



# NVIDIA OMNIVERSE COLLABORATION AND SIMULATION PLATFORM

Timo Livistö HP Sales Specialist

# Ada Lovelace





# 3D WORKFLOWS ARE ESSENTIAL FOR EVERY INDUSTRY

## 40 MILLION CREATIVE DESIGNERS WORLDWIDE

M&E



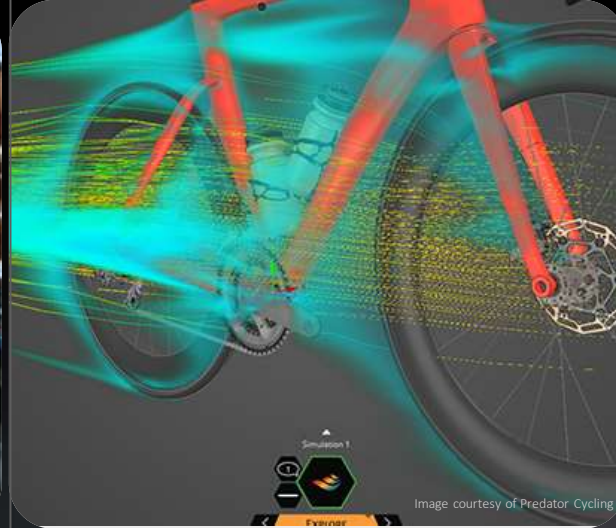
MFG & Product Design



AECO



SCI VIZ



# VISUAL COMPUTING WORKFLOW COMPLEXITY

## AI, 3D, SIM, RENDER, REMOTE WORKING

### AI EVERYWHERE



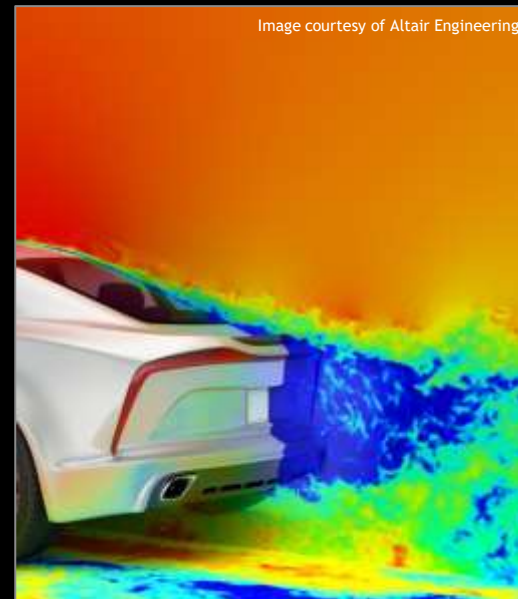
Generative Design  
Content Creation

### ADVANCED VISUALIZATION



Ray Tracing  
AR, VR

### INTERACTIVE SIMULATION



Fluid Dynamics  
Digital Twins

### HYBRID WORK



Multi-App Productivity  
Remote Access





# 3D DESIGN IS AN EXTREMELY COMPLEX TEAM SPORT



Large, Geographically Distanced Teams

The new normal



Many Vendors, Many Tools

Incompatible tools and file formats  
tedious import-export and iteration  
Mistakes  
time lost  
model decimation  
needless iteration



3D Workflows Rising in Complexity

Computationally demanding workflows  
real-time ray tracing  
AI  
physically accurate simulation  
Data too large to propagate WW

