

kama DEI Solution Description

July 29th, 2022

Madeleine Kwan and Brian Ritchie - kama.ai



This document reviews kama.ai's Designed Experiential Intelligence™, also known as kama DEI. It covers the conversational AI approach used to create kama DEI, a technical overview of the product, and a walkthrough on creating basic knowledge-based FAQs. For more detailed and complex use cases or to request a demo, please visit our website's contact form here: <https://kama.ai/info/contact-us/>

Table of Contents

1	Introduction	3
1.1	Kama.ai and kama DEI.....	3
1.2	Approaches to Conversational Intelligence	3
1.3	Kama DEI in Action.....	5
2	Kama DEI Technical Overview.....	7
2.1	The “Chatbot” (or other) Front-End.....	7
2.2	Superior Natural Language Understanding (NLU)	9
2.3	Kama DEI Zero-Code Administration (Admin) System.....	10
2.4	Kama DEI Conversational Intelligence “Controller”	11
2.5	Achieving Best In-Market Virtual Agent Intelligence	13
3	Building Knowledge and FAQs in kama DEI	15
3.1	Setting up the Terms.....	15
3.2	Defining Synonyms.....	16
3.3	Finding the Problem; presenting a Solution	18
3.4	Extended Data.....	19
3.5	Adding the Human Values	22
3.6	Updating Knowledge and NLU Performance in Real Time	24
3.7	Custom Org Messages.....	26
3.8	Multi-language Capabilities	28
4	Summary	30
5	References	31

1 Introduction

1.1 Kama.ai and kama DEI

Kama.ai is a proudly Canadian Indigenous-owned conversational intelligence provider leading the industry in the zero-code, Emotion AI, conversational intelligence solution area.

Kama.ai's patented Designed Experiential Intelligence™ platform, kama DEI, puts the human touch into automated AI interactions. The kama DEI system uses its own industry-leading natural language understanding ("NLU") layer to recognize multiple inferences or issues detected in text or voice inquiries and responds to end-users with prioritized information based on their own personal values.

Accounting for a user's values, desires, and situations, kama DEI engenders trust, minimizes data bias, and creates experiences that evolve with each interaction. Our human-in-the-loop, knowledge-based, Rapid Assisted Learning training approach does not require large training data sources, data scientists, or Machine Learning model training. More importantly, because kama DEI is not based on historical data, it is not susceptible to the biases and enterprise risks often associated with these data sources.

The result is, kama DEI operates 24x7, helping organizations better connect with their customers or clients over website chatbots, Facebook Messenger® bots, smart speakers, or from within a mobile phone application.

Our technology is industry agnostic and can therefore be applied to virtually any application area where organizations want to communicate product, service or support information to their perspective clients or other stakeholders. We are currently addressing customer applications in consumer services, travel, telecommunication, healthcare, staffing, and online software services areas.

1.2 Approaches to Conversational Intelligence

There are several ways in which conversational intelligence can be designed and delivered, namely:

- Big-Data & Machine Learning ("ML")
- Decision Tree
- Knowledge Graph (kama.ai approach)

Each approach can have its own benefits and drawbacks. While Big-Data ML approaches can be effective for large applications like Siri and Alexa, they do not favour applications for small or medium-sized

enterprises or institutions, where there may be limitations in data availability or in the availability of specialized resources to manage the data and build, modify, and train the ML system.

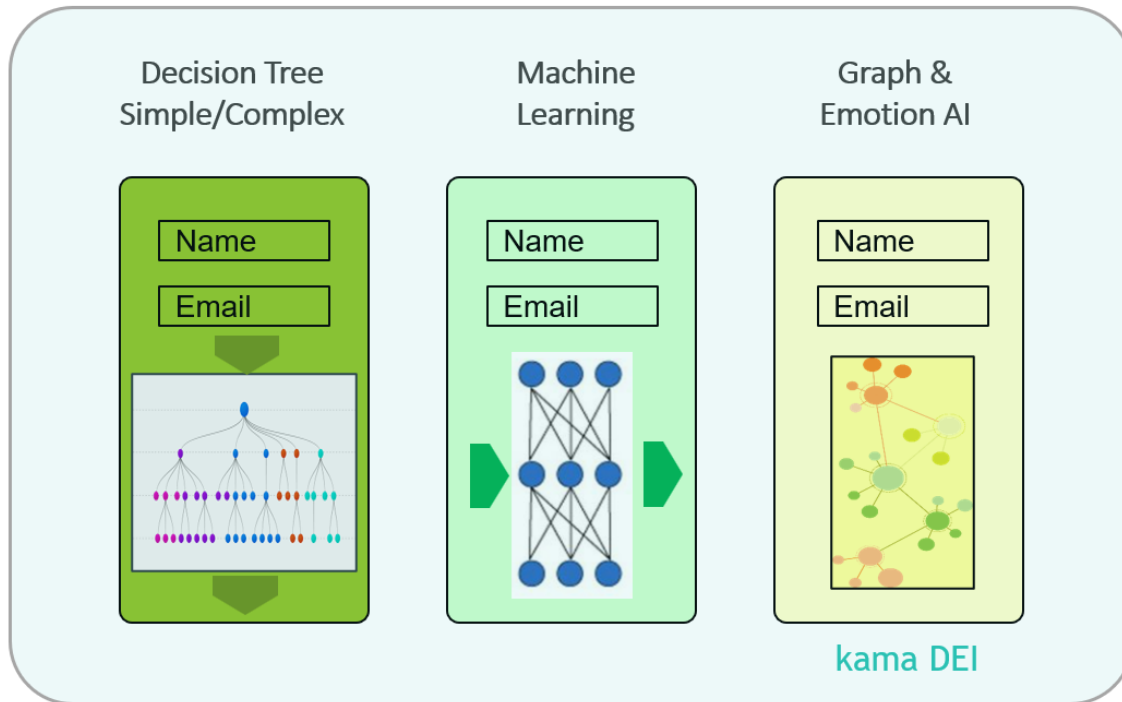


Figure 1: Various approaches to conversational intelligence

Decision Tree systems can offer low-code approaches to configuring conversational intelligence, but they are limited to the tree structures that define them. While there are some capabilities to cross-reference decision trees to support important capabilities like multi-intent recognition, such approaches can become very complicated to build and troubleshoot.

While kama DEI's patented Knowledge Graph + (human values) Emotion AI approach is incredibly unique, very flexible, and immensely powerful, it is also extremely easy to use to create humanistic conversational journeys. The following provides a partial listing of the benefits of kama DEI's Knowledge Graph + Emotion AI approach:

- **No pre-existing data is required**, and therefore no data grooming/preparation or specialized resources are necessary, significantly reducing the cost and deployment time
- **Curated Knowledge Graph and Extended Data mitigates risk of negative bias or inappropriate responses**, thereby reducing the risk to your brand and offending users

- **Graphs more closely resemble the human thought process** and can support unlimited contextual situations that organizations can design for, and users can experience
- **Kama DEI's patented human value rating can understand the human impact of user situations and provide prioritized responses or solutions that best suit the user's personality**
- **Rapid Assisted Learning** – the kama DEI Knowledge Graph can be easily configured, with zero-code, providing prioritized multi-intent recognition, multi-solution delivery to a single issue or intent, ultimately delivering empathetic, human-like natural language responses. This zero-code human-in-the-loop Rapid Assisted Learning is applied by business users and subject matter experts, ensuring clients get exactly the information your organization wants them to receive.

1.3 Kama DEI in Action

Kama DEI generally operates by taking a user's question, or intent, and inferring what they are asking for. From there, it presents the relevant information to the user, whether that be the answer to the question or a set of options to clarify the user's intent. Clarification may be required because multiple problems were detected in original statement, or because multiple solutions are available for the user's problem or intent.

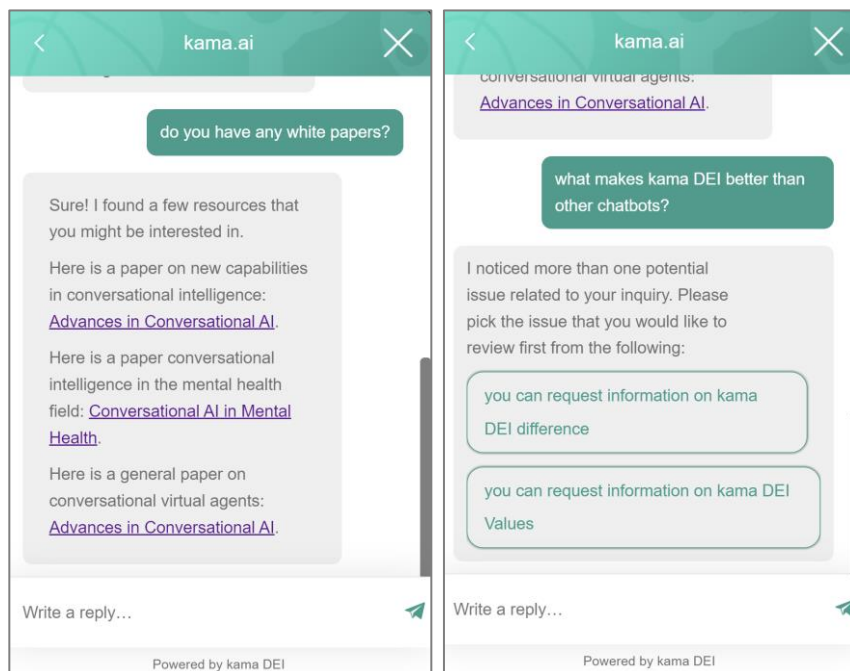


Figure 2: Demonstration of Multiple Problems versus Multiple Solutions for one Inquiry

The screenshots provided above show examples of the Knowledge Graph, Emotion AI, and best-in-class Natural Language Understanding at work.

In the left screenshot, there are several “solutions” to one problem “Do you have any white papers?” While it may not be apparent in the screenshot, these solutions are prioritized based on several human values in the underlying conversation graph, further factored by the user’s Personality Value Profile. This is a patented capability of kama DEI that is unique to the industry.

