AL1 - Team E Presentation

V1: planning and graphical tracking of the delivery paths

Quentin Larose, Enzo Briziarelli, João Brilhante, Charly Ducrocq, Ludovic Marti
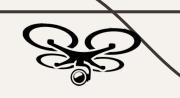
Subject understanding

Planning of the delivery paths:

- Get the delivery assigned to the drone ready
    - V5 : scheduling, drone allocation
    - Mocked

- Compute the path the drone should follow
    - DeliveryPathfinder
    - Black box
    - Algorithm mocked

Subject understanding

Graphical tracking of the delivery paths:

- Track a drone position during its delivery
    - DroneHeartbeat
    - Receives the positions sent by the drone

- Graphical tracking of the positions
    - TrackingRouter
    - Sends a technician the last received position of each drone
    - Sends a customer the followed path of a drone

Critical points

Resilience

Trace paths in the case of a component failure:

- Knowing if a delivery has finished

- Find a lost drone

Performance

Algorithmically heavy and blocking path calculation:

- Compute more than one path at a time

Scalability

A lot of data from drones is sent down:

- Duplicate components in case of high demand.

- Reduce calls between components

Critical points

MICROSERVICES

- Better scalability
- Fault isolation
- Zero downtime deployments
- Flexible organization

EVENT-DRIVEN ARCHITECTURE

- Loose coupling
- Fault tolerance
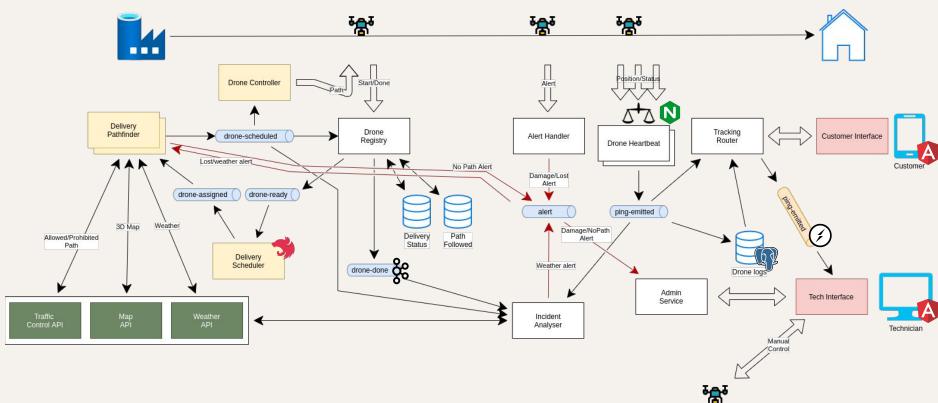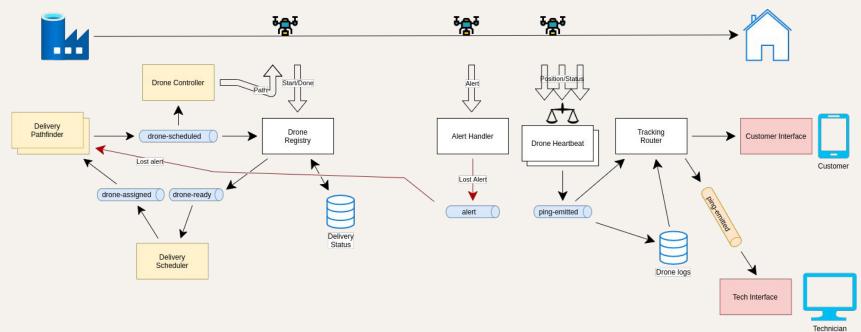- Better scalability
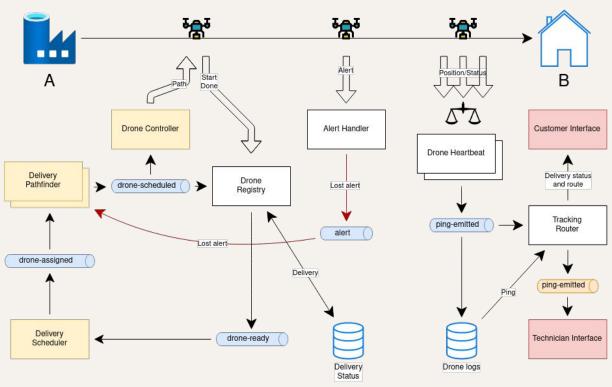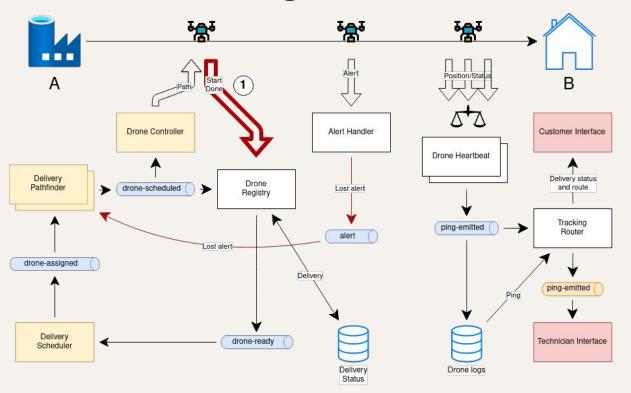- Real-time handling

