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# Generative AI for Knowledge Linking: The Future of AVEVA

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Lori Warda | Senior Product Manager | AI and Analytics

AVEVA

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AVEVA Knowledge Linking and Industrial AI Assistant  
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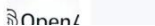
# Generative AI

## ChatGPT burst in the headlines in 2023

Since the release of ChatGPT in November 2022, it's been all over the headlines, and businesses are racing to capture its value. Within the technology's first few months, McKinsey research found that generative AI (gen AI) features stand to add up to \$4.4 trillion to the global economy—annually.

### Microsoft launches AI-powered Bing search engine

- The New York Times**  
Microsoft's ChatGPT-Powered Bing Makes Search Interesting Again  
Yesterday
- CNET**  
How AI Will Make Bing Something You Actually Care About  
31 minutes ago
- CNBC**  
Microsoft will let companies create their own custom versions of ChatGPT, source says  
2 days ago



### Microsoft announces new multibillion-dollar investment in ChatGPT-maker OpenAI

PUBLISHED MON, JAN 23 2023, 9:34 AM EST | UPDATED TUE, FEB 7 2023, 9:49 AM EST  
Ashley Capoot @ASHLEYCAPOOT

### The role of Generative AI in achieving decarbonization

Opinion By Elisabeth Goos published about 20 hours ago

How generative AI is used to achieve decarbonization goals



Medical Exam To Acing Wharton's MBA -- How ChatGPT Has s Latest Obsession



### HustleGPT: Generative AI will boost income and help millions of workers take on second and third jobs, Morgan Stanley predicts.

Alistair Barr  
Wed, September 20, 2023 at 10:00 AM GMT+1 · 2 min read



### Breakthrough In Cancer Treatment: The Role Of Generative AI In Drug Development

Bernard Marr Contributor  
SYMPOSIUM Xpo  
6 - 9 November 2023 | Barcelona, Spain

Home Agenda Speakers

### Hackers are selling a service that bypasses ChatGPT restrictions on malware

ChatGPT restrictions on the creation of illicit content are easy to circumvent.

DAN GOODIN - 2/8/2023, 6:54 PM

Quartz  
Google's ChatGPT competitor Bard made a \$100 billion mistake  
11 hours ago



### Prepare for the generative AI disruption

Spurred on by the release of ChatGPT potential to transform the way all e and manage risk.

High-value use cases for generative job role. CIOs must quickly unders provide critical leadership to defin

Realizing generative AI's full compo portfolio, ecosystem, deployment i

# How to get your data ready for the generative AI revolution

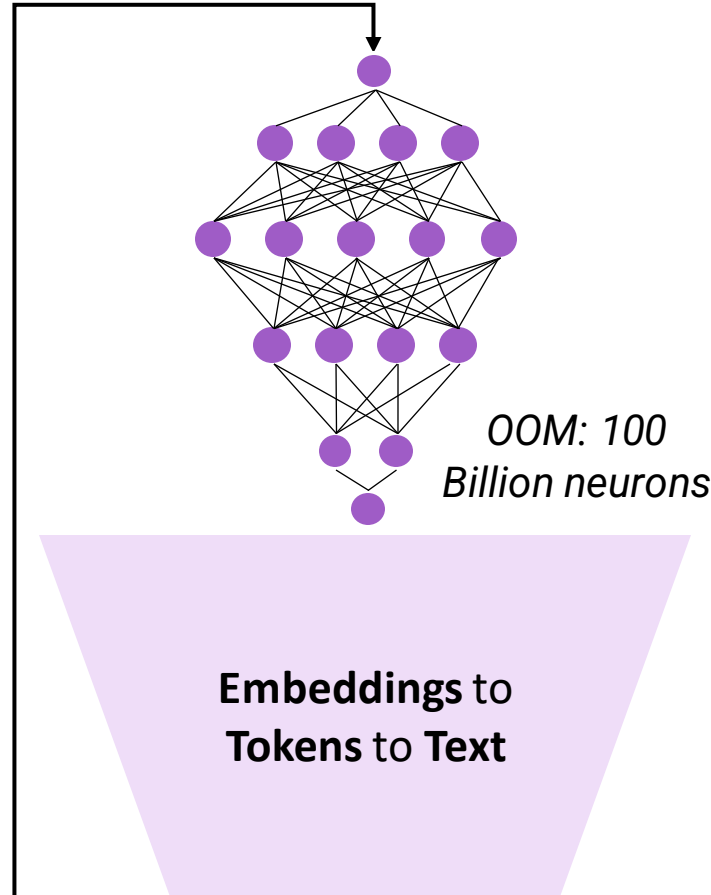
# Large Language Models

## What is an LLM?

*"It is a mistake to think you can solve any major problems just with \_\_\_\_\_"*

