility into our design and development process so that no remediation is required in order to launch.
3. Use styles and components from the U-M Library Design System (https://design-system.lib.umich.edu) that are already vetted for accessibility.

We aimed for WCAG 2.1 AA and consistently erred towards developing universal design solutions. Accessibility was top of mind for design, development, and content and the website was developed in tandem with the Design System and uses its components, colors, fonts, and more.

Method 3: Bring DEIA emphasis to testing recruitment
Plan statement: Bring a DEIA emphasis in how we recruit for testing

Our UX team leveraged their existing relationship with the university's Services for Students with Disabilities office to support recruitment. We also partnered with the library's Assessment Specialist to improve our sampling efforts and help achieve diverse pools in conjunction with our self-selecting volunteer list. When tabling for intercept testing, we set up in a variety of buildings on campus to expand our reach.

Method 4: Integrate into content creation
Plan statements:

1. Integrate guidelines around accessible content creation and readability into the Editorial Style Guide and Best Practices.
2. Setup content authoring experience to encourage/enforce accessible content creation.

We refreshed and updated our style guide and best practices early in the project and used what we developed throughout content creation. Readability of text and a focus on plain language became guiding principles in our approach to creating content.

When building out content types, we focused on consistency of field labels and order across content types. We also made customizations to the WYSIWYG editor for body text including removing the heading 1 (it's used for the page title) and underlining options (only links should be underlined and that's handled on the front-end).

Metric 3. Mobile experience

Providing an equivalent, optimized experience across screen sizes should be inherent, but it wasn't the case on our legacy site and we wanted to be explicit in how we would design, build, and test for mobile.

Method 1: Design and build for mobile and desktop
Plan statements:

1. Design and develop site navigation and architecture for both mobile and desktop experience.
2. Build site using responsive design.
3. Aim for PageSpeed Insights Good Mobile Optimization.

For every design we considered the layout and interactions for small and full screens. We were cognizant of breakpoints — especially for the header, primary navigation, and image scaling — and sensitive to thinking about selects (as opposed to clicks) and having appropriate touch points. The site is built using responsive design.

Google changed the available PageSpeed Insights during the project and what we planned to assess on was no longer available. However, the site passes the PageSpeed Insights[12] Web Vitals Core Assessment on mobile and Google's Mobile-Friendly Test[13] states the site is mobile friendly and easy to use on a mobile device.

Method 2: Test across screen sizes and devices

Plan statement: Conduct usability tests on various screen sizes and devices.

Most usability testing ended up being on full screens, though we regularly checked various screen sizes and devices during the design and development process. In spring 2020, we conducted a quality assurance project with library staff and several folks tested on phones, uncovering some minor issues and things to be aware of.

Metric 4. Content authoring experience

In addition to the attention to content authoring relative to accessibility, we wanted to ensure what we were building was better than what we had before.

Method 1: Test content authoring

Plan statements:

1. Pre-test our legacy content authoring experience by conducting System Usability Scale survey with content creators.
2. Repeat with content creators once majority of content creation is complete.
3. Conduct usability testing on the content authoring tool and make changes as necessary.

The System Usability Scale (SUS)[14] carries an industry average of 68 out of 100. All members of our Web Content Coordinator Group completed the SUS for the legacy site in March 2019 with an average score of 45. We repeated the survey in September 2020 and the average went up to 69. The median also increased (from 40 to 78).

We did not end up conducting any usability testing. With the significant shift in our technical stack to a decoupled site and less people having access to add new content, this was not a high priority.

Method 2: Research and employ best practices

Plan statement: Research content authoring user experience and integrate best practices.

No research specifically around this occurred, but much is covered in our accessibility work and it is something we were attuned to.

Metric 5. Site performance

While there are quantifiable measures available to assess site performance, we approached them with attention to nuance and our context. We also kept coming back to performance to inform our approach to infrastructure.

Method 1: Pre- and post-test performance and establish peer comparison
Plan statements:

1. Test and record performance and speed for mobile and desktop for legacy site.
2. Test and record performance and speed for mobile and desktop on peer institution sites for comparison.
3. Test and record performance and speed for mobile and desktop for redesigned site.

The legacy website's performance was slow (as expected) and the same was not unusual among our peers (some were average, none were good). The bar was low and building a static site changed our perceptions of what "good" performance is. The initial page load is a bit slower to have a fast experience once you are on the site. While we didn't meet our outcomes, we were confident in the trade-off.

Method 2: Advocate for infrastructure
Plan statement: Advocate for hosting outside of Library server infrastructure to meet user expectations for site performance, if necessary.

