

# Semantic Web and Semantic Technology Trends in 2019

Dataversity – January 2019

What to expect of Semantic Web and other Semantic Technologies in 2019? Quite a bit. DATAVERSITY engaged with leaders in the space to get their thoughts on how Semantic Technologies will have an impact on multiple areas.

Dr. Jans Aasman, CEO of Franz Inc. was quoted several times in the article:

Among the semantic-driven AI ventures next year will be those that relate to the healthcare space, says Dr. Jans Aasman, CEO of Semantic Web technology company Franz, Inc:

“In the last two years some of the technologies were starting to get used in production,” he says. “In 2019 we will see a ramp-up of the number of AI applications that will help save lives by providing early warning signs for impending diseases. Some diseases will be predicted years in advance by using genetic patient data to understand future biological issues, like the likelihood of cancerous mutations – and start preventive therapies before the disease takes hold.”

If that’s not enough, how about digital immortality via AI Knowledge Graphs, where an interactive voice system will bring public figures in contact with anyone in the real world? “We’ll see the first examples of Digital Immortality in 2019 in the form of AI Digital Personas for public figures,” says Aasman, whose company is a partner in the Noam Chomsky Knowledge Graph:

“The combination of Artificial Intelligence and

Semantic Knowledge Graphs will be used to transform the works of scientists, technologists, politicians, and scholars like Noam Chomsky into an interactive response system that uses the person's actual voice to answer questions," he comments.

"AI Digital Personas will dynamically link information from various sources – such as books, research papers, notes and media interviews – and turn the disparate information into a knowledge system that people can interact with digitally." These AI Digital Personas could also be used while the person is still alive to broaden the accessibility of their expertise.

On the point of the future of graph visualization apps, Aasman notes that:

"Most graph visualization applications show network diagrams in only two dimensions, but it is unnatural to manipulate graphs on a flat computer screen in 2D. Modern R virtual reality will add at least two dimensions to graph visualization, which will create a more natural way to manipulate complex graphs by incorporating more depth and temporal unfolding to understand information within a time perspective."

**Read the full article at [Dataversity](#).**

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## **2019 Trends In The Internet**

# Of Things: The Makings Of An Intelligent IoT

AI Business – December 2018

2019 will be a crucial year for the Internet of Things for two reasons. Firstly, many of the initial predictions for this application of big data prognosticated a future whereby at the start of the next decade there would be billions of connected devices all simultaneously producing sensor data. The IoT is just a year away from making good on those claims.

Dr. Jans Aasman, Franz's CEO was quoted by the author:

The IIoT is the evolution of the IoT that will give it meaning and help it actualize the number of connected devices forecast for the start of the next decade. The IIoT will encompass smart cities, edge devices, wearables, deep learning and classic machine learning alongside lesser acknowledged elements of AI in a basic paradigm in which, according to Franz CEO Jans Aasman, "you can look at the past and learn from certain situations what's likely going to happen. You feed it in your [IoT] system and it does better... then you look at what actually happened and it goes back in your machine learning system. That will be your feedback loop."

Although deep learning relies on many of the same concepts as traditional machine learning, with "deep learning it's just that you do it with more computers and more intermediate layers," Aasman said, which results in higher accuracy levels.

The feedback mechanism described by Aasman has such a tremendous capacity to reform data-driven businesses because of the speed of the iterations provided by low latency IIoT data.

One of the critical learning facets the latter produces

involves optimization, such as determining the best way to optimize route deliveries encompassing a host of factors based on dedicated rules about them. “There’s no way in [Hades] that a machine learning system would be able to do the complex scheduling of 6,000 people,” Aasman declared. “That’s a really complicated thing where you have to think of every factor for every person.”

However, constraint systems utilizing multi-step reasoning can regularly complete such tasks and the optimization activities for smart cities. Aasman commented that for smart cities, semantic inferencing systems can incorporate data from traffic patterns and stop lights, weather predictions, the time of year, and data about specific businesses and their customers to devise rules for optimal event scheduling. Once the events actually take place, their results—as determined by KPIs—can be analyzed with machine learning to issue future predictions about how to better those results in what Aasman called “a beautiful feedback loop between a machine learning system and a rules-based system.”

In almost all of the examples discussed above, the IIoT incorporates cognitive computing “so humans can take action for better business results,” Aasman acknowledged. The means by which these advantages are created are practically limitless.

Read the Full Article at [AI Business](#).

