3D Connectivity for Digital Twins
Web3D 2022, Paris
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Threedy Visual Computing Pioneers - building on 25 years of research!

- 25 years experience
- Founded Q3 2020
- 40+ Staff Q4 2022

instant3Dhub Platform technology for industrial 3D applications

Customers

Partners
Fraunhofer IGD: Last 30 Years

5 software stacks for interactive 3D application

1992: Y/VRCOM
- Immersive VR
- 6D Interaction
- Industrial App

2001: OpenSG (OS)
- Scene Graph
- Distributed Vis.
- Multithread save

2005: instantReality
- VR/AR Platform
- X3D App Layer
- Rapid App Devel.

2009: x3dom (OS) / transcoder
- X3D in HTML
- Mesh Streaming

2015: webVis/instant3DHUB
- WebScale Visual Computing Platform
- Any Data, Any Device, Any Size, instantly.

Exposed Data and Computing Sensitivity
Target: Visual Computing Experts

Data Driven End2End automation
Target: Domain Experts
Core Issue: Application scalability

"Pilot Purgatory" leads to exploding TCOs

1998, Cebit, Fraunhofer IGD, BMW

"AR-Service is Killer App!"

Status 2022
No Standard Solution
TCO/Cost per Case to high!
Visual Computing as a Service
First Data Driven End2End automation solution

Product Life Cycle
- Sales & Marketing
- Design & Engineering
- Manufacturing
- Assembly & Logistics
- After Sales & Service

Integration
- PLM/PDM
- Digital Twins
- IIOT

Addressability

Scalability
- Any Data
- Any Size
- Any Device

Visualization
- DMU Operations
- Live Collaboration
- Virtual & Augmented Reality

Visual Computing
Vision: “Google Maps” for 3D Data
Any data, any device, any size, instantly

- Reference-based Integration: „Single Truth“ of Data
- Instantaneous Startup and Progressive transmission
- On-Demand Loading
  - Structure
  - Details
  - Metadata
  - Relations
- Pre-Packaged & Custom Apps
VCaaS as infrastructure middleware

Connect, build and run digital 3D products

Visual Compute Virtualization

3D App Standard / Web

3D App Standard / Fat

3D App Custom / Web

3D App Custom / Fat

3D Data Gateway MoST

3D Data Gateway AWS-S3

3D Data Gateway Microsoft Graph

3D Data Gateway TeamCenter PLM

3D Data Gateway Custom

3D Space

3D Space

3D Space

(3D) Data Source

(3D) Data Source

(3D) Data Source

(3D) Data Source

(3D) Data Source

continuous VC Stream

discrete 3D State

3D App

PC-VR

Hololens

API

JAVA

3D App

PC-VR

3D App

Custom / Server

3D App

Custom / Web

3D App

Custom / Fat

3D App

Standard / Web

3D App

Standard / Fat

3D App

3D Data Gateway

PC

VR

Hololens

API

JAVA

3D App

PC-VR

3D App

Custom / Server

3D App

Custom / Web

3D App

Custom / Fat

3D App

Standard / Web

3D App

Standard / Fat

3D App
3D Data Addressability
Spatial, hierarchical and data format agnostic schema

Multi-Data Addressing

Hierarchical Data Links

Data Fragment Addressing
Customer Solution 1/3: BMW Visualization as a Service (VaaS)

- **Use-Case Cluster**
  - Visualization as a Service
    - DMU, Multi-CAD
  - 3D Concepts
    - Review, Collaboration
    - AR-Editor

- **Client Layer:**
  - Standard/Custom Web-App

- **Data Layer:**
  - Custom Data-Gateways (PDM)
    - urn:bmw:prisma:dokuid:...
    - urn:bmw:caebench:...
Customer Solution 2/3: Daimler

PDM2020, Digital Twin Architecture

• Use-Case Cluster
  • Review, Collaboration
  • Live-AR (DARC)

• App Layer:
  • Standard/Custom Web-App
  • PC-VR, AR-Tracking

• Data Layer:
  • Custom Data-Gateways (PLM)
    • urn:daimler:smaragd:struct:
    • urn:daimler:smaragd:data:
Customer Solution 3/3: Siemens

Service Portal

- Use-Case Cluster
  - Service,
  - XR

- App Layer:
  - Custom Web-App

- Data Layer:
  - Standard S3 Data-Gateways