Robotics in Industry and HealthCare
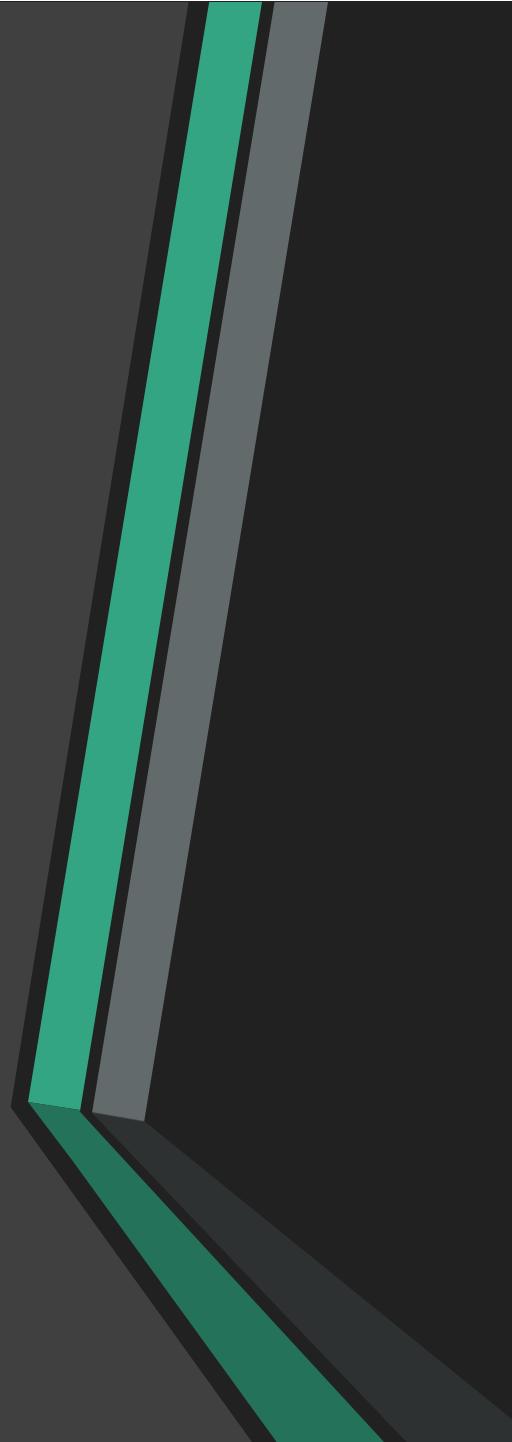
Robots in industries

Evolution of robotic in industries

1954 - First programmable industrial robot (by George Charles devol)

1973 - First industrial robot with 6 axis controlled eclectromechanicly (by KUKA)

1977 - Robot with 5 axis able to carry 10 kilos (commercialized by Vicarm Inc)

1978 - PUMA: an assembly robot (by Unimation and still used currently in laboratories)

1981 - First robot with motorized arms (by Takeo Kanade)

1998 - Control systems can synchronise 4 robots simultaneously and manage 27 axis

Some data

Annual installations of industrial robots at year-end worldwide by industries 2016-2018

Industry	Value
Automotive	+2%
Electrical/electronics	-14%
Metal and machinery	-1%
Plastic and chemical products	-6%
Food	+32%
All others	+48%
Unspecified	+44%

