

# COLDLIGHT

A PTC Business

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PTC 240 The Value of Data in the IoT

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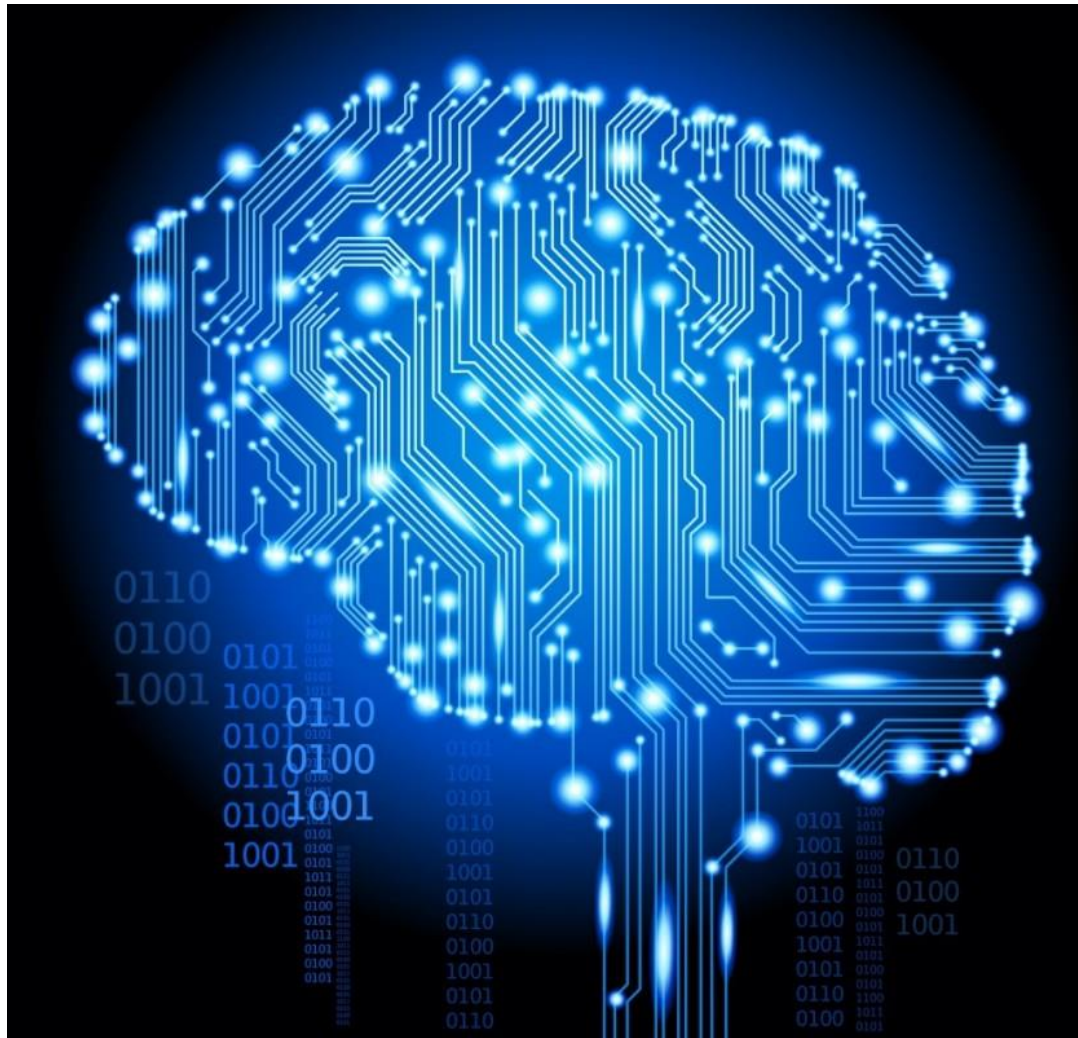
What's the value of data?  
The real value of data is in the data.



We're at the dawn of a new machine age.



