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# Virtual Event

November 1 – 4, 2022

Virtual Event

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## Margining Tool in Chatbot

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Virtual - November 1-4, 2022



## Introduction

- Intel have various type of application and tools
  - Design validation
  - Issue debugging
  - Benchmarking
- User have to download the application and tools
  - Application and tools able to run locally
  - Margining Tool will summarize critical parameters within a table
  - Easy reference

Solution:

- Implementation of software application and tools within chatbot
- Easily access to the application and tools 24/7 with the help of chatbot

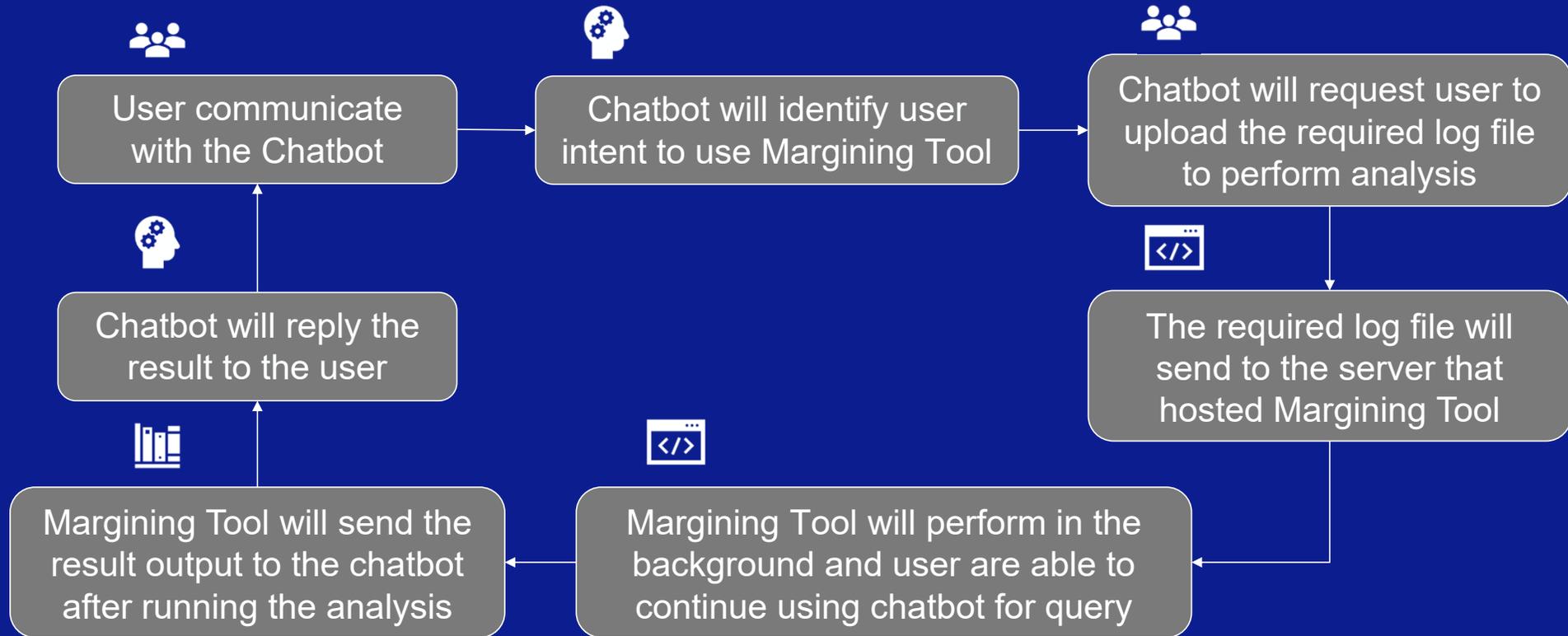


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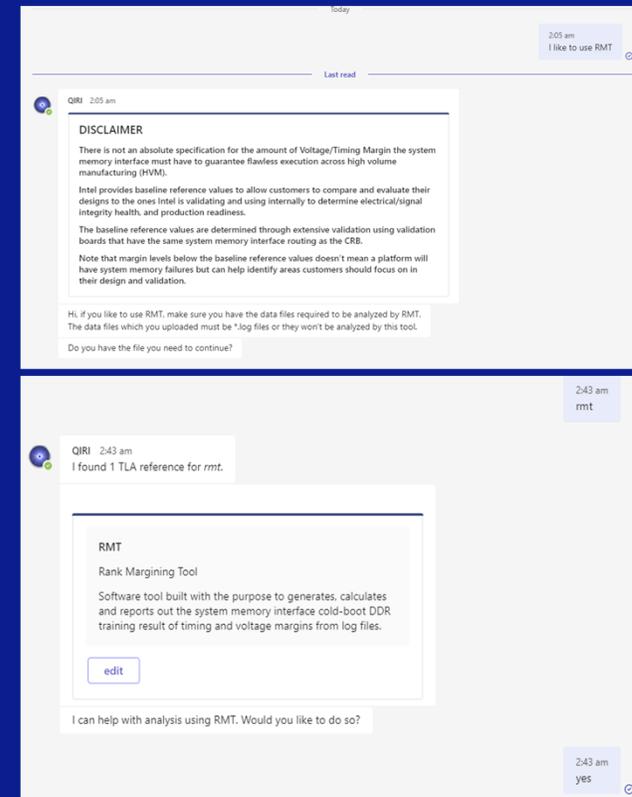
## Summary Flow



