

Design of IT Service Platform System Construction Scheme

Wen-rong JIANG and Bo-yan ZHANG

School of Computer and Information, Shanghai Polytechnic University, Shanghai, China

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Abstract. This article is based on the design of the IT service platform system construction project undertaken by Shanghai Zhenhua Heavy Industry (Group) Co., Ltd. It is to standardize the IT operation and maintenance work flow of the "LiangHua" Department, clearly define the functions of the Ministry of Chemical Industry and Chemical Industry, improve the standardization and efficiency of the operation and maintenance work, and have its own characteristics of the IT operation and maintenance management system. By expressing the facts, the article finds that when the service desk introduces this service management process, the system gradually runs stably, and the complex operation and maintenance business becomes clear and hierarchical, which greatly improves the problems such as the inability to save processing records and process records before. It also solves the problem that the second-line engineers are delayed in their work because they often answer the telephone. It not only speeds up the efficiency of operation and maintenance work, but also improves the quality of operation and maintenance work.

Introduction

Purpose

With the deepening of construction and application, users rely more and more on information technology, and the operation and maintenance work of Zhenhua Heavy Industries Information and Standardization Management Department (hereinafter referred to as "Lianghua Department") is becoming more and more complicated. For the Ministry of Operations and Maintenance, the pressure is increasing. At the same time, due to the lack of systematization and standardization, it relies too much on the individual ability and attitude of the operation and maintenance team, as well as the high frequency of coordination among managers, which leads to more deficiencies in the operation and maintenance work. These deficiencies make the operation and maintenance work of the Ministry of Operations and Maintenance have more hidden dangers. If the number of telephone calls is too large, 10% - 15% of them are in the consultation processing state, tired of coping with these urges; telephone and e-mail, there is more duplication of work. Mail returned to the user did not see, but also called to ask; process processing is not currently processing records, process records, often can not be retrospective, changes are too frequent, there is a situation of ups and downs, and so on.

In order to standardize the IT operation and maintenance workflow, clearly define our work functions, improve the standardization and efficiency of operation and maintenance work, and reduce the operational risk of information systems, Lianghua Department has introduced mature operation and maintenance management methods (including ITIL, ISO20000, etc.) and combined with the actual operation and maintenance needs of the Lianghua Department to establish IT operation and maintenance management system with its own characteristics and implement it step by step in the follow-up work.

Significance

IT service platform is an extremely important part of an organization's IT department. It is by far the best way to deal with front-line IT support issues. It should become a daily contact point with IT users to handle all failures and service requests, while using specialized software tools to record and manage all these events. It can not only improve customer service, feeling and satisfaction, provide communication and information through a single contact point, improve service accessibility, but also improve collaboration and communication capabilities, better manage infrastructure and control, improve the utilization of IT support resources and the efficiency of business personnel, and provide

more meaningful management information for decision support in order to recover to users as soon as possible "Normal Service".

Requirement Analysis

Institutional Aspects

A unified service management standard and engineering standard as well as a unified operation and maintenance management methodology are initially established. At the same time, a service management system with help desk as the dispatching center and operation and maintenance management process and service report as the centralized manifestation is initially established.

Process Control

The visualization of operation and maintenance process is preliminarily realized and quantifiable. Preliminary implementation of comprehensive analysis and display of service data (such as service requests, troubleshooting, service level, etc.)

Standardization

Through specialized and standardized operation and maintenance process management and knowledge transfer system, the system can reduce the operation and maintenance risks, improve the efficiency of operation and maintenance work, and meet business needs.

Configuration Management

Establishment of configuration management system, establishment of configuration files, basic IT equipment management, baseline management and configuration audit.

Operational and Maintenance Planning

Relying on the basic data of operation and maintenance, the quality of operation and maintenance is continuously improved. Strengthen the planning of operation and maintenance work, and plan ahead in the scope, object, content, quality and resources of operation and maintenance.

