Streaming Technology Combined With 3G Mobile Communication Systems

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ABSTRACT: By offering information transmission rates up to 384 Kbps for wide-region coverage and 2 Mbps for neighborhood coverage, 3G systems will have the option to give high quality streamed Internet content to the quickly developing mobile market. Notwithstanding higher data rates, these systems additionally will offer value added applications upheld by a hidden system that joins streaming services with a scope of novel mobile specific services, for example, geographical positioning, user profiling, and mobile payment. This and other versatile application situations present various difficulties, for example, how to give spectrum efficient streaming services over changed radio-access networks to various kinds of end-user terminals. Our standard-based Interactive Media platform addresses these difficulties by utilizing an engineering that fits flawlessly into 3G versatile communication systems. A basic some portion of this engineering is a streaming proxy, which follows up on both the service and transport levels. We as of late led a few field preliminaries, which illustrated that this platform is adaptable enough to manage diverse administrator prerequisites and that it can give excellent streaming services in a mobile application environment.

KEYWORDS: 3G Mobile Communication Systems, CDMA, GSM, Mobile Market, Streaming Technology.

INTRODUCTION

Worldwide Mobile Telecommunications-2000 (IMT-2000) and the Universal Mobile Telecommunications System (UMTS) [1] will be among the first 3G versatile communication systems to offer remote wideband sight and sound services utilizing the Internet protocol. Two significant mechanical changes will encourage this headway. The primary change is a move from second-age radio-get to innovations for example, the worldwide system for versatile (GSM) communication, cdma One (an IS-95 code division numerous entrance standard), and individual computerized cell (PDC) toward increasingly modern systems with higher information move rates, for example, the upgraded information GSM condition (EDGE), wideband CDMA (WCDMA), and cdma2000.

The second significant innovation move is from a vertically coordinated to an on a level plane layered help condition. An on a level plane layered 3G service arrange consistently coordinates Web protocol transport into a mobile help condition with an assortment of access systems, opening up numerous new open doors for IP-based versatile applications [2]. For instance, versatile terminals will have the option to get to existing Internet content through protocols and markup dialects, for example, WAP and WML that are upgraded for remote application situations. The 3G systems will likewise give access to help services for example, verification, security, and charging systems just as mobile explicit services, for example, portability the executives and area-based processing.

MOBILE STREAMING CHALLENGES

The boundless usage of versatile streaming services faces two significant difficulties: get to organize what's more, terminal heterogeneity, and content insurance.

Heterogeneity:

Herein, we have approached an assortment of mobile terminals with a wide scope of show sizes and capacities. Furthermore, extraordinary radio-get to systems will make different most extreme access interface speeds accessible. Due to the physical qualities of cell radio systems, the quality and, along these

lines, the information pace of a continuous association will likewise fluctuate, adding to the heterogeneity issue. One approach to deliver heterogeneity is to utilize properly planned ability trade instruments that empower the terminal and media server to arrange mobile terminal and versatile system capacities and user inclinations.

This methodology allows the server to server mixed media information adjusted to the user's mobile terminal what's more, the system. For instance, a user getting to a particular service by means of a WCDMA [3] system could get the content conveyed at a higher piece rate than somebody utilizing a general parcel radio assistance or GSM [4] arrange. Additionally, when an individual utilizing a mobile mixed media terminal with an inherent low-quality speaker connects a high-devotion earphone, a unique capacity trade happens, updating the transmission to a great sound stream for the rest of the meeting.

Content Protection:

At the application level, controlling what users can do with content is a significant test. The least complex type of content assurance is just refusing the capacity of got content. Content assurance is part of a lot more extensive computerized rights the board (DRM) idea, which utilizes methods, for example, encryption and contingent access dependent on utilization rules to ensure and oversee access to mixed media information. Content suppliers are hesitant to convey premium content over advanced systems without DRM components set up to forestall far reaching illicit replicating of significant sight and sound content, for example, music and films.

Streaming Standardization:

A few association and industry bunches including the Internet Streaming Media Alliance (ISMA; http://www.isma.tv) and the Wireless Multimedia Discussion (WMF; http://www.wmmforum.com) have perceived the requirement for institutionalization of streaming services. Mobile streaming services specifically require a normal institutionalized organization since it is impossible that mobile terminals will have the option to help all restrictive Web streaming positions soon.

