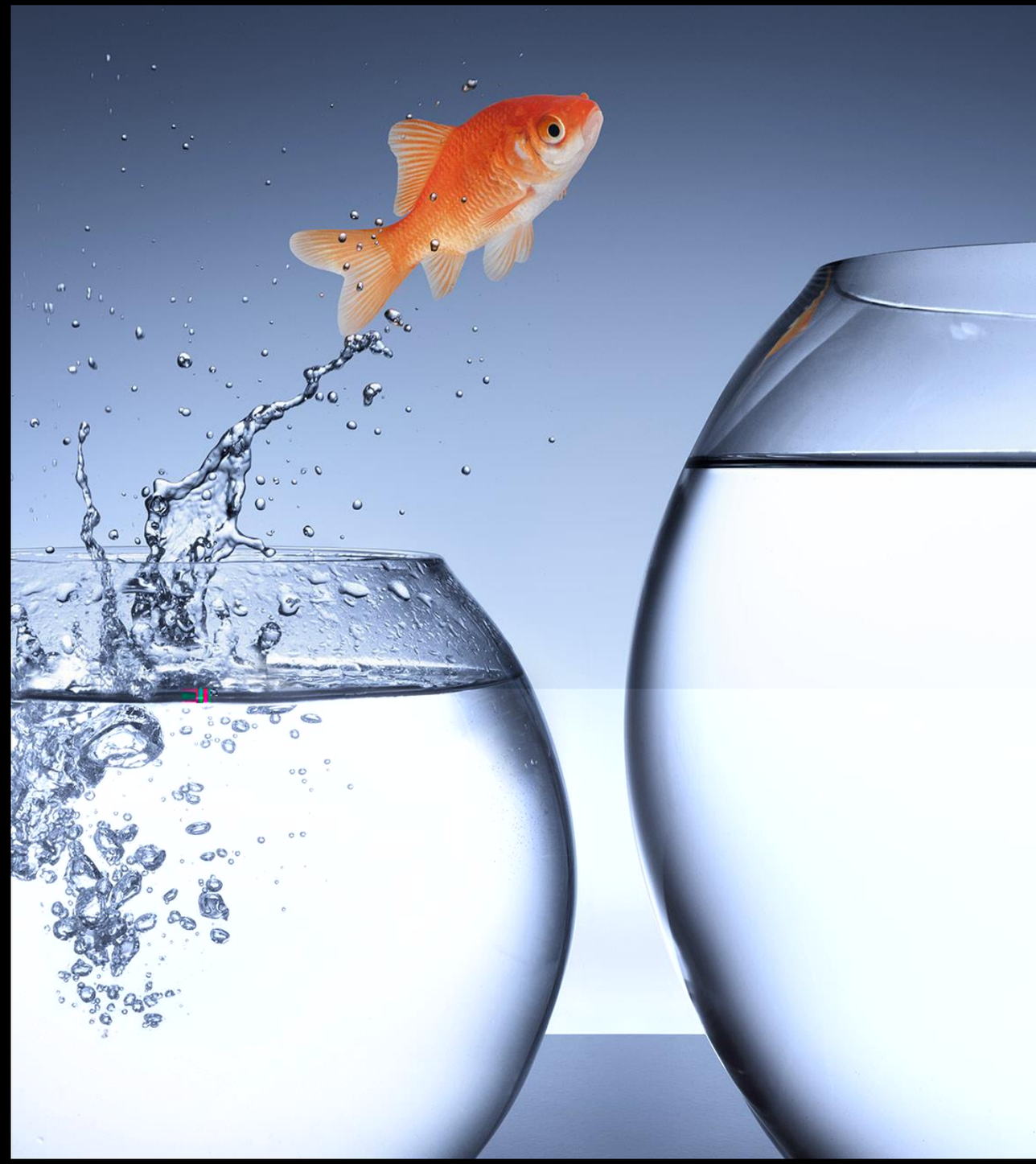
What business are you in?

