Publio WP3 Specifications

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DOCUMENT HISTORY

<table>
<thead>
<tr>
<th>Version</th>
<th>Release Date</th>
<th>Author</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>28/09/2022</td>
<td></td>
<td>Initial version</td>
</tr>
</tbody>
</table>
1 Introduction

Work Package 3 (WP3) is one of the three work packages planned for the augmentation of the Publio assistant in 2022. WP3 has 2 main components:

- Extending the domain to include EU Whoiswho
- Adding Spanish as a new language

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUIS</td>
<td>Language Understanding (LUIS) is a cloud-based conversational AI service that applies custom machine-learning intelligence to a user's conversational, natural language text to predict overall meaning, and pull out relevant, detailed information. LUIS provides access through its custom portal, APIs, and SDK client libraries</td>
</tr>
</tbody>
</table>

2 EU Whoiswho

We divided the specifications for this section into two sections,

- **Product Specifications** – This is a section dedicated to defining the user experience, i.e., How the user can interact with the assistant, what will the user see, etc
- **Technical Specifications** – This section is dedicated to technical specifications related to the implementation

2.1 Product Specification

The purpose of this development is to extend the Publio assistant to cover the EU Whoiswho domain in a similar way that the document search is covered.

The EU Whoiswho includes two distinct categories of results: Persons and Organizations. There are significant differences between the two so they will be treated as separate flows from the user perspective.

2.1.1 The person flow

2.1.1.1 Spoken Examples

The conversation samples below present key user journeys for the person search flow. The next chapter will detail and formalize the conversational architecture required to achieve these conversations. The examples explore voice only conversations that are the more difficult use cases to handle. The written flow will be detailed in the next sections. Speech specific instructions are presented in *italics*. 
<table>
<thead>
<tr>
<th>User input</th>
<th>Publico response</th>
<th>Search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opens chat</td>
<td>Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal. How can I help you? Are you looking for a Document, Person or Organization? I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying “Menu”. (Document) (Person) (Organization)</td>
<td></td>
</tr>
<tr>
<td>Clicks microphone: I am looking for a person</td>
<td>Please remember you can turn off the voice by clicking the microphone. Tell me some details about the person you are looking for. I know about people’s names, positions, organizations, country, phone numbers and emails. Who are you looking for?</td>
<td></td>
</tr>
<tr>
<td>I am looking for an administrative assistant</td>
<td>I understand that you are looking for a person working as administrative assistant. Here is what I found: There are 11482 persons matching your description. Do you want to narrow it down? Say “See top results” to receive the top results. Alternatively say “Refine search” or “See all results”</td>
<td>Position: administrative assistant</td>
</tr>
<tr>
<td>Refine the search</td>
<td>The following institutions form part of the European Union. Do you know where this person works? Options include European Commission, European External Action Service, European Parliament</td>
<td>Position: administrative assistant</td>
</tr>
</tbody>
</table>
| Someone from the Publications Office. | I understand that you are looking for a person that is part of the Publications Office of the European Union working as administrative assistant. Here is what I found:  

There are 290 persons matching your description.  

Do you want to narrow it down?  

*Say “See top results” to receive the top results. Alternatively say “Refine search” or “See all results”*

| See top results | I understand that you are looking for a person that is part of the Publications Office of the European Union working as administrative assistant. Here is what I found:  

There are 290 persons matching your description.  

You can press N or say “next” to skip to the next result. You can turn my voice off by clicking on the microphone icon.  

*First person, , working as \_

European Commission*

*Second person, working as \_

European Commission*

*Third person, working as \_

European Commission*  

| Position: administrative assistant  

Organization: Publications office |
Fourth person, working as [Redacted], European Commission

To select the first person say “first person”, to select the “second person” say “second person” and so on.

To filter the results, say <<Refine search>>
For more results you can say <<See more results>>
Alternatively, you can say <<See all results>> to switch to the advanced search.

<table>
<thead>
<tr>
<th>First person</th>
<th>[Opens portal page]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Would you like to continue the search?</td>
</tr>
</tbody>
</table>

Spoken conversation 2 — Direct phone number search

<table>
<thead>
<tr>
<th>User input</th>
<th>Publio response</th>
<th>Search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opens chat</td>
<td>Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal. How can I help you? Are you looking for a Document, Person or Organization? I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying “Menu”. (Document) (Person) (Organization)</td>
<td>Person name: Marco Buti Search type: phone number</td>
</tr>
<tr>
<td>I’m looking for the phone number for [Redacted]</td>
<td>Please remember you can turn off the voice by clicking the microphone.</td>
<td></td>
</tr>
</tbody>
</table>
I understand that you are looking for a person with the first name Marco and last name Buti. Here is what I found:

(Call) (Email) (Show position) (See more results)

1Implied filter:
Result type: Person

Spoken conversation 3 – Misspelled name

<table>
<thead>
<tr>
<th>User input</th>
<th>Public response</th>
<th>Search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opens chat</td>
<td>Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal. How can I help you? Are you looking for a Document, Person or Organization? I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying &quot;Menu&quot;. (Document) (Person) (Organization)</td>
<td></td>
</tr>
<tr>
<td>I'm looking for...</td>
<td>Please remember you can turn off the voice by clicking the microphone. Are you looking for a Document, Person or Organization? (Document) (Person) (Organization)</td>
<td>Person name/ Author name/Organization name:</td>
</tr>
</tbody>
</table>

1 We can imply the result type “person” because we can detect the person’s name entity and the search type contact details.
The result type disambiguation is detailed in the 2.1.3 Section, Flow initiation

2 The user says "..." but due to Microsoft Speech to Text model limitation the model understands and transcribes this wrong.
<table>
<thead>
<tr>
<th>Person</th>
<th>I understand that you are looking for a person with the name « __________ ». Can you confirm my understanding?</th>
<th>Person name: [REDACTED]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Confirm) (Reject)</td>
<td>Result type: Person</td>
</tr>
<tr>
<td>Reject</td>
<td>Sorry I was not able to understand your request.</td>
<td>Result type: Person</td>
</tr>
<tr>
<td></td>
<td>Could you please tell me how many words compose the name of the person you are looking for?</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Could you please spell the first word of the name of the person you are looking for?</td>
<td>Result type: Person</td>
</tr>
<tr>
<td>🎈</td>
<td>I understood “________”. Can you confirm my understanding?</td>
<td>Result type: Person</td>
</tr>
<tr>
<td></td>
<td>(Confirm) (Reject)</td>
<td>Person name: [REDACTED]</td>
</tr>
<tr>
<td>Confirm</td>
<td>Could you please spell the second word of the name of the person you are looking for?</td>
<td></td>
</tr>
<tr>
<td>Buti</td>
<td>I understood “________”. Can you confirm my understanding?</td>
<td>Person name: [REDACTED]</td>
</tr>
<tr>
<td></td>
<td>(Confirm) (Reject)</td>
<td>Result type: Person</td>
</tr>
<tr>
<td>Confirm</td>
<td>[REDACTED] Cabinet of Commissioners – Cabinet of Commissioner STAFF).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Let me know if details about the phone number or email address are of interest to you.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Call) (Email) (Show position) (See more results)</td>
<td></td>
</tr>
</tbody>
</table>

