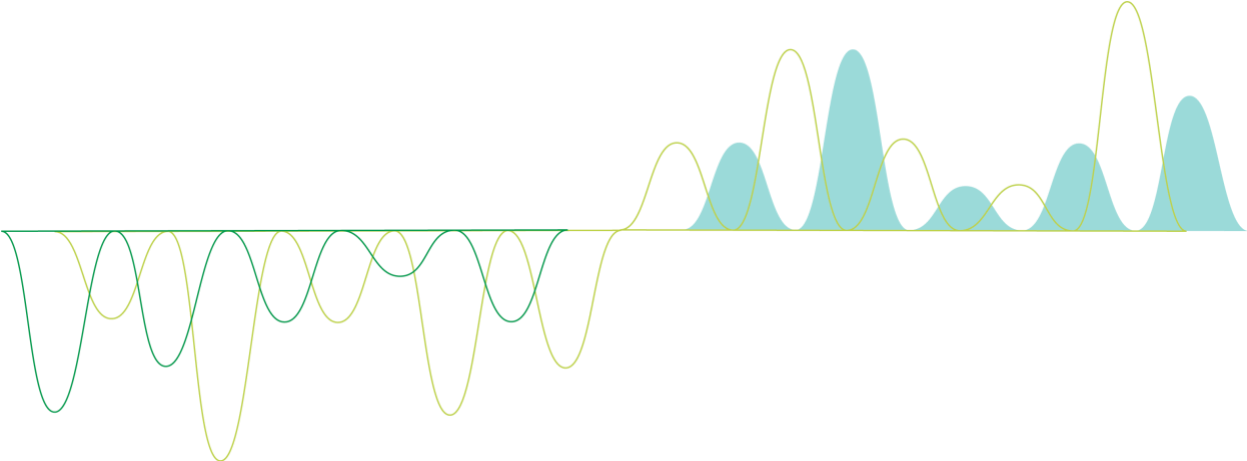


Natural Language Best Practices

Qlik Insight Bot
June 2020
Copyright © 1993-2020 QlikTech International AB. All rights reserved.



Contents

1. Introduction.....	1
2. Ask Simple Questions.....	1
3. Apps	2
4. Measures & Dimension Synonyms	2
5. Aggregations & Calculations	2
6. Filters.....	2
6.1 Dimensional filters.....	3
6.2 Measure filters.....	3
6.3 Time filters	5
6.4 Bookmark.....	6
7. Custom Calendar	6
8. Comparison	7
9. Superlatives/Ranking	7
10. Complex Questions and Answers.....	9
11. Alerts.....	9
12. Forecast.....	10
13. Email	10
14. Charts.....	11
15. Surprise me.....	12

1. Introduction

Qlik Insight Bot is an innovative way for users to get insights from their Qlik applications through simple chat interactions without having to open a dashboard. Qlik Insight Bot is an early step on our journey to Augmented Intelligence and Cognitive Analytics and there is much more innovation to come. Today, you can ask questions like:

- Show me sales for Healthcare products in East and West region
- Create a pie chart for gross margin by products
- Show me lowest selling products
- Compare my sales for New York and Philadelphia
- Alert me for sales when it reaches to 10M
- Forecast my sales for next 3 months
- Email this to John@qlik.com

When interacting with Qlik Insight Bot, you can get the best results by following the guidelines below.

2. Ask Simple Questions

Qlik Insight Bot can answer simple questions that involve master items in your application. It cannot:

1. Create calculated measures or dimensions on the fly. Make sure your application has master items defined for each item that users will want to report or filter on.
2. Infer your meaning if you do not reference master items directly or synonym tags added to it. For example, if you ask “Show me the bids we won”, Qlik Insight Bot will not understand the term “we won”. Instead, you should ask “show me bids where win_flag = true”.
3. Correct your spelling – if you spell master items incorrectly, Qlik Insight Bot may give an unexpected answer.
4. Perform a fuzzy match on dimension values. For example, “give me customer name that start with “SA” will not work.

For best results, use simple phrases, and omit articles and superfluous words.