Think Beyond the Rails

The AI Opportunity

AI could potentially deliver additional global economic activity of around **$13 trillion globally by 2030**, or about 16 percent higher cumulative GDP compared with today

This amounts to about 1.2 percent additional GDP growth per year



6 out of 10 people in this room use AI every day

Business trends accelerating AI

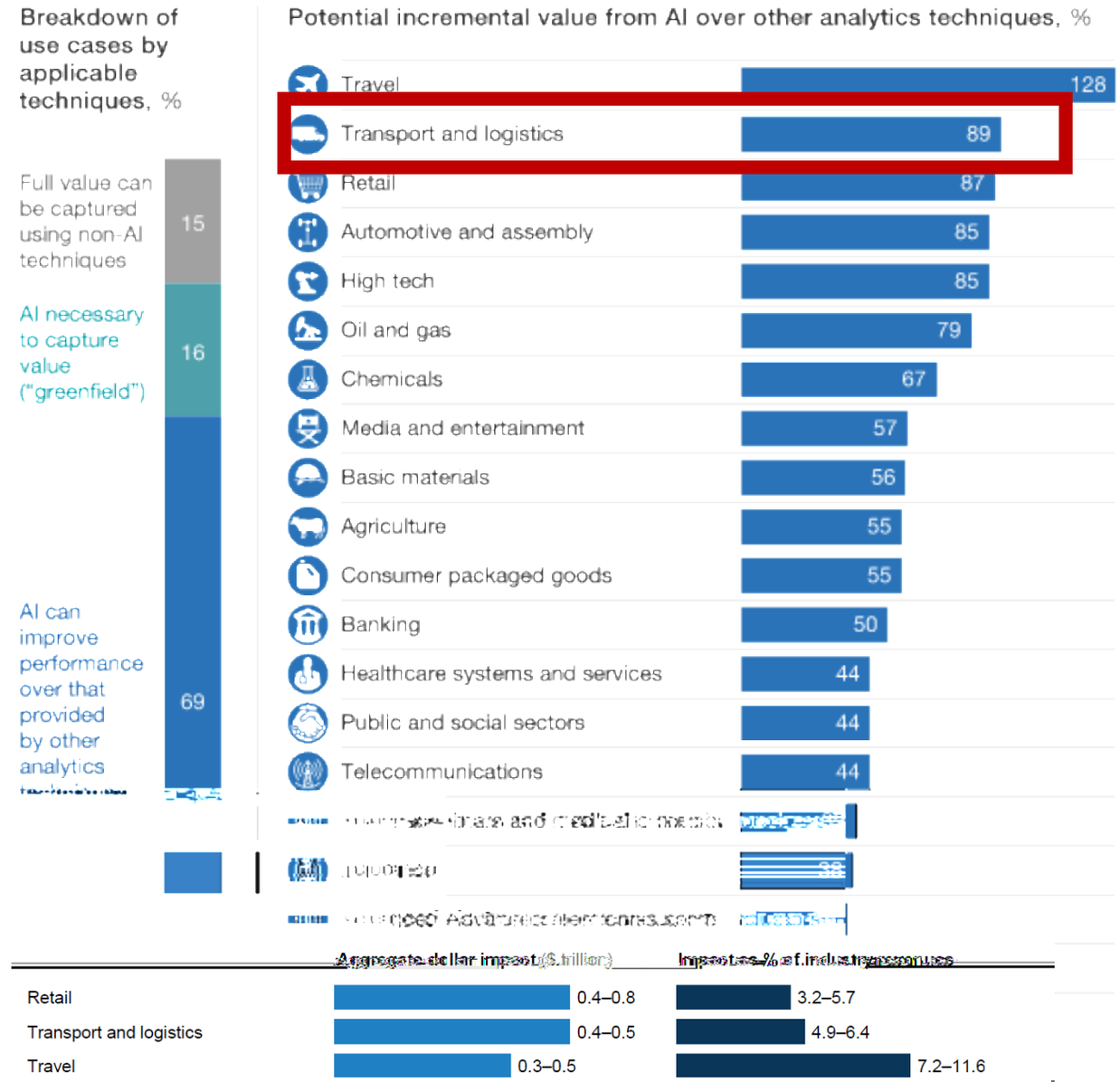
Challenges

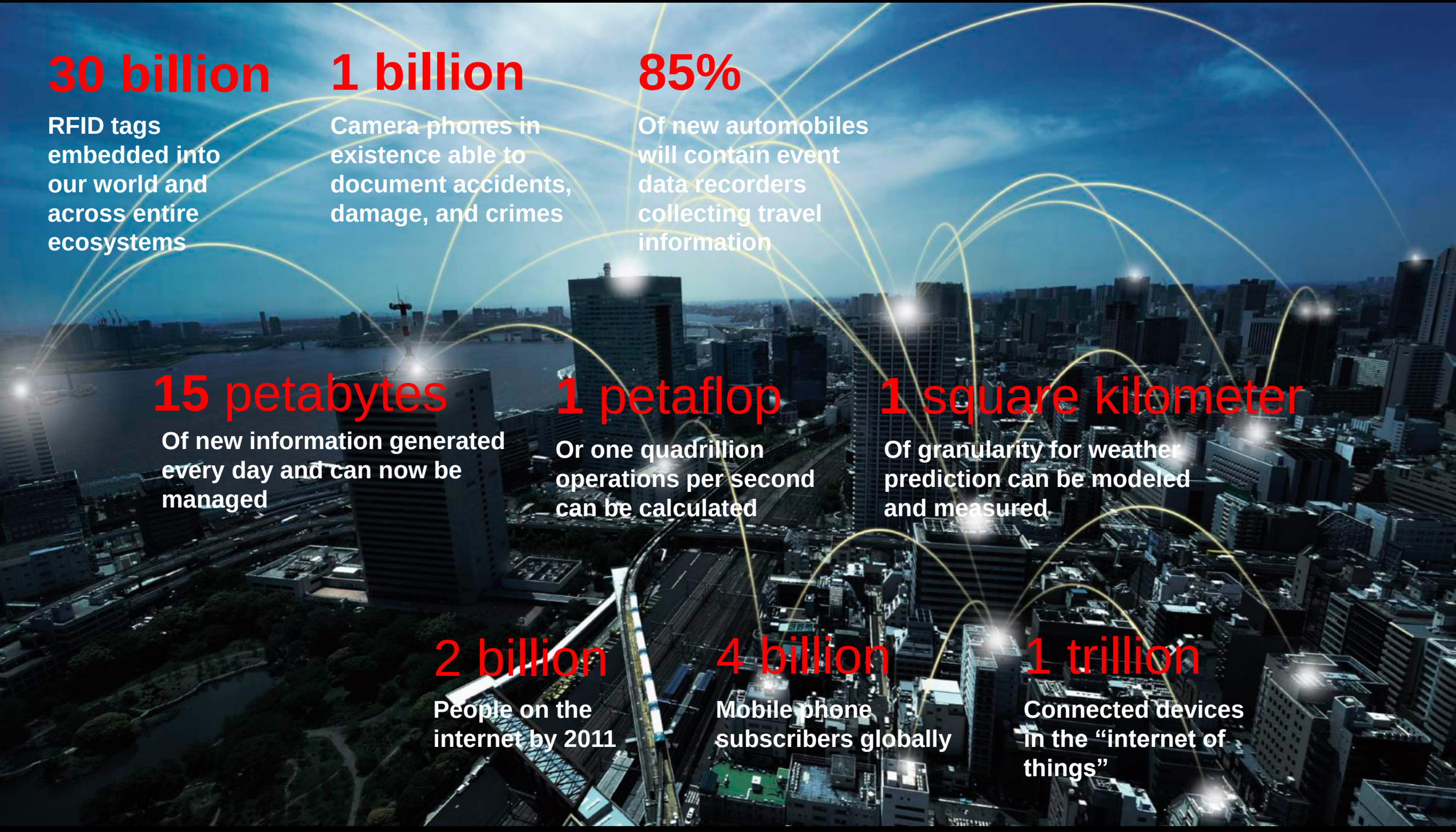
- Customers demand more control over their transportation needs
- Companies need to tackle mountains of structured and unstructured data
- Freight and logistics operations providing reliable service and deploying resources

Solutions

- AI can harness data and help freight and logistics companies achieve the interconnected vision
- AI enables freight and logistics marketing and sales functions to deliver personalized offers

In more than two-thirds of our use cases, artificial intelligence (AI) can improve performance beyond that provided by other analytics techniques.




30 billion
RFID tags embedded into our world and across entire ecosystems
1 billion
Camera phones in existence able to document accidents, damage, and crimes
85%
Of new automobiles will contain event data recorders collecting travel information
15 petabytes
Of new information generated every day and can now be managed
1 petaflop
Or one quadrillion operations per second can be calculated
1 square kilometer
Of granularity for weather prediction can be modeled and measured
2 billion
People on the internet by 2011
4 billion
Mobile phone subscribers globally
1 trillion
Connected devices in the “internet of things”

How do you make sense of all this data?

