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## Integration Telegram Bot on E-Complaint Applications in College

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**Abstract.** Internet of Things (IoT) has influenced human life where IoT internet connectivity extending from human-to-humans to human-to-machine or machine-to-machine. With this research field, it will be created a technology and concepts that allow humans to communicate with machines for a specific purpose. This research aimed to integrate between application service of the telegram sender with application of e-complaint at a college. With this application, users do not need to visit the Url of the E-complaint application; but, they can be accessed simply by submitting a complaint via Telegram, and then the complaint will be forwarded to the E-complaint Application. From the test results, e-complaint integration with Telegram Bot has been run in accordance with the design. Telegram Bot is made able to provide convenience to the user in this academicians to submit a complaint, besides the telegram bot provides the user interaction with the usual interface used by people everyday on their smartphones. Thus, with this system, the complained work unit can immediately make improvements since all the complaints process can be delivered rapidly.

### 1. Introduction

The complaints management system is a tool commonly used to improve organizational performance [1], noted the completion of and respond to customer complaints as well as make it easier for other feedback [2]. The complaints handling process can result in a probability of the complainant satisfied and dissatisfied [3]. Complaints can also be classified by related work unit [4], Thus the complained work unit can immediately make improvements.

The submission of complaints by customers can be done quickly using a web-based application or we call it e-Complaint, this application can be classified data based on student complaints work unit purposes using a Centroid Based Classifier algorithm [4]. Presence of Internet of Things (IoT)



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increasingly facilitates the work of man. IoT not only People-To-Machine communication, but also Machine-To-Machine (M2M) [5][6]. IoT aims to allow all connected anytime, anywhere, with anything and anyone using the internet network [7]. Additionally, IoT allows integration between Telegram smartphone messenger with an Arduino platform using Telegram Bot [8].

In this paper, we proposed the integration of web-based complaint applications with Telegram, this integration utilizes the Telegram Bot API and we chose the Long-Polling [9] method in Bot making, this method is Telegram's default method. The main contribution of this paper was to demonstrate the potential of Telegram applications implemented on IoT via the Bot telegram API on different platforms of communication between web platform and Telegram. Applications were expected to provide an easy interface, simple and commonly used by people everyday with their smartphones.

## 2. Experimental methods

The integration between e-Complaint application with Telegram Bot was done using Telegram Bot API. The first step was to use the Telegram API for making Telegram Bot by registering to @botfather (<https://telegram.me/BotFather>). In @botfather, there are steps that must be passed such as creating a Bot name, Bot username and command with command / newbot. Once the Bot was made, a Bot token was used for Telegram Bot communication with e-Complaint application.

```
HTTP API:
414625573:AAFZ0WH1URT92V
Hnizaz7aWtIp3_ . . )
```

Figure 1. Token Bot

Figure 1 is an example of a token generated at the Bot-making stage. Token Bot shown Figure 1 was applied to the program named as the program UmsidaBot. This program was then placed on the web server and run periodically per second. UmsidaBot acted as an intermediary between Telegram and the e-Complaint application. Data was obtained by UmsidaBot from Telegram API bot of JSON, to get JSON update from Telegram API bot, UmsidaBot should check its update with getUpdates command.

JSON obtained, then processed to get a message in the form of a data string, if the message received is a complaint, then this data sent to the e-Complaint application to be processed again into complaint information. But if the received message is not a complaint, then UmsidaBot will request data from e-Complaint then the data obtained is sent back to Telegram bot to display on smartphone.

Detailed information about how to make update is shown in Figure 2. This figure displayed a function of the getUpdates command on UmsidaBot.

```
function DapatkanUpdate($offset){
    //kirim ke Bot
    $url = BotKirim("getUpdates")."?offset=".$offset;
    //dapatkan hasilnya berupa JSON
    $kirim = file_get_contents($url);
    //kemudian decode JSON tersebut
    $hasil = json_decode($kirim, true);
    if($hasil["ok"]==1){
        return $hasil["result"];
    }else{
        return array();
    }
}
```

Figure 2. Function getUpdates UmsidaBot

Figure 3 shows the architecture of UmsidaBot. In short, the system can be described into two flows. The first flow is the information system from user to the telegram bot. Then, the telegram delivers the message to the e-complaint server. To get complaint being up to date, the e-complaint server took update everytime. Then, when receiving the user message, the e-complaint server give a result to telegram and the telegram deliver the result to the user.

