



State of The Art: Digital Twins

THE WORLDS MOST POWERFUL
3D DATA VISUALIZATION
SYSTEM





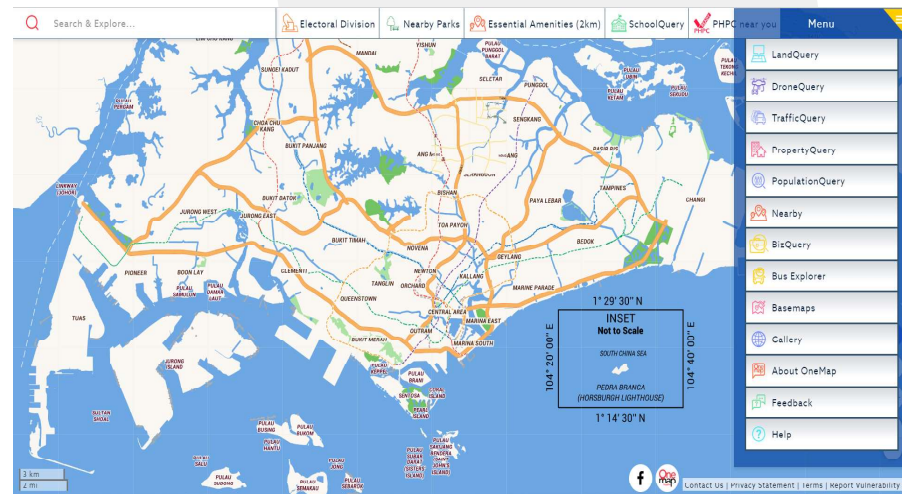
Visualization is so important

"A picture is worth a thousand words" is perhaps even more true in this digital age than ever...

Big Data is now so big, that it is virtually impossible to make sense of it in tabular / text form.

- **Faster Action** – The brain tends to process visual information more easily than written.
- **The models are interactive** – encouraging users to explore and manipulate the data to uncover learnings
- **Geographical information (GIS)** – location information can be included in the analysis

OneMap - Singapore Smart City Project

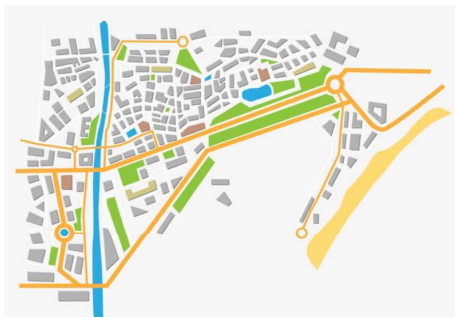




Digital Twins – What is REAL Twin?

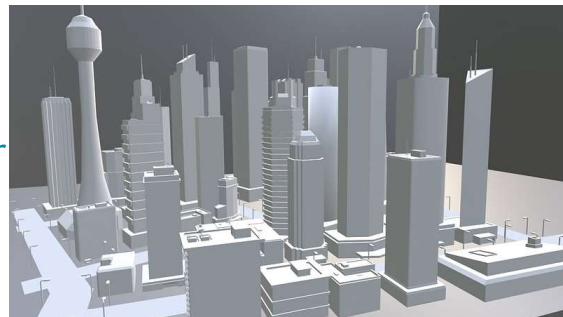
*“The **digital twin** is the virtual representation of a physical object or system across its life-cycle. It uses real-time data and other sources to enable learning, reasoning, and dynamically recalibrating for improved decision making.”*

When we talk about TWINS



2D plan map

or



Simple block model

or



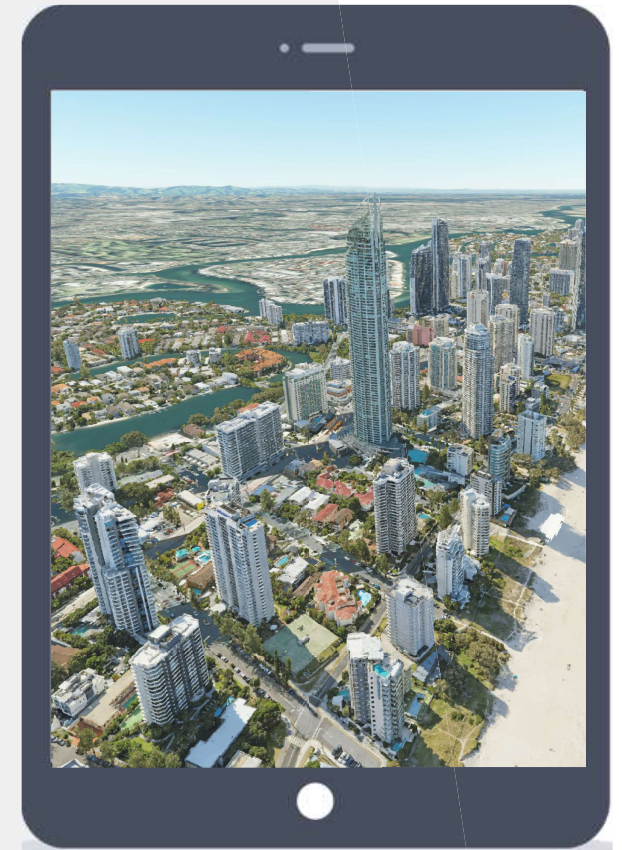
Real scene 3D model



The Problem?

