Technical Support for Freedom Consumer Products

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1. Introduction

The objective of this section is to briefly highlight the company and group I have been working for during this work-term. We will take a high-level view at the business, as well as the general responsibilities of the Customer Support and Information Services (CSIS) team.

1.1. Zero-Knowledge Systems Inc.

Zero-Knowledge Systems Inc. (ZKS) was founded in 1997 and originally offered an Internet privacy solution called the Freedom Network. The company quickly grew to become a known developer of privacy and security software. ZKS is headquartered in Montreal, Québec, and has an additional office in San Francisco, California[i]. Its core business is focused on consumer privacy and security products, which are sold throughout the world thanks to a network of partners. Please consult section 1.1.2 to learn more about partners.

1.1.1. Products

ZKS offers products for home users and enterprises focused on security and privacy.

The consumer line of products, called Freedom, noticeably offer firewall, antivirus, pop-up blocker and parental control software, allowing home users to secure their systems in a user-friendly and simplified way. It also features Freedom Websecure, a simplified version of the now discontinued Freedom Network, allowing users to browse the web with increased privacy. All products are offered as monthly or yearly subscriptions.

ZKS also offer an innovative product, called the Enterprise Privacy Manager, for businesses trying to find easier ways to manage their customer's privacy.

1.1.2. Partners

ZKS offers its consumer products directly from the web. However, the consumer line of products is also available from partners (ISPs, OEMs, etc.) such as HP, DLink and NetGear, Bell Sympatico, Telus Internet and Royal Bank of Canada[ii].

Each partner has a different version of Freedom Privacy and Security Suite custom-made, as well as varying service agreements for customer support.

Also, some partners provide us with software or software development kits for ZKS products.

1.2. CSIS Team

CSIS is the unit within ZKS in charge of customer services. CSIS offers email-based technical support to end-users and to our partners' technical support Agents, monitors the state of the systems, services and web pages available to customers, as well as being an integral part of the decision-making process in ZKS.

CSIS is responsible for supporting the following products[iii]:

FREEDOM Internet Security & Privacy	Freedom offers integrated suite of privacy and security tools. Services can be activated easily within a user's account. This suite is also sold under the brand name of Safeworld.
FREEDOM //websecure NEW!	Offers limited anonymity of browsing by transforming the user's IP address to ZKS'.
SpamCatcher	Detects and flags spam. Exists in an embedded Outlook version as well as a standalone version.

2. Duties

This section describes the routine duties that CSIS Technical Support Analysts must accomplish.

The Analyst (often referred to as a Technical Support Agent) must manage time allocation in a workday to accomplish, as much as possible, all the duties described below. Time must be allocated efficiently between recurring issues (where the last solution failed to solve the user's issue) and new issues. Each day is different and, as such, each responsibility will be differently weighted. Factors such as the length of the queue, the age of the updated issues, case priority, special assignments and the history of technical issues on our systems must be taken in consideration constantly in order to optimize the quality of work and of the user experience.

2.1. Helpdesk Technical Support

The technical support duties are the major activity in any workday. It involves the use of a specialized and customized application, Remedy.

2.1.1. Helpdesk Customer Support

Customer support represents the largest chunk of any workday. The tasks include answering to users' questions, help users troubleshooting issues, and offering extended support in more complicated cases. Practically all technical support requests are handled via email.

Most cases involve typical, if not classical, support issues. These issues and thus answered very easily via standardized solutions within Remedy.

However, most customer questions and complex cases require personalized answers and investigation. In many cases, I must sometimes evaluate long diagnostics of users' systems, which may take up to 15 minutes.

2.1.2. Partner Escalations

An ‘Escalation’ is the term used when an issue is moved up by one level in the resolution hierarchy. For instance, a customer’s issue can escalate, within our partner’s technical support services, from first-line support (general technical support), to second-line support (specialized support), finally to be escalated to CSIS. In special cases, issues can be escalated to the Network Operating Center (NOC) or DEV. However, CSIS has its own escalation hierarchy in order to avoid such escalations. Support Agents are asked to confer with peers, then to a technical lead, then to our supervisor, who will then consider and suggest the best course of action to follow.

Escalations from partners are the highest priority of all technical support requests we receive. Such supports must be handled very quickly (details are of confidential nature) and the highest standards of quality must be applied to the resolution of such cases.

It is the escalations’ nature that, since the issue most often went through two levels of technical support before being received by CSIS, the issues at hand are of high complexity and often require deeper analysis and investigation than customer support.

2.1.3. Phone Support

In special circumstances, Agents are asked upon to answer calls from users or to call users. Most often, this will be the case when an escalation from a partner becomes too complex for our partner to support directly.

