

# The Implementation of Agent-based Complaint Management System

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## Summary

Complaint Management System is a system to enable customers channel the issues about the organization for immediate action. Thus responsive complaint system is essential for the organization to ensure customers satisfaction in managing complaints. This paper introduces the agent-based Complaint Management System (ACM). The objective of the system is autonomously accepted the complaints and forward to the respective responsibility. Initial result, shows the system is able to entertain users complaint with minimal intervention by human. Keyword recognition was proposed as an intelligent element for the system. Future efforts are looking for complete agent-based complaint management system with more intelligent features.

**Key words:** *Software Agent, Complaint Management, Agent-based System,*

## 1. Introduction

Recently, many researchers have considered agent-based technology as a proposed design paradigm and used this technology to develop new systems to act on behalf of their users [3]. Ye-Ping [4] realize that internet technology has become a natural platform for agent system and promotes wider use of Multiagent System (MAS). Intelligent software agents can help alleviate the problems with the amount of information received. What exactly is an intelligent software agent? They are autonomous computer programs, where their environment dynamically affects their behavior and strategy for problem solving [1].

The terms "agent" and "intelligent agent" are used in two different but related senses which are often confused. In computer science, an intelligent agent (IA) is a software agent that assists users and will act on their behalf, in performing non-repetitive computer-related task, in the sense of a "representative agent", like an insurance agent or travel agent [1]. Schiaffino [5] noticed in assisting users, a software agent needs knowledge not only about the application domain also customer preferences and interests. Intelligent agents are used for operator assistance or data mining. While they are often based on fixed pre-

programmed rules, "intelligent" in this context is often taken to imply the ability to adapt and learn [1].

Customer complaint management is becoming a critical key success factor in today's business environment [6]. Complaint Management System is a system that can survey customer feedback about any organization. Best-practice organizations consider complaints as opportunities for improvement. These companies understand the link between complaint resolution and customer loyalty and work hard to act immediately on problems that can be easily resolved [3].

This paper describes the Agent-based Complaint management system (ACM) oriented by web application or also called eComplaint which use for student and lecturer to make complaints about their dissatisfaction about Faculty of Science Computer and Information System. This system is able to record and give feedback for every complaint made faster than before. We improve the current Complaint Management System (CMS) by put the software agent. The software agent will be used as operator assistance and send email to the department that have to solve the complaints. This ACM will predict and recognize to whom the complaint received will be forward to.

The rest of paper is organized as follows. In section 2 we discuss about the problem of the Complaint Management system without the agent-based. Proposed solution and the idea are presented in section 3. Section 4 presented the expected result while Section 5 is conclusion.

## 2. The problem of Complaint Management System

An effective complaints management system is integral to providing quality customer service. It helps to measure customer satisfaction and is a useful source of information and feedback for improving services. Often customers are the first to identify when things are not working properly [5].

Responsive is about how quickly you respond to a complaint and a complainants. It is about receiving,

recording and responding a complaint, considering the issues it raises and how best to handle it, making decisions, and informing the complainant of progress and your ultimate decision, all within reasonable timeframes [6]. It is essential to have documented procedures for the system to be truly responsive to customers. This means setting specific levels for performance, not just general targets and meaningless promises. This will help staff and customers feedback within your agency.

In terms of responsiveness, an effective complaints management system has mechanisms and strategies in place to the first one are responding to complaints in a timely manner. People often expect their complaint to be resolved immediately and usually by the first person they speak to. The longer it takes for them to receive a response, the more likely it is they will be dissatisfied with the outcomes. In fact, one of the most common complaints problems is delayed. Without the agent-based in the system, the responsiveness of the system sometimes will be question.

Throughout the complaints management process, from receipt through assessment, consideration, investigation and final decision, you will need to promptly advise to the complainant of at least some of these matters which is that the complaint has been received, the process for dealing with the complaint, that an internal investigation is under way, where the consideration of the complaint is at a given time and so on [6].

In order to improve the responsiveness of the system, we contribute the software agent into the complaint management system. The software agent itself will manage the system. Without the agent-based, complaint management system must be organized and managed by the administrator. This means that we need somebody to alert and managed the system sequentially. Furthermore, we improve this system by propose a new framework to better the performance of complaint management system.

