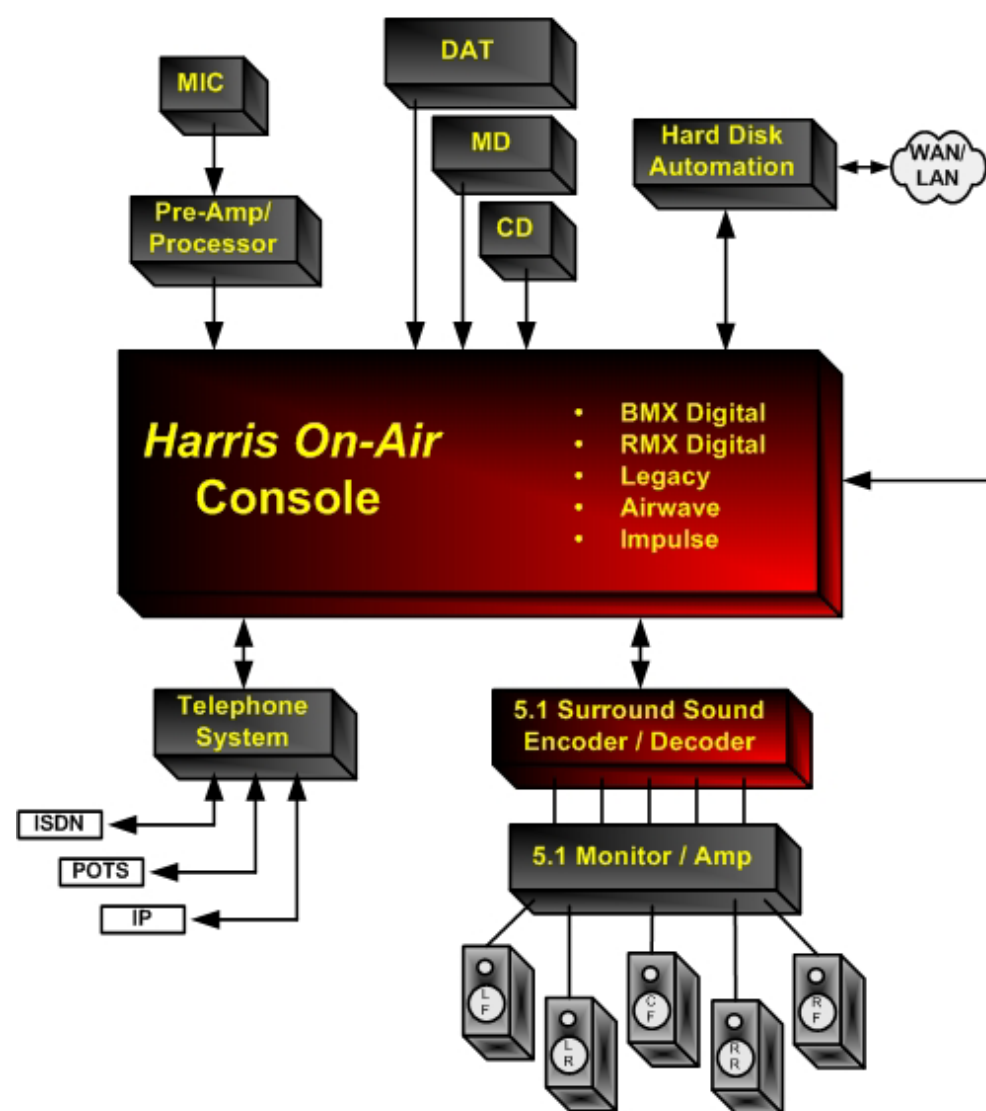
