

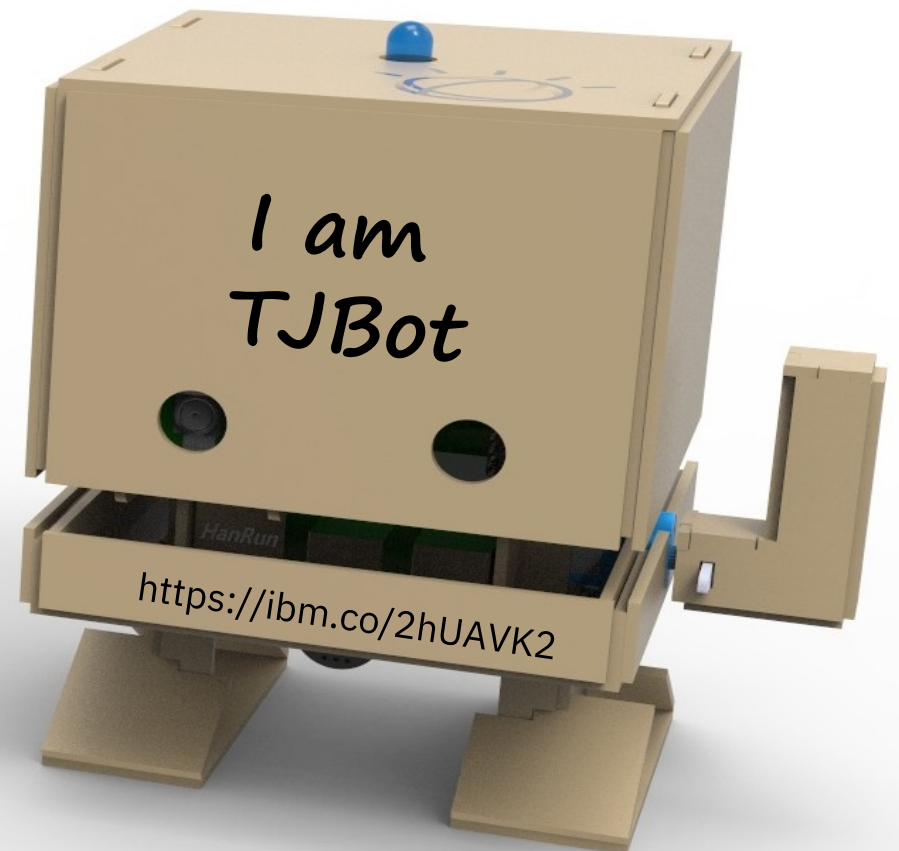


Say “Hello” to Watson on the Shopfloor

AI and Cognitive Manufacturing in Action

Thorsten Schröer
IBM Deutschland GmbH
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Member IBM Industry Academy

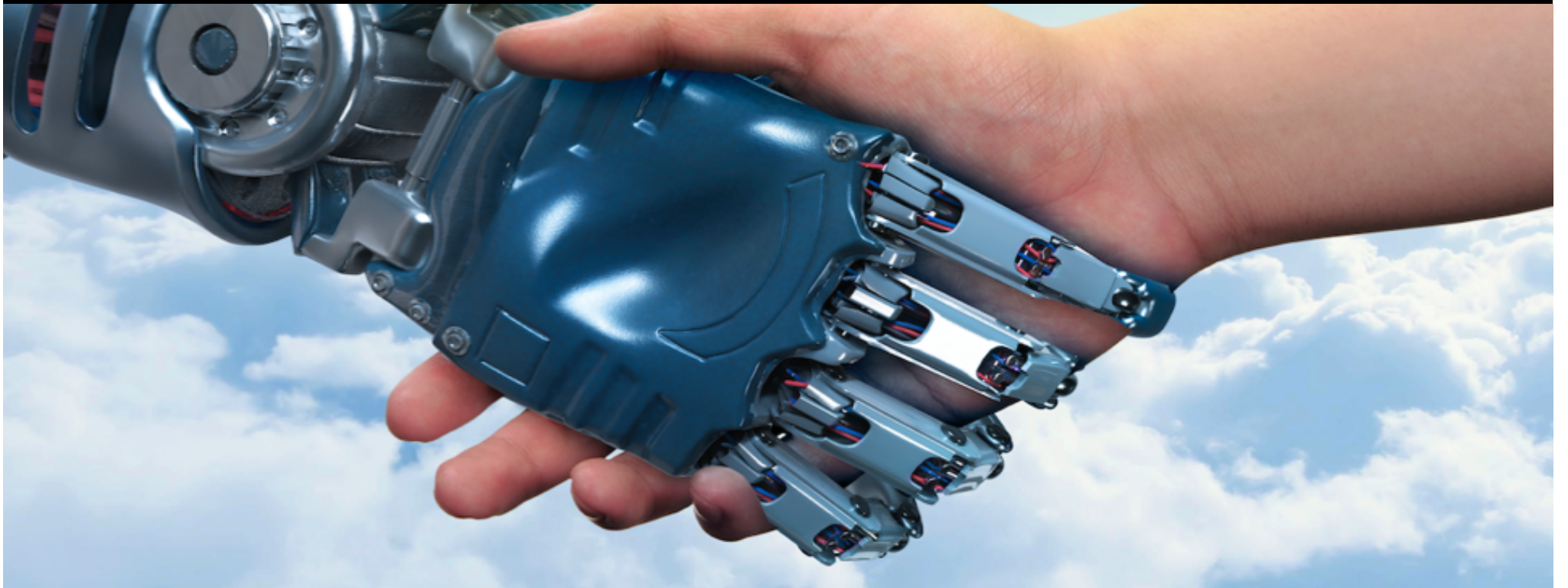
@CSCMP Benelux Roundtable - Robotics & AI in Logistics
Luxembourg, November Nov. 21st, 2017 / © 2017 IBM Corporation





