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(54) **PROVIDING REMOTE NETWORK DRIVER INTERFACE SPECIFICATION SERVICES OVER A WIRELESS RADIO-FREQUENCY MEDIUM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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5,566,331	A	*	10/1996	Irwin et al.	707/10
5,765,155	A	*	6/1998	Nakamura	707/10
5,875,478	A	*	2/1999	Blumenau	711/162
5,918,158	A	*	6/1999	LaPorta et al.	340/7.29
5,949,776	A	*	9/1999	Mahany et al.	370/338
5,987,060	A		11/1999	Grenon et al.	
6,480,505	B1	*	11/2002	Johansson et al.	370/449
6,480,711	B1	*	11/2002	Guedalia	455/412.1
6,600,726	B1	*	7/2003	Nevo et al.	370/278
6,603,744	B2	*	8/2003	Mizutani et al.	370/310

FOREIGN PATENT DOCUMENTS

EP	0 975 123	A1	1/2000
EP	0 998 094	A2	5/2000

OTHER PUBLICATIONS

Patent Abstracts of Japan, vol. 2000, No. 03, Mar. 30, 2000 & JP 11 355322 A (Nokia Mobile Phones Ltd), Dec. 24, 1999 abstract.

(Continued)

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(51) **Int. Cl.**⁷ **H04B 7/00**

(52) **U.S. Cl.** **455/41.2; 455/557; 455/528; 455/463; 709/315; 709/331; 709/332; 710/62; 710/63; 710/8; 710/65**

(58) **Field of Search** **455/41.2, 422.1, 455/463, 557, 528, 41.1, 517; 709/315, 332, 331; 370/328, 252, 449, 466; 710/62, 63, 8**

(56) **References Cited**

U.S. PATENT DOCUMENTS

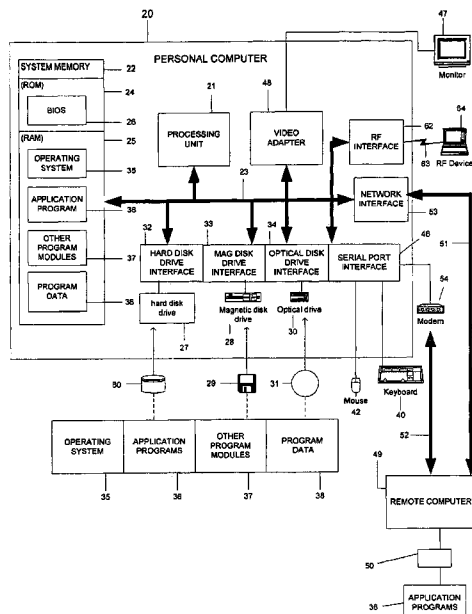
5,497,412 A * 3/1996 Lannen et al. 455/432.2

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(57) **ABSTRACT**

The present invention provides a method and computer program product for providing, over a RF link conforming to the Bluetooth specification, a network message protocol which is bus-independent and was originally designed for bus-attached networking devices. One such network message protocol is the NDIS device management protocol. In such a manner, many computer software products designed to operate over a hard-wired (or bus-attached) network can also be used over a Bluetooth wireless network.

18 Claims, 3 Drawing Sheets



OTHER PUBLICATIONS

Post, Guido, et al., *Control and Data Flow Aspects in the Design of A Wireless Data Radio Modem: A Case Study*, 1996 IEEE International Conference on Acoustics, Speech, and Signal Processing—Proceedings, (ICASSP), Atlanta, May 7–10, 1996; IEEE International Conference on Acoustics, Speech, and Signal Processing—Proceedings, (ICASSP), New York, IEEE, US, vol. 6 Conf. 21, May 7, 1996, pp. 3201–3204, XP000681738.

Specification of the Bluetooth System, v.1.0B, Dec. 1, 1999.

Riku Mettala et al., *Bluetooth Protocol Architecture* (White Paper), v1.0, Nokia Mobile Phones, Sep. 29, 1999.

Brent Miller et al., *Mapping Salutation Architecture APIs to Bluetooth Service Discovery Layer* (White Paper), v. 1.0, IBM Corporation, Jul. 1, 1999.

IEEE Standard, 802.11, *Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications*, 1st Ed. 1999, and Supplements 802.11a–1999 and 802.11b–1999.

Bob O'Hara and Al Petrick, *IEEE 802.11 Handbook A Designer's Companion*, Dec. 1999.

Pat Megowan et al., *IrDA Object Exchange Protocol*, v1.2, Counterpoint Systems Foundry, Inc. Microsoft Corporation, Mar. 18, 1999.

Universal Plug and Play Device Architecture, v1.0, Microsoft Corporation, Jun. 8, 2000.

Golden G. Richard III, "Service Advertisement and Discovery: Enabling Universal Device Cooperation," <http://computer.org/internet/>, Sep.–Oct. 2000.

ETSI TS 101 369 v7.1.0 (Nov. 1999), *Digital Cellular Telecommunications System (Phase 2+); Terminal Equipment to Mobile Station (TE–MS) Multiplexer Protocol*, Global System for Mobile Communications (GSM 07.10 v7.1.0 Release 1998).

