

# The WINNER Concept

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- What is a concept?
- Logical Node Architecture
- Protocol Architecture
- Radio Resource Management



For WINNER, a concept is:

- The scenario independent framework covering all realisations
  - Logical Node Architecture & interfaces
  - Protocol Architecture
    - Cross layer functionalities
  - Control signalling structure
  - A set of high performing algorithms and the framework where they fit
- Simply put: A coherent comprehensive framework and toolbox of the things that need standardizing and that are vendor and scenario independent
- Important design criteria: **Flexibility and scalability**

What is it *not*:

- it does not specify how to parameterize or implement a system for a certain scenario, or how to best deploy the system
- It does not specify details of e.g. link adaptation, scheduling, scenario-optimized multi-antenna scheme etc
- These things belong to the *reference design* part

Internet, operator services etc...

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WINNER Access Network

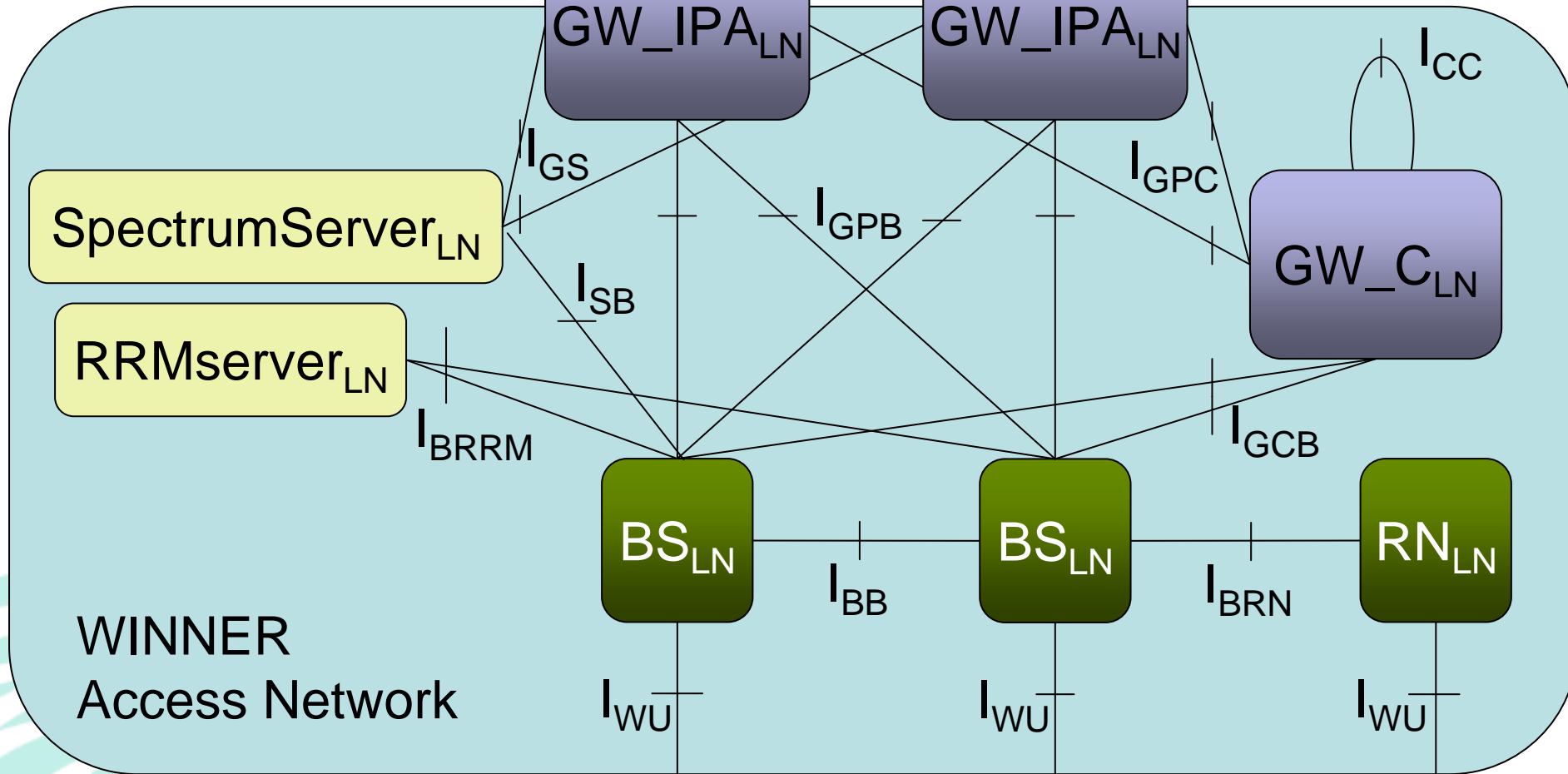
Interface



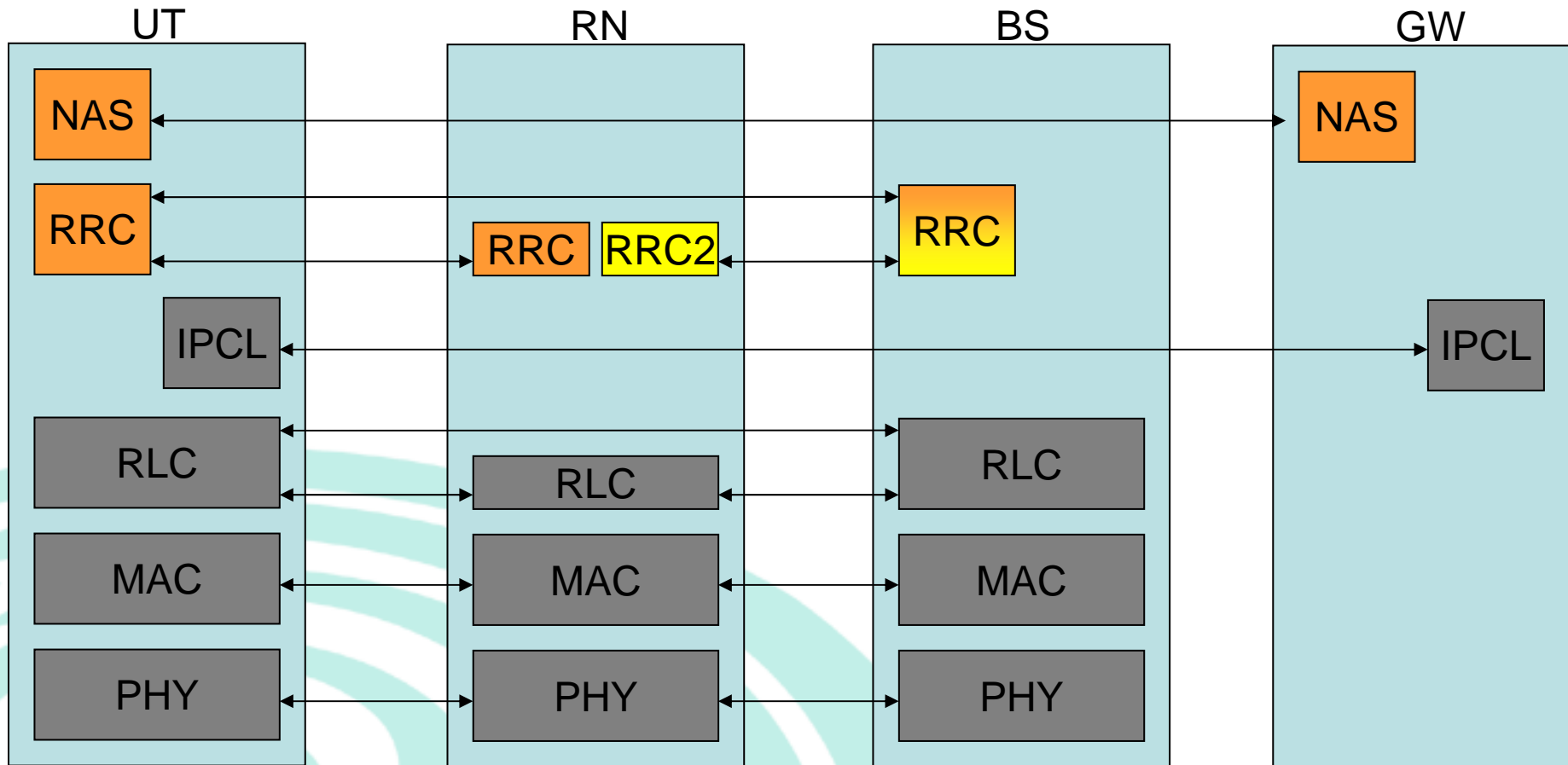
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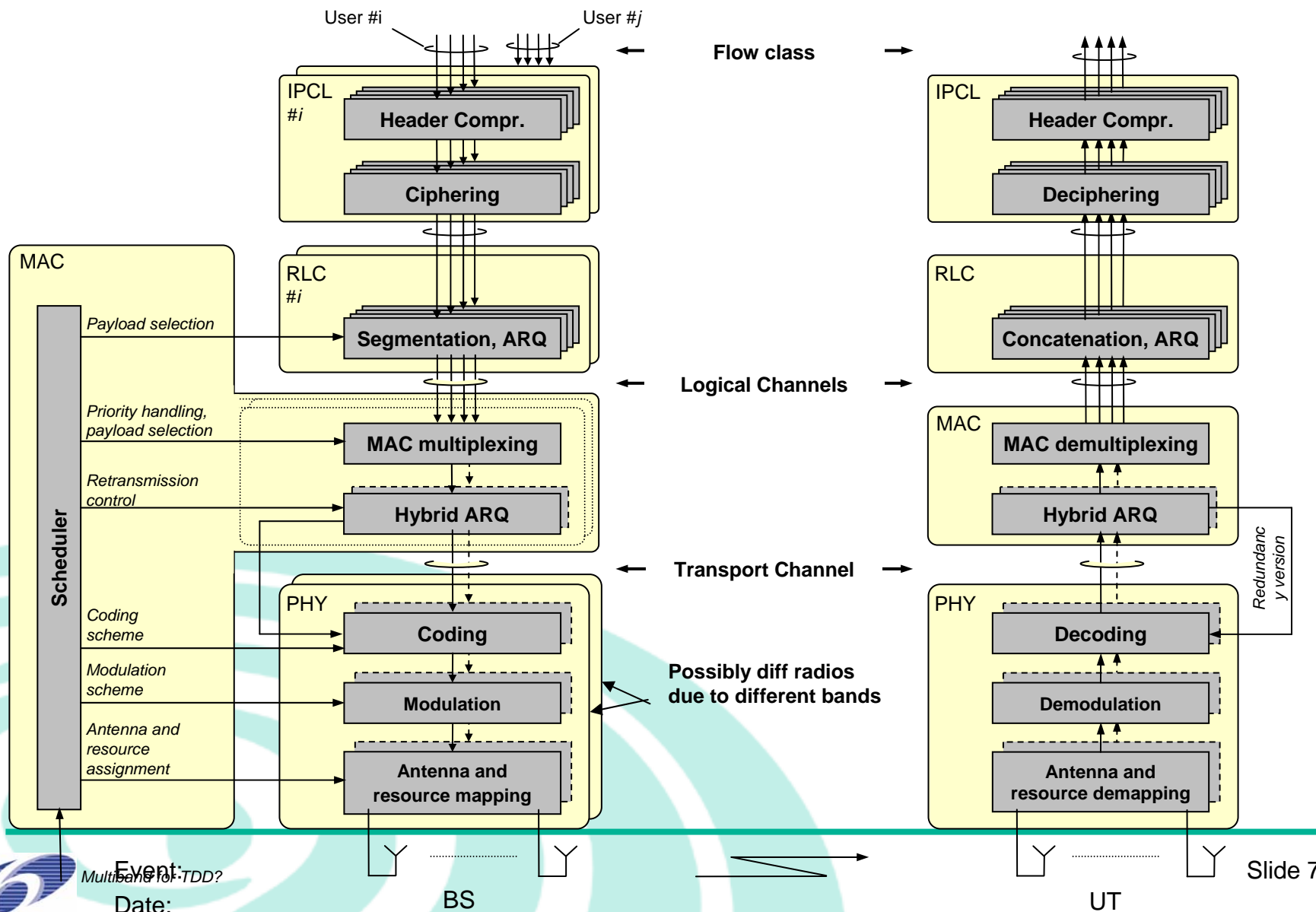
Logical node

