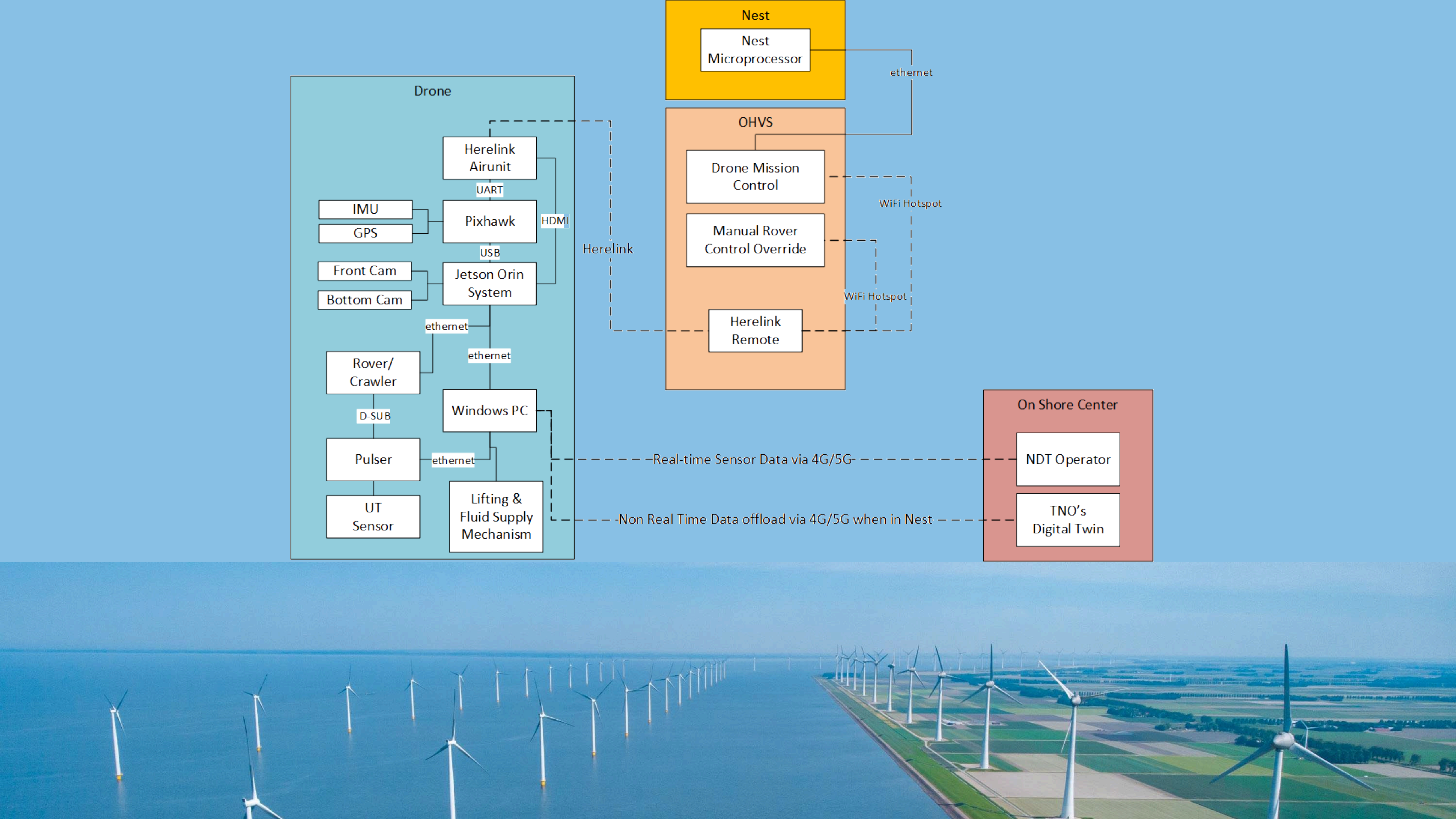
Data Communication for Offshore Maintenance