2018 2017 2016

units

Source: World Robotics 2019
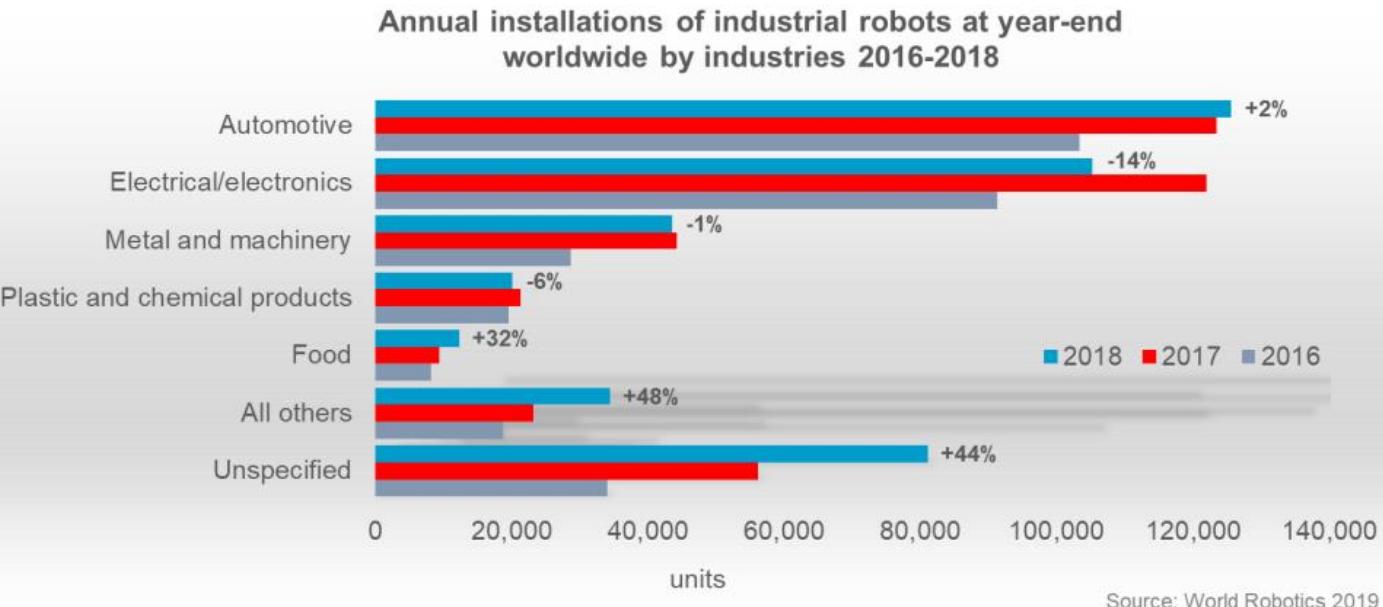
Mainly need robots for:

 - automotive   - electronic

Increasing of need of robots:

- entertainment - farming

- domestic tasks - healthcare

(not specified on the graph)

Robot density in the manufacturing industry 2018
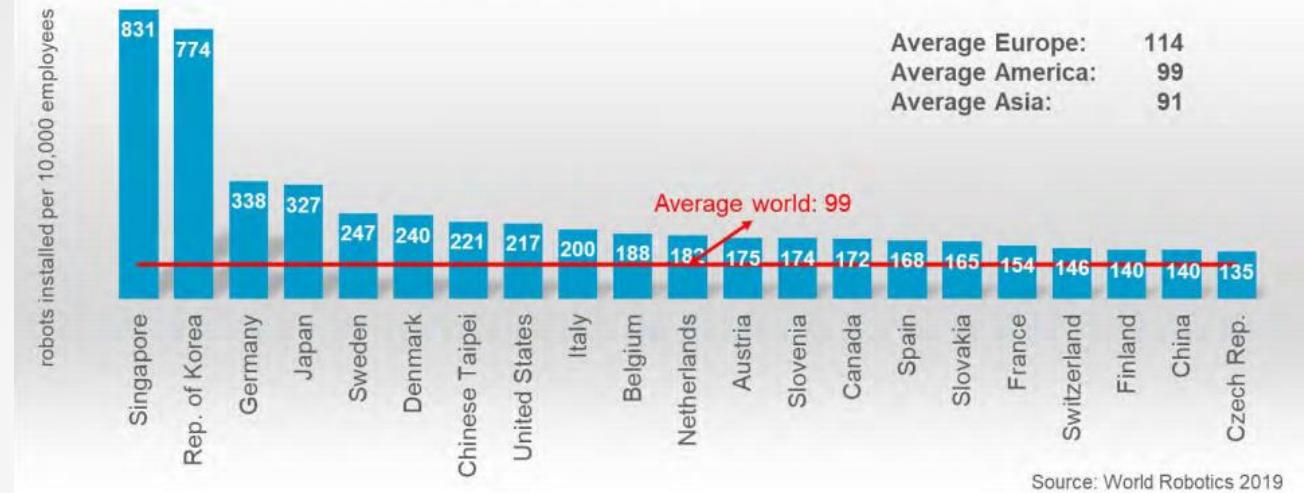
Highest robot density (robots / 10 000 employees):

