Digital Operations

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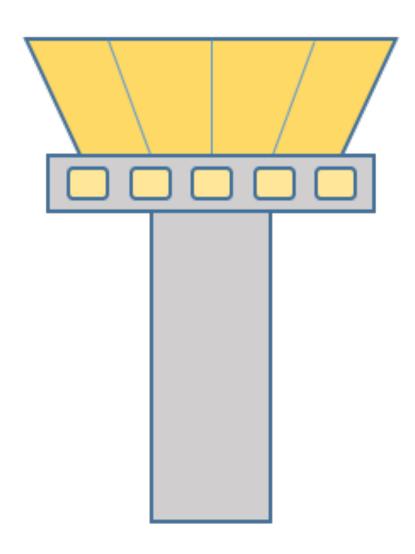


"Workflow is digitally supported, if not fully executed"

Control Towers



Digital Control Towers in Supply Networks



1. Visibility

 You have visibility of events & milestones across the entire network

2. Alerts

 You receive alerts for SLAs and leadtimes of events & milestones (and resolve them in real-time)

3. Decision Support

 You execute transactions and users make decisions based on what intelligent agents recommend

4. Autonomous

 Intelligent agents run the supply network without human intervention

Digital Level 5

5. Connected devices/mobile/wearable



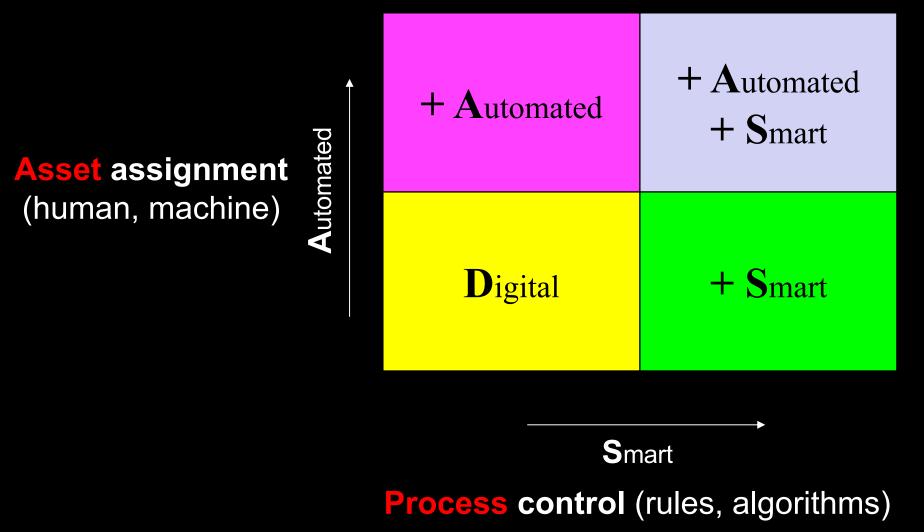
Automation & Autonomy





Pacif-i

Digital Operations: Framework

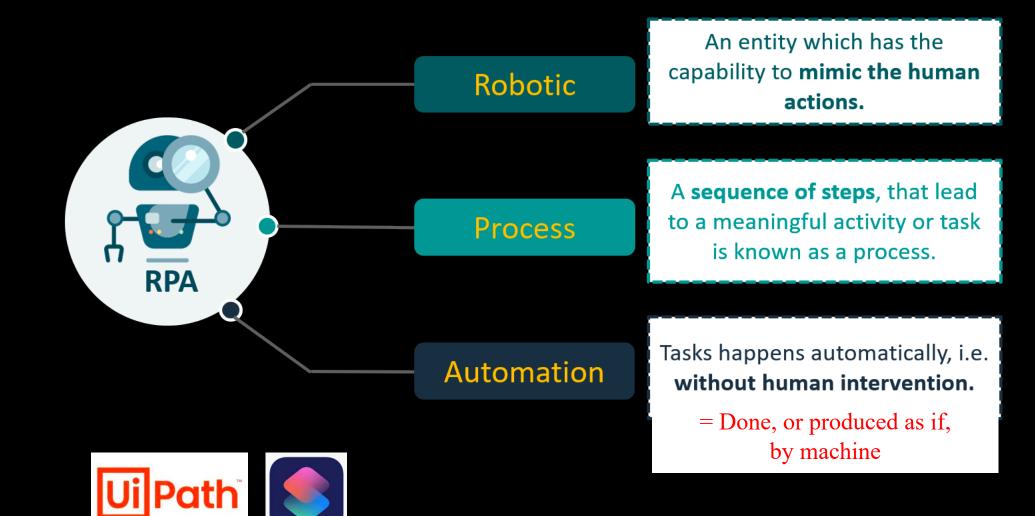


Aspiring structural understanding

1. As-is: Diagnostic

2. Could-be: Where (not) to go

Robotic Process Automation (RPA) automates repetitive tasks



SUPERVISED Automation = Machine + Human

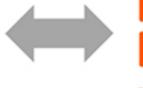
AUTONOMOUS Automation = Machine

Attended Automation

Unattended Automation













Front Office Automation

Configure bot to work together with the human