Risk Control

Depending on the monitoring system and emergency management method, the comprehensive analysis model of IT capability and emergency plan database of the Lianghua Department are established to ensure the high availability of the system.

Construction Model of Service Desk

Virtual Service Desk

The use of technology (especially the Internet) and business support tools can give the impression of a central desk where people may actually be dispersed or located in any number or type of geographical or organizational location. This will help in choosing "home office", second support group, offshore or outsourcing, or any combination that meets users' needs. But it must be noted that all these environments require security measures to ensure quality of service and cultural coherence.

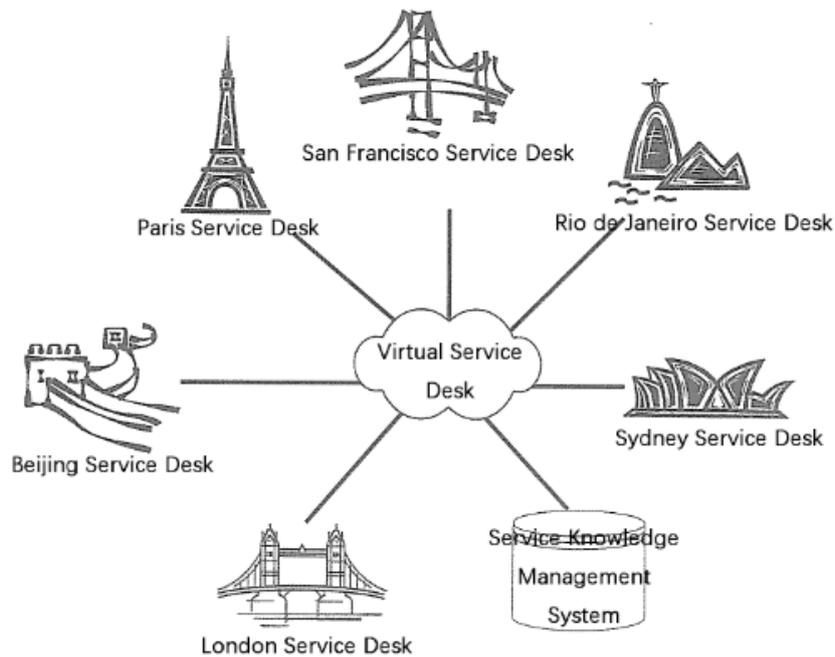


Figure 1. Virtual service desk

As shown in Figure 1, the virtual service desk gives people the impression of a central service desk, which can be connected to the service desks in different areas, such as Beijing, London, Paris, etc. They can work in different places, but through the virtual service desk connected to provide users with undifferentiated services, so that users can not feel the clothes being connected. The desk may not be in the same country or time zone.

Sunflower Program

Some global or international organizations may wish to combine their two or more desks scattered around the world to provide a 24-hour "sunflower" model of service. For example, the Asia-Pacific desk can handle calls during standard office hours, beyond which all unresolved failures can be handed over to the European desk. The service desk will handle these calls within a standard time, with its own failures, and then hand them over to the service desk in the United States. Ultimately, responsibility is handed over to the Asia-Pacific service desk, thus completing the cycle.

This allows 24-hour service at a relatively low cost, since all desks do not have to work overtime. However, in order to continue this method, we must deal with common processes, tools, shared information databases and cultures, and also need to effectively control the upgrade and migration process.

In order to meet the IT technical support needs of Zhenhua Heavy Industry's global layout, the "Sunflower" Virtual Service Desk should be considered.

There are two ways to construct a sunflower virtual service desk:

Fully self-built: According to the complementary points of Zhenhua Heavy Industry's overseas branches, and according to the time zone (including daylight saving time), select the appropriate location layout to form a hotline platform to support global 24-hour support.

Partial outsourcing: If it is difficult or costly to build a self-owned service desk in overseas branches, we can consider building a service desk at headquarters, and then outsourcing the non-working service desk at headquarters to meet the 24-hour support needs.

