



Advanced Help Desk for Enterprise System

By

Anucha Piroontanapisarn

Submitted in Partial Fulfillment of
the Requirements for the Degree of
Master of Science
in Information Technology
Assumption University

November, 2000

Advanced Help Desk For Enterprise System



By

Anucha Piroontanapisarn

**Submitted in Partial Fulfillment of
the Requirements for the Degree of
Master of Science
in Information Technology
Assumption University**

November, 2000


The Faculty of Science and Technology

Thesis Approval


Thesis Title	Advanced Help Desk for Enterprise System
By	Mr. Anucha Piroontanapisarn
Thesis Advisor	Dr. Narutep Choakjaremwani
Academic Year	1/2000

The Department of Information Technology, Faculty of Science and Technology of Assumption University has approved this final report of the **twelve** credits course. **IT7000 Master Thesis**, submitted in partial fulfillment of the requirements for the degree of Master of Science in Information Technology.


Approval Committee:



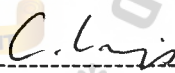
(Dr. Narutep Choakjaremwani)
Advisor



(Dr. Thotsapon Sortrakul)
Committee



(Dr. Prong Kongsubto)
Committee

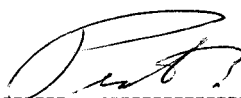


(Prof. Dr. Chitchanok Lursinsap)
Representative of Ministry of
University Affairs

Faculty Approval:



(Dr. Thotsapon Sortrakul)
Director



(Asst. Prof. Dr. Pratit Santiprabhob)
Dean

November/2000

ACKNOWLEDGEMENTS

Accomplishment of this thesis would not been possible without the continuous help and strong support that I received from various people to complete this task successfully.

I sincerely thank my advisor, Dr. Naruetep Choakjarernwanit, for his valuable guidance, positive criticisms, and advice throughout this study. I also owe a great deal of thanks to Dr. Thotsapon Sortrakul and Dr. Prong Kongsubto for their contributions in serving as my committee members and also for their useful suggestions in the pursuance of this study.

Special thanks are extended to K. Kate from Thammasart University for her kind suggestion and the useful resources, especially the book “Microsoft Sourcebook for the Help Desk (Second Edition)”.

Last, but not least, a big thanks to my beloved parents and family members who are owed more thanks that I can possibly give them.

ABSTRACT

The purpose of this report is to provide a deep knowledge in setting up a Help desk center or call center which can provide supports to end users and get users' satisfaction. The main focus is on surveying Help desk activities, analyzing the types of help desk and presenting the underlying basic pattern of help desk operations.

This report is divided into 5 chapters. Details about the objectives and scope of this report have been described in chapter 1. Chapter 2 contains the reviews about foundation and basic structure of help desk including advantages and disadvantages of various type of help desk. The steps in developing advanced help desk model and the criteria for measuring performance of help desk have been discussed in chapter 3. In chapter 4, the derived advanced help desk concept has been applied to various companies with impressive results. Finally, the summary and future trend have been presented in chapter 5.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
ABSTRACT	ii
LIST OF FIGURES	vii
LIST OF TABLES	viii
CHAPTER	
CHAPTER 1 INTRODUCTION	
1.1 Background of the thesis	1
1.2 Statement of problem	3
1.3 Objective	4
1.4 Scope and Limitation of the study	4
CHAPTER 2 LITERATURE REVIEW	
2.1 Introduction	6
2.2 A back of basic approach	
2.2.1 Basic Help Desk focus	8
2.2.2 Basic Help Desk structure	9
2.3 Tracking	11
2.4 Integrating the Help Desk	13
2.5 Clearly defining the mission	14
2.6 Establishing a clear policy	16
2.7 Establishing services	16
2.8 Queuing strategies	18
2.9 Areas to be focused	
2.9.1 Service Level Agreement	21
2.9.2 Business process re-engineering	23
2.9.3 Staffing	23
2.9.4 Reporting	23
2.9.5 Technical assessment of staff	25
2.9.6 Management team assessment	25
2.9.7 Asset management	26
2.9.8 Physical location: consolidated or distributed	26

2.9.9 Test lab and resource library	26
2.9.10 Outsourcing the Help Desk	26
2.10 Need assessment	
2.10.1 The needs assessment plan	28
2.10.2 The needs assessment team	30
2.10.3 The needs assessment tools	31
CHAPTER 3 ADVANCED HELP DESK	
3.1 Introduction	35
3.2 The Enterprise Help Desk	36
3.3 Building an effective support model	
3.3.1 Role Help Desk play	39
3.4 Steps in developing Advanced Help Desk	
3.4.1 Determine the role (mission) of the Help Desk	40
3.4.2 Determine both internal and external customers	44
3.4.3 Identify existing Knowledge bases	44
3.4.4 Establish the level of service needed from the Help Desk	45
3.4.5 Establish staffing requirements in logistical terms	46
3.4.6 Establish staffing requirement in terms of skill levels	47
3.4.7 Establish Help Desk infrastructure requirements	47
3.4.8 Determine how centralized or decentralized your Help Desk should be	51
3.4.9 Establish problem transfer & tracking procedures	52
3.4.10 Determine What, If any, software is needed and how it will be implemented	53
3.4.11 Identify and provide for security issues	55
3.4.12 Develop an “Advertising” plan	56
3.4.13 Provide mechanisms for feedback	56
3.4.14 Define components of improvement	57
3.4.15 Some additional useful information	58
3.5 Help Desk Tools	
3.5.1 Tools for information finding	58
3.5.2 Tools for communication	60

3.5.3 Problem resolution tools	64
3.5.4 Network management tools	66
3.5.5 Tools for customer training and self-help	66
3.6 Strategy for selecting tools	68
3.7 Staff modeling	
3.7.1 How to estimating required staffing by formula	69
3.7.2 Process for staffing required	70
3.7.3 Training for staff	76
3.8 Strategy for defining SLA successfully	
3.8.1 Items that might be included in SLA are as follows	77
3.9 Seven method to measure Help Desk success	
3.9.1 Addressing sampling issue	79
3.9.2 Determining content	79
3.9.3 Designing the survey	80
3.9.4 Phone surveys	80
3.9.5 Mail surveys	80
3.9.6 Online comment cards and online-voting	81
3.9.7 Providing follow-up	81
3.10 Measurement method	
3.10.1 Performance	82
3.10.1.1 Return On Investment (ROI)	
3.10.1.2 Effectiveness of call load management	
3.10.1.3 Level of proaction	
3.10.2 Evaluation	87
3.10.3 Call handling	87

CHAPTER 4 CASE STUDIES

Case Study: ABC Company	89
Case Study: XYZ Company	94
Case Study: UTO Company	98
Case Study: GAS Company	101
Result and summary of case study	104

CHAPTER 5 CONCLUSION AND FUTURE WORK	
5.1 Conclusion	107
5.2 Future work	108
BIBLIOGRAPHY	111
APPENDIX A: Maslow’s Hierarchy of Needs	114
APPENDIX B: Example list of services provided by Help Desk	115
APPENDIX C: Service Level Agreement (SLA) example	116
APPENDIX D: Example of Knowledge base article	120
APPENDIX E: Customer Satisfaction Survey (Mail Survey)	121
APPENDIX F: Help Desk Software Support	124



LIST OF FIGURES

Figure 2-1	Help Desk Focus	8
Figure 2-2	Help Desk Structure	9
Figure 2-3	Normal Help Desk Workflow	11
Figure 2-4	Mission Example	15
Figure 2-5	Queue Structure	18
Figure 2-6	Benefits Outsourcing	27
Figure 3-1	Using Knowledge base to solve problem	45
Figure 3-2	Components of improvement	58
Figure 3-3	Computer Telephony Integration Structure	61
Figure 3-4	No Self-help options	67
Figure 3-5	Self-help options	67
Figure 3-6	High skilled employee	72
Figure 3-7	Less skilled employee	73
Figure 3-8	Staff Evaluation	85
Figure 3-9	Evaluation Process	87
Figure 4-1	ABC Advanced Help Desk Workflow	93
Figure 4-2	XYZ Advanced Help Desk Workflow	97
Figure 4-3	UTO Advanced Help Desk Workflow	100
Figure 4-4	GAS Advanced Help Desk Workflow	103
Figure 5-1	eSupport Model	109

LIST OF TALBES

Table 2-1	Needs assessment plan	29
Table 3-1	Costs associated with potential employee’s skill level	73
Table 3-2	Performance metrics	88
Table 4-1	Comparison between before and after applying Advance Help Desk Concept (ABC Company)	92
Table 4-2	Comparison between before and after applying Advance Help Desk Concept (XYZ Company)	97
Table 4-3	Comparison between before and after applying Advance Help Desk Concept (UTO Company)	100
Table 4-4	Comparison between before and after applying Advance Help Desk Concept (GAS Company)	103



CHAPTER 1: INTRODUCTION

1.1 Background

A Help Desk is a central place where customer and other telephone calls are handled by an organization, usually with some amount of computer automation. Typically, a Help Desk has the ability to handle a considerable volume of calls at the same time, to screen calls and forward them to someone qualified to handle them, and to log calls. Help Desks are used by mail order catalog organizations, telemarketing companies, computer product help desks, and any large organization that uses the telephone to sell or service products and services.

The help desk is a concentration of expertise, a center staffed by professionals whose task it is to solve the technical problems experienced by the users of software within the company or by the customers who buy the company's products. The professionals, who staff the help desk, call support engineers or simply agents, use proven communication techniques and problem-solving methods to track and solve customers' technical problems. The help desk typically uses a multi-tiered approach in which engineers possessing a general knowledge of the product respond initially to incoming calls, passing on or "*escalating*" issues that cannot be solved without specialized knowledge. All calls and issues are tracked and techniques are applied to make help desk procedures more efficient.

The help desk is now a professional discipline with its own specific kinds of training requisite qualifications. Its usefulness today goes beyond that of merely helping workers to solve problems. By tracking and quantifying the attributes of those problems, and recording solutions, manufacturers learn more about their products and processes and management learns more about the way people work, while gaining insight into possible ways to improve efficiencies. The help desk is

relevant to training solutions, to product testing, and most importantly, to productivity.

The help desk has substantial backup support in the form of resource libraries, test and simulation labs, and online or in-house industry databases. Some larger companies have multi-vendor support agreements to support large corporate customers who use many applications in a networked environment.

The main responsibility of most help desk is to take reports about problems and to find solutions of those problems. To work more effectively, the help desk may track those problems and their solutions, using the information collected to allocate resources and to develop a collection of standard solutions to common problems. Often, the help desk staff has related duties, such as providing training to the users of the technology, offering on-site technical support, planning for future technology, and installing new technology.

The range of the technology supported by the help desk also varies widely. A help desk may focus on providing help with questions about only a few software programs, or it may be responsible for resolving any problems that involve technology or the application of technology. In most organizations, the focus is on providing help with computer software, maintaining and troubleshooting computer hardware problems, and finding the right people to resolve any remaining problems. Often, the help desk is also responsible for supporting phones and other office technology.

Even if the help desk provides only software support, it may not offer all levels of support. In some organizations, the helpdesk may only be responsible for supporting the basic functions within a narrow set of applications. In others, the help desk may be responsible for providing support for all of the features, including

programming assistance, for a variety of applications. In yet others, the support may be tied to mission-critical aspects of the company where immediate response is necessary.

In very large organizations, there may be more than one help desk or even more than one type of help desk. Microsoft, there are two groups that are considered help desks “*Microsoft Technical Support*”, which answers customer questions about Microsoft Software Products, and Internal Technology Group (ITG), which supports users within Microsoft with problems concerning everything from software to facilities to telecommunications (including networks, phones, and fax machines).

There is also a wide range of ways in which the support can be delivered. Some help desk rely solely on the telephone for communicating with their users. Others offer a variety of contact methods including fax, e-mail, Internet, and face-to-face interactions. Some help desks require the user to bring the problem to the help desk, while others offer on-site support for most problems. Recently there has been a shift from the reactive presumption of most help desk strategies to one of proactive service. Many help desks today actively try to anticipate problems that may occur and through e-mail or support web sites try to bring the problem solving methodology to the customers. Making these strategies work for you depends to a large extent on how clearly the help desk mission is defined and communicated, and on how well it is integrated into the company and with the user community.

1.2 Statement of Problem

Today the important of Help Desk as a source of organization has been recognized, but until now organizations have not known that they are able to operate it effectively and efficiency, because there are many activities associated with

operating help desk and being able to use it in an efficient and cost-effective manner. The organizations are very much in unclear situation about where the Help Desk is, how to use it and how to manage it effectively. They are not clear about what step in/how to build Help Desk, how to provide services and support to end-users in large organization and how to measure Help Desk performance.

1.3 Objective

The goal of this study was to examine how well Enterprise Companies use Help Desk Concept in their organization. The main focus was on surveying Help Desk activities, analyzing the type of Help Desk and presenting the underlying basic pattern of Help Desk Operations. The specific objectives were:

- ◆ To define keys to a successful Help Desk and Needs assessment.
- ◆ To study difference between Internal and External Help Desk.
- ◆ To define methodology how to measure help desk performance.
- ◆ To build the Advanced Help Desk Model.

1.4 Scope and Limitation of the Study

This comprehensive study intends:

- ◆ To study the keys to successful Help Desk and Needs assessment.
- ◆ To building the Advanced Help Desk Model.
- ◆ To define Help Desk Structure.
- ◆ To set up the Physical Environment.
- ◆ To select Support Software for Help Desk.
- ◆ To report problem channels.
- ◆ To study hiring plan for resources.

- ◆ To study methodology how to measure help desk performance.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

At one time, when a new employee began working at his or her job, older and more experienced workers were almost always on hand to act as guides when the tools of the trade didn't function properly. Then, as now, productivity was tied to the quality of the tools and their ability to withstand long hours of use. Frequently, when productivity ceased because of problems with the tools, it wasn't so much tool failure, as it was inexperience on the part of the new employee. The experts in the shop, people with more experience, more education, or people who had a "talent" beyond the call of the job, were usually on hand to move the stymied employee back on track with advice on how to use the tool, or with some adjustments to the tool itself.

Today we live in a very different world. The tools of the modern business trade are much more complicated, more abstracts, trickier to control. In addition, workers aren't necessarily concentrated in one location anymore. A company can have multiple operating centers separated by vast distances and yet all are connected by a network so that workers can reach one another instantly by e-mail, Internet, or Intranet.

In another sense, our world is still very much the same in that new employees must become familiar with the tools of their trade, and the manufacture of the tools must take steps to see that the tools themselves work properly so people can do their jobs. Software tools are so complex these days that it is really difficult to find an unofficial "expert" who can guide workers through whatever problems they may be having. And even if there are experts on site, they still have their own work to do over and above the "informal" education of their co-workers. The answer for most companies is the formal help desk.

Its purpose is to provide guidelines for both planning and accomplishing all the tasks that must be done to establish a fully functioning help desk.

There are two types of help desks: “*Internal*” and “*External*”. An internal help desk is designed to aid employees within its own company with problems relating to hardware and software tools they use to do their jobs. An external help desks is designed to support customers who have service requests concerning software or hardware purchased from the company. External help desks can also include third-party support centers who provide technical support for a company that manufactures a hardware or software product.

Much of the knowledge and many of the skills for managing a help desk are the same as those needed for managing any organization. The same guidelines that apply to developing, managing, and refining any department, often also apply to the help desk. Some of these techniques are the topics of later chapters in this paper, but before applying those principles, it is important to develop a strong foundation for them by defining the help desk mission, establishing clear service policies, and positioning the help desk correctly within the organization. From this foundation, all other decisions regarding help desk structure and activities may be derived.

2.2 A Back to basic approach

Please don't forget the basics. With all of the advancement in technology solutions, process improvements and resourcing alternatives, it is the basics that make us successful in the first place. You cannot move to the next level of the Help Desk maturity curve if you have not yet:

- ◆ Attracted and retaining qualified and trained professionals.

- ◆ Established a realistic phone schedule that identifies the **TOTAL** demand for your services.
- ◆ Created proper **SOP's** (*Source Of Professional*) and successfully delivered the message to your Help Desk professionals on what to do with all problems and requests made by your customers.

The basic of setting-up and implementing a support center are equivalent to Maslov's Hierarchy (*See Appendix A.*) of Needs where food, clothing, and shelter are you first order of business. To make the move up the organizational ladder and fulfill a strategic value-added role in the business you will first need to get out of the repetitive and reactive mode of the support process. You can never strive for self-actualization or a strategic role in the company if you cannot deliver tactics and operational procedures first and foremost!

2.2.1 Basic Help Desk Focus

Senior Management, IT Groups, and Customers are majors concern in setting up Help Desk in most organizations. After we set team, then team should define Mission, Service and Objective for setting up Help Desk. But the most important, we should concern and focus on Business.

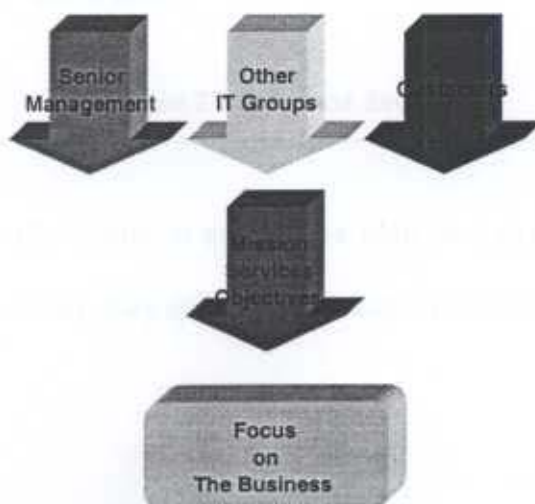


Figure 2-1: Help Desk Focus

2.2.2 Basic Help Desk Structure

Calls come into the front line. If the front line cannot handle a call, it is passed on to the second line of support or to a specialized area such as hardware maintenance. If the second line cannot resolve the call or if the call requires specialized skills, the call is passed to the third line of support, which is typically another information technology (IT) area or an area external to the organization, such as a vendor.

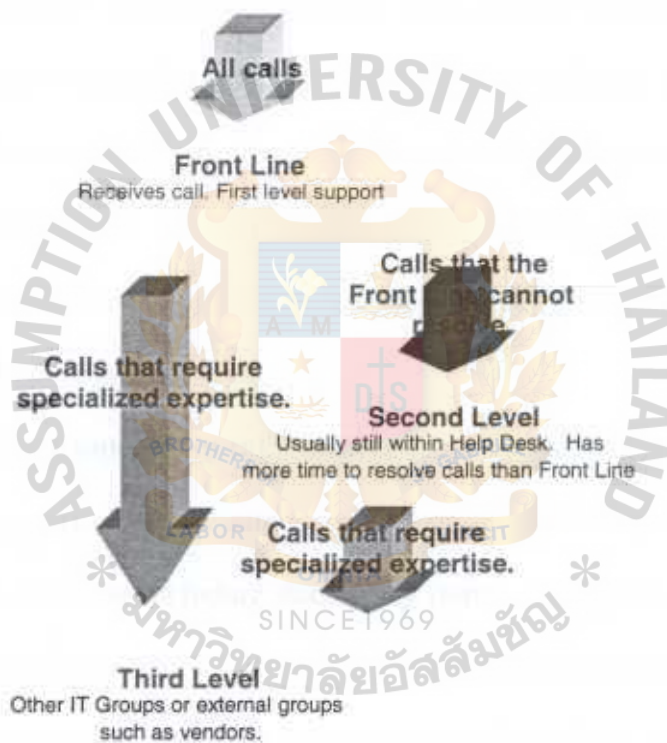


Figure 2-2: Help Desk Structure

Help Desks usually reside in an IT area such as enterprise operations, but depending on the business, they might also be found in business areas.

◆ *Front Line*

The structure of the front line can make or break the Help Desk. It is the point of first contact with the customer, the first chance to help the customer. Front lines are usually structured as follows;

- Dispatch. The call is answered and then dispatched to a second level.
- Resolve. The front line analyst tries to resolve the call, only passing it on if it cannot be resolved within a certain amount of time.

◆ *Second and Third Levels of Support*

The second level of support in a Help Desk usually consists of Help Desk analysts who are doing other things besides resolving problems passed on by the front line. Functions performed by second-level analysts depend on the services provided by Help Desk but may include software testing and installation, call elimination initiatives, marketing initiatives, surveying customers, and maintaining Help Desk (Web site).

Third levels of support typically involve areas outside of the Help Desk such as technical support, database administration, program development, an network administration and also including third party (terms of support outside of Help Desk need to be formalized so there is a clear understanding on both sides of the responsibilities involved in passing on and receiving Help Desk problems.).