80% is not captured by companies today… and data is not information or insight

The full AI learning cycle

- **Sensing**

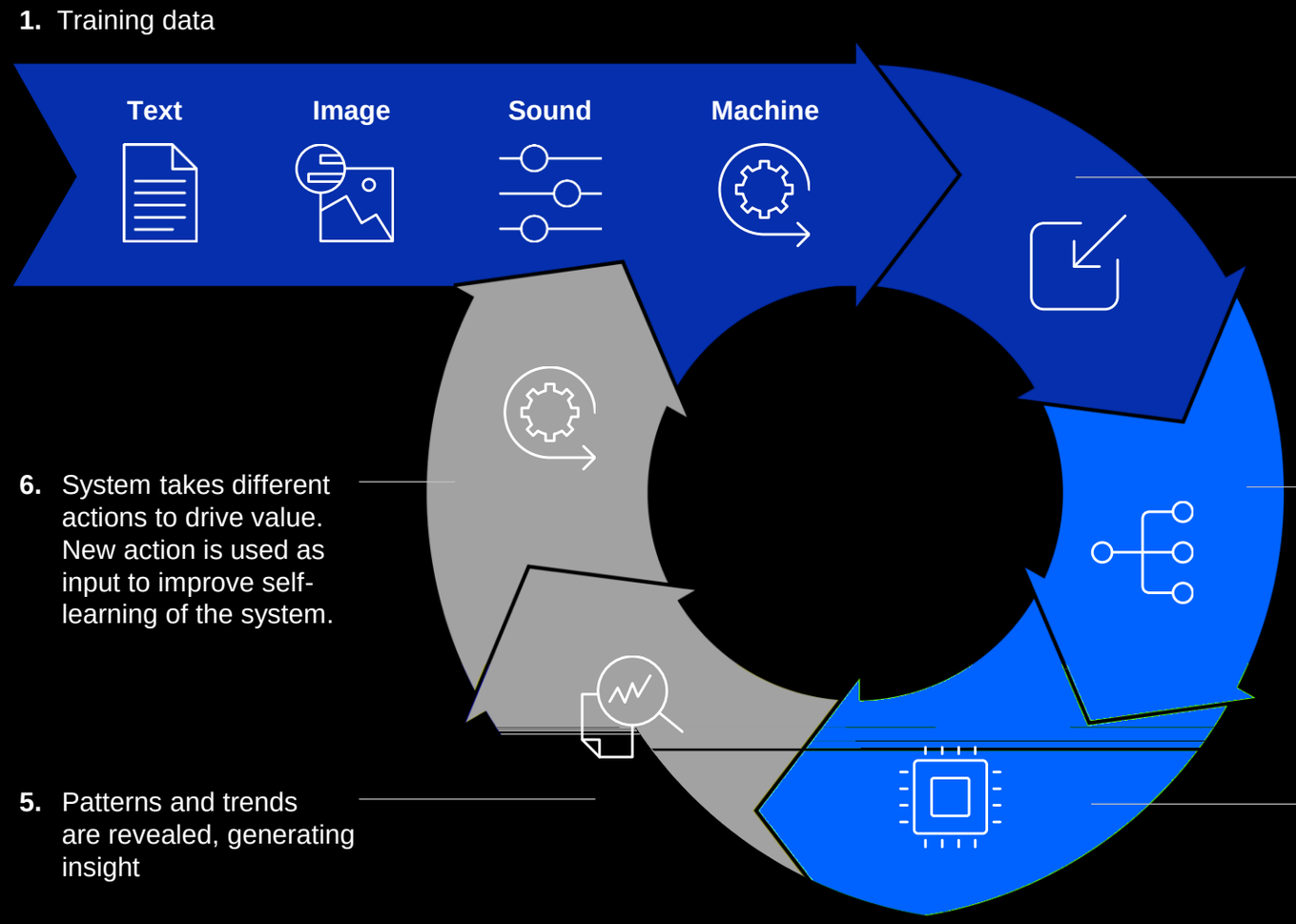
  How machines perceive

- **Processing**

  Ingesting and organizing large volumes of data

- **Learning**

  How machines acquire and build on knowledge, and generate insights that improve continually



