Modem Architecture for Dynamic Modulation with Concatenated Coding and Interleaving

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Purpose:

This document describes a modem architecture that supports dynamic modulation with concatenated Reed-Solomon convolutional coding and interleaving in the downstream link.

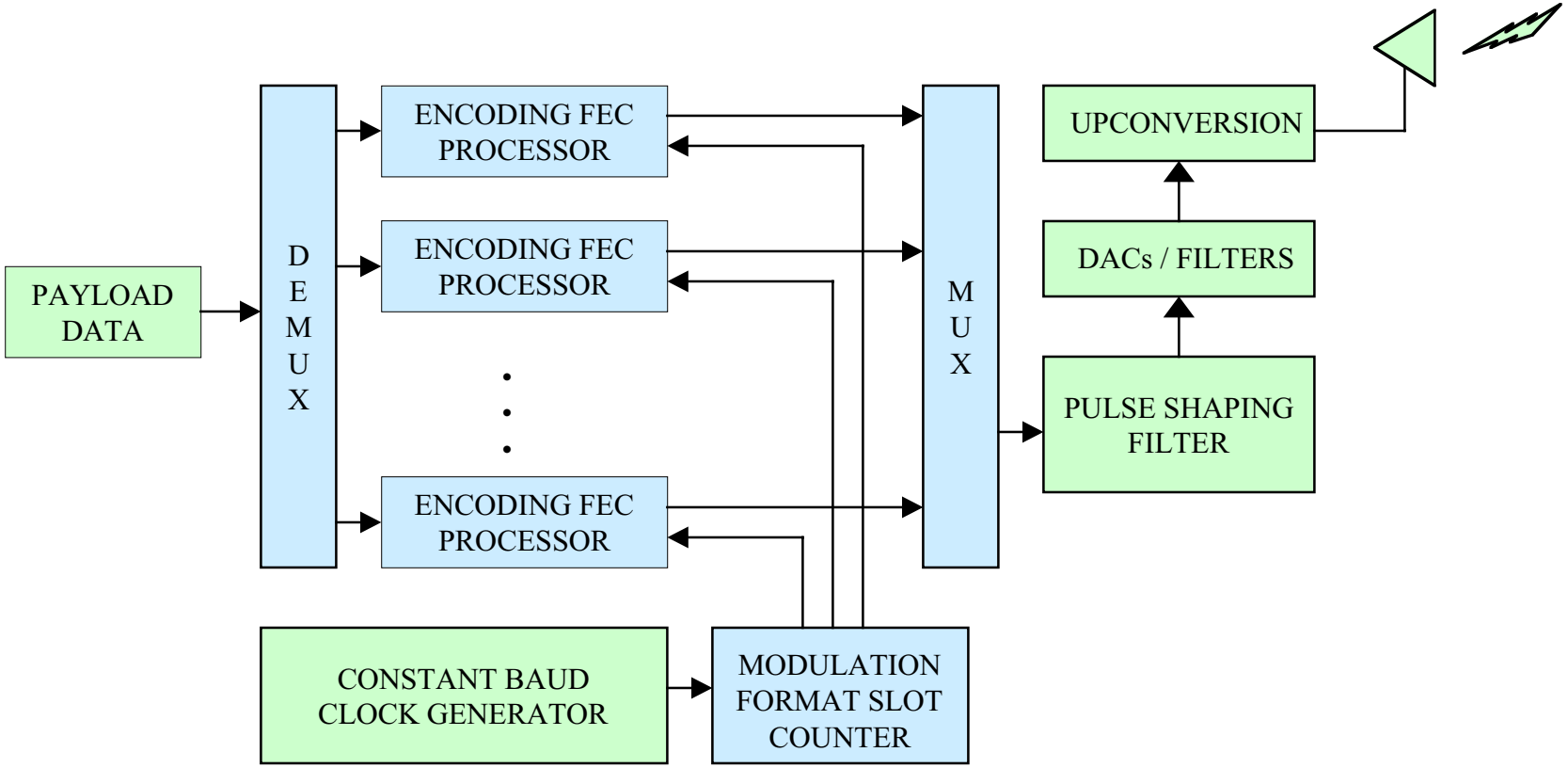
Modem Architecture Description

- Coding structure for downstream link
  - Concatenated coding with interleaver
  - Inner convolutional code
  - Outer Reed-Solomon code
- Advantages
  - High coding gain
  - Supports long block lengths
  - Supports multiple coding strategies in the channel
  - Well-known complexity for subscriber terminal
  - Additional complexity is concentrated at hub

Modem Architecture Description

- Downstream FDD transmission
- Dynamic variation in modulation format
  - Code rate / type (coding strategy)
  - Modulation order
- Supports multiple codes in the channel
  - Code assignment is partitioned by service requirement
  - Supports variability in block lengths
    - Coding gain improvement for all codes
    - Low-latency applications

Modulator Architecture Description



Typical Encoding FEC Processor

Demodulator Architecture Description