SECURITY
MATTERS
Wednesday 20th March 2019
ITF Q1 'Security Matters' Forum
"AI – friend or foe for insurance businesses?"

cortex®

The Evolution of Automation

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Director
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AI: using IA to make AI your friend.

Manual “Computers”

People are:

- *Intelligent*
- *Interpretive*
- *Self-learning*

Work is:

- *Arduous*
- *Unscalable*
- *Error Prone*
- *Slow*

Williamina Fleming (standing)
supervises the team of women “computers”
Harvard College Observatory
1885

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Machine “Computers”

Machines are:

- *Relentless*
- *Accurate*
- *Fast*
- *Scalable*

Work is:

- *Complex*
- *Precise*
- *Demanding*

Astronomical compute nodes

Yale University

Autonomous Machines

- *Programmed*
- *Adaptable*

- *Scalable*
- *Complex*
- *Accurate*
- *Fast*

- *Safe?*

Autonomous Car

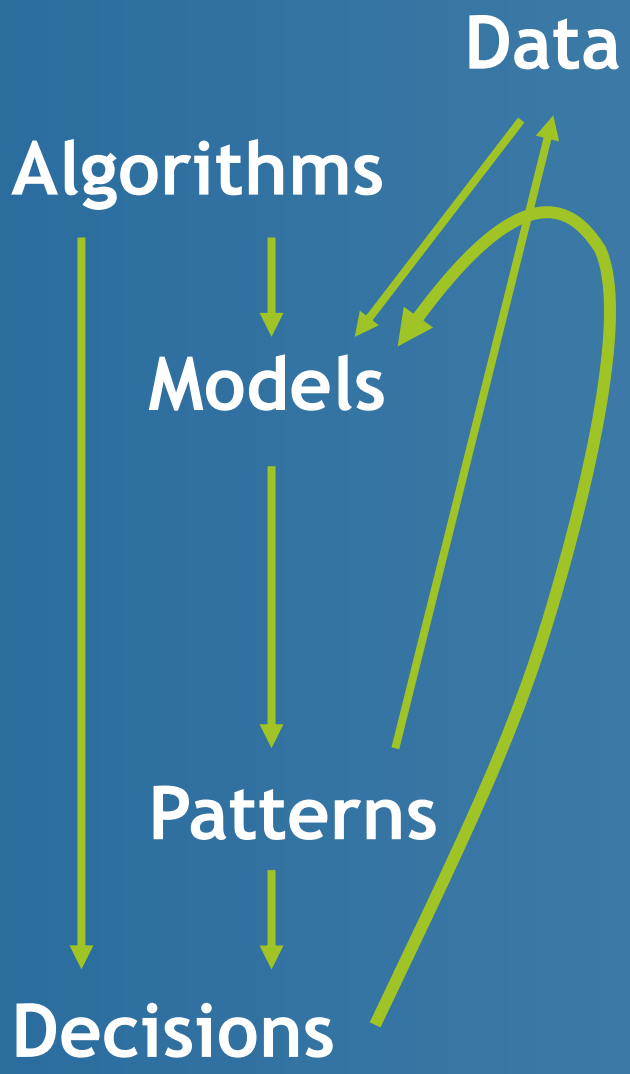
Without the self-driving “brain”

…it is still a car

.. and is still intelligent…

Without the car ?

Algorithms vs Models



- Zeroth Order automation
  - The decision is fixed
- 1st Order decisions
  - The decision is driven by an algorithm
- 2nd Order decisions
  - The decision is driven by a model that is created by an algorithm from pre-existing data
- Adaptive 2nd Order – Machine Learning
  - As 2nd Order, but the Model is continually adapted (self-tuned) to optimise outcomes.

…

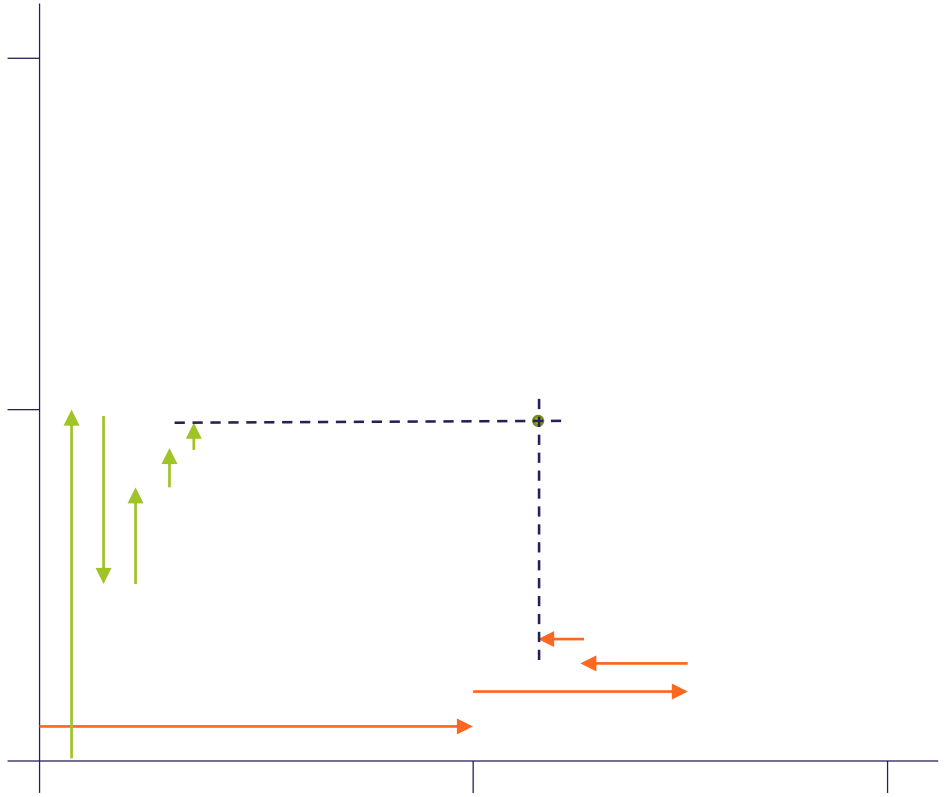
Algorithms - Digital Estimation

Binary search

Add or subtract half of the remaining range depending if you are too high or too low

- Approximation
  - 1st +ve : 0.5
  - 2nd +ve : 0.75
  - 3rd -ve : 0.625
  - 4th -ve : 0.5625

Finding the point : 0.5625, 0.46875



Complexity in the Algorithm…

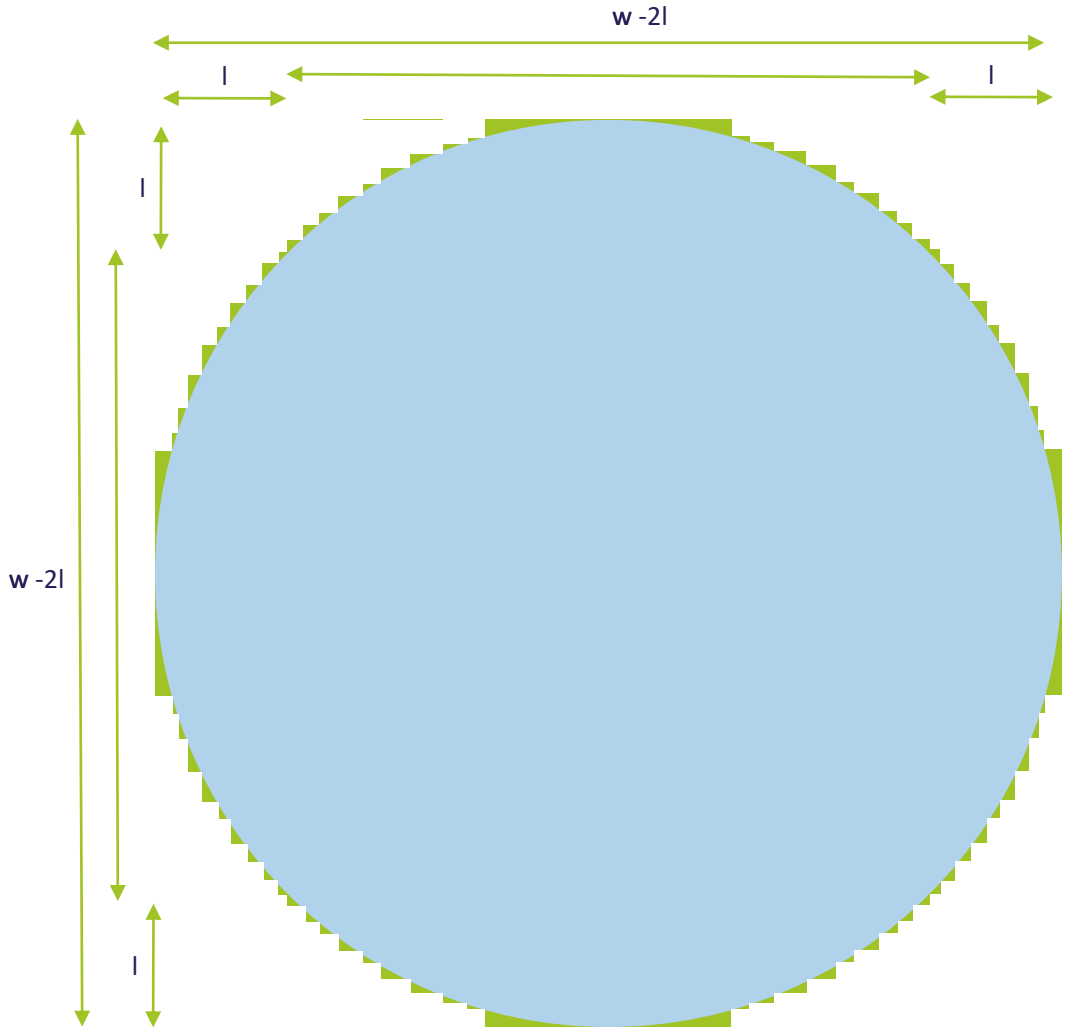
Approximate the circumference of a circle with a square

- **Perimeter**
  - Square = 4 x w
  - Circle = πw (2πr)

- **Approximation**
  - Square 4 x w
  - 1st 4 x w
  - 2nd 4 x w
  - 3rd … !!

The circumference of this Circle is

4 x w !!!

