Introduction to USRP

Agenda

Chapter 01

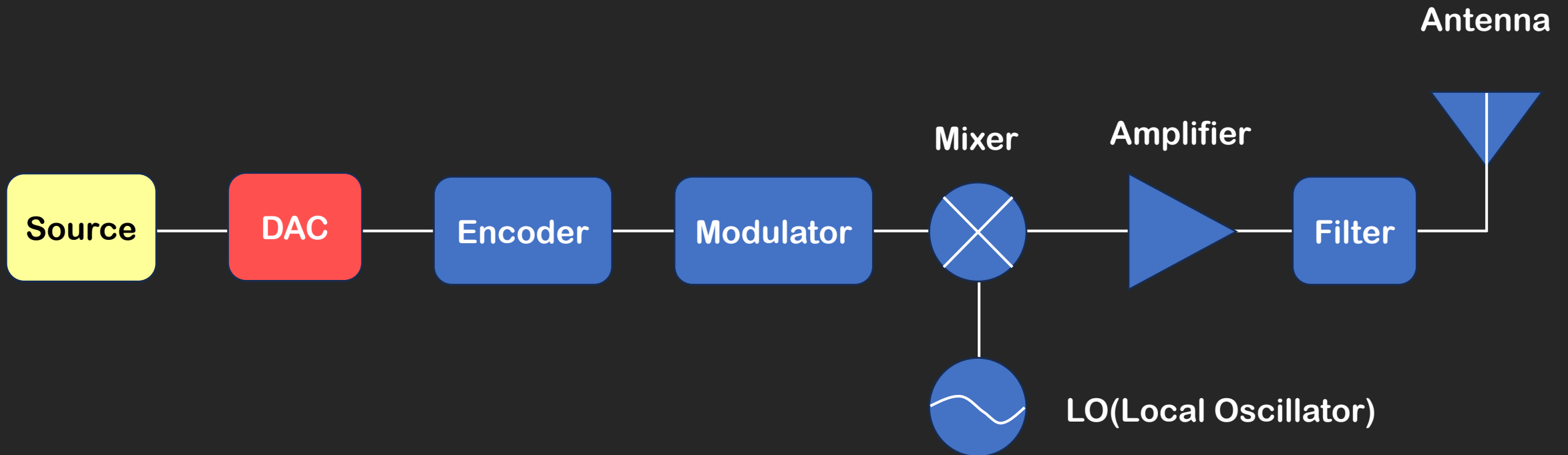-   **What is SDR?**

-     **USRP Hardware**

What is SDR?

What is SDR?

- SDR (Software Defined Radio)

- or SR (Software Radio)

What is SDR?