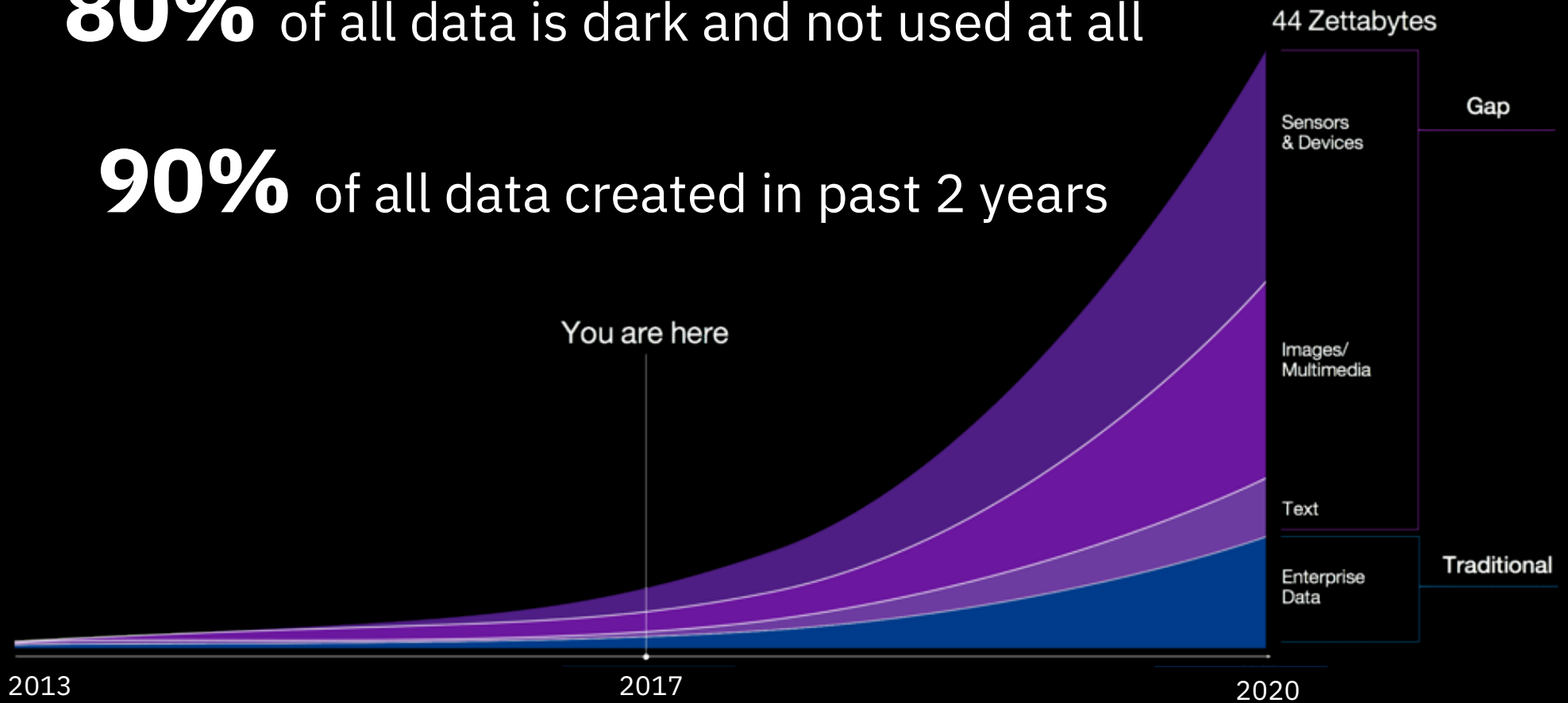
>1890 Tabulating 1960 Programmable >2010 Cognitive

AI Status – Why - Why Now?

