

# Leveraging AI for Enhanced Support and Problem-Solving

An Innovative Solution to Streamline Global ICT Support

# Presentation Agenda

## 1. Revolutionizing ICT Support

Streamlined Problem Identification / Global Reach / Augmented Decision-making

## 2. Operating Logic

Initial Setup / Support Phases / AI Involvement / Human Oversight

## 3. Sample of Handing History

Retrieve / Wash / Response

## 4. Sample of Outcome

Input data / AI Agent / Outcome

## 5. Immediate Aim

UNall / Zabbix / Fine-Tuning

## 6. Future Prospects

Collaboration with OpenAI / Partnership with Microsoft AI / Fine-Tuning Our Own Model

## 7. Q&A

Any Questions 😊



# Revolutionizing ICT Support



## 1. Streamlined Problem Identification:

- **Easy of Deployment:** This tool is designed to be simple to deploy, ensuring a smooth transition into your existing systems.
- **Cost-Efficiency:** Not only is it low-cost to deploy, but it's also inexpensive to maintain, providing long-term financial benefits.
- **Human Approval:** While the tool streamlines problem identification, final decisions are subject to human approval for an added layer of oversight.

## 2. Global Reach:

- **24/7 Support:** This is especially beneficial for global organizations like the UNDP, where round-the-clock monitoring is a necessity.
- **Data-Driven Insights:** The tool operates on the basis of factual information, contributing to a balanced approach to problem resolution.
- **Professional Handling:** It is equipped to professionally address a variety of problems, making it adaptable to diverse challenges.

## 3. Augmented Decision-making:

- **Quick Content Analysis:** The tool can quickly read and interpret relevant data, speeding up the decision-making process.
- **Rational Suggestions:** It provides rational and data-driven suggestions for effective problem-solving.
- **Avoidance of Redundancy:** The AI identifies and skips over repetitive, basic issues, allowing humans to focus on more complex tasks.
- **Supportive Role of AI:** Rather than replacing human decision-makers, the AI serves as a support and assistant, augmenting human capabilities.

