

CreditTrax

*Empowering Young Professionals for
Financial Success*

By Team: Copper
Old Dominion University
CS 410
Fall 2024



Table of Contents

Title Page	1	Major Functional Components Diagram ...	17
Team Biography	3	Development Tools	18
Intro to the Problem	4	What CreditTrax Will Do	19
Can You Relate?	5	What CreditTrax Will Not Do	20
Problem Data	6-8	Competition	21
Problem Statement	9	User Risks	22
Problem Characteristics	10	Technical Risks	23
Users / Customers / Stakeholders	11	Security Risks	24
Current Process Flow	12	Legal Risks	25
Our Solution	13	Conclusion	26
Solution Characteristics	14-15	References	27-28
Solution Process Flow	16		

Meet the Team



Darrick Allen
Webmaster /
Frontend Developer



Brian Nguyen
Project Lead



Bryce Johnson
Database Specialist



Erika Andrade
Backend Developer



Josh Martin
Backend Developer



Smit Dalia
Documentation Specialist

Financial Stress

A life-altering issue for young professionals

Young professionals often feel trapped by financial uncertainty. With limited experience in an increasingly hostile financial world, many are mentally overwhelmed by student loans, credit card debt, and the constant struggle to meet basic needs—all while trying to build a successful future.

I'm sure at one point we've all felt the **Stress** of:

Unexpected Expenses



Busy Schedules



Bills piling up



Can Relate?

Ever found yourself in a financial situation you couldn't afford? This could be an unexpected medical bill, a costly car repair, or overspending during the holiday season for a gift for a love one. **Just trying to make ends meet!**

Young adults often navigate a challenging financial landscape marked by significant student loan debt, limited entry-level incomes, and high living costs. Some struggle with housing affordability, leading to shared accommodations or living with parents, while credit card debt becomes a tempting yet risky solution for immediate purchases. **We have all been there!**

Interesting Fact: In 2024, student loan debt in the U.S now totals more than \$1.74 trillion, and approximately 60% of college graduates leave school with student loan debt.¹²

A Financial Crisis for Young Professionals

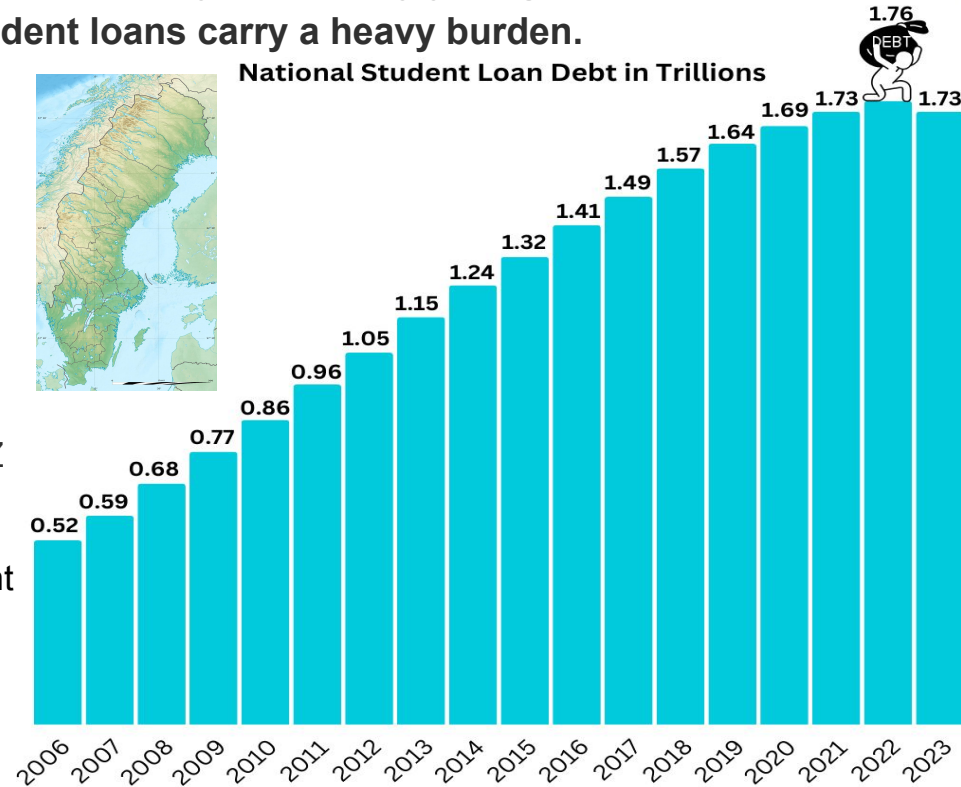
Proper finance management is key to success in life, yet for many young professionals, increasing credit debt and student loans carry a heavy burden.

In The USA

- ❖ U.S Consumers owe over \$1 trillion in credit card debt.⁵
 - Roughly equivalent to Sweden's national debt.¹³
- ❖ Credit card debt raised by 14.3% among Gen-Z (ages 18-29) between 2022-23.⁵
- ❖ 9 in 10 borrowers report experiencing significant anxiety due to their student loan debt.³
- ❖ The national student loan debt balance has risen by 66% in the last decade.¹²



National Student Loan Debt in Trillions



Source: U.S. Federal Reserve

The Hidden Cost of Debt



Mental Health

- Those in debt are twice as likely to experience depression and anxiety.¹⁰
- 16% of suicides are linked to financial trouble.¹⁰



Delayed Milestones

- Marriage, starting a family, and buying a house are often delayed due to debt burdens.¹⁰



Struggle to Meet Basic Needs:

- 36% of young adults (age 18-24) have trouble meeting basic needs.⁷



More Than One in Three Young Adults Had Trouble Meeting Basic Food Needs

Share of adults ages 18 to 24

Experiencing food insecurity

36%

Problems paying utility bills

16%

Problems paying rent or mortgage

12%

URBAN INSTITUTE

Source: Well-Being and Basic Needs Survey, December 2023.

