Information Technology Service Design

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Abstract

This paper presents a conceptual understanding of IT (Information Technology) Service design ,its components and the importance of service design in the lifecycle of Information Technology Framework . Service Design is a DNA of a service plan . Proper implementation of service design into the service plan enhances the quality of the service delivered there by improvising the entire set of processes involved in the business plan . Along with detailing the significance of service design , the scope ,value and aspects of service design , this paper intends to explain exclusively on "Information Security Management' - one of the important processes of service design . The goal of Information Security Management is to build a firewall around the sensitive data involved in the business plan and offer an analysis on the risks encountered both expected and unexpected , methods and strategies involved in the effective governance of complex sensitive data that are dealt on daily basis on the business environment . This paper outlines such modern analysis through real time example such that at the end of the paper a reader gets a lucid understanding of service design and its importance and also gain a weighted insight about the role of information Security management under the service design aspects inside the lifecycle of the service architecture .

Keywords : service design , information technology management , service plan

IT Service Design

Introduction

Right after the service goals are set, service strategy being analysed and well planned,the role of service design begins detailing the architecture, policies and agreements involved in the forecasted service plan to get a solid   understanding on how normally 'things' roll on the business floor depending on the requirements. The significance of service design is such that it aims to provide a blue print of an end result of the service .The structured phases of service design typically suggests suitable methods,measurements and metrics to improve the efficiency of the business model, clarifies operational level IT tasks and organisational strategies , discusses cost , deliverable timescales It list the current and past changes made in the service plan , and available service tools to adapt to achieve the business goals ,steps to successfully incorporate those tools into the service plan and tell us how well that is going to change the overall benefit of the business within the architectural boundary . In short ,service design offer a proof-planning of all conceptual business policies into physical acknowledged agreements   between   two parties involved typically the service provider and the end user .

This paper parts the title in 3 sections ,where in section 1 service design concepts are explained,Section 2 elaborates Information Security Management through discussing few peer reviewed articles on the same topic.

Section 1 :Concepts of IT Service Design

Objective

The objective of Service Design is to provide a structured outline of business policies, agreements needed for the business environments in all the phases of the business plan . It also gives space to change from existing designs to new suitable ones such that it is accepted across the environment by all to avoid any conflicts at both understanding level and at the execution level in the business .Please refer the Figure 1 below to capture the role of service design in the IT framework .
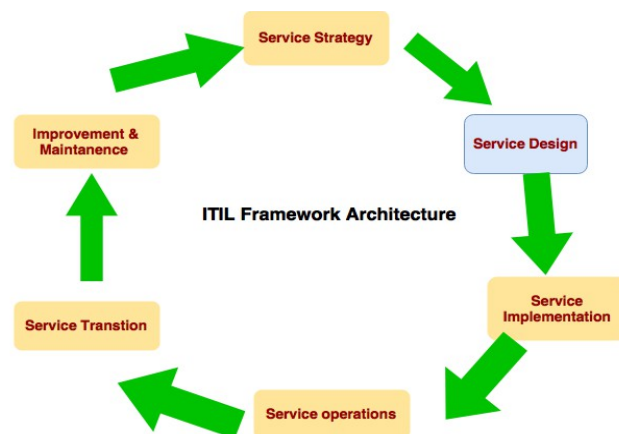
Figure 1 : Service Design in Framework

Values Of Service Design:

Given that it is properly constructed and executed a good Service   design design benefit the business environment in the following ways :

1)Cost effective :

 Although the business plans and goals are met it would be ineffective and be considered as a flaw if the cost of the product exceeds its forecasted estimate. Therefore as a business architect its always a good pointer to remember that while constructing service design , all the factors involved with minimising cost without compromising on the service or the quality of the product should be thoroughly examined from end to end .

Example :

Cutting down the cost on lavish interior designs for a whole sale retailer company .

