WIN
Wireless Intelligent Networks

5G

Wireless **I**ntelligent **N**etworks

5GWIN Association

Tackling AIB and AI Scheduler Complexity

5G WIN Association members

5G WIN is a non-profit association in Israel funded in 2020 for the sole purpose of advancing the research and knowhow in specific 5G Intelligent Network topics

Academic Institutes

1. Technion Haifa
2. Bar Ilan Uni
3. Ariel Uni.
4. Ben Gurion Uni (BGU)
5. Tel Aviv Uni (TAU)
6. LEV Uni. Jerusalem

Industrial associates

1. Asocs
2. Elbit
3. RunEl
4. CEVA
5. Ceragon
6. Mobilicom

The rational for setting 5G WIN

STANDARDIZATION ✔

- 5G-NR standardized Rel.17/16
- O-RAN
- Massive adoption of key players
- Multiple & flexible applications

REGULATION ✔

- WW Regulations
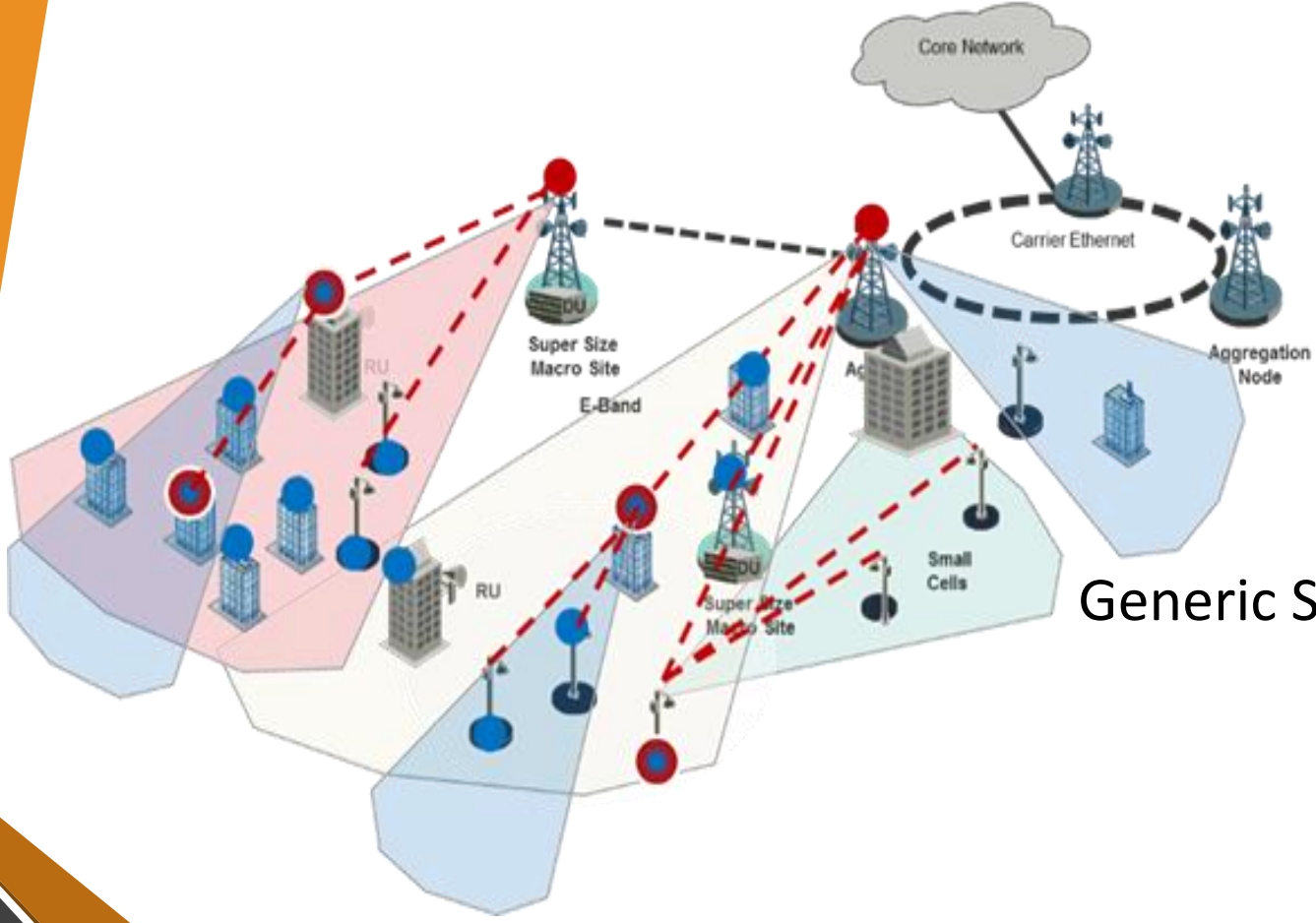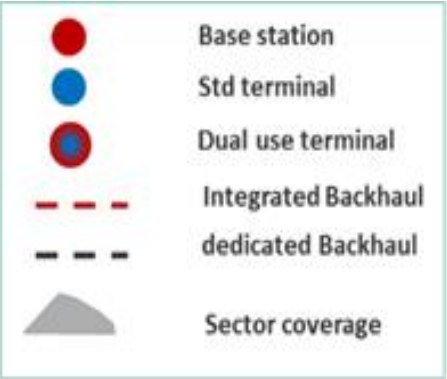- Ultra-wide bands spectrum

