C-Scripter: A Dynamic Call Center Scripting Application

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Abstract

Call centers are communication channels between companies and their customers, where customers usually receive information about products, campaigns, promotions, and solutions to technical problems. In this study, a dynamic call center scripting application called C-Scripter, which connects the dialer system and the customer representative's display, is proposed. In more detail, C-Scripter can be described as an application that reflects the calls made with the automatic outgoing call system on the customer representative's screen and enables to manage the call according to the workflow requested by the customer. Non-native counterparts of C-Scripter only provide restricted use due to lack of code access. Furthermore, the purchase of such non-native applications results in a severe financial loss paid in foreign currency. By developing C-Scripter with an entirely domestic workforce, the source codes of the application have been made fully accessible, and a much more flexible structure in development and integration has been offered.

Keywords: Computer Telephony Integration, Dialer, Dynamic Script Design, Call Center.

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1. Introduction

Call centers are central points within organizations where incoming calls are received and processed by customer representatives. Customers usually come in contact with call centers to receive information about products, campaigns, promotions, and solutions to technical problems. Calls are mainly divided into two groups, including inbound and outbound calls. For incoming calls, customer representatives make progress by following the script that appears according to the customer's keystrokes. Outbound calls, in turn, are used for feedback to the customers (Akşin et al. 2009).

Call centers provide substantial benefits to companies on administration, sales, and marketing. Some significant benefits include (a) longer service and opening times, (b) relief of the clerks in the departments, (c) acquisition of working time and personnel capacities, (d) improvement in efficiency, effectiveness, and quality of administrative services, and (e) increase in customer satisfaction. Thus, it is essential to develop new applications to enhance service quality and success in call centers (Chicu et al. 2016), (Feinberg et al. 2002).

This study presents the development of a dynamic call center scripting application called C-Scripter for the Genesys Predictive Dialer automatic dialing system used to serve customers within Comdata. C-Scripter ensures the integration between the dialer system and the customer representative's computer and enables the call management by displaying workflows on the screen according to the incoming call type. A script development interface that the end-users can use to design their scripts is also provided.

C-Scripter aims to support the operations team to manage their intense processes in a better and faster way. To this end, C-Scripter works integrated with two technologies, namely Computer Telephony Integration (CTI) and Predictive Dialer. CTI (Chou and Lin 2000) enables the management of (a) communication media supported by more than one phone using computers and programs and (b) integration between phone and computer. Predictive dialer (Lavrakas 2008), on the other hand, accesses the phone numbers to be called using a database and initiates the call process. After the called customer answers the phone, the call is forwarded to the appropriate customer representative. If the Predictive Dialer, which operates controlled according to the talk times and the number of customers, cannot find any customer representative to direct the call, it either informs the customer by voice message or activates the Interactive Voice Response system (Corkrey and Parkinson 2002).

The rest of the paper is organized as follows. Section 2 briefly summarizes the related works. The details of the proposed C-Scripter application are given in Section 3. In Section 4, the development methodology is outlined. In Section 5, the results of the study are presented. Finally, the paper is concluded along with future directions in Section 6.

2. Related Works

There are some related studies in the literature. (Copeland and Smith 2019) proposed a dynamic script engine for tele-agents including a statistics engine configured, among other functionalities, to receive, during a sales call, real-time industry trend data from one or more remote industruy resources.

(Woydack and Lockwook 2017) reported on the use of scripts in the global call center industry. The scripts, in general, have been found to be helpful and empowering to the agents as they develop their communication skills to serve global business customers. The study reported a positive view of different scripts being helpful in a number of ways. However, it has also been emphasized that the utilization of scripts can result in agent disengagement and customers feeling they are talking to robots. Consequently, the authors concluded that the research area deserves further investigation, especially in in outbound calls centers where agents are required to be more responsive to their customers and build business relationships.

(Woydack and Rampton 2015) focused on the trajectory of scripts within a call center. Particularly, long-term ethnography was combined with trans-contextual analysis of the production, circulation and uptake of calling scripts. It has been concluded that this reveals a good deal of collective and individual agency in processes of text-adaptation, and produces a rather more nuanced picture of work in a call center.

(Pettay 2015) proposed methods and devices for using automatic speech recognition to analyze a voice interaction and verify the suitability of a tool reading from a prepared script to a client during the voice interaction.

(Kishinsky and Anisimov 1999) proposed a call center management system with a graphical user interface adapted for modeling call center behavior, as Petri Net directed graphs. The authors reported that after the development phase, the Petri Net graphs can be compiled as software modules for use in CTI management of a call center. The call center management system can analyze speech during voice interaction and create a dynamic script accordingly.