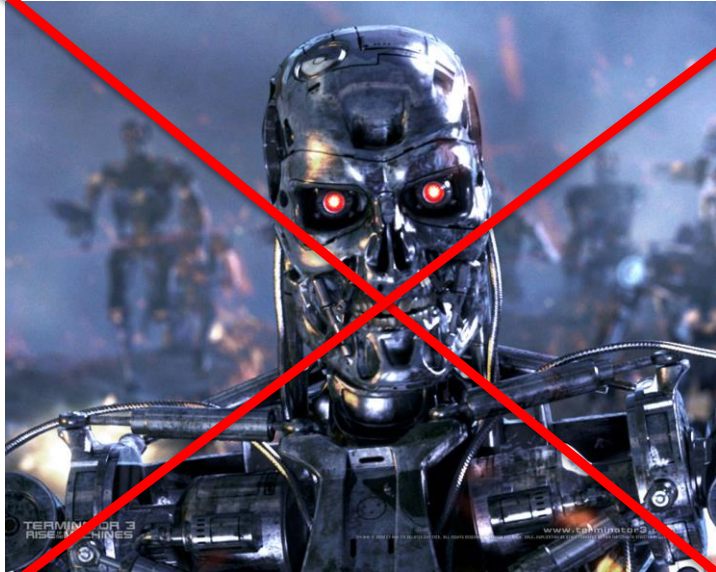
The first machine age was about augmenting manual human power with machinery.

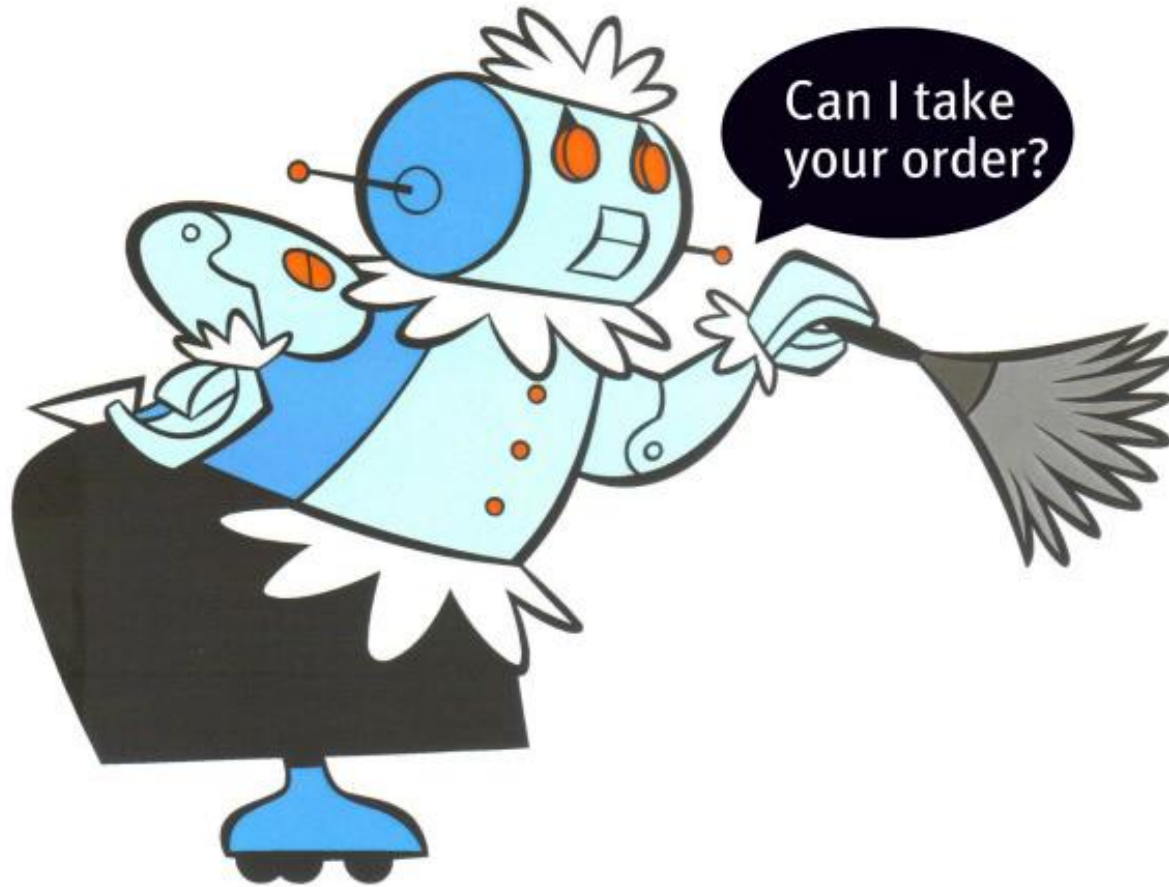


The second machine age is about augmenting human mental power with machines.

Computer's ability to organically learn without  
programming.  
What's machine learning?





