The information processing systems (part 2 of 2)
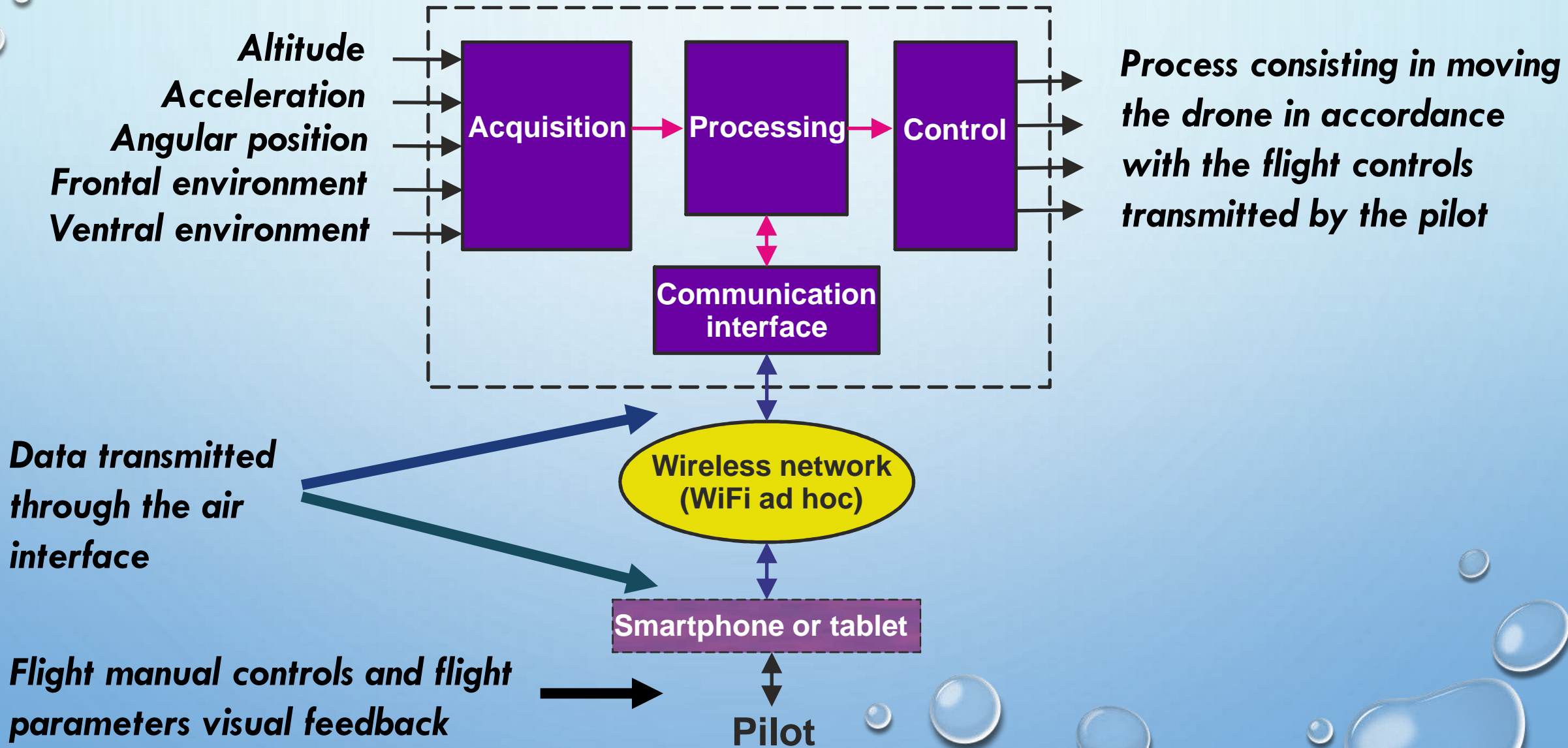
An example of information processing system