# DIGITAL TWINS, THE METAVERSE

AI DRIVEN VIRTUAL WORLDS ARE GOING TO BE ESSENTIAL FOR EVERY INDUSTRY

ARCHITECTURE, ENGINEERING,  
CONSTRUCTION, AND OPERATIONS



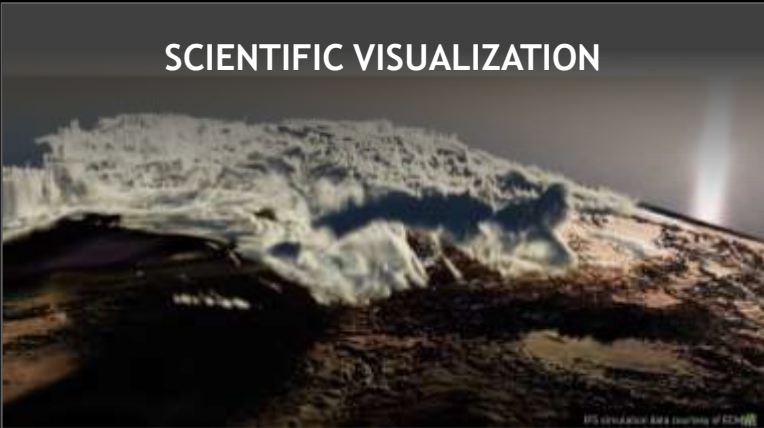
MEDIA, ENTERTAINMENT, AND GAME  
DEVELOPMENT



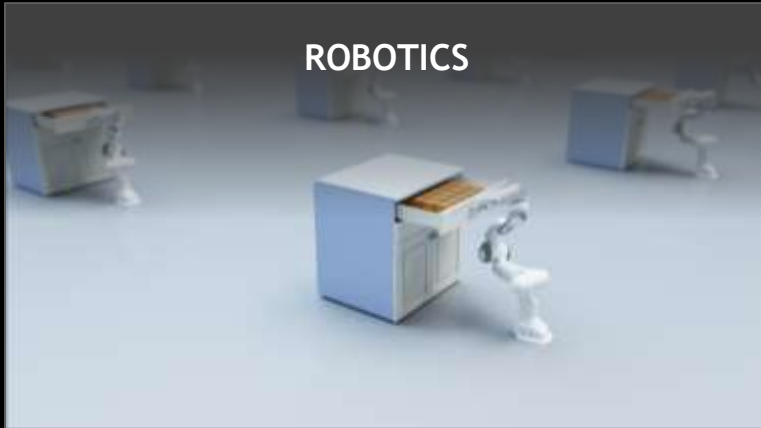
PRODUCT DESIGN AND  
MANUFACTURING



SCIENTIFIC VISUALIZATION



ROBOTICS



AUTONOMOUS VEHICLES





The background features a black field with numerous thin, bright green lines that appear to be light trails or data paths, some straight and others curved. On the right side, there are larger, more complex green structures that look like stylized, glowing plant stems or fiber-optic bundles. A solid, vibrant green vertical bar is positioned on the far left edge of the frame.

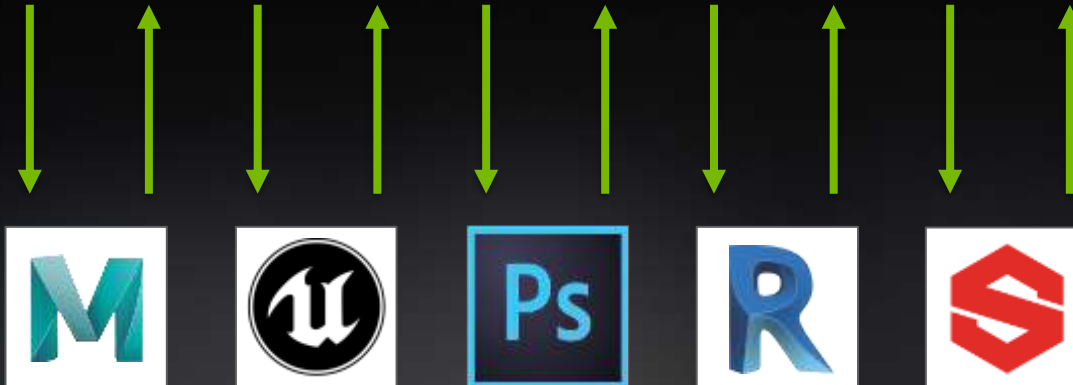
# OMNIVERSE COLLABORATION

# SINGLE USER INEFFICIENCY

Artist Workstation



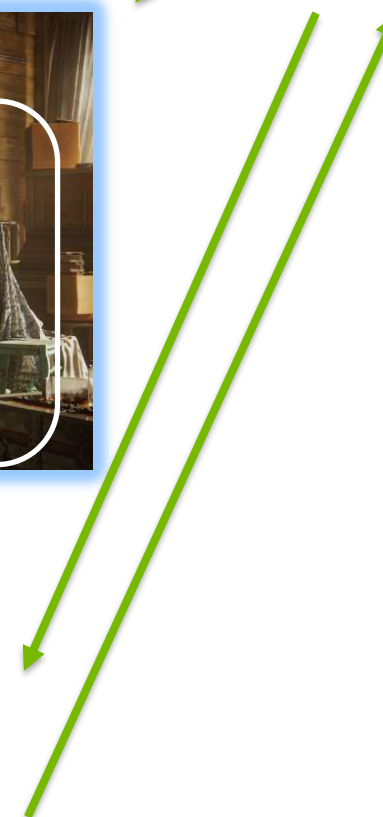
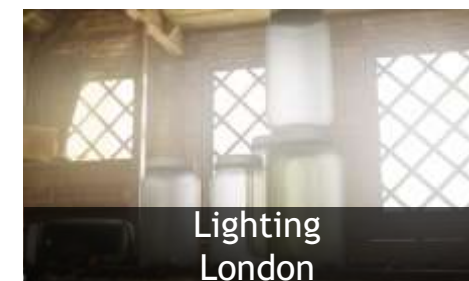
PROBLEM  
MULTIPLE IMPORT & EXPORT  
OF CONTENT BETWEEN  
APPLICATIONS WITH  
DIFFERENT FILE STRUCTURES