Back Office Automation

Fully automate by teaching the robot how to do it

Levels of Automation & Autonomy

LEVELS OF DRIVING AUTOMATION



0

NO AUTOMATION

Manual control. The human performs all driving tasks (steering, acceleration, braking, etc.).



1

DRIVER ASSISTANCE

The vehicle features a single automated system (e.g. it monitors speed through cruise control).



2

PARTIAL AUTOMATION

ADAS. The vehicle can perform steering and acceleration. The human still monitors all tasks and can take control at any time.



3

CONDITIONAL

Environmental detection capabilities. The vehicle can perform most driving tasks, but human override is still required.



4

HIGH AUTOMATION

The vehicle performs all driving tasks under specific circumstances. Geofencing is required. Human override is still an option.



5

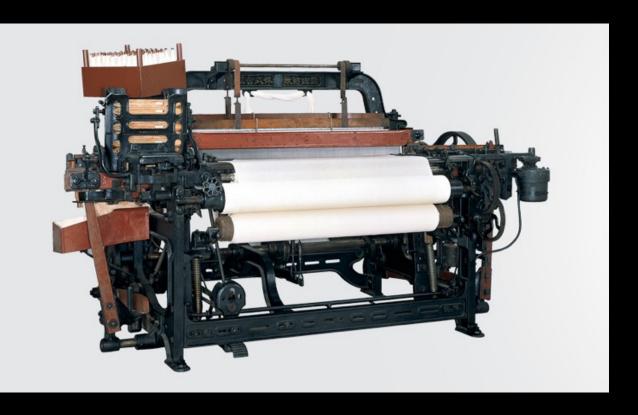
FULL AUTOMATION

The vehicle performs all driving tasks under all conditions. Zero human attention or interaction is required.

THE HUMAN MONITORS THE DRIVING ENVIRONMENT

THE AUTOMATED SYSTEM MONITORS THE DRIVING ENVIRONMENT

Smart Control may enable Autonomy



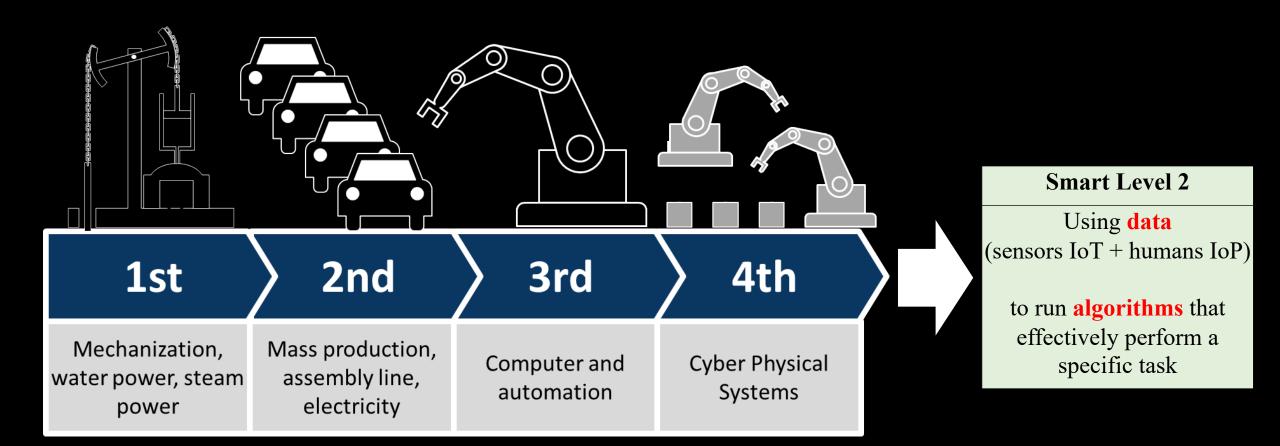
Jidoka = "autonomation"
(autonomous automation)

