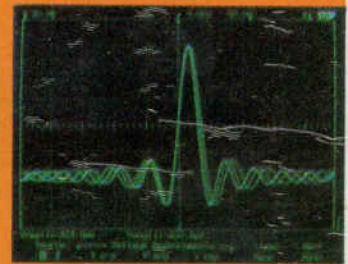
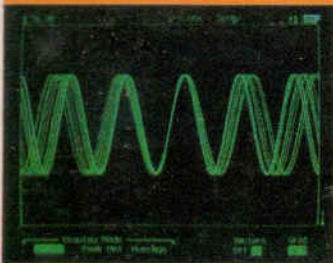


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MULTIMEDIA: APPLICATIONS & TECHNOLOGIES

■ S.K. Chaturvedi

Companies in formerly disparate industries such as Telecommunications, Consumer electronics, Computers and Entertainment are merging to develop and deploy an integrated service, 'The Multimedia Network'. Universal high performance transmission and switching technologies provide the basis for the world of Multimedia communications both in present day as well as in future. What are the basic services associated with multimedia? What scenarios for introducing multimedia capabilities are available to networks around the world? The author has sketched a roadmap to undertake the journey from now to the envisioned Multimedia-cyberspace of tomorrow in this article, describing the state of development and future options.

Author



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providing 100% automation with STD to all exchanges. Presently, he is engaged as Team Leader for OSP consultancy project from TCIL on turnkey basis for PTC, Zimbabwe at Harare.

Even though majority of the people on this planet do not have a personal or business telephone, it is striking that the overwhelming share of the Gross Global Product (GGP) is created in areas of the world where telephone density is highest. The fact is that a high quality and pervasive telecommunications network is part of a cause and effect chain reaction that helps create and sustain economic growth.

2. EVOLUTION OF MULTIMEDIA

In the past the Telecommunication services had initially begun as primitive capabilities such as direct distance dialling and evolved into a myriad of enhanced services such as global credit card calling, international conference calling, global video meetings, voice activated dialling etc to name a few. Plate 1 depicts the evolution of traditional services, such as broadcast TV or Telephony into full interactive multimedia services.

The impetus for this change stems mainly from,

- (i) public demand for information and entertainment and

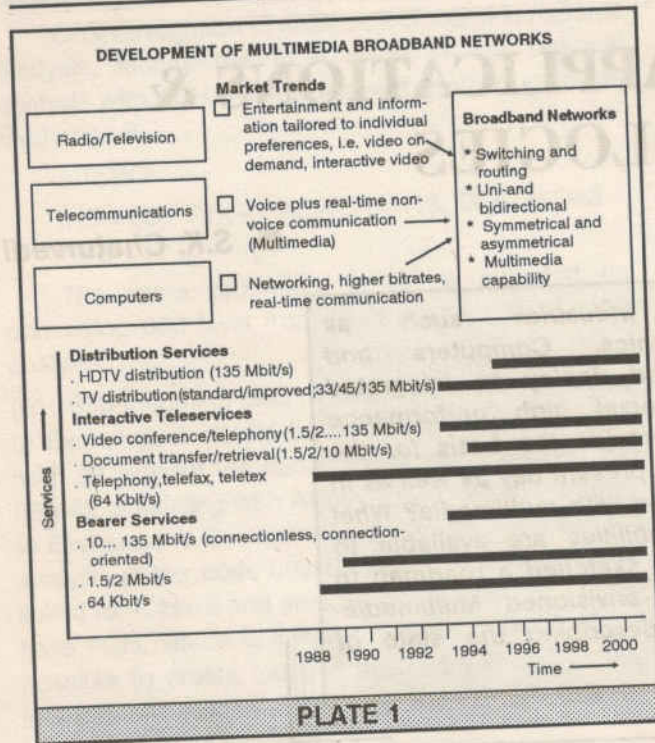


TABLE 1
CLASSIFICATION OF MULTIMEDIA SERVICES

Professional	Personal
<ul style="list-style-type: none"> * Customer switched video conferencing. * Distributed and simultaneous computer aided design. * Distributed video editing. * Remote retrieval or delivery of data files. * Video faxes. * Distributed medical conferencing with tomography images. * Cyberspace-three dimensional architectural design view. 	<ul style="list-style-type: none"> * Interactive home video (both broadcast and selected viewing). * Personal information services, such as news, data and messages * Transaction processing e.g. on-line banking, billing and shopping services.

