



6G + REFERENCE

6G haRdware Enablers For cEll fRee cohEreNt

Communications & sEnsing

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6G-REFERENCE Overview

The development of 6G hardware enablers for joint communications and sensing

In-Band MIMO full duplex transceiver innovations

Novel synchronization solutions

Novel RF and antenna components

Dynamic filtering (IF and antenna)

- Data capacity
- Scheduling challenge
- Monostatic radar

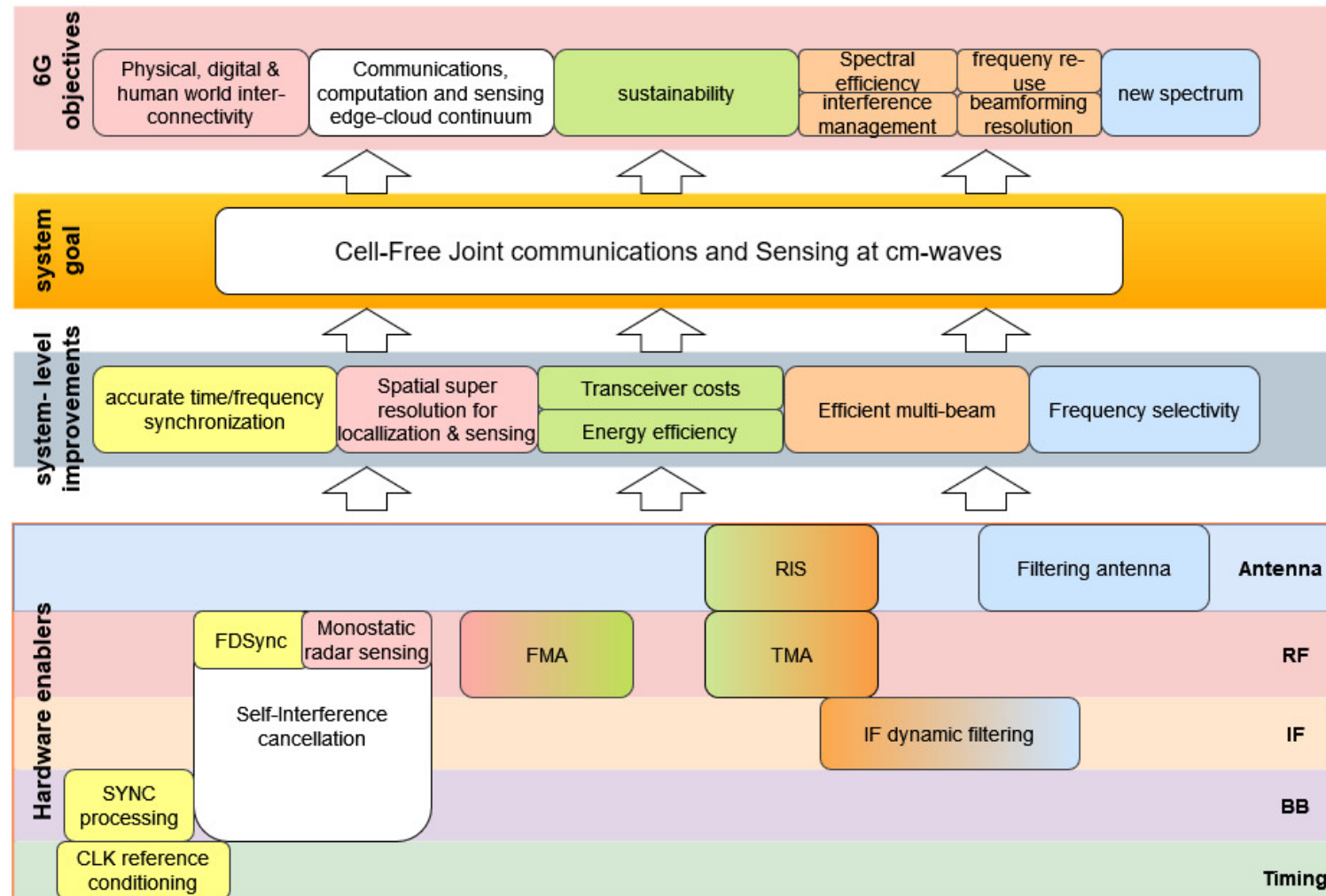
- Frequency
- Phase and time
- FD SYNC

- Reduced complexity/cost
- Time modulated arrays
- Frequency modulated arrays
- RIS
- Environmental sensors

