

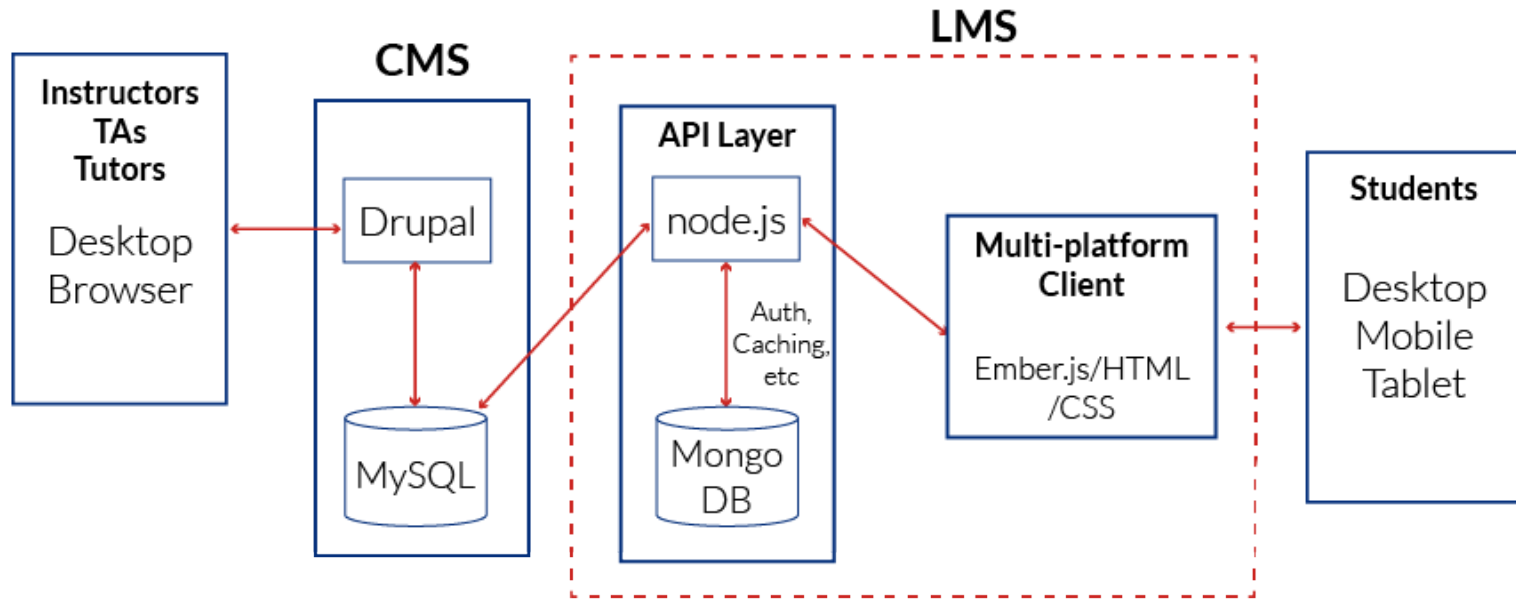
mooKIT

# What is mooKIT?

mooKIT is a lightweight MOOC Management System which aims to

- Make course creation and navigation very **simple**
- Be highly **customizable**
- Be **multi-platform** (supports phones, tablets etc)
- Be **efficient with server resources** (should not cost a lot to run)

# mooKIT Architecture



# Architecture – Key Components



## **Stores Course Content + User Data:**

As a part of Drupal CMS, i.e. Database Schema is governed by Drupal.



## **Frequently Accessed Data + Ad-Hoc Storage:**

A Schemaless database which primarily stores login sessions

# Architecture – Key Components



Node.js

**API Layer:** A “communicator” layer which acts as a simple mediator between the databases and the client

Multi-platform  
Client

Ember.js/HTML  
/CSS

**Webapp:**  
JavaScript based interface. Complex calculations can be deputized to the client

# Advantages

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- **Easy Customizability**

Lack of a rigidly designed Database schema, Drupal as CMS, and a JavaScript API Layer allows administrators/developers to add new features even with a basic technical know-how

# Advantages

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## □ **Multi-platform Support**

The User Interface (i.e. the webapp) communicates with the server using standard protocols (JSON) and thus the interface can be a mobile app or even a desktop application

# Advantages

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- **Scalability**

Since complex calculations can be moved to the client's machine, the server load can be reduced drastically thus supporting a large number of simultaneous users while not costing a lot



# Benchmarking (without performance optimization/tuning)

- **Server Configuration**
  - 1 Amazon EC2 m3.large instance: 7.5GB RAM, 2 vCPUs (2.5 GHz, Intel Xeon Family)
  
- **On this configuration, mookIT supports**
  - At most 250 read requests per second (before RAM usage peaks)
  - At most 150 write requests per second (before RAM usage peaks)
  - Assuming 1% of the total students registered in a course are simultaneously online at an instant, mookIT can support a course with 15,000-20,000 registered users
  
- **mookIT can support more requests per second using a server with more RAM**

# Benchmarking (without performance optimization/tuning)

- **Activities with High Server Resources Usage**
  - Jumping quickly from one forum topic to another
  - A chat session with 150-200 simultaneous users
  
- **Activities with Negligible Load on the Server**
  - Watching a lecture (served via YouTube)
  - Reading through a forum topic
  - Posting a comment

# Future Plans

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- **mooKIT will be released under a valid Open Source Software License once it has been rigorously tested and stabilized. Users will be able to download and deploy the platform on their own machines.**
  
- **When would mooKIT be available for use?**  
In approximately 3 months from now.