



# Chief Data Officer Summit **2019**

#CDOSUMMITMEA

How Business will leverage Data Science & Machine Learning  
as drivers for Digital & AI transformation in the 4th Industrial  
Revolution

Dr. Mark W Nasila

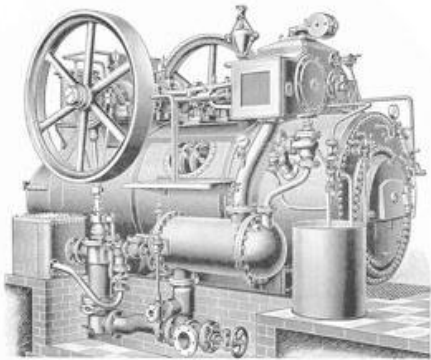
Chief Analytics Officer, Consumer Retail and Chief Risk Office

First National Bank, South Africa

# Timeline & Innovation Between Revolutions

## First

**Mechanical production**  
steam, water



**1784:** First power loom

## Second

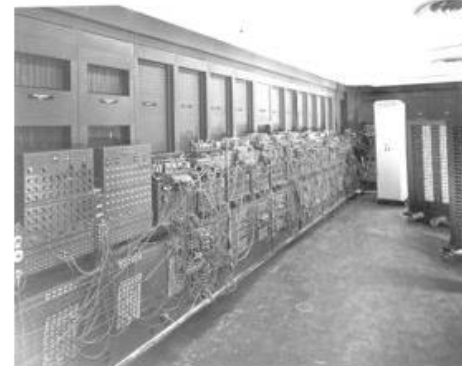
**Mass production**  
electricity



**1870:** First assembly line,  
Cincinnati slaughterhouses

