CASE-STUDY
SOA DESIGN AND DEVELOPMENT FOR BEPET

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Abstract: Service Level agreement has given a new idea about the business where two organizations can work together on the based on some contract. The bepet which is an Energy company want to sign an agreement with IT department which can make Bepet services better for the customer and IT Company tries to fulfill all the requirements of Bepet. SOA is an IT Control policies follows in institution. The main concept of SOA is to provide services on SOA Governance from beginning to the end. There are many steps to complete the service level agreement which is needed for one organization and it starts from Service Broker which want to take services from the administration and send request and details about the service to the organizations. SOA supervisor which is main body of the service level agreement consult with SOA registry to send all the details about the service because they have establish the monitoring system.

Key Terms: Service Level agreement, bepet, Service Provider, Service Receiver etc.

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1. Introduction

The main concept of SOA is to provide services on SOA Governance from beginning to the end approach. The lifecycle of services are development, deployment and retirement of service framed by the process, policies, procedures, roles, and responsibilities for design-time governance and runtime governance (Philip Bianco, 2008). SOA registry is used to give the mechanism for have track of SOA assets, dependencies and relationships. With the help of SOA registry services can distributed, classified in significant method for an organization, The moral governance of SOA services supports in reducing problems associated to the misalliance of services and the similar enlargement hard works. The SLA monitoring takes responsibility to send the regular performance activity to the SOA supervisor and SOA supervisor update the information to the service requester's repositories supports corporate design also encourage to use the basic guidelines of the service level agreement which gives basic instruction about the developing the services. After developing these services business employees should learn about these services and try to do more practice. Services do not follow only one path these goes many roots so authorization and approval are must for security.

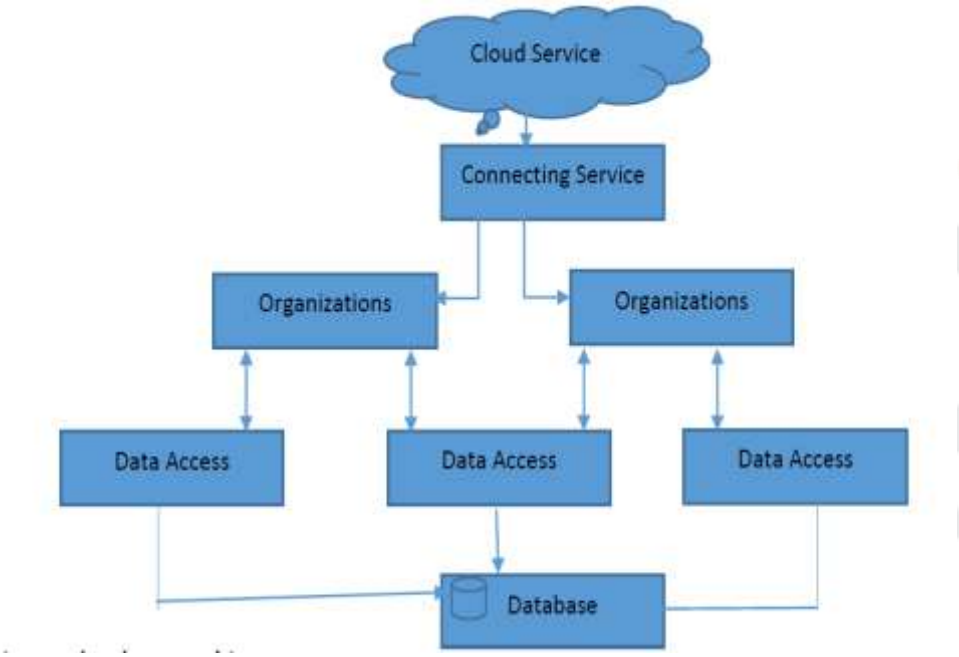

Fig 1.1 Cloud SLA Architecture

2. Literature Review

2.1 Set of SOA and SLA as required by Bepet

The top level is the association of one or more organization which is associated with "connecting service" and each organization have their own task and controls some movement as well as organization gives command one or more administrations which are taking service from the organizations. For example, the agreement of the same cloud service between two different organizations controls some security and gives the some permission to access. The second level is the only for judgment and would like to know that all the administrations which are getting cloud service from the organization these services are helpful to fulfill their task in the business mission. The association of the administration which needs different type of services make a strategy for the business management they approve the service component from the security operator which had given some restriction on the services but it is flexible and organization can change it on the demands. If

there is any problem happens during the establishment of the services then business management will return values which is the main cause of the services arrangement and it is indicted by "problem with arrangement". The association of organization will give another business administration which can handle this problem and gives the chance to manufacture goods. For example, a client such a web service delivering which can find all the valuable information in the starting of the structure and easily administration account can be accessed.

