

# Technical Disclosure Commons

---

Defensive Publications Series

---

September 2022

## AUTOMATIC SUGGESTION OF MESSAGE CATEGORY/TAG

Krzysztof Dziuba

Follow this and additional works at: [https://www.tdcommons.org/dpubs\\_series](https://www.tdcommons.org/dpubs_series)

---

### Recommended Citation

Dziuba, Krzysztof, "AUTOMATIC SUGGESTION OF MESSAGE CATEGORY/TAG", Technical Disclosure Commons, (September 14, 2022)

[https://www.tdcommons.org/dpubs\\_series/5369](https://www.tdcommons.org/dpubs_series/5369)



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

This Article is brought to you for free and open access by Technical Disclosure Commons. It has been accepted for inclusion in Defensive Publications Series by an authorized administrator of Technical Disclosure Commons.

## AUTOMATIC SUGGESTION OF MESSAGE CATEGORY/TAG

AUTHORS:  
Krzysztof Dziuba

### ABSTRACT

Techniques are provided herein for automated suggestion of a message category/tag to help users organize their conversations. This may help filter or highlight important messages (e.g., to improve communication between users), particularly in hybrid work scenarios.

### DETAILED DESCRIPTION

A user may assign a flag to a message by choosing from four predefined categories. A user may also assign an arbitrary category to the flag, but this can lead to a confusing set of various categories. Accordingly, techniques are provided herein to allow a user to select a category from a list of categories that is automatically generated based on message context.

The user may organize/flag the messages according to an automatically generated list of categories. An algorithm (e.g., YAKE! algorithm) may analyze message text to extract a list of keywords. Categories may be automatically defined for the user based on the context of the message.

Figures 1 and 2 below together illustrate a flow for generating a list of categories.