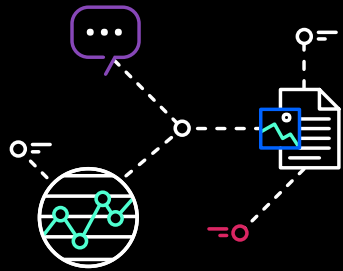


80% of all data is dark and not used at all

90% of all data created in past 2 years

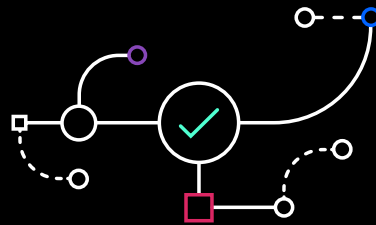


IBM Watson = AI + ML + DL



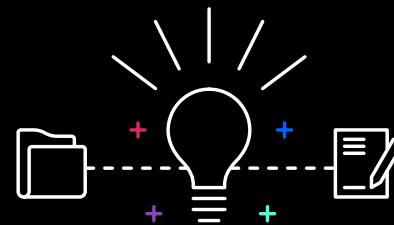
Understands

imagery, language and other unstructured data like humans



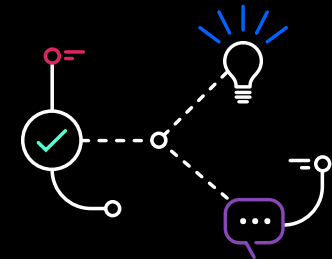
Reasons

forms hypotheses, infers and extracts ideas



Learns

With every interaction to sharpen expertise



Interacts

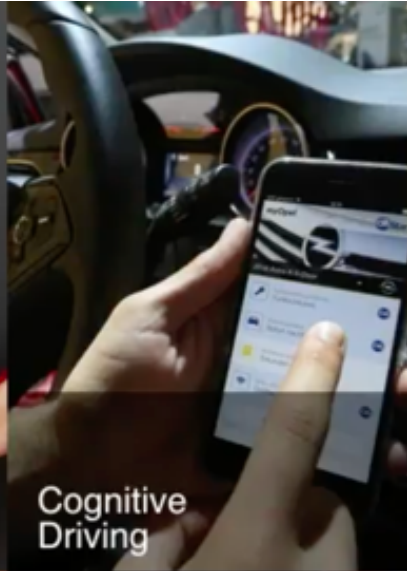
With humans through seeing, talking and hearing