# Operating Logic

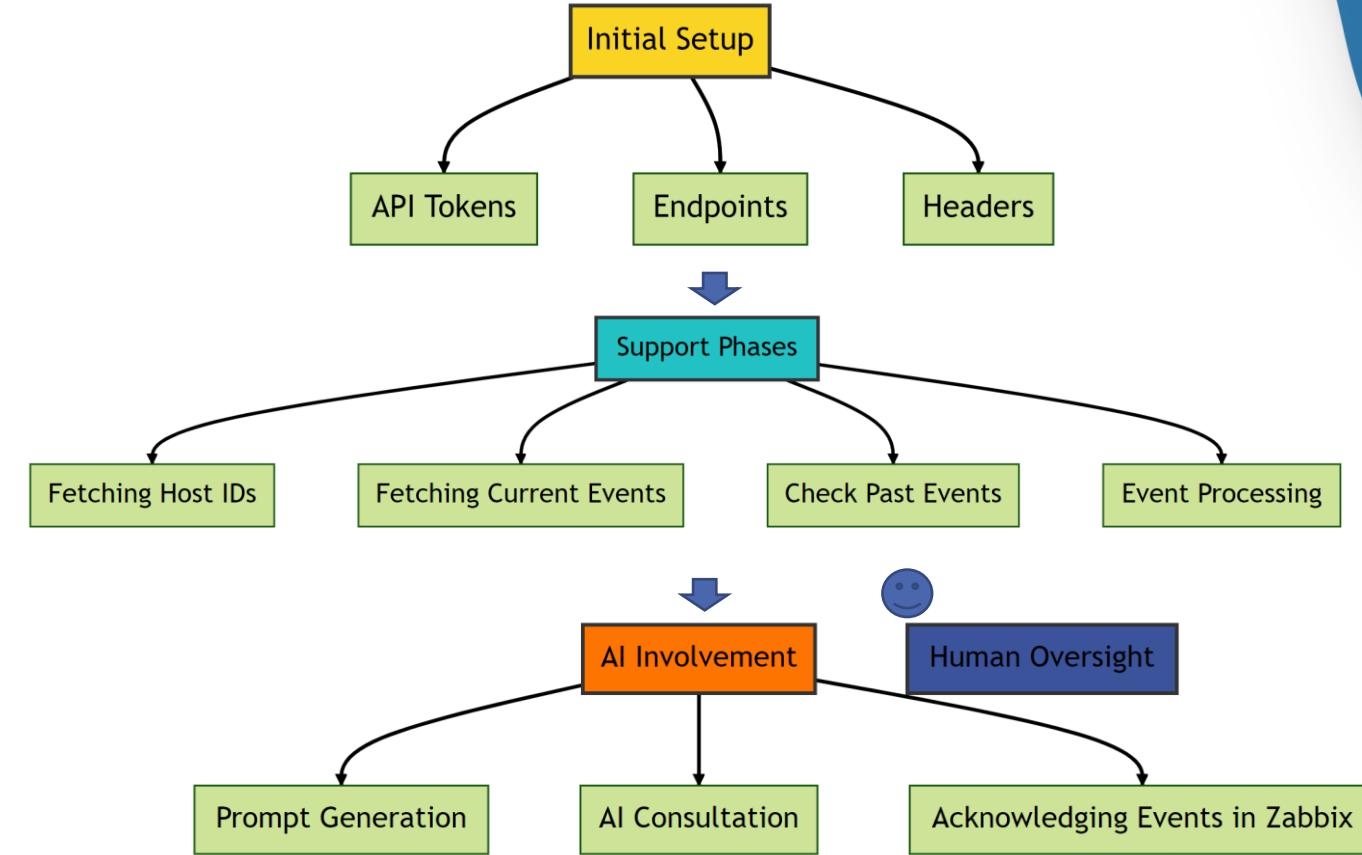


## 1. Initial Setup:

- Configuration of API Tokens,
- Endpoints
- Headers

## 2. Support Phases:

- Fetching Host IDs
- Fetching Current Events
- Check Past Events
- Event Processing



## 3. AI Involvement:

- Prompt Generation
- AI Consultation
- Acknowledging Events in Zabbix

## 4. Human Oversight: *Final decision remains with human teams*

# Sample of Handing History



```
[{"eventid": "66572696", "acknowledged": "1", "clock": "1694112962", "acknowledges": [{"eventid": "66572696", "message": "Haiti Country Office has issues with electricity, so ICT manager powers off the equipment every night and powers it on in the morning"}]}, {"eventid": "66458104", "acknowledged": "1", "clock": "1694062681", "acknowledges": [{"eventid": "66458104", "message": "Based on the provided information and past solutions, it seems that Trigger ID 29343, named \"All ISP links are down\" indicates a critical event related to the loss of connectivity with the Internet Service Provider (ISP) links. The severity of 5 signifies a high priority issue. \n\nThe relevant past solutions include contacting the IT Manager for feedback and acknowledging the issue. Additionally, there was a previous incident in 2021 where a fiber optic issue caused both ISP links to go down.\n\nTo address the ongoing issue, it is crucial to investigate if there are any physical connection issues with the ISP links or if there have been any recent changes or disruptions in the network infrastructure. Checking the network equipment's status, such as routers, switches, and firewalls, is necessary.\n\nMonitoring the link status and ensuring redundancy in ISP connections is recommended. Implementing a failover mechanism with automatic switching to an alternative ISP link can help mitigate the impact of such incidents. Additionally, setting up proactive alerts for any physical link state changes or critical network device failures can provide early detection and enable a swift response.\n\nRegular maintenance and ensuring proper documentation of the ICT infrastructure setup will assist in troubleshooting future incidents. Conducting periodic reviews of ISP services, contracts, and overall network architecture will help identify areas for improvement and rectify potential risks or weaknesses in the ICT infrastructure."}], "eventid": "46026414", "acknowledged": "1", "clock": "1676617982", "acknowledges": [{"eventid": "46026414", "message": "The IT Manager has been contacted, awaiting feedback"}]}, {"eventid": "45950843", "acknowledged": "1", "clock": "1676446321", "acknowledges": [{"eventid": "45950843", "message": "The IT Manager has been contacted, awaiting feedback"}]}, {"eventid": "17020343", "acknowledged": "1", "clock": "1612246741", "acknowledges": [{"eventid": "17020343", "message": "Fiber optic issue with both ISP links"}]}]
```