3. Apps

Qlik Insight Bot answers questions for the applications those are deployed from the Qlik Insight Bot Management Console. You can ask “Show apps” and it will show you the accessible application.



QIB shows only those application to users to which user has access in Qlik Sense hub. QIB leverages security rules defined in the QMC for application access. You can audit the security rule for application in QMC to confirm the app access to users.

4. Measures & Dimension Synonyms

Qlik Insight Bot recognizes the measures and dimensions that are defined in master items in your Qlik Sense application. For example, if you ask, “what are my sales” and your master items contains measure named “revenue”, Insight Bot will not know if these are the synonyms.



You can augment your application by adding synonyms to master items. In the example above, if you add the tag “Sales” to the revenue master measure, Insight Bot will then recognize sales as a synonym of revenue.

You can also add synonyms to master items from Qlik Insight Bot Management Console. If there are already tags added for other provision, you can add tag prefix to each tag related to QIB. It will not recognize plurals of dimension name or measure name if it is not added as synonym.

5. Aggregations & Calculations

Qlik Insight Bot does not do mathematical operations in response to natural language queries.

Limitations

- You cannot ask for aggregations of a master measure. The calculation of the master measure has already an aggregation set. You cannot ask “Show me Average Sales” when Sales is a measure with aggregation type of sum already defined.
- You cannot ask for aggregation of a simple master dimension. For example, “count of customers”.
- QIB cannot perform calculations like “Show item price multiplied by quantity”



If your users need to ask questions based on calculations, include them in your Qlik application. For example, to support the question “Which products have the lowest % change in inventory this month”, you can create a master measure called “% change in inventory” which always shows change this month over last.

6. Filters

You can use filters with your natural language queries. Insight Bot supports the following types of filters:

1. Dimensional filters
2. Measure filters
3. Time filters
4. Bookmarks

6.1 Dimensional filters

Qlik Insight Bot can answer questions that involve filtering on master dimensions. Here are the types of questions we support:

Dimension Filters	Sample questions you can ask
Single value filter	Tell me about customers with age 20 (where age is a master dimension) Select East region
Multiple value filter	Show me sales for East and West region Select East and west region
Multiple dimension filter	Show me sales for East and West region for Healthcare products Select east region and healthcare products

Note also, that Qlik Insight Bot remembers dimensions filters from one question to the next. If you ask “Select New York”, and then subsequently ask “Show me expenses”, Qlik Insight Bot will answer as if you had asked “Show me expenses for New York”.

Limitations

- Comparison operators (<, >, between) not supported for master dimensions. For example, “Tell me about customers with age > 20” (where age is a master dimension) will not work.
- Exclusion filters are not supported - “Show me sales except New York” will not work.
- Filters cannot be applied on calculated dimensions.

6.2 Measure filters

Qlik Insight Bot supports referring to only one measure in a question. You can include a filter on that measure in your question. For example, QIB can answer “tell me about sales where sales > 1000”, but not “tell me about sales and expenses”, or “tell me about sales where expenses > 1000”.



If you want QIB to answer questions that filter on two measures, you can create a master item that performs this calculation.

Measure Filters	Sample questions you can ask	Phrases we recognize
Greater than	Show customer name where gross profit is greater than 10M	Greater than More than

Larger than
after
Higher than
>
Exceeding
exceeds
exceed
over
Above
increases
great than
crosses
>
surpass
surpasses

Less than

Show me the stores having sales less than 50K in this month

Less than
Smaller than
Lesser than
before
Lower than
<
Under
Fall below
Falls below
Drop below
Drops below
Is below
<

Between	Show me customers with revenue between 50k to 1M	Between Is Between
----------------	--	-----------------------

Limitations

- Compound filters such as “Less than or equal to” (<=) and “greater than or equal to” (>=) are not supported. Instead, use the word “between” if you want to filter on a range. For example, use “show me products with sales between 100000 and 200000” instead of “show me products with sales greater than 100000 and less than 200000”.
- If the field is classified as dimension, then greater than, less than, and the between are not supported.
- You cannot apply filter for different measure than asked. For example, Show me sales by customers where # products sold is greater than 20k.
- Questions with multiple measures as filter conditions without numeric values are not supported. We need numeric threshold in filter values

6.3 Time filters

Certain time related terms are supported when forming a question. These can be used as filters (e.g. this year, last year, etc.) as well as analysis (e.g. Year to date, Month over Month, etc.)