Sabari & Berend Jan

Inertia Technology

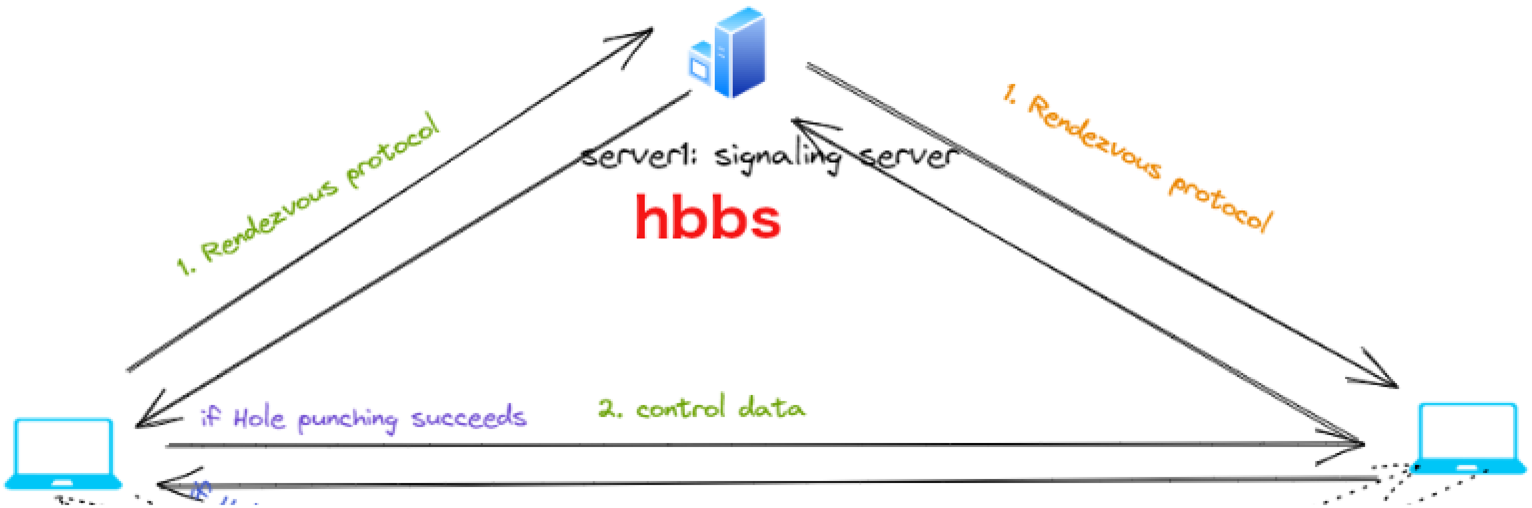

Nest
Nest Microprocessor
ethernet
Drone
Herelink Airunit
UART
IMU
GPS
Pixhawk
HDMI
USB
Front Cam
Bottom Cam
Jetson Orin System
ethernet
ethernet
Rover/ Crawler
D-SUB
Windows PC
Pulser
ethernet
UT Sensor
Lifting & Fluid Supply Mechanism
Herelink
OHVS
Drone Mission Control
WiFi Hotspot
Manual Rover Control Override
WiFi Hotspot
Herelink Remote
On Shore Center
Real-time Sensor Data via 4G/5G
NDT Operator
Non Real Time Data offload via 4G/5G when in Nest
TNO's Digital Twin

Real-time NDT Operator Remote control

WinPC is ready with

- Open source Remote Desktop connection software
  - Securely routes via Inertia Servers
  - P2P access for fast-access

