

MODERN ASPECTS OF IT SERVICE MANAGEMENT IN ORGANIZATIONS

Nowoczesne aspekty zarządzania usługami IT w organizacjach

Abstract. The most effective solutions of technical support namely helpdesk are presented here. Helpdesk is a part of an organization (unit, department, team or assigned group of people) responsible for admitting notifications or calls from users, controlling and dealing with them. This solution guarantees a user help with software, computer equipment and other tools from the producer or a professional company. Moreover, the work describes ITIL providing a wide range of good practices worked out by public and private companies from all over the world, commonly used and actively supported by training and examination centers, IT services providers, internal IT departments, IT tools providers, clients, users and consulting companies.

Streszczenie. W opracowaniu przedstawiono najskuteczniejsze z rozwiązań w obszarze wsparcia technicznego jakim jest helpdesk (z ang. - biuro pomocy) – część organizacji (dział, sekcja, zespół lub wyznaczona grupa osób) odpowiedzialna za przyjmowanie zgłoszeń od użytkowników oraz kontrolę ich rozwiązania. Rozwiązanie to gwarantuje pomoc w eksploatacji oprogramowania, sprzętu komputerowego jak też innych urządzeń, która jest udzielana użytkownikowi przez producenta lub wyspecjalizowaną firmę. Ponadto w materiale przedstawiono także ITIL dostarczający szeroki zestaw najlepszych praktyk wypracowanych przez sektor publiczny i firmy prywatne z całego świata, powszechnie stosowanych, aktywnie wspieranych przez ośrodki szkoleniowe i egzaminacyjne, dostawców usług informatycznych, wewnętrzne działy IT, dostawców narzędzi dla informatyki, klientów i użytkowników usług informatycznych oraz przez firmy doradcze.

Introduction to the ITIL, Service Lifecycle Book

The '90s was the beginning of the first stage of the period of revolution in IT, workstations are equipped with PC¹ for writing letters and the use of programs and stand-alone systems. Inclusion of PCs in the local network

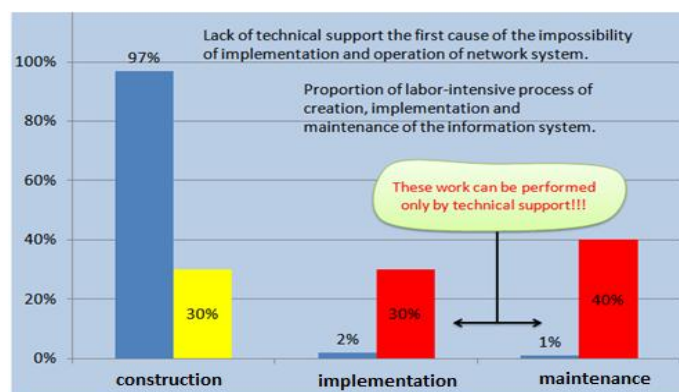
¹ Personal computer(called PC)-microcomputer designed primarily for personal use at home and office. It is a desk top or notebook. It is mostly used to run office software, Internet resources, presentations, multimedia content(text, images, sounds, videos, etc.).

launched the second phase of the revolution resulting in the creation of computer network. By wiring objects with network devices PC users have become components of a computer network. Over time, the linkage networks were created including thousands PC computers (depending on the size of the organization, institution or company). The linkage networks were created including thousands PC computers

- development/acquisition system (97%),
- implementation (2%),
- maintenance of the system in action (1%).

In case of stand-alone systems which mostly we operated on, the first stage absorbs almost 97% , so the other two were often neglected without great prejudice to the overall project. For the network system(should not to be confused with a computer network) the distribution of the amount of work that needs to be put in various stages of task fulfillment is different and is as follows:

The level of difficulty and the labor-intensiveness to implement a network system is much higher than to implement single-user system. The share of technical support in the implementation of this work is shown in Figure 1. The graph presents the labor-intensiveness for the process of creating, implementing and maintaining the system.



Source: T. Pryliński, *Informatyzacja Urzędu MON [w] Myśl wojskowa*, wyd. MON Warszawa 2006.

Figure 1. Labor-intensiveness for the process of creating, implementing and maintaining the system (as compared to the current state required).

Without technical support 60-70% of the work in the network system is not performed. We should take into account the amount of work to maintain the network system (40%) we have to pay for each year, and assuming the system operates only for a few years more it takes 90 % of the work connected with the technical support and implementation. When the network is working every day at least a few dozen of users entering and retrieving information need support. Lack of technical support is the first cause of the barrier to implementation and operation of network systems. Without a professional and efficient support any network system may not work properly.

