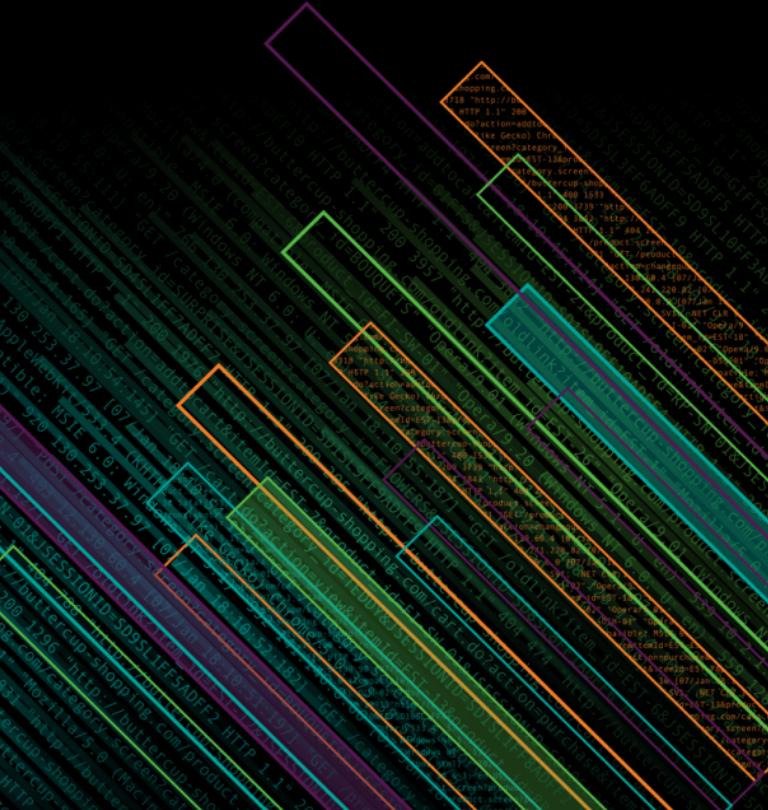


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# Spreading the word: how chat and voice is transforming Retail AI Ops

October 2018 | Version 1.0



# Our Speakers



**JASON PETTIT**

Retail AI Ops, Kohl's



**DIPOCK DAS**

Senior Director, Products, Splunk

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# Introduction





- ▶ Leading omnichannel retailer
  - ▶ Offers amazing private and exclusive brands, incredible savings and easy shopping experience
  - ▶ Founded in 1962
  - ▶ Headquartered near Milwaukee in Menomonee Falls, Wisconsin
  - ▶ More than 1,110 stores in 49 states
  - ▶ 140,000 Associates nationwide



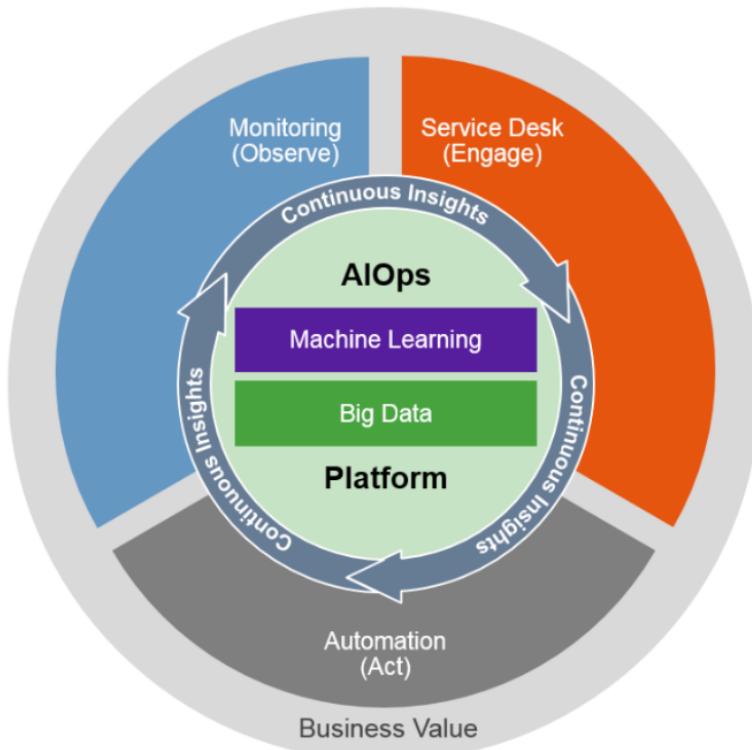
To inspire  
and empower  
families  
to lead  
fulfilled lives

