BRICOLAGE

Bricolage: Building Multi-Disciplinary Teams at WPI and Local Partner Institutions

WPI i3 Lab | Team 10

Final Report

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Executive Summary

Bricolage was developed to meet a critical but often overlooked need within Worcester Polytechnic Institute's (WPI) entrepreneurial community: the need for structured, interdisciplinary collaboration. While innovation is a defining characteristic of the WPI experience, many students pursuing technical and creative ventures struggled to find co-founders who complemented not just their skills, but also their working styles, motivations, and long-term goals. Traditional methods of team formation, relying on informal networks and unstructured outreach, often proved inefficient and exclusionary. Bricolage was designed to address this gap, creating a system where collaboration is not left to chance but intentionally fostered through thoughtful design.

The platform's foundation was built on qualitative research with active student founders, whose experiences shaped both the system's functional priorities and its behavioral architecture. These interviews revealed that successful entrepreneurial partnerships hinge not only on complementary technical expertise, but equally on emotional resilience, shared work ethics, and trust. Based on these insights, Bricolage offers two primary services: MixMatch, a structured cofounder matching tool that filters potential collaborators based on skills, availability, and behavioral traits, and NeedFeed, a lightweight peer-to-peer support channel designed for short-term project needs. Together, these services address both the long arc of venture building and the immediate demands of project work.

Interface and interaction design centered on reducing cognitive load, guiding users clearly through critical flows, and building early trust signals. Testing phases reinforced these priorities, surfacing key usability refinements related to onboarding, profile creation, and interaction feedback mechanisms. Across the iterative cycles of system development, user experience remained at the core of design decisions, ensuring that technical functionality was always in service of human connection.

The system architecture employs a three-tier structure, hosted initially through Mendix Cloud Services, providing both scalability and modularity for future growth. Security protocols, including role-based access control and encrypted data management, were incorporated from the outset to protect sensitive user information and maintain system integrity as adoption scales.

A phased rollout strategy, beginning with a pilot launch in Fall 2025 among targeted user groups, will allow for measured adoption, controlled feedback collection, and refinement based on authentic usage patterns. Future expansion plans include broader availability across academic units at WPI and, eventually, the potential to extend the platform to partner institutions seeking to foster similar interdisciplinary collaboration.

At its core, Bricolage is not simply a tool for finding teammates. It is a catalyst for building resilient, high-functioning teams among emerging innovators. By grounding technical design in behavioral research and strategic implementation planning, Bricolage reflects a model for how thoughtful systems analysis can translate complex human needs into actionable, sustainable solutions.

Section 1: Revised System Request

Project Sponsor: Ardian Preçi, Director of the WPI i3 Lab for Innovation and Entrepreneurship

Business Need: The WPI i3 Lab has a desire to grow entrepreneurship exponentially at WPI and expand the school's influence in Worcester and beyond. WPI produces a significant volume of impactful scientists, experts, and innovators, but they are often siloed in their programs without ways to meet or form inter-disciplinary teams.

This project has been initiated to create a web application that allows students at WPI (and potentially other nearby schools) to identify other students that they would like to team with on starting a business, a side project, a school project, or solicitation of gig work from local businesses. Matching students through basic criteria alignment will ensure that the right people can meet and have similar work expectations and ambitions in addition to complementary skillsets. Students need a centralized place to go when they have a key need to fill.

Business Requirements: Students will create an account and supply basic personal info about skills and current teaming motivations. Based on set criteria, students can browse peers that match with some (or all) of their preferences. Students should be able to post a basic need and receive inbound posts by other students who may be able to help. Simple prompt answering or other basic messaging is needed to facilitate interaction. This website will be externally hosted (i.e. not on the WPI infrastructure) because of the interest in potentially onboarding other local universities (and beyond) to the platform and facilitating collaboration between them.

Business Value: The WPI i3 Lab exists to foster entrepreneurship and innovation, and creating this new platform will accelerate the growth of this community and its output. There are many ways the value can be measured in the short and long term. They include:

- Increase in attendance (and mailing list sign-ups) at Innovation Studio in-person events of 100% by May '26
- Enhanced energy within Business School results in 300% increase in bachelor's degree enrollees by Fall 2028
- The number of businesses founded at WPI increases by 200% over the next 3 years
- WPI and WPI Business School rise in relevant Global, U.S., and regional rankings for schools judged on fostering innovation and entrepreneurship (within 5 years)

Special Issues or Constraints: Must be built to accommodate adding more universities to the platform and be spun off as a separate SaaS business that can create and manage similar "white-labeled" innovation communities at these other schools and regions. The project sponsor would like to pay for basic Mendix hosting to onboard users with the working prototype while a permanent 1.0 version gets built.

Section 2: Revised Feasibility Analysis

Technical Feasibility

Overall, the project is technically feasible, and a working prototype should be deliverable using Mendix. If successful, full engineering of the permanent system will be required, but in general, the technical complexity of the project is quite low. The most significant risk is just that this app will be completely new, so unfamiliarity is high, and must be mitigated through thoughtful design and implementation, including user education.

Familiarity with the application – Risk: **High**

Due to the fact this is a completely new system, unfamiliarity will be a significant challenge to user adoption. User research in understanding what works best and what offers value to users will help direct future design work and feature enhancements. Young people have high standards for website speed and design quality, and this must be taken into account even in the MVP stage of the product. It's likely that as the app gets rolled out to users, it is done with supplemental user education or demonstration to begin to bridge unfamiliarity and recruit new users.

Familiarity with the technology – Risk: **Low**

This will be a web-based application with responsive design for major browsers on all device types. In 2025, this technology is ubiquitous for our core users, and the learning curve of a web app is more a function of the app's complexity than familiarity with the client/hardware, etc. Websites are one of the most familiar places for college-age students to engage with information and with peers, so familiarity with this technology is quite high, resulting in relatively low risk.

Project Size: **Small** – Risk: **Low**

The project is currently in its prototype/MVP phase therefore is quite limited. In early months of the application, it's likely to only have a couple dozen users, and perhaps a couple hundred by the end of Year 1 if things are going well. The project team will likely only consist of two people plus advisors, so the team will be easy to manage. The scalable nature of Mendix allows for significant user growth while still just using the Mendix Basic hosting package, ensuring the project can remain small even with some moderate growth.

Compatibility is actually **a planned positive output** of this project.

One of the challenges that led to the initiation of this project is the natural incompatibility between universities in a region and their digital systems. This project will be designed on Mendix, and then on a major cloud provider's instance in the future, in order to remain off the infrastructure of any one university and thereby providing inter-university compatibility. This also provides value at the intra-university level because varying schools within a given university are often quite siloed. This project intends to weave a fabric of interaction between schools that results from the compatibility that this system is creating.

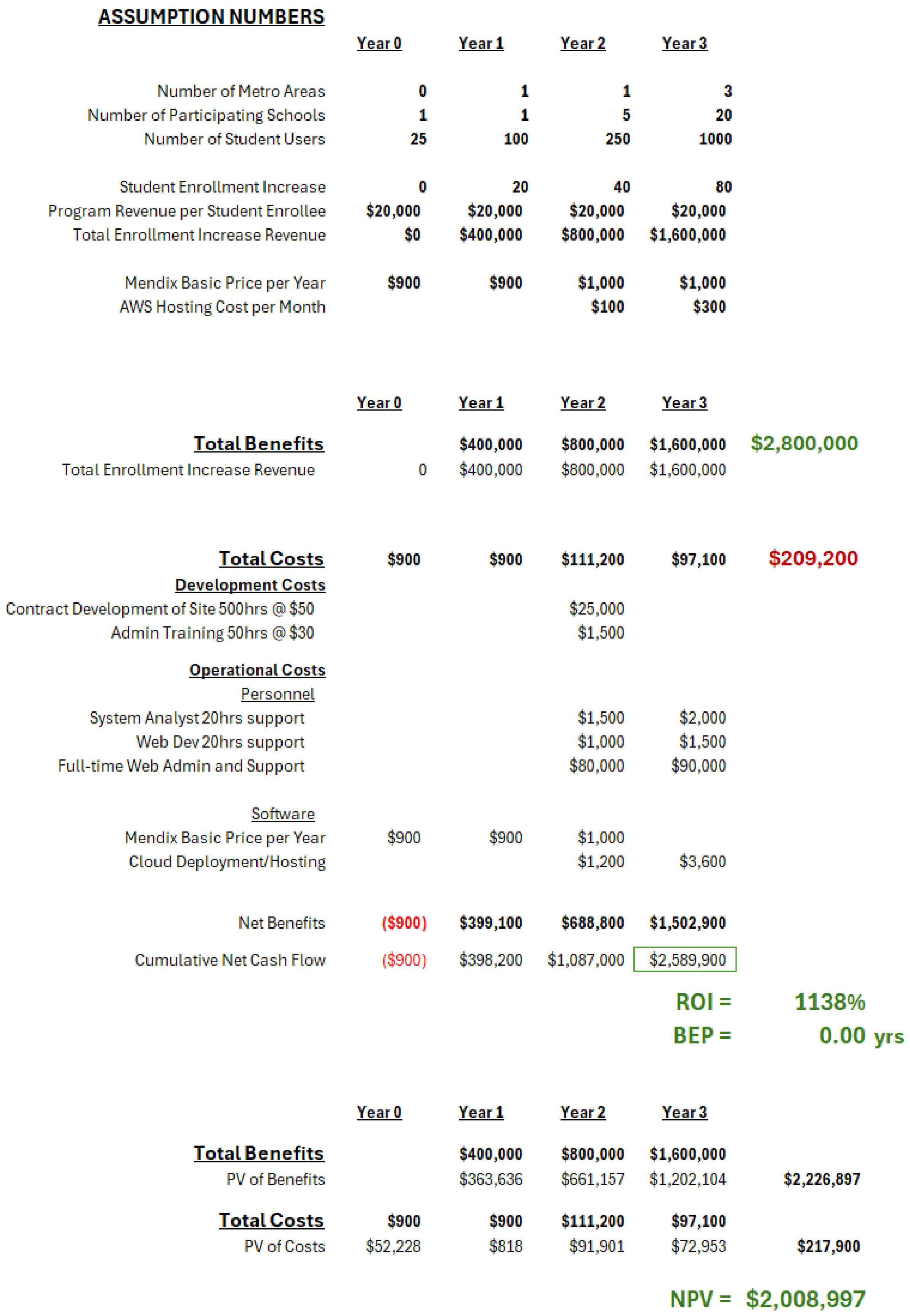
Economic Feasibility

The project is **economically feasible to proceed**. The project sponsor is willing to pay for Mendix Basic hosting ($75/month) for at least one year, to run the MVP and onboard users for testing and refining the product before engaging in any permanent engineering build. If/when user growth occurs and a full product is to be built, the cost-benefit analysis becomes more complex.

In general, the most direct tangible benefits that this system can provide WPI is helping drive new student start-ups, and the downstream impact of increased Business School enrollment as a result of a more dynamic student creative community. Much of the ROI presented in the feasibility chart below is tied to the estimated revenue from increased enrollment.

While economic feasibility in the short term is covered, **the chart below demonstrates the benefits of building the system are likely to significantly outweigh the costs, even as it scales**. Some basic assumptions have been made about growth trajectory (Year 0 and 1 only WPI, Year 2 has five Worcester schools, and Year 3 has two new metro areas coming online for a total of 20 schools), and program revenue from increased enrollment ($20k/student/year increase in enrollment revenue to a given program such as Business), a core goal of this project.

Intangible benefits include the increased sense of belonging among creative students, a more palpable buzz around the Business School and the i3 Lab and its events. This also would include the bolstering of WPI's standing in Worcester and Massachusetts as a leader in innovation, and likely encourage significantly more interest in entrepreneurial activity. This project also has the opportunity to foster new connections between programs and schools that may never have intersected before, leading to untold new innovations.