If we perceive this solution just like that, it becomes obvious that the computer network should have its own professional technical support (helpdesk) and operator (network administrators). Helpdesk is responsible for the operation of hardware and software. More advanced helpdesk is often divided into several levels of service. The first level provides answers to frequently asked simple questions. The customer is forwarded to the next, more advanced level, this happens when you cannot solve the problem at that level. Helpdesk often administers the targeted queries using the software. This software allows you to track the progress of cases reported by individual users. The user reporting the problem or question receives a response unique application number, so it can then track the progress of its implementation and the current status. The administrators are responsible for the proper functioning of the local network and servers to be properly designed. Supervising the operation of servers, adding, any data editing and deleting user accounts, configure computers, installing software, ensuring the security of the system and optionally, the same data, monitoring, detecting and eliminating irregularities, the attendance and cooperation with external experts in the work of installation, configuration and repair are the task of the administrators. Administrative expertise often goes beyond the knowledge of administration entrusted software or network, and may refer to categories such as: electronics, knowledge of a wide variety of programming languages, cryptography and cryptanalysis, ethics, etc.

Administrator² to be able to carry out their functions normally holds the system account with the highest authority. In most cases, the administrator does not know the passwords of ordinary users, but it can be changed freely. The passwords as well as specific permission may be given to ordinary users. Helpdesk and administrators together determine possible technical support. In organizations, institutions and companies a team of people is responsible for the functional support service applications and troubleshooting information - hardware and applications commonly referred to as the Service Desk. Service Desk is part of the ITIL (Information Technology Infrastructure Library).

According to the specification of ITIL we can distinguish the following types of Service Desk:

- Call Centre³ - performs call logging, passing all calls on to other teams for resolution and further processing
- Unskilled Service Desk - log calls, dispatch calls onwards for resolution, track incidents, and provide feedback to users
- Skilled Service Desk⁴ - the majority of the calls are resolved by the service desk team , with only complex calls,
- Expert Service Desk - carry the whole incident management in the organization, most reports do not go beyond the enterprise. The main

² A **system administrator**, **IT systems administrator**, **systems administrator**, or **sysadmin** is a person employed to maintain and operate a computer system and/or network. The duties of a system administrator are wide-ranging, and vary widely from one organization to another. Installing, supporting and maintaining servers or other computer systems, and planning for and responding to service outages and other problems. Other duties may include scripting or light programming, project management for systems-related projects, supervising or training computer operators, and being the consultant for computer problems beyond the knowledge of technical support staff. To perform his or her job well, a system administrator must demonstrate a blend of technical skills and responsibility. http://en.wikipedia.org/wiki/System_administrator.

³ **Call center** is a centralized office used for the purpose of receiving or transmitting a large volume of requests by telephone. An inbound call center is operated by a company to administer incoming product support or information inquiries from consumers. Outbound call centers are operated for telemarketing, solicitation of charitable or political donations, debt collection and market research. In addition to a call center, collective handling of letter, fax, live chat, and e-mail at one location is known as a contact center. http://en.wikipedia.org/wiki/Call_centre.

⁴ Service Desk means Call center.

features of Service Desk is to provide a point of contact for customers / users (SPOC - Single Point of Contact):

- classification of incidents,
- Monitoring of incidents,
- Logging and overview.

THE HISTORY OF TECHNICAL SUPPORT (FOR USER)

The most effective solution in the area of technical support is helpdesk. At the end of the eighties, experts were looking for effective, less expensive solutions for information technology management. The first version of ITIL⁵(IT Infrastructure Library) was published in the nineties of the twentieth century by the CCTA(Central Computer and Telecommunications Agency)-an agency acting for the Government of the United Kingdom. It was the result pursued by the CCTA in 1987GITIMM project (Government IT Infrastructure Management Method). At this time, no one involved in the implementation of the project, thought about introducing it to the private sector. GITIMM was established as a government project and provided the maximum benefit to the government. The first book, "Helpdesk" was released in 1989. In 2001 the second version of the library was published, and in 2007 PC the third version was published. PC. The e-helpdesk is fully supported by ITIL management methodology (IT Infrastructure Library), which is a collection of the best recommendations for

⁵ ITIL(Information Technology Infrastructure Library) is the world's most widely accepted approach to TSM (IT Service Management), which in recent years has become the undisputed global standard in this area. Those who know and apply this set of best practices saw their strength in addressing the organization responsible for the maintenance and operation services. Defined ITIL processes for consistent map, relationships, roles, key concepts and measures, which has been widely adopted by the IT industry. He also introduced the culture of service in the organization of information. Also the Polish industry following the path pioneered by the more mature of our markets in Western Europe and the United States. ITIL provides abroad set of best practices developed by the public sectors and private companies from all over the world, widely used, actively supported by training and exam centers, providers of services, internal IT departments, suppliers of tools for computing, customers and users of IT services and consulting companies. <http://itsm.itlife.pl/> (10.03.2013).

the management of IT services. In 2007 the operation of ITILV3 began. There are 5 key publications that encompass the full life cycle of services from the design, through manufacturing, testing, transferring, the producing, maintaining and continuous developing and improving.