2023-09-07 AI  
11:52:00 bot

- Sanitize confidential information
- Transform raw data into natural language
- Insert data into the prompt

```
'45950843', 'message': 'The IT Manager has been contacted, awaiting feedback'}], {"eventid": "17020343", "acknowledged": "1", "clock": "1612246741", "acknowledges": [{"eventid": "17020343", "message": "Fiber optic issue with both ISP links"}]}
```

The prompt send out to GPT:  
Our past solutions for this issue are: [{"historical\_event\_time": "2023-09-07 18:56:02", "acknowledges": [{"message": "Haiti Country Office has issues with electricity, so ICT manager powers off the equipment every night and powers it on in the morning"}]}, {"historical\_event\_time": "2023-09-07 04:58:01", "acknowledges": [{"message": "Based on the provided information and past solutions, it seems that Trigger ID 29343, named \"All ISP links are down\" indicates a critical event related to the loss of connectivity with the Internet Service Provider (ISP) links. The severity of 5 signifies a high priority issue. \n\nThe relevant past solutions include contacting the IT Manager for feedback and acknowledging the issue. Additionally, there was a previous incident in 2021 where a fiber optic issue caused both ISP links to go down.\n\nTo address the ongoing issue, it is crucial to investigate if there are any physical connection issues with the ISP links or if there have been any recent changes or disruptions in the network infrastructure. Checking the network equipment's status, such as routers, switches, and firewalls, is necessary.\n\nMonitoring the link status and ensuring redundancy in ISP connections is recommended. Implementing a failover mechanism with automatic switching to an alternative ISP link can help mitigate the impact of such incidents. Additionally, setting up proactive alerts for any physical link state changes or critical network device failures can provide early detection and enable a swift response.\n\nRegular maintenance and ensuring proper documentation of the ICT infrastructure setup will assist in troubleshooting future incidents. Conducting periodic reviews of ISP services, contracts, and overall network architecture will help identify areas for improvement and rectify potential risks or weaknesses in the ICT infrastructure."}], {"historical\_event\_time": "2023-02-17 07:13:02", "acknowledges": [{"message": "The IT Manager has been contacted, awaiting feedback"}]}, {"historical\_event\_time": "2023-02-15 07:32:01", "acknowledges": [{"message": "The IT Manager has been contacted, awaiting feedback"}]}, {"historical\_event\_time": "2021-02-02 06:19:01", "acknowledges": [{"message": "Fiber optic issue with both ISP links"}]}]. The current setup of this host is: No setup information is given.. Please summarize and list relevant past solutions, then offer a new solution based on both your own data and these past solutions. Keep the response within 200 words. Thank you.

Sleep 60 seconds...

14/09/2023

The screenshot shows a messaging interface with two main sections. The top section displays a table of historical data with columns for Time, User, and Message. A specific message from 'rafis.saifulin@undp.org' on February 4, 2021, at 16:01:13 is highlighted, mentioning a fiber optic issue with both ISP links. The bottom section shows the AI's response to this message, which includes a summary of past solutions and a proposed new solution. A blue arrow points from the historical data table to the 'Message' section, and another blue arrow points from the 'Message' section back up to the historical data table.

Time	User	Message
2021-02-04 16:01:13	rafis.saifulin@undp.org (ReadOnly HQ)	Fiber optic issue with both ISP links

**Message**

Based on the provided information and past solutions, it seems that Trigger ID 29343, named "All ISP links are down" indicates a critical event related to the loss of connectivity with the Internet Service Provider (ISP) links. The severity of 5 signifies a high priority issue.

