**Assignment 3: KM System Design**

**Objective: To analyze a given business case and propose a knowledge management system design for the given business problem. Use your knowledge of systems analysis and design methods and knowledge management to analyze the business case and propose a KM system solution. Further instructions and deliverables, and resources are listed at the end of this document.**

**A2Z Global Consulting Inc.**

A2Z is an Information Technology consulting company that helps large companies in the implementation and management of their information technology infrastructure. Specifically, the company provides IT implementation and managed IT services for 44 of the Fortune 500 companies in four specific areas that include Enterprise Resource Planning (ERP) Systems (Oracle and SAP), Managed Desktop Services (Windows and Mac), Storage and Databases systems, and Collaboration and Communication Systems (MS Exchange, IBM Lotus, Oracle Collaboration). The company’s operations are organized according to the four managed service products and by client-specific dedicated teams consisting of on-site and remote employees (See Figure 1 below).

**Problem Description: Incident Management**

The incident management process of the company involves responding to system outage incidents and other service quality problems from customer organizations and quick restoration of normal service operations. The incident management process is a knowledge intensive process that could involve multiple engineers and domain experts working together to restore normal IT operations as quickly as possible. Each dedicated client services team has a well defined incident management process to deal with incidents across the different managed IT services for the particular client. Although all incident management processes have similar process models, the knowledge requirements for each incident vary depending on the customer organizations IT infrastructure, technology and applications involved and other details in the incident report. The organizational knowledge available to support such processes is distributed across various databases, experts and groups.

Given the critical nature of the incident management process and its impact on customer satisfaction and revenue, the VP of Operations for Managed Services has requested you to **design a knowledge management system to support the knowledge intensive incident management process** and achieve the following objectives:

1. Retain employee expertise: The IT Managed Services industry is characterized by high turnover rates. Top performing and experienced engineers have to be frequently replaced with new inexperienced employees. The proposed KM system should help retain employee expertise.
2. Improve customer satisfaction: Problems with incident management directly impacts customer satisfaction. The proposed knowledge management system should help in the quick and efficient resolution of incidents and prevent recurring problems.
3. Increase Revenue: Lower number of recurring incidents, and quick resolution of incidents, and fewer the number of employees required to manage incidents help the company meet or exceed service level agreements and help increase revenue.

The proposed KM system is for use across 44 dedicated client service teams of the company. A typical incident management process is given in Figure 1.



Figure 1. Incident Management Process

Table 1. Task Descriptions

|  |  |
| --- | --- |
| **Task** | **Description** |
| Record Incident | The **help desk engineer** captures the incident details and sends it to the incident manager. |
| Incident classification | The **incident manager** reviews the incident record and sets a priority level for the incident based on the urgency and impact of the incident on business processes. After determining the priority level, the incident manager initiates an initial support process and an incident investigation. Based on the incident manager’s knowledge of company expertise, the incident manager identifies the senior support engineers, and other expert’s best suited for resolving the problem. |
| Initial Support | The **support engineer** explores if a work around or a documented solution exists to the given problem and initiates incident recovery procedures. |
| Incident Investigation | The **senior** **support engineer** is responsible for developing a permanent solution to the problem and preventing recurrence. Based on the scope and complexity of the problem and the sr. support engineer’s expertise, the engineer may consult different engineers (Network, database etc.) and the product engineers and architects to identify the root cause and develop a solution. |
| Change Management | The **change manager** verifies the solution and impacted systems to ensure that any changes do not cause additional service outages and are compatible with the affected systems.  |
| Incident Recovery | The **incident manager** and the **Sr. Support Engineer** oversee the implementation of the proposed solution for the problem incident.  |
| Testing | The **quality analyst** tests the implemented solution to verify the fix. |

Table 2. Roles, Knowledge and Responsibilities

|  |  |
| --- | --- |
| **Role** | **Description** |
| Help Desk Engineer | **Knowledge/Skills**1. Broad knowledge of various IT systems
2. Ability to understand and document IT related problems and incidents

**Responsibilities**Document incidents using incident recording system. |
| Incident Manager | **Knowledge/Skills**1. Knowledge of expertise and skill set of various employees to build incident management team
2. Knowledge of various IT systems and ability to assess incident severity
3. Ability to determine affected systems and assess impact of incident on users and business processes
4. Ability to determine priority level based on service level agreements and incident impact