Spoken conversation 4 – Ambiguous first name or last name
<table>
<thead>
<tr>
<th>User input</th>
<th>Publio response</th>
<th>Search parameters</th>
</tr>
</thead>
</table>
| Opens chat         | **Hello, I'm the Publications Office assistant. I'm here to guide you in your search on the Publications Office portal.**  
  How can I help you? Are you looking for a Document, Person or Organization?  
  I'm currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying "Menu".  
  (Document) (Person) (Organization)                                                                                                                |                                 |
| Person             | **Please remember you can turn off the voice by clicking the microphone.**  
  Tell me some details about the person you are looking for. I know about people's names, institutions, organizations, positions, countries, phone numbers and email.  
  Who are you looking for?                                                                                                                         | Result type: person             |
| I am looking for   | I understand that you are looking for [redacted]. Can you confirm my understanding?  
  (Confirm) (Reject)                                                                                                                                |                                 |
| Confirm            | I understand that you are looking for a person with the last name [redacted]. Could you please confirm if this is the person's last name or first name?  
  (First name) (Last name) (Modify)                                                                                                               | Result type: person             |
| First name         | There are 2557 persons matching your description.  
  Do you want to narrow it down?  
  *Say "See top results" to receive the top results. Alternatively say "Refine search" or "See all results"*                                   | Result type: person             |
<p>|                     |                                                                                                                                                    | Person first name: [redacted]    |</p>
<table>
<thead>
<tr>
<th>User input</th>
<th>Publicio response</th>
<th>Search parameters</th>
</tr>
</thead>
</table>
| Opens chat  | Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal. How can I help you? Are you looking for a Document, Person or Organization?  
I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying "Menu".  
(Document) (Person) (Organization) |                   |
| Person      | Please remember you can turn off the voice by clicking the microphone.  
Tell me some details about the person you are looking for. I know about people’s names, institutions, organizations, positions, countries, phone numbers and email.  
Who are you looking for? | Result type: person |
| I am looking for [redacted] | I understand that you are looking for a person with the name [redacted]. Can you confirm my understanding?  
(Confirm) (Reject) | Result type: person  
Person name: [redacted] |
| Confirm     | I understand that you are looking for a person with the last name [redacted]. Could you please confirm if this is the person’s last name or first name?  
(First name) (Last name) (Modify) |                   |
| Modify      | Please tell me the full last name of the person you are looking for. |                   |
I understand that you are looking for a person with the first name [redacted] and last name [redacted]. Here is what I found:

You can press N or say "next" to skip to the next result. You can turn my voice off by clicking on the microphone icon.

I found 8 persons.

First person, [redacted] Gouvernance démocratique et gestion des finances publiques, Cooperation (DEL. IVORY COAST.003)

Second person, [redacted] Digital transformation and coordination (DIGIT.01)

Third person, [redacted] European Commission

Fourth person, [redacted] European Commission

To select the first person say "first person", to select the "second person" say "second person" and so on.

To filter the results, say "<Refine search>"

For more results you can say "<See more results>"

Alternatively, you can say "<See all results>" to switch to the advanced search.

**Spoken conversation 6 – Search for the delegation to Norway**
<table>
<thead>
<tr>
<th>User input</th>
<th>Publio response</th>
<th>Search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opens chat</td>
<td>Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal. How can I help you? Are you looking for a Document, Person or Organization? I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying “Menu”. (Document) (Person) (Organization)</td>
<td></td>
</tr>
<tr>
<td>I’m looking for someone in the delegation to [redacted]</td>
<td>Please remember you can turn off the voice by clicking the microphone. I understand that you are looking for a person that is part of the Delegation to [redacted]. Here is what I found: You can press N or say “next” to skip to the next result. You can turn my voice off by clicking on the microphone icon. I found 4 persons. First person, [redacted] European External Action Service. Second person, [redacted] European External Action Service Third person, [redacted] European External Action Service Fourth person, [redacted] European External Action Service</td>
<td>Organization: Delegation to [redacted] Result type: Person</td>
</tr>
</tbody>
</table>
To select the first person say “first person”, to select the “second person” say “second person” and so on.

To filter the results, say “Refine search”

For more results you can say “See more results”

Alternatively, you can say “See all results” to switch to the advanced search.

---

**Spoken conversation 7 – Searching for HR representatives**

<table>
<thead>
<tr>
<th>User input</th>
<th>Publiio response</th>
<th>Search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opens chat</td>
<td>Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal. How can I help you? Are you looking for a Document, Person or Organization? I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying “Menu”. (Document) (Person) (Organization)</td>
<td></td>
</tr>
<tr>
<td>I’m looking for someone working for the European Commission</td>
<td>Please remember you can turn off the voice by clicking the microphone. I understand that you are looking for a person that is part of the European Commission. Here is what I found: There are [blank] persons matching your description. Do you want to narrow it down? Say “See top results” to receive the top results. Alternatively say “Refine search” or “See all results”</td>
<td>Result type: person Organization: European Commission</td>
</tr>
<tr>
<td>I am looking for a head of HR</td>
<td>understand that you are looking for a person that is part of the European Commission working as head of HR. Here is what I found:</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There are $\Box$ persons matching your description.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do you want to narrow it down?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Say &quot;See top results&quot; to receive the top results. Alternatively say “Refine search” or “See all results”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organization: European Commission</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Result type: person</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Position: head of HR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organization: HR</td>
<td></td>
</tr>
<tr>
<td>See top results</td>
<td>I found $\Box$ persons.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>You can press N or say &quot;next&quot; to skip to the next result. You can turn my voice off by clicking on the microphone icon.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>First person, Policy coordination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Second person, Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Third person, Relations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fourth person,</td>
<td></td>
</tr>
</tbody>
</table>
To select the first person say “first person”, to select the “second person” say “second person” and so on.