- Frequency selectivity
- Spectrum coexistence (10-15 GHz)

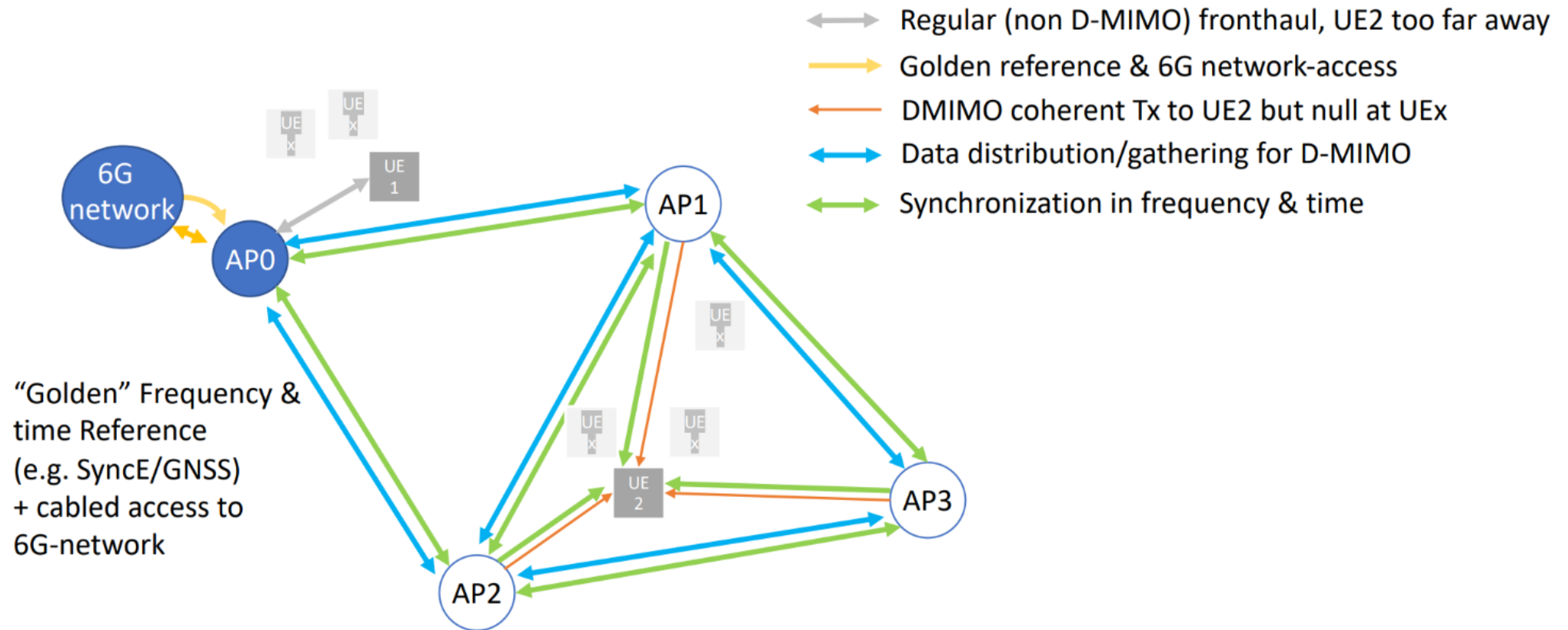
6G-REFERENCE Goals

Hardware solutions and their relation to system level improvements and 6G goals



