Capstone Proposal: SnapShot

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Advisor name

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Executive Summary

Providing good customer service can make or break a business. Customers would not want to continue to do business with a company that is unable to provide support when needed. Our project aims to simplify the role of a customer support agent for an internet service provider. This proposal will cover the problems and how our solution can help improve the performance for customer support agents in the wireless internet service industry. The proposal will point out the population affected by this project and its anticipated outcomes.

The main objective of this project is to be able to gain experience in creating a web application from the ground up that can be useful in a real world application. The challenge will be to be able to get it integrated with an existing system and be able to integrate multiple vendor equipment into a single pane view. We expect to also get a better understanding of how one will use an application we create and compare to what our anticipated outcomes were. There is potential for this application to expand and become either an open source application or have paid features.

The application has the potential to be very useful for companies that use fixed wireless equipment for networking purposes. We anticipate that this application will allow users who are unfamiliar with wireless equipment, be able to diagnose and troubleshoot issues with little effort. We also anticipate that users of the application will have a different perspective of what they feel is useful and informative and make suggestions for the interface.

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Introduction/Background

Project Name and Description

Snapshot: Revolutionizing Customer Support in the Wireless Internet Service Industry

In the ever-evolving landscape of wireless internet services, the need for efficient and intuitive customer support has never been more critical. Enter "Snapshot", a cutting-edge web application meticulously crafted to simplify and enhance the role of customer support agents for internet service providers. Designed specifically for companies utilizing fixed wireless equipment for networking, Snapshot aims to streamline the diagnosis and troubleshooting process. By offering a unified pane view that seamlessly integrates multiple vendor equipment into one coherent system, it promises to be an invaluable tool for agents, even those previously unfamiliar with wireless equipment. But Snapshot's significance extends beyond its immediate functionality. As businesses grapple with the growing expectations of an informed customer base, tools like Snapshot not only optimize operations but also act as catalysts in retaining customer trust and loyalty. In an industry where a company's reputation hinges on its ability to swiftly address customer concerns, Snapshot is not just an application—it's an imperative.

Problem and/or issue in technology

One of the most pressing challenges in the wireless internet service sector is the increasing complexity of equipment integration and the consequent difficulty faced by customer support agents. As companies deploy a diverse range of hardware from various vendors to optimize their network capabilities, the lack of a unified platform to manage and troubleshoot these devices hampers effective customer service. Recent industry reports highlight a notable rise in customer complaints related to prolonged downtimes and extended resolution periods, which

can be attributed to the time-consuming task of navigating disparate systems for different equipment. This fragmented approach not only diminishes the customer experience but also strains support agents who need to be proficient across multiple platforms. "Snapshot" seeks to address this gaping technological inefficiency. By consolidating multiple vendor equipment interfaces into a single pane view, it streamlines the diagnostic and troubleshooting process, reflecting a much-needed solution in an industry desperate for integration and simplicity.

Solution to the problem and/or issue in technology

To tackle the prevailing fragmentation in the wireless internet service sector, "Snapshot" will employ an integrative web-based platform that harmonizes various vendor equipment interfaces. Utilizing advanced API integration techniques, the application will communicate with different equipment software, extracting essential data and translating it into a cohesive and intuitive dashboard. By leveraging the education that we received from inside and outside of CSUMB, Snapshot will anticipate common issues and could potentially provide predictive troubleshooting solutions, drastically reducing resolution time. Additionally, a user-friendly GUI will be developed to ensure even those with limited technical expertise can navigate and diagnose equipment challenges effectively. To guarantee seamless interoperation, continuous testing will be conducted, simulating diverse equipment combinations and real-world scenarios. The resultant unified pane view will not only simplify the agent's role but also enhance the overall customer service experience, embodying a technological leap forward in equipment management and support.

