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Distributing, Transmitting, and Receiving System

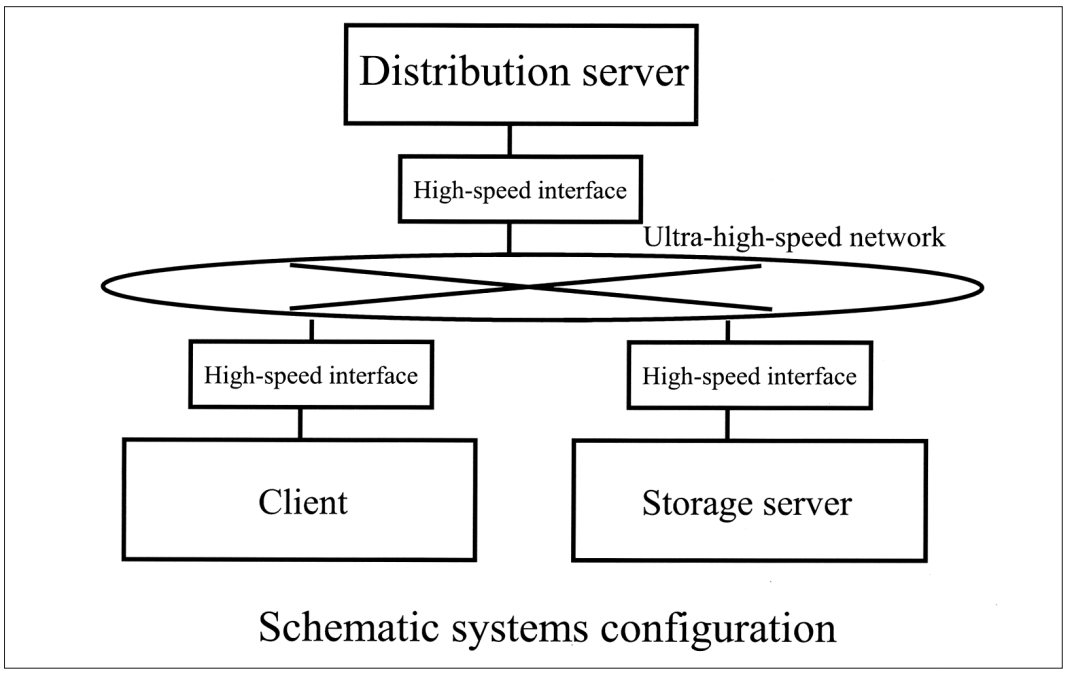
*Invented by:KATSUMOTO Michiaki, HARADA Masahiro**
**Tokyo Electron Limited*

External view of Ruff Systems

Outline of the technology

The use of the Internet has greatly expanded in recent years; however, bandwidth remains too narrow for high-speed transfer of massive amounts of data. As a result, the quality of video on the Internet is not high, due to the digital compression of its audio and image signals (via MPEG compression, for example). This invention allows for the transmission of high-quality video and audio data with no loss of synchronization over narrow Internet channels.

The transmitter generates live data in units consisting of non-compressed digital image data per screen and digital audio data per screen that has been divided into more than one frame. The receiver, in turn, restores the digital image data and multi-frame digital audio data per screen from this live data for



Schematic systems configuration

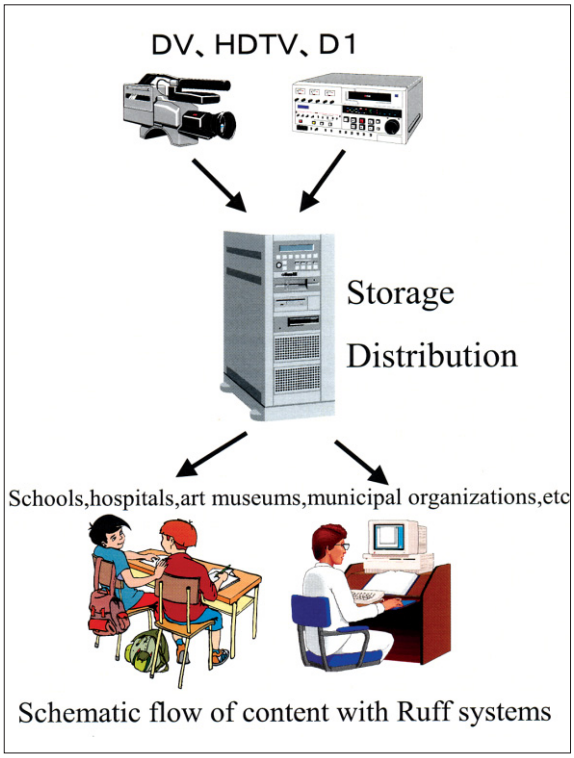
output. It thus becomes possible to transfer high-quality data for commercial use.

Commercialization

This technology, referred to as "Ruff Systems," has been jointly developed and marketed by CRL, its partner Tokyo Electron Limited, and NK-Exa Co. Ruff Systems can store and distribute broadcast-quality video and audio data. The technology will enable real-time video-on-demand, allowing distribution services to deliver data utilizing the next-generation broadband Internet. This technology concerning this product is still under development, and a PC version has recently been released that allows even today's PC users to access this service.

"Ruff Systems" will be used for the following purposes, in conjunction with a next-generation broadband network:

1. Data transmission/reception between professional-use content producers
2. Transmission of content by providers
3. Digital cinema and live sports broadcast
4. Distance education, international meetings
5. Distribution of digital content by art museums



Schematic flow of content with Ruff systems

This technology will enable the distribution and storage of professional-use video images and home-use digital video data through the future large-bandwidth Internet. In short, it will provide the necessary infrastructure for the flexible distribution of video and audio data via the Internet.

Demonstration site for Ruff Systems

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