**Responsibilities**1. Co-ordinate incident management, determine priorities and overall responsibility for incident management
2. Initiate initial support and incident investigation and identify appropriate support engineers
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| Support Engineer (DB, ERP, Network etc.):  | **Knowledge/Skills**1. Technical knowledge of specific domain areas (ERP, SOA, E-Commerce etc.)
2. Knowledge of company application platforms, products and architectures in specific domain area
3. Knowledge of latest developments, bug reports etc. related to specific IT products

**Responsibilities**Search existing bug reports, problem checklists and apply solution |
| Sr. Support Engineer (DB, ERP, Network etc.) | **Knowledge/Skills**1. Deep technical knowledge of specific domain areas (ERP, SOA, E-Commerce etc.)
2. Deep knowledge of company application platforms, products and architectures in specific domain area
3. Extensive knowledge of latest developments, bug reports etc. related to specific IT products
4. Ability to investigate problems and determine root cause
5. Identify relevant experts and collaborate with other support engineers to develop solutions

**Responsibilities**Work with incident manager and other support engineers, application engineers, and vendors to determine root cause of a problem and develop solution. |
| Application Engineer | **Knowledge/Skills**1. Knowledge of a specific product (ERP, MS Exchange etc.)
2. Knowledge of a specific product implementation at the client organization.
3. Knowledge of known bugs etc.

**Responsibilities**Help Sr. Support Engineer and Incident Manager in investigating problem incident and developing a solution. |
| Client Infrastructure Specialist | **Knowledge/Skills**1. Deep knowledge client organizations IT infrastructure

**Responsibilities**Help Sr. Support Engineer and Incident Manager in replicating problem incident, investigating problem incident and developing a solution. |
| IT Application Architect | **Knowledge/Skills**1. Deep knowledge of a specific product (ERP, MS Exchange etc.)
2. Deep knowledge of a specific product implementation at the client organization.
3. Knowledge of known bugs and problems.

**Responsibilities**Help Sr. Support Engineer and Incident Manager in investigating problem incident and developing a solution. Analyze changes to product to prevent recurrence of incidents. |
| Change Manager | **Knowledge/Skills**1. Knowledge of various applications, IT Systems and their inter-relationships
2. Ability to update and manage the change management database
3. Ability to determine affected systems based on a change request

**Responsibilities**1. Verifies changes requested, their impact on other systems, suggest additional changes required and ensure that any changes do not cause additional service outages and that changes are compatible with the affected systems.
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| Quality Engineer | **Knowledge/Skills**1. Knowledge of various quality analysis and testing procedures
2. Ability to identify appropriate testing procedures for a particular IT system

**Responsibilities**Tests the implemented solution to verify the fix. |

**Current KM Practices**

1. Bug reports and updates from vendors such as Microsoft, Oracle etc.
2. Training budget for all employees to attend job related seminars, training sessions and purchase books

**Instructions and Deliverables:**

Analyze the given case and design a knowledge management system using UML and systems analysis and design methods.

1. Identify Functional and Non-Functional Requirements of the Knowledge Management System
2. Develop a Use Case Diagram and Use Cases that detail the interaction of the users with the system
3. Present relevant Activity Diagrams and sample Sequence Diagrams detailing the interaction between users and system components
4. Present a Component Diagram detailing your proposed KM solution
5. Write a report describing the components proposed in the KM system and how it can help the company achieve the objectives and support the management of the knowledge intensive process. List any assumptions you make. List the KM Processes supported by the system and describe components that support such processes.

**Resources**

UML Diagrams Overview: <http://www.agilemodeling.com/essays/umlDiagrams.htm>

Use Case Diagrams: <http://www.agilemodeling.com/artifacts/useCaseDiagram.htm>

<http://www.agiledata.org/essays/objectOrientation101.html#UMLUseCaseDiagrams>

Simple Use Case Template: <http://www.agilemodeling.com/shared/UseCaseTemplateSimple.doc>

Activity Diagrams: <http://www.agilemodeling.com/artifacts/activityDiagram.htm>

Sequence Diagrams:

<http://www.agilemodeling.com/artifacts/sequenceDiagram.htm>

<http://www.agiledata.org/essays/objectOrientation101.html#UMLSequenceDiagrams>

Component Diagrams

<http://www.agilemodeling.com/artifacts/componentDiagram.htm>

<http://www.agilemodeling.com/style/componentDiagram.htm>

Data Flow Diagram

<http://www.agilemodeling.com/artifacts/dataFlowDiagram.htm>

Feature Specification

<http://www.agilemodeling.com/artifacts/feature.htm>