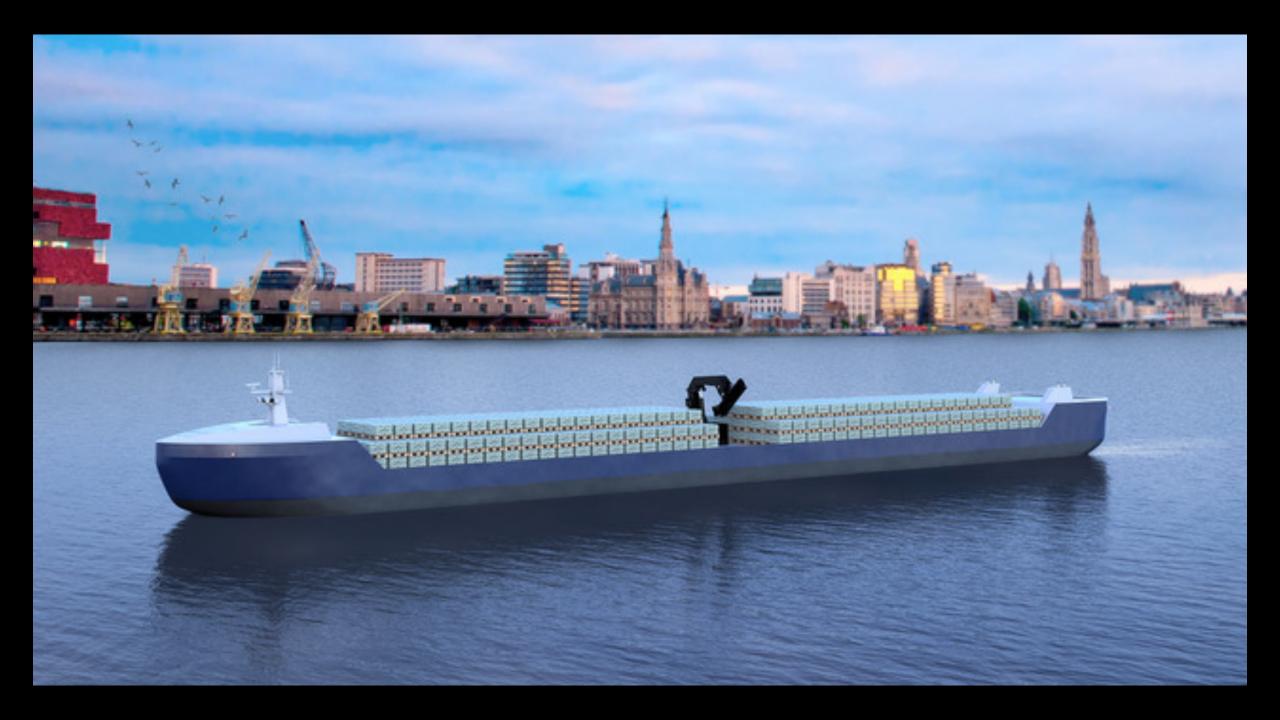
Smart Level 1

Explicit instructions contingent on one feature (the thread)