## Third

**Digital**  
IT, Electronics



**1969:** First programmable  
logic controller (PLC)

## Fourth

**Cyber-physical systems**  
physical + digital + biological



**Today:** Cyber-physical  
systems and robots learning  
from humans

Source: Schwab, K. (2017) The Fourth Industrial Revolution

# Innovation: First Principles Thinking

## Horse Drawn Wagons vs. The Steam Engine



# Innovation: First Principles Thinking

## SpaceX Falcon Heavy vs. The Classic Saturn V



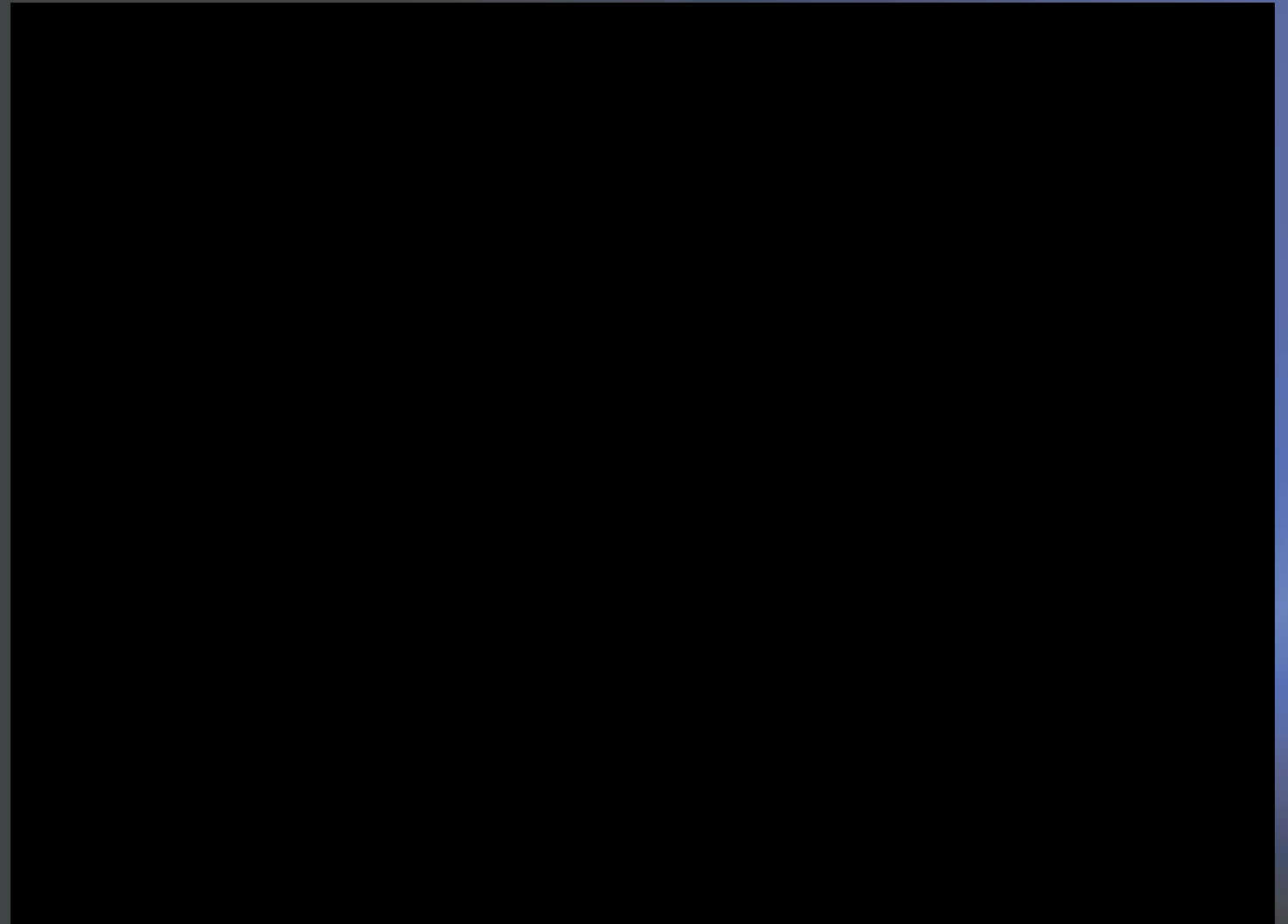
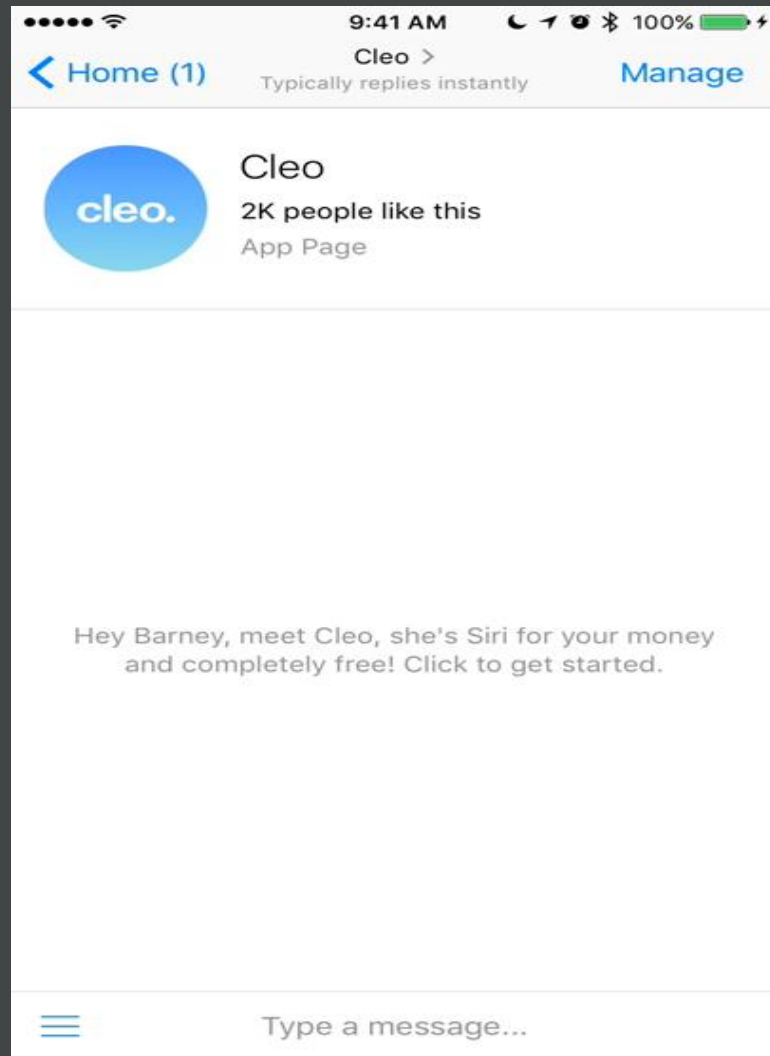
# Innovation: Iterative Thinking