Phone support is very different from email-based technical support, as it is a time-consuming interactive activity. Agents must be able to quickly determine the source of an issue, and guide the user through resolution.

Agents typically find this form of technical support to be very challenging because of its inherent stress and efficiency requirement.

2.2. Emergency Response

CSIS Technical Support Agents must stay informed of developments in the world of computer security, especially of viruses. In order to deal with the situation, Agents stay perpetually informed of any major virus outbreak. Agents thus write and update customized solutions and publish internal virus information references, in order to help infected customers recover, as well as to assist DEV in quickly developing virus removal tools.

Agents thus stand in the frontline of any viral outbreak, as customers and other emergency response staff are able to better cope with and react to the ever-evolving situation.

2.3. Continuous Internal Processes Improvement

CSIS Agents are involved, at many levels, in the improvement of the internal processes of CSIS and ZKS. Not only can CSIS comment on future product specifications and design, we can also collaborate in the improvement of the product and product-related websites, as well the internal tools available to CSIS.

In order to support DEV in defining its priorities in product improvement, Agents must compile issues experienced by customers in order to provide sufficient data for DEV to assess the issue and allocate the proper resources. I was thus involved in the compilation of multiple issues for this sake. Further details are of confidential nature.

Agents also contribute to the refining of training manuals, used both internally and by ZKS' partners. Agents are asked to write summaries, issue symptom descriptions, technical explanations and resolution methods. Some of these documents are intended for varying audiences, making this contribution and interesting challenge of technical writing.

Furthermore, starting from my personal initiative, CSIS Agents are now constantly involved in an open process designed to improve and fine-tune the standard solutions in Remedy, called the Zero-Knowledge Community Process (zksCP). All Agents are invited to suggest improvements to existing solutions or to propose new ones. After some exchange and improvements with the moderator, the solution is brought forward to the other Agents, who are free to propose changes as desired. After a certain deadline, the moderator gathers the comments and proposes an updated solution. This iterates until the solution becomes unanimously adopted. More details on the process are of confidential nature.

2.4. Training and Leadership

During the fall work-term, all co-op students employed by CSIS, with the exception of myself, were new Agents, all of which were starting their first work-term.

Experienced Agents and new Agents were working together for a week in order to provide personalized attention and training to the newer staff.

As the only experienced co-op Agent left in CSIS, I was asked upon to provide leadership to the team, in order to help the Agent pick up the skills and organization required for them to work efficiently. I also initiated the zksCP and became its moderator.

2.5. Other Duties

CSIS staff must also filter emails (both in Remedy and in regular Outlook folders) for spam and emails not related to tech support, such as résumés and partnership offers for the company. Agents must also integrate information from emails within Outlook into Remedy in order to consolidate cases.

3. Evaluation

3.1. Relation to Academic Training

This work-term can be seen as a complementary experience from the education offered by the Software Engineering programme.

The academic programme focuses on the part of the lifecycle related to software development, but takes deployment and maintenance as granted. As such, we do not have the possibility to learn about such topics without an experience like the one I had this semester.

I will cover more about this in section 3.4.

3.2. Contribution to Professional and Personal Development

This was my first experience working in an integrated work unit, instead of the relative isolation I was in during the last two work-terms.

This, of course, makes the work experience radically different. This means that, being in an open and multidisciplinary office environment, I am often participating in technical and non-technical social interactions.

3.2.1. Professional Development

On a professional level, this work-term allowed me to improve my problem-solving skills, since the cases we receive from customers are often quite complex and require investigation of diagnostics and questioning the user for more details on the issue. I was thus able to develop the capacity to modelize, to a certain extent, the customer's system in its operating context and to determine the impacting elements so that I could propose solutions to the issue at hand.

Also, I had to develop critical judgment and understanding of the hierarchical structure of issue resolution (as explained in 2.1.2), in order to efficiently resolve issues. I also had to develop my judgment in order to determine, in a few situations, the necessity to skip the hierarchy in order to ensure an accelerated treatment of what I judged to be an emergency situation. The details of such situations remain confidential information.

Finally, I was able to better understand the user base, characterized by a low level of technical expertise, with a great variance in capability to understand situations and explanations. In many cases, I had to explain simple concepts such as how to redeem a serial number or to shut down Freedom. In other cases, handling escalations, I was replying to technical support Agents, often of technical expertise far greater than mine. This kind of situation allowed me to grasp a better understanding of our users and I am confident that I'll be able to use this knowledge in software and user interface design in the future.

In short, I am satisfied with the professional learning I accomplished during this work-term, and I am confident that this work-term has given me tools to become a better software engineer.

