



**xlcloud**  
Powering Computation in the Cloud

**OW2**  
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# Remote rendering for games and 3D graphics applications in the cloud

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## Agenda of presentation

- ❖ Project Organization
- ❖ Key Tenets and Objectives
- ❖ Remote Rendering Principle
- ❖ Platform Logical Architecture



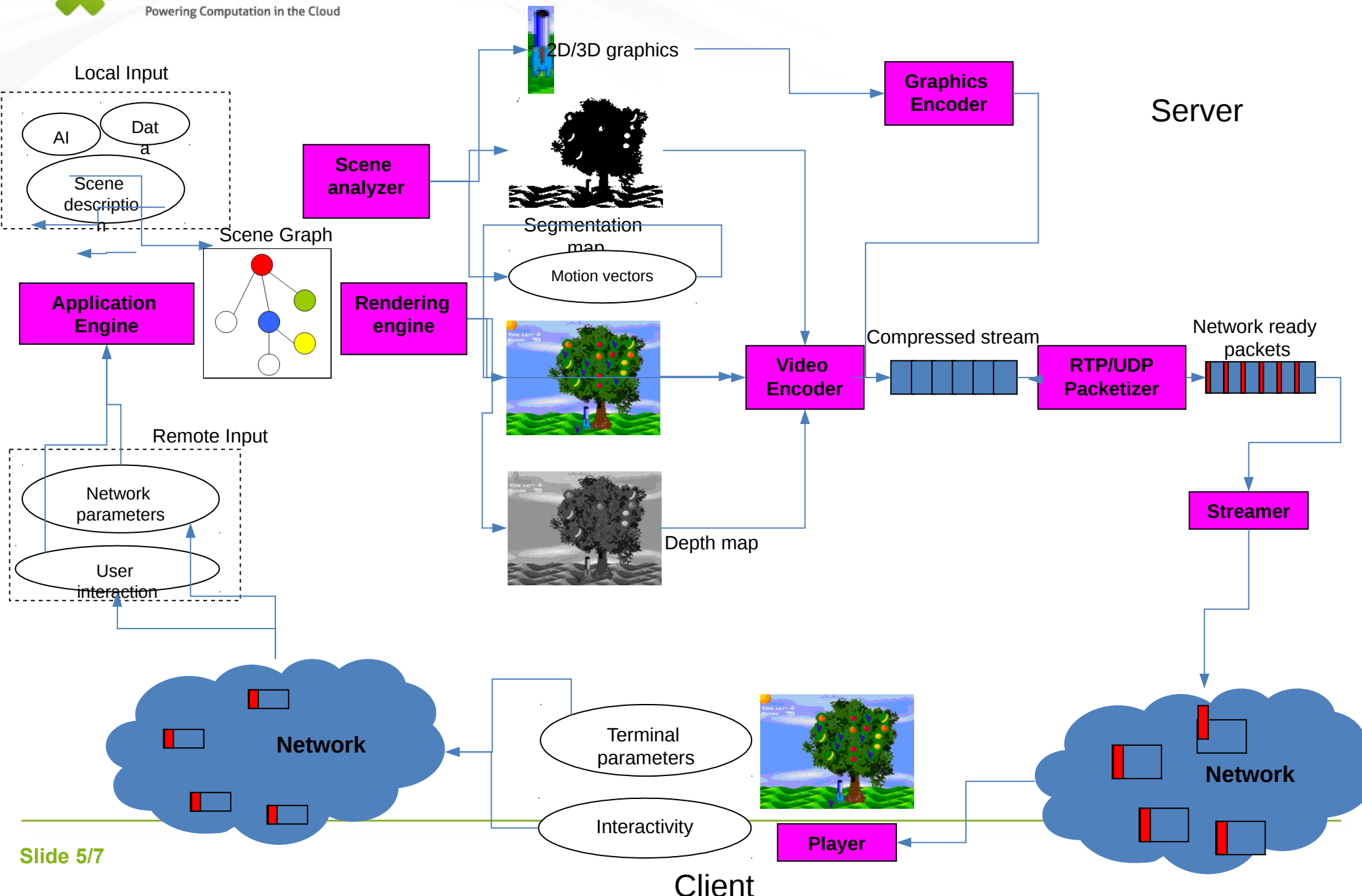
## Project Organization

- ❖ Winner of Call for Projects #1 “Cloud Computing” by the FSN (5 projects selected nationwide)
- ❖ Project length: 36 months
- ❖ Official Start: 01/01/2012
- ❖ Coordinator: Bull
- ❖ Open Source (Apache V2)
- ❖ <http://gitorious.org/xlcloud>