Embeddings  
Model  
**Text to Tokens to  
Embeddings**  
vectors

0.012 0.768 0.398 0.005 0.291



*"It is a mistake to think you can solve any major problems just with **potatoes**"*

**GENERATIVE** – completion model predicting the next word.

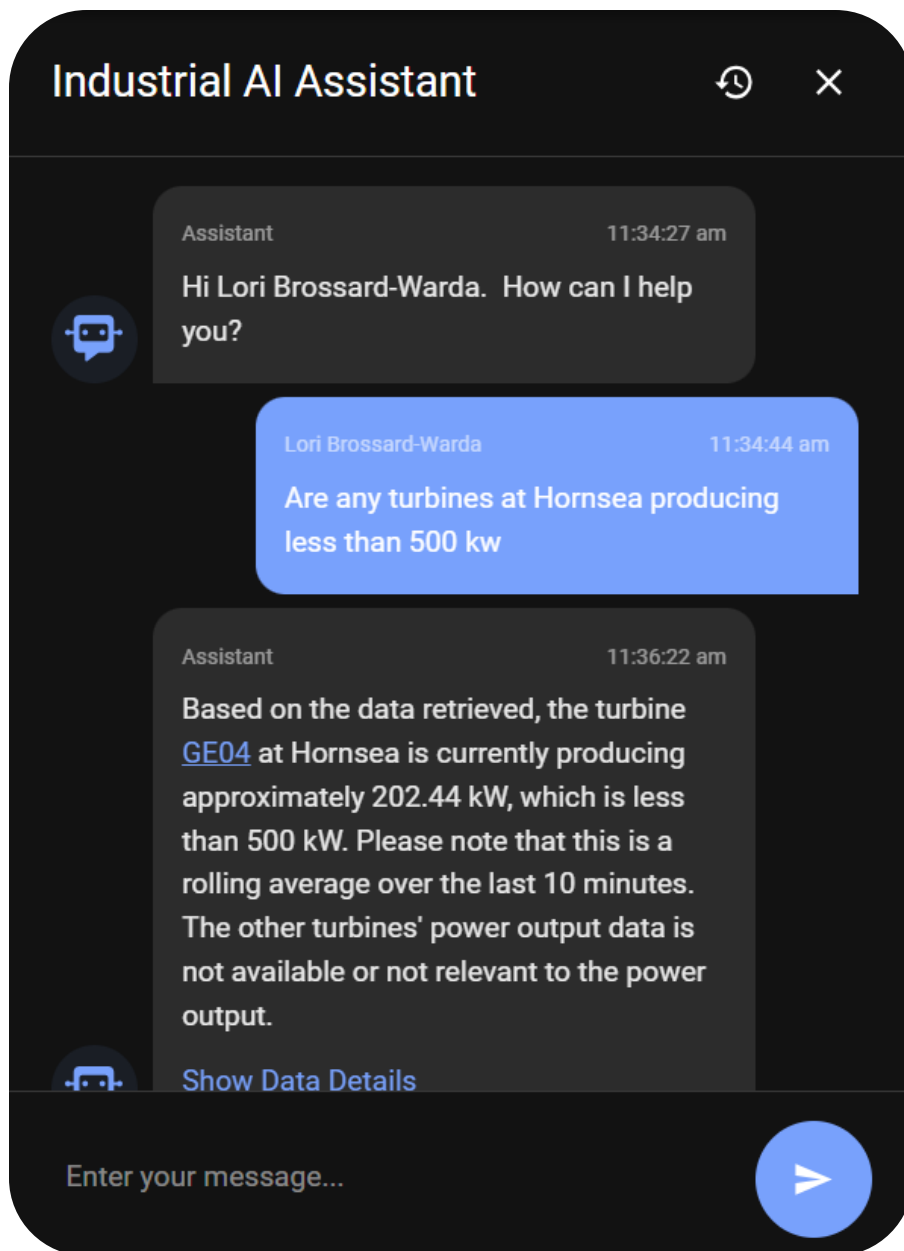
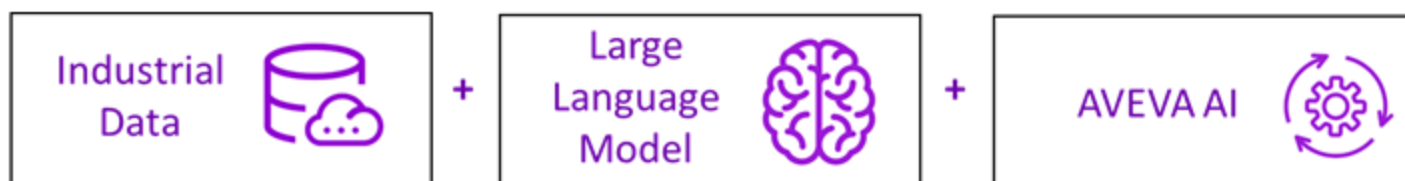
**PRETRAINED** – data you send is thrown away.