- Singapore (831)   - Rep. of Korea (774)

 World average: 99

- France: 154 - China: 140 - USA: 217

density USA> density France > density China

Robots in healthcare

I) *The surgical robot*

Theses one are really helpful: they help surgeons with their operations. It has to be precise and not to let only one error threw the system.

⚠ Does not REPLACE them.

First appearance: 1990

II) Rehabilitation Robots

Allows people with sicknesses or handicaps to have a regular sportive activity, and to use muscles. Exists to walk, to move only the head, arms or legs.

First appearance: 1989
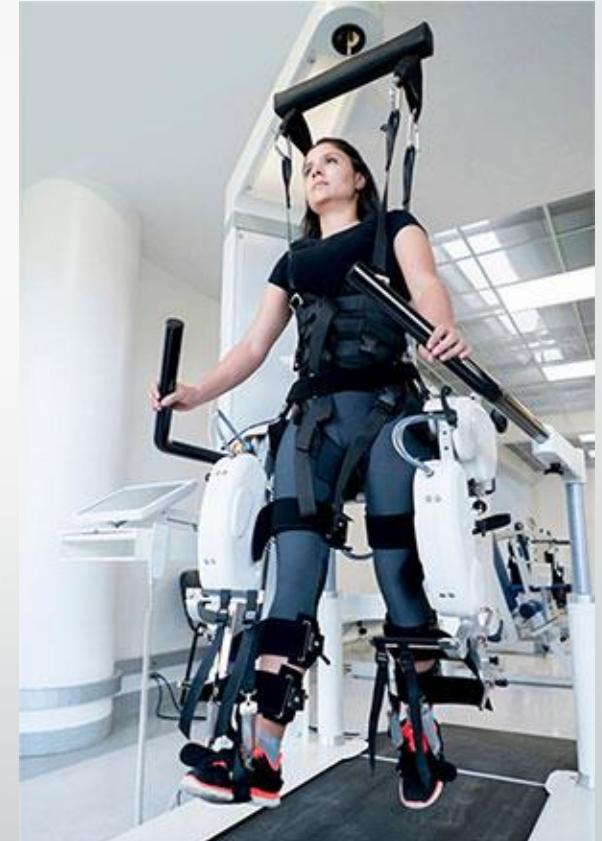
III) Robot nurse

The two robots next to the nurse are her colleagues! They are up to serve sick people, to do the little things and to help human nurses.
They do not replace them!

First apprearance: 2018

IV) Hospital logistic robot

Here is a transport robot which helps the nursing staff in transporting food, medicines, papers, books... to patients.

First appearance : 2005

V) Tele presence robot

This robot is used by people who can no longer move because of sickness or a much serious handicap. It allows them to demonstrate their presence even if they do not move from home. It is controlled by a joystick and it can be used at school too.

First appearance: 2014

V) Diagnostic robot

This one is a blood diagnostic robot, but there are much more! Like eyes diagnostic, autism, etc.
It could replace some jobs...