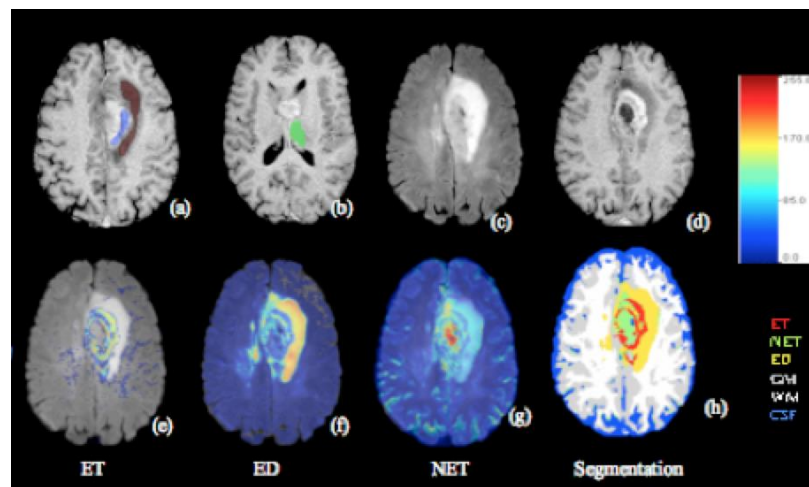




The future of analytics requires a collaboration extending human intelligence with machine learning.



Threat Detection



Diagnostics

# Machine Learning Use

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When will the machine need maintenance before downtime is experienced?

# Machine Learning Use

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How can we maximize our production yield?