Time Filters	Sample questions you can ask	Phrases we recognize
Year	Show me sales for this year	This year Current Year Previous Year Last Year Next year
Month	How was my orders in last month	This month Current month Previous month Last month Next month
Quarter	How many sales reps had no sales last Quarter	This quarter Current quarter Previous quarter Last quarter Next quarter

Week	How many were on leave last week?	This week
		Current week
		Previous week
		Last week
		Next week

Limitations

- Time filters only work with Gregorian calendar. To support the Fiscal Calendar, you can configure the fiscal calendar from Insight Bot Management Console. However, “Forecast” on fiscal calendars is not yet supported.
- Complex time filters involving multiple time periods are not supported. QIB cannot answer a question like “show me sales for First and Last quarter of 2018”.

6.4 Bookmark

If your application has bookmarks created in it, you can leverage them to apply filters.

Bookmarks	Sample questions you can ask	Phrases we recognize
Show Bookmarks	Show Bookmarks	Show bookmarks
		Bookmark
	It will show buttons for bookmarks	Bookmarks
		List bookmarks
		Show my bookmarks

On Selecting a button, it will apply bookmark on application, and you can see the applied filters on fields.

Limitations

- Default filters/bookmark applied on application may not work as expected
- Alternate states are not supported by Qlik Insight Bot

7. Custom Calendar

With the support of Custom / Fiscal calendar, Qlik Insight Bot can answer questions based on the calendar being followed as per the business logic. Fiscal calendar with monthly shifts e.g. Fiscal Year starting from July 1st, or week based calendar where a Financial Year is strictly 52 weeks etc. can now be addressed. Scenarios where

Business is following last complete month as a current month will also be addressed instead of strictly following the actual current month.

Basic options here are -

- Providing lowest granularity of Qlik Sense app
- Mapping various time dimensions (Fiscal) with application fields
- Ability to define default time dimension for trends
- Defining fiscal time periods (this year, last year, etc.) through Application variables

Limitations

- QIB will not provide accurate answers/insights for below patterns
 - <measure> for last 2 months/last 5 years
 - <measure> for first quarter of 2018/last 6 months of this year/period 1 of 2019.
- QIB will not answer for below cases when
 - Forecast for next n period/year/quarter
 - It won't show buttons for period over period comparison viz. MoM, QoQ, YoY, if YTD flag is not configured.
 - Questions for period over period comparison e.g. YoY Sales, if YTD flag is not configured.

End users experience for questions with measures not tied to Custom Calendar will remain same.

8. Comparison

Qlik Insight Bot can compare measures between two-dimension values.

Comparison	Sample questions you can ask	Phrases we recognize
Two dimension values	Compare my sales for New York and Philadelphia	Compare Versus Vs
	Show attrition for USA vs Europe	
Compare with previous	Show me sales for Philadelphia	Compare
	Compare with New York	Versus Vs

9. Superlatives/Ranking

Qlik Insight Bot can show a specified number of top/bottom dimensional values on measure. For example, you can ask "Show me top 10 customers for Sales" or "Show me lowest selling products". If the number of values is not specified, QIB will give 5 dimensional values.

Superlatives/Ranking

Superlatives	Sample questions you can ask	Phrases we recognize
Top	Show me top 10 customers for sales	Top best largest biggest top most max maximum highest the highest the largest the best the biggest the top most the maximum finest the finest top-notch top notch most Popular
Bottom	Show me lowest selling products	bottom smallest lowest bottom most least min

Complex Questions and Answers

minimum
the smallest
the lowest
the bottom most
the least
the minimum
slightest
the slightest
minimal
the minimal
worst

Limitations

- You cannot rank on two measures. For example, “show me customers with highest returns and lowest sales” will not work.
- QIB cannot answer questions involving both ranking and measure filters. For example, “Show me top 10 stores where sales are greater than 10K” is not supported.