# Technology + splunk®

- ▶ 2012
    - Proof of Concept - Splunk 4.3
  - ▶ 2013 - 2016
    - Deployed Splunk to the enterprise
    - Installed Universal Forwarders on thousands of corporate and store servers
    - Leveraged multiple Splunk apps to onboard data (DB Connect and Stream)
    - Created Center of Excellence within KT
  - ▶ 2017 - Today
    - Moved Splunk infrastructure to Google Cloud
    - 8.5 TB License
    - 20,000+ servers and devices monitored
    - 100 concurrent users per hour / 1000 distinct users

# What is Retail AI Ops?

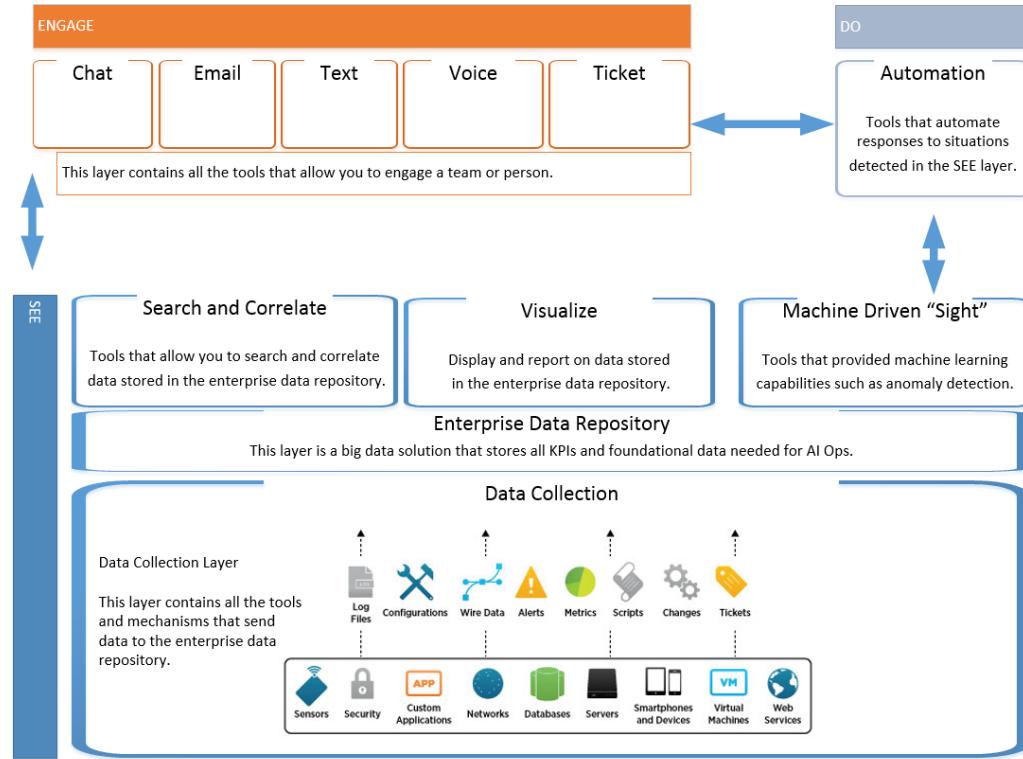
- ▶ See Better
  - Empower teams with real time insight
  - Correlate data across siloed data sources
  - Machine driven “Sight”
  
- ▶ Engage Faster
  - Smart Engagement
    - Right people and teams
    - Before situations occur
  
- ▶ Automation Resolutions
  - Let the machine do the things it is good at



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# How do we do AI Ops?