## Accessing Margining Tool using Chatbot

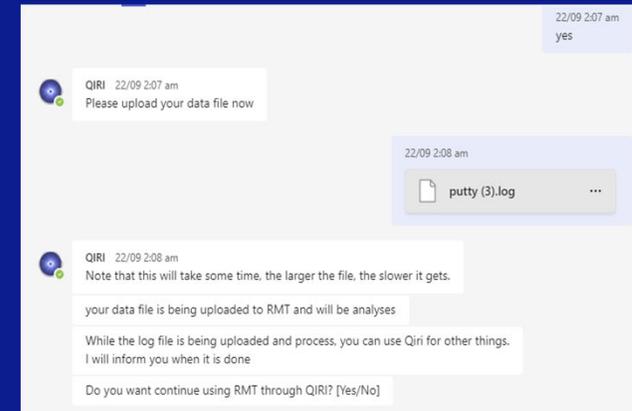
### Chatbot

- attempt to understand the user's intention by identifying the intent and respond immediately  
e.g. "I like to use RMT" , "rmt"
- allow user check the abbreviation
- allow user to access Margining Tools that hosted at server if needed
- User are required to have a log file for the analysis



## Accessing Margining Tool using Chatbot

- Allow the user to upload the log file to perform the analysis
- Margining Tool may take time to process and return the result to the user.
- Log file will be sent to process with Margining Tool which was hosted remotely at a different server
- This allow user to continue using the chatbot for query while Margining Tool is running at the background from different host server.
- Also, user able to upload log file to perform the analysis using Margining Tool which will be added to the queue



## Output from Margining Tool in Chatbot

- Output of Margining Tool will send to the chatbot after the process is completed
- Chatbot will automatically reply to the user with the result from Margining Tool
- In the future, chatbot will send the output in document format
- User allow to download and archive the document if needed

The result from RMT have return

Worse Case System Memory Margin Result Summary							Platform: EHL		SAGV point: high	
System	Memory Speed	3200	MT/s	Gear2			Timing per Step	4.88	pS/Step	
DRAM Device Type	LPDDR4x						RD VREF Voltage per Step	1.66	mV/Step	
System Memory Voltage	0.60	V					WR VREF Voltage per Step	3.60	mV/Step	
Total Data Files Analyzed	1	Files					CMD VREF Voltage per Step	3.60	mV/Step	
Timing Parameter	Left Side	Right Side	Total	Units	Left Side	Right Side	Total	Units	PASS/FAIL	
Min RW Baseline	10	10	20	Steps	48.83	48.83	97.66	pS	PASS	
Read Timing Margin	17	17	34	Steps	83.01	83.01	166.02	pS	PASS	
Write Timing Margin	19	19	39	Steps	92.77	92.77	185.55	pS	PASS	
Min CMD Baseline	10	10	20	Steps	48.83	48.83	97.66	pS	PASS	
CMD Timing Margin	38	36	80	Steps	185.55	175.78	390.63	pS	PASS	
Voltage Parameter	Low Side	High Side	Total	Units	Low Side	High Side	Total	Units	PASS/FAIL	
Min RD VREF Baseline	18	18	36	Steps	28.13	28.13	56.25	mV	PASS	
RD VREF Voltage Margin	28	34	64	Steps	43.75	53.13	100.00	mV	PASS	
Min WR VREF Baseline	14	14	28	Steps	50.40	50.40	100.80	mV	PASS	
WR VREF Voltage Margin	33	36	69	Steps	118.80	129.60	248.40	mV	PASS	
Min CMD VREF Baseline	14	14	28	Steps	50.40	50.40	100.80	mV	PASS	
CMD VREF Voltage Margin	40	40	80	Steps	144.00	144.00	288.00	mV	PASS	