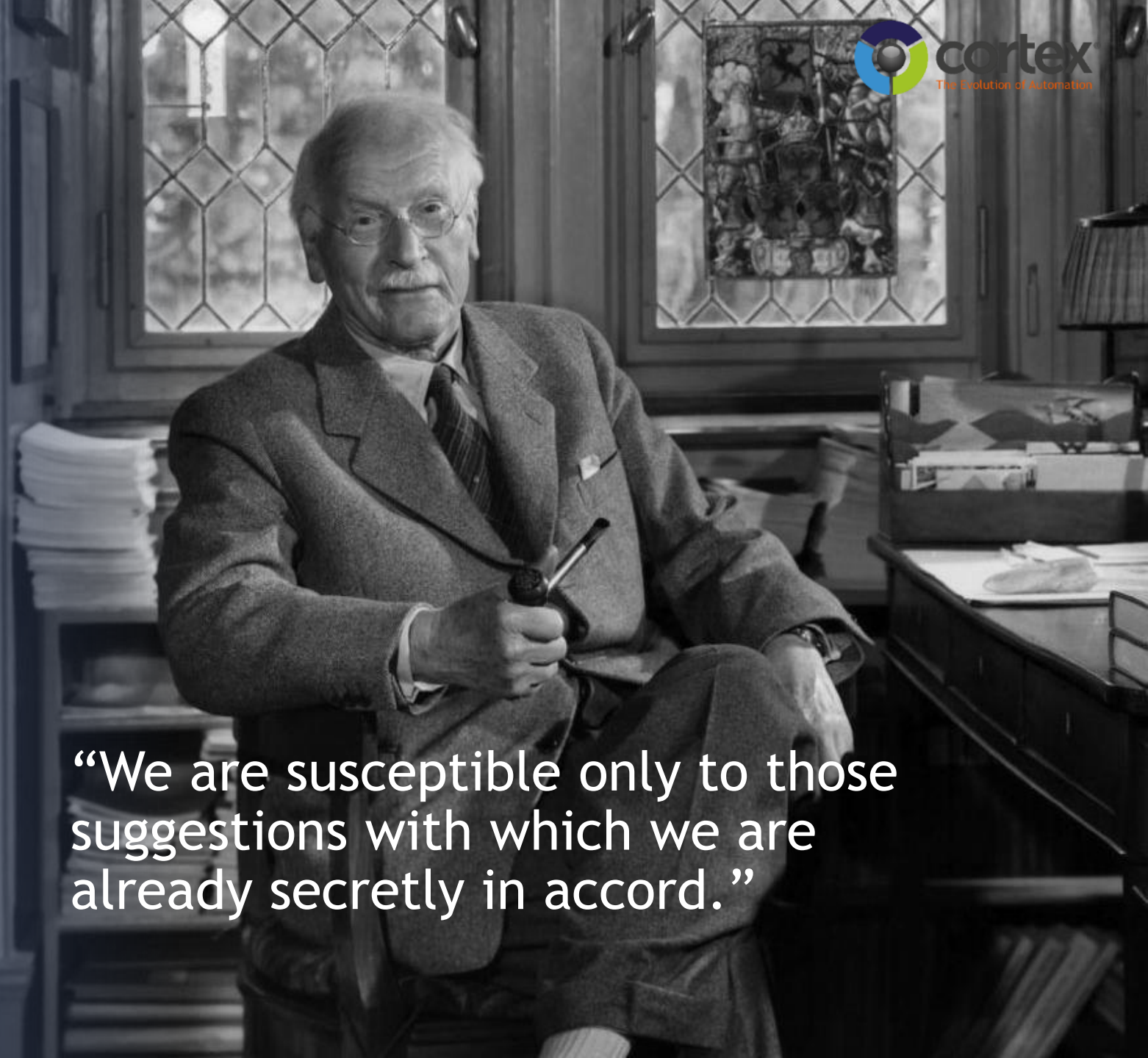


w – 2l + l + l = w

Pre-conditioned bias

Carl Jung

Founder of Analytical Psychology



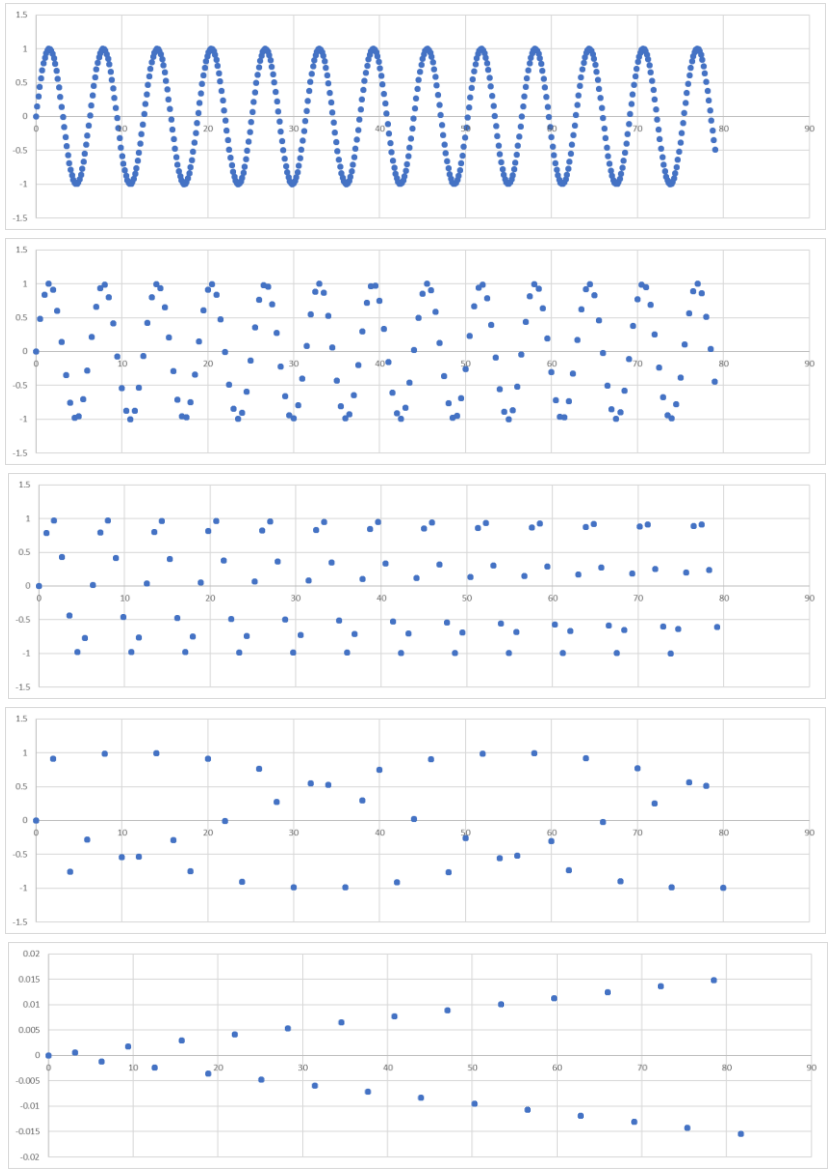
“We are susceptible only to those suggestions with which we are already secretly in accord.”

Data Sufficiency

- Enough Clean Data
- The right type
- Within the limits

Learning / Fixed :

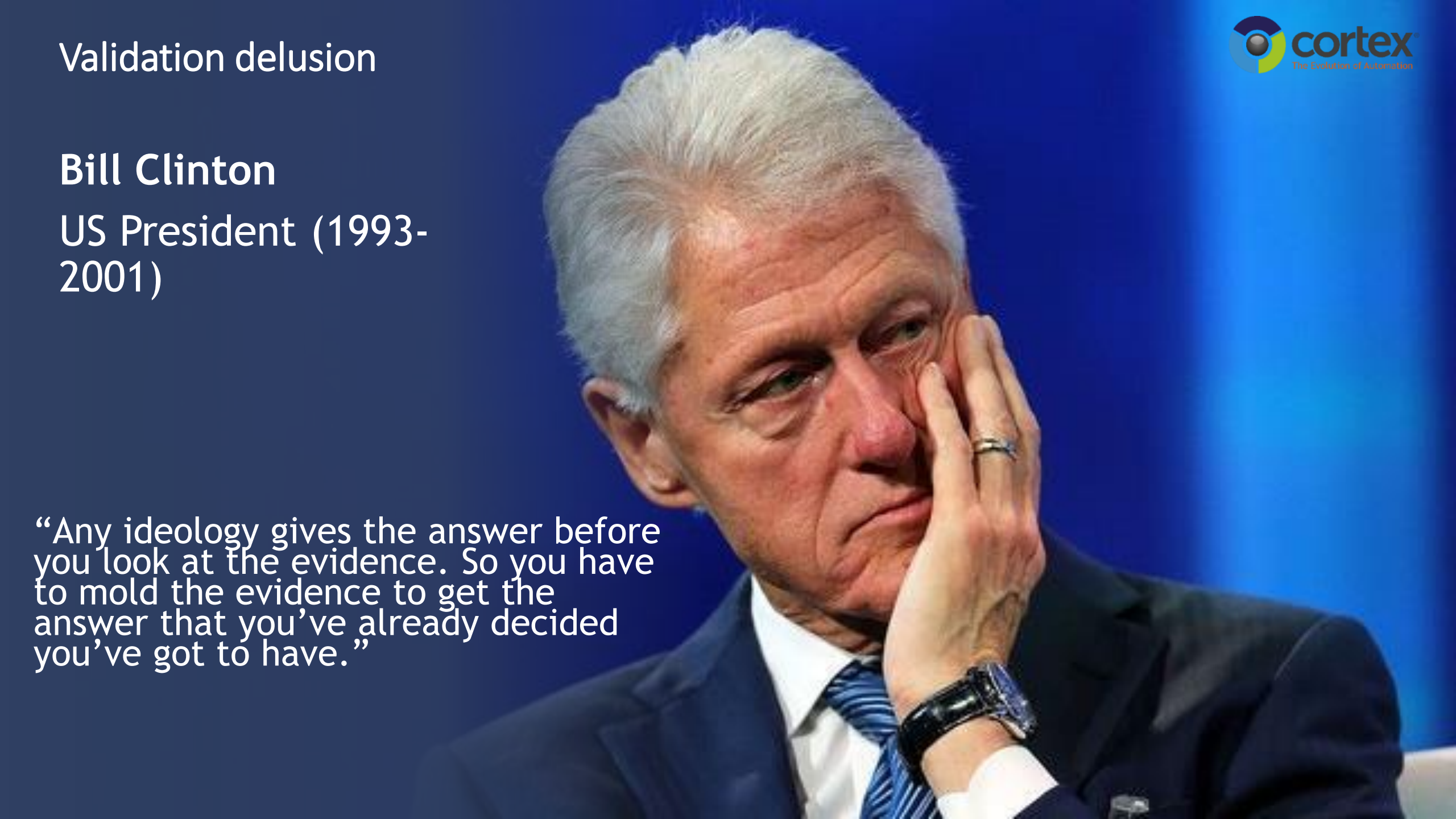
- Fix the Model / Algorithm
- Adapt the Algorithm / Model