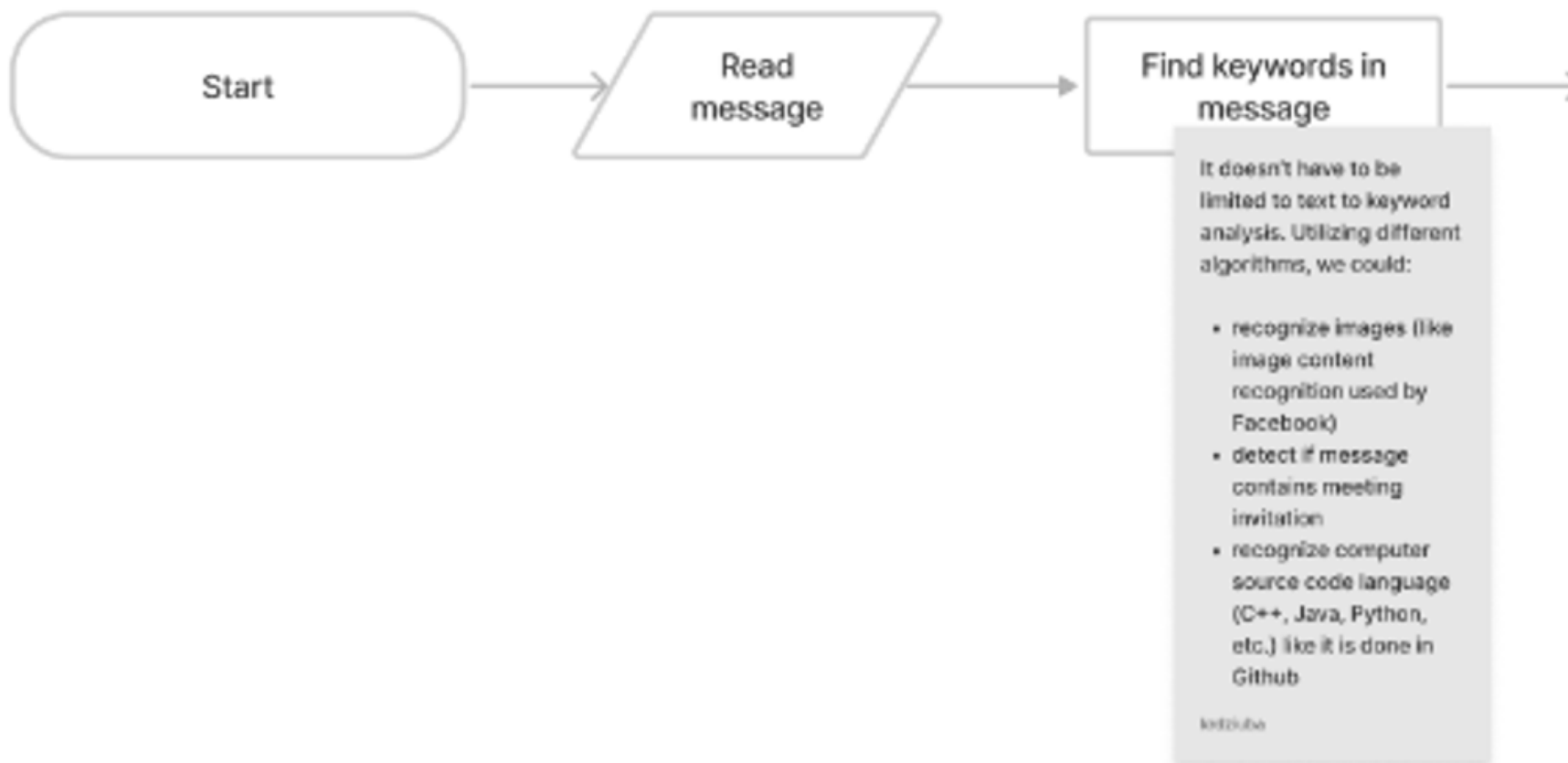


Figure 1

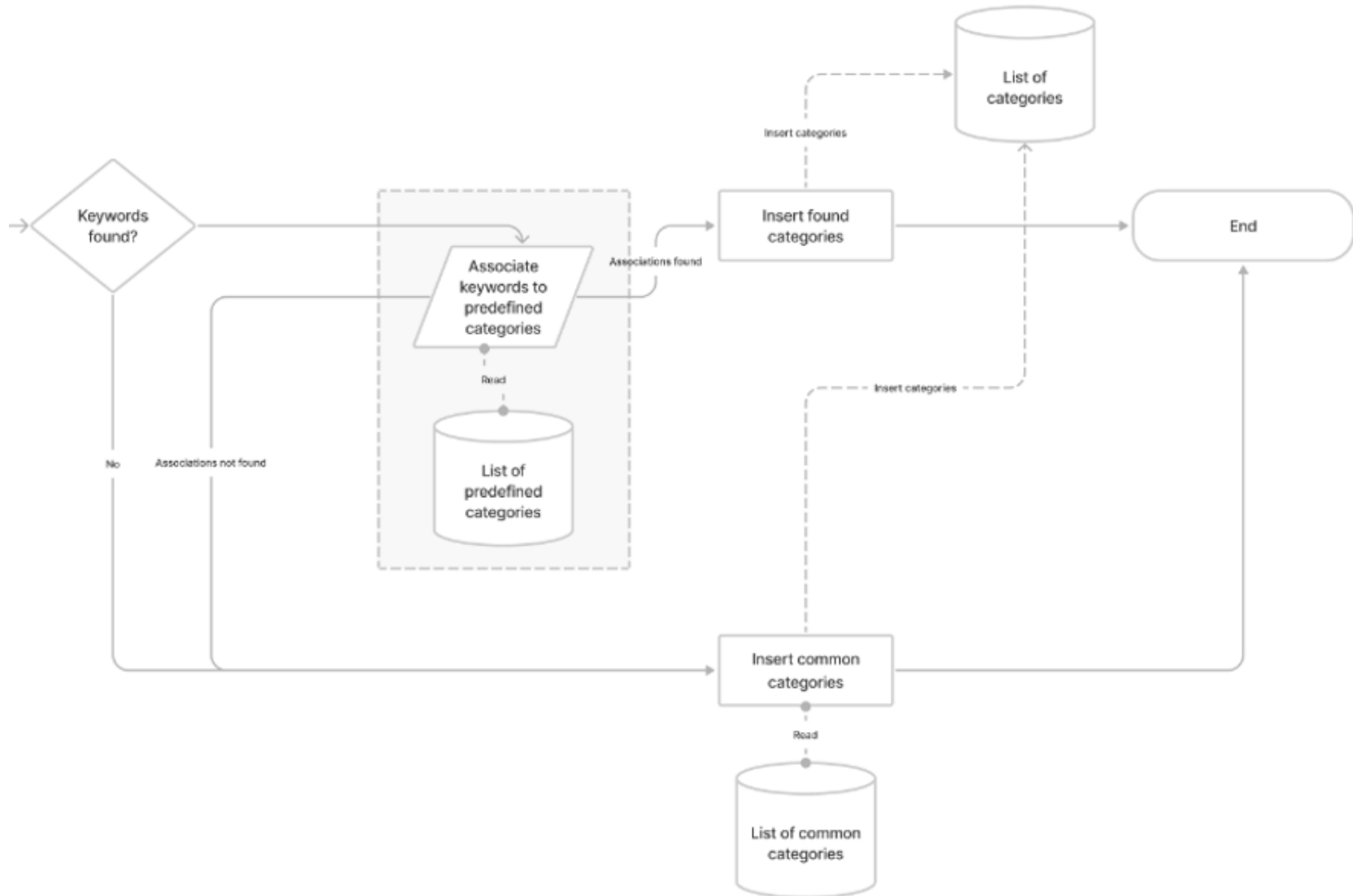


Figure 2

The process may start (1) in the background upon message arrival, before the message is presented on the screen; (2) when the conversation is presented on the screen; or (3) when the user clicks on the message to open an action menu.

If the messages are encrypted, the processing may be performed on the client side. The list of categories may be processed and stored on the server side.

The message may be read and then sent to the keyword extraction algorithm. The algorithm may produce no or multiple keywords. When no keyword is found, a predefined list of categories may be presented to the user (e.g., follow up, important, to-do, etc.). When a list of keywords is found, the keywords may be sent to an association algorithm that matches them to a rigid list of predefined categories that is broader than the list of common categories inserted when no keyword is found. Figure 3 below illustrates an example association algorithm that could be used to limit the number of categories.