The third and final level which accesses the data from the organizations and utilizes theses services in the administration and compares the benefits of the information which they accessed, each service handles a particular task of the examination to protect the data which are stored in different type of arrays. For example, when an administrator would like to access some information he has to call to a specific business layer which will give the exact information what are the searching without taking much time. Security is more important in the development of IT services so it will develop such a system and will divide everyone that who can access which account but administrator has permission to access the employee amount. For example, a client which is delivering the web services they can find all the information in the starting of the structure and administrator account can easily accessed by him but later administrator can change and then no one access including IT client which has developed.

The main idea about the services that when one organization provides some service related to IT or anything else another organization adapts these services quickly without disturbance any previous services which are present in the administration and also concerned that these service are fulfilling the demand of the administration. There are few organizations which give miscellaneous procedure of the different client. For example, one administration can get services from one organization or the association of organization which can fulfill their demand and also requirement of the task.

Service Level Agreement (SLA) is the structure like Grid where many systems are service associated with each other and regularly services are going from one organization to another organization without interfering of third services. These services can be same organization or different organization which has permission to access the services. SLA is the central portion of the Grid framework where tasks and documentation are showed and can be implemented. The intermediary planned is made by service level agreement administrators and they develop an interface for the customer which takes resources of the interest in the CPU assets. The three stage submit agreement which gives an idea to protect resources which comes under the needs of the service level agreement (SLA). The completion of the Grid testing it has given an idea that how can be identified registered services. The outcomes shows the whole process is that if up gradation will be needed manager will do. The SLA is complete set of that how much time it will take delivering to implementation. Service Level Agreement (SLA) is based on some circumstances which have different motives but contractual. Service Level agreement can be defined with many characteristics in spite of the evidence exceptionally regular in telecom and dotcom situations. Service Level agreement are operated with the growing recurrence as portion of the common facility which is the association of the e-trade outsourcing and B2B administration.

The performance of the services establishment noted every day for every hours and those section of the service transaction which is rejected illustrates of the features of the service level which may be associated end-focus. The evaluation is often used during the implementation of the methodology or the demand of the level whatever they want. The movement of activity may be fundamentally assembling and reporting which are recognized and referring SLA violations. It is very easy in hard-wired administrations, where SLA can be accepted programming tools. The operators can be transported to gather the some virtual measurements, and the programming is used to supply the procedure. The services are not constant sometime organization will be need new services so they can install these new services without affecting previous service which working in the organizations and also same thing if any service stop or delete it will not disturb to the organization services.

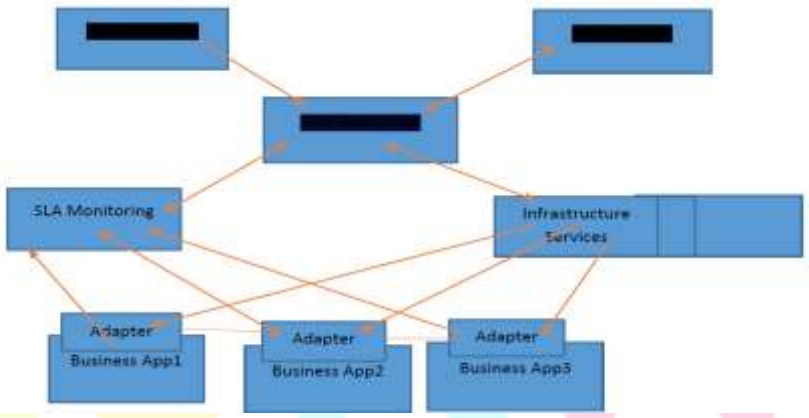

Fig 2.1 Service Level Agreement (SLA) flow

2.2 Set of BPM model, and draw a set of Business Process scenarios using Bonita tool (at least one BPM model using Bonita tool)

The BPM Model will show whole process of the service request which need Bepet from the IT Company and this company responsibility to fulfill all the requirements and the way of services success or failure. It also tells where the services can be stopped and will return those values which is causes of this failure.

