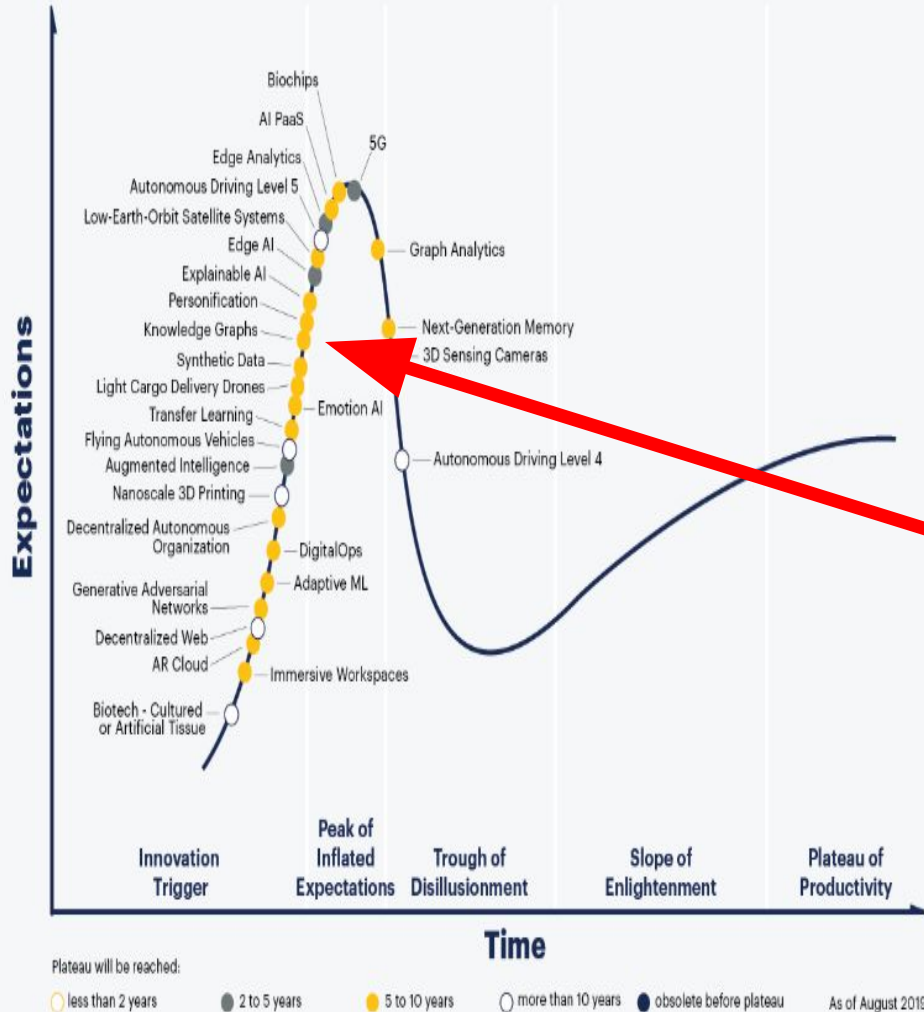# Knowledge Graphs @ Franz

Dr. Jans Aasman
(allegrograph.com)

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Adoption of "Knowledge Graphs" amazing

- But good luck trying to find a definition on the web that is not ideology or vendor based or very application specific.
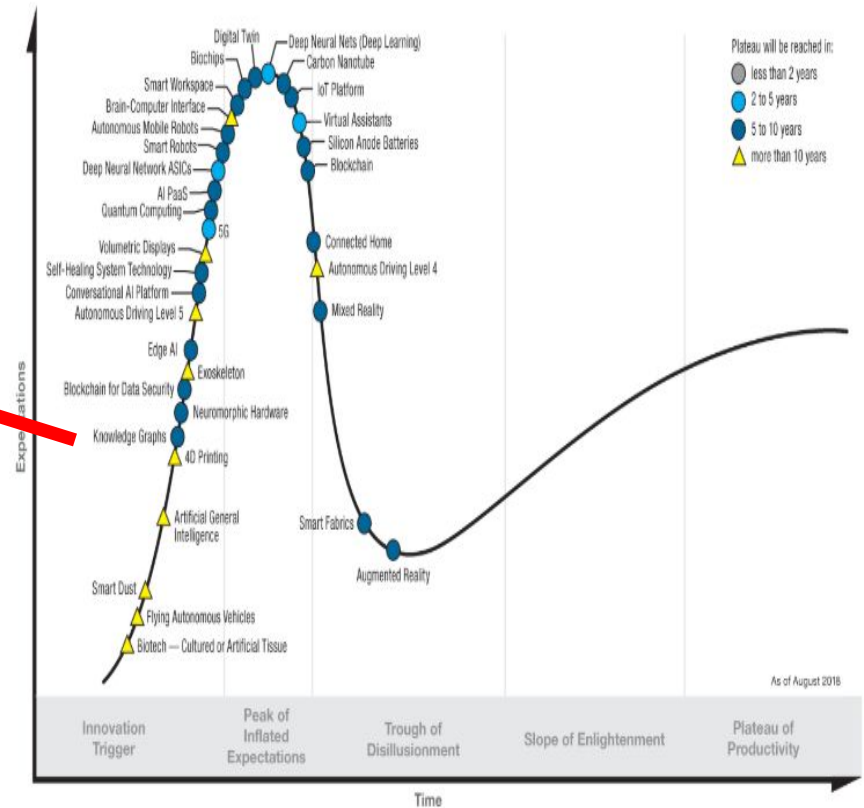
Gartner Hype Cycle for Emerging Technologies, 2019

Expectations / **Time**

Biochips
AI PaaS
5G
Edge Analytics
Autonomous Driving Level 5
Low-Earth-Orbit Satellite Systems
Edge AI — Graph Analytics
Explainable AI
Personification
Knowledge Graphs — Next-Generation Memory
Synthetic Data — 3D Sensing Cameras
Light Cargo Delivery Drones
Transfer Learning — Emotion AI
Flying Autonomous Vehicles
Augmented Intelligence — Autonomous Driving Level 4
Nanoscale 3D Printing
Decentralized Autonomous Organization — DigitalOps
Generative Adversarial Networks — Adaptive ML
Decentralized Web
AR Cloud — Immersive Workspaces
Biotech - Cultured or Artificial Tissue