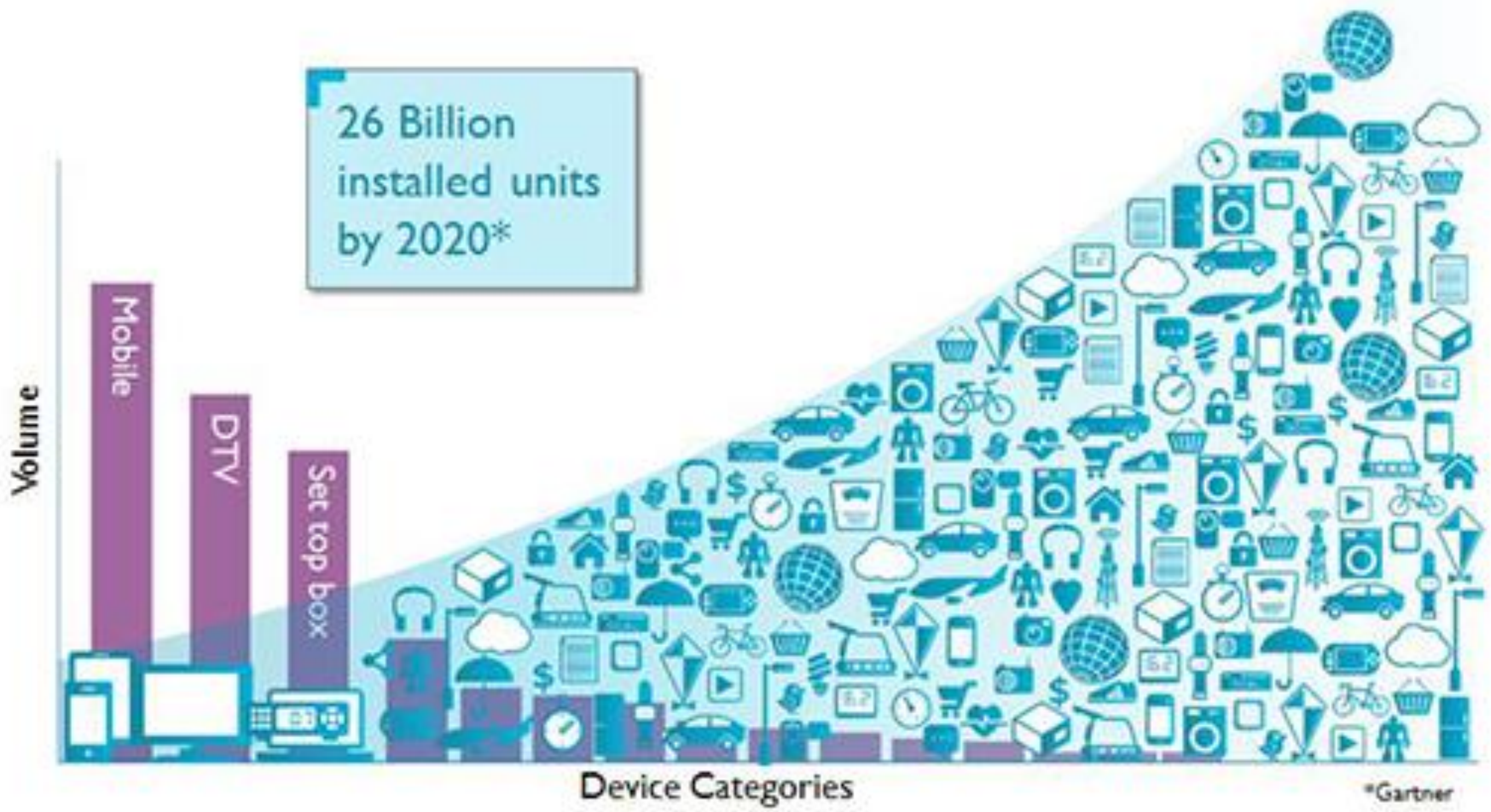
# Machine Learning Use

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What's the next big thing?



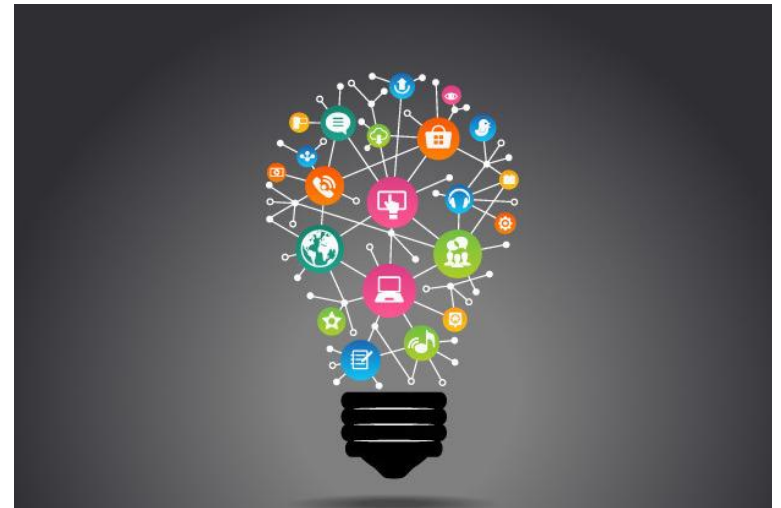


# Challenge of IoT Data

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Data from the Internet of Things is inherently complex.

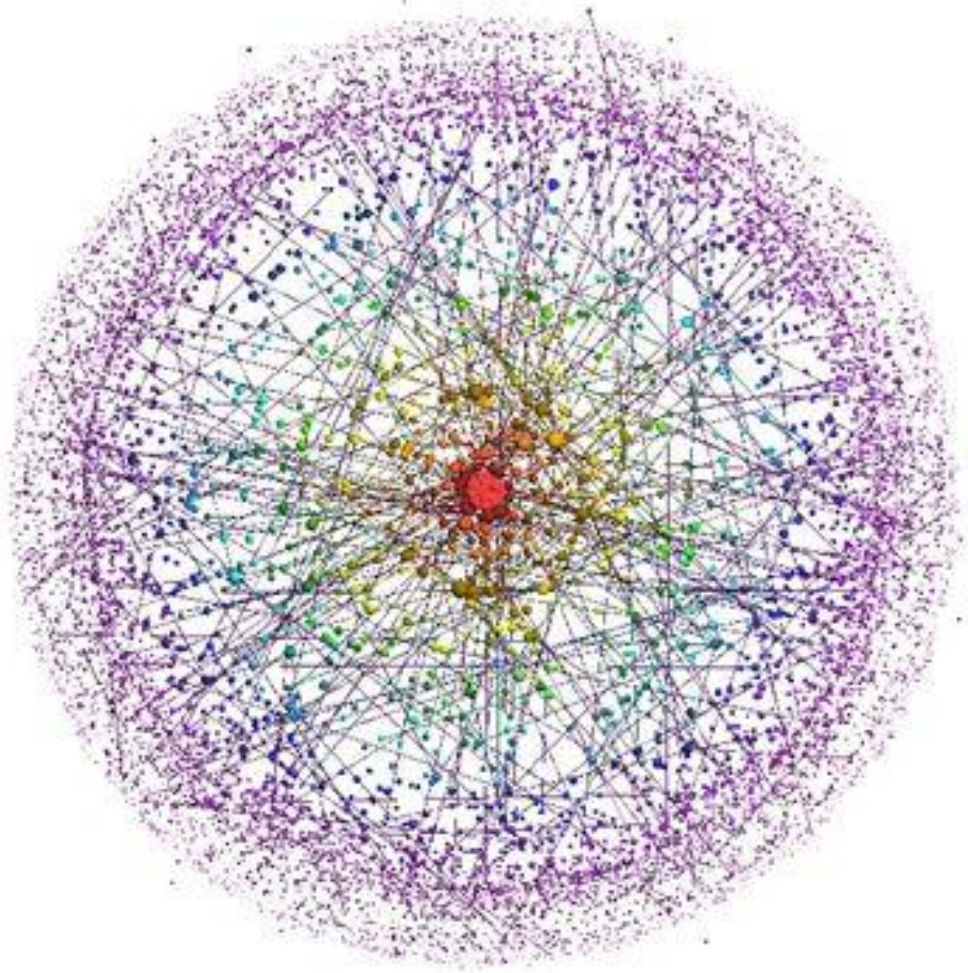
- Geographically distributed
- Different devices types
- Unique protocols
- Highly specialized information
- Multiple data formats
- Disparate data sets
- Lack of standards for integration
- Almost Impossible to easily discover patterns and correlate data beyond the individual device and/or source.