ASSUMPTION NUMBERS

	Year 0	Year 1	Year 2	Year 3
Number of Metro Areas	0	1	1	3
Number of Participating Schools	1	1	5	20
Number of Student Users	25	100	250	1000
Student Enrollment Increase	0	20	40	80
Program Revenue per Student Enrollee	$20,000	$20,000	$20,000	$20,000
Total Enrollment Increase Revenue	$0	$400,000	$800,000	$1,600,000
Mendix Basic Price per Year	$900	$900	$1,000	$1,000
AWS Hosting Cost per Month			$100	$300

	Year 0	Year 1	Year 2	Year 3	
Total Benefits		$400,000	$800,000	$1,600,000	$2,800,000
Total Enrollment Increase Revenue	0	$400,000	$800,000	$1,600,000	
Total Costs	$900	$900	$111,200	$97,100	$209,200
Development Costs					
Contract Development of Site 500hrs @ $50			$25,000		
Admin Training 50hrs @ $30			$1,500		
Operational Costs					
Personnel					
System Analyst 20hrs support			$1,500	$2,000	
Web Dev 20hrs support			$1,000	$1,500	
Full-time Web Admin and Support			$80,000	$90,000	
Software					
Mendix Basic Price per Year	$900	$900	$1,000		
Cloud Deployment/Hosting			$1,200	$3,600	
Net Benefits	($900)	$399,100	$688,800	$1,502,900	
Cumulative Net Cash Flow	($900)	$398,200	$1,087,000	$2,589,900	

ROI = 1138%

BEP = 0.00 yrs

	Year 0	Year 1	Year 2	Year 3	
Total Benefits		$400,000	$800,000	$1,600,000	
PV of Benefits		$363,636	$661,157	$1,202,104	$2,226,897
Total Costs	$900	$900	$111,200	$97,100	
PV of Costs	$52,228	$818	$91,901	$72,953	$217,900

NPV = $2,008,997

Organizational Feasibility

From an organizational perspective, this project has moderately low risk. Considering it is a non-existent system in the prototype phase, there is little to be risked by implementing a testable MVP. Once additional user bases (schools) join the platform, this is when risk and complexity begin to climb. Considering what these risks might be when assessing a higher growth scenario is critical to appropriately designing the system. Below is a key stakeholder analysis.

- **Top management support**: Business School Dean Debora Jackson, and Head of Entrepreneurship Department Prof Rosanna Garcia are strong proponents of the project and want to see this effort develop rapidly

- **Project champion**: Ardian Preci Director of the WPI i3 Lab (also project sponsor), as well as Entrepreneurship PhD student Warich Ngamkanjanarat, who both staff and run the i3 Lab on a daily basis, are eager to get this project complete so that they can accelerate participation in the school's (and Worcester's) startup ecosystem.

- **Other WPI departments** (non-Business): This presents some moderate risk because of skepticism and misunderstanding of what Business School activities entail and may encourage students in their department to avoid participation.

- **Other Worcester Schools**: This presents minor risk. Although the intention of the project is to interconnect the innovation communities at all of the postsecondary institutions in and around Worcester, even if the system were only implemented at WPI and gained no other participant schools, the system would still bring good value. The network effects gained with broader participation would be significant for all involved schools/users. Of course, with more participant schools comes more complexity and risk, but the system design will be considerate of this trajectory and be built to accommodate this growth.

- **Student users**: This presents some moderate risk because it does facilitate interpersonal connections for young people, which is an inherent risk due to human behavior. These are the core users of the system and the app will have to be designed very carefully with their needs and proclivities in mind. This is complicated by the fact that it is a brand new system with complete unfamiliarity, so design should be very straightforward and not overwhelming. These users expect a smooth and visually appealing interface, and load times should be fast.

- **School admin user**: When a new school is onboarded, a faculty member must serve as the sponsor and contact for that school. This adds risk as well, because it involves finding the right people when that may not be obvious, and politics are always involved. The system will have to be very lightweight to manage from their perspective. They should be incentivized to use the app in the future by providing a dashboard with key university participation metrics that can be leveraged to demonstrate an active innovation community.

Section 3: User Research for Design

As part of preliminary system design research for *Bricolage*, a platform intended to foster entrepreneurial collaboration among technical student founders, two semi-structured interviews were conducted with individuals pursuing distinct, innovation-driven ventures. The objective was to surface nuanced insights regarding cofounder matching, collaboration barriers, and short-term peer-to-peer support needs. Through these conversations, it became evident that the path to effective venture collaboration is neither linear nor purely technical. Rather, it is shaped by complex interplays of skills, behavior, motivation, and timing. The synthesis below integrates findings across participants and identifies foundational tensions and design opportunities that should inform the evolution of Bricolage.

Current Project Context and Collaboration Needs

While participants differed in venture focus and immediate resource needs, both converged on a fundamental reality: entrepreneurship at the technical frontier is an isolating endeavor. Each founder, operating largely alone, acknowledged reaching the limits of solo execution.

For one participant, the absence of technical expertise outside their primary field of study, particularly advanced programming and algorithm development, posed a structural constraint. Without a skilled technical collaborator, the venture's evolution beyond ideation was improbable. The other participant, despite possessing a high degree of technical self-sufficiency, articulated a different vulnerability. For this founder, the critical gap was not skills, but discipline and motivational reinforcement needed to sustain the demands of an intensive project.

This divergence reveals an essential early insight. Matching systems must account not only for what founders can do, but also for what sustains them over time. Skill deficits are solvable with the right expertise. Emotional isolation and loss of momentum, however, can quietly dismantle ventures before products are ever built. A robust platform must be capable of diagnosing and addressing both forms of entrepreneurial risk.

Critical Inputs for Effective Matching

Participants painted a strikingly consistent picture of what an ideal cofounder profile should surface: not only competencies, but character. Beyond listing technical skills, both emphasized the importance of understanding a potential partner's work ethic, communication style, and commitment to shared outcomes.

Structured profile fields, such as technical skill sets, project experience, educational background, and work availability, were seen as necessary but insufficient. Equally vital was the inclusion of narrative elements, specifically a concise professional vision statement that could reveal the founder's internal compass. Participants sought the ability to quickly sense whether a prospective match shared similar ambitions, rhythms, and standards of collaboration, even before initiating direct contact.

Filtering mechanisms emerged as equally critical. Both participants advocated for multi-dimensional search filters that would encompass technical expertise, location preferences, education level, work modality, and time commitment. Notably, one participant suggested distinguishing between undergraduate and doctoral collaborators, pointing to different experience levels and expectations.

These findings highlight a subtle but crucial tension. Users need quick, surface-level filters for efficiency, but they also crave deeper qualitative signals to anticipate interpersonal fit. Bricolage's success will depend on balancing structured data with lightweight narrative cues, helping founders intuit both capability and compatibility.

Behavioral Assessments and Match Filtering Preferences

The idea of incorporating standardized behavioral assessments into profiles was received with cautious optimism. One participant viewed tools such as MBTI or Predictive Index as valuable mechanisms to surface collaboration risks early, especially regarding work habits and communication styles. The other participant acknowledged their potential but warned against over-reliance on psychometric labels, advocating instead for face-to-face interaction as the ultimate filter for true compatibility.

The consensus emerging from these perspectives is clear. Behavioral assessments should be available, but optional. Moreover, any such information should be contextualized thoughtfully through simple tooltips or compatibility suggestions to avoid reductive interpretations.

When discussing the matching logic itself, both participants overwhelmingly favored optimization for complementarity rather than pure similarity or opposition. In early-stage ventures, redundancy of expertise dilutes momentum, while ideological clashes derail fragile progress. Participants sought partners whose skills and styles completed their own, enabling broader capabilities without sacrificing alignment on core values.

Effective partnerships, especially at the inception stage, require a careful balance: diverse enough to challenge assumptions, yet cohesive enough to build trust and operational speed. This nuanced view of complementarity should directly inform the platform's match recommendation algorithms.

Engagement Triggers and Match Evolution Over Time

Participants were highly strategic in identifying when they would turn to a platform like Bricolage. Engagement would not be constant but would spike at key venture inflection points. These included technical bottlenecks, escalating workload, preparation for external deadlines such as pitch competitions, and transitions from research to development phases.

Both participants emphasized that their matching criteria would evolve alongside their venture trajectories. What is indispensable at the prototyping stage, such as technical expertise, availability, and speed, may be supplanted later by needs for business development acumen, financial strategy, or regulatory navigation. This lifecycle-aware perspective suggests that Bricolage must be more than a one-time matching engine. It must support dynamic, iterative refinements to user profiles and search filters over time.

Participants also drew sharp distinctions between non-negotiable requirements and softer preferences. For one founder, technical skills constituted the immovable foundation for a match. For the other, discipline, work ethic, and consistent time availability were paramount, while formal education history was treated as a secondary consideration.

An effective matching system must allow users to explicitly tag and prioritize their hard and soft criteria. It must also provide frictionless ways for users to update their preferences as needs change and ventures mature.

NeedFeed Use Cases and Short-Term Collaboration Behaviors

The proposed NeedFeed feature resonated strongly with participants, who could easily envision real-world applications. Recent examples included soliciting live feedback for pitch competition preparation and sourcing specialized tools or assistance during intensive work periods.

Participants expressed a willingness to engage with a campus-only community for such lightweight exchanges, provided that requests included clear logistical information such as timeframe, required effort, and nature of assistance sought. Authentic profiles and transparent expectations were seen as crucial to building trust within the ecosystem.

Participants also proposed extending NeedFeed functionality to include personal resource tags, such as available equipment or specialized skills. This would allow faster targeted matching between needs and providers and encourage more frequent low-barrier interactions.

These insights reinforce the notion that peer-to-peer support within innovation communities thrives when friction is minimized, visibility is high, and trust is quickly established through clear signals.

Interface and Platform Considerations

Participants were emphatic about the need for a clean, intuitively navigable user interface. Platforms that overwhelm users with excessive options or bury critical actions behind complex menus were cited as examples to avoid. In particular, professional platforms perceived as cluttered or disorganized were criticized for diminishing user engagement.

A desktop-optimized design was preferred for serious entrepreneurial tasks, reflecting the nature of venture work as focused, sustained, and detail-oriented. Mobile functionality was seen as necessary, but not the primary mode for serious system interactions.

Ease of onboarding emerged as another critical factor. Participants advocated for streamlined profile creation, with options to upload resumes, auto-fill structured fields, and efficiently compose narrative statements. Reducing friction at the outset would lower barriers to adoption and encourage richer participation across the platform.

Design Recommendations

Building upon the user insights surfaced through research, the following design recommendations envision Bricolage not merely as a matching platform, but as a catalyst for self-discovery, authentic collaboration, and venture growth. By integrating established psychological theories and user experience principles, these recommendations seek to create an environment where technical founders can understand themselves more deeply, find meaningful partners, and translate entrepreneurial intention into real-world action.

1. Support Holistic and Identity-Driven User Profiles

Profiles must extend beyond technical skill listings to reveal users' motivations, values, and working styles. Structured fields such as technical expertise, project experience, educational background, and availability should form the foundation. However, users should also be prompted to articulate a brief professional vision statement that surfaces deeper dimensions of identity, such as entrepreneurial aspirations and collaboration values.

Behavioral assessments like the Predictive Index (PI) should not merely be appended to profiles as passive labels. Instead, they should be framed as opportunities for self-understanding, aligning with principles from Self-Determination Theory (Ryan & Deci, 2000), which emphasize the importance of autonomy and competence in motivation. By encouraging students to learn about their working styles and preferred environments, Bricolage can position itself as a formative experience in entrepreneurial identity development rather than just a transactional matching tool. Behavioral information should be opt-in, presented with thoughtful tooltips or summary badges, and interpreted within a framework of complementarity rather than categorical judgment. This approach prevents over-simplification while promoting deeper interpersonal insight.

2. Design an Inspiring, Low-Cognitive-Load Onboarding Experience

Onboarding must not feel like bureaucratic data entry. Instead, it should be designed to spark excitement and curiosity from the first interaction. Applying Cognitive Load Theory (Sweller, 1988), onboarding should minimize extraneous cognitive effort by surfacing only essential inputs initially, inviting deeper reflection and profile enrichment over time.