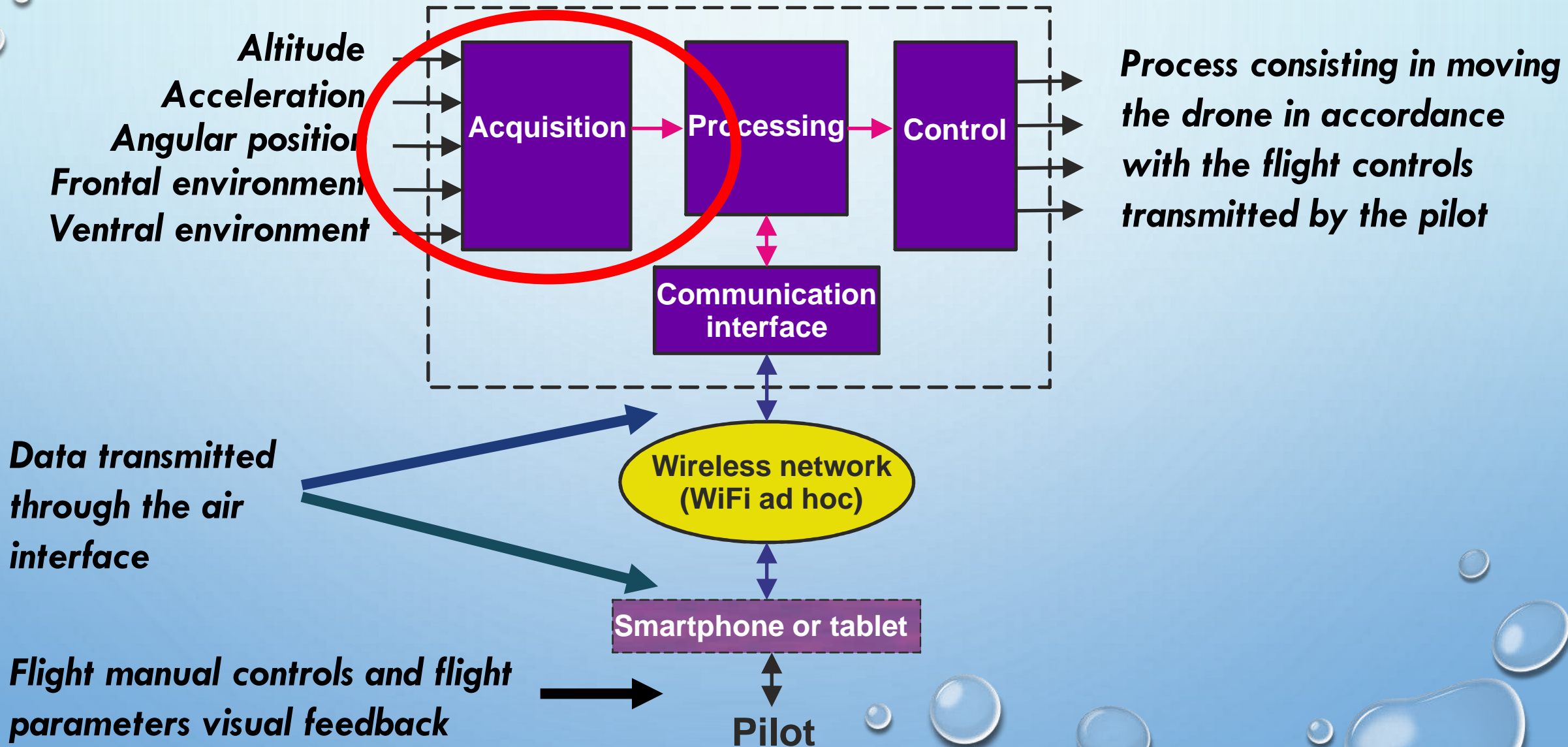**The famous Parrot drone**

AR-Drone

iPhone/iPod (Station Sol)