Costco Vs IKEA

IKEA , an exclusive retail company dedicated for decorated rooms,spaces and furnitures spending on its interiors to attract customers aligns with its business goal whereas COSTCO a whole sale retail company like COSTCO have a simple customer friendly interior set up instead of spending on a lavish interiors that doesn't match with the business goal .

2)Quality :

With cost under control that is already estimated with the criteria of high quality of the service offered , a well constructed design obviously result in good quality as desired by the business plan . Here the The business architect should compare and analyse the best methods practised in the system   that enhances the quality of service, product and operation which in turn enhances the performance of the business model .

Example : Netflix

A leading online video streaming company which in a short span of 8 years have acquired half a majority of subscribers in north america and still expanding successfully in overseas countries sets minimum charges for a customer , improves its quality by profiling customers according to the pattern behaviours of browsing contents and acquiring most wanted and searched repertoire of movies with respect to the user choices.

3)Consistency :

When cost and quality in a straight line , now we need to improvise the performance of the system. Complex ideas from all departments are put through conventional metrics to enhance the overall improvement . A good service design will check whether the principles and conditions of the business models are addressed first .

 Example :

are both admin and sales team of the retail company working on the same agenda ?

Are the independent goals of the respective teams is in lieu with the common goal of the company

Do all the departments understand the what need to be worked and what not to ?

This   result in uniform progress on all the sides of corporate, operation and organizational live which ensures the consitency of the whole business model .

4)Adaptation :

This is the significant benefit of the service design . As change is constant and unavoidable in any architecture framework , the good service design must guide the architect to be flexible in adapting to the best model in terms of current practice and suggesting appropriate metrics in order to deliver the expected results . Several system tools are designed in this stage according to the business requirements and to monitor the current changes in the design and how well the recent changes accomplish the business goals.

Here it is important to focus on the question that :

- Are the recent design changes conflict with the common goal ?

- Why in the first place the existing services needs a change ?

Example : Uber Vs Ola.

Uber Vs Ola , while uber was the pioneer of interactive taxi services found in America , with its misunderstanding of agreement with respect to employee relations , data security threats and failure to adapt to native environments when expanding business overseas, Uber lost to Ola , a competitive hire and ride taxi company started in India whose strategic service goal approach was to capture the unsatisfied users(customers/drivers) of uber by rectifying the former's mistake by being adaptive ,with more of both business and profit purpose have made Ola a successful taxi service in India

5) Governance & Management :

Here, the resultant quality and performance of the design directly result in the effectiveness of the governance . Managing information across all levels of the lifecycle of design results in better decision making with the help of interactive communication at all levels of the business .

6)Risk analysis : Although well organised and maintained , a business model is vulnerable to risk factors if not analysed properly on all the factors including corporate, organisational , social factors that can potentially affect the system causing heavy risk there by compromising the quality of the service. Hence predictive methods such as pattern recognition tools , algorithms that are focussed on predictive failure trapping should be followed to reduce the risks as to revive from the risks encountered .