First appearance: 1970
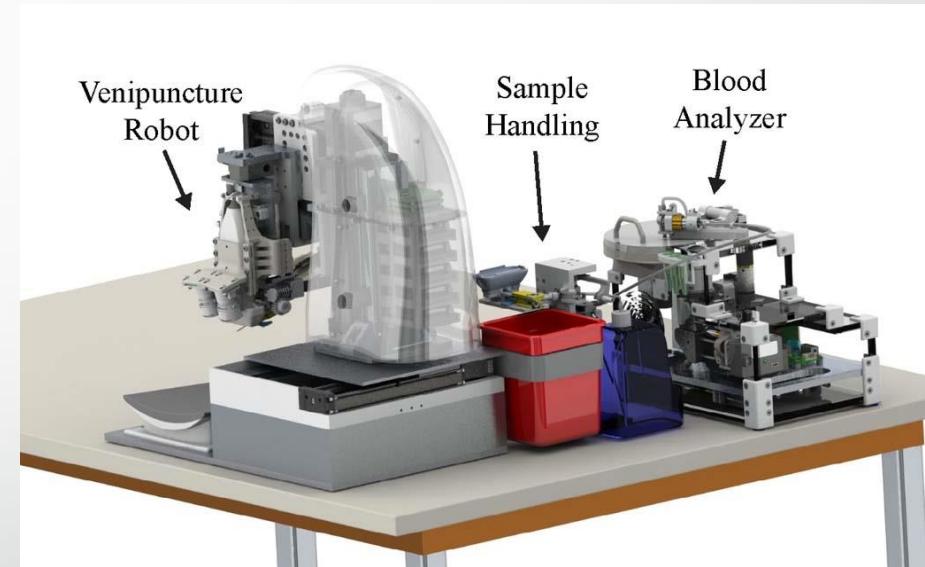
VI) The prothesis

To sum up, we have the most famous robot in healthcare: it exists since the dawn of time, because not having a hand, an arm or a leg can be very restrictive. Nowadays, they are directly connected to the nerves and obey to the will of the user.