Early onboarding screens should focus on immediate engagement. Microcopy and visual design should highlight the personal journey users are about to begin. Visual cues, conversational prompts, and milestone feedback should frame onboarding as a narrative experience rather than a form-filling task. Incorporating a "first meaningful win" during onboarding, such as surfacing preliminary recommended matches after basic profile setup, can trigger positive emotional reinforcement, following the Fogg Behavior Model (Fogg, 2009). Small, early successes are critical in building user momentum.

3. Enable Dynamic, Multi-Dimensional Filtering and Matching

Given the diversity of founder needs and venture evolution, Bricolage must offer robust, dynamic filtering capabilities. Users should be able to search across technical expertise, education level, location preferences, work modality, time availability, and behavioral traits where applicable.

Filtering should distinguish clearly between "must-have" and "nice-to-have" attributes, supporting users' prioritization and decision-making. This recommendation draws from Choice Architecture concepts (Thaler, Sunstein, & Balz, 2013), which stress that organizing choices meaningfully reduces user decision fatigue. The matching engine should default toward optimizing complementarity across skills and collaboration styles rather than emphasizing pure similarity. Complementary dynamics allow venture teams to balance strengths and grow adaptively over time.

4. Design NeedFeed for Quick Connection and Community Trust

The NeedFeed feature offers a unique opportunity to foster lightweight peer collaboration. Its design must prioritize clarity, ease of posting, and trust-building. Each NeedFeed post should prompt users for essential logistical elements such as time sensitivity, effort estimate, and a short description. Using progressive disclosure principles (Nielsen, 2006), post creation flows should reveal information requirements naturally and incrementally, reducing user overwhelm.

Building visible trust mechanisms is equally critical. Authentic user profiles, transparent connections, and lightweight credibility signals (e.g., basic activity history, number of fulfilled requests) will support organic community growth.

5. Prioritize a Streamlined, Desktop-First Interface

Given the nature of entrepreneurial project work, Bricolage's primary interface must be optimized for desktop environments, where users can engage in focused, sustained interactions. Mobile experiences should enable quick actions such as NeedFeed responses, but core workflows should be designed for desktop use.

Interface design should minimize cognitive burden by following Jakob's Law (Nielsen, 2000), which holds that users prefer systems that match patterns they already know. Primary actions, including profile creation, match searching, and posting on NeedFeed, should be one or two clicks away, ensuring intuitive access to critical features. Onboarding flows should be modular and flexible. Features like resume uploads, smart auto-fill prompts, and modular narrative questions should streamline the experience without overwhelming users at the outset.

6. Support Entrepreneurial Growth Through Venture Lifecycle Awareness

Bricolage must anticipate that entrepreneurial needs and working styles evolve over time. The platform should prompt users to revisit and refine their profiles and match preferences periodically, particularly after key venture milestones such as prototype launches, competition entries, or major team changes.

Treating matching as a living process acknowledges findings from Lifespan Development Theory (Baltes, 1987), which suggests that identity and competence development continue dynamically into adulthood. By enabling growth-oriented reflection, Bricolage positions itself not only as a project accelerator but as a personal development catalyst for its users. Prompts for re-engagement should feel supportive rather than intrusive, framing profile updates as opportunities for continued entrepreneurial self-awareness and thriving.

Section 4: Revised Process & Data Models

As-Is System

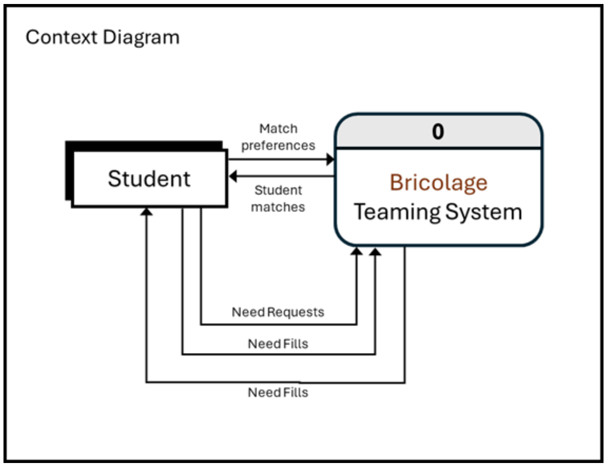
While WPI fosters a dynamic entrepreneurial spirit, it currently lacks a centralized system specifically designed to cultivate interdisciplinary team formation among students. Existing pathways for collaboration are fragmented and informal, relying on peer-to-peer outreach, attendance at ad hoc networking events, flyer postings, or decentralized online platforms such as the WPI Discord server. These channels, while occasionally effective, operate without structured discovery mechanisms or intentional matching logic, limiting their ability to support sustained, innovation-driven collaboration.

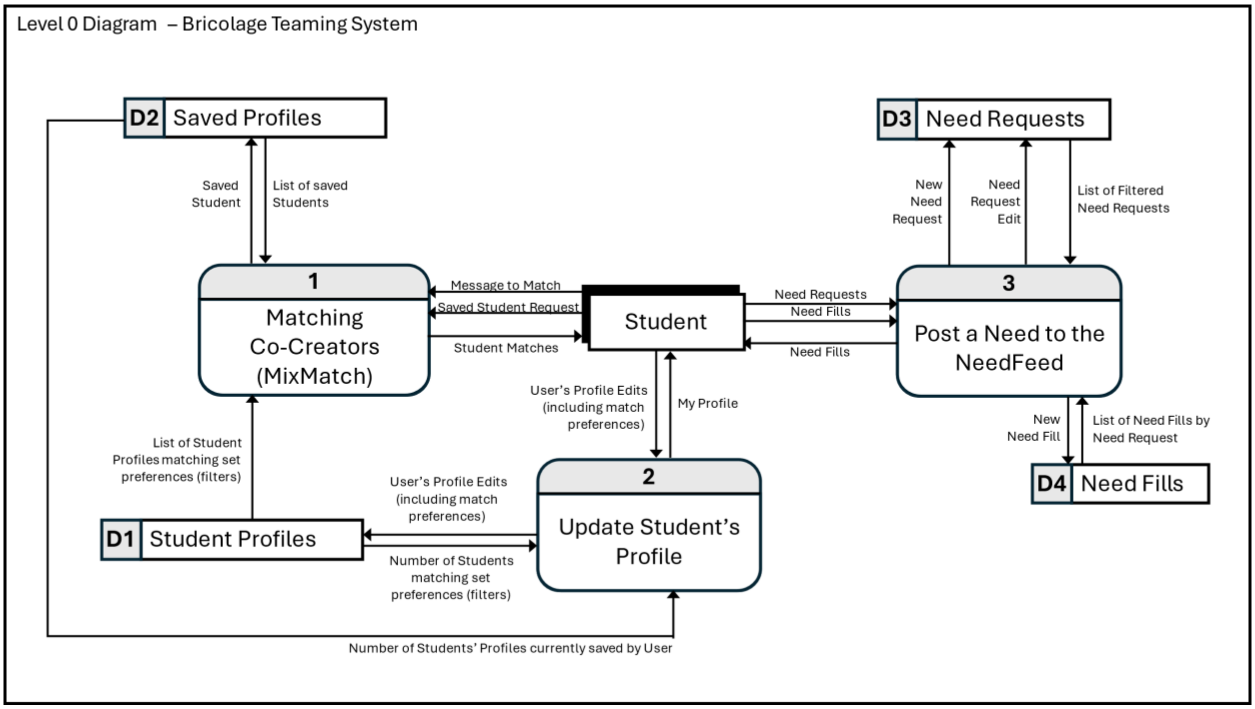
This decentralized landscape particularly disadvantages cross-disciplinary teaming, where chance encounters are unlikely to yield the diversity of skills, work styles, and motivations necessary for venture success. Students from disparate academic domains face friction not only in discovering collaborators, but in discerning compatibility and commitment levels critical to project viability.

In parallel domains, structured cofounder matching tools offer a reference point for system design. The Co-Founder Matching platform developed by Y Combinator, while oriented toward startup founders rather than university students, provides a lightweight model for skills- and work style-based discovery with minimal scope creep. Its emphasis on structured profiles, behavioral transparency, and scalable simplicity informs key principles of Bricolage's system vision.

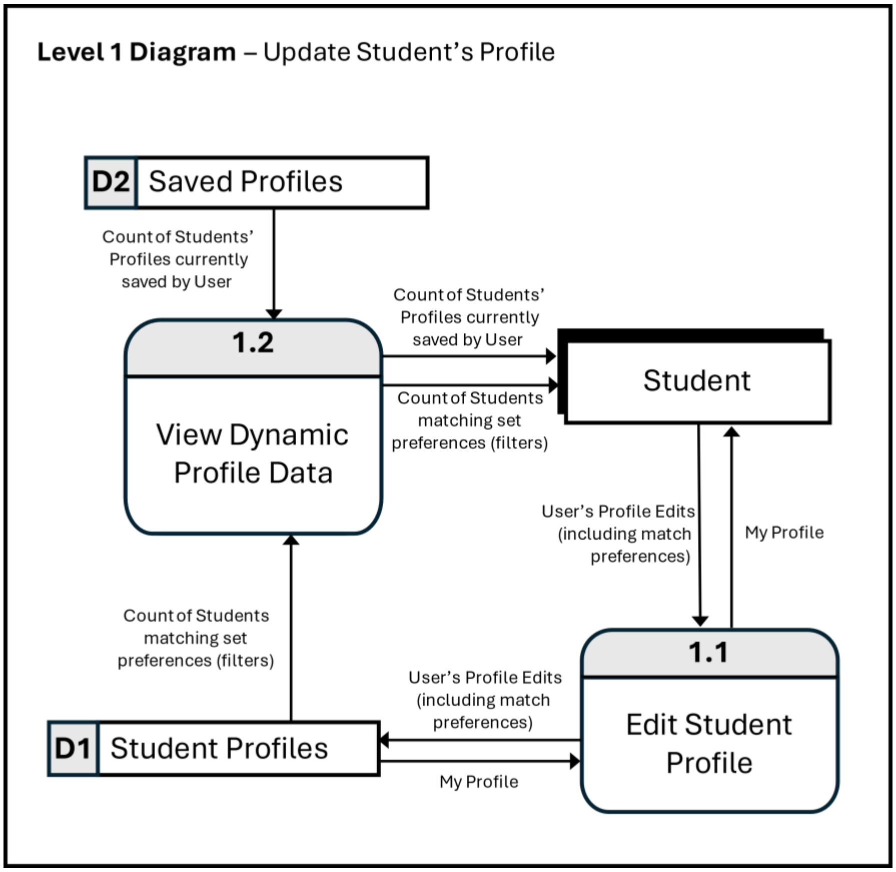
Bricolage does not seek to replicate these external models wholesale, but to adapt their underlying logics to a university setting. In doing so, it aims to bridge the institutional gap at WPI by providing an intentional, dynamic platform for interdisciplinary teaming, better aligned with the lifecycle needs of student ventures and innovation-driven projects.