Cognitive Health



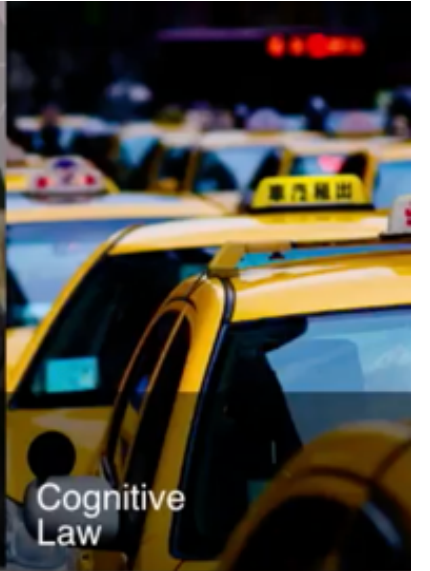
Cognitive Education



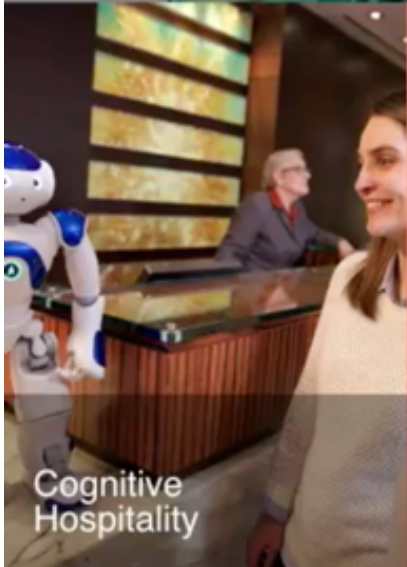
Cognitive Driving



Cognitive Banking



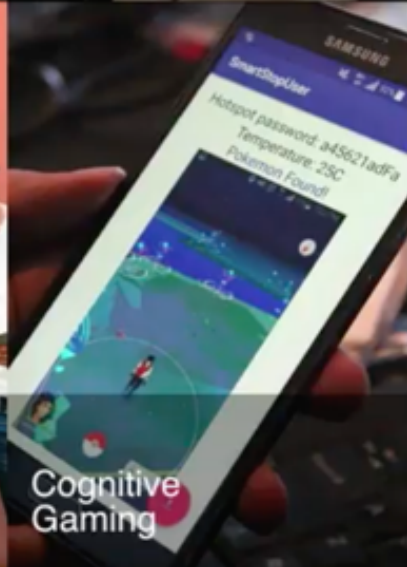
Cognitive Law



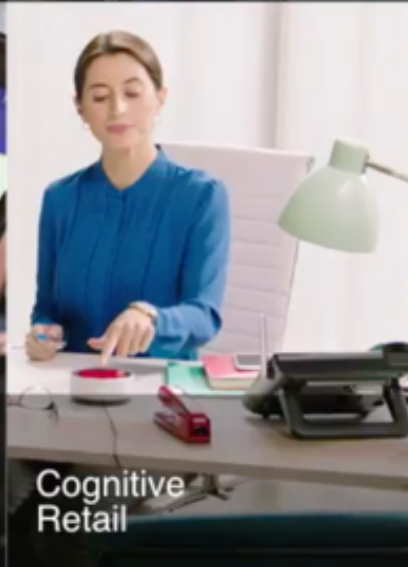
Cognitive Hospitality



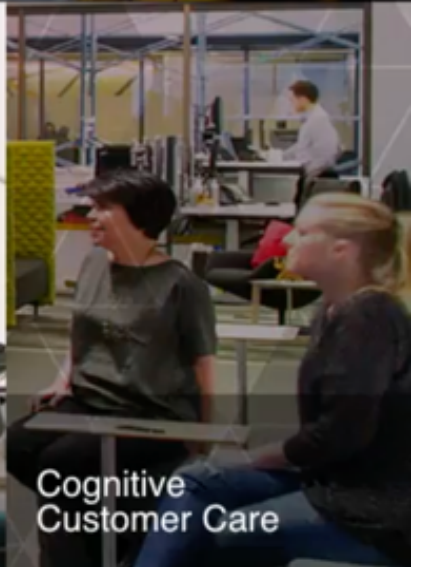
Cognitive Insights



Cognitive Gaming

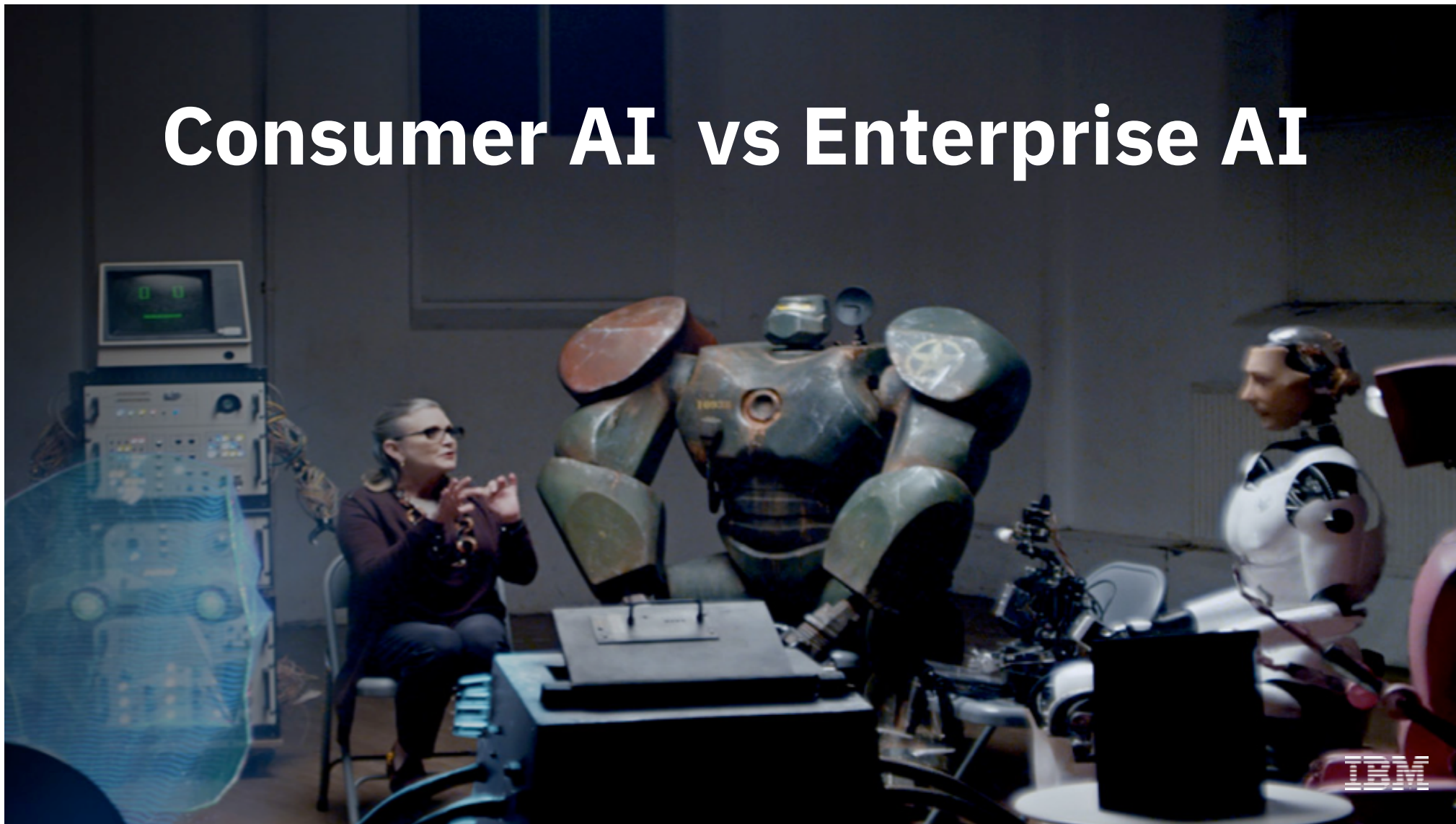


Cognitive Retail




Cognitive Customer Care

Consumer AI vs Enterprise AI




Check flights from Tokyo to Amsterdam tonight

Hi Sarah. Would you like to fly business or economy class?

Bookr 

Business

Sorry Sarah, all flights are full. No seats left :(

Bookr 





THE Late
ate SHOW
WITH JAMES
CORDEN

<http://bit.ly/2jPavJX>







Digital & AI in Manufacturing & Supply Chain

Industrial Robots:

Primarily used in automotive, chemical and petroleum, and manufacturing settings



Programmed and stationary



Work alongside humans (Cobots)

Consumer Robots:

Assist consumers with day to day tasks



Basic household chores (vacuuming and dusting)



Functions as personal assistant, photographer, smart home advisor

Logistics Robots:

Specialized for the movement of goods and people



Used in warehouses



Assist with product transportation

Service Robots:

Enhance customer engagement in industries, such as retail and healthcare



Humanoid (human-like) robots personalize interactions



Adaptive robots taking care of elderly

Swarm Robots:

Multi-robot systems exhibiting collective behaviors based on each other and the environment.