Utilizing institutionalized parts, for example, interactive media protocol stacks and codecs—video and sound pressure/ decompression programming—in end-user gear will help decrease terminal expenses. Besides, planning and giving content in one institutionalized design is less tedious and costly than setting up content for a few exclusive streaming arrangements independently. The Third-Generation Partnership Project (3GPP; http://www.3gpp.org) is right now tending to mobile streaming institutionalization. 3GPP respects streaming benefits as a significant structure square of future 3G mixed media applications. Notwithstanding mobile streaming institutionalization, 3GPP likewise addresses different applications for example, videoconferencing and services for creating and accepting mixed media messages [5], [6].

Media informing services can incorporate content, pictures, sound, short video clasps, or video-stream URLs. The 3GPP versatile streaming standard is as of now the most full-grown institutionalization movement right now, and all significant versatile media transmission gear suppliers bolster it. 3GPP is the most reasonable association for versatile streaming institutionalization in light of the fact that it covers all parts of a versatile communication system, counting system foundation, 3G terminals, furthermore, 3G services. 3GPP2 (http://www.3gpp2.org), 3GPP's sister association, will probably institutionalize very comparative if not completely good arrangements. Figure 1 shows the illustration of 3GPP protocols with their applications.

Video Audio Speech	Scene description Presentation description Still images Bitmap graphics Vector graphics Text	Presentation description	
Payload formats Real-time transfer protocol	Hypertext transfer protocol	Real-time streaming protocol	
User datagram protocol	Transmission control protocol		User datagram protocol
Internet protocol			

Fig.1: Illustration of 3GPP Protocols with Their Applications

Mobile bundle exchanged streaming service, regularly alluded to as the 3G-PSS standard [7], [8]. This service coordinates all the while playing video, sound, pictures, and designed content into mobile sight and sound applications. The protocols and terminals for streaming applications are less mind boggling than for conversational services, which require media input gadgets and encoders. The 3GPP standard determines the two protocols and codecs. The protocols and their applications, delineated in Figure 1, are:

• Real-time streaming protocol (RTSP) and session description protocol (SDP) for meeting arrangement and control,

• Synchronized Multimedia Integration Language (SMIL) for meeting format depiction,

• hypertext transfer protocol (HTTP) [9] and transmission control protocol (TCP) [9] for shipping static media, for example, meeting designs, pictures, and content, and

• Real-time transfer protocol (RTP) for moving ongoing media, for example, video, discourse, and sound.
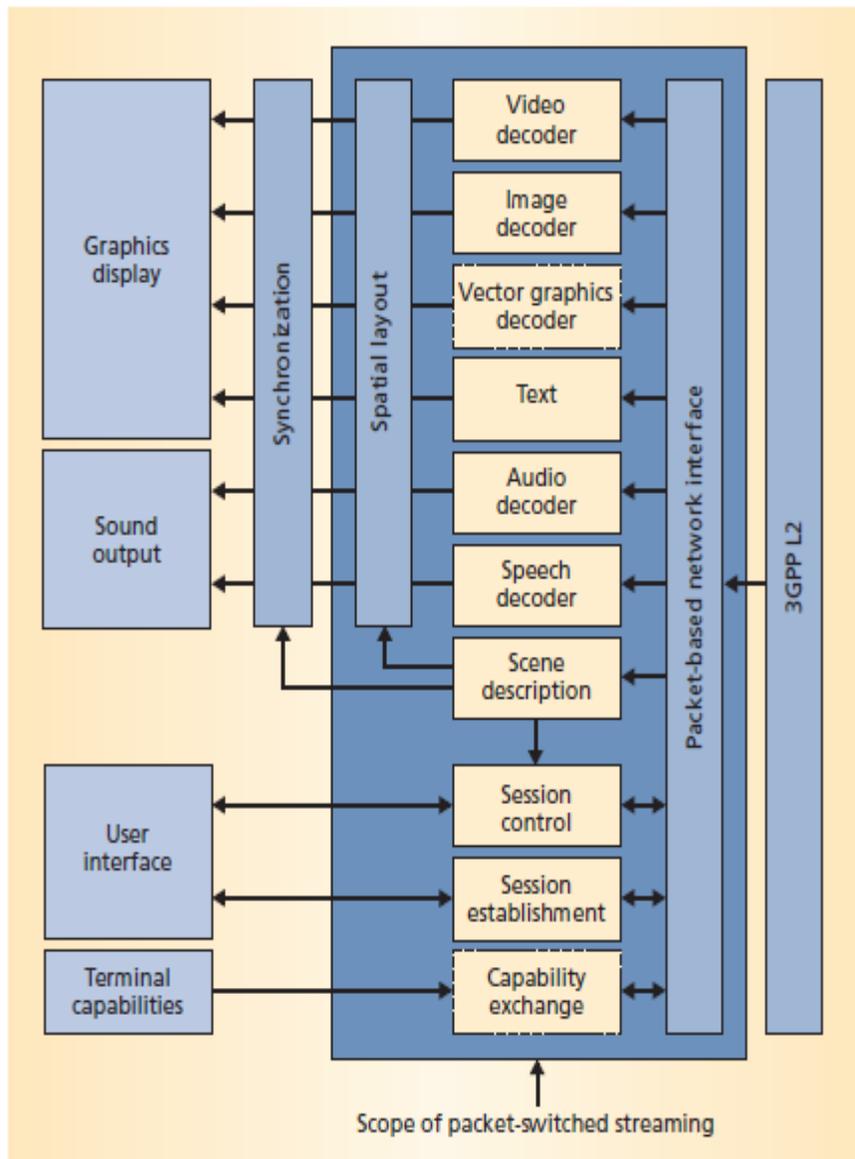
Fig.2: An Overview of Streaming Users of 3GPP