Why Are Young Professionals Struggling With Debt?

❖ College Tuition More Expensive Than Ever

- Adjusted for inflation, On campus student tuition has over doubled since the 60's.²

❖ Rising Inflation

- A 40 year high annual inflation rate of 9.1% was recently reached in 2022, making everything more expensive, including the debt.⁹

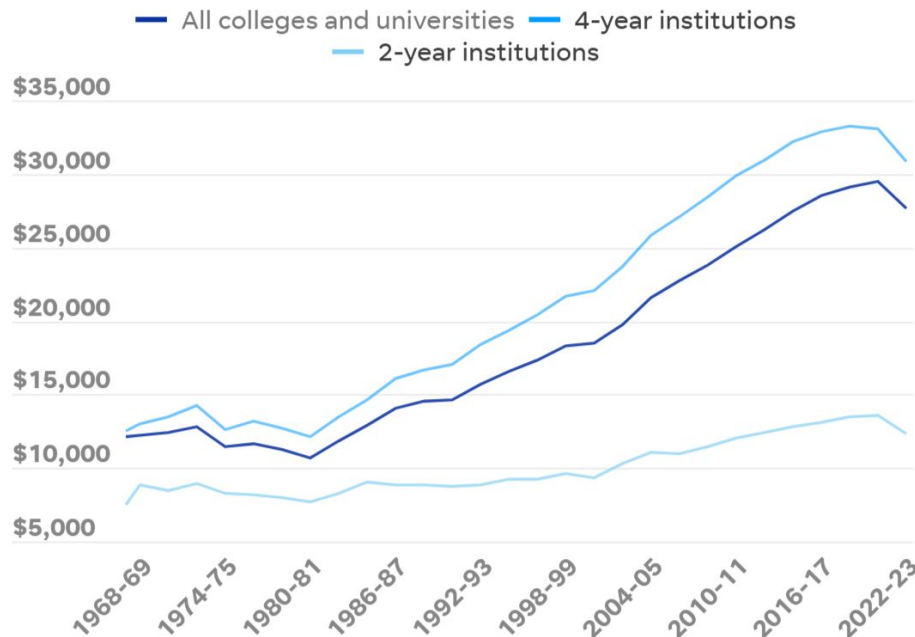
❖ Soaring Credit Card Interest Rates

- The APR on credit cards has nearly doubled from 12.9% in 2013 to a record 22.8% in 2023, further increasing the financial burden on young professionals.⁶

❖ High Cost of Living in Crucial Areas

- Major urban areas, where many young professionals find work, have some of the highest cost of living.¹⁴

Average cost of tuition fees, room and board by institution
In 2022-2023 dollars



Source: USA Today, data from the National Center for Education Statistics (NCES)

Our Problem Statement

Many young professionals in the U.S. struggle with their finances due to the overwhelming burden of student loans, ever increasing credit rates, and a lack of experience with crucial financial skills.

Balancing the pressures of starting a career while facing financial uncertainty leads to the accumulation of debt, increased anxiety, and delayed life milestones such as marriage, home ownership, and starting a family.



The Problem Characteristics

Forgetting to pay monthly payments due to being busy

- ❖ Interest rate increase
- ❖ Takes even longer to pay it off
- ❖ Late fees
- ❖ Credit score sinks
 - Harder time making large purchases
- ❖ Mental and physical health decline
- ❖ Harder time achieving life goals.

Lack of proper budgeting skills and/or financial literacy

- ❖ Can't make realistic budgets
- ❖ Won't know where their money has gone
- ❖ Harder time prioritizing expenses, short-term and long-term goals
- ❖ Won't fully understand the impacts of late payments and general financial choices

Some apps have budget management features, some have debt management, not many have both

- ❖ May have to use at least two financial apps.
- ❖ Harder to manage finances
- ❖ Hard to see the bigger picture



Who is Affected?

Users

- ❖ **Young Professionals** overburdened by student loans and credit card debt.
- ❖ **Recent Graduates** lacking financial literacy and seeking budgeting support.
- ❖ **Young Adults** mentally overwhelmed by a lack of experience with finance.



Customers

- ❖ **Young Adults**, especially recent graduates, who want to simplify their debt and budget management.
- ❖ **Financial Institutions** looking to partner with apps to better serve a younger audience.
- ❖ **Employers** looking to offer financial wellness programs for early-career employees.