First appearance (as a robot): 2002
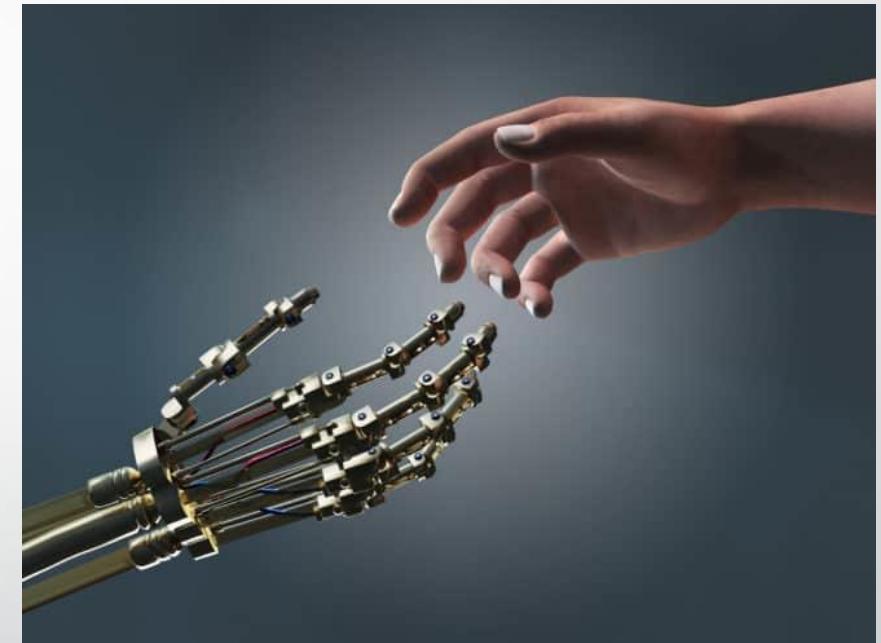
Robots nowadays
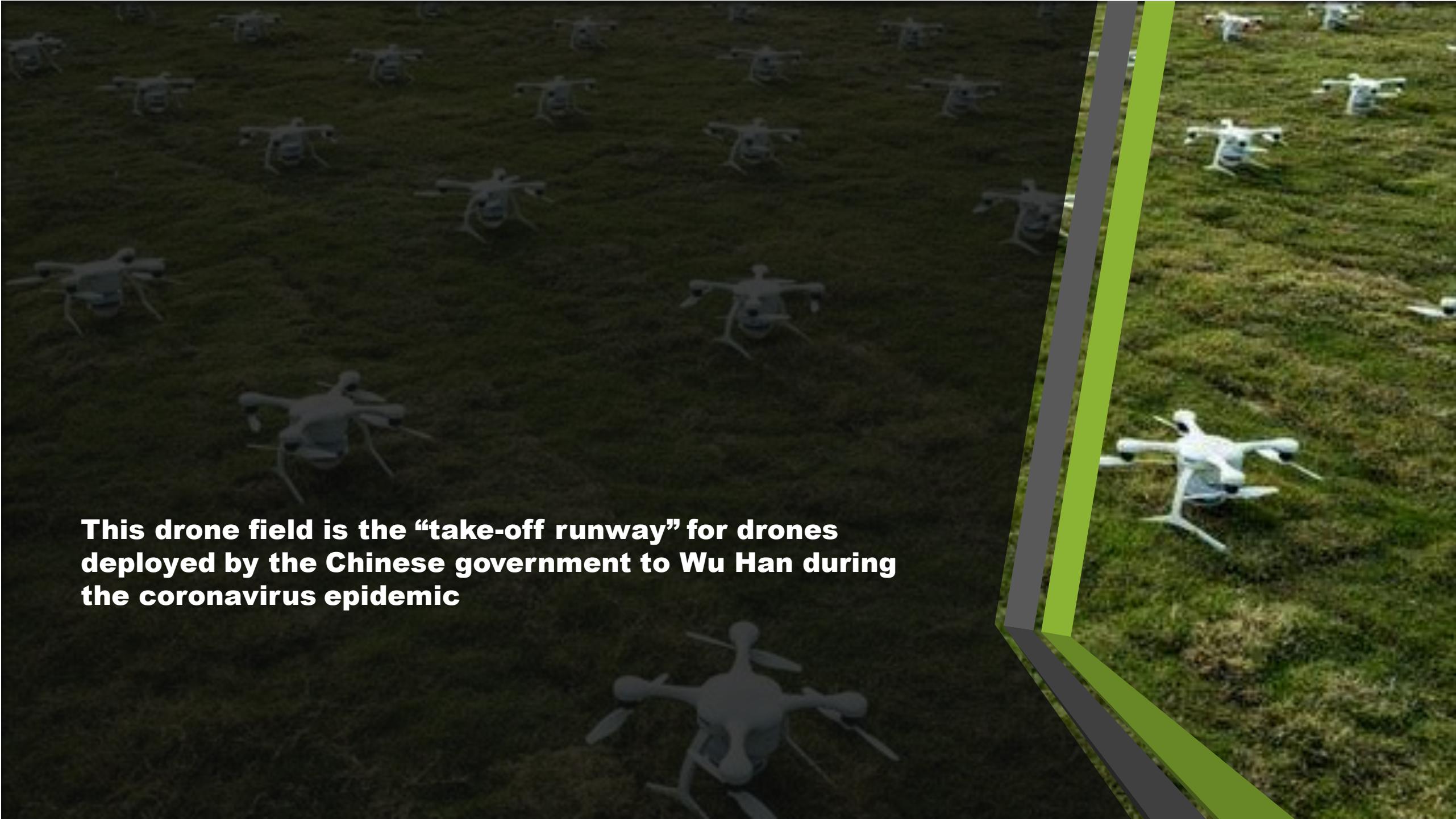
This drone field is the "take-off runway" for drones deployed by the Chinese government to Wu Han during the coronavirus epidemic

In case of the coronavirus epidemic, robotic objects have been created to replace hands (to hold or touch everyday objects)