- ▶ See
  - Splunk is our data repository
- ▶ Engage
  - There is a heavy focus on using chat and leveraging data in Splunk
- ▶ Automation
  - Jarvis - Kohl's Built



# What is Project Natural Language Search?

Project Natural Language Search is a natural language platform for machine data that delivers Natural Language Search, Natural Language Understanding and Natural Language Generation for Splunk and SQL data.



# Natural Language Search



Communicate  
instantly in charts,  
text and voice



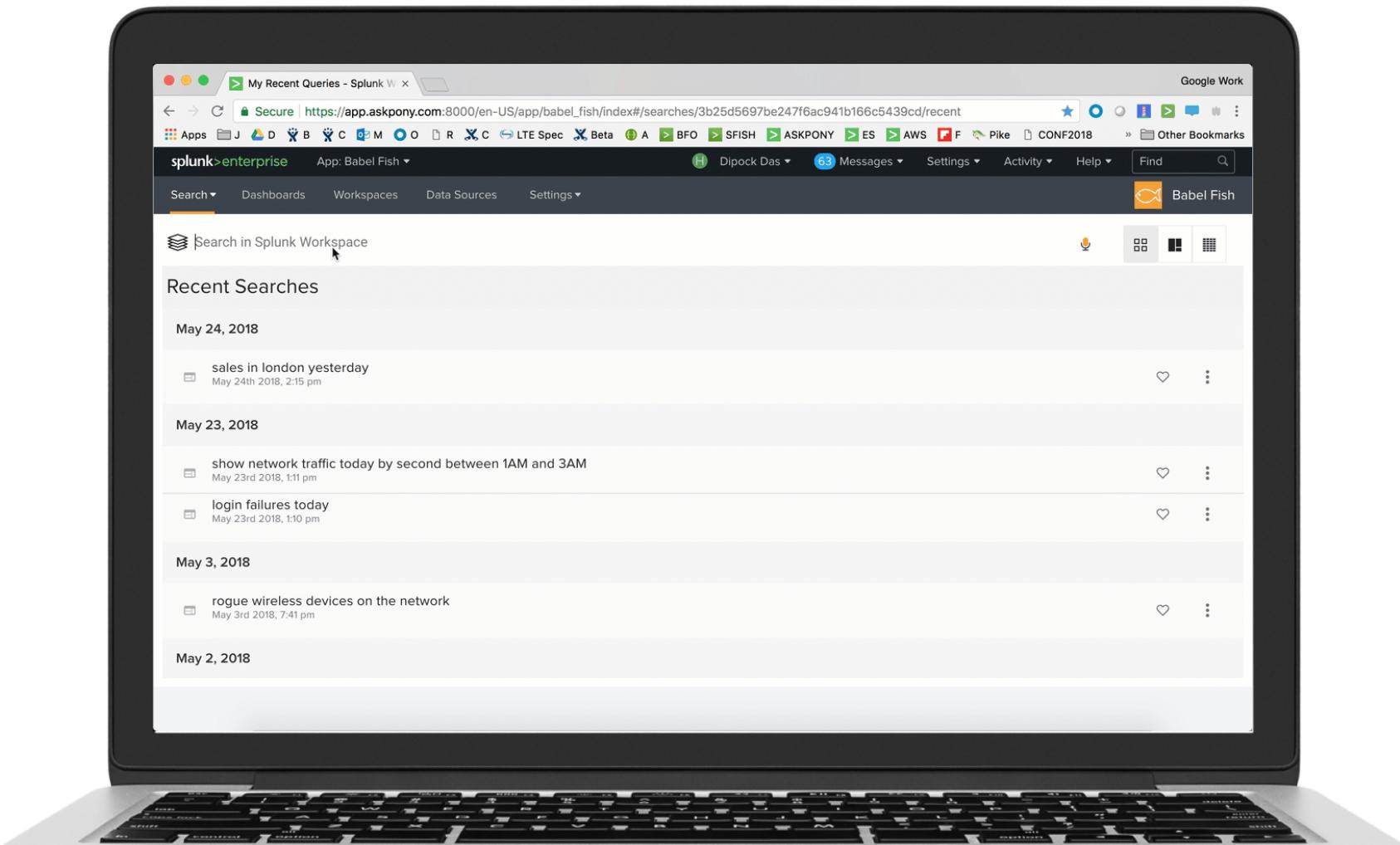
Access anywhere  
with type, touch,  
voice

# What is Natural Language?

How many security incidents in the last hour ?