To filter the results, say “Refine search”
For more results you can say “See more results.”
Alternatively, you can say “See all results” to switch to the advanced search.

Spoken conversation 8 – Homonym flow

<table>
<thead>
<tr>
<th>User input</th>
<th>Publio response</th>
<th>Search parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opens chat</td>
<td>Hello, I’m the Publications Office assistant. I’m here to guide you in your search on the Publications Office portal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>How can I help you? Are you looking for a Document, Person or Organization?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I’m currently available in English, French and Spanish. You can switch my language, get help or restart the conversation by saying “Menu”.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Document) (Person) (Organization)</td>
<td></td>
</tr>
<tr>
<td>I’m looking for Sandrin</td>
<td>Are you looking for a Document, Person or Organization?</td>
<td>Person/Author name:</td>
</tr>
<tr>
<td>Person</td>
<td>(Document) (Person) (Organization)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*The search matches multiple persons with the name “[redacted]”. The flow no longer asks for the validation of the name because perfect matches exist. The flow doesn’t return a single result because multiple homonym perfect matches exist.</td>
<td>Result type: person</td>
</tr>
<tr>
<td></td>
<td>I understand that you are looking for a person with the first name [redacted] and last name [redacted]. Here is what I found:</td>
<td>Person first name:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Person last name:</td>
</tr>
<tr>
<td>There are 1 persons matching your description.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you want to narrow it down?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Say “See top results” to receive the top results. Alternatively say “Refine search” or “See all results”</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**See top results**

I understand that you are looking for a person with the first name [redacted] and last name [redacted]. Here is what I found:

You can press N or say “next” to skip to the next result. You can turn my voice off by clicking on the microphone icon.

<table>
<thead>
<tr>
<th>Person 1</th>
<th>[redacted] coordination (JUST.D.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person 2</td>
<td>[redacted] at Disease Prevention (JRC.F.1)</td>
</tr>
<tr>
<td>Person 3</td>
<td>[redacted] Security (INTPA.G.5)</td>
</tr>
<tr>
<td>Person 4</td>
<td>[redacted] Transitions (RTD.E.5)</td>
</tr>
</tbody>
</table>

*To select the first person say “first person”, to select the “second person” say “second person” and so on.*

*To filter the results, say “Refine search”*

*For more results you can say “See more results”*

*Alternatively, you can say “See all results” to switch to the advanced search.*
2.1.1.2  Conversational structure

When opening the chat, the users will be welcomed by the assistant and will be suggested one of the three main flows covered by the assistant:

- Document
- Person
- Organization
The conversation starts on the written version and the user has the option at any point to press the microphone to activate the spoken flow.

The spoken and written flow have the same dialog structure. Some of the messages sent by the bot are slightly adapted to the written or spoken flows. The main differences between the written and spoken EU Whoiswho flows are:

- If a written flow message includes visual results or buttons, the spoken version text will describe the results and buttons.
- Results are displayed as a carousel on the written version and as a list on the spoken version. This is consistent with the document search flow.

Further we will describe dialog structure common to both flows and mention specific behavior of the written and spoken flows where applicable.

We can distinguish 3 main phases for a person search conversation.

- Making the initial search
- Filtering
- Interacting with the result
  - This last stage is equivalent to the document being opened in the documents search flow. But for EU Whoiswho the information structure allows us to present it directly in a conversational format

The diagram below presents a high-level overview of all the flows supported by Publio.
The user can either

- Select one of the 3 main flows (Document, Person, Organization)
- Ask a question covered by the QnA
- Start a search without mentioning the flow, in which case the assistant will try to figure out the flow or ask the user to clarify

The diagram below summarizes the person search flow. The rectangles represent assistant replies and the ovals represent user inputs. The 3 conversational phases are detailed below.
2.1.3 Search initiation

2.1.3.1 Overview
After the initial message sent by the Bot the user can either select one of the three options, Document, Person or Organization or he can freely type or say what he is looking for.

If the user selects the Person flow, he will be presented with a message describing the ways he can search and encouraging him to search in a conversational way. Alternatively the user can begin to search by freely typing or saying what he is looking for.
2.1.1.3.2 Entities
The details that the user can use to search for a person are listed here:

- Person name (first name, last name)
- Phone number
- Email
- Position
- Organization (includes Institutions and Organizations)
- Location (Country)
- Represents (For representatives of organizations outside the EU Institutions)

In addition to the information identifying a person the assistant will also detect two other entities:

- Result type (Is this a person or an Organization)
- Search type (Is this a search for general information or for contact information)

The configuration of the entities is detailed in the technical section (2.2).

2.1.1.3.3 Approach to disambiguation
When starting the conversation with a natural language search (not using one of the buttons “Document”, “Person”, “Organization”) it is not immediately clear whether the user is looking for a person, Organization or even author. This section describes how the disambiguation is achieved.

1. First, if the user is using the guided flow the first step requires him to choose between Document, Person, or Organization. This case has a clear solution.

2. If the user types freely, the following methods are used to determine the flow:
   a. The intents can be determined clearly in most cases based on the question phrasing
      i. “I am looking for something written by the Publications Office” indicates a document search
      ii. “I am looking for information about the Publications Office” indicates an Organization search
   b. The Result type entity, the “person” keyword indicates the person search, the “Organization” keyword indicates an Organization search
   c. The position entity is specific to a person search
   d. The Organization type entity is specific to an Organization search
   e. A person name entity indicates either a person search or a document search but not an Organization search
   f. If the correct flow cannot be determined, the user will be asked to specify what sort of results he is looking for.
2.1.1.3.4 Utterances

The table below lists phrases that the users can use to initiate a person search. Those phrases can be used either before or after selecting the Person flow.