Military robots are used to fight against coronavirus
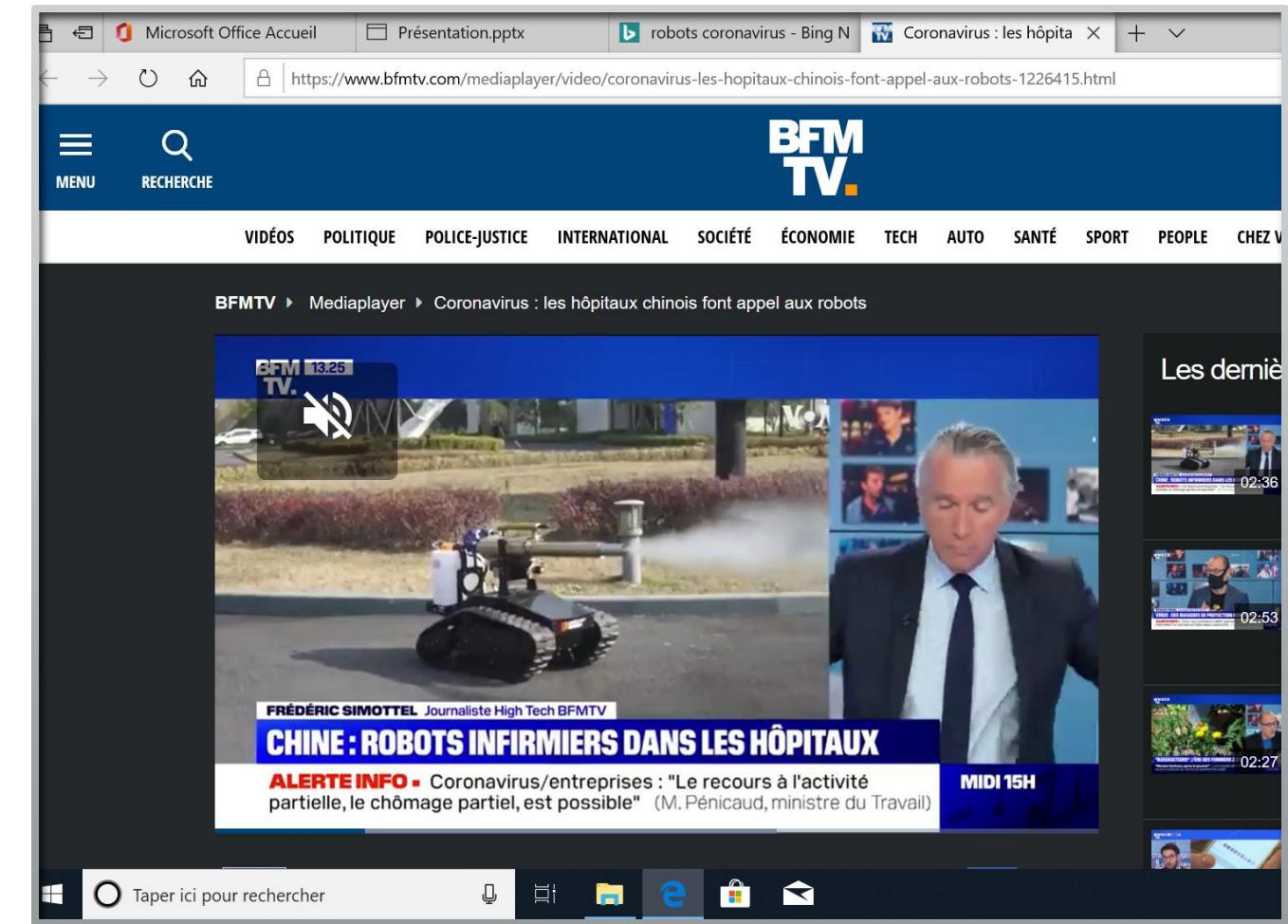
Thank you for your attention!