



Interactive voice based To for Project management

An approach to utilize IVR (Interactive Voice Response) & ASR (Automatic Speech Recognition) for effective project Management

PMIBC-19-1-016

Mr. Sathyanand Maroju

Project Manager, Collins Aerospace Pvt Ltd

CONTENTS

Abstract.....	3
Introduction	3
Details of the paper.....	4
Conclusion	8
References	8

ABSTRACT

Industries are changing quickly and facing many challenges such as globalization, budget cuts, and local competition. Globalization comes with its own challenges for project management. In order to handle such challenges companies working within the industry must ensure the projects are successful. Project Management has been more vital than ever. At the core of any successful organization there must be a robust and effective project management in order to compete globally to develop and improve on performance.

Complex processes have to be coordinated, executed and diverse planning approaches have to be synchronized. Traditional methods of project management often fails to keep up with these tasks, resulting project delays, budget overruns, and quality issues causing high warranty costs in the aftermath of product launches. The projects vary from task based to large complex projects. A lot of human effort is spent on capturing the data manually to segregate and digitize.

In this paper we discuss to propose Interactive voice based tool for Project Management which if implemented effectively, will reduce the human effort to capture data, increase efficiency by focusing on the actual work. Partners would be able to easily coordinate with each other, are enabled to fulfil their specific tasks, efficiently manage their resources and even most complex project environments can be managed efficiently

INTRODUCTION

I. The temporary and finite characteristic of projects stands in the sharp contrast of processes, or operations. These are permanent or semi-permanent functional work to repetitively produce the same product or service. In practice, the management of these two systems is often found to be quite different and as such requires the development of distinct technical skills and the adoption of separate management. Project management is all about to bring unique focus shaped by the goals resources and schedule of every project. It becomes both art and science as project managers strive to find creative new solutions in the 21st century Project environment. The primary challenge of project management is to determine and achieve all of the project goals or objectives both stated and unstated while balancing the project constraints

DETAILS OF THE PAPER

II. PROCESS OF PROJECT MANAGEMENT

A. Life cycle of the Project

The life cycle of the project is from initiation to its closing. It is a collection of generally sequential phases. The number of phases and the names of the phases depend on the performing organization or by the nature of the project itself. Good project management is no accident but a result of careful handling of all the five processes 1) Initiation 2) Planning 3) Executing 4) Monitoring and control 5) Closing. These process groups have 10 knowledge areas and 42 tasks per PMBOK [1].

B. Role of Project Manager

Project manager is the one who is assigned by the performing organization to direct and manage a project to achieve the project objectives. The role of the project manager is different from that of a functional manager or operations manager. The role of the functional manager is focused on providing management oversight in an administrative area and the role of the operation manager focuses on core business operations. A project manager can either report to a functional manager or report to a program or portfolio manager depending upon the organization structure of the performing organization.

The Project manager should have good understanding of the tools and techniques specific to project management. But it is not sufficient to be a good project manager. A good project manager should also possess general management skills and area specific skills or domain knowledge. This enables in achieving project objective with his/her knowledge on project management. Also behavior of the project manager is important when performing the project or related activity. This includes his attitude, core personality characteristics and leadership skills in guiding the project team while achieving the project objectives and balancing the project constraints.

C. Project management tools

Project managers use set of tools [2] combined or individually to perform the role assigned. A project management tool can be a forum for asking or answering questions, bringing up project bugs, and suggesting changes. Project management tools such as project plans, task assignments, project budgets and Gantt charts -- bar charts for planning and scheduling projects -- enable project managers to effectively estimate, plan and track projects. In fact, many view developing project plans as the most critical phase in the project management process. These tools allow managers to clearly define goals and objectives which involve several people and maybe several departments.

- Project Planning - Be able to easily plan projects while taking previous track record into account
- Tracking project evolution when it comes to completion, time and costs - Warn the right people when things are veering off track
- Scheduling and Time Management - Be able to easily register time on work items and take people's work schedule into account

- Resource allocation - Making sure that people are working on the right things at the right time
- Project budgets, incl. costs of people - Keeping real-time check of not only time but also allotted budget
- Communication and Collaboration - Easily post comments and concerns, communicate with external stakeholders, all while keeping a full historic record of all actions
- Documentation & Files - Easily document requirements, specs, directly or via files

III. PROJECT MANAGEMNT SOFTWARE

Businesses, large and small, unquestionably juggle numerous projects, plans, tasks and people. Having a solution that can help them keep organized while planning and running projects, in a way that is accurate, predictable, and profitable is promising. The benefits of project management software are boundless. Not long ago project management software was symbolized by three things: a pencil, a sheet of paper and a methodology.

A. Early Project management applications [3]

Many early project management applications were general purpose tools not designed for a specific aspect of project management or for a particular industry. Now, software developers have created project management tools that target specific industries. And these project management tools come in different types: paper-based tools, such as templates, checklists and forms; automated tools, which could reside on local computers for primary users or reside on a network server for different users; and Web-based tools.

B. Estimating, Planning & tracking [3]

Projecting management tools such as project plans, task assignments, project budgets and Gantt charts -- bar charts for planning and scheduling projects -- enable project managers to effectively estimate, plan and track projects. In fact, many view developing project plans as the most critical phase in the project management process. Project management tools allow managers to clearly define goals and objectives.

C. Assigning and Scheduling Resources [2]

Project management tools are critical in the area of resources. Tools such as Gantt charts and resource time and expense reporting enable project managers to assign and schedule resources. These capabilities come in use in the areas of manufacturing and production in particular.