5G WIN

TECHNOLOGY ✔

- Modular technology for many layers
- Enabling platform for innovative and unique solutions
- Architecture , algorithms, applications readiness
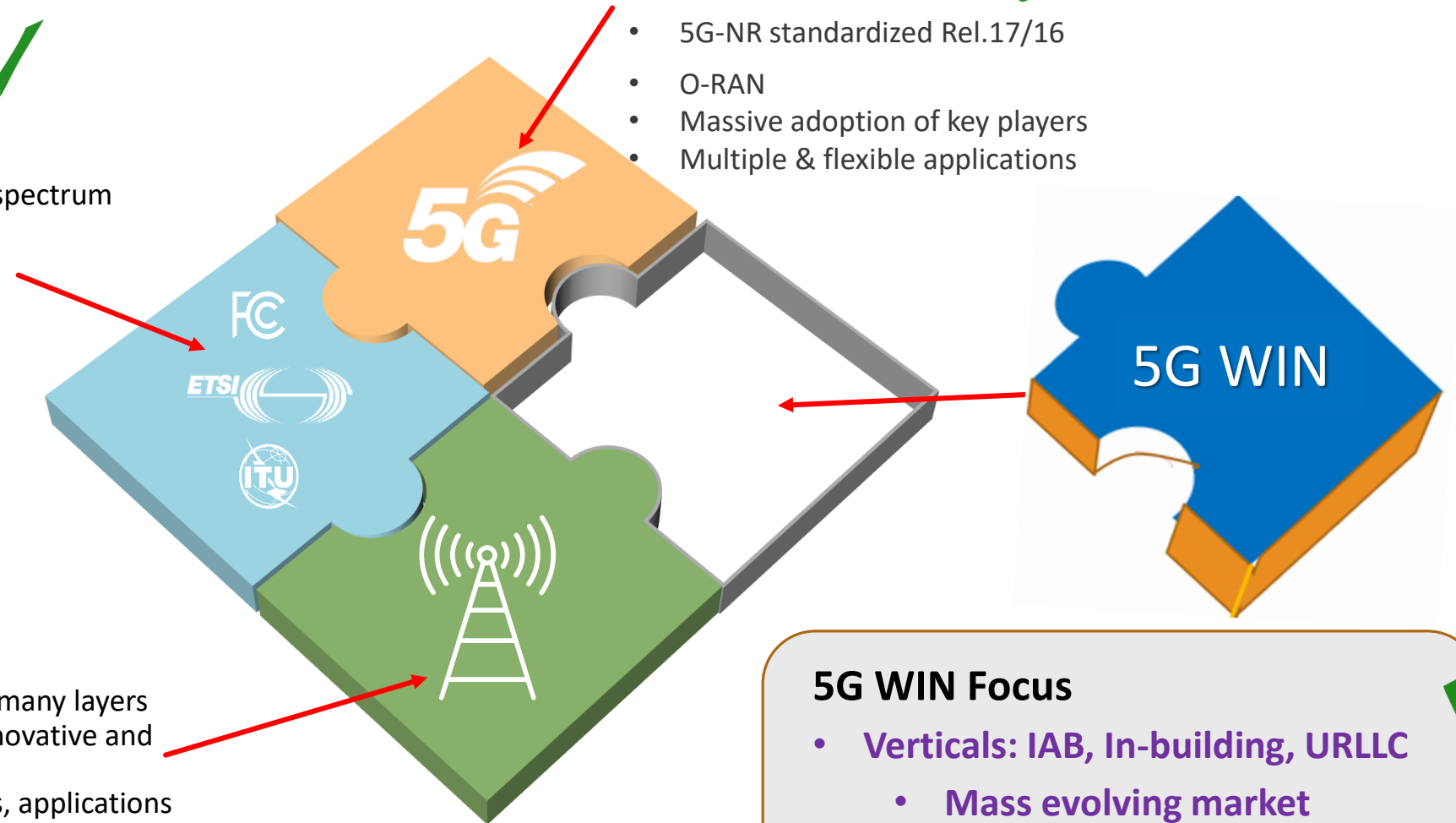
5G WIN Focus