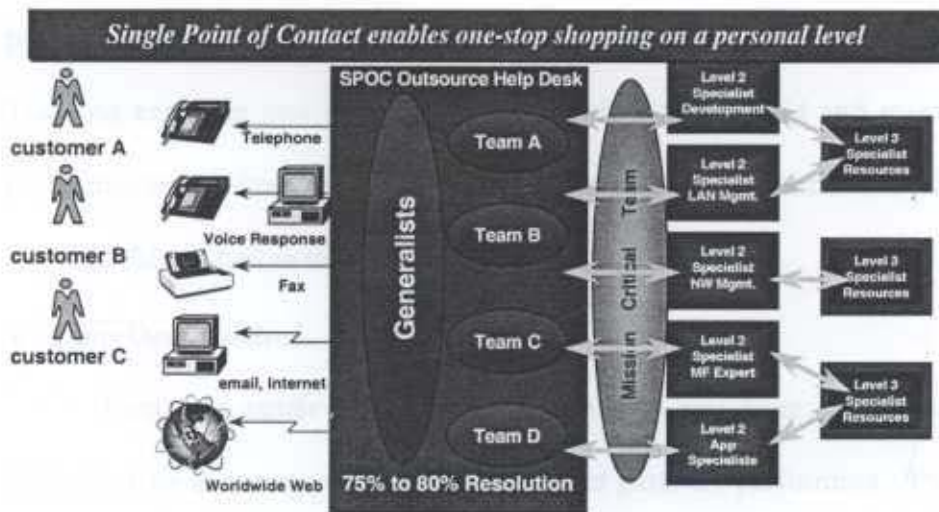


Figure 2-3: Normal Help Desk Workflow

2.3 Tracking

Call tracking means recording information about each Help Desk call and updating and monitoring its progress to closure. Tracking cannot be performed manually. Tracking information might seem time consuming at times, but the paybacks are tremendous. The information you can get from your Help Desk operation contains the blueprint you need to improve your level of service and to improve the technological environment of your customers. Tracking information can tell you everything from how many front line staff you need at any point during the day to how many and which PCs need to be upgraded to support a client/servers system that is being planned for release on the network.

Tracking brings benefits in four major areas as follows;

♦ *Asset Control*

Asset Control involves tracking hardware and software assets to facilitate their management and identification of trends in asset performance.

♦ *Problem Control*

Tracking problems, problem resolutions, and system and network performance gives you valuable data to help keeping problems under control. Tracking can help you manage network performance, build and maintain a problem/solution knowledge base, identify recurring problems, and identify major problems before they occur.

♦ ***Help Desk Control***

Data you gather from your calls can help you keep control of your Help Desk by showing you how its component parts are performing. Tracking call data will help you manage vendor performance, identify candidate processes for automation and outsourcing, measure Help Desk performance, and evaluate and manage Help Desk function. Tracking will also give you a solid basis for justify improvements and provide the data necessary for charge back.

♦ ***Customer Effectiveness***

Data tracked from calls and network management tools can increase the effectiveness of your customers. You can identify and help customers needing training, and keep customers informed of problems, unplanned maintenance, and other service interruptions.

2.4 Integrating the Help Desk

The help desk must be designed with a focus on providing service appropriately to the entire organization. Determining where the help desk is positioned within the organization influences how well help desk will be able to function. For help desk to truly provide services, users must perceive it as being both

useful and accessible. This means that the help desk must be perceived as a trusted problem-solving resource and an integrated part of the organization.

◆ ***Integration within the organization***

To determine the appropriate affiliation for the help desk within the company's organizational structure, the scope of services associated with the help desk must be considered. The key is that the help desk be positioned so that it can best provide its services and, in turn, receive any support it needs. In companies where there is an established computer services organization, the help desk usually belongs within that organization. However, depending on the services it provides, the help desk may be a better fit in facilities, customer services, technical support, or another department entirely.

◆ ***Integration with User Community***

Organizationally, it is critical that the help desk be accessible to a company's users (people who are actually using computer technology to perform their role, whether typing a memo, managing a department, or running an automated assembly line). These are the people who turn to the help desk with every specific problem and are the actual users of the help desk. Because help desk staff and managers have more direct exposure to employee issues and concerns related to technology than any other group in the company, the help desk can become the voice of the user. Ideally the relationship of the help desk with its users is characterized by responsiveness and the meeting or exceeding of expectations. The help desk must also have a mechanism for providing reports to other departments within the company. By maintaining accurate incident logs with detailed analyses of specific hardware problems, the help desk can provide information to influence the purchasing of service contracts and equipment.

Additionally, if some services are provided by sources outside of the company, the help desk can record support delivery and performance. Help desk can record valuable information such as; call-history information, which help identify problems such as design flaws or ease-of-use issue. During support calls, users frequently offer suggestions for product enhancement, feature flexibility, design change, and overall product improvement. However, all of these opportunities for product improvement begin with an well-integrated help desk that maintains open and clear lines of communication with its community of users.

2.5 Clearly Defining the Mission

It is extremely important to clearly define the purpose of the help desk at the outset with a mission statement. A mission statement is a broad description of the goals of the help desk that helps to define expectations (to be a declaration of purpose, values, and direction.). With clearly defined goals, everyone within the organization is more likely to be working toward the same end, and, with clearly defined expectations, it is easier to evaluate whether the help desk has met its goals.

Your mission will typically be one to five paragraphs long. Sometimes it will be a statement only, sometimes it will be a statement followed by values-or how you plan to achieve your mission. There is no hard-and-fast rule about what a mission should look like, but it should be:

- ◆ **Believable.** Your staff needs to believe in the mission. Something like “Exceed customer expectations” will receive very little buy-in if you’re just trying to keep your head above water, trying not to let your problems take over.

- ◆ **Achievable.** Your mission needs to be achievable. “Strive to thrill the customer at every opportunity” is not achievable. In most cases it would take more than a call to the Help Desk to thrill your customers (unless you choose to provide a very different set of services.)
- ◆ **Recognizable.** After each call you need to know whether you fulfilled your mission. Did you give “best value first time?” In other words, did you solve as much of the problem before you passed it on? Did you “focus on the needs of the business first” by resolving the customer’s immediate problems before worrying about the technological problem? If you cannot recognize when you are fulfilling the mission then it’s not much use having one.

A sample of mission statement as follow;

Example

Mission:

“To help the customer make the best use of technology in support of the business.”

Values:

We resolve problems, not symptoms.

We are proactive, actively seeking to prevent problems and eliminate reasons for calls.

We treat customers courteously and professionally.

Our top priority is to minimize the downtime of our customers.

Figure 2-4: Mission Example

2.6 Establishing a Clear Policy

For a help desk to function well, it must be clear exactly what services are to be provided and how the services are to be made available. Often, this policy is defined in the service level agreement that department managers formulate when the help desk is planned. The policy should include information about what technology is supported what level of support is available for each technology, and who is responsible for providing the support. The policy should exactly name the services that are not provided. Telling a user to call elsewhere for problem resolution affects the value and reputation of the help desk. When the problem is not within the help desk's boundaries, referring the incident is appropriate but must be done so that the user knows the problem is being moved closer to a solution.

Help desk leadership and staff must understand individual responsibilities and consequences of their actions. The process of creating accountability should empower leadership and staff and encourage ownership of problems.

2.7 Establishing Services

The services that your Help Desk provides are determined by your customer profile, senior management, other IT Groups, and your budget. The more services you offer and the more things you support, the more thinly spread your staff and resources will be. You need to focus on providing those services that give best value to the business. You also need to keep the cost of offering these services within the budget that you have. (*See more details in Appendix B.*)

◆ **Caution: Too many services**

If you try to provide too many services or support too board a range of products, you are setting yourself up for failure. You could end up in a

situation in which customers with important needs are forced to wait while you provide a service that is not as important.

◆ *Stretching the Budget*

Customers may be happy to pay for services that you cannot provide. For example, an option popular with customers is to have someone come into their department on a daily basis to give just-in-time help to people while they work—to show them better ways of doing things, to help them do new things, to answer their questions. They are typically more than willing to pay for this themselves.

◆ *Characteristics of Services*

Services must be:

- ***Manageable.*** Make sure your Help Desk doesn't take on more than it can handle.
- ***Supportive of the business.*** You have limited resources. Make best use of them by focusing on the services that deliver the best value to the business. Use input from customers, senior management, and other IT areas.
- ***Well understood and well defined.*** If they're not, customers may have expectations far beyond what your Help Desk can possibly provide. The closer your customer's expectations are to reality, the more satisfied they will be.

◆ *When things change*

You will want to adjust your services regularly, as the business changes, as your customers change, as your budget changes. Your goal always is to provide the best value to the business within the budget you have.

2.8 Queuing Strategies

Knowing that low volume queues are less efficient, how can a Help Desk improve efficiencies and thus control costs? There are 3 basics strategies that helpful to consider when planning for queuing. These strategies are:

3.8.1 Original Model

3.8.2 Merged Queue Model

3.8.3 Overflow Model

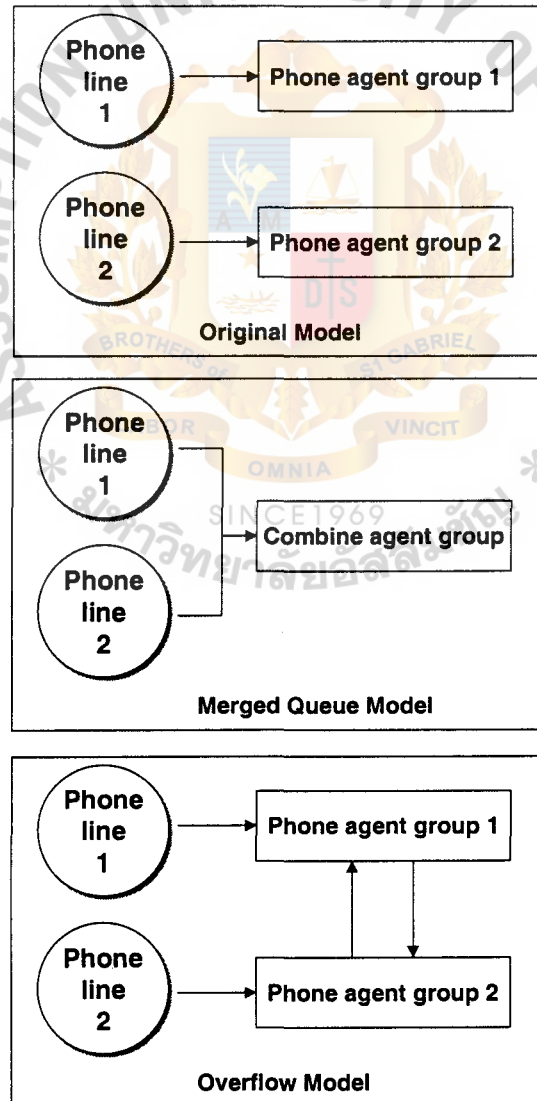


Figure 2-5: Queue Structure

◆ *Merge Queues Together*

If you have two separate queues that do not share support engineers or customers, consider training the support engineers to support the needs of both queues. The advantages are:

- The resulting single queue is now larger, thereby increasing incidents per support engineer and talk ratios. All other things being equal, any two queues combined will result in more efficiency in calls per person.
- The single, combined queue may require fewer support engineers than two separate queues and still maintain the same service level, contributing to cost control and allowing for the redeployment of some staff to other trouble areas.
- The combined queue also has the added advantage of being able to use the other queue's resources when one queue is experiencing unusually high incident volume. This reduces unacceptable delays and backlog of incidents, which can lead to longer incidents, which in turn, can lead to further backlog. The sharing resources in this scenario is achieved by introducing incident routing schemes such as overflows; if one group of support engineers is busy, the call automatically routes to a second tier of support engineers.
- Combining queues results in some synergy if support engineers support both products. For example, a support engineer who can support both MS. Word and MS. Excel may become more adept at MS. Word – Excel interaction issues than a support engineer who supports only MS. Word or MS. Excel.

Some of the drawbacks to such a system are:

- Support engineers must learn to support both queues.
- Training expenses will increase because each support engineer needs to be trained for two queues instead of one.
- For very low volume queues combined with substantially higher queues or for extremely complex support, support engineers may not stay up-to-date on support issues for the low volume, but recurring incident issues. In such cases the gain in volume efficiency may be more than offset by the lost expertise.
- When call coding is driven from the queue, issue-based reporting may require additional effort because the support engineer now mixes issue classification.

♦ ***Create Overflow Queues***

Creating overflow queues is an option available to those with fairly sophisticated phone switching capabilities. Depending on how the phone system queues the calls, the overflow could differ somewhat. When call back up in one queue because the support engineers are all busy, the group of support engineers in the overflow queue becomes available, assuming support engineers in the second group are not all busy. Therefore, extra resources are only called upon when absolutely needed. A common variant form of this is to create a queue with support engineers who can support both queues and serve as the overflow reservoir for both other queues.

The overflow queue has advantages and disadvantages similar to those of merged queues. In addition, the overflow queue has the following issues: its advantage is that it minimizes duplicate training needs and thus can

control costs, but its disadvantage is that it adds complexity to the queue and to incident reporting.

2.9 Areas to be focused

When collecting data for the need assessment, focus groups address specific areas in order to understand the existing status of support delivery and the requirements for the implementation or upgrade. One way is a model the current situation functionally and compare it to the proposed help desk. Models are more practical when dealing with discrete features of the help desk rather than describing the help desk as a whole, it is conceivable to develop a needs assessment using several models: one addressing staffing, one addressing call management, and other addressing scheduling. Here are some common topics that might be covered in a need assessment:

2.9.1 Service Level Agreement (SLA)

A Service Level Agreement is a contract between the help desk and end-user, which stipulates the terms under which the help desk agrees to resolve the problems experienced by the user community. A Service Level Agreement can be characterized in the following ways;

- ◆ It is a two-way agreement between the Help Desk and a specific group of customers. The agreement specifies services the Help Desk must provide and targets it must meet. It also specifies the responsibilities of customers using the services.
- ◆ It measures both Help Desk performance and customer compliance with the agreed-upon responsibilities.

- ◆ It is created through a joint effort between Help Desk representatives and customer representatives. Both groups must agree upon all items specified in the agreement.

SLA not only defines a Help Desk performance measurement but also clarify both customer and Help Desk expectations. Each party understands what its responsibilities are and what to expect from the other parties. The agreement contains both qualitative and quantitative measures. SLA is based on those services that provide the best value to the business.

A Help Desk might have a separate agreement with each customer area, agreements only with critical areas, or one agreement with all customers. In creating a SLA keep the following rules of thumb in mind:

- ◆ Don't forget about the people you rely on for support. Their performance affects your ability to meet measures. Spend time defining and agreeing on whom is responsible for what. Don't expect this to be trivial. It will be time consuming.
- ◆ Each item in the SLA must be measurable. If you can't measure the item, don't include it.
- ◆ Each item in the SLA should be very specific. For example, if performance reports are required, a layout of the report should be included and frequency and recipients stated. The more specific each item is the less chance there is of misunderstandings and of expectations not being met.
- ◆ Ensure everyone affected by the SLA is represented in the creation and negotiation process.

- ◆ The creation process is an iterative one. A draft SLA is created by a workgroup of representatives. The representatives then take the draft back to their groups for changes, additions, or clarifications. The process continues until all groups are satisfied with the result.

2.9.2 Business process re-engineering

Many corporations are undergoing major changes using quality initiatives such as business process re-engineering. If your company has made changes to improve productivity and efficiency, the help desk can play a key role, especially if the need assessment is developed with your company's business goals in mind.

2.9.3 Staffing Model

During the process of gathering information for your need assessment, staffing will play a major role. Budgetary constraints, hiring issues and personnel shifts all play a major role in developing the staffing model. The focus group should use the assessment tools to consider the key issues in staffing.

2.9.4 Reporting

◆ *Standard Reports*

- **Daily Reporting:** it's for individual productivity or group productivity (issues, incidents, and labor) may be useful. Daily reports are especially helpful for the Help Desk manager who is evaluating the appropriateness of labor deployment, either for specific support engineers or for the staff in general. Using daily reports facilitates

developing historical demand patterns. Demand patterns are required to be able to forecast appropriately and to allocate staff.

- **Weekly Reporting:** Weekly reports are typically summaries of daily reports. They are usually distributed for internal Help Desk needs and are normally quite useful in helping staff manage the organization. Weekly reports generally do not provide a good vehicle for reporting overall trends to upper management because of the short time frame covered.
- **Quarterly Reporting:** Monthly reports are usually summary reports of the key items being measured during the month, such as issues and incidents, costs, and customer satisfaction. Monthly reports might include breakdowns of which group received support, what major topics are, and other information useful for other than day-to-day management of business.
- ◆ **Ad hoc Reports:** Ad hoc reports are generally needed only once or very infrequently. Typically, ad hoc reports have a specific purpose. Ad hoc reports are usually prepared manually and can be time consuming to create.
- ◆ **Flash Reports:** Flash reports are short, bottom-line summaries that present a snapshot of a business situation. These are commonly used to report status to upper management. Flash reports are also used to distribution to groups that may not need the detail include in standard reports.

2.9.5 Technical assessment of staff

Help desk staff must be trained to understand the needs of the users from both a technical and a business perspective. It is critical that you understand what the help desk supports and match the right people with the support responsibilities.

There are 2 methods for assessment staff; mentoring and coaching. Mentoring provides a resource for the less experienced individual to call upon, it focus on employee development. The goal of mentoring is to increase the skills and knowledge. Mentoring is more of a long-term partnership between two support engineers and generally has specific objectives. Coaching is responsible for monitoring, assessing, and providing feedback on the less experienced individual's support related performance. The coach often possesses a particular expertise and is responsible for providing feedback to the new support engineer to help influence and improve performance, whether that improvement concerns technical knowledge, communication, or mastering another skills.

2.9.6 Management team assessment

A good management team can motivate and trains help desk staff. The management team will be developed and identified in the need assessment, although in all probability the management team will be the same people who are conducting the needs assessment. By using performance statistics and data, a needs assessment can determine whether the management team is understaffed and whether current help desk managers have the skills required to perform management tasks such as scheduling and task assignment. Interviews can turn up interesting data on training new support engineers or retraining experienced engineers when applications upgrades are rolled out. Surveys are good indicators

of attitude and employee satisfaction. User surveys can also be used to determine the effects of current management techniques on the users or customer.

2.9.7 Asset Management

Asset management is an important element of the help desk needs assessment. The help desk can assist other departments in managing assets. Many companies only track assets through purchase history. What happens if a computer is purchased by one department and transferred to another? It becomes difficult to track without inventory management software. The help desk is also a repository for databases that are useful throughout the company. The needs assessment can determine if the current in-house databases serve users needs.

2.9.8 Physical location

Physical location is an important thing that should be focused because location will imply indirectly with Help Desk performance, effectiveness and efficiently.

2.9.9 Test lab and resource library

Test lab and resource library is also important for every Help Desk, sometimes Help Desk staffs can test some hardware, and peripherals in lab test. Library is the place for storing and keeping books, paper, document, electronic form, etc. in searching information required or solving problem with users.

2.9.10 Outsourcing the Help Desk

Outsourcing is a tool that can add value to your Help Desk. Using outsourcing as a tool, applied where necessary, will bring tangible benefits:

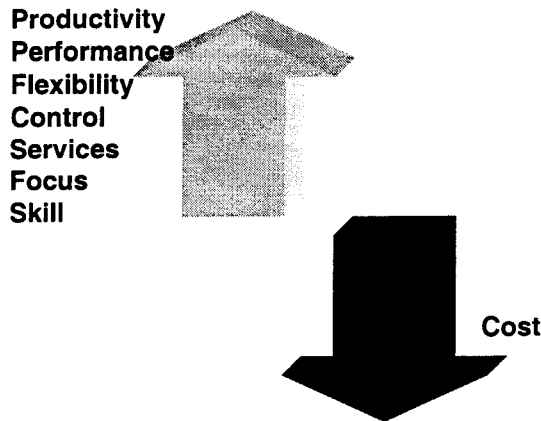


Figure 2-6: Benefits Outsourcing

- ◆ Reduction in costs
- ◆ Improvement in productivity and performance
- ◆ Increased flexibility so business requirements can be responded to more quickly
- ◆ A wider range of services
- ◆ Increased skill level
- ◆ More control over the Help Desk function
- ◆ Increased ability to focus on what really matters to the business

When you are outsourcing, you can mix and match between what you need and what third parties can offer. They want your business, so they are usually more than willing to accommodate any special requirements you might have.

The following are some of the most commonly outsource Help Desk functions. Each can be partially outsource and combine with other functions, giving you several options for the kinds of outsource services that are available to Help Desk as follows:

- ◆ Hardware maintenance

- ◆ Software maintenance
- ◆ Customer support
- ◆ Training
- ◆ Transitional work

2.10 Need Assessment

When developing requirement for a project of the magnitude of a company help desk, it is advisable to conduct a full needs assessment, without which one could not determine the true mission and optimal placement of the help desk. A need assessment is a fact-finding process that evaluates the current situation to determine what must happen in order to accomplish some particular goal. There are as many need assessment methodologies as there are companies that conduct needs assessments, however, all needs assessments have enough commonality to make worthwhile a discussion of the process as it relates to the help desk.

2.10.1 The Needs Assessment Plan

Every company has its own planning style and reporting methodology- all equally valid. Nevertheless, it is important to remember that the needs assessment plan frequently becomes the implementation plan and as such it serves your interest as help desk manager to be as thorough as possible in formulating your conclusions. The needs assessment is essentially a comparison between what exists and what you want to bring out; the difference between them forms the basis of the implementation plan. Below table is the example of Assessment Plan.

Table 2-1: Table Needs Assessment Plan

Topic	Content
Problem statement	The reasons why the company needs a help desk.
Assessment of current system of technical support	Include a diagram and narrative description of the way people in the company receive technical help. Use figures to compare actual performance with optimal. Cute future demand.
Mission statement and vision	Benefits of a help desk. State ways the rest of company will be affected by the help desk. Provide a proposed service agreement. Present an idea of what the company will be like in three years, after the help desk is formalized or updated. Conclude with specific goals and cost benefit analysis.
Action Plan	Develop a timeline and budget. Address equipment, facilities, and other infrastructure considerations, such as library and database resources, and test laboratory. Describe hardware, software, call-center logistics, incident submittal processes, escalation procedures, staff forecasting plan, hire plan, and contingency plans. Include description of vendor management plan and any outsourcing necessities. Provide all models, tools, and activities to be used.
Implementation Plan	Describe approach to making the help desk a reality. If a phased approach, prioritize activities. Assign leadership roles and responsibilities. Communicate planning results with people who have a stake in the existence of a help desk. Construct a timeline for implementation. Develop process for future planning.