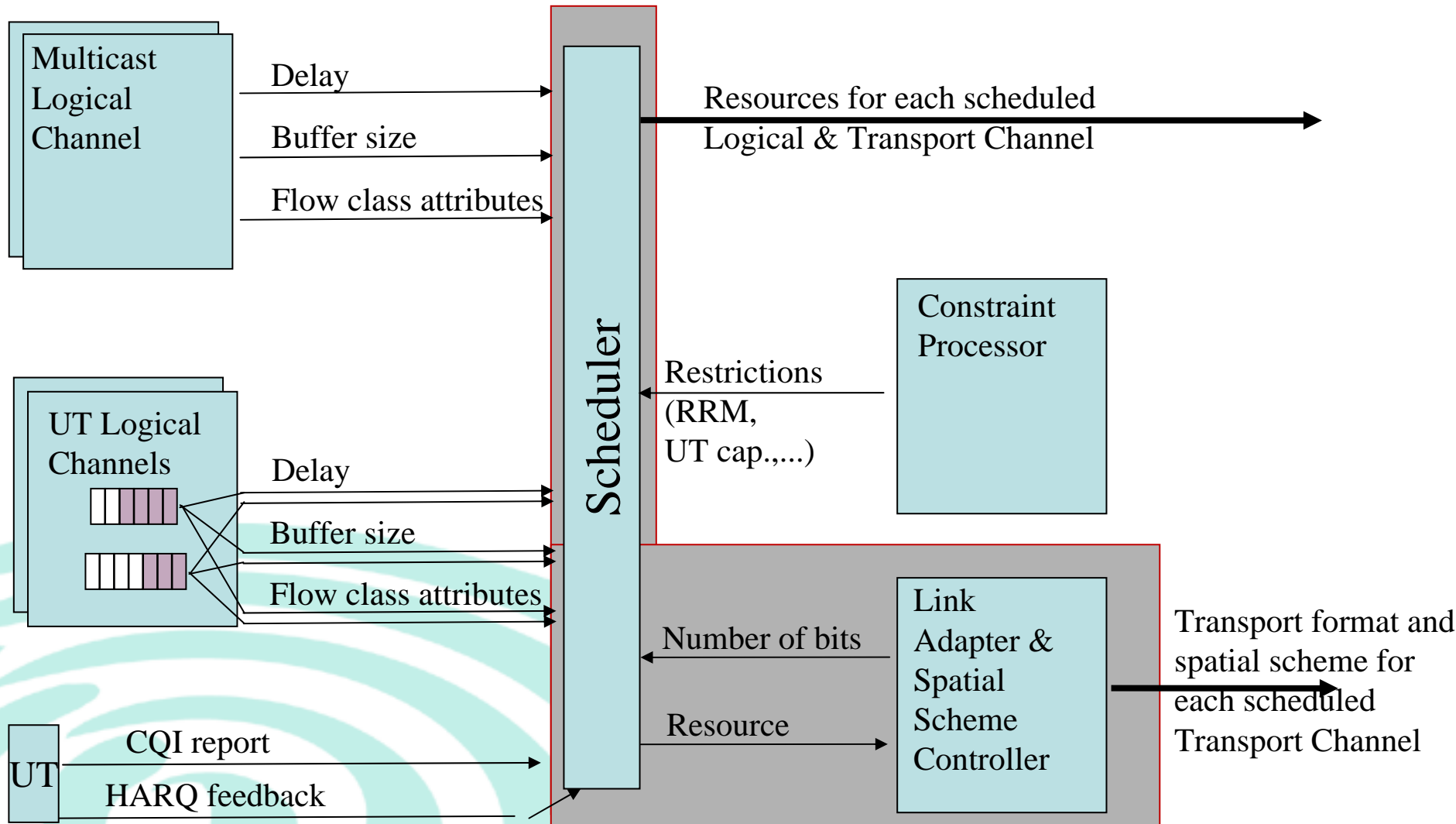




WINNER  
Access Network







- Cross layer optimized user and control plane protocol architecture
  - Scheduler
    - RLC, MAC, PHY
    - Includes control of coding, modulation, multi antenna solutions...
  - MAC & RLC Segmentation, concatenation and multiplexing
  - RLC-ARQ and MAC Hybrid ARQ
    - Enables fast retransmissions, robustness and low overhead



- CP-OFDM based transmission
- The *generic transmitter* is a unified flexible MIMO transmission concept which can realise both multiplexing, diversity and directivity gains utilising
  - Per stream rate control enable multi level coding techniques
  - Linear dispersion codes enable flexible trade-offs between spatial multiplexing and spatial diversity
  - Linear precoding/beamforming
- Channel coding based on LDPC and conv codes
  - Link adaptive of course!

- Spectrum management
  - Long and short term spectrum assignment
  - Spectrum sharing w other WINNER or non-WINNER systems
  - **Key for flexible spectrum usage**
- Interference mitigation
  - Interference avoidance
  - Mitigation using multiple antennas
  - Interference averaging
  - **Key for efficient and flexible spectrum usage and deployment**
- Mobility management
  - Micro and macro mobility
- Congestion Control
  - Load control
  - Admission control

- An overview of the WINNER concept is given
- Flexibility and scalability are key design criteria
- Useful as introduction to the reference design presentation

