

VMach Media

Virtual World Platform

White Paper

Issue: 1.2

Date: 28-Jun-2022

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Abstract

This paper provides an architectural overview of the VMach Media platform providing interactive virtual world experiences supported by cloud-based objects, services and applications.

Introduction

This paper provides an architectural overview of the VMach Media platform. The key focus is on the four key differentiators of the platform: flexible experience delivery, high performance engine, accelerated experience development & cloud services integration.

VMach Media Goals & Principles

Provision of a high-performance, scalable, customizable, and secure virtual world platform targeting five broad use cases:

1. Real world simulations
2. Visual explorations
3. Interactive experiences
4. Simulation based training solutions
5. Virtual Productions

The overarching aim of VMach Media is to provide a unifying platform for the creation of virtual world experiences supporting ease of interaction with their digital assets. The platform possesses the following properties:

Flexible Experience Delivery

The photorealism and capability of virtual world applications is continually improving with wide ranging demands on hardware. The platform provides solutions accessible to target audiences using three approaches:

Application Based

Installed on higher performance hardware at client's location for highest levels of photorealism and simulation performance

Application based, edged served

Installed on higher performance hardware in server farm near to clients location for highest levels of photorealism and simulation performance. Can be accessed from most browsers including dedicated VR headsets & mobile devices

Browser Based

Uses the latest openXR/webXR technologies for browser based solutions accessible from most VR & mobile devices

High Performance Virtual World Engine

Photo realistic, high performance world simulations utilise our platform components built on the Epic Unreal game engine.

Accelerated Experience Development

To providing a significant reduction in programming time & cost VMach intelligent scripting supports the creation of scripts using standard film industry tools. Intelligence within the virtual world follows the script using actor recordings (real of virtual) to prompt student actions. Instructor voice responses are then selected and played according to the user actions.

Cloud Integration & Management

The virtual world platform integrates with scalable cloud-based objects, services and applications providing:

- Organization registration
- Membership management
- Virtual world access management
- Virtual world token (for feature and digital asset purchase)
- Virtual event scheduling & management
- Virtual Studio (including event information feed)
- Training course creation
- Training course scheduling
- Student registration
- Remote instructor <> student sessions (real time)
- Student performance reporting

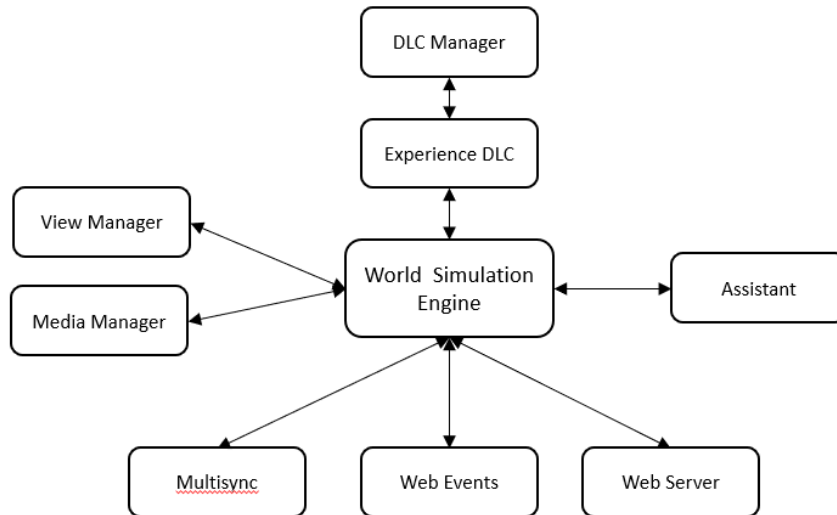
Architecture

Experiences

An experience is comprised of a 3d world containing 3D assets providing user interaction.