Innovation Trigger | Peak of Inflated Expectations | Trough of Disillusionment | Slope of Enlightenment | Plateau of Productivity

Plateau will be reached:
○ less than 2 years ● 2 to 5 years ● 5 to 10 years ○ more than 10 years ● obsolete before plateau   As of August 2019

Hype Cycle for Emerging Technologies, 2018

Digital Twin — Deep Neural Nets (Deep Learning)
Biochips — Carbon Nanotube
Smart Workspace — IoT Platform
Brain-Computer Interface
Autonomous Mobile Robots — Virtual Assistants
Smart Robots — Silicon Anode Batteries
Deep Neural Network ASICs — Blockchain
AI PaaS
Quantum Computing
Volumetric Displays — Connected Home
5G
Self-Healing System Technology — Autonomous Driving Level 4
Conversational AI Platform
Autonomous Driving Level 5 — Mixed Reality
Edge AI
Blockchain for Data Security — Exoskeleton
Neuromorphic Hardware
Knowledge Graphs
4D Printing
Artificial General Intelligence — Smart Fabrics
Smart Dust — Augmented Reality
Flying Autonomous Vehicles
Biotech — Cultured or Artificial Tissue

Innovation Trigger | Peak of Inflated Expectations | Trough of Disillusionment | Slope of Enlightenment | Plateau of Productivity

Plateau will be reached in:
○ less than 2 years ● 2 to 5 years ● 5 to 10 years △ more than 10 years

As of August 2018

All the big ones in the US heavily investing in it

| Day 1			
9:00	Christos Boutsidis	Goldman Sachs	Pythia: the Goldman Sachs Social Graph
9:20	Patricia Branum	Capital One	Knowledge Graph Pilot Improves Data Quality While Providing a Customer 360 View
9:40	David Newman	Wells Fargo	Knowledge Graphs and AI: The Future of Financial Data
10:00	Tim Baker	Refinitiv	Financial Crime
break 10:20 - 11:00	Coffee and snacks will be provided		
11:00	Denny Vrandecic	Google AI	Wikidata, Knowledge Graphs, and Beyond
11:20	Pierre Haren	Causality Link	Graphs
11:40	Dieter Fensel	OnLim	Talking Knowledge Graphs
12:00	Chris Brockmann	Eccenca	Knowledge Graph for Digital Transformation in the Supply-Chain
12:20	Tom Plasterer	Astrazeneca	FAIR Data Knowledge Graphs – From Theory to Practice
lunch 12:40 - 1:40	A light lunch will be provided		
1:40	Subhabrata Mukherjee	Amazon	Deep Learning for Knowledge Extraction and Integration to build the Amazon Product Graph
2:00	Teresa Tung	Accenture	Using a Domain Knowledge Graph to Manage AI at Scale
2:20	Alfio Gliozzo	IBM Research	Extending Knowledge Graphs using Distantly Supervised Deep Nets
2:40	Michael Tung	Diffbot	Knowledge Graphs for AI
break 3:00 - 3:30	Coffee and snacks will be provided		
3:30	Xiaoya Wei	Airbnb	Knowledge Graph at Airbnb
3:50	Amy Hodler	Neo4j	A Real-World Guide to Building Your Knowledge Graphs
4:10	Juan F. Sequeda	Capsenta	Designing and Building Enterprise Knowledge Graphs from Relational Databases in the Real V
4:30	Ron Snyder	ITHAKA / JSTOR	Why Wikibase? Why not?
4:50	Sören Auer	TIB	Creating a knowledge graph based Enterprise Data Innovation Architecture

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We build KGs or help others build their KG

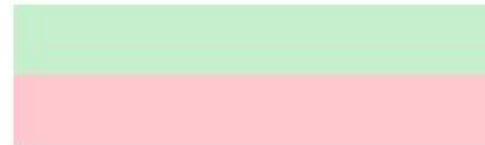We see two categories of Knowledge Graphs, nearly always mixed

[1] Very data driven enterprise knowledge graphs, mostly structured data

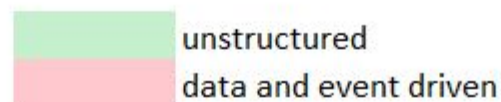[2] More content oriented unstructured data dependent on NLP

Chomsky Knowledge Graph
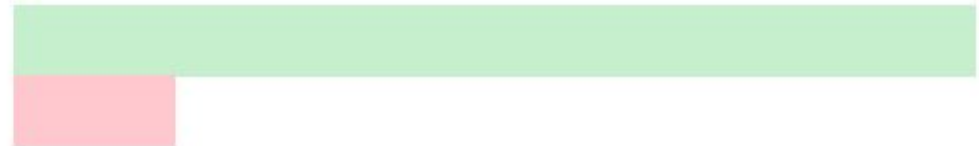
N3 Call Center Knowledge Graph

Montefiore Patient Knowledge Graph

unstructured

data and event driven

The Chomsky Knowledge Graph

Overall Goal

- Preserve Chomsky's legacy

Practical

- Make it easy for journalists, students, researchers, strategists and politicians to navigate his work

From our technical point of view

- Build an infrastructure for personal knowledge graphs for important public figures.

Chomsky Legacy Project

SEMANTIC WEB COMPANY
linking data to knowledge

INTERNET ARCHIVE

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More than a 1000 books and articles

NOAM CHOMSKY
MEDIA CONTROL
The Spectacular Achievements of Propaganda
2ND EDITION

"THE ROLE OF THE MEDIA IN CONTEMPORARY POLITICS FORCES US TO ASK: WHAT KIND OF A WORLD AND WHAT KIND OF A SOCIETY WE WANT TO LIVE IN, AND IN PARTICULAR, IN WHAT SENSE OF DEMOCRACY DO WE WANT THIS TO BE A DEMOCRATIC SOCIETY?...