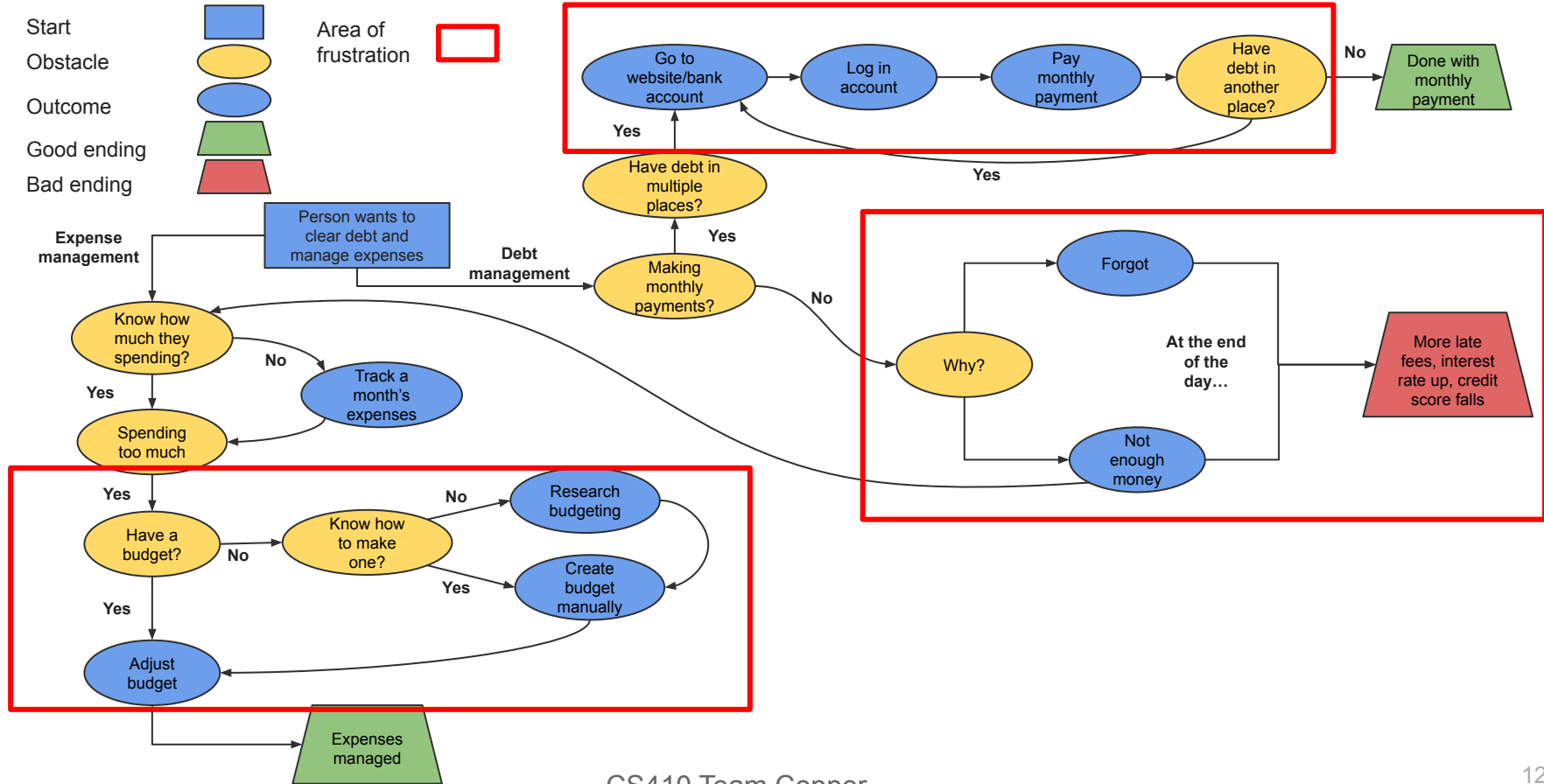
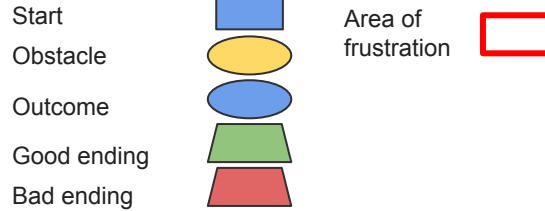
Stakeholders

- ❖ **Financial Advisors** with an interest in helping young professionals build sound financial habits
- ❖ **Financial Wellness Coaches** providing educational services to young adults to reduce debt and improve budgeting skills.
- ❖ **Credit Counselors** looking for tools to suggest to their younger clients.



Current Process Flow

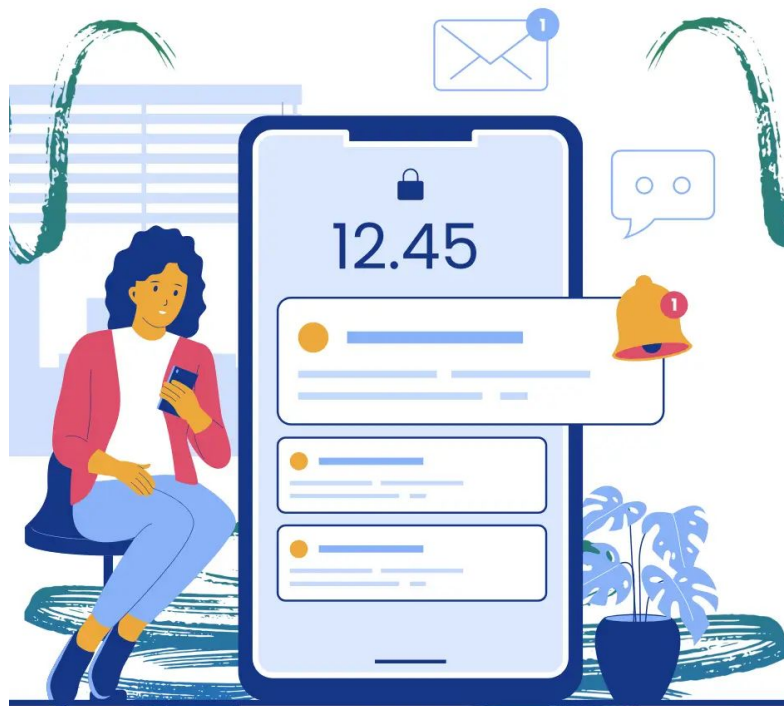
Legend



Our Solution: CreditTrax

CreditTrax leverages AI-powered budgeting through personalized financial dashboards and interactive tools to help users align their spending with long-term financial goals while making smarter financial decisions.

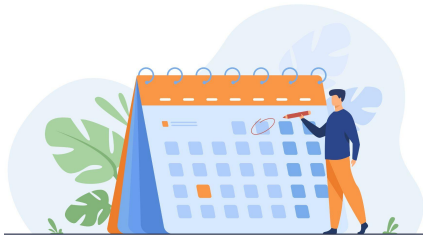
By analyzing spending habits, sending real-time notifications, and offering comprehensive financial literacy tools, CreditTrax enables young professionals to achieve their financial objectives, track their progress, and reduce the stress and anxiety that often comes with managing debt.



