GENERATIVE - AI SERVICE

(GEN-AIS™)

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I. INTRODUCTION

With all the hype about AI and Generative AI, let me take a moment to ensure everyone knows transition to an AI capability is not a PANACEA to make your life easier with the click of a button. It will take some work, commonly called 'elbow grease' for those of us who have done mechanical work or worked on a farm.

Contained within the white paper the reader will gain an understanding where or how to begin the AI journey. Second, the reader will gain basic information for Generative AI and a reference to architecture and foundational models. Also included is a short series of activities on the transition from a Help Desk Center to a Customer Care (Cx) Center and their duties. Google labels this as a Contact Center AI (CCAI). Last, for review, will be a short section regarding general website knowledge. One might ask, why is the website information important? In simple terms new IT resources require continued education including Program Managers..

II. WHERE TO START

The question from management, if they have not already asked, is, "What is it going to take to get AI operational? Where Do I Start?". To implement a new AI capability, first start with process review to determine repetitive workload activities.

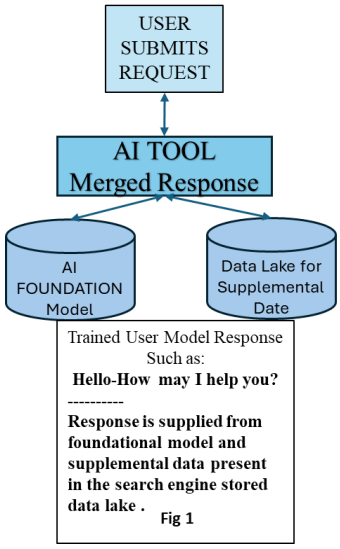
There are several blogs pointing to a daunting question of where to start. The following article might help in making that decision. "Almost every business has a public-facing website or a customer call center. Unfortunately, many of these websites and agents have become a labyrinth for customers to navigate. Internal call center and customer service content is thus one of the prime places where organizations can begin applying generative AI. " Stay up to speed on transformative trends in generative AI, Philip Moyer, Global VP, AI & Business Solutions at Google Cloud, April 29, 2023, https://cloud.google.com/blog/transform/prompt-choosing-generative-ai-use-cases/

Rest assured; the process aligns with building a house with hundreds of decisions. However, when finished the benefits to the business are seen in multiple areas such as user experience or reduced the overall cost for the changed operational process. Note: AI is not a capability to develop, put in a shoebox. Management must expect the need for continuous improvement for long term success, because AI while improving services and will reduce cost, it is a new IT capability/system. For example, the data lake, mentioned in subsequent paragraphs, will inevitably become stale over time based on the dynamics of change.

III. AI FOUNDATIONS

Let us pause for a minute and gain an understanding of some basic principles. To begin, every reader by now has experienced the use of a search engine such as Google and Bing (from Microsoft) just to mention two. These are mainstay search tools and have created a wealth of data from their robots' accomplishing web crawls on websites and returning the data (big) back to their regional operational servers.

AI in a conversational mode needs this big data to respond to questions asked by users. Google Maps is a classic big data AI model we have all used. Tools on the rise are those such as OpenAI (ChatGPT) or new AI tools from various vendors in the AI market all depend on backend models for responses either industry standard foundational models or one unique to the specific business or need. These AI tools, with their associated model, all operate to some degree like search engines. See Figure 1 below to gain an understanding of the high-level process.



Notice in Figure 1 industry label of foundational models. Over the course of my research, I have reviewed dozens of documents, files and websites, each offering a unique process to install and sale AI services. However, NICE is rapidly becoming a leader in the transformation process for AI globally. Their resource center link (https://www.nice.com/resources) is excellent and provides comprehensive knowledge.

XENONSTACK, also provides excellent and comprehensive AI articles, in particular: **Types of Generative AI Models and LLM Model Training and Evaluation,** Dr. Jagreet Kaur Gill | 20 November 2023, https://www.xenonstack.com/blog/generative-ai-models#:~:text=The%20most%20used%20models%20are,and%20quality%20of%20the%20data

I encourage digesting this information over multiple readings, not just one sitting.

A main feature from my research covers a Seven Step Process for training a Task Oriented Model: *How do generative AI models work* starting with setting a clear objective and obtaining clear data set ending with the need to iterate the model with additional updates.

