This is the top-level methodology diagram also known as architecture diagram. This is the manifestation of how overall system will work and how module connectivity and communication is done. The system has total 3 modules named as marker hardware, controller application and LMS. Every classroom will have marker hardware and a desktop PC on which controller application will be executed.

Now I am going to elaborate the marker hardware specifically. First of all, instructor clicks the start button and the lecture recording will be started. Instructor delivers the whole lecture. Orientation, position and audio data is being transferred and received through radio frequency wireless module. Camera 1 and Camera 2 collectively determine the relative position of the marker ball. Orientation when combined with the relative position, gives the absolute position of marker tip. After the lecture is over, instructor clicks the stop button on controller application.

Lecture file and audio file is generated and uploaded to central database server through which it is accessible to webgl player embedded in LMS.

Third module is LMS. Using LMS, Instructor can Add or Edit Student Assignments, Course material and details, Announcements and details about institute. It implements the modern authentication protocols for login and registration. Lecture can be played on offline player and online as well. It can be played on a smartphone, laptop or desktop.

This is the result of comparison of two separate images, one from board and other from controller application. Accuracy is about 95%. To raise it further, the marker hardware needs much more precise pressure sensor that costs much larger than we are currently using.

We will develop the webgl player from which lecture animations will be able to be played directly on LMS website player. We will integrate audio module with the controller application so that voice will be recorded wirelessly as well. We will us computer vision and artificial intelligence algorithms that will eliminate the need of marker hardware and an ordinary marker will work for this system. We will make our system more flexible to work on any board dimensions. We will implement the module for automatic annotations and notes generation for students.

That is all for the presentation. We would like to thank you. If you have any question then you can ask.