The relevant past solutions include contacting the IT Manager for feedback and acknowledging the issue. Additionally, there was a previous incident in 2021 where a fiber optic issue caused both ISP links to go down.

To address the ongoing issue, it is crucial to investigate if there are any physical connection issues with the ISP links or if there have been any recent changes or disruptions in the network infrastructure. Checking the network equipment's status, such as routers, switches, and firewalls, is necessary.

Monitoring the link status and ensuring redundancy in ISP connections is recommended. Implementing a failover mechanism with automatic switching to an alternative ISP link can help mitigate the impact of such incidents. Additionally, setting up proactive alerts for any physical link state changes or critical network device failures can provide early detection and enable a swift response.

Regular maintenance and ensuring proper documentation of the ICT infrastructure setup will assist in troubleshooting future incidents. Conducting periodic reviews of ISP services, contracts, and overall network architecture will help identify areas for improvement and rectify potential risks or weaknesses in the ICT infrastructure.

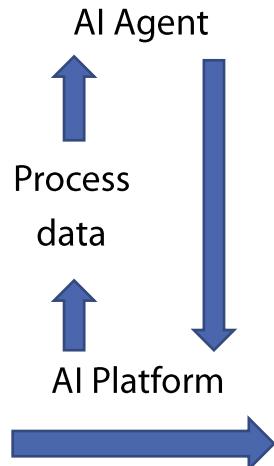
- Retrieve historical data
- Interact with AI system for responses

# Sample of Outcome



Time	User	Message
2023-08-10 15:20:35	alan.yamikani.kambilonje@undp.org (ReadOnly HQ)	The ISR interface connected to the VSAT Core Switch is still not responding via ICMP even after Marlink configured Port 6 on the Core Switch as Trunk.
		SFNOC has asked the ICT Manager to verify physical connections and test connection with a P2P link to laptop.
2023-08-10 15:16:10	alan.yamikani.kambilonje@undp.org (ReadOnly HQ)	MARLINK SUPPORT via Telegram
		Configuration of interface Fa0/6 is adjusted. You can check.
2023-08-10 14:53:29	alan.yamikani.kambilonje@undp.org (ReadOnly HQ)	MARLINK SUPPORT via telegram: Kindly note that T-620332 is opened for this request.
2023-08-10 14:52:37	alan.yamikani.kambilonje@undp.org (ReadOnly HQ)	MARLINK SUPPORT via Telegram: this is the current configuration of interface Fa0/6 UNDP-SITE63-SWITCH#sh run int Fa0/6 Building configuration... Current configuration : 119 bytes ! interface FastEthernet0/0 description -- Customer UNIA LAN switchport access vlan 302 switchport mode access end Hi dear Marlink Support Colleagues. Could you also possibly take a look at the Switchport connecting between VSAT Core Switch Link and our ISR for UNDP Guinea Bissau CO? The link seems to be down with a similar problem description of ticket T-600195 that we just recently resolved with your assistance. Do let us know if you require additional details. Thank you in advance and kind regards, Allan UNDP SFNOC
2023-08-10 14:51:41	alan.yamikani.kambilonje@undp.org (ReadOnly HQ)	The Link between the ISR and VSAT Router is down. Working with the ICT Manager for a troubleshoot and will escalate to Marlink for further resolution.
2023-08-10 14:02:46	alan.yamikani.kambilonje@undp.org (ReadOnly HQ)	The Link between the ISR and VSAT Router is down. Working with the ICT Manager for a troubleshoot and will escalate to Marlink for further resolution.