**TRANSFORMER** – text is converted to embeddings vectors.

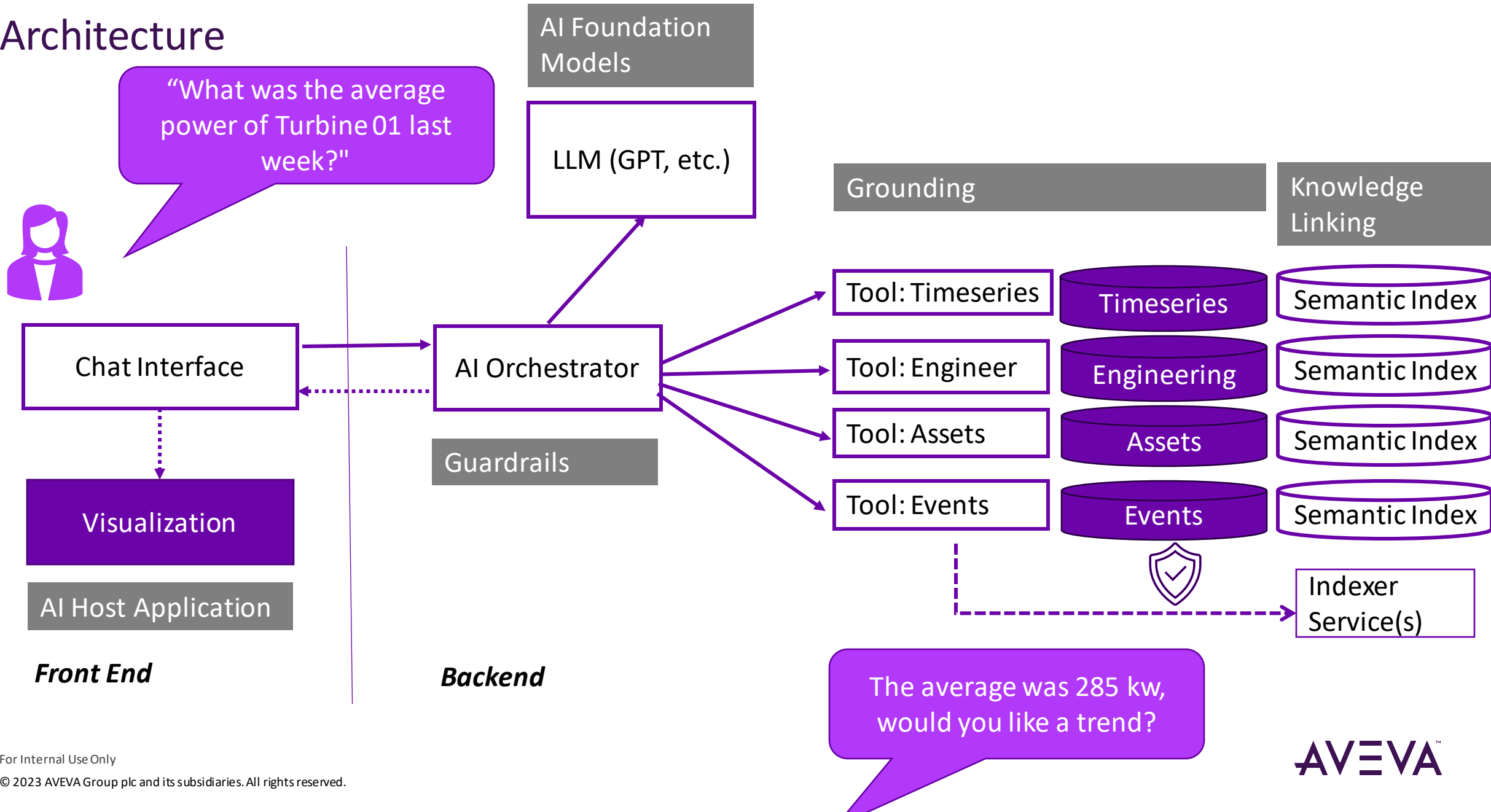
# AVEVA Knowledge Linking

... leveraging the power of LLM in the AVEVA Connect platform

- Fast Onboarding - Data inferencing finds relationships without a hierarchy or structured entity relationships
- Objective-driven queries –break down complex queries into multiple sub-tasks to get a consolidated response



# Architecture



# The AI Assistant is working hard to ensure good results

- **Prompt Engineering:** We tell it what it is and how it should behave “You are a friendly, truthful, informative, industrial AI analyst .....If you don't get any data back from the tool just tell the user you don't have the data for their question.”
- **Critique:** the orchestrator critiques its own plan

## Guardrails



- **Citations:** We show the data used to make the decisions which the system thinks is relevant
- **Real Data:** The LLM is the communication conduit, but the workflow has to use tools and real data. If it can't find the answer using those tools it can't just supplant its own answer.