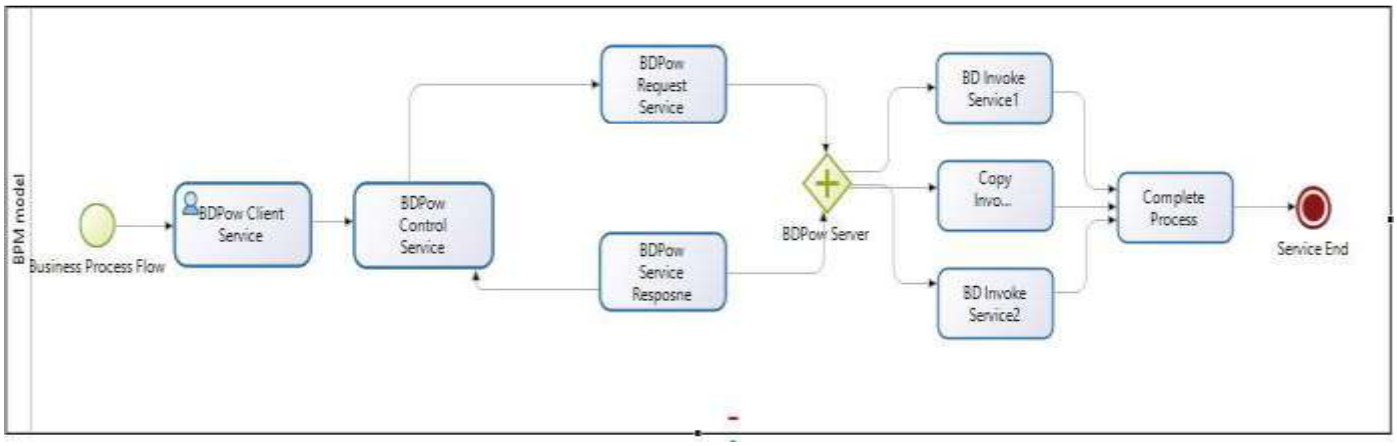

Fig 2.1 BPM Model

2.3 Set of web service components and infrastructure model for Bepet and their strategic business objectives

One organization bonds with another organization on the basis of the contract of the agreement of the service especially the implementation of the operating system layer. There are many bepet components which helps the organization especially these are .There are many sections of Bepet and each have their own work functionality which gives some procedure or realization for the organization and their action. The Bepet grips with functional and technical modules which encourage the service module to recognize one or more organizations. The administration of the Bepet only concerned about the quality of service which can give more facility. Bepet makes agreement with the IT department especially implementation of the operating system layer. There are many Bepet components which can save the energy as well the way of implementation few are:

a. **Home-based Saving Energy**: Energy is the more important sources of most of the work and used many places but there are many cases where energy is wasting because lack of implementation or they do not care. The department of energy is more concerned and try to do all the ways where energy can be saved and it begins from home based saving which is the largest consuming sources. Home-based saving energy which is supported by energy department is an innovative work that additional strength and cash while working the government organization. It opened the door for families and make them clever and developed understanding that how can save the energy. The water radiator which reading was not so good and consuming more energy try to replace it and also gave some practical guidelines to shoppers how to setup all the things.

b. **Saving Energy Guidelines:** Bepet sign an agreement with the Energy department and Climate (DECC) which offer energy saving guidelines through the websites, newspaper, magazines which gives all the instruction in a format only these are not the sources to get the information related to saving energy it also give calling facility where any user can call to the specific number and can get the information. The same process is running is Scotland which has given best result for both service provider (Energy Company) and service receiver (customer or organization) and reduce the money buying energy.

c. Energy efficient Product: The most and simple way to save the energy is that to install the energy efficient product and it will also reduce the fuel bills. Green Deal and Energy Company support the similar view.

d. Gas Boiler: Some experts say that only the production of energy is not important also saving of energy is essential. If no one will care to save the energy crisis can come soon and everyone will trouble so everyone should know that how can save the energy. The opinion of the Bepet administration is that economic ideas which depends on customer choice to produce energy productivity and protection of energy is related to investigational script.

e. Repairing Boiler Service: It is an important service and consider only those apparatus which are not doing well and consuming more energy so it will give instruction to replace these things else try to adjust such a manner that it perform good and how it is secure. For example, gas evaporator and heater working securely and proficiently, gas producer prescribe the kettle such a way that it adjust consistently. The winter season is the best to arrange the heaters because they are little inclined to break down. It is an important issue to discuss the property of heater and the principle of heating because it is also source to consume energy. The cost of repairing the apparatus or any other service which owner should discuss with organization designer in beginning.