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- ❖ ATEME: H264/MPEG-4/AVC low latency compression algorithms
- ❖ Bull: cloud infrastructure, distributed systems architecture and HPC cluster
- ❖ CEA List: interactive simulation of natural phenomena, virtual reality
- ❖ EISTI: marketplace, OpenERP integration
- ❖ Inria Reso: energy efficiency
- ❖ TSP (Lab Artemis): MPEG standardization, video compression, multimodality
- ❖ Silkan: massively distributed (HPC) software architecture for interactive simulation
- ❖ OW2: communication, dissemination

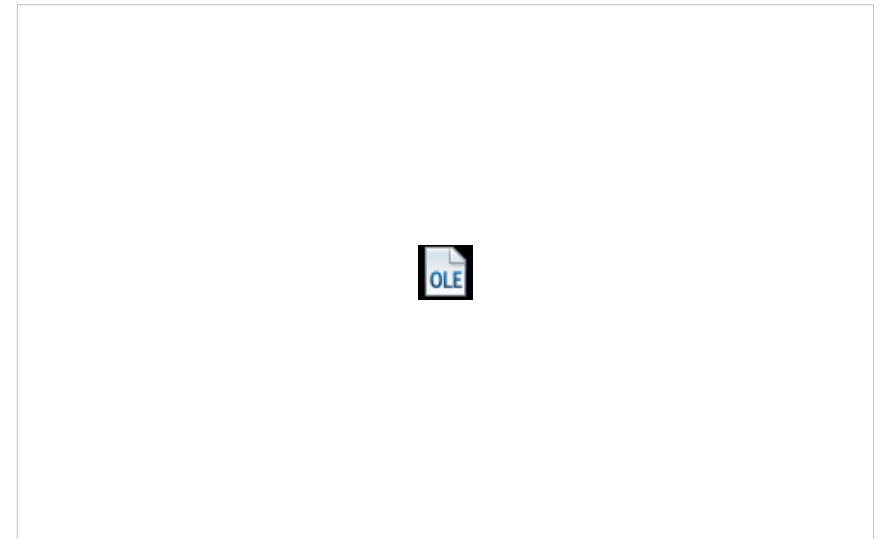
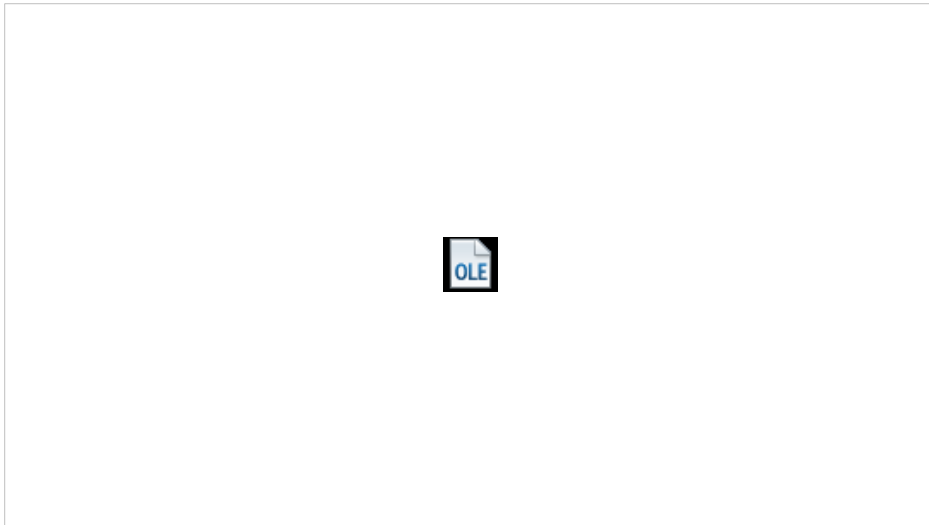
## Key Tenets and Objectives