Environmental Scan/Literature Review

Within the industry, two companies—PowerCode and Sonar—offer products similar to the one proposed in this project. Both companies have developed cloud-based systems that allow for the monitoring and troubleshooting of wireless connectivity issues. While their products aim to deliver comprehensive solutions encompassing billing, ticketing, equipment tracking, and more, many of these services might be superfluous for some users. A significant distinction is that their systems operate entirely in the cloud, meaning customer data isn't hosted locally. In terms of pricing, Sonar charges $1.25 per user for the first 5,000 customers (Sonar,2023). However, PowerCode does not publicly disclose its pricing structure.

Stakeholders

The primary beneficiaries of the "Snapshot" application are the customer support agents in the wireless internet service industry. For these end users, "Snapshot" represents a shift towards simplified equipment management and efficient troubleshooting. They stand to gain considerably in terms of time saved, reduced error rates, and an overall improved work experience. Effective problem resolution can lead to increased job satisfaction and reduced stress levels. However, they also have potential risks. If the transition to the new system is not smooth or if "Snapshot" fails to deliver on its promises, these agents could face increased customer dissatisfaction, added complexities, and a potential increase in their workloads.

The development team behind "Snapshot" plays a pivotal role in bringing the vision of the project to life. They have the opportunity to gain experience, professional growth, and recognition by successfully creating a solution for a prevalent industry problem. The project's

success can bolster their portfolio and reputation, opening doors for future endeavors and potentially lucrative projects. On the other hand, the developers also bear the risks associated with any software project: potential scope creep, technological limitations, or unforeseen challenges that could delay or derail development. If "Snapshot" doesn’t meet the industry's needs, it could reflect poorly on their skills and expertise.

The companies and ISPs that choose to adopt "Snapshot" are crucial stakeholders with substantial stakes in the project's outcome. They stand to gain improved customer satisfaction rates, more efficient customer service operations, reduced downtimes, and potentially increased loyalty and retention rates. This can directly correlate to financial gains in the long run and solidify their reputation in the market. However, they also risk potential disruptions during the integration phase, financial investments without guaranteed returns, and the possible need for training their employees on the new platform. Should "Snapshot" not deliver on its value proposition, these companies could face operational setbacks and reputational challenges.

Ethical Considerations

An ethical dilemma that arises from “Snapshot” is, how does this affect the workforce when you use technology to simplify a process that requires skills and knowledge? By removing the requirement to have a good understanding of networking and wireless technologies, there is potential for companies to not hire skilled workers and rely more on uneducated employees.

As "Snapshot" will interface with various vendor equipment, it's likely to access, process, or store data related to the operations of these devices, possibly including user-specific data.

Ensuring the protection of this data from unauthorized access, breaches, and misuse is paramount. There could be concerns about how data is stored, and transmitted, and who has access to it.

Stakeholders, especially end users, may want to know how "Snapshot" operates, makes predictions, or interfaces with other systems, particularly if there's any form of automated decision-making.

Long-term Support and Maintenance

After "Snapshot" is integrated into operations, stakeholders would be reliant on it. If the project is abandoned or doesn't receive timely updates, it can hamper the operations of ISPs, leading to potential customer dissatisfaction and financial losses.

Legal Considerations

The development and implementation of "Snapshot" bring forth several potential legal considerations. First and foremost is the aspect of intellectual property. As the application interfaces with multiple vendor equipment, there's a potential for inadvertently infringing on patents or proprietary technologies owned by these vendors. Ensuring "Snapshot" operates without violating these rights is paramount. Additionally, the software itself, including its code, design, and functionalities, should be protected through copyrights to prevent unauthorized replication or misuse. Any third-party software, libraries, or tools integrated into "Snapshot" must be used under the correct licenses, and permissions must be sought where necessary to avoid legal complications. Moreover, as "Snapshot" deals with data, adhering to data protection

regulations, such as the General Data Protection Regulation (GDPR) or the California Consumer Privacy Act (CCPA), becomes essential. Non-compliance can not only lead to hefty fines but can also tarnish the reputation of the project and its stakeholders.

Project Goals and Objectives:

Goals

The primary deliverable of our project is the "Snapshot" web application, featuring an intuitive dashboard tailored specifically for the needs of wireless internet service support agents. This centralized dashboard will serve as the hub for agents, offering real-time insights, essential tools, and streamlined functionalities to enhance their troubleshooting process. Alongside the app, supplementary resources will include a dedicated website detailing "Snapshot's" features and a user manual to ensure agents can maximize the platform's capabilities.