Inertia Server



On Shore PC

Drone Win PC

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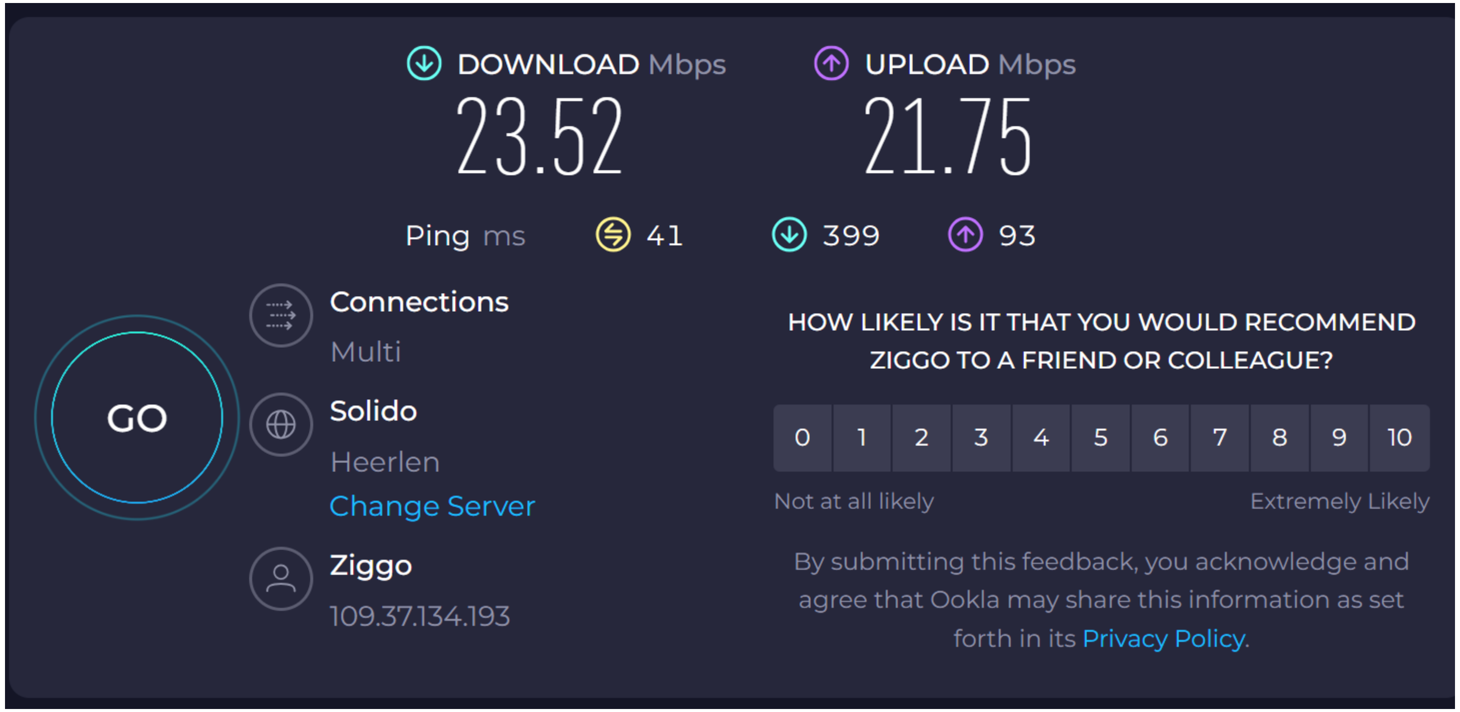