To-Be System




Level 0 Diagram – Bricolage Teaming System

D2 Saved Profiles
Saved Student
List of saved Students
D3 Need Requests
New Need Request
Need Request Edit
List of Filtered Need Requests
1
Matching Co-Creators (MixMatch)
Message to Match
Saved Student Request
Student Matches
Student
Need Requests
Need Fills
Need Fills
3
Post a Need to the NeedFeed
User's Profile Edits (including match preferences)
My Profile
New Need Fill
List of Need Fills by Need Request
D4 Need Fills
List of Student Profiles matching set preferences (filters)
2
Update Student's Profile
User's Profile Edits (including match preferences)
D1 Student Profiles
Number of Students matching set preferences (filters)
Number of Students' Profiles currently saved by User


Level 1 Diagram – Update Student's Profile

D2 Saved Profiles
Count of Students' Profiles currently saved by User
1.2
View Dynamic Profile Data
Count of Students' Profiles currently saved by User
Student
Count of Students matching set preferences (filters)
User's Profile Edits (including match preferences)
My Profile
Count of Students matching set preferences (filters)
1.1
Edit Student Profile
User's Profile Edits (including match preferences)
D1 Student Profiles
My Profile

Section 5: Use Cases

UC-1 Manage Student Profile

Use Case Name: Manage Student Profile	ID: UC-1	Priority: High
Actor: WPI Student (Business/Technical)		
Description: Allows a student to create and/or edit their profile, including skills, project interests, availability, and preferences for matching with others.		
Trigger: A student logs in for the first time or selects "Edit Profile."		
Type: [**X**] External [ ] Temporal		
Preconditions: 1. The user is authenticated. 2. The system is online and accessible.		
Normal Course: 1.0 Manage Student's Profile 1. The student selects "Create Profile" or "Edit Profile." 2. The system displays a form with required fields (Name, Major, Skills, Interests). 3. The student enters or updates their details. 4. The system validates input and prompts corrections if required fields are missing. 5. The student submits the profile. 6. The system saves the updated profile and confirms success.		**Information for Steps:** ← Student ID (if edit) → Validation warning ← Form inputs/changes
Postconditions: 1. The student's profile is stored in the system. 2. The profile is now available for matching.		

Summary Inputs	**Source**	**Summary Outputs**	**Destination**
Profile form Profile details Submission	Student Student Student	Profile fields displayed Saved profile data Success confirmation	System System System

E1: If required fields are missing, the system displays an error message and prompts completion.
E2: If the system is down, the student cannot edit their profile and is notified.

UC-2 Discover Co-Founders

<table>
<tr><td colspan="2"><b>Use Case Name:</b> Discover Co-Founders</td><td><b>ID:</b> UC-2</td><td><b>Priority:</b> High</td></tr>
<tr><td colspan="4"><b>Actor:</b> WPI Student (Business/Technical)</td></tr>
<tr><td colspan="4"><b>Description:</b> Allows students to search for potential co-founders based on skills, industry experience, and project interests.</td></tr>
<tr><td colspan="4"><b>Trigger:</b> A student selects “Find a Co-Founder.”</td></tr>
<tr><td colspan="4"><b>Type:</b> [<b>X</b>] External [ ] Temporal</td></tr>
<tr><td colspan="4"><b>Preconditions:</b>
1. The student has completed their profile.
2. Co-founder preferences have been set.
3. The system is online and accessible.
4. The system contains at least one other active user.</td></tr>
<tr><td colspan="3"><b>Normal Course:</b>
2.0 Discover Co-Founders
1. The student navigates to the Home Page, and clicks “MixMatch”
2. On new page, system displays the user’s current match criteria filters (e.g., Industry, Skills, Experience Level – set in profile).
3. The system displays the number of students currently matching the user’s set criteria.
4. The user clicks “View My Matches”
5. The system returns a prioritized list of matching profiles based on complementary skills and experience according to set filters.
6. If no exact matches are found, the system suggests alternative matches only if the student enables this option.
7. The student clicks on a profile to view details.
8. The student saves interesting profiles for later review.
9. The student enters a brief introductory message in the blank text box atop the profile and clicks marked “Reach Out Now!”
10. The message is sent to the other student’s email address.</td><td><b>Information for Steps:</b>
← User profile
→ # of matching profiles
→ List of matching profiles
→ List of other students
← Clicked student profile
← Saved Profile
← Match message
→ Match student email</td></tr>
<tr><td colspan="4"><b>Postconditions:</b>
1. Search results are displayed.
2. Student selections are stored.</td></tr>
<tr><td><b>Summary Inputs</b></td><td><b>Source</b></td><td><b>Summary Outputs</b></td><td><b>Destination</b></td></tr>
<tr><td>Search filters
Filter selection</td><td>System
Student</td><td>Displayed options
Search results</td><td>Student
System</td></tr>
</table>

Selected profile	Student	Profile details	System
Saved match	Student	Stored preferences	System

E1: If no matches are found, the system suggests similar profiles or allows broadening filters.
E2: If the system is offline, an error message is displayed.

UC-3 Manage Need Request Posts

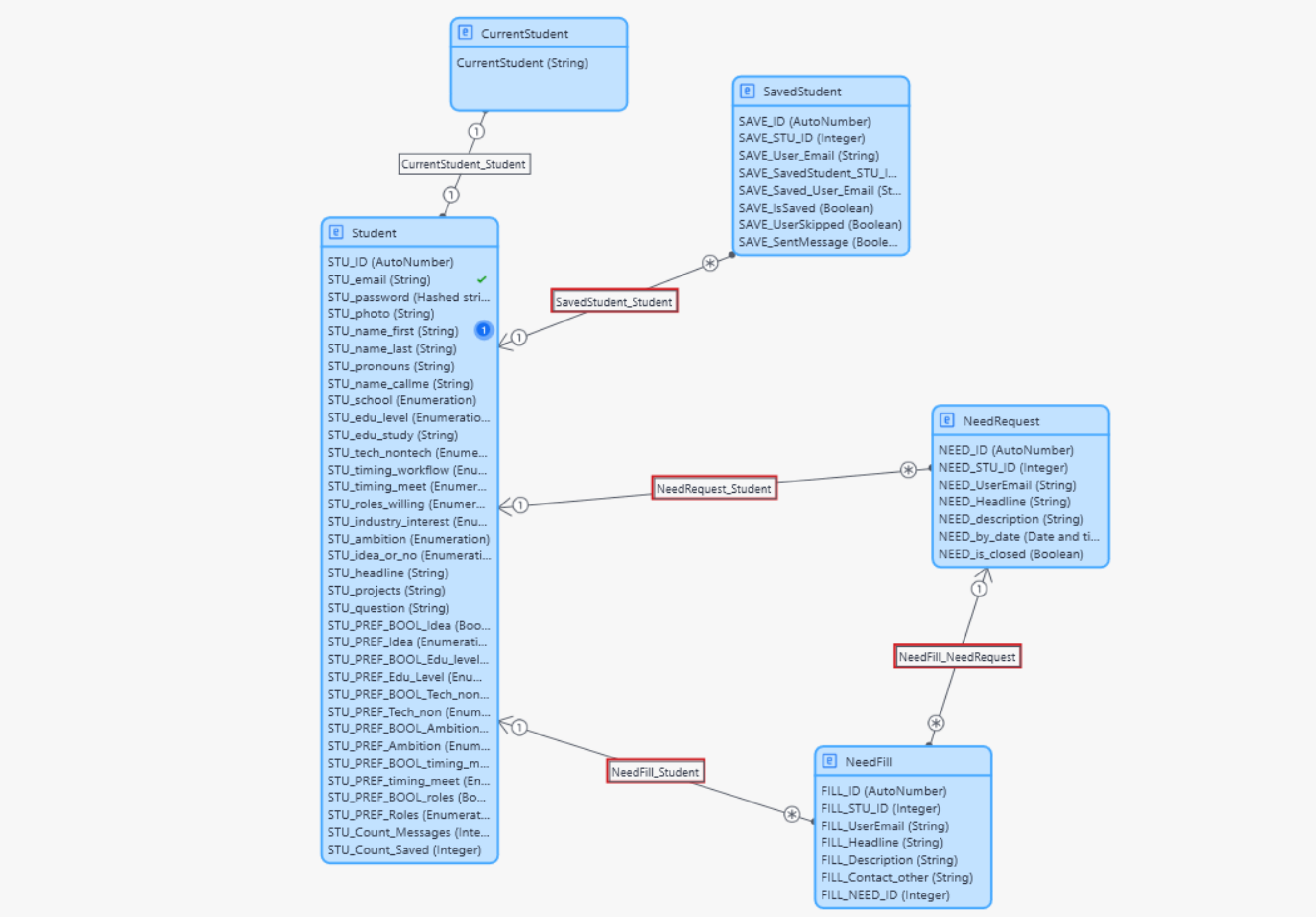
Use Case Name: Manage Need Request Posts	**ID:** UC-3	**Priority:** High
Actor: WPI Community Member (Need Requester)		
Description: Allows users to create, edit, and manage gig listings, including reviewing applications and closing postings.		
Trigger: A user navigates to the “NeedFeed” page and selects “Post a Need” or “Edit Need Request.”		
Type: [**X**] External [ ] Temporal		
Preconditions: 1. The user has completed their profile. 2. The system is online and accessible.		
Normal Course: 3.0 Manage Gig Postings 1. The poster selects "Post a Need" or "Edit Need Request." 2. The system displays a form for Need details (Title, Description, Category, Skills Needed, Timeframe). 3. The system validates inputs. 4. The user chooses to post Need immediately or save it as a draft. 5. The Need is published and available for applicants or is saved as a draft (depending on Step 4 selection). 6. The system stores the Need Request and makes it available for browsing. 7. The poster can edit, update, or close the Need at any time. 8. If a Need Request expires (passes the specified timeframe), the system automatically removes it from visibility. 9. Other students post Need Fills to the Need Request, and the poster reviews the candidate responses, and can contact posters for more information. 10. The poster selects a candidate and marks the gig as filled.		**Information for Steps:** ← Need ID (if edit) ← Is draft Y/N ← Need field inputs → Need ID ← Need EndDate → Need Fill ID ← NeedReqFilled = Yes ← NeedFillChosen = Yes
Postconditions: 1. The gig is posted and visible to seekers or saved as a draft for later. 2. The selected candidate is assigned to the gig. 3. If the gig is marked as filled, it is no longer available for new applicants. 4. If the gig expires, it is automatically removed from the listings.		

Summary Inputs	**Source**	**Summary Outputs**	**Destination**
Gig form Gig details Candidate selection	System User User	Displayed fields Stored listing Assignment confirmation	User User System

E1: If required fields are missing, the system prompts for corrections.
E2: If no applicants are suitable, the poster can extend the posting.
E3: If the gig expires, it is automatically removed from visibility and archived.

Domain Model

Screenshot from Mendix Project:

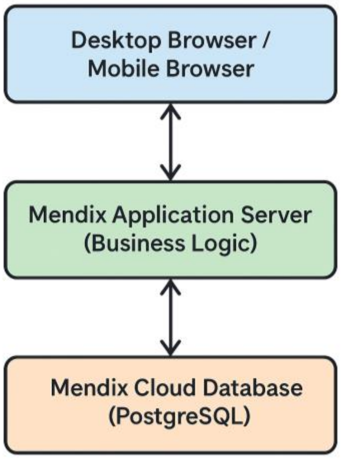


CurrentStudent
CurrentStudent (String)
1
CurrentStudent_Student
1
SavedStudent
SAVE_ID (AutoNumber)
SAVE_STU_ID (Integer)
SAVE_User_Email (String)
SAVE_SavedStudent_STU_I...
SAVE_Saved_User_Email (St...
SAVE_IsSaved (Boolean)
SAVE_UserSkipped (Boolean)
SAVE_SentMessage (Boole...
*
SavedStudent_Student
1
Student
STU_ID (AutoNumber)
STU_email (String) ✓
STU_password (Hashed stri...
STU_photo (String)
STU_name_first (String) 1
STU_name_last (String)
STU_pronouns (String)
STU_name_callme (String)
STU_school (Enumeration)
STU_edu_level (Enumeratio...
STU_edu_study (String)
STU_tech_nontech (Enume...
STU_timing_workflow (Enu...
STU_timing_meet (Enumer...
STU_roles_willing (Enumer...
STU_industry_interest (Enu...
STU_ambition (Enumeration)
STU_idea_or_no (Enumerati...
STU_headline (String)
STU_projects (String)
STU_question (String)
STU_PREF_BOOL_Idea (Boo...
STU_PREF_Idea (Enumerati...
STU_PREF_BOOL_Edu_level...
STU_PREF_Edu_Level (Enu...
STU_PREF_BOOL_Tech_non...
STU_PREF_Tech_non (Enum...
STU_PREF_BOOL_Ambition...
STU_PREF_Ambition (Enum...
STU_PREF_BOOL_timing_m...
STU_PREF_timing_meet (En...
STU_PREF_BOOL_roles (Bo...
STU_PREF_Roles (Enumerat...
STU_Count_Messages (Inte...
STU_Count_Saved (Integer)
NeedRequest
NEED_ID (AutoNumber)
NEED_STU_ID (Integer)
NEED_UserEmail (String)
NEED_Headline (String)
NEED_description (String)
NEED_by_date (Date and ti...
NEED_is_closed (Boolean)
*
NeedRequest_Student
1
1
NeedFill_NeedRequest
*
1
NeedFill_Student
*
NeedFill
FILL_ID (AutoNumber)
FILL_STU_ID (Integer)
FILL_UserEmail (String)
FILL_Headline (String)
FILL_Description (String)
FILL_Contact_other (String)
FILL_NEED_ID (Integer)

Section 6: System Architecture Design

To ensure scalability, flexibility, and security, the Bricolage platform is designed around a three-tier architecture model. This structure separates concerns across the presentation, application, and data layers, enabling modular growth and reliable system operations as user demands evolve.

