Interdisciplinary collaborations between architects, media engineers, students and researchers can innovate new environments that integrate the physical and virtual realms for both operational performance and scholarly inspiration. Digital-native students are learning and working in modes that increasingly straddle the line between the physical and the virtual. Therefore the design of campus learning and research environments needs to respond to new learning challenges while continuing to inspire future modes of scholarship.
Over the course of several projects in-progress on the Georgia Tech campus, the integration of digital media technologies and architecture has become an opportunity for reinforcing Tech’s identity as a world-leading institute of technology. These designs also reflected Tech’s ongoing initiatives to integrate ‘art’ and ‘science’ on the campus. When work began on the renewal of the Price Gilbert Memorial Library, early proposals helped to inform a design strategy that wrestles with what it means to be a 21st Century Research Library in the digital age, when many research libraries’ collections are increasingly digital, ephemeral, and invisible. By leveraging the use of digital media for both operational ends (such as AV purposes and room scheduling) and aspirational ends (creating memorable spaces), the design team sought to create a library that is responsive to today’s students’ increasingly digital needs while also creating architectural experiences that inspire scholarship and research excellence.

This Library Renewal effort has also led to a redesign of the digital wayfinding at the adjacent Clough Learning Commons, again using the integration of digital media and architecture to both operational and aspirational ends. The design will allow the Institute the flexibility to manage and update the signage content from a central location. But the broader proposal also incorporates site-specific conceptual installations that speak to issues beyond physical wayfinding, such as building system performance, building occupancy data, and abstract art installations. Taken as a continuum of design investigation into the digital and physical aspects of design, these projects tell a compelling story of how the integration of digital media and architecture can result in buildings that are more efficient and easier to operate, but which also create spaces that inspire today’s digital natives.
The bridge media experience should reflect the continuously changing context between all the instances of creative expression and scholarly work that can be found in The Cloud. The library is no longer a collection of finished ideas but is instead a part of the knowledge ecosystem, where data flows steadily and the users can add to The Cloud their own instances of expression and work with minimal effort. The bridge media experience should not bring to mind a single tool, or a single answer, but instead should bring to mind the vast and diverse body of knowledge that the digital age has made (almost) immediately accessible.

The library is a collection of technology, services, and expertise that allows us to interact with all the materials that exist in the Cloud: the aggregate of digital content and constant virtual connections which we draw from, manipulate, and contextualize. When we are done with our work and our art, the library also gives us the tools and the inspiration to add our own to the Cloud, where it will be found, changed, and built upon by others.

Circle —> Cycle —> Water Cycle

Using the water cycle metaphor, and attaching it to the idea of the (data) cloud, looks to signify the idea of the library as a location and suite of services that let us interact with the Cloud: the aggregate of digital content and constant virtual connections which (as in the plant transpiration cycle), we draw from, manipulate, and send back into the cloud.
Starting in 2002, the Georgia Tech Library began transforming spaces and services to match the digital components of its patrons’ habits and workflow. The Library had seen a reduction in gate count, check-outs, and even its status on campus. In a partnership with the Office of Information Technology, the Library became the location of a 100+ computer lab, consolidating a number of smaller labs in various academic buildings. Our reference services were moved next to the lab, and technical support was woven into the duties of the librarians and staff at the desk.

This change gave the library an extraordinary boost in visibility, with a soaring gate count and a revitalized first floor. But circulation statistics showed that the physical collection was not being used more, and the rest of the library seemed ripe for experiments in “library as place.”
The older Library building (built in two parts in the 50s and 60s) was in dire need of a full renovation. Included HVAC and plumbing repair, and the services and aesthetics needed to be updated to match the Clough.

When it became clear that the book collection would have to be temporarily relocated for the needed repairs, renovations, and refinements to the building, the Georgia Tech Library asked: do we have to bring them back after? What if we keep the books elsewhere, and remake the entire library building and all its services into a 21st century digital library?
BRIGHTSPOT INSIGHT

We turned to brightspot to help us refine a brand and to design the experience. They identified a diverse mix of services and patron habits that defined the library, bringing into focus the research, teaching, and learning needs of patron groups on campus. This work explicitly recognized the physical and digital tools that patrons use, and the need for the library to accommodate the digital in the physical space.
Library Renewal: Piloting and Prototyping

A core principal for the Library Renewal is making the “invisible” world of e-books, e-journals, librarian expertise, and digital scholarship, highly “visible” to the user.
As we began working on the actual Library project, we recognized that as with any design project, there were a number of questions that begged to be wrestled with. But it soon became apparent that all of them revolved around one central, big question:

**If, for centuries, an overwhelming presence of books has been the Library’s defining characteristic, serving as a signifier of a culture’s amassed knowledge, then how might the spaces in a 21st century Library, for whom the collection is increasingly digital or otherwise invisible, continue to connote scholarship and inspire students and faculty?**

It’s a really important question, and it’s was underscored by Dean of Libraries Catherine Murray-Rust’s challenge to the design team to “make the invisible visible”.

With this in mind we set out to program and conceive of a Library in which digital media would be employed across a spectrum uses ranging from the operational to the aspirational.

**Operational Media** is the term we used for the combination of AV and IT equipment and infrastructure that modern learning environments require. This includes projectors, screens, monitors, smartboards, room schedulers, etc., along with the backbone required to support them. Operational media is important, and is mission-critical in that the Library literally cannot provide its services without them, but by themselves they are not the types of interventions that inspire patrons in the ways that, say, the tiered stacks of the Bibliotheque Nationale set the scene for that Library’s iconic Reading Room.