- **Verticals: IAB, In-building, URLLC**
  - **Mass evolving market**
  - **Unique solution**
  - **Enhances customer value**

Mesh IAB Topology

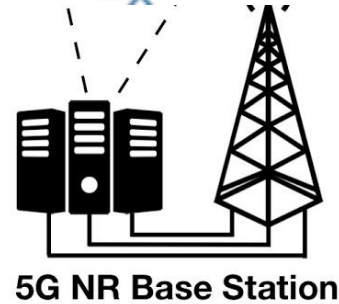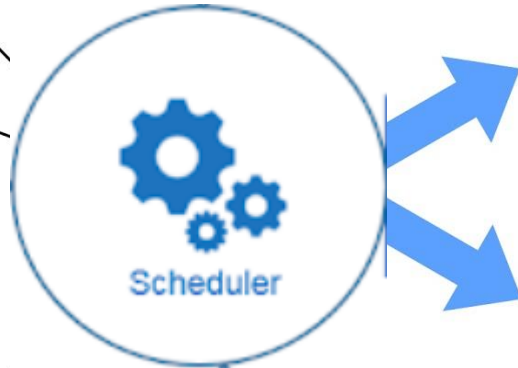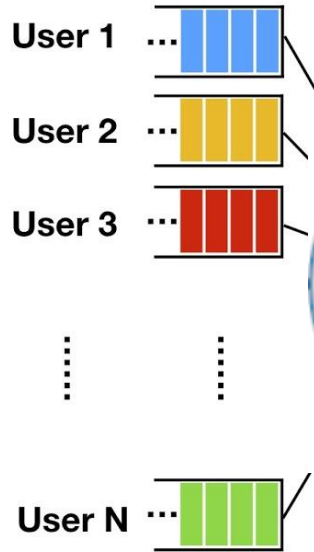|	
●	Base station
●	Std terminal
◉	Dual use terminal
– – –	Integrated Backhaul
– – –	dedicated Backhaul
▲	Sector coverage

Generic Solution for the following markets

wireless backhaul for Small Cell

.Fixed wireless access (FWA)

Public Safety

AI based scheduler

Data Buffers For ~100s Users

User 1
User 2
User 3
User N

Scheduler

5G NR Base Station

Allocating Time-Frequency Resources with ~100 μs resolution

Freq.