Cooperate to perform complex tasks



Traverse uncharted terrain

DER SPIEGEL

3. Fortsetzung:
Daher wenn das Raub fällt



AUTOMATION
IN DEUTSCHLAND

Spiegel 1. April 1964

IBM



**Manufacturing Quality
Cognitive Visual / Acoustic Inspection**

IBM Visual Insights Defect Checking

Inspection Results

Defects

- Type 04 Scratch 70%
- Type 05 Scratch 70%
- Type 04 Scratch 80%
- Type 04 Scratch 40%
- Type 04 Scratch 30%
- Type 05 Scratch 30%

Product No. 2, Open after plant 25-7-2016, 16:00

Quality to date Total

112k Units Total, Quality Issue % 1.7%

Quality Issue Breakdown

195 Total, 11 Defect Types

Observed Issues

- Scratch 84 (1.0% - 52)
- Blot 24 (0.0% - 29)
- Warping 16 (0.0% - 26)

Alerts (2/50)

- SPE Issue: Greater than 50 instances of defect scratched observed, 100000
- SPE Issue: Scratch based on defect scratched observed, 100000

Scratched Location Heatmap

Defect Overview

Line Buffers

- Line 7: 27
- Line 3: 14
- Line 5: 13

IBM Visual Insights 3D Dashboard

Inspection Results

Latest Inspection

Quality Inspection: 0070000

Line: 7, Cell: 3, Inspection #: 17007-1, Defects Identified: 3

Recent Quality Inspection Results

Defect	Count
Type 04 Scratch	1
Type 05 Scratch	1

Line 7 Overview

56 Issues, 2 Alerts

Defect Breakdown - Line 7