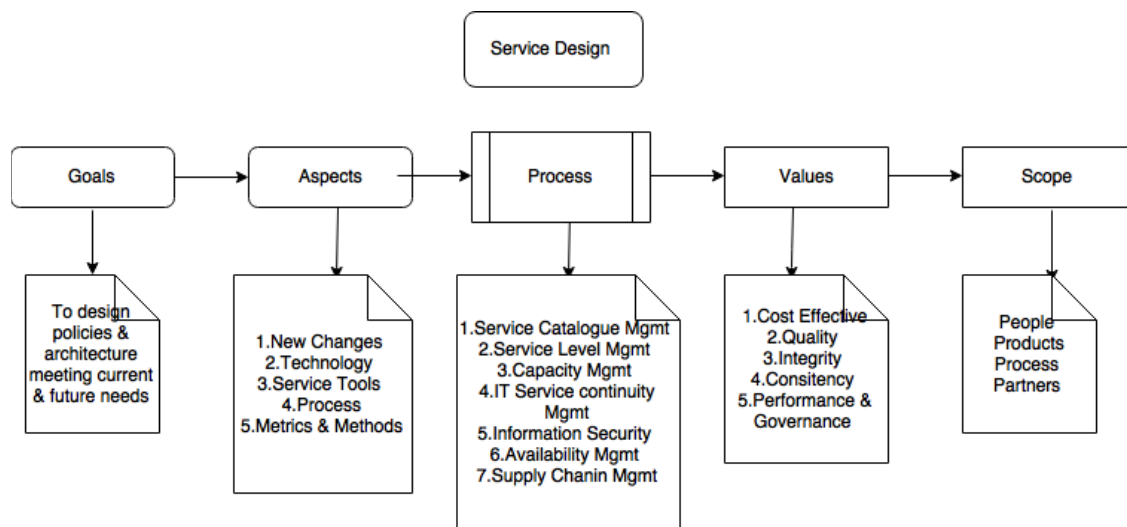Please refer the below figure for the service design map

Figure2 Service Design Map

Process of IT Service Design :

The service design comprises a set of important process in tits life cycle and in each process a specific task in alignment with business requirements is achieved by increasing the overall improvement .Care should be taken such that none of the process exist with independent agendas which will only create chaos in the business model . All the process should corroborate with each other and flow accordingly that a growth of one process in-explicitly increases the growth of another process.

1) Service catalogue management :
In this phase , a checklist is ensured to know that all of the products offered are listed, explained in detail to let know the end user what are all the services offered and at what costs on operational ends available in the business environment . It answers the below questions :

- Are the end customers able to see all the products /services offered ?
- Are the products priced at an optimised cost suiting the financial resource and allocations ?
- Does the priced products matches the customer satisfaction ?
- Does the service catalogue answers all the questions of business needs ?

Example : service catalogue of a Bank brochure

catalogue of IKEA

2)Service level management :

In this phase , conceptual understandings are converted into legal agreements,

general policies and principles are   elaborated   and clarification between the service provider and

the user are explained in detail to ensure the smooth relationship between all the parties involved .

- What are all the end user need to know about the offered service ?

- Are the limitations and restrictions are clearly explained and acknowledged by the

  participants ?

- Are the policy and principle narrowing the flexibility of the entire business model ?

- Do the enlisted policies and agreements classify the legal liabilities of all the parties ?

Example : a)Terms and conditions page before you sign up for an email set up

b)Updated Privacy policy of Facebook

contract agreement between corporate employee and the employer .

3)Capacity management   : This phase ensures there are   enough resources   available to continue
and how well the resources can be managed such that the resources are fully utilised upto their
capability to offer a end product . The number of resources should be matched with the budget for
the resources and vie versa. At no point , there should be neither low number of stocks with
surplous funds nor oversupply of stocks with less funds allocated . Always the budget should match
with current and future business requirements and active tracking of funds allocation to the product
capacity is neatly monitored and managed in this phase .

- What is the maximum capacity of the business offer ?

- How and in what ways time scale affect the capacity delivery of the product ?

- Are there enough funds to accomplish required number of products?

Example :

Flipkart big billion sale failure 2015 .

In 2015 Flipkart An   online retail store like amazon advertised some of the larger than life   of
promotional offers /festival discounts to attract its customers on the festival season of the year. To
Flipkart's shock and dismay hundreds and thousands of customers accessed Flipkart in a specific
period of time to avail the advertised offers ,ended up paying   for the products that was not
available with Flipkart's stock . Flipkart which failed to calculate its stock availability with both its

vendors and suppliers collapsed as it could not manage the customer requests without the actual stocks resulting in drop of sales , and in share price in the market for the entire season .
availability management

4)IT service continuity management

  With power of information technology and its collaboration interwoven into all in business nowadays its important to choose suitable it service and supported devices to manage and maintain the business requirements n this phase , depending upon the the business needs and functionalities computer networks , necessary database, data warehouses are picked ,designed and exclusively maintained to suit the customised needs of the business . At no point should exist a situation such that the business needs are affected   because of poor mapping and maintenance of devices and network .
The same flipKart example can be considered here .
FlipKart failed to analyse the maximum capacity of the user access the flipKart servers could handle. It also failed to update the stock information, their estimated chart availability into their databases prior to the sale . With neither of the crucial factors addressed, the e commerce resulted in collapse affecting the business goals as well as the brand value of the company .