<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
<th>Spanish</th>
<th>Entities</th>
</tr>
</thead>
</table>
| I'm looking for the phone number for [name]. | Je cherche le numéro de téléphone de [nom]. | Busco el teléfono de [nombre]. | Search type: contact information
Person name: [name] |
| Who is the president of the European Council? | Qui est le président du Conseil européen? | ¿Quién es el presidente del Consejo Europeo? | Position: president
Organization: European Council |
Person name: [name]
Organization: Publications Office |
| Can you get me the contact info for someone within the Delegation to Moldova? | Pouvez-vous m'obtenir les coordonnées d'une personne de la délégation en Moldavie? | ¿Me puede dar la información de contacto de alguien dentro de la Delegación de Moldavia? | Search type: contact information
Organization: Delegation to Moldova
Result type: person |
| What is the email address for the head of the OP? | Quelle est l'adresse e-mail du chef du OP? | ¿Cuál es la dirección de correo electrónico del jefe del OP? | Search type: contact information
Position: “head of” ³
Organization: Publications Office |
| Find contact information for a head of unit from the OP. | Trouver les coordonnées d'un chef d'unité du OP | Encuentre la información de contacto de un jefe de unidad del OP | Search type: contact information
Position: head of unit
Organization: Publications Office |
| Find a Head of unit inside the European Commission | Trouver un chef d'unité au sein de la Commission européenne | Encuentre un jefe de unidad dentro de la Comisión Europea | Position: head of unit
Organization: European Commission |

³ “Head of” is a special position; see explanation in the technical section.
| I need to find a representative of the European People’s Party located in Belgium | Je dois trouver un représentant du Parti Populaire Européen situé en Belgique | Necesito encontrar un representante del Partido Popular Europeo ubicado en Bélgica | Location: Belgium
Represents: European People’s Party |
|---|---|---|---|
| How can I contact an assistant for the Publications Office | Comment puis-je contacter un assistant de l’Office des publications | ¿Cómo puedo contactar a un asistente de la Oficina de Publicaciones? | Search type: contact information
Position: assistant
Organization: Publications Office |
Result type: Person |
| I would like to contact a vice-president of the European Economic and Social Committee | Je souhaite contacter un vice-président du Comité économique et social européen | Me gustaría contactar con un vice-presidente del Comité Económico y Social Europeo | Search type: contact information
Position: vice-president
Organization: European Economic and Social Committee |
| Search for | Rechercher | Buscar | Phone number: |
| See details about | Voir les détails sur | Ver detalles sobre | Email address: |
| I need to speak with a person from the Publications Office | J’ai besoin de parler à une personne du l’Office des publications | Necesito hablar con una persona de la Oficina de Publicaciones | Search type: contact information
Result type: person
Organization: Publications Office |
| I am looking for a person representing the European Alliance | Je recherche une personne représentant l’Alliance européenne | Busco una persona que representa a la Alianza Europea | Result type: person
Organization: European Alliance |
| Who is responsible for climate change in the parliament? | Qui est responsable du changement climatique au parlement ? | ¿Quién es responsable del cambio climático en el parlamento? | Result type: person
Organization: European Parliament
Organization: climate change |
| Who is the OP team | Qui est l’équipe OP | ¿Quién es el equipo OP? | Result type: person
Organization: Publications Office |
I am looking for the staff of the delegation to Mali

je recherche le personnel de la délégation au Mali

Busco al personal de la delegación a Mali

Result type: person
Organization: Delegation to Mali

In charge with building infrastructure

En charge du construction d'infrastructures

A cargo de la infraestructura del edificio

Position: in charge (head of)
Organization: building infrastructure

2.1.1.4 Filtering

After the initial user search the bot might find 0, 1 or multiple results.

2.1.1.4.1 No results
For 0 results, the search enlargement dialog will be presented. The dialog shows all the currently selected filters and allows the user to remove some of them. Alternatively, the user can restart the search.

The search enlargement will be implemented for the document flow, the person flow and the Organization flow.

The search enlargement widget will only be presented in the written flow. For the spoken flow the current behavior will be preserved. The current behavior is to inform the user that 0 results match the current search and to propose to the user to either restart the search or to eliminate the last filter added.
I understand that you are looking for a person with the first name sandrine that is part of the Joint Research Centre located in Luxembourg working as assistant. Here is what I found:

There are no persons matching your search. May i propose you to narrow the search to find the right person? Then, i will guide you.

- First name: [Redacted]
- Institution: European Commission
- Organization: [Redacted]
- Position: [Redacted]
- Location: Luxembourg

Select

Restart the search

2.1.1.4.2 Single result

1 result is the target. When we manage to narrow the search to 1 result, we can send the user the information he has asked for. This is detailed in the section 2.1.1.5 Interacting with the results.
I understand that you are looking for a person with the name [redacted] working as project officer. Here is what I found:

European External Action Service – EU Delegations and Offices – Delegation to Nicaragua and to the Central American Integration System (SICA) – Cooperation (DEL.NICARAGUA.002)

Just now

- Clicking on “Call” will open the system call application if supported by the client operating system.
- Clicking on “Email” will open the system email application if supported by the client operating system.
- Clicking on “Show position” will open the portal details page.
- Clicking on the copy icon will copy the number or email to the clipboard.

2.1.1.4.3 More than 20 results for spoken flow

For more than 20 results on the spoken flow the assistant will propose to narrow down the search without listing results. The assistant will list the additional data that the user may input to encourage natural language filtering. As alternatives the user can trigger the guided refinement flow (detailed in the next section) or ask to see the results.
2.1.1.4.4 Main case

When the search returns multiple results (except more than 20 results for spoken flow), the assistant will list the results and allow the user to either select one of the results or refine the search.

Four results are listed in the spoken version and presented in the interface as a vertical list. On the written version a maximum of 10 results will be presented as a carousel.