Use Case:
AI powered visual inspection for rail and multi-modal yard management

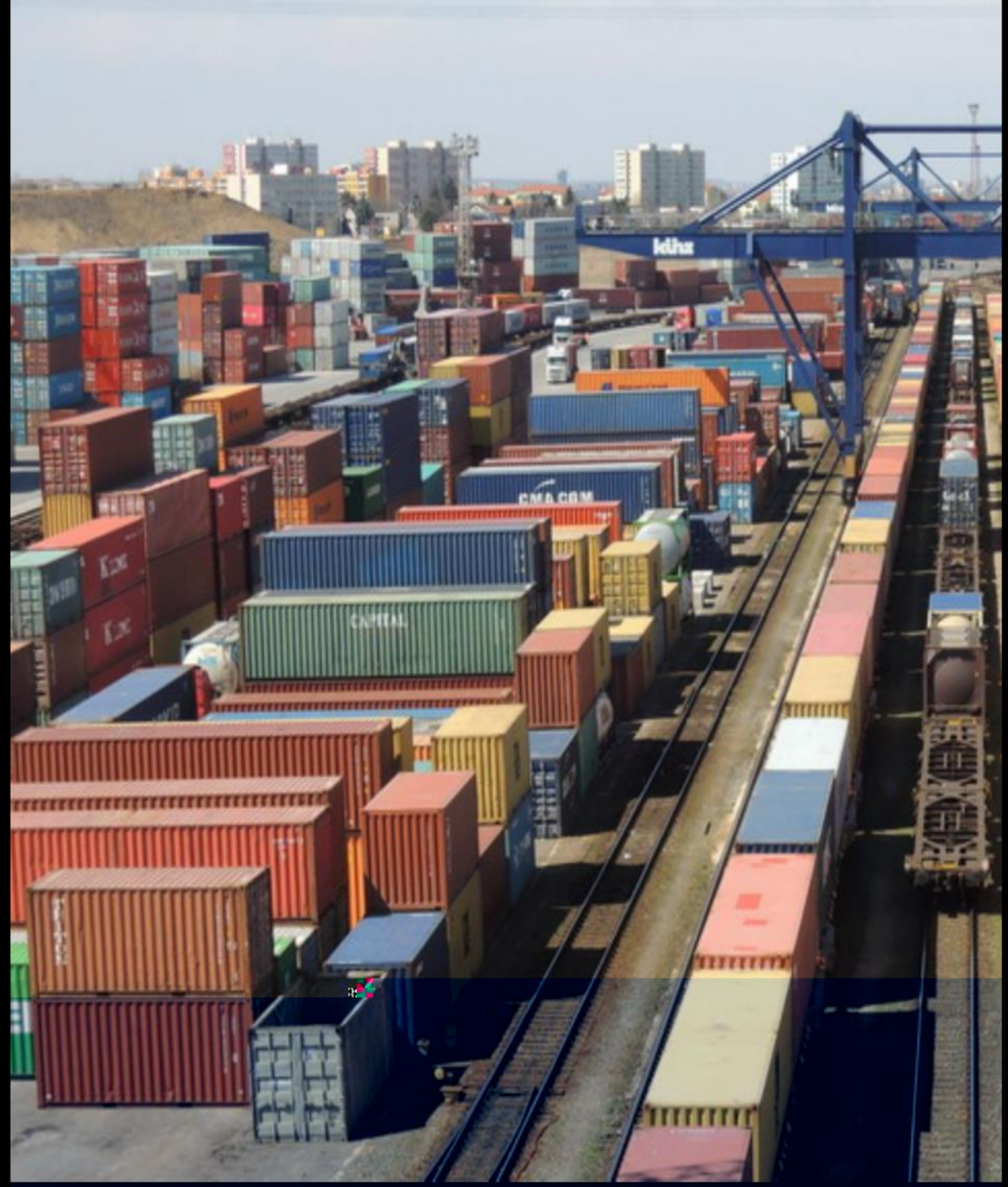
Drone provides automatic, accurate, fast, and safe inventory checks

AGV’s with telescoping camera masks

CCTV cameras connected to cloud-based AI image recognition

Gives visibility into

- Inventory
- Productivity
- Safety



Use case:
AI powered visual inspection

Edge Camera devices installed along a train track uploads images to Watson where AI image classifiers identify damage.

- Cognitive visual recognition
- Inspect wear and damage to physical assets
- Determine appropriate corrective action
- Accuracy improved to over 98%

Use case: anticipatory logistics

Relationship between logistics providers and consumers is changing. AI can help personalize these interactions to increase customer loyalty and retention.

- Predict what customers will purchase
- Sources Vast and varied data – browsing behavior, purchase history, weather, social media chatter and news reports
- Shorten delivery times – move inventory and resources to meet anticipated demand