2.10.2 The Needs Assessment Team

When you begin your needs assessment, you should organize a project management team. Identify who will benefit the most by having a formal help desk, or an upgraded help desk, and make those people team leaders. Include a board cross section of people across department lines on the planning team. Vice presidents, Directors, Department Heads, and Technical Leads are all candidates for the needs assessment team.

◆ Chairperson

The chairperson is responsible for organizing the list of tasks for short-range and long-range issues that the team needs to consider. He or she should assign leadership roles and design focus team structures. The needs assessment process should culminate in a written report that can be transformed into an implementation plan.

◆ Project Management Team

The project management team is responsible for managing the development of the help desk as a whole, and as such has oversight responsibility for the entire needs assessment process. Key members of the project management team are;

- The manager of the help desk.
- Department Manager or Business Owner
- A facilitator or Company Sponsor

◆ Focus Groups

In developing the help desk needs assessment, it is advisable to create focus groups composed of members of the project management team and

relevant technical leads and customers to research and report to the chairperson on the current status of technical support delivery. Focus teams should be organized around specific topic areas. Some focus team subject areas are:

- Infrastructure (hardware, software, facilities, communications, libraries, and test labs).
- Staffing including forecasting, hiring and training.
- Call-center logistics.
- Contingency planning.

After determining the company's needs, the focus group should concentrate on translating those needs into the specific requirements for the design of help desk. A focus group would include a staff scheduling manager and a human resources representative as;

- ◆ The leader or manager of the help desk.
- ◆ One analyst from the help desk.
- ◆ One application development team.
- ◆ One networking or telecommunication team.
- ◆ One financial team
- ◆ One production development team.
- ◆ One operation team
- ◆ One human resources department.
- ◆ One staff scheduling specialist.
- ◆ Representatives from each department.

2.10.3 Needs Assessment Tools

There are several tools that can be used in the needs assessment process. They include:

◆ Observation Technique

The advantage of direct observation is that the focus group collects data about actual behavior, as opposed to reports of behavior. For example, an observer can monitor telephone conversations between support engineers and users, recording the events and such data as wait time and callback procedures. A good observer can recognize efficiency problems not easily described by participants. If the focus team plans to observe overtly, it should be prepared to inform the subjects of the observation ahead of time. Generally, observation techniques are effective when attempting to describe the “current state” of the technical support delivery system. The disadvantage of this technique is that the data can be distorted by the preconceptions of the observer, the data is not easily quantifiable, and the presence of the observer can alter both the behavior and the data.

◆ User Information Surveys

The focus group should consider developing user information surveys as part of the deliverables for the project. These surveys inform all potential help desk users of the potential services the help desk has to offer. They are also a way for users to contribute ideas to the development of a help desk, or help to assess improvements. As another benefit of the survey, you should collect important information on the computer systems within the corporation, which would be very useful to the help desk for such uses as inventory.

◆ Interviews

Interviews can be conducted on a one-to-one basis or in a group. You can interview a department head, or you can get all the support engineers or the users of a particular application together and interview them en masse. The advantage of interviewing is that it provides a very useful way of building rapport with the people who are going to be directly involved with the help desk, either as support personnel or as users. Interviewing is a way to develop broad and deep data about the technical support system as it exists. It is also an effective way to get immediate feedback on the proposed changes to the technical support delivery structure. There are some disadvantages; interviews can be time-consuming. As with direct observation, interview data are not easily quantifiable, and the presence of an interviewer can corrupt the data. Interviews are useful ways to obtain information and get in touch with attitudes of users and support personnel. Interviews help focus groups to understand the way the current technical support delivery system works. Data collected from interviews can be fed back to the participants in the form of surveys to validate the findings. This validation can be very useful in developing requirements for the new or upgraded help desk.

◆ Performance Data

Performance Data is quantifiable data that can be collected to support the needs assessment. It consists of an inventory of the current call-related data such as wait times and callbacks in cases where existing help desks is being upgraded, or network system downtime in cases where a help desk is

being proposed. It provides a means to measure the efficiency of the help desk. One of the disadvantages is that, because it is quantifiable, there is a tendency to rely on this information alone as a means of establishing requirements.

There is no single method that will paint the entire picture. Using all the tools at your disposal, including interviews, observations, surveys, and performance data, will provide you with the clearest view of what the help desk can mean for your company and its customers.



Chapter 3: Advanced Help Desk

3.1 Introduction

Back to the early days of the Help Desk, it is very nostalgic we think back: a single person on a single phone, waiting for the next call for support. We were delivering something very basic to our customers, something very special and uncomplicated. The organizational model was simple: “the bucks stops here – do whatever it takes to solve the customer’s challenge”. The only tools necessary included a pen, paper, a brain, technical experience, charm and personality! The process was very intuitive; it didn’t involve escalations and notifications. The people who were chosen to take on the support effort were usually the same ones who did the implementation because they were already doing the work.

The support industry has seen unprecedented growth over the last ten years! The market began with a handful of vendors and products. It has grown rapidly to become extremely crowded, with a multitude of products, solutions and marketing messages. In the last two years, the support industry has increasingly become consolidated with fewer vendors selling integrated suites of products, such as Internet based technologies, the Enterprise Service Desk or Customer Relationship Management.

The Help Desk continues to struggle as it is transformed from a reactive and tactical “fix-it” environment to a more proactive and strategic business partner within an organization. Help Desk professionals need to spend less time reacting and repeating and more time being supportive of the customers’ business initiatives. As this shift occurs, the professionals will feel more valuable and loyal; in partnership with the customer, they will directly drive revenue for the company. The Help Desk professionals need to see that they are business-critical.

Strongly believe that the support center is based on workflow principles, requiring the appropriate process coupled with people doing the right things at the right time and using the right technologies. Everyone appreciates the importance of well-defined and properly mapped process, but we have never really given the process the priority it deserves. We still don't to take full advantage of built-in functionality and automation that would maximize the return on investment on those tools and technologies that we purchased. We continue to have very expensive technology that is underutilized and is far away from being the solution that we hoped for.

3.2 The Enterprise Help Desk

The Enterprise Help Desk (EHD) is a single point of contact for customers to report problems and make requests for products and services. The EHD not only monitors the health of the entire technology infrastructure; it is the single point of contact for processing all technology and business-related problems, and service and information requests. It's goal is to better leverage the knowledge, tools and process to increase the percentage of calls resolved at the first contact, thereby increasing customer satisfaction and lowering support costs. A continued focus should be placed on Root Cause Analysis to eliminate repetitive problems and identify ways to be proactive and predictive in order to reduce the impact of change on the business.

[enterprise means "In the computer industry, an enterprise is an organization that uses computers. A word was needed that would encompass corporations, small businesses, non-profit institutions, government bodies, and possibly other kinds of organizations. The term enterprise seemed to do the job. In practice, the term is applied much more often to larger organizations than smaller ones"].

From a business perspective, the EHD is the first and most important link in the services-profit chain. Technology is a key productivity tool enabling employees to handle the customers' experience effectively and efficiency. The EHD is responsible for the 100% availability of that productivity tool. The rewards of a focused customer satisfaction strategy are customer and employee retention, loyalty and a consistent revenue stream. "The Help Desk is where the action is for interactive service", says the META Group's Bruce Allen. With service management now a critical corporate requirement, the Help Desk presents a major opportunity for IT to prove its worth to end-users and thereby prevent outsourcing which usurps IT's role in distributed system support.

The EHD is the center of all support activity for the Technology Infrastructure. The one-stop-solution EHD will be actively involved in handling problem management, asset management, change management, network management, desktop management, technology rollouts, and recently business operations and continuity and E-Commerce. The EHD is an opportunity for savvy CIOs to invest in a front-line marketing arm for the IT department. Because of its daily interaction with customers, the Help Desk should be the central knowledge base and repository for an organization's data, information and knowledge. Decentralized, autonomous Help Desk must consolidate and automate, to keep up with an increasingly distributed and complex computer environment. In addition, Help Desk must strive to be even more effective in order to support a competitive business environment emphasizing customer service and lower costs.

This vision is where the Technology Infrastructure is available 100% of the time and the EHD, as the center of all support activity, leverages tools and technology to intelligently monitor the health of the Technology Infrastructure. This vision

dictates that you manage technology with technology, and automate your manual processes so that your employees can better manage your customer relationships. The EHD will seamlessly monitor all activity generated by self-diagnostics, threshold monitoring and event trapping, and it will be directed to take action by a process driven, rules-based escalation, notification and workflow functionally process. Taking it one step further, the problem ticket will automatically access the problem resolution/knowledge base and attempt to find the solution and either solve the problem in a self-correcting manner or instruct the requestor as to how to resolve it. Simultaneously, customers, employees and key business partners will be accessing the 7x24x365 Intranet, Internet and Extranet and using the self-service tools that enable them to research and solve their own problems, answer their own questions and have access to information on their own terms. The EHD will keep track of all infrastructure activity for historical reporting purposes and will escalate the activity log to a Certified Help Desk Professional when the customer requires additional support, information or assistance.

3.3 Building an Effective Support Model

Once the support team has been assembled and the product evaluation is fairly complete, the planning team must determine how the product will be supported. This support model addresses the call-handling methodology, incident management process, escalation process, the support team structure, and defines who will be responsible for supporting the final release. Therefore, it is essential that the team have a very good, very detailed understanding of the complexities and structure of the product, and of the current operational models used by Help Desk. The best support model will be one that most closely reflects the realities of the current business

practices so that, when the time comes, it may be seamlessly integrated with the existing processes. Below are some issues to consider as the support model is defined:

- ◆ Structure
- ◆ Support team size
- ◆ Bandwidth (Workload)
- ◆ Escalation
- ◆ Communication
- ◆ Incident handling

If the product is sufficiently complex to require support from several Help Desk support teams, it might be useful to have a detailed support boundary plan identifying how issue ownership will be determined and divided. As the product issues and support considerations become clearer, the size and scope of Help Desk support team will become easier to define.

3.3.1 Roles Help Desk Play

There are seven major roles that Help Desk must take on a day-to-day basis.

- Partner/shareholder in the mission, services, and objectives of the Help Desk.
- Problem eliminator to solve, prevents, and eliminates problems.
- Communicator
- Marketer
- Data gather
- Expert

3.4 Steps in developing Advanced Help Desk

The following are the steps in developing Advanced Help Desk;

3.4.1 Determine the Role (Mission) of the Help Desk

A Help Desk can perform any or all of the functions listed below. The ones it should perform depend entirely on the needs of the agency, the resources available, and what functions other units in the agency are performing. Functions are listed from those most frequently performed by Help Desks to those least frequently part of a Help Desk's responsibilities:

- ◆ **Problem Tracking:** - This is generally considered the distinguishing feature of a Help Desk as opposed to other technical support models. The Help Desk provides as single point of contact through which all technical problems are routed. Whether the Help Desk actually solves problems or passes them on to other units for problem resolution, the Help Desk is responsible for recording the status of a problem its initial reporting through its final resolution. Almost all Help Desks have "Problem Tracking" as a responsibility. Still, however, one or two agencies do not. While there is no universal Help Desk function "Problem Tracking" comes the closest.
- ◆ **Problem Solving:** - Almost all Help Desks are responsible for some level of problem solving. In some cases, the Help Desk is solely responsible for problem solving. More commonly, however, the

Help Desk is responsible for making a preliminary attempt at fixing the problem, using a set of standard solutions. If a problem doesn't have a standard solution, it is then passed along to other units within company, or a call is placed to vendor support.

- ◆ ***Liaison to Vendor Support:*** - When it's necessary to talk to a vendor's technical support, the Help Desk is frequently responsible for making the call, providing the warranty information, translating the vendor's "tech-speak", etc. In a third of all agencies where the Help Desk does vendor liaison, only the Help Desk is permitted to make such calls. The advantage to this approach is that all information is in one place and both the agency and the vendor know whom to contact. The disadvantage, however, is that the Help Desk can become a bottleneck, especially if it's swamped with other duties. Therefore, another third of all allow end users to contact vendors directly for some problems, but must go through the Help Desk for others. Frequently this is a consequence of vendor contracts. Some vendors charge additional fees for every designated contact person. Thus an agency that prefers to allow users to contact vendors directly might still have to require users to go through the Help Desk for some systems, either because such a fee schedule is in place, or because the system is so complex that an expert is needed to report the problem correctly.
- ◆ ***Information Booth:*** - Frequently, the Help Desk is not only the place for getting technical problems solved, it is also the place to get basic information such as Service hours and telephone

numbers. Rough four-fifths of all Help Desks use as an internal information booth. Half of all use their Help Desk as an information booth for external customers, giving out the Help Desk's number to some or all of the general public.

- ◆ ***Hardware and Software Installation:*** - Roughly half of Help Desk includes hardware and/or Software installation as part of services. Frequently this is simply because on other unit is available to do so. Another reason that installation might be viewed as a Help Desk function is that by insuring that the installations are done correctly, the Help Desk reduces the number of problem calls it will receive in the future. On the other hands, the nature of installation work is at odds with the nature of most other Help Desk function. Consequently, the other half of all assigns installation to other units, or relies upon vendors.
- ◆ ***Inventory of Hardware and/or Software:*** - Roughly half of all perform inventory control through the Help Desk. Once again, the most common reason for doing so is simply because no other unit is available to do so. Frequently, however, a Help Desk needs to know what hardware and software is installed at a given inventory purposes, many Help Desks feel that inventory control is a natural fit for the Help Desk. On the other information found in purchasing and finance units. Therefore, the other half of them don't do inventory control through the Help Desk.
- ◆ ***Hardware and Software Selection and/or Evaluation:*** - Slightly under half of all use their Help Desk to not only support existing

hardware and software but to also select or evaluate new purchases. The reasons for doing this are either no other unit is available or that by doing so, the Help Desk reduces trouble calls in the future. Over half of all have other units available to perform such evaluations. By assigning these tasks to other units, they can keep their Help Desk staff available for answering phones or other duties.

◆ **Training:** - Two-fifths of all make the Help Desk responsible for either coordinating or conducting training. The argument for including training as a Help Desk responsibility is that frequently trouble calls are the result of insufficient training; end users either does something that they shouldn't, or fail to do something that they should. Over time, Help Desk can detect patterns of problems arising from people not knowing what they should or shouldn't do. These patterns can then be the basis for conducting or recommending additional training. Three-fifths of all with Help Desk, however, assign training functions elsewhere. Training requires a different set of skills than most other Help Desk functions. Also, the Help Desk may have too few staff to add training to its list of duties.

◆ **Miscellaneous Functions:** - Especially in smaller companies, the Help Desk may be the only source of technologically skilled staff. As a result, these Help Desks may pick up responsibility for miscellaneous technical projects, such as creating and Internet Web Page. Again, the criterion for what if any, miscellaneous duties

you assign your Help Desk depends entirely on your agency's particular circumstances. Keep in mind, however, that miscellaneous projects have a tendency to accumulate. They can quickly drain resources away from the main functions of your Help Desk.

3.4.2 Determine Both Internal and External Customers

The goal when determining the customer base is to identify groups with similar needs. Usually customers are going to have different needs than internal customers. Even those two groups may need greater division. Technical workers, for instance, are likely to have different needs than clerical workers. Identifying the needs of separate groups will help you identify what resources are needed to devote to each. In some cases, it may be best to create separate Help Desks for each set of customers. More likely, however a single Help Desk will be created with separate procedures for each customer group. Knowing how many customer groups need to be supported will also influence such things as selection of Help Desk software.

3.4.3 Identify Existing Knowledge Base

“Knowledge base” simply means a collection of useful information, usually organized in some useful fashion, such as a manual. The phrase “Knowledge base” is used to avoid specifying the medium upon which the information is stored. Knowledge bases include manuals, paper lists, computer files, videos, and anything else that contains useful information. Prior to establishing a Help Desk, most agencies have many knowledge bases,

in many forms of media, scattered throughout the agency, with no particular overall organization. One of the benefits of a Help Desk can be the creation of a central repository of such information, using a common form of access. Typically, that common form of access is some type of computer software.

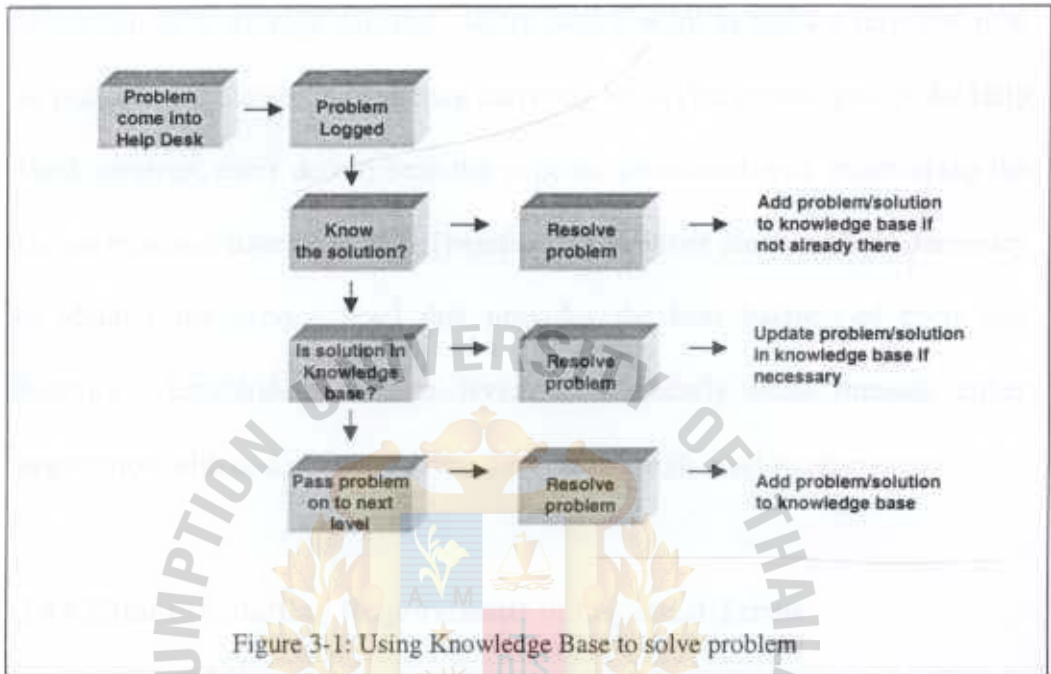


Figure 3-1: Using Knowledge Base to solve problem

In knowledge base, we can classify into Articles that there are many components in Article as follows; (see appendix)

- Problem Name
- Apply for what kind of Operating System
- Symptom
- Cause
- Resolution

3.4.4 Establish the Level of Service Needed From the Help Desk

Trouble calls generally do not occur in a steady fashion. There are peaks and valleys of demand, both from day to day and from hour to hour.

Determining staffing requirements is not only a function of the total workload, it is also a function of how quickly problems need to be addressed when they occur. If response needs to be immediate, then staffing levels have to be at or near peak demand. If response can be delayed by hours or days, then staffing levels can be at average demand. Users naturally want as quick a response time as possible. Since no State agency currently has a chargeback policy for Help Desk services, users do not bear the expense associated with maintaining the fastest response time possible. Therefore, some other mechanism is necessary to identify the service level that provides the best balance of costs and benefits. Establishing service levels is frequently done through either negotiation with end users, or at the direction of high level management.

3.4.5 Establish Staffing Requirements in Logistical Terms

This refers to the basics of how many staff will be required to have enough people working during the hours that the Help Desk operates, and what hours the Help Desk will operate. A tenth of all agencies surveyed operate Help Desks 24 hours a day, 7 days a week. The remainder operates only during the normal business hours of the company. Again, this becomes a question of customer need and available company resources. If customers are law enforcement or emergency service companies, which typically operate around the clock, the Help Desk will probably need to be available to them all hours of all days. If customers are fellow agency staff working normal business hours, then the Help Desk can probably operate only during normal business hours.

3.4.6 Establish Staffing Requirements in Terms of Skill Levels

The skill set needed by Help Desk Staff will be driven mostly by the functions that the Help Desk performs. If the Help Desk acts solely as an information booth, or limits itself to problem tracking rather than problem solving, then it can be staffed by clerical workers with strong people skills and some organizational skills. The more problem-solving activities the Help Desk performs, the greater the need for staff with both strong people skills and strong technical skills. Currently, companies draw from clerical, computer operations, and/or computer programming titles to staff Help Desks.

Another issue regarding skill levels is the training of Help Desk Staff. Since it's unlikely that staff have ever worked in a Help Desk environment before, staff must be trained in the systems being supported and also in Help Desk procedures. Staff from technical areas especially may need training in telephone techniques and how to communicate with non-technical individuals.

3.4.7 Establish Help Desk Infrastructure Requirements

This refers to such basics as physical site, furniture, telephones etc. Quite probably, the needs of Help Desk staff will be noticeably different than the needs of other staff. Some points to consider:

- ◆ **Telephones:-** For most Help Desks, phone using is constant, and hands need to be free to access manuals or computer keyboards. Therefore, help staff may need headsets rather than hand-held phones. If staff need to frequently move away from their phone, the headsets may have to be wireless, or be equipped with extra-long hand set cords. Presumably, a company will want a single

phone number for customers to dial, but will have Help Desk Staff answer that number. There are 2 ways that this can be accomplished.

The first way is through a “bridge” which simply connects all phones run from one line. When a call is received, all phones ring. Staffs are responsible for deciding who will pick up the current call. Unlike multiple phones at home, a bridge does allow more than one call to be active at the same time.