Whether self-built or outsourced, to build "sunflower" service desk, we need to provide users with undifferentiated services through IP phone and service desk support system, so that users can not feel that the service desk they are contacting may not be in the same country or time zone.

Service Mode

According to the actual situation of Zhenhua Heavy Industries, Zhenhua Heavy Industries IT Service Desk provides services through voice hotline, e-mail, website, Wechat public number and other ways. At the same time, in order to ensure the quality of service, different acceptance methods should be provided for the following situations:

Complaint: Establish a complaint hotline to provide users with a more direct way to communicate with service desk or IT service management managers and direct channels for complaints.

Big Client: In order to provide better service to big customers when Zhenhua Heavy Industry IT establishes its IT service company, we can set up a big customer service hotline so that big customers can more directly contact the big customer manager.

Capacity Building of Service Desks

The Role and Function of Service Desk

The service desk is an entry-level position for IT service managers, which is a common practice. Working at the service desk is an excellent "foundation" for everyone who wants to engage in service management. However, it may also pose challenges for those who do not understand the business or technology.

Users seeking help from the help desk should be able to talk to people who can meet their needs. Service desk staff should not be exhausted in less than a year due to excessive pressure. We should carefully select people with appropriate skills, in-depth understanding of the business, and provide adequate training, so as to avoid reducing the level of front-line support due to lack of relevant knowledge.

1. IT Service Management Supervisor

According to the role definition of the service desk mentioned above, an IT service management supervisor is required. However, considering the current situation of human resources in Zhenhua Heavy Industry IT department, it is suggested that the IT service management manager should be part-time in the short term.

2. Service desk analysts

According to the role definition of the service desk mentioned above, a service analyst is required. However, considering the current situation of human resources in Zhenhua Heavy Industry IT department, it is suggested that the IT service management director or hotline engineer should be concurrently employed in the short term.

3. Headquarters Hotline Engineer

The organization must ensure that at any given time a suitable number of people meet the business requirements for the help desk. Call rate can be very variable, often on the same day, the call rate can change from very high to very low, and then rise again. Organizations planning new service desks should try to predict call arrival rates and deploy personnel accordingly. Call arrival rates under current support arrangements must be analyzed statistically, then closely monitored and adjusted when necessary.

Many organizations will find that the inflow rate peaks at the beginning of the office day, then drops rapidly, perhaps another peak at noon. This obviously depends on the business of the organization, but often the mode of occurrence of many organizations. In these cases, part-time workers, family workers, second-line supporters or third parties can be used to cope with the peak.

At present, Zhenhua Group still lacks an effective way to accurately evaluate the call volume. However, according to the previous research, the number of calls per day should be 50-100 for all kinds of support from the Ministry of Chemical Industry and Technology. We can calculate the number of hotline personnel required according to the following assumptions:

Assuming that each call lasts 5 minutes (including recording, dispatching and tracking), the maximum number of calls per person per day is $60 \times 8 / 10 = 96$.

If there is a 20% first-line solution rate and it takes 10 minutes to solve these problems, the average length of each call is $(10+10)*20\%+5*(1-20\%)=7$ minutes, while the daily acceptable number of calls is $60*8/7=68$.

Assuming that the call volume of Zhenhua Heavy Industries will increase by 100% after the ERP goes online, the daily call volume is expected to be 100-200.

From this, it can be concluded that Zhenhua Heavy Industry IT needs 2-3 full-time hotline engineers, so that 136-204 calls can be answered daily.

In conclusion, considering the unbalanced inflow, it is suggested that Zhenhua Heavy Industry IT should be equipped with two full-time and one part-time hotline engineers.

4. Branch Hotline Engineer.

At present, it is impossible to count the users' repairs and demands of branches, but there is no significant call volume in terms of the size of branches and daily feedback.

Therefore, it is suggested that all the branches needed to construct the "Sunflower" scheme should be equipped with a part-time hotline engineer. After the service desk is online, the number of full-time hotline engineers should be determined according to the work order statistics in the tool.