Technological choices

Architecture

Delivery Pathfinder

Drone Controller

Path

Start/Done

drone-scheduled

Drone Registry

Lost/weather alert

No Path Alert

Alert Handler

Alert

Position/Status

Drone Heartbeat

Tracking Router

Customer Interface

Customer

drone-assigned

drone-ready

Delivery Status

Path Followed

Damage/Lost Alert

alert

ping-emitted

ping-emitted

3D Map

Weather

Allowed/Prohibited Path

Delivery Scheduler

drone-done

Damage/NoPath Alert

Drone logs

Weather alert

Admin Service

Tech Interface

Technician

Traffic Control API

Map API

Weather API

Incident Analyser

Manual Control

Architecture : POC

Walk-through scenario

Walk-through scenario

A

B

1- The drone says it is ready to go and asks for the path

Path
Start
Done
(1)

Alert

Position/Status

Drone Controller

Alert Handler

Drone Heartbeat

Customer Interface

Delivery Pathfinder

drone-scheduled

Drone Registry

Lost alert

ping-emitted

Tracking Router

Delivery status and route

Lost alert

alert

drone-assigned

Delivery

Ping

ping-emitted

Delivery Scheduler

drone-ready

Delivery Status

Drone logs

Technician Interface

Walk-through scenario

1- The drone says it is ready to go and asks for the path

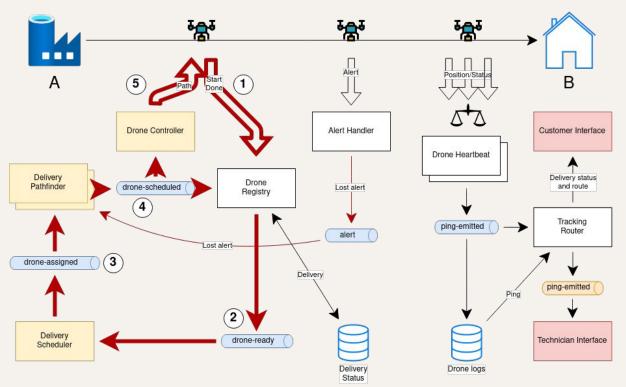2- An event announcing its availability is sent