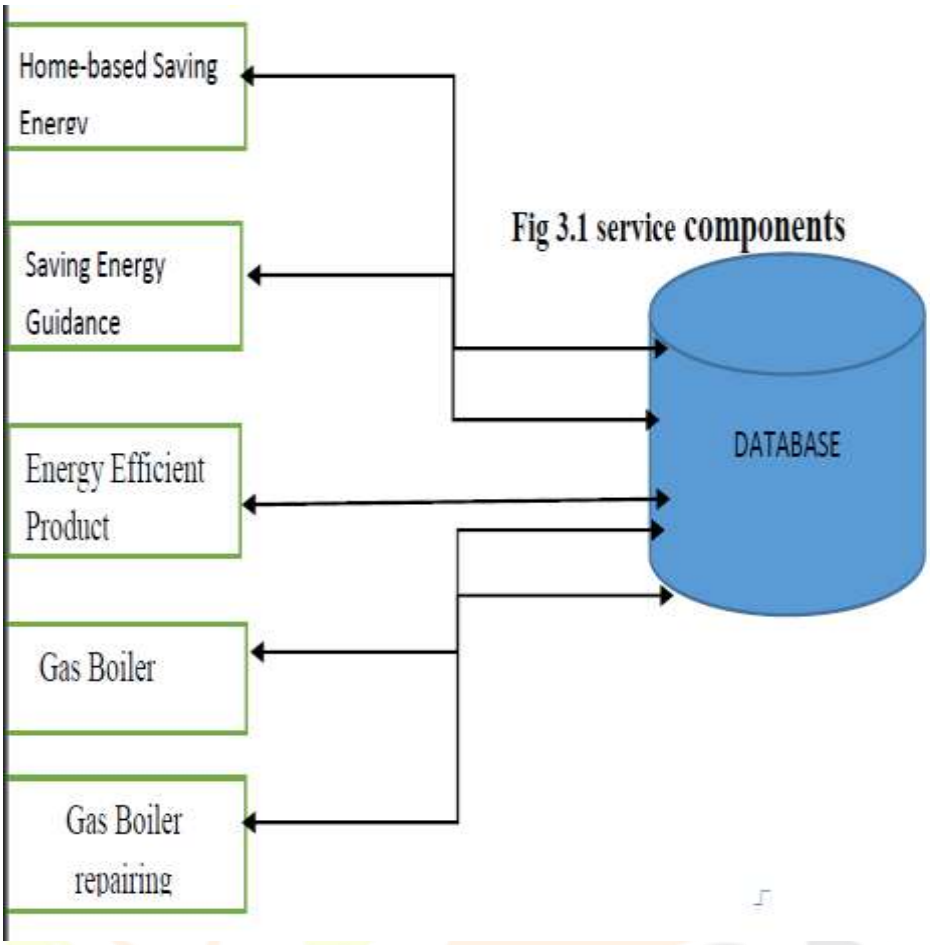

Fig 3.1 service components

Fig 2.3.1 service components

From, the above graph it can be seen that all the services are coming from the database and also going to the database. The overall meaning of this process is that when there will be no use of service it will be stopped and energy will return to the database and saving energy can be used again.