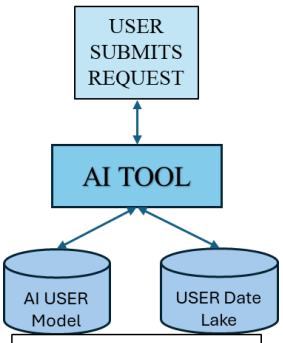
I like to label the AI model as the heartbeat for the AI objective. Without the AI model the AI tool is nothing more than binary code. The AI model contains an algorithm (software program) used to respond to the user questions with an extraction of data from the data lakes. It depends on the data in a data lake for its responses or how to perform certain tasks or functions. An especially important feature of the model is the pattern analysis along with its ability to learn.

When dealing with unique model for a business, the AI responses are provided through an interactive building process for collecting and gathering both questions and responses – labeled as training AI. It is extremely important to understand this process of training a task AI model, because suppose an industry such as an automobile dealership wants to implement an AI tool to respond to internet requests. Sounds simple? On the surface it might be, however the trained model for responses is the key to success. The data response depends on the question asked to the AI tool. For example, a key place to start training the model is to allow the AI tool access same data as the search feature on the Website. The business owner of the AI must realize the trained data requires often refreshing such as when adding new automobiles, plus those sold. In addition, the trained data model needs teaching to respond to specific questions.

Voice active conversational AI is on cell phones today, which the user activates through the microphone icon on cell phones. In newer automobiles, interactive conversational AI is occurring, limited as it might be, it is still conversational AI. The AI is foundational with preprogrammed responses and is not dynamic or trainable by interacting with the user. Just like when responding via voice to a request to send a text and the tool has access to the user's contacts. However, if the tool does not find the name to send the request, the tool responds with preprogrammed answers: "I can't find a match, please check your contacts." Or a similar response.

In all cases, the trained data model for a specific business/industry require nurturing like a new employee to get the right response. It requires training, educational evolution and constant learning. The training of the unique model is the longest activity in the implementation of AI. The success of the project is highly dependent on the unique data for the business. Specific business data is and must be unique to the business both conversational and those for a

software system help desk or customer care center. See FIGURE 2 below for a simple user model.



Trained User Model Response Such as:
Hello-How may I help you?

Data from the User Data Lake is supplied in response to request

FIG 2

IV. SOFTWARE SYSTEM

While the above example focused on a Car Dealership the principles apply to any Task Oriented Model with a specific purpose such as software system. The IT businesses, likewise, have a Help Desk. However, the AI model for a software system is equally involved and more complex. Figure 3 show the level of complexity needed to create an effective AI tool for Software (S/W) System Help Desk. To make it clear, it is a journey not a one-time event.

When dealing with data lake, suggest review of an e-book from databricks inc. at https://www.databricks.com/. This document gives an excellent overview on the architecture of an AI data lake geared towards a specific customer.

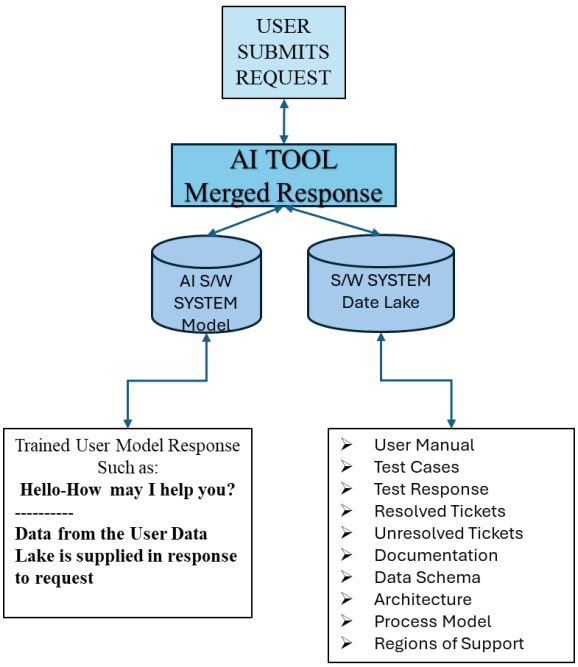


Fig 3

V. HELP DESK TRANSITION

If you have had the chance to chat with a conversation AI tool recently, you probably were impressed and gathered that was a neat means to help resolve questions-thus begun your own journey. From that point I am certain other new AI tools became used, some of which you were readily aware of and other perhaps not. As new generative AI capabilities continue to become more readily accessible, you might now be wondering where or how you can apply Generative AI. While there are use cases where Generative AI can unlock value, customer service (specifically the contact center) is not new and has been evolving for over a decade.

Most all companies have a contact centers or similar customer service channels. The leaders responsible for these operations are constantly seeking new ways to improve customer satisfaction, reduce costs, improve ticket handling, and identify opportunities often driven by shrinking IT budgets. With the arrival of Generative AI, though, management can envision improvement opportunities, however, the initial path to a modernized contact center is promising it must not be oversold, because it too needs maintenance.