Validation delusion

Bill Clinton

US President (1993-2001)



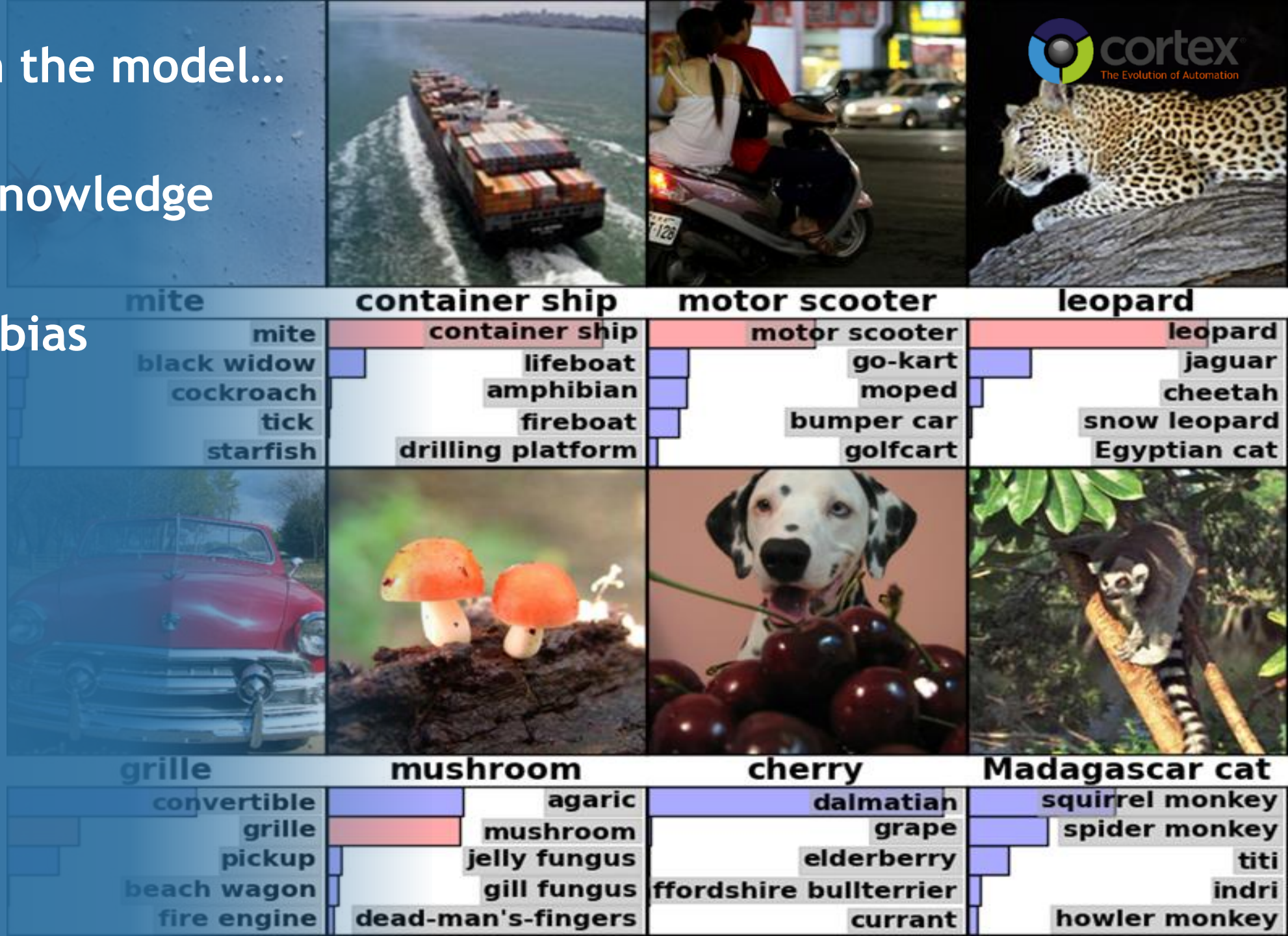
“Any ideology gives the answer before you look at the evidence. So you have to mold the evidence to get the answer that you’ve already decided you’ve got to have.”