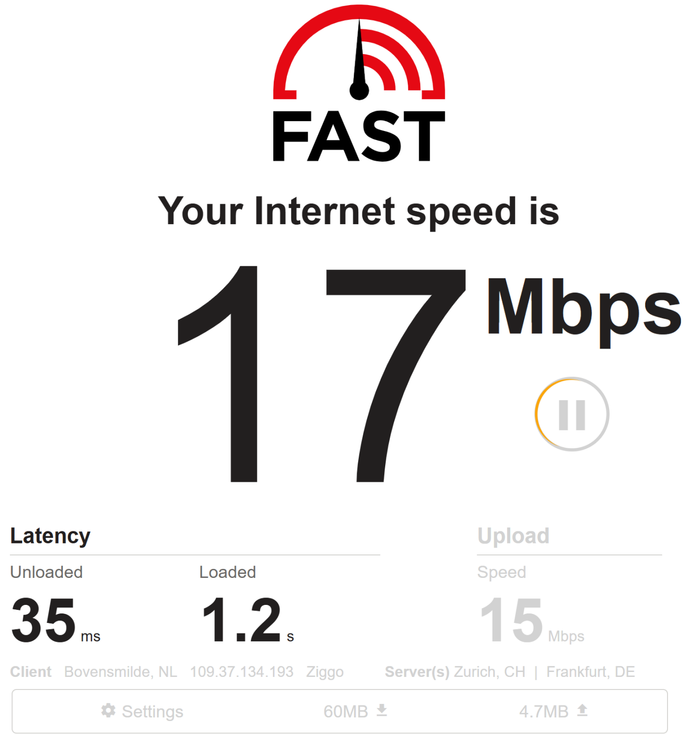
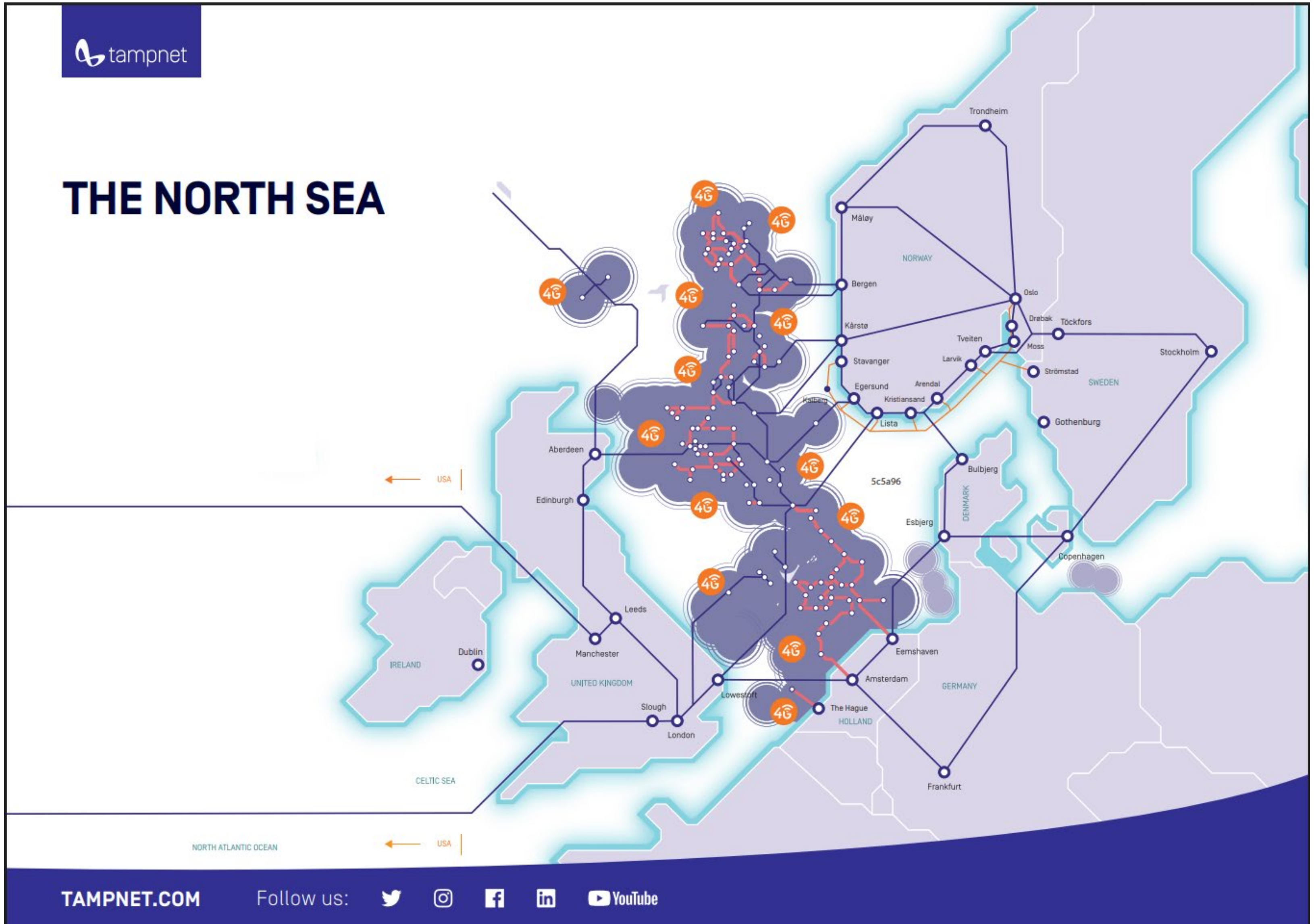
Tests – Speed test 4G





