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Chapter 1 : The Wireless Data Handbook - PDF Free Download

*The Wireless Data Handbook [James F. DeRose] on calendrierdelascience.com *FREE* shipping on qualifying offers. This new edition of a highly successful book is completely updated and revised to reflect the latest developments involving the transmission of digital information over wireless networks.*

For the army of fresh, young people now turning their impressive energy and intellect to this growing field, it is fitting to have enough historical perspective to understand the work of their predecessors. As the title states, this book is devoted to data with only passing reference to voice-and then only as voice and data impact each other. It is also focused on wide area, mostly mobile, applications; it does not cover in-building, wireless LANs. By far the greatest emphasis is on public wide area networks, with a conscious effort to make fair business comparisons among the many competing alternatives. While key technology, which includes airtime protocols, must be discussed, this book is mostly application and business oriented. The necessary technical discussions tend to deal with practical matters, such as the impact of long message lengths on user transmission success. The mathematics require no more than high school algebra. This is not an engineering manual. If you need to calculate path losses, understand turbo coding, or approximate chi-square probability distributions, this is not your book. The core of this book is a nuts and bolts examination of realistic wireless applications and the networks that can serve them in the short term. Considerable emphasis is placed on deflating unrealistic vendor claims. The time horizon is short, with the most extended market opportunity projection ending in This book is not visionary. You will find no refrigerators scanning milk carton expiration dates in order to wirelessly place a replenishment order at your local supermarket. For carriers, the market opportunity estimates tend to be bearish. In my view the estimates are realistic and no apology is made for failing to project a hockey stick upsurge in short term network revenues. After 42 years of struggling in a market that was always on the brink of exploding. I concluded about ten years ago that the model was wrong. One of the original assumptions was that available spectrum was rare and precious, with limited subscriber capacity. It would be controlled by a very few network operators, who could command premium prices for a limited number of highly profitable applications. But there has been no practical spectrum shortage. There is a local analogy. When I moved to Stamford, CT in there was a single, presumably profitable, restaurant which featured tablecloths. Today Stamford has 15 yellow pages of restaurant listings, with every ethnic variation. Individual restaurant owners make a living, but most are privately for sale in this fiercely competitive environment. So it is with wireless networks. There are no realistic capacity restrictions in the near term. A dozen network alternatives are routinely available for prospective customers. Only one or two network offerings are profitable, and casualties are legion. Most networks are privately for sale-or at least open to a deal. Prices are dropping with hard fought competitive bidding to gain market share. Inappropriate solutions are being touted by some carriers who ignore actual limitations such as realistic data transmission rates. Wide area, wireless data is growing very nicely but is not dominated by any one service provider. The long held dream of a new, uniquely profitable, business opportunity is in ashes. DeRose has been a data radio consultant since He is the author of numerous reports in the field; this is the fourth edition of the Wireless Data Handbook. For thirty-two years Mr. DeRose was a designer, manager, and executive for IBM in its first golden age, specializing in telecommunications product development. He can be contacted at jderoseQ2way. By the Japanese had mastered the key techniques and began to intercept messages from the Russian Vladivostok fleet cruising secretly south of Tokyo Bay. Driven by continued military demands, wireless data technology leaped forward. In the hapless Russians lost the Battle of Tannenburg because of German intercepts of their land-based data radio communications and in the British successfully employed radio telegraph in tanks at the Battle of Cambrai2; by these same units were adapted for aircraft. In World War II both the United States and Germany communicated with and controlled their widely scattered submarine fleets via data radio. During this period H. Van Duuren3 devised the technique still known as ARQ Automatic Repeat reQuest , one of those disarmingly simple ideas that seems so trivial in retrospect. The idea was to ensure that a block of characters had been successfully transmitted through the use of error detection. A

detected error was followed by a signal from the receiver asking the transmitter to repeat the block. In the late s wireless teletype units such as the CYLG were in use in high-profile applications like the media pool aboard Air Force One. The Semi-Automatic Ground Environment SAGE air defense system began testing digitized radar information sent by data radio from airborne early warning aircraft. The more complex messages were separated from the continuously repeating X and Y coordinates. A header identifying the radar address was added to the data. The stage was set for commercial exploitation of this knowledge base. The IBM system was a failure and was withdrawn in Competition fared little better. The failure causes were many: The termination of LEAA funding in 2. The physical inadequacy of the devices: A crushing lack of software support: Unreadiness of the customers: The following year the first 12 commercial terminals employing CSMA were delivered to the pioneering package delivery service. MDI was purchased, then extinguished. Nationwide rollout began in April and was essentially complete two years later with the installation of more than base stations. It used a single frequency on adjacent base stations, with deliberately overlapping coverage patterns, to achieve better in-building penetration. The end-user device was hand held, incorporating integrated radio modems and internal dual diversity antennas for improved reception at walk speeds. The initial opportunity estimates were enormous: Within IBM this period later came to be known as the first era of low hanging fruit. IBM better understood the application development barriers that would hinder rapid roll-out of this technology, having struggled to place experimental customers on DCS via the then-extant IBM Information Network. Motorola had a sounder grasp of the infrastructure changes necessary to provide a high-availability system and had begun development of its own, independent network. The proposal to build a public network resting on the shoulders of DCS was rejected by the decision-making elements of both IBM and Motorola for complex and often emotional internal business reasons. After the collapse of the joint venture negotiations, Motorola unveiled its own public packet switched network, the Digital Radio Network DRN. This system used DCS-class base stations but with area controllers sharply modified for both performance and high availability. As IBM expected, making a market was an extraordinarily difficult task. Clearly a positive learning curve existed, but the absolute pace was exceedingly slow. The venture was agreed to by IBM, surprising since the airtime protocol remained proprietary to Motorola. The system has been in continuous evolution ever since: There were multiple reasons for this transaction. The two companies were not strangers. Infrastructure deployment rates jumped. They are now greatly helped by far better modem capability, most cellular ready, and the formation of carrier modem pools in most major metropolitan areas. Facsimile transmission alone, usually from a portable computer to a wireline fax, has created thousands of casual public data radio users. In early UPS made a direct connection of its own leased facilities to cellular mobile telephone switching offices MTSOs , bypassing the public switched network landlines. This resulted in very advantageous pricing, though there were time connection limits. ARDIS, beginning in late The ostensible reason for pool deployment is to avoid forcing users to convert the modem facilities at their host sites. Another important reason is that dialing to a pool gives the carriers the ability to distinguish between voice and data calls. Custom tariffs can follow. This would ultimately be addressed by the carriers with flat-rate packet pricing. Several carriers issued request for proposals RFPs. Motorola prepared responsible proposals based on its high-speed radio data link access procedure RD-LAP protocol. Ericsson held back, presumably because of business constraints evolving from Mobitex and BellSouth. Motorola, awash in hubris, refused, thus snatching defeat from the jaws of victory. CDPD was late to the market. The carriers are Balkanized, with erratic roaming agreements. There is a real possibility that the original nationwide vision may not unfold. Perhaps, at last, the long awaited, widespread adoption of wireless packet switched data is about to be triggered. This accomplishment attracted competitors, most of whom also offered voice. None of these solutions could attack the trailer opportunity. Qualcomm is poised to attack that problem with the use of Aeris Microburst, a terrestrial cellular control channel approach. The first proponent of the use of the cellular control channel for telemetry purposes was BellSouth, with its Cellemetry system.

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Chapter 4 : WNDW - Wireless Network in Developing World

and data handbook 11 chapter 1 data transmission basics data transmission, as the name suggests, is a means of moving data from one location to another. Ffiec it examination handbook infobase home, the information technology.