The user can refine the search with natural language phrases. The table below lists phrase examples that the user can use to filter the results.
<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
<th>Spanish</th>
<th>Entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Their name is</td>
<td>Ils s’appellent</td>
<td>Su nombre es</td>
<td>Person name:</td>
</tr>
<tr>
<td>Someone in the European Council</td>
<td>Quelqu’un au Conseil européen</td>
<td>Alguien en el Consejo Europeo</td>
<td>Organization: European Council</td>
</tr>
<tr>
<td>They work for the Publications Office</td>
<td>Ils travaillent pour l’Office des publications</td>
<td>Ellas trabajan para la Oficina de Publicaciones</td>
<td>Organization: Publications Office</td>
</tr>
<tr>
<td>Is there someone by the name</td>
<td>Y a-t-il quelqu’un qui s’appelle</td>
<td>¿Hay alguien que se llame</td>
<td>Person name:</td>
</tr>
<tr>
<td>Filter by Delegation to Moldova</td>
<td>Filtrer par Délégation en Moldavie</td>
<td>Filtrar por Delegación a Moldavia</td>
<td>Organization: Delegation to Moldova</td>
</tr>
<tr>
<td>I am looking for a head of unit</td>
<td>Je recherche le chef d’unité</td>
<td>Busco jefe de unidad</td>
<td>Position: head of unit</td>
</tr>
<tr>
<td>Search in the OP</td>
<td>Rechercher dans l’OP</td>
<td>Buscar en el OP</td>
<td>Organization: Publications Office</td>
</tr>
<tr>
<td>She is a representative of the European People’s Party located in Belgium</td>
<td>Elle est une représentante du Parti Populaire Européen situé en Belgique</td>
<td>Es representante del Partido Popular Europeo con sede en Bélgica.</td>
<td>Location: Belgium Represents: European People’s Party</td>
</tr>
<tr>
<td>Someone in Germany</td>
<td>Quelqu’un en Allemagne</td>
<td>alguien en alemania</td>
<td>Location: Germany</td>
</tr>
<tr>
<td>Works in hr</td>
<td>Travaille dans hr</td>
<td>Trabaja en hr</td>
<td>Position: hr</td>
</tr>
<tr>
<td>Search within the European Economic and Social Committee</td>
<td>Recherche auprès du Comité économique et social européen</td>
<td>Búsqueda dentro del Comité Económico y Social Europeo</td>
<td>Organization: European Economic and Social Committee</td>
</tr>
<tr>
<td>Their phone is</td>
<td>Leur téléphone est le</td>
<td>Su teléfono es</td>
<td>Phone number:</td>
</tr>
</tbody>
</table>
The email address should be [REDACTED]

L’adresse e-mail doit être [REDACTED]

La dirección de correo electrónico debe ser [REDACTED]

Email address: [REDACTED]

She is the head of hr

Elle est le chef de hr

Ella es la jefa de hr

Position: head of 4

Organization: hr

Someone representing the European Alliance

Quelqu’un représentant l’Alliance européenne

Alguien que representa a la Alianza Europea

Organization: European Alliance

As an alternative to natural language filtering, the user can ask to “Refine search” to trigger a guided flow.

Whoiswho – Guided Flows
Proposed guided flows for person & organization searches

Person search: 7-step filtering process to cover all possible search scenarios

Organization search: 7-step filtering process to cover all possible search scenarios

Figure 3 Guided filtering flows

The guided person filtering flow consists of 7 steps asking the user information. See the steps listed below.

Filtering step | Prompt
--- | ---

4 Head of is a special position; see explanation in the technical section
<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
<th>Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution</td>
<td>The following institutions form part of the European Union. Do you know the institution where this person works?</td>
<td>[List top 3 institutions for the current search]</td>
</tr>
<tr>
<td>Organization type</td>
<td>The following classification of organizations form part of the European Union. Do you know the classification of the organization where the person works?</td>
<td>[List top 3 Organization classifications for the current search]</td>
</tr>
<tr>
<td>Organization</td>
<td>The following organizations form part of the European Union. Do you know the organization where the person works?</td>
<td>[List top 3 organizations for the current search]</td>
</tr>
<tr>
<td>Location</td>
<td>Do you know where the person is located?</td>
<td>[List top 3 organizations for the current search]</td>
</tr>
<tr>
<td>Position</td>
<td>The following positions form part of the European Union. Do you know the person’s position?</td>
<td>[List top 3 positions for the current search]</td>
</tr>
<tr>
<td>Represented countries or organizations</td>
<td>Do you know if the person represents any of the following?</td>
<td>[List top 3 represented countries or organizations for the current search]</td>
</tr>
<tr>
<td>Email</td>
<td>Please specify the phone number in the text input area below.</td>
<td></td>
</tr>
<tr>
<td>Phone number</td>
<td>Please specify the phone number in the text input area below.</td>
<td></td>
</tr>
</tbody>
</table>

For institution, organization classification, organization, location, position and represents the assistant will use a filtering card similar with the ‘subject’ filtering card from the document search. See an example below.

---

5 *European Union* and *person* are the fallback values used when no details are known about the current search. It will be replaced with details about the current search. European Union is replaced with the Institutions and Organization names if known.

6 *Person* is replaced by the person’s name if known.
The email and phone number steps will ask the user to input the information as free text.
2.1.1.5 Interacting with the result

At this stage of the conversation the bot will respond with information about the searched person.

For the written flow the bot will display a card with general information about the persons’ position and organization and also include information about the email and phone number. The card will allow the user to copy the email and number and the buttons below will trigger a call or a send email action.
I understand that you are looking for a person with the first name [redacted] that is part of the European Commission with the phone number [redacted]. Here is what I found:

[redacted]

European Commission - Legal service - EEI Team (EUROZONE and economic issues) (SJ.N)

2 minutes ago

On the spoken flow by default the bot will respond with information about the person’s position and organization and present the user with options to:

- Ask for the phone number by specifying the trigger words “call” or “phone”
- Ask for the email by specifying the trigger words “mail” or “email”
- Open the portal detail page by asking to “Show position”
Public office assistant

Switch my language, get help or restart the conversation by saying "Menu".

Tell me some details about the person you are looking for. I know about people's names, positions, organizations, country, phone numbers and emails.

Who are you looking for?

I understand that you are looking for a person with the first name [REDACTED] and last name [REDACTED]. Here is what I found:

[REDACTED] is a [REDACTED] at OP Portal for European Commission - Publications Office of the European Union - [REDACTED]. Let me know if details about the phone number or email address are of interest to you.

If during the flow the user asked specifically for the phone, email or contact information in general, the bot will instead answer directly with a message containing the specified information. When showing an email, a special suggestion will be added that will allow launching an email app with the shown email address. Similarly, when showing a phone number, a special suggestion will be added that will allow launching the call app with the shown phone number.
Tell me some details about the person you are looking for. I know about people’s names, positions, organizations, country, phone numbers and emails.

Who are you looking for?

I am looking for the phone number for [redacted]

I understand that you are looking for a person with the first name [redacted] and last name [redacted]. Here is what I found:

[redacted]

2.1.2 The Organization flow
The Organization flow will be built on a conversational structure similar to the person flow. In this section we analyze the key difference between the two flows.

2.1.2.1 Search initiation
In the initial step if the user selects the organization the bot responds with the main ways to search an organization and pushes the user towards a conversational search.
2.1.2.2 Filtering

When searching for an organization the users can search and filter by:

- Organization name
- Organization phone number
- Organization email
- Parent organization (includes Institutions and Organizations)
- Location (Country)
- Organization type (includes Units, Sector, Directorate, etc.)
In addition to the information identifying a person the assistant will also detect 2 other entities:

- Result type (Is this a person or Organization)
- Search type (Is this a search for general information, contact information or address)

The configuration of the entities is detailed in the technical section (2.2).
The table below lists phrases that the users can use to initiate an organization search. Those phrases can be used either before or after selecting the Organization flow.

