

## **Breakout Session One**

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**Developing Virtual Server-Based Managed Learning Environments**

**Harper Adams University College**

## Introduction

This paper explores the development of managed learning environments run on virtual servers, investigating:

- the reasons for their implementation
- the effectiveness of their use.

It uses Harper Adams' MLE development as a case study.

## Managed Learning Environments

MLEs allow an institution's VLE to join up with other systems, such as:

- Administrative course information
- Resources
- Student support
- Collaboration tools
- Assessment and feedback
- Evaluation (Conole, 2002, p.6)

## Virtual Learning Environments

VLEs are central to MLE construction and promote constructivist based pedagogy. They support:

- Asynchronous and synchronous communication and collaboration
- Learning objects
- Assessment and feedback functionality
- Scaffolding
- Peer assessment

## SITS Integration

The final stage of the project remit was the direct connection of the new VLE to the college's SITS registry system, a 200+ table, relational database containing:

- All student and associated award data
- Course data
- Module data
- Student Ids
- Usernames and passwords

## Methodology

The Harper Adams' MLE construction had five primary objectives:

- Develop a sustainable platform for the eventual migration of all the college's existing courses to a new VLE
- Integrate the VLE with the college's registry system
- Integrate the TALIS list reading list software.
- Link the VLE with a learner centric portal, replacing the current intranet.
- Develop a scalable system with the scope for the future development

## Moodle Migration

Following research into usability and system integration options, Moodle was chosen as the replacement for WebCT, being a PHP based open source VLE.

Moodle underpinned the E-Learning departments commitment to a Socio-constructivist pedagogy in a blended learning context.

## Virtual Servers

The decision to take a MLE approach expanded server requirements beyond their prior capacity and more extensive provision was required.

Virtual servers were chosen as an alternative to accommodate future development and web-based applications.

VMware was chosen to provide the MLE platform, allowing individual IP addresses to be assigned to each virtual server within a single machine

## Results

The project found:

- Moodle is a viable alternative to commercial software
- VMware allows multiple servers to be established, having the scalability capacity to quickly add new servers as required
- VMware can provide video server functionality but with restrictions
- Moodle effectively integrates with the institutions existing lchain portal
- Existing course materials required restructuring to be logically presented

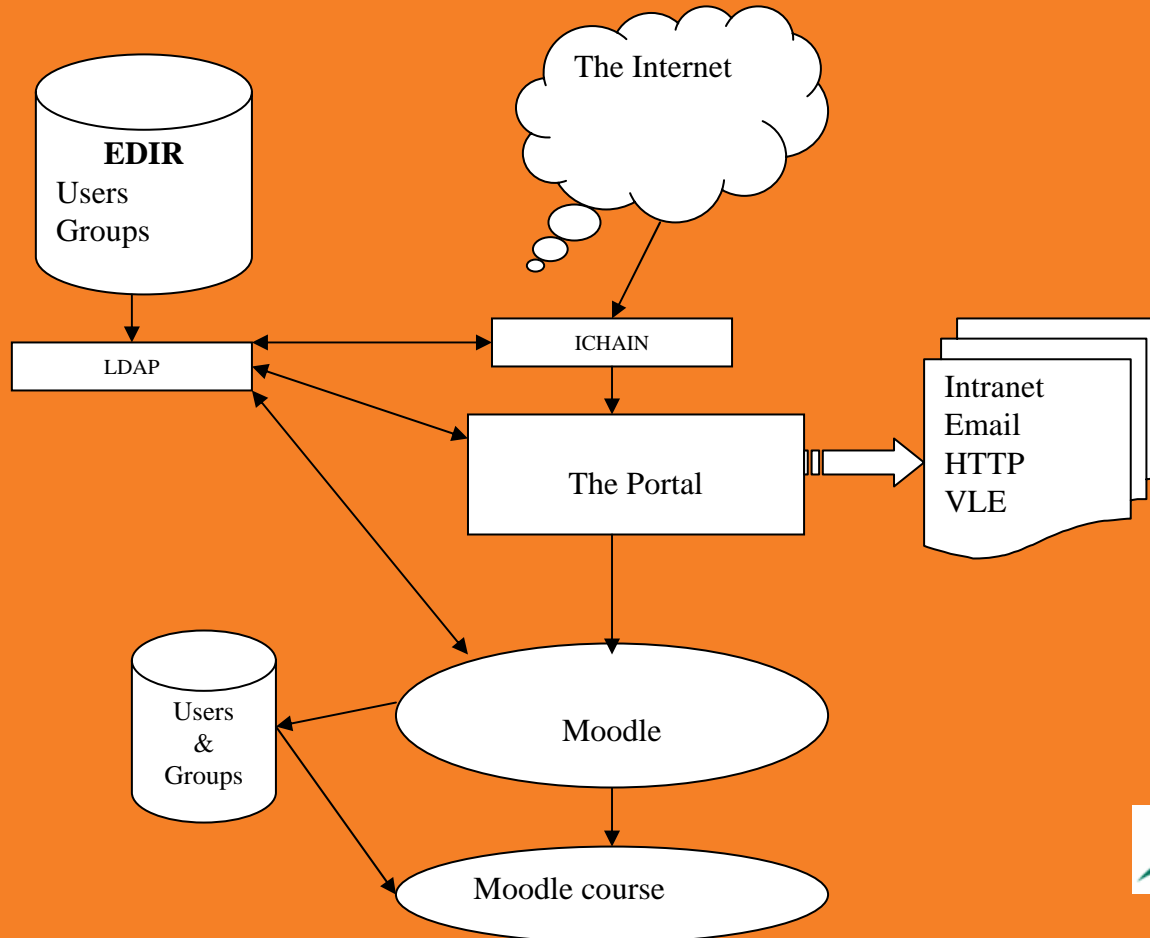
## **VMware development**

**VMware successfully enabled the rapid creation of new servers, meeting the project's scalability requirements using a GUI interface**