Pilote

The example of the Parrot drone

The example of the Parrot drone

The example of the Parrot drone

The « Acquisition » function

Acquisition of the altitude parameter with two ultrasound sensors

Acquisition of the acceleration parameter with an accelerometer

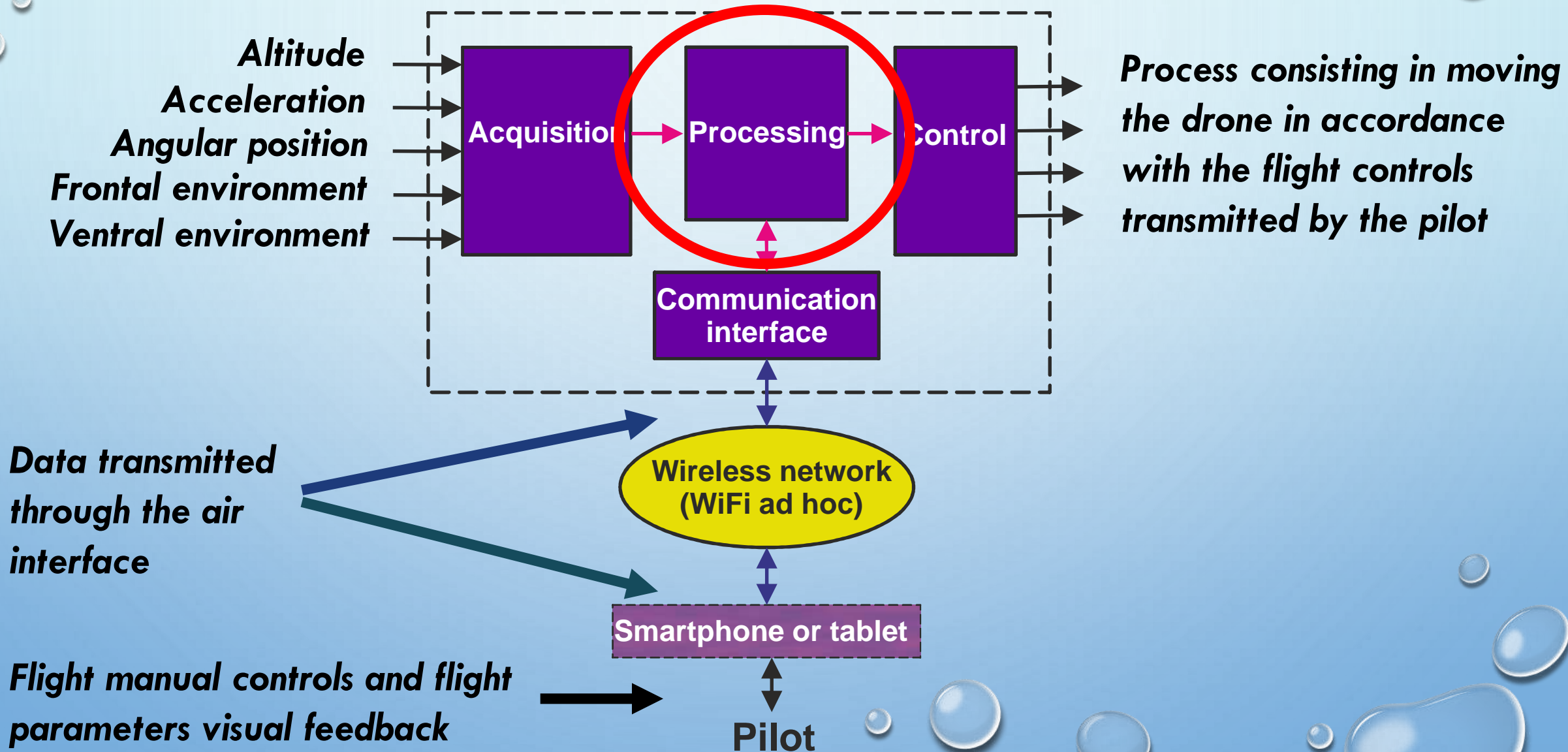*Acquisition of the angular position parameter with a gyroscope*

Acquisition of the frontal environment parameter with a camera

Acquisition of the ventral environment parameter with a camera

The example of the Parrot drone

Altitude
Acceleration
Angular position
Frontal environment
Ventral environment

Acquisition → **Processing** → **Control**

Communication interface

Process consisting in moving the drone in accordance with the flight controls transmitted by the pilot

Data transmitted through the air interface

Wireless network (WiFi ad hoc)

