

Fundamentals of Digital Radio: 0G through LTE and 4G

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This half day workshop will summarize radio from the spark-gap transmitters of long ago to advanced long term evolution of tomorrow, and everything in between. We will look at history, legal wrangling, and even the Titanic catastrophe, and see how these have shaped radio communication systems. In another world communications could not resemble the system solutions that have developed on earth. The fundamentals of radio are the result of system engineering in response to available technologies, and competitive and monopolistic interests. As with all systems, communication systems are developed beginning with fuzzy requirements for components and subsystems. Just as system requirements provide impetus to develop new base technologies, the development of new technologies provides new capabilities that drive innovation and new systems. The new capabilities may arise from developments made in support of other systems. Sometimes serendipity leads to the new capabilities. The outcome of this workshop will be that workshop attendees will have an appreciation of systems engineering applied to radio. Today, appreciating a system requires higher levels of abstraction than in the past, but it also requires detailed knowledge or the ability to access detailed knowledge and expertise. This workshop will cover core technologies. The workshop is suited to analysts, technology investors, scientists and engineers who want to understand the fundamentals of radio.

Reference: Microwave and RF Design: A Systems Approach, SciTech Publishing, 2010.