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent
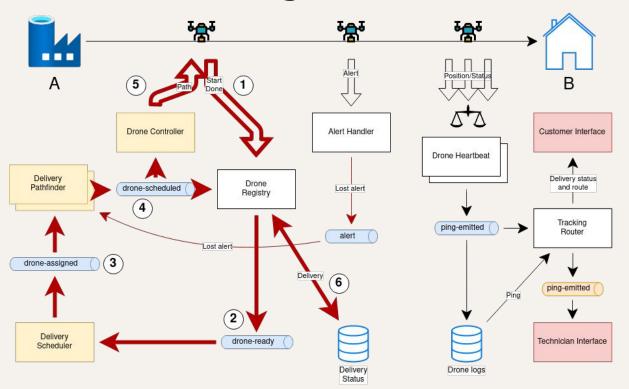
3- Assignment of an order and sending of the event

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

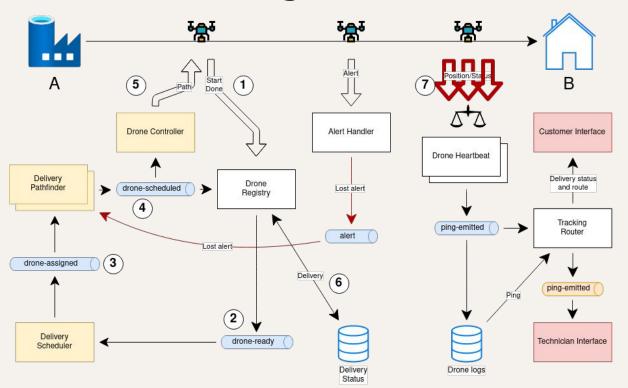# Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event
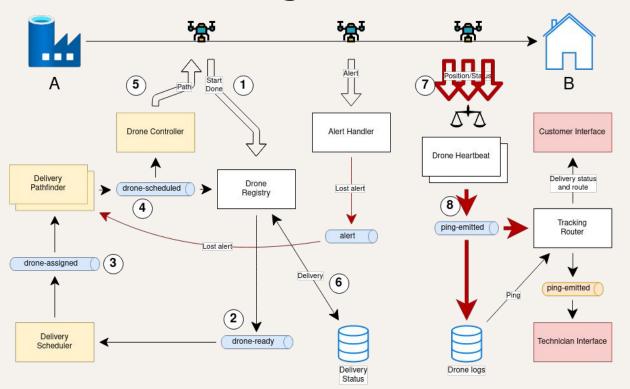
5- Sending the delivery to the drone

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone
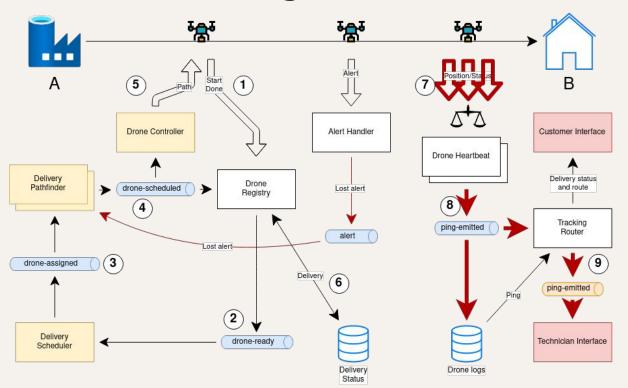
6- Registration of the "in process" delivery status

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status
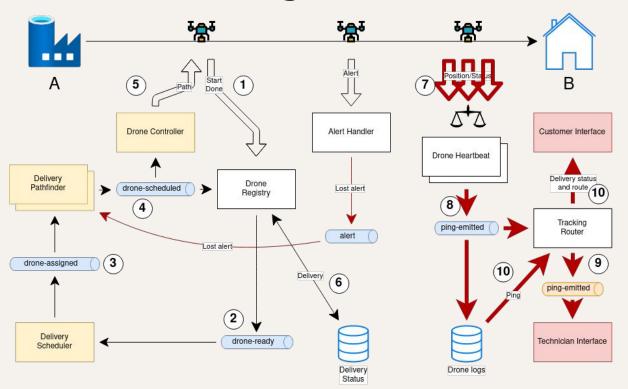
7- The drone sends an heartbeat to indicate its position