The second way is through an “Automated Call Distributor” or “ACD” for short. An ACD is a device that receives all incoming calls on a particular phone number and then routes those calls to other phones, bases upon whatever rules have been programmed in to the ACD. Typically, the rule is to pass the call on to whichever Help Desk phone has been idle the longest. Only the selected phone rings and the staff member assigned to that phone is responsible for taking that call. The larger the Help Desk, the more likely the need for an ACD. Usually, ACD systems generate statistics such as total number of calls, average length of call, and how many calls are handled by each agent.

Another potentially useful piece of phone equipment is an “Automated Attendant”. An Automated Attendant is a phone menu system, as in “If you would like...Press 1. If you wish to ...Press 2” and so on. For a Help Desk, it can be used to provide some level of assistance when the Help Desk is not available, to screen calls, and to answer common questions and problems

without typing up Help Desk Staff. Although Automated Attendants are built into some privately vended ACDs doesn't have an Automate Attendant service.

- ◆ ***Access to Production Systems:*** - There are many components to this issue. Security is one and is discussed elsewhere. Another is basic wiring and workstation placement. If the Help Desk is to do problem solving on production systems, it will need the ability to access the production systems. If the Help Desk is physically located away from production sites, then some way has to be found to link the two locations either through dedicated wiring or through some form of dial-in via telephone (modem) connections.
- ◆ ***Equipment:*** - Usually this means computer equipment, but the circumstances of the company and Help Desk may require other equipment, such as microfiche readers. Each system supported may require a separate terminal or PC. In addition, if the Help Desk uses software for call tracking and/or a reference, a separate computer or terminal may be needed for this as well. Besides identifying how many systems need their own terminal, how many terminals of each type will needed will also need to be determined. For example, does each agent need their own terminal or can a single terminal be shared? Besides computer terminal or PCs, a Help Desk will probably need at least one printer and may need a fax machine, especially if supporting remote sites.
- ◆ ***Furniture:*** - When multiple terminals or PCs per workstation are used, ordinary furniture may be insufficient for the Help Desk's needs.

Desktop with keyboard shelves wide enough for two keyboards at once may be needed. Stand-alone equipment tracks capable of supporting multiple terminal and/or PCs may also be required as well as bookshelves, printer stands, and fax stands. Even if each Help Desk agent needs just one phone and one terminal, a larger than standard desktop may be necessary to provide sufficient space for a large phone console, the computer, and room to place manuals, working notes, etc.

- ◆ **Soundproofing:** - For most Help Desks, the principal activity is nearly constant telephone conversations. Therefore soundproofing may be necessary to shield agents from each other's conversation and to shield agents from external noise. Conversely, agents may need to speak with one another to do problem solving. Careful attention needs to be paid to space design to simultaneously allow conversations and to block noise as needed.
- ◆ **Physical Location:** - Usually, the criterion for locating the Help Desk is simple: put it where there's room for it. If there is a choice where to locate the Help Desk, several issues should be considered. Many companies locate their Help Desk within their computer room. The advantage to this are that it gives Help Desk Staff immediate access to many of the devices they may need to monitor or repair; it automatically provides a climate controlled environment for Help Desk equipment; and, it provides a level of physical security by restricting access to Help Desk equipment. The disadvantages can be that computer rooms are typically noisy environments, and the lack of physical access that provides security is also a lack of physical access

that can make customer contact difficult. One factor to consider in locating the Help Desk outside the computer room is air flow and temperature control, especially if the Help Desk is going to be equipped with multiple PCs or computer terminals. In a confined space, these can generate enough heat to cause equipment failures.

- ◆ ***Sharing Records:*** - In most environments, Help Desk Staff will need some method of sharing records with one another; identifying which problems recur and how they were previously closed; which problems are still and who's handling them; and, which problems can be closed. In a small agency, this can possibly be handled through a central logbook and/or papers kept in a filing cabinet. More commonly, however some form of computer software should be used.
- ◆ ***Providing a Quiet Area:*** - The job of Help Desk agent can be stressful, especially if the Help Desk is responsible for some level of problem solving. The workday consists of dealing with problems and people upset by those problems. To help relieve some of the stress, a few companies have created a "Quiet Area". This is a space sectioned away from the work area where the company can "take a breather" from the phones. Quiet areas often feature more casual furniture than work areas, some form of sound proofing, and some visual relaxant.

3.4.8 Determine How Centralized or Decentralized Your Help Desk Should Be

In term of centralizing or decentralizing Help Desk functions, there are basically three, non-exclusive models. The first is fully centralized: whenever

an end user has a problem, he places a call directly to the single Help Desk serving the entire agency. This is the most common approach, especially for smaller agencies. The second model is multiple Help Desks: when an end user has a problem, he places a call directly to the Help Desk assigned to his unit. That Help Desk then either solves the problem or refers it to the central Help Desk. This model is most commonly found in agencies with multiple offices around the state. In this case, each office has its own Help Desk with the central Help Desk located at the central office. The third model is a single Help Desk, but with assigned Help Desk contacts in each user unit: when an end user has a problem, he doesn't call the Help Desk directly. Instead, he notifies the local Help Desk contact, who is commonly not a member of the Help Desk staff but a first level supervisor of the end user's unit. The local Help Desk contact then either fixes the problem or contacts the Help Desk on the end user's behalf. Agencies using this approach have large numbers of clerical workers performing similar work. As a result, most problems are of a similar nature and can be solved without much technical expertise.

3.4.9 Establish Problem Transfer & Tracking Procedures

After establishing what role the Help Desk will play in problem tracking and/or solving, specific procedures must be prepared for each category of problem the Help Desk will be expected to address. To reduce the magnitude of this task the procedures of fellow agencies should be examined, as should the problem solving procedures currently in place internally. Rather than developing procedures from scratch, existing procedures could be modified to include the role of the Help Desk. For example, suppose that for

an existing application, all problems are routed to the programmer who it. In an interview with that application, it is discovered that he has a “cheat sheet” for solving the most common problems with the application. If, it has already been determined that the role of the Help Desk will be problem tracker and preliminary problem solver, the new procedure might provide for all trouble calls regarding the application to go to the Help Desk, which will then make an initial attempt to solve the problem using the programmer’s “cheat sheet”. If the problem cannot be solved there, the Help Desk will then pass the problem on to the programmer who will assume responsibility both for solving the problem and for notifying the Help Desk when the problem is solved. Procedures might also be created whereby the programmer can tell the Help Desk how he solved the problem so that the Help Desk can resolve the problem directly, should it occur again.

In the process of establishing overall problem transfer and tracking procedures, consideration should be given to developing “triage” procedures. Because not all problems are of the same urgency and importance (and it is unlikely there’ll be enough staff to handle all problems at all times), some rules need to be established for identifying which problems will take procedure over others.

3.4.10 Determining What, If Any Software is Needed, and How It Will Be Implemented

For the propose of maintaining Help Desk records, the use of some form of software is recommended. The records will usually indicate when a problem was reported, whom it’s been assigned to, and when it was closed.

The records may also include some form of knowledge base, which may provide general problem solving information or case-specific information on how each problem was resolved. The software used to record this information may be either a general-purpose package, or a Help Desk specific package. General-purpose software that might be used for Help Desk purposes includes database software, spreadsheets, and word processor. Any of these can be used to create a central database, spreadsheet, or document that all agents access to record problem reporting and disposition. Currently, multiple brands of all three-software packages are available from private vendors on State contract.

The use of general-purpose software for Help Desk purposes can be awkward especially if the Help Desk performs problem solving. Generally speaking, the larger the Help Desk, the more likely the need for Help Desk specific software. Presently, no Help Desk specific software is on State contract although a few vendors indicate that they are applying for contract status. Although there are over 200 brands of Help Desk specific software, only a handful is currently used by NYS agencies. Most agencies are willing to provide demonstrations of the software that they use.

Help Desk software is extremely varied in both price and features. Some packages, for instance, are strictly call recording and provide for exactly one type of call. Others include problem-solving components and provide for the ability to customize screens so that a separate screen can be used to record each different type of call. There is almost certainly Help Desk software available with the features that the Help Desk needs.

After selecting software, hardware must be selected to run it on. One issue to consider is whether or not the Help Desk hardware should be independent of the rest of the agency (creating a Help Desk only LAN, for example). An argument for isolating Help Desk equipment is that this increases the likelihood that Help Desk resources will be available when other agency equipment fails. For instance, instructions on how to recover from a mainframe crash are of little value if they're stored on the mainframe that crashed. Also, by isolating Help Desk equipment, security risks decrease. Help Desks may contain "hacker" information such as master passwords and techniques to bypass system security. Isolating Help Desk systems reduces the chances of someone outside the Help Desk software within the overall agency system, however. First, there is cost: it is generally less expensive to create and maintain one system than two. Second, it may be desirable for other units to have the capability to access Help Desk records especially if those records include non-sensitive problem solving techniques.

3.4.11 Identify and Provide For Security Issues

If the Help Desk is to do problem solving, it will need some level of access to agency computer systems. Generally speaking, the greater the access, the more problems the Help Desk can solve directly. On the other hand, the greater the access, the greater the security risk. It must be determined what the Help Desk will be empowered to do and what, if any, authorizations will be required beforehand. In addition, audit trails may be necessary, not only to detect unauthorized access, but also to track how a given situation came to be in the first place.

After determining the level of available to the Help Desk, barriers must be established to that access for unauthorized users. These barriers can be logical (e.g., passwords) and physical (e.g., security doors). If the Help Desk supports remote sites, consideration should be given to implementing dial-back systems for remote terminal access. In such a situation, the remote terminal dial-ins to the Help Desk to initiate contact. That initial contact does not create an active session, however. Instead, the Help Desk computer then places a return call to the terminal initiating contact. The return call is placed to a previously authorized phone number. By only allowing contacts to authorized numbers, dial back increases the likelihood that only authorized users can access the system.

3.4.12 Develop An “Advertising” Plan

Once the Help Desk is developed agency employees must be made aware that the Help Desk exists, how to contact it, and when to contact it. Care should be taken to raise interest in using the Help Desk without raising user expectations above what the Help Desk can actually provide.

3.4.13 Provide Mechanisms for Feedback

Feedback for a Help Desk works both ways: the Help Desk needs to hear from customers on ways to better match Help Desk service to customer needs, and the Help Desk can be a source of ways to improve agency products and ways to avoid problem repetition.

Feedback from customers can involve anything from the classic suggestion box to formal benchmarks. In a formal benchmarking system,

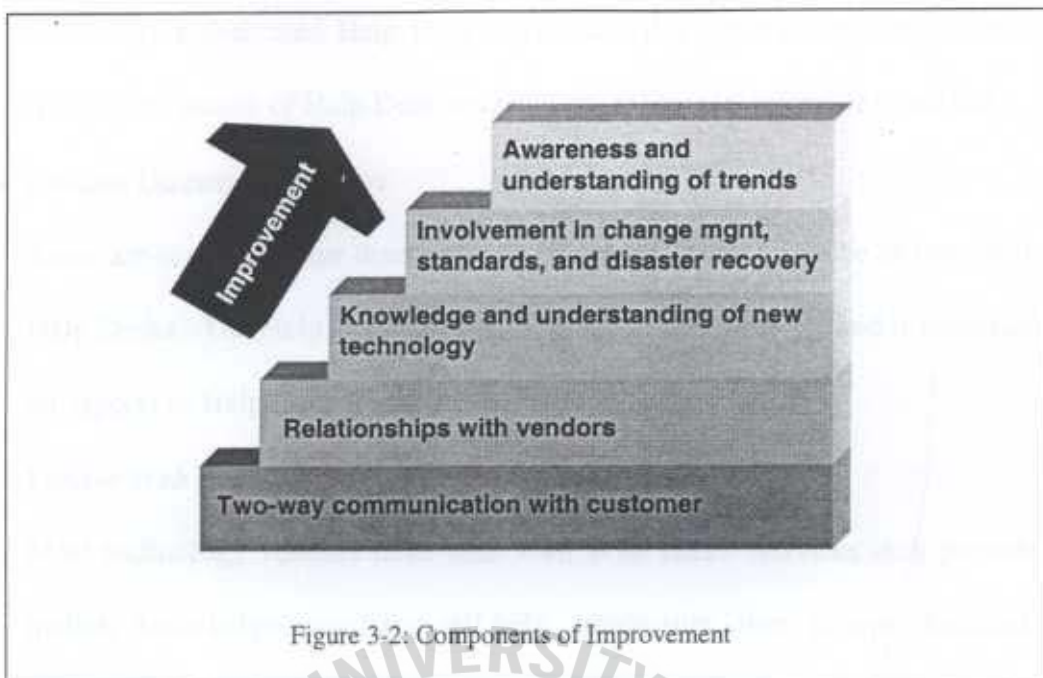
fixed, measurable goals (such as time customers are kept on hold or length of call) are established at the start of a time period. The Help Desks' performance is then measured against those benchmarks. If benchmarking system is used, extreme care needs to be taken with the choice of benchmarks. For instance, a benchmark that measures numbers of calls per hour could result in abbreviated calls that are neither polite nor informative. Many of the traits desired in a Help Desk are not easily measurable. Calming customers and thoroughly detailing the problem, for instance, are important but not easily measurable. If a benchmarking system is used, benchmarks should be developed in conjunction with representatives of the customer base.

Whenever customers provide feedback, it is important that Help Desk management acknowledges customer input, even if the suggestions can't be implemented. Otherwise, customers will eventually give up on making suggestions and the Help Desk will slowly but surely become inconsequential.

Good diplomatic skills are necessary for providing feedback to customers. Frequently, the Help Desk will be reporting what are in essence errors on the customers' part. The focus of such feedback should be on techniques to improve future procedures. Avoid language that might be constructed as "blame" for failings in past procedures.

3.4.14 Define components of improvement

After establishing Help Desk, we should consider in term of improvement of Help Desk as follows;



3.4.15 Additional Useful Information

Presently, plans are underway to establish association agency Help Desk managers. This association should prove an excellent source of contacts and references for creating and improving Help Desk operations.

3.5 Help Desk Tools*

Help desk tools give the Help Desk the ability to manage call traffic, track and control individual calls, resolve problems at point of call, and manage technology assets, as well as an infinite number of other tasks that might fall within an individual Help Desk's role. Given the complexity and range of technology being supported by most Help Desks, these takes would be impossible without tools.

3.5.1 Tools for Information Finding

- ◆ *The Help Desk Frequently Asked Questions (FAQ) Site*

Started by a dedicated Help Desk aficionado, this site has become the most recognized source of Help Desk information, resources, references, and links.

◆ ***On-line Discussion Groups***

There are several on-line discussion groups in areas that might be of interest to Help Desks. The Help Desk discussion group is one of these, and it addresses all aspects of Help Desk management.

◆ ***Vendor Web Site***

Most technology vendors have their own Web sites. Services they provide include knowledge bases for self-help, production, user groups, feedback opportunities, suggestions for more effective use, and so on.

◆ ***Magazine on the Internet***

Most computer magazines have Web sites on the Internet. You can do keyword searches to browse article archives and pick up information on products, events and industry news. These sites are extremely valuable to Help Desks and offer management ideas, product comparisons, news of new technologies, and so on. Some of the most relevant are the following:

- a) Services News, at www.servicenes.com
- b) Support Management, at www.supportmanagement.com
- c) LTI Technomedia (Computer World, Network World, Info World Canada, CIO Canada), at www.lti.on.ca
- d) Network Computing, at www.networkcomputing.com. This is part of a larger network of technical magazines, sourced at www.cmpnet.com
- e) PC week, at www.pcweek.com. This is also part of larger network of technical magazines, sourced at www.zdnet.com

3.5.2 Tools for Communication

◆ *White Boards*

Sometimes the simplest tools are the most effective ones. If Help Desk staff become aware of serious problem, they might write a note on a central white board that is visible to all other Help Desk staff so everyone is made aware of the situation. Some Help Desk management systems have on-line white boards where staff can post messages. The challenge with on-line white boards is that staff members have to remember to check to see if there are new messages.

◆ *Voice Mail*

Voice mail can be part of your Help Desk phone system. It can take messages when all Help Desk staff are busy and can be used to broadcast messages about the system. It must be used carefully on a Help Desk-if you don't get back quickly to people who leave messages, then people aren't going to use voice mail. They will find another way to get help, and it might not be through your Help Desk. Voice Mail can be integrated with Help Desk software and/or other telephone technologies.

◆ *E-mail*

E-mail is not only a general-purpose communications medium, allowing communication with everyone who has a user ID for that system, it can also be integrated with Help Desk software to allow customers to interact directly with the Help Desk system. Some Help Desk systems have interfaces that allow customers to log problems and generate call tickets automatically by sending an E-mail message into the Help Desk. In the same way, when a log is closed, an automatic notification can be sent to the customer. Other Help

Desk systems allow for even more integration of E-mail into the Help Desk function.

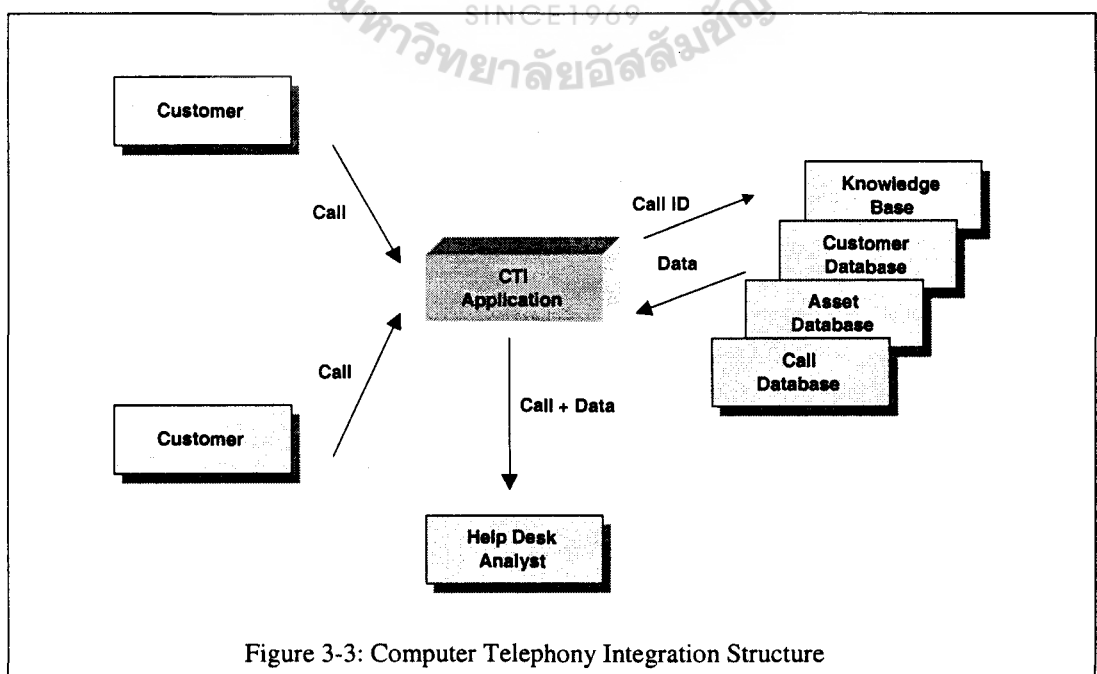
◆ *Electronic Displays*

Electronic displays can be set up in customer areas to keep them up to date on system status. If there is a problem, the display will either flash or beep and a message indicating the nature of the problem will be displayed. This will cut down on calls to the Help Desk. Customers will get information about system status when a problem occurs simply by looking up at the display.

3.5.2.1 Telephone-Related Technologies

◆ **Computer Telephony Integration (CTI)**

Computer Telephony Integration (CTI) is the integration of computer and telephone technology to allow greater and easier communication between the two. CTI will perform functions such as simultaneous call and data transfer, which means that the Help Desk analyst gets not only the call but a display of caller information.



An example of a CTI application is an interactive voice response (IVR) application that allows the customer to perform a computerized function, such as information retrieval or terminal reset, by pressing keys on the telephone keypad. Other popular CTI applications include fax-on-demand; intelligent call routing, in which an auto attendant answers the call and routes it to a specific extension; and interactive voice response (IVR), which allows the customer to enter requests via a touch tone phone. The Help Desk might use an IVR that interacts with the customer to try to solve a problem by sending a fax, or by offering a selection of prerecorded solutions for the customer to listen to. Help Desk analysts can also initiate faxes from their PCs. If an analyst finds that explaining a solution is too complex or time consuming, it might be easier for that analyst to simply fax the information to the customer using a fax server on the LAN.

CTI can also provide call conferencing; call transfer via computer, which is as simple as dragging names onto a phone icon; multiple message types in the same mailbox; and intelligent call forwarding, an application that can find you and forward your calls to you.

◆ **Automatic Call Distributor (ACD)**

At its simplest, an automatic call distributor (ACD) is a phone system, or software within a phone system, that manages the flow of calls coming into the Help Desk. An ACD typically routes calls on a first-come-first-served basis to the first available Help Desk analyst. If all analysts are busy, caller are put into a queue and played a recorded message, such as “All Help Desk staff are currently busy; your call will be answered as soon as a Help Desk analyst becomes available”. The ACD monitors the queue and sends the caller

who has been in the queue longest to the next available operator. The ACD monitors routed calls to make sure they are being distributed evenly among staff. More sophisticated ACDs ask customers to select from a list of options depending on the nature of their problem so that their call can be routed into the appropriate area. The ACD also provides statistics for calls such as number of calls coming in, number of calls abandoned, time on hold, and time per call.