**Aspirational Media** is the umbrella term we used to identify opportunities to leverage digital media to create spaces that reveal the ‘virtual library’ in the physical world, and which utilize digital means to reinforce the identity of the Library as a physical place, with experiences that are enriched because they are experienced “in person” at the “real” Library. Here are a few ideas that emerged from this process:
IDEA: A forum for gathering student input and “hacking” the new library.

PHYSICALLY: It’s a seating riser with video screens integrated into the wood veneer of the risers and a “game table” console at the base.

DIGITALLY: It’s a series of LED screens clad with perforated wood veneer, linked to local inputs from the console and also to centralized data feeds. Content will be mostly text but images are also in play.

EXPERIENCE: A student approaches the stairs. Embedded along the width of each riser in the seating area is an LED marquee. Each displays a note or response posted by a student or librarian. As the student climbs the stairs, a post catches their eye, and they have an idea about a project using that data. Later when they return, they pause at the table, and using the built-in table touchscreen, they find the original post, craft a response suggesting a collaboration, and create a new post looking for more collaborators.
PULP COVERS
PRESENTING CURRENT RESEARCH
IN A BOLD AND FUN WAY

IDEA: Eight-foot tall pulp sci-fi book covers showcase active Georgia Tech research projects to the public.

PHYSICALLY: The Georgia Tech Library boasts one of the largest and most comprehensive collection of Science Fiction books in the country. The renewed Library includes a dedicated space for the collection, which overlooks the Reading Room on the Library’s main level. The Pulp Covers are suspended in the windows of the “Sci-Fi Lounge” such that they are visible from the Reading Room Below.

DIGITALLY: High definition LED arrays that allow patrons to ‘read’ the images but also to see through them to the space beyond.

EXPERIENCE: Images and text are captured from actual research publications and magazine articles and are then used to populate templates that take the form of classic sci-fi book covers. The latent thematic connection between Science Fiction novels and Georgia Tech as a world leader in science and technology research is here made literal, by packaging actual research content into a whimsical pulp fiction format.
**IDEA:** In the manner that traditional libraries often inscribed the names of historical scholars in an architectural frieze to signify the importance of the Library’s amassed collection of knowledge, the Digital Cloud seeks to inscribe the Library’s data flow onto the ceiling near the Library’s main entrance.

**PHYSICALLY:** A raised ceiling above a monumental stair that connects the Library main lower level and the plaza level above. The edges of the ceiling are conceived as ‘cracks’ in the physical ceiling that reveal the digital inner workings of the Library, which spill out onto the ceiling.

**DIGITALLY:** Concealed short throw projectors are positioned along the edge of the raised ceiling to create animated images on the ceiling that appear to flow out from within the building.

**EXPERIENCE:** It’s job is to make the ephemeral and invisible flows of digital information coursing through the Library visible. Adjacent to the Digital Cloud’s ceiling is a small control room, or “DJ Booth” which can be used to manipulate the images generated by the data flow.
IDEA: In much the same way that computer stores have reinvented themselves in response to the increasing virtuality of their product, a 21st Century Library demands a new service model.

PHYSICALLY: Historically, Library services were provided by Librarians that sat behind circulation desks and offered assistance navigating cabinets filled with index cards or rolls of microfilm. The Library Store gets rid of the circulation desk in favor of decentralized collaboration stations where Librarians can bring their services out to the patrons, rather than patrons bringing their questions to the circulation desk.

DIGITALLY: Search tools have been digital for decades, but with the collection being increasingly digital, the search and the delivery of the titles can both occur on mobile devices that can move freely around in the Library.

EXPERIENCE: The decentralization of the circulation desk and the increasing immateriality of the collection has given rise to a newly important type of Librarian: the Rover.
MEDIA BRIDGE
MAKING THE CYCLE OF SCHOLARSHIP

IDEA: One cycle of nature is transpiration, the continuous flow of water from clouds to plants and then back again. The bridge media experience makes a vivid metaphor of a related cycle: the inspiration exchange between scholarly work that flows from the digital cloud and the creative expression of students engaging it, changing it, and then returning it to the cloud. The library is no longer a collection of finished ideas, but is instead a part of the knowledge ecosystem, where data flows steadily and the users can add to the cloud their own unique instances of expression and work.

EXPERIENCE: The bridge media experience should reflect the continuously changing context between the instances of creative expression and scholarly work that can be found in the Cloud. The Library is no longer a collection of finished ideas but is instead a part of the knowledge ecosystem where data flows steadily and users can add to the Cloud their own instances of expression and work.
PHYSICALLY: The bridge is literally a construction that connects the two buildings that comprise library. It provides for the conveyance of people, infrastructure, and data between the two buildings. At the campus scale, it sits astride a major campus crossroads, and serves a symbolic gateway between the historic “Hill District” and the remainder of the campus to the north. It is clad with glass curtain wall, which provides generous views to the north and south, and which also puts the activity generated within the library on display to the campus. The curtain wall is pleated, and thin linear LED monitors are set within the vertical pleats, concealing the actual screens but revealing the text messages via reflections and other optical phenomena.

DIGITALLY: There are two major moves that animate this installation. The recessed LED screens are vertically oriented strands, with text streams running vertically across the façade. Text streams appear to be captured at the top of a strand as information gathered from the sky, as with an antenna. The text stream flows downward where it ‘pools’ into an image on the underside of the bridge via large LED screens that continuously cover the ceiling. The text stream crosses the ‘pool’ and rejoins another vertical strand on the opposite face of the bridge, where it travels up and appears to disperse back into the sky.