Defect	Location	Count	FailRate
Top01	D4	10	65%
Top01	C4	67	56%
Top01	E4	32	27%

Defect Observed - Cell 3

Machine ID	Failure Rate
0070000	94%
0070000	27%
0070000	27%

NEWS-L07 Status

Critical, Issue Detected, Operating Normally

Machine ID: 0070000

Cell: 3, Line: 7, Plant: Main-Plant China

...ia manufacturing

Efficient virtual



Up to
30%
lower project costs

Studio® speeds up
reovers and start-ups
increases collaboration and safe



IBM **ABB**







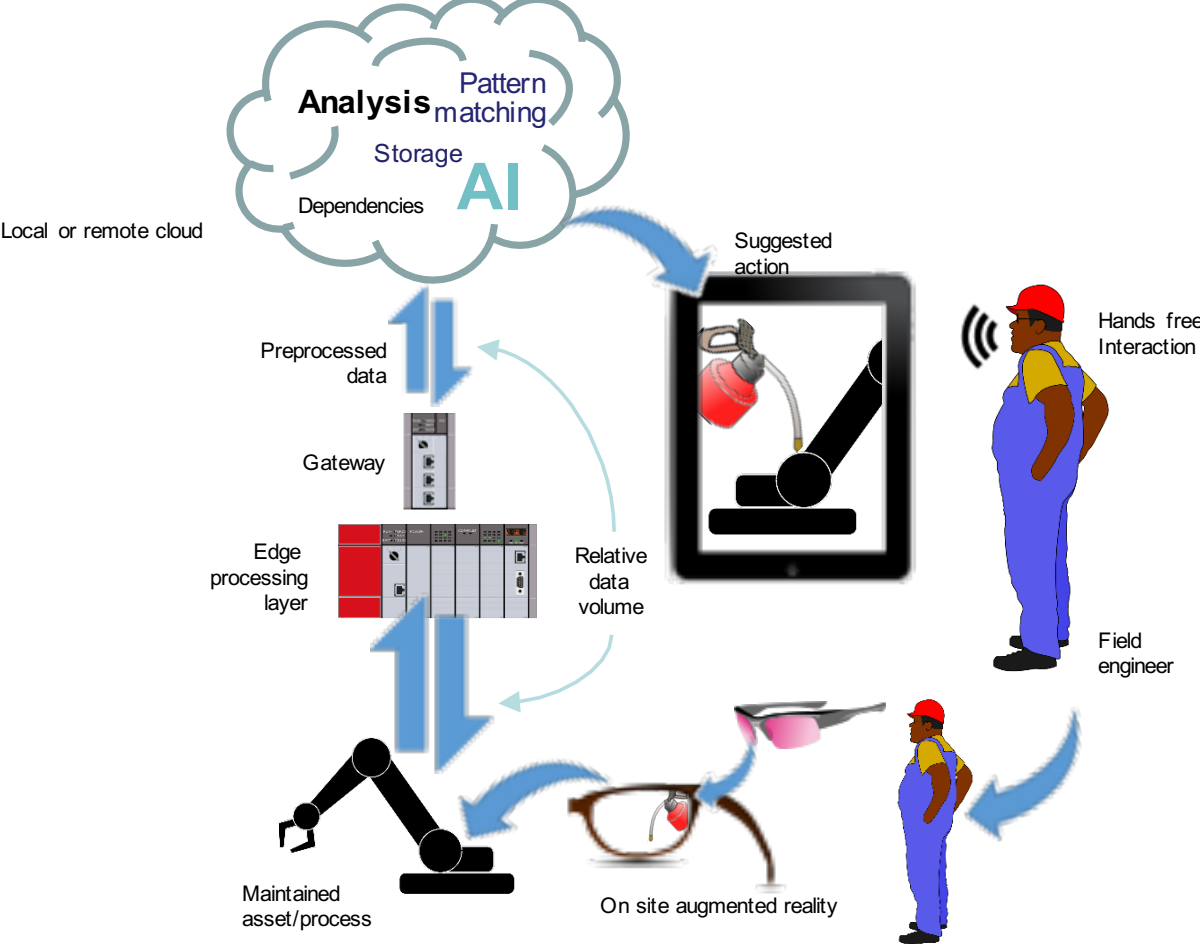


Speech controlled cognitive robot

Speech / text controlled robot

- Visual recognition of objects & their location
- Cognitive understand of robot's capabilities
- Ability to learn using speech interactions

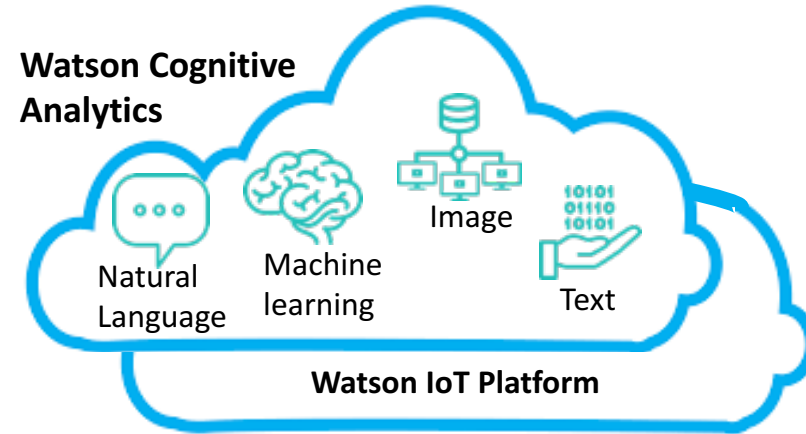
Mitsubishi Robotics – Cognitive Maintenance



Cognitive Robot



Hannover Messe 2016



Foxbot writes calligraphy



Voice recognition

#CognitiveSupplyChain



IBM Internal Supply Chain Augmenting Supply Chain Decisions

Supply Chain Professionals

Operation Center



Alerts

Resolution Room



Watson Q&A

We program
Advisory.

We upload
Data into
Watson
Analytics.

We teach
Watson.



We utilize Enterprise
Data Sources.

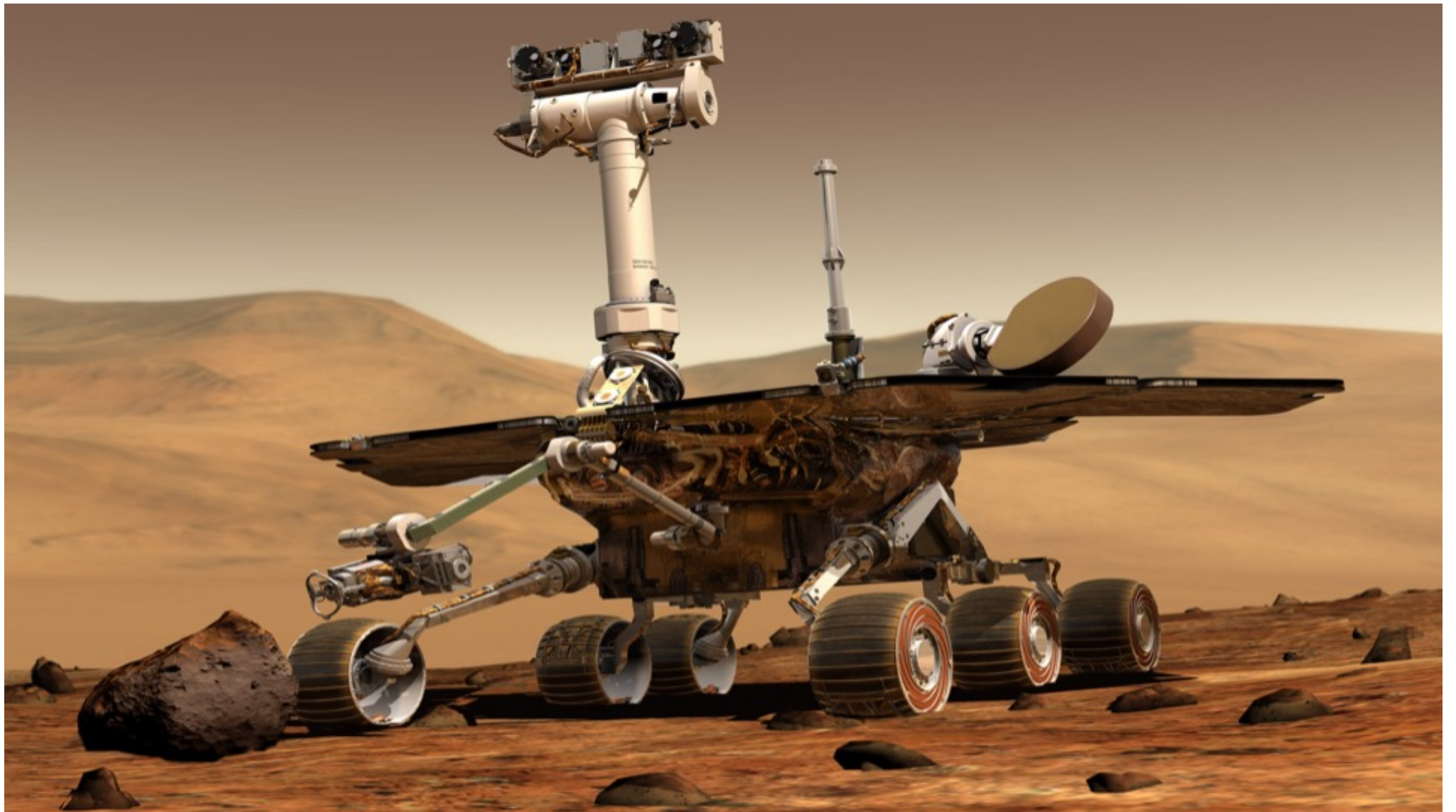
We gain insights
from **IoT**.

