Future Fairway Navigation – 5G for Maritime

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5G for Maritime

- 5G
  - The new generarion of cellular systems
  - Improvements across the board; performance, security etc.
- 5G for Maritime
  - High bandwidth, low latency, and secure access for many aspects of maritime
    - Ship to shore, port, authorities, remote pilotage, other services...
  - Integration with satellite communication in the works, bringing 5G to open sea

- **How can 5G provide isolation, access control, and robustness for business/safety critical operations?**

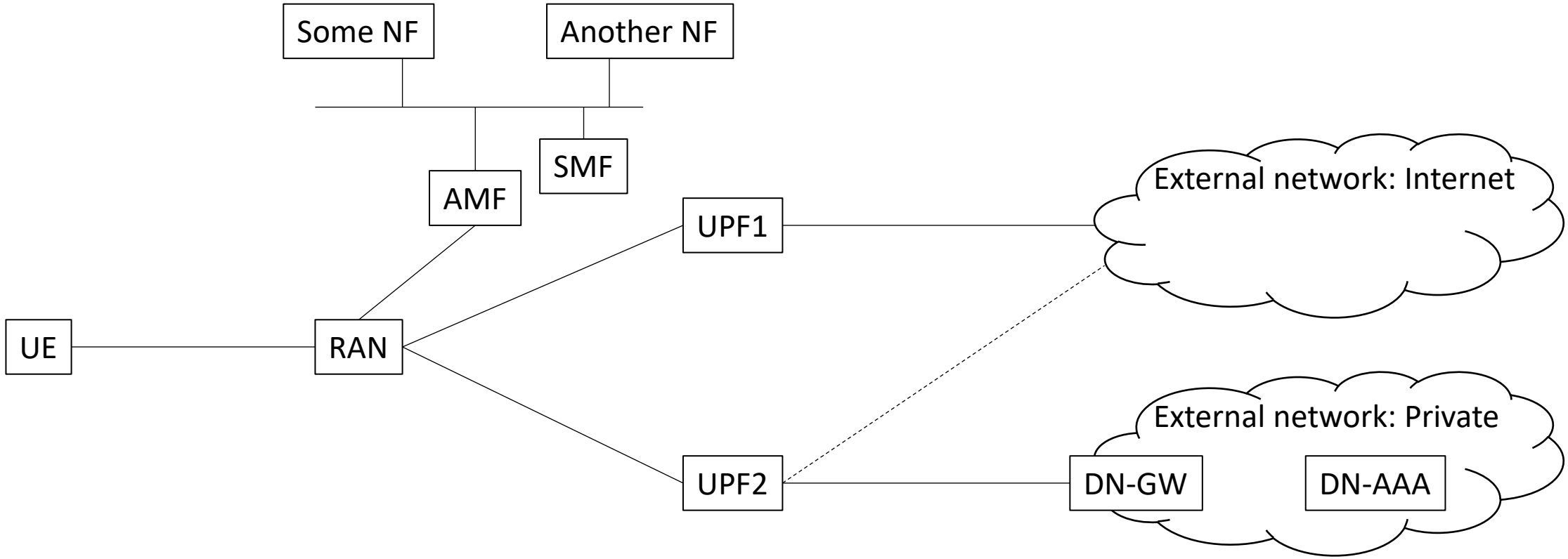
Maritime networking

- On ship, in port, between maritime actors and authortities
- Many services and data only for authorized users, e.g.
  - Port authorities – full access to port services and data
  - Visiting ships – limited access to port services and data
  - Tourists – no access to port services and data

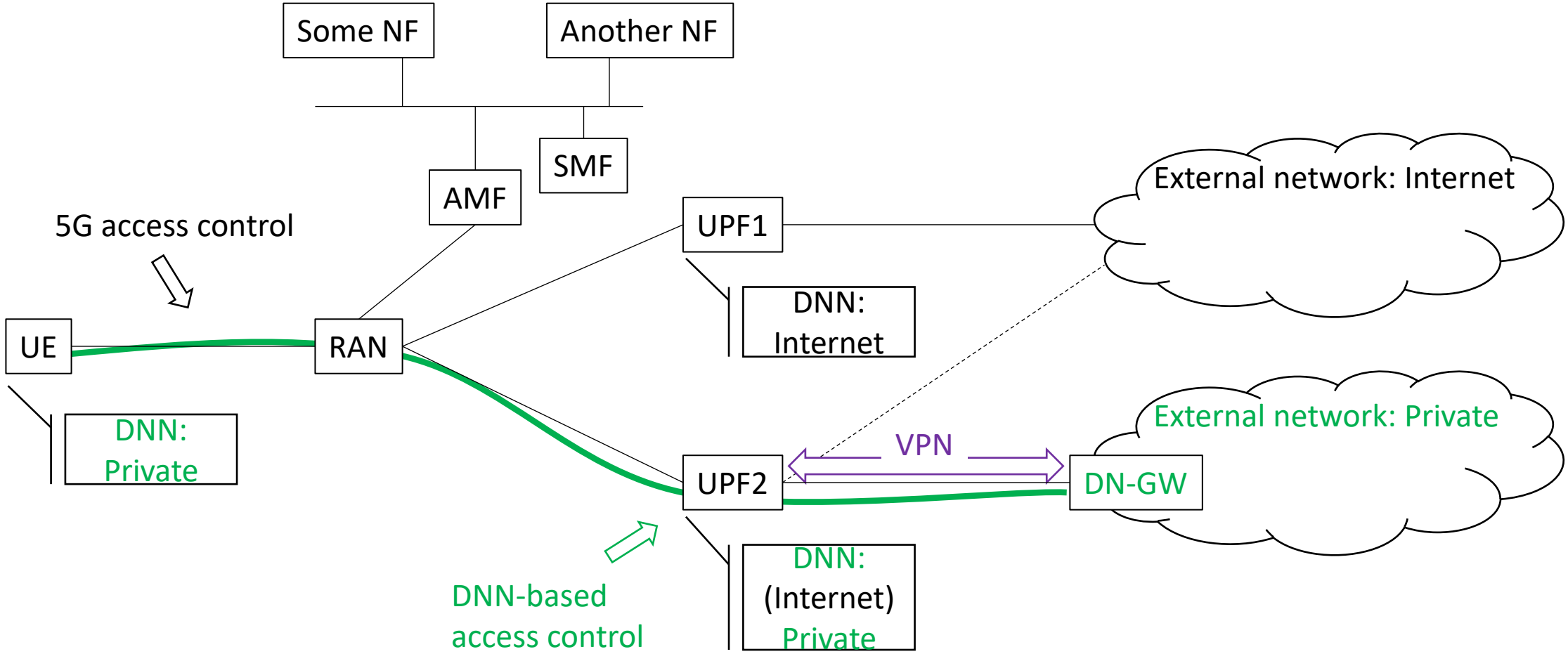
  ➢**Access control is needed**
- Services should be available all the time
  - Remote pilotage should not suffer because it is midnight at new year's eve

  ➢**High availability is a must**
- 5G isolation mechanisms and traditional networking solutions can be a good fit
  - Private networks for running the services
  - 5G for providing authorized access to the networks/services in a secure and robust way

5G network

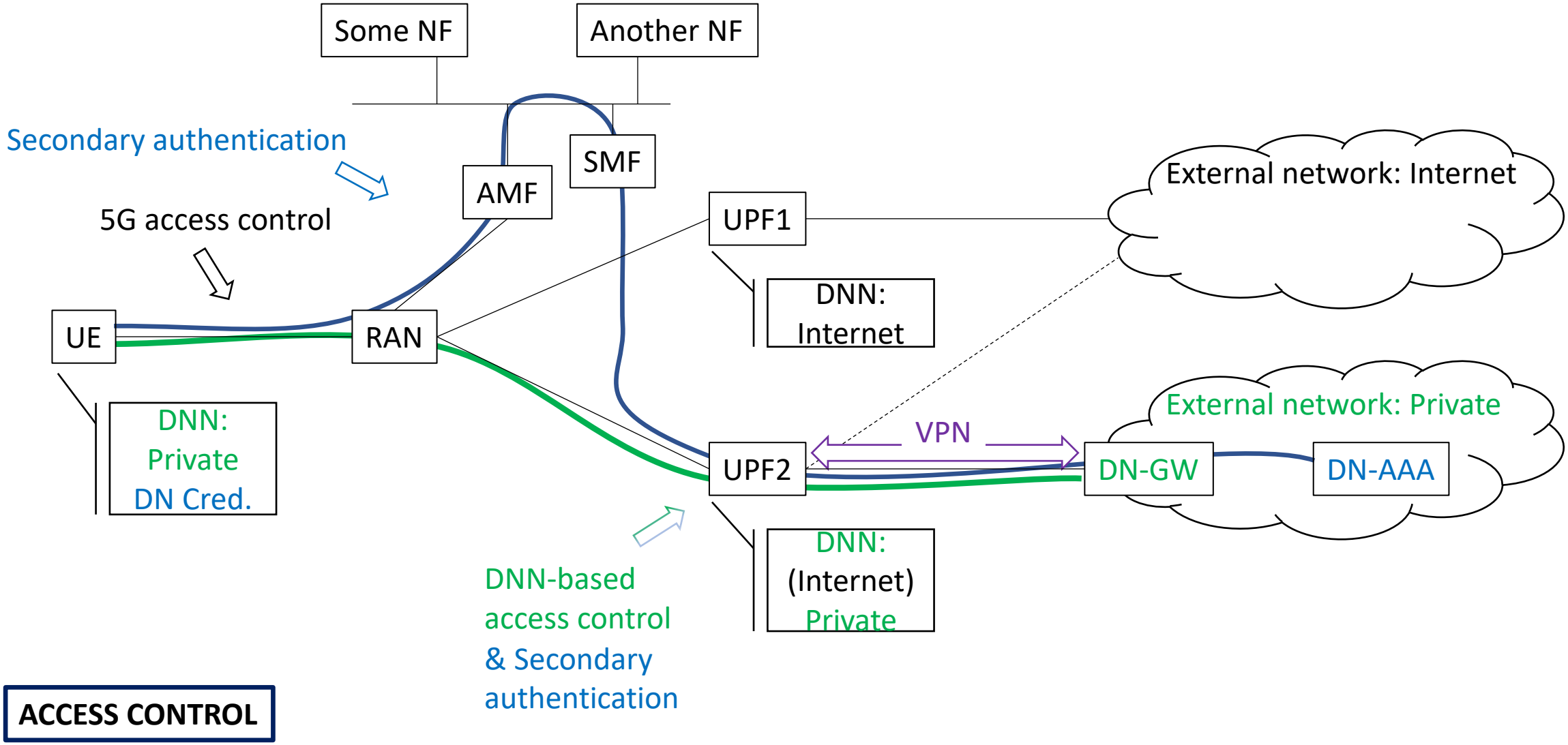

Some NF
Another NF
SMF
AMF
UPF1
External network: Internet
UE
RAN
External network: Private
UPF2
DN-GW
DN-AAA

5G network – Data Network Name (DNN)



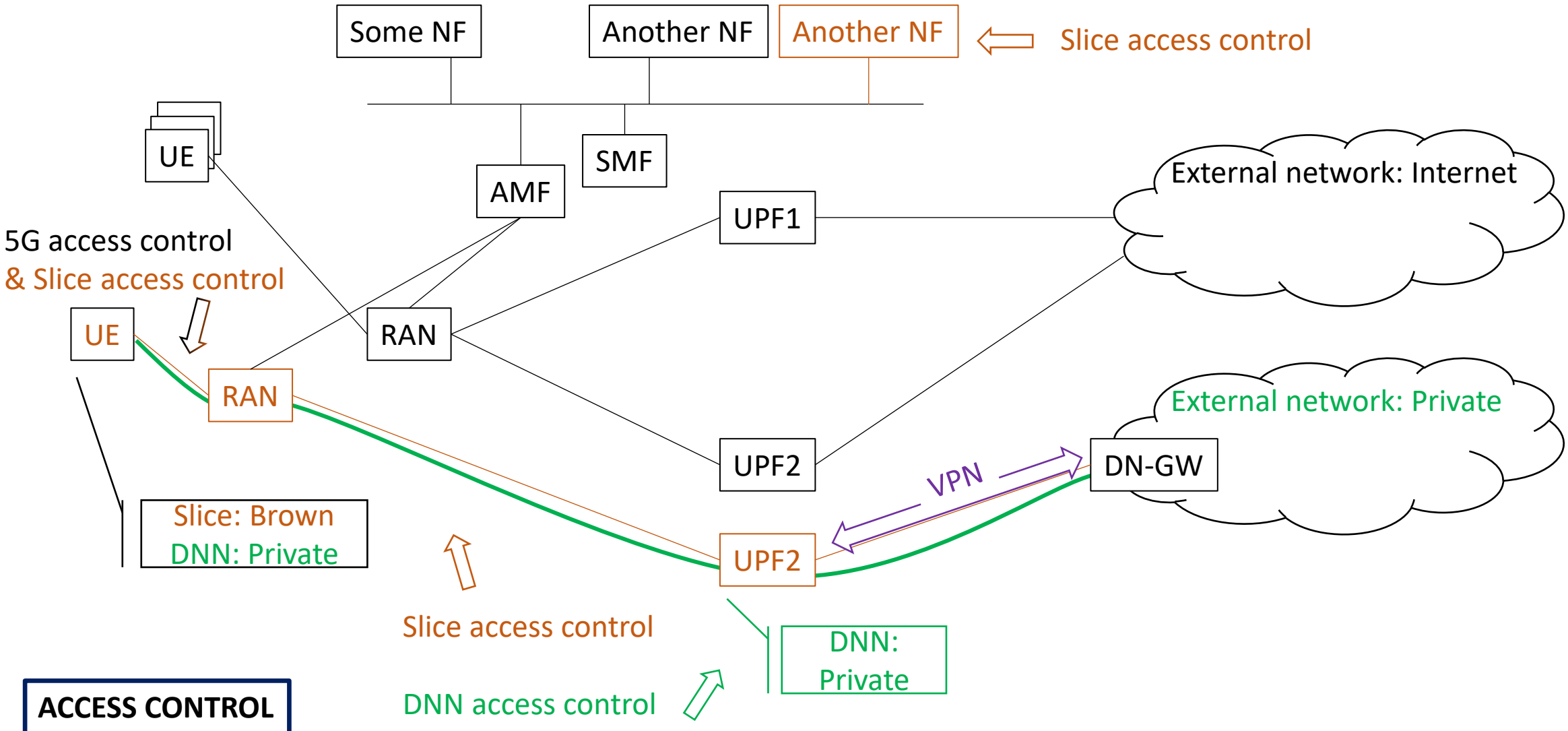
ACCESS CONTROL

5G network – Secondary Authentication



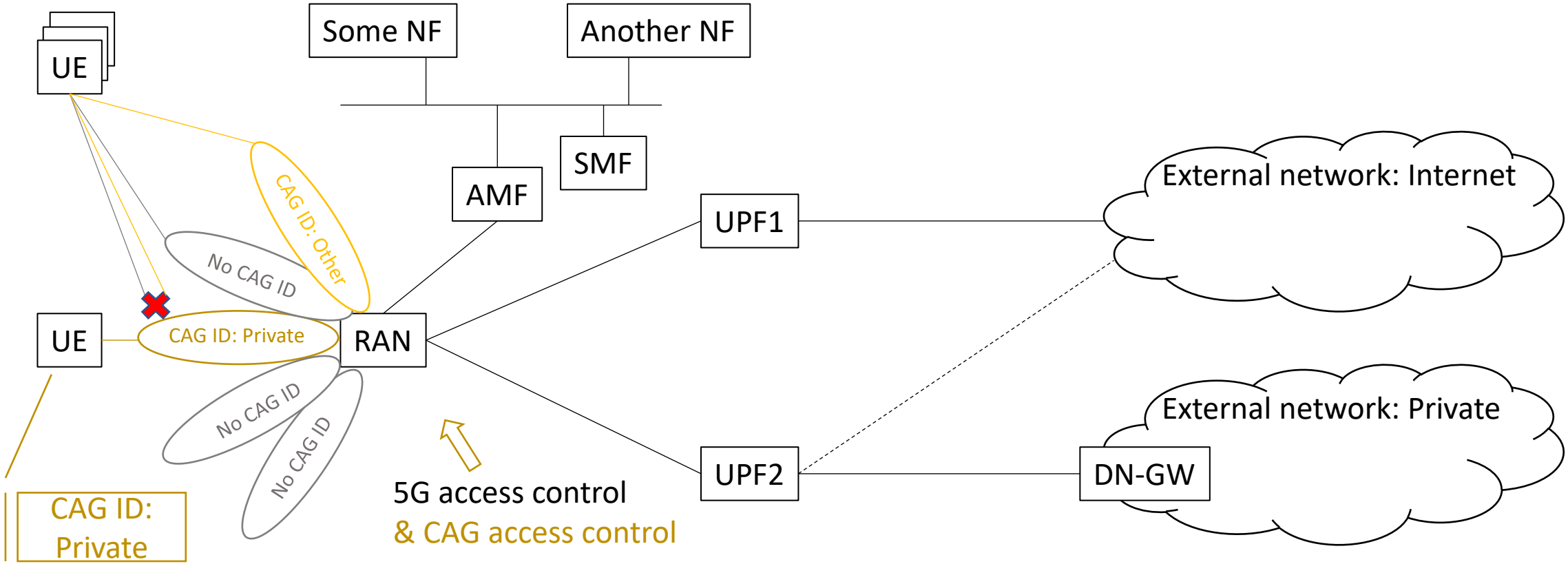
ACCESS CONTROL

5G network – Slicing



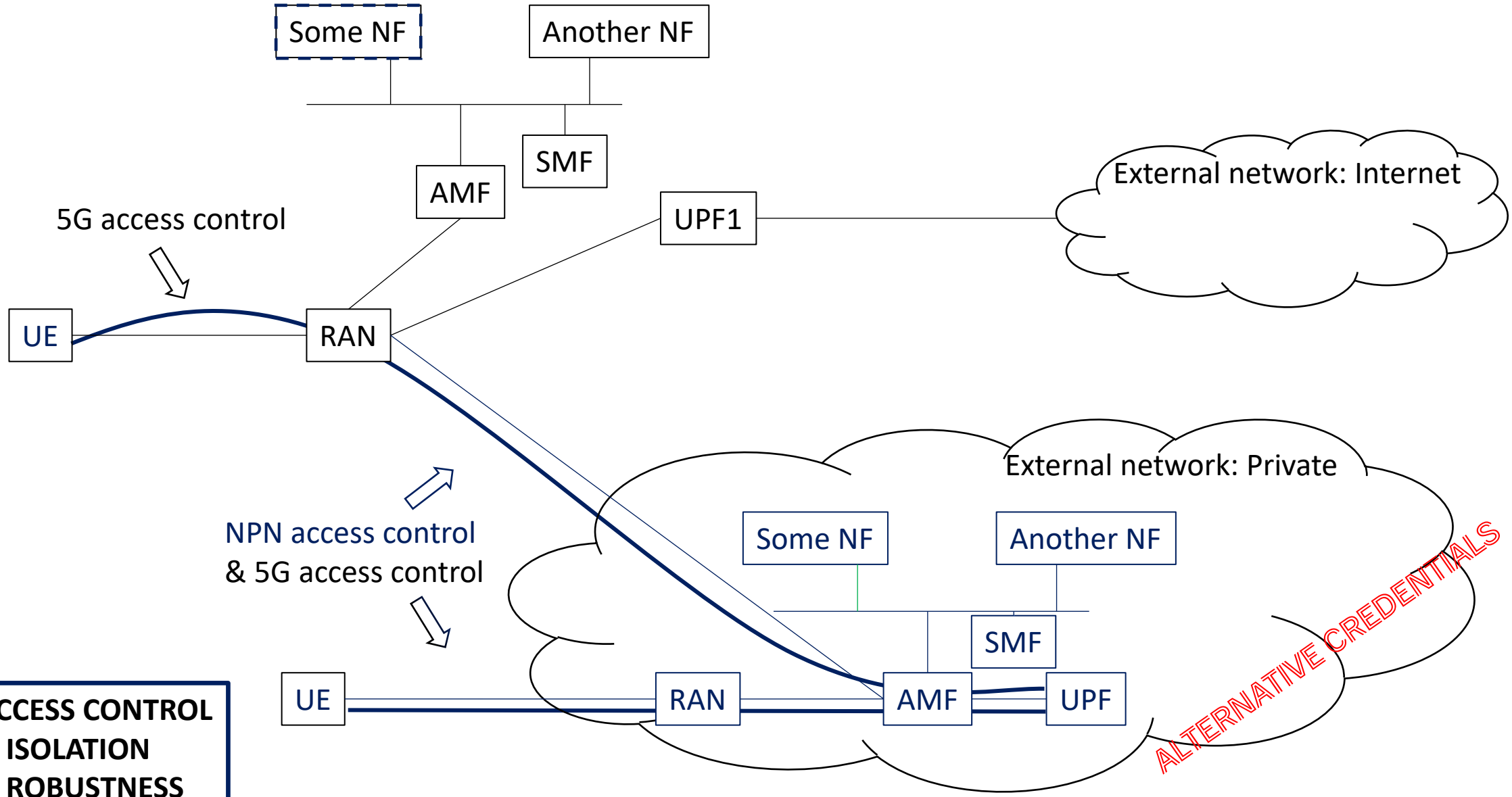
ACCESS CONTROL
& ISOLATION
& ROBUSTNESS

5G network – Closed Access Group (CAG)



ACCESS CONTROL
& ISOLATION
& ROBUSTNESS

5G network – Private Networks (NPN)



ACCESS CONTROL
& ISOLATION
& ROBUSTNESS

Conclusions

- Maritime key networking requirements include security and availability
- There are many isoaltion mechansims available in 5G that can help to provide access control and high availability
  - DNN, secondary authentication, slicing, NPN…
- Combining traditional enterprise-type networking with 5G access can provide for a secure and robust networking solution

Thank you!
Questions?