Solution Characteristics

Debt tracking

- ❖ Designed to give users a clear, organized view of their financial obligations
- ❖ Users can **input all their debts** e.g. credit card balances and student loans along with their respective interest rates and due dates
- ❖ **Smart Payment Reminders** - Prompts the user to **manually approve payment** of a debt. If they neglect to do so, the app will issue increasing reminders to ensure that they pay their debts on time.



Budget recommendations

- ❖ Powered by **AI** to provide personalized advice based on a user's debt and spending habits
- ❖ Analyzes the user's income, expenses, and debt obligations to generate tailored suggestions to help them optimize their budget
- ❖ Reduces unnecessary spending and allocate funds more efficiently

For example:

If a young professional is just starting out in their career and is burdened with multiple loans, the app might suggest the 50-30-20 budget plan.

(50% for needs, 30% for wants, and 20% for savings and debt payments)

Personal Financial Dashboard

- ❖ **Data analytics** - tracks and analyzes users' spending habits, debt obligations, and income flow over time, allowing the dashboard to offer real-time visualizations and reports on financial health.
- ❖ **Visualization** - Makes use of charts/graphs and badges to illustrate the user's progress with their debt. It allows users to easily monitor their spending in relation to their debt obligations.
- ❖ The tracking tools utilized in the app give users a clear understanding of how their financial choices impact long-term goals, such as loan repayment or saving for important life events. Users can make more informed financial decisions and stay motivated to adhere to their budget and debt repayment plans.

e.g. For users who manage to make every payment before the due date for 6 months straight.

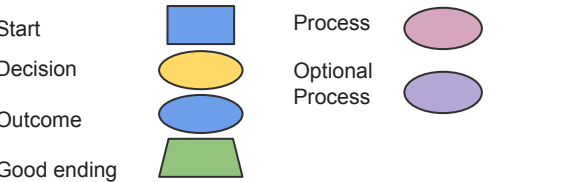


Solution Characteristics

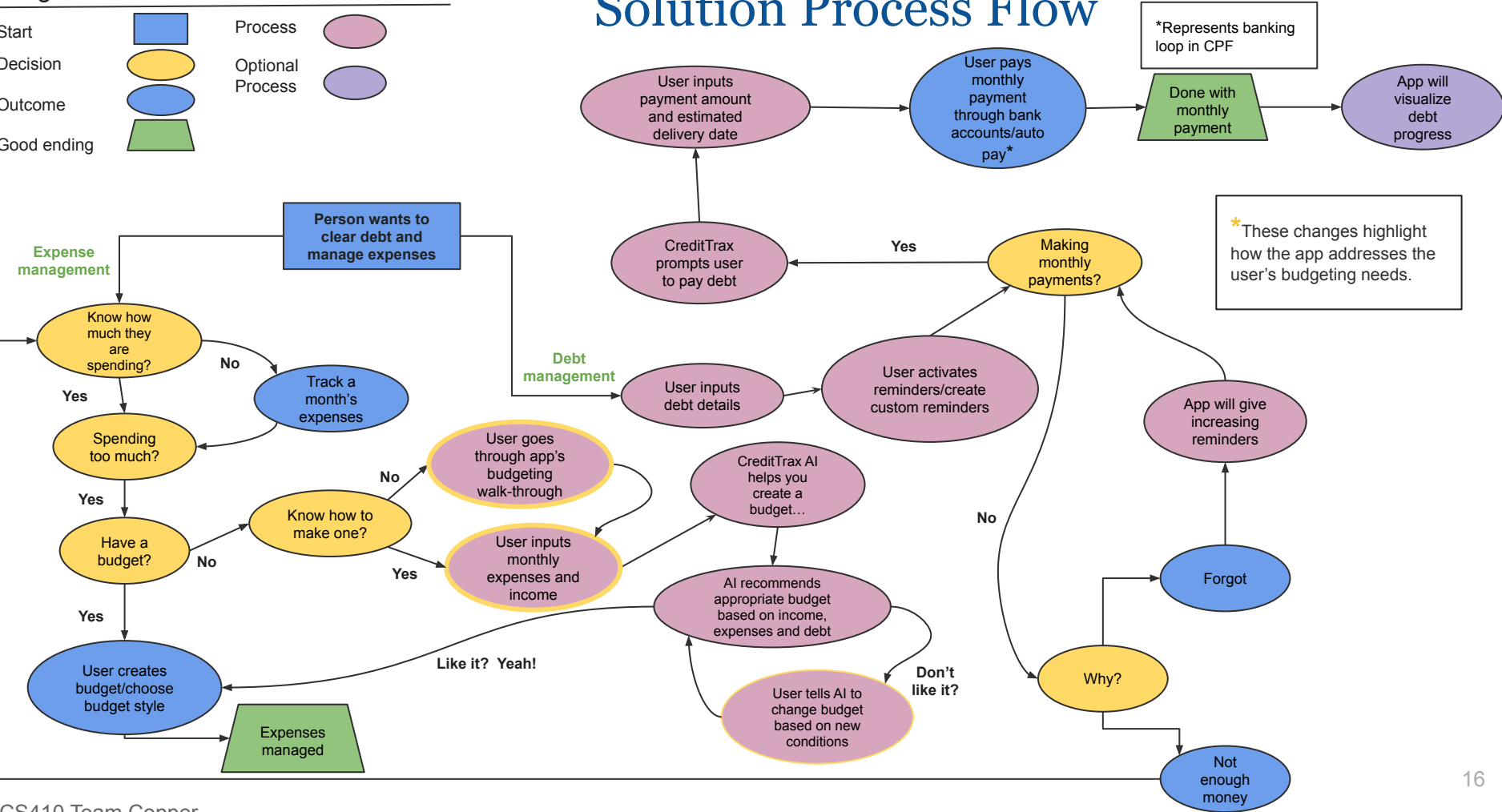
Financial Literacy

- ❖ **Builds essential financial skills:** CreditTrax educates users on key financial concepts like budgeting, saving, and managing debt, which are crucial for young professionals who may lack experience in these areas.
- ❖ **Encourages proactive financial habits:** The app fosters good financial habits by teaching users how to balance debt payments with saving goals, enabling them to take control of their finances early in their careers.
- ❖ **Reduces financial anxiety:** By improving financial literacy, CreditTrax empowers young professionals and alleviates the stress of managing their finances, which is especially important for recent graduates (and young professionals alike) facing student loans and credit card debt.