(ii) the growing impact of latest technologies such as video compression (MPEG) or broad band switching and transmission systems (ATM).

3. MULTIMEDIA SERVICES

Multimedia services offer optimum flexibility in the way we respond to challenges and opportunities. For practical purposes they can be classified into two categories as grouped in Table 1.

4. MULTIMEDIA APPLICATIONS

Multimedia services can be broadly grouped into four categories as indicated in Table 2.

TABLE 2
SEGMENTATION OF MULTIMEDIA APPLICATIONS

Entertainment	Information	Transaction	Communication
<ul style="list-style-type: none"> • TV • PPV • APPV • Video/audio on demand • Video games 	<ul style="list-style-type: none"> • Information retrieval • Advertising • TV navigator • Distance training • Distance learning 	<ul style="list-style-type: none"> • Teleshopping • Financial applications • Special interest applications <ul style="list-style-type: none"> * travel * gambling * deliveries 	<ul style="list-style-type: none"> • Telephony and video telephony • Multimedia mail • Telecommuting

5. MULTIMEDIA INTRODUCTION SCENARIOS

There are atleast three introduction scenarios of interest for making multimedia services available to business and residential telecommunication customers as shown in Table 3.

These scenarios predict a strong, focused and progressive move towards a Global multimedia cyberspace that initially encompasses the business community and then extended to residential

**TABLE 3
SCENARIOS FOR MULTIMEDIA**

S.No.	Scenarios	Options/Implications
1.	Upgrading existing Narrowband network to variable bit rate Broadband network.	<ul style="list-style-type: none"> * Re-use maximum existing telecommunications equipment and investment. Elements under consideration range from copper wire to TMN systems. * Utilize fully digital and ATM based access technologies in comparison to Hybrid coaxial (HFC) if economically viable. * Upgrade gradually, starting with the customers able and willing to pay for those services, who will then pay back the infrastructure investment.
2.	Upgrading an existing Broadband network to variable bit rate, bidirectional Broadband network.	<ul style="list-style-type: none"> * Re-use as much of the existing equipment and investment as possible. * Build upon existing HFC, by adding digital carried services, including telephony. * Upgrade rapidly and broadly first to the existing customer base of residential households and gradually extend to business customers.
3.	Building a new variable bit rate Broadband network from ground base.	<ul style="list-style-type: none"> * Higher installation costs since no re-use is made of existing infrastructure. * More time is required to generate a substantial return on investment. * Advantage of rejuvenating networks with the most modern technology. * Very viable option for network operators who are deploying new networks in virgin territories.

customers in stages, via ISDN, CATV, but eventually reaching full digital broadband capability.

6. MULTIMEDIA STRATEGY

A complete multimedia strategy incorporates number of different technologies in order to accomplish a wide range of tasks.

A network infrastructure furnished with basic tools and applications must be created. The network then needs to be integrated, while maintenance equipment has to be introduced to provide extra support.