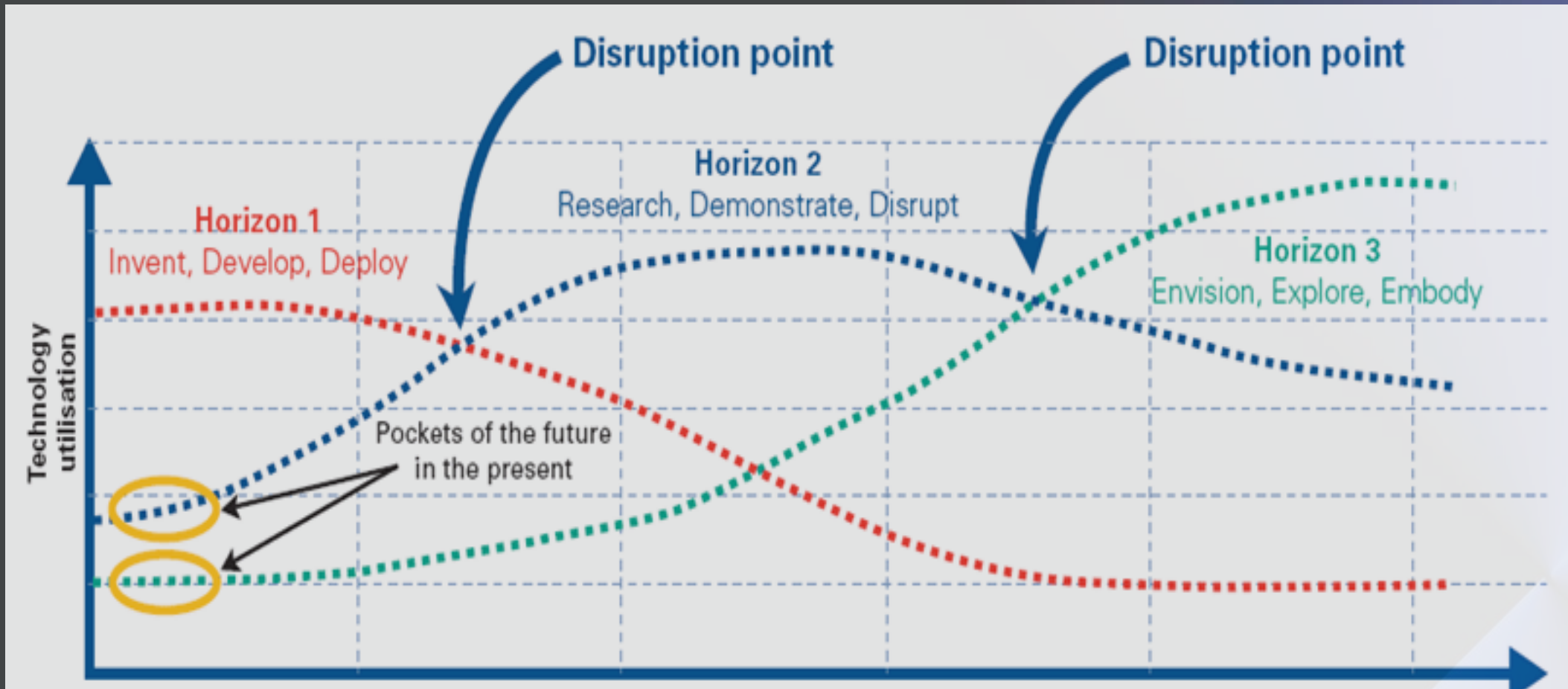
Bank at one branch,  
your name on a card  
in a drawer