<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
<th>Spanish</th>
<th>Entities</th>
</tr>
</thead>
</table>
| I’m looking for the address of the European Economic and Social Committee | Je cherche l’adresse du Comité économique et social européen | Busco la dirección del Comité Económico y Social Europeo | Search type: address  
Organization name: European Economic and Social Committee  
?Implied filter:  
Result type: organization |
| I want to contact the Publications Office | Je souhaite contacter l’Office des publications | Quiero contactar con la Oficina de Publicaciones | Search type: contact information  
Organization name: Publications Office  
?Implied filter:  
Result type: organization |
| I’m looking for a liaison office for the European Parliament | Je cherche un bureau de liaison pour le Parlement européen | Estoy buscando una oficina de enlace para el Parlamento Europeo | Parent organization: European Parliament  
Organization type: liaison office |

---

We can imply the result type “organization” because we can detect the organization’s name entity and the search type contact information. The result type disambiguation is detailed in the 2.1.1.3.3 Section, Approach to disambiguation.
<table>
<thead>
<tr>
<th>Utterance</th>
<th>French utterance</th>
<th>Spanish utterance</th>
<th>Details</th>
</tr>
</thead>
</table>
| Show me the Luxembourg bodies of the Court of Justice of the European Union | Montrez-moi les organes de la Cour de justice de l’Union européenne du Luxembourg | Muéstrame los órganos del Tribunal de Justicia de la Unión Europea de Luxemburgo    | Parent organization: Court of Justice of the European Union  
Location: Luxemburg  
Result type: organization                                                                 |
| What are the units of the Publications Office                            | Quelles sont les unités de l’Office des publications                      | ¿Cuáles son las unidades de la Oficina de Publicaciones?                             | Parent organization: Publications Office  
Organization type: unit  
?Implied filter:  
Result type: organization                                                                 |
| What are the DGs of the European Central Bank?                           | Quels sont les DG de la Banque centrale européenne ?                            | ¿Cuáles son los DG del Banco Central Europeo?                                      | Parent organization: European Central Bank  
Organization type: directorate-general  
?Implied filter:  
Result type: organization                                                                 |

In the **filtering step** the user identifies a single organization by either selecting one from the list or by narrowing down the search with more filters. The assistant listens for the same entities as in the initial step. The table below lists utterances that users can use to refine the organization search.
<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
<th>Spanish</th>
<th>Entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The email address is [redacted]</td>
<td>L'adresse e-mail est [redacted]</td>
<td>La dirección de correo electrónico es [redacted]</td>
<td>Email: [redacted]</td>
</tr>
<tr>
<td>Look for liaison offices</td>
<td>Rechercher des bureaux de liaison</td>
<td>Busque oficinas de enlace</td>
<td>Organization type: liaison office</td>
</tr>
<tr>
<td>Show only bodies of the European Parliament</td>
<td>Afficher uniquement les organes du Parlement européen</td>
<td>Mostrar solo órganos del Parlamento Europeo</td>
<td>Parent organization: European Parliament</td>
</tr>
<tr>
<td>located in Luxembourg</td>
<td>situé au Luxembourg</td>
<td>ubicado en Luxemburgo</td>
<td>Location: Luxemburgo</td>
</tr>
<tr>
<td>Show units of the Publications Office</td>
<td>Afficher les unités de l'Office des publications</td>
<td>Mostrar unidades de la Oficina de Publicaciones</td>
<td>Parent organization: Publications Office Organization type: unit</td>
</tr>
<tr>
<td>I am looking for an agency</td>
<td>Je recherche une agence</td>
<td>busco una agencia</td>
<td>Organization type: agency</td>
</tr>
</tbody>
</table>
The guided organization filtering flow consists of 7 steps asking the user information. See the steps listed below:

<table>
<thead>
<tr>
<th>Filtering step</th>
<th>Prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution</td>
<td>The following institutions form part of the European Union*. Do you know the name of the institution that the organization is part of? [List top 3 institutions for the current search]</td>
</tr>
<tr>
<td>Organization type</td>
<td>The following classification of organizations form part of the European Union*. Do you know the classification of the organization you are looking for? [List top 3 Organization classifications for the current search]</td>
</tr>
<tr>
<td>Organization</td>
<td>The following organizations form part of the European Union*. Do you know the name of the organization you are looking for? [List top 3 organizations for the current search]</td>
</tr>
<tr>
<td>Location</td>
<td>Do you know where organization is located? [List top 3 organizations for the current search]</td>
</tr>
<tr>
<td>The phone number</td>
<td>Please specify the phone number in the text input area below.</td>
</tr>
<tr>
<td>The email</td>
<td>Please specify the email in the text input area below.</td>
</tr>
<tr>
<td>The physical address</td>
<td>Please specify the physical address in the text input area below.</td>
</tr>
</tbody>
</table>

2.1.2.3 Interacting with the results
When the search is narrowed down to a single organization the information will be presented using the card below.
European Commission

European Commission (COMMISSION)
tel: [redacted]

Just now

Open detail page  Show contact information

Display team members  Show publications

The user has the following options when interacting with the card:

- **Open detailed page**: Open the organization detail page in the browser
- **Show contact information**: Request contact information such as a phone number or email if available.
- **Display team members**: Request a list of team members. This option will jump to the person flow and list the first persons in the selected organization.
- **Show publications**: This option will jump to the document search flow and list the documents published by the selected organization. This option will only be displayed if the organization has at least 1 published document.

Users can also mention the search type (general info, phone number, email, physical address) in natural language together with the search.
Other examples of asking for the location include:

- Where is the European Commission located?
- What is the location of the European Parliament?
- In what country is the European Central Bank located?

2.1.3 Speech recognition customization

The Azure standard speech recognition service is trained on common words for the language it is trained for. It is impossible for the default model to understand certain person names or organizations names as those are not part of the supported vocabulary. Therefore, custom speech recognition models will be trained. The models will be trained with text content consisting of the person names available in the WholsWho dataset. A model will be
trained for each language because models are language specific. The training of the model is done manually and cannot be automated.