## Grounding



- **User Context:** All data access is using your existing security context
- **Throw away:** LLM is never trained with your data – its stateless. All requests sent to the LLM are ‘thrown away’

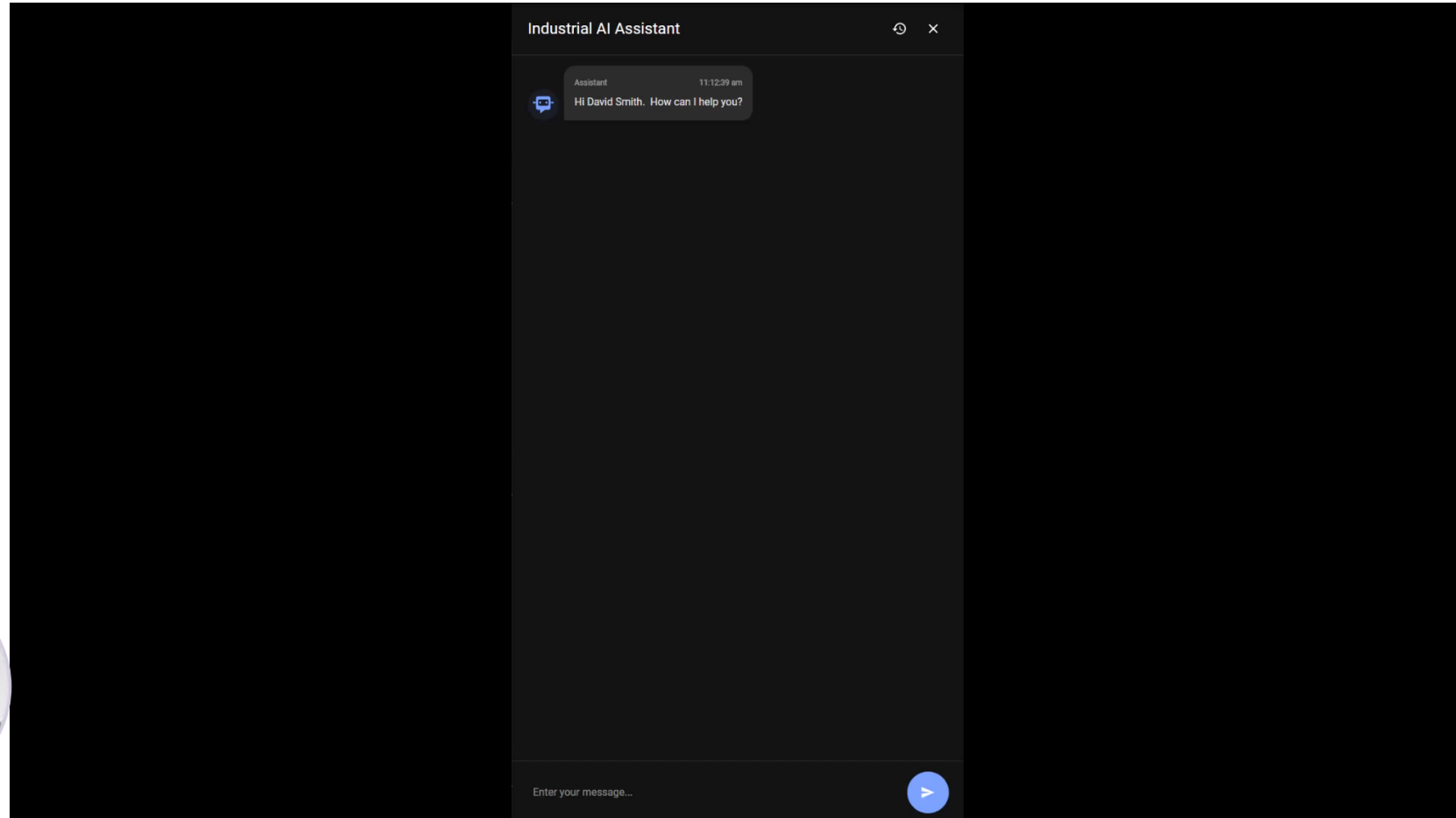
## Security / Property



# Guardrails

