HomeRF Working Group

Shared Wireless Access Protocol [SWAP]

HomeRF and SWAP

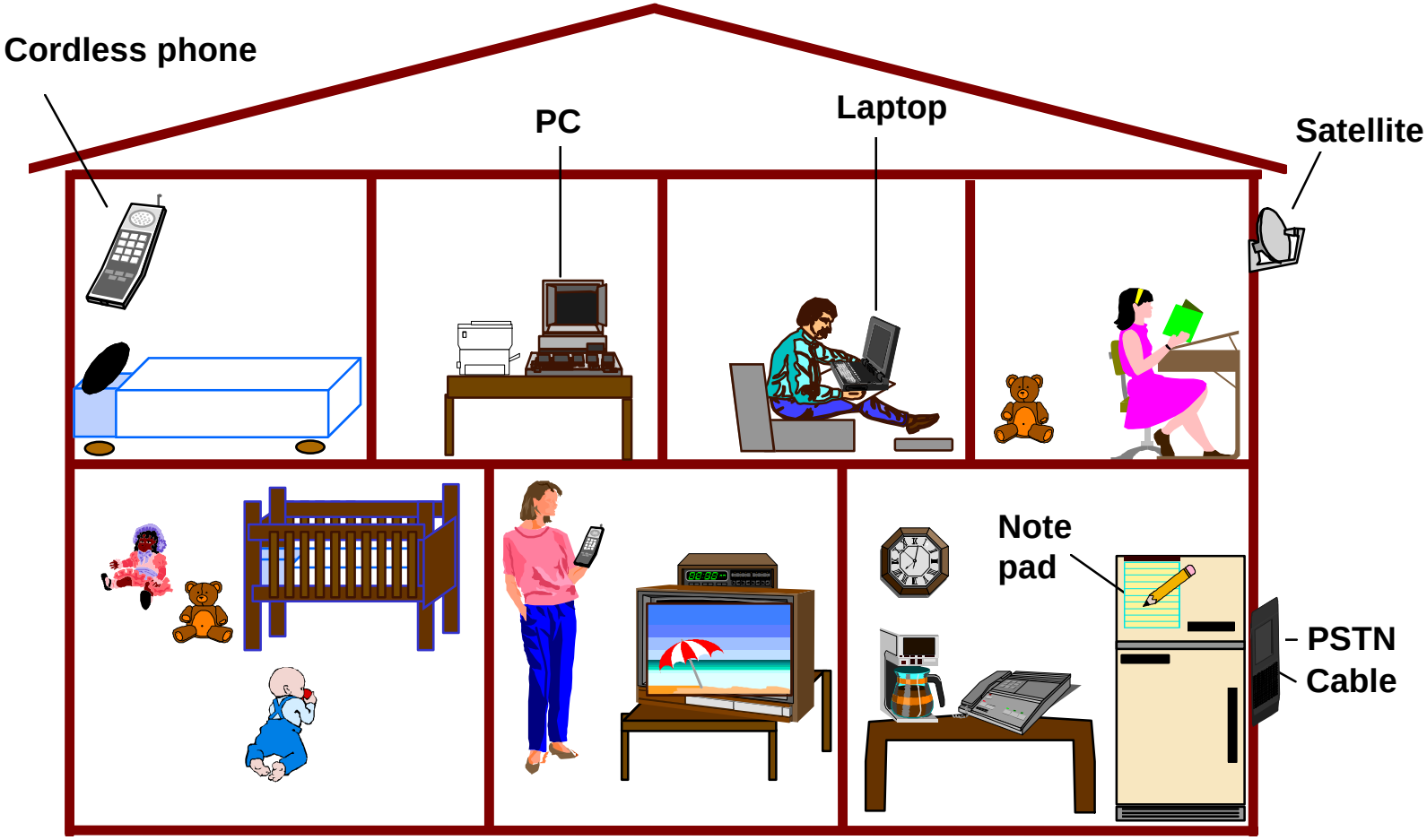
Enabling Interoperable Home Wireless Products

- Unprecedented broad cross industry support
- Universal specification for home wireless voice & data
- Extends reach of Home PCs and enables a new class of consumer products