◆ **Automated Attendant**

A basic automated attendant for the Help Desk answers a customer call with an automated greeting that offers a selection of options, then routes the call based on the option selected. The options usually include transfer to a human operator. Automated Attendants can also be much more sophisticated. They can anticipate a caller's needs-based on where the caller is calling from, for example – and can be integrated with other technologies to use networking and voice-response features to route calls and give out information. Such integration can give customers the ability to check on the status of their Help Desk calls by entering their call ticket numbers. It can also give customers the ability to select an operation and get prerecorded response to frequently asked questions. While customers are on hold, the automated attendant can play prerecorded messages. Some automated attendants can make use of automatic number identification to pass calls on to Help Desk analysts who are servicing specific areas. Companies frequently use automated attendants to provide a reduced level of after-hours support.

◆ **Interactive Voice Response (IVR)**

Interactive Voice Response (IVR) is a combination of hardware and software that allows a customer to interface with other technology, such as a mainframe, LAN, or fax machine, to get information or to perform a specific function. The customer typically makes a selection from a menu of options and then enters any data required via the telephone keypad. The IVR takes that data and acts upon it depending on the function requested. An IVR can fax selected documents back to the caller, provide prerecorded information on a specific topic, give the status of a job, reset terminals and printers, and reboot LAN file servers. The IVR can also be set up to interface with a call management system to allow customers to report problems or make requests and to check on problem or request status.

3.5.3 Problem Resolution Tools

◆ Knowledge Bases and Expert Systems

With respect to a Help Desk, a knowledge base is a database of diagnostic information that helps the Help Desk analysts solve problems. Although often referred to as reasoning systems, expert systems are not really capable of reasoning, only of knowing. Human find reasoning to be a time-consuming process, and what we tend to do is store the results of our reasoning for later reference. That stored information is what we put into the expert systems.

An expert system is composed of a knowledge base and a shell. The knowledge base can be structured in various ways, but it always contains the knowledge-information that will suggest to the user of the system what to do or what conclusions to reach under a specific set of circumstances. The knowledge base is built by the experts who know how to solve the problems

that might occur. The shell of the expert system is the part that contains the mechanism for accessing the knowledge base and the user interface. The knowledge base-searching mechanism is sometimes call the “inference engine”. Several vendors offer expert shells, which companies can customized to their own requirements by providing the information. The shell contains logic that is the result of years of AI research and that would take a significant time to re-create.

◆ **Remote Diagnostic Software**

Remote diagnostic software products allow Help Desk staff to take over a customer’s local or remote PC session from their own workstations, so they can help resolve any problems the customer is experiencing. Help Desk staff can see exactly what the customer was doing at the time of the problem and what the customer’s PC environment looks like, including configuration files. With remote diagnostic software, staff can watch the screens and operate the keyboards and mice of any node on the LAN. Privacy concerns from Help Desk customers are addressed by including varying level of security, such as requiring the end customer to allow entry. These tools are a time-and – resource saver and should be part of the tool kit of all but the smallest Help Desks. They give the Help Desk staff the ability to perform fast and accurate problem diagnosis from their own workstations without asking too many technical questions that the customer might not be able to answer and without having to rely on the customer’s version of what happened.

◆ **Internet Access**

Various components of a Help Desk management system can be made available via the Internet through the use of Internet access software, which

may take the form a Help Desk system option or a third party plug-in. This software typically gives customers access to external knowledge bases and internal documents, such as manuals in word processing format, so they can obtain their own problem resolutions. Customers can also create and inquire against call tickets. Remote Help Desk analysts can access call information, view call history, and perform other Help Desk management functions regardless of their location. Some versions of this software also offer the ability to create and distribute Web Page.

3.5.4 Network Management Tools

Network Management systems monitor the performance of all the components, or specific components, or a network and can flag occurrences of problems, degradation, or unusual activity. Network activity can be watched from a workstation, and a graphic representation of the network will show where any problems, abnormalities, or degradations occur. Network management systems offer functions such as traffic monitoring, software distribution, storage management, and software license management.

3.5.5 Tools for customer training and self-help

There is some self-help options that can be offered to our customers as follows:

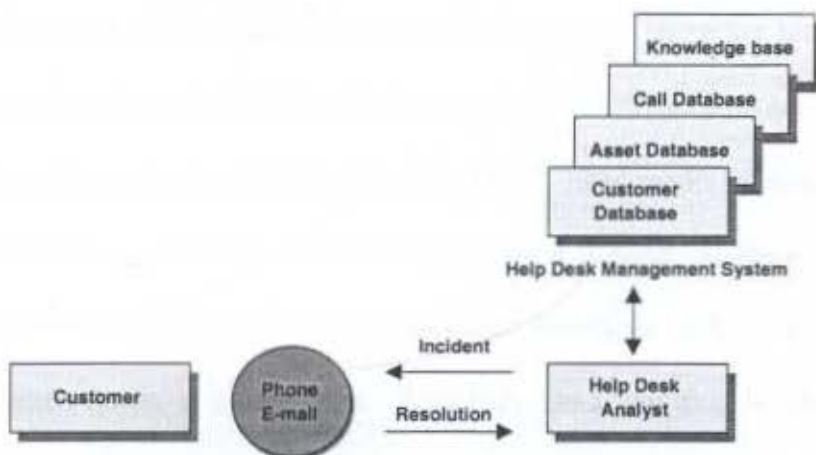


Figure 3-4: No Self-help Options

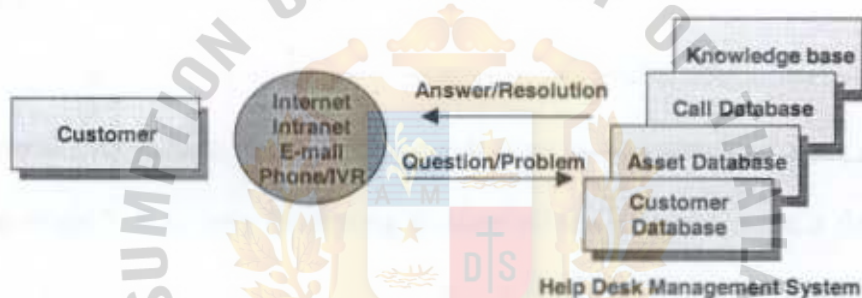


Figure 3-5: Self-help Options

- ◆ Making knowledge bases or call databases accessible to customers so customers can find out the status of problems or can try to resolve their own problems.
- ◆ Setting up interactive voice response (IVR) systems to let customers perform common requests such as terminal resets or to initiate fax-backs of problem resolutions or specific procedures.
- ◆ Making use of Internet or Intranet Web sites to allow customers access to frequently asked questions or common problems and resolutions

3.6 Strategy for Selecting Tools

Selecting Help Desk tools is not a trivial process. There are some criteria to select any tools and some of the factors you need to take into account are as follows:

- ◆ The information model for your Help Desk. This model identifies all of the information your Help Desk uses and how it is used. It shows the flow of information through your Help Desk and interfaces with other areas. It is typically drawn as a flow chart. Your Help Desk tool must be able to support your information model, managing the information within it. If you don't have such a model for your Help Desk this might be the right time to create one.
- ◆ What kind of reporting you need? If the Help Desk package you are considering doesn't meet your needs, can it be integrated with a reporting package? It is very frustrating to have all the information in a database and not be able to get it out in the format you need.
- ◆ What functions you want to integrate with your basic call management system. If you decide you want asset management but not right now, you want to make sure that your system either offers an asset management component or will allow integration with someone else's asset management component.
- ◆ The technical environment you have, including databases supported, operating environment, and so on. You need to understand how any tools you are considering will fit into your organization's technical architecture.
- ◆ How many people will have access to the Help Desk tool. Some Help Desk management systems are designed for smaller Help Desks with one or a few users, other are more robust and are designed for large support centers.

- ◆ What price you can afford. The prices of Help Desk management systems usually reflect functionality and vary considerably. This might be your first level of constraint.
- ◆ Take your time to understand what you are getting. The wrong tool may do more damage than good. You can get feedback on specific tools from organizations that are already using these tools.

3.7 Staff Modeling

3.7.1 How to Estimating Required Staffing by formula

If you just want a quick indication, there is a very simple, commonly used formula that will give you a good idea of the staff required answering calls. The formula is simply “total expected call time for a specific time period” divided by “time one person will actually be available for that period”. In more detail and selecting a time frame of one month, the formula is as follows;

$$\frac{(\text{Expected number of calls per month} \times \text{Expected average duration of call})}{(\text{Working hours per month} \times \text{Estimated utilization} \times \text{Percentage availability})}$$

Expected number of calls per month, Expected average duration of call. If you have no call history you’ll have to estimate these. Call duration must be expressed in hours.

Working hours per month. This is the hours per working day, totaled for a month, that an analyst will be working at this job. If we say that the working day is eight hours and subtract 1.5 hours for lunch and breaks, we’re left with

6.5 hours on the job per day. Over one month, or twenty-one working days, this becomes 136.5 hours.

Estimated utilization. The person doing this job will not be on the phone 100 percent of the time. There will be time between calls. Since your numerator in the formula deals with actual call time, your denominator must also. The estimated utilization figure is your estimate of what percentage of time the analyst actually spends on the phone (or answering E-mail, if you get requests or problems that way).

Percentage availability. Your analyst will be taking vacation time, attending training, taking occasional sick leave, and so on. In reality, only a portion of analysts' time is usable time. Your human resources department can tell you what figure your organization uses. Let's take an example. Say you estimate 2,500 calls per month, averaging twelve minutes (or 0.2 hours) per call. Each analyst will be on the phones 136.5 hours each month (6.5 hours per day for twenty-one days); you want to see a utilization of 75 percent, and 85 percent of the analyst's time is usable. Your formula becomes $(2500 \times 0.2) / (136.5 \times 0.75 \times 0.85)$ which gives you 5.7 people required.

3.7.2 Process for staffing required

In order for staffing required, we must possess certain skills as follows:

- ◆ **Focus:** The ability to remain focused on the mission, on what's important to the business despite the distractions of day-to-day Help Desk life.
- ◆ **Problem solving:** The ability to identify and resolve problems quickly and effectively.

- ◆ **Proaction:** The ability to take initiative to make improvements.
- ◆ **Communication:** The ability to listen to customers and staff and convey ideas effectively.
- ◆ **Technical skills:** The ability to learn technical product information quickly and accurately.
- ◆ **Customer skills:** The ability to interact with customers in a polite and professional manner.

We can look for potential Help Desk staff, the following kinds of people often make good Help Desk employees:

People who work with people

A big bonus here is that these people probably has most of the non-technical skills you're looking for: communication, problem solving, proaction, and customer service.

- Service
- Administrators
- Teachers
- Human Resource workers
- Marketing people
- Tellers

People who work with technology

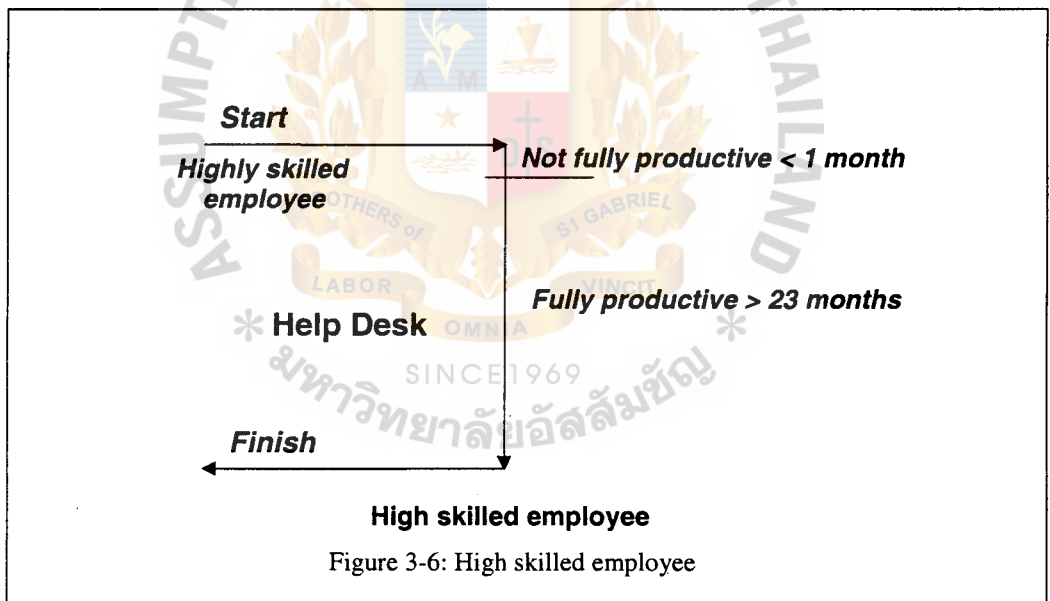
These people are most likely to have the technical expertise you require, especially if you want them to be fully productive from day on.

- People already working in support.

- Technology salespeople.
- People from other IT areas.

Students

A student's incredible enthusiasm and eagerness to learn often more than make up for lack of experience and expertise. Students are good for part-time or summer help or for fixed duration placement as part of cooperative learning programs. You wouldn't put a student on the front line right away, but very Help Desk has non-critical work that a student could do well.



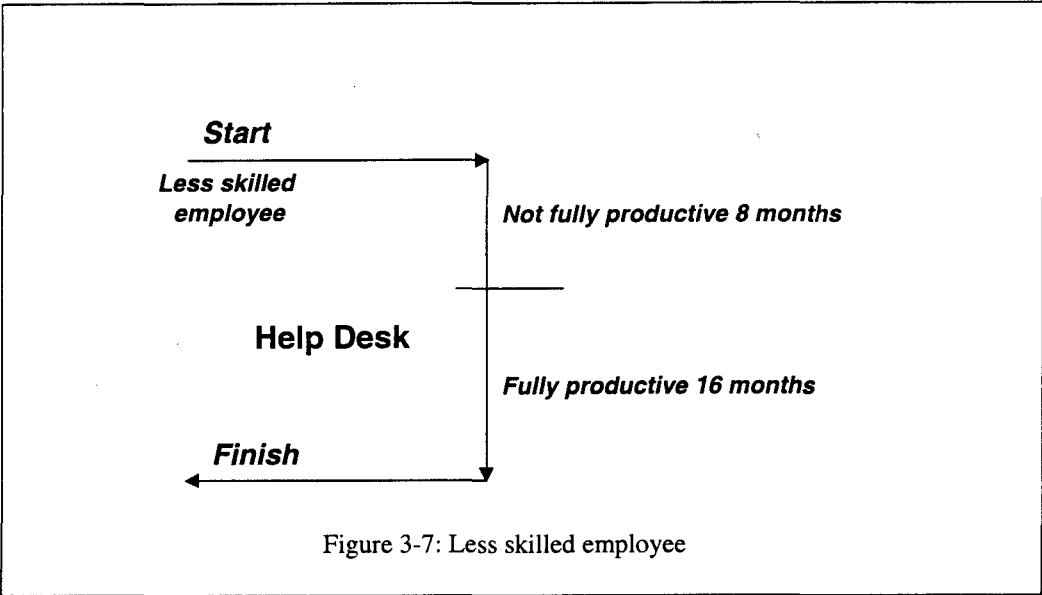


Table 3-1: Costs Associated with Potential Employee’s skill level

<i>Costs</i>	<i>Highly skilled</i>	<i>Less skilled</i>
Salary	Higher	Lower
Time employee is not up to full productivity	Little or none	Could be significant
Time required by other employees to help this employee	Little or none	Could be significant
Negative impact on service to customers	Little or none	Could be significant
Cost of training required to get employee up to full productivity	Little or none	Could be significant

After we study who should be Help Desk staff, we should consider in term of how to improving job satisfaction. There are 4 parts that we should concern as follows;

1. Stress-Reduction Ideas

- Alleviate repetition - build in flexibility and a variety of tasks
- Communicate company and Help Desk information regularly
- Address concerns about job stability - be honest and open. If you can't tell all, communicate that too

- Schedule fun activities (Cookout recognition), schedule an event on a day off that includes families
- Provide exercise facilities or a discount for employees at a local gym
- Provide time management training
- Improve physical work environment
- Provide ways for professionals to be organized
- Provide lunch and break facilities where professionals can relax undisturbed
- Encourage other interests outside of work
- If a professional is burned out or stressed, find out why
- Keep professionals informed about upcoming changes and prepare the Help Desk accordingly

2. Career Path Planning

- Mentoring programs
- Schedule one-to-one meetings with each professional to discuss career goals
- Training - technical and customer service skills, cross training
- Document plan and review with the professional regularly
- Provide recognition for application of learning on the job
- Make sure professionals are suited to their jobs
- Know the industry averages and trends for pay, benefits, work environments, and 'perks'
- Offer bonuses and stock options based on individual or team performance

3. Attaining Professional Support

- Communicate - decide how, when, and where to introduce an initiative.
- Communicate - get input, get feedback, address concerns.
- Listen and respond to professionals' ideas and suggestions
- Have representatives from other business units speak at team meetings
- Relate the initiative to the company's mission and business goals. Show how it benefits the company
- Set goals with professionals. Tie recognition with goals
- Delegate responsibility for tracking and reporting performance
- Take a dare for goal achievement (I'll grill hamburgers for the team if it meets the new abandonment rate goal next month)

4. Retention Strategies

- Give professionals responsibility for projects: surveys, call monitoring, newsletter articles and success stories, leading team meetings, intranet update and maintenance, HIT strategies, reporting and charting team performance, input into SLA negotiations, writing SOP's, training customers, orienting and training new employees, scheduling, forecasting, quality improvement, knowledge base administration
- Professional representation on cross departmental teams
- Customer visits, deskside visits with technicians
- Support community programs that employees are involved in
- Consider telecommuting options, make flexible work schedules
- Keep adequate staffing

- Ensure that professionals understand the company and Help Desk mission statement, SLA's. and SOP's. Ensure they understand how the Help Desk impacts the bottom line of the business
- Communicate on a personal level as well as a professional level
- Informally recognize accomplishments (say "Thank you" and "Job Well Done")
- Never miss an opportunity to brag on your professional's achievement to upper management and other departments
- Give feedback to individuals and to teams on a regular basis. The feedback in an annual performance review should not be a surprise

3.7.3 Training for Staff

One of the biggest mistakes Help Desk managers make in trying to stay within their budget is letting people learn on the job. Learning on the job encourages the bad practice of learning other people's mistakes and inefficiencies. It teaches how a certain person or applications use a tool, not what the tool is capable of and what it might be used for in the future. The kind of training your Help Desk Staff will need might include the following:

3.7.3.1 Technical training

- Help Desk tools
- Foundation products, such as LANs and LAN operating system
- Products currently being supported by the Help Desk

3.7.3.2 Procedural training

- Help Desk procedures in use at your organization

- General procedures and skills for setting up, running, or improving a Help Desk

3.7.3.3 Personal training

- Delivering quality service to customers
- Communication skills
- Problem solving

3.8 Strategy for defining SLA Successfully

Quickly review the following points while creating and before implementing the final SLA to increase your chances of SLA Success:

- ◆ Keep list of service promise short and simple.
- ◆ Make sure that promised performance can be measured.
- ◆ Make the measuring and reporting process easy and automated if possible.
- ◆ Align your organizational mission with SLA promised performance.
- ◆ Tie individual performance to SLA promised performance.
- ◆ Measure understanding of the SLA as well as customer satisfaction. If customer don't know or understand the SLA, it is not serving its purpose.
- ◆ Offer different levels of service at different costs to tie cost to performance relationship.
- ◆ Understand that SLA's cannot be strictly applied to all situations, especially during customer crisis situations. Be prepared to over deliver when needed.
- ◆ Outline resource and funding requirements to meet SLA standards. If resources are not committed, renegotiate the SLA.

3.8.1 Items that might be included in SLA are as follows: (see appendix)

- ◆ Description and location of customer group
- ◆ Classify different levels of service for different groups and therefore different SLA.
- ◆ Period covered by agreement.
- ◆ Services to be provided by Help Desk.
- ◆ Help Desk hours of operation and after-hours service options.
- ◆ How customers can access Help Desk services.
- ◆ Customer responsibilities.
- ◆ Definition of calls priorities and required response times.
- ◆ Service measures to be met.
- ◆ Escalation procedures.
- ◆ Reporting to be generated by Help Desk.
- ◆ Components supported.
- ◆ Components considered critical.
- ◆ Support fees, if any.
- ◆ Pay for use services, if any.

3.9 Seven methods to measure Help Desk Success

User feedback is generally collected with surveys that measure customer satisfaction. Typically, the survey originates within the Help Desk organization, but it is possible to designate a third party or another department preferably one with no affiliation to the Help Desk to administer the survey. For very large Help Desks, particularly those that provide external, paid support, outside agencies provide professionalism, expertise, and impartiality that may be very useful.

3.9.1 Addressing Sampling Issue

The key criteria in sampling are appropriately defining who the survey is intended to represent (population), ensuring that the people surveyed are representative of the entire group, and ensuring that the number of completed surveys (sample size) is large enough to truly represent your Help Desk's performance.

- ◆ **Population:** The population is the group of people whose opinions you want to study. This could be all Help Desk users or a smaller group, such as only users of network support or users of on-site support.
- ◆ **Representative:** This is usually achieved by selecting people randomly from the population for surveying.
- ◆ **Sample size:** The sample size is the number of people who actually evaluate the service. Too small a sample may lead to incorrect assumptions.

3.9.2 Determining Content

For any survey satisfaction, it is important to determine content categories. The categories should address the company's specific objective in conducting the survey. For the typically Help Desk, measuring satisfaction is commonly divided into two areas:

- ◆ Customer Service Satisfaction (the level of satisfaction with interpersonal interaction)
- ◆ Solution Satisfaction (the level of satisfaction with the solution provided)

3.9.3 Designing the Survey

Once it is known who will be responding to the survey (the sample) and what questions will be asked (the content), it is time to organize the questions. The customer satisfaction survey form is an example that you can see (attached “Customer Satisfaction Survey”).