We analyze data recorded
in **Blockchains**

We use IBM's Cognitive
Data Lake



Watson goes to space to ISS April 2018





```
mirror_mod = modifier_ob.modifiers.new( "mirror_mirror", mirror )

# set mirror object to mirror_ob
mirror_mod.mirror_object = mirror_ob

if _operation == "MIRROR_X":
    mirror_mod.use_x = True
    mirror_mod.use_y = False
    mirror_mod.use_z = False
elif _operation == "MIRROR_Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif _operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

#selection at the end -add back the de-selected mirror modifier object
mirror_ob.select = 1
modifier_ob.select = 1
bpy.context.scene.objects.active = modifier_ob
print("Selected" + str(modifier_ob)) # modifier ob is the active ob
#mirror_ob.select = 0
#one = bpy.context.selected_objects[0]
#bpy.data.objects[one.name].select = 1
except:
    (context.scene.objects.active = modifier_ob)

#mirror_ob.select = 1
#mirror_ob.select = 1

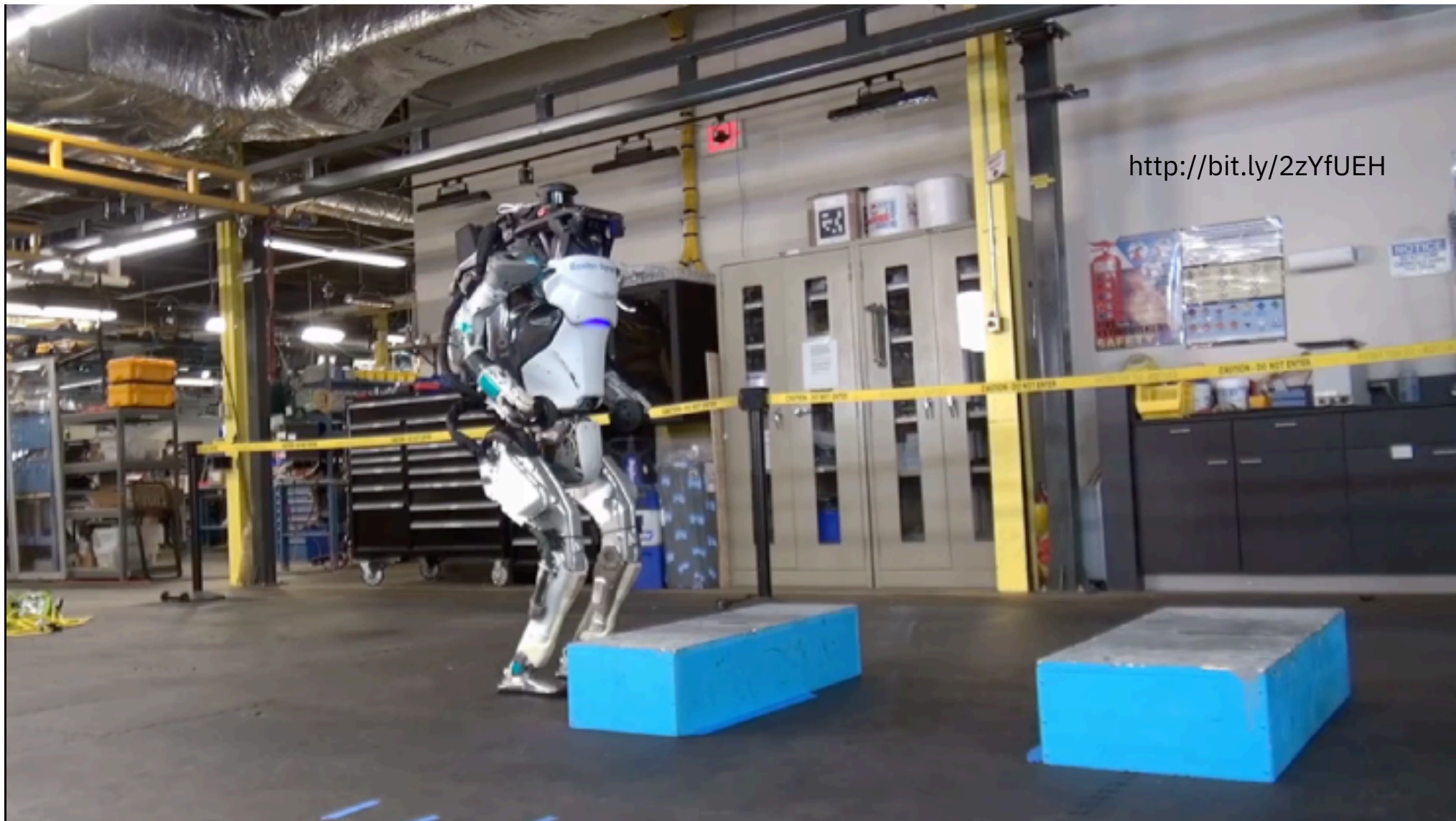
class MirrorX(bpy.types.Operator):
    """This adds an X mirror to the selected object"""
    bl_idname = "object.mirror_mirror_x"
    bl_label = "Mirror X"

    @classmethod
    def poll(cls, context):
        return context.active_object is not None
```