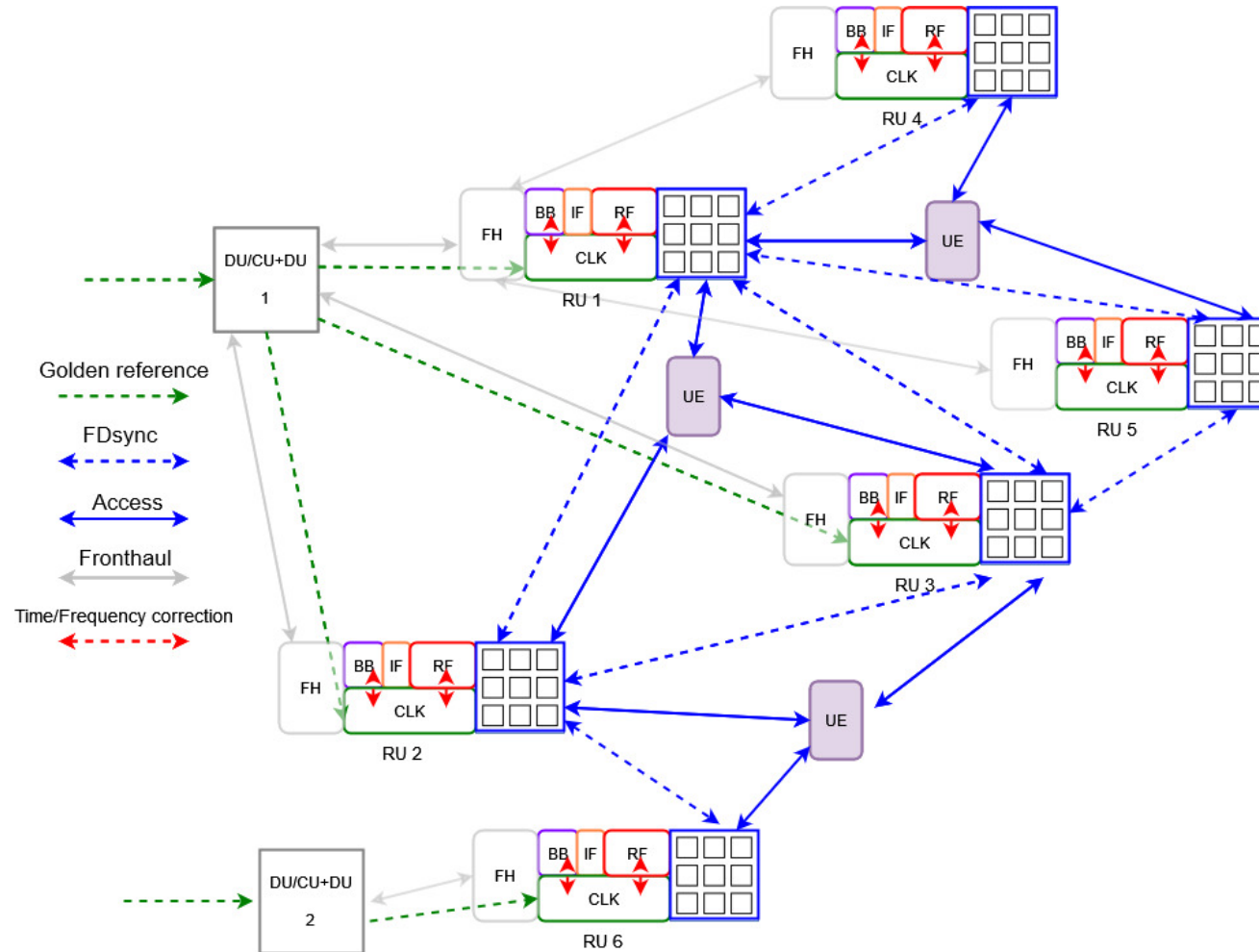
6G-REFERENCE Goals

Simplified D-MIMO cell-free radio system architecture operating at 10-15 GHz



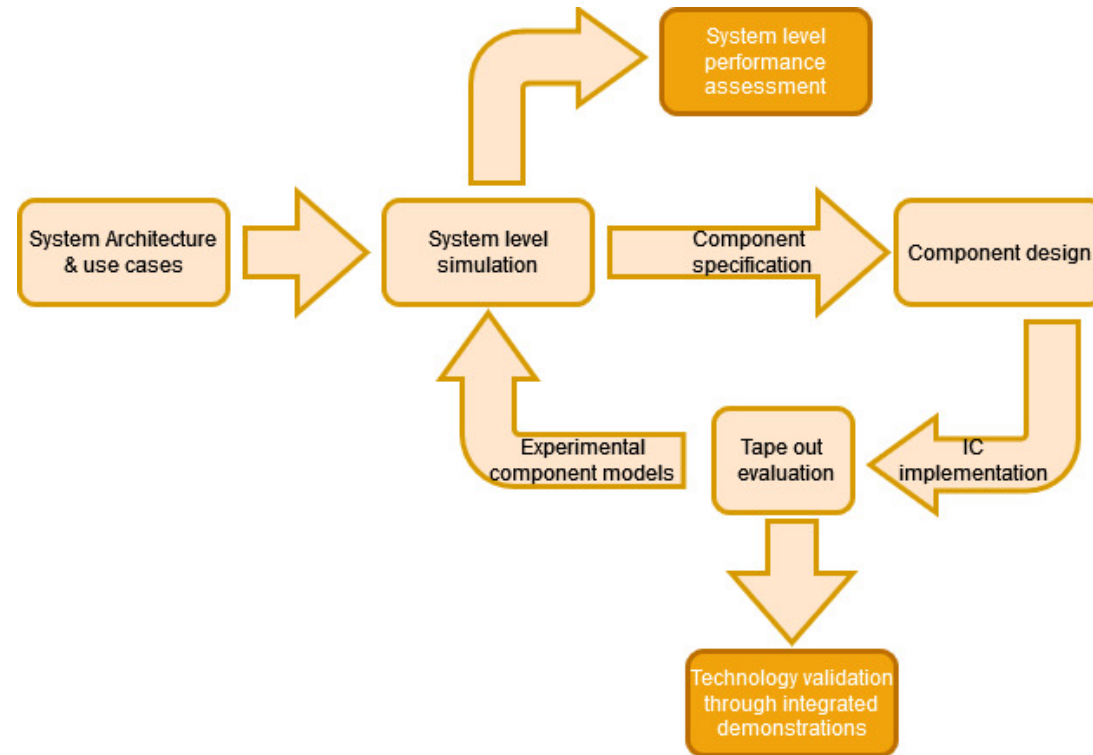