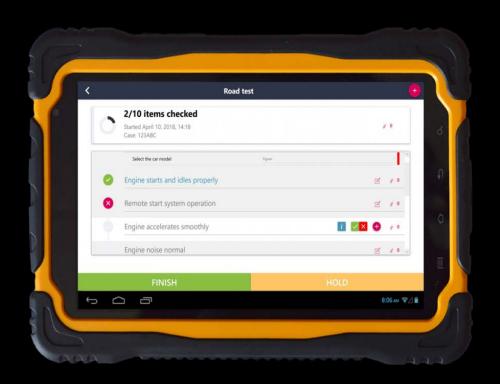
1924: Powered textile loom with automatic stopping device

Industry 4.0 = Digitally connected smart systems





IoT can be complemented by operator (IoP) data



Operator logs information about a product or an installation.

This **feedback information** can take many forms: a simple check, a value, an answer to a multiple-choice question or a drawing.

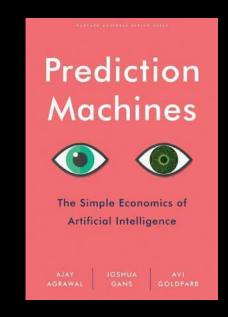


Smart Level 3 = Machine Learning

algorithms that effectively perform a specific task

without using explicit instructions,

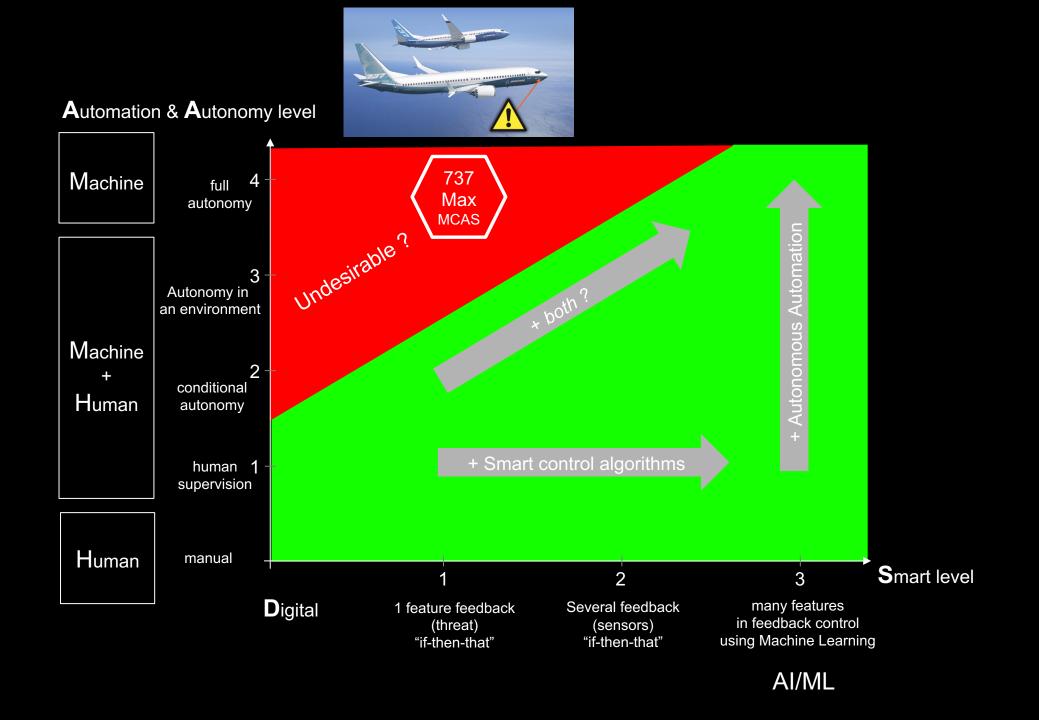
relying on patterns and inference instead



March 15, 2016: AlphaGo beats Lee Sedol.

A milestone for the use of machine learning in decision support







Autonomous Automation and the Smart Execution of Work