SIGFOX

One network A billion dreams

ULTRA NARROW BAND SIGNAL PROCESSING

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- **IOT ECO-SYSTEM**

- INCREASED USER DEMAND (**CAP**)
- **L**OW **C**OST DEVICE (**LC**)
- **L**OW **D**ATA VOLUME (**LD**)
- **L**OW **P**OWER DEVICES (**LP**)

- **AIR INTERFACE ACCESS**

- NO SYNCHRONIZATION (**LC**)
- MODIFIED ALOHA BASED ACCESS (**CAP**)
- ULTRA NARROW BAND (**LD**)

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- **NETWORK END POINT**

- LOW SENSITIVITY BS
- COOPERATIVE BASE STATION (**CAP**)
- ISM BAND (**COST**)
- SDR IMPLEMENTATION IN BASE STATION

- **SDR REQUIREMENTS**

- DEVICE SIMPLICITY IMPLIES BS COMPLEXITY
- COGNITIVE RADIO (ENVIRONMENT AWARE)
- MULTIPLE STANDARDS (REGIONS)
- INTERFERENCE RESILIENCE (ISM BAND)
- CAPACITY (15% SPECTRUM OCCUPANCY)

- **SDR FRONT END**

- HIGH DYNAMIC RANGE (NO AGC)
- SOFTWARE BASED CALIBRATION
- MASSIVE N-PATH RADIO (OVER-DECIMATED CHANNELIZER)
- WATERFALL COMPOSITION
- DETECTION CRITERIA (INTERFERENCE)
- GHOST (CONCEPT)

- **FREQUENCY TRACKING**

- MOBILITY (**LC**)
- SIMPLIFIED TED
- FREQUENCY ESTIMATION FOR DOWNLINK
- GHOST ERADICATION (MIPS, CAPACITY)

- **DEMODULATION**

- COHERENT RECEIVER
- RSSI ESTIMATION
  - QoS,
  - Downlink power control)
- NYQUIST POST-FILTERING

- **TIMING ERROR DETECTION**

- DOWNSAMPLING
- INTERPOLATION
- HARD DECISION

- **DECODER**

- MULTIPLE PROTOCOL SEARCH
- PAYLOAD EXTRACTION
- QOS ESTIMATION

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- **NEW ARCHITECTURES**

- FPGA
- ASIC
- HSA-GPU

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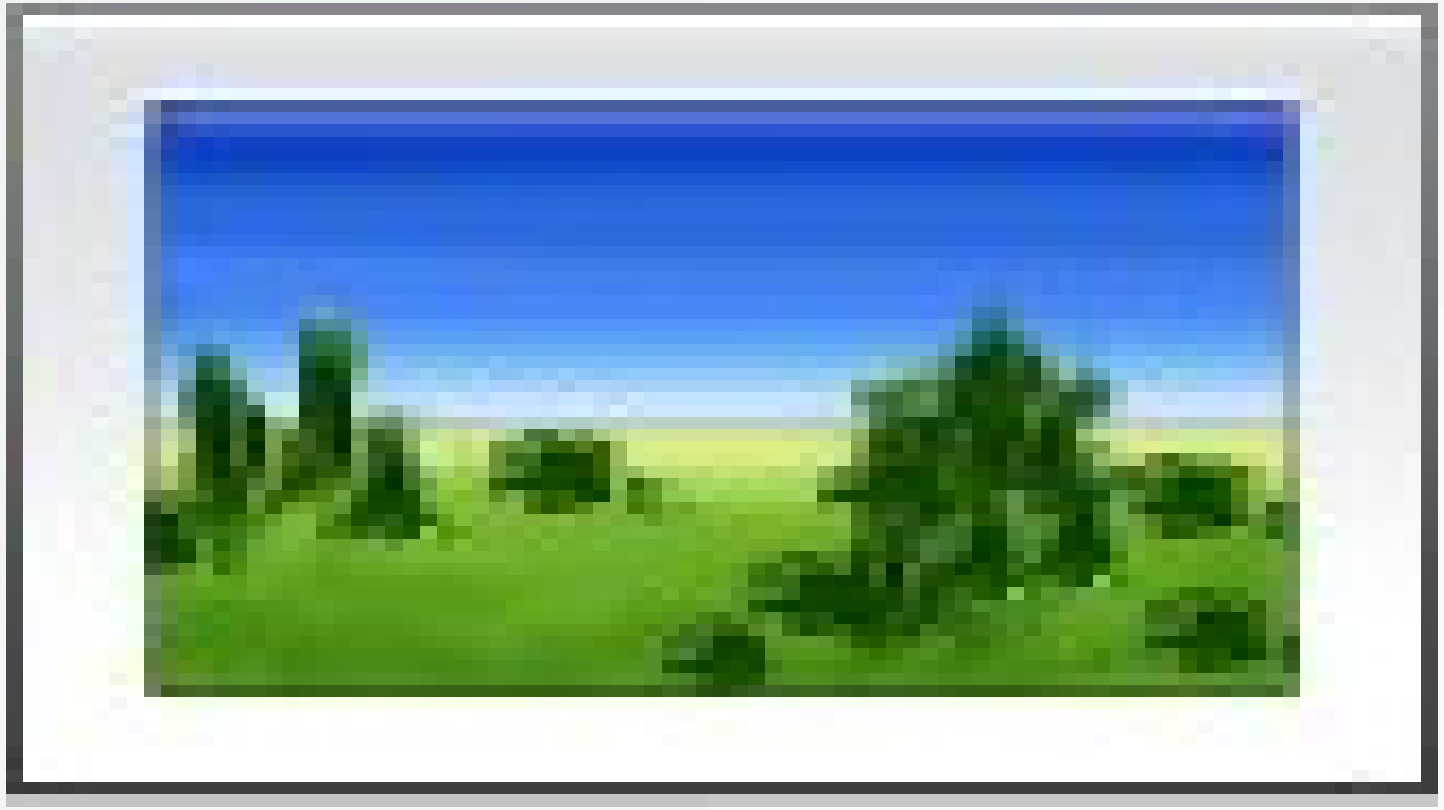

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