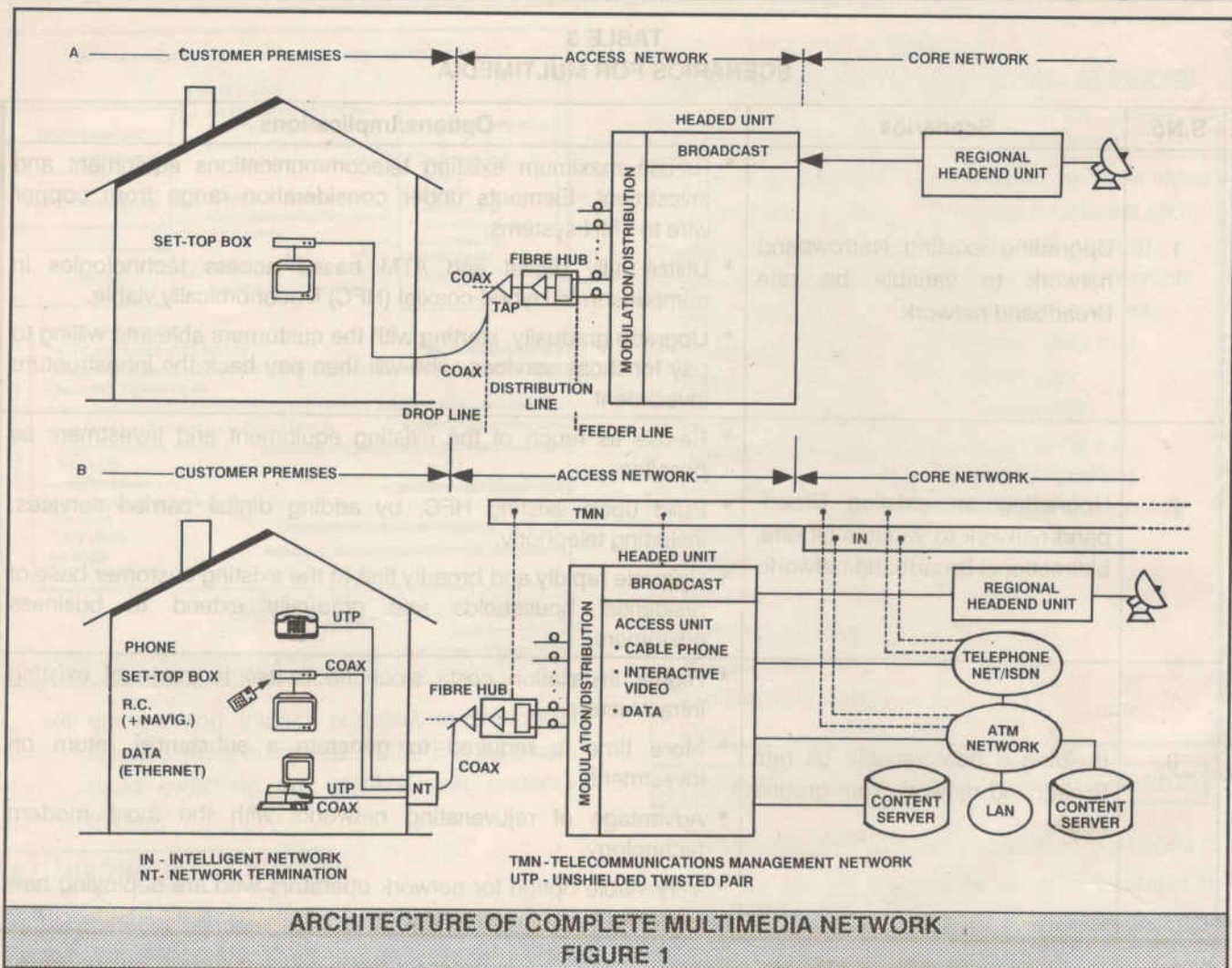
The architecture of a complete multimedia network is depicted in Figure 1.

In order for these new services to be successful, they must be user friendly and users must perceive real benefits and added convenience.

Excluding the applications and tools, the basic multimedia network infrastructure can be divided into five parts.

- (i) Customer Premises Equipment (CPE),
- (ii) The Access network,
- (iii) The Core network,
- (iv) The Transmission networks and
- (v) The Server side.

On the CPE different types of terminals can be used, while on the Access network the Hybrid Fibre coaxial and the Fibre in the loop are some of the architectures. The Core network consists of Narrow/Broadband switching and transmission systems.



Content servers are needed to store the digital information that is downloaded by the subscriber.

7. CONCLUSION

In the near future we will see major changes in the way we consume, receive and distribute entertainment and information in the form of video and multimedia.

But we should not forget that this process is evolutionary and not revolutionary.

However, network and service providers will probably need support from video advertising and subsidised telephone calls from business transactional services to support personal services which may not be so remunerative initially.

Instead of saying that man is the creature of circumstances, say that man is the architect of circumstances.

—Thomas Carlyle