Architecture Overview

Topic	Description
Overview	Bricolage follows a three-tier architecture, optimized for a web-based, desktop-first experience. This model ensures scalable deployment, flexible feature iteration, and robust security management.
Architecture Layers	• **Presentation Layer:** Web browser interface for students and administrators • **Application Layer:** Mendix low-code application server managing business logic • **Data Layer:** PostgreSQL database hosted in the Mendix Cloud
Hosting	Initial deployment on Mendix Basic Hosting ($75/month), with pathways for future migration to AWS, Azure, or GCP environments to meet scaling demands.
Security	Role-based access control, secure password policies, HTTPS communication protocols, and daily cloud-based backups enforce strong security postures from the outset.
Architecture Flow Diagram	 Desktop Browser / Mobile Browser Mendix Application Server (Business Logic) Mendix Cloud Database (PostgreSQL)

Hardware and Software Specification

Figure 6-1: Hardware and Software Specification for Bricolage Platform

Device/Software	Description	Requirements
Web Client *(Student/Faculty)*	Desktop or Laptop Computer	Modern web browser *(Chrome, Firefox, Safari, Edge);* stable internet connection
Application Server	Mendix Application Server	Mendix Basic Cloud Hosting *(managed),* scalable for MVP
Database Server	Mendix Cloud Database	PostgreSQL database managed within Mendix environment
Development Environment	Mendix Studio Pro	Low-code toolset for rapid iteration, feature development, and maintenance updates
Security Infrastructure	Role-Based Access Control	User roles established for student users and system administrators
Backup and Recovery	Cloud Backup Services	Daily encrypted backups with disaster recovery contingency

Nonfunctional Requirements

Figure 6-2: Selected Nonfunctional Requirements for Bricolage Platform

Category	Subcategory	Requirement
1. Operational Requirements	Technical Environment	1.1 The system will work on the Web through any modern browser (Chrome, Firefox, Safari, Edge).
		1.2 Students accessing the system via mobile devices will be able to browse, but key functionalities (profile creation, detailed matching, posting on NeedFeed) will be optimized for desktops.

		1.3 The platform will use Mendix hosting initially, with a transition plan to AWS or similar cloud environments for broader scalability.
		1.4 The Mendix-based prototype will integrate only through APIs with any future external university systems; no internal WPI systems integration is initially planned.
		1.5 Data hosting will be independent of WPI infrastructure to enable easy onboarding of students from other universities.
	System Integration	1.6 Matching will be restricted to authenticated users.
		1.7 Student profile data, NeedFeed posts, and match requests will be read, written, and updated through Mendix's secure data services layer.
		1.8 Backup and data recovery processes will be handled through Mendix Basic hosting capabilities initially, scaling with AWS RDS backup once migrated.
	Portability	1.9 Desktop (Windows, Mac) and mobile (iOS, Android via browser) environments will be supported. No native app development is planned at MVP stage.
	Maintainability	1.10 The system must be able to easily update profile fields, matching algorithms, and NeedFeed features through low-code Mendix updates without significant downtime.
2. Performance Requirements	Speed	2.1 Critical actions (profile creation, viewing matches, posting Needs) must have a response time of less than 5 seconds.
		2.2 Page loads must meet or exceed average industry norms for SaaS platforms used by Gen-Z users (approx. <2.5 seconds).
	Capacity	2.3 Support up to 500 concurrent users during MVP.
		2.4 The NeedFeed and Match modules must support up to 50 simultaneous search/filter operations without noticeable lag.

	Availability	2.5 System must be available 24/7, with planned maintenance windows communicated 72 hours in advance.
	Reliability	2.6 The system will target 99% uptime performance, with Mendix's SLA and basic monitoring tools.
3. Security Requirements	System Value	3.1 The system is critical for WPI's entrepreneurial ecosystem growth and supports cross-university collaboration goals.
	Access Control/ Authentication	3.2 All students must authenticate with an account using email and password. Future roadmap may include SSO integration for affiliated schools.
	Encryption	3.3 All data in transit (login credentials, profile information, NeedFeed posts) must be encrypted using HTTPS protocols.
		3.4 Stored data (profile information, NeedFeed posts) will be encrypted at rest on the cloud storage used by Mendix.
	Virus Control	3.5 All file uploads (e.g., profile photos, optional resume attachments) must be scanned using standard virus/malware detection services provided by Mendix.
4. Cultural and Political Requirements	Multilingual	4.1 No multilingual support required at MVP launch. English will be the sole language.
	Customization	4.2 Students will be provided customization options in their dashboard (profile visibility settings, match preferences filtering).
	Unstated Norms	4.3 Encourage professional behavior without heavy moderation.
	Legal	4.4 Ensure compliance with FERPA, GDPR.

This architecture strategy supports early-stage reliability, scalability, and security while retaining flexibility for future growth. The decision to prioritize desktop-first interactions aligns with student work patterns observed in early research, while cloud-native hosting models enable staged expansion without major infrastructure overhauls. Tight system boundaries and layered security protocols reflect best practices for SaaS platforms in academic innovation environments.

Section 7: Use Scenarios

To ground the Bricolage system design in authentic user needs, we developed core use scenarios aligned to the primary services Bricolage must provide. Each use scenario reflects a commonly used path through a major system use case and informed critical interface structure and design decisions. For each scenario, we explain the sequence of steps, the corresponding input and output interfaces, and the connection to business requirements expressed through user stories.

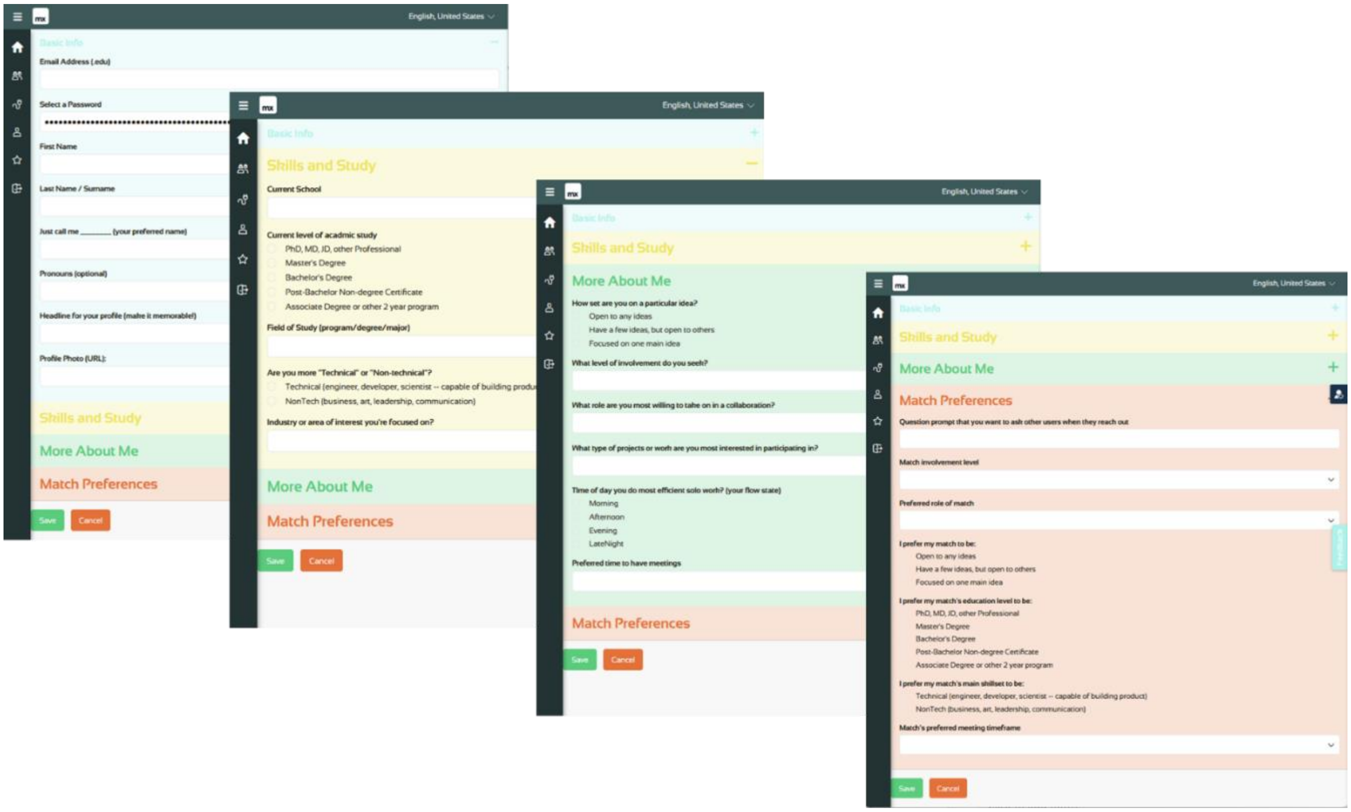
Use Scenario 1: Creating a Profile

A student creates a personal profile to be discoverable by potential project collaborators.

Step	User Action
1	User logs into Bricolage and selects “Create Profile” from the dashboard.
2	User enters major, skills, interests, availability, and project preferences.
3	User selects at least two skills using a multi-select checkbox interface.
4	User optionally uploads a profile picture using an image URL.
5	User saves the completed profile and is directed to the personalized dashboard.

Impact on Interface Design:

- **Business Requirement:** Students must clearly communicate skills, interests, and project needs to foster meaningful matches.
- **Input Interface Decisions:**
  - Designed a multi-section step-by-step form separating Personal Details, Skills, Interests, and Availability.
  - Incorporated multi-select checkboxes for skills and project types to standardize data and enable structured matching.
  - Provided optional fields (e.g., profile picture) to encourage completeness without requiring unnecessary barriers.
- **Prototype Example:**
  - "Create Profile" screen includes visible information sections and validates mandatory fields (e.g., email must be .edu)



Basic Info

Email Address (.edu)

Select a Password

••

First Name

Last Name / Surname

Just call me ________ (your preferred name)

Pronouns (optional)

Headline for your profile (make it memorable!)

Profile Photo (URL):

Skills and Study

More About Me

Match Preferences

Basic Info

Skills and Study

Current School

Current level of acadmic study
○ PhD, MD, JD, other Professional
○ Master's Degree
○ Bachelor's Degree
○ Post-Bachelor Non-degree Certificate
○ Associate Degree or other 2 year program

Field of Study (program/degree/major)

Are you more "Technical" or "Non-technical"?
○ Technical (engineer, developer, scientist -- capable of building produ
○ NonTech (business, art, leadership, communication)

Industry or area of interest you're focused on?

More About Me

Match Preferences

Basic Info

Skills and Study

More About Me

How set are you on a particular idea?
Open to any ideas
Have a few ideas, but open to others
Focused on one main idea

What level of involvement do you seek?

What role are you most willing to take on in a collaboration?

What type of projects or work are you most interested in participating in?