Smartphone or tablet

Flight manual controls and flight parameters visual feedback
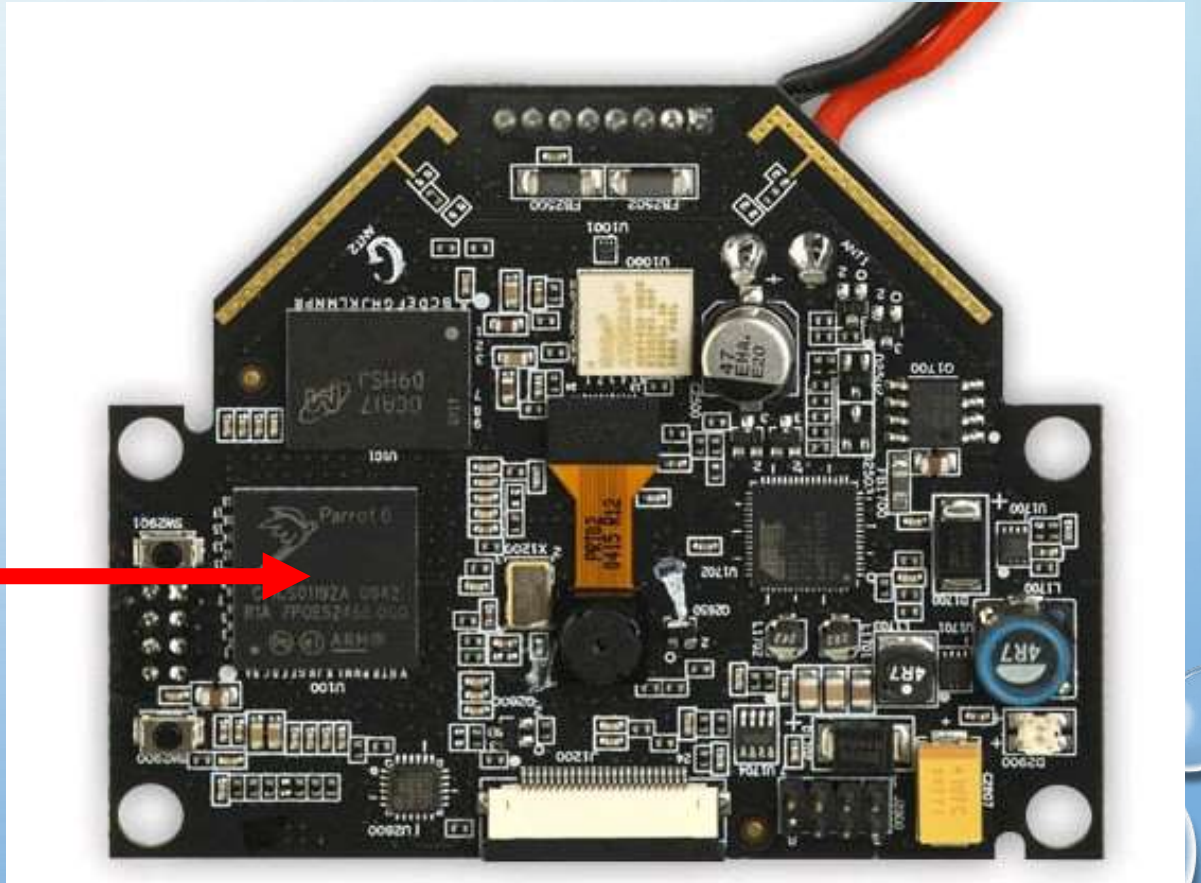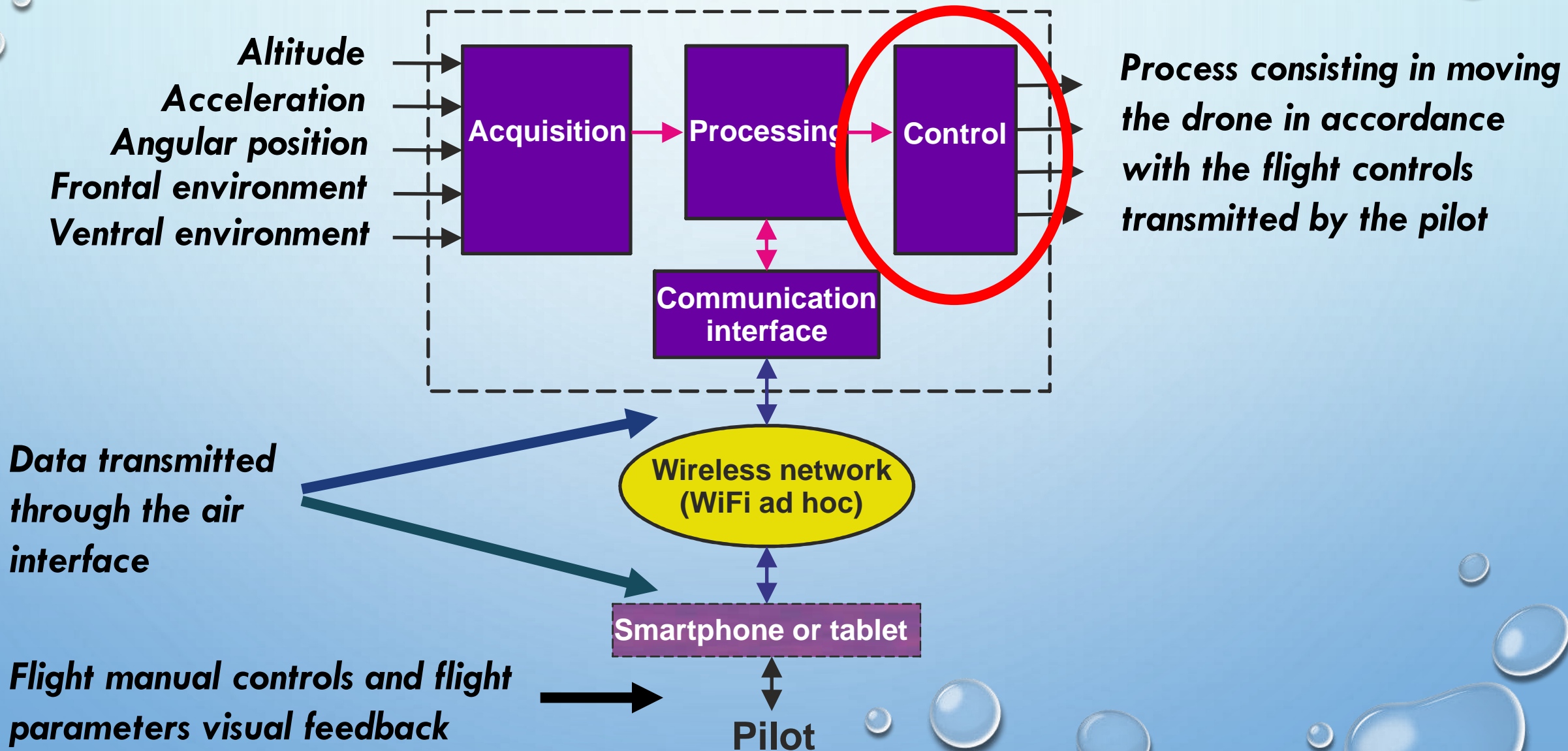
Pilot