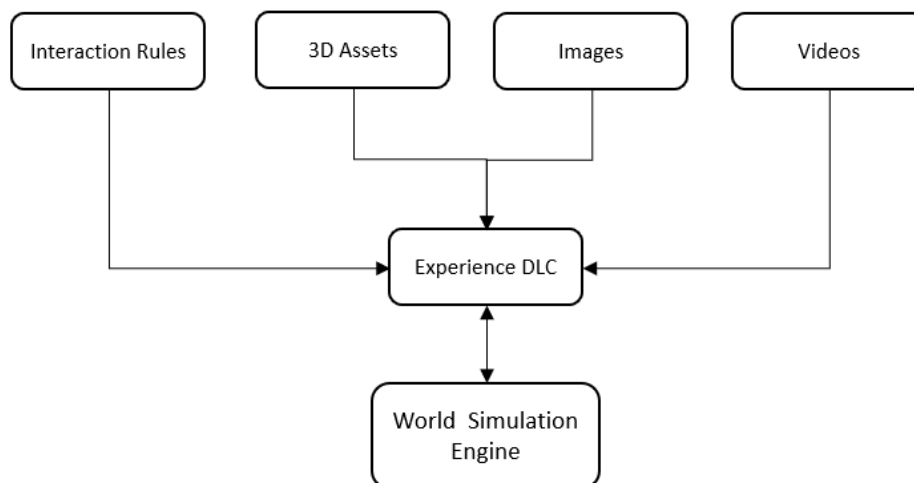
Experience Foundation

The platform provides foundational components supporting the delivery of an experience on the world simulation engine.



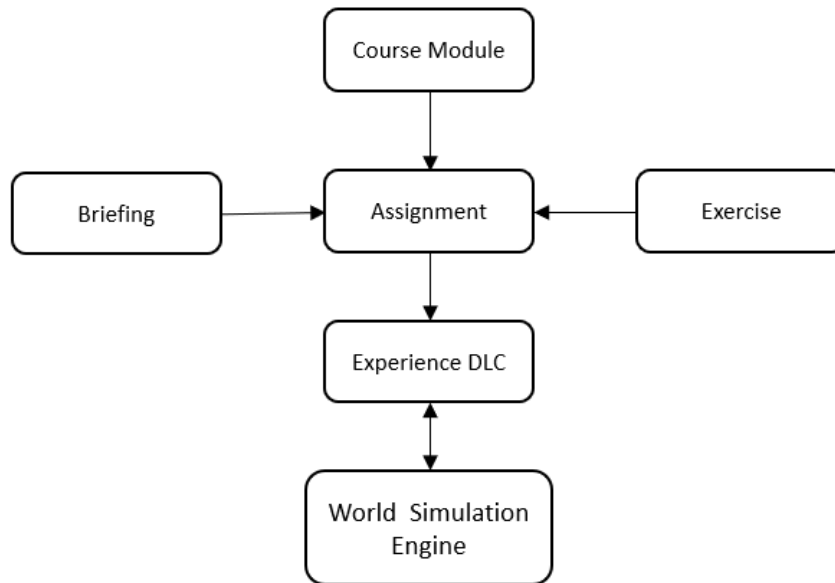
Experience Packages

Experiences are created as individual packages downloaded on demand (DLCs). This provides a compact foundation capable of delivering an unlimited number of experiences.



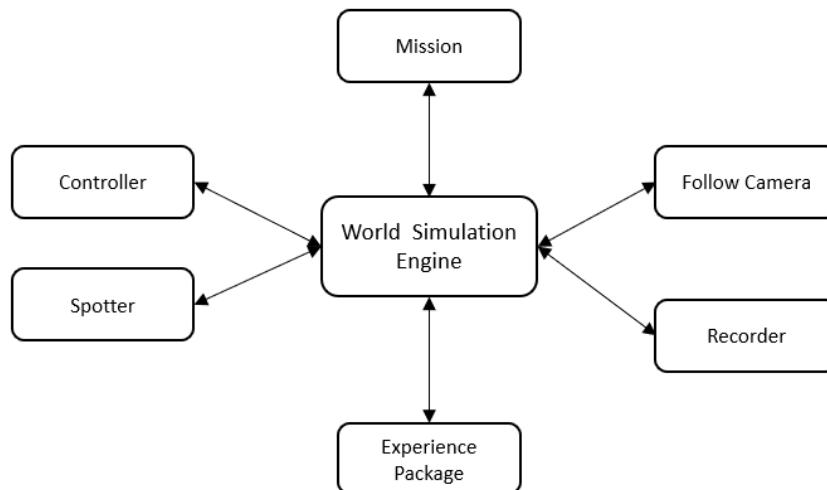
Training Experiences

A training experience provides the user with assignments containing interactive briefings and exercises designed to impart knowledge and practical skills.