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status

7- The drone sends an heartbeat to indicate its position
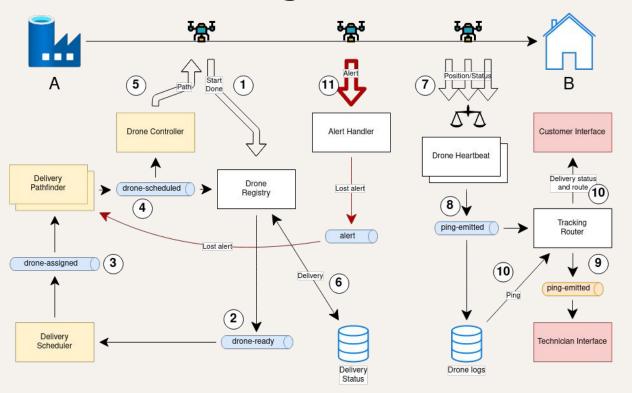
8- The drone heartbeat is forwarded to the event bus

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status

7- The drone sends an heartbeat to indicate its position

8- The drone heartbeat is forwarded to the event bus

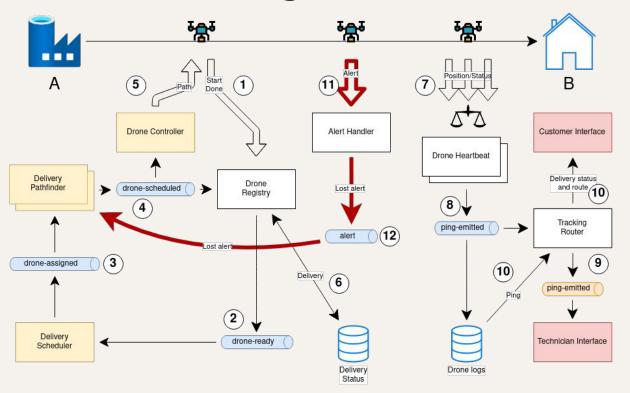9- The drone heartbeat is forwarded to the technician with web sockets

Walk-through scenario

1- The drone says it is ready to go and asks for the path
2- An event announcing its availability is sent
3- Assignment of an order and sending of the event
4- Calculation of the path to follow and sending of the event
5- Sending the delivery to the drone
6- Registration of the "in process" delivery status
7- The drone sends an heartbeat to indicate its position
8- The drone heartbeat is forwarded to the event bus
9- The drone heartbeat is forwarded to the technician with web sockets
10- Recovering the last recorded position

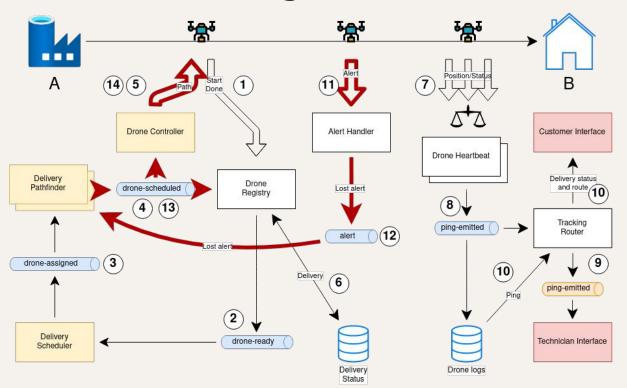# Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status

7- The drone sends an heartbeat to indicate its position

8- The drone heartbeat is forwarded to the event bus

9- The drone heartbeat is forwarded to the technician with web sockets

10- Recovering the last recorded position
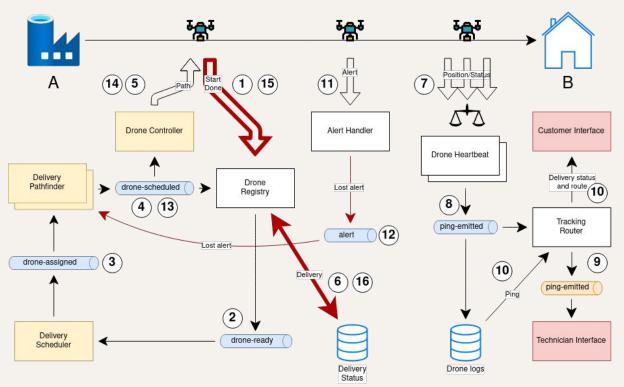
11- The drone is lost and raises an alert