3.9.4 Phone Surveys

Phone surveys are a very powerful tool for customer satisfaction interviewing. A random sample of users is contacted and surveyed by phone. The survey references a single contact, a specific incident, or the resolution of a specific issue. If phone surveys are used, it is important that the customer is contacted as soon as possible after the incident.

3.9.5 Mail Surveys

Surveys by mail are relatively inexpensive ways to assess customer satisfaction. For these surveys, a random sample of individuals is chosen and sent surveys. There are also some modern alternatives to the standard mailed survey:

- ◆ **Electronic mail:** Rather than distributing the survey by traditional mail, the same type of survey can be distributed by electronic mail (e-mail). The major advantage of this method is that the respondent can open the survey and complete it quickly. The disadvantage for the external help desk is that you may bias the sample by only including customers who use e-mail.

- ◆ **Internet/Intranet:** Surveying customer satisfaction when support services are offered by means of a web site generally has the same advantages and disadvantages as electronic mail.
- ◆ **Mail-out/Fax-back:** Using this method, the survey is distributed by traditional mail and then faxed back. The extent to which respondents have fax access should be considered in the decision of whether to use this feedback mechanism.
- ◆ **Fax-out/Fax-back:** The survey is both distributed and returned by fax. This method is similar to the mail-out/fax-back survey except that it requires knowing the respondent's fax number.

3.9.6 Online comment cards and online voting

Comment cards, and online voting are ways to acquire unsolicited feedback regarding service. This allows users to choose their own response time and may provide those otherwise not heard from the opportunity to respond. Though both methods are valuable ways of communicating with users, data should be used with caution.

3.9.7 Providing Follow-up

One important issue to remember is that when a feedback process, such as a survey, includes a way for the respondents to request follow-up, it is essential that a mechanism be in place to manage the requests.

3.10 Measurement Method

3.10.1 Performance

There are 3 main aspects of performance. All three are necessary to get a complete picture of performance:

3.10.1.1 Return On Investment (ROI).

Help Desk ROI can be defined as the dollar value of the gains, advantages, and services the Help Desk is bringing to the business (Return) divided by the operating cost of the Help Desk (Investment). Because the services and benefits of the Help Desk are not always tangible, putting a value to return is a challenge.

◆ Return

The easiest way to calculate return is to base it on replacement value, or the market value for the services the Help Desk is providing.

Outsourcing is a good example in return.

◆ Investment

Investment is the Help Desk's operating cost. This should include the following:

- Staffing costs
- Expense such as outsource contracts
- Training cost for staff
- Material distribution training to customer
- Office supplies
- Help Desk software and maintenance
- Help Desk hardware and maintenance
- Facilities overhead, i.e. rental

3.10.1.2 Effectiveness of call load management.

To measure how effectively you are managing your calls within your changing environment, you are going to have to look at a number of measures, both qualitative and quantitative. These are the factor that should be concern in measuring effective:

◆ Objective

When you're measuring Help Desk against objective, you might be measuring the effectiveness of changes or improvements you have made or the stability of existing services levels. For example, you set objective for Help Desk to reduce calls by 20 percent.

◆ Service Level Agreement

A Service Level Agreement can be characterized in the following ways;

- It is a two-way agreement between the Help Desk and a specific group of customers. The agreement specifies services the Help Desk must provide and targets it must meet. It also specifies the responsibilities of customers using the services.
- It measures both Help Desk performance and customer compliance with the agreed-upon responsibilities.
- It is created through a joint effort between Help Desk representatives and customer representatives. Both groups must agree upon all items specified in the agreement.

◆ Customer evaluation (see appendix)

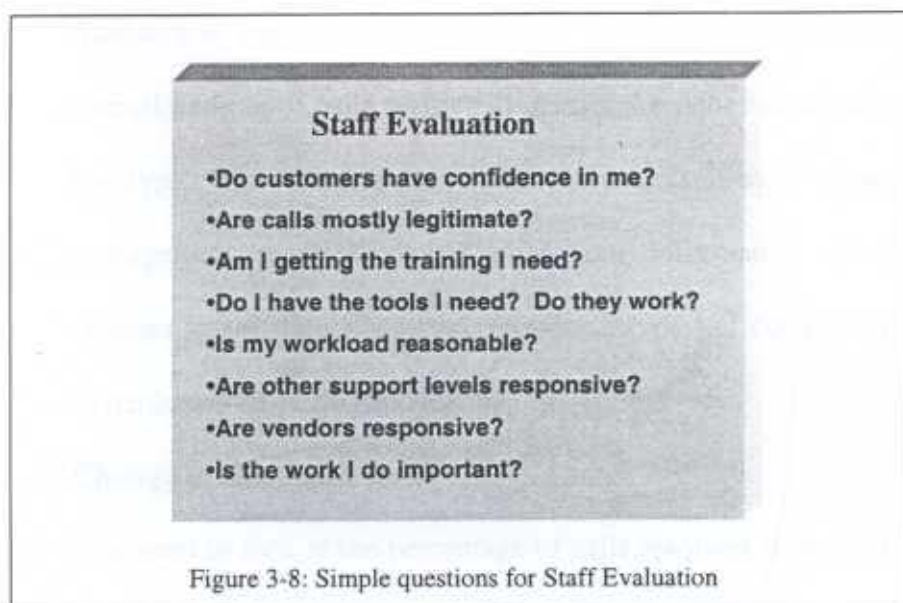
A customer evaluation is a report card on the Help Desk's performance from customers. It is not a onetime thing but an

ongoing process in which Help Desk goes to the customer for feedback. Customers evaluate Help Desk against those things that are most important to them. These include:

- **Speed and accuracy of service:** Customer perception may be different from the quantitative measures supplied by a call management system.
- **Provision of emergency service when required:** Measuring customer perception would give an indication of whether the definition of emergency in Help Desk priorities was adequate.
- **Quality of Help Desk staff:** Just one customer who feels the Help Desk doesn't know anything can do significant damage to Help Desk's image and its success.
- **Quality of training:** How appropriate was it for the customer and environment? Was the topic covered adequately?
- **Quality of service:** such as PC Purchase or Upgrade. Was the equipment delivered appropriate for the job being performed? Was it set up properly?
- **Quality of communication:** Are customers kept informed of the progress on their calls? Are they informed of the occurrences and duration of system outages or planned downtimes?

◆ Staff evaluation

Factors that Help Desk staff will use to evaluate Help Desk performance include the following:



- Customer attitude
- Legitimacy of customer calls
- Adequacy of training received (for staff)
- Availability and performance of tools
- Workload
- Availability and function of second level support
- Vendor performance
- Value of tasks performed

♦ Help Desk management statistics

Help Desk management system provides you with endless statistic about the performance of your Help Desk. You need to keep a sharp eye on these, remember that performance is a moving picture and you need to be looking at change. Some of the most critical changes to watch for include the following:

- **Change in environment and in call load**

Statistics to watch include number of workstations supported; overall number of calls, daily call distribution, number of calls by type, and number of calls per workstation. Asset management package should give your information about changes in software supported, change in type and complexity of hardware supported and so on.

- **Change in resolution times**

You need to look at the percentage of calls resolved at point of call to make sure your front line is at maximum effectiveness. If percentage has gone down, you need to look at other statistics such as number of calls by type to find out why. Some report on average resolution time, but this can be a very deceiving measure if there is a wide variance in your resolution time. Selecting time interval is a good example for measuring performance.

3.10.1.3 Level of proaction.

When you are measuring proaction you are checking whether your Help Desk is standing still or whether it is moving ahead with the business working to eliminate calls, making improvements, and getting ready for future technology or customer requirements. Your primary measurement for proaction is your objective. There is cycle to do proaction to our customer as follows;

Find out most frequent reason for calling.

Eliminate it

Go to Step 1

3.10.2 Evaluation

Evaluating the activities of your Help Desk on an ongoing basis is necessary to ensure that your Help Desk is functioning effectively. Evaluation Checklist comes to be method to check in each step as;

- Procedures are correct, understood, and being followed.
- Priorities are balanced and are being followed.
- Service delivered is accurate and is accomplished within and acceptable time frame.
- Planned work is completed.

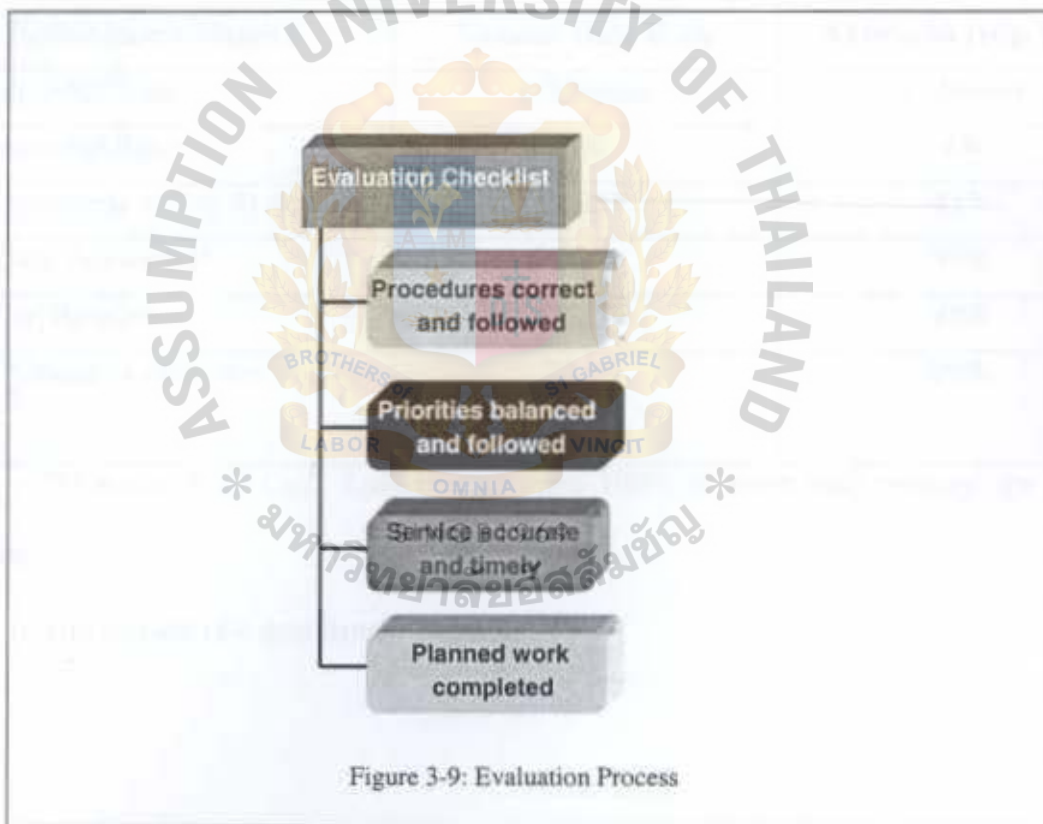


Figure 3-9: Evaluation Process

3.10.3 Call Handling

In survey with 4 companies in Bangkok area, we set 6 indicators to measure performance of each Help Desk in percentage. There are:

- Average Waiting Time

- Abandonment Rate
- Calls Answered within 60 Seconds
- % of Calls Answered
- First Call Resolution
- Calls Closed within the Agreed SLA

Then, we get the result (in average) from each company also, we get the standard Advanced Help Desk from Help Desk 2000 as show in table below:

Table 3-2: Performance Metrics

Performance Metrics	Normal Help Desk	Advanced Help Desk
Average Wait Time	6 Minutes	4 Minutes
Abandonment Rate	6%	4%
Calls Answered within 60 Seconds	51.25%	85%
% of Calls Answered*	92%	97%
First Call Resolution	56.25%	85%
Calls Closed within the Agreed SLA	70.5%	90%

Note: - (*) means % of Calls Answered assumes 100% of voice mail message are returned.

- You can see raw data from Case Study.

Chapter 4: Case Study

Company Name: ABC

Customer Profile

- ◆ There are 1,500 users in two adjacent buildings (almost everyone in the company).
- ◆ Each user has either an IBM-compatible PC (ranging from a Pentium). There are about twenty-five standalone PCs. Laser printers are one of three makes; impact printers are any of a variety of makes. Software has been standardized to a few Windows applications.
- ◆ All users have full access to the Internet.
- ◆ Applications are being migrated to the LAN from the mainframe. Most customers will be accessing client/server applications from their PCs within the next six months. Currently, most customers use their PCs only for word processing, spreadsheet applications, host access, and Internet access (heavy research requirements).
- ◆ Customers work mostly from 8 A.M. to 6 P.M., but a few come in early and a few stays late. At year's end, some extra support is required to provide help for customers doing year-end calculations, should they need it.
- ◆ Ten percent of customers work from home.
- ◆ Most customers are familiar with how to use the standard software but are complaining that they cannot use the Internet effectively for research; they don't know where to find things.
- ◆ E-mail is used heavily; voice mail is used only by certain departments. Generally, customers have no problem accepting new technology.
- ◆ Priorities are the network and the applications being migrated to client/server.

Mission

To help customers get the most out of their technology. Values:

- ◆ Get customers up and running as soon as possible.
- ◆ Solve problems, don't just apply fixes.
- ◆ Offer customers hints and tips, answers to frequently asked questions, training suggestions. Take every opportunity to educate customers.

Senior Management Input

- ◆ Fix problem quickly, no computer or user downtime is acceptable.
- ◆ Don't let technology failure negatively impact any critical business functions.
- ◆ Automate wherever possible, keep costs to the absolute minimum.
- ◆ Respond to business change quickly.

Responsibility splits with other IT Groups

For problems with internally developed applications, the Help Desk will get the initial call but will pass it on the applications group for resolution. The Help Desk will maintain its Intranet web site, but network technical support will maintain the Intranet platform, informing the Help Desk when it changes.

The Help Desk is consulted in software selection, but another part of IT actually makes the selection. The Help Desk is responsible for notifying everyone of the installation, for doing the installation, and for getting a pilot out for testing to make sure that it works with all other technology components.

Services

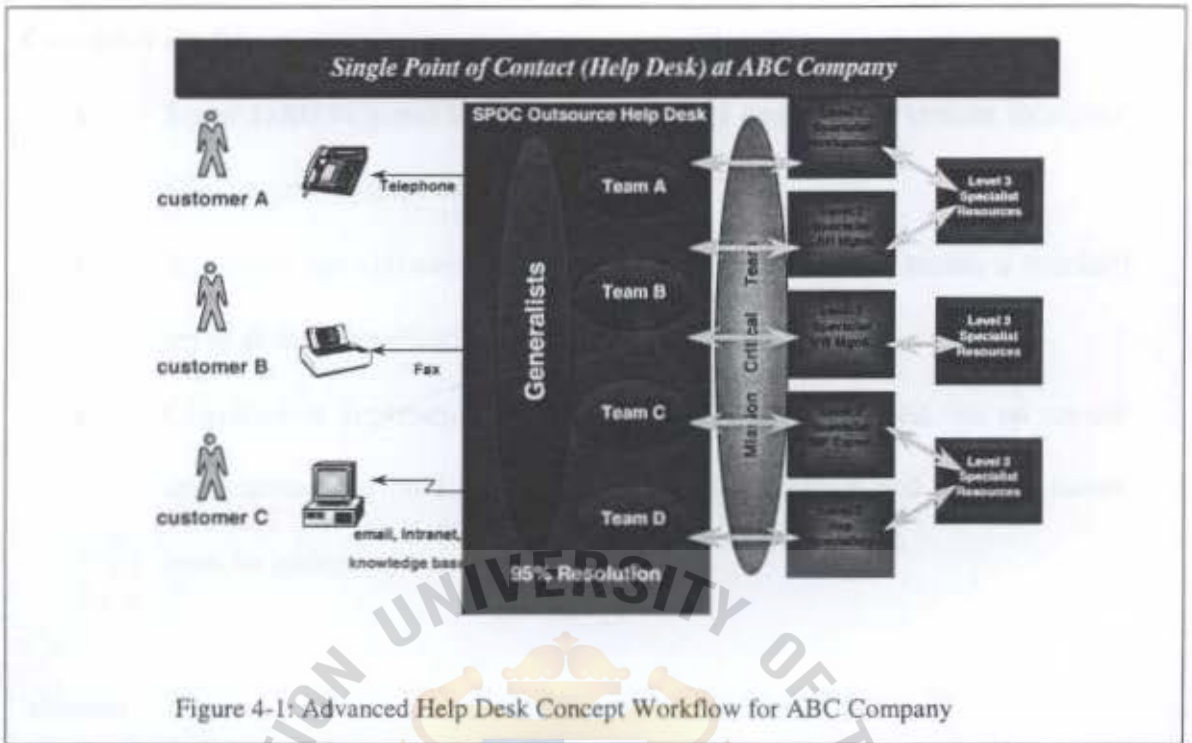
- ◆ Offer supports 7 A.M. to 7 P.M.; extra support available by request, arranged for in advance.
- ◆ Allow customers to use E-mail, phone mail, or the phone to request support.
- ◆ Offer single point of contact for all technology problems: Calls that cannot be resolved within ten minutes will be passed to second-level analysts. All calls are tracked from open to close.
- ◆ Offer management of hardware and software assets.
- ◆ Provide hardware maintenance - Help Desk has actually outsource this; a person from the outsourcing company works as part of the Help Desk, maintaining hardware and investigating hardware failures.
- ◆ Maintain Help Desk Intranet web site.
- ◆ Create and maintain service-level agreements with each major customer group.
- ◆ Source and purchase hardware and software.
- ◆ Participate in setting standards and change management.
- ◆ Monitor LAN performance and notify appropriate groups of any potential problems.
- ◆ Monitor problem trends and notify appropriate groups of recurring problems so that a solution can be found.
- ◆ Participate in setting standards.
- ◆ Arrange for training for products being supported.

Successful for Three Months after applying Advanced Help Desk Concept

- 1. Increase number of problems resolved at first call to 85 percent from 60 percent.
- 2. Upgrade PCs to a level that can handle client/server application (using asset management tool to find PCs that need upgrading).
- 3. Source and offer training on using the Intranet/Internet.
- 4. Calls that cannot be resolved within four minutes will be passed to second-level analysts. All calls are tracked from open to close.
- 5. Revise SLA with all departments.
- 6. Users can solve some problem by themselves with Intranet Knowledge Base.

Table 4-1: Table comparison between before and after applying Advanced Help Desk Concept

Performance Metrics	Before applying	After applying
Average Wait Time	6.5 Minutes	< 4 Minutes
Abandonment Rate	5%	5%
Calls Answered within 60 Seconds	50%	80%
% of Calls Answered	95%	95%
First Call Resolution	53%	87%
Calls Closed within the Agreed SLA	68%	91%



Company Name: XYZ

Customer Profile

- ◆ Some 1,000 PCs and LAN users are spread over several remote locations. Users access system via LAN and WAN.
- ◆ Hardware and software standards exist, and most users access a standard set of desktop applications from LAN.
- ◆ Client/server applications are just starting to be developed, but no critical applications run on LAN yet. Several performance and stability issues must be addressed before this happens.

Mission

To help our users get solutions with more productivity and effectively when problems occur.

Current Help Desk Services

- ◆ Staff consists of three front line staff, one of whom is a student. Hardware maintenance is outsourced and performed by two on-site third-party staff. Two people look after PC ordering and invoicing. Five staffs look after LANs. Two staffs are administrator Email system, three trainers and one technical writer.
- ◆ Most (but not all) calls are logged via a Help Desk package called *Quetzal*.
(Enterprise-wide system for Help Desks and call centers. Include tool that provides scripting language that allows straightforward implementation of business rules or custom integration without programming. Provides integration including built-in support for full text retrieval, telephone systems, Internet Web

access, E-mail, pager and fax. Supports Windows 95, Windows NT and Windows 3.x clients.)

- ◆ The call volume is 80 to 100 calls per day.
- ◆ There is no call distribution system. Calls into the Help Desk are fronted by a phone menu.
- ◆ Training is administrated by an outsourcing firm, which takes care of everything from signup to billing.
- ◆ Support is from 7.00AM. to 6.00PM. and the hours are covered by staggered shifts.