In 1991 a non-profit organization *itSMF*⁶ (IT Service Management Forum) was founded and promotes the philosophy of ITIL. Last year, the Polish branch of *itSMF* was supported among others by companies such as HP and IBM. These and other companies confirmed the official ITIL methodology for IT⁷ services. Popularity of ITIL increased significantly in the 90s of the twentieth century, when along with the development of the Internet and e-business companies it occurred that "IT is business and business is IT." ITIL guidelines allow IT vendors to work in partnership with business and create new business opportunities. Currently the publication of ITIL's 40 items describe good practices in the implementation of process oriented IT service management. The two best documented and well-established areas are:

- Service Delivery - tactical processes, focusing on the planning of service delivery,

⁶ The **IT Service Management Forum** (*itSMF*) is an independent, internationally, not-for-profit organization of IT Service Management (ITSM) professionals worldwide. Around the operation of IT services the *itSMF* collect, develop and publish "best practice", supports education and training, discuss the development of ITSM tools, initiate advisory ideas about ITSM and held conventions. The *itSMF* is concerned with promoting ITIL (IT Infrastructure Library), Best Practice in IT Service Management¹ and has a strong interest in the international ISO/IEC 20000 standard. The *itSMF* publishes books covering various aspects of Service Management through a process of endorsing them as part of the *itSMF* Library. The *itSMF* is a brand and trademark with a focused vision and goal, which is often copied by partners-members, local chapter and other.

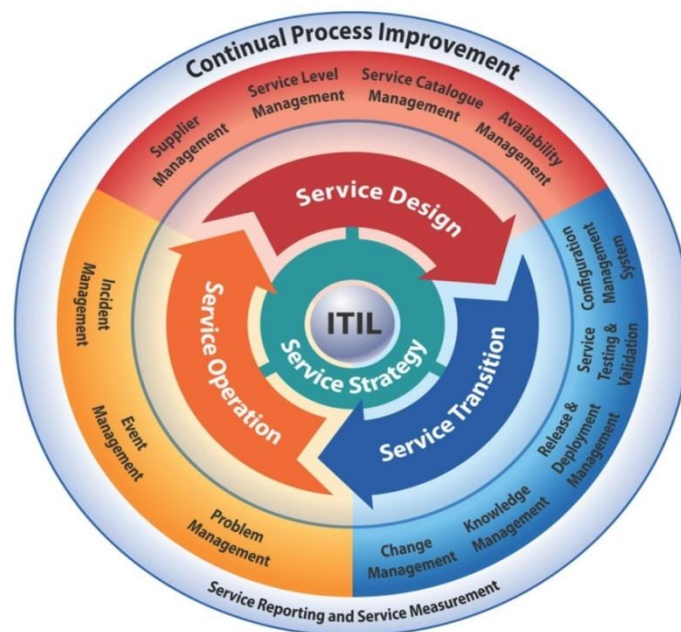
⁷ **Information technology (IT)** is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise. The term is commonly used as a synonym for computers and computer networks, but it also encompasses other information distribution technologies such as television and telephones. Several industries are associated with information technology, such as computer hardware, software, electronics, semiconductors, internet, telecom equipment, e-commerce and computer services. <http://umarketing.pl/2012/03/ip/polski-rynek-it-jest-wart-juz-prawie-10-mld-dol/>.

- IT Service Support - operational processes, focusing on daily support to the user.

Initially helpdesk only served to solve IT problems. Currently they are also used to receive notifications about problems in other areas, such as personnel matters, law enforcement. Companies often provide customer support helpdesk by free phone lines or through the website. There are also internal helpdesk, which have the same function, but it is available only to employees of the company. ITIL (often referred to key service management) is a code of conduct for IT departments. As Set of recommendations on how to effectively and efficiently provide services ITIL provides a complete, consistent and coherent set of best practices for IT Service Management (IT Service Management), introduces a common glossary of terms, the scheme of IT processes and the relationships between them, to promote quality approach to achieving business effectiveness and efficient use of ICT⁸ systems. ITIL process model is appropriate for both commercial IT organizations, providing their services in the market for external clients as well as for the IT department within the company, which provides services to internal customers. ITIL defines the objectives, main activities and how to start and stop the process. It gives a number of guidelines for measurement, reporting and audit processes, in order to verify and improve the quality of services. It is fully scalable, that is suitable for businesses of all sizes and activity profile. ITIL built a widely recognized and globally accepted set of competencies in the area of service management. For years, experts who have extensive experience in the application of ITIL can apply for certificates attesting to their knowledge and skills. Since May 2007