Role Functions of Failure Management

1. Front line:

IT Service Desk section.

2. Second line

Many organizations choose to set up a second-line support group, consisting of people with higher technical skills than the desk (though still normal), and have extra time to specialize in fault diagnosis and resolution, free from telephone interference.

Such teams can deal with many less complex failures, allowing more expert (third-line) support groups to concentrate on dealing with deeper failures or the development of new systems.

When using the second-line group, it is better to set the group near the service desk, so as to facilitate good communication and facilitate the flow of people between groups, which helps to train/understand the work of the service desk, and to provide assistance in busy periods or in the case of shortage of staff. Second-line support managers (or team leaders) usually lead the team.

This group can be outsourced, which is more likely and necessary if the service desk itself is outsourced.

3. Three line

Third-line support is provided by many internal technical teams or third-party suppliers or maintenance personnel. Personnel organization varies from organization to organization, but may include: network support; voice support (if independent); server support; desktop support; application management. Different applications or types may have separate teams, and some may be external suppliers or maintenance personnel. In many cases, the same team is responsible for application development and support, so resources must be prioritized in order to give support sufficient importance

Environment Choice of Service Desk

The following points should be noted in the selection of service desk environment:

Relatively quiet, good sound insulation, avoid telephone interference; elegant environment, convenient arrival, so as to facilitate the reception of visitors, create a good image; relaxed and comfortable atmosphere and office furniture, conducive to alleviating work pressure; close to the tea room, toilet, convenient personnel, avoid long-term departure; consider close to the second and third line team, help encourage and support each other.

At the same time, it is suggested that the service desk provide 5*8 hours of service: follow the current staff working hours standard, and provide services from 8:00 to 17:00. The following two examples are provided for reference