The example of the Parrot drone

The « Processing » function

Built around a major programmable component called microcontroller and located on the mother board

Microcontroller ⟶

The example of the Parrot drone

Altitude
Acceleration
Angular position
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Acquisition → **Processing** → **Control**

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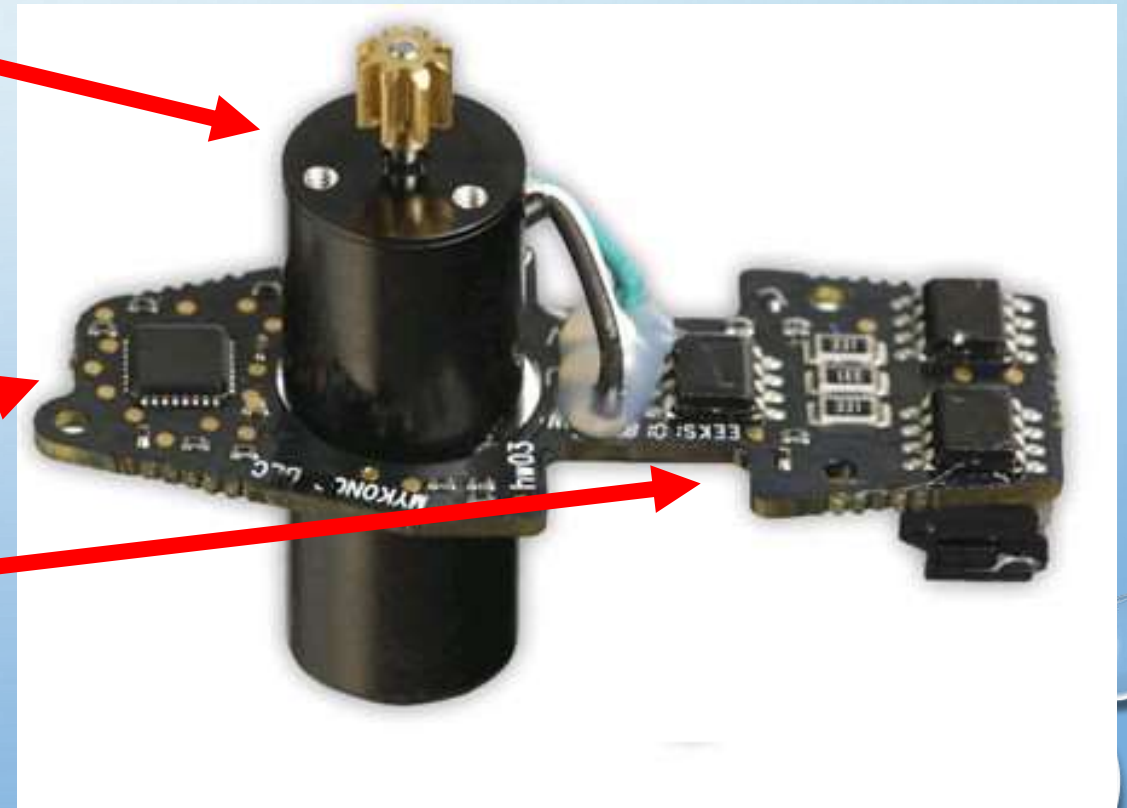
Pilot