⁸ **Information and Communications Technology (ICT)**, information technology (IT), but is a more specific term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information. The phrase *ICT* had been used by academic researchers since the 1980s, it became popular after it was used in a report to the UK government by Dennis Stevenson in 1997 and in the revised National Curriculum for England, Wales and Northern Ireland in 2000. "The World's Technological Capacity to Store, Communicate, and Compute Information", Martin Hilbert and Priscila López (2011), Science (journal).

the market has entered a new, expanded version of ITIL, the individual certification processes undergone a profound evolution. Best practices collected in ITIL are used in over 15 000 industry-leading companies from around the world and supported by a wide range of IT service providers, accredited training centers and consulting firms. OGC (Office of Government Commerce), the creator and owner of the ITIL standard deals with the further development, while working closely with the IT SMF (IT Service Management Forum) - the largest international organization of practicing IT professionals and BSI (British Standards Institute) - British Committee of Standardization, the creator of such BS15000 standard. From May 30, 2007, the market is already ITIL V3. There are 5 key publications that encompass the full life cycle of services from the design, through manufacturing, testing, commissioning, maintenance and continuous development and improvement. The concept of the use of ITIL V3 shown in the following picture.



Source: <http://itsm.itlife.pl/> (10.02.2013).

Figure 2. Setting service life cycle model, which is the starting point for the creation of new publications of ITILV3.

The third version of ITIL is to gain certification at four levels:

- Foundation Level,
- Intermediate Level (Lifecycle and Capability Stream Stream),
- Expert Level,
- Master Level.

The ITIL training and certification allows gain skills and confirmation of theoretical knowledge. However, the standard care professionals IT Service Management deals with the Institute of IT Service Management, which offers five levels of membership:

- FISM- Fellow of The Institute,
- MISMA-Member of The Institute,
- PSIM-Practitioner of The Institute,
- AISM-Associate of The Institute,
- SISM- Student Member of The Institute.

Getting another degree of membership and joining the program CPD(Continuing Professional Development) allows you to improve the skills systematically. In December 2005, the program was officially approved by ISO⁹ /IEC 20000, which formalizes the requirements for IT service management (based on the British Standard BS15000). ITIL became the basis for making recommendations MOF (Microsoft Operations Framework) focused on Microsoft systems. New publications, as mentioned above reflect the full life cycle services. The new version of ITIL consists of the following departments:

- Service Strategy- Design, development and implementation, service management as a strategic resource,
- Service Design- Development of IT services, including architecture, processes, policies and documentation,

⁹ ISO International Organization for Standardization 'International Organization for Standardization') an international organization in Geneva, was founded in 1947, brings together national standards organizations, dedicated to developing their own standards (ISO) standardization of certain national standards and the development of scientific cooperation , technological and economic. "Dictionary of Foreign Words" Publishing Europe, edited by prof. Irena Kaminska-Szmaj, author Mirosław Jarosz and team. ISBN 83-87977-08-X. Year of release 2001.

- Service Transition-Development and improvement of the ability to transfer new or changed services into operation,
- Service Operation-Achieving efficiency and effectiveness in supporting services,
- Continual Service Improvement- Creating customer value and keeping it by improving the design, handling and use of services.

CE STRATEGY

Service Strategy provides guidance on the developing service – based business models and strategies. It defines the value creating context and principles of service management that shape decisions, policies and processes across the ITIL Service Lifecycle. Service Strategy defines the objectives, resources, and constraints within which services and the relationships they define with customers are to be managed.

The core process in Service Strategy involves defining the market, developing the offerings, developing strategies assets and preparing the organization for execution through the Service Lifecycles. This process is driven by functions such as Financial Management, Service Portfolio Management. The title introduces the role of Product Manager as a counterpart to Business Relationship Managers.

The guidance in Service Strategy is relevant to service providers in the public and private sectors. It is useful for developing strategic perspectives, distinctive positions in customers' minds, and effective execution through the Service Lifecycle. The title helps managers set up the potential of Service Management as a strategic asset. It also helps them make the business case for investments in the Lifecycle phases of Service Design, Service Transition, and service Operations, and in the ongoing activity of Continual Service Improvement.