What were sales  
quarter over  
quarter in 2017?

When will we run out of stock?



# How Project NLS can help Retail



IT



## Sales



# Marketing



Finance



# Shop Floor



# Warehouse



# Maintenance



## Management

# Project NLS @ Kohl's

# Project Natural Language Search POC at Kohl's

Anyone at Kohl's,  
can ask any question about any KPI,  
for any store

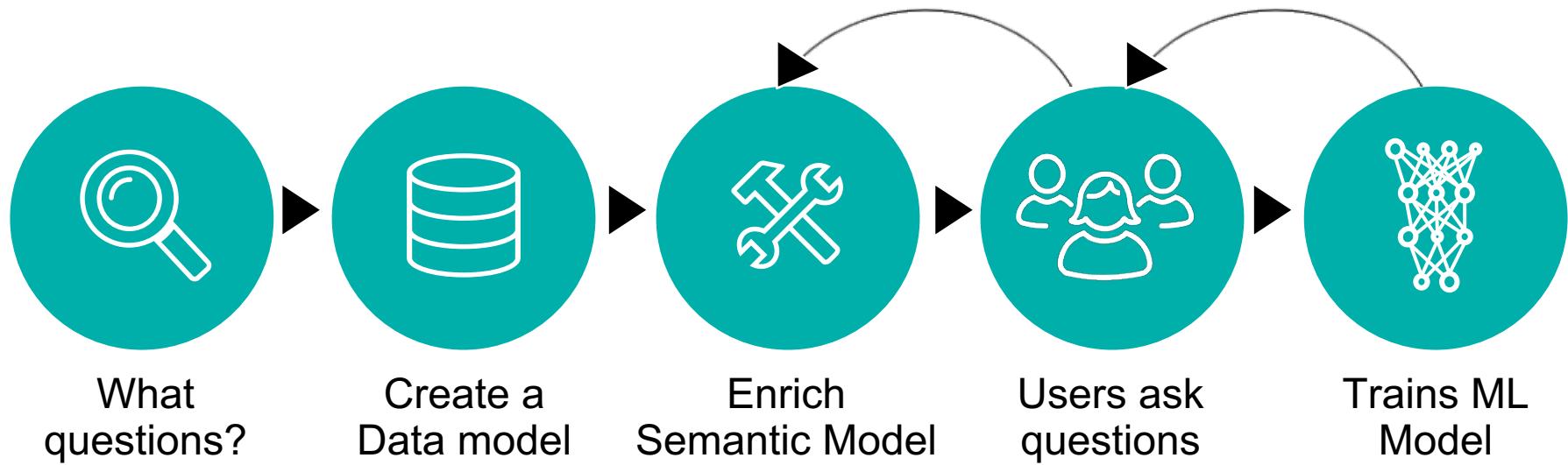
# What we wanted to achieve

1. Give folks access to Splunk data without the need to know SPL
1. Executives being able to ask any type of operational question without the team having to create a query or dashboard
1. Explore voice as the primary means of communication

# Kohl's Business KPIs

- ▶ Point of Sale
  - Payments and Authorizations
- ▶ WIFI Network Health in the Stores
  - Finding dead spots in the store
  - Network Metrics (6 metrics, data pulled into Splunk on a 5 minute interval.  
Signal strength: Poor/Good/Better/Best )
- ▶ Handheld Devices (WIFI)
  - Associates check prices on devices for customers
  - Pick up in store - process a customer online order/pickup
- ▶ End user compute - servers and registers used to process transactions in the store
- ▶ Signing
  - Displaying offers to customer
  - Refreshing the offers on a regular basis