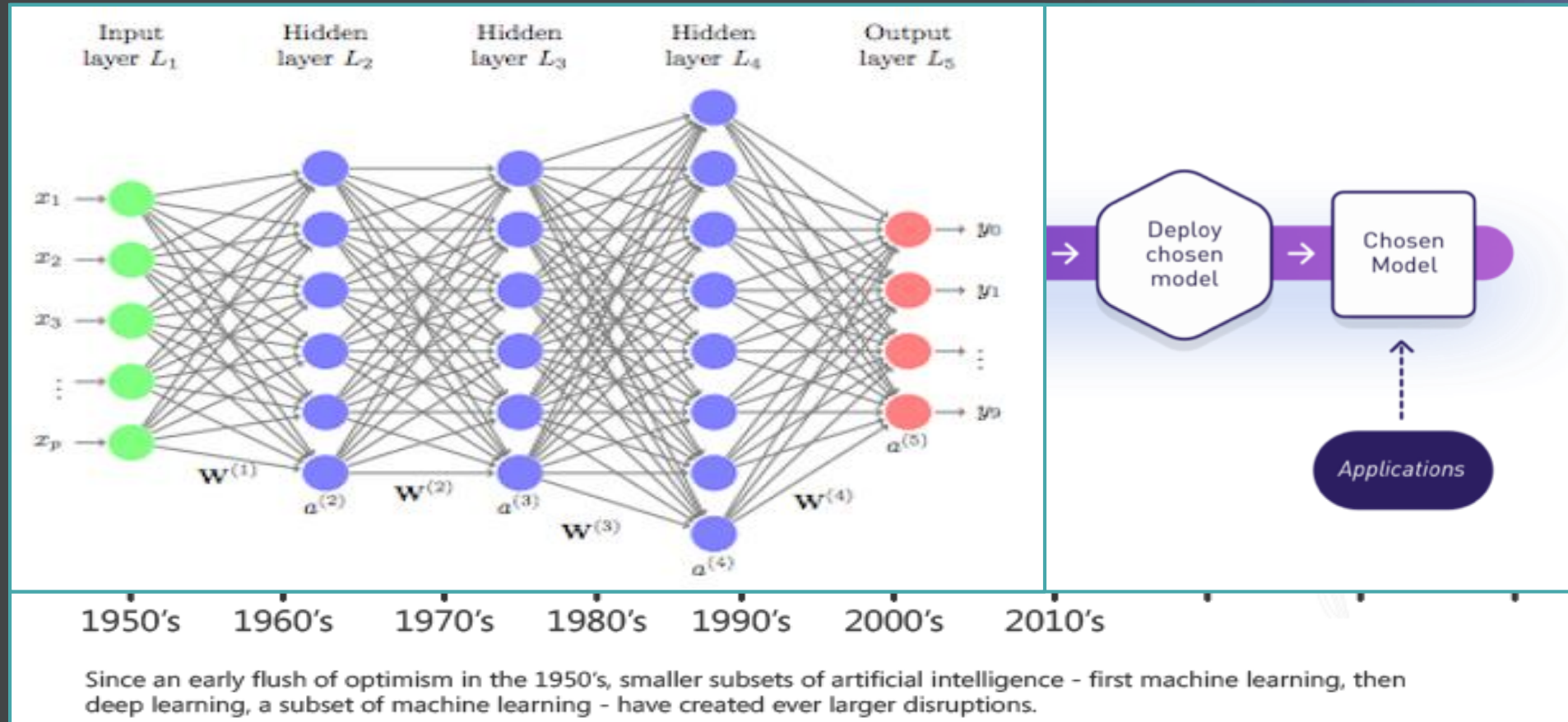
# Cleo Chatbot: Capital One Video



# First Principles Thinking vs. Iterative Thinking vs. No Innovation

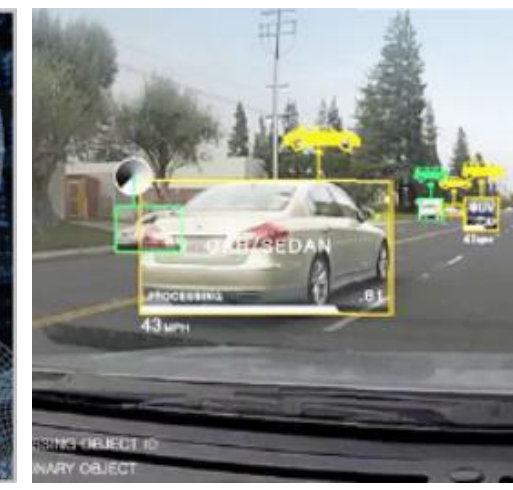
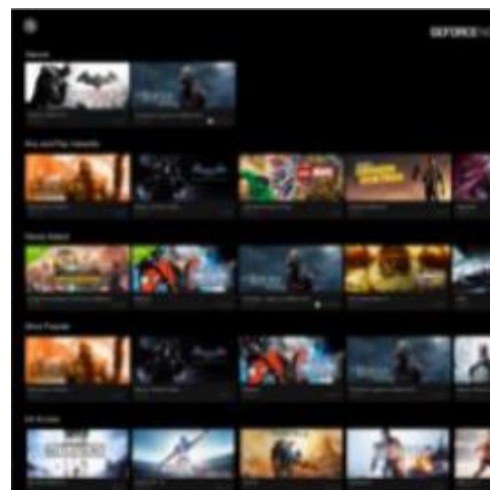
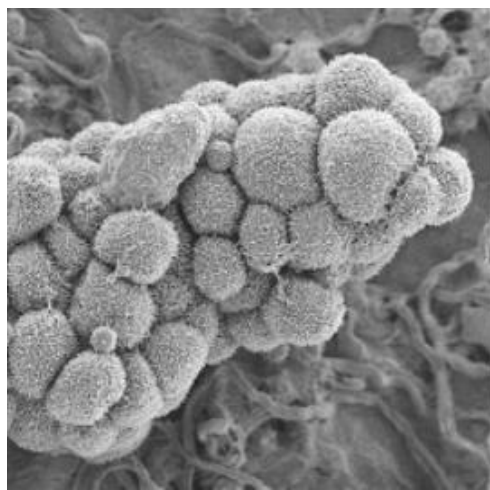