4G connectivity with ODIDO/Tampnet

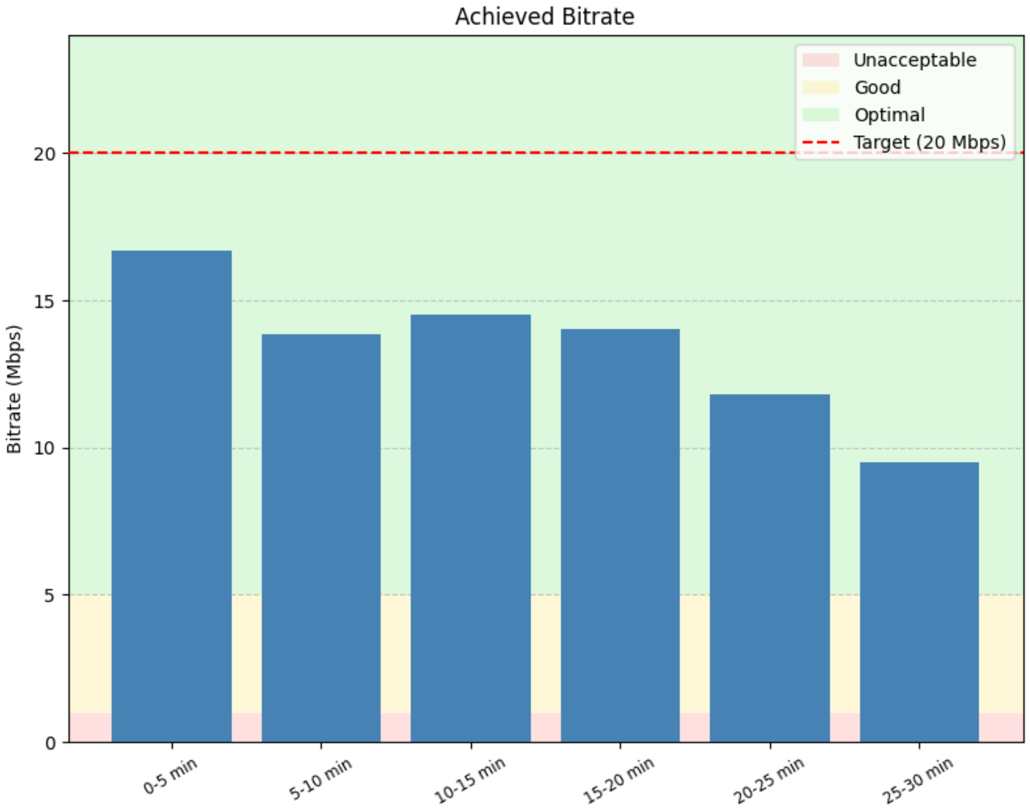


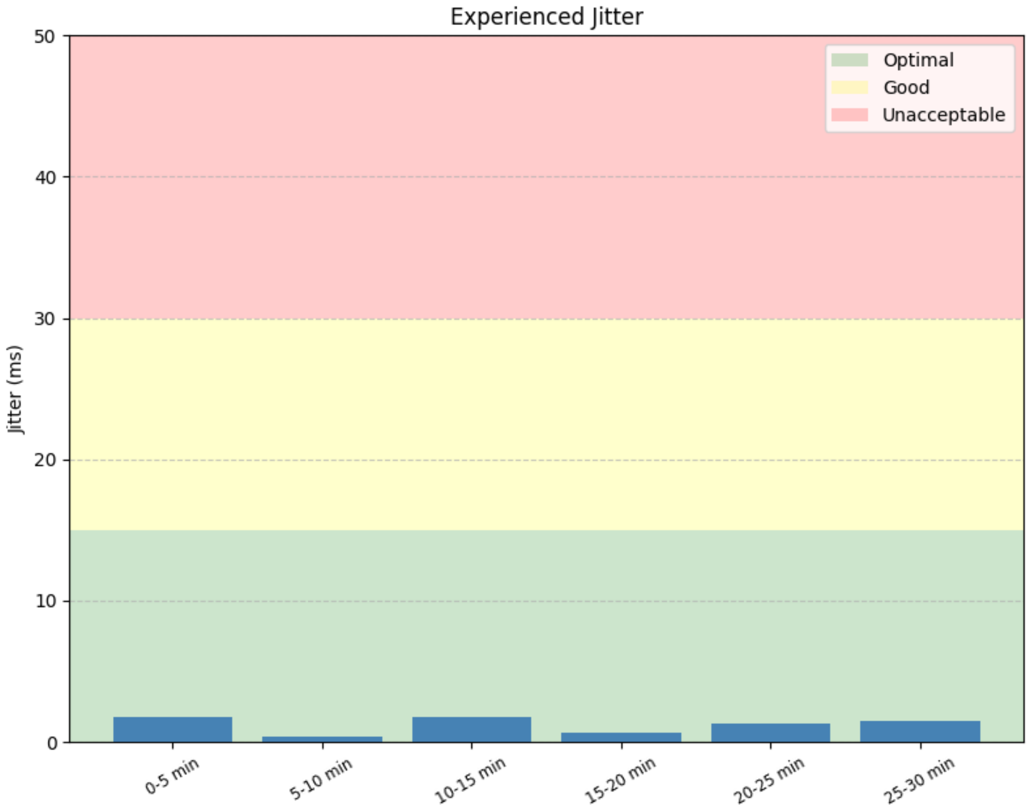
https://www.betterroaming.com/plans/esim-northernsea/

Drive Tests – 4G

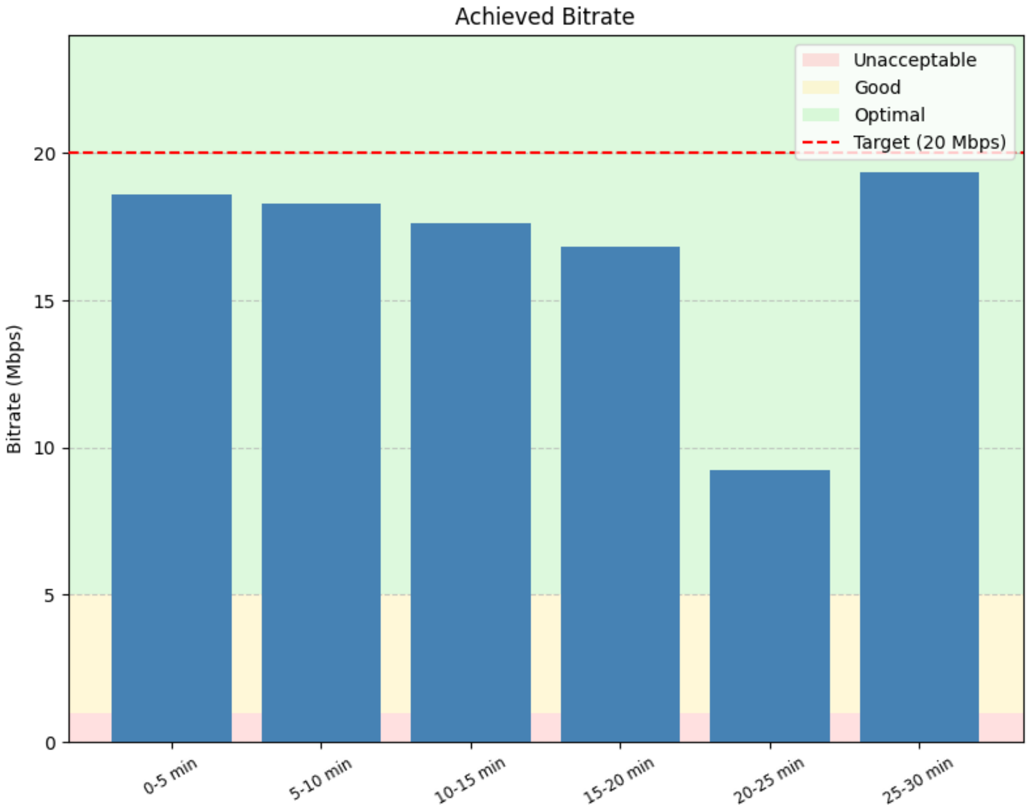
Mobility	Node Location	Mean_Achieved BR (Mbps)	Mean_Jitter (ms)
Static	Office	13.4	1.21
Walking	Backpack	16.65	1.77
Drive	Car Front Seat	14.99	1.3
Drive	Car Boot	12	1.7

Stationary


Achieved Bitrate
Unacceptable
Good
Optimal
Target (20 Mbps)
Bitrate (Mbps)
0
5
10
15
20
0-5 min
5-10 min
10-15 min
15-20 min
20-25 min
25-30 min


Experienced Jitter
Optimal
Good
Unacceptable
Jitter (ms)
0
10
20
30
40
50
0-5 min
5-10 min
10-15 min
15-20 min
20-25 min
25-30 min