Service Strategy represents advanced thinking on how services define relationships between customers and service providers based on mutual dependence and welfare. It places business outcomes for customers at the center

of all dialogue in service management. Services are viewed as mechanisms for engaging the capabilities and resources of service providers for the support of the customers' business activity¹⁰.

Service Design

Service Design is about ensuring that services are designed to align and match the current and future requirements of the business. This title provides guidance on the production and maintenance of IT policies, architectures, processes, systems, and documents for design of appropriate and innovative IT service solutions and processes.

Service Design contains guidance on designing service solutions aligned to the changing requirements of the business. A holistic approach is used for the design of the new or changed services and all of their constituent components are described, adopting the principle that the better the quality of design, the less rework will be required during subsequent stages of the services lifecycle. A model of a service and its constituent elements is included within the publication to facilitate this approach.

Service Design takes the strategies, policies, requirements and constraints produced by the service Strategy stage of the lifecycle and ensures that the service designs, meet all of the needs of the business within those strategic guidelines¹¹.

Service Transition

Service Transition provides guidance on delivering change to the service portfolio and through the service lifecycle. It covers how the requirements of Service Strategy encoded in Service Design are effectively realized in Service Operation to support the business processes via the installed service base and

¹⁰ "Service Strategy Introduction", Authors: Majid Iqbal and Michael Nieves, CT Partners.

¹¹ "Service Design" Authors: Collin Rudd, FISM, FBCS CITP and Vernon Lloyd, FISM CT Partners.

the ability of Continual Service Improvement to measure the new or changed service.

The guidance is relevant to IT organizations and shared services units in the public and private sectors. Service Transition helps managers and practitioners in their choices and application of good practice ideas. It focuses on the broader, long-term change management role and release practices, so that risk, benefits, delivery mechanism and the ease of ongoing operations of service are considered with an appropriate balance of speed, cost and safety¹².

SERVICE OPERATION

Service Operation is about delivering on the promises made during the Strategy and Design phases of the Service Lifecycles. It achieves this by making sure that the people processes and technology that deliver IT Services are all working in the same set of objectives.

Service Operation is not just about managing the service, it is about achieving a balance between several dynamic drivers: Technology and Business, Cost and Quality, Proactive and Reactive activities. This balance results in a stable environment, which is able to anticipate and respond to changes where necessary¹³.

CONTINUAL SERVICE IMPROVEMENT

Continual Service Improvement (CSI) is, as its name implies, an ongoing practice that is woven into the fabric of an organization as opposed to a reactive response to a specific situation or a temporary crisis. Whether an organization is making large scale or incremental improvements, it is the role of every person in the IT department to identify opportunities to improve services and IT Service Management processes¹⁴.

¹² “Service Transition” Authors: Shirley Lacy and Ivor Macfarlane CT Partners.

¹³ Service Operation Authors: David Cannon and David Wheeldon CT Partners.

¹⁴ “Continual Service Improvement” Authors: George Spalding and Gray Case CT Partners.

USE OF ITIL BEST PRACTICES IS PRIMARILY

- Business view of IT,
- Reducing the cost of managing IT,
- Continuous process improvement organization-Quality Management,
- A single communication to the IT World.

ITIL best practices can provide information technology services:

- Proven quality approach to service delivery,
- Increased productivity,
- Increased customer satisfaction,
- Minimize the risk,
- Reduced costs,
- Improving communication between computer science, business and customers,
- Greater peace of mind, guaranteed proven practices,
- Confidence that you can rely on IT services-the opportunity to achieve their business objectives,
- Clearly defined processes and contracts-to help solve problems.

Helpdesk is a system that combines processes such as: Incident Management, Problem Management and Change Management in a comprehensive and intuitive. The main advantages of the system, distinguishing it from already available on the market are the simplicity and intuitiveness, speed, fast deployment and low cost of implementation, functionality. Superbly facilitates solving technical problems in small and large organizations. With it, we can easily make quick contact support without exposing the organization to in corn necessary costs. The use of professional solutions allows you to create your own support center in the organization. The solution of technical problems related to IT resources is much faster, and all the necessary information such as history reports, details about hardware and software are available immediately, from one place.

HELPDESK SYSTEM COMPONENTS

Service calls-allows recording user service requests, has built in capabilities to view all reports, status reports, and seek solutions to problems in a public database.

Database Solutions- divided in to public and private. Public is available for both the support staff and the users. Private is available for support staff.

Administrative Portal-Services to operate the system or administer and support staff (service engineers) having a built in search solutions to problems in the public and private data base problems.