Complexity in the model…

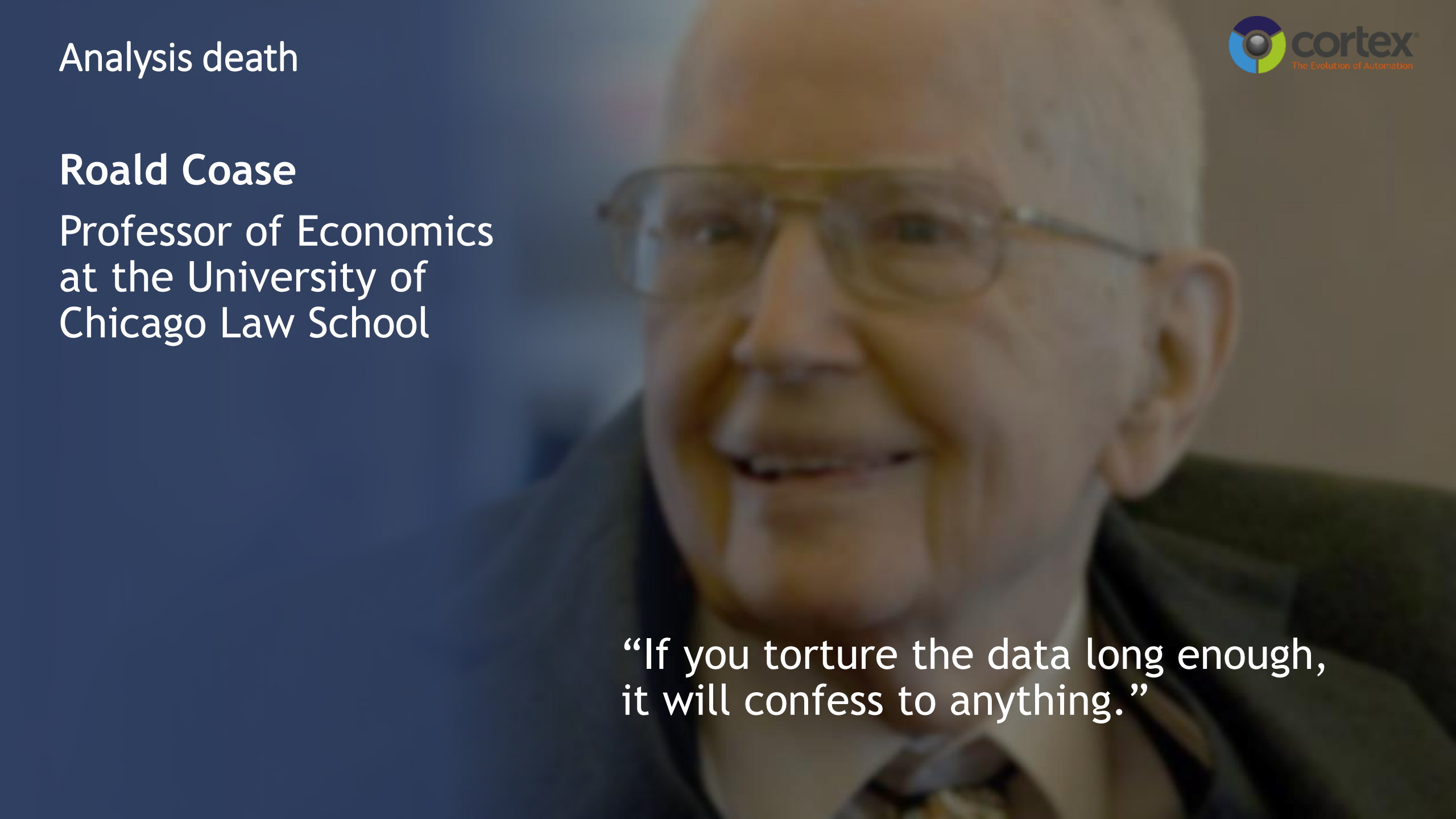
- Derivative knowledge

- Algorithmic bias
- Model Bias
- Data Bias

- Constraints
- Limits



Analysis death



Roald Coase

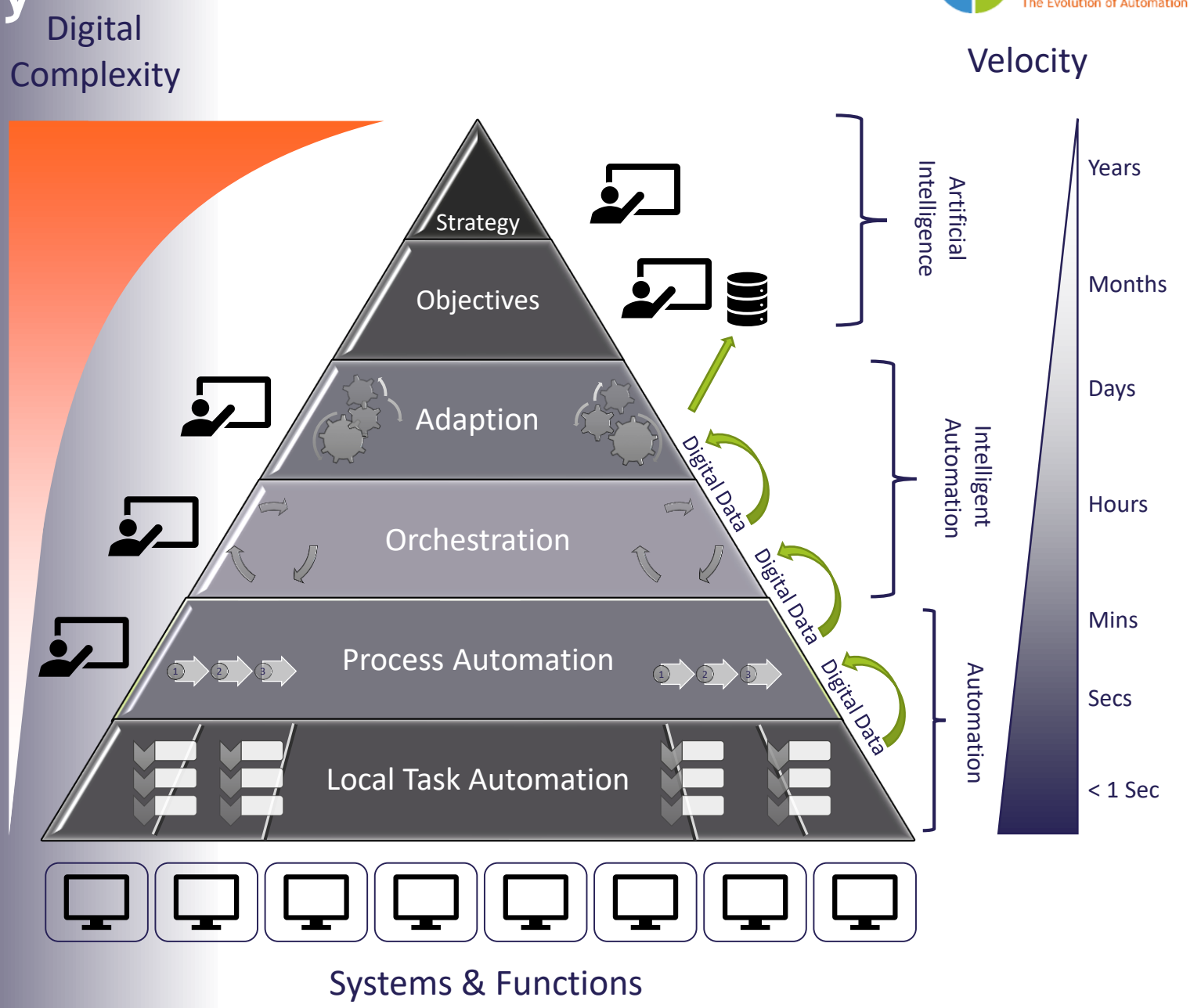
Professor of Economics at the University of Chicago Law School

“If you torture the data long enough, it will confess to anything.”

Complexity and Heirarchy

Capabilities:

- Intelligence
- Information
- Meaning
- Morals
- Learning
- Policies
- Adaption
- Orchestration
- Processes
- Tasks
- Functions
- Reference
- Data



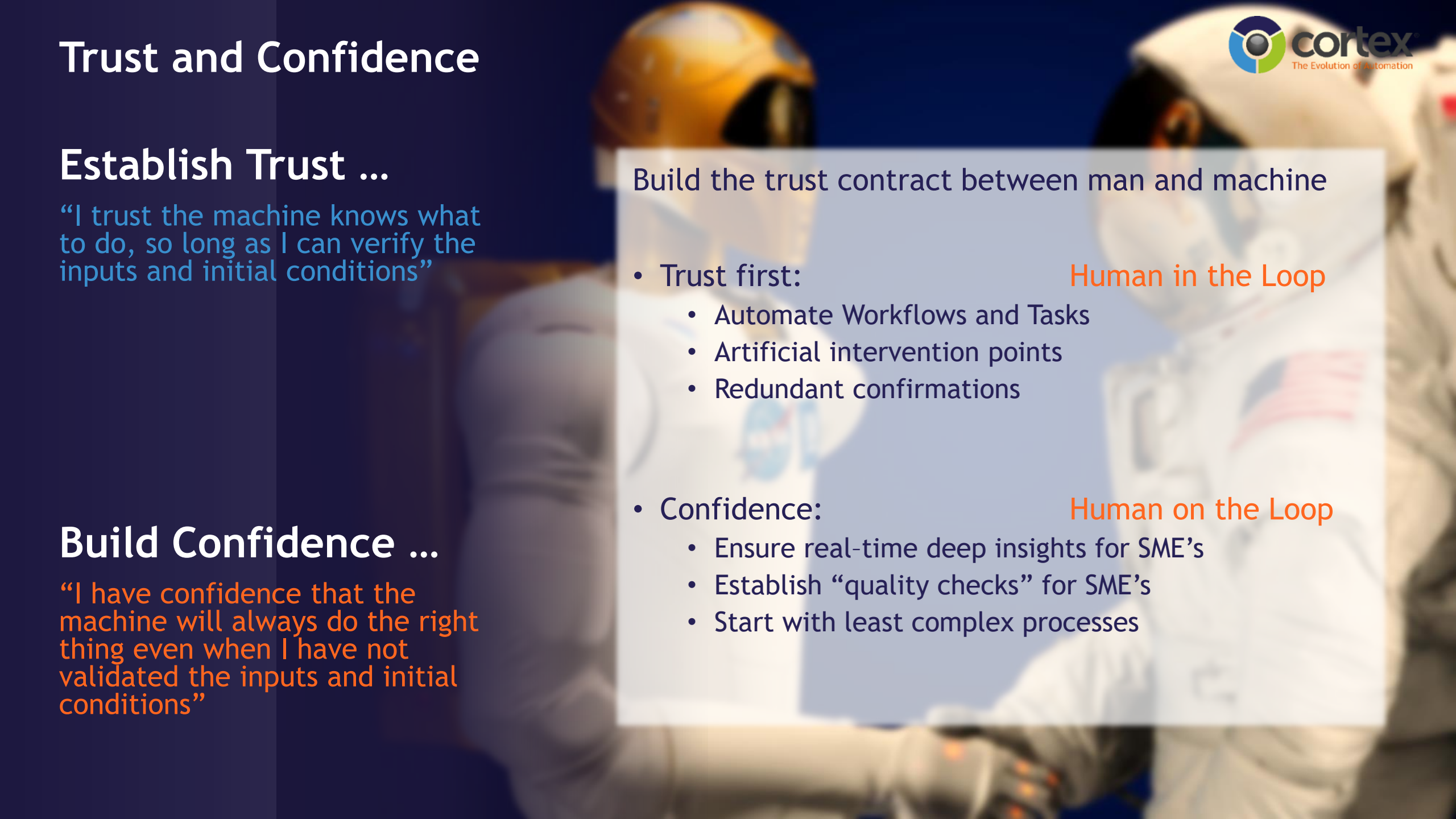
Trust and Confidence

Establish Trust …

"I trust the machine knows what to do, so long as I can verify the inputs and initial conditions"

Build Confidence …

"I have confidence that the machine will always do the right thing even when I have not validated the inputs and initial conditions"



Build the trust contract between man and machine

- Trust first: Human in the Loop
  - Automate Workflows and Tasks
  - Artificial intervention points
  - Redundant confirmations
- Confidence: Human on the Loop
  - Ensure real-time deep insights for SME's
  - Establish "quality checks" for SME's
  - Start with least complex processes

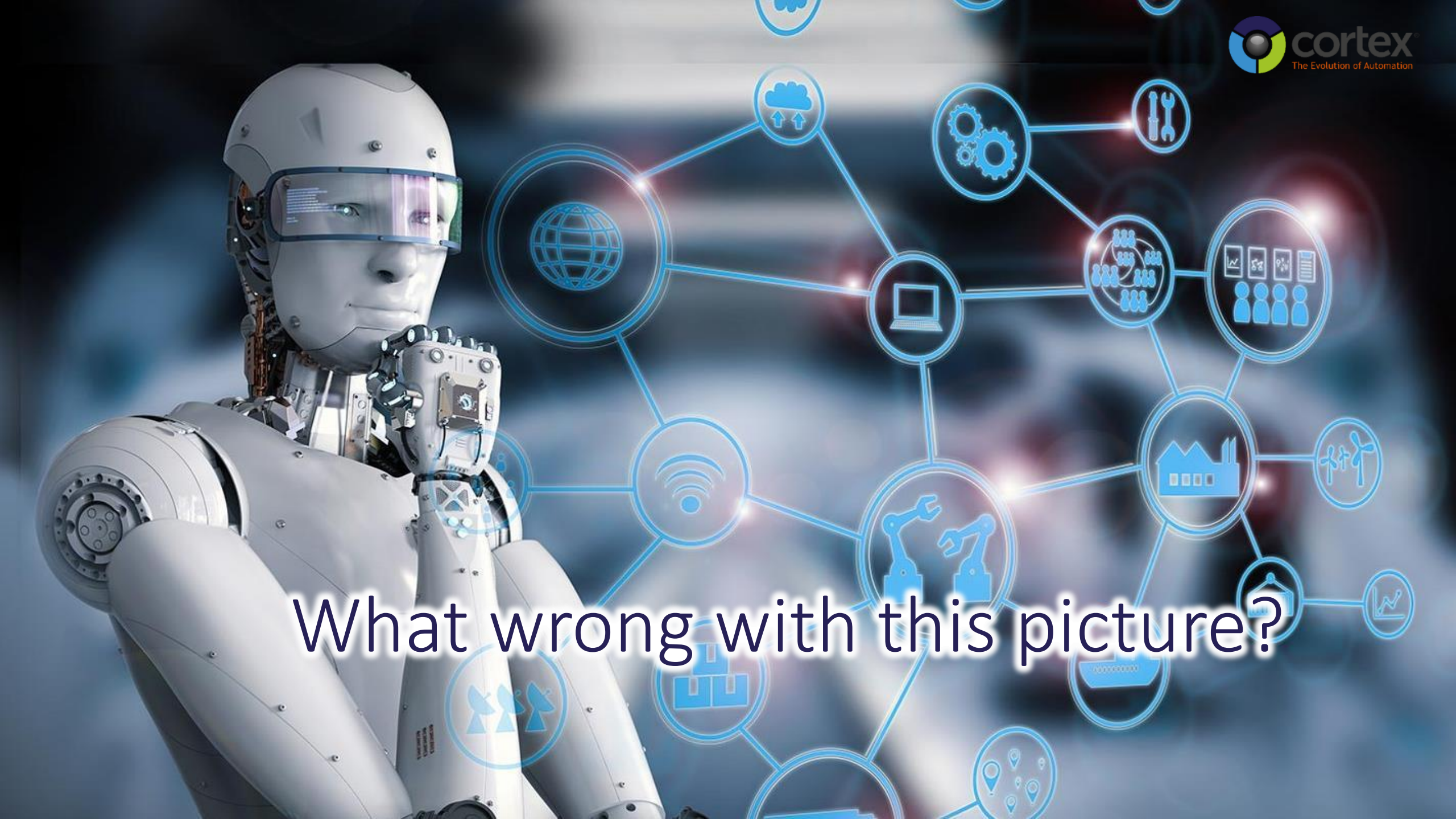
Man and Machine - The ultimate collaboration

Man:

- Emotivity
- Strategy
- Meaning
- Novelty
- Morals

Machines:

- Repeatability
- Complexity
- Scalability
- Accuracy
- Velocity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What wrong with this picture?