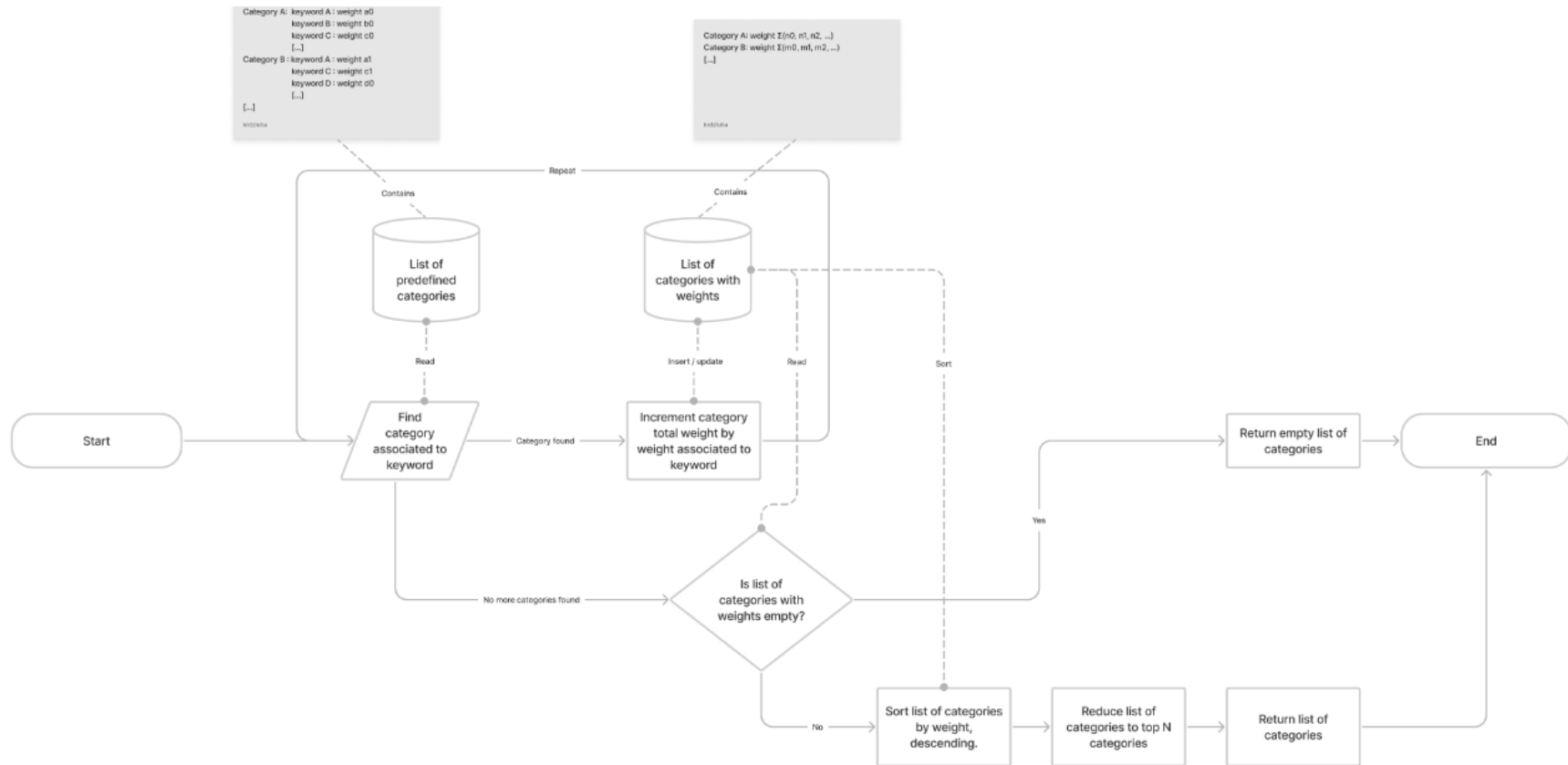


Figure 3

The algorithm may prepare a list of generic categories with associated keywords and weights for each keyword. For the same keyword associated to different categories, weight may be the same or different. The algorithm may find a category associated to the specific keyword. If the list of categories is empty, the algorithm may indicate this. Or, if a category is found, the algorithm may increment the category total weight by the weight associated to the keyword. This step may be iterated until no further category is found. The algorithm may sort the list of categories according to the associated weight (e.g., in descending order). The algorithm may reduce the list of categories to the top N categories, where N is an arbitrarily chosen number, and return the reduced list of categories.

At this point, when the association algorithm return is not empty, it may be presented to the user. Otherwise, the “common categories” list may be presented to the user.

The list of predefined categories may be constant. The list may be prepared in advance. The list may be created, for instance, by simple manual association by human keywords to specific category or topics. More advanced algorithms that utilize Natural Language Processing to match categories to keywords may also/alternatively be used.

An example use case is provided as follows.

First, a user sends or receives the following message: *“I’ve spoken to most teams about the return to office in the last few weeks. If you have any further questions, please reach out 1:1. Below are the new level 3 restrictions which we entered on Friday last. Also please discuss with your manager the options around hybrid working and what will work best for you and your team.”*

The YAKE! algorithm may detect the following keywords in the message: 'weeks', 'spoken', 'return', 'office', 'Friday', 'questions'. Table 1 below illustrates the corresponding arbitrary defined list of categories:

Category	Keyword	Weight
Meeting	meet	4
	discuss	3
	spoken	3
Follow up	spoken	2
	meet	4
	return	4
Calendar	Monday	1
	Tuesday	1
	Wednesday	1
	[...]	
	Friday	1
	[...]	
	weeks	1

Table 1

The category 'Meeting' includes the keyword 'spoken.' Therefore, this category has weight 3. The category 'Follow up' includes 'spoken' and 'return.' Therefore, this category has weight 6. The category 'Calendar' includes 'Friday' and 'weeks.' Therefore, this category has weight 2. This is shown in Table 2 below.

Category	Weight
Meeting	3
Follow up	6
Calendar	2

Table 2

Table 3 below illustrates the list of categories sorted by weight.

Category	Weight
Follow up	6
Meeting	3
Calendar	2

Table 3

These three categories may be presented to the user, who may select one of the categories in following order: 'Follow up', 'Meeting', or 'Calendar.'

A User Interface for presenting the list of categories to the user is now discussed as follows.



As shown in Figure 4 below, the list of categories may be shown in the context menu upon right mouse button click on the message. The 'Flag message' option includes a sub-menu.

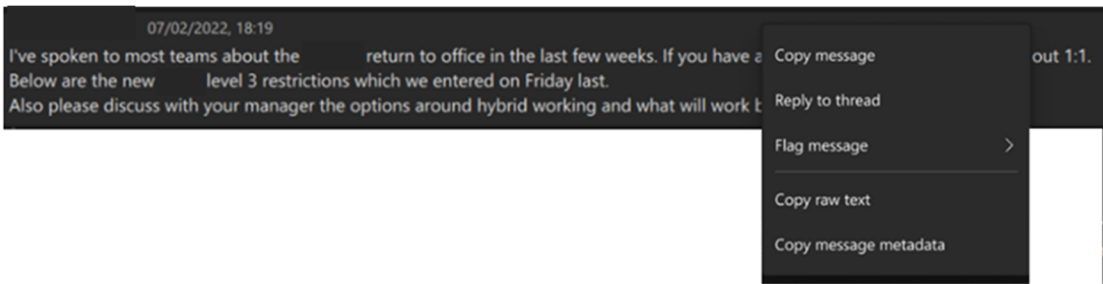


Figure 4

As illustrated in Figure 5 below, the user may see three categories that were automatically detected.