Time of day you do most efficient solo work? (your flow state)
Morning
Afternoon
Evening
LateNight

Preferred time to have meetings

Match Preferences

Basic Info

Skills and Study

More About Me

Match Preferences

Question prompt that you want to ask other users when they reach out

Match involvement level

Preferred role of match

I prefer my match to be:
Open to any ideas
Have a few ideas, but open to others
Focused on one main idea

I prefer my match's education level to be:
PhD, MD, JD, other Professional
Master's Degree
Bachelor's Degree
Post-Bachelor Non-degree Certificate
Associate Degree or other 2 year program

I prefer my match's main skillset to be:
Technical (engineer, developer, scientist -- capable of building product)
NonTech (business, art, leadership, communication)

Match's preferred meeting timeframe

Use Scenario 2: Finding and Matching with Potential Founders

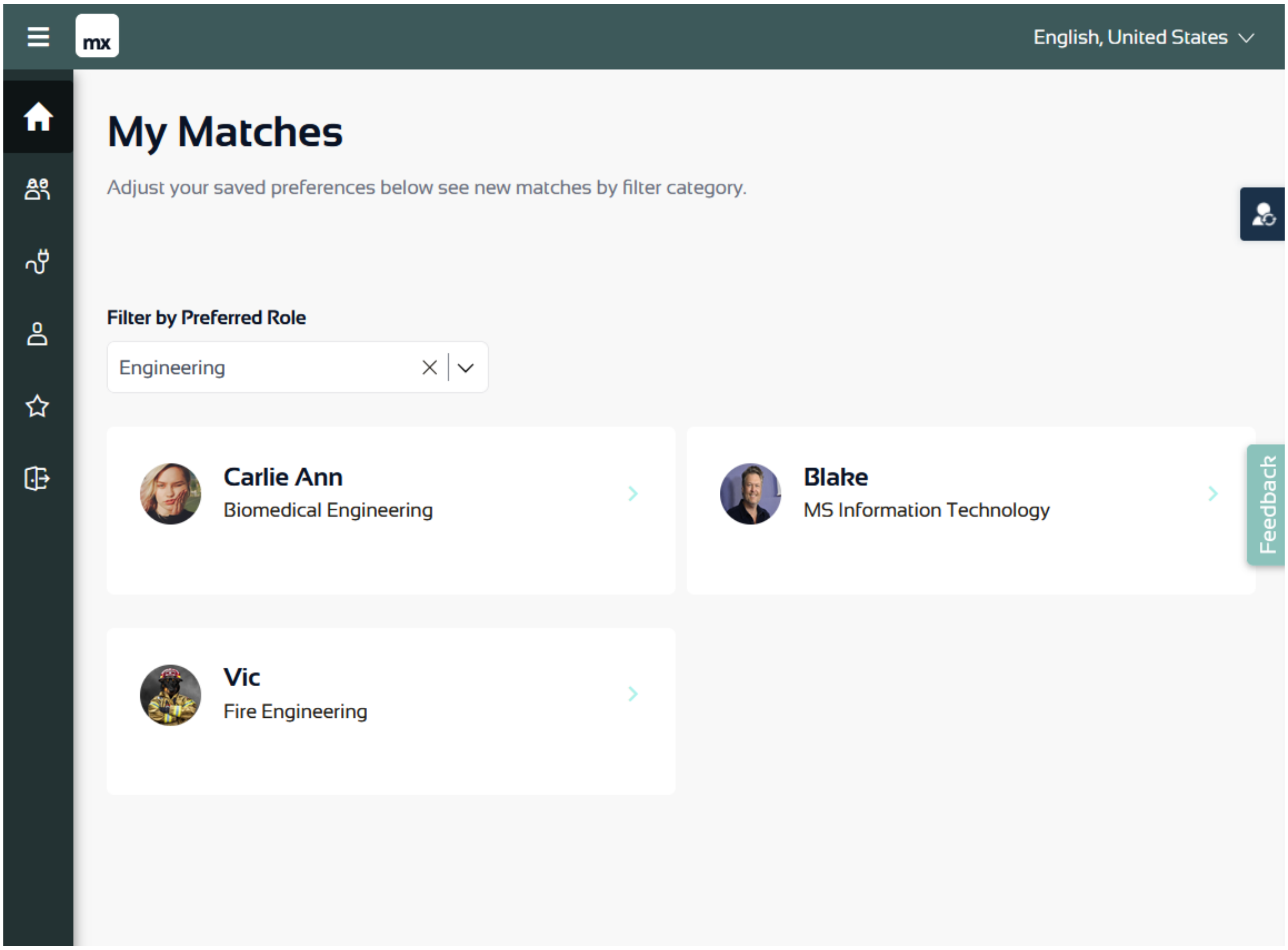
A student searches for and connects with students who match based on skills, interests, and availability.

Step	User Action
1	User selects "MixMatch" from the home page.
2	User applies multi-dimensional filters (skills, project interests, availability).
3	System displays a ranked list of matching profiles with brief overview cards.
4	User clicks a card to view full profile details.

Impact on Interface Design:

- **Business Requirement:** Enable efficient discovery and evaluation of compatible collaborators.
- **Input Interface Decisions:**
  - Introduced dynamic filter controls at the top of the "Find Teammates" page to refine results by key attributes.
- **Output Interface Decisions:**

    - Designed profile summary cards displaying major, skills, and availability without requiring full page navigation.
    - Embedded "View Profile" and "Connect" action buttons directly under each card to minimize friction.
- **Prototype Example:**
    - "MixMatch" screen shows compatible matches with expandable profile previews.



My Matches

Adjust your saved preferences below see new matches by filter category.

Filter by Preferred Role: Engineering

Carlie Ann
Biomedical Engineering

Blake
MS Information Technology

Vic
Fire Engineering

Use Scenario 3: Posting and Responding to a NeedFeed Opportunity

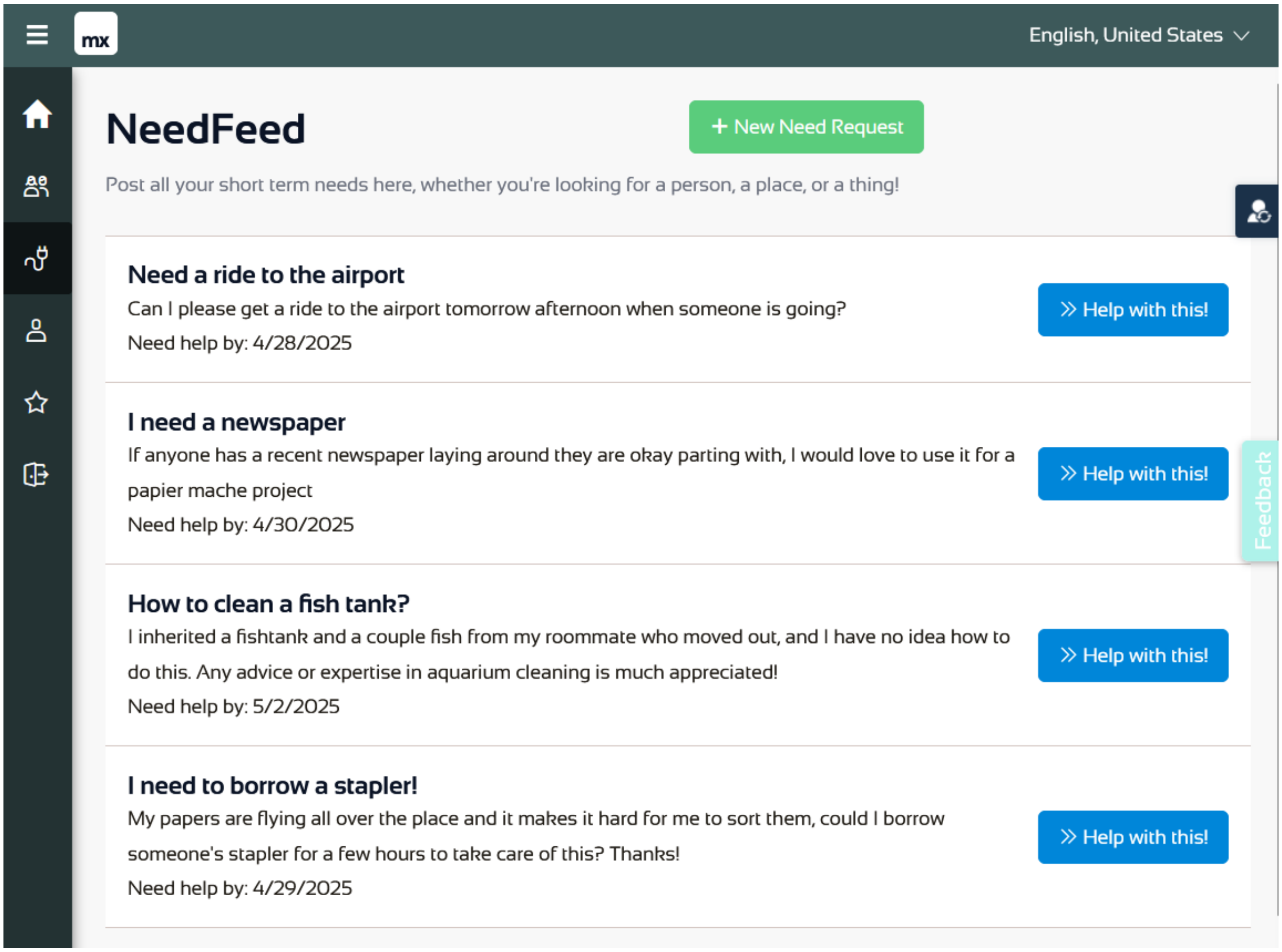
A student posts a short-term project need and receives offers of assistance from other students.

Step	User Action
1	User navigates to "NeedFeed" from the home page.

2	User fills out a one-page form detailing project need title, description, required skills, and timeframe.
3	User submits the form to post the NeedFeed entry.
4	System publishes the new post on the centralized NeedFeed board visible to all users.
5	Interested students view posts and click "Help with this" to initiate an offer to help

Impact on Interface Design:

- **Business Requirement:** Support lightweight, time-sensitive peer-to-peer project help.
- **Input Interface Decisions:**
  - Developed a minimalist one-page form with short fields and contextual tooltips to reduce user effort and speed posting.
- **Output Interface Decisions:**
  - Created a scrollable NeedFeed board displaying newest posts first, with urgency indicators ("Urgent" vs. "Flexible") based on timeframe inputs.
  - Designed post cards showing title, skills needed, and a brief description to allow quick scanning.
- **Prototype Example:**
  - NeedFeed page lists help requests with "Help With This" buttons directly on each listing, reducing click depth for rapid engagement.



NeedFeed

Post all your short term needs here, whether you're looking for a person, a place, or a thing!

Need a ride to the airport
Can I please get a ride to the airport tomorrow afternoon when someone is going?
Need help by: 4/28/2025

I need a newspaper
If anyone has a recent newspaper laying around they are okay parting with, I would love to use it for a papier mache project
Need help by: 4/30/2025

How to clean a fish tank?
I inherited a fishtank and a couple fish from my roommate who moved out, and I have no idea how to do this. Any advice or expertise in aquarium cleaning is much appreciated!
Need help by: 5/2/2025

I need to borrow a stapler!
My papers are flying all over the place and it makes it hard for me to sort them, could I borrow someone's stapler for a few hours to take care of this? Thanks!
Need help by: 4/29/2025

Overall Influence of Use Scenarios on Interface Structure and Design

The use scenarios developed for Bricolage directly shaped the system's interface architecture, feature prioritization, and interaction flows. Each decision was made to ensure that the platform would meet user needs for efficiency, clarity, and trust at critical moments of engagement. Key influences included:

1. Clear Dashboard Pathways

- The dashboard was designed to surface primary actions immediately upon login: Profile Setup**,** Find Teammates**,** and Post a Need**.**
- This layout minimizes cognitive overhead by reflecting users' natural priorities, as evidenced through research interviews and use scenario mapping.
- Every task begins with a direct, visible call-to-action, avoiding deep menu structures and reducing drop-off during navigation.