Final Deliverables

Our project will deliver the "Snapshot" web application, designed specifically for wireless internet service support agents. Alongside the app, we'll launch a dedicated website to outline "Snapshot's" features and benefits, complete with user guides. We'll also provide a sign-off document for stakeholders to confirm their satisfaction and a straightforward user manual detailing "Snapshot's" functions and best practices.

Approach/Methodology

We intend to run this development project through the Agile process. We feel the ability to be flexible in development and record keeping will help keep our project on time. We will initially meet with the client and then we will discuss the best plan to move forward.

Timeline/Resources

Detailed Timeline

Week	Objectives
Week 1	● Develop data extraction scripts or processes for real-time data collection. ● Ensure data integration includes all critical network performance metrics. ● Implement data quality checks and validation procedures.
Week 2	● Perform in-depth data analysis on the collected data to identify trends and insights. ● Process and clean the data further to prepare it for visualization. ● Develop scripts to clean data as it is being injected from various sources ● Identify key performance indicators (KPIs) and metrics to be displayed on the dashboard.
Week 3	● Set up the front end of the dashboard using React ● Create the basic layout and components for the dashboard's user interface.
Week 4	● Integrate data fetching from the Python backend into the React frontend. ● Integrate Git for version control and create a GitHub repository for the project and Host it on Heroku.
Week 5	● Implement real-time data integration by connecting to the Python backend using RESTful APIs. ● Begin building data visualizations using JavaScript charting libraries within React. ● Ensure data updates in real-time as new information becomes available.
Week 6	● Create comprehensive documentation for the real-time dashboard, including setup instructions and user guides. ● Conduct testing to ensure the dashboard is fully functional and stable.

Milestones

Milestone 1	Successful collection and analysis of Data from various sources
Milestone 2	Frontend framework complete, create the user interface and visualizations.
Milestone 3	Successful connection and integration of the backend with the Frontend
Milestone 4	Enable real-time updates, conduct testing, and address issues or bugs.

Resources Needed

The main resource we will be using for this project is Github, so that we can centralize the data and everyone on the team and access and see updates when pushed. We will also need to review the API documentation for the networking equipment we plan to integrate with. Also, the client is going to need to provide access to the equipment during development so we can test and refine our work.

Platform

We have chosen to use a web platform for this application. We feel that with it being accessible via a web browser, we can integrate with the company's office management system and not disrupt their processes. This will also allow for greater flexibility of porting our interface to other companies should we choose to expand our customer base.

Risks and Dependencies

Risks

One of the risks of this project is not knowing the exact method of data collection from multiple network vendors. There will be a lot of research that will be done to learn how to best collect the data so that we can present it in a meaningful way. This could use an excessive amount of time that will prevent us from working on other aspects of the project.

Dependencies

One major dependency for this project is being able to pull the data from the wireless networking equipment. We will need to make sure the client provides access in a timely manner so we can focus on development. When the application is sent for testing, we will also need to have quick responses and feedback so we can quickly sort through bugs and issues.

Testing Plan

We plan to have 3 customer support representatives test out the initial phase of the project and provide feedback. Prior to releasing the software to be used in production, we will have two representatives from tier 2 to test the software and provide feedback.

Team Members if applicable

Team member names

Crystian Chavez, Christian Rodriguez, Emmanuel Salcedo

Division of labor, including clear roles and responsibilities

For the initial division of labor, Crystian will be working to layout the project for the client with the group's guidance. Then Crystian will be responsible for coordinating time for getting access to client equipment for testing. Christian and Emmanuel will work on the backend of creating the script to gather data either through API or other methods. Crystian then will work on front end development and design to pull the data acquired from the scripts.

References

Sonar. (n.d.). *Pricing - Sonar Software | Simple Pricing for ISPs*. Sonar Software. Retrieved September 20, 2023, from https://sonar.software/pricing/