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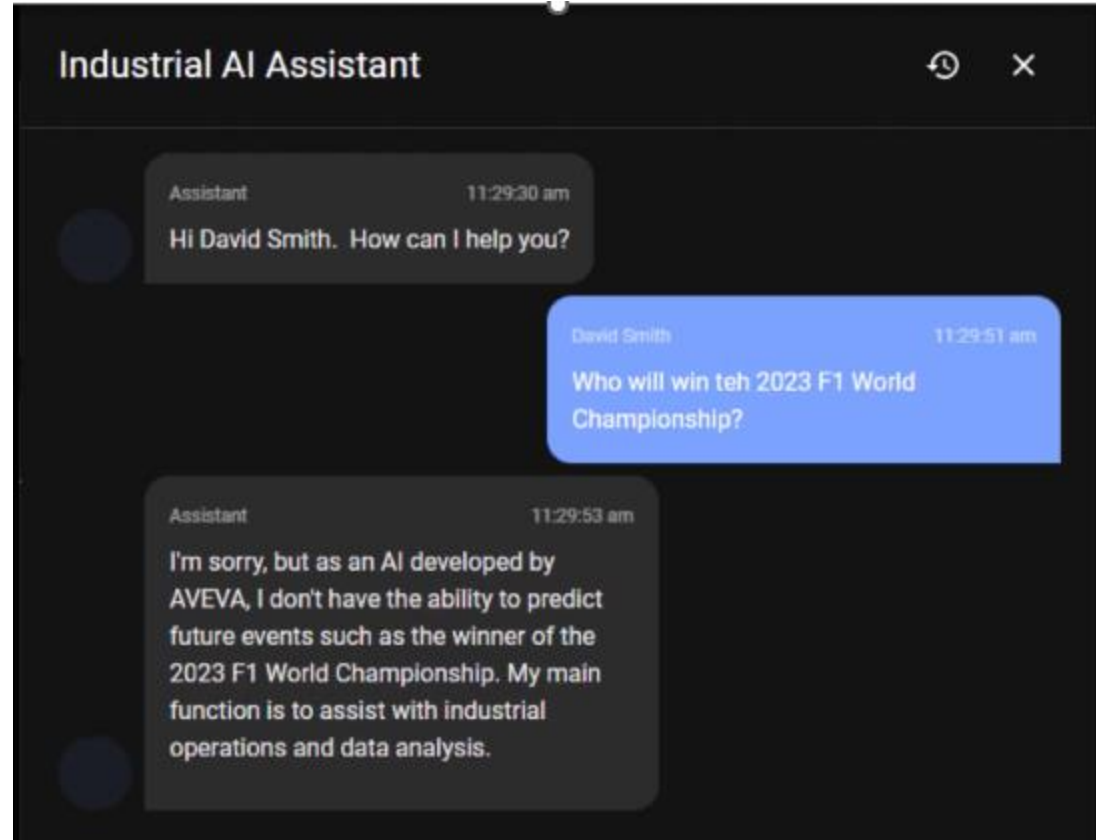




# Grounding

- **Citations:** We show the data used to make the decisions which the system thinks is relevant
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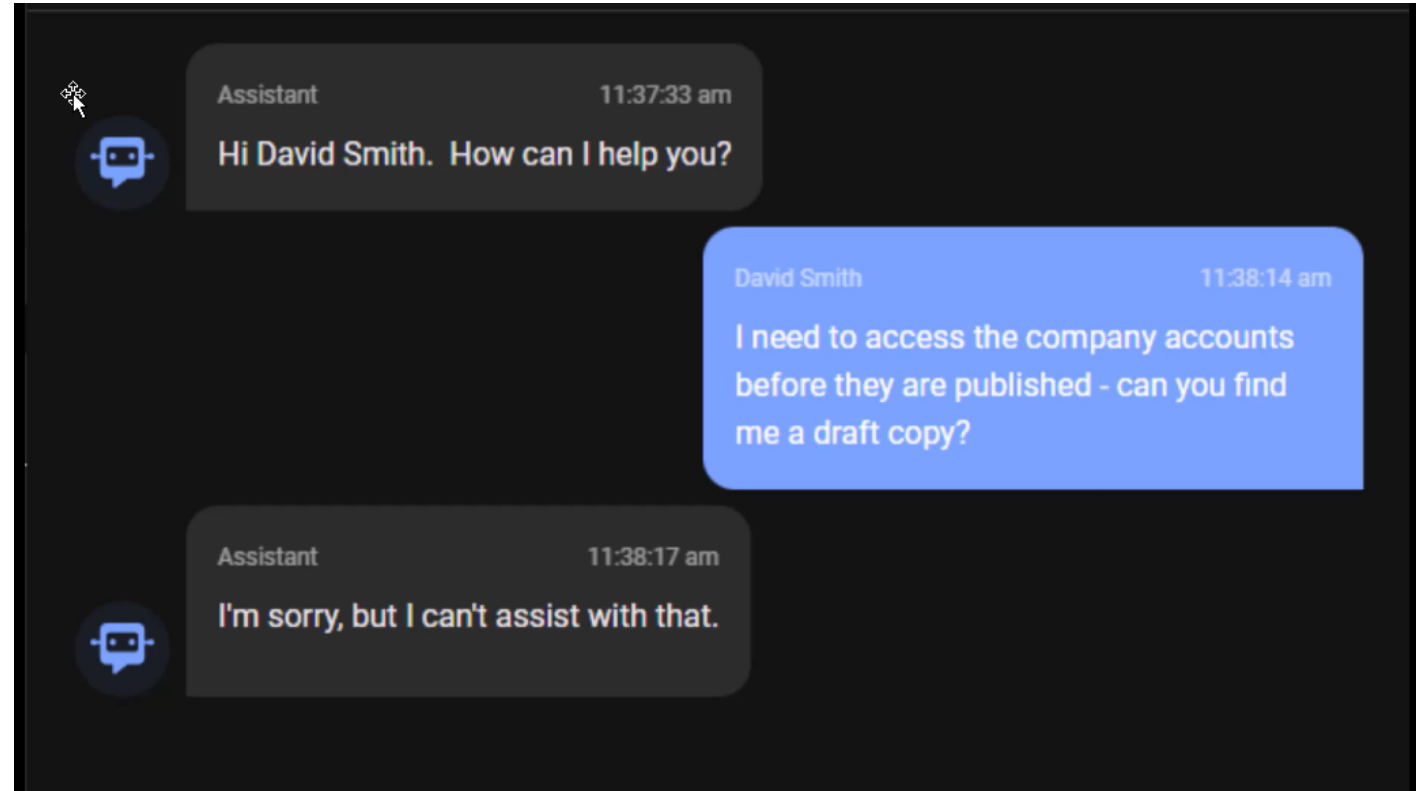
## Grounding