6G-REFERENCE Objectives

6G-REFERENCE preliminary baseline architecture



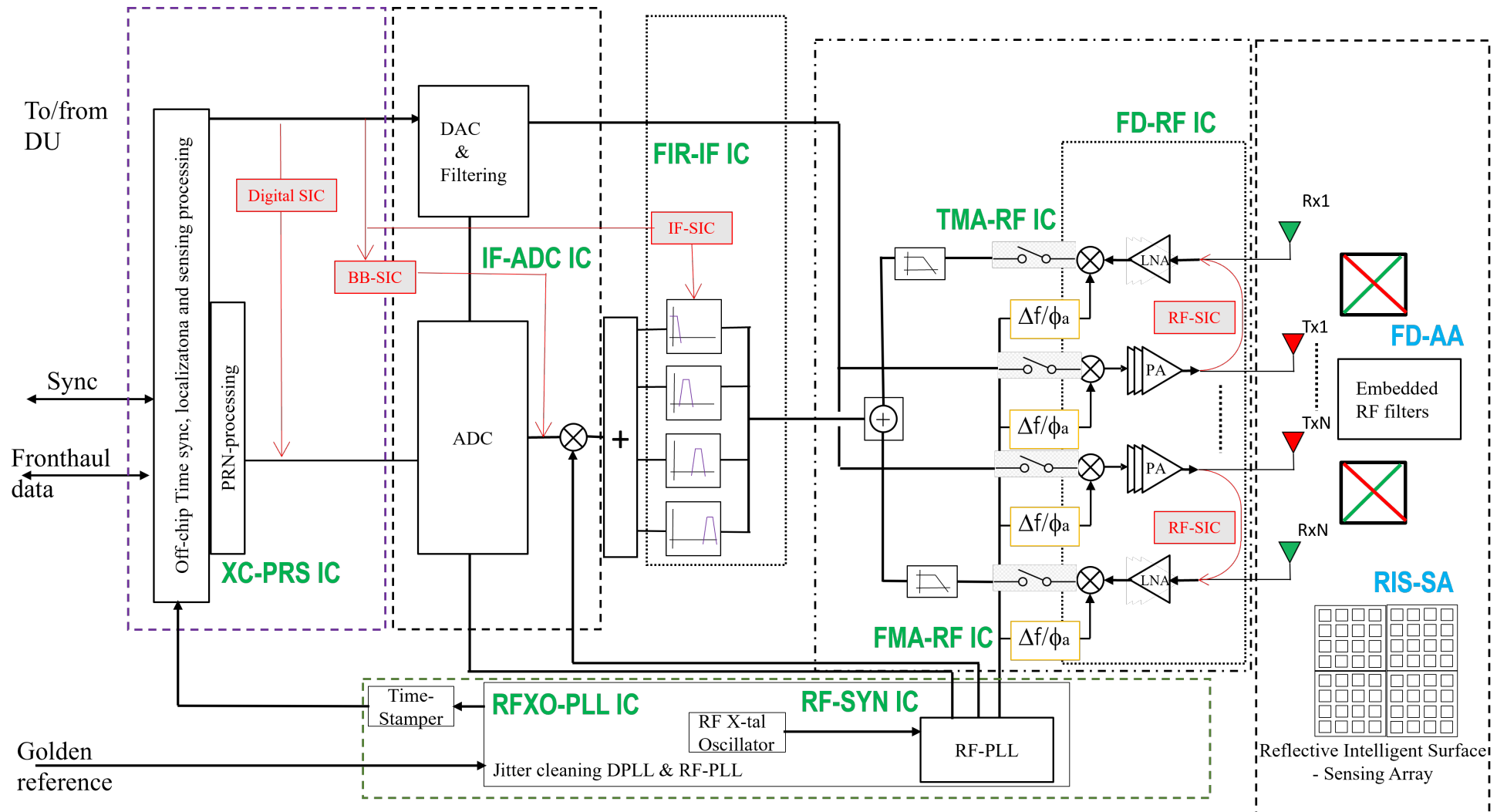
6G-REFERENCE Objectives

Integrated Circuit development