By developing the C-Scripter application in this study, the dependency on the applications developed by foreign companies is alleviated, while the costs of these applications with foreign currency are significantly reduced. Furthermore, thanks to the Dynamic Script Design (DSD) module, which is not available in C-Scripter equivalents, various functions for business owners are offered to create and edit scripts without the need for technical support.

3. Proposed C-Scripter Application

C-Scripter provides the integration between the dialer system and the customer representative's computer and performs the call management by displaying workflows on the screen according to the incoming call type. In addition, a script development interface, which is not included in Genesys' product[1], is provided that the end-users can use to design their scripts without additional software or technical support. Mainly, C-Scripter is made up of 3 modules:

[1] Genesys. A Global Company with Global Diversity: https://www.genesys.com/products [accessed 02.01.2021]

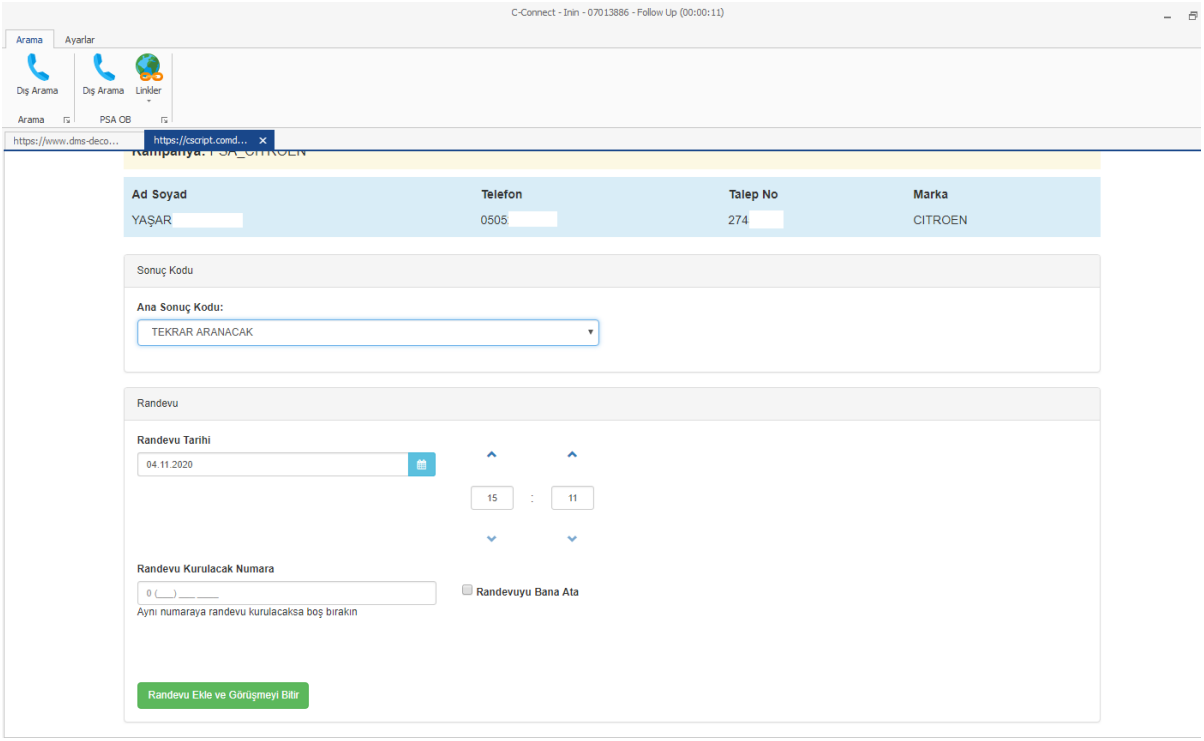

Figure 1. C-Scripter Application Overview

I. **Computer Telephony Integration (CTI):** Provides integration between the automatic outbound call system and the customer representative's computer. CTI module triggers script screens.

II. **Scripter Application:** Reflects the calls made by the automatic outbound call system on the screen of the customer representative and enables to manage the call according to the workflow requested by the customer.

III. **Dynamic Script Design (DSD):** Enables the script applications to develop workflows with drag and drop screens by the team manager without any coding knowledge. Flows in the scripts can be created and changed by team managers without coding knowledge via an admin interface.

The headings outlined below indicate the details of all processes developed within the "C-Scripter Project".

- CTI application architecture is designed to cover long-term needs and coded with up-to-date technologies.
- All phone functions can be used within the CTI product.
- On the CTI, the agent can view its own activities.
- The CTI product can be authorized based on the user, and the desired functions can be added and removed based on the user.
- Scripter has been designed to be compatible with managing multiple campaigns and workflows.
- Scripter has been developed web-based using current technologies.
- Flows in the scripts can be created and changed by team managers without coding knowledge via an admin interface.