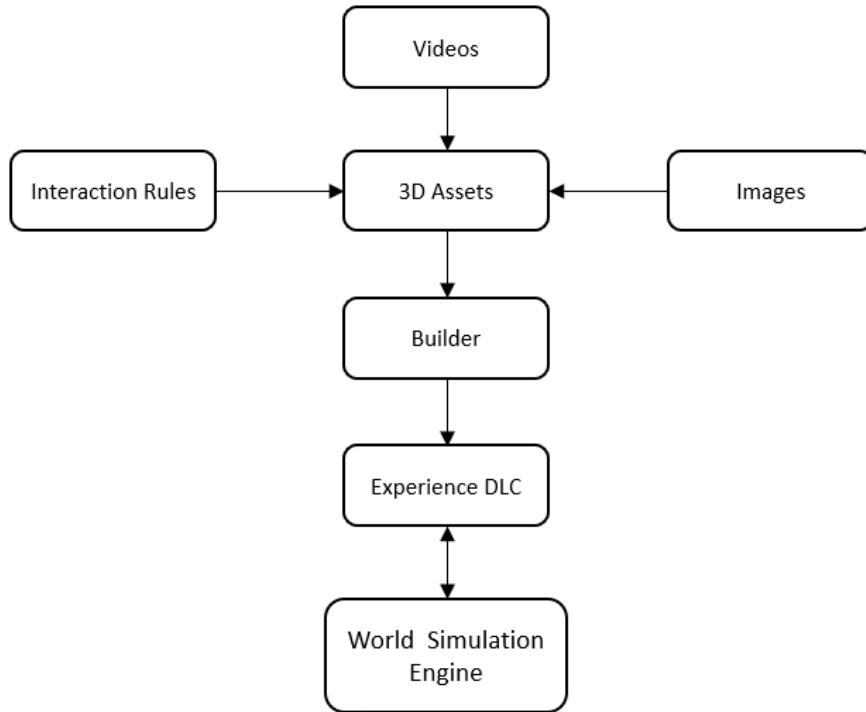
Challenge Experiences

A challenge experience provides the user with a competitive environment in which to complete missions individually or with other users on the internet or local LAN. These experiences would typically be games for entertainment and esports events.



Experience Builder

The Vmach Media platform includes a runtime builder allowing users to create custom experienced based on a set of pre-packaged 3D assets.

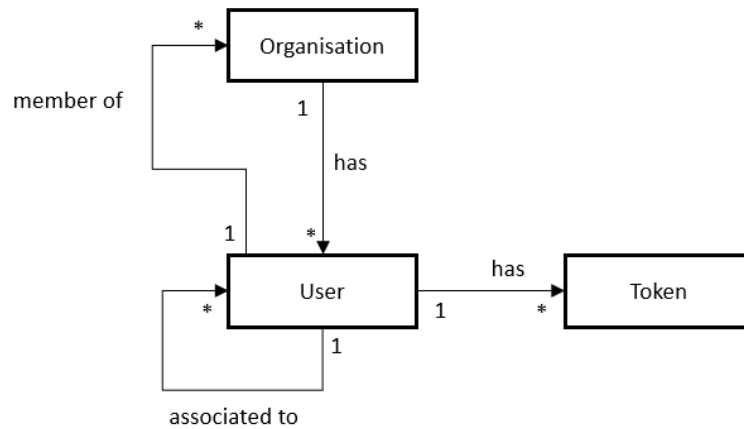


Cloud Objects & Services

Virtual world clients are supported flexible and scalable cloud components utilising object storage and an associated entity relationship model.

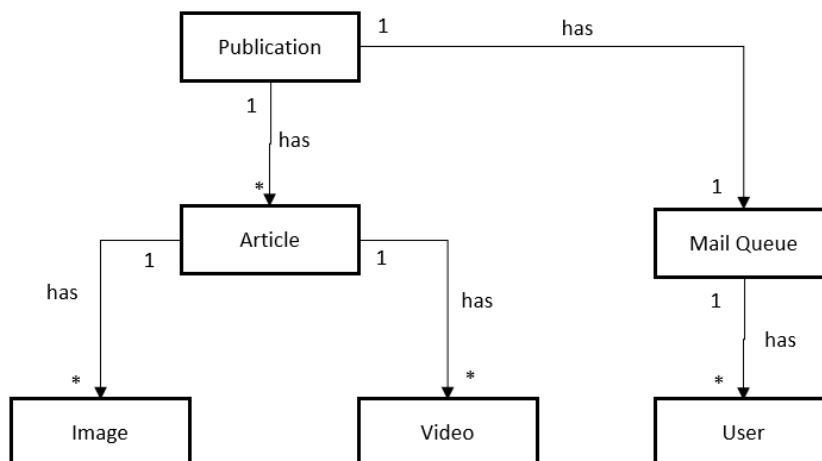
Organisations & People

These fundamental entities define an organisation and how it is related to individual members and users of its services. User tokens are provided as an option for the purchase of services and digital assets.