Two types of training will be done for each custom speech recognition model:

1. Each model will be trained by feeding it person names in text format to update the underlaying language model, meaning that the model will know that those are possible words that it can output.
2. Each model will be trained by feeding it synthesized vocalizations of the person names. The vocalizations will be generated with 3 voices, an English-speaking voice, a French speaking voice and a Spanish speaking voice. This will help the phonetic model to better understand different pronunciations of the Whosiwho names.

2.1.4 Modules to be extended

All Publio’s functionalities implemented for the document search will be extended to also cover EU Whoiswho. Here are some key functionalities that will be covered by the EU Whoiswho flows.

- TLT will be used for language management
  - All the Webchat texts and buttons and all messages from the Bot will be integrated in the central text management system to facilitate translation.

- All error messages will have 3 alternate texts and one will be chosen at random. Texts will be added to the file “Varied error messages.xlsx” during the implementation phase.

- The speech results are presented in a list format and the written results in a carousel format.

- On the spoken version the user can skip results by pressing the ‘N’ key or saying “next” (or equivalent translation).

- Piwik Logging
  - All the webchat events will be logged to Piwik in a format similar with the document search
  - Conversation started
  - Filter used to search
  - User messages
  - Stage of the conversation reached
  - Person or Organization selected
  - Advanced search triggered

- Application Insights Monitoring
  - All key events covered by the document search will also be logged to Application Insights, Reports similar with the document search will be included in the monthly reports.
• Feedback automated triggering
  ○ The feedback overlay should be presented when the following conditions are met:
    ■ After 20 seconds of inactivity. Inactivity is defined as none of the following happening:
      ● A message is sent or received
      ● The user is moving the cursor inside the chat
    ■ Once per session
    ■ At least one person or organization result has been displayed in the current conversation

• Disable previous actions
  ○ Previous Whoiswho clickable HTML elements will be disabled (greyed out and cannot be hovered or clicked) to avoid confusing scenario where a user clicks an older card.

• Limit language switching
  ○ Automatic language detection will not be working inside the flow to avoid false detections. To change the language from within the flow the user can use the buttons in the menu or ask for it specifically e.g., « Change the language to French »
  ○ When changing the language while inside the flow the entities with multilanguage labels will be translated automatically. i.e., If the user asked for a specific organization and we could identify the organization code, after the switch we would refer to the organization name for the switched language. Free text searches will not be translated.
  ○ Because of many false positives provoked by foreign names being recognized as a language change the language switch was also disabled in the initial step and instead it only detects the following greeting words as triggers for changing the language:
    ■ Bonjour
    ■ Hello
    ■ Salve
    ■ Hola
    ■ Bună
    ■ Pozdravljeni
    ■ Hallo

---

8 This behaviour shall be replicated in all current and future flows
The search enlargement module described in section 2.1.1.4.1. will be extended to cover the document search, the person search and the organization search.

2.2 Technical specifications

The Publio Whoiswho implementation consists of two flows corresponding with two types of results: persons and Organizations. The flows, as defined in the product specifications section, will be implemented as two new dialogs in Bot Framework Composer. The Bot Framework structure of each dialog will be similar to the structure presented in the conversational diagram.

One of the first tasks in any conversation is to select the correct flow. This will be implemented in a Bot Framework Middleware. Based on LUIS intent score and extracted entities the middleware will decide to either trigger the appropriate flow or ask the user for clarification. The decision will be based on the rules mentioned in the product specification, Search initiation section.

The clarification dialog will be created as a new dialog. The appropriate dialogs will not be triggered by intents as they have been until now. Instead, they will be triggered directly from the middleware.
A critical aspect of this development is recognizing entities with high accuracy despite the ambiguities and high cardinalities. For that we propose defining most of the entities as Machine Learned entities backup up by List Entities that are configured as sub entities of the main Machine Learned entity.

Here is a list of the entities to be trained:

<table>
<thead>
<tr>
<th>Entity name</th>
<th>LUIS entity type</th>
<th>Cardinality</th>
<th>API Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person name</td>
<td>ML + List</td>
<td>~43.000</td>
<td>• If the person’s name has 2 or more words we first suppose that the last word is the last name, and the first words are the first name. We do an API search and check if the first result is a perfect match. If it is, we return the result.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o As an exception if 2 or more results are perfect matches (homonym results) we do not return a single result and continue with the next steps.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• For 2-word names we also try to reverse the names and check if this results in a single perfect match.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• On the spoken flow only if it doesn’t have an exact match after following the previous steps, Publio will ask the user to confirm it’s understanding of the name’s spelling. In this step it will allow the user to validate the spelling or spell each word one at a time. For a concrete example see Section 2.1.1.1: Spoken conversation 5 – Compound name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• After confirming the spelling of the name if we still don’t have an exact match</td>
</tr>
</tbody>
</table>

---

9 Name detection accuracy will depend on the retrained model outcomes described in section 2.1.3

10 An entity cannot be both ML and List at the same time. List has the advantage of consistently matching entities that we already know of while ML has the advantage of being extensible to values not known in advance. To benefit from both advantages there are a few approaches that we will analyze:

- a ML entity with a List sub entity
- a ML entity + a Phrase list
- a ML entity and a List entity
If the person’s name is composed by **1 word** we will ask the user if this is a first name or a last name. The user has the option to skip this step if not sure whether it is a first name or last name. For phrasings see Section 2.1.1.1: Spoken conversation 4 – **Ambiguous first name or last name**.

- For multiple words we will ask the user to confirm what is the last name. For a concrete example see Section 2.1.1.1: Spoken conversation 5 – **Compound name**.
  - If it doesn’t have an exact match after following the previous steps, Publio will continue to the filtering flow using the current name understanding as a start point for the search.

<table>
<thead>
<tr>
<th>Organization name</th>
<th>ML + List</th>
<th>~6800 base+ to consider short name, acronym where applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The Organization code will be stored in LUIS as a key for the entity value. When an entity is matched the code will be used in the search.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If an Organization is matched through ML and doesn’t exactly match an Organization name from the dataset, we will use the free text “Entity” field from advanced search options.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phone number</th>
<th>Regex</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The Phone number is configured as a LUIS Entities of type Regex. We have noticed limitations of LUIS causing the Regex entity to not be detected when part of a larger phrase. To work around this limitation we also implemented a middleware in Bot Framework Composer that checks all the texts from the user with a regex expression and if there is a match it extracts the entity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phone numbers will be included as the full text search term.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Email</th>
<th>Regex</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The Email is configured as a LUIS Entities of type Regex. We have noticed limitations of LUIS causing the Regex entity to not be detected when part of a larger phrase. To work around this limitation we also implemented a middleware in Bot Framework</td>
</tr>
</tbody>
</table>
Composer that checks all the texts from the user with a regex expression and if there is a match it extracts the entity.