Use Case:
Cargo Customs & Compliance with Artificial Intelligence

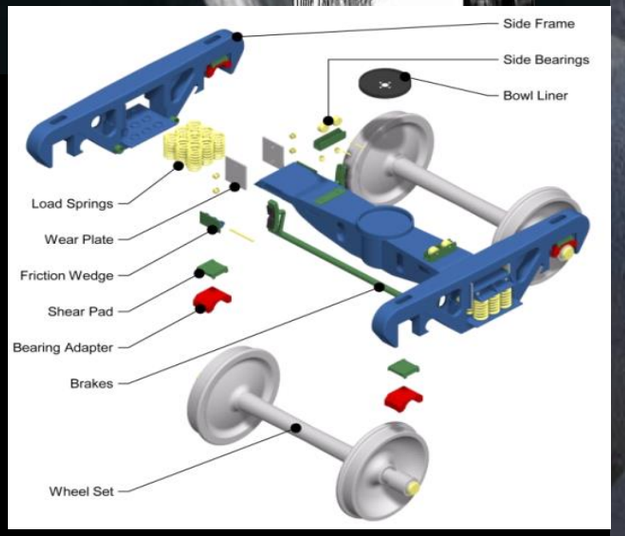
Increase of sales and compliance agent responsiveness on handling Booking requests

Reducing and optimizing the time spent on repairs of non-compliant Shipments

Reducing or eliminating fines due to non-compliance by reduce fine amount as a result of lower false positives

Benefits and business value will apply to both Air Cargo Carriers and Freight Forwarders

Use case:
sensor fusion for anomaly detection



Edge Devices collecting data on wagon and Locomotive Data

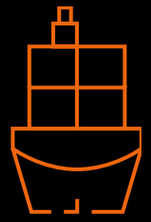
Using data analytics and machine learning coupled with the vast amount of data collected through sensors

Find patterns in alarms

AI to recommend next best action

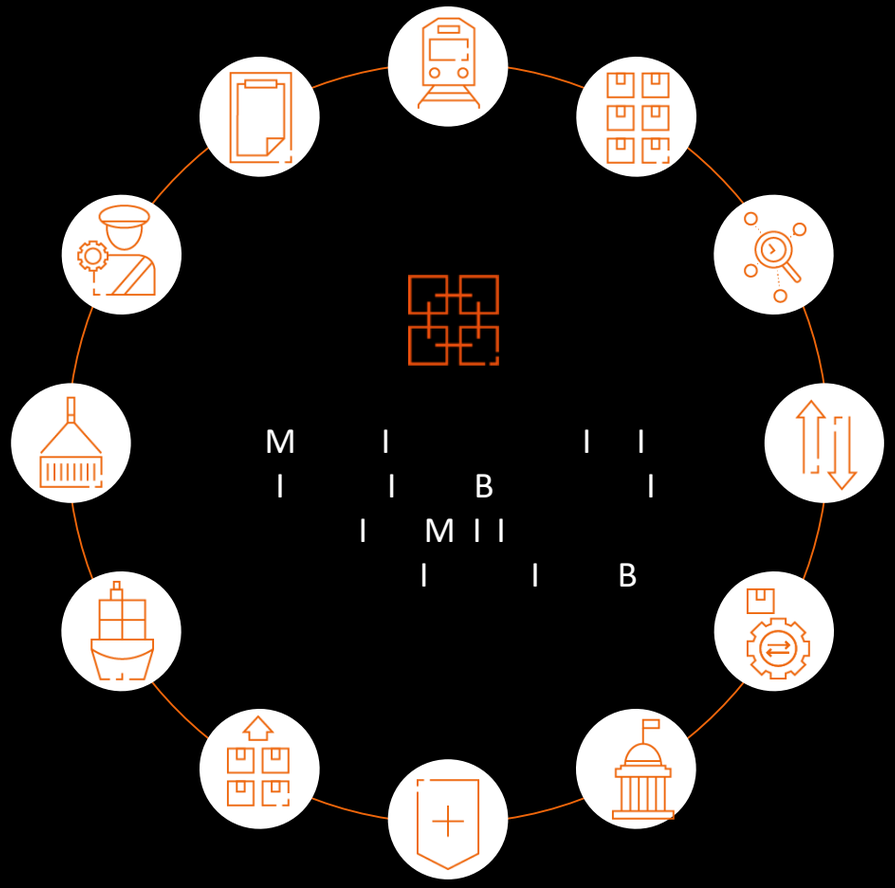
B M I I M

M M
I M I M M
M



I M M
MM I
I B I M

M I B MM M I
I M I I B
M



M I I I
I I B I
I M I I
I I B

TRADELENS

OUR MISSION

B B I

- **Connect the ecosystem**
- **Drive true information sharing**
- **Foster collaboration and trust**
- **Spur innovation**

- **100+ Ecosystem Members**
- **40M+ Containers Tracked**
- **675M+ Events**
- **5.7M+ Documents**