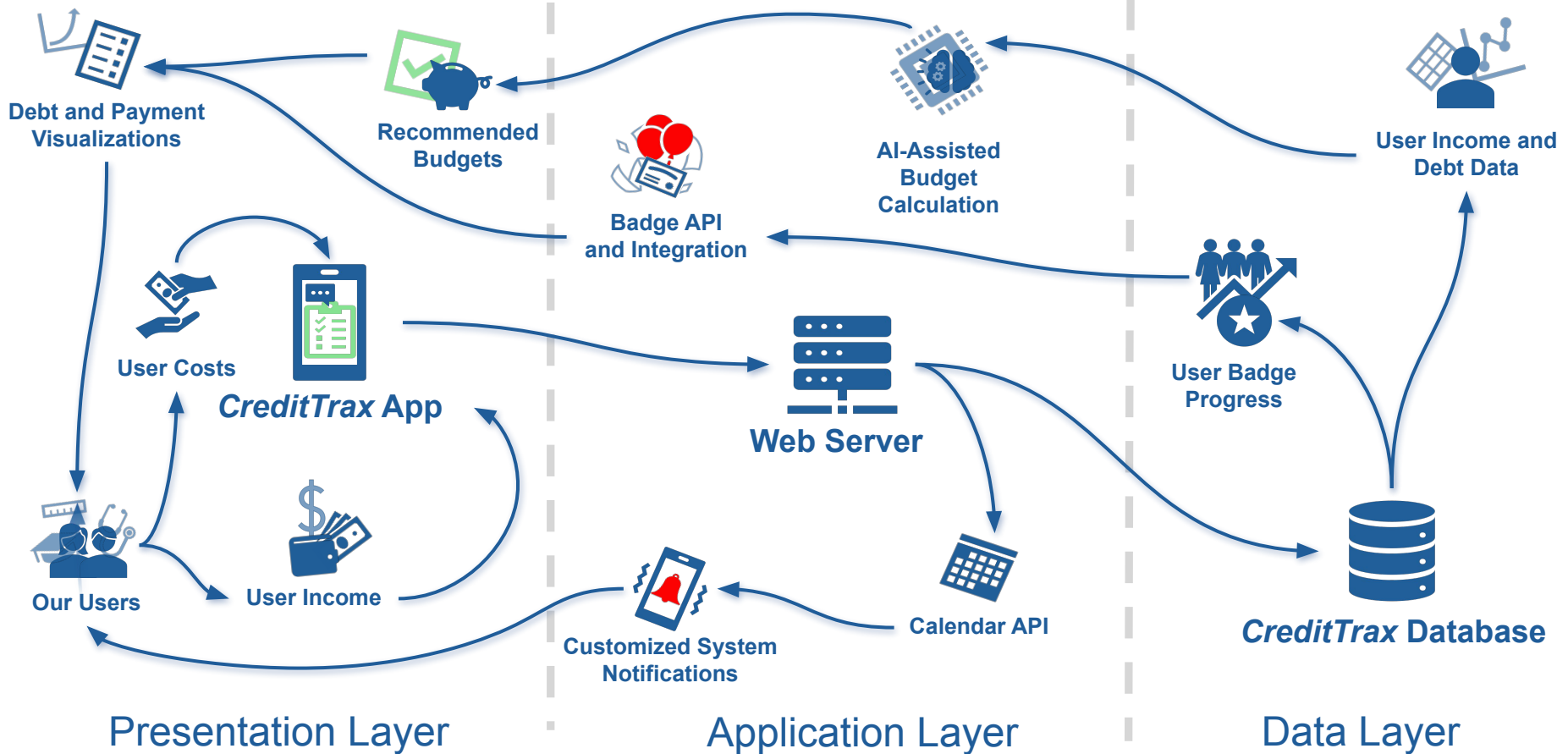
Legend



Solution Process Flow



Major Functional Components Diagram



Development Tools

Development Type	Front-End	Back-end
IDE	VSCode	VSCode
Version Control	Github	Github
CI and CD	Github	Github
Language	TBD	TBD
Testing Framework	TBD	TBD
Documentation Tool	TBD	TBD

What CreditTrax Will Do

- ❖ Track debt and manage budgets all in one place.
- ❖ Allow customized notifications tailored to user preferences.
- ❖ Tailor budgets specifically to the user's income and debt.
- ❖ Help visualize a user's financial journey using charts, graphs, and badges.
- ❖ Motivate users to develop good financial habits and improve their financial health.
- ❖ Keep information secure.

What CreditTrax Will Not Do

- ❖ Directly change credit scores:
 - CreditTrax will not pull or report credit information to individual credit agencies. The companies paid will report this information already.
 - CreditTrax will not pay bills by itself. Instead, CreditTrax helps develop a good payment schedule to help teach the user pay on their own.
- ❖ Lend you money to pay bills:
 - CreditTrax will help budget, but will not create new lines of credit.
- ❖ Share information with business partners, advertisers, or credit agencies:
 - CreditTrax will optimize budgeting, not advertising. User information is only used to help create a budget and track progress.