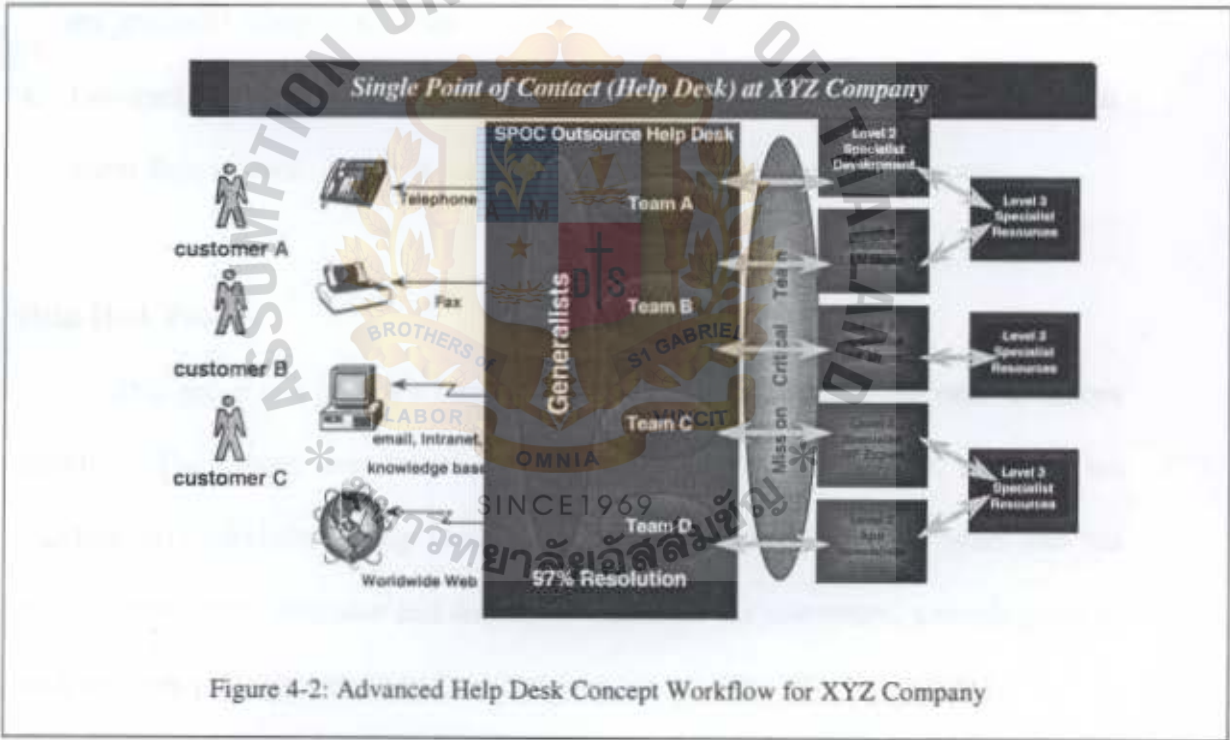
Successful for Four Months after applying Advanced Help Desk Concept

1. A plan was developed and objectives set to try to stabilize the current PC environment. It included setting up processes, support procedures, and training. The first thing on the list was switching all existing PCs and LANs to Windows 98 and phased out NetWare.
2. A standard desktop was developed and tested, and a rollout schedule was put together. The rollout started, and all existing LANs and PCs were converted over the course of four months. At the same time, the trainers developed courses for the standard desktop and how to use LAN. They are learning PCs themselves.
3. A Help Desk phone number and user ID were selected and publicized. The Help Desk number was prefaced with a phone menu so users could select hardware, software, Unix or E-mail support. Some options contained commonly asked questions about E-mail so people could get their own answer.

4. Standards and ordering procedures were put together and published for hardware and software. Convincing customers that standards were vital to a supportable environment was not easy.
5. SLA was developed with “Secrets to Success for SLA” Concept.
6. A Help Desk package was purchased (Quetzal). The PC staff reorganized so that someone was almost always available for PC help and began to log calls.
7. A hardware maintenance agreement was set up with a hardware supplier. On-site technician provided, and also provided hardware maintenance support and setup of new PCs.
8. An open house was held to market the standard software, the services of the group, and the capability of the technology and to explain the concept of PCs and LANs. The event had demonstrations, seminars, an open server on display, and tours through the computer room (meeting room). It was extremely successful.
9. Standard software was upgraded to new versions. Trainers gave upgrade seminars.
10. PC support had its own dedicated team and manager. Processes and procedures, standards, and standardized environment were all in place. Customers knew what the PC Help Desk did and how to get service.
11. PC environment had grown in one year from 200 PCs to almost 600, with eight LANs, all able to communicate with system via WANs.
12. Help Desk can handling First call from 60 percents to 87 percents.
13. Call handling and closed via SLA are around 85 percents.
14. Knowledge Base is developed for using with Help Desk by keeping historical record from *Quetzal*.

Table 4-2: Table for comparison between before and after applying Advanced Help Desk Concept

Performance Metrics	Before applying	After applying
Average Wait Time	6 Minutes	5.5 Minutes
Abandonment Rate	7.5%	5.5%
Calls Answered within 60 Seconds	48%	86.5%
% of Calls Answered	90%	97%
First Call Resolution	60%	87%
Calls Closed within the Agreed SLA	71%	95%



Company Name: UTO

Customer Profile

- ◆ Approximately 500 retail outlets, most runs by their own AS/400 hooked to a front-end cash register system and back-end data storage system. Stores are hooked to a satellite network for access to the head office mainframe for E-mail and various other retail applications.
- ◆ Help Desk supports a live retail environment and works out of the head office location.
- ◆ Consists of ten people. Two are outsourcer staffs who support older systems that are gradually being phased out.
- ◆ The staff works in shifts to keep Help Desk staffed from 7.00AM. to midnight, seven days a week. The call load is approximately 2,400 calls per month.

Help Desk Profile

This group is a part of a larger IT department that supports the retail locations directly. The whole department is partially funded by storeowner, so costs are watched very carefully. Help Desk has been in existence for many years and has matured into a very effective and successful function. Its customers, a tough group at best, are very pleased with Help Desk services.

All calls go directly into an Integrated Voice Response (IVR) system. The caller is asked to enter the store number, a system code, a priority code, and a voice message describing the problem. By the time the caller hangs up, the IVR has sent all the information to AS/400, which has logged the call. Help Desk staff pick the call up from AS/400 and look after it in order of priority. All calls are resolved in less than five hours. There is no such thing as an outsourcing call.

Successful for Two Months after applying Advanced Help Desk Concept

1. There are two major measures of success for this Help Desk:
whether the customers want to pay Help Desk and whether it meets the Service Level Agreement (SLA). The agreement contains the following elements:
 - The method of operation, describing the responsibilities of each party, the hours of service, after-hours service, priorities, and response times.
 - Support and services, describing what systems are supported, what third parties are involved, who supported what, and what the procedures are for interacting with each of the parties involved in support.
 - Fees, detailing out regular support fees and additional services and their related charges.
2. Mission for Help Desk Support as “Providing good services and supports 24 hours for business” was defined.
3. To be able to reduce abandon called from customer is at 3.33% decreased (average call per month is 2,400 calls).
4. Knowledge Base is developed at Help Desk Center to providing instruction and recommendation for resolving problem at first call.

Table 4-3: Table for comparison between before and after applying Advanced Help Desk Concept

Performance Metrics	Before applying	After applying
Average Wait Time	6 Minutes	4.5 Minutes
Abandonment Rate	6.5%	3.33%
Calls Answered within 60 Seconds	52%	83%
% of Calls Answered	92%	95%
First Call Resolution	52%	87%
Calls Closed within the Agreed SLA	70%	90%

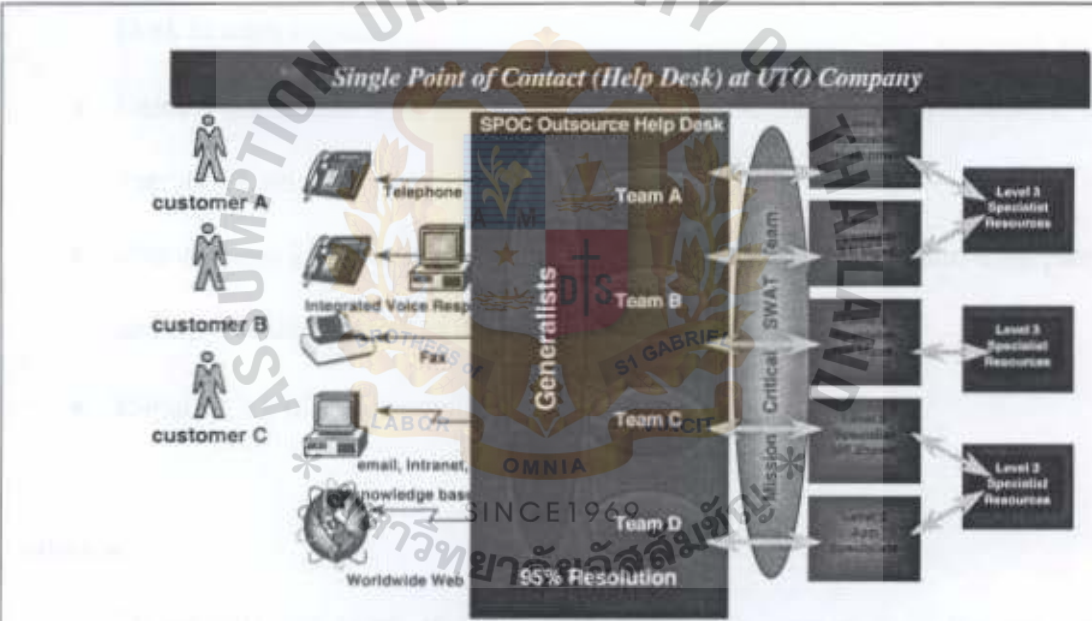


Figure 4-3: Advanced Help Desk Concept Workflow for UTO Company

Company Name: GAS

Customer Profile

- ◆ There are 1,000 users in 8 locations in same country.
- ◆ Each user has their own personal computer, Unix workstation using in daily operation.
- ◆ Internet access is limited by permission, there are 3 internet access levels as; level 1 (Intranet only Thailand), level 2 (Intranet, worldwide), and level 3 (Internet).
- ◆ There are 6 Help Desks that consist of 1 center Help Desk and 5 small Help Desk in each location.
- ◆ Users work almost 6.30 A.M. to 5.00 P.M., but there are some locations, will operate 24 hours.
- ◆ 95% of users know well about standard applications (in-house and third party), and there is department to develop training for users.
- ◆ E-mail is a tool to communicate between users.

Mission

To support our users by providing accurate information at the time and location as required by the business.

Current Help Desk Services

- ◆ Offer supports 7.00 A.M. to 5.00 P.M.; extra support available by request, arranged for in advance.
- ◆ There are 8 staffs in Help Desk; 2 Help Desk operators, 3 Software support, 2 Hardware support, and 1 for PC Helper.

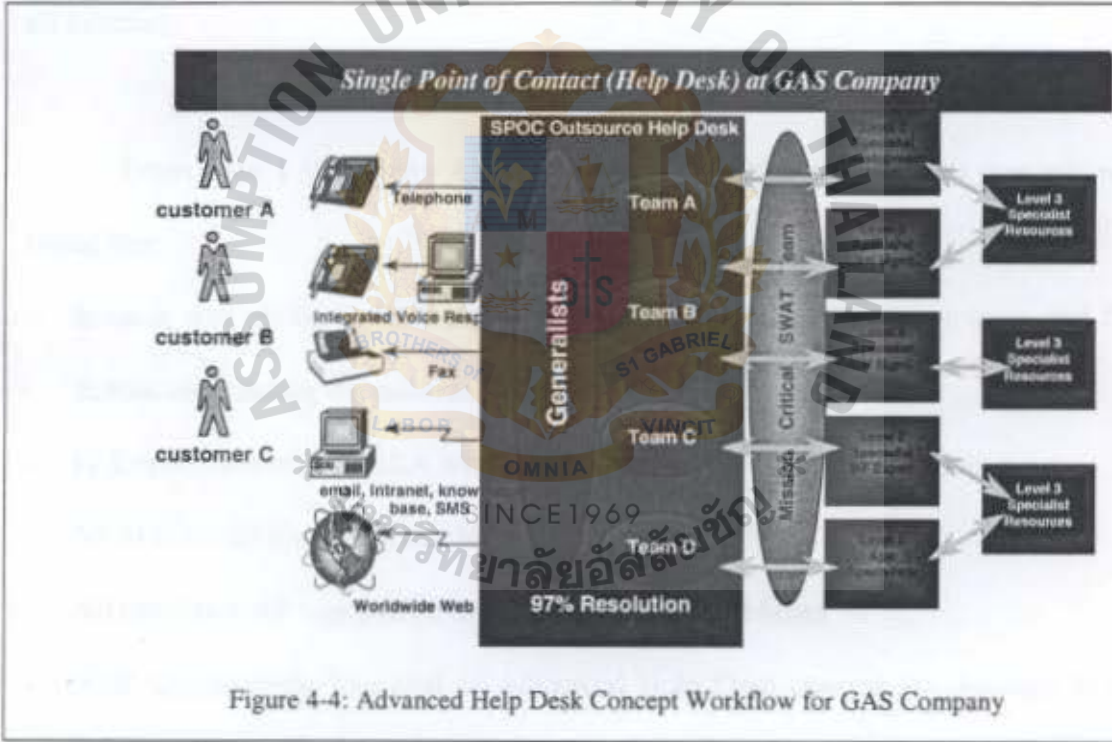
- ◆ **Remedy** is used for logging call and request for users. (**Remedy:** *Client/server help desk system focusing on problem tracking and resolution. Includes GUI import tool, customizable views, automatic problem submission, automatic delegation and escalation, support of leading SQL database, notification through desktop beeper and documented to allow integration with other equipment/applications. Optionally includes full-text search engine.*)
- ◆ E-mail, telephone, fax, voice mail are support tools.
- ◆ **Automatic Call Distributor (ACD)** is use for communication tool.
- ◆ Offer management of hardware and some software assets.
- ◆ Providing and selecting hardware standard is using in company.
- ◆ Create and maintain SLA with all departments.
- ◆ First call resolution is around 80 percents, and waiting time for solution is around 5 minutes.

Successful for Four Months after applying Advanced Help Desk Concept

1. Knowledge base is created into Intranet and also Help Desk recommends users to visit this, that we call “IT Tips and Trick” in every weeks.
2. SMS (System Management Server) is developed to use in hardware and software asset management.
3. **Integrated Voice Response (IVR)** is developed to be communication tool.
4. First call resolution is up to 86 percents and waiting time for solution is reduced to 4 minutes.
5. Questionnaire is developed and sent to users every 3 months for improving Help Desk services..

Table 4-4: Table for comparison between before and after applying Advanced Help Desk Concept

Performance Metrics	Before applying	After applying
Average Wait Time	5.5 Minutes	3 Minutes
Abandonment Rate	5%	3%
Calls Answered within 60 Seconds	55%	86.5%
% of Calls Answered	91%	97%
First Call Resolution	60%	88%
Calls Closed within the Agreed SLA	73%	95%



Result and Summary of Case Study

After we did survey in IT operations (daily operation) from 4 companies in Bangkok area, we interviewed with IT Staffs and gathered information from IT Department. But unfortunately, all of these companies cannot print in this report because of security concerns, so we get the example name like; ABC, XYZ, UTO and GAS. We focused in Help Desk activities as; SLA, Service, Technologies and etc. that you can see in Case Study section. After that we proposed our concept (Advanced Help Desk) with several models which are in this report, we got successfully from each organization to hit goal of Advanced Help Desk Concept (Not all criteria).

From Case 1 (Company ABC), result of study after propose our concept; we found that:

- Intranet was set up to be tool for training and knowledge base for users and IT technicians finding the solutions.
- IT Department revised SLA with all departments in ABC Organization.
- No of first call resolution can increase from 60% to 80%.
- All unsolved call was passed to second level to solve faster.
- ABC Organization hits goal of Advanced Help Desk concept in: Average Wait Time, Calls Answered within 60 Seconds, First Call Resolution and Calls Closed within the Agreed SLA.

From Case 2 (XYZ Company), result of study after propose our concept; we found that:

- Standard computer equipment and software were established in organization.

- SLA was developed by using “Secrets to Success for SLA” concept.
- Reorganized “Quetzal” (Help Desk Application) was restructure by Help Desk Staffs.
- First call handling was increased from 60% to 87%.
- And Knowledge Base was developed to keep historical problem and solution from “Quetzal”.
- XYZ Organization hits goal of Advanced Help Desk concept in: Calls Answered within 60 Seconds, % of Calls Answered, First Call Resolution and Calls Closed within the Agreed SLA.

From Case 3 (UTO Company), result of study after propose our concept; we found that:

- Revise SLA to meet user requirement.
- Help Desk Mission was created as “Providing good services and supports 24 hours for business”.
- To reduce abandon called is around 3.33%. (Call per month is 2,400 calls)
- Knowledge Base was developed to provide instruction and recommendation for resolving problem at first call.
- First call handling was increased from 52% to 87%.
- UTO Organization hits goal of Advanced Help Desk concept in: Abandonment Rate, First Call Resolution and Calls Closed within the Agreed SLA.

From Case 4 (GAS Company), result of study after propose our concept; we found that:

- Knowledge Base was developed as Intranet system, and advertised to users as “IT Tips and Trick” in every weeks.
- SMS was implemented to be tool for managing clients in same network.
- First call handling was increased to 86%.
- Questionnaire was developed and sent out to users every 3 months for improving Help Desk Operations.
- IVR (Integrated Voice Response) was developed to be communication tool for problem solutions.
- GAS Organization hits goal of Advanced Help Desk concept in: Average Wait Time, Abandonment Rate, Calls Answered within 60 Seconds, % of Calls Answered, First Call Resolution and Calls Closed within the Agreed SLA.

From 4 Cases study above, we found 4 organizations that we did survey, most of them were hit goal of Advanced Help Desk Concept by using several models to implement. Not all Advanced Help Desk concept were used in a organization, some can be used, some can not be use; so when we would like to set up Help Desk Center, you should select some of this concept to be implemented for your center.

Chapter 5: Conclusion and Future Work

5.1 Conclusion

From this study in topic “Advanced Help Desk for Enterprise System” by objectives of defining keys to a successful Help Desk and Needs Assessment, Difference between Internal and External Help Desk, Methodology how to measure performance of Help Desk and how to build Advanced Help Desk Model. The purpose of this report is to provide deeply knowledge in setting up Help Desk Center or Call Center which provides supporting to end users and gets user’s satisfaction. Most of organizations already have Help Desk (or Call Center), but they had to still need improving their operations, they got not good feedback from end users in term of response time, pending time, closing time, etc. So, most of them were still working about how to provide the best service support to end-users.

In this report, we proposed the way to improve Help Desk activities and operations to every Help Desk. Or we can call “Proactive” Model. In this study, we collected information from interviewing with Help Desk Staffs in each companies (4 companies that we did survey) and then we analyzed information what should we propose and what should we do. Then we proposed this concept (Advanced Help Desk Concept) to each companies and implemented at their for a period (some took 3 months, some took 4 months). The result after implementing this concept, we found that all of them are successful in Advanced Help Desk concept, but unfortunately they cannot present company name and some raw data to us, because of security policy of company.

And also after we defined Advanced Help Desk concept and proposed to 4 organizations that we surveyed, we look forward to future trend in term of technologies, resources and timing in support users. So, we would like to propose

“*eSupport*” concept to be a future work of this study. This concept, you can look at in part of “*Future Work* “ below that can be increased performance of your Help Desk.

5.2 Future Work

5.2.1 eSupport

The Internet, enabling technologies and the people who use them have created an opportunity for organizations to redesign their support strategy. The strategy and vision that takes advantage of these changing forces is an eSupport strategy. By implementing an integrated eSupport strategy, organizations will be positioned to fully maximize their return on investment – an investment that will retain both customers and employees, and is aimed at producing a healthier bottom-line.

Value is defined as lowering support costs throughout the organization, enhancing the customer experience and positioning the support organization to provide business continuity. Business continuity is defined as the uninterrupted use of technology to accomplish business goals. This compelling argument for change envisions a flatter, technology-enabled support strategy providing a higher level of customer satisfaction at a reduced cost, thus positioning eSupport as a business enabler.

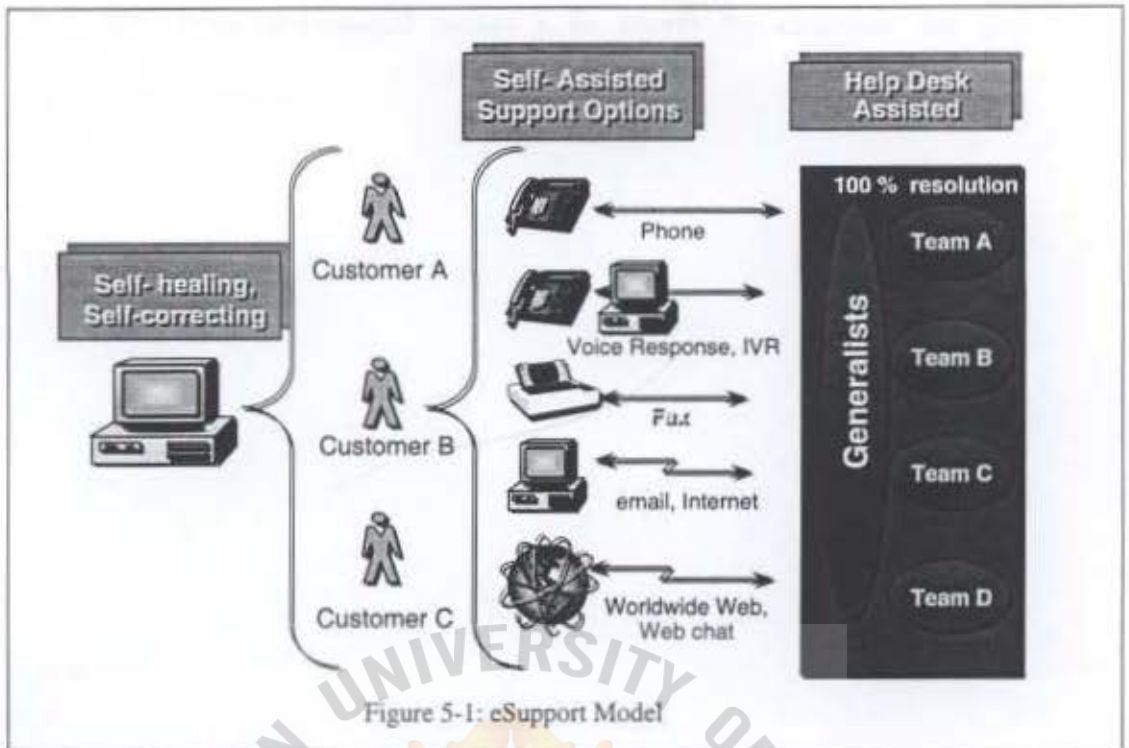


Figure 5-1: eSupport Model

5.2.2 eSupport Components

- **Self-Healing**

Allows a customer to self-heal an application the administrator has protected. An application can also “heal at launch” if that level of service is desired.