The right screenshot has a different utterance “What makes kama DEI better than other chatbots?” In this case, our NLU detects multiple ‘problems’ from within our knowledge base that can be related to the same inquiry. Selecting either of these problems will provide the information associated with the solution record(s) from the knowledge graph that address that particular problem. Again, the matching of ‘solution’ to ‘problem’ and delivering the related information or ‘payload’ Extended Data is a patented problem-solving technique based on our Knowledge Base + Human Values approach.

In both examples, the responses are gathered from the kama DEI Knowledge Graph with no decision tree, or other complex programming involved, demonstrating the flexibility and performance of the kama DEI solution.

2 Kama DEI Technical Overview

This section includes the technical overview of the Conversational Intelligence solution powering Kama.ai's Designed Experiential Intelligence®, or kama DEI platform. The solution involves in four main parts:

1. **a chatbot 'front-end'** which can be configured for branding and look-and-feel in terms of colour schemes, and custom front-end messaging (i.e., welcome message, time-out message etc.),
2. **a Natural Language Understanding (NLU) layer** which decodes natural language inputs into discrete knowledge-like structures that the industry calls '[triples](#)' that can be resolved in our Knowledge Base for problem or intent recognition,
3. **a conversational intelligence 'back-end' configuration system** called the kama DEI "Controller" where the identified problems are inferred and prioritized solutions and supporting information are delivered to the user based on our patented human values problem solving approach, and,
4. **the kama DEI Administrative (Admin) System** that facilitates our Rapid Assisted Learning or 'programming' of the conversational intelligence with zero code and virtually no technical skills, with full multi-language capability.

2.1 The "Chatbot" (or other) Front-End

Often, a chatbot is seen as one entity when in reality, it is actually comprised of two parts: a front-end user experience interface, and a back-end conversational AI. While the real 'intelligence' comes from the back-end AI portion of a chatbot solution, the chatbot front-end UI does play an important role because this is how users perceive or realize the experience. Though kama DEI is typically offered with the website chatbot front-end, kama DEI's intelligence can support virtually any front-end, such as preexisting 3rd party chat interfaces, Facebook Messenger®, Amazon Alexa etc.

In the following screenshots, you can see the proprietary kama DEI chatbot deployed on the kama.ai website.

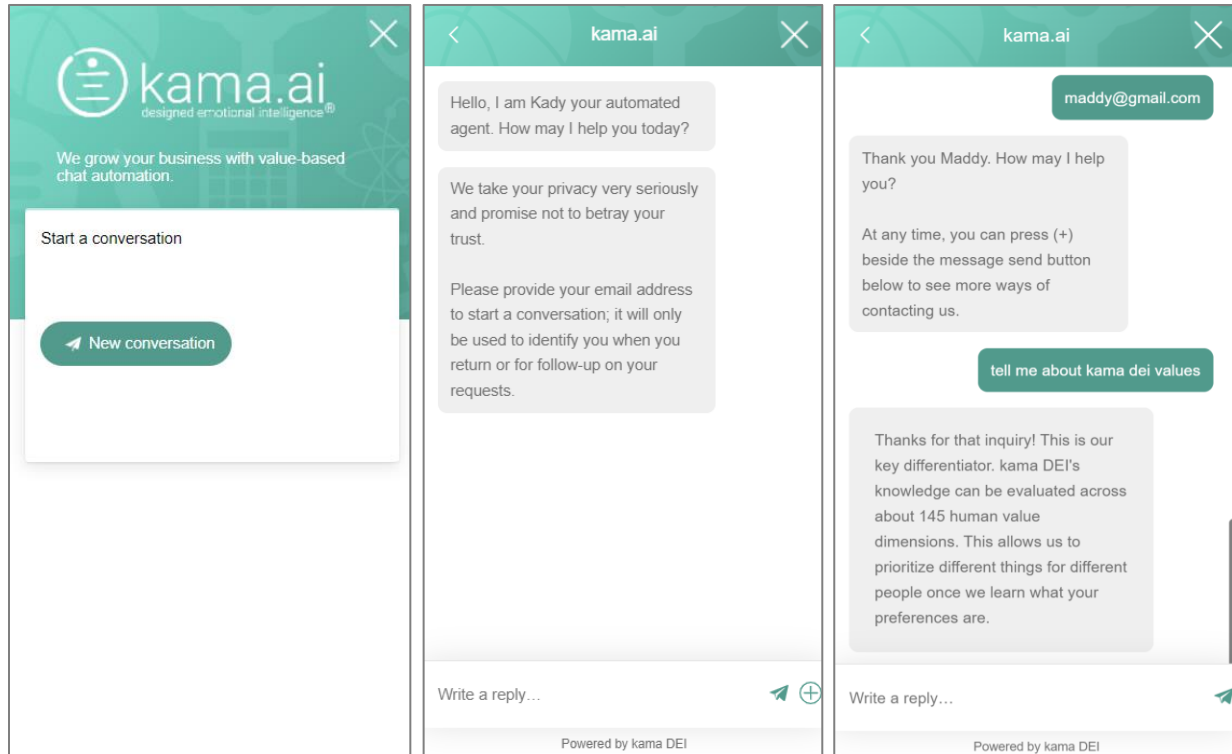


Figure 3: Screenshots of the kama DEI Chat Front-End interface

In the first screen capture on the left, you see the chatbot as it is opened on a website or mobile phone. The chatbot conveniently opens a new window on mobile phones and occupies the entire mobile screen operating very much like a dedicated app but it can be rapidly delivered as feature on your website with just a few lines of JavaScript.

The second screen capture in the center shows an example of a 'standard' introductory message. Note that this, and all standard system messages are fully configurable by the client organization, for any language, and doing so does not require any technical programming skills or involvement from kama.ai. Further, note that the introductory messaging can include HTML formatting, and links applicable for "terms of use", or other resources your enterprise may want to make available to the user upon introduction to the chatbot service.

In the third screen capture on the right, we have inserted a FAQ example. In this case, the user asks about kama DEI Values. The chatbot has answered with the relevant information.

2.2 Superior Natural Language Understanding (NLU)

One of the most important aspects of conversational intelligence is that it can understand the many ways that users communicate a question or state an issue in their “utterance.”

The screenshot below asks the same question about kama DEI values in different ways, and the same relevant information is provided.

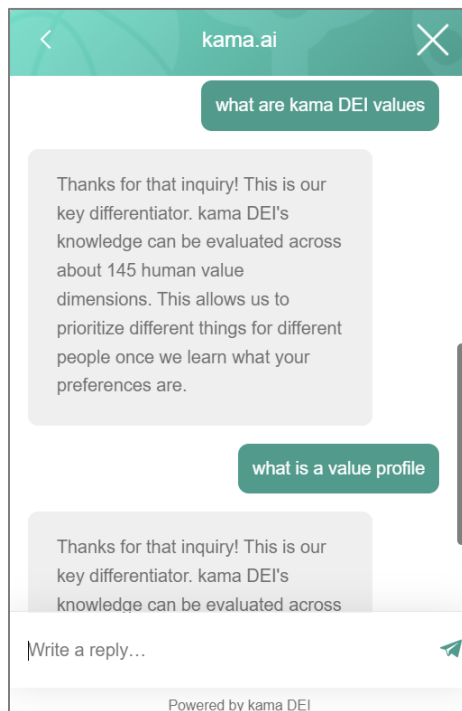


Figure 4: The kama DEI NLU understands alternative ways of phrasing a FAQ

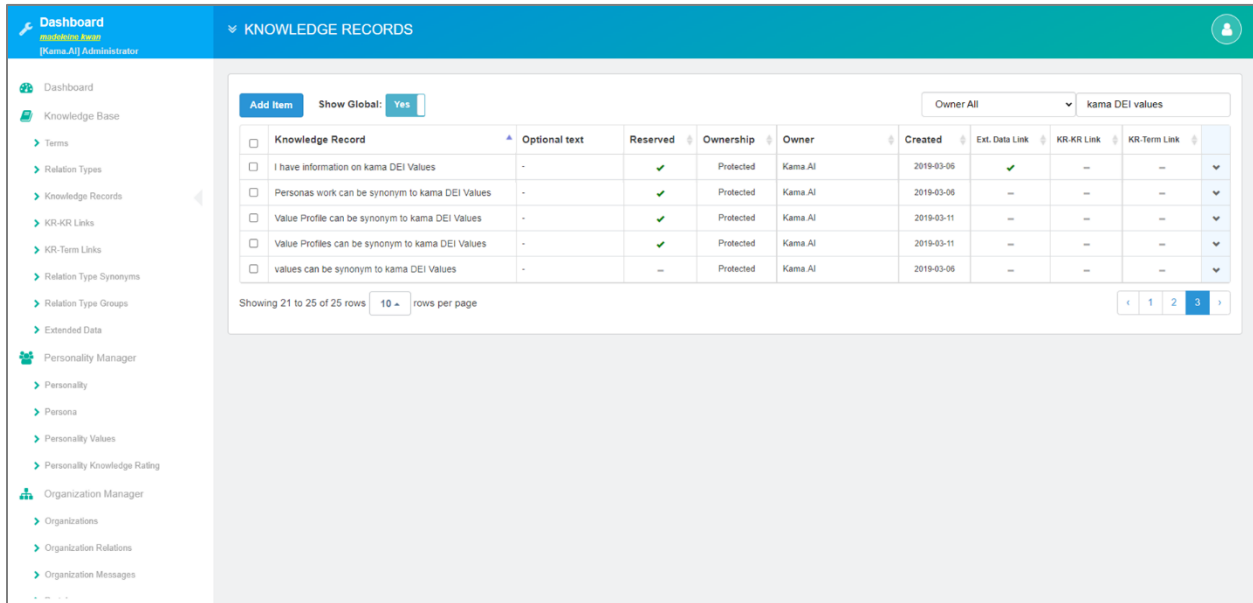
It is important to note that the Natural Language Understanding (“NLU”) capability is supported in two ways in kama DEI.