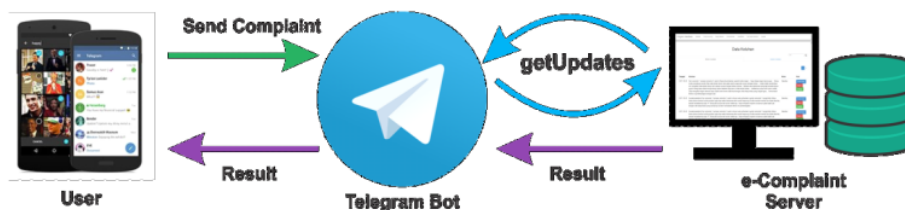


Figure 3. Architecture of UmsidaBot

### 3. Results and discussion

Figure 4a is the display of the Telegram Bot, the chat session begins with the click of the start button (command / start is sent automatically) [10]. There is a menu of complaints and see the complaint statistics, if the send complaint menu is selected, Telegram Bot will give feedback in the form of grievance procedure shown 4b, we use the format / complaint {space} complaint. Complaints sent by customers / students through Telegram Bot are then forwarded to the e-Complaint application. The complaint data in the e-Complaint application can be seen in Figure 5.

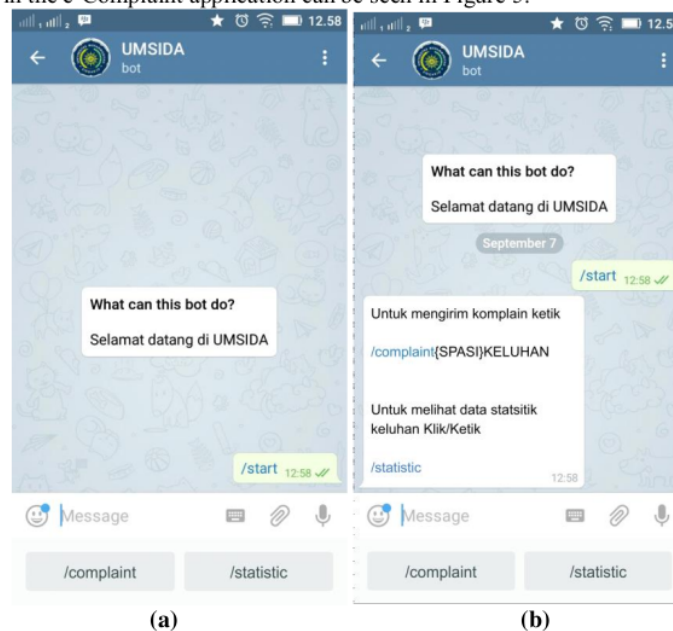


Figure 4. Figure 4a Initial Display of Telegram Bot, Figure 4b is the display of the message delivery procedure

Tanggal	Keluhan	Kelas	Aksi
2017-10-03	Dari semester 1 sampai semester 5 saat ini Kaprodi perbankan syariah terlalu kejam... Saya bilang begini karena apa... Beliau minta seenaknya sendiri Ada mata kuliah dosen lain pada saat itu juga ada urusan dengan beliau... beliau tidak memberikan izin mengikuti mata kuliah dosen lain sampai urusan dengan beliau selesai... Bahkan ada mahasiswa yang lagi berduka itupun juga di bilang kalau tidak menghubungi beliau bakalan tidak lulus di mata kuliah beliau... Setidaknya punya hati nurani sedikit... Saya mengeluh begini karena saya sudah bener-bener tidak kuat dengan sifat sikap beliau yang sangat egois... Terima kasih Mohon di pertimbangkan dengan baik	Fakultas	<a href="#">Ubah Kelas</a> <a href="#">Hapus</a> <a href="#">Validasi</a>
2017-10-03	Assalamualaikum Dari semester 3 sampai semester 5 saat ini dosen wali perbankan syariah semester 5 sangat killer Masa beliau belum bertau buat konsultasi tugas tapi waktu kahasiswa kirim email langsung di tolak mentah-mentah dan tidak diberitau alasan kesalahannya apa ?? Tolong lah punya hati nurani sedikit aja... Saya mengeluh seperti ini karena sudah tidak kuat dengan sifat sikap beliau yang semuanya sendiri Terimakasih Mohon di pertimbangkan	Fakultas	<a href="#">Ubah Kelas</a> <a href="#">Hapus</a> <a href="#">Validasi</a>
2017-10-03	Assalamualaikum Dari semester 3 sampai semester 5 saat ini dosen wali perbankan syariah semester 5 sangat killer Masa beliau belum bertau buat konsultasi tugas tapi waktu kahasiswa kirim email langsung di tolak mentah-mentah dan tidak diberitau alasan kesalahannya apa ?? Tolong lah punya hati nurani sedikit aja... Saya mengeluh seperti ini karena sudah tidak kuat dengan sifat sikap beliau yang semuanya sendiri Terimakasih Mohon di pertimbangkan	Fakultas	<a href="#">Ubah Kelas</a> <a href="#">Hapus</a> <a href="#">Validasi</a>