- Capture problem-solving knowledge
- Analyze the data
- Diagnose the problem
- Initiate and complete corrections in a non-obtrusive, non-resource-intensive manner

- **Self-Help**

Gives customers the option to submit queries to knowledge base and receive a response.

- **Operator Assisted Healing**

Help Desk professional pushes a fix out to the customer real time after receiving a request.



Bibliography

- 1) Bexar, D. 1996 "Long Raod to CTI," LAN Time Online, July 22, www.wcmh.com/96jul
- 2) Chamberlin, B. 1993. "Knowing When It's Time to Outsource." LAN Times, Vol. 10, no. 24(December 6), page 80
- 3) Computer Conference Analysis Newsletter. 1993. "Outsourcing," Computer Conference Analysis Newsletter, no. 320 (May 25), page 12
- 4) Condon, Ron. 1997. "Intranet Benefits, Dangers Outlined by Report," Client/Server World, March 1997, page 22.
- 5) Crevier, D. 1993. AI: The tumultuous History of the Search for Artificial Advanced, New York, NY: Basic Books.
- 6) Daly, Cinda. 1997 "Help Desk Software Vendors: Understanding the Product Features Can Aid in Tool Selection," Service News, Vol. 17, no. 4 (March), page 46.
- 7) Danielle, D. 1997. "Equipping Your Help Desk: 4 Products to the Rescue," Network Computing, vol. 8, no. 2 (February 1), page 44.
- 8) Dolan, T., and S. Smith. 1993 "Getting Support," LAN Magazine, vol. 8, no. 11 (October), page 77.
- 9) EDGE: Work-Group Computing Report. 1993. "Software Support: Software Publishing Outsources Support for Selected Products,; EDGE: Work-Group Computing Report, vol. 4, no. 177 (October 11), page 3.
- 10) Ellison, C. 1993. "Tech-Support Hold Blues," Computer Shopper, vol. 13, no. 2 (February), page 836.
- 11) Falcone, P. 1997. "96 Great Interview Questions to Ask before You Hire," AMACOM, American Management Association.

- 12) Gibbs, M. 1997. "Push and Pull for Suckers," Intranet Journal, September, page 5.
- 13) Goldmann, N. 1997. "Extranet: The Third Wave in Electronic Commerce,"
Journal of Internet Banking and Commerce, January, www.arraydev.com.
- 14) Hamilton, K. 1996. "Web Page Reduces Help Desk Calls", Service News, vol. 16,
no. 12, November.
- 15) Hamilton, K. 1997. "Help Desks Turn to Self-help Support," Service News, vol.
17, no. 1, January.
- 16) Microsoft Press 1999. "Microsoft Sourcebook for the Help Desk," Second edition.
- 17) Help Desk 2000 <URL: [Http://www.helpdesk2000.org](http://www.helpdesk2000.org)>
- 18) Help Desk 2000 <URL: [Http://www.helpdesk2000.org/chdp.html](http://www.helpdesk2000.org/chdp.html)>
- 19) Help Desk 2000 <URL: [Http://www.helpdesk2000.org/info/glossary.html](http://www.helpdesk2000.org/info/glossary.html)>
- 20) Help Desk 2000 <URL: [Http://www.helpdesk2000.org/index.html](http://www.helpdesk2000.org/index.html)>
- 21) Help Desk 2000 <URL: [Http://www.helpdesk2000.org/media/white_papers.html](http://www.helpdesk2000.org/media/white_papers.html)>
- 22) Help Desk 2000 <URL:
[Http://www.helpdesk2000.com/media/articles_audition.html](http://www.helpdesk2000.com/media/articles_audition.html)>
- 23) Help Desk 2000 <URL:
[Http://www.helpdesk2000.com/media/articles_spikes.html](http://www.helpdesk2000.com/media/articles_spikes.html)>
- 24) Help Desk 2000 <URL:
[Http://www.helpdesk2000.com/media/articles_desk.html](http://www.helpdesk2000.com/media/articles_desk.html)>
- 25) Help Desk 2000 <URL: [Http://www.helpdesk2000.com/media/articles_slas.html](http://www.helpdesk2000.com/media/articles_slas.html)>
- 26) Help Desk 2000 <URL:
[Http://www.helpdesk2000.org/media/articles_reinvent.html](http://www.helpdesk2000.org/media/articles_reinvent.html)>
- 27) White Paper <URL: [Http://www.helpdesk.com/publications.html](http://www.helpdesk.com/publications.html)>
- 28) Maslow's Hierarchy of Needs <URL:
[Http://www.connect.net/georgen/maslow.htm](http://www.connect.net/georgen/maslow.htm)>

29) Certification

<URL:

[Http://certification.about.com/compute/certification/library/weekly/aa022899.](http://certification.about.com/compute/certification/library/weekly/aa022899.htm)

htm>

30) Certification

<URL:

[Http://certification.about.com/compute/certification/gi/dynamic/offsite.htm>](http://certification.about.com/compute/certification/gi/dynamic/offsite.htm)

31) <http://www.kmonline.com/>

32) Advanced meaning <URL: [Http://www.encyclopeida.com/articles/06409.html](http://www.encyclopeida.com/articles/06409.html)>

33) Advanced meaning <URL: [Http://www.dictionary.com/cgi-bin/dict.p?term=Advanced](http://www.dictionary.com/cgi-bin/dict.p?term=Advanced)>

34) Advanced concept <URL: [Http://www.netmining.be/dico/index.html](http://www.netmining.be/dico/index.html)>

35) ESupport <URL: [Http://www.helpdesk2000.com/media/articles_eSupport.html](http://www.helpdesk2000.com/media/articles_eSupport.html)>

36) IT Support News <URL:

[Http://www.itsupportnews.com/july2000/depts/gn/topstory2.htm](http://www.itsupportnews.com/july2000/depts/gn/topstory2.htm)>

37) Improving job satisfaction <URL:

[Http://www.inc.com/incmagazine/archives/27960621.html](http://www.inc.com/incmagazine/archives/27960621.html)>

Appendix A.

Maslow's Hierarchy of Needs

1. *Physiological Needs*

Biological needs such as oxygen, food, water, warmth/coolness, protection from storms and so forth. These needs are the strongest because if deprived, the person could or would die.

2. *Safety Needs*

Felt by adults during emergencies, periods of disorganization in the social structure (such as widespread rioting). Felt more frequently by children who often display signs of insecurity and their need to be safe.

3. *Love, Affection and Belongingness Needs*

The needs to escape loneliness and alienation and give (and receive) love, affection and the sense of belonging.

4. *Esteem Needs*

Needs for a stable, firmly based, high level of self-respect, and respect from others in order to feel satisfied, self-confident and valuable. If these needs are not met, the person feels inferior, weak, helpless and worthless.

5. *Self-actualization Needs*

Maslow describes self-actualization as an ongoing process. Self-actualizing people are...involved in a cause outside their own skin. They are devoted, work at something, something very precious to them—some calling or vocation, in the old sense, the priestly sense. When you select out of a careful study, very fine and healthy people, strong people, creative people, saintly people, sagacious people... you get a different view of mankind. You ask how tall can people grow, what can a human being become?

Appendix B.

Example List of services provided by Help Desk

- Provide support between 7.00 am to 7.00 pm.
- Allow customers to use E-Mail, the phone, or voice mail to request support.
- Provide support for all standard software and all standard hardware.
- Provide a central point of contact for any problems with technology.
- Help Desk is responsible for problem recording, tracking, ownership, and resolution. Problems that cannot resolved immediately are passed on to the appropriate areas but monitored to make sure they get resolved.
- Monitor LAN performance and notify appropriate groups of any potential problems.
- Monitor problem trends and notify appropriate groups of recurring problems so that a permanent solution can be found.
- Maintain hardware/software inventory.
- Provide hardware maintenance (outsourcer to an external vendor).
- Offer training/education.
- Offer software testing and upgrading.
- Offer hardware and software sourcing, purchasing, and installation.
- Provide consulting in hardware and software based on user requirements.
- Participate in-groups to determine standard for hardware and software.
- Provide performance reporting-system and Help Desk.
- Broadcast information about system availability.

Appendix C.

Service Level Agreement (SLA) Example

The following is an example of a SLA between a Help Desk and a marketing department in company.

Service Level Agreement (SLA)

Between:

The Corporate Help Desk and Marketing department

For:

January 1, 1999, through December 31, 1999

1. Services to be provided by Help Desk

- Perform first level support for all standard software applications and all hardware that meets corporate standards.
- Manage second and third level of support.
- Log and track all customer calls.
- Carry out quarterly customer satisfaction surveys to rotating client base, 100 at a time. Publish results.
- Carry out customer callbacks to 50 percent of customers daily. Publish results.

2. Hours of Operation

- Regular Business Hours:
 - 7.00 AM. To 7.00 PM., Monday through Friday, non-holiday.
- After hours support:
 - Pager 111-123456, priority 1 only.
 - 7.00 AM. To 7.00 PM., Monday through Friday, non-holiday.
 - 24 hours Saturday and Sunday.
 - 24 hours holidays

3. Service Access

- Help Desk service in accessible via:
 - Phone – Call 1234
 - Email – Send a message to HelpDesk@abcdefg.com

4. Customer responsibilities

- Use only specified phone number or Email ID to get support. No other support requests will be process.
- Customers who are new to technology must attend two half-day LAN and PC familiarization seminars before receiving a workstation.
- Attend training on all software used.
- Read and abide by the Corporate Security Policy and Corporate Standards Policy documents.

5. Call Priorities and Response Time

Priority	Impact	Response	Resolution
1	critical component downs	15 Mins.	As required
2	critical component degraded	45 Mins.	4 Hours
3	non-critical component	4 Hours	8 Hours
4	other requests, questions	8 Hours	12 Hours

6. Service measures to be met

- By Help Desk:
 - First level call resolution – 85% or greater.
 - Average call answer time – 90% in thirty seconds or less.
 - Percentage of calls respond within two weeks – 2% or less
- By Customer:

- Percentage of training – type calls to be less than 10%

7. Escalation Procedures

Level	Initiative when:	Call:	Phone/Pager
1	Agreed-upon response time not met	Help Desk manager	1235
2	No response two hours after level 1 escalation	Director, Local Operation	1236
3	No response three hours after level 2 escalation	V.P., Location Opeation	1238

8. Reporting

- ◆ Standard Reports
 - *Daily Reporting*
 - *Weekly Reporting*
 - *Quarterly Reporting*
- ◆ Ad hoc Reports
- ◆ Flash Reports

9. Systems and Components Supported

- Critical System/Components Supported
 - Price Flow system
 - Server T1AD
 - Catalog system
 - Marketing LAN
 - All PCs on Marketing LAN
- Non-critical Components Supported
 - Marketing search, Competitor system, Marketing performance.
 - All standard desktop software as per Corporate Standards document

- Hardware Supported

- All hardware that meets corporate standards will be supported.

10. Support Fees

- Cost will be allocated at the rate of \$60 per workstation per month.

11. Pay for use Fees

Training of standard desktop packaged software is available and will be arranged by the Help Desk for the cost \$300 per half day. Course dates and times are available from the Help Desk Intranet web site and are distributed to all customers quarterly.

12. Signatures Denoting Agreement

Manager, Help Desk:

Director, Local Operation:

Manager, Marketing Liaison: SINCE 1969

Director, Marketing

Appendix D.

Example for Knowledge base Article

Blank Screen or Operating System cannot Load profile at Logon

Article ID: Q1234

Creation Date: Aug. 30' 00

The information in this article applies to:

- Microsoft Windows NT Server Version 4.0
- Microsoft Windows NT Workstation Version 4.0

Symptoms

When you log on, you receive either the following error message

The Operating system was unable to load your profile.

Please contact your Network Administrator.

Or the logon dialog box goes away, leaving a blank screen, or wallpaper only, with no taskbar or desktop icons.

Cause

The %winroot%\directory, and possibly its subdirectories, have had READ permissions for the Everyone group removed. If the permissions have been removed from the %winroot%\directory only, you will get the blank screen symptom. If the subdirectories are missing the READ permission, you will get the "Cannot load profile" error.

Resolution

Restore READ permission for the Everyone group to the %winroot%\directory and all its subdirectories.

Appendix E.

Customer Satisfaction Survey

(Mail Survey)

In order to provide the best service to our customers, Help Desk is interested in your evaluation of our computer support. Please take a few minutes to complete this survey and return it to Help desk in the envelope provided.

Thank you!

1. **Overall**, how satisfied are you with the support you received from Help Desk?
(Please circle one response)

*Very
Dissatisfied*

1

2

3

4

5

*Very
Satisfied*

2. Please rate the service you received from the support engineer who assisted you and the overall service you received from Help Desk. To do this uses a 1 to 5 scale, where 1 means “*Disagree Completely*” and 5 means “*Agree Completely*”. You can use 1, 5 or any number in between. (Circle one response for each item.)

About the Support Engineer:

♦ Was polite	1	2	3	4	5
♦ Was knowledge	1	2	3	4	5
♦ Communicated well	1	2	3	4	5
♦ Was helpful	1	2	3	4	5
♦ Provided accurate answers	1	2	3	4	5
♦ Worked until the problem was solved	1	2	3	4	5
♦ Solved issue in a reasonable time frame	1	2	3	4	5
♦ Met my expectations	1	2	3	4	5

About the Help Desk overall:

- | | | | | | |
|---|---|---|---|---|---|
| ◆ Service hours are convenient | 1 | 2 | 3 | 4 | 5 |
| ◆ Initial contact was made in reasonable time frame | 1 | 2 | 3 | 4 | 5 |
| ◆ Persons who routed the call was polite | 1 | 2 | 3 | 4 | 5 |

3. In an average week, how often do you call Help Desk? (Write the number below)

4. List the software and hardware that prompted you to contact Help Desk for assistance.

Software	Hardware
4.1 _____	4.6 _____
4.2 _____	4.7 _____
4.3 _____	4.8 _____
4.4 _____	4.9 _____
4.5 _____	4.10 _____

5. In which area do you work? (Please circle one department name)

- ◆ Human Resources/Administration
- ◆ Accounting/Finance
- ◆ Marketing
- ◆ Sales
- ◆ Manufacturing
- ◆ Legal
- ◆ Research & Development
- ◆ Other _____

6. What is your position? (Please circle one level)

- ◆ Administrative
- ◆ Middle Management
- ◆ Senior Management
- ◆ Technical
- ◆ Staff
- ◆ Other _____

7. Additional Comments:

***!THANK YOU FOR YOUR HELP!**

SINCE 1969

Appendix F

Help Desk Software Support

<u>Vendor</u>	<u>Product</u>	<u>Contact information</u>
2020 Solutions	CalTraker	http://www.2020solutions.org/
Advantage kbs	IQ Support Pro	http://www.akbs.com
Alexander Frances Systems Consultants	MasterSoft OSM System-4	http://www.wen.co.za/afsc/default.htm
Allen Systems Group	ASG-Impact	http://www.allensysgroup.com
Applied Innovation Management	HelpDesk Expert	http://www.aim-helpdesk.com/
Applix	Applix iEnterprise; iHelp Desk	http://www.applix.com
Ascend Consultancy	CATS	(England) 0784 431 756
Astea International	Service Alliance; Dispatch-1	http://www.astea.com
Atlanta On-Line Systems	Help Desk Application Suite	http://www.atonline.com/aos/index.htm
Automation Centre	Support Tracker	http://www.acentre.com
Baron Software Services	Manage-it! Help Desk	http://www.bssinc.com/
Bendata Management Systems	HEAT	http://www.bendata.com
Blue Ocean Software	Track-it!	http://www.blueocean.com
Bridgehead Software	Bridgehead Service Desk	http://www.bridgeheadsoftware.com/
Bullseye Systems	HelpDesk I	http://www.bullseyesystems.com/
BusinessLine Corp.	BusinessLine	http://www.bl-corp.com
Caliburn Technology	Caliburn Call Center	http://www.caliburntech.com
Clarify Inc.	ClearSupport	http://www.clarify.com
Coastal Technologies	Help!Desk	http://www.coastaltech.com
Commonsense	Dispatch	http://www.groupapps.com/
Computer Associates	CA-Netman; Service IT	http://www.cai.com ; http://www.prohelpdesk.com
ComputerWorks	InterTrac Help Desk	http://www.computerworks.com
ConSol* Software	CallManager	http://www.consol.de/Produkte/
Coral Sea Software	Sysman	http://www.coralsea.com.au
Core Technology	Persist	http://www.ctc-core.com/products/persist.html
CustomerSoft	Li@son	http://www.customersoft.com/
CyberSource	FAULT	http://www.cyber.com.au/cyber/product/fault.htm
Datawatch Corp.	Quetzel/SC	http://www.datawatch.com

Decisif Software Solutions	Call Tracking Software (LSA)	http://www.decisif.com
DKSystems Inc.	DKHelp Desk	http://www.dksystems.com
DP Solutions	In-Vision	http://www.dpsol.com
DVSD International	Napoleon	http://www.dvsd.net/Products/Napoleon/napoleon.htm
Envisage Systems	Envisage Support Centre	http://www.envisage.co.nz
Epicor Software	Clientele	http://www.epicor.com
Firstwave Technologies	TakeControl	http://www.firstwave.net
FG&A	Probe	http://www.fga-software.com
Foresight Software	Service Management System	http://www.foresight-esp.com/
GroupApps	Dispatch	http://www.groupapps.com
GroupSoft Systems	GroupSoft Help Desk	http://www.gsft.com
GSx Groupware Solutions	GSX Help Desk	http://www.gsx.net
GWI Software	GWl Collaborative Front Office; cKnowledge; cSupport	http://www.gwisoft.com/
Help Desk Technology	HelpSTAR 5.1; cs5.1 for Windows; HelpDESK 99	http://www.helpstar.com
Hewlett Packard	HP OpenView - ITSM Operation	www.openview.hp.com/itsm
Infinite Access	CITRIS	http://www.bullseyesystems.com/
Infra Corporation (Formerly Help Desk Systems)	Infra-Help	http://www.infra.com.au
Integral Solutions Corporation	Support Wizard	http://www.supportwizard.com/fspage.htm
Ixchange, Inc.	Customer IXCHANGE	http://www.ixchange.co.za/
Kemma Software	Bridge 99	http://www.kemma.com
KnowledgeSoft	KnowledgeDesk	http://www.knowledgesoft.com
Metrix	OpenUPTIME	http://www.metrix-inc.com/
MGV America	HelpDesk	http://www.mgv.com
Molloy Group	Top of Mind	http://www.molloy.com
Monarch Bay Software	HelpTrac; Help Trac 2000	http://www.helptrac.com
Motive Communications	Motive Duet	http://www.motive.com

Multima Corporation	NetKeeper HelpDesk	http://www.netkeeper.com
Network Associates	MacAfee/Magic ServiceDesk (bought out Magic Solutions))	http://www.nai.com/products/helpdesk/helpdesk.asp
Nocom AB	S.O.S. Help Desk	http://www.nocom.se
Octane Software	Octane99	http://www.octanesoftware.com
PHD (Professional Help Desk)	PHD	http://www.prohelpdesk.com
Peregrine	Service Center	http://www.peregrine.com
Platinum Technology (Bought out by Computer Associates)	AutoAnswer (formerly Apriori)	http://www.platinum.com/products/sys_mgmt.htm#h
PosAm Bratislava	Help Desk	http://www.posam.sk/
PRD Software Pty Ltd	HelpMasterPro	http://www.prd-software.com.au
Primus	Solution Builder; Solution Publisher	http://www.primus.com
ProAmerica Systems	Support Connect	http://www.proam.com/
Quintus Corp.	HelpQ, CustomerQ	http://www.quintus.com
Remedy Corp.	Action Request System	http://www.remedy.com
Repository Technologies	Customer First Software	http://www.custfirst.com
royalblue technologies	FrontOffice	http://www.royalblue.com
SIAL Software	Fireman	http://www.sial.com.br
Scopus Technology	Scopus	http://www.siebel.com
ServiceSoft	WebAdvisor; KnowledgeBuilder	http://www.servicesoft.com
Service Data Management	ServiceEdge and TAC	http://www.sdm1.com/
Silknet Software	eService	http://www.silknet.com
SIO Technologies	MultiHelp	http://www.sio.com/
Softopia Development	iTrack and iTrack Enterprise	http://www.softopia.com/
Software Artistry (now IBM/Tivoli)	Expert Advisor	http://www.softart.com
Sunrise Software	Sunrise	http://www.sunrisesw.com
Synchrony Communications	Synchrony eRM	http://www.synchronyinc.com
Techflow	Enhanced Help Desk	http://www.techflow.com
TEK-TOOLS	iTicket (for Remedy)	http://www.tek-tools.com/iticket

Tele-Support Software	Tele-Support HelpDesk	http://www.resource-dynamics.com
TJ Tieto Group	TJ Help Desk	http://www.tigroup.com
Tower Concepts	Razor/PT/CM	http://www.tower.com
Tree Tools	HelpDesk-3	http://www.treetools.com.br
Troika Software	RESOLVE IT!	http://www.troikasoft.com/
UniPress Software	Footprints	http://www.unipress.com/footprints/
United System Solutions	SystemCare	http://www.ussinc.com
Vantive Corp.	Vantive Help Desk; Vantive Support; Vantive Field Support	http://www.vantive.com
Vision4	Gemini	www.vision4.co.uk
WebWonderland	WonderDesk	http://www.wonderdesk.com