3.2.2. Personal Development

On a personal level, this work-term was quite satisfying. I mostly worked on interpersonal interactions, as well as learnt to improve my time management.

3.2.3. Interpersonal Interactions

In my previous work-terms, I worked with a mostly male staff in a relative isolation. In this work-term, I was able to work with a gender-balanced staff in an open environment. As such, I found the social relationships established with my coworkers to be stronger and more open, as well as approaching a wide range of everyday topics in a manner that I didn't have the chance to experience in the past.

I was also exposed, through this variety of topics touched, to a variety of opinions, some of which I do not always share. I thus learnt to develop my listening ability and empathy in order to better understand the other party's position and to address the context in a non-confrontational manner.

As the only experienced Agent in the team, I was also asked upon to provide leadership to the team. I thus provided assistance and personalized attention to the less experienced workmates, in order to let them grow wings and soar on their own. I had to accept a role as a guide, whereas I was often tempted to adopt a stronger and more controlling approach. As such, I had the opportunity to evolve my personal attitude towards a greater respect of the maturity and self-determination of my workmates.

In short, I believe that my ability to interact with coworkers was greatly improved through this work-term.

3.2.4. Time Management

As I am involved in a major group project, a report course, as well as many church activities, I had the chance to learn to better manager my out-of-office time in order to fulfill my engagements in a healthy and balanced manner.

3.3. Strength and Weaknesses of Training

The details of the training provided by ZKS remain confidential. I do believe that the training strategy in place is efficient in providing Agents with the tools to easily resolve most basic cases very quickly and allows us to have a constant progression without a massive theoretical training at the beginning of the work-term. As stated previously, I have contributed my comments in order to support the constant improvement of our training materials.

3.4. Suggested Changes to Academic Programme

This experience as a technical support analyst made me realize that post-development issues were not considered during the training at Concordia. In fact, there is no consideration on issues of software distribution, deployment processes, technical support and maintenance issues. More importantly, I feel that our training failed at giving us the ability to make software easy to troubleshoot, to make robust software and to make scenarios that consider problem resolution.

3.4.1. Troubleshootable Software

The Freedom Security and Privacy Suite was built to include a diagnostics utility as well as an event console. This is an example of a design that integrates the concern of software that is easy to troubleshoot.

However, our training in software specifications lead us to think about software in a consumer-based perspective, where the features we find are focused on customer needs. There was never mention of making software easy to diagnose and troubleshoot.

I feel that this weakness in training makes us less apt to efficiently accomplish our duty as software engineer, which is not only to deliver high-quality software, but to make sure that this software is easy to evolve and that issues that may arise would be easy to fix.

3.4.2. Software Robustness

The notion of software robustness is not new to any student in Software Engineering. However, this notion is an abstract concept. We are not taught how we can implement fallbacks or how to create software that is able to operate in non-favorable environments.

Freedom is a good example of software that can be affected by a multitude of external factors and that is yet robust enough to operate in an extremely wide range of environments. The Freedom users will use different versions of the Windows operating system, as well as having different configurations. Since Freedom integrates many features that rely on deep knowledge of the operating system' architecture, special care has been taken in order to ensure a functioning software despite a large set of things that may go wrong in the configuration of a user's system and in Freedom's installation and operation.

I do not believe that a full course on software robustness is realistic in the context of the programme, but I believe that this topic should nonetheless be studied, maybe by transforming the 'project' courses (such as SOEN 390 and 490) into lightly loaded courses (i.e. one lecture per week) with a project.

3.4.3. Scenarios and Problem Resolution

During the requirements phase of the software development, we are taught to modelize how the user will interact with the software. Yet, we do not spend time modelizing how the user could deal with faulty software, or upgrade components or report issues efficiently.

I feel that it is essential that we learn, as part of the software engineering programme, how we can design a user experience. This will probably force us to take in consideration the development of support tools and infrastructure for problem resolution. Furthermore, it probably would make us able to create better error messages and integrated tools within the software package for issue resolution.

I feel that covering this topic would give us the ability to create software that provides an entire user experience, instead of merely features. It would also help us, as software engineers, to develop products requiring less support.

4. Conclusion

My experience as a technical support Agent allowed me to discover another side of software development and gave me a new perspective in how software interacts with their environment.

I also improved my ability to harmoniously cooperate in a team and efficiently manage my professional and personal time.

I believe that this experience will lead me to an improved understanding of users as well as leading me to the creation of better software in my future as a software engineer.

References

[i] From “Mission Statement”, available at http://www.zks.net/company/default.asp.

[ii] To learn more about ZKS partners, please consult http://www.zeroknowledge.com/media/pressrel.asp.

[iii] Brief product description is available at http://www.freedom.net/products/index.html.