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“Artificial Intelligence” or Probabilities

- Imaging Recognition
- Entity relationships
- Stateful Heuristics
- Neural Networks
  - Convolutional
  - Deep

- Chat Bots
- Voice Recognition
- Natural Language Processing
  - Short Form
  - Long Form
- Natural Language Understanding

“Data Analytics” or Facts

- Statistical Analysis
- Pattern Matching
- Classification
- Clustering
- Regression
- …

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So Friend or Foe

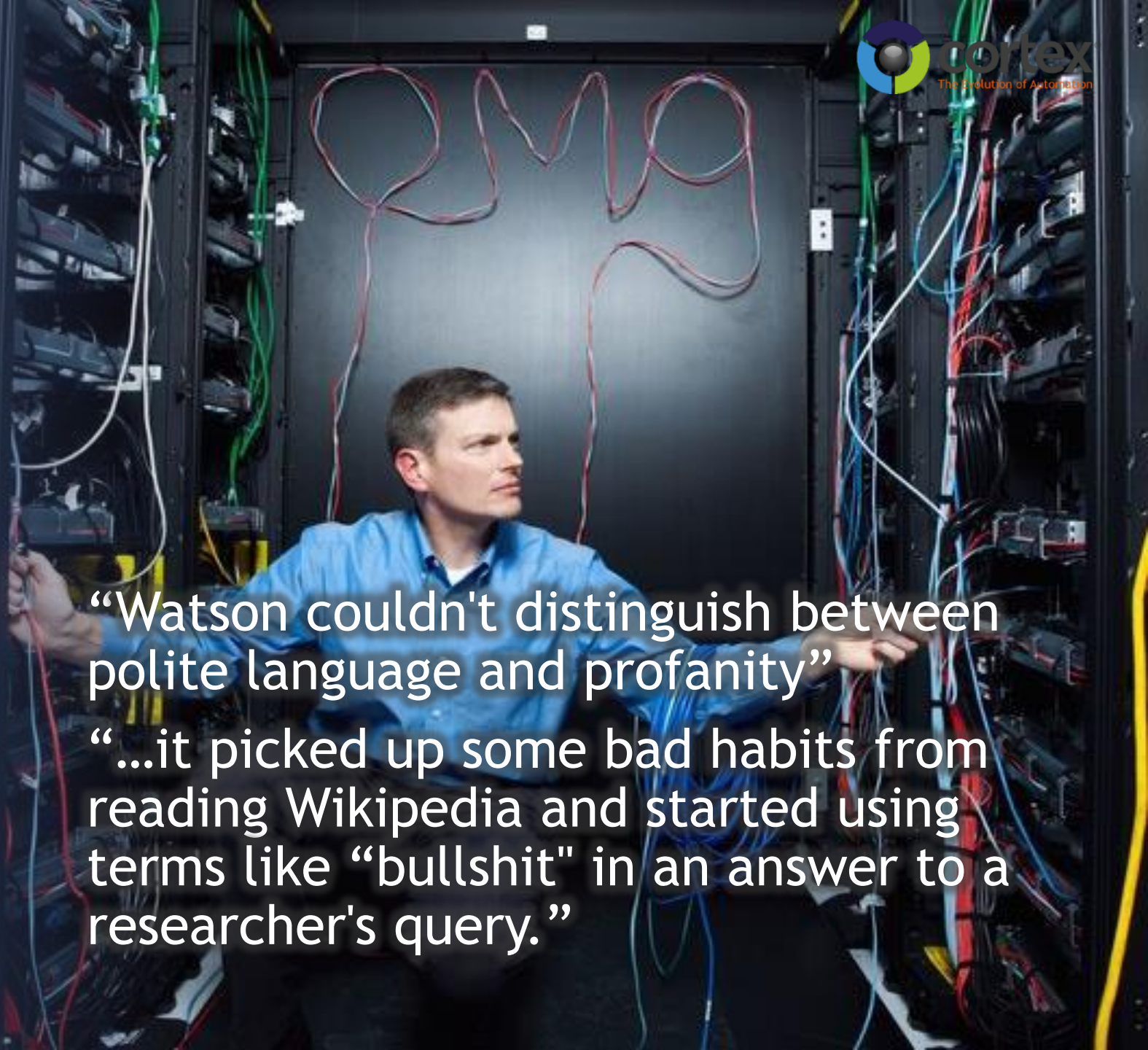
- Start Simple
- Actions before decisions
- Clean Data
- Analytics before AI

- Build Trust
  - Automate processes and data
  - Use Analytics and Algorithms
  - Human in the Loop
- Build Confidence
  - Validate Decisions
  - Monitor Constraints
  - Alert at Limits

Morals, Ethics and humanity!

Eric Brown

IBM Watson Research scientist



“Watson couldn't distinguish between polite language and profanity”

“…it picked up some bad habits from reading Wikipedia and started using terms like “bullshit" in an answer to a researcher's query.”

Beware of the “bots”, they are not IA

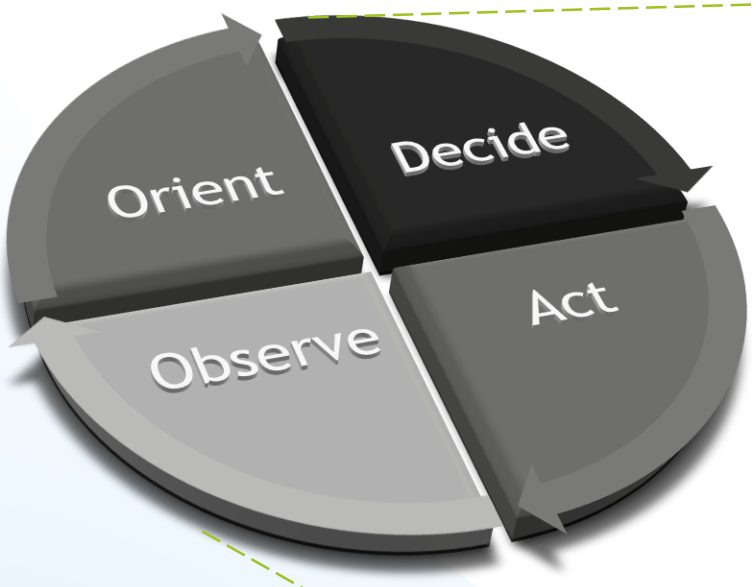
- “Robot” a machine able to orchestrate and execute simple tasks to emulate human activities.

- “Automaton” a machine capable of repeatedly mimicking a sequence of actions.