# Analytics Intelligence vs. Machine learning vs. Deep Learning for Digitisation





# Deep Learning Techniques – Disruptions in all Domains



## INTERNET AND CLOUD

Image Classification  
Speech Recognition  
Language Translation  
Sentiment Analysis  
Recommendation

## MEDICINE, BIOLOGY AND AGRICULTURE

Cancer Cell Detection  
Diabetic Grading  
Drug Discovery  
Precision Agriculture

## MEDIA AND ENTERTAINMENT

Video Capturing  
Video Search  
Real Time Translation  
Virtual Reality  
Augmented Reality

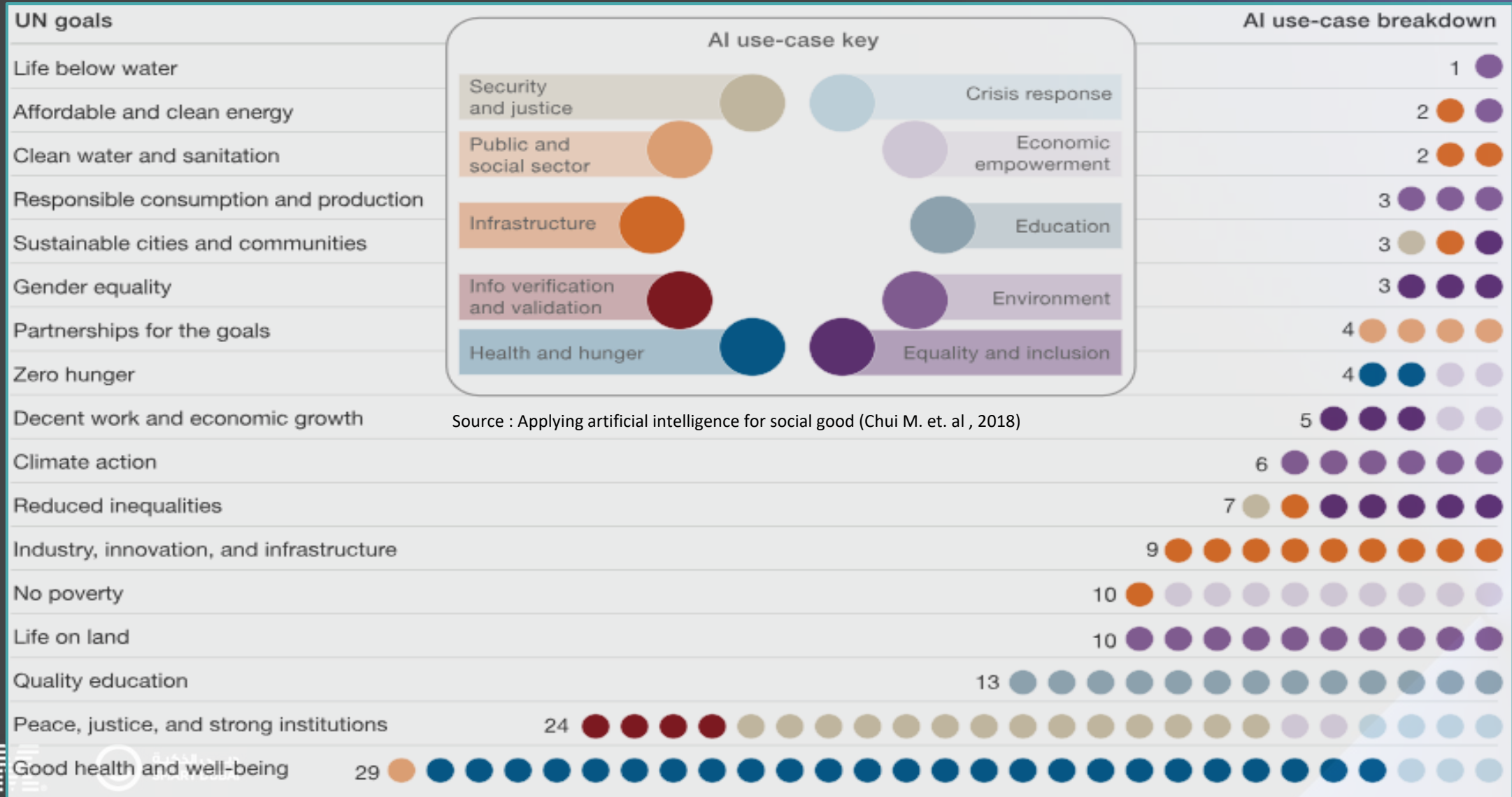
## SECURITY AND DEFENCE

Face Detection  
Video Surveillance  
Satellite Imagery  
Drone Technology

## AUTONOMOUS MACHINES

Pedestrian Detection  
Lane Tracking  
Recognize Traffic Sign  
Object Recognition Object  
Detection

