



**GREY MATTER INDIA TECHNOLOGIES
PRIVATE LIMITED**

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CASE STUDY

**LOCATION-BASED AD CONTENT
DISTRIBUTION NETWORK FOR MOBILE
DEVICES**

CLIENT REQUIREMENT

The client needed an end-to-end, location based, proximity content distribution server for advertising purposes running on the Windows platform and utilizing both the Bluetooth and GPRS wireless technology for communication. The system would be capable of interacting with wireless devices within the proximity defined by the range, forming a personal local area network (in case of Bluetooth) and making data accessible to any wireless device having the downloadable wireless client installed. This product would enable mobile users to access the Bluetooth/GPRS wireless network located at specific and certified locations and benefit from various value-added services localized information. The target segment for this system would be shopping centers and other such customer-centric services based on their location & proximity to retail outlets and would serve marketing purposes, business advertisements and infotainment services.

CHALLENGES

- Development of a system that would work as a web server and would be capable of delivering location based proximity content distribution services within a defined range.
- The incorporation and assimilation of Bluetooth & GPRS wireless technology for communication.
- Development of a Personal Area Network through the system and making data available and accessible to any wireless enabled devices equipped with the downloadable wireless client.
- Development of a dependable framework capable of supporting an array of value-added services & localized information made available to customers over the network.
- Ensuring safe and secure transfer of data.
- Incorporation of a wide variety of advertising like photo, video, pod cast, blog advertising and search advertising.

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, Win 32 SDK PocketPC 2003 SDK, PocketPC 5.0 SDK, Smartphone 2003 SDK, Smartphone 5.0 SDK
Database	Symbian: XML, Symbian native database WinCE: XML

MANPOWER

Project Leader	1
Developers	5
Designers	2
Quality Assurance Testers	2

PLANNING

With due consideration to the functionality of the server, development areas were charted out to be elaborated upon:

Communication with the web browser was established by the web server using HTTP protocol

The Mobile clients would use Bluetooth stack (BTNode) for accessing mobile devices (in case of Bluetooth) or Packet based UDP/IP in case of GPRS.

The Windows client would use internet protocol (TCP/IP) for the web server-windows desktop client communication or Bluetooth stack (BTNode) if the PC is Bluetooth-enabled.

Integrated third party SMS and MMS gateway would support SMS and MMS ads.

ARCHITECTURE

The web server acts as the core component of the system to ensure the provision of quality location-based advertising services and allowed the configuration and monitoring of the entire system. Centralized monitoring of the security would be made possible via the web server which is made available on windows platform, equipped with a number of BT nodes. Data from mobile terminals could be routed via the BT Nodes to the Web server where it can be accessed from third party applications. The display of personalized and location-based content and advertisements when users access the client services through mobile & PDA based Bluetooth or GPRS was enabled through the specially designed server. Packet based UDP/IP would be used incase of GPRS or Bluetooth stack (BTNode) for accessing mobile devices. The web server would interact with the database using .Net pages and the system was designed with third party SMS and MMS gateways to support SMS and MMS ads. No direct connection to the web server would be established with the server composing SMS or MMS and send it to the respective gateway to ensure effective performance.

DEVELOPMENT HIGHLIGHTS

The designed system provided a comprehensive solution for exhaustive end-to-end location based advertising and large-scale marketing activities by making content available for users through Bluetooth or GPRS. The system possess the capability to provide its users with numerous options for composing SMS and MMS ads which they could utilize as mass broadcasts and campaigns. A system of sending reply-enabled alerts was incorporated within the system which could be used to conduct polls and gain valuable user preferences, statistics and other user-related information. The site was developed and fully functional within a span of 6 months.

CLIENT FEEDBACK

"GMI was a very satisfying provider to work with. Performance was excellent and above expectations. They are very professional in their approach and are sure about their requirements. They are quick to respond with our requirements and

specs. They are open to reason and appreciative. We are looking forwards to work with them soon."