- **Traditional radio vs. SDR**
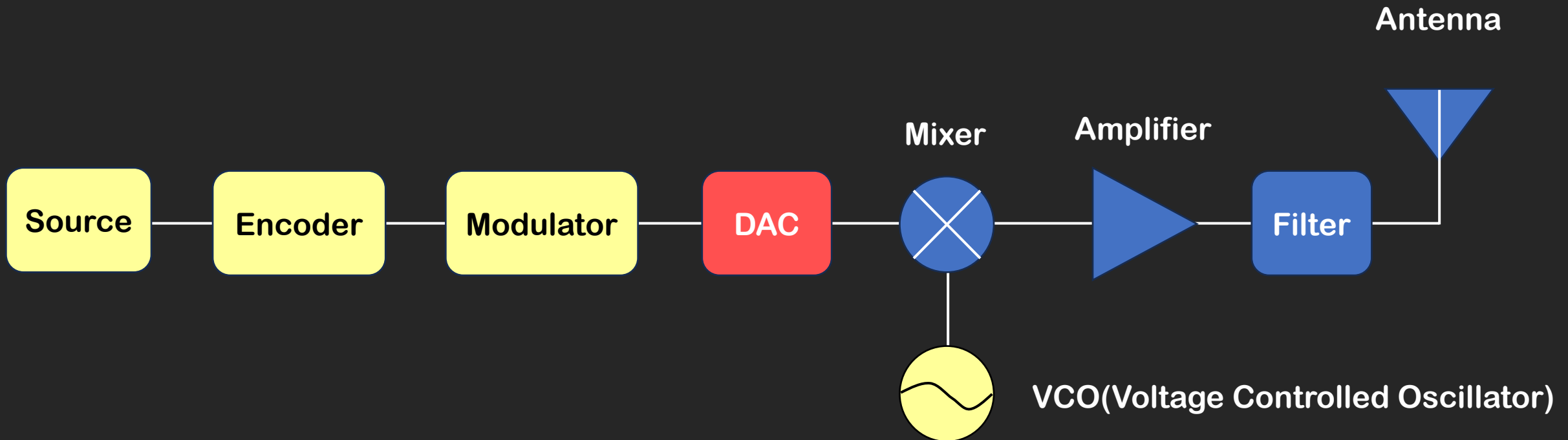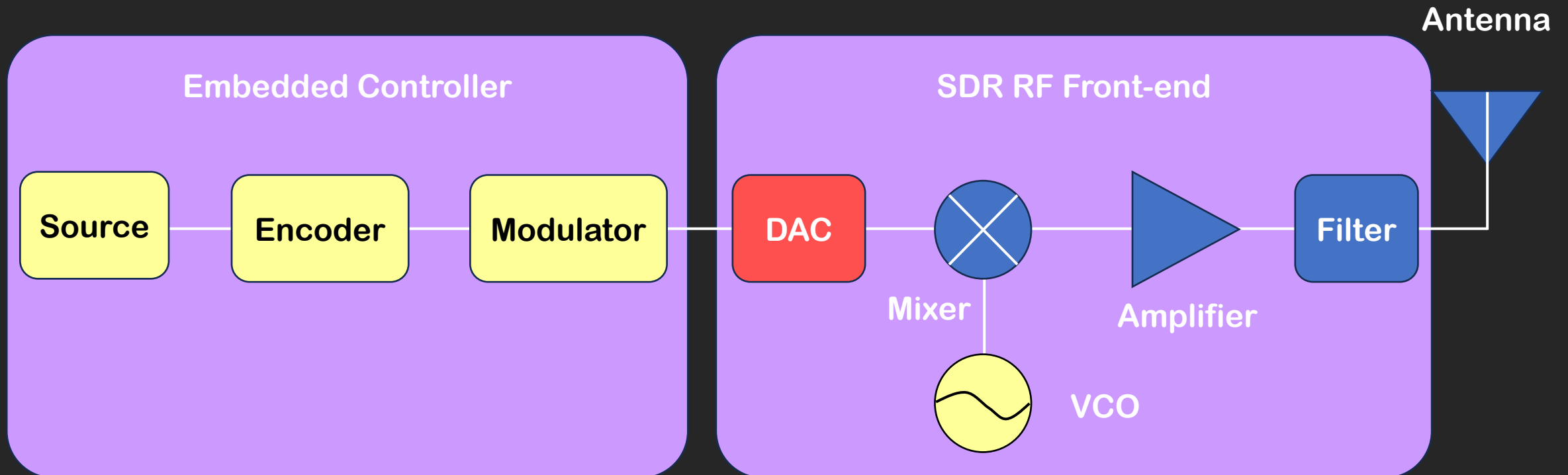
  - Transmitter(Tx)

What is SDR?