Media Control

THE SPECTACULAR ACHIEVEMENTS OF PROPAGANDA
By **NOAM CHOMSKY**

Part of **Open Media Series**
Category: **Domestic Politics**

Paperback		−
Paperback		BUY
Sep 03, 2002 | 112 Pages		

Ebook	+

Audio	+

*This title is not eligible for purchase to earn points nor for redemption with your code in the
Reader Rewards program

ABOUT *MEDIA CONTROL*

Noam Chomsky's backpocket classic on wartime propaganda and opinion control begins by asserting two models of democracy—one in which the public actively participates, and one in which the public is manipulated and controlled. According to Chomsky, "propaganda is to democracy as the bludgeon is to a totalitarian state," and the mass media is the primary vehicle for delivering propaganda in the United States. From an examination of how Woodrow Wilson's Creel Commission "succeeded, within six months, in turning a pacifist population into a hysterical, war-mongering population," to Bush Sr.'s war on Iraq, Chomsky examines how the mass media and public relations industries

ALSO IN OPEN MEDIA SERIES

ANGELA Y. DAVIS
ABOLITION DEMOCRACY
BEYOND EMPIRE, PRISONS, AND TORTURE

MICHAEL McCAUGHAN
THE BATTLE OF VENEZUELA
VOTA
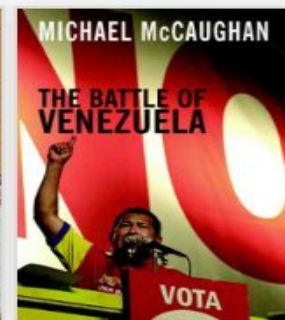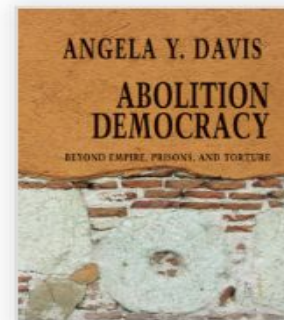
Creating a taxonomy with professionals and volunteers

Books, chapters and articles, paragraphs, concepts, co-occurrences and odds-ratios, linked open data, similarities
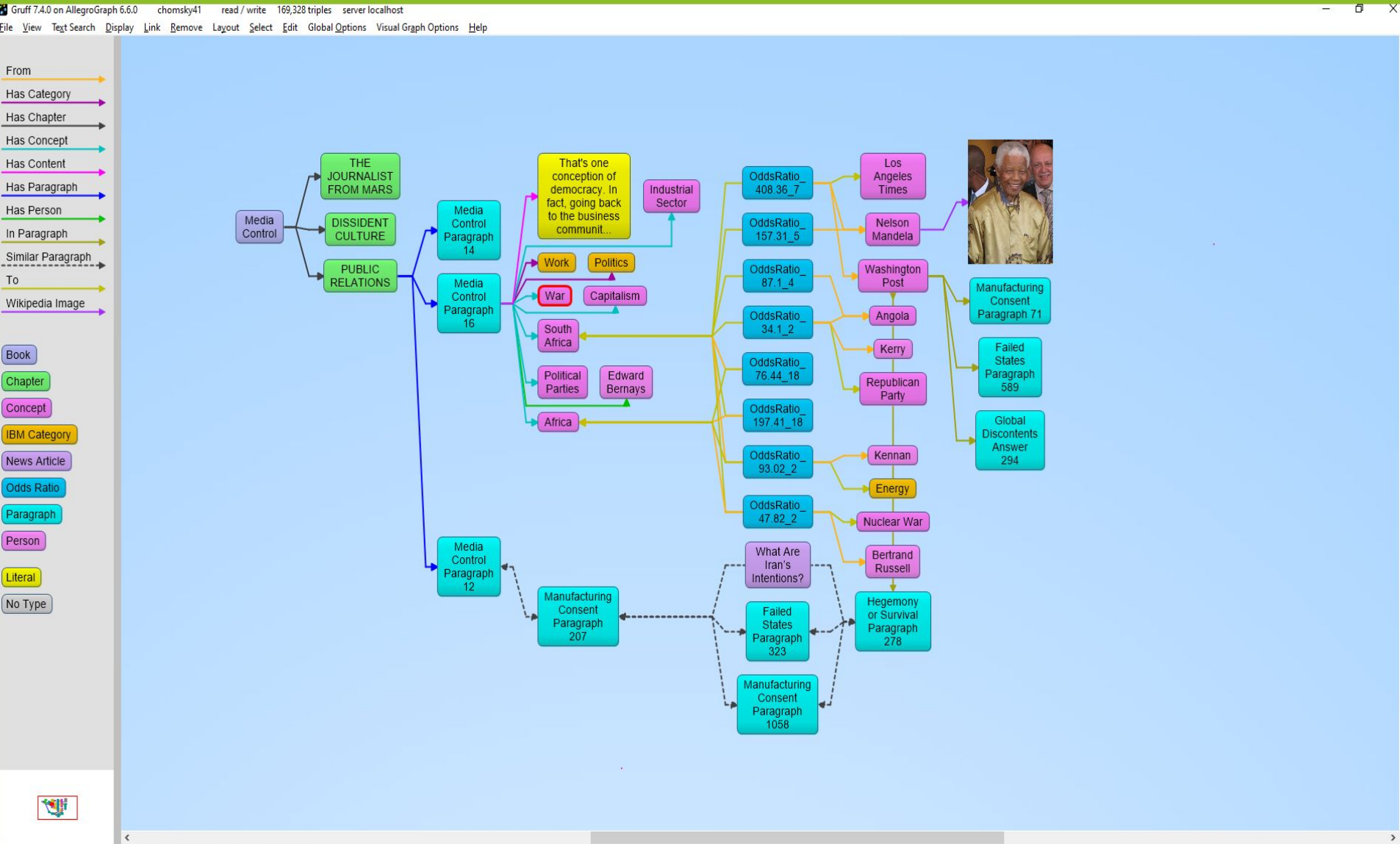
An event based knowledge graph in healthcare