3. Research Design and Methodology

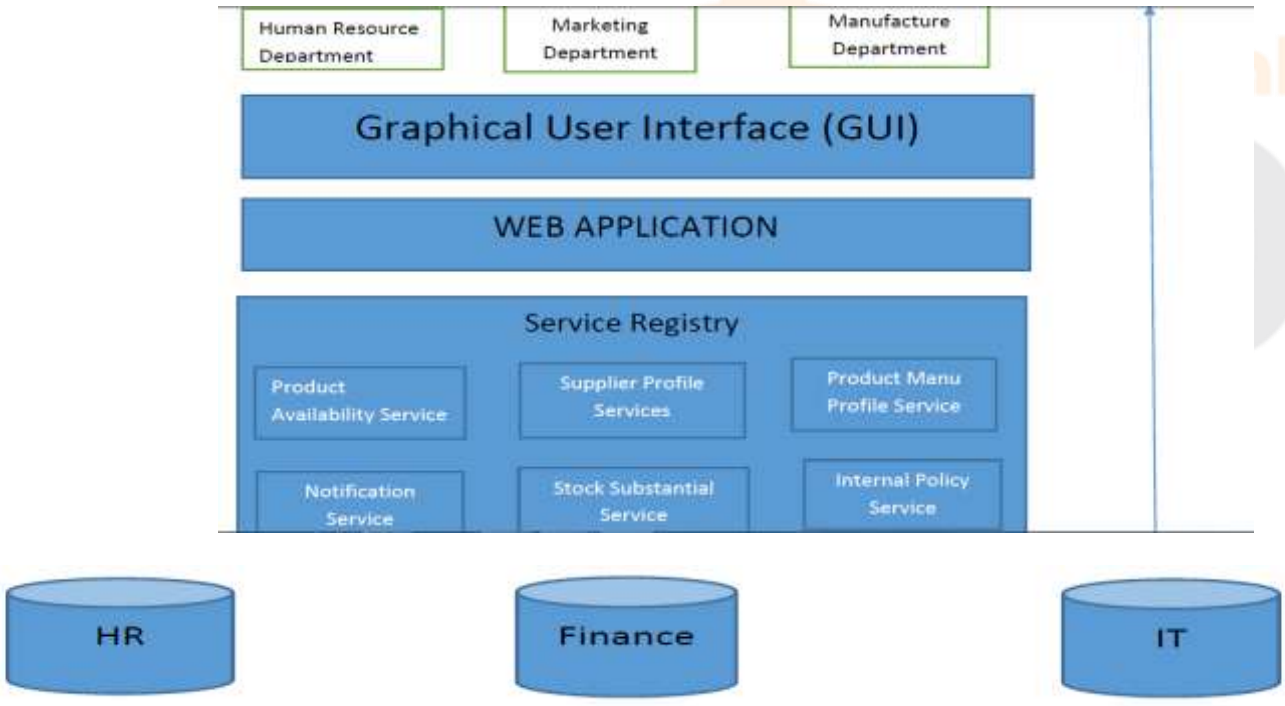

Fig 3.1 Web Services

3.1. List of services (B2B and B2C business types) for Bepet services

- There the list of services of Business to Business and Business customer for Bepet Service. **Business Implementation Services using Bepet SOA**
  Service oriented architecture is not only used between the customer and a small level company also it is implemented for business to business service where one company handles some part of data of the company. To make better service of the Bepet energy company, IT administration setup an environment which is the association between applications, platforms, business process and data sources which will play important roles in Bepet to make better services. Business to customer also comes under the business implementation where Business Company provides service to the customer to start or improve their business.

- **Bepet Service Oriented Architecture Service**
  There are three categories of the of the Bepet business application services, defining a service as self-contained and independent unit of work. The categories are: a task requiring a human decision, an information service and functional service. Technology service supports all of these categories.

- **Human decision services:** This type of services come under the human decision and wait for the action so it is called decision making component which comes under certain rules and application. Business to customer (B2C) service comes under the human decision. In case of the B2C service customers know all the facilities which are coming from Bepet and trying to give chance to improve their skills.
  A Decision module contains the following
  Rules Engine is the kind of way to estimate Rules or Decision table and store in corporate rules data.
  Metadata defines the evidence for a particular rule implementation and each set of methods are associated some kinds of rules or decision cells like XSD theory.
  A Cloud or web based Service binds the input, output, and the appeal to the underlying rule engine.
  This service is good for business development resources and pulls back evidence as part of the procedure. There are some process where business methodology may incrementally asserts evidence and refer to the rule engine for the interfaces. This is one of the reasons that service has to be support both stateless and state full communications. It can be created different variety of such business rules service modules.
- **Information Services:** The information service layer represents the data part of a Bepet company which is developed by the IT administrations, provisions, and frameworks allowing business requirements and adjusted to it in terms of the business. The essential destination layer can be connected in many ways and these layers are associated with modeling, business investigation and braiBepart, Meta contemplation and guarantees the concern with key contemplations which is related to data structure. Data architecture plays the role in the business investigation supporting the data administration.
  The SOA helps the quality of information as well as information consistencies:
  Process service has an essential role in SLA because it gives an idea that how the combination of services can be used which are the part of different organizations and these service are used in same administration for the development of business.
  SOA associated development apparatuses are important but hidden
  All the development of SOA services only can be used without seeing it because it is hidden.
- **Functional Service:** This kind of layer contains every last one of organizations features inside the Service Oriented Architecture. It holds the administration depictions for the business needs and the administration as well as their IT sign throughout configuration time. The agreement between two organizations is not static so service can be used at run time. This layer will be loaded at run time in compartment inside the operational system layer and which is the most important key for runtime execution. Functional layer plays an essential role during the establishment of the services and it always supports service oriented architecture. The work functionality of this layer is different and it is only concerned about those abilities of the organizations which are important during the establishment of the services. The implementation of the structural programming in service oriented architecture based on this layer.
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Fig 3.1 Bepet services