Firstly, our NLU has its own inherent capabilities to understand utterances, including dissecting them, grammatically, to determine the multiple inferences that may be included in a single utterance.

Secondly, our NLU capability is also supported by common kama DEI data, and the client organization’s implementation (setup) data, collectively defining synonyms, or other semantic inputs with the kama DEI Knowledge Base, that further support the NLU. An example of this from the previous screenshots is that “value profile” is defined as a synonym to the Key Term “kama DEI values” that this particular FAQ Problem and Solution were configured for.

2.3 Kama DEI Zero-Code Administration (Admin) System

As described in the solution overview above, the entire conversation that will be supported by a chatbot is configured within the kama DEI zero-code Admin System. This is an enterprise-grade application used by kama.ai customers and implementation partners that allows the structuring and "programming" of conversations that defines the FAQs supported by the chatbot.

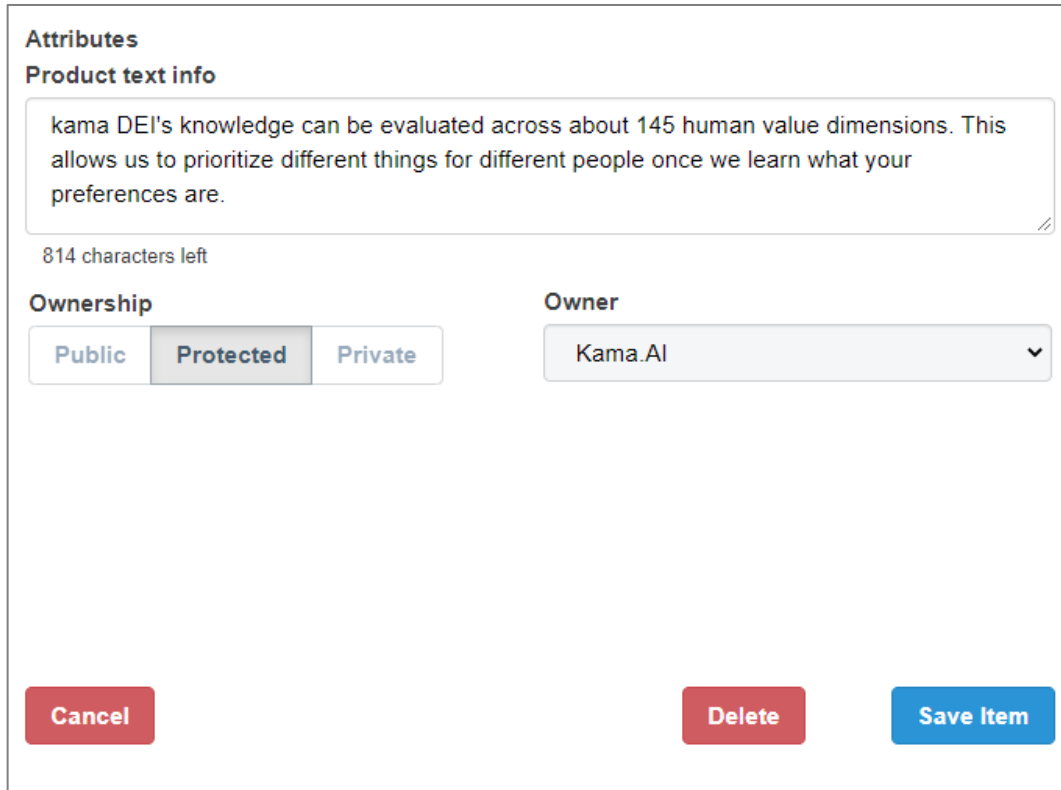


<input type="checkbox"/>	Knowledge Record	Optional text	Reserved	Ownership	Owner	Created	Ext. Data Link	KR-KR Link	KR-Term Link
<input type="checkbox"/>	I have information on kama DEI Values	-	✓	Protected	Kama AI	2019-03-06	✓	--	--
<input type="checkbox"/>	Personas work can be synonym to kama DEI Values	-	✓	Protected	Kama AI	2019-03-06	--	--	--
<input type="checkbox"/>	Value Profile can be synonym to kama DEI Values	-	✓	Protected	Kama AI	2019-03-11	--	--	--
<input type="checkbox"/>	Value Profiles can be synonym to kama DEI Values	-	✓	Protected	Kama AI	2019-03-11	--	--	--
<input type="checkbox"/>	values can be synonym to kama DEI Values	-	--	Protected	Kama AI	2019-03-06	--	--	--

Figure 5: A view of the kama DEI Admin System showing the Knowledge Record screen

Please note that in the screenshot above, there are two records that are relevant to our previous chatbot screenshot examples. The first record is the FAQ record ("I have information on kama DEI Values"). Also shown are additional records where the Terms like "Personas work" and "Value Profile" are set as possible synonyms to the Key Term "kama DEI Values" to assist the chatbot's NLU for this application.

Lastly, note in the screenshot that on the row "I have information on kama DEI Values," there is a checkmark under "Ext. Data Link." This indicates a 'payload', intended for the user, attached to the Solution record. When the question "What are kama DEI Values" is asked, kama DEI's algorithm will locate the appropriate answer as "I have information on kama DEI Values and will deliver the intended payload into the chat.



The screenshot shows a web form titled 'Attributes' with a sub-section 'Product text info'. It contains a text area with the text: 'kama DEI's knowledge can be evaluated across about 145 human value dimensions. This allows us to prioritize different things for different people once we learn what your preferences are.' Below the text area is a character count '814 characters left'. To the right of the text area is an 'Owner' dropdown menu currently set to 'Kama.AI'. Below these are three buttons: 'Cancel' (red), 'Delete' (red), and 'Save Item' (blue).

Attributes

Product text info

kama DEI's knowledge can be evaluated across about 145 human value dimensions. This allows us to prioritize different things for different people once we learn what your preferences are.

814 characters left

Ownership

Public Protected Private

Owner

Kama.AI

Cancel Delete Save Item

Figure 6: The Extended Data ‘payload’ for an FAQ Question and Answer pair

The screenshot above shows the Extended Data payload that has been attached to the Solution record for the ‘kama DEI values’ Problem.

Please note that all this data is input in forms as shown here, and it can be easily performed by employees with absolutely no technical skills or vendor support after the kama DEI Admin System training has been completed.

2.4 Kama DEI Conversational Intelligence “Controller”

The actual conversational intelligence, with respect to inference and response within kama DEI, is performed in a layer called the ‘Controller’ in the overall kama DEI Experiential Intelligence solution. In the Controller, kama DEI takes the input of ‘triples,’ determined by the NLU output, and seeks to determine what, in the user’s utterance, is a Problem that should be investigated. To be more accurate, it looks at what number of Problems should be investigated and what the priority for this investigation should be for this user in terms of the user’s Value Profile. This ability to understand multiple problems is known as ‘multi-intent recognition’ within the conversational AI industry.

To accomplish this analysis of comparing user input to known problems, we resolve input ‘triples’ against a common kama DEI Knowledge Base and any additional Knowledge Records added by the client organization, also contained within the Knowledge Base, and determine if any of the located Knowledge Records are rated with negative human values. It is this negative human value rating that signifies an issue as a Problem (or a question) that the user may be communicating to kama DEI for resolution or informational response.

The use of a Knowledge Base or “Graph” has been recently acknowledged by the leading independent technology research firm Gartner as a means of adding higher levels of intelligence to Virtual Assistants or conversational AIs.

According to Gartner, “Graph more closely resembles human thought processes and knowledge because it permits flexibility for all potential interpretations.”

This graph, and the associated human values problem-solving method, is kama DEI’s patented conversational experiential intelligence solution in which the following steps occur:

1. **kama DEI resolves any triples from the NLU output against the Knowledge Base**
2. **Any found Knowledge Records are checked** using the Persona associated with the chatbot/Portal for net-negative ratings, which indicates a kama DEI Problem
3. **If only one Problem is found** using the information resolved from the NLU input, then associated solutions are identified and reported back to the user in priority order (highest net-value solutions are presented first, with lowering values presented next)
4. **If the one Problem has only an Extended Data ‘payload’** (text or links) intended for the user, then the Extended Data is shown directly without the user seeing, or having to select, the Solution
5. **If a number of Problems are located** based on the NLU input, they are presented to the user in priority order (the highest net-negative value is the highest priority for Problems identified)
6. **Once the user selects the Problem they want to explore, kama DEI then reports the prioritized Solutions for the selected Problem** – again, if there is only one Solution that has only Extended Data payload, the conversational data (Extended Data answer payload) is presented directly to the user without seeing or having to select a Solution

7. If a Solution has a set of (logically) linked options, these linked options are presented to the user for selection and further information delivery or further navigation

2.5 Achieving Best In-Market Virtual Agent Intelligence

In Figure 7 below, the independent industry-leading technology research firm, Gartner, indicates how the industry will move towards increasingly Virtual Assistants (VAs). In this chart, Gartner shows that the industry, in mid-2021, was achieving late stage 2 for VA intelligence.