5) Information Security Management(ISM)
This phase takes care of protecting the information and maintaining the integrity of the sensitive data used at various point of level inside the business model . Complex algorithms and counteractive measures are analysed by examining the prediction of potential breaches. Necessary security measures are undertaken to avoid the security breach that can potentially affect the performance and quality of the service delivered . following questions are addressed in this process of service design :

- Are the information properly secured ?
- Are the security measured monitored regularly ?
- What are all the risk factors involved in case of security threats ?

6)Supplier management :

This phase ensures that the relationship between the suppliers and vendors are maintained such that suppliers are very well aware of the level of quality to deliver as per the business needs and always quality products offered with best of price for both the parties .

This focus on

- Do the supplier aware of the quality expected by the supplier ?

- Have all the business needs properly communicated to the supplier ?

- Are the price offered for the product is at an optimised level ?

- Are the time scale , delivery nature and requirement of the business vendor is properly communicated to the supplier ?

Section II : Information Security Management (ISM) :

Goal :

The main goal of ISM is to protect the integrity and security of the data in all the service level activities both inside and outside the service life cycle effectively mapping the business needs with information technology security .

The following key notes are addressed in the objective of ISM :

- Availability: Data is readily available in the data base according to the business needs . It can be accessed at any requested time and the business systems should be designed in way they could manage attacks from untrusted scenarios .It should also be fed with recovery process as a counteractive method of retrieving vulnerable or victimised data inside the system.

- Integrity : The data inside the systems should be always accurate, zero percent duplicity so that it becomes physically impossible to attack the data from any sides. Integrity of the data also ensures high quality and performance of the service offered .

- Confidentiality : The ISM should focus on limiting the visibility of the information available according to the authorisation levels with respect to all departments . This enhances permissive authorised data to travel inside the model instead of independent access inside the system which is more prone to security threats . Example : Hiding the client billable information to inter department level employees. Or prompting access code or one time passwords to access highly classified information regarding the top level management .

- Authenticity : This iterates basic idea of the above notes on 'confidentiality',except in addition it focusses on transaction management . All the transactions shared between the vendors ,suppliers , employers and users should be authenticated via secure platforms to avoid phishing methods that trap the sensitive data .Example : securetouchnet platform on myiit portal that exclusively manages my account page of student portal consisting of account activity , payment activity , payment process etc. This secure authentication confirms and clarifies the business goal of the ISM phase : to avoid security threats in the first place .

Policy :

Policy discusses the best practices and methods to effectively manage the ISM to improve the overall data security . Following are the key factors of Policy in ISM .

- Security Framework : An exclusive security strategy is devised as per the business needs to protect the meta data involved in the business model . A detailed monitoring on business plans, goal is set up and strict rules are set for the shared information with integrated, intra and inter networks to ensure that significance of data protection and creating an awareness on security threats . When doing above , care should be taken such that the business needs or its progress is not affected while incorporating any of this security practices . Hence proper channelised guidelines, control measures ,time schedules are generated in well advance to map data security with business goals .

- Information Security Policy : This is very important as it encompasses a set of guidelines to be followed by all irrespective of departments to satisfy the objective of security framework of ISM. Several strict reasonable rules are set in this level which are to be followed strictly . Some of the common security policies of Corporate Companies are

  ○ Policy on Access Entry : An employee of one bay should enter in another bay only by having proper access or by swiping his biometric access identity card so that his entry ,exit and time spent in the bay all are monitored.

