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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Redevelopment of Spectrum To Encourage) ET Docket No. 92-9
Innovation in the Use of New)
Telecommunications Technologies)

**COMMENTS OF OMNIPOINT CORPORATION,
ORACLE DATA PUBLISHING, INC., AND
McCAW CELLULAR COMMUNICATIONS, INC.**

Omnipoint Corporation ("Omnipoint"), Oracle Data Publishing, Inc. ("Oracle"), and McCaw Cellular Communications, Inc. ("McCaw") (collectively, "Petitioners") hereby submit their comments in response to the Commission's above-captioned Notice of Proposed Rulemaking.¹ These parties are the proponents of an innovative Data BroadCast Service ("DBCS") proposed for the emerging technologies bands identified in the Notice.² As discussed below, DBCS could be implemented without requiring forced relocation of existing microwave operations to other frequency bands. In evaluating its plans for redeveloping the heavily used 1.8-2.2 GHz bands, the Commission should consider and promote such spectrum sharing technologies. They represent the optimal means for deploying emerging technologies in a phased negotiated manner minimizing disruptions to the nearly 30,000 licensed microwave operations in the band.

¹ FCC 92-20 (released February 7, 1992) ["Notice"].

² *Omnipoint Corporation, Oracle Data Publishing, Inc., and McCaw Cellular Communications, Inc. Request for a Pioneer's Preference for a New Data Broadcast Service in the Emerging Technologies Band*, PP-__ (filed May 4, 1992) (attached as Exhibit 1) ["DBCS Request"].

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List A B C D E

**I. THE DATA BROADCAST SERVICE PROPOSAL CONTEMPLATES
HIGHLY EFFICIENT SPECTRUM SHARING WITH 1.8-2.2 GHz
MICROWAVE LICENSEES**

In the *DBCS Request*, Petitioners proposed an innovative system that would provide a high speed, high volume information "superhighway" to address the public's needs -- the Data BroadCast Service ("DBCS"). This service would enable many important applications to be delivered at a small fraction of the cost of fiber, satellite, or landline distribution, sustainable by private funding sources, and with operations commencing within 24 months. In addition, because DBCS is a broadcast rather than a landline system, it offers many advantages for portable applications that national fiber optic, satellite, or wireline systems cannot.

The DBCS proposal is fundamentally distinct from any service contemplated to date. As an initial matter, DBCS contemplates *broadcasting* digital information to customers at rates up to 1.5 Mbit/s. And, by capitalizing on the use of spread spectrum technology and the absence of uncontrollable mobile transmitters, DBCS can achieve this unprecedented data rate in a modest shared allocation of 10 MHz. DBCS relies on an adaptable simulcast topology and inexpensive receivers capable of combining multiple high speed transmissions to provide reliable coverage that can be tailored to avoid interfering with point-to-point microwave users without creating huge exclusion zones. Thus, DBCS can provide ubiquitous coverage at low cost to rural areas as well as metropolitan areas. These characteristics of DBCS not only embody a number of highly advanced technologies, but also an entirely new way of thinking about data transmission.

What DBCS means for information users and providers is a dramatic change in the availability of timely data in electronic form. Petitioners have designed DBCS as a comprehensive answer to information providers' data transmission and management needs. Technically, DBCS responds to widespread public demand for inexpensive, high speed, high volume nationwide digital data delivery. DBCS is an enabling technology that will permit nearly ubiquitous access to up-to-the-second information and allow economic delivery of a rich variety of new information-based services designed to promote productivity and efficiency. And, since all of this information is provided in a manipulable, electronic form, users can optimize their use of the data in highly personal ways to enhance their productivity and facilitate their information processing tasks. The service will add a new dimension to personal computing and personal communications.