- Email addresses will be included as the full text search term.

<table>
<thead>
<tr>
<th>Position</th>
<th>List</th>
<th>~11101</th>
</tr>
</thead>
</table>

- The position entity will be trained based on the list of position from the portal.
- Additionally, a list of frequent position keywords will be manually configured.
  - **English**: head, leader, chef, director, manager, president, coordinator, administrator, assistant, officer, minister, agent, adviser, secretary, expert
  - **French**: head, chef, manager, leader, président, directeur, officer, assistant, administrator, commissaire, analyst, minister, agent, gestionnaire, expert, adviser, secrétaire, secretary, coordinateur
  - **Spanish**: presidente, jefe, jefa, director, general, secretario, adjunto, asistente, ministro, ministra

- Positions are searched in the API using the full text search position field supported by advanced search. This ensure that positions with similar names are also matched. It is important to also match similar positions because the position text has small variations as it is configured as free text.

- “Head of” and synonyms “in charge of”, “leader of” is a special position. When this position is detected, a filter will be applied to select most frequent positions with leadership role.
  - **English**: head of, head, leader, director, president, officer, minister, governor, prime minister, chief executive, dean, leader, managing director
  - **Spanish**: jefe, director, supervisor, líder, administrador, ejecutivo, dueño, propietario, oficial, ministro, gobernador, primer ministro, CEO, decano, líder, director general, jefa, directora, supervisora, líder, administradora, ejecutiva, dueña, propietaria, oficial,
<table>
<thead>
<tr>
<th>Country (location)</th>
<th>List</th>
<th>130</th>
<th>The country code will be stored in LUIS as a key for the entity value. When an entity is matched the code will be used in the search.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Represents</td>
<td>List</td>
<td>44</td>
<td>The represents code will be stored in LUIS as a key for the entity value. When an entity is matched the code will be used in the search.</td>
</tr>
<tr>
<td>Organization type</td>
<td>List</td>
<td>28</td>
<td>The Organization type code will be stored in LUIS as a key for the entity value. When an entity is matched the code will be used in the search.</td>
</tr>
<tr>
<td>Result type</td>
<td>List</td>
<td>2</td>
<td>Used to filter by either person or Organization</td>
</tr>
<tr>
<td>Search type</td>
<td>List</td>
<td>2</td>
<td>Used in the dialog flow to select the appropriate response.</td>
</tr>
</tbody>
</table>

The EU Whoiswho data will be exported weekly into Blob storage container.

We will implement a script that every week reads the latest data from the API aggregations and refreshes the values list for the list entities mentioned above. The entity codes will also be refreshed where applicable. The script will be implemented in JavaScript and packaged as a time based Azure function.

Since the LUIS entities are being refreshed automatically but the LUIS configuration is also included in the Bot Framework configuration, we need to make sure to manually update the LUIS configuration in the Bot Framework configuration before deploying a new Bot version.

All the searches started from the chat must be consistent to the Portal capabilities in order for the user to be able to transition when selecting “See all results”.

ministra, gobernadora, primer ministra, CEO, decana, líder, directora general

- **French**: chef, directeur, supérieur, responsable, gérant, président, officier, ministre, gouverneur, premier ministre, PDG, doyen, leader, directeur général, directrice, supérieure, responsable, gérante, présidente, officière, ministre, gouverneure, premier ministre, PDG, doyenne, leader, directrice générale
The result type and the search type entities will be populated manually. Here are the proposed values:

- Result type person: person, someone, somebody, employee, who, staff
- Result type Organization: organization, organization, body
- Search type contact: email address, phone number, phone, number, contact information, contact details

3 Language inclusion

Spanish is going to be added as a new language of the Public assistant.

The first step in including the new language is to translate all the texts included in Public. The table below describes the text categories and the translation approach for each of them.

<table>
<thead>
<tr>
<th>Text category</th>
<th>Text category details</th>
<th>Translation approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webchat texts</td>
<td>Hover hints, Public name, proactive message, welcome message</td>
<td>- Included in the text management system under the “Public” table.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Will be translated by the OP in the text management application.</td>
</tr>
<tr>
<td>Bot Framework texts</td>
<td>Bot messages, error messages, buttons, suggestions, QnA answers</td>
<td>- Included in the text management system under the “Bot Framework” table.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Will be translated by the OP in the text management application.</td>
</tr>
<tr>
<td>LUIS utterances</td>
<td>Regular Intent utterances and QnA utterances</td>
<td>- The consortium will export the utterances and share them with Deloitte and OP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Deloitte and OP will translate the utterances and share them with the Consortium.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The Consortium will import the utterances.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- After importing the consortium will test the detection with new phrases and finetune. Finetuning might involve adding more phrases, removing phrases, adding feature lists, removing entity values, or defining special handling for certain phrases or words.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The utterances should be maintained manually by periodically analysing phrases proposed by LUIS and phrases extracted</td>
</tr>
</tbody>
</table>
from application insights. The training dataset maintenance should be added to the Service Management.

<table>
<thead>
<tr>
<th>LUIS entities</th>
<th>All the list-based entities (subject, author, organization, organization type, position, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Periodically exported automatically from the Portal dataset and indexed as LUIS List entities</td>
</tr>
<tr>
<td></td>
<td>• Exception lists are translated and maintained manually by the Consortium</td>
</tr>
<tr>
<td></td>
<td>o e.g., “bot” is an acronym for an author, “publication” and “document” are subjects</td>
</tr>
<tr>
<td></td>
<td>• Synonyms lists are translated and maintained manually by the Consortium</td>
</tr>
<tr>
<td></td>
<td>o e.g., in charge = head of unit or director-general; hr = human resources</td>
</tr>
</tbody>
</table>

Some other changes need to be implemented to include the new language:

- Adding a new language file in Bot Framework Composer.
- Update the webchat and bot middleware to include the new language.
- Adding the new language in the Webchat switch language menu options.
- Add the new language in various bot messages and options list (e.g., “I am available in English, French and Spanish”; “I can only understand English, French and Spanish”, “What language do you want to switch to? (French)/(Spanish)”
- Creating and training a new LUIS application.

After the translation and the language inclusion changes mentioned above are implemented, the Consortium will have an internal testing session to validate that all existing Publio functionalities are properly working on the new language.