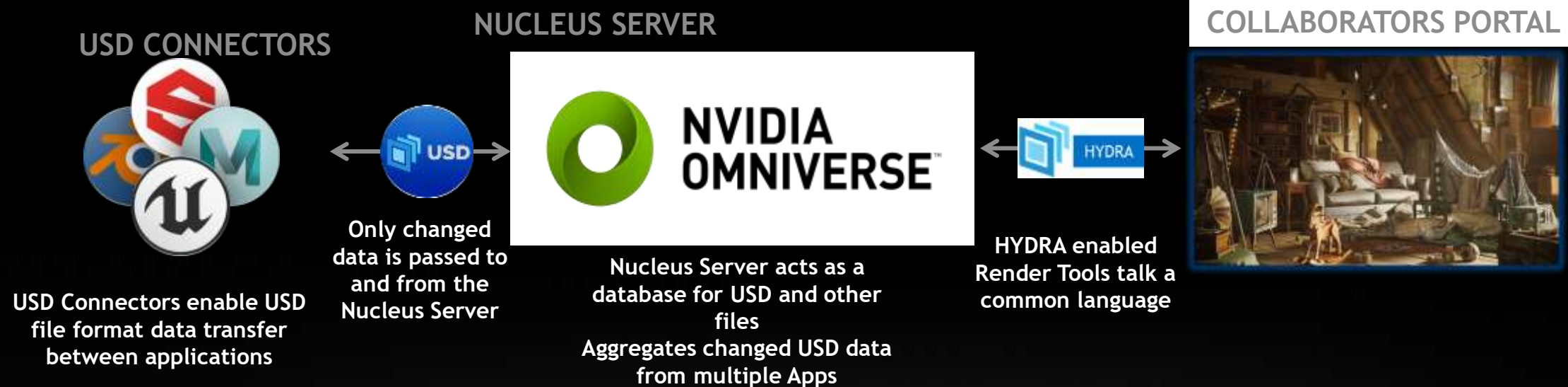


# MULTI-USER COLLABORATIVE INEFFICIENCY



# A NEW ERA OF COLLABORATION AND SIMULATION

SINGLE USER & MULTIPLE USER APPLICATION COLLABORATION  
“Standard ISV Applications With USD Connectors”







# NVIDIA OMNIVERSE

## UNIVERSAL SCENE DESCRIPTION

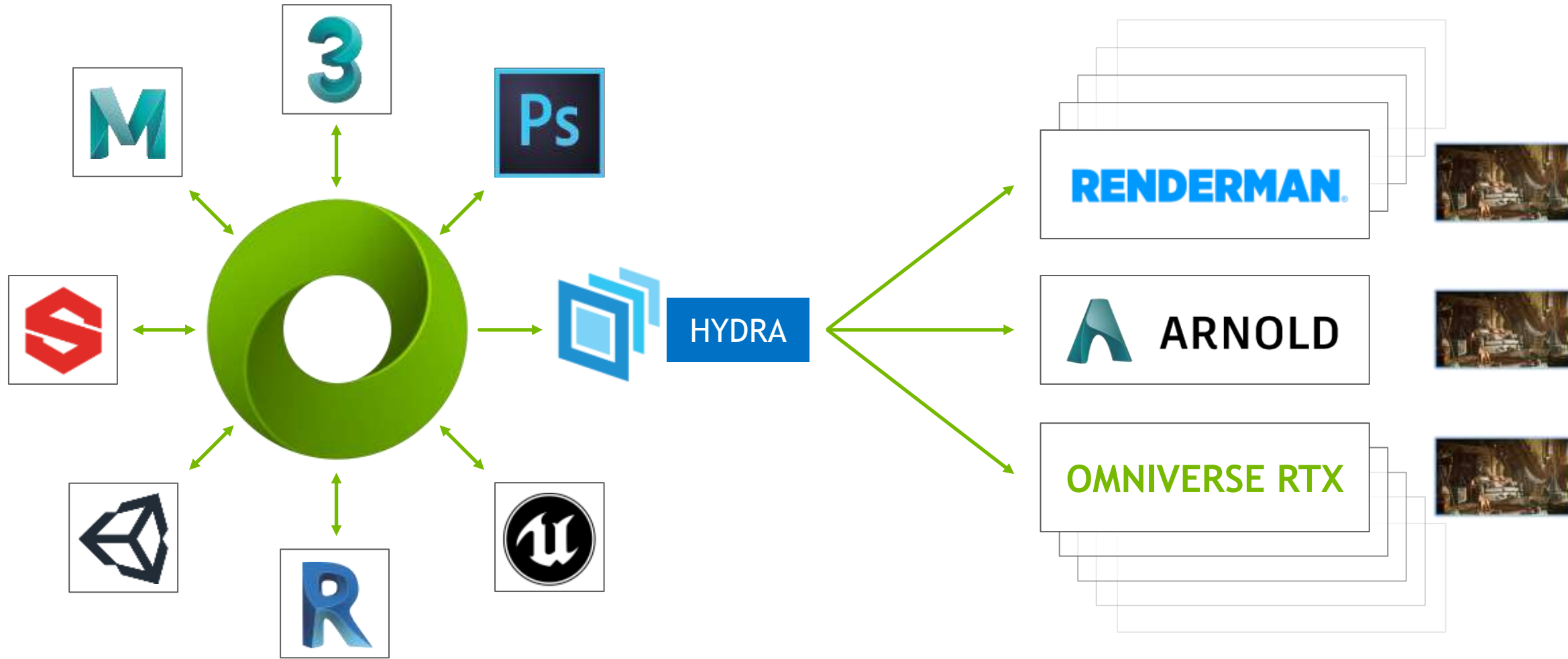
The “HTML” of 3D Virtual Worlds

- ▶ Developed by Pixar
- ▶ Foundation for NVIDIA Omniverse
- ▶ Open-sourced API and file framework for complex scene graphs
- ▶ Easily extensible, simplifies interchange of assets between industry software
- ▶ Introduces novel concept of layering
- ▶ Enables simultaneous collaboration for large teams in different department working on the same scene
- ▶ Originated in M&E, now becoming a standard across industries including AEC, Manufacturing, Product Design, Robotics