Use case:
Customer service

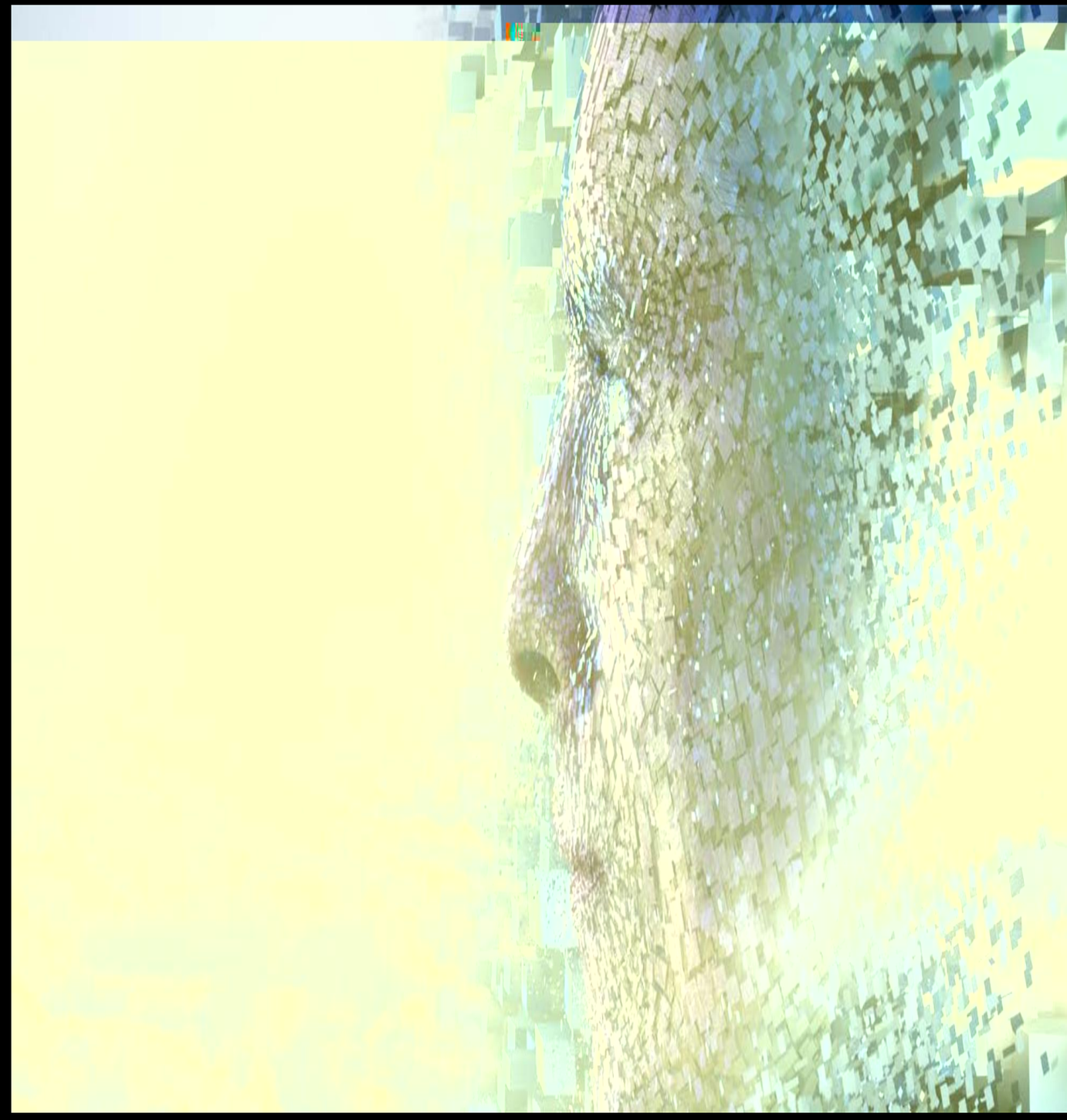
What is the least expensive mode of transportation to achieve a 5 day lead time

What is the ETA for order 1234?

What sales orders have a requested ship date of tomorrow

Are there any delayed shipments for carrier XYZ?

Which supplier has the best on-time delivery performance?