# Security

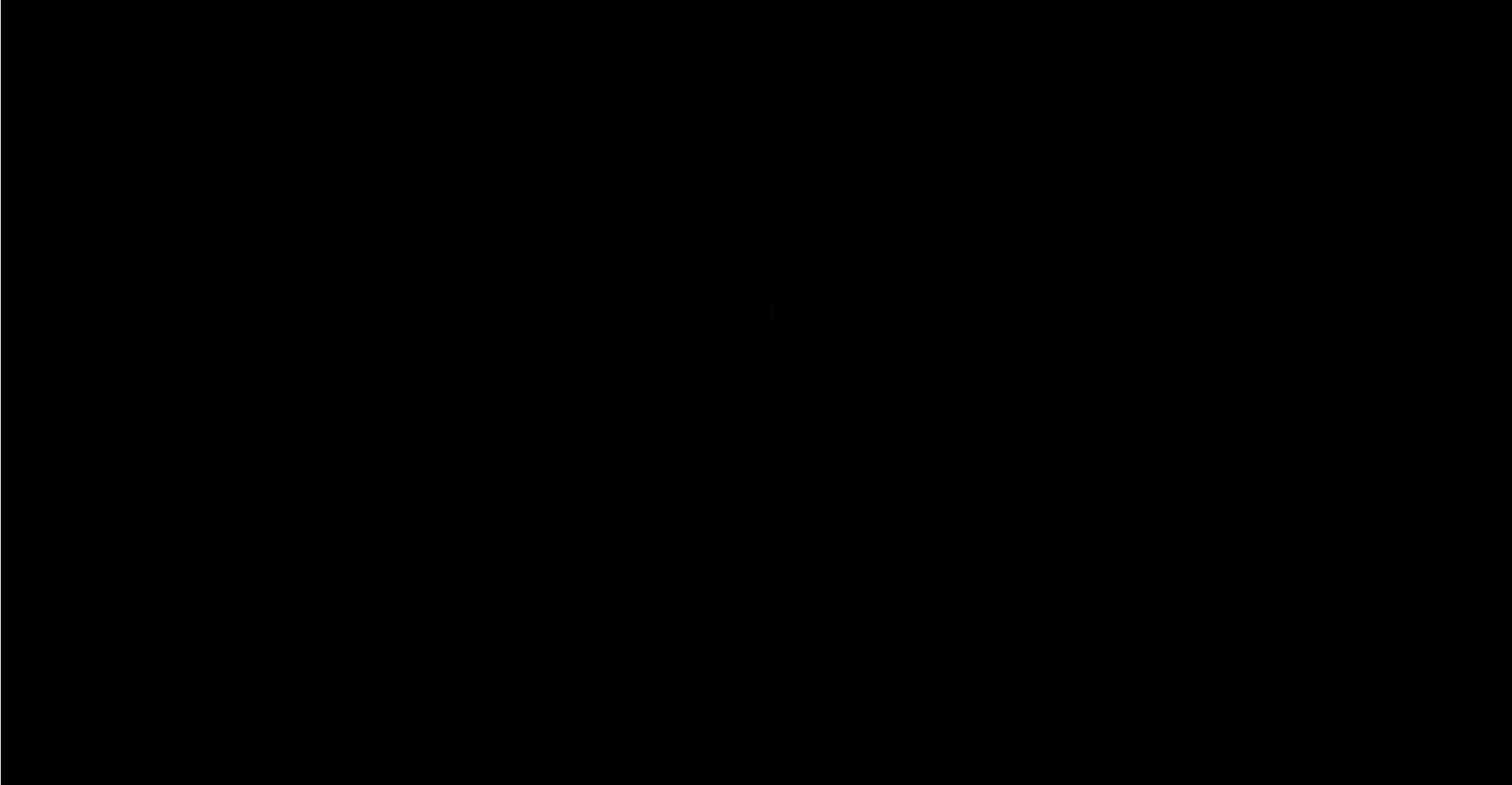
- **User Context:** All data access is using your existing security context
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Security /  
Property