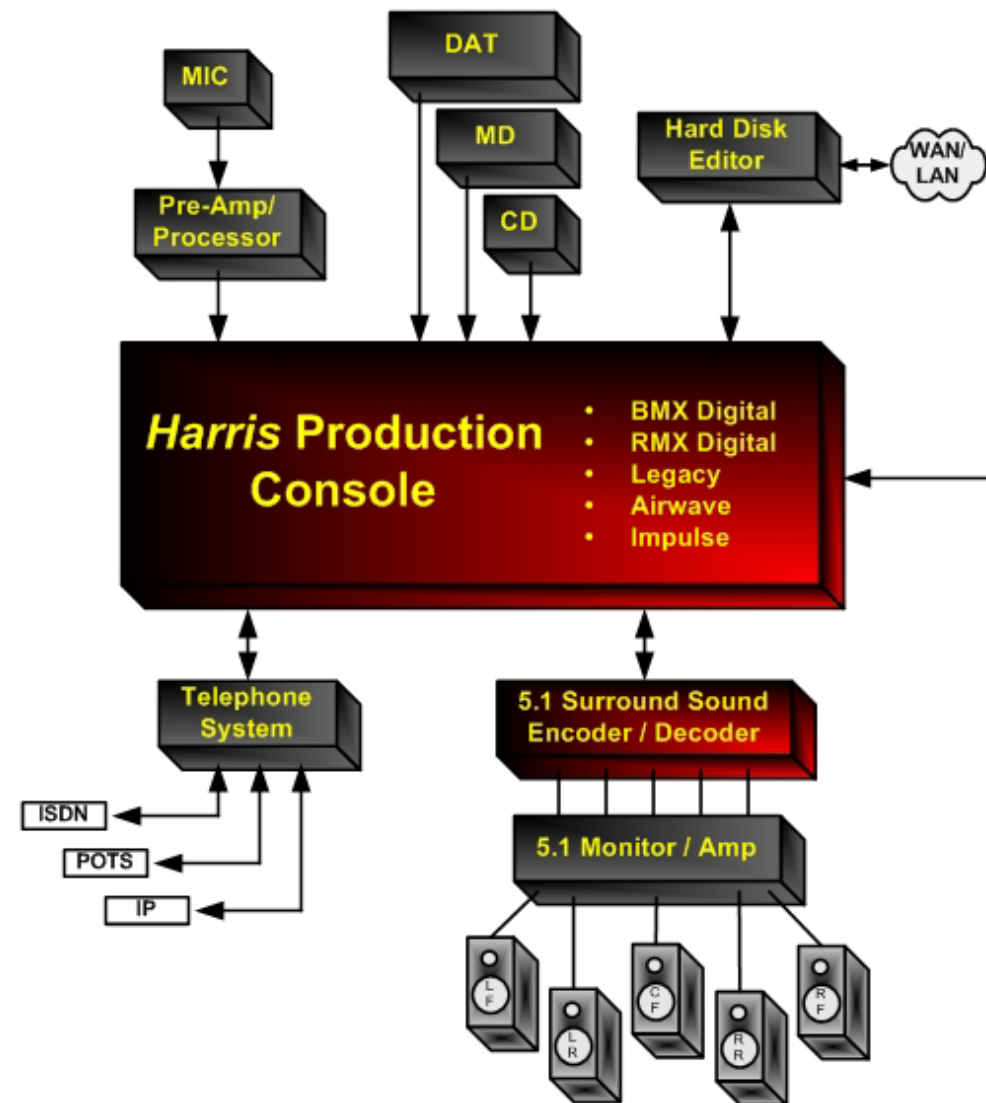