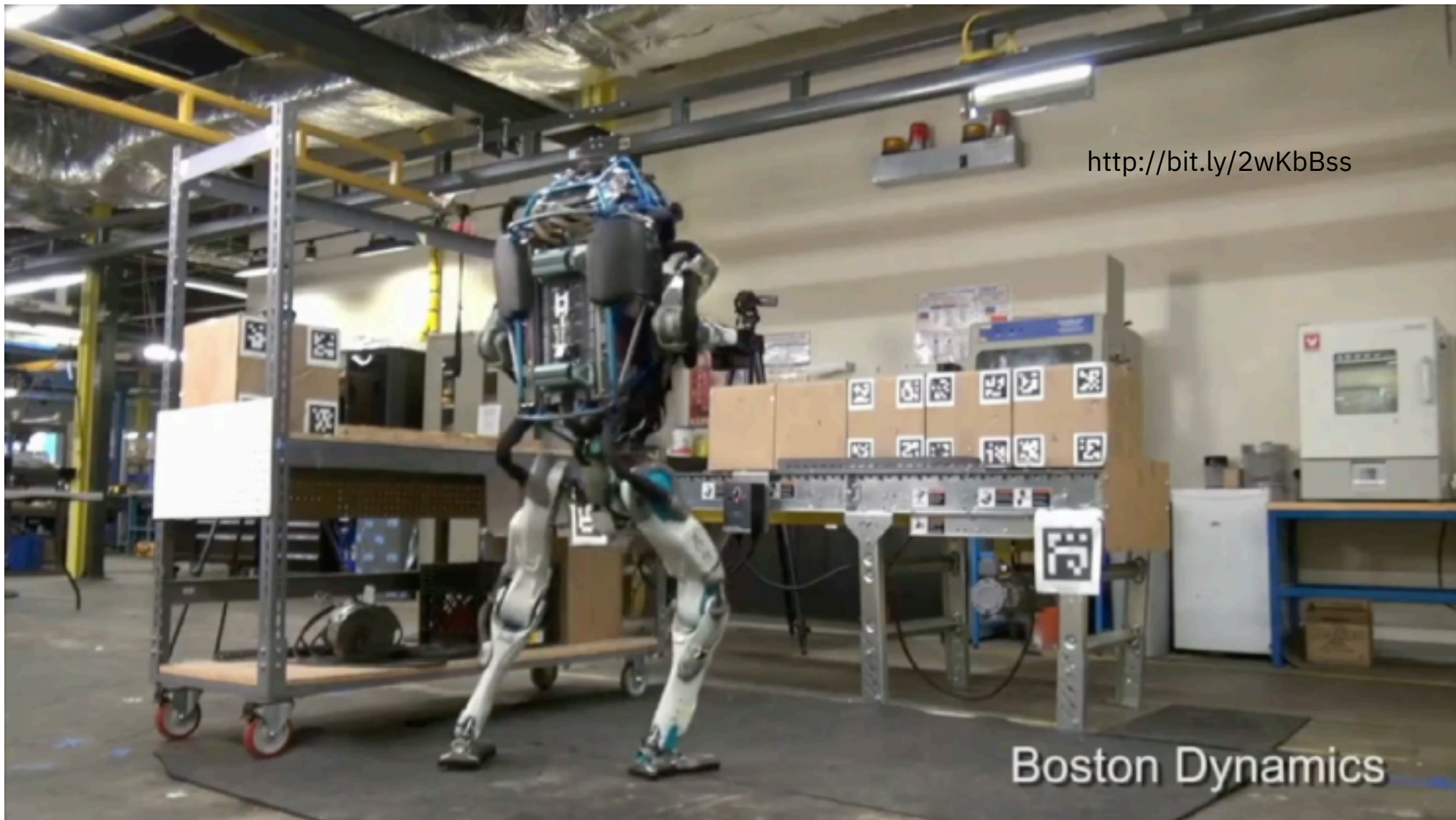
Impact for Supply Chain & Logistics







<http://bit.ly/2zYfUEH>



<http://bit.ly/2wKbBss>

Boston Dynamics

Einladung des CSCMP Roundtable Germany
30.11.2017 in München - IBM Watson IoT Center

Rolle von Blockchain in der Supply Chain – Nur ein Hype oder Thema mit Substanz?





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