### 3. The Proposed Agent-based Solution

In this section, we discuss about the implementation of the system. The system strength is the agent itself. So how the agent works in this complaint management system? Agent works after complainants make complaint. From the complaint details made by the complainer, agent will compare the word (word by word) with the library database. From the keyword, agent knows which category the complaint is and the agent will automatically send email to the respective department that responsible for the complaint.

In other case, when the keyword from the complaint detail is not including in the library database, the system absorb

the keyword and the administrator is responsible to update the database. The size of information stored in the database determines the level of intelligent of the agent. This means, the new keyword found would be stored into the library database. Therefore, the content of the library database will increase over ther time. Fig 1 showed how the system works.

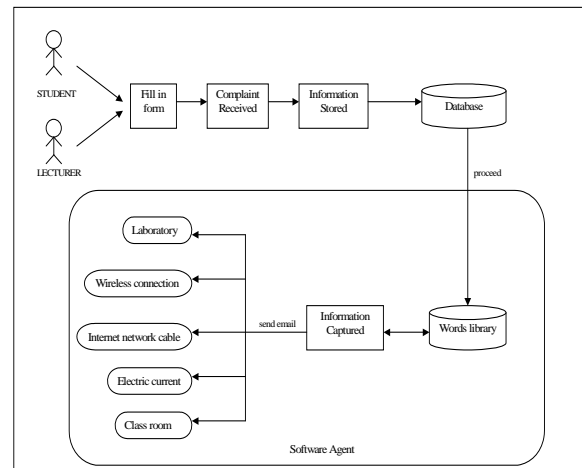


Fig. 1 Proposed Agent-Based Complaint System

For more understanding, we summarize the flow of the major function of the system using the sequence diagram as shown in Figure 2.

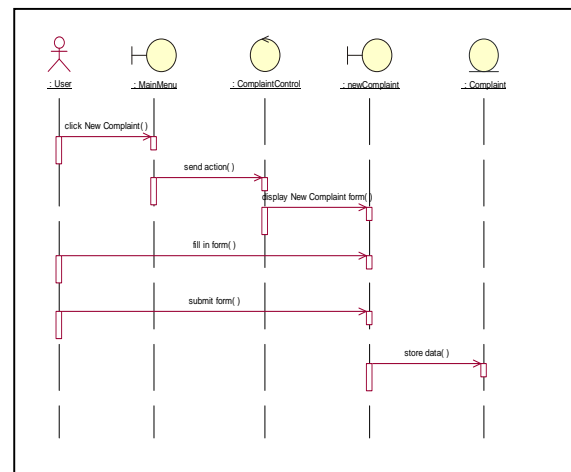


Fig 2. Sequence Diagram for Agent-Based

The major function of this system is make complaint. The Fig 2 showed the flow when complainants make complaint. First, the users click on the ‘New Complaint’ link. After that, the complaint form will display. Then the user can fill in and submit the form.

Basically, the complaint submitted by the user will be forward to the responsible department by the

administrator. But, for this system, the existence of software agent would replacing the administrator role. The agent will automatically forward the complaint to the responsible department by sending an email. Initially, once the complainer key in their complaint to the system, the agent determined the number of keywords inside the complaint and matching process is performed to determine the respective personnel who should entertains the complaints. The complaint, which just made can be forwarded to the responsible department faster than the previous.

Furthermore, the agent-based complaint management system is also yielding the complaint list for monitoring the status of complaints made. The minimal human intervention needed to entertain the complaints that are not being able determined by the system to whom it may be send.

The complainers could browse the list to check the status and action taken for the complaints. Firstly, the users must log in into the system to check the status of the complaint through the complaint list function.

#### 4. The result and discussion

The Agent-based Complaint Management System (ACM) has been implemented at the faculty level and promising result was yielded. The system autonomously direct the complaint received to the respective personal at the faculty to response for the complaint with minimal human intervention. The human intervention only required when the keyword inside the complaint is not available in the library of the system to determine where the complaints should be routed.

The system would be able to increase the library keyword for respective responsibility every time new keyword is being identified.

#### 5. Conclusion

This paper presents the development and implementation of agent-based complaint management system called eComplaint. The result obtained from the implementation are encouraging and promising for development more complex system in the future. At present, the intelligent characteristics proposed were minimum and the system was at the early stage of development and implementation. Our future efforts are looking for the possibilities to enhance the characteristic of the agent to be more intelligent.

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