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status

7- The drone sends an heartbeat to indicate its position

8- The drone heartbeat is forwarded to the event bus

9- The drone heartbeat is forwarded to the technician with web sockets

10- Recovering the last recorded position

11- The drone is lost and raises an alert

12- A lost drone event is read by the pathfinder

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status

7- The drone sends an heartbeat to indicate its position

8- The drone heartbeat is forwarded to the event bus

9- The drone heartbeat is forwarded to the technician with web sockets

10- Recovering the last recorded position

11- The drone is lost and raises an alert

12- A lost drone event is read by the pathfinder

13- Calculation of the path to follow and sending of the event
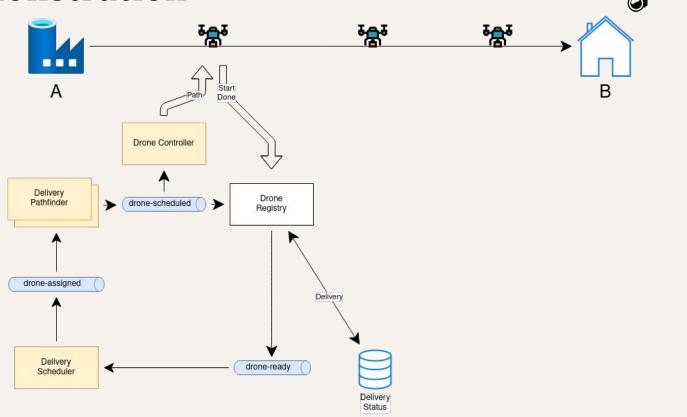
14- Sending the new path of delivery to the drone

Walk-through scenario

1- The drone says it is ready to go and asks for the path

2- An event announcing its availability is sent

3- Assignment of an order and sending of the event

4- Calculation of the path to follow and sending of the event

5- Sending the delivery to the drone

6- Registration of the "in process" delivery status

7- The drone sends an heartbeat to indicate its position

8- The drone heartbeat is forwarded to the event bus

9- The drone heartbeat is forwarded to the technician with web sockets

10- Recovering the last recorded position

11- The drone is lost and raises an alert

12- A lost drone event is read by the pathfinder

13- Calculation of the path to follow and sending of the event

14- Sending the new path of delivery to the drone

15- The drone says its delivery has been made
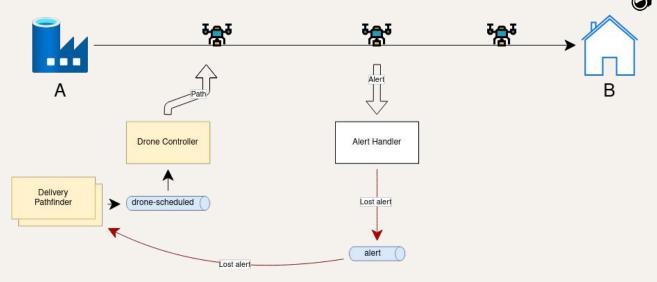
16- Update the delivery status to "done"

Demonstration

Demonstration

Demonstration

Demonstration

Demonstration

A

B

Position/Status

Drone ... eat

Customer Interface

Delivery status and route

ping-emitted → Tracking Router

Ping

ping-emitted

Technician Interface

Drone logs

Team organisation

Friday:
- Next week goals
- Task distribution

Tuesday:
- Review architecture
- Weekly status

All week long:
- Sprint development
- Frequent meetings

Future developments

Admin
service

Manual
control

01 —— 02 —— 03 —— 04

Incident
Analyser

External
APIs

Thanks

Do you have questions ?