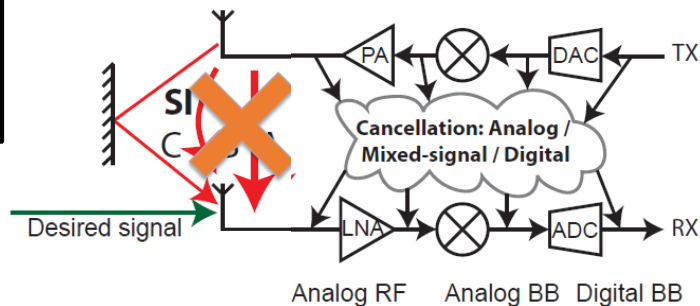
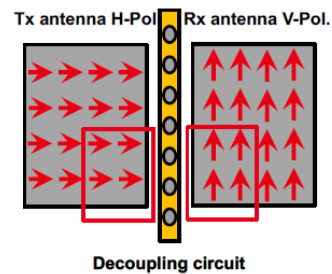
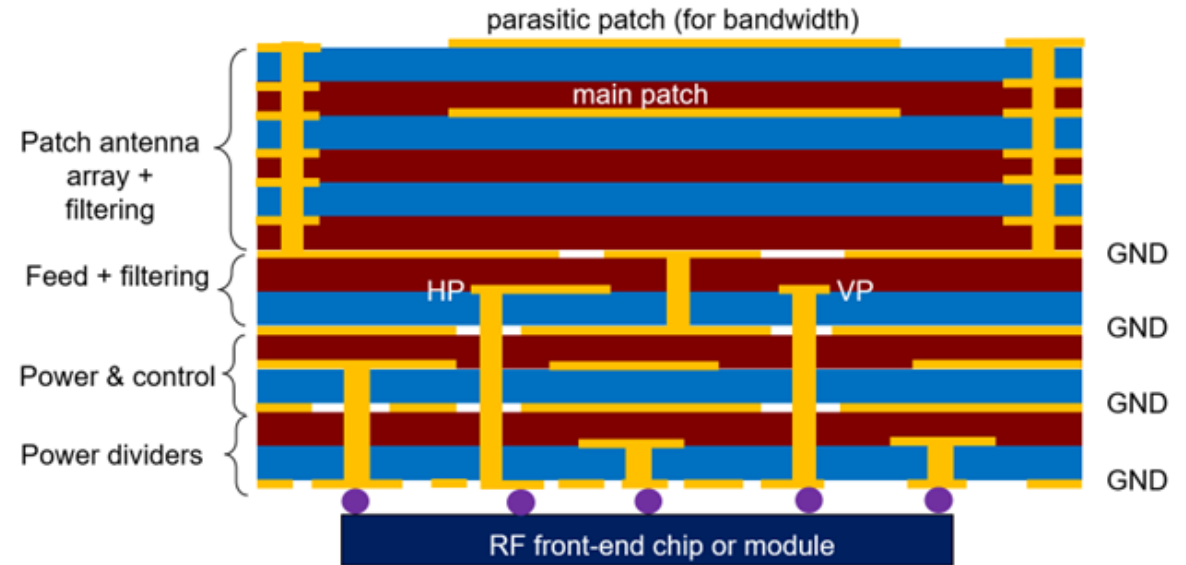
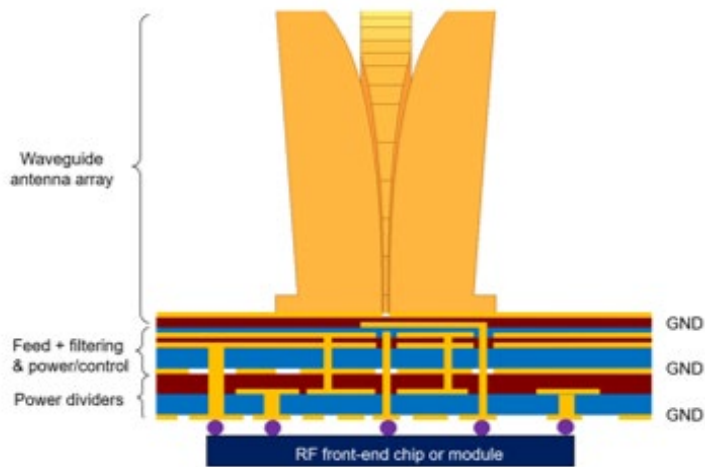
6G-REFERENCE Objectives