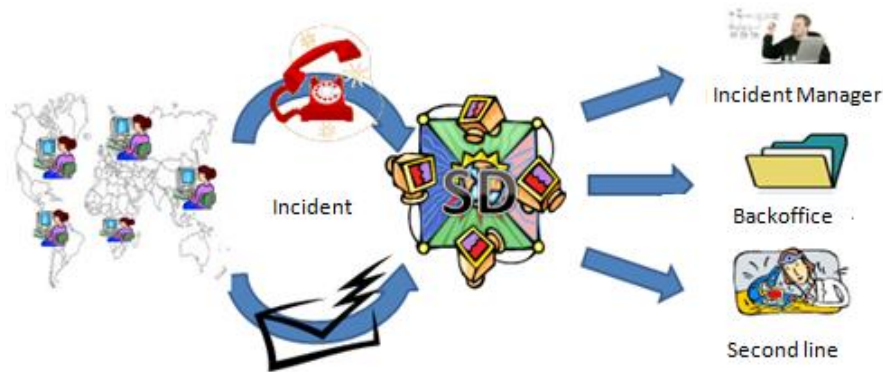


Figure 3. Own elaboration. The way the incident is picked up by helpdesk.

PROCESS FOR THE MAIN SYSTEM HELPDESK BELONG:

Incident Management

The incident is any incident which is not a part of the normal operation of services, causes or may cause a break in the provision of services, or reduce its quality. Incident management process is to be restored to the normal operation of services and reduce the negative impact of the incident on the functioning of the business. At the time of the incident is very important to the qualification of the technician. The receiving application should classify them on the basis of an interview with a person who offers. Help Desk system enables registration of all

necessary information on the application, and then finding a solution to the base problem. The user gets an answer in a very short time.

"Life – cycle " of incident:

1) Detailed recording of the incident.

The registration of the incident is done by filling out a form and in the same time record it in the database.

2) Logical partitioning of the incident.

In the Help Desk system it is possible to classify the incident to the various subcategories (Category / Subcategory / Item) and assign the incident to a service technician.

3) Providing solutions, including temporary solution.

Engineer may publishes solutions (current or temporary), he can create a solution that will be visible to all users or to the people directly affected.

4) Forwarding.

Conversely, if it is a problem associated with a business application, server, network, etc. It will be a team appropriate for each of these cases. At this point it does not matter where a team is located. The notification will be directed by e-mail, and the solution does not require physical contact with the user's computer. If there is a need for direct intervention, it will be resolved by remote control.

5) Closing the incident.

Closing of the incident is made by the technician informed of completed work on the incident. The task of the problem management process is to find the main causes of the incidents and to reduce their impact on the business. In this way, Help Desk protects an organization against repeated occurrence of the same incident. The helpdesk can accurately classify the problem and assign appropriate priority(depending on the urgency and the degree of impact on the company). The system can also be combined in a variety of problems, which helps in the analysis. This method of work contributes towards the knowledge of the cause of the problem and allows for better development of current or temporary solution.

1) Detection and logical partitioning problem.

Detection by a service incident, having the same origin causes, defines the problem, which can be classified by. Category/Subcategory/ Item.

2) Giving priority and importance of the problem and the level of impact.

With these parameters adjustable by a service order is easier to manage service operations.

3) Analysis of the problem.

Engineer defines the symptoms of the root cause and impact of the problem. Completed tasks are stored in the working window. In addition technician can attach different types of file attachments.

4) Providing solutions, including temporary solution.

Engineer has the ability to publish the solution, which results in a faster solution to future incidents. Additionally, you can adjust the visibility problems for different groups of users.

5) Closure of the problem.

Closing of the problem by a service informs, completed work on the problem¹⁵.

Application Management

Help Desk provides full information about company security, and thanks to the constant updates, the system guarantees the use of the latest version of protection against constantly evolving threats. Applications could allow remote connection to a selected computer and make the preview panel or remote control of the computer, which in most cases, is used to solve problems on user's computers. With this method it is possible to remotely fix problems around the globe. With a small cost Help Desk provides solution to the problem in any place and at any time. For recipient it is a very valuable service that can guarantee support that translates into business economics.

¹⁵ http://www.ehelpdesk.com.pl/ehelpdesk/itil_a_ehelpdesk/ (20.03.2013).