Time
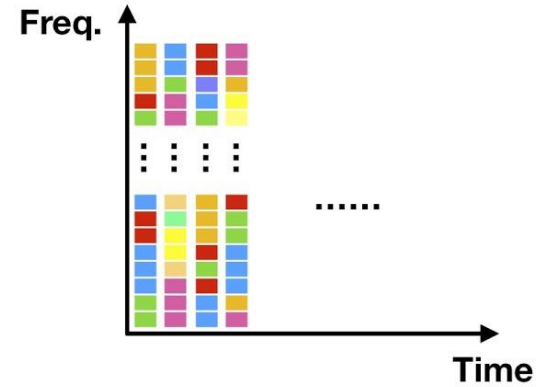
Variables

1- **Beams**
2- **Slices**
3- Modulation
4- Traffic
5- Applications
6- Interference
7- **QoS**
8- **Reliability**
9- **IAB**
10- **Users types**
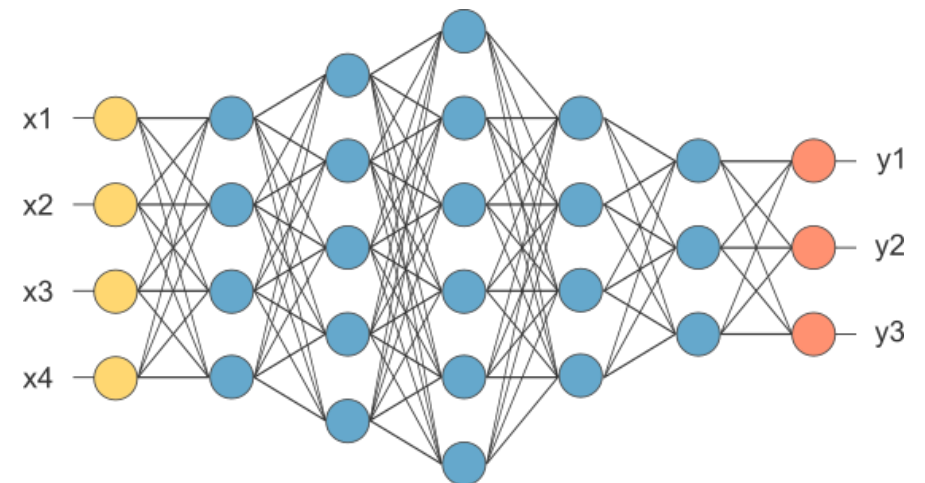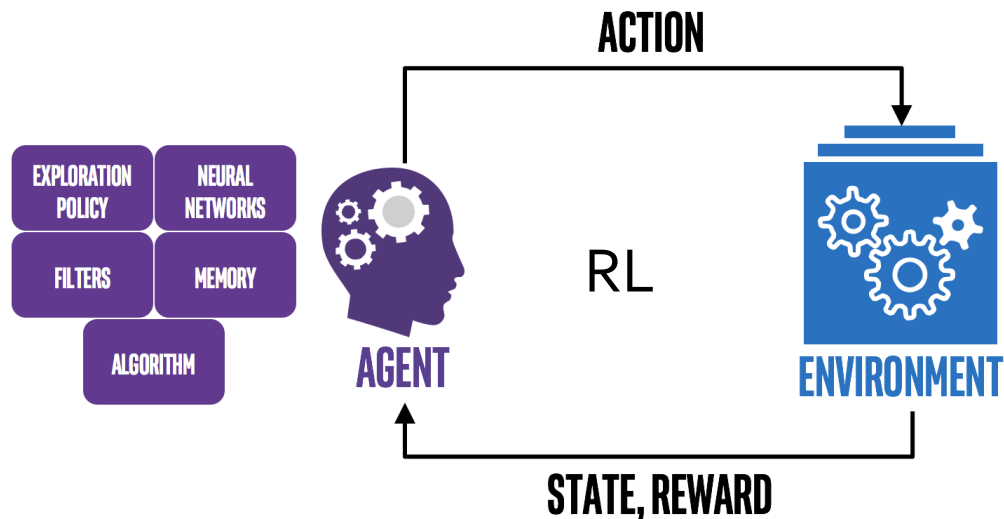11- **Latency**
12- **Priorities**
13- **Optimization target**

Challenge
No Deterministic Model for optimal 5G Scheduler

WAI – Wireless Artificial Intelligence

- The requirements in 5G for high data rates, low latency, high BW and the dense number of users cannot be solved in conventional methods

- Use of neural networks in ML (reinforcement Learning) has the potential to enhance performance relative to conventional approach

Thanks