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# Solving Knowledge Graph Data Prep with Standards

**Dataversity – December 2018**

There's a general consensus throughout the data ecosystem that Data Preparation is the most substantial barrier to capitalizing on data-driven processes. Whether organizations are embarking on Data Science initiatives or simply feeding any assortment of enterprise applications, the cleansing, classifying, mapping, modeling, transforming, and integrating of data is the most time honored (and time consuming) aspect of this process.

Approximately 80 percent of the work of data scientists is mired in Data Preparation, leaving roughly 20 percent of their jobs to actually exploiting data. Moreover, the contemporary focus on external sources, Big Data, social and mobile technologies has exploded the presence of semi-structured and unstructured data, which accounts for nearly 80 percent of today's data and further slows the preparation processes.

Read the full article at [Dataversity](#).

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## **AllegroGraph named to 2019**

# Trend-Setting Products

## Database Trends and Applications – December 2018

You can call it the new oil, or even the new electricity, but however it is described, it's clear that data is now recognized as an essential fuel flowing through organizations and enabling never before seen opportunities. However, data cannot simply be collected; it must be handled with care in order to fulfill the promise of faster, smarter decision making.

More than ever, it is critical to have the right tools for the job. Leading IT vendors are coming forward to help customers address the data-driven possibilities by improving self-service access, real-time insights, governance and security, collaboration, high availability, and more.

To help showcase these innovative products and services each year, Database Trends and Applications magazine looks for offerings that promise to help organizations derive greater benefit from their data, make decisions faster, and work smarter and more securely.

This year our list includes newer approaches leveraging artificial intelligence, machine learning, and automation as well as products in more established categories such as relational and NoSQL database management, MultiValue, performance management, analytics, and data governance.

[Read the AllegroGraph Spotlight](#)

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# Knowledge Graphs – The path to true AI

Published in SD Times – December, 2018



Knowledge is the foundation of intelligence– whether artificial intelligence or conventional human intellect. The understanding implicit in intelligence, its application towards business problems or personal ones, requires knowledge of these problems (and potential solutions) to effectively overcome them.

The knowledge underpinning AI has traditionally come from two distinct methods: statistical reasoning, or machine learning, and symbolic reasoning based on rules and logic. The former approach learns by correlating inputs with outputs for increasingly progressive pattern identification; the latter approach uses expert, human-crafted rules to apply to particular real-world domains.

Read the full article at [SD Times](#).

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# What is the most interesting use of a graph database you ever seen? PWC responds.

From a Quora post by Alan Morrison – Sr. Research Fellow at PricewaterhouseCoopers – November 2018

*The most interesting use is the most powerful: standard RDF graphs for large-scale knowledge graph integration.*

*From my notes on a talk Parsa Mirhaji of Montefiore Health System gave in 2017. **Montefiore uses Franz AllegroGraph, a distributed RDF graph database.** He modeled a core patient-centric hospital knowledge need using a simple standard ontology with a 1,000 or so concepts total.*

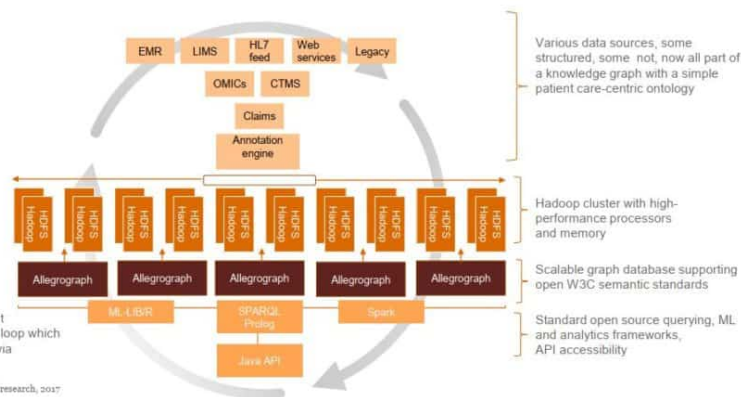
*That model integrated data from lots of different kinds of heterogeneous sources so that doctors could query the knowledge graph from tablets or phones at a patient's bedside and get contextualized, patient-specific answers to questions for diagnostic purposes.*

*Fast forward to 2018, and nine out of ten of the most value-creating companies in the world are using standard knowledge graphs in a comparable fashion, either as a base for multi-domain intelligent assistants a la Siri or Alibot or Alexa, or to integrate and contextualize business domains cross-enterprise, or both. The method is preparatory to what John Launchbury of DARPA described as the Third Wave of AI.....*



## Montefiore's semantic data lake

Doctors can query the graph or harness ML + analytics and receive answers from the system at the point of care via their handhelds.



