Native GPU Accelerated Geometry - A New Era Begins
When we come to 3D Computation and Geometry - We're Stuck in the Past.
Quick History CAD/CAM Geometry Kernels

- Autocad
- ASIC
- Parasolid
- PTC
- UNIGRAPHICS
- CATIA
- SoildWorks
- GeForce 256
- PC CAD
- EMERGES
- Today: Quadro RTX6000, 24 GB GPU Memory, 4608 CUDA Cores
AS A RESULT:

- Manufacturing Hardware Has Outpaced the Software
- Modern Design and Production Needs Not Being Met by Current Solutions
- Workflows Mired in Cumbersome App Switching and File Repairing
HOW ARE GPUS PREDOMINANTLY USED IN CAD/CAM?

FROM A COMPUTATION STANDPOINT:
Rendering and animations

FROM A MEMORY STANDPOINT:
Larger and larger models due to memory increases every year.
MODERN DESIGN TRENDS

- Getting more and more complex
- New manufacturing methods
- Iteration time and trade studies
- Costs to simulate/prototype
- Demographic shift of engineers, designers & technicians
MODERN MANUFACTURING TRENDS

MODERN MANUFACTURING:
- Additive manufacturing toolpath generation
- Complex geometry processing
- Precise control and variance every 50 – 100 um.
- On the fly adjustment and control
- Data explosion and lazy evaluation
Rocket injector design courtesy of Arc Engines
Introducing Dyndrite’s Accelerated Computation Engine

World's First Fully GPU-Native 3D Geometry Kernel
Let’s Not Code Like It’s 1998

- Geometry Kernel provides surface creation, stitching, and tessellation method
- Ancient API requires experts
- Build a house by first searching for sand and clay

What’s Missing?
Developer Focused Technology Stack

- Start with the essential tools needed to build an application
- Democratize GPU development beyond experts
- Rapid Prototyping Using Python API
- Debug from Python API into C++ API
- Develop print drivers for OEM machine vendors
CASE STUDY:
Dyndrite Additive Toolkit
+ 3D Print Driver
**Dyndrite Additive Toolkit**

Robust, Powerful, and Scriptable Build Processor - 1st App Built on Dyndrite

Streamlines, Optimizes, & Augments End-to-End Workflow

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- **File / Geometry Interoperability**
- **Native Geometry (Spline) Slicing**

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**Python API**

- **IMPORT**
- **POSITION**
- **LIGHT WEIGHTING**
- **SUPPORTS**
- **SLICE**
- **ZONE**
- **HATCH**
- **PRINT**

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**Dyndrite Geometry Kernel**

- Sophisticated Lattice and Support Geometry
- Customized Tool Path Control
DEMO
“Dyndrite puts the power of computational geometry in the hands of anyone. We’re excited to be one of the first companies exploring the applicability of this new technology”

Ryan Petterson, CEO
What Will You Build?

Q & A