# From raw data to insights - simple steps to NLQ



# Data models created for the Proof of Concept

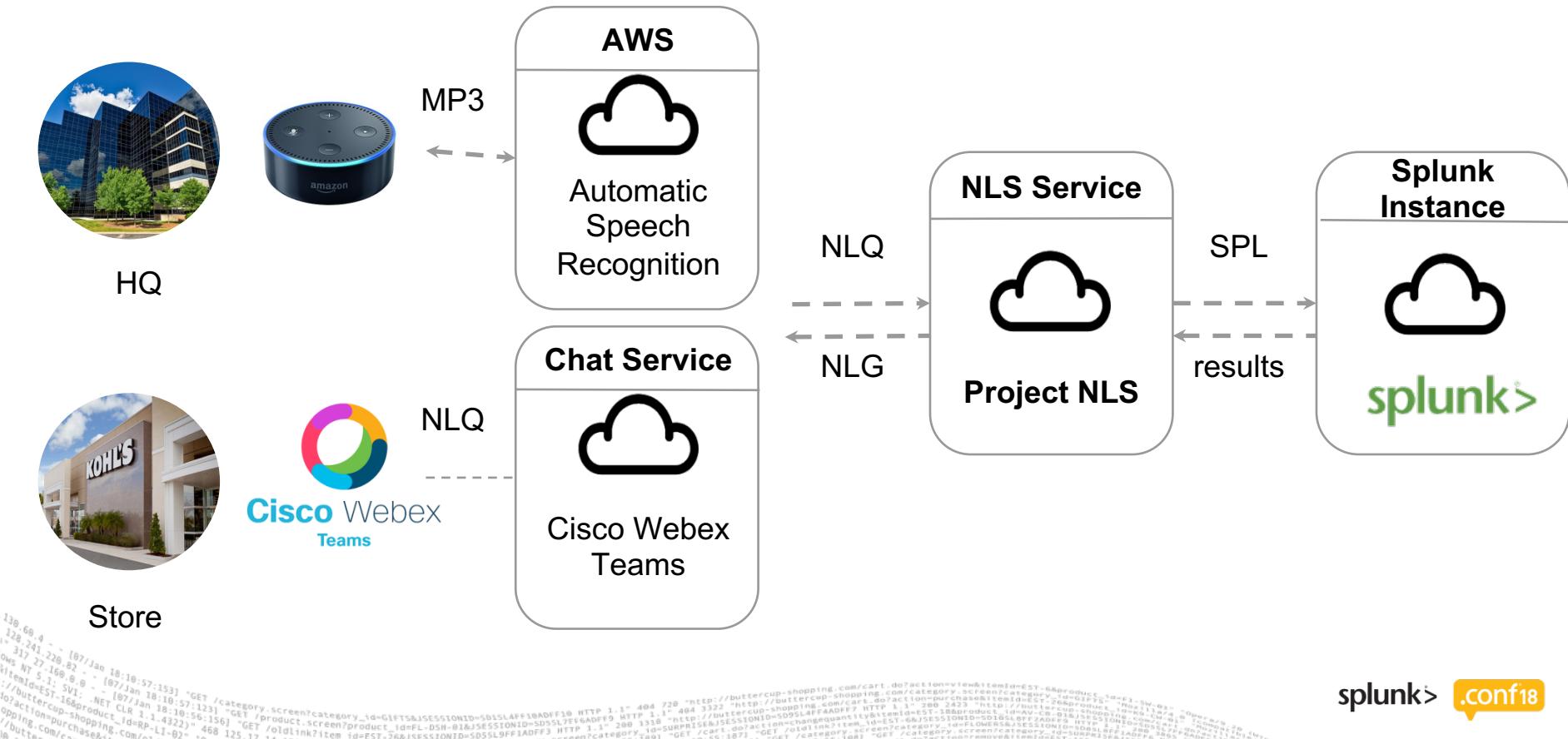
- ▶ Two models created
  - ▶ Kohls
    - Payment Authorization
    - Mainly for initial tests
  - ▶ KohlsMetrics
  - ▶ Used sample data (not live) to populate the data model

BASE SEARCH		
EXTRACTED		
_time	Time	Required
city	String	
date_hour	Number	
date_mday	Number	
date_minute	Number	
date_month	String	
date_second	Number	
date_wday	String	
date_year	Number	
date_zone	Number	
eventtype	String	
host	String	
index	String	
info_max_time	Number	
info_min_time	Number	
info_search_time	Number	
linecount	Number	
metric	String	
search_name	String	
search_now	Number	
source	String	
sourcetype	String	
splunk_server	String	
splunk_server_group	String	
state	String	
status	String	
store_number	Number	
tag	String	
tag:eventtype	String	
timeendpos	Number	
timestartpos	Number	
value	Number	