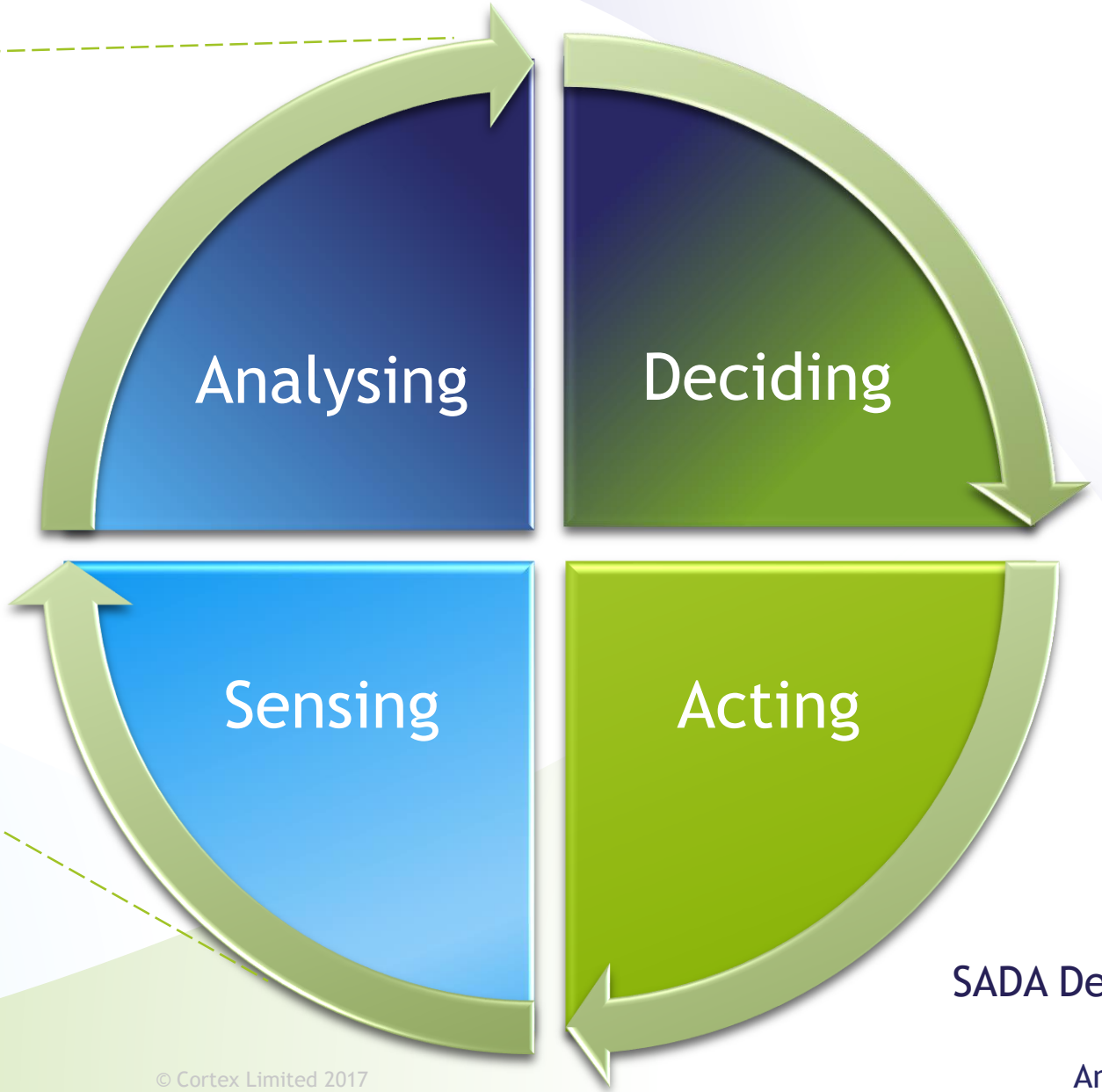
“RPA” is a quirky Automaton

… that looks a bit like a robot if you squint

How to achieve Autonomous Operations



John Boyd Decision Model



SADA Decision Model

Confidential
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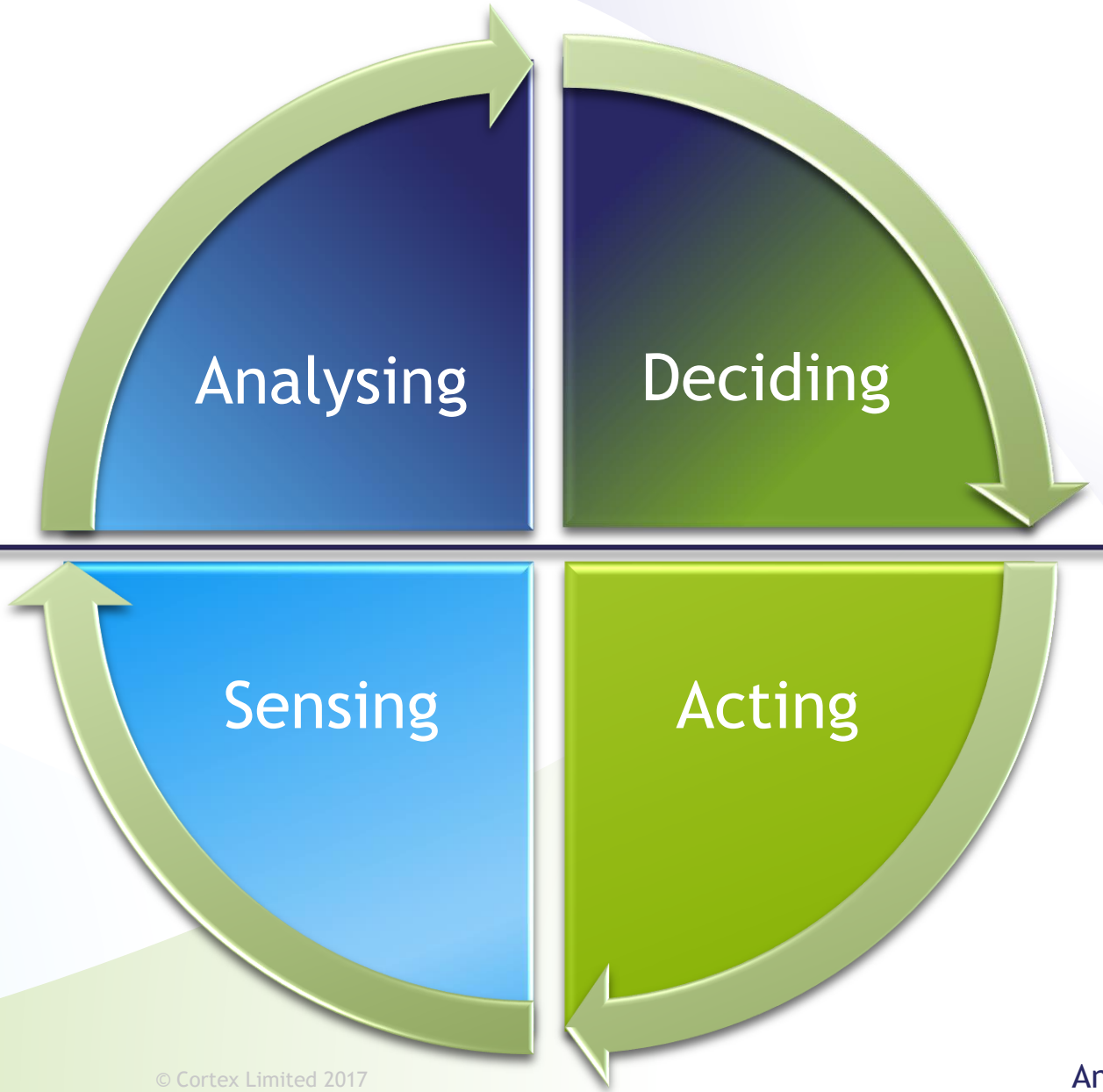
Intelligent

Automation



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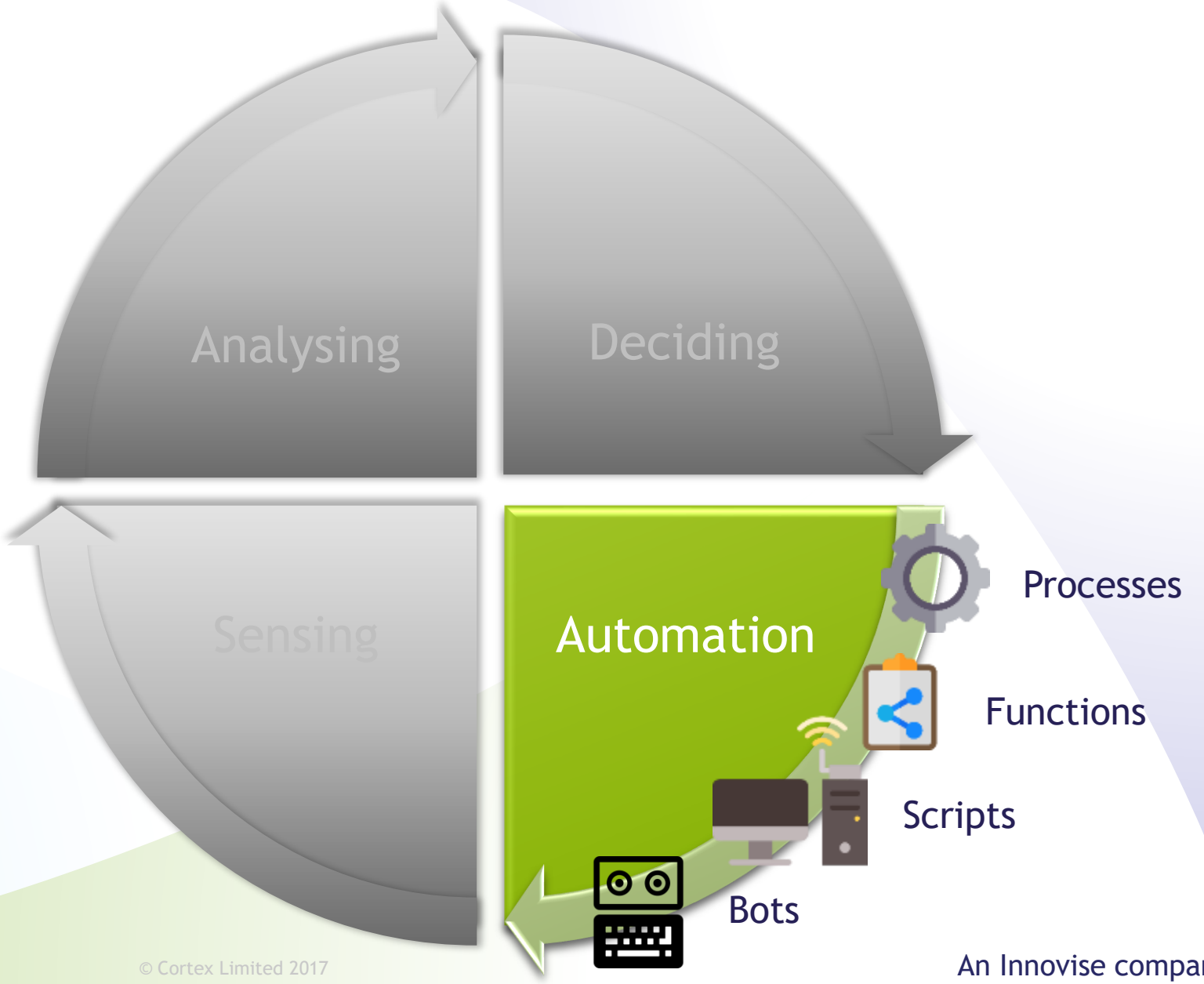
Current Automation



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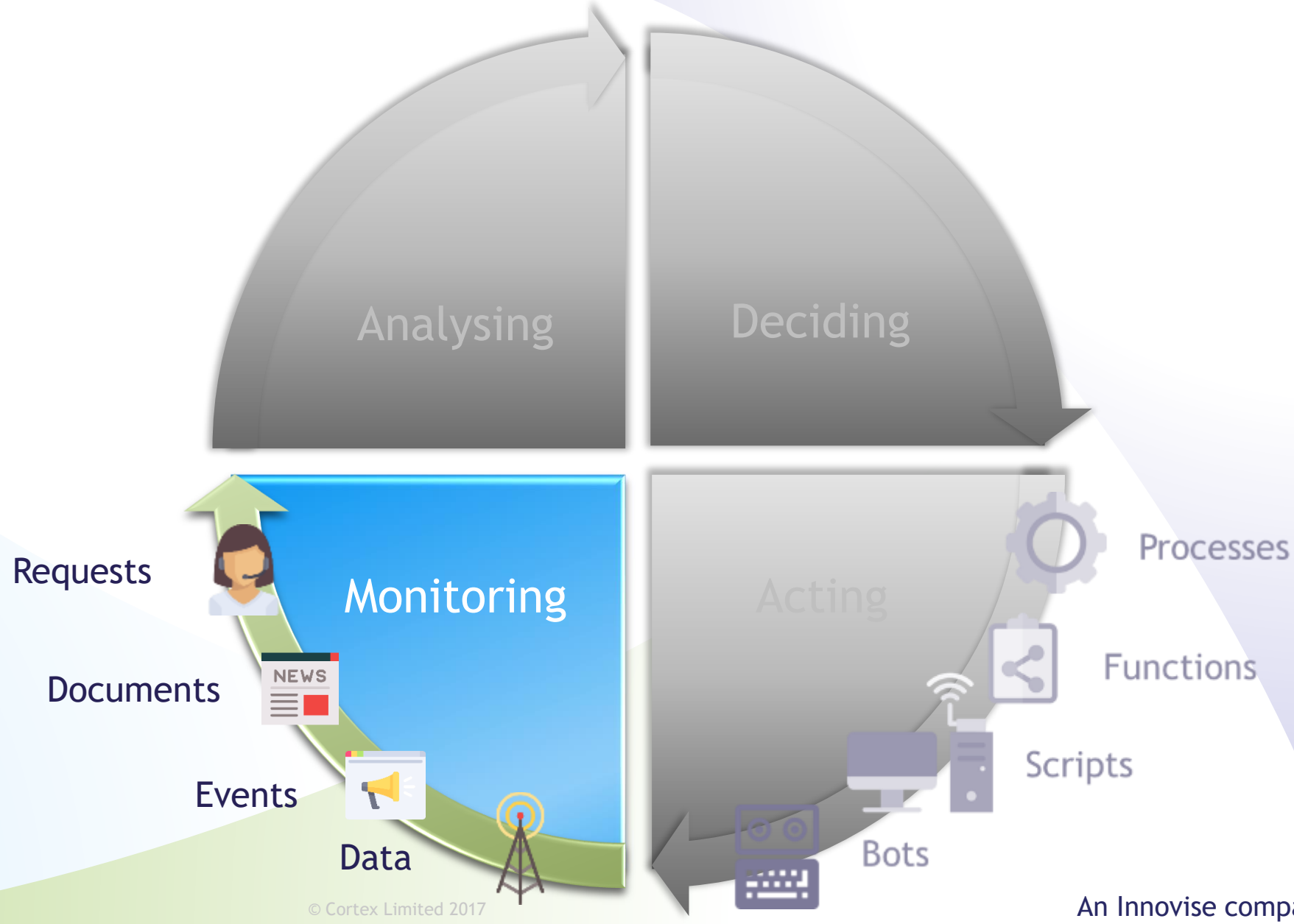
Monitoring and Sensing