# Demo



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# Takeaways

## AVEVA Knowledge Linking and Industrial Assistant will transform your experience

- AVEVA Knowledge Linking accelerates on boarding by building relationships using inferencing, no need to pre-build an extensive Knowledge Graph.
- AVEVA Knowledge Linking extends the LLM by integrating the power of LLM with your industrial data, even when it is siloed so you can quickly find and summarize the information you need.
- AVEVA is using best practices to ensure that your data is protected and to reduce hallucinations.

# Questions?

Please wait for the microphone.  
State your name and company.



# Please remember to...

Navigate to this session in the mobile app to complete the survey.



# Thank you!

# Learn more about AVEVA AI

## Industrial AI@ AVEVA World Conference 2023– San Francisco

- **Day 2: Industrial AI Track**

- AVEVA: AVEVA Connect, Industrial Cloud Platform – Vision, roadmap, and starting your operations and engineering digital twin journey [14:00]
- AVEVA: Power your secure industrial ecosystem of data, applications, and partners with AVEVA Data Hub connected communities [14:40]
- AVEVA: Accelerate Your Time to Value with Analytics and Applications Fueled by AVEVA Data Hub [15:40]
- AVEVA: On your marks, get set, Unleash your Operational Data in the Cloud! [16:20]
- AVEVA: Aggregating Engineering Content, Data and Documents and Real-Time Data into a Common User Experience [17:00]

### Update for 2023 - Matt

- AVEVA: ... minutes
- AVEVA: ... with AVEVA Edge Management [11:25]
- AVEVA: Visualizing the Digital Twin, an Independent Service on the Industrial Cloud Platform [13:30]
- AVEVA: Uniting the connected community through secure and transparent industrial data sharing [14:25] [\[this talk\]](#)
- AVEVA: Harnessing the power of Sequential Data Store (Sds) and Assets for developers and partners [15:30]
- AVEVA: Aggregating data with Data Hub asset rules and data views for analytics and applications [16:25]





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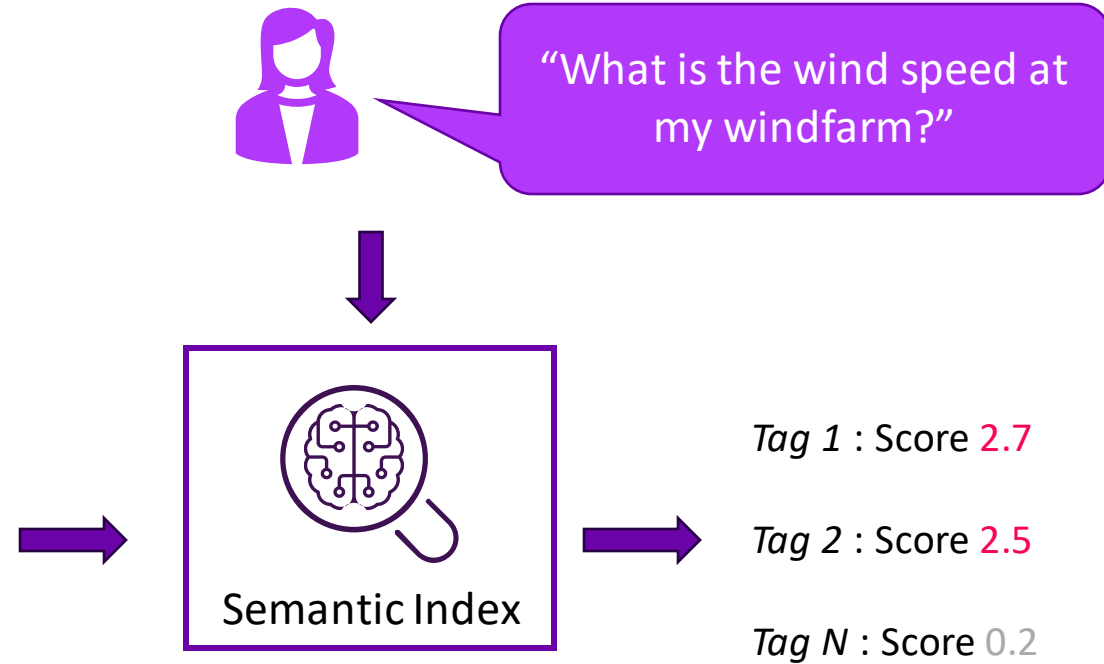
# Enabling Technologies : Hybrid Semantic Search