SOLUTION BRIEF

Healthcare and Life Sciences
Data Analytics Solutions

(intel®)

Montefiore Creates Data Analytics Platform to Advance Patient Care

Addressing value-based healthcare with Intel® Xeon® processors and Franz AllegroGraph*
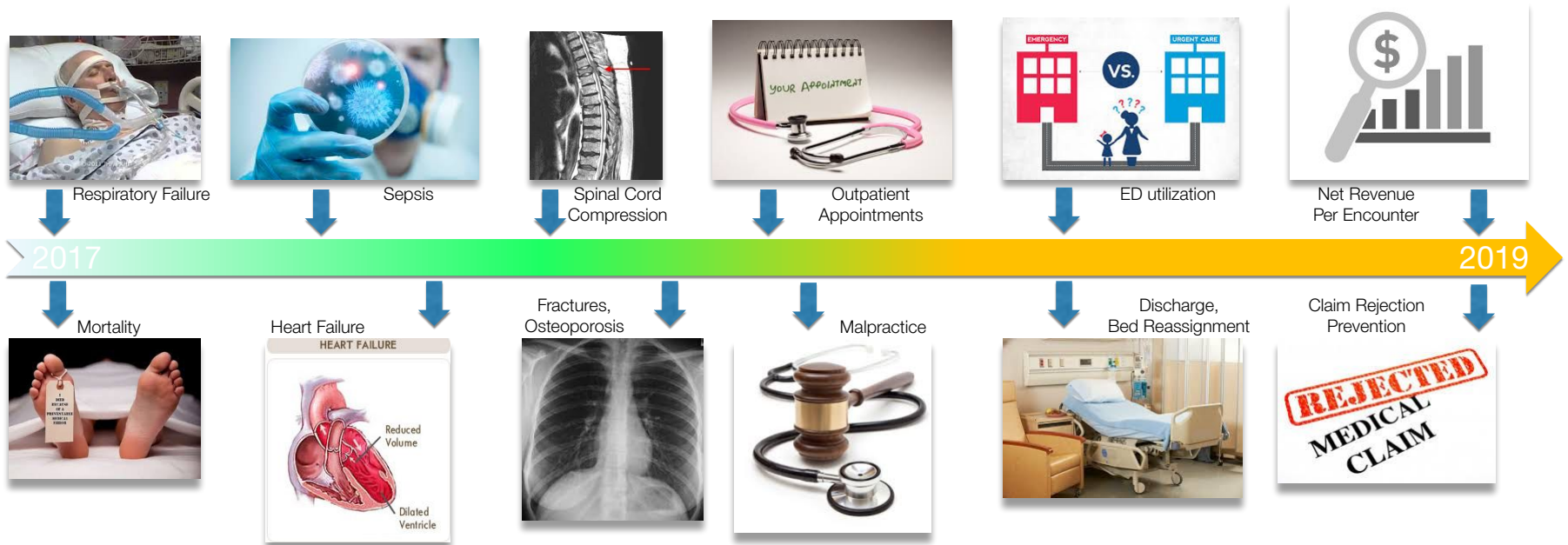
Challenge

Located in the Bronx, Montefiore Health System serves one of the most ethnically and socioeconomically diverse populations in the US. The complex includes the Montefiore Medical Center, the Albert Einstein College of Medicine, and a research facility. Unlike a pay-per-service model, as an accountable care organization Montefiore delivers value based on patients' long-term health—during their hospital or clinic visit and after they return to the community.
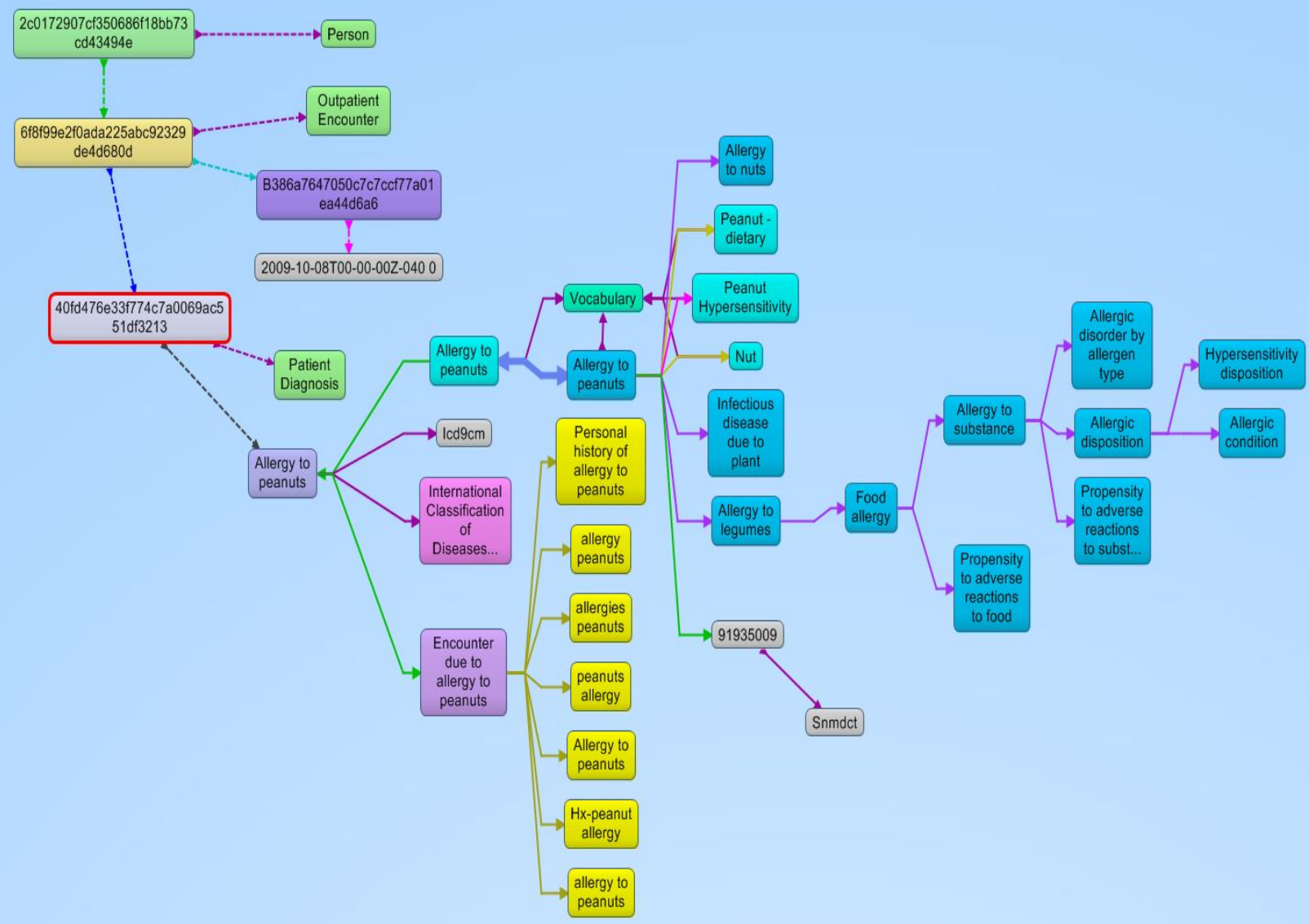
Knowledge Graph Roadmap in Montefiore

