# 5G NR: Radio Access Networks
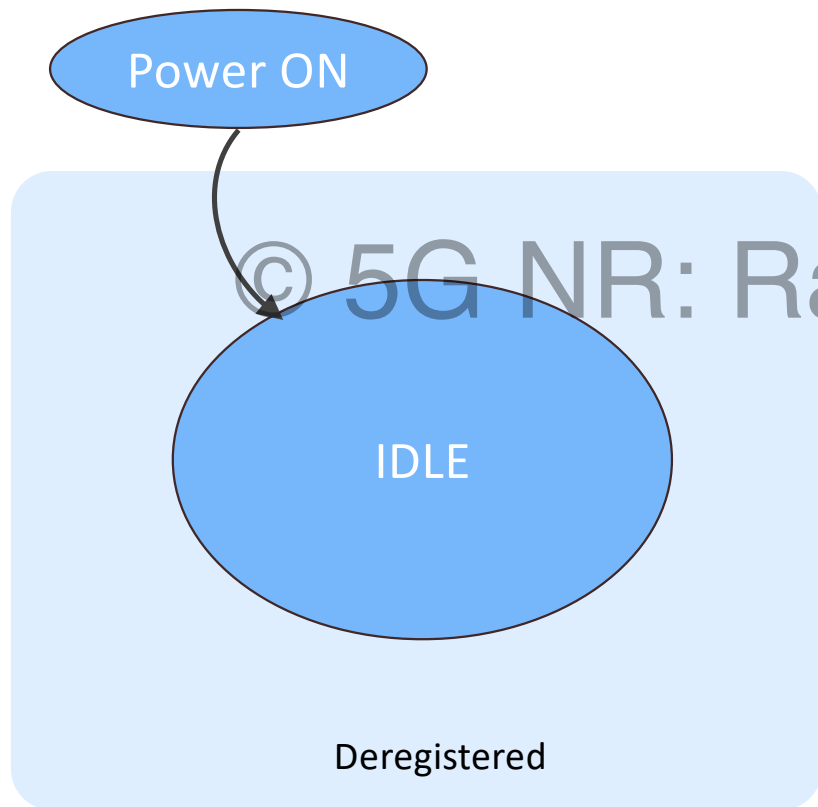
## RRC AND NAS

# NAS (UE—AMF) and RRC (UE-gNodeB)

## Functions of NAS (Non-Access Stratum)

- authentication,
- security,
- idle-mode procedures
- assigning IP address

## Functions of RRC (Radio Resource Control)

- System information broadcast
- Paging
- Connection management
- Mobility functions
- Measurement configuration and reporting
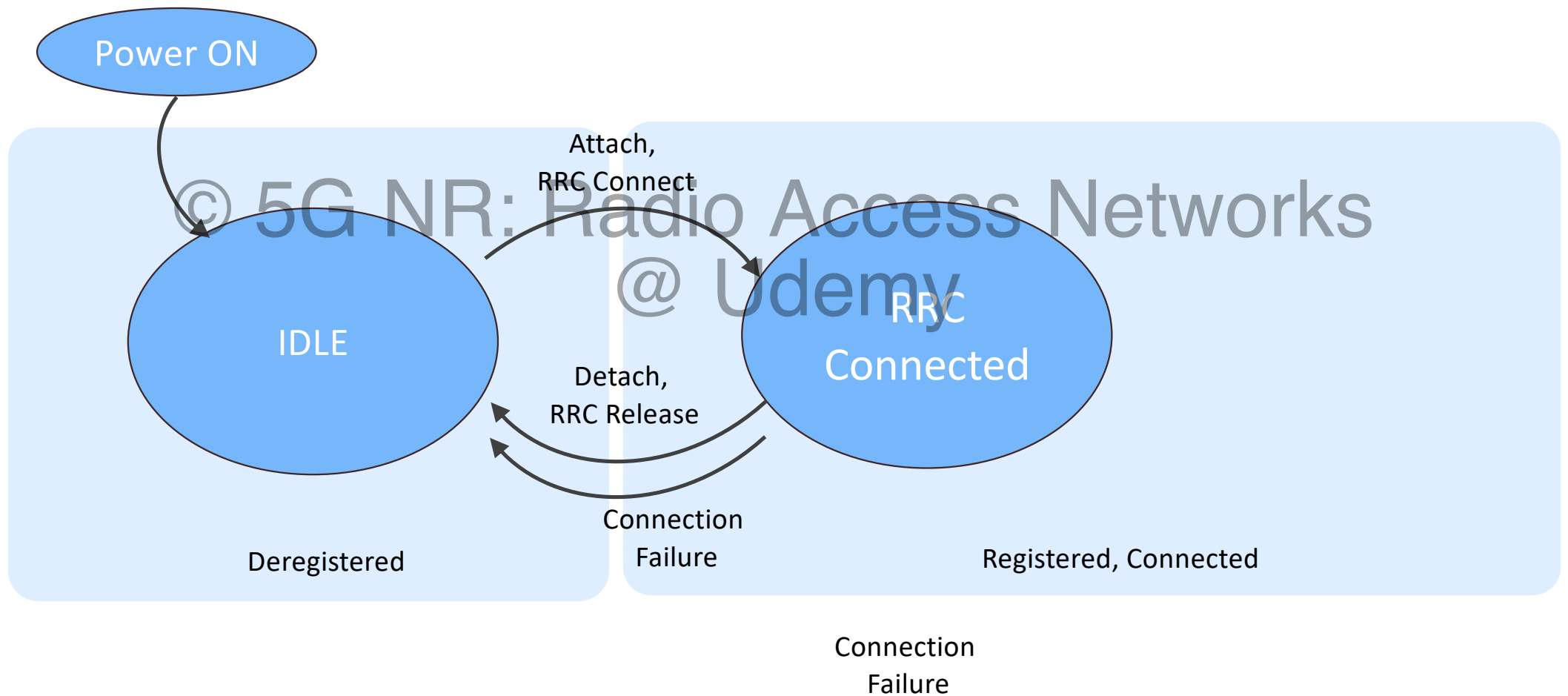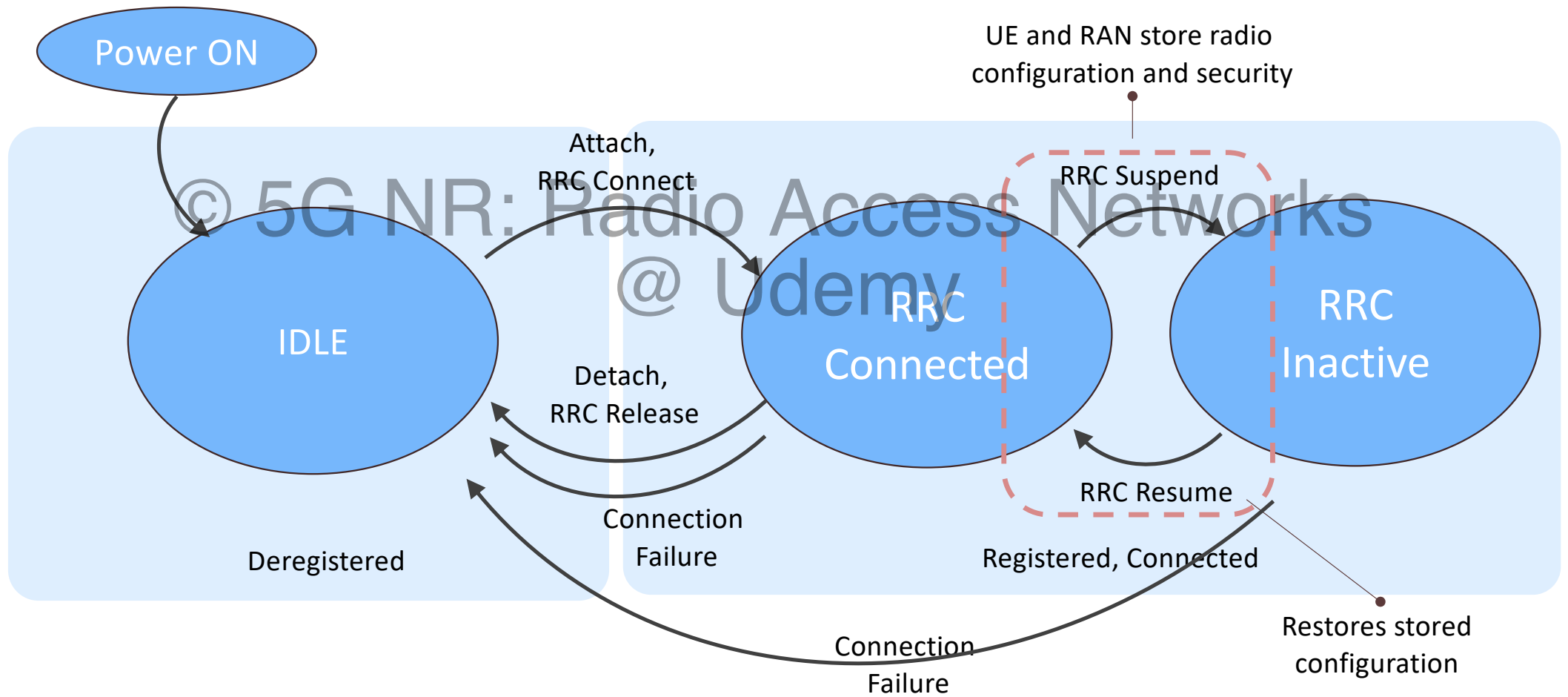- Handling of device capabilities

# RRC and NAS

Power ON

IDLE

Deregistered

No RRC Context

# RRC and NAS

Power ON

Attach,
RRC Connect

IDLE

RRC
Connected

Detach,
RRC Release

Deregistered

Connection
Failure

Registered, Connected

Connection
Failure

# RRC and NAS



Power ON

Attach,
RRC Connect

UE and RAN store radio
configuration and security

RRC Suspend

IDLE

RRC
Connected

RRC
Inactive

Detach,
RRC Release

Connection
Failure

RRC Resume

Deregistered

Registered, Connected

Connection
Failure

Restores stored
configuration

# MOBILITY FUNCTIONS

# Idle and Inactive Mode Mobility

RAN – RAN Areas –
RAI
RRC RAN Notification Area Update

Core – Tracking Areas –
TAI – UE Registration Area
NAS Registrations Update

UE controls the mobility

RAN
Areas

Tracking
Areas
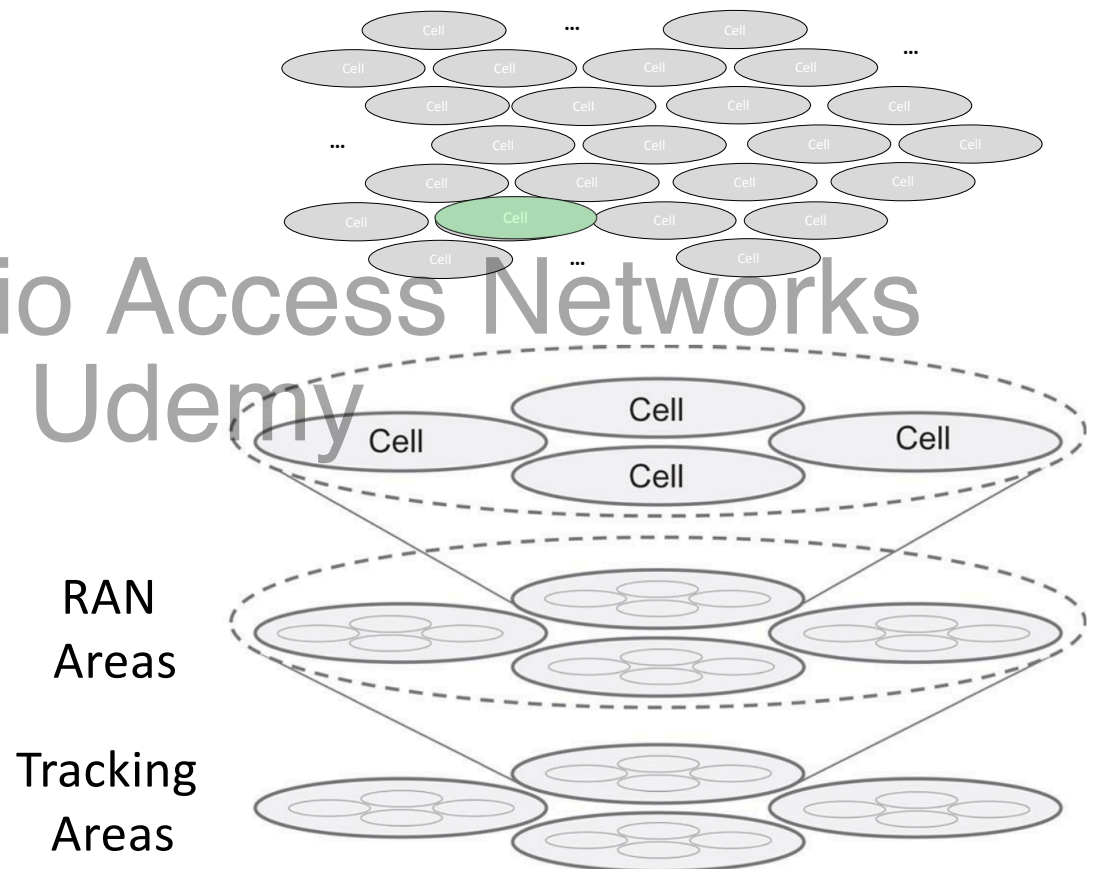
# Connected Mode Mobility

Serving cell

SS Block

SS Block

Neighboring cell

Neighboring cell
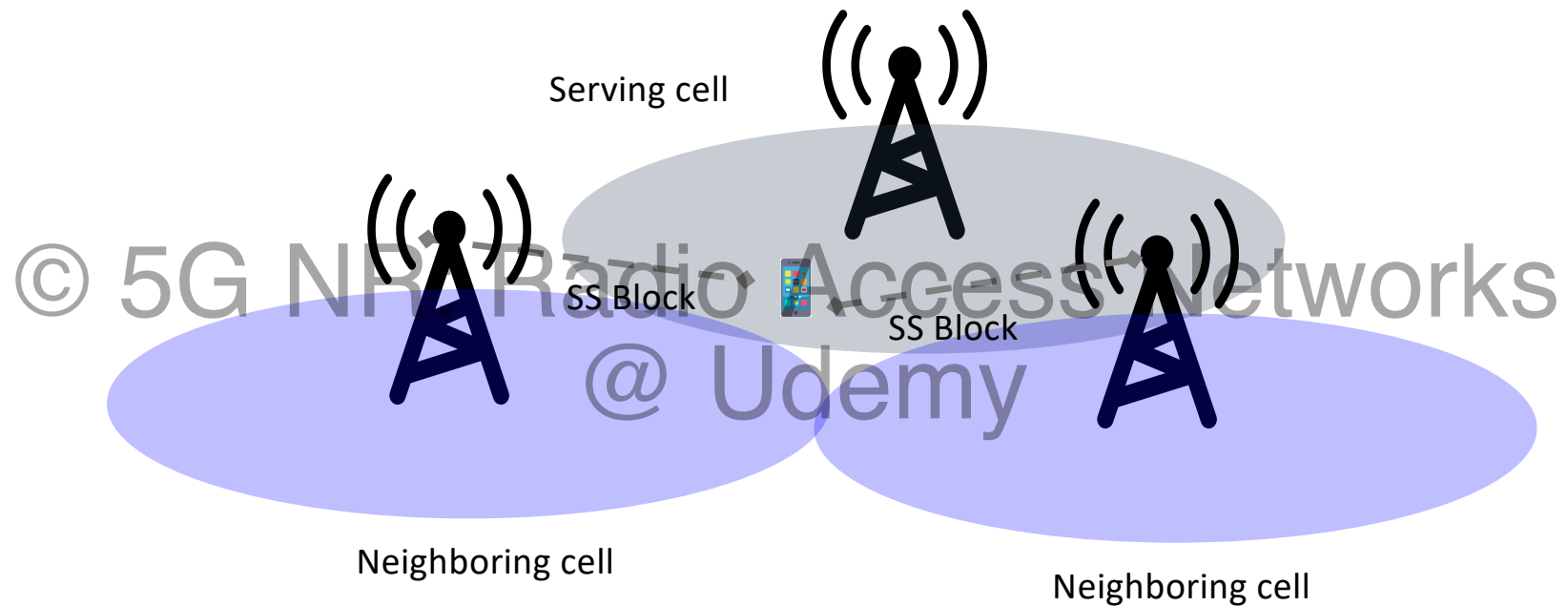
## Network controls the mobility

# Summary

RRC States
- Idle
- Connected
- Inactive

Mobility
- Idle and Inactive Mode
- Connected Mode

THANK YOU