# USD






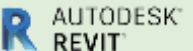




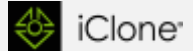




















# CONNECT APPLICATIONS THROUGH USD - RENDER TOOLS THROUGH HYDRA





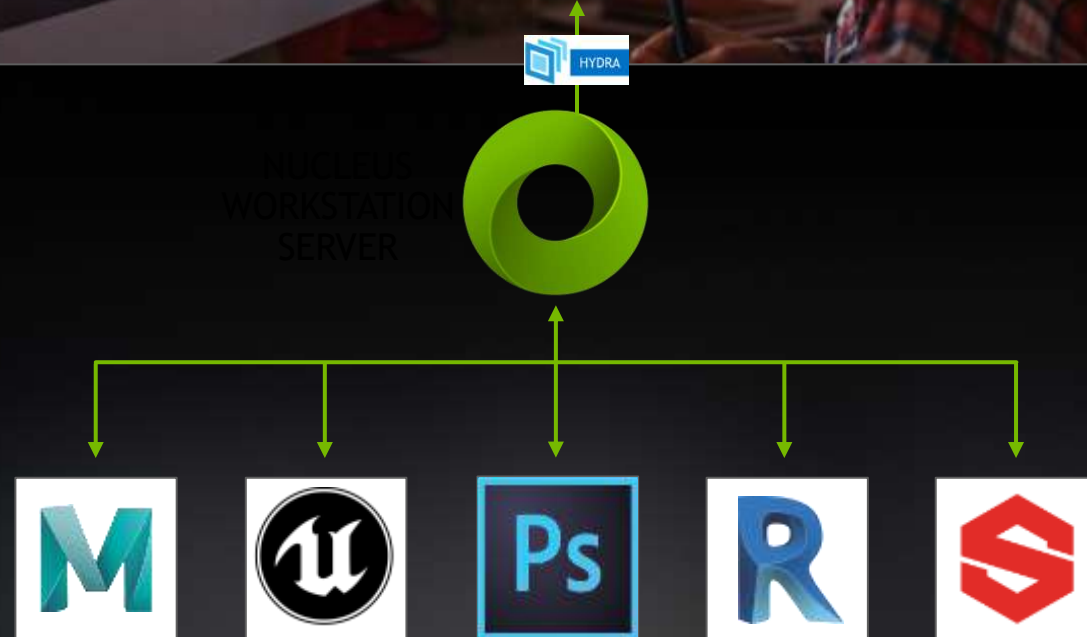
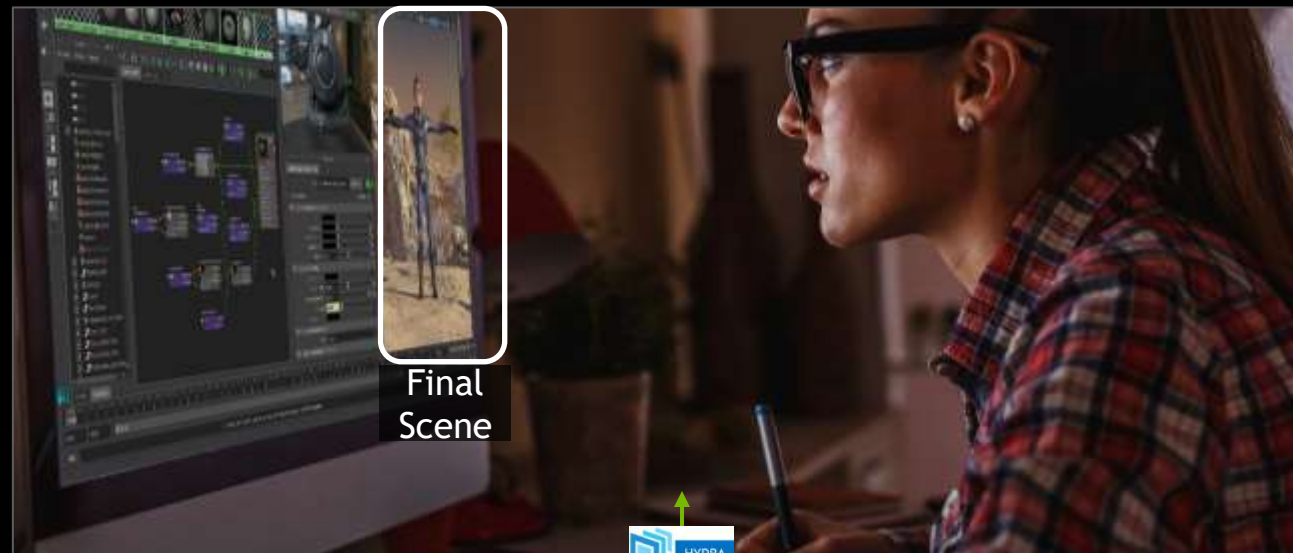
# MULTIPLE WAYS TO CONNECT TO OMNIVERSE

Please Check For The Latest On Production and Beta Connectors [Here](#)

|                                  |   |                     |  |
|----------------------------------|---|---------------------|--|
| BI-DIRECTIONAL CONNECTOR         | Real-time updates shared between apps after a single export/import. Material conversion supported.            | GENERALLY AVAILABLE |      |
|                                  |   | BETA                |    |
| UNI-DIRECTIONAL CONNECTOR        | Real-time updates from apps are reflected in Omniverse but aren't shared back. Material conversion supported. | GENERALLY AVAILABLE |       |
|                                  |   | BETA                |         |
| USD EXCHANGE VIA OMNIVERSE DRIVE | Similar to uni-directional but no Connector. Allows for USD or texture export.                                | BETA                |                      |
| KIT EXTENSIONS                   | Kit Extensions developed by partners that 'connect' their apps or tools to the platform.                      | BETA                |     |
| EXPORT / IMPORT                  | Conversion to USD via direct import or third-party app. Materials often converted manually.                   | EXPORT AND IMPORT   |        |
|                                  |   | IMPORT              | 3D PDF, 3DS, 3DXML, 3MF, ACIS, Alembic, CATIA V4, CATIA V5, Collada, DWF, DWG, E57, IFC, IGES, Inventor, JT, LXD, MD5, NX, Parasolid, PRC, PRO/E, ShapeNet, Solid Edge, SOLIDWORKS, STL, STP, U3D, URDF, VDA-FS, VRML, X3D   |

# OMNIVERSE INDIVIDUAL - STANDALONE

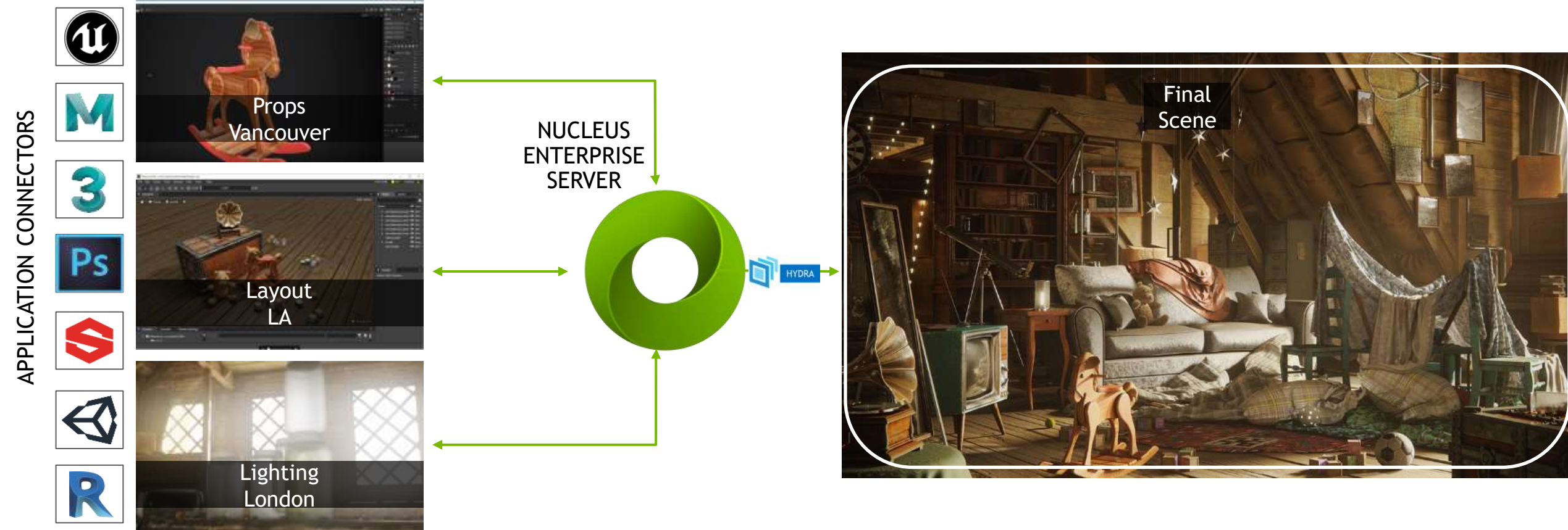
## Artist Workstation

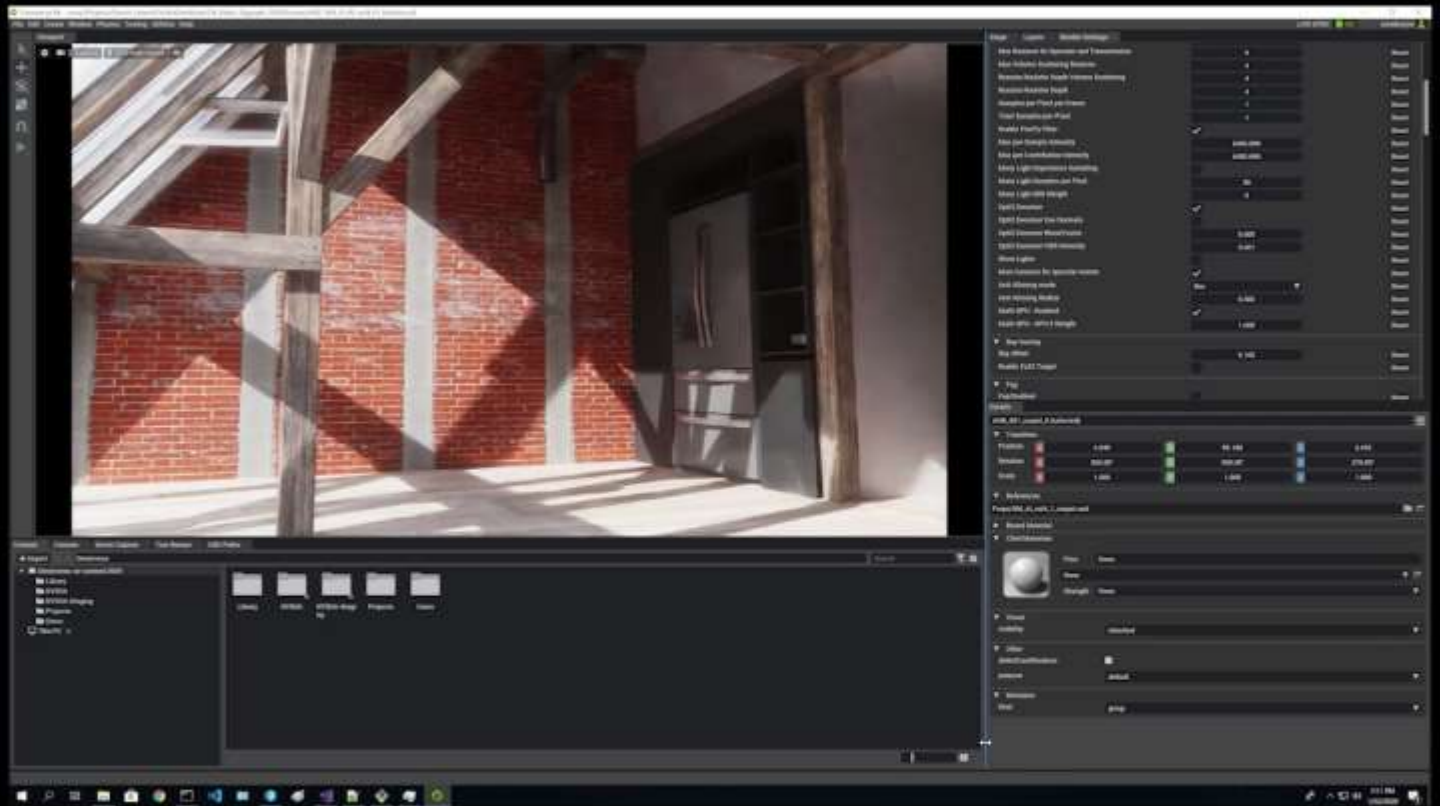
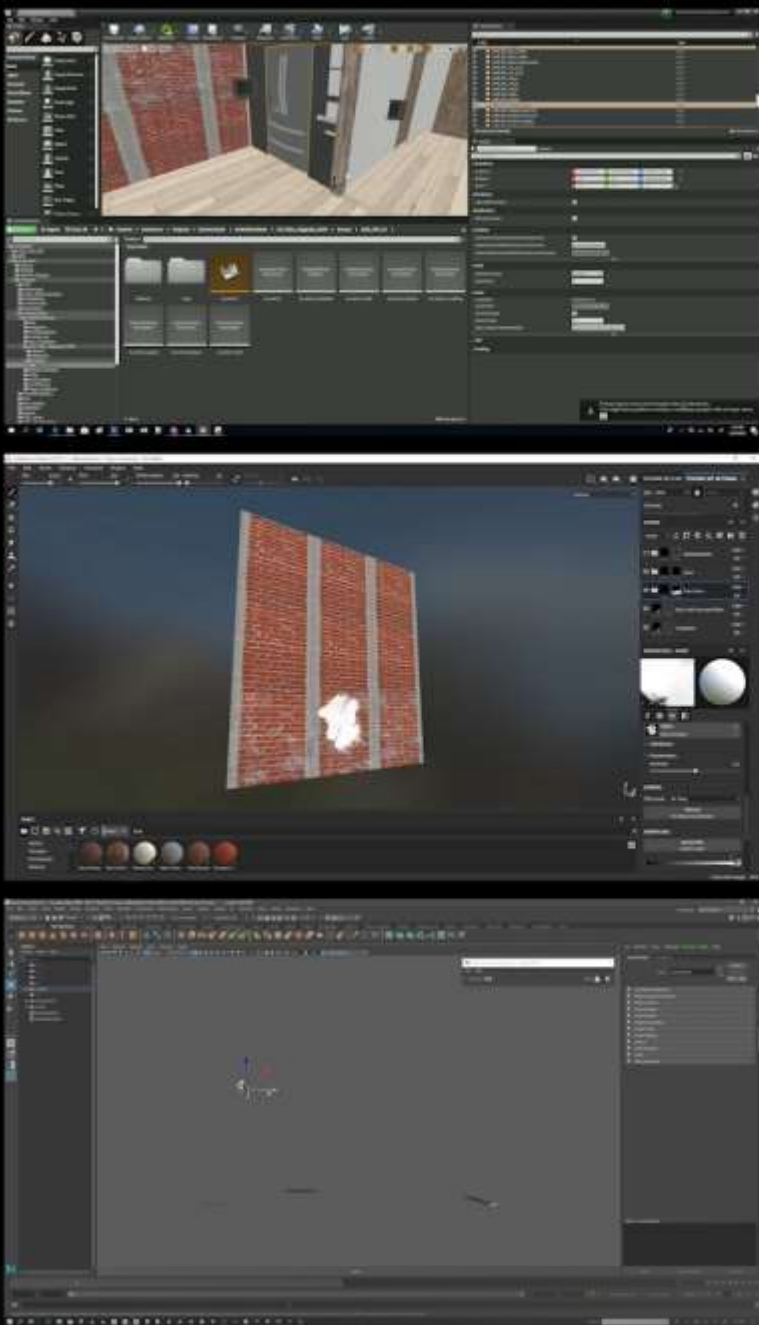