10. Complex Questions and Answers



If your use case requires Qlik Insight Bot to provide specific answers to questions that are not supported above, consider using the Rule Engine (see page 8 of the QIB Portal User Guide).

This will allow you to define specific keywords that will be recognized in combination with a dimension or measure to provide a specific answer.

11. Alerts

QIB can set and send alerts when measures reach a threshold value. Users can ask “set an alert for sales when reaches 10M”. This alert will be saved and triggered when Qlik Sense application is reloaded, and condition is met. Alerts can be set to trigger for one time only or on a recurring basis.

Alert Words	Sample questions you can ask	Phrases we recognize
Alert	Alert me for sales when it reaches to 10M	Alert me Set me an alert

 Email me when

Limitations

- Alerts can't be set for condition(s) having relative values e.g. Alert me when my sales is increased by 5%

12. Forecast

QIB can forecast for your measure. It performs the linear regression on past year data. You can ask, "Forecast my sales for next 2 months"

Forecast	Sample questions you can ask	Phrases we recognize
Forecast	Forecast my sales for next 3 months	Forecast Predict Next

Limitations

- A forecast statement must include the keyword "next" before the time period e.g. "Forecast my sales for next 6 months".
- The forecast feature does not support absolute time periods. "Forecast my sale for August 2019" will not work
- Forecast works only when the app contains at least 12 months of historical. QIB cannot forecast based on a single data point
- Unless precisely mentioned, all time periods specified in a forecast question will be considered to be in the future".

13. Email

QIB can email your last response. For example, you can ask "Email me" to get response in your mailbox. Also, you can ask "Email this to john" or "Email this to john@qlik.com" to send email to specific person.

Email	Sample questions you can ask	Phrases we recognize
Email me	Email Me	Email Me
Email this to <User Name>	Email this to John	Email this to Email to
Email this to <Emailid>	Email this to <u>John@qlik.com</u>	

Multiple Users or Email
Id

Email this to john and david

or

Email this to john@qlik.com,
david@qlik.com

or

Email this to john and david@qlik.com

Limitations

- User name can only be identified if user names are pushed to QIB from QIB Management Console.

14. Charts

QIB creates chart for each requested query. For example, you have asked “show me sales by category”, it will create a bar chart based on the records. QIB generates the chart image from fetched records and a chart in Qlik Sense Application based on the configuration from Configuration Application.

Charts	Sample questions you can ask	Phrases we recognize
Create <chart-type> chart	Create a pie chart for gross margin by products	For chart-type, Pie Bar Line Scatter
Trend	Show sales trend	Trend Over time Line chart will be displayed
Only measure	Show my sales	Measure Note: For single measure, it

Surprise me

		will give line chart by month year.
One Measure, one dimension	Show me sales by category	Bar chart (default); otherwise asked chart type
One measure, two dimensions	Show sales by product and category	A grouped bar chart will be displayed
Two measures	What is my sales vs cost	Line chart by month year
Two measures, one dimension	Show me sales vs cost by products	Grouped bar chart (default); otherwise asked chart type

If chart type is not mentioned and total dimension values in dimension is less than 10, it will show pie chart.

Limitations

- When asking for a chart, you cannot filter on the same dimension as you are using for an axis. “Show me sales by city for Philadelphia” will not work if Philadelphia is a value from dimension City.
- QIB can create only bar, pie, line and scatter chart – we do not support data tables at this time.
- Qlik Chart Extensions are not supported.
- Because of the screen real-estate on a chat client, QIB chart images are limited to showing the first few dimensional values. If there are 20 regions, QIB will show the first 10 and will show rest as others.
- If you have asked for a chart including two dimensions, chart image shows only 5 data points for second dimension

15. Surprise me

QIB can give random insights based on measure and dimension mappings on asking “surprise me”.

Surprise	Sample questions you can ask	Phrases we recognize
Surprise me	Surprise me	Surprise me
Surprise me for <measure> or <dimension>	Surprise me for Sales Surprise me for City	Surprise me

Limitations

- “Surprise me for <dimension value>” does not identified by QIB. For example, “Surprise me for Philadelphia” will response randomly for any measure but not for Philadelphia.