# IoT = Data Volume & Velocity

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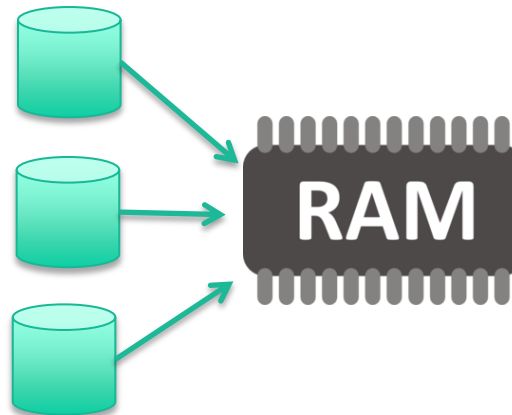
# Typical Approaches to Analytics Don't Work

## OLAP/Cubes Business Intelligence



**Challenge:** Strenuous pre-aggregation of data deliver inherent limitations prohibiting the open exploration of data. No predictive capabilities.

## In-Memory Business Intelligence



**Challenge:** Once data is connected, the user must know where to start their analysis. No prediction capabilities.

## Legacy Predictive Business Analytics



**Challenge:** Extremely complex limiting use. They provide point in time predictions that could be out of date once operationalized.

# Business Intelligence vs. Analytics

## BUSINESS INTELLIGENCE

- What happened?
- When?
- Who?
- How many?

- Reporting (KPIs, metrics)
- Automated Monitoring/Alerting (thresholds)
- Dashboards
- Scorecards
- OLAP (Cubes, Slice & Dice, Drilling)
- Ad hoc query

vs

ANSWERS THE  
QUESTIONS:

INCLUDES:

## BUSINESS ANALYTICS

- Why did it happen?
- Will it happen again?
- What will happen if we change x?
- What else does the data tell us that never thought.

- Statistical/Quantitative Analysis
- Data Mining
- Predictive Modeling
- Multivariate Testing

# Applying Business Analytics

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## Learn

Why does it happen?

Causal &  
Explanatory  
Analysis

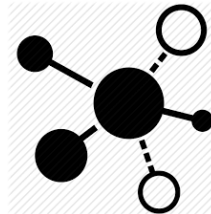
Pattern  
Identification &  
Detection



## Predict

What will happen?

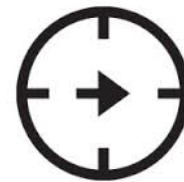
Automated Predictive  
Model Generation



## Adapt

What can I do to change outcome?

Simulation and  
Prescriptive Intelligence



# What is Neuron?

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# Neuron™

- Machine learning technology design to deliver proactive intelligence to decision makers.
- Data, industry, topic agnostic.
- Removes the complexity associated with advanced and predictive analytics.
- Through simple API calls, Neuron instantly delivers consumable predictive intelligence to any application or technology.