Figure 5. Complaints Data in e-Complaint application

In addition to sending a complaint, customers may also see statistics of incoming complaint data. The command used is /statistic or click the button /statistic. The display of statistical data is shown by Figure 6, but the Telegram Bot we built has not been able to display pie charts like the e-Complaint application shown in Figure 7. The process that occurs is the Telegram message received by UmsidaBot on the server side, then the JSON data that has become the data string forwarded to the e-Complaint application to obtain complaint statistics.



Figure 6. Complaints Statistics Data



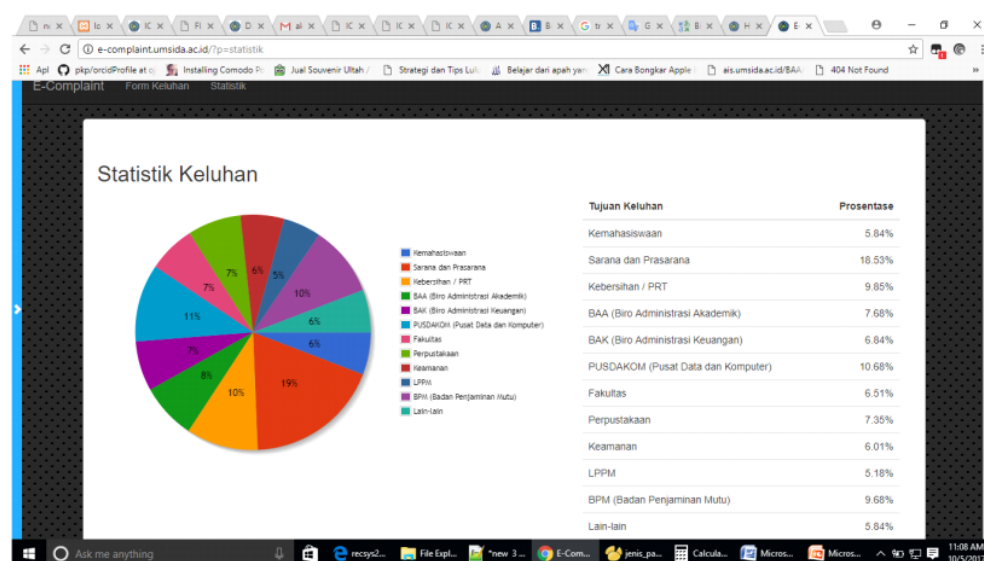


Figure 7. Complaint Statistics in the e-Complaint application

Based on Figure 6 and 7, various complaints from various departments were found. We identified that the system worked well and can be applied for wider applications.[10,11]

#### 4. Conclusion

This study examines the use of the Telegram Bot API to integrate two different application platforms. In the experiment, Telegram Bot API integrates e-Complaint application with Telegram platform. Use of Telegram Bot API we put on a small program that we named UmsidaBot, this small program serves as an intermediary between the two different platforms. The results show that the integration is successful, complaints can be sent via Telegram application in a smartphone, the complaint is then forwarded to the e-Complaint application that exists in the Higher Education server. From these results it can be concluded that with this integration can facilitate the delivery of complaints, using the interface that is often used by people on their smartphones. Complaints can be sent anytime and anywhere through the internet network.

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