The extent and degree of difficulty that Helpdesk can solve is determined between the parties in the contract. More advanced helpdesk are often divided into several levels of service. The first level provides answers to frequently asked questions, dealing with registration applications and solving the most common problems for the company. If the problem that occurs cannot be solved by the primary liner it is passed on to the next, more advanced levels. This often happens if the matter relates to a mechanical problem, and the helpdesk cannot fix it remotely or by telephone. In this case, it is necessary to support the user directly. Helpdesk manages queries by directing them with the help of software that allows to track the progress of cases. The user reported the problem or question receives a response unique application number, so it can then track the progress of its implementation and the current status. With this database easily possible to carry out analyzes, reports, deal with their work. Recording software application must interact with Active Directory¹⁶.

The admin service technician

Accepting submissions from users can be carried out in two ways: employees can register themselves through the application form, or by telephone or e-mail provider and the support line. Users can preview the report, which are supported at any given time, as well as historical reports. After registration the system automatically sends an email to the user to accept the application and to the first line of support of the registration application. Users are advised to change the status of the application.

A designated person in the first or second line support deals with registered applications. Automatically from Active Directory user information (phone, e-

¹⁶ **Active Directory (AD)** is a directory service implemented by Microsoft for Windows domain networks. It is included in most Windows Server operating systems. An AD domain controller authenticates and authorizes all users and computers in a Windows domain type network—assigning and enforcing security policies for all computers and installing or updating software. For example, when a user logs into a computer that is part of a Windows domain, Active Directory checks the submitted password and determines whether the user is a system administrator or normal user. http://en.wikipedia.org/wiki/Active_Directory.

mail address, company department) is collected. This makes it easy to locate the person and find the equipment owned by the user. All entries are categorized as incidents or order. Each application has a priority categorized on the basis of which is determined by the response time and resolution time. Exceeding the time to send the defined escalation in the system. In the case where the first line of the support is unable to resolve the notification, it is passed to the second line. IT Helpdesk can be assigned to fix applications of internal knowledge base that was used when handling the application.

All employees have access to the updated knowledge base shorting procedures and resolve the most frequent requests. The Knowledge Base is segregated according to the suitability of products for users and IT staff support. Using the Knowledge Base gives you the opportunity to support departments of solving the simplest of cases, resulting in better utilization of resources and cost savings associated with the management of the IT infrastructure in the organization at the same time reducing service costs. The Knowledge Base is built on the basis of the cases occurred and proposed solutions, and established procedures. Thanks to the service consultants can quickly classify the reported problems, solve routine matters and complex guided by established rules for competent professionals or suppliers. An additional feature is the ability to inform users about changes of the IT infrastructure in a well-defined place.

Customer support is a range of customer services to assist customers in making cost effective and correct use of a product. It includes assistance in planning, installation, training, trouble shooting, maintenance, upgrading, and disposal of a product.

Regarding technology products such as mobile phones, televisions, computers, software products or other electronic or mechanical goods, it is termed technical support. Automation of service organizations aim to achieve, for example, lower mean time to repair (MTTR).

Customer support automation involves building a knowledge base of known issues and their solutions to support incidents with delivery mechanisms, often by expert systems. A service automation platform includes a suite of support solutions including proactive support, assisted support and self-support.

With automated support, service organizations can make their services available to their customers 24 hours a day and 7 days a week, by monitoring alarms, identifying problems at an early stage and resolving issues before they become problems. Automated assisted support enables remote access to sites that need instant problem solving. By automating the collection of information of devices and applications coexisting with the supported application, problems can be quickly detected and fixed.

Automated self-support, automates the self-support process, freeing users from self-help diagnostics and troubleshooting from on-line libraries or knowledge bases. Support automation solutions can be integrated with customer relationship management (CRM) systems and network management systems (NMS), and provide full customer reports to management tallying problems and incidents that were solved mechanically ensuring compliance to industry¹⁷.

Types

- **Proactive Support Automation** refers to supporting automation solutions that minimize downtime and enable 24x7 availability. This is achieved by constant health check tracking with diagnostic procedures to enable issue monitoring and problem solving,
- **Preemptive Support Automation** refers to a support solution that utilizes information that is either generated or culled from an application or service, e.g. log files, database queries, configuration changes, etc. This information can then be exploited to predict service degradations or interruptions. The upshot of this is a higher level of service/application availability for the underlying application,
- **Self-support automation** is the term organizations give to their support structures that provide on-line libraries and tools for self-help and easy troubleshooting solutions to automatically and precisely diagnose and resolve problems and incidents,

¹⁷ <http://itsm.itlife.pl/content/view/10029/73/> (20.03.2013).

- **Assisted support automation** is the software that enables support personnel to remotely access their customers desktop or server for diagnostics and trouble ticket resolution.

Customer service may be provided by a person (e.g., sales and service representative), or by automated means. Examples of automated means are Internet sites. An advantage with automated means is an increased ability to provide service 24-hours a day, which can, at least, be a complement to customer service by persons.