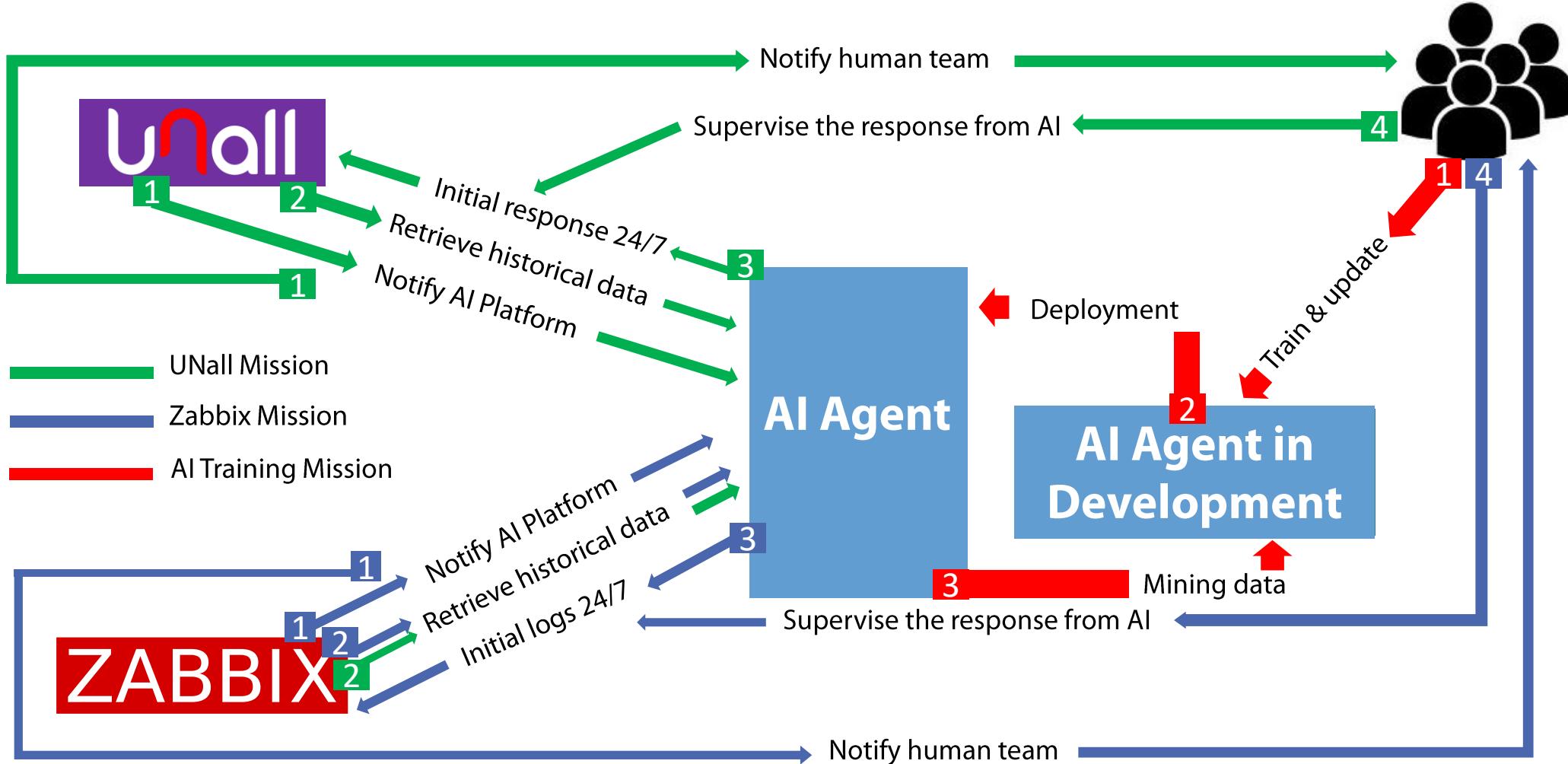
Input Data  
(handling history from Zabbix)