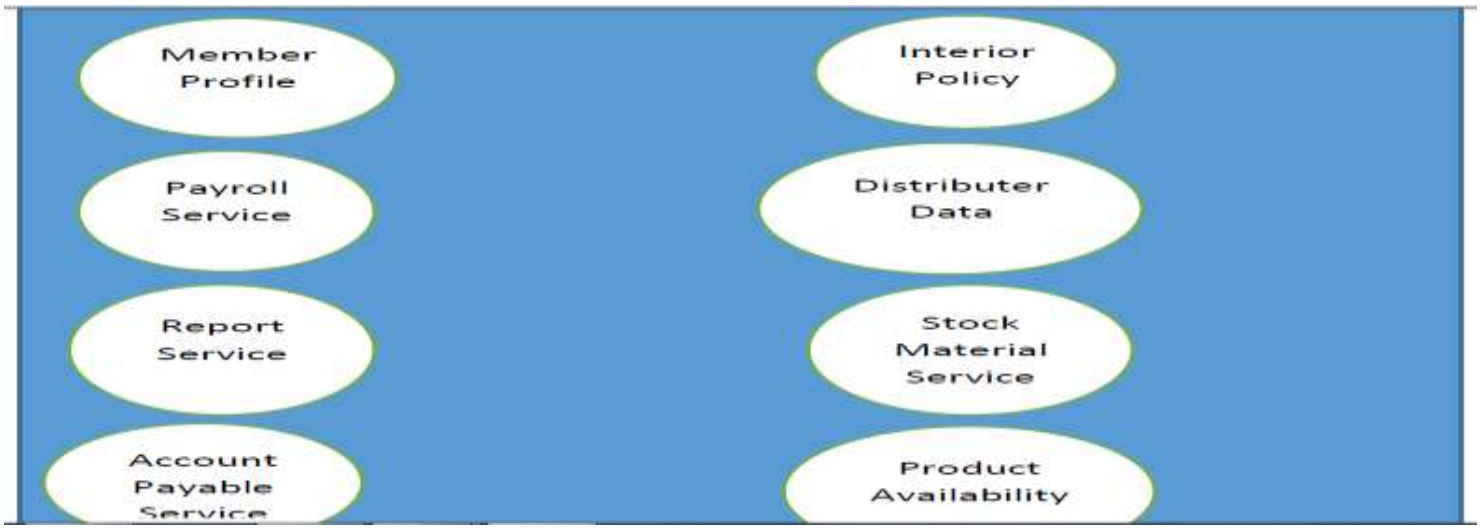

Fig 3.2 B2B Services

Fig3.3 B2C Services

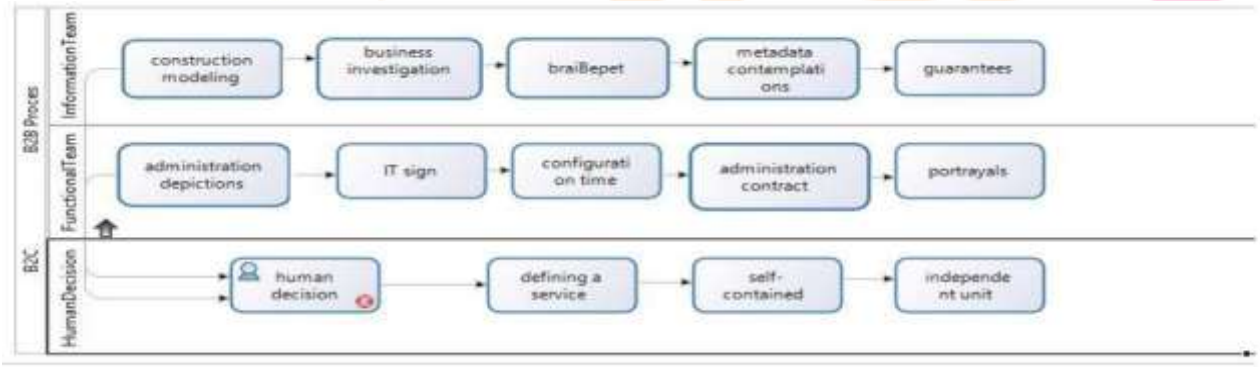

Fig 3.4 B2B and B2C Bepet services

3.2 Design UML service models for Bepet services

The UML diagram is the actual representation of any services or components and describes it in a very clear way. The class diagram, activity diagram, use case diagram etc. has its own representation and also the easiest form of understandability of the cases. The Bepet services which have contracted with the IT Company to make better services and security. These are the UML diagrams which will represent the services of the bepet which is developed by IT.

A: Use case diagram: The use case diagram is not only concerned to understanding the customer services also used for business services where one organization takes services from another organization.

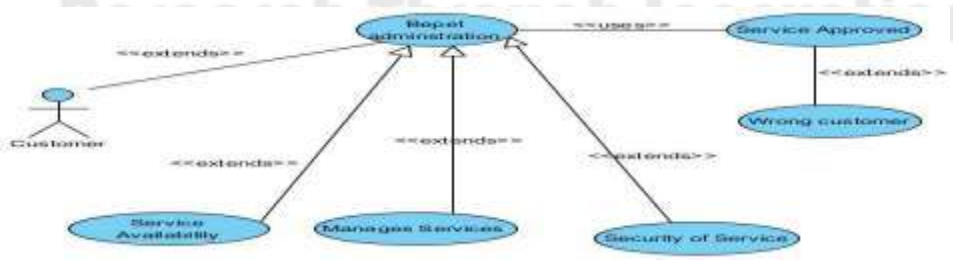

Fig 9.1 Use case diagram for (B2B) or (B2C)