Our Competition

Feature	CreditTrax	EveryDollar	YNAB	Credit Karma	Rocket Money
Debt and Income Tracking	✓	✓	✓	✓	✓
Debt and Payment Visualization	✓		✓	✓	✓
Budgeting Suggestions	✓	✓	✓		✓
Upcoming Bill Payment Reminders	✓				
Badges to Track Progress	✓	<i>Where CreditTrax can help!</i>			
Personalized AI Powered Advice	✓				

User Risks



User Risks

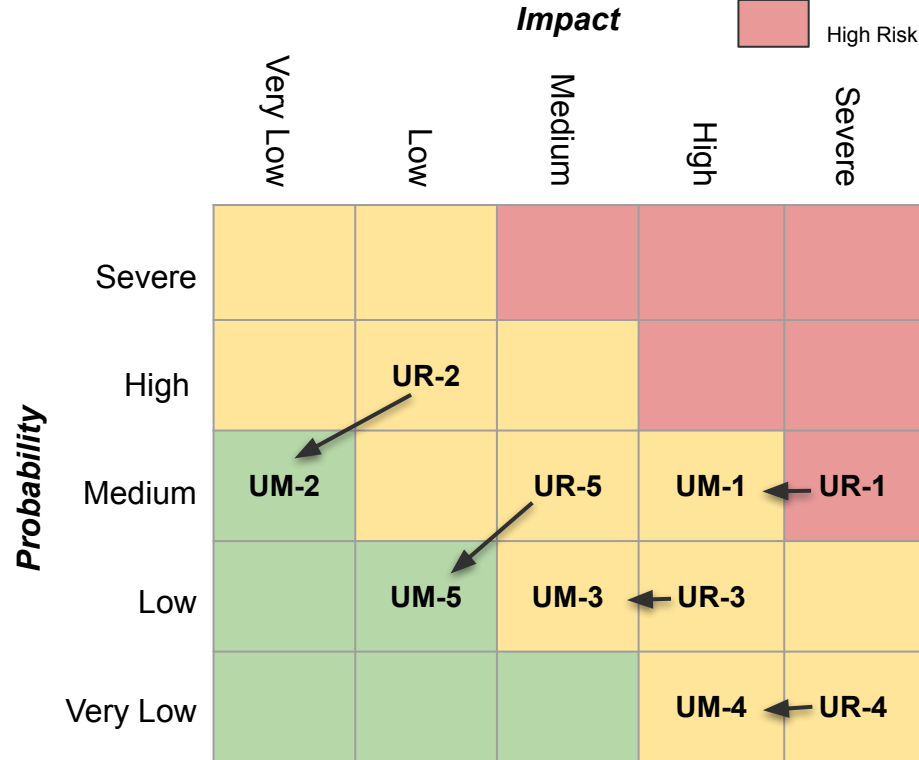
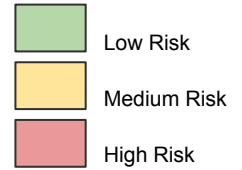
- **UR-1:** User missed a payment.
- **UR-2:** User forgot to respond to CreditTrax when monthly bill was paid.
- **UR-3:** User noticed that a feature is buggy/partially functioning
- **UR-4:** User's app crashed
- **UR-5:** User doesn't like their current budget style.



Risk Mitigation

- **UM-1:** Will increase frequency of reminders, remind them to prioritize their debt.
- **UM-2:** Asks users if they paid the bill the next time they open the app.
- **UM-3:** User can send a bug report and developers will patch the bug.
- **UM-4:** User will be notified for reason of crash and can send a crash report to developers.
- **UM-5:** CreditTrax can recommend user another budgeting technique (50/30/20, zero-based, etc.)

Legend



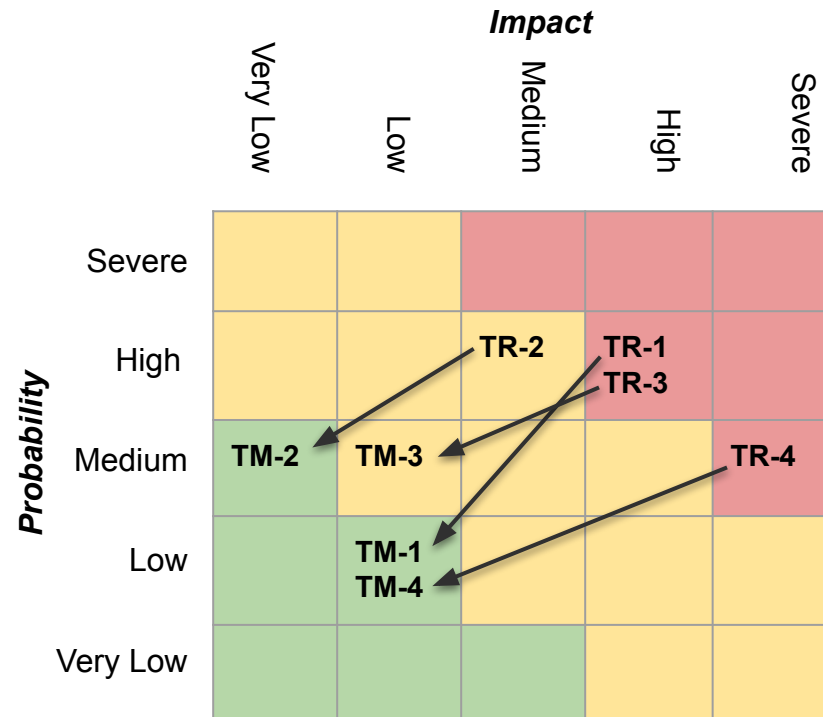
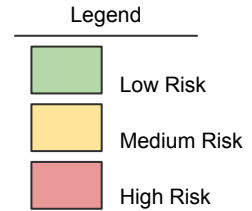
Technical Risks

Technical Risks

- **TR-1:** Integration of AI-driven budgeting recommendations and multiple features that can be complex
- **TR-2:** Ensure the app runs smoothly across different smartphones, operating systems, and versions.
- **TR-3:** Issues with handling concurrent users or processes at one time that also may make the application struggle to scale effectively.
- **TR-4:** The developed solution may not fully meet users' actual needs, leading to potential disengagement with the app.