2. Structured Form Design

- Input interfaces were standardized into short, segmented forms for profile creation and NeedFeed posting, reflecting the need for quick, lightweight engagement.
- Forms were validated in real time (e.g., ensuring a minimum number of skills selected) to minimize user errors and the need for rework.
- Visual chunking (section headers like "Skills" and "Availability") helped guide users through input tasks with minimal effort, supporting usability heuristics around progressive disclosure.

3. Summary Visuals for Output Data

- Search results for both MixMatch profiles and NeedFeed posts were formatted as concise cards.
- Cards displayed only essential information upfront (e.g., name, major, skills, availability for profiles; title, required skills, timeframe for NeedFeed posts).
- Expandable details were available but optional, respecting users' need for quick triage without overwhelming the screen.

4. Encouragement of Profile Completeness

- The system incorporated subtle motivational cues such as completion percentages and progress trackers during profile setup.
- Success banners and encouragement messages followed major input stages (e.g., "Profile Saved! Ready to find teammates?") to reinforce completion behavior.
- This approach was grounded in user research insights emphasizing the link between perceived system investment and willingness to participate fully.

5. Feedback Mechanisms for Confirmation and Trust

- Every major system interaction was immediately followed by a confirmation screen or modal including profile creation, connection request, and NeedFeed posting.
- Visual success signals (e.g., green checkmarks, brief success messages) ensured users had closure after each task and minimized ambiguity.

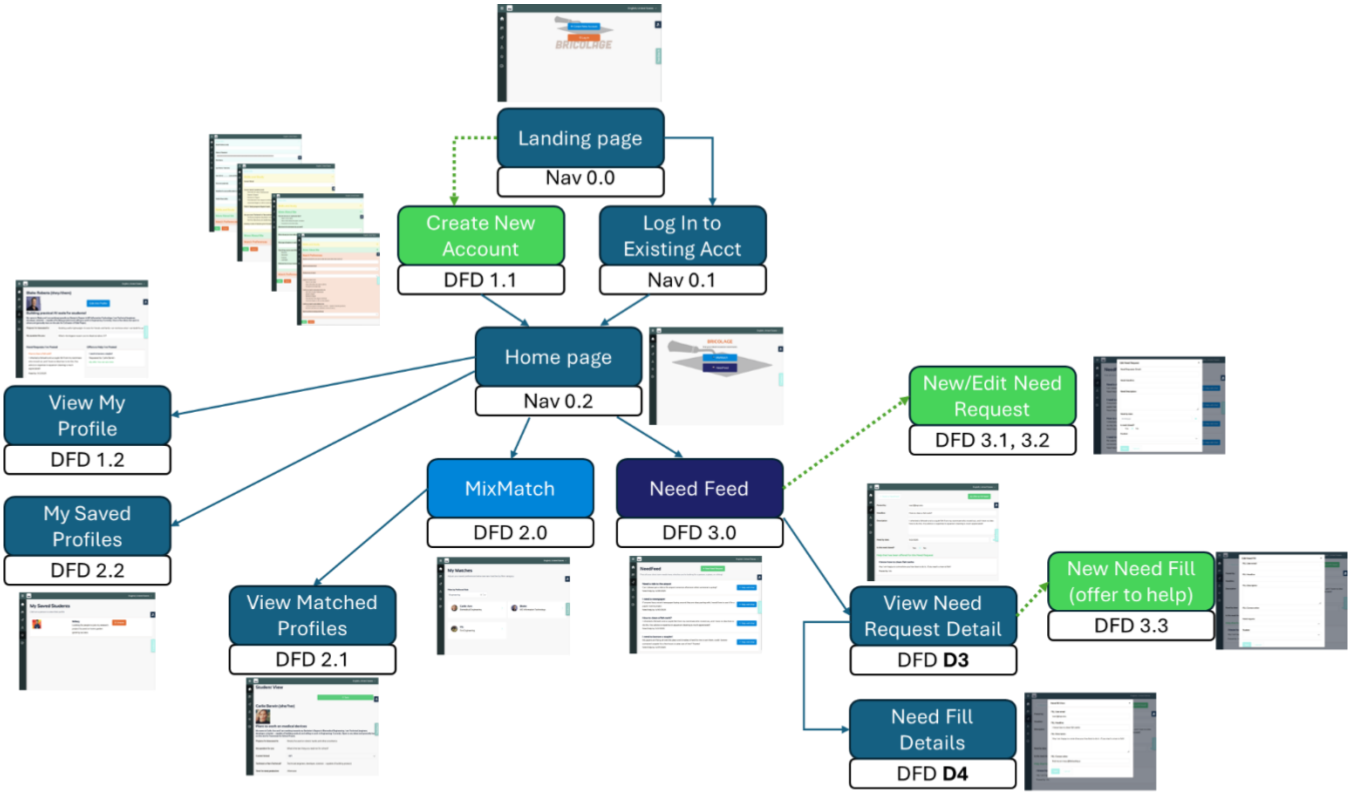
- These feedback loops were critical to building trust in the system, particularly for lightweight, peer-to-peer exchanges where reliability perceptions drive participation.

6. Consistency Across Interfaces

- A uniform design system was implemented across all forms, lists, and action buttons.
- Icons, button placements, field labels, and color schemes were standardized to create a predictable interaction environment, reducing the learning curve for new users.
- Consistency across different workflows (profile creation, matching, posting needs) ensures that users can transfer knowledge from one part of the system to another seamlessly.

Section 8: Interface Structure Design & Standards

Our basic interface structure for Bricolage:



Interface Design Standards

Design Item	Details
Color	We developed an energetic and entrepreneurial color scheme using Adobe Color. The blue shade could be slighlty darkened as contrast rendering of this color in Mendix made contrast on some buttons difficult to read. 🟨 🟧 🟦 ⬛ ⬛
Font	We opted to change Mendix's default font family in favor of something more unique and clean, with a slight bit of quirk to it. We selected a font family from Google Fonts called "Sansation" – see here: Sansation - Google Fonts
Button	We adopted the Mendix button design standards, with some slight alterations of color to match our scheme and adjusted the rounding to 5px. Where possible we prioritized button visibility and large touch area to encourage positive actions and smaller and brighter buttons for delete actions to prevent errors.

Error Handling	Errors are either called out by validation warnings or pop-ups. Admittedly this is an area that we could spend more time to ensure data quality and validation throughout the system.
Navigation Menu	Navigation Menu (for core users) is focused on funneling users to the key activities and screens in the app. The core Nav menu items on the sidebar are (in order) Home, MixMatch, NeedFeed, View My Profile, Saved Profiles, Logout When viewed in Admin mode, additional nav items are available for app management. They include (in order): LogIn (used to change the view of fake users to test different data views), All Students (to add/delete/edit users), and Admin Users Panel (to see which Mendix users/roles have recently accessed the application environment)
Page Titles	Page titles are coded as H1 for large size, legibility, and clear purpose definition as all users will be new to this platform and the additional context to learn it. UX language is meant to encourage and facilitate proper actions in the tool and discourage error entry or missteps.
Responsiveness	Mostly relying on the standard Mendix responsiveness engine to handle 95% of adjustments and automated responsiveness, which seems to be highly performant. There were some manual layout adjustments made to ensure the mobile view was not stretched off screen. Further refinement in the interfaces can be made for cosmetic and UX enhancement.

Color Scheme Rationale

The Bricolage platform adopts a blue and orange color scheme to evoke a dual sense of credibility and entrepreneurial energy, drawing from established psychological and cultural principles in design practice. Blue serves as the system's primary anchor, selected for its strong association with trust, dependability, and professionalism, which are critical signals for a platform where students are asked to share skills, aspirations, and project needs with a broader community (Cherry, 2022). Orange is strategically applied to energize interactions, conveying enthusiasm, motivation, and urgency to drive proactive engagement in short-term collaborations and venture building (Elliott, 2015).

To ensure maximum clarity and accessibility, primary text is rendered in black on light backgrounds. This follows usability standards for optimal contrast and reading comfort, particularly for dense informational content (Lidwell, Holden, & Butler, 2010). Blue and orange accents are reserved for interactive elements and emphasis, preserving visual hierarchy without competing with core content legibility.

Together, these design choices balance emotional reassurance with creative activation. Blue grounds the system visually, lowering cognitive barriers to trust and reinforcing perceptions of system legitimacy. Orange highlights opportunities for action, prompting users to post, explore, and connect with a sense of momentum. Black text provides a neutral, accessible foundation for all communication. Collectively, the scheme positions Bricolage as a trustworthy yet dynamic environment where innovation can flourish.

Font Rationale

We chose the font family “Sansation” by Bernd Montag and open-licensed on Google Fonts. This font is fairly clean as a sans-serif, but also has some interesting flair and unique characters, while maintaining a clean and modern/futuristic feel. It’s not necessarily meant to be a text font but lighter versions perform well for this task. It shines as a heading font. Overall, it adds some decent interest to the page without being illegible. Depending on who you ask, the lowercase “k” is either cool and interesting or people aren’t immediately sure what it is.

Section 9: Testing Plan & Test Data

Testing Objectives

The objective of user testing was to validate that the Bricolage platform's core workflows are intuitive, align with user expectations, and enable smooth task completion across primary features, including profile creation, cofounder matching (MixMatch), and NeedFeed posting. Testing specifically aimed to uncover usability barriers that could impact early adoption, task efficiency, and user engagement.

Prototyping Method

Testing was conducted using a clickable Mendix prototype, which included essential interface elements for user profile creation, matching workflows, and NeedFeed task posting. The prototype intentionally excluded system internals and non-critical functionality to maintain focus on core user journeys.

Testing Method

A Walkthrough Evaluation approach was employed. Participants were guided through major workflows without prior formal training, simulating a realistic onboarding experience. Observers recorded navigation patterns, points of hesitation, and instances where users deviated from expected task flows. Immediate post-task debriefs captured participants' perceptions while memory of the interaction remained fresh.

Test Plan

Item	Details
Participants	5 student users representing diverse academic backgrounds at WPI
Environment	Laptop computers with internet access to the Mendix prototype
Scenario	"Imagine you have joined Bricolage to find teammates for a startup project. Create a user profile, search for potential collaborators, and post a short-term NeedFeed request."
Time Allotted	30 minutes per participant

Test Cases

Test Case ID	Task Description	Expected Outcome	Observed Outcome
TC-1	Create a new user profile with name, major, skills, interests, and availability.	Profile saved; confirmation message displayed.	Completed successfully. 5 participants
TC-2	Search for potential cofounders using the matching feature (MixMatch).	List of matching profiles displayed according to search criteria.	Completed successfully. 5 participants
TC-3	Save an interesting profile and send a match message ("Reach Out Now!").	Profile saved; match request sent to user inbox.	Completed successfully. 5 participants
TC-4	Post a NeedFeed request for a marketing expert needed for a business idea.	NeedFeed post created; listing visible on board.	Completed successfully. 2 participants
TC-5	Edit an existing profile to add a new skill.	Updated skill saved and reflected in profile display	Completed successfully. 4 participants

Results Recording Plan

During testing, observers tracked whether participants could complete tasks independently, requested clarification, or became stuck. After each task, participants were asked:

- "Was anything confusing about this step?"
- "How easy or difficult was it to complete this action?"

All observations were categorized by severity:

- **Critical** – Prevented task completion or caused abandonment.
- **Major** – Caused significant friction but task was eventually completed.
- **Minor** – Created momentary confusion without blocking completion.