From, the above it can be seen that customer or business people will request for services from administration department after that it depends on the administration that they request approve or not and everything will be handled by the administration.

B. Activity Diagram: The activity diagram shows the process of the whole services step by step.

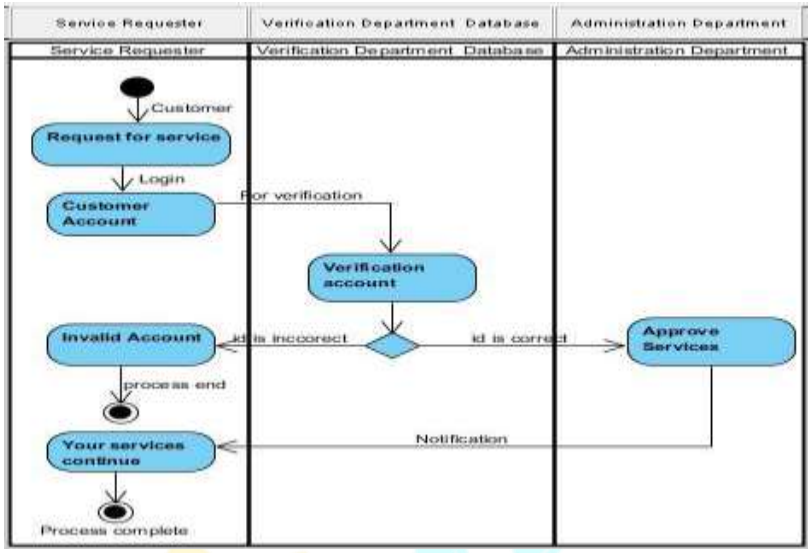

Fig 9.2 Activity diagram service request

IT admiration has setup such a system for the Bepet that no outsider or unauthorized user cannot access the account of services. The above graph shown the every step that if you are authorized customer then you can login and can demand for the services of the Bepet otherwise it will return false result.

Class Diagram: The class diagram is an important to represent a relationship between Bepet and other organization. This example will clear the way that what are the procedure and how many types it is possible.

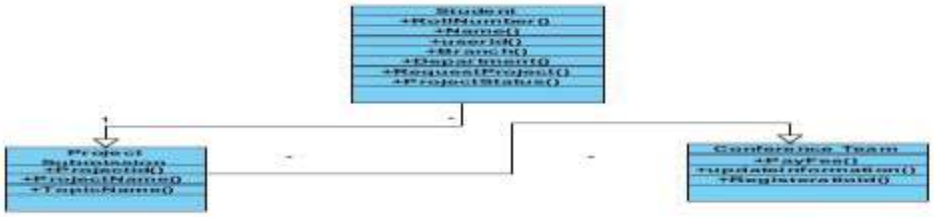

Fig 9.3 Class diagram for student project submission.