Walking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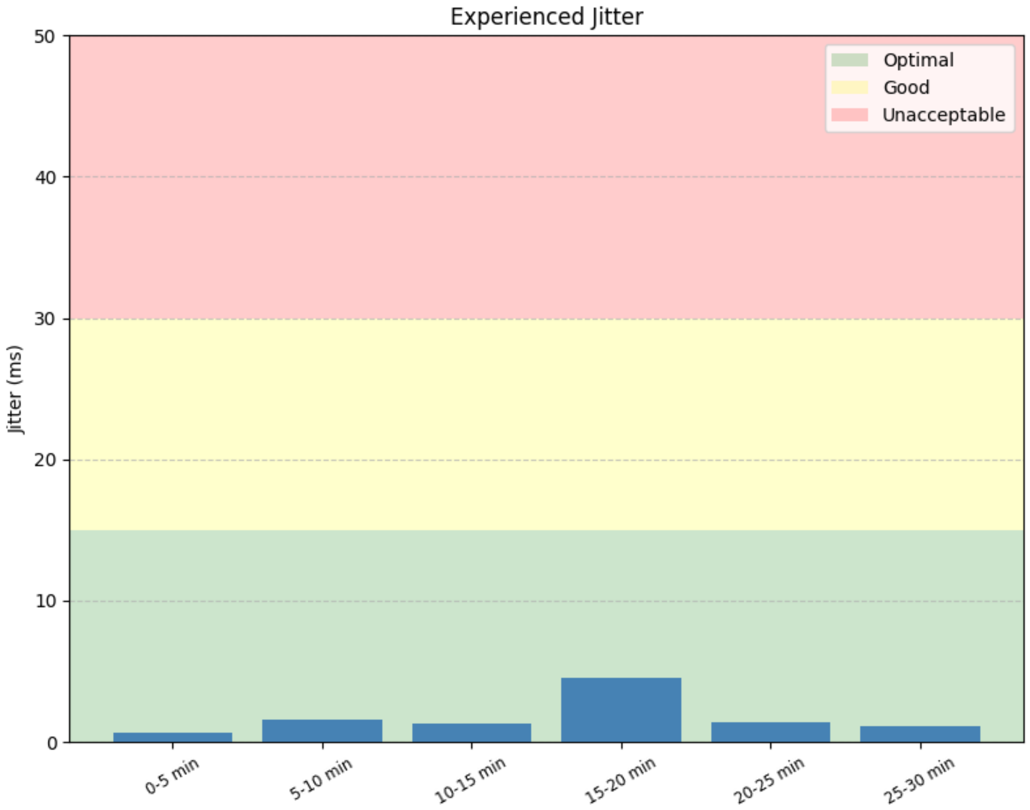
Experienced Jitter
Optimal
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Jitter (ms)
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10
20
30
40
50
0-5 min
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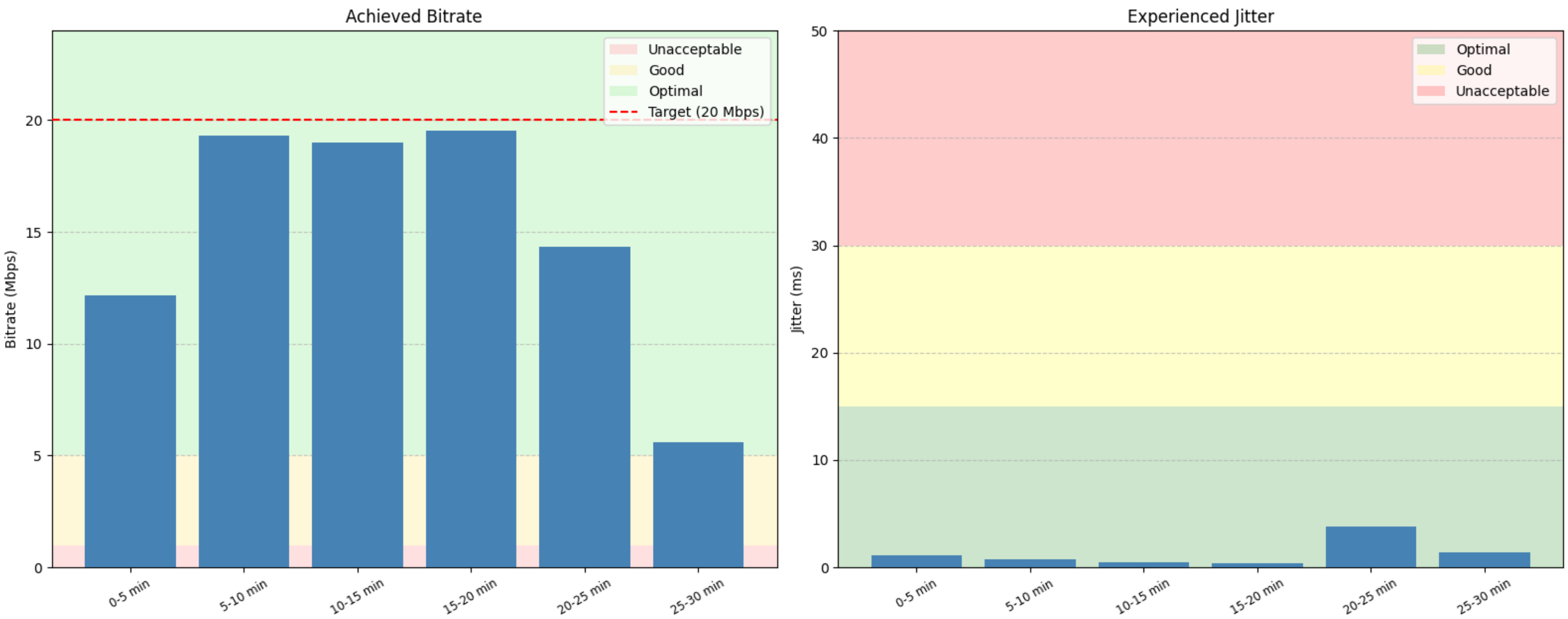
15-20 min
20-25 min
25-30 min