To empower interoperability between content servers, particularly while interworking with MMS, the standard indicates utilizing MPEG-4 [10] as a discretionary document group for putting away media on the server. The institutionalization process chosen individual codecs based on both pressure proficiency and multifaceted nature. At the point when joined utilizing the SMIL introduction depiction language, the codecs empower rich sight and sound introductions also, applications, including video, sound, slideshows, also, multi-language subtitling. Figure 2 shows the overview of streaming users of 3GPP.

Figure 2 shows the coherent parts and information stream in a square outline of a 3GPP mobile streaming terminal, including the individual codecs and introduction control. The 3GPP system transmits the information what's more, passes it to the application from L2, the lower 3GPP connection layer.
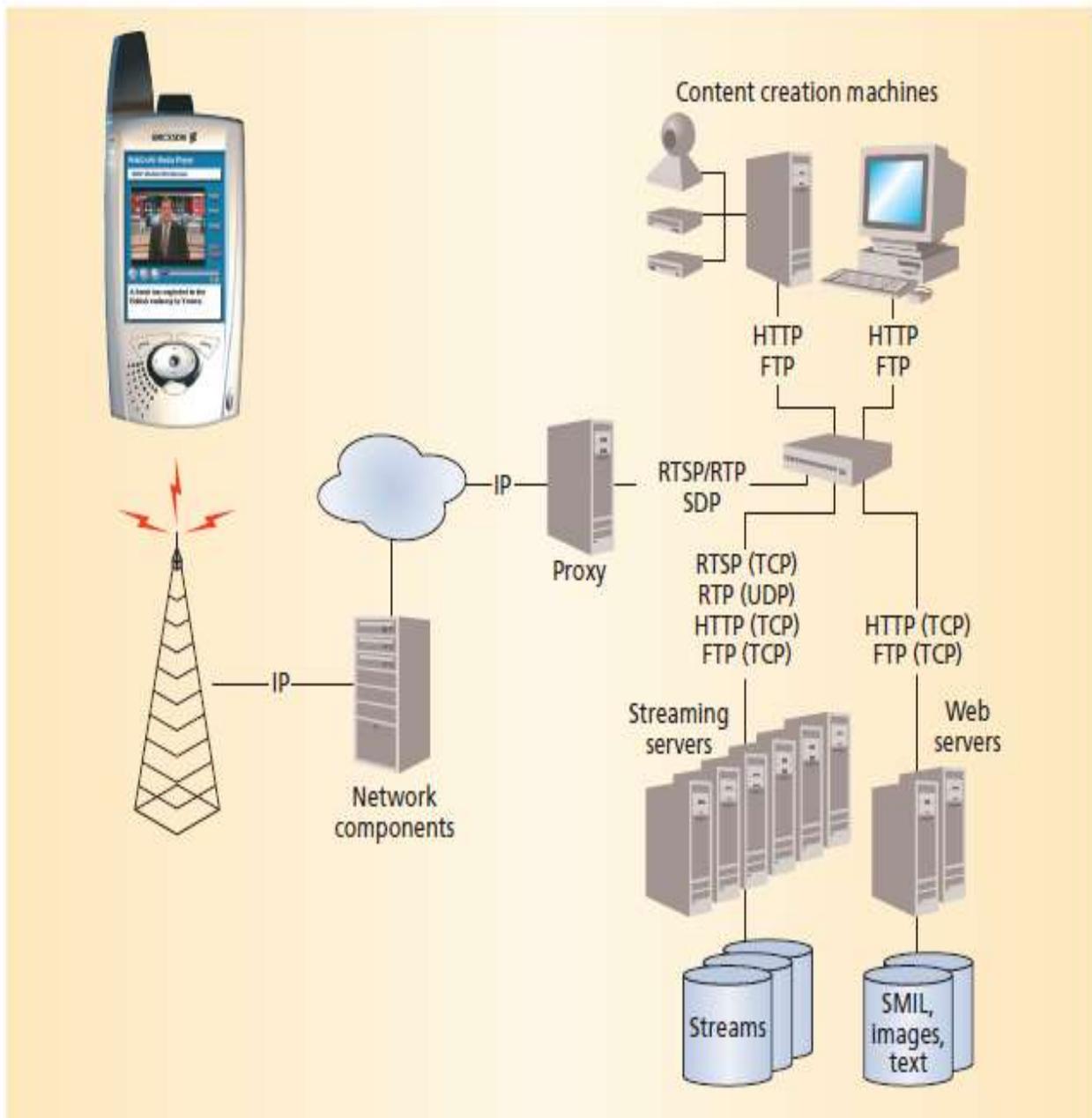
Fig.3: A HTTP Driven Interactive Media Platform