With our decision to go with a decoupled architecture, we host the Drupal instance in the library's Amazon Web Services[15] environment and the Gatsby site on Netlify.[16] Using Netlify was new to the library and started as an experiment. After numerous discussions, evaluation, and review with colleagues, we were able to establish this infrastructure for production.

Method 3: Follow best practices
Plan statement: Follow optimization recommendations and best practices for design and development.

There was a learning curve with the new architecture, but we made sure to optimize and follow best practices as much as possible, especially around caching and image handling. By using Netlify we also benefit from the best practices built into their infrastructure.

Metric 6. Project management and structure

A range of plans around meetings, tracking, and communication made up this metric. It's also one we had to shift later in the project. The timeline of the launch was pushed from May to July. We also changed our approach to a public beta and had a short, 3-

week preview prior to launch instead of multiple months as originally planned. While these are additional instances of not meeting stated outcomes, they were very much informed decisions.

Method 1: Hold intentional meetings
Plan statements:

1. Hold Core Team bi-weekly retrospective and planning meetings.
2. Hold full project team meetings once each semester to check-in with the main goal being to talk about how things are going.

Bi-weekly meetings were in line with sprints throughout the course of the project. We reviewed the previous sprint and discussed planned tasks for the next one. They were important for staying aligned and provided space for discussion.

Project team meetings were initially scheduled for once a semester, but we ended up increasing the frequency to every other month. This was a more conducive pattern for keeping everyone informed. To ensure information was being shared equitably from the Core Team to the full team, I posted a brief bi-weekly retrospective to the team Slack channel as well.

Method 2: Track project in JIRA
Plan statement: Use JIRA Project to track the progress and completion of deliverables and tasks.

Yep. This happened.

Method 3: Use communication tools thoughtfully
Plan statement: Use private Slack channel for general discussions, information sharing, and quick questions and feedback.

This happened too. We stuck to Slack as our primary communication channel for the full team and hooked up our team's group email address to send there as well. Slack was a more established communication tool for LIT team members than others, however. We adjusted our practices as needed to ensure everyone was getting timely information (such as using channel pings anytime we shared retros or reports).

Method 4: Complete post-assessment
Plan statements: Hold a wrap-up meeting to discuss how the project structure ultimately worked after launch and provide an online option to give anonymous feedback.

Between the online form to collect responses and final discussion, we found the distributed team structure with a "core team" mostly worked with some bumps and

adjustments needed. The biggest takeaway was the importance of sub-team members feeling connected to the whole. The bi-weekly retros via Slack were particularly valuable for keeping everyone up to speed, but we could've done more to provide structure around our collaboration across sub-teams — especially with sharing design work for feedback — and had clearer expectations for communication up and down.

Metric 7: Internal communication and outreach

Making sure a 450-person organization feels both informed and heard during a large, complex project requires intentional commitment to communication.

Method 1: Provide regular, timely, and relevant communication

Plan statement: Provide regular, timely, and relevant communication to internal audiences through newsletter items and presentations.

Our approach to internal communication included:

- Messaging (primarily library newsletter items) when there were things to say for the first year, with gaps of no more than two months.
- Presentations open to all staff for a "staff preview" where we shared the information architecture, initial designs, and our approach to content strategy.
- Monthly newsletter updates sharing progress from the staff preview onward.
- A celebration for the release of the Staff Beta, along with the start of release notes.
- Steady communication for the 3 months leading up to launch.

Method 2: Conduct a Listening Tour

Plan statements:

1. Go on a Listening Tour and provide an open questionnaire.
    a. Stops are focus groups with specific audiences through the library. We will conduct 20+ stops and speak to as many staff as possible.
    b. A questionnaire will be provided as a follow-up for anyone who is more comfortable sharing that way, has thoughts after, or could not attend.
2. A recap of the Listening Tour, including common themes and how many people were reached, will be shared.

We did it! The tour was incredibly valuable for building trust and getting the project off on the right foot. We facilitated 24 sessions, reached 189 people, captured 1,124 observations, and created 187 tags to categorize observations. We articulated the 10 top themes, as well as specific takeaways for things we had not realized were so important, hard to find, or happening at all.

Method 3: Convene and engage with Website Redesign Champions
Plan statements:

1. Champions are library staff members from across the organization who will help build trust and foster engagement among all library staff in support of the project.
2. The champions will meet with the project manager approximately twice per semester to share feedback, questions, or concerns from library staff and to stay updated on the project plans and progress.