- ❖ Provide **virtual cluster instances on-demand** through self-service API and Web UI
- ❖ Point to point application **latency (lag) < 200 ms** (pipeline, capture/encode, network, decode, display)
- ❖ **Standard compliance** (Eg. SAML V2, OAuth 2.0, XACML)
- ❖ **Layered and modular design** to allow for seamless support of many types of applications and workloads (purpose-built PaaS computing environment)
- ❖ **Policy-based Service Level Management (SLM)** with automatic scale-up / scale-down
- ❖ Business applications integration framework for **service composition and aggregation**
- ❖ **Secure multi-tenant environment** (isolation, strong authentication and access control)
- ❖ Adaptation of the Cloud Management System to best leverage the underlying infrastructure performance (HPC cluster)
- ❖ Fine-grained resource usage metering and accounting for chargeback
- ❖ Energy efficient meaning **produce the most output for the least cost**

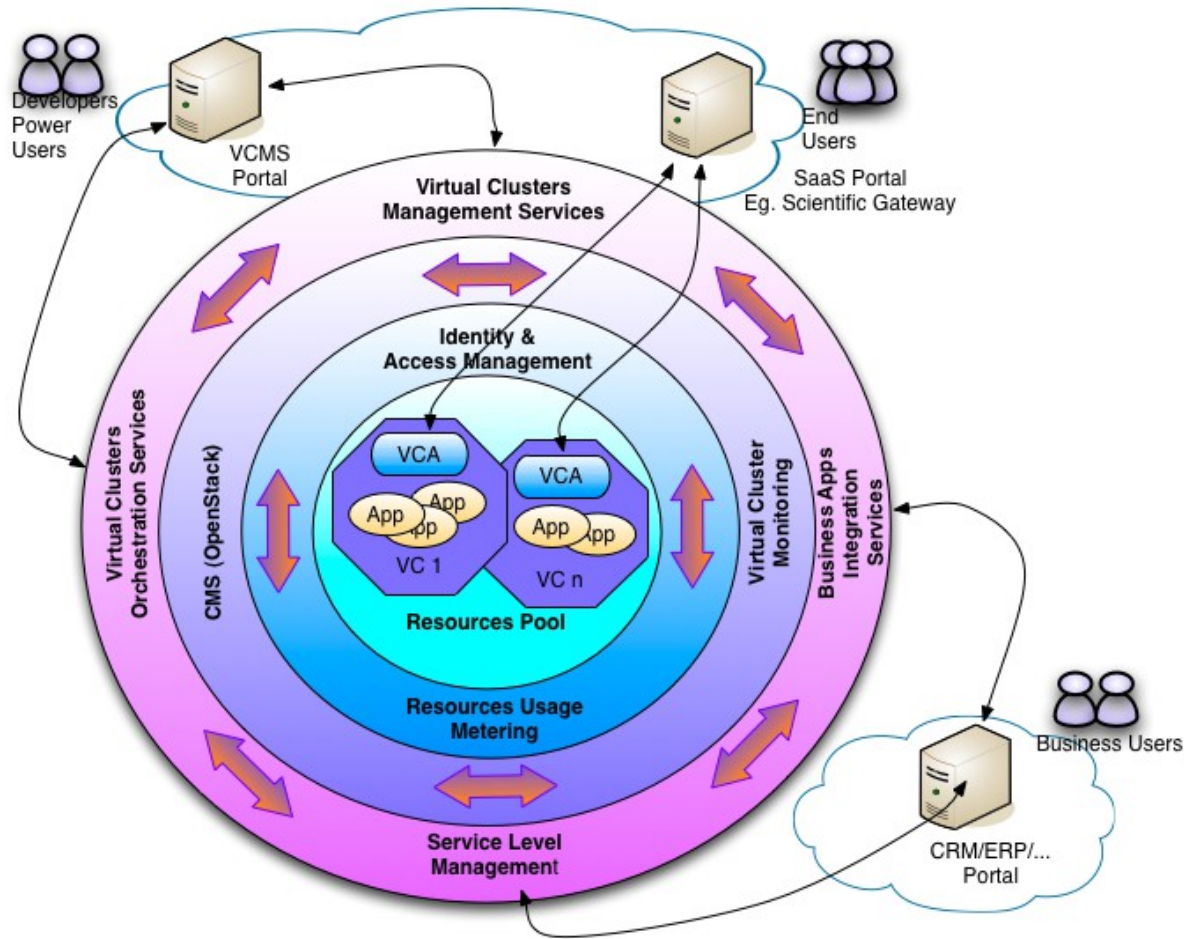
# How remote rendering works?



# Example of games played in Remote Rendering



# Platform Logical Architecture



**Thank you for your attention**