From the above graph, It can be seen that one or more student request for a project from the conference or database that it is available or not if available then it can continue otherwise no. The class diagram is the combination of 1 to 1 or 1. The similar thing happens with the Bepet where consumer request for services and what the information they have to fill and what are the process.

3.3 Design SOA for Bepet services– identify a list of service design & SLA using Thomas Erl's book1

SOA and Web organizations assumption proceeds business to work out all of the particulars and norms. Cleanser and WSDL are used for measurement which is broadly received, and others also used like WS-security are well-informed and also expensive selection. The development of the web services have many benefits which is used in the organization frequently. For example, any type of transaction. A software is like a service which is well-defined, self-contained and the best thing is that it does not depends on the other services in the same framework or different framework. Software component which is associated with loosely coupled services like Interface where services can communicate with each other.

4. Results and Discussion

4.1. Service classification (tasks and entity-oriented services against Utility/Business/Coordination services) Bepet **Infrastructure for organization**

Services fulfill the needs of the administration but it cannot be a major part of the organizations. These services are included in the structure of the Bepet where these services are needed. For example, spring, Hibernate framework which offers may inbuilt modules for the java programming instead of writing more code.

4.2 Bepet application for Organization

Services that fall into its grouping which organize the smaller square organizations to illuminate basic business fundamentals. Services form a group which runs into the organizations or administration for the development of the business. These kinds of management flexible and change according to the needs and ready to help to the other organization. The application of the organization start from graphical after that it moves in programming model. The main objective of the IT Company is to implement the services quickly in low cost which can be possible using methodology. Sometimes hard to change services because these are inside only administrations have ability to arrange framework.

4.3 Bepet Association Services

Bepet wants to make better services for its organization so it is not only concerned one or two organization which are providing services also ready with contract many other company too. The composition of the controller administrations, reconciliation administrations which

are stand at the exterior boundaries of organizations. The organizations which give the basic info using message exchange workplaces. The association of services handles company needs and tries to give best services.

- **The utility service of the Bepet:** The utilities are a part of the organizations which are tiny, minor, and inseparable and frequently used in organization framework. The main objective these services to build a big organization where many services needed for long time. There are also some features to install these services.

  - It takes guarantee that framework is smart and can adapt services
  - It gives the chance of swapping if happens any disturbance in framework.
  - Same service can be reused over the organization

- **Activities services of Bepet:** All those services which comes under the establishment of the building square referred to as a task to the organization. The activities service are independent any individual task of the organization. For example, xml web service which automatically creating with many different languages like servlet it will not affect if a single line of code will be deleted because every specific line shows different object.

4.4. Service operations (input/output/exceptions) and description similar catalogue service

Service on the internet: All the web services come under internet service which can be accessed from anywhere and it is location independent. It is only for those organizations which want to provide some company service to another company or a customer. The data security is the most important of this online web service and those have appropriate permission only they access these service. For example, email id verification is more feasible in the internet in comparison to intranet situation. This type of situation includes business-to-business (B2B) or customers workplace organizations.

I. **The Intranet services:** The intranet service runs within the organization and it is more secure in comparison to internet because these services can be used by employees who are working for same company.

II. **Combination of services:** It can be applicable for specific client or an administration which receives services from different organizations and these services can come internet, local machine or internet.

III. **Service Input:** The reusability which is used in software component where one can be reused with many projects after the some changes. Now days, reusability concept is using frequently in services oriented architecture especially organization framework and it shifted business in a new direction. It gives an idea that service oriented architecture will convert data engineering foundation and will redesign.

IV. **Service Output:** The output of the service comes after the installing the services with the brief introduction.it give the chance of redevelopment or rearrangement. The conversion of amplification produces some area of services especially programming which can be send at run time.

V. **Service Exception**: Service exception plays an important role during the establishment of the services if any problem occurred during the process of the service it return results which tell that why it happened. The service may be success or fail and the failure of the service may be caused list of problems or may be service itself.

VI.

5. Conclusion

The overall discussion is based on providing services to the organization and research also set an example of the Bpet which show that how can implement the services and what characteristics should be.

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