Risk Mitigation

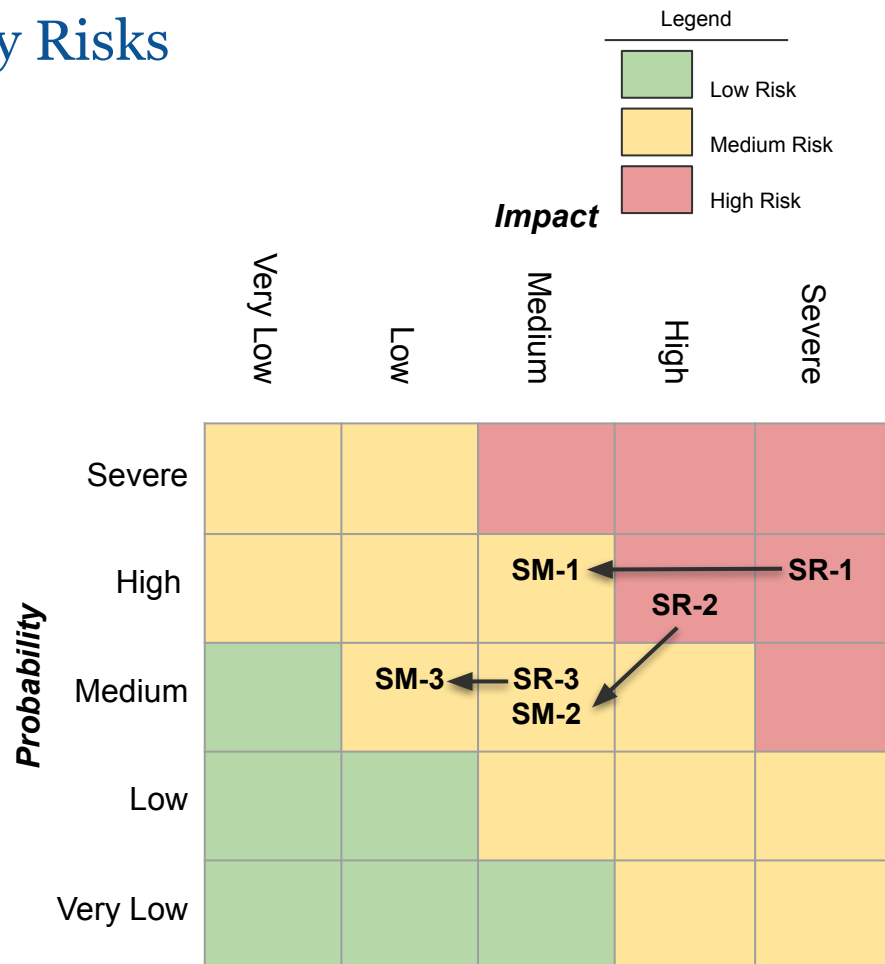
- **TM-1:** Break down the development process into smaller, manageable tasks; using modular architecture and thorough testing.
- **TM-2:** Develop a robust compatibility testing plan that covers a wide range of devices and OS versions.
- **TM-3:** Implement concurrency control mechanisms and perform load testing with the use of scalable infrastructure and cloud services
- **TM-4:** Engage with end-users throughout the development process through surveys and interviews, and implement regular updates and feedback mechanisms to keep users engaged.



Security Risks

- ❖ Security Risks
 - **SR-1:** Risks related to data breaches, leading to unauthorized access to user's sensitive financial information.
 - **SR-2:** Weak encryption mechanisms might expose sensitive data during storage or transmission.
 - **SR-3:** Inadequate authentication and authorization protocols may allow unauthorized users to access.

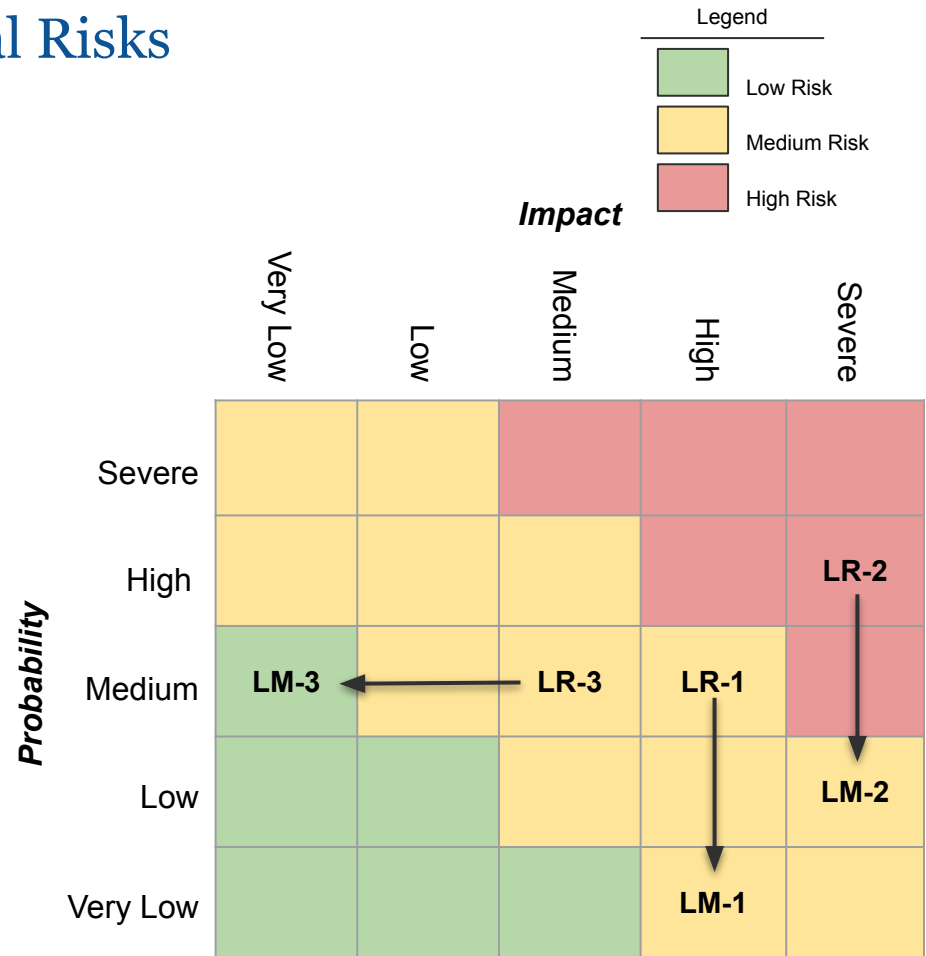
- ❖ Risk Mitigation
 - **SM-1:** Implement robust security practices such as data encryption (both at rest and in transit), multi-factor authentication (MFA), and regular security audits.
 - **SM-2:** Implement AES-256 encryption, TLS, and RBAC, supported by real-time monitoring and regular audits to thwart breaches.:
 - **SM-3:** Keep systems updated, conduct ongoing security training, and have a rapid incident response plan to quickly tackle threats.