* cited by examiner

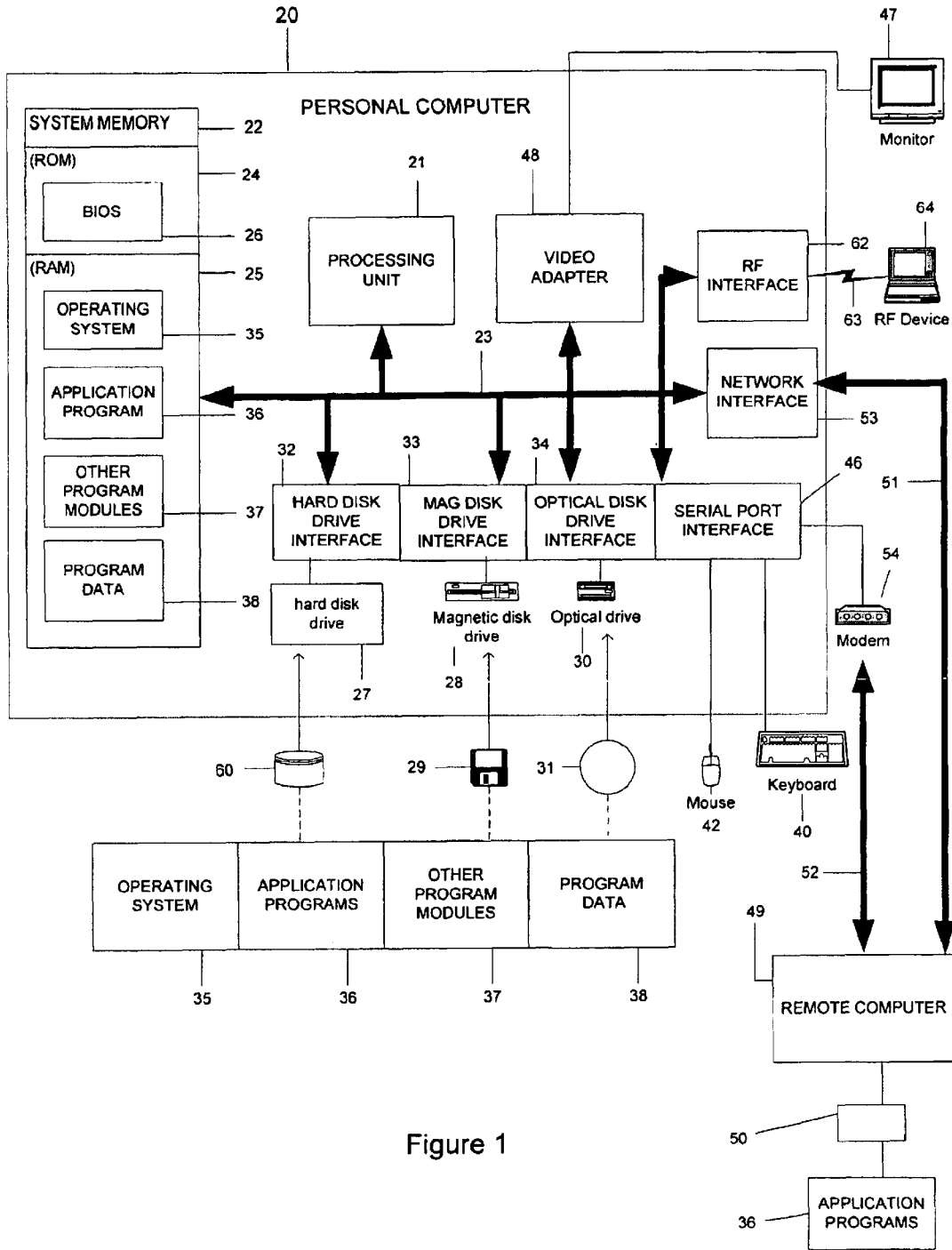


Figure 1

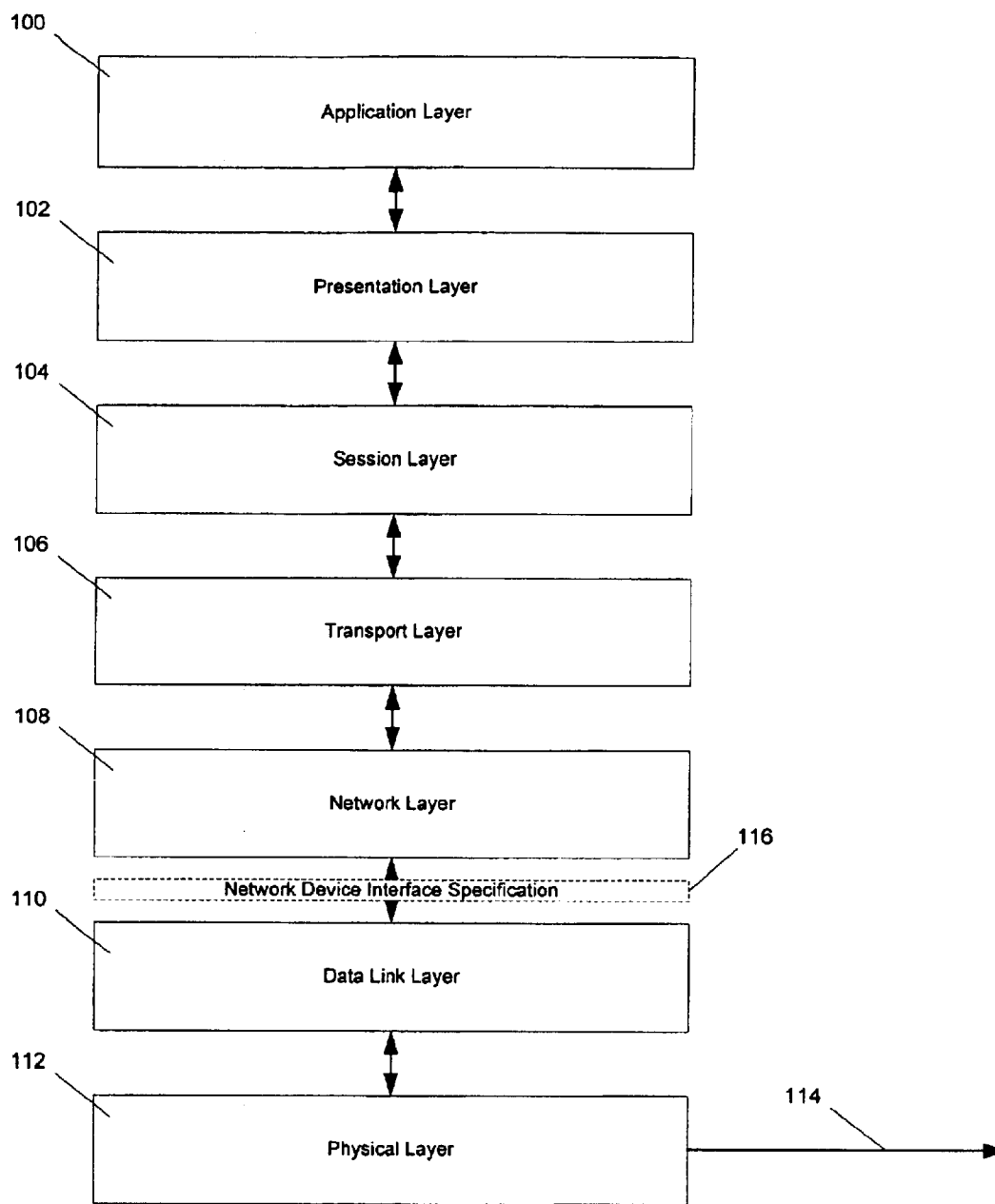


