Interaction with TV in 2003

SONY Distributed Systems Lab.

FOR MORE INFORMATION

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Sony Distributed Systems Lab (DSL)

Sony Corporation
- Sony Computer Entertainment
- So-Net
- TV
- Vaio
- Semi-c
- Broad-c

Japan

Sony Corporation of America
- Sony Computer Entertainment of America
- Sony Electronics
- USRL
- BGs
- Music
- Pictures
- DSL

US

Sony DSL

TV in 2003
DTV Trends

- broadcast content: AV ↔ AV+data
- channels: increasing
- receivers: standalone ↔ networked
- processing: upstream ↔ downstream
- viewing experience: passive ↔ interactive
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DTV Delivery Chain

DTV Production

AV Production (Broadcaster) → MPEG2 Encoder → Data Injector → Modulator → MPEG2 Transport Stream → DTV delivery (cable, satellite, terrestrial broadcast)

Data Acquisition → IP

elementary stream carrying application data

DTV Receiver

Tune → Demux → MPEG2 Decoder → App

DTV | STB | PC + DTV Card

Sony DSL

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Home Networking
IEEE 1394 – Present

1394-1995

- 100, 200, 400 Mbps
- 64 “isochronous” channels (guaranteed bandwidth, bounded jitter)
- True plug-and-play (network is self-configuring)
- Protocols for transport of MPEG2, DV etc.
- Available products: DV camcorders, DVD/MD/DVCR, PC cards, printers, disks...
- OSD, high-def pass-through from STB to DTV receiver (EIA-775)
IEEE 1394 – Future

P1394a
- Improved reset
- Power management
- Asynchronous streams

P1394b
- 800 Mbps, 1.6, 3.2 Gbps
- Bridging, plastic fiber
- Backwards compatible with 1394a

1394 over IR and RF

Digital copy-protection
HAVi (Home AV Interoperability)

- AV-oriented home networking architecture
- 8 founders:
  - Grundig, Hitachi, MEI, Philips, Sharp, Sony, Thomson, Toshiba
- currently ~40 members
- language/platform independent APIs
  - APIs for AV devices and services
  - Java bindings
- based on IEEE 1394 (aka Firewire, iLink)
- HAVi 1.0 available (www.havi.org)
HAVi System Components

- 1394 Manager
- Messaging System
- Event Manager
- Registry
- DCMs
- DCM Manager
- Stream Manager
- Resource Manager
- Level I UI Engine
- Java runtime – optional
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Virtual Studio: Upstream Composition
Virtual Studio: Downstream Composition

![Diagram of downstream composition process with nodes labeled 'mux', 'composite', 'render', and 'demux'.]
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Interactive Sports Services

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TV in 2003

Images courtesy of Hemera Technologies.