APPLICATION CONNECTORS



# OMNIVERSE ENTERPRISE - ACROSS TEAMS





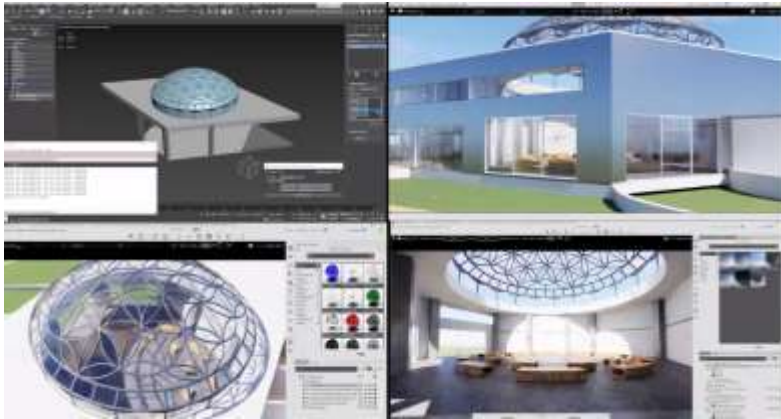
TEAM COLLABORATION

# OMNIVERSE Roadmap

Available  
NOW

**PHASE 1**  
Available OVE GA

Design Collaboration - AEC, M&E



**PHASE 2**  
Available 2022

Design Collaboration - MFG



**PHASE 3**  
Available 2023

Simulation of Virtual Worlds -  
Factory of the Future





# NVIDIA, BMW Blend Reality, Virtual Worlds to Demonstrate Factory of the Future

April 13, 2021 by [BRIAN CAULFIELD](#)

[BMW Omniverse  
Blog](#)







# OMNIVERSE ENTERPRISE SUBSCRIPTIONS

Starting at \$9,000 per year for minimum initial purchase

EDU-lisenssi tälle pakettile about 2 500 taalaa



## CREATOR SUBSCRIPTION

*Enables scene composition, simulation and rendering on workstations and virtual workstations.*

### Includes:

Omniverse Create, Kit, Extensions, Batch microservices (on up to 64 GPUs) & NVIDIA Enterprise Support

*Collaboration via Nucleus requires a Nucleus subscription.*

**\$2,000**

*Annual subscription per floating (CCU) user*

*Minimum Initial Purchase of 2*



## REVIEWER SUBSCRIPTION

*Review and approval application for workstations and virtual workstations.*

### Includes:

Omniverse View & NVIDIA Enterprise Support

*Editing and commenting via Nucleus requires a Nucleus subscription.*

**\$100**

*Annual subscription per floating (CCU) user*

*Minimum Initial Purchase of 10*



## NUCLEUS SUBSCRIPTION

*Collaboration and scalable core microservices deployed on servers and/or workstations.*

### Includes:

Nucleus Workstation, Enterprise Nucleus Server & NVIDIA Enterprise Support

**\$1,000**

*Annual subscription per named user*

*Minimum Initial Purchase of 4*

All subscriptions include Enterprise Launcher & Enterprise Connectors.



# WHICH SUBSCRIPTION(S) DO YOU NEED?



Omniverse Enterprise  
Creator Subscription

*Minimum Initial Purchase of 2*



Omniverse Enterprise  
Reviewer Subscription

*Minimum Initial Purchase of 10*



Omniverse Enterprise  
Nucleus Subscription

*Minimum Initial Purchase of 4*

## User Persona / Activity

Designing with Kit/Create, 3rd party tool(s) and collaborating via Nucleus



Designing using only 3rd party tool(s) and connecting to Nucleus for collaborating



Viewing, commenting and making minor edits, e.g. textures, using View



Viewing only using View



All creators/designers require a (named user) Nucleus subscription for collaboration.

Reviewers that comment and/or make edits via Nucleus also require a (named user) Nucleus subscription.

# 30 DAY EVALUATION

Customer-driven, NVIDIA-delivered, 30-Day Trial

- Eval licenses available from nvidia.com
- Automatic delivery via NVIDIA License Portal
- Option to have 30-day extension

APPLICATION FORM



The screenshot shows the 'APPLICATION FORM' for the NVIDIA Enterprise Account Evaluation. It features the NVIDIA logo at the top left. The main heading is 'NVIDIA Enterprise Account Evaluation'. Below this, it says 'Apply for Omniverse Enterprise Trial' and 'Answer 5 quick questions'. There are five numbered questions: 1. 'Please confirm your company email address.', 2. 'Please confirm your company email address will not be approved.', 3. 'Please confirm your company email address will not be approved.', 4. 'Please confirm your company email address will not be approved.', 5. 'Please confirm your company email address will not be approved.' Below the questions, there is a section for 'Primary Contact' with fields for 'First Name', 'Last Name', 'Email Address', and 'Company Email Address'. At the bottom, there is a 'Company' field.

<https://www.nvidia.com/en-gb/omniverse/enterprise/free-trial/>

# OMNIVERSE DEVELOPER RESOURCE CENTER

<https://developer.nvidia.com/nvidia-omniverse-developer-resource-center>

## OMNIVERSE DEVELOPER RESOURCE CENTER

Get started developing on the Omniverse platform using the resources below.

Developer Introduction

Omniverse Code

Universal Scene Description (USD)

Tutorials

Samples and Resources

Connecting to Omniverse

Export/Import

Omniverse Drive Connect

Connectors

Creating a Connector

Support

Extensions, Apps and Microservices

Omniverse Kit

Extensions and Apps

Scripting

Omni UI

Microservices


Support and FAQ

### Omniverse Platform - Developer Introduction

Omniverse enables universal interoperability across different applications and 3D ecosystem vendors. It provides efficient real-time scene updates and is based on open-standards and protocols. The Omniverse platform is designed to act as a hub, enabling new capabilities to be exposed as microservices to any connected clients and applications.


The following video gives an overview of NVIDIA Omniverse platform and how to develop custom tools and applications in Omniverse.