- Developed using grant funding (NHLBI, PCORI, and ICTR) and Intel/Franz collaboration
- Fully integrated with Epic, and hosted by MIT Data Center.
- Go-Live January 2017 with Respiratory Failure and Mortality Prediction ☐ Prevention
- C: Sepsis, HF, Spinal Cord Compression (etc) all with **associated ROI**
- Wide and multi-disciplinary spectrum of applications confirms a **platform** approach

Respiratory Failure · Sepsis · Spinal Cord Compression · Outpatient Appointments · ED utilization · Net Revenue Per Encounter

2017 — 2019

Mortality · Heart Failure · Fractures, Osteoporosis · Malpractice · Discharge, Bed Reassignment · Claim Rejection Prevention

EINSTEIN
Albert Einstein College of Medicine

Montefiore
DOING MORE

N3 Experience + Overview

Global partner with over a decade of generating significant revenue impact for leading technology and software clients

- Sales Skillset + Mindset + Culture
- Integrated End-To-End Sales Capabilities
- Technology + Software Focused (Cloud)
- Corporate + Partner Ecosystems Expertise
- Strategy + Design + Execution
- Proprietary Technology Platforms
- Atlanta (USA) HQ + 12 Global Offices
- SiriusDecisions Premier Partner
- 12+ year Track Record of Growth

N3 Regional Delivery Centers
N3 In-Country Resources
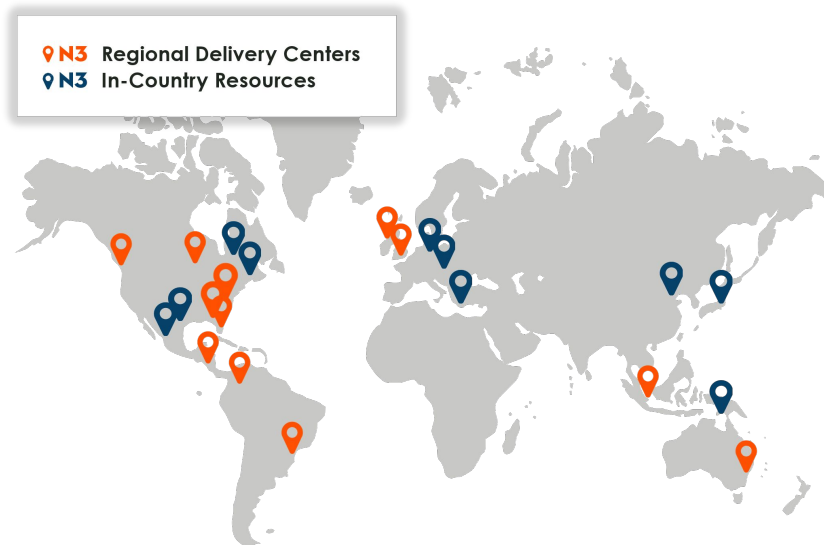
N3 - Sales Cycle Foundational Shared Taxonomy

Hierarchy of SALES concepts and terms

This application is where the Taxonomies are created – these are built to the W3C SKOS industry standard