Iteration Plan

Identified Issues and Resolutions

- **Critical and Major Usability Issues**
    - Creating the ability to go directly from creating a profile to being “logged in” is not a functionality that we were able to get to work in prototype environments. Created a dummy “Current User” entity to allow Admin to adjust this view.
    - Sometimes data fields were not passed to the proper new entities upon item creation, causing blank entries or error popups
- **Minor Cosmetic Issues**
    - Sometimes the email validation warning would show when changing screens despite that not impacting the flow or usability
    - Users at times struggled to find the "Save Profile" button after editing. Resolution: The "Save Profile" button was relocated to a more prominent location (at the bottom of the form) and styled in a distinct color (green) to stand out visually.
    - Sometimes additional fields from the entity were visible when not needed (e.g. User ID)

Validation Approach

A second informal Walkthrough Evaluation was conducted with two additional participants after the profile creation fixes were implemented.

- Both users successfully completed profile creation without hesitation.
- No new critical or major issues were reported, validating the effectiveness of early design refinements.

Section 10: Recommendations for Implementation

To ensure a successful launch and sustained adoption of Bricolage among WPI students, we recommend a staged conversion strategy designed to minimize risk, manage user onboarding effectively, and align with the platform's interdisciplinary objectives. These recommendations focus on the organizational process of adoption rather than hardware deployment, following best practices for introducing new digital systems within academic ecosystems.

Conversion Strategy: Pilot and Phased Expansion

Given that Bricolage is a new platform with no existing infrastructure for student matching at WPI, we recommend beginning with a Pilot Conversion. A smaller, targeted group reduces implementation risk while allowing for rapid feedback cycles. The pilot phase will engage approximately 25–40 students drawn from the i3 Lab community and Innovation Studio business school events. This approach enables early validation of onboarding flows, profile creation processes, and matching logic under controlled conditions.

Pilot Timeframe

- September 1 – October 15, 2025 *(approximately 6 weeks)*

Following the pilot, a Phased Conversion is advised to support broader adoption. Rather than introducing Bricolage campus-wide immediately, expansion will proceed across academic groups in structured waves: first to Business School students, then to Engineering students, and finally to Arts & Sciences students. This staged approach facilitates targeted messaging, tailored onboarding strategies, and minimizes the risk of overwhelming system support resources.

Phase Expansion Timeframe

- Phase 1: October 16 – November 30, 2025
- Phase 2: January 2026 *(aligned with Spring Semester start)*

This structure reflects an intentional, measured path to full deployment, emphasizing system stability, user engagement, and manageable growth.

Module Conversion: Incremental Feature Release

In parallel with the phased user rollout, Bricolage features will be introduced incrementally through a **Modular Conversion** strategy. This ensures that platform complexity scales alongside user familiarity and engagement.

- **First Release:** Profile creation and co-founder matching tools will launch during the Pilot phase, establishing the foundational system utility and encouraging profile population.

- **Second Release:** NeedFeed postings will be introduced after the initial user base is sufficiently active and posting behaviors are validated, supporting lightweight, peer-to-peer collaboration needs.
- **Later Releases:** Messaging features, Behavioral Match Insights, and cross-university collaboration modules will be launched following Phase 2 expansion to strengthen long-term platform engagement.

Module Release Timeline

- Profile Matching: Pilot Launch *(September 2025)*
- NeedFeed Posting: Phase 1 Expansion *(October 2025)*
- Messaging and Advanced Features: Post Phase 2 Launch *(Spring 2026)*

This modular strategy ensures that users are not overwhelmed during early adoption, and that each functional layer of the system is introduced at a pace aligned with user readiness and platform stability. To support sustained adoption, a proactive communication plan will be implemented throughout the phased rollout, setting clear expectations about available features, timelines, and future enhancements. Structured onboarding resources, informed by pilot feedback, will reinforce user familiarity, while integration with project-based learning initiatives will promote consistent engagement across academic units.

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Appendix A: User Manual

Link to Mendix Prototype: https://bricolage2-sandbox.mxapps.io

Mendix Credentials:

User:
Username: test1@wpi.edu
Password: xK2a3dbiD9

Admin:
Username: demo_administrator
Password: ysoIle8n3A

System Overview

Bricolage is a digital collaboration platform built to support interdisciplinary teamwork among students. It introduces two core tools: **MixMatch**, for structured cofounder discovery, and **NeedFeed**, for short-term peer support. This prototype simulates core user flows in a test environment.

1. Getting Started

- Click “Create New Account” on the login screen
- Use a [.edu] email and set a secure password
- Enter your name and preferred name; pronouns are optional
- Log in to begin onboarding

2. Build Your Profile

The profile is organized into four collapsible sections:

- Basic Info: Contact details and account identity
- Skills and Study: Academic background and capabilities
- More About Me: Interests, communication style, and goals
- Match Preferences: Desired collaborator traits and roles

Save each section individually. You can return to edit at any time.

3. Explore Collaboration Tools

MixMatch

- Access via the homepage
- Filter matches by role (e.g., Engineering, Design)
- Click student cards to view full profiles
- Use “Save” to bookmark people or click to “Reach Out”

NeedFeed

- Access via the homepage
- Click “+ New Need Request” to post a short-term ask
- Include a title, description, and help-by date

- Use “Help with this!” to respond to others’ needs

Suggested Actions to Try

- Complete your full profile
- Post a Need and respond to one
- Explore student matches and save at least one
- View your profile to confirm saved content

Advanced Admin Prototyping Action (change student login view)

- Login to Mendix using “demo_administrator” role
- On the side panel, click “Log In”
- Create a new login (click green button)
- Select from the student dropdown (second field) any of the email addresses (they may appear as “<…>” due to a UI rendering issue
- Click Login to create the new session
- Delete the top row item (to clear previous session), when prompted click “OK”
- Now when viewing “View My Profile” page, you will see the data from that user’s view
- Repeat this process when you want to switch to a new user’s view

Appendix B: Original Project Proposal

Deliverable 1: Report

Here is the link to our original project proposal:

Team 10 - Original Project Proposal_Deliverable 1

Appendix C: System Analyst Reflections

Anurag Bansal’s Reflection

Working on the Bricolage project as a systems analyst was an incredibly eye-opening experience. One of the biggest lessons I learned is the importance of deeply understanding user needs before beginning the design work. Initially, we had assumptions about how students might use the platform, but through walkthrough evaluations and feedback sessions, we realized that students valued simplicity, speed, and intuitive navigation far more than we anticipated. Another major insight was recognizing that systems analysis is not a perfectly linear process. Gathering requirements, designing solutions, and refining ideas happened continuously as we moved forward. One surprising challenge was seeing how small details, such as the wording of a button or the placement of a filter, could significantly affect user behavior. If I were to approach this differently, I would invest more time early on in creating low-fidelity prototypes and mapping complete user journeys before building the functional prototype. Overall, this project reinforced that successful systems analysis is not just about documenting requirements but about constantly validating them through user feedback and practical testing.

Supria Basak’s Reflection

What I liked the most working on the project was how everyone worked together in every aspect, taking each other's input. Timing was crucial. Delivering what we initially planned was not easy without careful sprint management. As a System Analyst for the first time, I realized the importance of balancing ambition with feasibility. Sometimes, even the most exciting extension ideas had to be paused to meet realistic goals within the timeframe. For example, for the profile creation page, we wanted to incorporate a personality check section so that a person could see another person’s personality beyond just their skills, because finding a co-founder is not only about finding someone with skills; it is about connecting with someone who shares a similar vision and is compatible to work with. But we couldn’t implement that due to the limited timeframe. This experience taught me how vital it is to build buffer time into schedules to better handle unexpected tasks. I also realized how important it is to think ahead about scalability, especially when planning a system that could eventually expand beyond the current scope. Balancing short-term needs with long-term vision shaped many of our decisions during design and sprint reviews. Working on mendix was fun yet challenging as it’s not a regular drag and drop software. Anyway, looking ahead, I will plan sprints with even more flexibility, making room for last-minute improvements without compromising quality. Overall, I truly enjoyed working on Bricolage because of the strong team spirit and our shared goal of creating something meaningful for our peers.

Pete Mohan’s Reflection

Serving as a systems analyst on this project has been very rewarding, as this is my first time (other than building a website) where I truly was trying to implement technology based on a client’s scope. While I have built web apps using low code in other environments, these were always for fun or myself, and therefore only using my own critique and standards. But when tasked with developing for a 3rd party this brings in new issues and challenges, especially managing expectations and scope creep.

Using Mendix was also interesting as it got me oriented to a new development environment and software. There was certainly a learning curve but I can see how this tool is useful for rapidly developing new solutions or replacing manual processes. Taking the design scope and synthesizing it through the data flows and down into the physical data model in Mendix was a fascinating process that I really enjoyed. I like to take what seems like a nebulous idea or process and distill it down into just a handful of related entities.

Next time some things I may approach differently are focusing on delivering one core function and have that in testing and feedback while developing on another one. We definitely did not master this process of development handoffs and timing or establish a perfect Agile sprint rythym. I think that with further teaming we would learn each other's patterns better and be able to design a cadence that works best for us.

Bhavya Sharma's Reflection

Working as a system analyst on this project was a really valuable experience for me. One of the biggest lessons I learned was how important planning and step by step building is when working with Mendix or any system design. Even something that looks small, like connecting a microflow to a page, has to be thought through carefully, and one wrong setting like a missing role or wrong return type can stop the system from working.

I was surprised by how many tiny details Mendix expects to match perfectly, like roles for microflows or making sure each page and button connects properly. It showed me that being a good system analyst means not just designing how things will look but also deeply thinking about how data moves, how users interact, and how security is set up.

If I had to do something differently, I would focus even more from the start on planning the relationships between entities and pages first, before jumping into building. It would make the building process smoother and avoid small mistakes that cost time later.
Overall, this project made me realize how much smart thinking, patience, and testing is needed to design systems that are not only working but also efficient and user friendly.

Rachelle Wailes's Reflection

Serving as a systems analyst for this project deepened my understanding of what it means to bridge technical systems design with human context. One of the most powerful lessons I took away is that successful systems analysis is not just about producing technically sound diagrams, but about translating real, complex human needs into structured, scalable solutions. Early in our project, I realized how easy it would have been to build for abstraction, designing generic profiles and generic matching. However, it was the nuance uncovered through user research, the recognition that different founders have different emotional and motivational needs, that gave the system its real value. This aligns closely with the principles emphasized throughout our semester, reinforced by both Dennis et al. and our course discussions, where requirements elicitation is framed as an act of empathy as much as an act of logic. Technology alone does not solve the collaboration problem. It is the careful understanding of what students seek in teammates, and what they fear losing when collaborations fail, that shaped the heart of Bricolage's design.

Another insight I gained relates to how systems evolve over time. Early models, even when carefully constructed, cannot anticipate every point of friction users will experience. During our testing phase, what initially seemed like minor usability barriers surfaced as significant trust barriers. Participants hesitated when the system failed to guide them clearly or validate early actions, and that hesitation had an outsized impact on their confidence moving forward. Addressing these challenges required iterative humility and direct engagement with user psychology. Our discussions on agile refinement and prototyping helped frame iteration not as rework, but as an essential mechanism for building resilient systems. Seeing this unfold firsthand reinforced that systems are not made robust through upfront perfection, but through structured responsiveness to real user experiences.

If I were to approach a project like this differently in the future, I would push for a deeper integration of behavioral research much earlier, before any system flows or features were locked in. Rather than relying primarily on attitudinal interviews, I would advocate for embedded observation sessions, in which we could watch users navigate comparable collaborative tasks without guided prompts. This would surface hidden friction points, misplaced assumptions, and gaps between stated preferences and actual behaviors. These insights would have allowed us to design not only for what users say they want, but for how they truly move through collaborative decision making under real constraints. This lesson builds directly on the principles of stakeholder-centered design, risk mitigation, and the recognition of the limits of traditional requirements gathering methods. A technically sound system can still fail if emotional and cognitive risks are not identified early enough to be designed against.

Above all, this project reaffirmed that systems analysis is not merely a technical discipline. It is a human-centered craft that requires ongoing navigation between structure and empathy, architecture and adaptability. It is not enough to ask, "Does this work?" A strong systems analyst must continuously ask, "Does this work for the people it was intended to serve?" That orientation is what transforms system design from a technical accomplishment into meaningful and lasting change.