An important migration consideration is the understanding the difference between migrating a call center answering questions, routing calls etc. verses those AI activities needed to serve an automated system.

The basic difference is the call center typically routes the call to the appropriate resources or provides a block of information for the response or even a link to the information. How many times have you heard: “We are sorry, but all agents are busy at this time…; or We are experiencing higher call volume at this time…” The goal is to eliminate this frustration for your customers and improve their overall satisfaction with your organization.

Cost from delays in responding to a user request for information is totally beyond this scenario but a driving reason the need for Generative AI exist. What if the issue deals with the sale of a large revenue item – would you want to miss the sale due to inability to respond to a user with a question? An ineffective help desk center for an automated system (call center or help desk) has far reaching impacts beyond the typical loss of revenues and can be felt in loss of productivity from the users of the automated system.

Issues associated with an automated system needs immediate attention. It is ineffective if users are put on hold waiting on an agent. Often the response to an issue requires historical research or even supplying information from the User Manual, or data from historical test scenarios. Establishing an effective AI capability for an automated system is not a quick implementation due to the complexity of the system, substantial number of users, not to mention some systems are considered a legacy system with special needs.

Therefore, if the organization plans to implement Generative AI, then the next portion of this document can augment and guide successful implementation.

STEP ONE – ESTABLISH A VISION

Remember a project without a vision is a dead or failed project.

> *SAMPLE: We will transition the Call or Help Center to an AI enabled capability to improve the responses to users needing assistance by (percentage – be realistic, a modest improvement in the first year is a reasonable expectation.) within the first year*.
>
> Each project will be different, therefore collaborating with the team establish GOALS and timelines for the implementation. Set realistic KPIs and measure them frequently.

STEP TWO - ANALYSIS

- RESOURCE ASSESSMENTS

Key resources required for an analysis are those assets who are knowledgeable of the process and routines. Think though these key resources in terms of their leadership and abilities to lead a team. It is important to have the team on board also since some employees may see the effort as a threat to their employment. Nothing is farther from the truth, because at the end of the journey new careers will come to life and the overall health of the services will improve.

- CONDUCT an AS-IS Analysis

  Establish the process flow for human interception/workflows for documentation and data to summarize the usage. Make spreadsheets for this activity and capture the details in terms in quantities of devices, phone numbers, websites, issue or ticket forms, and transfer after records.

- ANALIZE the Automated Systems

  Gather all the details regarding the automated systems involved in the support process: phone systems, issue/ticketing tools, and agent access and user access. This information will be valuable in the AI implementation.

STEP THREE – DATA INDENTIFICATION

Always ensure to back up all data prior to any migration to a new tool or capability. The standard rules for data integrity apply in AI capabilities just like any software system supporting users.

- Data base storage location for key configuration item for the AI tool.

  The key to a successful AI implementation is the need for dedicated database schema and associated tags for the AI to use. This is a learning process for the AI.

  The tool will establish its own data repository for responses, however, ensure the proper database configuration to the AI code and the database and code is backed up routinely.

- Map data

  Meta data is data about data and is used for continuity.

  If implementing a change or update to AI capability, then align the data or response fields from the old replies with the newer responses. Adjust, as necessary.

STEP FOUR - TESTING

- Never release any IT capability, legacy, or AI without testing to ensure responses. By now the reader must realize for Task Oriented AIs, they basically become a new software system or capability.
- Testing with use cases and validating the responses.
- Test migration is likewise critical to explore potential errors. Conduct a pilot migration to identify any potential issues before fully committing to the transition.
- Obtain a GO-NO GO Decision.

STEP FIVE - TRAINING

- Training your team is fundamental to the entire success. Not only is training the AI model necessary but so is the members of the team. In this step the need to identify any gaps in skills and where supplemental training needs addressing. Adjust often and as necessary.

VI. TRAINING THE MODEL

This is an exercise within itself. If the model is not trained properly, then the results will be negative. Just remember AI is software and the release of software requires testing and testing scenarios. Understanding software testing will enable the ability to grasp the needs for training the model. Training the AI model is in the same arena as testing software, with the knowledge the AI intelligent portion can expand. Just like testing software there are certain events that are critical to the training.

1. Each model can stand on its one, thus each model needs a High-Level Objective. (Note there are many scenarios for one model, thus many scenario-based objectives are required for one model to enable answers to the numerous inquiry/questions.)
2. Each model, due to its unique nature, will need a set of independent data, free of errors.
3. The model architecture is equally important. Based on the article above from Dr. Gill make the selection for the intended outcome.
4. Training the model is where the work begins and requires both technical and functional resources to ensure the training and output meet expectations.
5. Never deploy the model or updates without end-to-end testing. Recall the need for automated testing to exercise the entire system? For example, if the input question is asking for Password assistance, expectation, therefore, would be the password strength requirements.