Driving with the PC in the front seat



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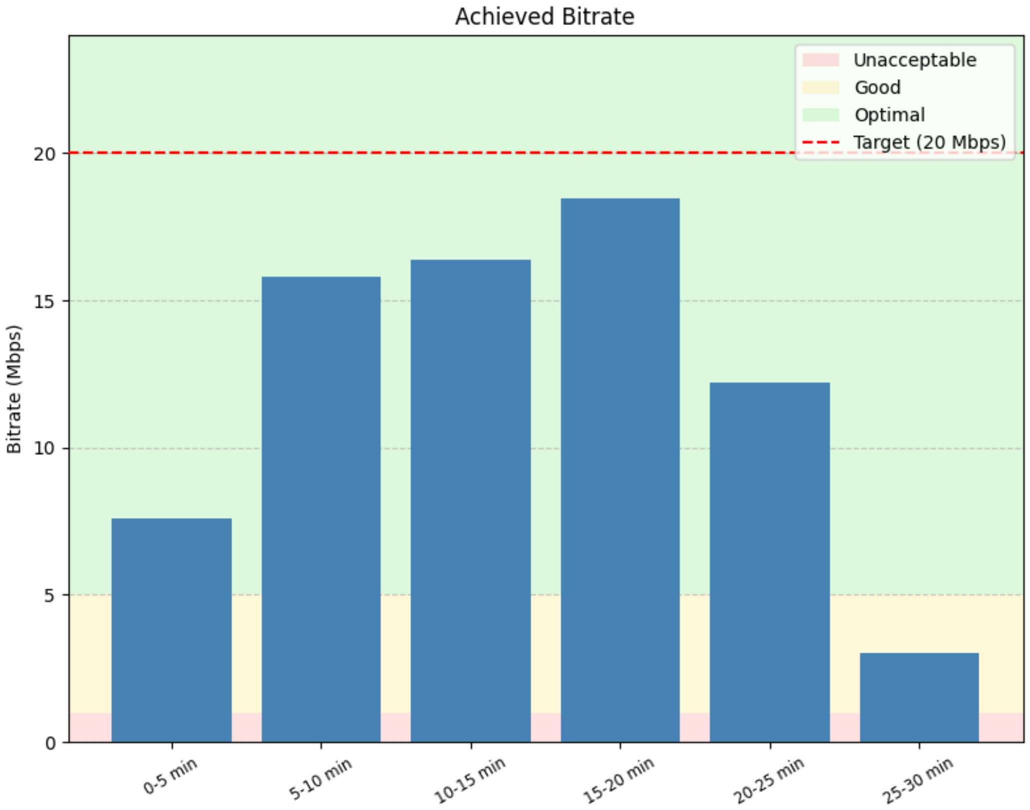