The group was formed in fall 2018 based on a call for volunteers and targeted recruitment to ensure representation from across the organization and a mix of staff and librarians. All seven members stayed on for the duration of the project. They met with me seven times, served as counsel over email, and provided a network for communicating both in and out. The group was valuable as a gut check and supported strategizing for internal communications. Members also expressed enjoying the experience.

Method 4: Conduct all staff surveys
Plan statements:

1. Conduct a short survey in Summer 2019 to ask about the quality, quantity, and frequency of communications around the library website redesign to gauge if we need to adjust course.
2. Conduct a short survey in Summer 2020 following the launch to assess overall how informed, prepared, and heard library staff felt about the redesign project.

We conducted the mid-point survey in August 2019 and the generally positive results showed folks felt they knew what was going on. The findings indicated we should stay the course with our internal communications strategy. Findings from our post-launch survey demonstrated the strategy was effective; 98% of respondents knew the site was launching on July 21, 2020 and 93% agreed they were prepared for the change. A few people did not feel fully heard, but we did our best and committed to keeping lines of communication open, because a website is never really done.

Overall results

The website redesign demonstrated significant improvement over the legacy website across the first 5 metrics.

- Usability is backed by foundational user research and extensive testing.
- Accessibility is measured in not only a complete reversal in audit scores, but also in how ingrained it became within the project team.

- The site works on all screen sizes and is built using responsive design, where the old site did not and was not.
- Site performance improved, though not within the measures we originally anticipated.
- Thought and intentionality were put into the content authoring experience from start to finish and we're happy with where we landed and how it supports our website content strategy.

For our remaining metrics, it is evident that the project demonstrated best practices in project management, stakeholder engagement, and internal communication, not only in what we did, but also how we learned and adjusted throughout the project.

Beyond our assessment results, comments from colleagues in the library and broader community were overwhelmingly positive. And at the ResearchLibrariesUK Digital Shift Forum in October 2020, Lorcan Dempsey — a well-known expert in libraries and digital information[17] — used the University of Michigan Library website as an example of where things are going in libraries.

> "I think they've done a very good job of actually trying to develop a more holistic view of what the library has to offer and delivering it online in a way that makes sense…this website gives you the full library experience and [tries to] present to you as much as [possible], everything that you can do here."[18]

Lessons learned and conclusion

Three lessons learned in our approach to assessment for this website redesign are broadly applicable to assessing projects.

#1. Build assessment into the project from the beginning. It's not something you shoehorn in at the end. Making how we were going to assess success part of our planning early on made it feel very intentional and allowed us to more seamlessly make it part of how we managed the project and planned work. This also meant assessment informed decision making along the way and increased our confidence in what we were creating.

#2. Assessment metrics and methods are varied and that's OK. We leaned in to how nebulous many of our goals were to assess and didn't try to force formal methods where they didn't make sense. There are lots of ways to measure success and being intentional about it is arguably the most important factor.

#3. Be prepared for change and being wrong. Desired outcomes might shift as you learn more and a project progresses. Projects are far often more nuanced than a

timeline or list of tasks can ever capture. It's better to acknowledge adjustments that should be made and act then ignore them to the project's detriment.

Two bonus lessons

If you're working on a large project — in scope, timeline, or other complexity — the way the project team works together and how you approach communication are critical to success.

#4. Establishing (and checking in on!) team norms, values, and expectations are keys to success. Our team structure wasn't perfect, and we adjusted along the way, but having a project charter and taking time to establish these things as a team set us up to work together and adapt.

#5. Strategic communication is necessary labor. Taking time to think through what people need to know and when they need to know it is important to not only maintain awareness, but also build trust. And trust can get you a heck of a long way.

Conclusion

The University of Michigan Library's website redesign integrated assessment from start to finish and it underpinned the whole project. Having our assessment plan to tie back to was incredibly valuable and in the end, allowed us to demonstrate success across all seven of our assessment metrics.

Acknowledgements

This work would not have been possible without the contributions of every member of our project team: Albert Bertram, Ben Howell, Bridget Burke, Denise Leyton, Eliot Scott, Ellen Schlegelmilch, Emily Buckler, Jon Earley, Mary Morris, Robyn Ness, and Tess Mendes. Doing this work with all of them was a privilege.

Our project did not happen in a bubble and succeeded largely due to the organization being behind and part of it. We are grateful for the backing of internal teams, groups, and departments and our U-M Library colleagues at large who gave their time and labor by engaging with our project in a variety of ways.

Author biography

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Endnotes

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