Chapter – 5

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This Research includes both methodology and Prototype - Web Based Service Oriented Architecture for Mobile Augmented Reality System. Use a Mobile/PDA’s as a Mobile Augmented Reality Device is the key solution because of its size, mobility, network standards, mounted with camera, and freely use at anywhere. Important part is the architecture of software that is used in a Mobile/PDA’s Device to solve the problem facing at the time of using. Following essential research problems need to be addressed to solve this problem.

- Develop the kind of architecture that is loosely coupled and reusable targeted the range of mobile devices with their limitation also the using the developed application, the end user can add his own component and published it to the public without need for installation or any change. The architecture will span over three component mainly are server – major role in this architecture, middle level and client having minimum load.

- Research overcome the major problems of mobile augmented reality system, mobile device operating system and memory problem, proposed a kind of architecture so to use them without or minimum
installation having different range of mobile devices. That’s the big challenge for any architecture.

- In augmentation the data should be changed at various level as per the service provider so the range of data are stored is a big challenge also the data in augmentation is required in time for processing. So we can’t store data at client device because of the various level of data with secure manner. Cloud are the best solution for storing, faster retrieving and in secure manner. So the server will handle these using middle level services for accessing the data from cloud or any rdbms.

- Architecture should be portable, scalable and smoothly run on client device e.g. mobile or laptop or also a desktop. So the challenge for the architecture is the level of performance are same in all kind of device.

- Proposed architecture is web based so to access it using the web or internet are the key features, and also the handle many users at the same time with security issues, registration for using this, authorization, authentication are needs to be deal with the architecture.

Prototype Implemented Using Algorithm design for any area of Mobile Augmented Reality System. Algorithm Basically Divided in three Parts, 1) Client Device 2) Middle Level 3) Server Level.
All Three parts have its Own Mechanism to work with Mobile Augmented Reality System and every parts have its owns Roles & Responsibility to send Data from Client to Server and Getting Augmented Data Back to Client Device.

5.1 Implementation with Mobile Apps

Implementation Part demonstrate how whole architecture should work Tools for the developing application same are Phonegap, Wikitude, Jquery for Mobile and design sample Navigation Application that works on more than two platforms e.g Android, iPhone.
Navigation Apps show user current location with latitude/longitude
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Apps show the path between two locations as per latitude/longitude pass as parameter and calculate the distance between two location.

5.2 Browser based Implementation

New Application will using the tool of JSARToolkit, HTML5, X3DOM and supported browser. The screen shot are as here, showing some 3D objects rendering on screen without tracker and another is tracker based rendering. All apps will directly accessible by web browser. Here I have
used Firefox for mobile which supported webGL for run this application. Also the mobile support 3D rendering graphics library support and having accelerometer, gps and compass sensors so using single mobile device.

Figure 1 show the object will render in mobile screen using xdom parameter pass, and it’s run smoothly using url resided at server and call
it from mobile browser to render the graphics in 3D. This apps are the example of non-tracker based application

Hello, Jatin Shah - Mobile Augmente

This is my my page with 3d objects.
This is my my page with 3d objects.

Fig. 2

Fig. 3
This is my my page with 3d objects.

Fig. 4
Fig. 5
Fig. 6
Fig. 7

Fig. 5, 6 and 7 shows the Tracker based Mobile Augmented Reality System. The Tracker will open at Laptop and when device run the apps
from mobile device using browser, the camera will automatically starts using HTML5 and when the camera from mobile captures the tracker the augmented data render on the screen.