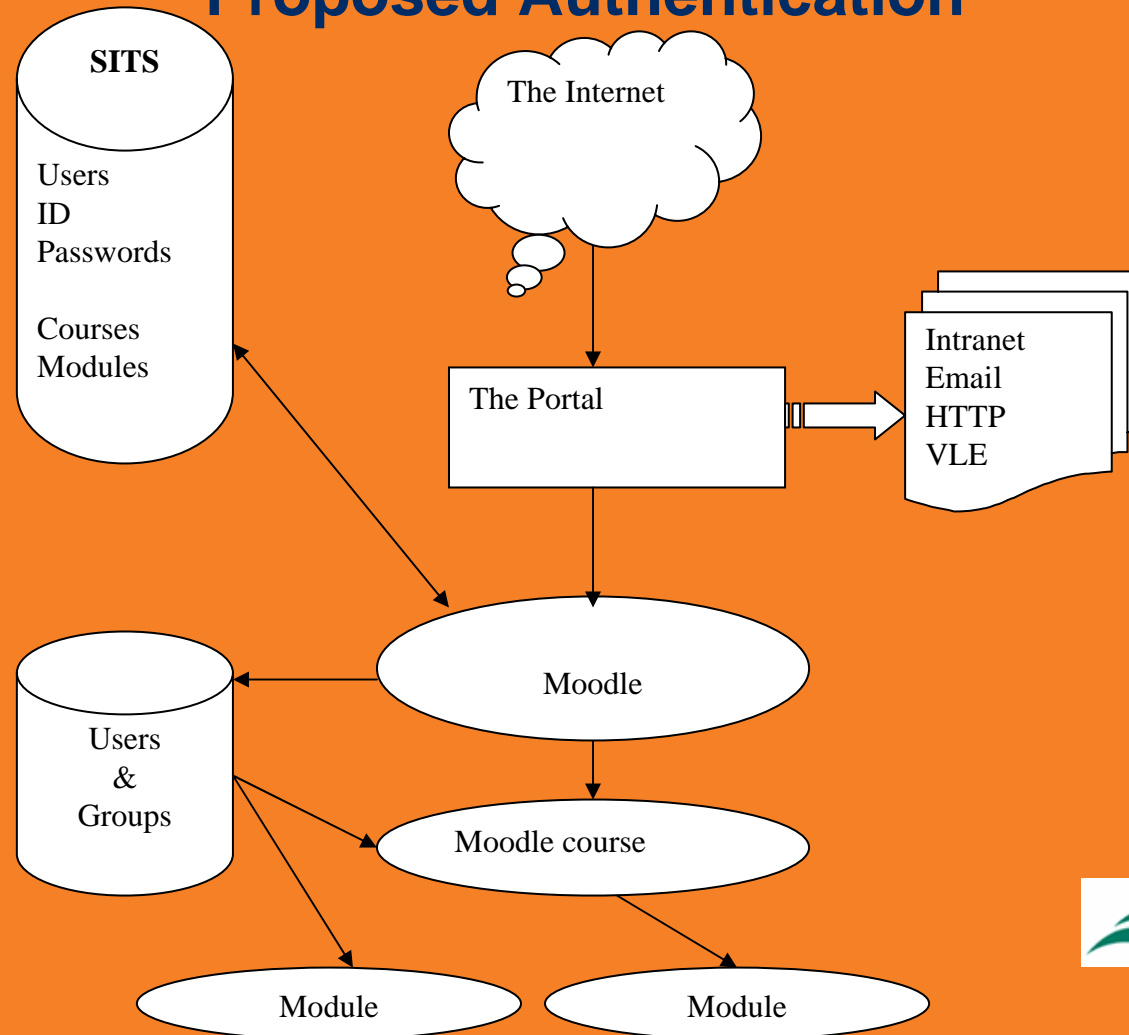
**To ensure there was sufficient disk space available for these new applications, a new 0.5 Terrabyte raid array disk set was required, at a cost of £1600.**

**Connecting the VMware based VLE to SITS via LDAP, proved to be a significant step in the foundation of a functioning MLE for the pilot distance learning course.**

## Current Authentication



## Proposed Authentication



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## Conclusions

**The development of the pilot MLE was considered an overall success. We are confident the full course migration will meet the university's requirement.**

**There was improved buy-in by cross-college staff, both technical and academic.**

**The limited number of current VLE resources allowed a level of migration not possible with a more E-Learning embedded institution.**

**Future developments will include the full full integration of SITS via the proposed method and the addition of TALIS list.**