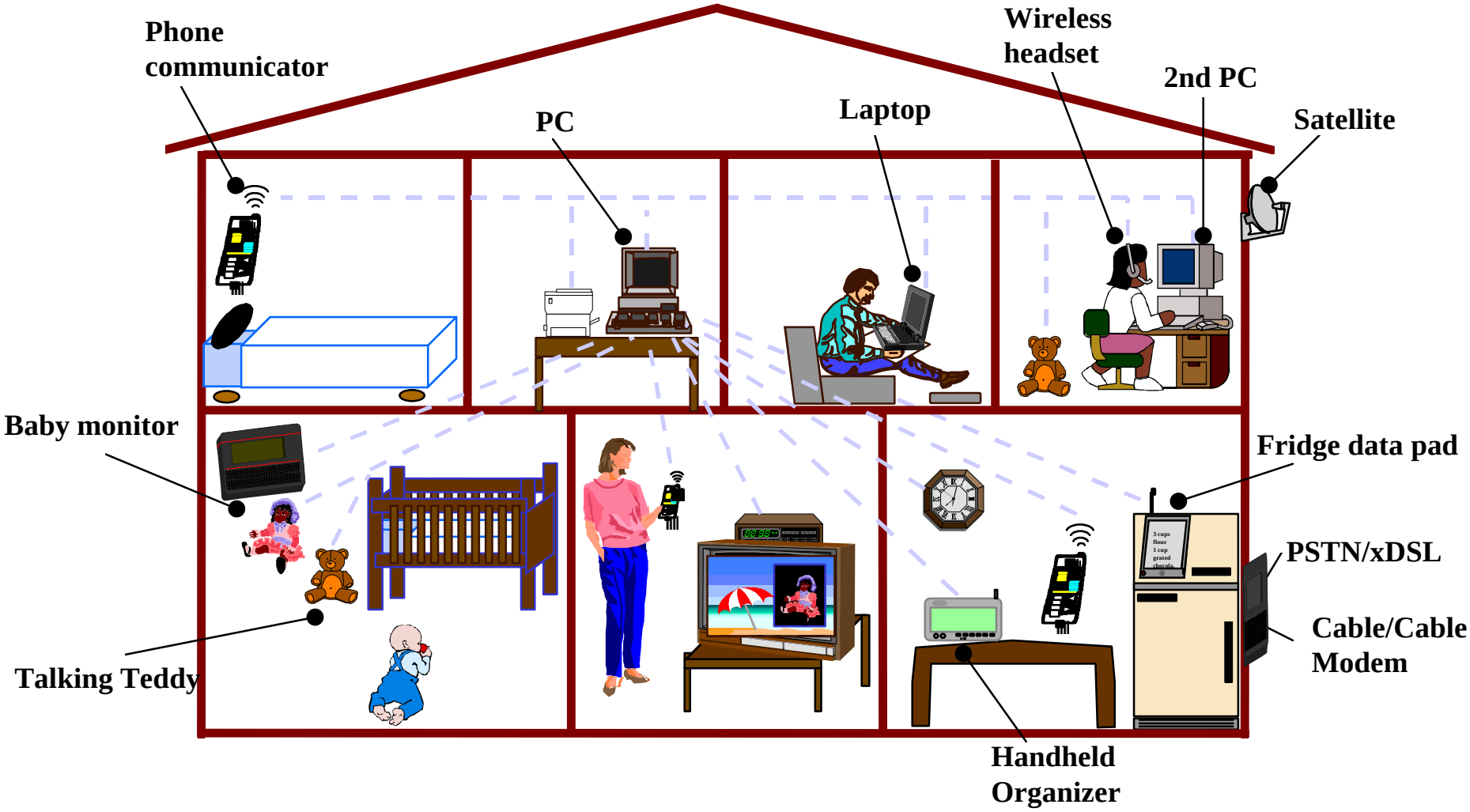
HRFWG Members

- Butterfly Communications
- Compaq Computer Corporation
- Ericsson Enterprise Networks
- Harris Semiconductor
- Hewlett-Packard Company
- IBM
- Intel
- Intellon
- LG Electronics
- Microsoft
- Motorola
- National Semiconductor
- Philips Consumer Communications L.P. (PCC)
- Proxim
- Rockwell Semiconductor Systems
- Samsung Electronics
- Symbionics
- WebGear Inc.

