

### 3. Multiple Input, Multiple Output :-

→ It is an antenna technology for wireless communications

in which multiple antennas are used at both the source (transmitter) and the destination (receivers).

→ The antennas at each end of the communications circuit are combined to minimize errors, optimize data.

→ To improve the capacity of radio transmissions by enabling data to travel over many signal paths at the same time.

→ By boosting the capacity of radio frequency (RF) systems, MIMO creates a more stable connection and less congestion.

→ All wireless products with 802.11n support

#### MIMO.

→ This technology (MIMO) uses a natural radio-wave phenomenon called multipath.

\* MIMO increases receiver signal-capturing power by enabling antennas to combine data streams arriving from different paths and at different times.

\* Legacy wireless devices use SISO (single input single output) technology, because they can only send or receive one spatial stream at a time.

## MIMO Systems

→ The data stream is encoded in the vector encoder and transmitted in parallel from  $M_T$  transmitters.

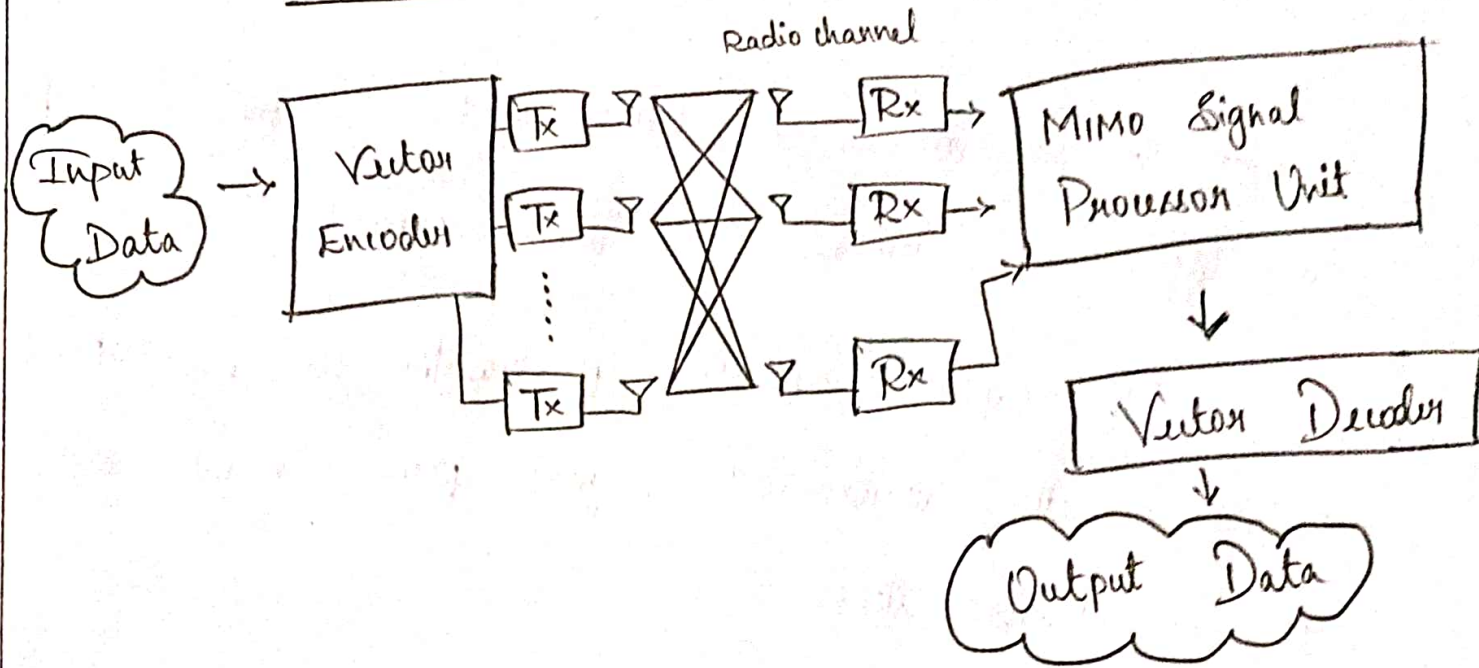
→ The MIMO radio channel introduces distortion to the signal.

→  $M_T$  transmitted signals are received by  $M_R$  antennas.

→ The received signal is first down converted to the baseband.

→ The estimates are then converted to the data stream in the next block.

# MIMO



MIMO systems are influencing the future

\* It is a primary tool for advancing all aspects of wireless communications.

\* It plays a substantial role in 5G technology and is influencing how users interact with these technologies daily.

These influences include,

i) High network capacities

ii) More coverage

iii) Better user experience (UX)