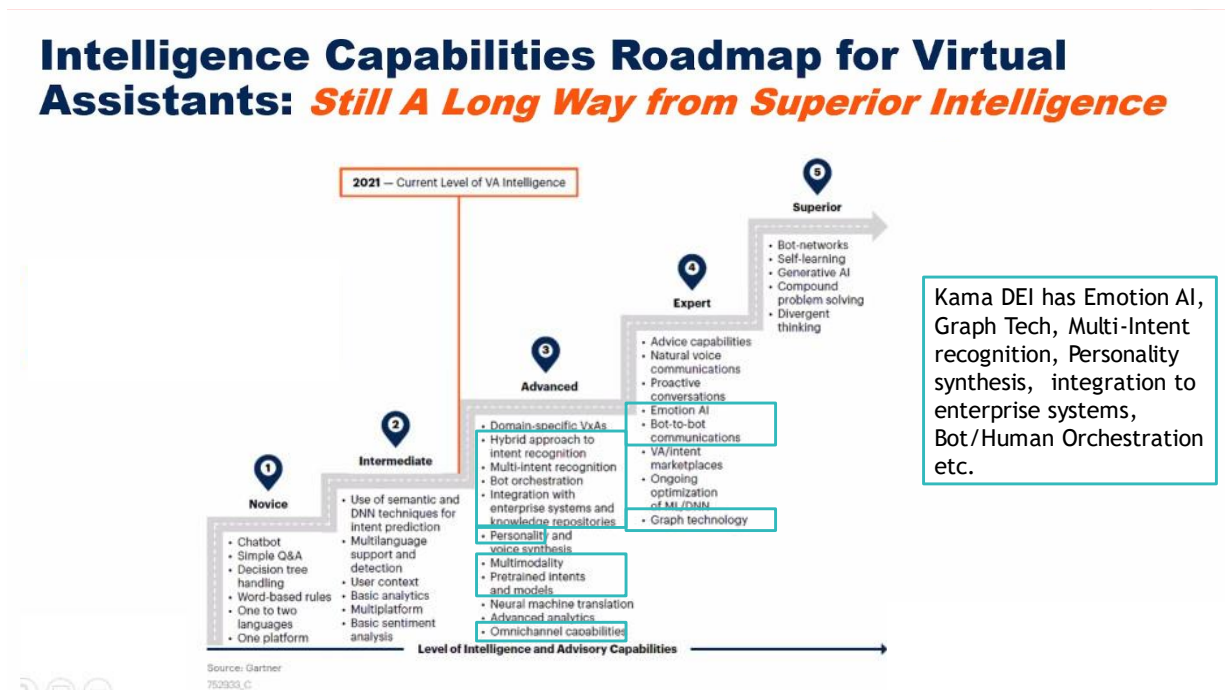


Figure 7: Gartner Evolution of Advanced Virtual Assistants

They indicate, through the features included under each level of intelligence, that to reach advanced levels, technology providers of conversational intelligence will need to incorporate the following (not the full list):

- Hybrid approach to intent recognition
- **Multi-Intent Recognition**
- Integration with Enterprise systems and knowledge repositories
- **Bot Orchestration**
- **Graph Technology**

- Pre-Trained Intents
- **Omni-Chanel Capabilities**
- **Emotion AI**

Kama DEI was designed to incorporate or achieve many of these capabilities from its original design goal in 2018, and we provide all of these capabilities in our current platform today. Specifically, using Graph Technology, Multi-Intent Recognition, and Emotion AI based on human values creates our unique capability to deliver user responses as described in the examples shown above.

3 Building Knowledge and FAQs in kama DEI

With kama DEI's no-code Admin System, adding knowledge or FAQs to your enterprise system is simple. The following section will detail the steps to build an FAQ for your virtual assistant using the example utterance of "what is a graph conversational AI?".

3.1 Setting up the Terms

To begin setting up the FAQ, the necessary Terms must first be created. The kama DEI system already has access to thousands of terms that enterprises can use; however, you may also add custom Terms, such as "graph conversational AI". Under the Knowledge Base menu, the Terms page allows your enterprise to see all available terms. As seen in figure 8 below, our Term "graph conversational AI", added in the search field on the top right, is not in the Knowledge Base, so we need to add it.

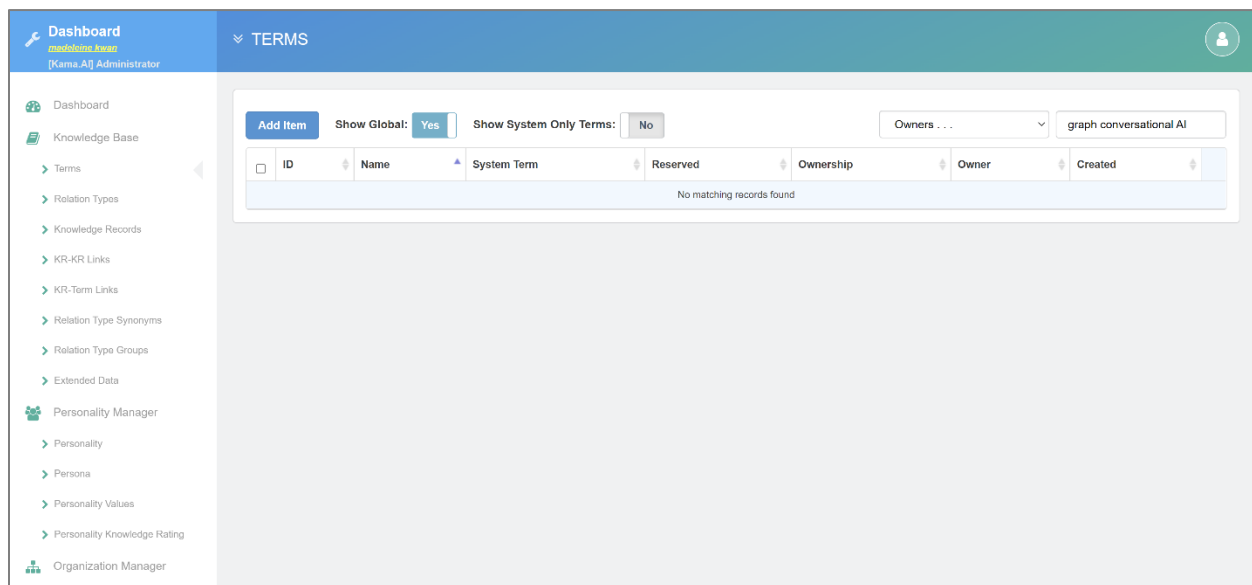
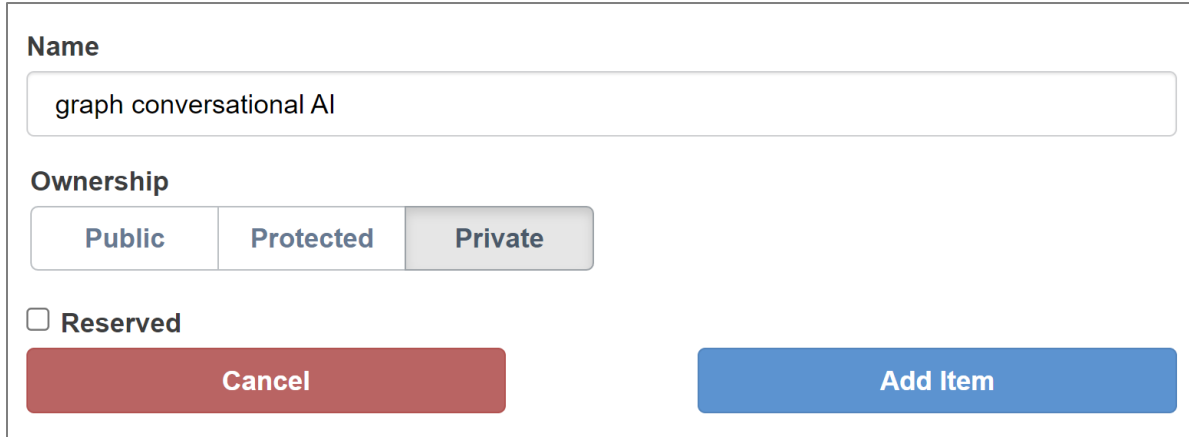


Figure 8: A view of the kama DEI Terms page with no records matching graph conversational AI

To add a new Term, click "Add Item," which will open the window in Figure 9, allowing you to create your new Term.



Name

graph conversational AI

Ownership

Public Protected **Private**

☐ Reserved

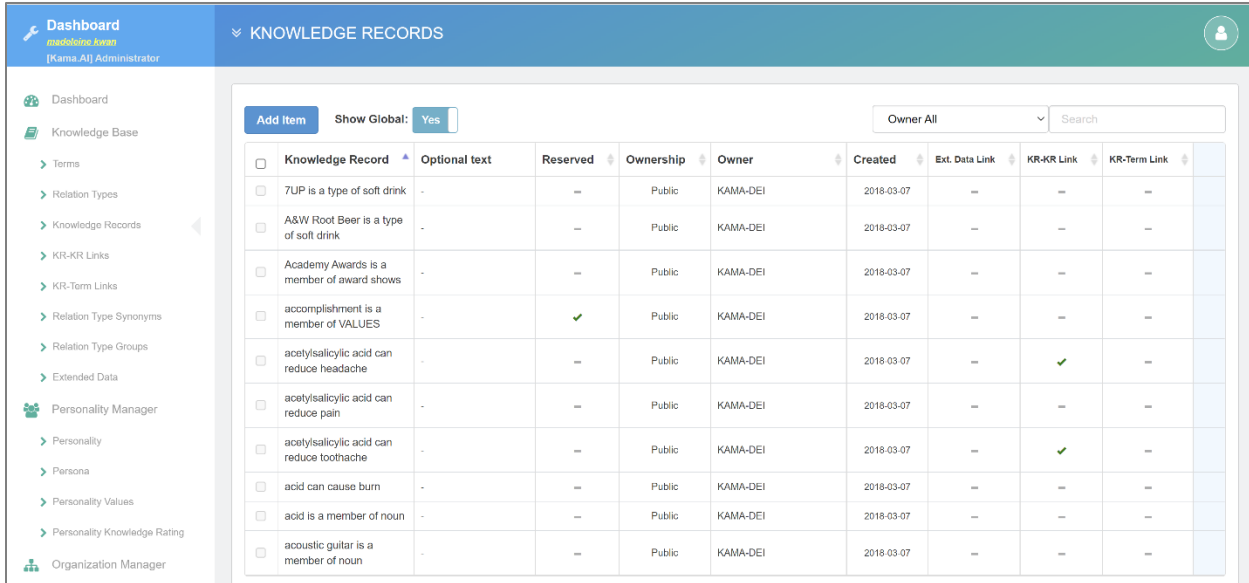
Cancel Add Item

Figure 9: Adding a new Term to the kama DEI system

In the Terms area, we may search for alternate synonym Terms for “graph conversational AI,” such as “graph”, “knowledge base,” and “knowledgebase”, and if they don’t exit as common kama DEI terms, we can add those too. By doing so, we can connect these Terms to enhance the NLU’s understanding of a user’s input, as demonstrated with our previous example in Section 2.3.