IV. INTERACTIVE VOICE RESPONSE

A. IVR

General thought of an Interactive Voice Response System is just for customer support. But it can be so much more. From facilitating a sale to gathering top-of-mind customer feedback, modern businesses are inventing entirely new ways to use an IVR system to make instant customer connections, all while reducing costs and increasing engagement. Across the organization — from marketing to sales to operations — business professionals are using this self-help technology to interact with customers 24/7, and seeing real benefits. Using a telephone keypad, employing DTMF (Dual Tone Multi-Frequency), or talking to an IVR — leveraging speech recognition software that is AI-driven — customers can make inquiries and receive immediate, considered responses. In fact, over 50% of customers think it's important to solve product issues themselves rather than rely on customer service which makes IVR the perfect solution for businesses to deliver on their demands

Interactive voice response (IVR) is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via a keypad. In telecommunications, IVR allows customers to interact with a company's host system via a telephone keypad or by speech recognition, after which services can be inquired about through the IVR dialogue. IVR systems can respond with pre-recorded or dynamically generated audio to further direct users on how to proceed. IVR systems deployed in the network are sized to handle large call volumes and also used for outbound calling, as IVR systems are more intelligent than many predictive dialler systems. [7]

B. Automatic Speech Recognition [10]

Speech recognition is the inter-disciplinary sub-field of computational linguistics that develops methodologies and technologies that enables the recognition and translation of spoken language into text by computers. It is also known as automatic speech recognition (ASR) [10], computer speech recognition or speech to text (STT). Automatic Speech Recognition (ASR)[10] powered by deep learning neural networking to power your applications like voice search or speech transcription. It incorporates knowledge and research in the linguistics, computer science, and electrical engineering fields. Speech recognition applications include voice user interfaces such as voice dialling (e.g. "Call home"), call routing (e.g. "I would like to make a collect call"), domestic appliance control, search (e.g. find a podcast where particular words were spoken), simple data entry (e.g., entering a credit card number), preparation of structured documents (e.g. a radiology report), speech-to-text processing (e.g., word processors or emails), and aircraft (usually termed direct voice input). From the technology perspective, speech recognition has a long history with several waves of major innovations. Most recently, the field has benefited from advances in deep learning and big data. The advances are evidenced not only by the surge of academic papers published in the field, but more importantly by the worldwide industry adoption of a variety of deep learning methods in designing and deploying speech recognition systems.

In the United States, the National Security Agency has made use of a type of speech recognition for keyword spotting since at least 2006[8] This technology allows analysts to search through large volumes of recorded conversations and isolate mentions of keywords. Recordings can be indexed and analysts can run queries over the database to find conversations of interest. Some government research programs focused on intelligence applications of speech recognition, e.g. DARPA's EARS's program and IARPA's Babel program

C. Areas of Application

The template is designed so that author affiliations are not repeated each time for multiple authors of the same affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization). This template was designed for two affiliations.

- Aerospace (e.g. space exploration, spacecraft, etc.) NASA's Mars Polar Lander used speech recognition technology from Sensory, Inc. in the Mars Microphone on the Lander [9]
- Automatic subtitling with speech recognition [10]
- Automatic translation
- Court reporting (Real-time Speech Writing)
- EDiscovery (Legal discovery)
- Hands-free computing: Speech recognition computer user interface

- Home automation
- Interactive voice response
- Mobile telephony, including mobile email
- Multimodal interaction
- Pronunciation evaluation in computer-aided language learning applications
- Robotics
- Speech-to-text reporter (transcription of speech into text, video captioning, Court reporting)
- Telematics (e.g. vehicle Navigation Systems)
- Transcription (digital speech-to-text)
- Video games, with Tom Clancy's End War and Lifeline as working examples
- Virtual assistant (e.g. Apple's Siri)

Summary

Speech recognition can be customized to a specific context by providing a set of words and phrases that are likely to be spoken. This is especially useful for adding custom words and names to the vocabulary and in voice-control use cases. Audio input can be streamed from an application's microphone or sent from a pre-recorded audio file. When support is needed in multilingual scenarios, it can be specified from two to four language codes and Cloud Speech-to-Text will identify the correct language spoken and provide the transcript. Inappropriate content can be filtered in text results including noise. Multichannel recognition in multi participant recordings where each participant is recorded in a separate channel (e.g., phone call with two channels or video conference with four channels), Cloud Speech-to-Text will recognize each channel separately and then annotate the transcripts so that they follow the same order as in real life e.g.: Project progress review meeting, Minutes Of meeting.

CONCLUSION

All in all interactive voice based project management tools technology if implemented provides most notable advantages which includes the dictation ability. With the help of the technology users can easily create documents by speaking. Speech recognition can allow documents to be created faster because the software generally produces words as fast as they are spoken, which is generally much faster than a person can type. Dictation solutions are not only used for transcription tasks but also to avoid missing of important points while Project manager performing his/her roles & responsibilities.

REFERENCES

- [1] PMBOK® guide - Sixth edition
- [2] "Smashing Magazine": 15 Useful Project Management Tools.
- [3] Business Balls: Project Management - Process, Techniques, Tools, Tips, and Training.
- [4] "Business Driven Information Technology"; David R. Laube and Raymond F. Zammuto; 2003.
- [5] "The Complete Project Management Office Handbook"; Gerard M. Hill; 2008.
- [6] Renolds, Nelsenia. "The Importance of Project Management Tools." Bizfluent, <https://bizfluent.com/info-8320824-importance-project-management-tools.html>. 26 September 2017.
- [7] Tolentino, Jamie. "Enhancing customer engagement with interactive voice response". The Next Web.
- [8] Froomkin, Dan. "THE COMPUTERS ARE LISTENING". The Intercept. Archived from the original on 27 June 2015. Retrieved 20 June 2015
- [9] "Projects: Planetary Microphones". The Planetary Society. Archived from the original on 27 January 2012
- [10] "Automatic subtitling with speech recognition". Govivace. Archived from the original on 16 November 2016