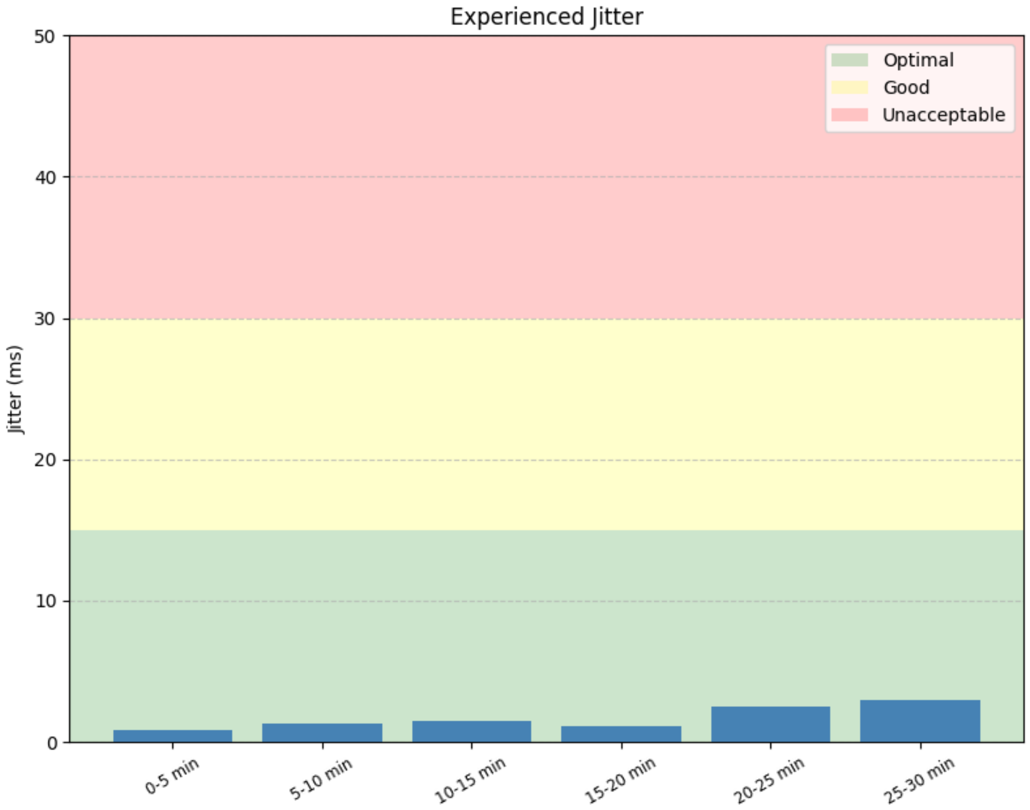
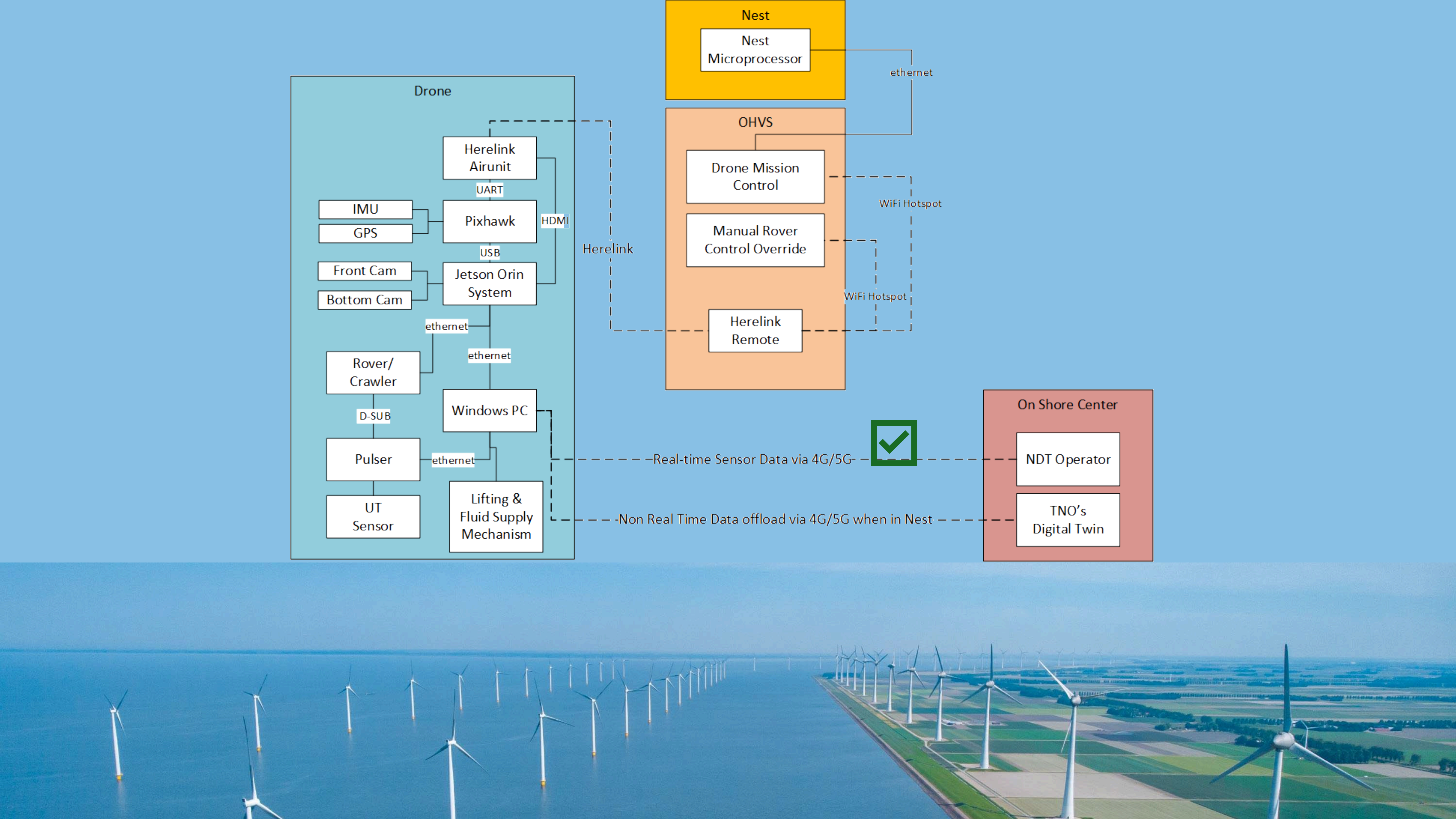
Driving with the PC in the boot







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