3.2 Defining Synonyms

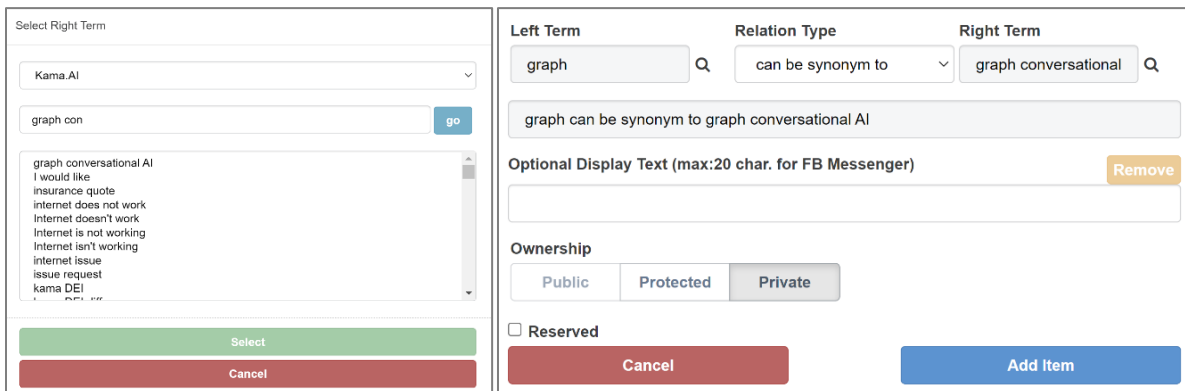
For synonyms to be recognized by kama DEI, we first must create a new knowledge record to inform kama DEI of this new relationship. To do this, we will navigate to the Knowledge Record (KR) page, where we can view all our pre-existing KRs.



<input type="checkbox"/>	Knowledge Record	Optional text	Reserved	Ownership	Owner	Created	Ext. Data Link	KR-KR Link	KR-Term Link
<input type="checkbox"/>	7UP is a type of soft drink	-	--	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	A&W Root Beer is a type of soft drink	-	--	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	Academy Awards is a member of award shows	-	--	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	accomplishment is a member of VALUES	-	✓	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	acetylsalicylic acid can reduce headache	-	--	Public	KAMA-DEI	2018-03-07	--	✓	--
<input type="checkbox"/>	acetylsalicylic acid can reduce pain	-	--	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	acetylsalicylic acid can reduce toothache	-	--	Public	KAMA-DEI	2018-03-07	--	✓	--
<input type="checkbox"/>	acid can cause burn	-	--	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	acid is a member of noun	-	--	Public	KAMA-DEI	2018-03-07	--	--	--
<input type="checkbox"/>	acoustic guitar is a member of noun	-	--	Public	KAMA-DEI	2018-03-07	--	--	--

Figure 10: A view of the kama DEI Knowledge Records page

Here we can “Add Item,” which, like with Terms, brings up a window to insert the relevant information. As a best practice, the right Term should be filled with your main subject or key Term; in this case, that would be our new term “graph conversational AI.” Our left Term would be our synonym Term, either “graph,” “knowledge base,” or “knowledgebase.” We will select the Relation Type “can be synonym to” to connect these two terms, which tells the NLU how it should understand this relationship. We can repeat this step for each of the synonym Terms we want to be equated to the key Term.



Select Right Term

Kama.AI
graph con
go

graph conversational AI
I would like
insurance quote
internet does not work
Internet doesn't work
Internet is not working
Internet isn't working
internet issue
issue request
kama DEI

Select
Cancel

Left Term
graph
Relation Type
can be synonym to
Right Term
graph conversational

graph can be synonym to graph conversational AI

Optional Display Text (max:20 char. for FB Messenger)
Remove

Ownership
Public
Protected
Private

☐ Reserved

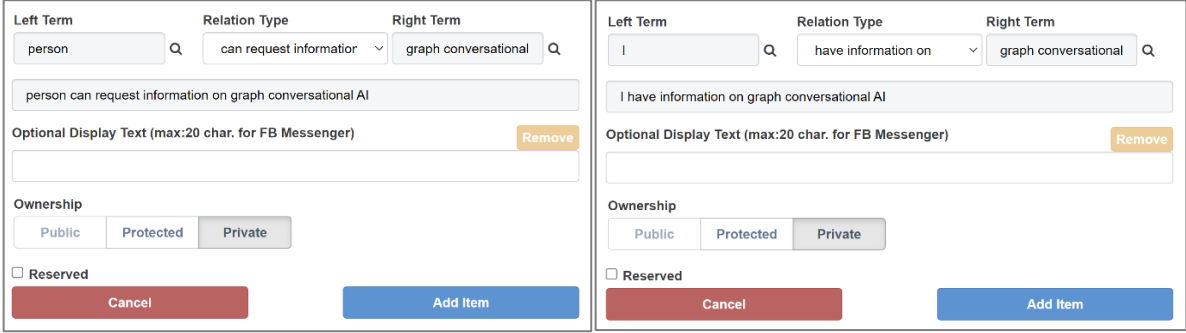
Cancel
Add Item

Figure 11: Adding a synonym Knowledge Record to connect graph with graph conversational AI

With this knowledge entered, into the system, we are able to assist kama DEI in finding relevant links and information for our FAQ, even if the user does not use the word “graph conversational AI” exactly.

3.3 Finding the Problem; presenting a Solution

Currently, even if we've connected these words, the conversational AI will not be able to find a solution to our example utterance, "What is graph conversational AI?". This is because we need a Problem KR and a paired Solution KR. To do this, we must Add Item as we did in section 3.2 with our synonyms.



Left Term	Relation Type	Right Term
person	can request information on	graph conversational
person can request information on graph conversational AI		
Optional Display Text (max:20 char. for FB Messenger)		
Ownership: Public Protected Private		
<input type="checkbox"/> Reserved		
Cancel	Add Item	

Left Term	Relation Type	Right Term
I	have information on	graph conversational
I have information on graph conversational AI		
Optional Display Text (max:20 char. for FB Messenger)		
Ownership: Public Protected Private		
<input type="checkbox"/> Reserved		
Cancel	Add Item	

Figure 12: Adding a Problem (left) and Solution (right) Knowledge Record to create FAQ

To define a Problem, our right Term will be our key Term, "graph conversational AI." For the left Term, we will use "person" to define any user communicating with kama DEI. We then connect the two Terms with a Relation Type "can request information on". This will give us "person can request information on graph conversational AI" as seen on the left of the figure above. Note that this form of creating a Knowledge Record with two Terms and a Relation Type, creates a very simple but very clear readable piece of 'knowledge'. This straightforward way of managing knowledge within kama DEI makes the information directly readable by the creators or Knowledge Managers but you will find that the very same form of immediately readable information is presented to the end user to guide their conversation with kama DEI. This simple formatting of knowledge is, in itself, a powerful zero-code natural language programming capability within kama DEI.

For our Solution Record, it is important to use the same right Term, effectively linking the Problem and Solution through the Term "graph conversational AI". The left Term will be "I" in this case, to represent kama DEI itself as it offers various information to users. To link the two terms, our Relation Type will be "have information on," creating "I have information on graph conversational AI" as seen on the right of the figure above.

3.4 Extended Data

Although we now have a problem and solution, we have two remaining requirements: they are not truly linked, and we have no text that will be returned to the user as an answer. Let’s solve the latter first. To begin, we can navigate to the Extended Data page and create a new Item. We can call it “graph conversational AI”; this will not conflict with our Term of the same name as they are separate pieces of information in different areas of kama DEI. Having said that, the name of the Extended Data element is arbitrary and can be determined by the Knowledge Manager programming kama DEI. This name, or label, is never actually shown, to the user; only the textual ‘value’ or payload, is seen when the Problem and Solution are triggered in a conversation.

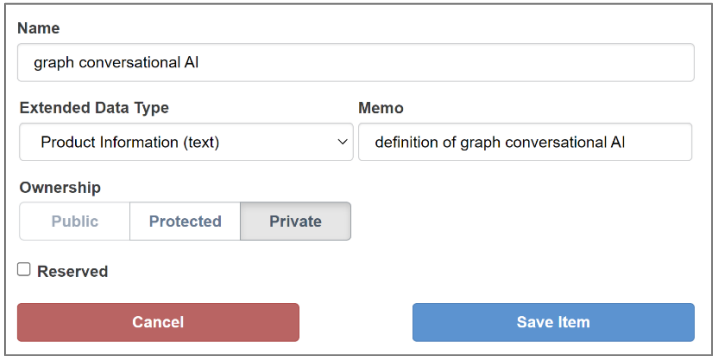
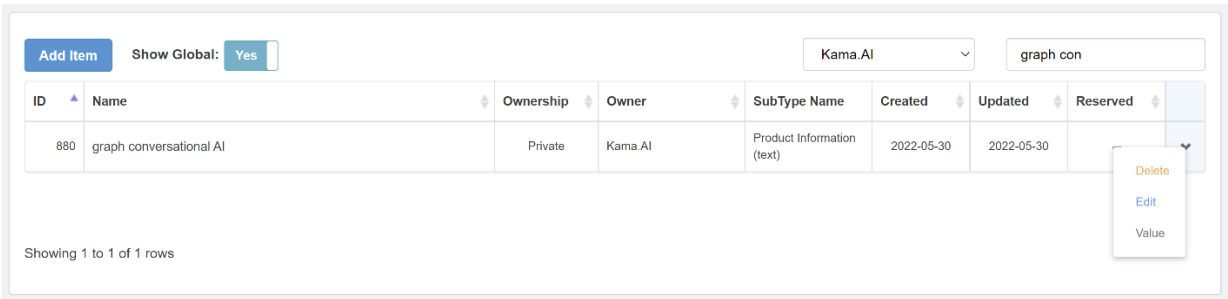


Figure 13: Creating a new Extended Data element

Once created, as shown in the left picture of the figure below, we can select the smart menu pull-down, next to the new Extended Data element, and click “Value”. This will allow us to enter the Extended Data response that we want the user to be show for the new FAQ, as seen in the top right image of the figure below.

