Powering Automobile Design With NVIDIA Omniverse

One-in-a-box strategy to capture Global Technology landscape

Design Fungibility for XUV700 – Challenges & Solution

Building more efficient, reliable & sustainable factories

Problem Statement	**Siloed multi-source** sequential process, with no context to engineers across the lifecycle of design	Multiple version of same file - long lead time in case of changes and **no visualization of simulation**	**Clay model is expensive** & wasteful exercise multiplied by # engineering iterations
Objective	**M&M Digicar –** Using Omniverse to bring a **single source of truth of the car model** as it goes through design, engineering, simulation & rendering		

Solution

Design Collaboration

- Accelerated world building enabling Realtime design collaboration
- Lighting and rendering the scene within Omniverse
- Real time visualization of design changes

Integration with 3d Experience

- Dassault to open their APIs to TechM developers
- Code the connectors which will allow seamless and instantaneous connection
- Use VR experience where the designer can do real-time changes.

Million Miles + Other Design Simulations

- Synthetic data generation scenario for one use case
- Explore animation, physics and material library and tweak them.
- OV lights and path tracing to render the sequence as a high-res high FPS video

Design using Omniverse – Benefits Unlocked

Problem

- ✓ Ensuring the Digicar (customer facing conf.) is as close to upstream PLM (Product Lifecyle Management) systems as possible
- ✓ Time loss in terms of gathering accurate & current (latest) data for digital surface model configuration
- ✓ Need for high accuracy wrt the variants across geographies, while ensuring time to market
- ✓ No feedback loop between physical to virtual to account for errors/modifications
- ✓ High scope of error as designers work in silos on various parts

Solution

NVIDIA Omniverse real time rendering capability

- Real time feedback of design decisions, wrt materials, design, specifications etc. (vs seeing the result when the car is made)
- Real time storyboarding of marketing assets

Digicar used USD format which enabled smoother migration to Omniverse

- USD contains business logic – **Technical X sellable** configurations, allows downstream configuration at scale
- Data centric workflow
- Switch from 150% car (all variants across geos) to 1 specification using USD

Outcome

- ✓ **Collaborative environment for designers**
- ✓ **Increased creativity at low cost & high efficiency**
- ✓ **Faster iterations**
- ✓ **Low-cost scale up on demand**
- ✓ **Better product**
- ✓ **Faster time to market**