6. Stage the model in a staging area to add to the training until the entire model is trained with every, or as many scenarios as possible. Append these tested and trusted scenarios and build out the model. Once it is tested in the staging areas, signed off by leadership, then it is ready for deployment.
7. Deploy the model into operational use.

One important note is these models will require technical expertise, mostly coding in a language such as Python. I might add at this juncture that Microsoft advertises a limited no-code or low-code option in their Azure Machine Learning studio at https://ml.azure.com. Creating a functional model is the long journey in Generative-AI.

IMPORTANT ASPECT FOR IMPLEMENTING GENERATIVE AI

MANAGEMENT MUST UNDERSTAND

TO TREAT AI

AS A NEW EMPLOYEE

VII. WEB ENABLMENT

Web crawling, (spidering or web scraping bots), is the built in code of the robot to scape and extract relevant information from the website through spiders and crawlers. Their logic is to gather or seek out various data such as images, relevant links, text or hyperlinks to other websites, key artifacts such as key words located in the web page description, (defined in the meta tags) and maintain the website's URL as the source of the information. These bots are not an application or software system per se' but built mostly with C/C++, Python and script language such as JAVA. The robots systematically navigate each page by following hyperlinks while gathering various data types such as texts, images, relevant links and returning the data back for storage in a data lake.

When a user issues a request to the search engine it uses the key words in the search criteria and seeks answers from the date lake. For a site to get recognized in the data lake is based on Site Engine Optimization (SEO) through the website development. This is a similar process for the AI tool.

VIII. CUSTOMER CARE AGENTS

Within the context of transitioning from Help Desk to Customer Care Agents, leadership has an invaluable role. First that role is for the employees to ensure they understand their

employment is not in jeopardy. If this nurturing fails, then the transition will have bumps in the road and might even not succeed.

Within this section are basic duties for the new agents. While not all encompassing the list serves as an excellent departure point for creating Customer Care Agents position description. These duties are general, however, the mission, scope of work and specific customers supported should be specific in detail.

DUTIES INVOVLE

Maintaining a contact database. This should be on a server not on individual PCs.

Track customer issues and ALL open tickets.

Investigating and supporting the resolution of issues, tickets, and complaints.

Collect and report customer feedback regardless of the rating.

Notify Customers of impending changes, such as release of software.

Providing technical support where feasible.

Provide uniform information on organization and changes.

Be prepared to engage in the resolution of unsatisfied service or a conflict.

Raise unresolved issues to the next level of supervision/managers.

Bottom line: Customer Care Agents are the face of the organization to the Customers/Users.

IX. GEN-AIS™

Generative – AI for Services (GEN-AIS™) is not simply a tool for AI, it is a **system** involving all the features meeting the definition of a system. According to Merriam-Webster a system is defined as a **regularly interacting or interdependent group of items forming a unified whole:** (Merriam-Webster https://www.merriam-webster.com) .

GEN-AIS™ brings together the features of AI to include the unique modeling activity to train the AI to meet the specific needs of the user. The reader should have discerned this event as the long pole in the entire process and like any automated system requires continuous improvements and updates.

The system of components will bring AI to customers with a proved and tested IT Service Management (ITSM) framework for service delivery, backed by XenonStack (https://www.xenonstack.com/) an industry leader in AI technology.

Each customer will have a Unique Task Oriented Model Dedicated to their needs and a foundational model for general services.

As software help desk transition to GEN-AIS™ the team will seamlessly support the transition to a fully functioning Customer Care Center (C3). The future help desk agents will be the ambassadors to the customers not agents sitting at a desk.

While software development is still transitioning to the AGILE framework, GEN-AIS™ can enable that transition by rapid categorization of requirements, support low-code no-code options and bring capabilities to the user faster. Most importantly, once trained pinpoint troubling code problems, detect coding trends, anticipated calls and augment the resolution with the human developer. Goal for all software development is Goal Zero Errors in Releases

X. CONCLUSION

Implementing an AI capability is not a silver bullet and will take initiative and effort. However, the results will have far reaching impacts on the overall mission. The goal is to introduce an AI Robot like employee and transition existing Help Desk Agents to Customer Care Agents. Many organizations don't have the resources for the ambassadors to the customer or users. However, the Generative-AIS solution for Help Desk will enable this transition. Transitioning to a Customer Care Center from a Call/Help Desk Center with a Generative-AIS™ Implementation will enable success in this journey.