Montefiore Health, Franz, Intel and PwC research, 2017

PwC | Collapsing the IT stack

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Read the full article over at Quora

# 2019 Trends in Data Governance: The Model Governance Question

From an AI Business Article by Jelani Harper – November 2018

*The propagation of the enterprise's ability to capitalize on data-driven processes—to effectively reap data's yield as an organizational asset, much like any other—hinges on data governance, which arguably underpins the foundation of data management itself.*

*There are numerous trends impacting that foundation, many of which have always had, and will continue to have, relevance as 2019 looms. Questions of regulatory compliance, data*

lineage, metadata management, and even data governance will all play crucial roles.

Franz's CEO, Dr. Jans Aasman was quoted:

*Still, as Aasman denoted, "It's extremely complicated to make fair [machine learning] models with all the context around them." Both rules and human supervision of models can furnish a fair amount of context for them, serving as starting points for their consistent governance.*

Read the full article at [AI Business](#).

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# AI Requires More Than Machine Learning

From Forbes Technology Council – October 2018

**This article discusses the facets of machine learning and AI:**

*Lauded primarily for its automation and decision support, machine learning is undoubtedly a vital component of artificial intelligence. However, a small but growing number of thought leaders throughout the industry are acknowledging that the breadth of AI's upper cognitive capabilities involves more than just machine learning.*

*Machine learning is all about sophisticated pattern recognition. It's virtually unsurpassable at determining relevant, predictive outputs from a series of data-driven inputs. Nevertheless, there is a plethora of everyday, practical business problems that cannot be solved with input/output reasoning alone. The problems also require the*

*multistep, symbolic reasoning of rules-based systems.*

*Whereas machine learning is rooted in a statistical approach, symbolic reasoning is predicated on the symbolic representation of a problem usually rooted in a knowledge base. Most rules-based systems involve multistep reasoning, including those powered by coding languages such as Prolog.*

Read the full article over at Forbes

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# **Franz and Semantic Web Co. Partner to Create a Noam Chomsky Knowledge Graph**

Press Release – September 10, 2018

**First Semantic Knowledge Graph for a Public Figure will Semantically Link Books, Interviews, Movies, TV Programs and Writings from the Most Cited U.S. Scholar**

**OAKLAND, Calif. and VIENNA, Austria** – Franz Inc., an early innovator in Artificial Intelligence (AI) and leading supplier of Semantic Graph Database technology, AllegroGraph, for Knowledge Graphs, and Semantic Web Company, developers of the PoolParty Semantic Suite and leading provider of Semantic AI solutions, today announced a partnership to develop the Noam Chomsky Knowledge Graph. This project is the first aimed at

connecting all the works from a public figure and turning the linked information into a searchable and retrievable resource for the public.

The Noam Chomsky Knowledge Graph project will organize and semantically link the vast knowledge domain surrounding Noam Chomsky, the founder of modern linguistics, a founder of cognitive science, and a major figure in analytic philosophy as well as an American linguist, philosopher, historian and social critic. Chomsky is currently an Institute Professor Emeritus at the Massachusetts Institute of Technology (MIT) and laureate professor at the University of Arizona. He has received many awards including Distinguished Scientific Contribution Award of the American Psychological Association, the Kyoto Prize in Basic Sciences, the Helmholtz Medal, the Dorothy Eldridge Peacemaker Award, and the Ben Franklin Medal in Computer and Cognitive Science.

“Noam Chomsky is one of the most brilliant minds of our generation,” said Fred Davis. Executive Director of the Chomsky Knowledge Graph project, “His body of work is tremendously valuable to people across many disciplines. Our goal is to make Chomsky’s work searchable in the context of topics and concepts, readable in excerpts, and easily available to journalists, scientists, technologists, students, philosophers, and historians as well as the general public.”

The Noam Chomsky Knowledge Graph will link to over 1,000 articles and over 100 books that Chomsky has authored about linguistics, mass media, politics and war. Hundreds of Chomsky’s media interviews, which aired on television, print and online will be part of the Knowledge Graph as well as more than a dozen Chomsky movies including: Is the Man who is Tall Happy?, Manufacturing Consent, Programming the Nation? Hijacking Catastrophe: 911 Fear and the Selling of American Empire. The content will be made available by searching the Knowledge Graph for specific titles, related topics and concepts.