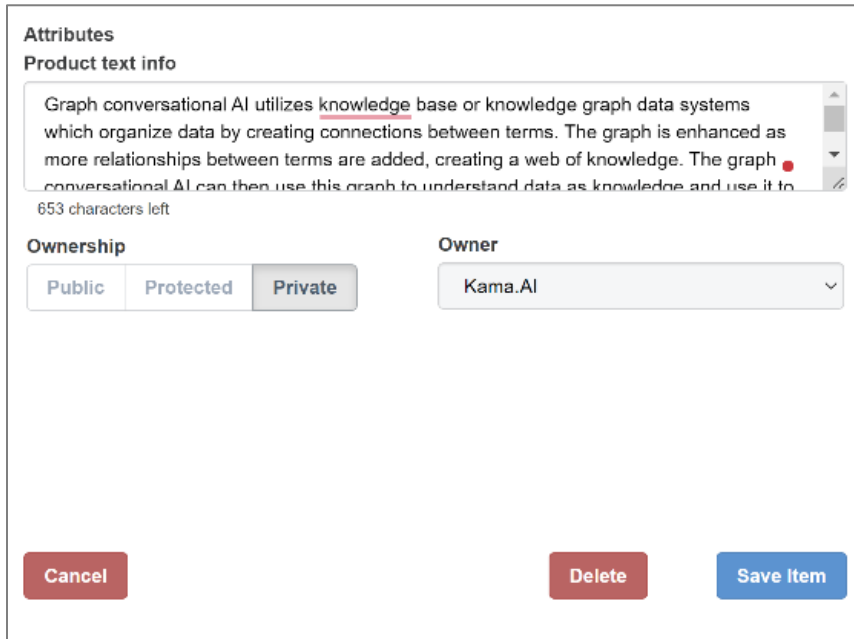


ID	Name	Ownership	Owner	SubType Name	Created	Updated	Reserved
880	graph conversational AI	Private	Kama.AI	Product Information (text)	2022-05-30	2022-05-30	

Showing 1 to 1 of 1 rows

Figure 14: Selecting “Value” to complete the Extended Data

The “Value” is the actual data or answer that we want to be shown to the user. To be clear, the Extended Data must be created in two parts; 1) the new data element itself, or “graph conversational AI” in this case, and 2) the ‘Value’ or information we want to be conveyed to the user. For further understanding, these Extended Data Values are primarily 2 types of information; 1) textual ‘chat’ information to inform the user, or 2) links to external web pages, electronic documents, etc., that we may want to help the user to access through the conversation.



Attributes
Product text info

Graph conversational AI utilizes knowledge base or knowledge graph data systems which organize data by creating connections between terms. The graph is enhanced as more relationships between terms are added, creating a web of knowledge. The graph conversational AI can then use this graph to understand data as knowledge and use it to

653 characters left

Ownership

Public Protected **Private**

Owner
Kama.AI

Cancel Delete Save Item

Figure 15: Entering the Extended Data Value

Lastly, we need to associate the new Extended data ‘answer’ to the Solution part of the FAQ. To create this Extended Data Link, navigate to the Knowledge Records view and locate the Solution KR (“I have information on graph conversational AI”). Then, using the Smart Menu pull-down on that record, we select “Ext. Data Link” bringing us to the screen shown on the bottom image of figure 16 for adding one or more Extended Data Links to a Knowledge Record.

KNOWLEDGE RECORDS

Add Item

Show Global: ☒

Owner All

graph conversational ai

<input type="checkbox"/>	Knowledge Record	Optional text	Reserved	Ownership	Owner	Created	Ext. Data Link	KR-KR Link	KR-Term Link	
<input type="checkbox"/>	graph can be synonym to graph conversational AI	-	--	Private	Kama.AI	2022-05-30	--	--	--	
<input type="checkbox"/>	I have information on graph conversational AI	-	--	Private	Kama.AI	2022-05-30	--	--	--	
<input type="checkbox"/>	knowledge base can be synonym to graph conversational AI	-	--	Private	Kama.AI	2022-05-30	--	--	--	
<input type="checkbox"/>	knowledgebase can be synonym to graph conversational AI	-	--	Private	Kama.AI	2022-05-30	--	--	--	
<input type="checkbox"/>	person can request information on graph conversational AI	-	--	Private	Kama.AI	2022-05-30	--	--	--	

Showing 1 to 5 of 5 rows

Delete
Edit
Ext. Data Link
KR-KR Link
KR-Term Link

EXTENDED DATA LINK

Add Item

Show Global: ☒

Knowledge Recor

I have information

Ext. Data All

Kama.AI

Search

Parent Type	Parent	Ext. Data	Ownership	Owner	Reserved
No matching records found					

Figure 16: Navigating to the extended data screen via Smart Menu on Solution KR

On the Extended Data Link screen, you can now choose “Add Item” and you will notice that the left-hand Knowledge Record is pre-populated; all that remains is searching for and adding the new Extended Data Record on the right-hand side.

enter Ext. Data

Owner All

graph conversational AI

go

Show Global: ☒

graph conversational AI

Select

Cancel

Parent Type

Knowledge Record

Parent

I have information on graph conversa

Ext. Data

graph conversational AI

Ownership

Public

Protected

Private

Add Chat Intro

Add Chat Intro

Add Voice Intro (if empty, Chat Intro will be used)

Add Voice Intro (if empty, Chat Intro will be used)

Preview Chat Display

Preview Voice Text

Graph conversational AI utilizes knowledge base or knowledge graph data systems which organize data by creating connections between terms. The graph is enhanced as more relationships between terms are added, creating a web of knowledge. The graph conversational AI can then use this graph to understand data as knowledge and use it to communicate.

Memo

Memo

☐ Reserved

Cancel

Add Item

Figure 17: Linking the extended data to a Solution KR

3.5 Adding the Human Values

The final step to creating and launching our new FAQ is to rate the Problem and the Solution KRs with (human) values. This is what makes kama DEI so unique, as our knowledge building includes the context of human values and emotion. For example, with an utterance like “What is graph conversational AI?” the values attributed may be “knowledge,” “service,” and “innovation.” Knowing this, we can now go into the organization’s Personality Knowledge Rating and choose the Persona that is associated to the Chatbot or Portal and add the new Knowledge Records and KR values that creates the emotional understanding. The Persona acts as an archetype of a customer or user in an enterprise’s audience.

To properly match an FAQ Problem and Solution together, two key elements must be in place. Firstly, the right-hand Term of the Problem KR must match that of the Solution KR for them to be considered as a relationship; we have already accounted for this in our example used here.

Persona : N.A. Enterprise Marketer

Knowledge Record : person can request information on graph conversational AI

Cancel Add KR Add and Rate

Show global ☐ Yes ☐ graph con

Knowledge Record	Ownership	Owner
graph can be synonym to graph conversational AI	Private	Kama.AI
I have information on graph conversational AI	Private	Kama.AI
knowledge base can be synonym to graph conversational AI	Private	Kama.AI
knowledgebase can be synonym to graph conversational AI	Private	Kama.AI
person can request information on graph conversational AI	Private	Kama.AI

Showing 1 to 5 of 5 rows

Current Knowledge Record:

person can request information on graph conversational AI

Owner : Kama.AI

Ownership : Private

Value : knowledge

Scaler value : -10 0 10

Cancel Add and Exit Add and Continue

knowledge

Value	Ownership	Owner
knowledge	Public	KAMA-DEI
posteriori knowledge	Public	KAMA-DEI

Showing 1 to 2 of 2 rows

Dashboard

Knowledge Manager

Knowledge Type Synonyms

Knowledge Type Groups

Extended Data

Personality Manager

Personality

Personas

Personality Values

Personality Knowledge Rating

Organization Manager

PERSONALITY KNOWLEDGE RATING

Add Knowledge Records Copy KR's

graph con clear search

Knowledge Record	Created	Net Rating	Personalized
I have information on graph conversational AI	2022-05-30 11:58:23	solution	

Add Personality Knowledge Rating

Search

Value	Scaler value	Ownership	Owner	Created
Innovation	<input type="text" value="-13"/> 0 10	Private	Kama.AI	2022-05-30 11:59:15
knowledge	<input type="text" value="-13"/> 0 10	Private	Kama.AI	2022-05-30 11:59:33
service	<input type="text" value="-13"/> 0 10	Private	Kama.AI	2022-05-30 11:59:58

Showing 1 to 3 of 3 rows

+ person can request information on graph conversational AI 2022-05-30 11:56:31 problem

Showing 1 to 2 of 2 rows

Figure 18: Adding human values to Knowledge Records

Secondly, the Problem KR must have a negative net rating which can be balanced by the Solution KR with a positive net rating. Though they do not have to be exactly the same values, nor ratings, the net difference should be significant enough for kama DEI to understand their relation.

In this case, we rate “knowledge” as -3 for the Problem KR and then rate “knowledge” as 4 for the Solution KR. Due to this complementary difference, kama DEI will be able identify that this Solution KR can address the negative values of our Problem KR and thus will present it to the user when they ask the question. More accurately, it will present the Extended Data payload attached to the Solution KR to the user when the Solution is identified.

Note, we have previously set up synonyms for our Key Term “graph conversational AI” in Section 3.2. Those synonym Knowledge Records don’t have to be added to the Persona, nor do they have to be rated. Only the Problem KR and the Solution KR need to be added to the Person and rated.

As previously stated, the synonym KRs are to support enhanced NLU but they are involved in the kama DEI Controller’s processing of value rated Problems and Solutions.