# Enrich the semantic model in the Ontology Workbench

metric	value	flagship	store	from	July 10th 2018	to	July 16th 2018
<b>metric</b>	<b>value</b>	<b>flagship</b>	<b>store</b>	<b>from</b>	<b>July 10th 2018</b>	<b>to</b>	<b>July 16th 2018</b>
<p>This word is a synonym for an Entity</p> <p>SELECT</p> <p>metric</p> <p>Type: Attribute</p> <p>Entity Name: Kohls Metrics</p> <p>Data Type: string</p> <p>Name: Metric</p> <p>Natural Type: String</p> <p>Format:</p> <p>Fixed Value: <input checked="" type="checkbox"/></p> <p>Synonyms: Enter a synonym</p>	<p>This word is a synonym for an Attribute</p> <p>SELECT</p> <p>value</p> <p>Type: Attribute</p> <p>Entity Name: Kohls Metrics</p> <p>Data Type: string</p> <p>Name: Value</p> <p>Natural Type: String</p> <p>Format:</p> <p>Fixed Value: <input checked="" type="checkbox"/></p> <p>Synonyms: Enter a synonym</p>	<p>I don't know! Can you suggest?</p> <p>SELECT</p> <p>flagship</p> <p>Not Understood</p>	<p>This word is a value</p> <p>SELECT</p> <p>store</p> <p>Type: Attribute</p> <p>Entity Name: Kohls Metrics</p> <p>Data Type: number</p> <p>Name: Store</p> <p>Natural Type: Number</p> <p>Format:</p> <p>Fixed Value: <input checked="" type="checkbox"/></p> <p>Synonyms: Enter a synonym</p>	<p>from</p> <p>SELECT</p> <p>from</p> <p>Type: Data</p> <p>Value: july 10th 2018</p> <p>Entity Name: Virtual Entity</p> <p>Attribute Name: Kohls Metrics Time DATE</p> <p>MadeOf: _time (KohlsMetrics)</p>	<p>July 10th 2018</p> <p>Understood</p> <p>Type: Data</p> <p>Value: july 10th 2018</p> <p>Entity Name: Virtual Entity</p> <p>Attribute Name: Kohls Metrics Time DATE</p> <p>MadeOf: _time (KohlsMetrics)</p>	<p>to</p> <p>SELECT</p> <p>to</p> <p>Type: Data</p> <p>Value: july 16th 2018</p> <p>Entity Name: Virtual Entity</p> <p>Attribute Name: Kohls Metrics Time DATE</p> <p>MadeOf: _time (KohlsMetrics)</p>	<p>July 16th 2018</p> <p>Understood</p> <p>Type: Data</p> <p>Value: july 16th 2018</p> <p>Entity Name: Virtual Entity</p> <p>Attribute Name: Kohls Metrics Time DATE</p> <p>MadeOf: _time (KohlsMetrics)</p>

# Deployed components (ideal end state)



# Demo

# Where next?

- ▶ Give access to more users for use during the peak season
  - lowered the barrier to address different needs of the users
  - no longer a need for a developer to create a dashboard
- ▶ Cisco WebEx Teams
  - Currently POC - need it as a product
- ▶ Alexa

# Open Questions

- ▶ Security
  - Simple authentication and setup for third party services
- ▶ Architecture
  - what is the final deployment architecture
- ▶ Integration with other services

# Key Takeaway

Opens up access to the data for anyone to ask questions that meet their requirements

# Other sessions

**Machine Learning & Natural Language Processing at BMW (FN1199)**

11:30 today

**How we use machine learning in Project Natural Language Search (FN1629)**

11:00 tomorrow

**Ask Splunk! Using natural language, voice and chat with Project Natural Language Search (FN1615)**

12:15 tomorrow

# Get Project Natural Language Search

- Contact
  - Dipock Das - [dipock@splunk.com](mailto:dipock@splunk.com)
  - Melissa Gannes - [mgannes@splunk.com](mailto:mgannes@splunk.com)

# Thank You

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