- **Traditional radio vs. SDR**

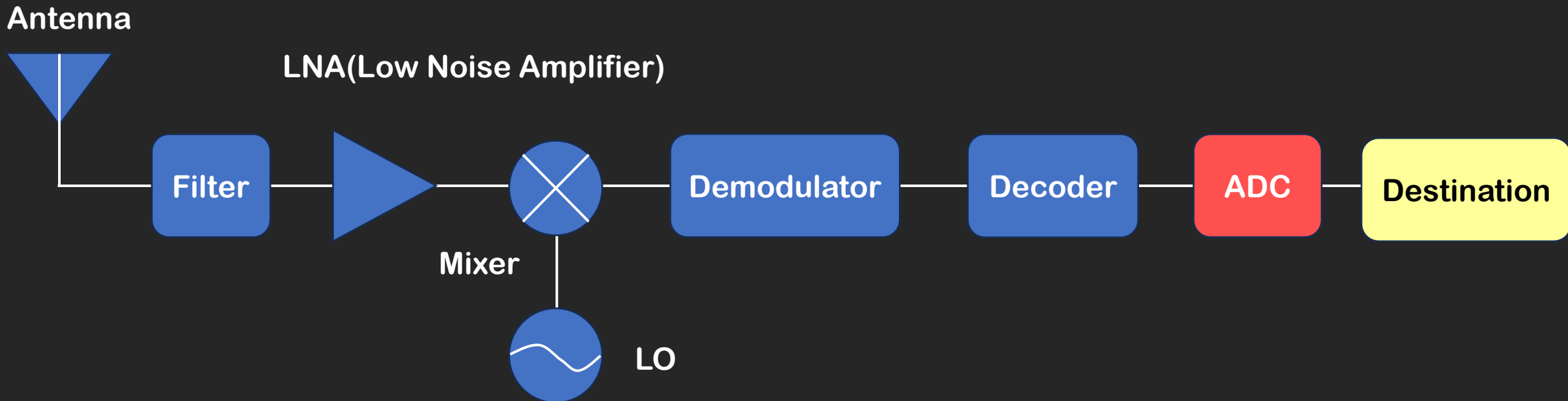 - **Transmitter(Tx)**

What is SDR?
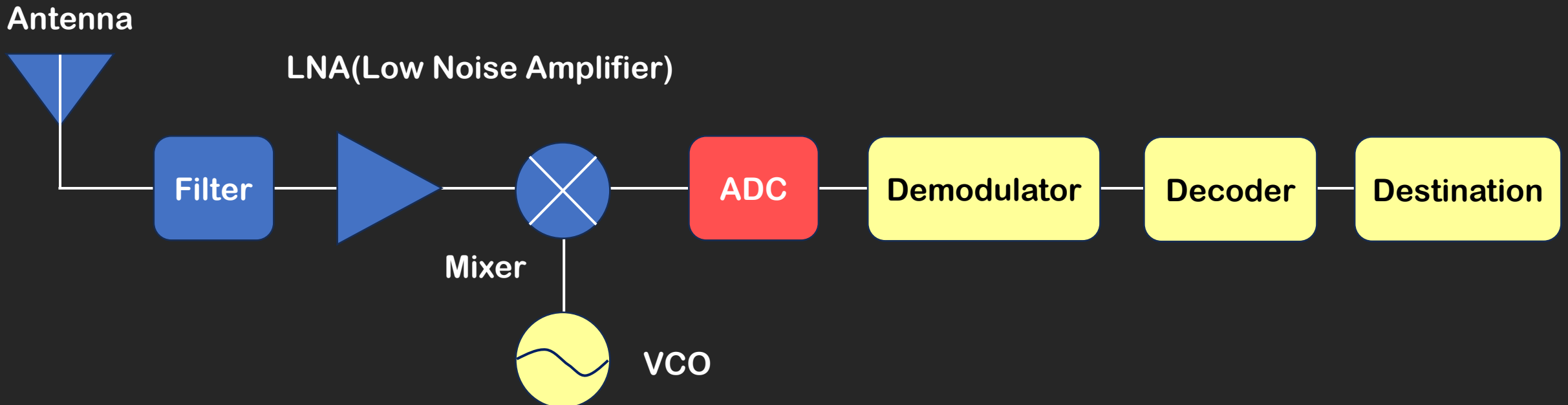
- Traditional radio vs. SDR

  - Transmitter(Tx)

What is SDR?

- **Traditional radio vs. SDR**

  - Receiver(Rx)

What is SDR?