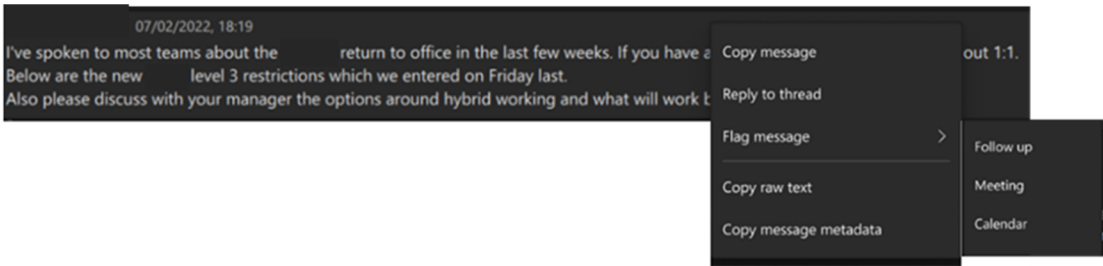


Figure 5

As illustrated in Figure 6 below, when the 'Follow up' option (for example) is selected, a checkmark appears.

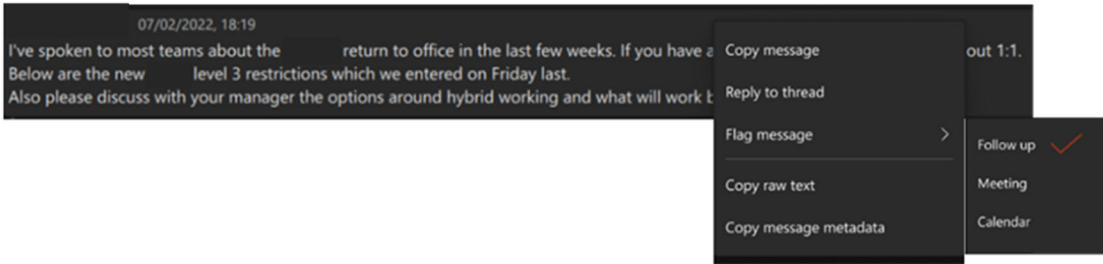


Figure 6

As illustrated in Figure 7 below, a badge with the category name is added to the message.

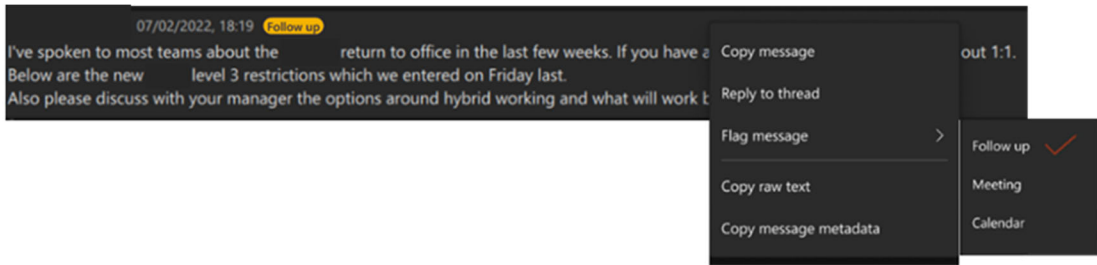


Figure 7

As illustrated in Figure 8 below, the message can have more than one assigned category, with all badges visible.

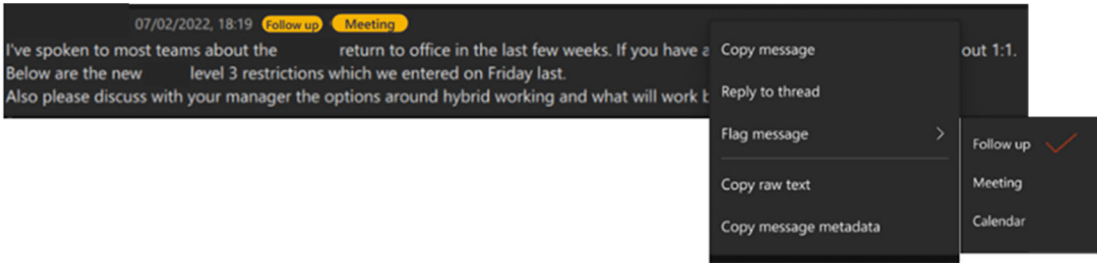


Figure 8

As illustrated in Figure 9 below, the user may search and filter messages according to the assigned category. These categories may be visible in the 'Filter by' menu:

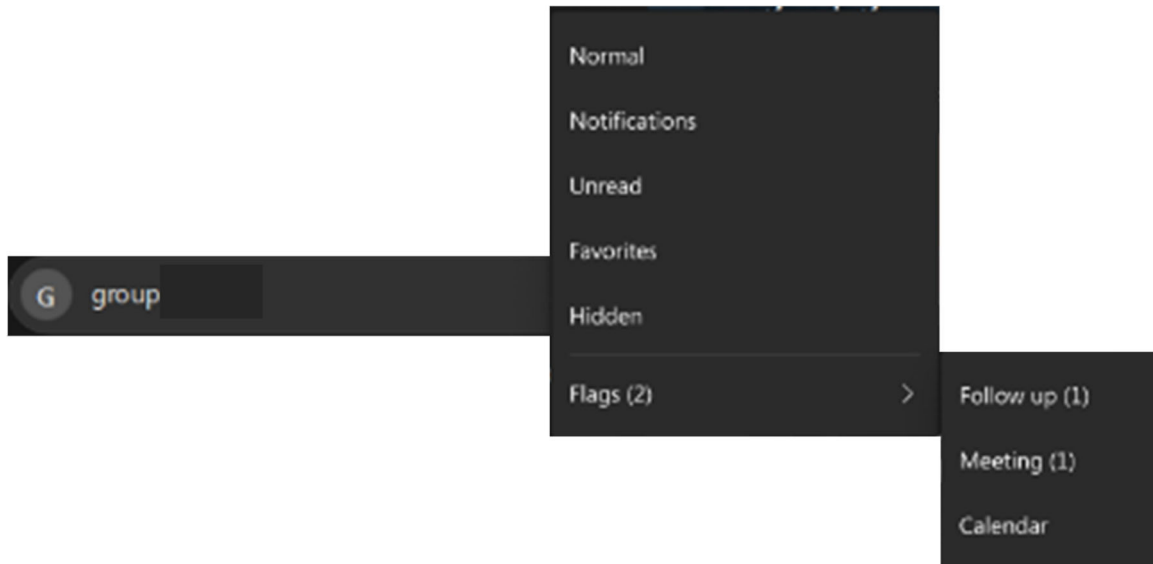


Figure 9

As illustrated in Figure 10, after the user selects a specific category from the sub-menu, a list of all messages may be presented, flagged by specific category. An additional badge may be provided to indicate the chosen category.

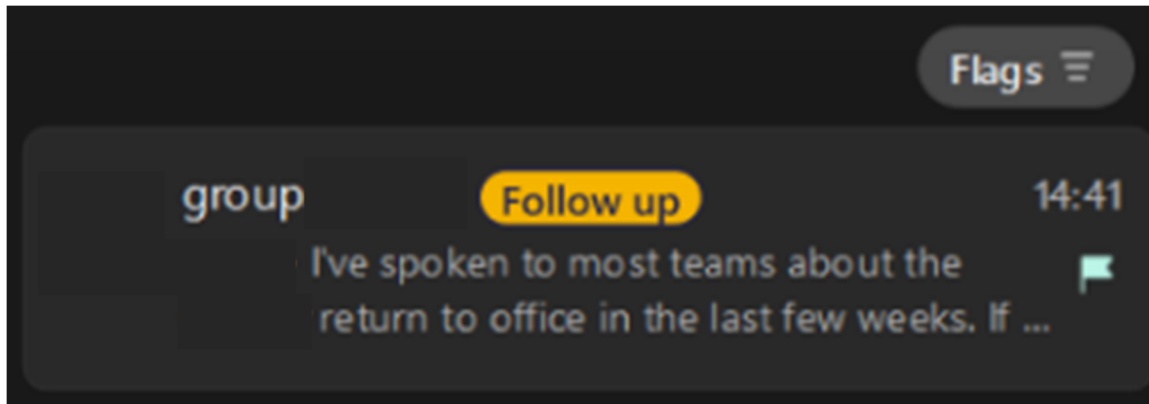


Figure 10

In summary, techniques are provided herein for automated suggestion of a message category/tag to help users organize their conversations. This may help filter or highlight important messages (e.g., to improve communication between users), particularly in hybrid work scenarios.