# Ai Use Cases Addressing Human Experiences



# Business Engagement in the 4th Industrial Revolution



# Customer Digital Expectations



Available anytime  
on my terms



Cohesive, integrated  
and simple



Fits in with my life and  
is effortless



Respectful and  
dedicated to my needs



Responsive and  
interactive



Relevant offers without  
infringing on privacy



Customised and  
tailored to my  
preferences



Make me  
feel important



Predicts my  
preferences



Associates with  
my identity



Makes me love  
the brand



Excite and  
engage me

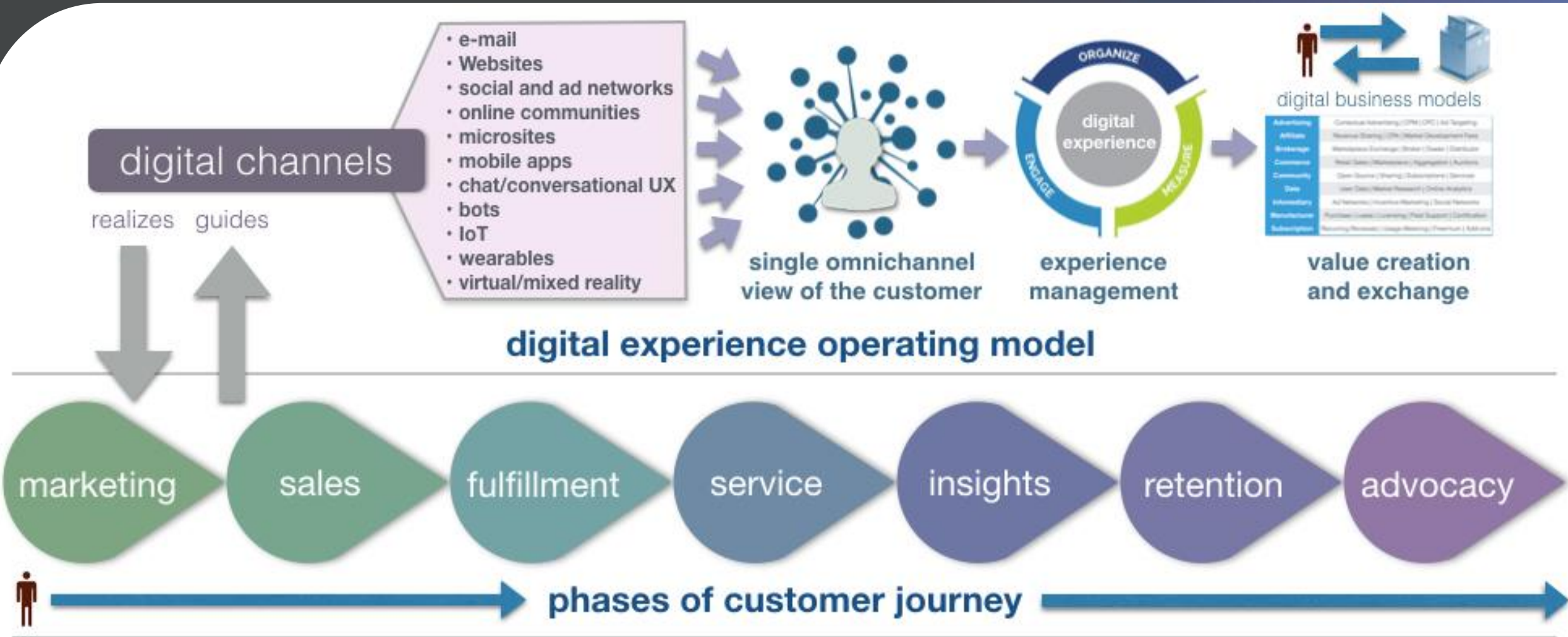


Makes me  
feel unique

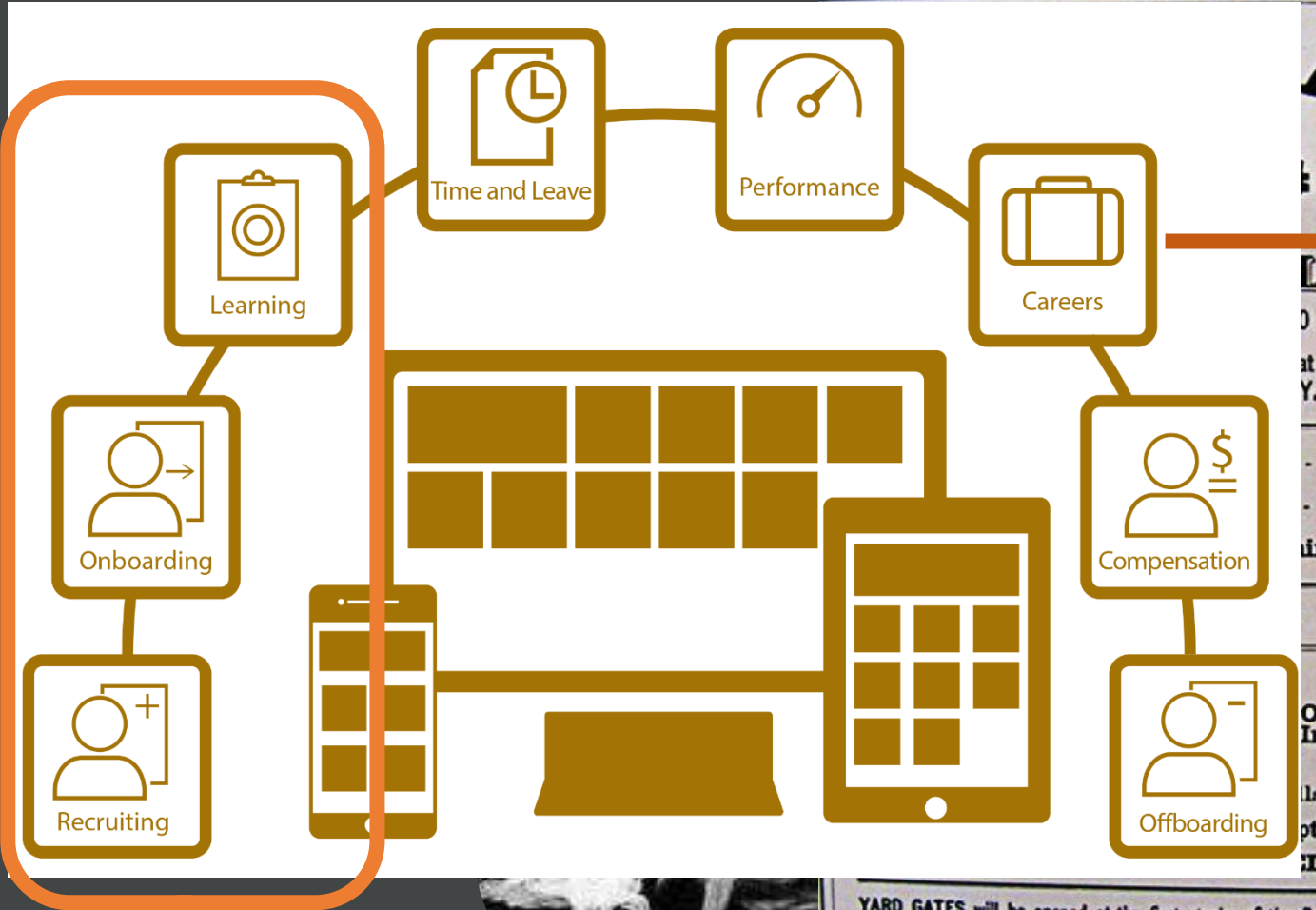


Is safe  
and secure

# Multichannel Digital Customer Experience



# Human Workforce Transformation



YARD GATES will be opened at the first stroke of the Bell  
Speed Gates Commence hoisting, five minutes before