The example of the Parrot drone
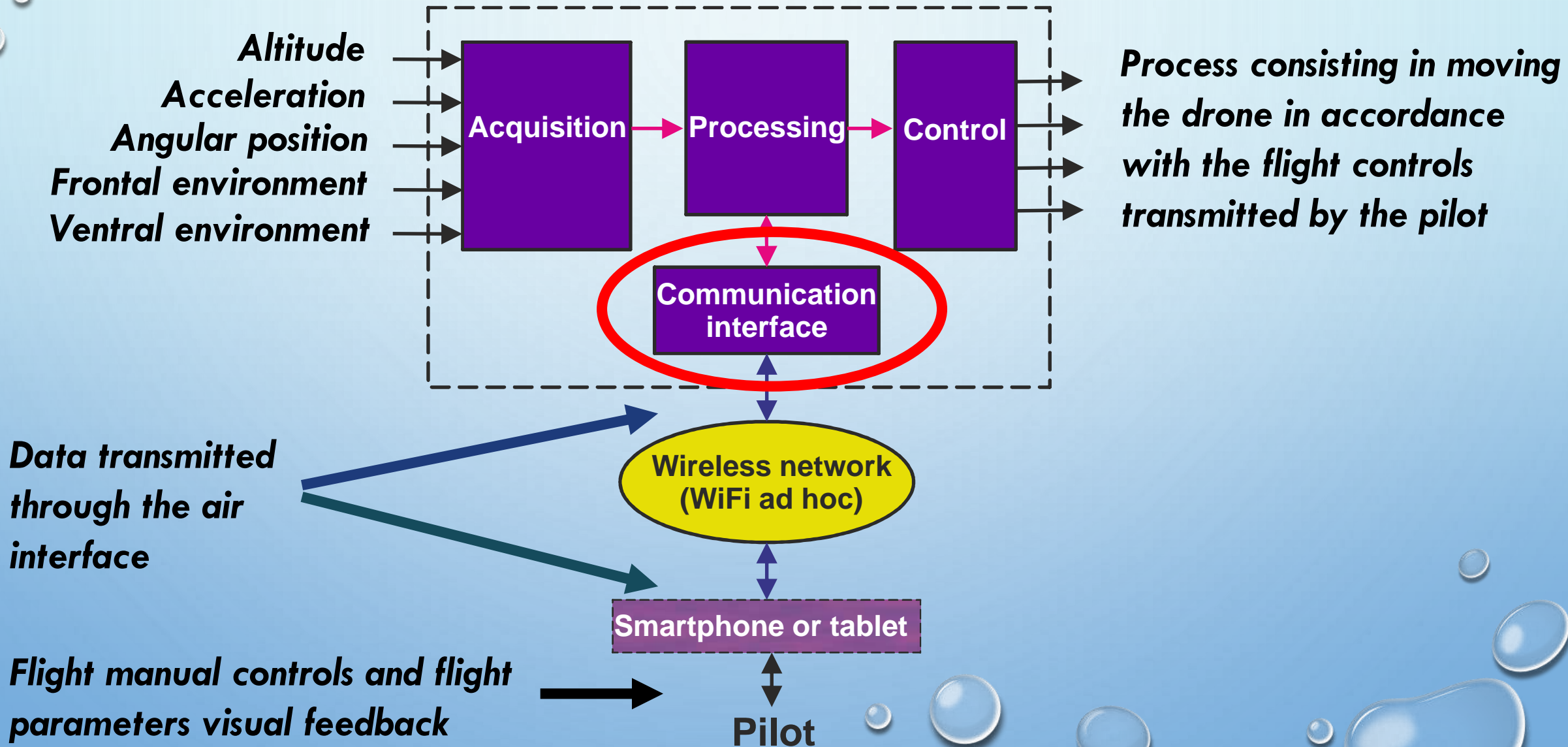
The « Control » function