Roadmap to HD Radio™

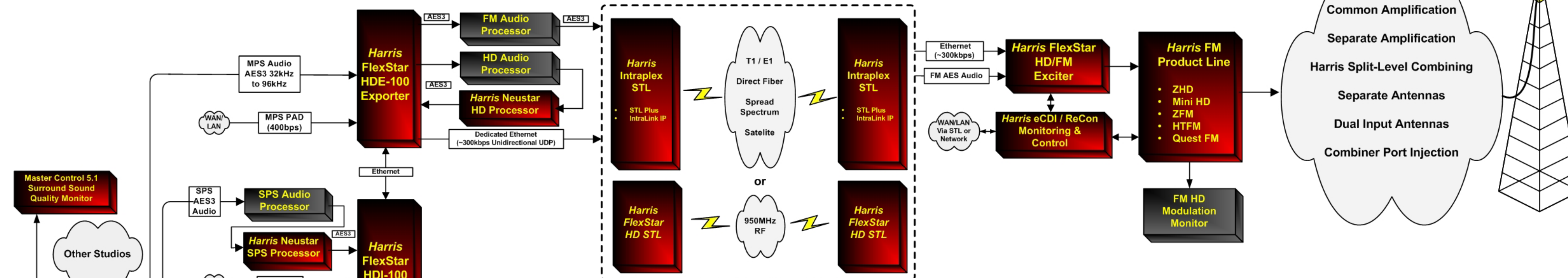
ON-AIR Studio



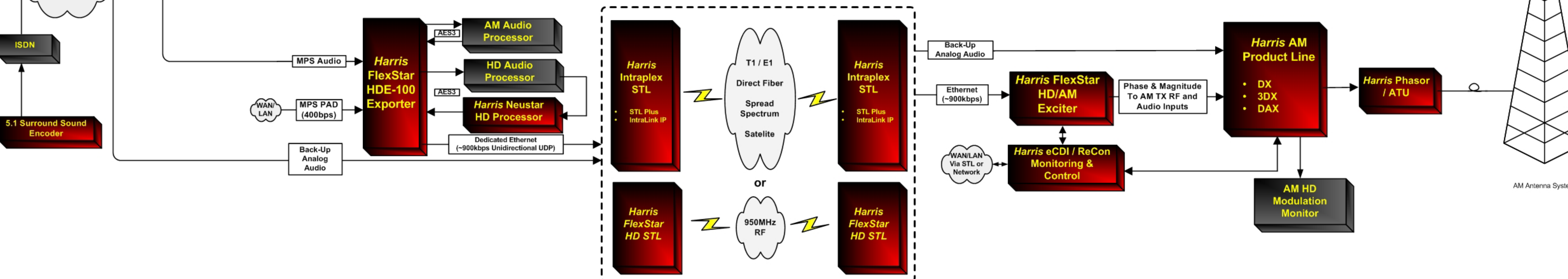
Production Studio



Harris FLEXSTAR™ FM HD Radio Architecture



Harris FLEXSTAR™ AM HD Radio Architecture



Frequently Used Terms

SPS – Supplemental Program Service
Also referred to as Supplemental Audio Service, Supplemental program audio is input to the HDI-100 Data Importer as AES3 digital format.

MPS – Main Program Service
The stations main program audio delivered from the stations on-air studio.

MPS PAD – Main Program Service Program Associated Data
MPS PAD is program related data such as song title and artist information. MPS PAD is delivered in the iBiquity protocol from the stations audio hard disk storage system via an Ethernet or RS232 communications port. This data is then fed to the HD exciter or the HDE-100 Program Exporter and is displayed on an HD receiver text display.

SPS PAD – Supplemental Program Service Program Associated Data.
Identical to MPS PAD but for SPS audio service.

AAS – Advanced Applications Service
Advanced Application Services are non-program related data services encoded into the HD bitstream and include Supplemental Audio, traffic information, news, weather, stock quotes, etc. The first AAS to be implemented in HD receivers will be Supplemental Audio channels. The HDI-100 receives, manages and multiplexes all AAS services for HD Radio.

AES3 – AES3 is an abbreviation for AES3-1992 which is the established standard for professional digital audio conveying two channels of periodically sampled and uniformly quantized digital audio on a single twisted pair wire. The sample rate standard for HD Radio is 44.1 kHz.

Common Amplification – Also referred to as Low Level Combining, Common Amplification utilizes a single transmitter and its associated IPA and PA stages to amplify a hybrid HD+FM signal that has already been combined with the proper power ratios at the exciter stage.

Separate Amplification – Separate amplification employs the stations existing FM transmitter and an HD transmitter amplifying the digital signal only.

Split-Level Combining – A Harris exclusive method of developing a hybrid FM signal using a combination of separate application and common amplification providing minimum reject power and overall dissipation and maximum combining efficiency and overall AC to RF efficiencies of greater than 50%.

Separate Antennas – Separate antenna techniques employ an existing FM antenna and a second antenna for transmitting the HD Radio sidebands. The analog and digital signals are effectively combined in space. The primary advantage of using separate antennas is very low loss to the HD signal, significantly reducing the HD transmitter power requirements. The primary disadvantage is unequal azimuth radiation patterns and resulting variation of the analog to digital signal ratios.

Dual Input Antennas – Dual input antennas is a low loss method of developing an FMHD hybrid signal. Dual input antennas utilize two RF inputs, one for FM and a second for the HD transmitter. Dual input antenna systems combine the HD and FM signals and each element is illuminated with a hybrid FMHD signal.

Interleaved Antennas – Interleaved HD antenna systems also employ two inputs one for FM and a second for the HD signal. In an interleaved antenna system the antenna bays are alternately illuminated with FM or HD.

Combiner Port Injection – Combiner port injection is a low loss method that utilizes the broadband input port of a constant impedance combiner system to inject the digital signal. Hybrids are then utilized to combine the FM and HD signals and the resulting hybrid signal is then fed to the antenna elements.

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AM/FM



AUDIO CONSOLES



DIGITAL RADIO



BROADCAST STUDIO



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SYSTEMS & SERVICE