Figure 1 illustrates C-Scripter's script screen for the people whose main result code is set to "Call Again". People are being called from the outside call section at the top left button. From the links section, a shortcut and knowledge access can be opened where customers can answer their questions.

The C-Scripter screen opens as a new tab in the CTI screen. In the opening tab, the fields must be filled based on a particular scenario. According to the scenario presented in Figure 1, the customer who was called by pressing the button on the top left over the

CTI was registered in the system to be called again since this customer did not answer the call. To not forget these customer's call, an appointment alert is displayed. After the day and time of the customer to be called again are determined, the customer is called automatically at that time on CTI.

4. Methodology

C-Scripter has been developed in 3 phases. In phase 1, the product's CTI layer was coded and submitted to the user acceptance test after the necessary technical tests were completed. After the approval of the user acceptance tests, phase 2 started.

In phase 2, the Scripter module's architecture working in the CTI module has been designed and developed according to the needs determined during the project analysis. Then, the Scripter module was submitted to the user acceptance test. After the user acceptance tests were completed, the C-Scripter product was operated in a live environment.

In phase 3, the "Dynamic Script Development" module has been added to the C-Scripter. Operation needs were determined by analyzing the script development application. Dynamic script development screens have been developed, and applications have been integrated to work in complete integrity.

5. Results

The process of developing C-Scripter has resulted in various module-based gains. Changes on the CTI provide the advantage of version independence and management over a single screen. User-based arrangements and detailed reports of customer representatives were followed, and data sharing was made possible with Customer-Relationship-Management (CRM). The gains of CTI, Scripter, and DSD modules can be summarized as follows.

CTI module gains:

- Thanks to its ergonomic design, CTI enables all operations from a single screen by opening script screens and customer applications on the browser inside.
- CTI saves time with its operation from a single screen and ease of use.
- Provides the use of all telephone functions (conference, transfer, manual call, etc.)
- The comfort of working users is increased with the user-based interface customization feature.
- Call and customer representative past transactions can be viewed.
- Fast and easy integration has been achieved by exchanging data at the client layer with customer CRM and applications.
- Thanks to ClickOnce technology, easy installation and updating are provided.
- Developed in a structure that allows creating a user-based test environment, the developments can be tested quickly and safely.

Scripter module gains:

- The web-based architecture enabled new features to be added very quickly with the developing coding technologies.
- Scripter enables script updates to be implemented immediately without interruption.
- Fully integrated operation of Scripter and CTI is ensured thanks to the scanner inside the CTI.
- The servers on which the product is published provide uninterrupted operation in a redundant structure with Web Farm technology.
- Since the product is web-based, minimum resource usage is provided on end-user computers. In this way, computer freezes and problems are minimized.
- Updates can be made without the need for any installation and provide a speed advantage.

DSD module gains:

- Allows users to design scripts without the need for any software developer and provides efficiency in the use of the workforce.
- The ability to make script designs by drag and drop over the interface provides ease of use, and script designs can be performed with very little information.

- Thanks to the campaign and project-based authorization, script changes can be made safely, quickly, and easily.
- As it eases the workload on software development experts, software developers can do more qualified R&D work.

6. Conclusion and Future Work

In this study, a dynamic call center scripting application called C-Scripter, made up of CTI, Scripter, and DSD modules, was developed for the Genesys Predictive Dialer automatic dialing system used to serve customers within Comdata. C-Scripter enables the integration between the dialer system and the customer representative's computer and manages the call by displaying workflows on the screen according to the incoming call type. Besides, a script development interface is provided where end-users can make script designs.

As applications such as C-Scripter are developed by Turkish engineers, external dependency on foreign-origin products decreases significantly. Such foreign-origin products have the significant disadvantage of restricted use due to lack of code access. Moreover, the purchase of these products results in a severe financial loss paid in foreign currency. As a result, by developing C-Scripter, the cost has been minimized due to the lack of a licensing fee, while the flexibility and quality of the provided services in call center have been increased. Also, thanks to the "Dynamic Script Design" module, which is not available in C-Scripter equivalents, various functions for business owners have been offered to create and edit scripts without the need for additional software and technical support.

The development of C-Scripter can further be advanced by creating customer profiles using external call data. In more detail, the application could recognize a customer who does not make regular payments, and a warning could be given to the customer representative's screen according to the potential collection value. Each customer's potential collection value may increase based on previous payments or decrease for customers who do not regularly pay their debts.

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