Synonyms, Broader, Narrower, Related concepts and terms

N3 – Cisco Specific Products Taxonomy
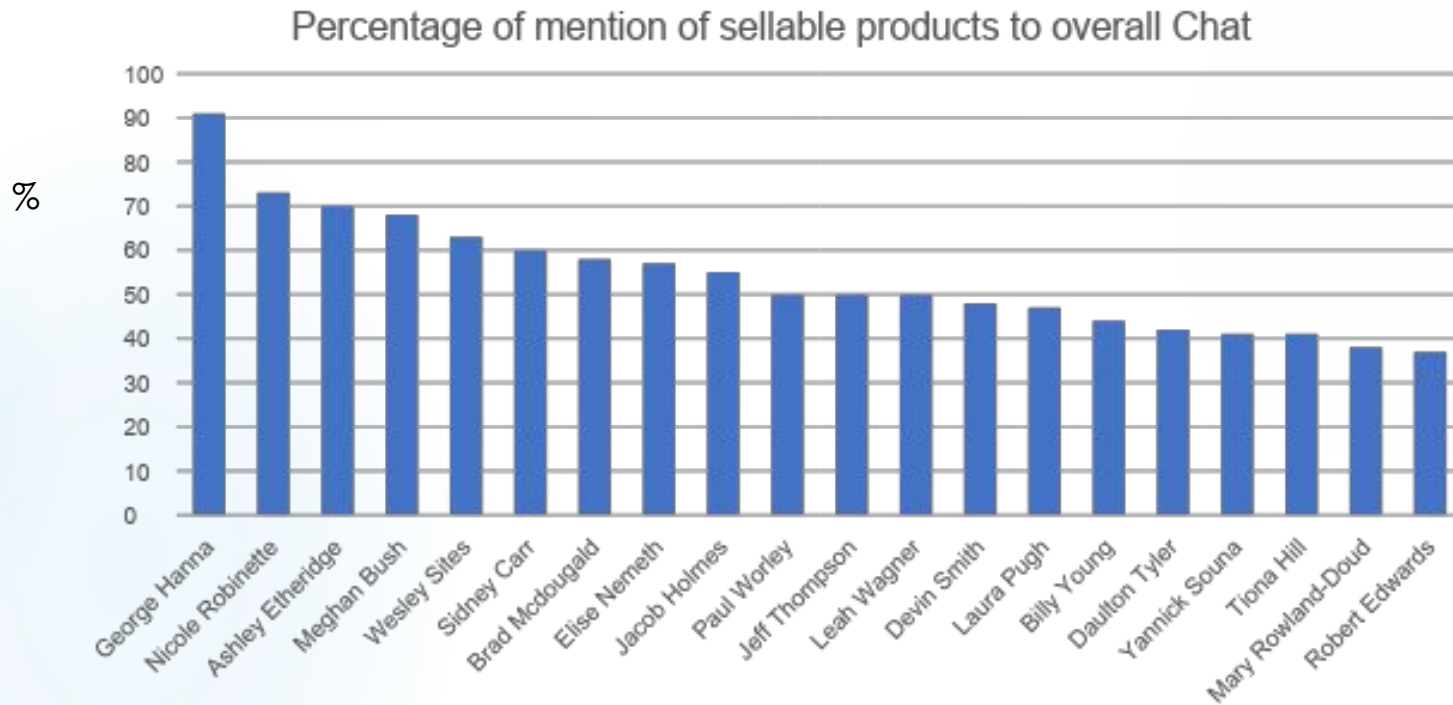

Hierarchy of Cisco Product concepts and terms

Synonyms, Broader, Narrower, Related concepts and terms

Query Results
Some BDR agents talk more about sellable/SKUs than others

Percentage of mention of sellable products to overall Chat

%

Query Results
"Who is the most experience on Product X?"

```
"SFP Module" -------------       "SX 20" -----------------
| name             | c |         | name            | c  |
==========================       ==========================
| Leah Wagner      | 60 |        | Yannick Souna   | 13 |
| Tiona Hill       | 45 |        | Daulton Tyler   | 12 |
| Brad Mcdougald   | 45 |        | Brad Mcdougald  | 9  |
| Jeff Thompson    | 45 |        | Tiona Hill      | 9  |
| Daulton Tyler    | 42 |        | Jeff Thompson   | 8  |
| Paul Worley      | 41 |        | Billy Young     | 7  |
| Yannick Souna    | 40 |        | Paul Worley     | 7  |
| Laura Pugh       | 34 |        | Mary Rowland-Doud | 6 |
| Billy Young      | 33 |        | Leah Wagner     | 6  |
| Devin Smith      | 28 |        | Sidney Carr     | 5  |
| Mary Rowland-Doud | 28 |       | Devin Smith     | 4  |
| Sidney Carr      | 25 |        | Nicole Robinette | 4 |
| Ashley Etheridge | 21 |        | Ashley Etheridge | 4 |
| George Hanna     | 19 |        | Laura Pugh      | 4  |
| Wesley Sites     | 14 |        --------------------------
| Meghan Bush      | 12 |
| Nicole Robinette | 12 |
| Elise Nemeth     | 11 |
| Robert Edwards   | 8  |
| Jacob Holmes     | 7  |
--------------------------
```

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Query Results- Chat Sentiment – AI deduced
Some BDR agents are more positive than others

Number of Negative, Neutral and Positive Chats   Ratio of Positive to Negative Chats
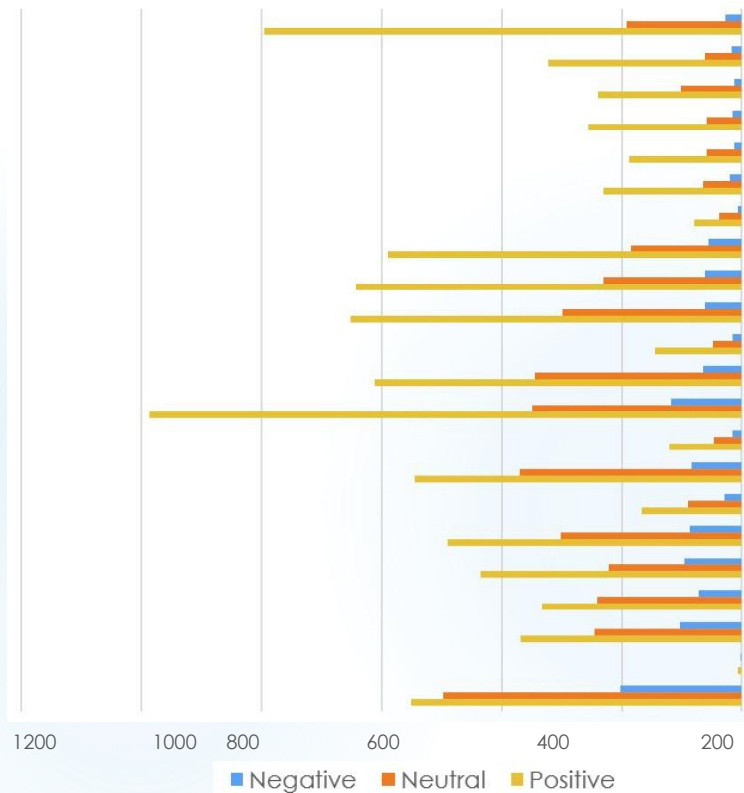
Jeff Thompson
Nicole Robinette
Wesley Sites
Meghan Bush
Elise Nemeth
Ashley Etheridge
Allison Slocomb
Daulton Tyler
Brad Mcdougald
Paul Worley
Robert Edwards
Mary Rowland-Doud
Leah Wagner
George Hanna
Yannick Souna
Jacob Holmes
Billy Young
Laura Pugh
Sidney Carr
Devin Smith
Christopher Spade
Tiona Hill