Since the project is based on the latest and most advanced technologies, the data will be also available as machine-readable data (Linked Data) in order to be fed into smart applications, intelligent chatbots, and question/ answering machines – as well as other AI and data systems.

The Internet Archive, the world's largest digital lending library, will host Noam Chomsky's books, movies, and other content – enabling public access to his works and marking the first integration between the Internet Archive and a public Knowledge Graph.

"We are thrilled to be working on this momentous project," said Dr. Jans Aasman, CEO of Franz Inc. "Noam Chomsky is the ideal person to fulfill the vision of a Public Figure Knowledge Graph. We are looking forward to collaborating with the Semantic Web Company and Fred Davis on this exciting project."

"Knowledge Graphs are becoming increasingly important for addressing various data management challenges in industries such as financial services, life sciences, healthcare or energy," said Andreas Blumauer, CEO and founder of Semantic Web Company. "The application of Knowledge Graphs to public figures, such as Noam Chomsky, will offer a unique opportunity to link concepts and ideas to form new ideas and possible solutions."

## **About Knowledge Graphs**

A Knowledge Graph represents a knowledge domain and connects things of different types in a systematic way. Knowledge Graphs encode knowledge arranged in a network of nodes and links rather than tables of rows and columns. People and machines can benefit from Knowledge Graphs by dynamically growing a semantic network of facts about things and use it for data integration, knowledge discovery, and in-depth analyses.

Gartner recently identified Knowledge Graphs as a key new technology in both their Hype Cycle for Artificial Intelligence and Hype Cycle for Emerging Technologies. Gartner's Hype Cycle for Artificial Intelligence, 2018 states, "The rising role of content and context for delivering insights with AI technologies, as well as recent knowledge graph offerings for AI applications have pulled knowledge graphs to the surface."

## **Knowledge Graphs are the Foundation for Artificial Intelligence**

The foundation for AI lies in the facets Knowledge Graphs and semantic technology provided by Franz and Semantic Web Company. The Franz AllegroGraph Semantic Graph database provides the core technology environment to enrich and contextualized the understanding of data. The ability to rapidly integrate new knowledge is the crux of the Knowledge Graph and depends entirely on semantic technologies.

### **About Franz Inc.**

Franz Inc. is an early innovator in Artificial Intelligence (AI) and leading supplier of Semantic Graph Database technology with expert knowledge in developing and deploying Knowledge Graph solutions. The foundation for Knowledge Graphs and AI lies in the facets of semantic technology provided by AllegroGraph and Allegro CL. The ability to rapidly integrate new knowledge is the crux of the Knowledge Graph and Franz Inc. provides the key technologies and services to address your complex challenges. Franz Inc. is your Knowledge Graph technology partner. For more information, visit [www.franz.com](http://www.franz.com).

### **About Semantic Web Company**

Semantic Web Company is the leading provider of graph-based metadata, search and analytic solutions. The company is the vendor of PoolParty Semantic Suite, one of the most renowned semantic software platforms on the global market. Among many

other customers, The World Bank, AT&T, Deutsche Telekom, and Pearson benefit from linking structured and unstructured data. In 2018, the Semantic Web Company has been named to KMWorld's "100 companies that matter in Knowledge Management." For more information about PoolParty Semantic Suite, please visit <https://ww.poolparty.biz>

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# Gartner – Knowledge Graphs Emerge in the HypeCycle

From Gartner – August 2018

## **Gartner Identifies Five Emerging Technology Trends That Will Blur the Lines Between Human and Machine**

Gartner's HypeCycle report is now acknowledging Knowledge Graphs, a market area that Franz has been leading with AllegroGraph.

Read Jans Aasman's IEEE paper on the Enterprise Knowledge Graph for more insight.

From the Gartner Press release:

### ***Digitalized Ecosystems***

*Emerging technologies require revolutionizing the enabling foundations that provide the volume of data needed, advanced*

compute power and ubiquity-enabling ecosystems. The shift from compartmentalized technical infrastructure to ecosystem-enabling platforms is laying the foundations for entirely new business models that are forming the bridge between humans and technology.

This trend is enabled by the following technologies: Blockchain, Blockchain for Data Security, Digital Twin, IoT Platform and **Knowledge Graphs**.

“Digitalized ecosystem technologies are making their way to the Hype Cycle fast,” said Walker. “Blockchain and IoT platforms have crossed the peak by now, and we believe that they will reach maturity in the next five to 10 years, with digital twins and knowledge graphs on their heels.”

Read the full article over at Gartner.