Motor

It is composed of 4 electric motors driving 4 propellers (this drone is a quadricopter) and the associated control boards

Control boards

The example of the Parrot drone

Altitude
Acceleration
Angular position
Frontal environment
Ventral environment

Acquisition → **Processing** → **Control**

Process consisting in moving the drone in accordance with the flight controls transmitted by the pilot

Communication interface

Data transmitted through the air interface

Wireless network (WiFi ad hoc)

Flight manual controls and flight parameters visual feedback

Smartphone or tablet

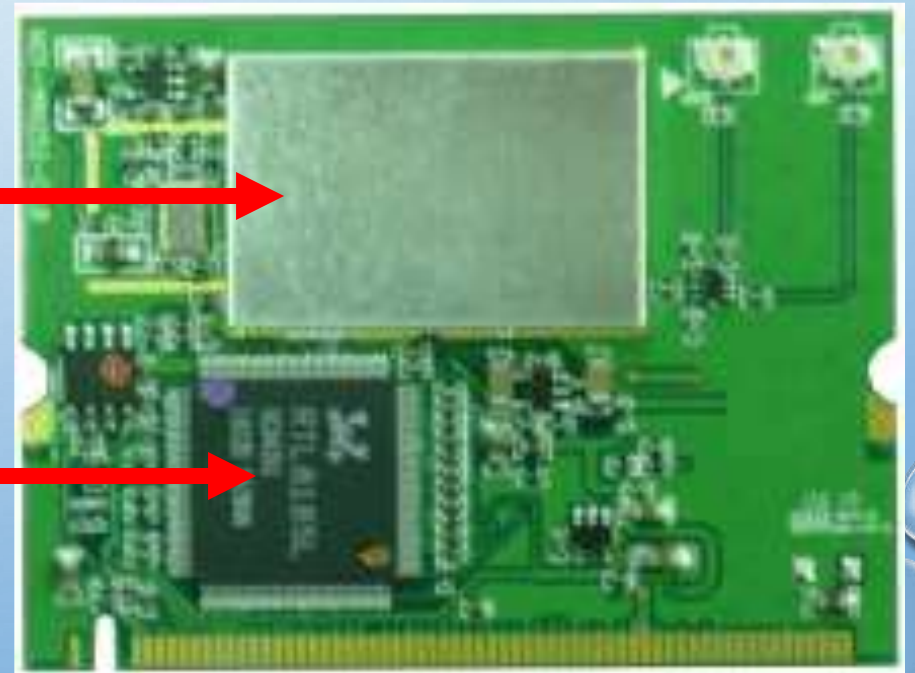**Pilot**

The example of the Parrot drone

The « Communication interface » function

It's built around electronic components called « Chipset WiFi »

The Radio-Frequency unit

The baseband processor

R&D trends

1. The multi-spread of communicating (connected) objects

→ IoT (Internet of Things)

The Internet of Things is the network of physical objects or « things » embedded with electronics, software, sensors and network connectivity, which enables these objects to collect and exchange data.
The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure.

Source : Wikipedia

R&D trends

1. The multi-spread of communicating (connected) objects

Health and welfare example

R&D trends

1. The multi-spread of communicating (connected) objects

By 2020, the number of connected objects is predicted to reach over 20 billion.
Thus, which requires a reevaluation of the transmission network's size.

- **Big data**

- **Cloud computing**

R&D trends

2. The concept of « Augmented Reality »

Augmented Reality (AR) is a live direct or indirect view of a physical real-world environment whose elements are augmented or supplemented by computer-generated sensory input such as sound, video, graphics or GPS data.

Source : Wikipedia

R&D trends

2. The concept of « Augmented Reality »

Some examples