2023-09-07 11:29:17	AI bot	Based on the past solutions and information provided, it seems that the trigger "ISP 3 Unavailable by ICMP ping" is related to the connectivity issue between the ISR interface and the VSAT Core Switch. The historical events suggest that the link between the ISP and the VSAT router has been frequently going down.  Past solutions have involved troubleshooting physical connections, verifying configurations, and actively involving the ISP for further resolution. Additionally, the ICT manager has been contacted for input and investigation.  To address this issue, it is recommended to: <ol style="list-style-type: none"><li>1. Verify physical connections: Check the physical connections between the VSAT Core Switch and the ISR interface, ensuring all cables are securely connected.</li><li>2. Validate configurations: Verify the configuration of interface Fa0/6 on the Core Switch and ensure it is configured properly as access mode.</li><li>3. Engage the ISP: Escalate the issue to the ISP (Marlink Support) and provide them with detailed information about the problem. Request their assistance in troubleshooting and resolving the connectivity problem.</li><li>4. Collaborate with the ICT Manager: Work closely with the ICT Manager to investigate the issue, perform additional troubleshooting, and provide necessary feedback to the ISP.</li></ol> By following these steps, you can tackle the connectivity issue between the ISP and the VSAT router effectively.
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Outcome (acknowledge message on Zabbix)

# Immediate Aim



# Future Prospects



## 1. Collaboration with OpenAI:

- **Exclusive API Access:** Customized, non-public API tailored for UN operations, enhancing security measures.
- **Utilizing Advanced Models:** Engagement with GPT-3.5 and forthcoming iterations for optimized performance.

## 2. Partnership with Microsoft AI:

- **Access to Cutting-Edge Models:** Utilizing Microsoft's latest AI innovations as a current supplier.
- **Synergistic Relationship:** Capitalizing on the existing partnership for enhanced capabilities.

## 3. Fine-Tuning Our Own Model from an Open Source:

- **Pioneering UN's AI Capabilities:** [The first-ever UN-specific AI model in the era of artificial intelligence.](#)
- **Enhanced Security & Features:** Incorporating multi-layer encryption and strict access controls.
- **Cross-Departmental Leverage:** Adapting the model's capabilities for broader organizational use.

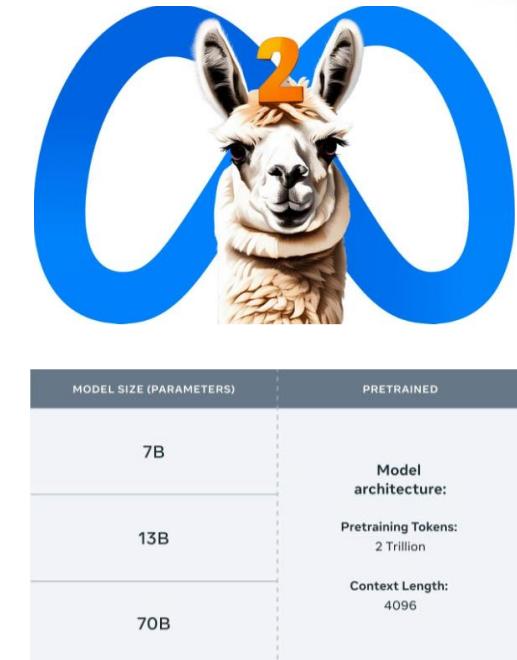
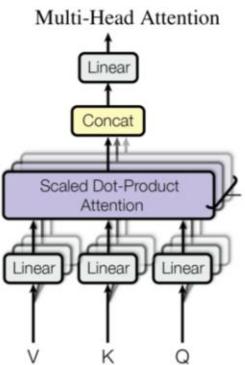
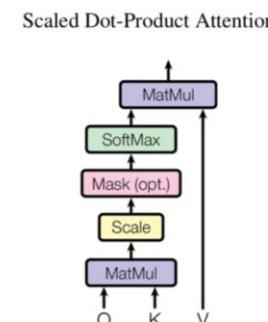
## -> Llama2 from Facebook :

- Due to the focused nature of the tasks at hand, fine-tuning Llama2 from Facebook is highly feasible. This allows for a streamlined, optimized solution specifically tailored to meet the UN's specialized operational requirements.

### Reference Paper:

**Attention Is All You Need:** <https://arxiv.org/pdf/1706.03762.pdf>

**Llama 2: Open Foundation and Fine-Tuned Chat Models:** <https://arxiv.org/pdf/2307.09288.pdf>



## Q & A



SICU SFNOC

# Thank You :)