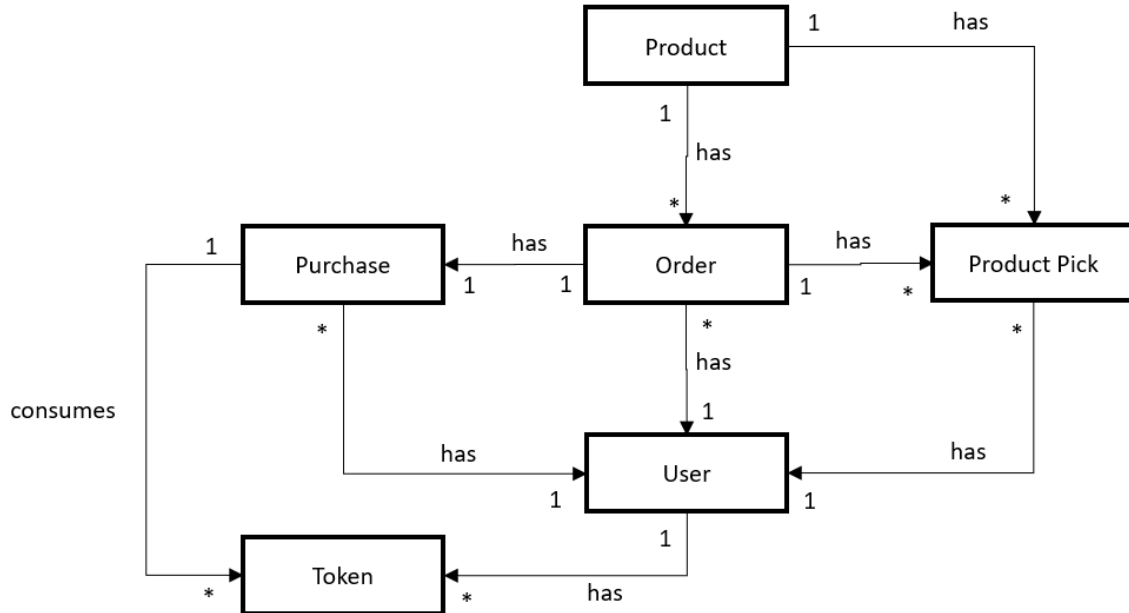
Information Management

Information is stored and organized as metadata. The final appearance is formatted according to the destination (bulletin, email, web page etc)



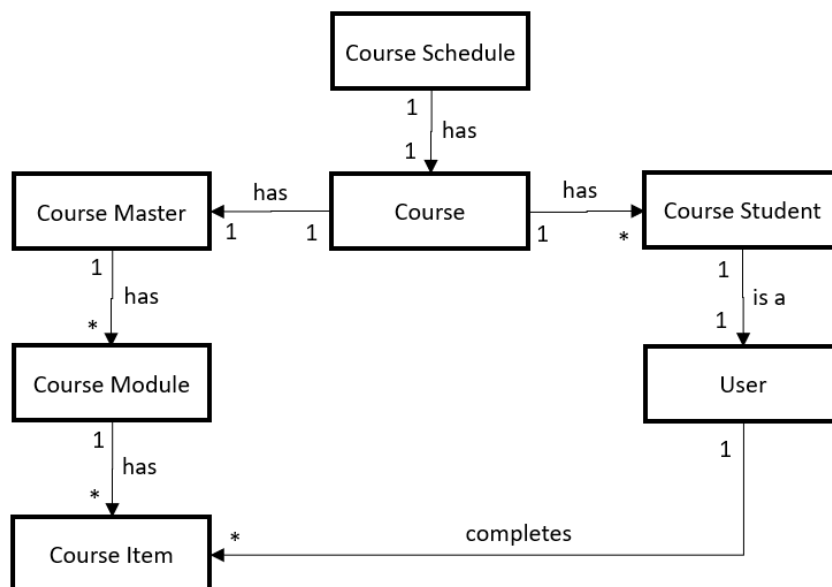
Products

Services and digital assets are defined as products presented as store items that can be picked and assigned to an order. Purchase of the order can then be completed by the user through an integrated payment gateway or using platform tokens.