■ Negative ■ Neutral ■ Positive
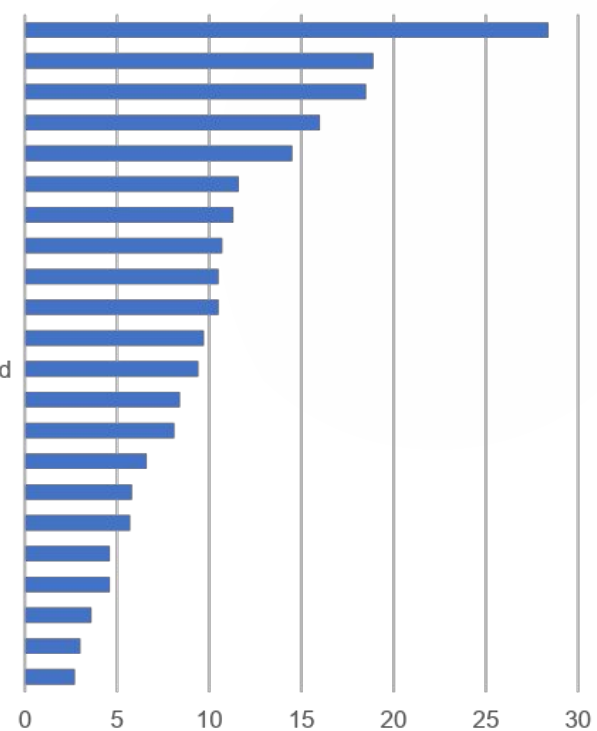
Semantic Graph Technology in Production

- ## Cisco – Predictive Insights for Client Interactions by tele-agents (BDRs)
  - ### Framework

Categories - UseCase		
Customer Persona	**Demand Scenerio**	**Prospect Industry**
Network Buyer	Replace/Replenish	Construction
DataCenter Buyer	Upgrade	Education
Security Buyer	Optimize	Financial Services
Collaboration Buyer	Enhance/Pioneer	Government
SMB Buyer	Non-Sales Related Inquiry	Healthcare
CIO Buyer	Immediate Purchase Request	Logistic/Distribution
		Real Estate
		Manufacturing
		Retail/Wholesales
		Energy/Utilities

CHAT TRANSCRIPT

RECORD ID: https://n3result.com/00Q3400001zUSXh
Chat Started: Friday, December 01, 2017, 07:55:50
(-0800) Chat Origin: us-sales-english Agent Yannick
(5s) Yannick: Hello Todd, thank you for choosing Cisco, my name is Yannick, how may I help you today?

(52s) Todd: I need **help choosing t**he correct access points for our businesses. I am **planning on purchasing two RV345P routers** and I need access points to go with them
(1m 21s) Yannick: Sure Todd. I will be happy to assist you. Can you please tell me what prompted this initiative?
(2m 10s) Todd: We are adding a second location and I want to connect the two with a VPN.
(3m 0s) Todd: Location 1 is smaller and only requires 1 access point. Approximately 40 clients, I need 2.4 GHz and 5 GHz. I want to use POE so that I don't need power where I put the access point.
(3m 49s) Todd: Location 2 is larger and will require 2 or 3 access points. Approximately 60 clients, I need 2.4 GHz and 5 GHz (4m 12s) Todd: I only use 2 or 3 wired connections at each locations.
(4m 51s) Yannick: Ok. I see. Do you have partner you currently working with or is it the first shopping with Cisco?
(5m 30s) Todd: I've tried to contact partners myself and through Cisco but I've never received a call back from anyone and I need to make this **purchase today** so I need help picking the access points.

N3 IBM Entity Extraction

Not secure | 192.168.109.200:4000/index....

Apps TriNet trinettime x https://wiki.franz.co...

N3

Products Mentioned

Competitors Mentioned

B A N T

© N3 No part or process to be used without permission.

Call ID: ibm:call3775141189

Reset

BANT VM - VMware Workstation

File Edit View VM Tabs Help

Home BANT VM

Terminal En 11:19 AM

burtsmith1600@BANTVM: ~

File Edit View Search Terminal Help

```
Complete: I am the decision maker and so we have plans for expansion. What I'm l
ooking more for is cost containment.

Partial: You...........................................................................
...........................................................................
...........................................................................

Complete: You might be happy to hear that we now also have a timetable so we can
 discuss that.

Partial: Actually....................................................................
..

Complete: Actually we have an implementation timetable.

Partial: He said.............
Partial: Reset.................................................................

Complete: Set

................Call ID: !ibm:call3775141189
...........................................................................
...........................................................................
...........................................................................
```

To direct input to this VM, click inside or press Ctrl+G.