OMNIVERSE DEVELOPER



Damien Fagnou

**DEVELOPING CUSTOM TOOLS  
AND APPLICATIONS IN OMNIVERSE**

 NVIDIA



# Metaverse suomessa

## Metaverse Suomi - Metaverse Finland

Ryhmä (Julkinen) · 573 jäsentä

Keskustelu Suositeltu Ihmiset Media Tiedostot Reels

Kirjoita jotain...

Merkitse henkilöitä Kuva tai video Tunne tai toiminta

Suosittelut

Uudet julkaisut

Risto Linturi jakoi julkaisun.  
Ylläpitäjä · 23 t ·

Matti Keräsen haastatteluartikkeli teollisesta metaversumista ja muitakin sivuavia juttuja Promaintissa. [https://www.instagram.com/p/CILNS1IN\\_J6/](https://www.instagram.com/p/CILNS1IN_J6/)

### Tietoja

Ryhmä on perustettu Metaverse-kehityksen seuraamista varten. Käsitteellä tarkoitetaan tässä yhteistoiminnallisia virtuaalimaailmoja, joissa eri toimittajien järjestelmät voivat ainakin joiltakin osin tuottaa ja ohjata hahmoja samoissa virtuaalimaailmoissa. Konkreettisia valineita esimerkiksi Epicin Unreal Engine, Reallusionin iClone, NVidian Omniverse, Autodeskin Maya ja Blender, mutta myös tulossa olevat tai mahdolliset Microsoftin, Applen, Facebookin ja Googlen avaukset edellyttäen, että ne kykenevät hyväksymään ja/tai tarjoamaan virtuaalisia elementtejä yhteisiin Metaverse-alustoihin. Ryhmä pyrkii tukemaan Metaverse Standards Forumin työtä: <https://metaverse-standards.org/news/press-releases/leading-standards-organizations-and-companies-unite-to-drive-open-metaverse-interoperability/> Näytä vähemmän

**Julkinen**  
Kuka tahansa voi nähdä, keitä ryhmässä on ja mitä jäsenet julkaisevat.

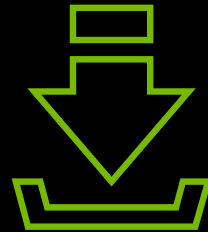
**Näkyvä**  
Kuka tahansa voi löytää tämän ryhmän.

Lisätietoja

# SEE YOU IN OMNIVERSE

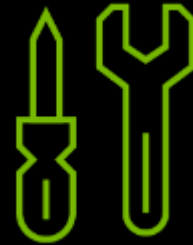


**EXPLORE OMNIVERSE ENTERPRISE**



**DOWNLOAD OMNIVERSE**

[nvidia.com/omniverse](https://nvidia.com/omniverse)



**DEVELOP ON OMNIVERSE**



**DOCUMENTATION**

[docs.omniverse.nvidia.com](https://docs.omniverse.nvidia.com)



**TUTORIALS AND WEBINARS**

[omniverse.nvidia.com/tutorials](https://omniverse.nvidia.com/tutorials)



**FORUMS**

[omniverse.nvidia.com/forums](https://omniverse.nvidia.com/forums)



**DISCORD**

[discord.gg/nvidiaomniverse](https://discord.gg/nvidiaomniverse)

# GTC Sept 2022 Keynote 19:36-37:10 (Omniverse)

MODULUS MONAI RIVA MAXINE NEMO MERLIN CUOPT MORPHEUS TOKKIO AVATAR DRIVE ISAAC METROPOLIS HOLOSCAN

NVIDIA HPC NVIDIA AI NVIDIA Omniverse

3,000 Accelerated Applications 12,000 Startups 3.5M Developers 35,000 Companies Run on NVIDIA AI

WORLD'S LEADING TECHNOLOGY PROVIDERS

ASUS Atos AWS BAIDU AI CLOUD CISCO Ddn DELL Technologies EQUINIX FUJITSU GIGABYTE Google Cloud HPE Hewlett Packard Enterprise IBM inspur Lenovo Microsoft Azure NetApp ORACLE CLOUD Infrastructure PURE STORAGE QCT Red Hat SAP Tencent Cloud VAST vmware WEKA

12,000 start-ups are founding their companies on NVIDIA.

59:03 / 1:37:41 • NVIDIA AI >

NVIDIA CORPORATION

GTC Sept 2022 Keynote with NVIDIA CEO Jensen Huang



NVIDIA  
951 t. tilaajaa

Tilaa

63 t.



Jaa

Lataa

Klippi

Tallenna



19 milj. katselukertaa 1 kuukausi sitten

Watch NVIDIA CEO Jensen Huang unveil the new Ada Lovelace GPU architecture, new advances to its computing platforms, and new cloud services to further the era of #AI and the metaverse – and transform every industry.

Näytä lisää



# SUMMARY

- Omniverse is a tool for multiuser collaborative visual workflows and AI simulated Worlds
- RTX technology is required to produce AI augmented photorealistic rendered scenes
- Enabled by Pixar's innovative USD file format
- Omniverse is available free for individuals and licensed for multiple user collaborative and digital twin environments
- The minimum initial order is a \$9000 "Starter Pack" of 2 Creator Subscriptions, 4 Nucleus Subscriptions and 10 Reviewer Subscriptions
- Agreement signed by HP to resell licenses, first deal is in. Zaha Hadid Architects.
- NVIDIA is here to help you win.







Thank you