The application demultiplexes the information and circulates it to the comparing video and sound decoders. The 3GPP streaming standard offers the chance of making introductions in which a few media components for example, video, sound, pictures, and designed content play simultaneously. SMIL, a XML-based introduction language created by the World Wide Web Consortium (http://www.w3c.org), is the "stick" that joins these various components to make an intuitive sight and sound introduction. SMIL is HTML with extra thoughts of time and transient conduct. Along these lines, it can depict a media screen and control the arrangement of media components in reality. Figure 3 shows the HTPP Driven interactive medic platform.

The 3GPP streaming customer deciphers the SMIL scene depiction and utilizations it to control the spatial design what's more, synchronization in the mixed media introduction. The 3GPP standard explicitly utilizes the SMIL 2.0 Fundamental Language Profile just as the Event Timing, Meta Information, and Media Clipping modules. The extra modules include usefulness, for example, changes in the introduction plan dependent on user collaboration (Event Timing), sending metainformation about the sight and sound information (Meta Information), and rendering just pieces of a transmitted media stream (Media- Cutting). Also, a 3GPP streaming customer ought to bolster the Prefetch Control module, which lets the content maker incorporate insights about when to begin a media stream.

Moreover, an Interactive Media system is illustrated in Figure 3 that serves as a software platform for mobile-streaming applications.

Content Creation Machines:

The content creation machines have the applications required for making both live and disconnected content. They are utilized to get ready streaming content, for instance, to alter recordings and pictures and encode them in the suitable configurations for mobile streaming. Also, these machines make the SMIL documents, which are a sort of storybook for the intelligent introduction. They transfer the content to the streaming servers—for dynamic content—and to the Web servers, which hold the static content and the SMIL documents.

CONCLUSION

To exhibit the Interactive Media platform's capacities in a system application, we created demonstrators for GPRS and reenacted UMTS systems. The main demonstrator was an amusement application utilizing a GPRS organize that permits mobile users to see films on request. We utilized Bluetooth to interface a Pocket PC to an Ericsson R520 cell telephone associated with the Internet by means of GPRS. Despite the fact that data transmission was constrained to 14.4 Kbps, video and sound quality were both acceptable.

Another application utilized an UMTS recreating condition in which handheld gadgets were associated utilizing a WLAN connected to streaming intermediary by means of an ISDN uplink, which streamed video at 44 Kbps and synchronized sound at 5.3 Kbps. In a film ticketing application, the handheld gadget can show brief portrayals of the film's plot and significant characters, what's more, the user can see chosen scenes from the film. Different applications that give improved data incorporate a cutting-edge climate channel, a games channel, and an ad channel.

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