II. THE COMMISSION SHOULD SEEK TO PROMOTE DEPLOYMENT OF NEW SERVICES IN THE EMERGING TECHNOLOGIES BANDS THAT ARE CAPABLE OF SHARING WITH EXISTING USERS

The *DBCS Request* shows that significant public benefits can be achieved without forced displacement of existing users. DBCS permits each user to receive up to 1.5 Mbit/s data transmissions from multiple simultaneous sources in a small, low power, safe, inexpensive, and relatively long battery life mobile unit. DBCS receivers support a data rate that is orders of magnitude faster than existing FM technologies and a transmission range orders of magnitude greater than comparably fast technologies. At the same time, however, DBCS has been designed to coexist with the Operational Fixed Service ("OFS") users in the 1850-1990 MHz band. Through a number of innovative techniques made possible through

the use of advanced spread spectrum technology and taking advantage of the one-way characteristic of the broadcast service, DBCS can be deployed without forced displacement of existing users of the band.

The Petitioners believe that DBCS, and other newly proposed services relying on sophisticated techniques to enable co-existence with microwave users in the band, warrant careful consideration. Given the broad range of potential new services that propose to share with existing users, a failure to examine spectrum sharing opportunities prior to expelling the microwave users from the band arbitrarily dismisses what is potentially the optimal solution to bringing new services to the public on a highly spectrum efficient basis.

III. THE COMMISSION SHOULD ALLOCATE SPECTRUM IN THE EMERGING TECHNOLOGIES BAND FOR SERVICES LIKE DBCS THAT SERVE SUBSTANTIAL UNMET PUBLIC NEEDS

The Petitioners submit that substantial public needs can be met by services deployed in the emerging technologies band without wholesale displacement of existing users. As Petitioners have described in the *DBCS Request*, DBCS will dramatically change the availability of timely data in electronic form. First, DBCS is very fast and, under prearranged conditions, the DBCS architecture can distribute information almost instantaneously. Second, the DBCS network configuration allows point-to-multipoint distribution at a very low incremental cost per information receiver. Third, DBCS efficiently transmits the increasingly large volumes of data that are being amassed, and are required for emerging graphical applications and interfaces, as well as existing textual information. As discussed below, information creators increasingly need these capabilities, individually and

collectively, to enhance the utility and accessibility of their data for the information consumer.

Speed. The high speed of the DBCS network is, in itself, a distribution solution necessary to bring certain time sensitive services out of the realm of text-only offerings for premium, "high-end" users. DBCS could inexpensively transmit a single-spaced ASCII page in less than 3/100ths of a second and thus permit information providers to include, for example, graphical data. Most existing data networks for highly time sensitive applications, in comparison, require capacity on demand even for text-only services, and thus rely on permanent networks of leased lines, satellite/FM sideband transmission, or VSAT technology. Not only are the initial fixed costs of these services prohibitive, there also are high recurring costs.³

Low Costs and Ubiquity. There also are a number of beneficial emerging services that require economical distribution of information from a single source to a large base of users. At the present time, to the extent that these services are offered at all, the delivery mechanisms are quite expensive or very slow. Since, for many of these services, delivery adds significantly to the cost of providing the service, the lack of a ubiquitous delivery system like DBCS impedes the growth of a wide range of beneficial information services.

High Capacity. DBCS also offers a high volume "pipeline" -- 60 to 75 gigabytes per day using compression techniques -- making feasible services relying on economic delivery of large quantities of one-way electronic data. These services are not ordinarily available

³ Furthermore, since satellite-based technologies typically rely on line of sight transmission, time sensitive data may not be available to all users.

because today's solution to high volume data transfer needs is circuit oriented, requiring inefficient use of two-way access lines. Since the fixed and recurring costs of these lines grows with the data rate, users must either pay high charges for circuit use or live with extremely slow throughput rates.

