



**GREY MATTER INDIA TECHNOLOGIES  
PRIVATE LIMITED**

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**CASE STUDY**

**STREAMING MULTIMEDIA CONTENT  
DISTRIBUTION NETWORK FOR MOBILE  
DEVICES**

## CLIENT REQUIREMENT

The client requirement was a module that would be an interactive streaming multimedia application capable of audio and video content distribution over various networks. Addition of tags to a video file and viewing the video along with any tags associated with the video will also be included in the application and the uploaded videos would be tagged either at the client end or at the server end. The system would be equipped with a communication medium between the client devices and central server for the application will be WLAN, GPRS networks and users would have the option to download the tags and save the tags locally.

## CHALLENGES

- Development of an interactive streaming multimedia application allow users to add tags to a video file and view the video along with any tags associated with the video.
- Incorporation of the module with a system that works as a web server and is capable of delivering location based proximity content distribution services within a certain range.
- Providing users the functionality to view the tags while the video is being played or when the video has finished playing.
- Providing users with the ability to download tags and save locally.
- Enabling the system to use WLAN, GPRS networks for communication.

## TECHNOLOGIES USED

### Web Server Environment

Operating System	Windows 2003 Server
Language	VC++ 6.0, Microsoft Platform SDK
Database	MS-SQL

### Bluetooth Stack (BT Node)

Operating System	Windows XP
Language	VC++ 6.0, Microsoft Platform SDK

### Windows Desktop Client Environment

Operating System	Windows 2000 Server
Language	VC++ 6.0, Microsoft Platform SDK

## Mobile Devices Environment

Operating System	Windows Mobile 2003 Phone Edition, Windows Mobile 5.0, Symbian Series 60 (before third edition)
Language	For Symbian: Carbide, .Net, Codewarrior. For WinCE: Visual Studio 2005, Win32 SDK, PocketPC 2003 SDK, PocketPC 5.0 SDK, Smartphone 2003 SDK, Smartphone 5.0 SDK.
Database	Symbian: XML, Symbian native database. WinCE: XML, EDB

## MANPOWER

Project Leader	1
Developers	7
Designers	2
Quality Assurance Testers	2

## PLANNING

The following development areas were charted out depending upon the consideration of the functionality of the server:

- HTTP protocol for communication with the Web browser was used in the web server.
- WLAN, GPRS networks use by server for connection management.
- Development of video editing (tagging) and viewing tool for the user.

## ARCHITECTURE

The core component of the streaming multimedia system was identified as the web server which would make the configuration and monitoring of the entire system possible. The web server would also allow for centralized monitoring of the security and keep track of mobile & PDA users to display location-based content that was made available either through WLAN, GPRS networks. The web and central servers were designed to run on Windows and the web server functioned on static IP address. GPRS and WLAN could be availed by users for direct connection to web server an the security for the same was ensured through the designing of web pages to handle communications by interacting with the database via the implementation of .Net pages. SMSs and MMSs are composed and sent to the respective gate way to ensure effective performance.

## DEVELOPMENT HIGHLIGHTS

The developed system facilitated video uploading and downloading for users besides providing extensive features for creating tags for video uploads. The tags could be created in image, video and text format and are user-dependant. A

tagging process was implemented such that tags could be edited while the video was being played (real-time) or after the video was done playing (differed-time), effectively allowing greater freedom for users. Systematic indexing of videos and allowance for user-defined category preferences were implemented through the incorporation of various video categories within the system. The video uploads on the system could be edited by the users after proper validation. Different video formats compatible with various mobile phones as well as the PC were created using the indigenous creation of a superior video conversion engine. Seamless playback of videos by dividing video files into smaller clips depending on their size is also ensured by the system besides offering the usual cross-platform usability. An illusion of break-free and continuous video play was created by eth facility of easily streaming clips in succession while additional clips were being downloaded through the backend process. The system was developed and fully functional within a span of 4 months.

### **CLIENT FEEDBACK**

"...GMI is a fantastic company to work with. Easy communication with technical management, experienced programmers and creative designers all met my expectations and delivered the application successfully. We will continue to work with GMI as partners for a long time..."