Today's Home Environment



HRFWG Vision



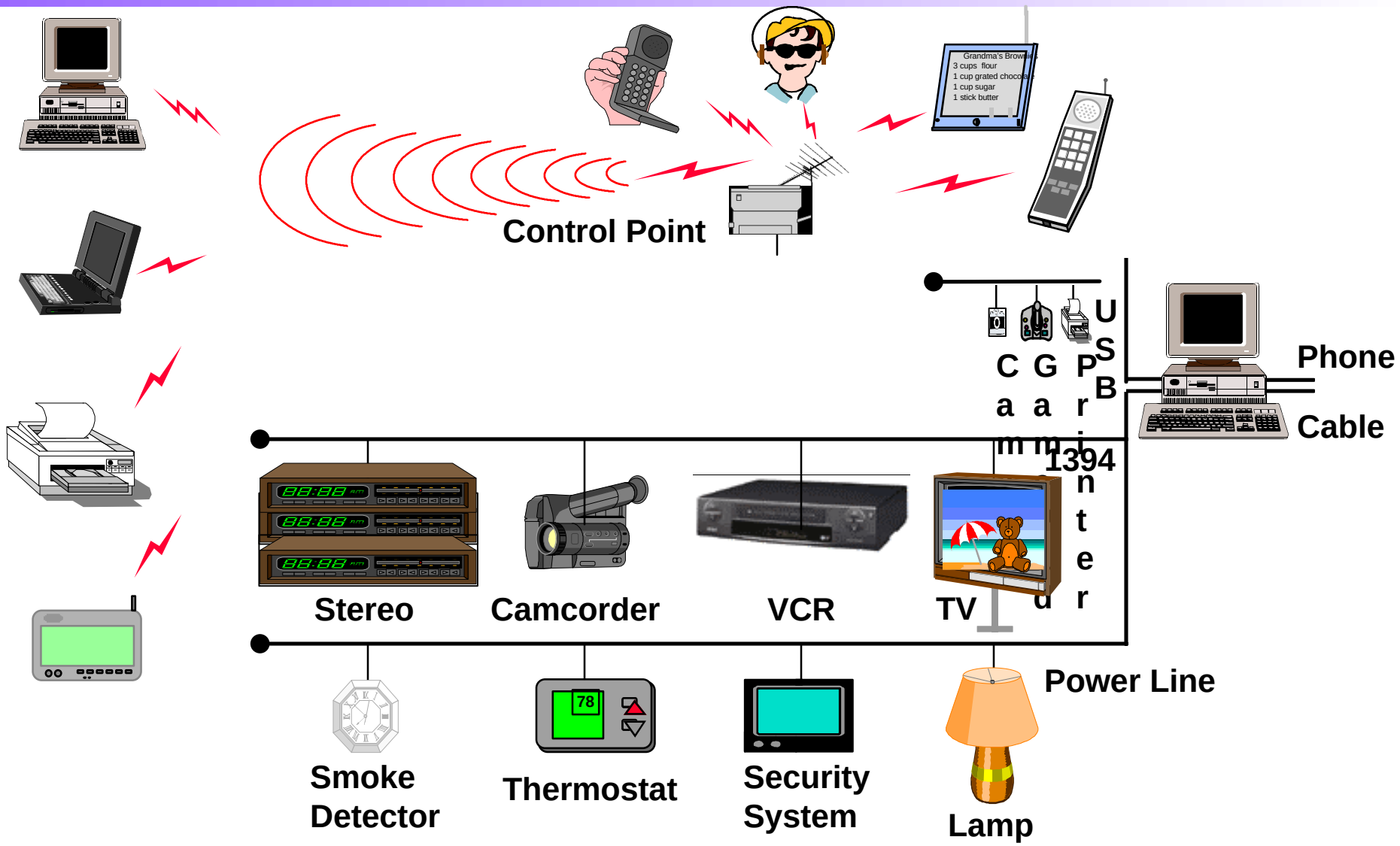
Requirements Tradeoffs

1) Availability
   - Early PC wireless products already available; multi-industry standards needed now.
2) Cost
   - Must be roughly equivalent to existing wireless products
   - PC association may command higher prices if perceived benefits and quality exist
3) Features
   - Easy to use
   - Safe to use
   - Unlicensed Band
   - Secure
   - Performance

Resulting Features & Capabilities

- Operates in the 2400 MHz band with 100 mW Transmit Power at 50 Hops/s
- Up to 6 Near-Wireline Quality Voice Connections (based on 32 Kb/s ADPCM and DECT Call Processing)
- 1 Mb/s and 2 Mb/s Modes as in IEEE 802.11 (supports >1.2 Mb/s data throughput)
- Paging Modes for Handheld Clients to Maximize Battery Life
- Specifically Designed to Perform Well in the Presence of Microwave Ovens
- Excellent Security Using Encryption Methods Employed in Digital Cellular Phones

System Architecture Overview



Technical Summary

- Hybrid TDMA/CSMA frame
  - If no connection point (CP), ad hoc CSMA
  - Base station required for DECT voice
- Beacon from connection point sets frame structure
- Frequency hopping, 50 hops/sec
- 2 or 4 FSK yields 1 or 2 Mb/s
- Also supports TCP/IP voice

Technical Summary - Voice

- DECT with re-transmission
- Uses DECT calling stack
- Uses DECT A/B fields
- 32kb/s ADPCM
- 20 ms frames - retransmit in beginning, outbound at end
- Up and down link packets interleaved

Technical Summary - Data

- Relaxed PHY specs from 802.11
  - Lowers radio cost significantly
  - Same hop sequences
    - Localized for France, Spain, Japan, US, EC
    - Different BW for Japan, France, Spain
- Same back-off, packet structure, and ad-hoc capabilities

Status

- MAC & PHY sections well underway
  - Initial demo of MAC+PHY by Symbionics
- PC software interface definition started
  - Initial Connection Point interface probably USB
  - NT 5.0 & Win 98 support in later releases
- Signing up Participants and early Adopters
- Product plans beginning now