# What if the computer says “no”? The machine isn't always right



Weak vs Strong AI

Accountability: The creator of the algorithm, The data source and The Operator

**END TO END GOVERNANCE**

**Analytics Governance** Human judgment -- and oversight -- is still required

**Results-sharing Governance**

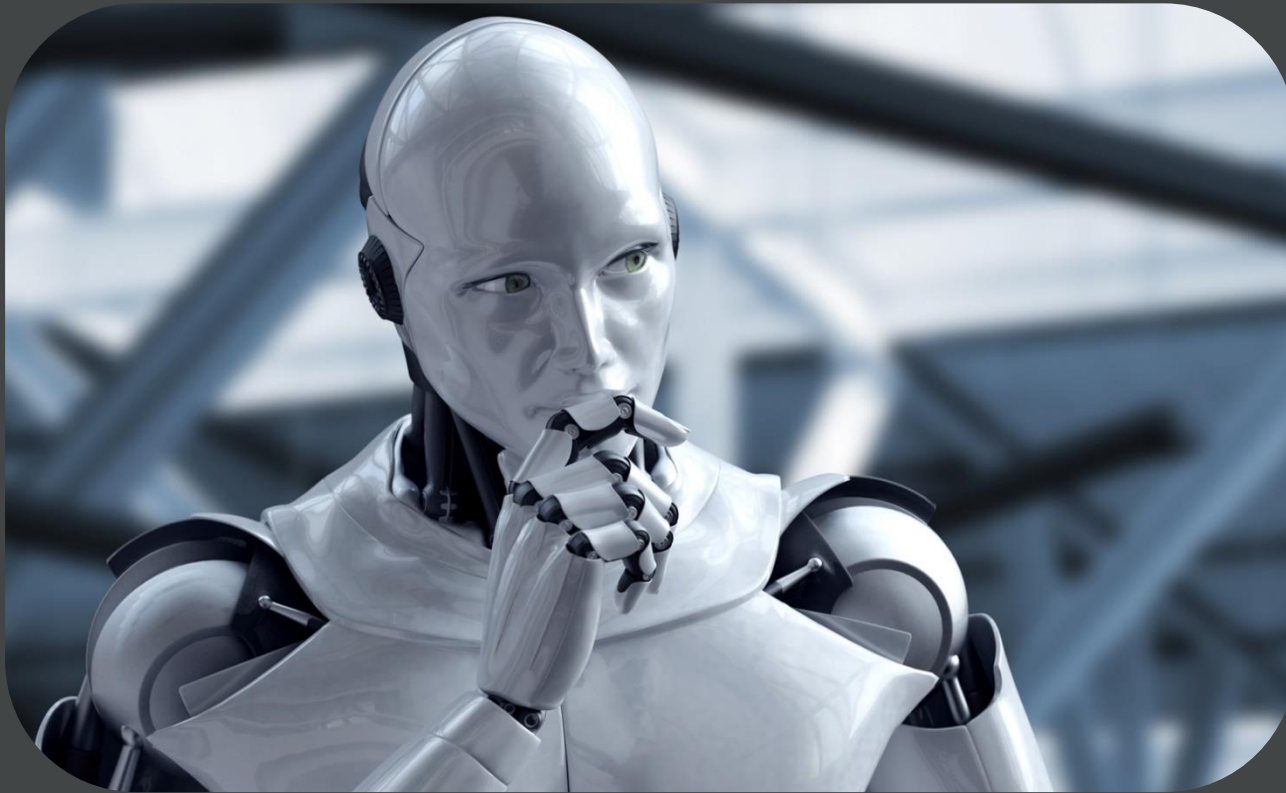
**Decision-Making Governance**

**Information and Data Governance**

**IT Governance**

Resort to alternative strategies/technologies

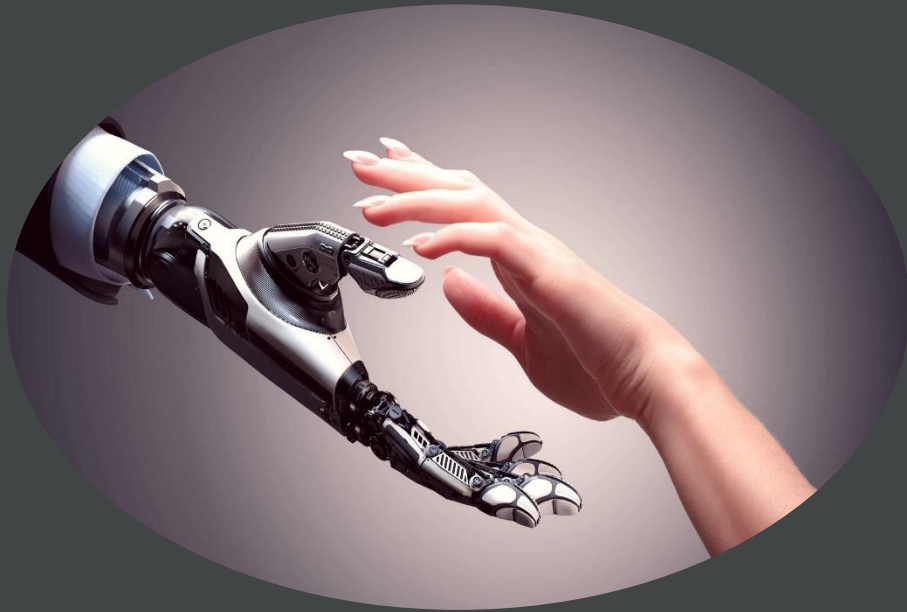
Un-expected consequences e.g. Home/Privacy invasion, Infringing regulatory requirements ~  
Legal liability for artificial intelligence works the same as normal liability



How will businesses **reinvent** themselves in the 4th Industrial Revolution Era?



# Thank you!



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