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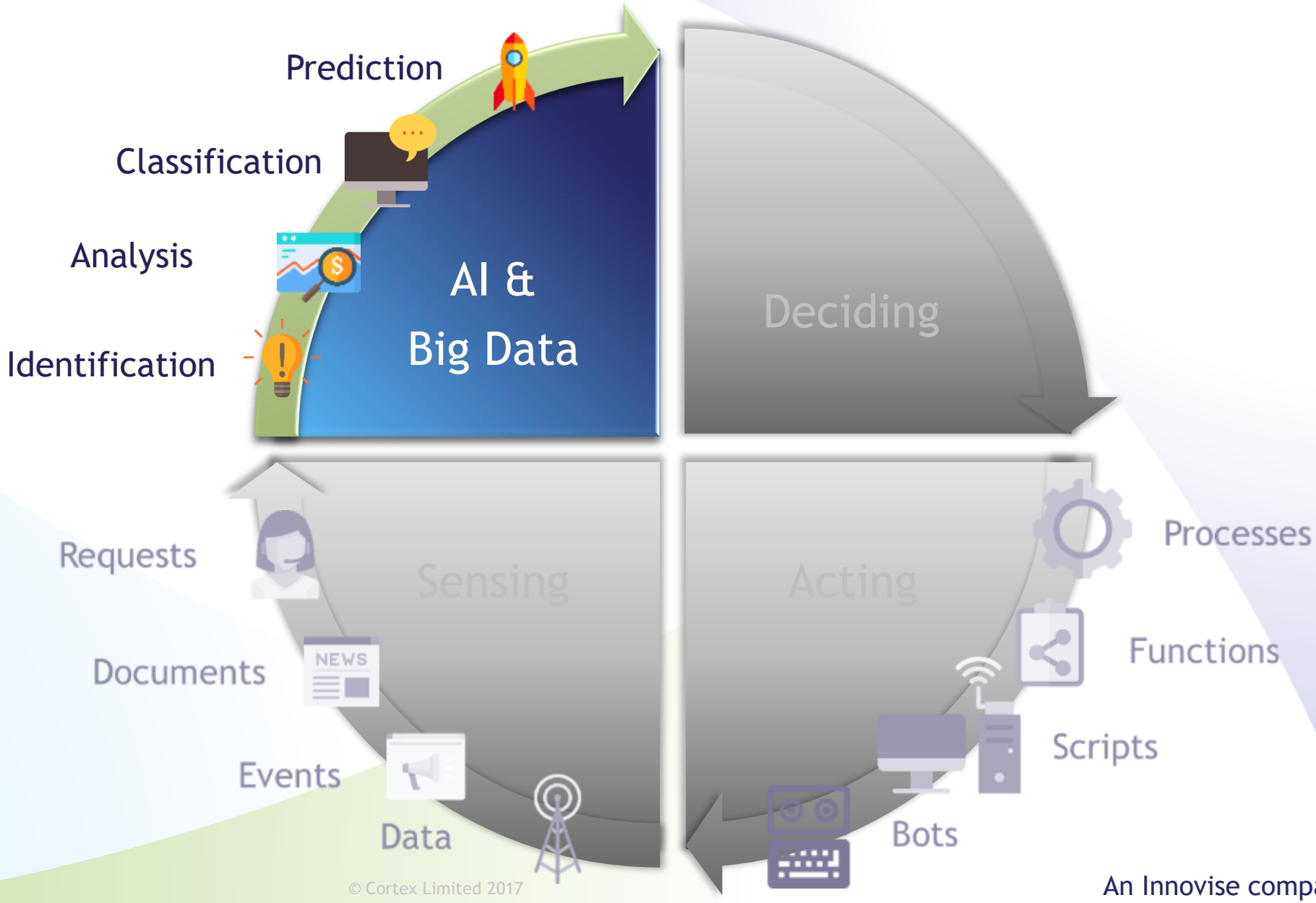
AI, Analytics & Big Data



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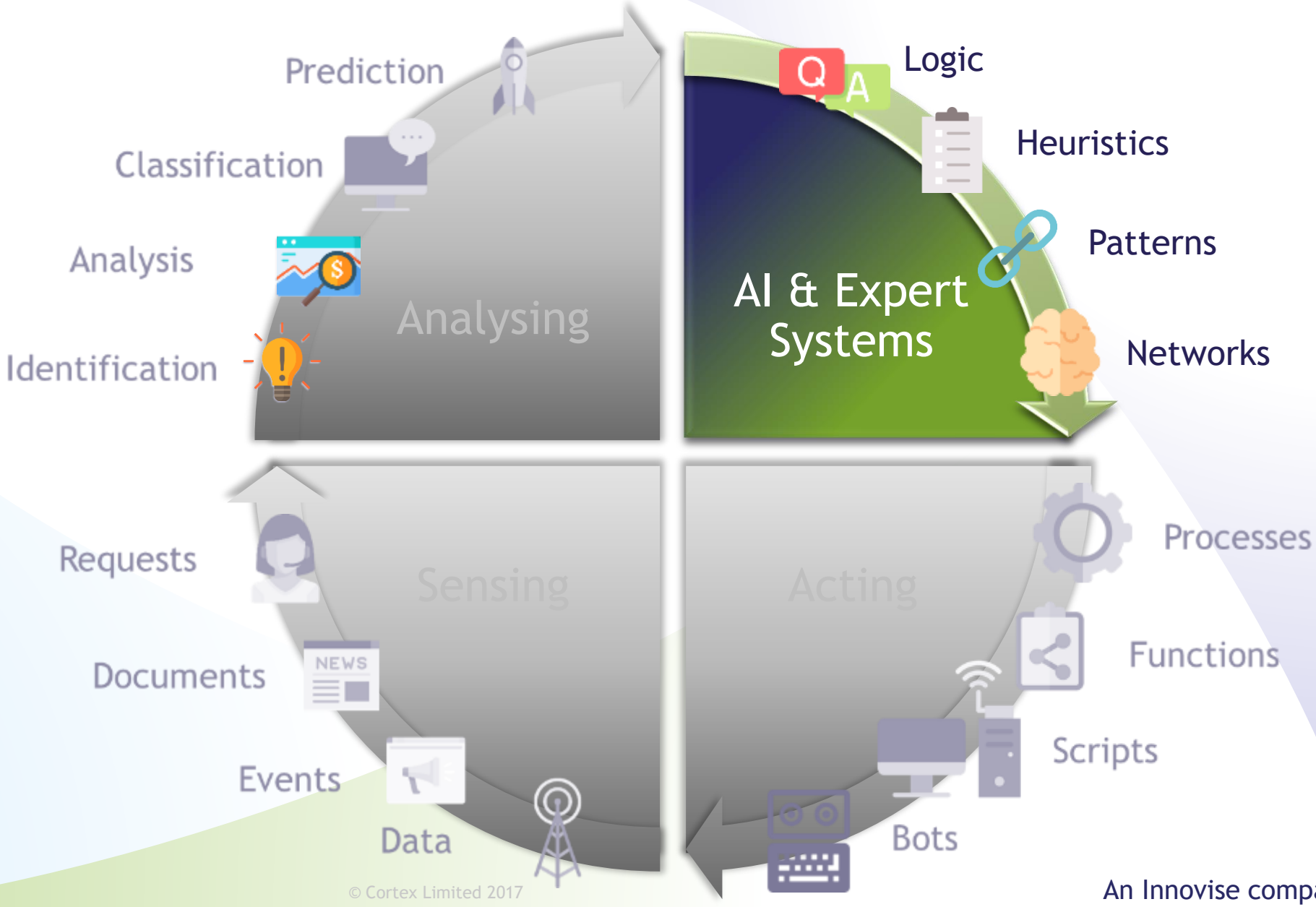
Logic, Rules, Inferencing and Neural Nets