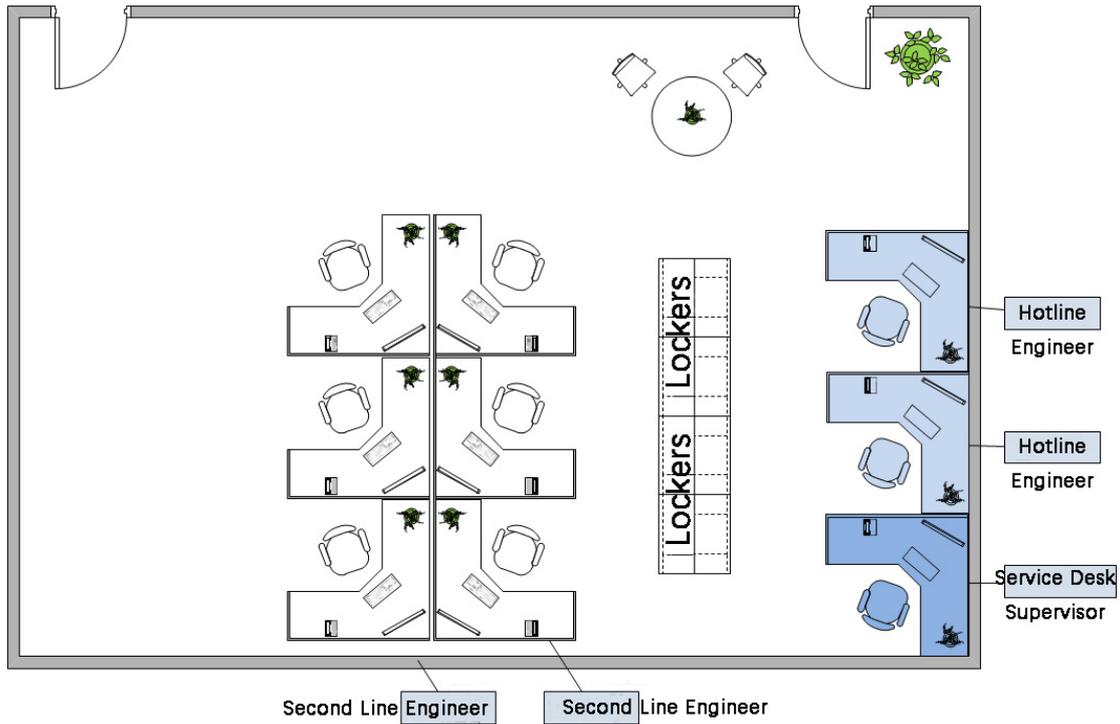


Figure 2. Example A of IT desk layout

As shown in Figure 2, the above figure is an example A of office layout of IT service platform designed according to the concept. Hotline engineers and second-line engineers can be in the same office, but the middle distance should be separated, so that the second-line engineers' workspace is relatively quiet, in order to receive visitors and create a good image. At the same time, it also avoids the interference between front-line engineers when they answer the phone. Or, hotline engineers and second-line engineers may not be in the same office, or even on the same floor, because they can communicate with each other by micro-mail or telephone, but it is better to work in adjacent areas, because considering the proximity of second-line and third-line teams can help encourage and solve related problems. But it is still the layout of the figure above. Hotline engineers call in at random in their own positions in turn. Hotline engineers submit work orders. If there are some simple problems that can be solved by the first line, they do not need to send the second line treatment. If the first line can not be solved, they send it to the second line engineers for processing, and finally make a summary. In this case, the desk supervisor plays a fairly important role. Important role

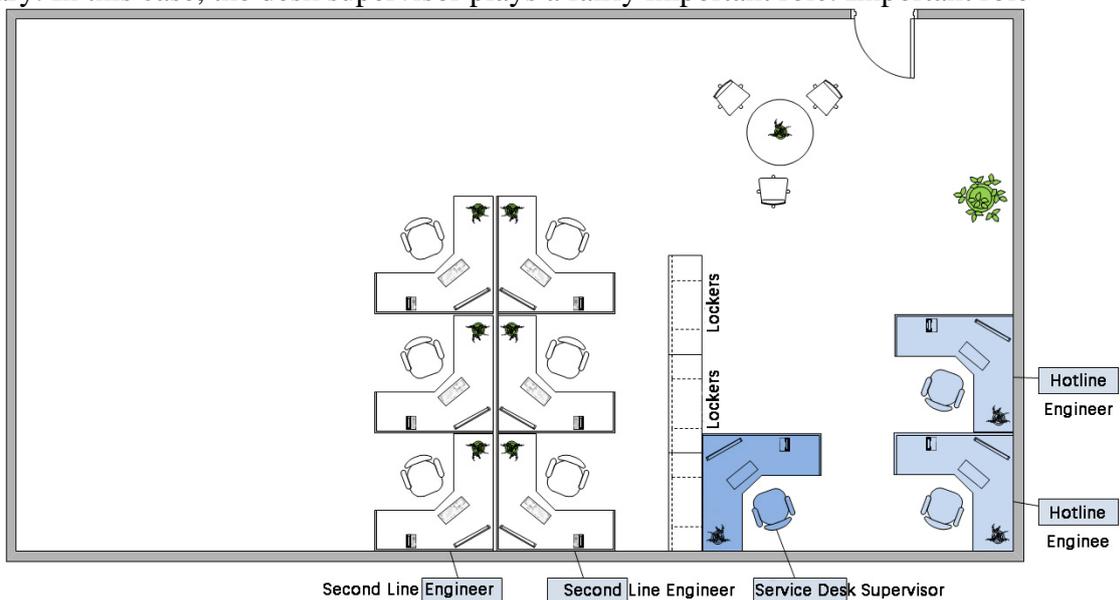


Figure 3. Example B of IT desk layout

As shown in Figure 3, the figure above is an example B of office layout of IT service platform designed according to the concept. Unlike Plan A, Plan B gives IT service desk managers a more independent office environment, while distinguishing them from ordinary front-line engineers, because service desk managers often have a relatively large workload, such as completing statistical and management reports. Represent the desk to attend relevant meetings; arrange personnel training and cognitive training; liaise with senior managers; liaise with change management departments; communicate changes or deployments that may affect the call volume of the desk; and assist analysts in providing first-line support when heavy workload or additional experience is required. All kinds of functions make the service desk supervisor's work special, which leads to the relatively special position. Of course, for the actual situation of Zhenhua Heavy Industries, both schemes are feasible.