Another example of automated customer service is by touch-tone phone, which usually involves a main menu, and the use of the keypad as options (i.e. "Press 1 for English, Press 2 for Spanish", etc.).

However, in the Internet era, a challenge has been to maintain and/or enhance the personal experience while making use of the efficiencies of online commerce. "Online customers are literally invisible to you (and you to them), so it's easy to shortchange them emotionally. But this lack of visual and tactile presence makes it even more crucial to create a sense of personal, human-to-human connection in the online arena.

Automated means can be based entirely on self - service, but may also be based on service by more or less means of artificial intelligence.

Customer service is the provision of service to customers before, during and after a purchase. According to Turban et al. (2002), "Customer service is a series of activities designed to enhance the level of customer satisfaction – that is, the feeling that a product or service has met the customer expectation".

The importance of customer service may vary by product or service, industry and customer. The perception of success of such interactions will be dependent on employees "who can adjust themselves to the personality of the guest, according to Micah Solomon. From the point of view of an overall sales process engineering effort, customer service plays an important role in an organization's ability to generate income and revenue. From that perspective, customer service should be included as a part of an overall approach to systematic improvement. A customer service experience can change the entire perception a customer has of the organization.

Some have argued¹ that the quality and level of customer service has decreased in recent years, and that this can be attributed to a lack of support or understanding at the executive and middle management levels of a corporation and/or a customer service policy. To address this argument, many organizations have employed a variety of methods to improve their customer satisfaction levels, and other key performance indicators (KPIs).

Bibliography:

Cabinet Office, *Service Operation (Maintenance Services)*, ed. TSO (The Stationery Office), edition: 2011.

Kuck J., *Nowoczesne rozwiązania do wsparcia procesu zarządzania logistyką w resorcie obrony narodowej*, [w:] *Innowacje w zarządzaniu procesami logistycznymi sił zbrojnych*, red. nauk. Jałowiec T., Nyszk W., AON, Warszawa 2012.

Kuck J. *Nowoczesne technologie w logistyce*, AON, Warszawa 2013.

Kuck J. *Nowoczesność, efektywność i bezpieczeństwo współczesnej logistyki*, AON, Warszawa 2014.

Pryliński T., *Informatyzacja Urzędu MON* [w] *Myśl wojskowa*, wyd. MON Warszawa 2006.

Service Strategy (Service Strategy), OGC, ed. TSO (The Stationery Office / HMSO) edition: XII ed. 2005 <http://itsm.itlife.pl/content/view/10043/88>.

Sharon Taylor, *The Official Introduction to the ITIL Service Lifecycle*, ed. Stationery Office, 2007.

Tyrała P., *Sekuritologia. Bezpieczeństwo kompleksowe*. Wyd. Max – Druk Rzeszów 2010.

Tyrała P., *Bezpieczeństwo ujęcie kompleksowe*. Wyd. UKiP J&D Gębka Gliwice 2012.

Turban, Efraim (2002). *Electronic Commerce: A Managerial Perspective*. Prentice Hall.

Buchanan, Leigh (1 March 2011). "A Customer Service Makeover". *Inc. magazine*. Retrieved 29 Oct 2012.

Paul H. Selden (December 1998). "*Sales Process Engineering: An Emerging Quality Application*". *Quality Progress*: 59–60.

Dall, Michael; Bailine, Adam (2004). *Service this: Winning the war against customer disservice* (1st ed.). Last Chapter First.

Implementing an online help desk system based on conversational agent
Authors: Alisa Kongthon, Chatchawal Sangkeetrakarn, Sarawoot Kongyoung and Choochart Haruechaiyasak. Published by ACM 2009
Article, Bibliometrics Data Bibliometrics. Published in: Proceeding, MEDES '09 Proceedings of the International Conference on Management of Emergent Digital Eco Systems, ACM New York, NY, USA. ISBN 978-1-60558-8292, doi:10.1145/1643823.1643908.

Solomon, Micah (4 March 2010). "*Seven Keys to Building Customer Loyalty--and Company Profits*". Fast Company. Retrieved 29 Oct 2012.

"Lunch Lesson Four - Customer service". BBC News. October 3, 2003. Retrieved October 27, 2008.

<http://itsm.itlife.pl/content/view/10029/73>.

Knowledge of ITIL <http://itsm.itlife.pl/content/view/10017/62>.

http://pl.wikipedia.org/wiki/Wsparcie_techiczne.

http://pl.wikipedia.org/wiki/Service_desk.

<http://www.polcom.com.pl/data-center/kolokacja>.

<http://itsm.itlife.pl>.