3.6 Updating Knowledge and NLU Performance in Real Time

While kama DEI can provide best-in-class conversational intelligence, the Knowledge Base and FAQs can always be enhanced to support better user interaction. One of the key dashboard reports in the kama DEI Admin System is the ‘Failed Utterance Report.’ This report allows Admin System users, or Knowledge Managers, to recognize daily what inquiries within the chatbot solution failed to find related FAQs. The Knowledge Manager can then augment the trained dataset to deliver new useful information to users.

Select Organization

Kama.AI

Last 24 hours

1 week

1 month

1 year

Export to CSV

Search

Portal Name	Persona	User	Started at	Failed Utterance
Kama.ai	N.A. Enterprise Marketer	Maddy	May 27, 2022 1:54:45 PM	When was kama.ai started
Kama.ai	N.A. Enterprise Marketer	Maddy	May 27, 2022 1:53:49 PM	Are you indigenous?
Kama.ai	N.A. Enterprise Marketer	Maddy	May 27, 2022 1:52:58 PM	What is Graph conversational ai?
Kama.ai	N.A. Enterprise Marketer	Maddy	May 27, 2022 1:50:07 PM	How does AI work?

Figure 19: Improving the Knowledge Base and User Experience

With the Failed Utterance Report, Knowledge Managers can quickly identify either the ways that users are asking questions that have not been provided for or new questions (i.e., FAQs) that need to be provided for. Using this feature, combined with our Rapid Assisted Learning and human-in-the-loop

training, kama DEI can be expanded to support new use cases within minutes without the requirement of technically trained personnel. In the Figure 18 above, we see a screenshot of this Failed Utterance Report. We can see that one of these failed reports was “What is Graph conversational ai?” At the time, we did not have this FAQ in our conversational AI, however after following the steps of section 3, we were able to add in this new case within minutes so that this question can be answered for the next visitor who requests it.

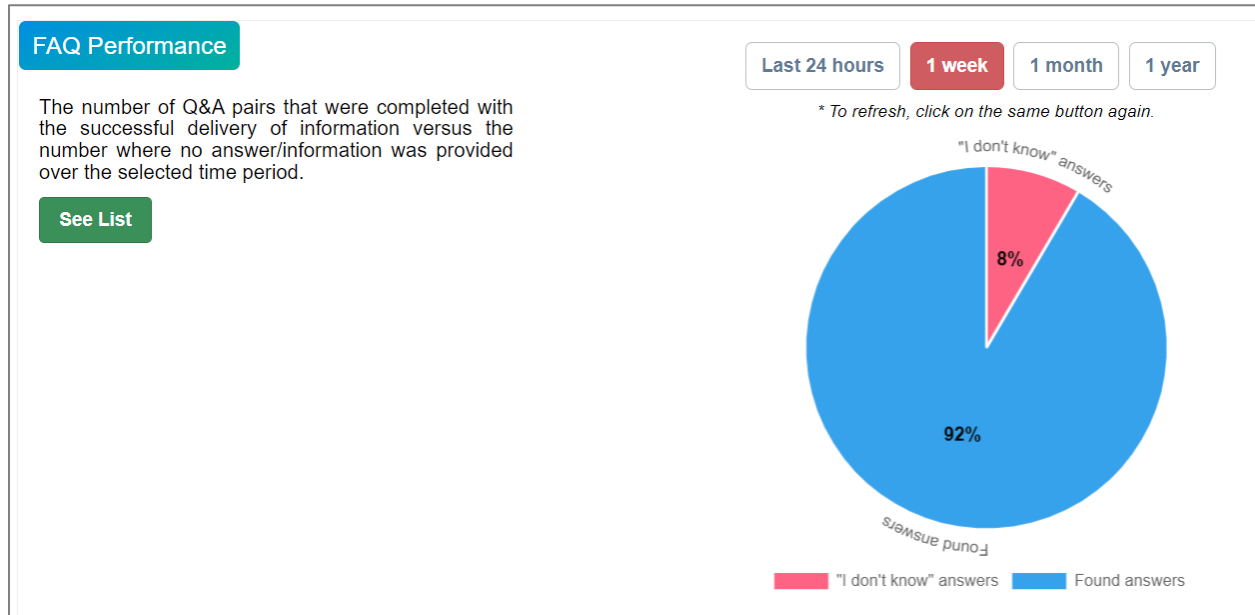


Figure 20: kama DEI FAQ Performance

To highlight our capability of accurate information delivery to users, please refer to the above figure. This is a chart taken from the weekly report of all kama DEI users as of April 27, 2022. The chart indicates the number of FAQ pairs (questions and corresponding answers) where kama DEI could provide relevant information, versus the percentage of times that kama DEI had to say, “I’m sorry, I don’t understand.” The typical industry average for a ‘good solution’ in this area is 70-75%. In the weekly report above, you can see that kama DEI is currently performing at an industry-leading 92% which demonstrates our kama DEI solution’s best-in-class capability.

To support higher performance, all that is needed is that we enter additional data into our Knowledge Base, and the system is updated in real time, meaning new FAQs, or new ways of relating FAQ Problems to user utterances (i.e. adding synonym KRs) will be instantaneously available to users; no model tuning, programming, or Machine Learning (ML) training is required.

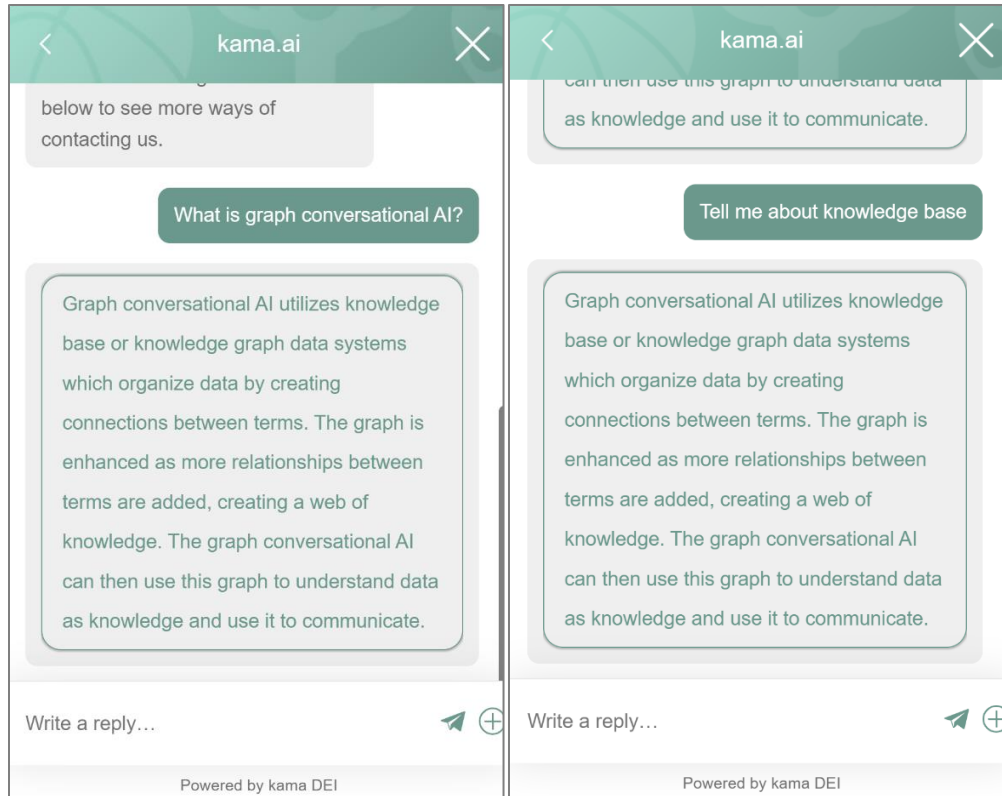


Figure 21: Our new FAQ example in kama.ai Virtual Assistant

In the figure above, we can see that the utterance “What is graph conversational AI?” will now locate the Problem KR we built in section 3, and respond with the extended data attached to our Solution KR. In addition, on the right-hand picture, a Knowledge Manager can also change the way the NLU and kama DEI Controller finds problems and solutions using the synonyms that we connected in section 3.2. This process is straightforward, simple, and requires no coding or technical knowledge to complete. That is, updating, and expanding kama DEI with new FAQs can be done with ease by business users or subject matter experts, not by engineers or programmers.

3.7 Custom Org Messages

Not all messages in the conversation will be direct answers supported by FAQs. As we have seen in previous sections like section 3.6, there may be cases where kama DEI does not know the answer to the question or it wants to communicate that it found several problems, or several solutions to one problem. In these cases, we turn to Organization Messages, pre-set responses to specific scenarios in a conversation.

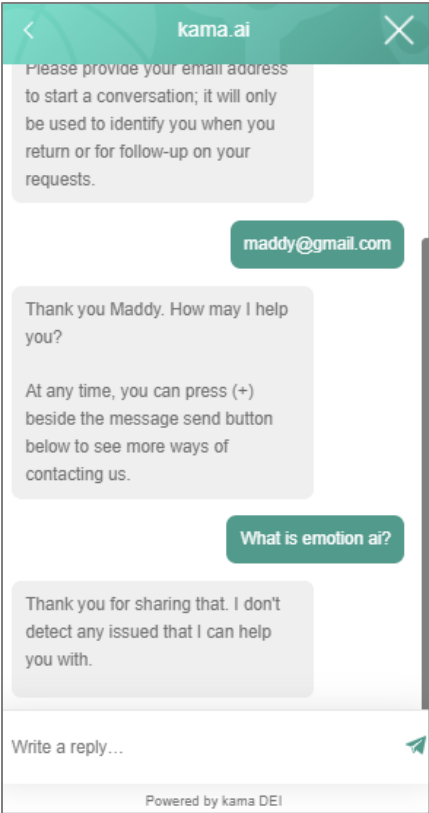
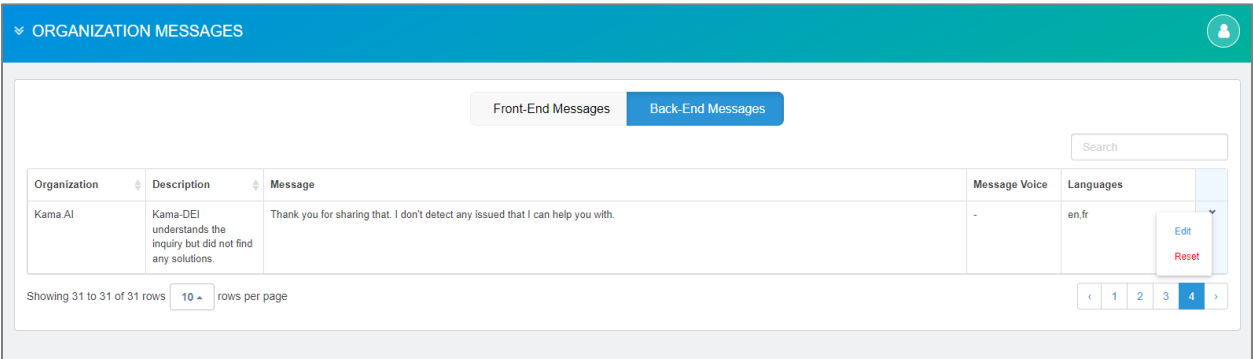