Using these three capabilities, individually or collectively, DBCS overcomes a number of communications barriers and offers information providers and users a broad range of new possibilities for information services. The *DBCS Request* listed, as a few potential uses of DBCS, the following:

- The entire daily public output of governmental information -- rulings, press releases, studies, records, requests from local, state, federal and military sources -- can be distributed at a small fraction of current costs, without paper. Moreover, it will be automatically filed and stored at each end user site for later retrieval or printing.
- Because DBCS utilizes powerful encryption and access authorization standards, it can also be used by the government efficiently to distribute non-public information internally. Similarly, it also could be used by business to distribute information among employees, selected customers, or to the general public.
- The extreme high speed and low unit cost of DBCS allow it to solve the growing problem of maintaining complex, illustrated, or multimedia documentation at many sites nationwide. This documentation -- for airlines, military equipment, large vehicles, manufacturing devices, farm implements, construction tools, computers, and computer software systems -- is now delivered for the most part on paper, or on mailed electronic media, and is a major expense for American industry. Although electronic publishing systems have allowed business to improve the efficiency of document preparation, DBCS is needed to allow efficient distribution.
- Schools could receive broadcasts of textbooks, including color graphics, updates, and curriculum materials on a highly cost effective basis. With the cooperation of the publishing industry, vast collections of information can be delivered to local libraries that could not possibly afford or support similar collections on paper or if delivered by mail. Moreover, the information can be updated automatically and accessed locally without the need for the expensive high-speed two-way lines that would be required if the data were centrally stored and accessed remotely.

- Universities and research institutes, regardless of size, could automatically receive broadcasts of updated search index information for journals and specialized research information, allowing the users to execute database retrieval searches on their computers. Since the searching functions are done "off-line," and downloading of actual articles is performed separately, database retrieval costs would be much lower. This model of distributed indices and off-line searching would dramatically lower the cost and efficiency of the nation's existing on-line data services industry, thereby making more information available at lower prices to more people.
- New publishing enterprises and self-publishing would be greatly assisted by this new service. DBCS would allow authors to create electronic books that could be distributed throughout the nation at costs which are orders of magnitude lower than paper. An illustrated book-length manuscript could be sent to millions of recipients throughout the nation for a distribution cost of a few dollars. Not a few dollars each; a few dollars for the entire nation.
- Computer users could receive broadcasts of upgrades to software packages that would be automatically installed on the user's computer, greatly lowering the cost to both users and vendors, while also increasing ease of use. Similarly, the documentation for the software could also be delivered by DBCS. America now runs on software, and the best selling computer software titles now outsell any new books, periodicals, movies or music.
- All existing news and financial services can be carried by DBCS and accessed individually by authorized subscribers. A financial analyst could receive minute by minute broadcast news that was filtered to allow the user to track all stories concerning a specific company, a market group, or, for example, the progress of U.S./Mexican trade negotiations. Subscribing to a new service can be accomplished with a single telephone call, and new subscribers can be activated without installing leased lines or VSAT systems. By accommodating all services and subscribers in a single network, DBCS will greatly expand the potential for current and new electronic publishing, as a central market stimulates commerce.
- Medical institutions could receive broadcast information updates regarding new treatment methods, newly available therapies, and disease control statistics, including detailed illustrations and raw data results that are not now possible to distribute electronically at reasonable cost.
- Because of the inherent efficiency of a broadcast topology, DBCS would also allow the creation of a national electronic mail delivery system that would offer message rates dramatically lower than current e-mail (or land mail) systems, while allowing the delivery of images, graphics and facsimile that current landline dependent services cannot cost-effectively support.

Since all of this information is provided in a manipulable, electronic form, users can optimize their use of the data in highly personal ways to enhance their productivity and facilitate their information processing tasks.

IV. CONCLUSION

DBCS is an prime example of the way the Commission could satisfy substantial public demands without imposing the costs and dislocation effects of forcing any existing users out of the emerging technologies band. The DBCS proposal shows that important new services can be deployed without forced displacement of existing users. The Petitioners thus respectfully submit that the Commission should embark on a procedural course designed to

seek out and promote services, like DBCS, that will not require the forced relocation of nearly 30,000 2 GHz microwave facilities.

Respectfully submitted,

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