Accelerating advances in technology and **transforming every part of your rail and logistics business**

- **Cognitive analytics**
- **Cloud computing**
- **Pervasive connectivity**
- **Product Lifecycle Management**
- **Embedded sensors**

Improving operations and lowering costs

Creating new products and services

Driving engagement and customer experience

Partnered Innovation

- Open ecosystem
- Device partnerships
- Embedded security
- Edge Analytics

Data Integration

- Weather data
- Social data
- Application data
- Platform of platforms

Advanced Analytics

- Predictive Analytics
- Real-time Analytics
- Data Mining
- Optimization

Cognitive Technology

- Natural Language Processing
- Machine Learning
- Textual Analytics
- Video/Image Analytics


VITTORIA
Bulk Carrier
15,7m
18,1m
Container: PONU0408148
Shipment: 962354649
Origin: Maersk Line
Time: 47:16:55
Destination: Gdansk, PL
HOLLANDIA
General Cargo
25,6m
2,7m
CMA CGM MOLIERE
Container Ship
24,1m
0.61 m/s
Container: YAKU0908852
Shipment: 762384641
Origin: MOL
Time: 11:36:28
Destination: Shanghai, CN
19,8m
STATUS FAULT
Container: HYDA02257814
Shipment: 142933420
Origin: Hyundai
Time: 148:22:39
Destination: Rotterdam, NL
48m
0.398 m/s
21,8m
56m
98 kN/m2
42 kN/m2

SEEING, SPEAKING & THINKING LOGISTICS OPERATIONS

1 Vision-based inventory management

2 Self-learning & self-navigating AGVs

3 Machine-video perception

4 Vision-based intelligent sorting

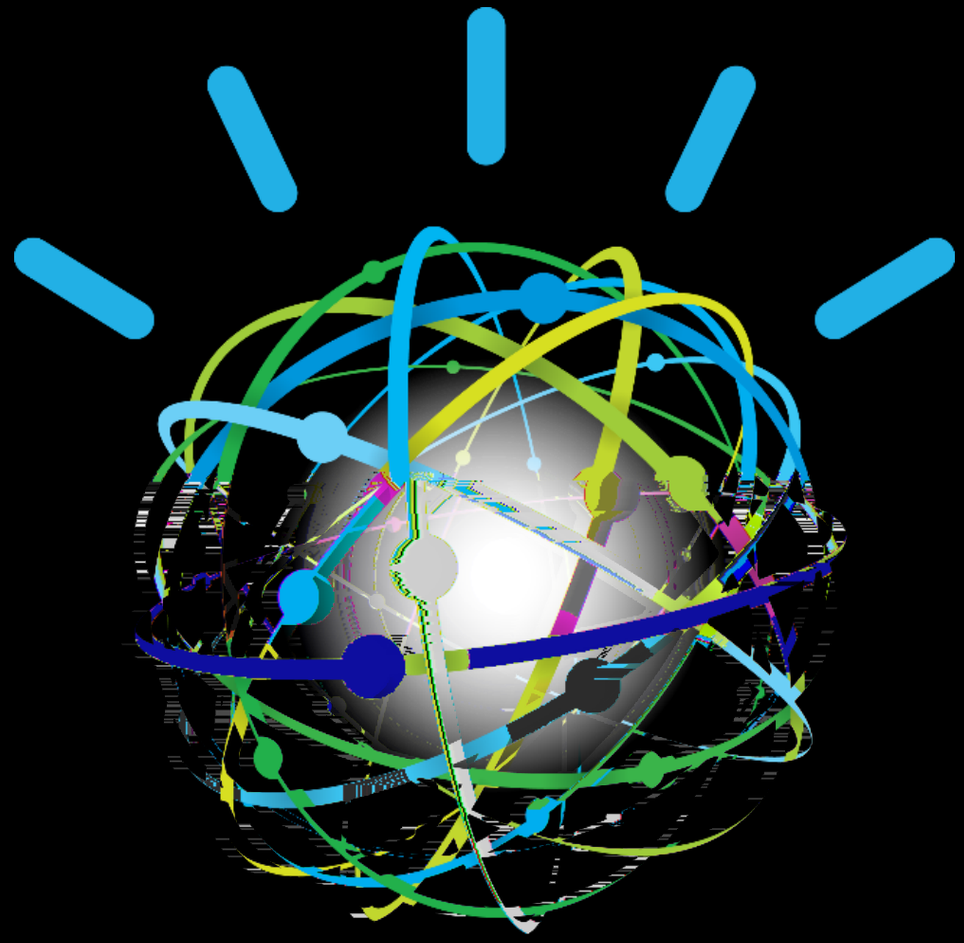
5 Autonomous delivery fleet

6 Conversationally enabled WMS system

7 AI driven inspection

The Emerging Quantum Age

Classical	$t \sim \exp(O(n^{1/3} \log^{2/3} n))$	28,000,000,000,000,000,000 years
Quantum	$t \sim O(n^3)$	100 seconds



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