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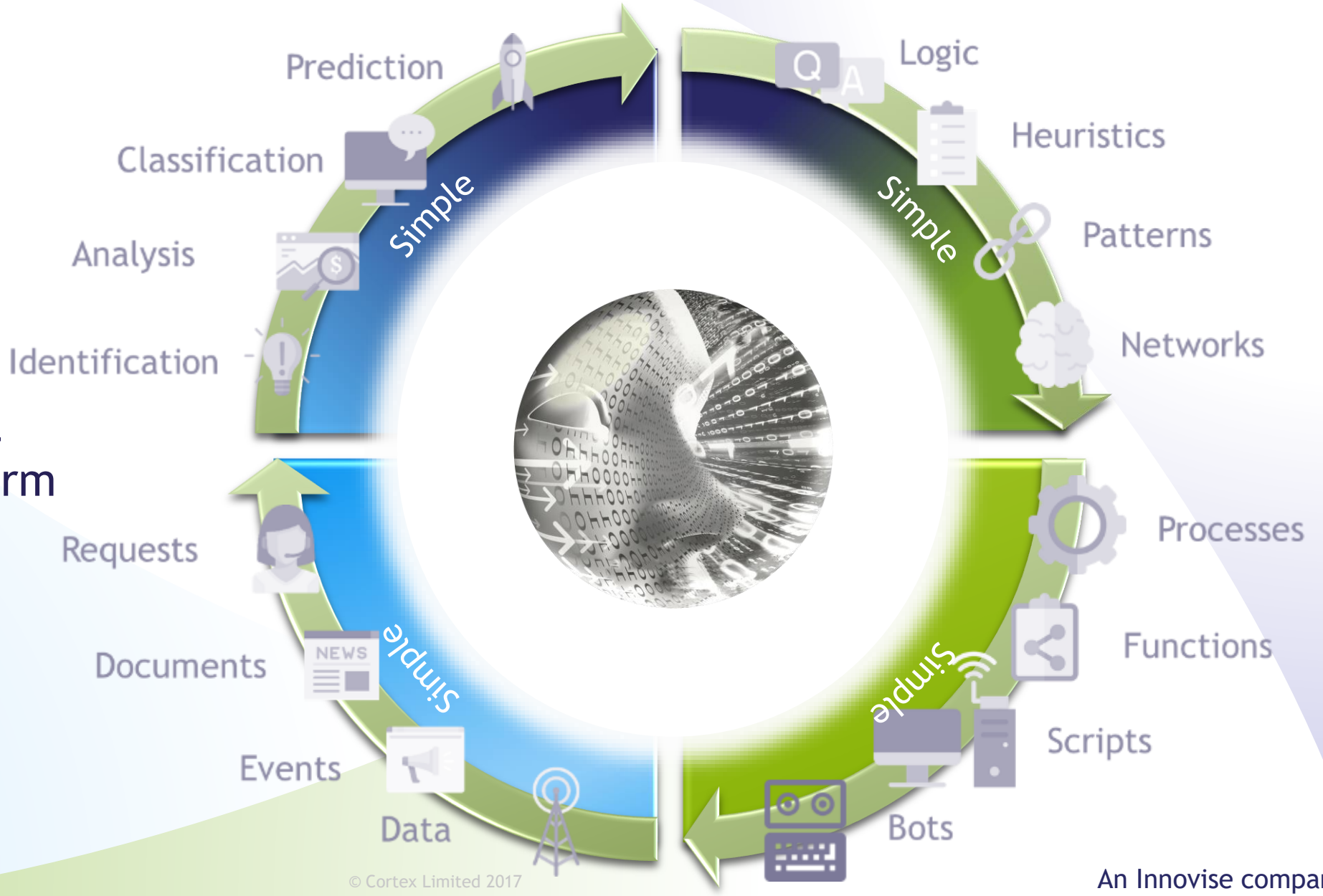
Intelligent Automation

The first universal automation platform



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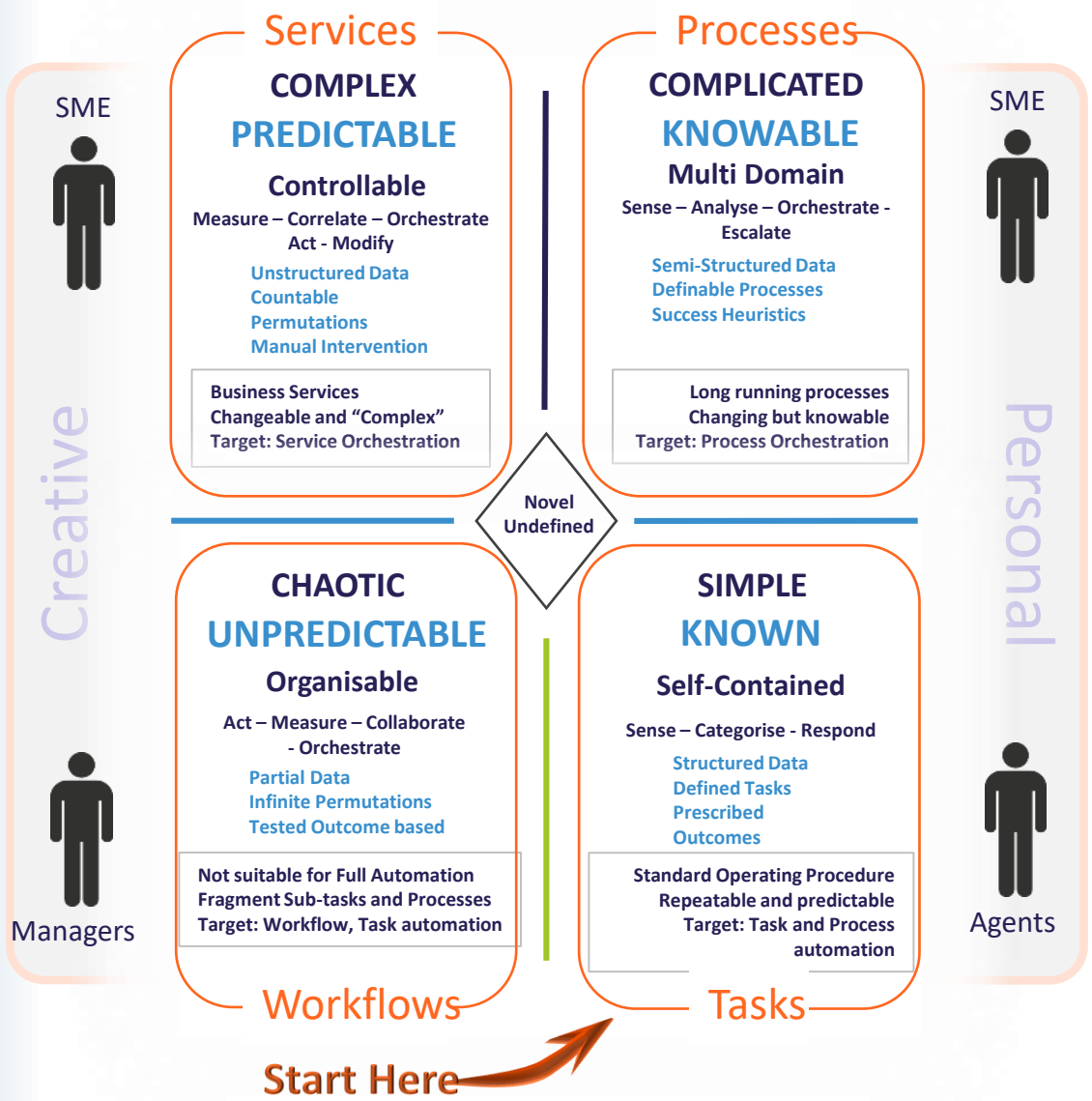
Automation reveals…

- Emergent Processes
- Shadow Knowledge
- Decision Criteria



Transforming operations

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Sales & Distribution	Underwriting	Administration	Claims
Velocity 130x	*Self Serve 92%*	*Business tripled*	*Released 60 staff*

"We now do in minutes what used to take days"
Capgemini

"…the consistency has transformed our operations…"
Prudential

ARAG
RBC Insurance
PRUDENTIAL
Capgemini
Tech Mahindra
IGATE
Speed.Agility.Imagination
TATA
TATA CONSULTANCY SERVICES

Organisations use Cortex to transform their operations through man machine collaboration

Telco

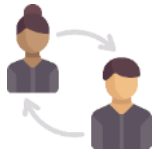
Retail

Banking

Insurance

Networks

IT



HR

Accounting

Logistics

Operations

Sales

Strategies - Technologies - Methodologies - Ecosystem

Software Company with deep domain experience

65%
CAGR

- An Innovise Company
- Profitable
- Self-funding
- No debt

Process automation
"Thought Leaders"
Business - IT - Telco

28
years
in Process Automation
and Control Engineering

>300
man-years of
knowledge and
experience

INVESTORS IN PEOPLE | Gold

nqa.
ISO 9001
Registered

The industry likes Cortex…

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"… the Cortex solution is a compelling option for companies looking to apply cognitive technologies . . . enterprises across a wide range of vertical industries should consider them as part of their digital transformation initiatives."

cognilytica

HFS Research

"… innovation such as self-learning and self-remediations as Cortex is demonstrating will become a new focal point for the industry."

Gartner®

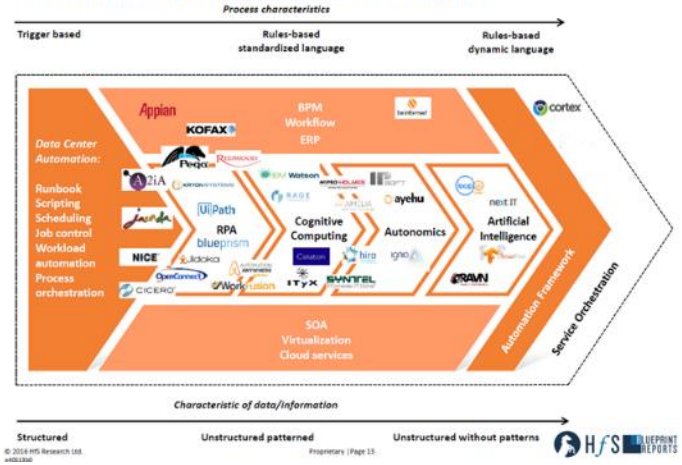
"… to me Cortex is a unique vendor that produces decent case studies with CSP's in their technology space."

Gartner®

"Cortex is defining a new market "
"Intelligent Automation"

Gartner 2014 CoolVendor

The HfS Intelligent Automation Continuum



451 Research®

"Cortex has the potential to enable businesses to maintain processes and ensure consistent service levels"

*"…now leapfrogging their peers by leveraging insights from the early deployments… deploying **Cortex** as the orchestration engine, and then linking up to the plethora of IA."*
HfS Blueprint 2016

Everest Group PEAK™ MATRIX
IT INFRASTRUCTURE AUTOMATION PRODUCTS
2017 MAJOR CONTENDER

cortex®
Intelligent Automation

Get Intelligent automation in your DNA

To capture data ready for AI