Figure 22: Organization message triggered by undetected issue

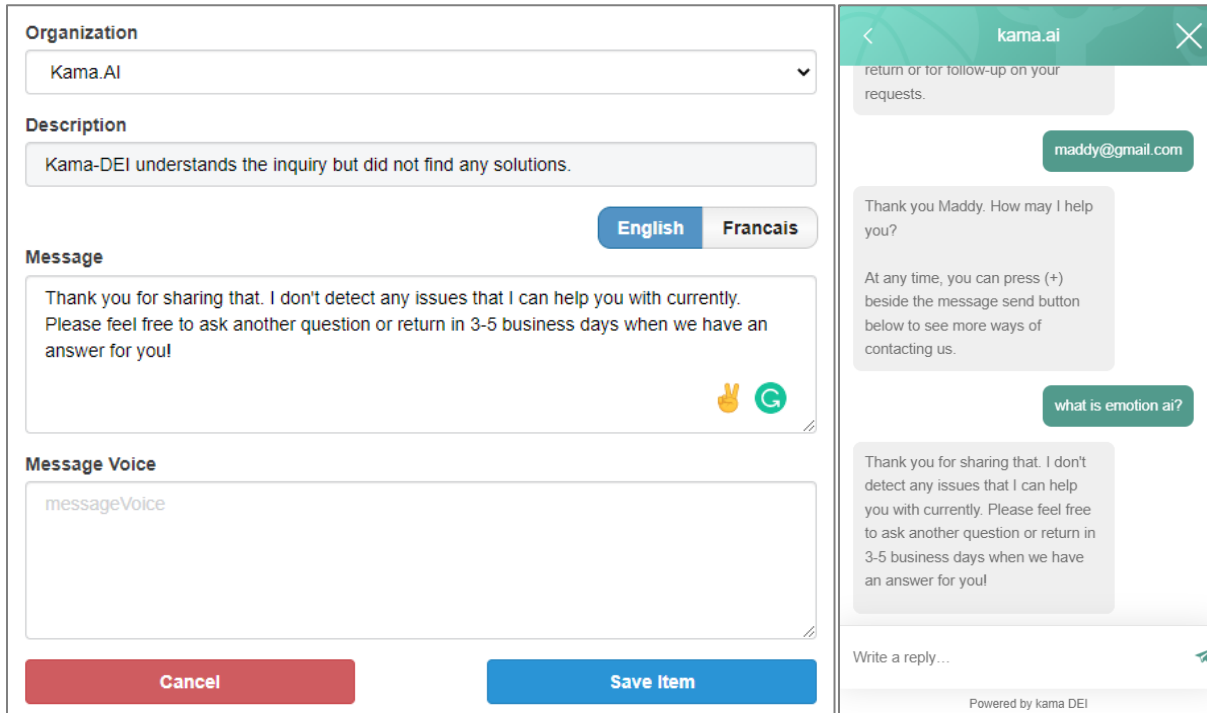
As seen in Figure 22 above, we could not answer the question “What is emotion ai?” meaning this data has not yet been added to our Knowledge Base as an FAQ. Though we can go and add this FAQ, we may also want to change that organization message to leave the user with an actionable next step since their inquiry came up blank in the meantime.



Organization	Description	Message	Message Voice	Languages
Kama AI	Kama-DEI understands the inquiry but did not find any solutions.	Thank you for sharing that. I don't detect any issued that I can help you with.	-	en,fr

Figure 23: Organization messages showing their description and message available

In this case, we would go into our Admin system and navigate to the Organization Messages tab under Organizations. There we will see all the available messages we can edit and personalize for our organization. The figure above shows that the message is triggered when the system understands the inquiry but does not have a solution currently. So, let's add in a sentence letting this user know that our team will update these missing FAQs (as shown in section 3.6) if they return later in the week.



Organization
Kama.AI

Description
Kama-DEI understands the inquiry but did not find any solutions.

Message
English Francals
Thank you for sharing that. I don't detect any issues that I can help you with currently. Please feel free to ask another question or return in 3-5 business days when we have an answer for you!

Message Voice
messageVoice

Cancel Save Item

Front-end Chat:
kama.ai
return or for follow-up on your requests.
maddy@gmail.com
Thank you Maddy. How may I help you?
At any time, you can press (+) beside the message send button below to see more ways of contacting us.
what is emotion ai?
Thank you for sharing that. I don't detect any issues that I can help you with currently. Please feel free to ask another question or return in 3-5 business days when we have an answer for you!
Write a reply...
Powered by kama DEI

Figure 23: Updated message in admin panel and live changes on the front-end

Your organization can create specific and tailored messaging for your target audience with these custom messages. There is also a reset button available if you ever want to return to our default kama DEI messages rather than your custom messages.

3.8 Multi-language Capabilities

Kama DEI also can understand languages with industry-leading dynamic translation without the need for additional data entry or translation services. As shown in Figure 24 below, a user can switch seamlessly between English and French within the same conversation.

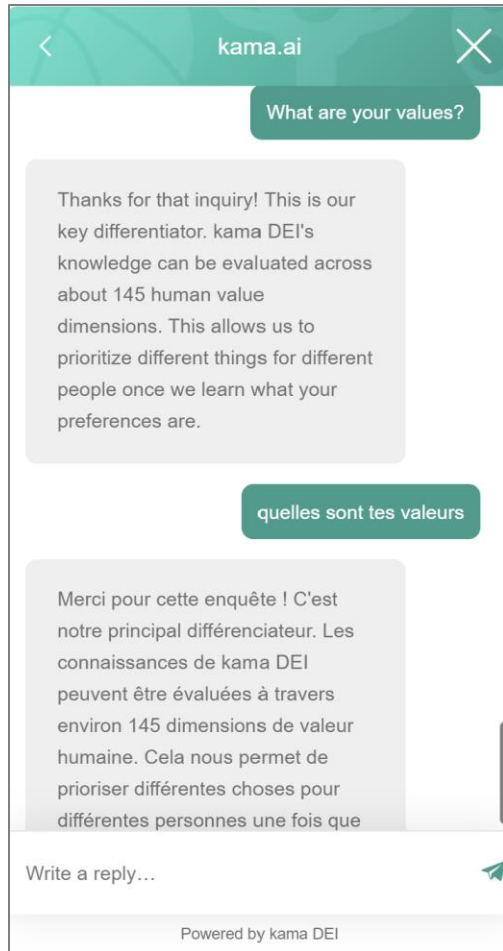


Figure 24: Multi-language capability, English and French

Of course, there may be extended data or messaging which require specific wording or different text for different languages. In this case, your enterprise can edit any piece of information, whether standard messaging, or Extended Data responses to override the dynamic translation automatically created by kama DEI. Using this approach, a new language can be offered to your clients immediately, while customized translations can be added in by native-language speakers over time.

4 Summary

With this Solution Description of kama DEI, we have only touched on the capabilities of our unique solution; the ability to create a value-rated Frequently Asked Question and have kama DEI respond in natural language. Using this Knowledge Graph and (human value) Emotion AI approach facilitates an emotional and contextual understanding within customer conversations. While we have created only one FAQ, when your organizations Knowledge Base and the Persona for your chatbot or Portal empowered with many FAQs, you will see that the contextual, multi-intent and multi-solution conversation journeys become richer and more flexible, all without having to apply any programming, big-data grooming or Machine Learning or complicated building of decision trees.

Not only does the value of our conversations improve, but the human-in-the-loop training also ensures that this conversational AI can be constantly improved and monitored to fit clients' growing needs. Knowledge Managers can add new FAQs, or update information quickly and easily.

While this document only reviewed the basic method of creating FAQs using kama DEI's unique Knowledge Base plus Value Rating method, many more valuable capabilities and best practices are available in the platform such as:

- Gathering user value profile information by inserting a value rating question into the conversation flow
- Logically linked solutions creating a flexible form of fixed “decision tree” options
- Creating a “chat skills” helper to let users know some typical questions that can be asked/answered
- Using other consumer interfaces like Facebook (Meta) Messenger® or smart speakers
- Integrating with live-chat systems and Facebook Messenger live agents for automating hand-off to human agents when either the user or your organization wishes that to happen
- Adding kama DEI emotional intelligence to other chatbots
- Using kama DEI to automate functions through conversations involving 3rd party Robotic Process Automation (RPA) solutions.

If you are interested in learning more about these advanced features or have any questions about the features mentioned in this document, you can visit our website's contact form here:

<https://kama.ai/info/contact-us/>

5 References

Gartner, “Emerging Technologies: Introducing the Artificial Intelligence Roadmap for Virtual Assistants”, [Annette Jump](#), [Anthony Bradley](#), August 9, 2021

Gartner, “What Is ‘Graph?’ — An Elementary Version for the Uninitiated”, [Mark Beyer](#), [Rita Sallam](#), [Jim Hare](#), [Pieter den Hamer](#), [Afraz Jaffri](#), [Merv Adrian](#), December 7, 2020