6:19 PM
8/18/2019

Voice Recognition goes directly into KG
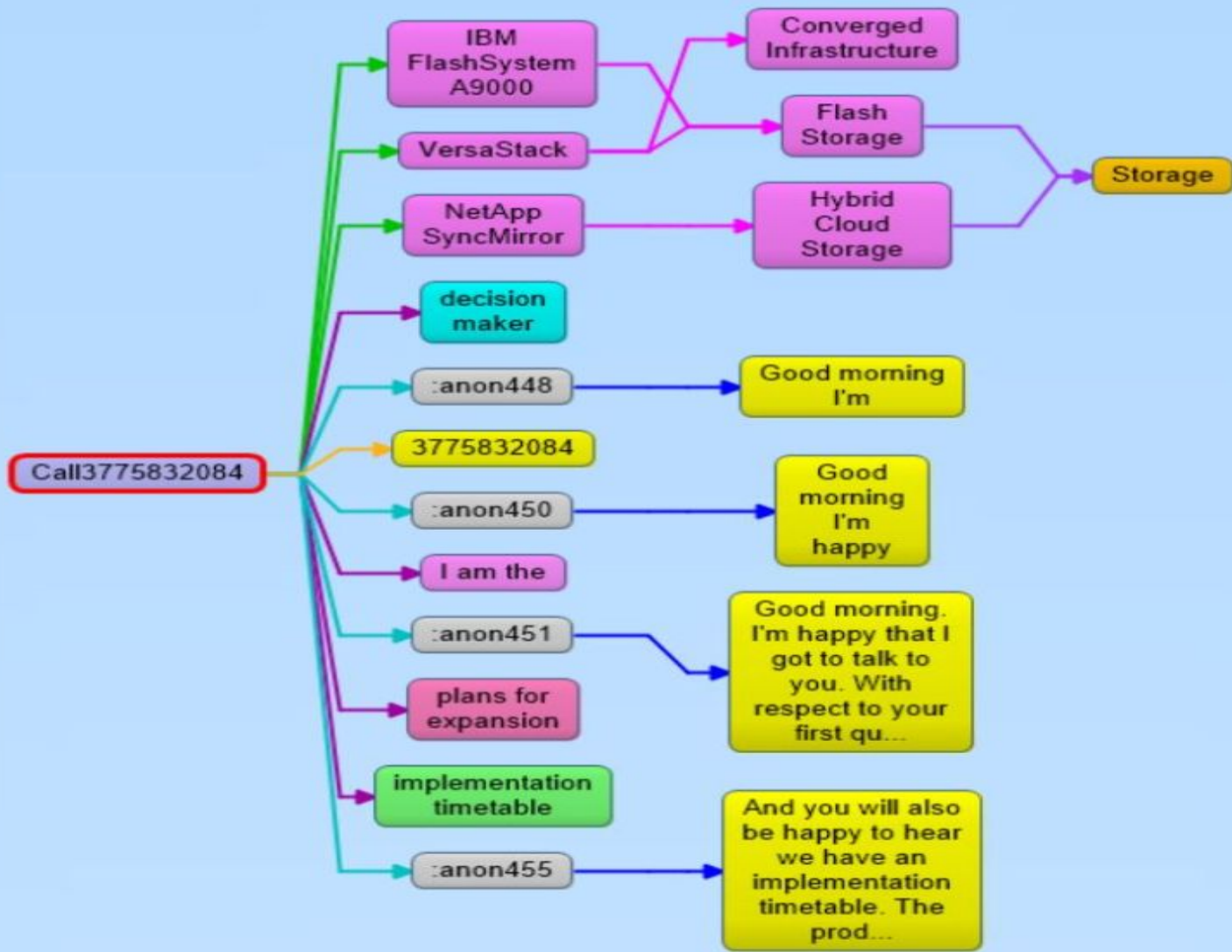
hansaasman 08:07

alle variaties van deze (ongeveer het meeste dat het progamma ooit zal moeten doen:

Untitled ▾

```
 1  'IOS XE Release 3.1.0SG 15.1': ['eye oh ess ex ee release three point one point zero
    ess gee one five point one',
 2    'eye oh ess ex ee release three point one point zero ess gee fifteen point one',
 3    'eye oh ess ex ee release three dot one point zero ess gee one five point one',
 4    'eye oh ess ex ee release three dot one point zero ess gee fifteen point one',
 5    'eye oh ess ex ee release three one point zero ess gee one five point one',
 6    'eye oh ess ex ee release three one point zero ess gee fifteen point one',
 7    'eye oh ess ex ee release three point one dot zero ess gee one five point one',
 8    'eye oh ess ex ee release three point one dot zero ess gee fifteen point one',
 9    'eye oh ess ex ee release three dot one dot zero ess gee one five point one',
10    'eye oh ess ex ee release three dot one dot zero ess gee fifteen point one',
11    'eye oh ess ex ee release three one dot zero ess gee one five point one',
12    'eye oh ess ex ee release three one dot zero ess gee fifteen point one',
13    'eye oh ess ex ee release three point one zero ess gee one five point one',
14    'eye oh ess ex ee release three point one zero ess gee fifteen point one',
15    'eye oh ess ex ee release three dot one zero ess gee one five point one',
16    'eye oh ess ex ee release three dot one zero ess gee fifteen point one',
17    'eye oh ess ex ee release three one zero ess gee one five point one',
18    'eye oh ess ex ee release three one zero ess gee fifteen point one',
19    'eye oh ess ex ee release three point one point zero ess gee one five dot one',
20    'eye oh ess ex ee release three point one point zero ess gee fifteen dot one',
21    'eye oh ess ex ee release three dot one point zero ess gee one five dot one',
22    'eye oh ess ex ee release three dot one point zero ess gee fifteen dot one',
23    'eye oh ess ex ee release three one point zero ess gee one five dot one',
24    'eye oh ess ex ee release three one point zero ess gee fifteen dot one',
25    'eye oh ess ex ee release three point one dot zero ess gee one five dot one',
26    'eye oh ess ex ee release three point one dot zero ess gee fifteen dot one',
27    'eye oh ess ex ee release three dot one dot zero ess gee one five dot one',
28    'eye oh ess ex ee release three dot one dot zero ess gee fifteen dot one',
29    'eye oh ess ex ee release three one dot zero ess gee one five dot one',
```

What is a Knowledge Graph?

- A system that tries to know and learn everything it can about an entity of interest to improve [internal processes, customer experience, health]
  - Yes, sometimes you can have more types of entities (product+customer, patient-provider)
- It always includes:
  - A (semantic) graph, ontologies, taxonomies
  - Identity management and a smart integration of silos of information
- It nearly always includes
  - Machine Learning, Natural Language Processing, Text classification
- And more and more we see
  - [taxonomy driven] Speech recognition

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Why now?

- Graph Databases now accepted as the best technology to store complex semantic data.

- Semantics: people no long scared of taxonomies, ontologies still a little bit scary

- Entity Extraction and NLP almost a commodity now with SPACY, BERT, IBM Natural Language Understanding, etc, etc..

- Machine Learning and advanced analytics now available in the cloud

- And we finally got enough people that can put it all together.

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