6G-REFERENCE Radio unit concept



6G-REFERENCE Objectives

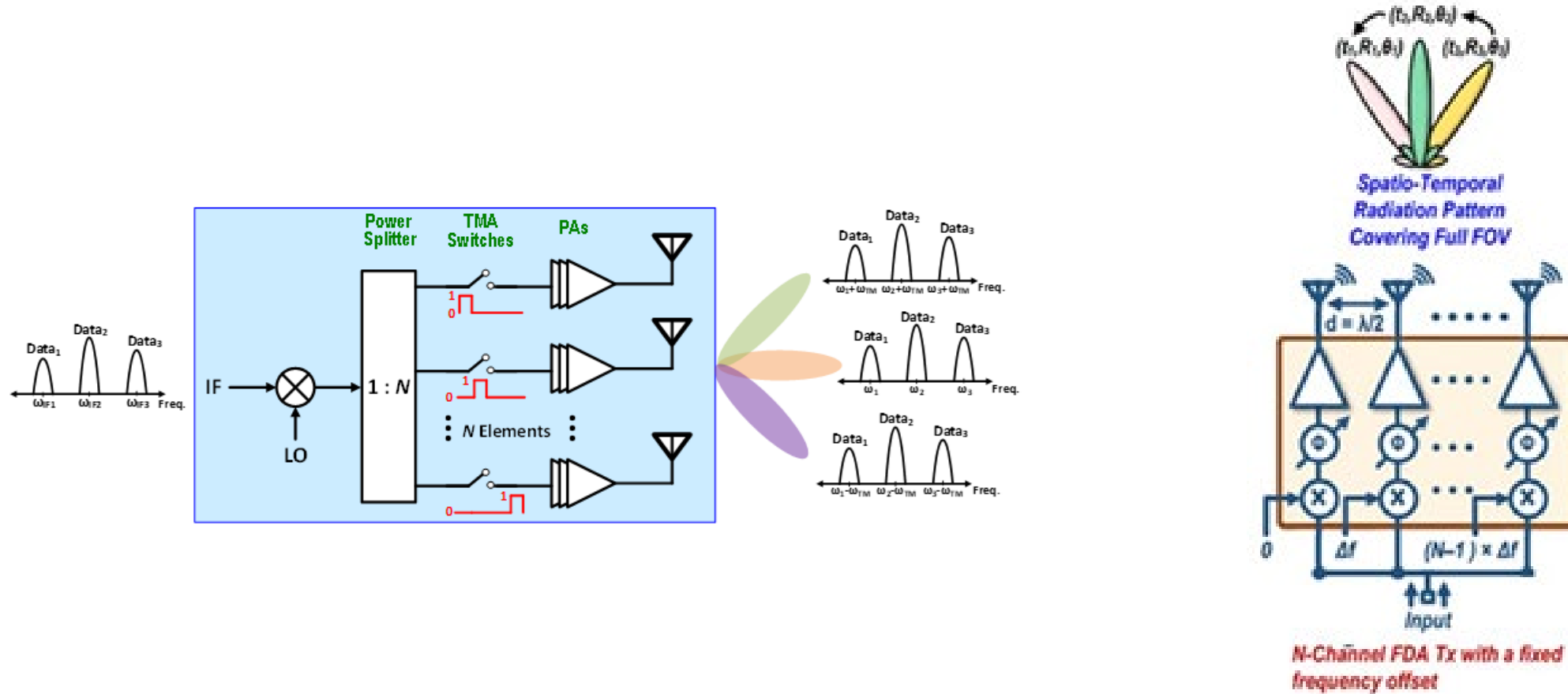
RF and antenna components



- Reconfigurable Intelligent Surface
- Embedded environmental sensing elements e.g. CO2, temperature, pressure

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Time Modulated Array – Frequency Modulated Array



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