Tunnel Vision

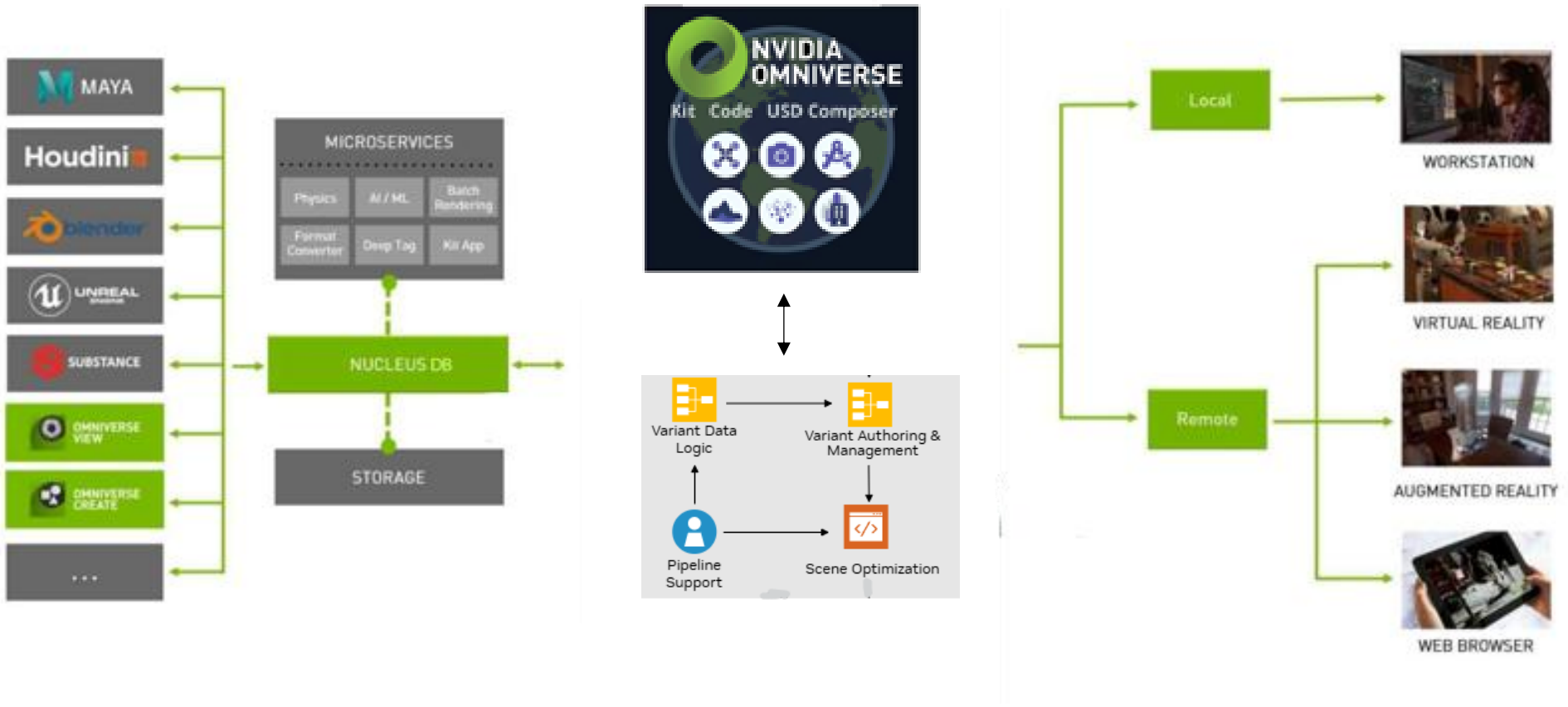
Sequential workflow

Increased Creativity

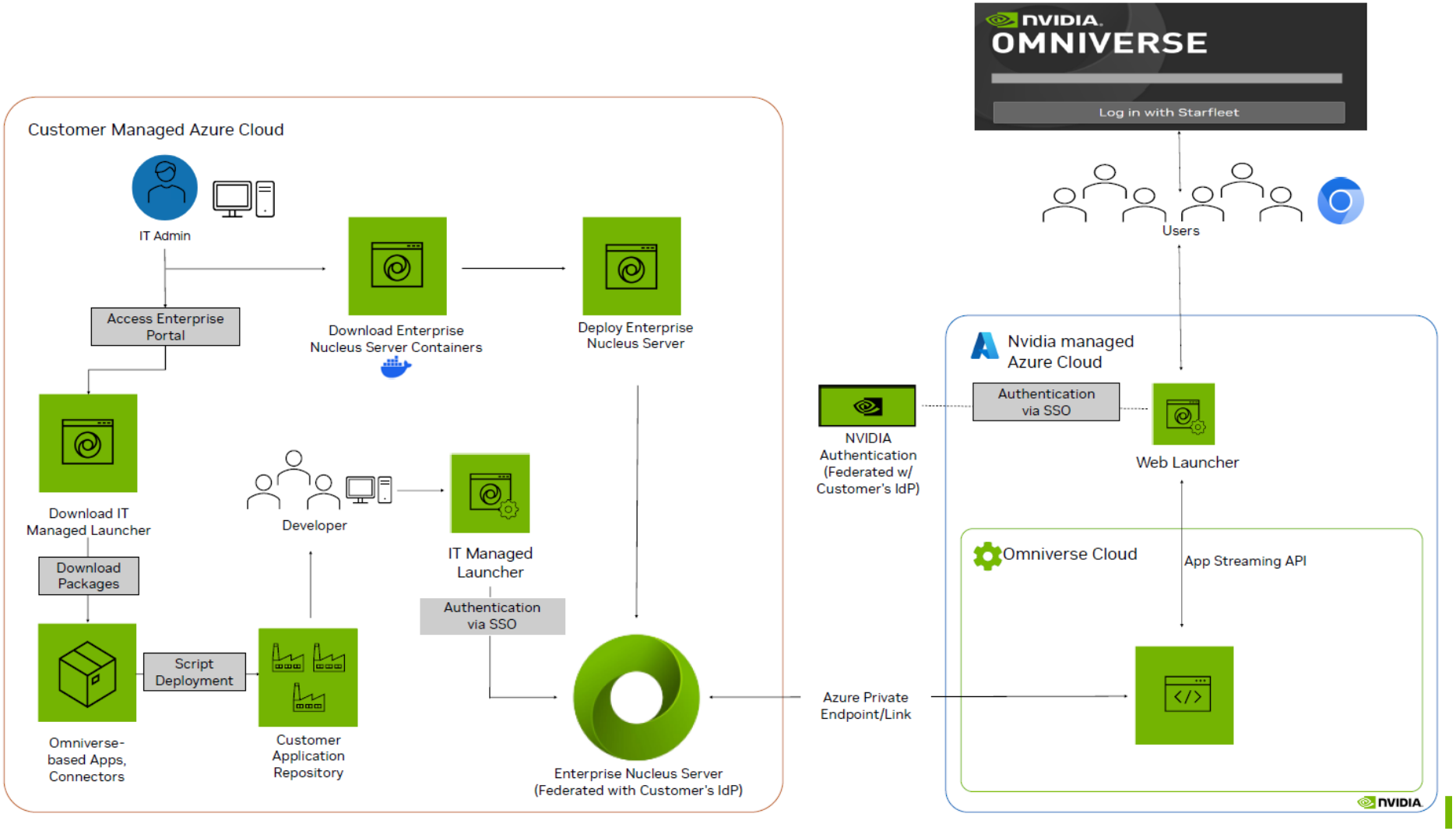
Contextual

Parallel workflow

XUV 700 Architecture using Omniverse



Omniverse Cloud Deployment - Azure



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