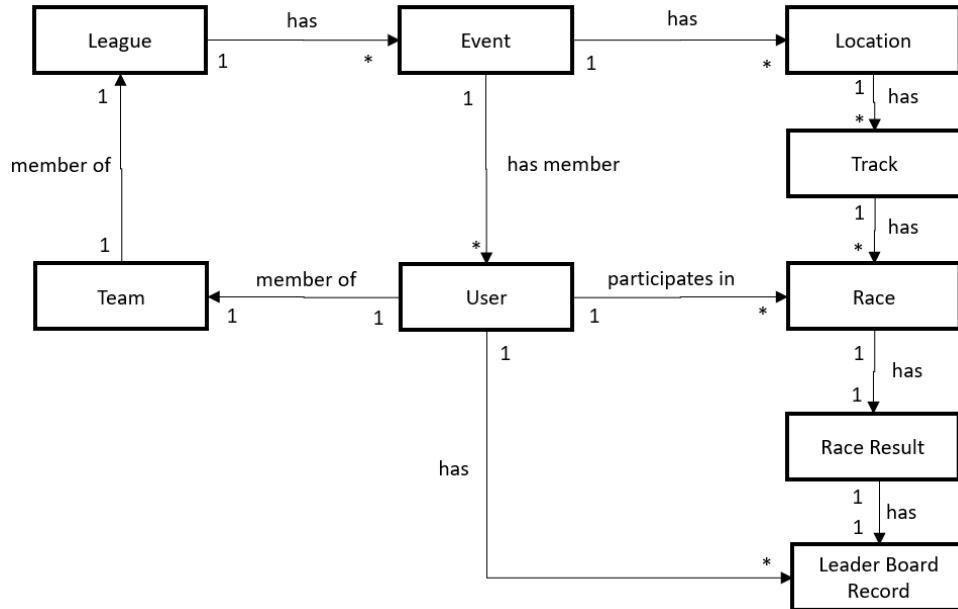
Education

Virtual worlds contain educational experiences and skill training represented as course items. These are grouped into modules that in turn make up a complete course. The progress of students is tracked and scored according to the course items completed.



Esports

Sports on the virtual world platform are supported with a comprehensive set of entities for scheduling events at defined locations comprised of individual races. These can be organised league teams with their own leader boards.

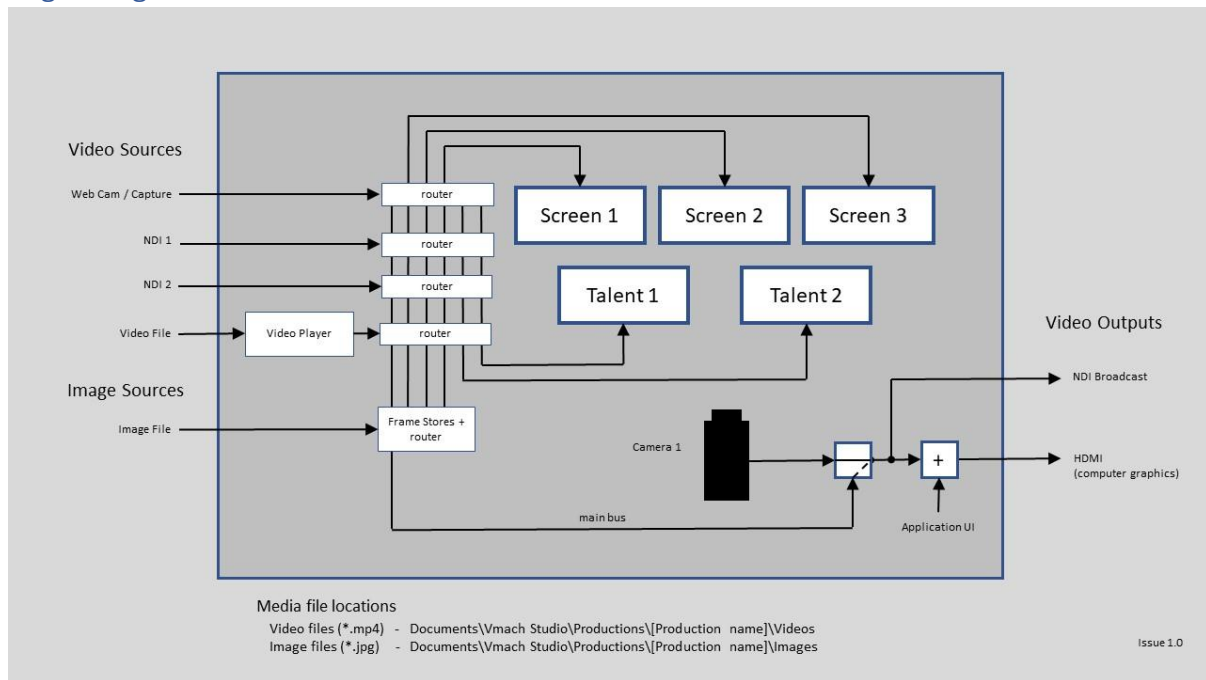


Virtual Production Studio

Overview

The virtual production studio is an individual component of the platform supporting the creation of video media and live streams. A selection of studio locations are available for download and support a wide range of media sources. The progress and results of challenge experience are also fully integrated, selectable as viewable graphics sources (via network).

Logic Diagram



Example Configuration