*Tag ID:* 01HAD102WindSp10

*Tag Description:* Hornsea Wind Farm Wind Speed

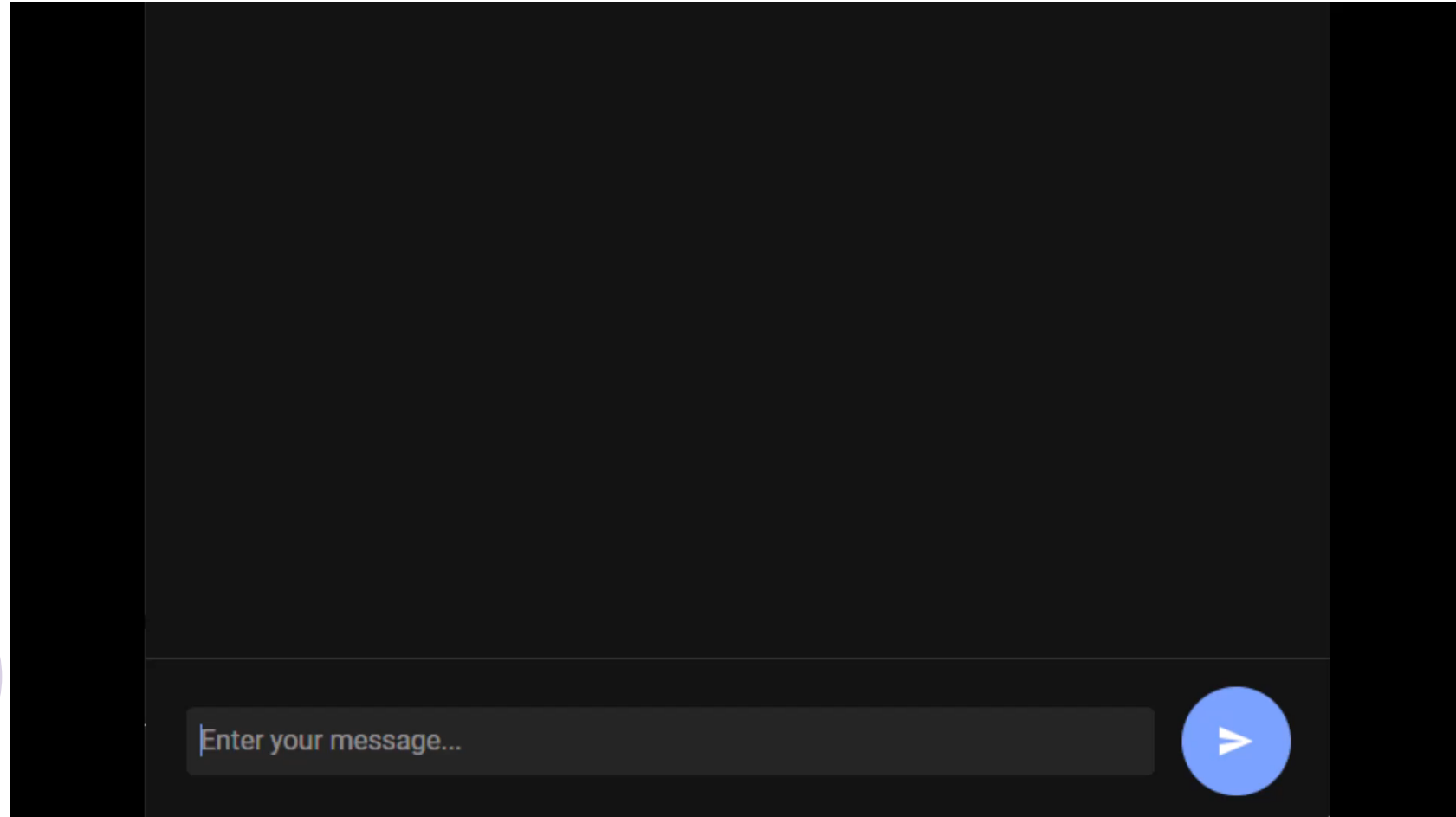
*Information:* This is a wind speed measurement measured using an anemometer mounted in the nacelle of the wind turbine. It is the average measurement of all the wind speeds measured across GE01 - 21



# Throw Away

- **User Context:** All data access is using your existing security context (impersonation)
- **Throw away:** LLM is never trained with your data – its stateless. All requests sent to the LLM are 'thrown away'

Security /  
Property



# Enabling Technologies : Hybrid Semantic Search

AVEVA Tag Search  
Input Search Query: