

3GPP TSG RAN Rel-19 workshop  
Taipei, June 15 - 16, 2023

Source: ZTE, Sanechips

Agenda: 4

RWS-230282

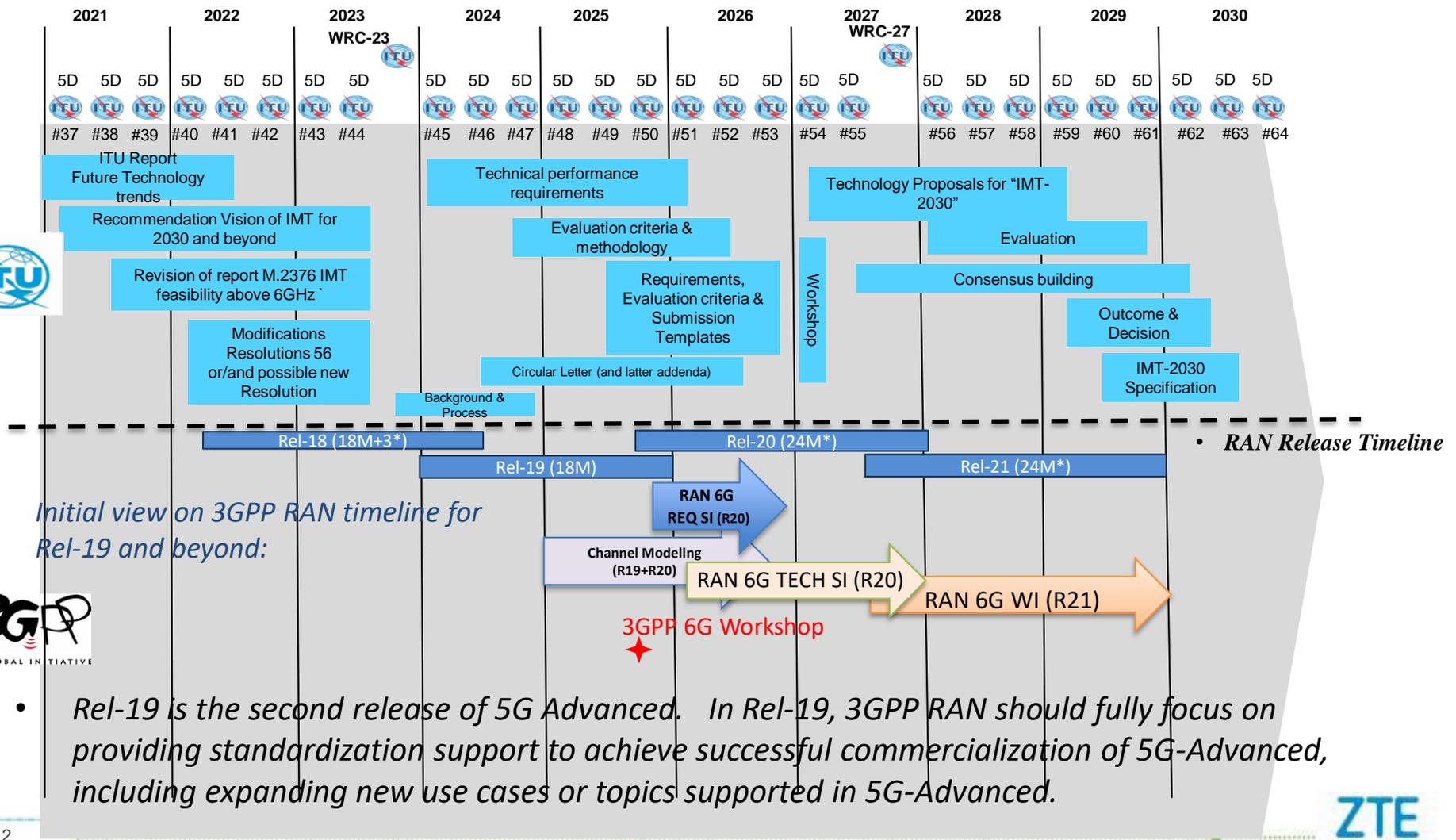
ZTE

Tomorrow never waits

# Continuation of 5G Advanced

- Rel-19 and beyond





Initial view on 3GPP RAN timeline for Rel-19 and beyond:

- Rel-19 is the second release of 5G Advanced. In Rel-19, 3GPP RAN should fully focus on providing standardization support to achieve successful commercialization of 5G-Advanced, including expanding new use cases or topics supported in 5G-Advanced.

# 5G Advanced RAN

## Rel-18 topics

### Enable network intelligence and efficiency

- Network Energy Savings
- AI/ML for NG-RAN
- AI/ML for Air Interface (study)

### Extend to support verticals

- EXTENDED REALITY (XR)
- eSmall data transmission (ZTE)
- Reduced capability UEs
- Positioning
- UAV (Uncrewed Aerial Vehicle)
- NTN/NTN-IoT
- Low Power Wake Up Signal (WUS)
- Broadcast and multicast MBS
- <5MHz for FR1

### Enhance network coverage & capacity Others

- Full duplex (study)
- Sidelink relay (UE aggregation)
- Network Controlled Repeaters (ZTE)
- Coverage enhancements
- MIMO Enhancements
- Multi-carrier enhancements
- Dynamic Spectrum Sharing (DSS)
- Mobile IAB
- Sidelink enhancements
- SON/MDT Enhancements
- Multiple SIM Enhancements
- In-Device Co-existence (IDC)
- QoE Enhancements
- Resiliency of gNB-CU-CP

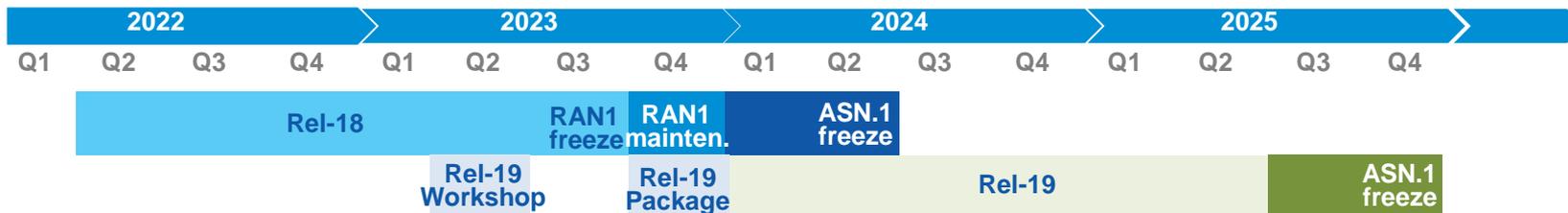
## Potential Rel-19 topics

### Further enhancements of Rel-18 topics e.g.

- NCR and RIS
- Network Energy Savings
- MIMO enhancements
- AI/ML NG-RAN
- Positioning
- Sidelink enhancements
- NTN enhancements
- Mobility enhancements
- SON/MDT/QoE Enhancements
- UL/Coverage enhancements
- MBS enhancements
- SDT/IoT/RedCap with URLLC
- UE aggregation/virtualization

### Rel-19 new topics

- Normative work
- AI/ML for Air Interface
  - Full Duplex
  - Lower Power WUS
- Study only
- ISAC (based on positioning)
  - Ambient IoT
  - Metaverse/Multi-modality
  - Channel Modeling (for 5G-A use cases in Rel-19)

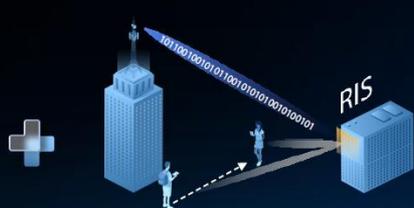


# Dynamic RIS for 5G-A Deployment

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Evolved Hardware



BS and RIS Joint Beamforming

**30%** Better Coverage

Multi-beam Sweeping

**6x** Better User Rate

Automatic Beam Tracking

**30km/h** Mobility Friendly

ms-level Beam Switching

**50%** Power Consumption

More Compact Design

## Networking

Better coverage and performance



**30%** Extended Coverage  
**10,000 m<sup>2</sup> @ 1 RIS**



**6x** DL Performance  
200Mbps -> **1.4Gbps**



**20x** UL Performance  
5Mbps -> **105Mbps**

## Deployment

Easy deployment for all scenarios

### Plug-in Deployment



General hardware for everywhere



Automatic beam optimization by BS

### Various Forms Fitting Environment



Camouflage



Transparent



## Future Evolution



Comprehensive networking in commercial network



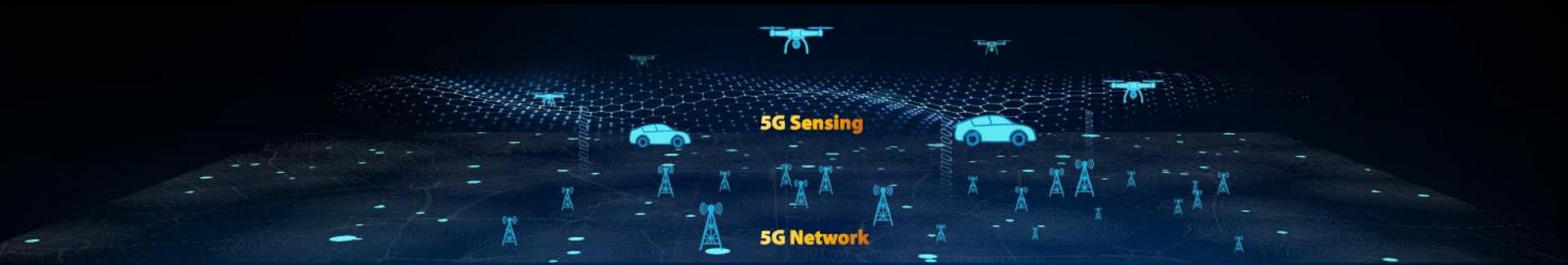
Automated Planning Tools  
RIS management



Industry chain promotion on cost / power consumption

# ISAC for 5G-A Deployment

ZTE



## ISAC for UAV Sensing



- UAV Intrusion Detection  
Power Grid, Railway, Airport, etc.
- UAV Trajectory Tracing

**Decimeter**

Sensing Accuracy

**1 km**

Sensing Distance

## ISAC for V2X



- Vehicle Information Detection (Traffic flow, Speed)
- Pedestrian Intrusion Detection
- Automated Driving

**Decimeter**

Distance Accuracy

**900m**

Sensing Distance

**0.1km/h**

Velocity Accuracy

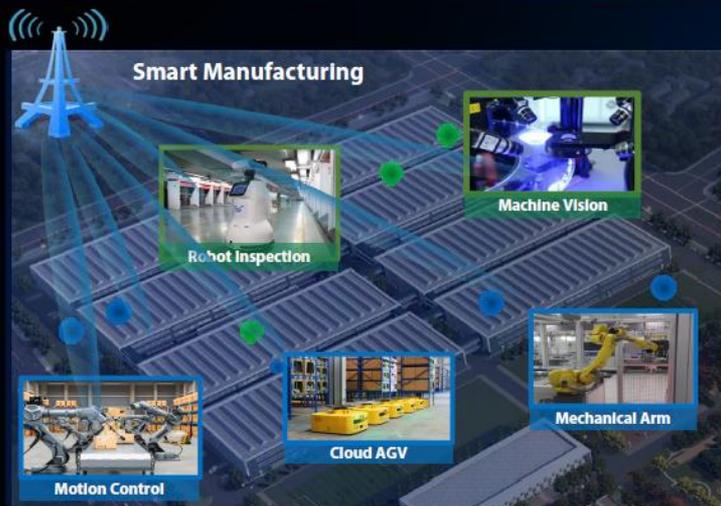
**Low Altitude UAV Intrusion Detection**

**Sensing for Pedestrians and Vehicles**

# Smart Duplex for 5G-A Deployment

ZTE

Vertical Applications  
demanding higher UL THP and lower latency



Higher Performance Requirements

>600Mbps  
UL THP

< 5ms  
E2E Latency

Requiring Complex Spectrum

TDD  
Large UL THP

FDD  
Low Latency

Calling for  
enhanced  
cost  
efficiency

Innovative Smart Duplex  
1 carrier achieving 2 Superior Performance

System performance ↗

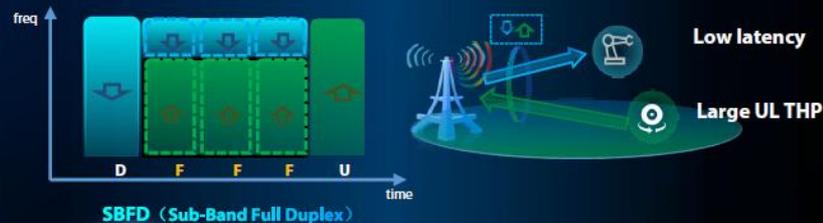
1.4Gbps  
UL Peak Data Rate



4ms  
E2E Latency

FDD & TDD Advantage Combination

Simultaneous TX/RX



Industry 1<sup>st</sup> RRU for SBFD

1<sup>st</sup> IOT with commercial UE

# Thanks



Tomorrow never waits