- **Traditional radio vs. SDR**
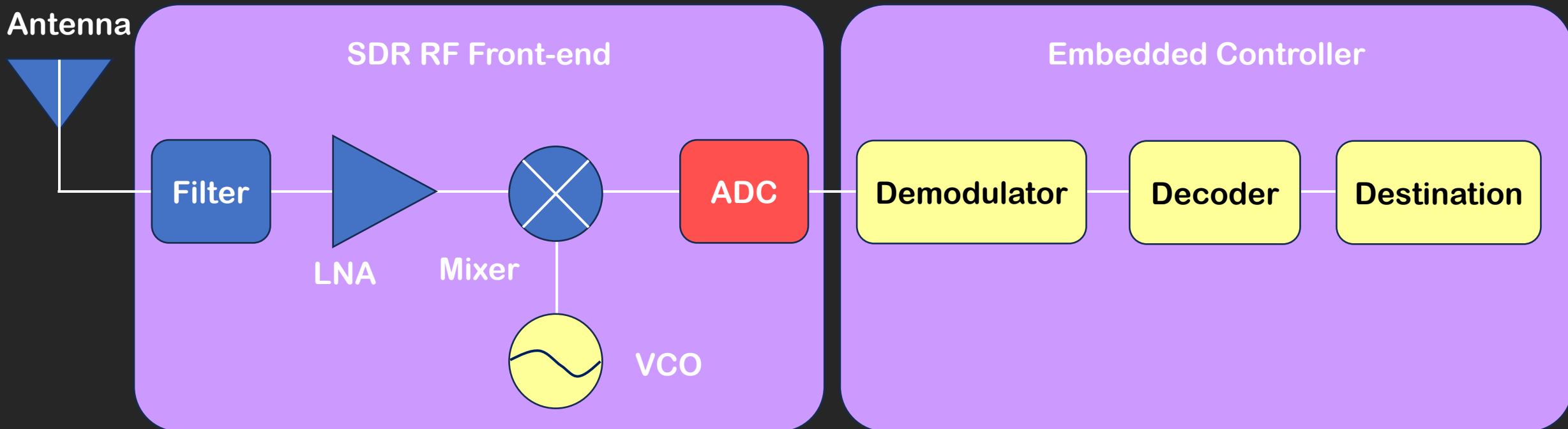
  - Receiver(Rx)

Antenna

LNA(Low Noise Amplifier)

Filter ▶ **ADC** — **Demodulator** — **Decoder** — **Destination**

Mixer

VCO

What is SDR?

- Traditional radio vs. SDR

    - Receiver(Rx)

What is SDR?

- **USRP(Universal Software Radio Peripheral)**

  - Open-source SDR platform

  - Controlled by GNU Radio, Python, Matlab, C++, etc.

What is SDR?

- **Applications**

  - **Wireless Communications(WiFi / Cellular)**

  - **RADAR**

  - **etc.**

USRP Hardware

USRP Hardware

- **Mainboard**

  - **X310**

  - **Power Adapter**
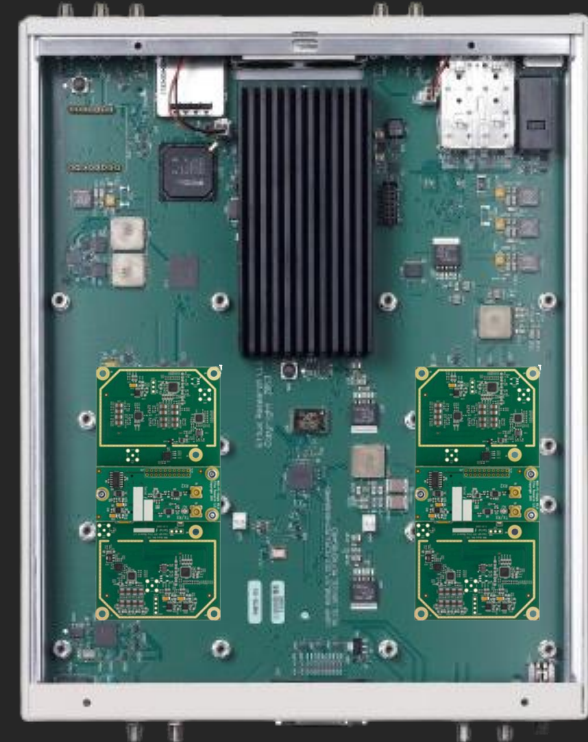
USRP Hardware

- **RF daughter board**

  - WBX (x2)

USRP Hardware

- RF daughter board

  - WBX (x2)

USRP Hardware

- **10Gb ethernet card & cable**

  - Host PC Interface

  - SFP+ converter required for 1Gb ethernet

USRP Hardware

- Antenna or SMA cable

- 30dB attenuator

Chapter 02

- **USRP specifications**
- **USRP block diagram and panels**
- **USRP advanced functions**

References

- www.gnuradio.org

- www.ettus.com

- www.ni.com