Summary

At home, although the development of computer started later, in recent years, IT operation and maintenance and service industry has also developed rapidly. With the rapid development of modern technology in China, network system is an indispensable part of people, and the work of IT operation and maintenance service has been paid more and more attention. It can effectively maintain network problems and provide corresponding network service content to customers. However, due to various factors, the quality of IT operation and maintenance service is gradually declining, and it is impossible to solve the related network problems encountered by customers comprehensively and effectively. Therefore, the IT operation and maintenance industry must find out the factors that cause the problems according to the relevant problems, formulate effective solutions according to the corresponding problems, effectively improve the quality of IT operation and maintenance service, and establish a perfect IT service management system. And then promote the continuous improvement of IT operation and maintenance service quality.

By inquiring relevant information and combining with the actual situation of Zhenhua Heavy Industries Information and Standardization Management Department, the operation and maintenance needs of the Ministry and the service needs of business users are clearly defined. Therefore, after investigating and analyzing the specific situation, we have certain direction and ideas, and participate in the project according to our own work position, in order to solve the problem of Zhenhua Heavy Industries. Starting from the existing operation and maintenance problems of HMI, we should optimize the organizational structure of operation and maintenance management, achieve unified management and control of operation and maintenance work, and improve operation and maintenance efficiency

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References

- [1] Lu Qimeng. Quality Management Practice in IT Service Platform Project Development [J]. Science and Technology Innovation, 2018, (21): 69-70.
- [2] Wenrong Jiang, Jian Chen, Shiwei Lin. Research of Custom Management System for C2C E-Commerce[J]. The 2011 International Conference on Internet Computing(ICOMP'11), Las Vegas, USA: CSREA Press. 2011(7):302-305.
- [3] Yan Kai, Guo Hongyang. Planning and Design of IT Operations and Maintenance Service Management Platform [J]. Digital Design (Part I), 2018, (6): 114.
- [4] Li Yajie, Zhang Jianyun, Li Zhigang. Application of IT service management based on ITIL in ERP operation and maintenance [J]. Electronic Design Engineering, 2017, 25 (10): 120-124.

- [5] Application of Wang Qinke. ITIL in IT Operation and Maintenance Management [J]. Science and Technology Innovation Report, 2016, 13(29): 65+67.
- [6] Su Yanjun. Design and implementation of IT service management system based on ITIL [D]. Jilin University, 2016.
- [7] Wang Nan, Liu Erkang, Wang Junhua. Operation and Maintenance System Based on IT Service Management [J]. Enterprise Management, 2016 (10): 110-112.
- [8] Deng Lilong. Research and application of IT operation and maintenance service system based on cloud computing [D]. Guangdong University of Technology, 2015.
- [9] Sailer, A., Li, Y., Diao, Y., et. Service analytics for IT service management [J]. IBM journal of research and development, 2016, 60(2/3): 1-.
- [10] Eikebrokk, Tom R., Iden, Jon. Strategising IT service management through ITIL implementation: model and empirical test [J]. Total Quality Management & Business Excellence, 2017, 28(3/4): 238-265.
- [11] Rai, Veerendra K., Chandak, Praveen. Shift planning and scheduling for IT service operations management [C]. // 9th Annual IEEE International Systems Conference: 9th Annual IEEE International Systems Conference (SysCon 2015), 13-16 April, 2015, Vancouver, Canada. Syst. Res. Lab., Tata Consultancy Services, Pune, India, 2015: 645-652.