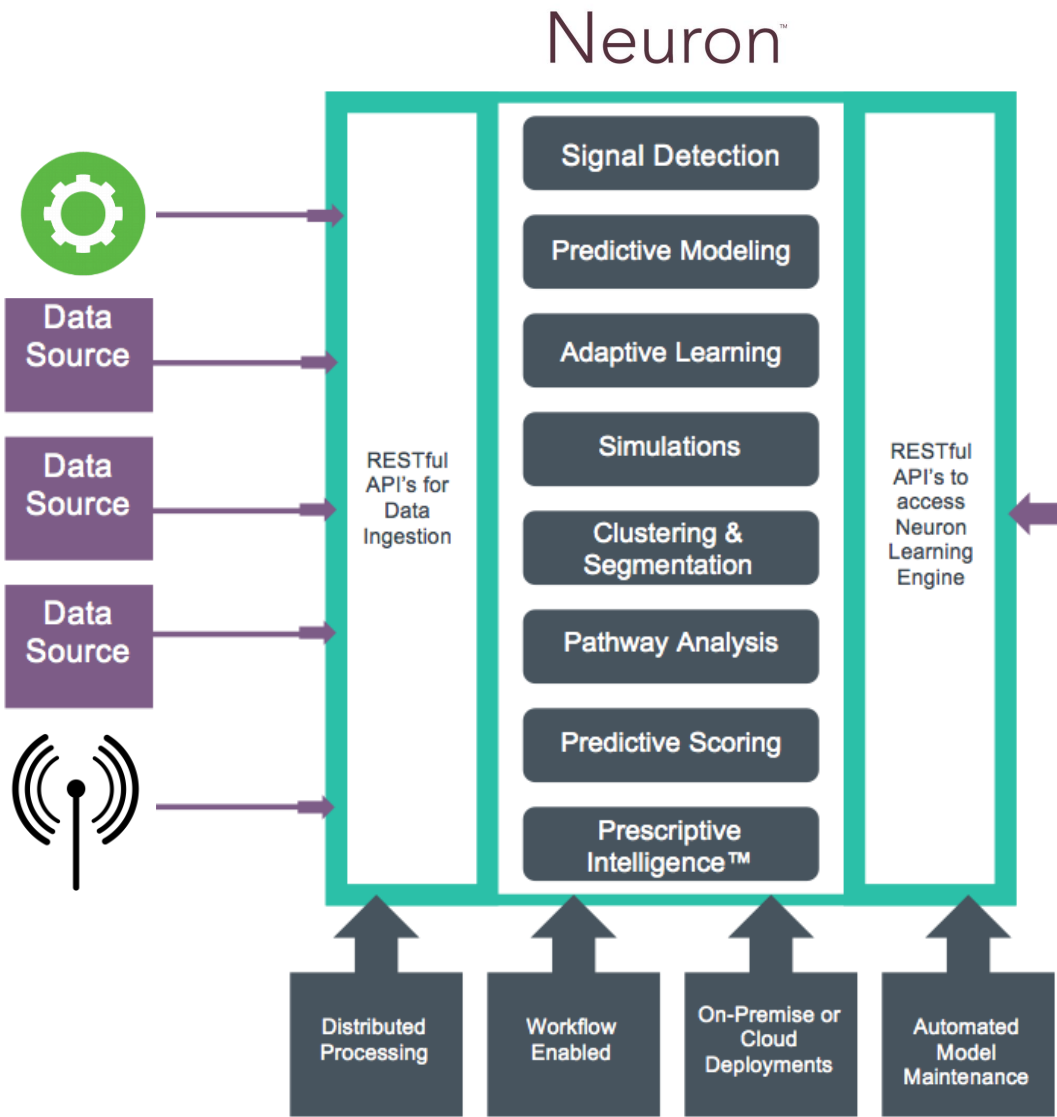


# The Neuron Process



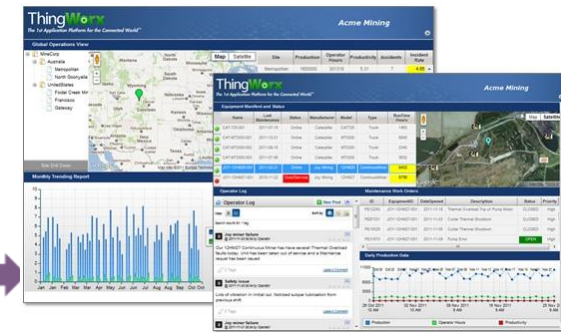


# Neuron Architecture



## Neuron™

**ThingWorx™**  
A PTC Business



Machine to Machine  
Communication

# Neuron Use

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Proactively perform preventative maintenance on mission critical equipment to avoid downtime and multiple service calls.

# Neuron Use

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Detect complicated, descriptive patterns leading to yield issues in complex manufacturing processes.

# Neuron Use

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Understand consumer buyer behavior and trends before 'the next big thing' is known.

# Contact Us

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