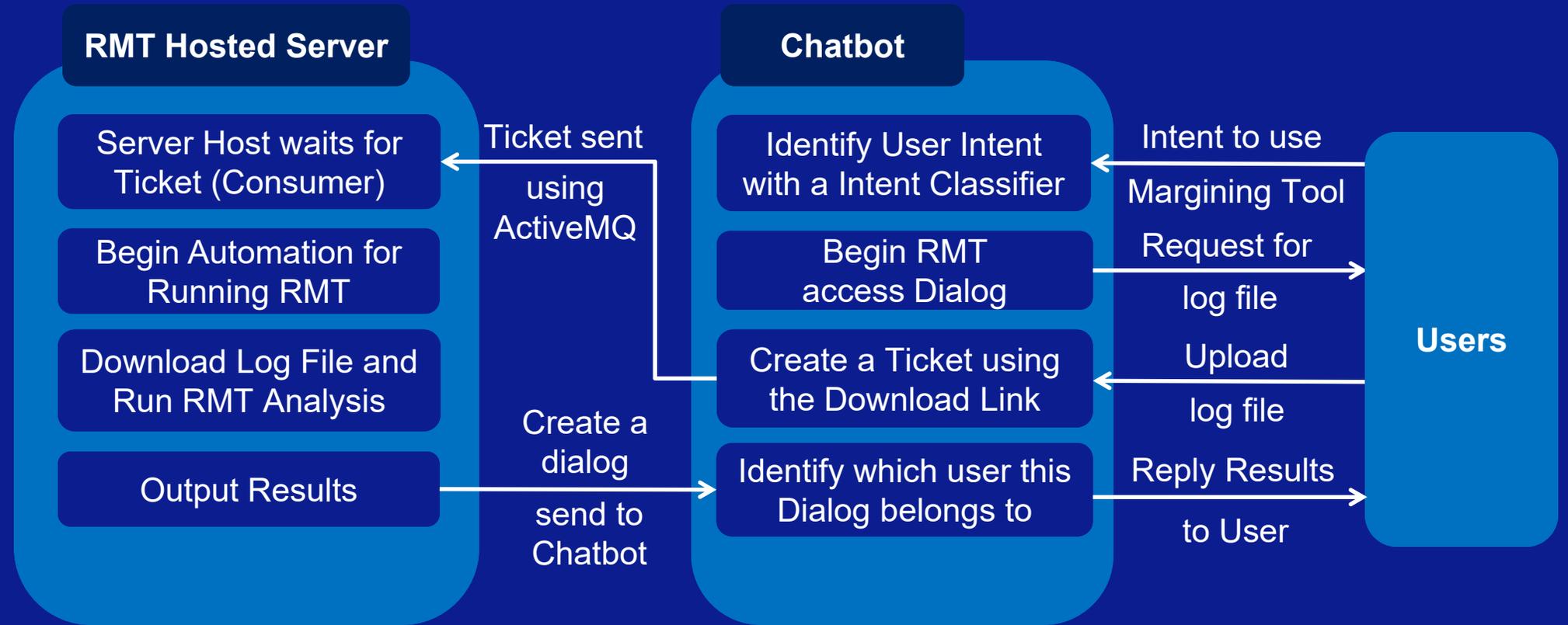
Worse Case System Memory Margin Result Summary							Platform: EHL		SAGV point: low	
System	Memory Speed	2133	MT/s	Gear2			Timing per Step	7.33	pS/Step	
DRAM Device Type	LPDDR4x						RD VREF Voltage per Step	1.66	mV/Step	
System Memory Voltage	0.60	V					WR VREF Voltage per Step	3.60	mV/Step	
Total Data Files Analyzed	1	Files					CMD VREF Voltage per Step	3.60	mV/Step	
Timing Parameter	Left Side	Right Side	Total	Units	Left Side	Right Side	Total	Units	PASS/FAIL	
Min RW Baseline	9	9	18	Steps	65.93	65.93	131.86	pS	PASS	
Read Timing Margin	17	16	33	Steps	124.53	117.21	241.74	pS	PASS	
Write Timing Margin	20	19	39	Steps	146.51	139.18	285.69	pS	PASS	
Min CMD Baseline	14	14	28	Steps	102.50	102.50	205.11	pS	PASS	
CMD Timing Margin	44	44	94	Steps	322.32	322.32	688.58	pS	PASS	
Voltage Parameter	Low Side	High Side	Total	Units	Low Side	High Side	Total	Units	PASS/FAIL	
Min RD VREF Baseline	18	18	36	Steps	28.13	28.13	56.25	mV	PASS	
RD VREF Voltage Margin	36	32	69	Steps	56.25	50.00	107.81	mV	PASS	
Min WR VREF Baseline	14	14	28	Steps	50.40	50.40	100.80	mV	PASS	
WR VREF Voltage Margin	35	37	72	Steps	126.00	133.20	259.20	mV	PASS	
Min CMD VREF Baseline	14	14	28	Steps	50.40	50.40	100.80	mV	PASS	
CMD VREF Voltage Margin	40	40	80	Steps	144.00	144.00	288.00	mV	PASS	



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## Overview of the Architecture



## Architecture Summary

- Chatbot act as front-end for user to access multiple applications and tools
- Chatbot classifies the intent using a trained intent classifier
- Margining Tool act as backend
  - server that hosting Margining Tool will detect any request from the chatbot
  - perform automation to run the application
  - send back the output to the chatbot once it's completed.
- Required log file for Margining Tool to perform analysis
- Access by the chatbot using a download link
  - send to the Margining Tool to perform analysis at different host server

## Architecture Summary

- Chatbot and Margining Tool hosted at different server
  - ensure do not disrupt each other
- ActiveMQ ticket consumer is set up at Margining Tool hosted server
  - consumer will run the automation for Margining Tool after received from chatbot
- Chatbot and Margining Tool communicate using ActiveMQ
  - task is queued can be analyzed one by one as not to overload the server
- Output will be built into dialog and send to chatbot
  - Chatbot will divert it to the correct user

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