  ○ Policy on shared content : An employee cannot use his official email id to personal use or to share any documents (both sensitive non sensitive) existing inside the shared

network to anyone outside the network .

- ○ Policy on external devices : An employee cannot bring or use any external devices such as pen-drive, external hard drive , CDs or any such devices which are not provided by the company to avoid data leaks .

- Information Security Management System(ISMS) :The main goal of ISMS is to provide a cost effective security measures otherwise it would rather become pointless to implement the measures at the cost of financial resources that is allotted for the business needs. A standard framework structure is used by bringing the scope of service design such as Process People products and partners into light that effectively encompass the following important elements of ISMS

1. Control – In this phase , roles and responsibilities ,authorisation levels are effectively set across the departments such that data remains contained in their respective levels . Example :an employee can access the shared network -> an admin can only access the server computers ->a db architect can only access the meta data and data warehouse schema

2. Plan – In this phase ISM device the detail plan of security guidelines is adapted such that there should be a common acknowledged document agreed by all participants irrespective of involvement in the plan or in the business needs . An Information Security Manager is hired to maintain and manage all the necessary documents,roles and responsibilities of the participants in compliance with the acknowledgement .Example : According to the author of the paper 'Information Security Management for the Integrated Platforms' , who suggests a plan of creating a data hiding and modularity through incorporating the idea of Service Oriented Architecture . The author also comes up with an integrated security model for e-commerce websites and cloud based systems /web services by explaining the need of integrated security models in todays worlds

3. Implement – Implementation explains how the plan and objectives of ISM should be executed satisfying the primary goals of security goals . By isolating the highly sensitive data centres from the commonly accessible group is one suggestion . A home set up can be the typical example of this isolated approach.In a home a family hall is accessed by all whereas individual rooms are accessed by concerned persons , and persons maintain

separate folders sorted with various levels like utilities ,bill, hospital records, rental records such that none of them mixes with one another and all these are kept in specific drawers so that its not only safe but also chances are unlikely to lose any collected information .

4. Evaluation – Evaluation of security measures is done by effective IT auditing . IT auditing is so important in ISM such that without it , the ISM would be incomplete . The main objective of IT auditing is to ensure data security by checking all the guidelines ,methods and practices set by ISM planning ,implementation and in Service Level Management (managing Service level agreements) as seen under the process of service design . Auditing should be done at regular intervals to ensure high security . Training sessions, practice sessions , security awareness programs can also be conducted at this level to evaluate the goals set by the planning phase of ISM .

  The author of the paper 'Information Security Management in local government' states that 'despite the security measures are evaluated as per the security norms ,special care should be taken to focus on human aspect of data security especially when dealing information communication technology systems such as e government websites . The author also suggests that evaluation of ISM should also be done with "human resource security " level , where concerned employee should be furbished with full details of norms and conditions while in the department or changing to another department to protect the data integrity across all level of jobs within the company .

5. Maintenance & Security Governance : Under this final phase , continual improvements of security practice is done by rechecking the questions addressed every time during the periodical IT auditing . A standard ISM approach specify that every security measure should be planned , implemented , examined and evaluated periodically to ensure the quality ,security and performance of the data . Thus a well maintained security model gives way to a constructed governance security practice that benefits such as

   • Thorough mapping of strategic goals to the business goals to the security goals resulting high performing system with desirable delivery as foreplanned .

- A successful practicable template of security measures that can be followed for similar business patterns of course with subjected to periodical improvement and maintenance.

- A clear understanding of risk analysis comprising all the factors such as acceptance , lessening , recovering and stabilising from the risk encountered .

- A well documented service level agreements that clearly prioritise the security goals and ways to ensure information security and metrics followed thereby achieving the ISM guidelines

- Successful management of resource and performance management resulting in positive feedback overall and ensuring data dependancy within the model .

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