Figure 2

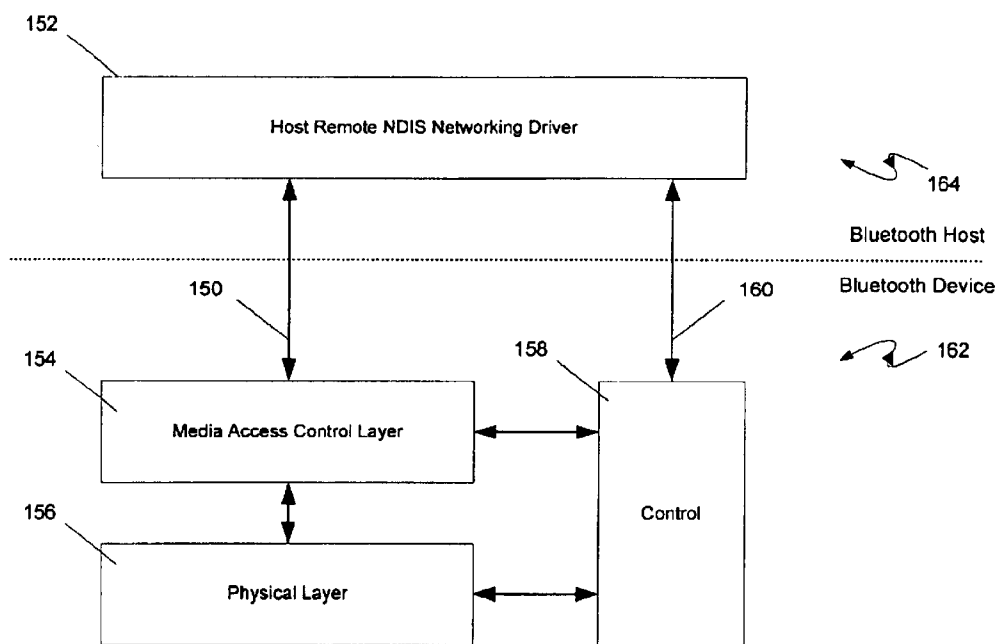


Figure 3

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