Legal Risks

- ❖ Legal Risks
 - **LR-1:** Copyright infringement on competitors
 - **LR-2:** User data privacy violated by data breaches
 - **LR-3:** AI-generated recommendations harming users' financial health

- ❖ Risk Mitigation
 - **LM-1:** Extensive research on competitors' features, design, and trademarks to avoid infringement
 - **LM-2:** Implementation of security software and encryption of user data stored in database
 - **LM-3:** Statements shown on account creation page informing users of AI usage and that investment advice doesn't have a 100% guarantee of success



In Conclusion...

- ❖ CreditTrax provides a comprehensive solution for debt management and budgeting, addressing shortcomings of apps like Mint and YNAB.
- ❖ The innovation of the app combines debt tracking, AI-driven budgeting suggestions, and visual tools to foster healthy financial habits.
- ❖ Despite challenges in data privacy and user retention, its holistic approach enhances financial well-being.
- ❖ CreditTrax empowers users to take decisive action, manage debt effectively, and build a more stable financial future.

References

1. *Consumer Credit - G.19*, U.S. Federal Reserve, 9 Sept. 2024, www.federalreserve.gov/releases/g19/HIST/cc_hist_memo_levels.html.
2. Chernikoff, Sara. *How are college costs adding up these days and how much has tuition risen? Graphics explain*, USA TODAY, 18 Apr. 2024, www.usatoday.com/story/news/education/2024/04/18/college-tuition-costs-graphics/73347491007/.
3. Gravier, Elizabeth. *Remind yourself of 'what makes you happy': Blogger shares her advice about battling debt and depression*, CNBC, 11 Jan. 2024, www.cnn.com/select/debt-and-mental-health/.
4. *How to Get out of Debt*. Consumer Advice, 1 Mar. 2018, consumer.ftc.gov/articles/how-get-out-debt.
5. Horymski, Chris. *Consumer Credit Card Report*. Experian, 4 Nov. 2019, www.experian.com/blogs/ask-experian/state-of-credit-cards/.
6. Martinez, Dan, and Margaret Seikel. *Credit card interest rate margins at all-time high*, Consumer Finance, 22 Feb. 2024, www.consumerfinance.gov/about-us/blog/credit-card-interest-rate-margins-at-all-time-high/.
7. Martincheck, Kassandra, and Miranda Santillo. *Many Young Adults Have Taken on Debt. It Could Jeopardize Their Financial Futures*. Urban Institute, 18 Sept. 2024, www.urban.org/urban-wire/many-young-adults-have-taken-debt-it-could-jeopardize-their-financial-futures#:~:text=Young%20adults%20who%20don%27t,by%20up%20to%20100%20points.
8. National Institute of Standards and Technology. *NIST Cybersecurity Framework: A Framework for Improving Critical Infrastructure Cybersecurity*. 2020, www.nist.gov/cyberframework.
9. Rugaber, Christopher. *U.S. inflation at 9.1 percent, a record high*, PBS News, 13 July. 2022, www.pbs.org/newshour/economy/u-s-inflation-at-9-1-percent-a-record-high.

References

- 10 Rademacher, Ida, and Genevieve Melford. *Young Adults and Consumer Debt: The Quiet Crisis Next Time*. New America, www.newamerica.org/millennials/reports/emerging-millennial-wealth-gap/young-adults-and-consumer-debt-the-quiet-crisis-next-time/.
- 11 Suknanan, Elizabeth, and Gravier, Jasmin. *Mint Is Gone — Here Are Some Alternative Budget Apps to Consider*. CNBC, 9 Jul. 2024, www.cnn.com/2024/07/09/tech/mint-budgeting-app-is-going-away-here-are-some-alternatives/index.html.
- 12 Safier, Rebecca, and Ashley Harrison. *Student Loan Debt: Averages and Other Statistics in 2023*. USA TODAY Blueprint, 7 Sept. 2023, www.usatoday.com/story/money/blueprint/2023/09/07/student-loan-debt-statistics/12345678.
- 13 *US External Debt, 2003 – 2023 | CEIC Data*. CEIC Data, www.ceicdata.com/en/indicator/united-states/external-debt/.
- 14 Winters, Mike. *The 10 U.S. places with the highest cost of living—No. 1 costs more than double the national average*, CNBC, 29 June 2024, www.cnn.com/2024/06/29/us-highest-cost-of-living.html.