Our customers usually report a number of these frustrations

- Limitations to size of 3D model
- Massive file sizes to download
- Takes forever (if at all) to load
- Have to split into tiles or throw away detail
- High-end computer hardware required
- No control over data hosting location or provider
- SaaS conversion costs
- Constant internet connection needed
- Data storage and transfer costs
- Browser limitation only works from Cloud storage (not local drives?)
- Limitations to number of viewers
- Locked into browser OR Desktop
- No flexibility across Windows / MacBook / Ubuntu / Mobile Device



Our Solution



*The only solution to ALL these problems
ALL at the same time!*



Unlimited data size

Unlimited points
Visualize massive 3D models instantly
No compromise between size and quality



Unlimited sharing

Easily store and share 3D data with your staff and clients –no matter where they are.

Unlimited simultaneous users



Manage your own data & security

You own, keep & manage your data where and how you prefer.
Full control of your own security



Total flexibility

Works across platforms
CPU based rendering on ordinary devices
Offline mode available





Who is Euclidean?

Euclidean is a cutting-edge 3D data technology company based in Australia with offices and clients all over the world.

We specialize in visualization and management of massive point cloud & other 3D formats data.

Euclidean received 'Best Technology' award in Silicon Valley in 2019 and ranked as the Top 30 Smartest companies in 2019 on CIO bulletin.







Unlimited Detail


Massive 3D Data Process Technology

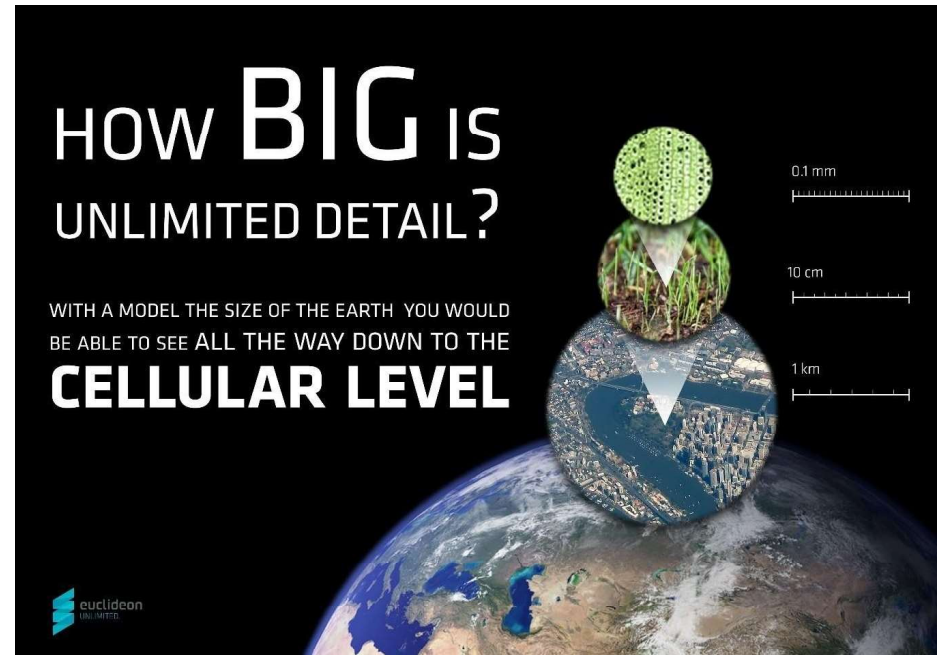
- ▶ The challenge: Big Data became data too big in 3D world.
- ▶ Euclidean has the fastest 3D render which can render terabyte or petabyte level 3D data on consumer hardware within 1 second.

How Massive?

 Imagine a laser scan of the entire Earth at 1mm resolution.

 That hypothetical scan would be approximately 37 billion TB (37 zettabytes) of 3D model data (RAW LAS).

 If you had all that data....we could help you view it...in just under 1 second





udStream – Euclidean Product

Load unlimited point cloud data in a real-time and ultra-fast manner

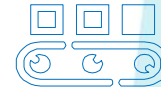
Online release of streaming data with super large scale

Open API and SDK

Allow IOT, GPS and other real-time feeds



To **integrate** upstream and downstream players on a open platform and **create 3D data industry standard**



Compatible with various 3D data sources (such as laser scanning, UAV image, **BIM** and etc.)



Supports 3D data in various industries and builds 3D data computing platform on cloud



Supports all kinds of 3D display devices (e.g. Wearable devices, PC, hologram devices etc.)



Euclidean Global Customers

We support over 1000 customers including governments, enterprises and institutions worldwide.





Euclidean Hong Kong





GB/PB/TB level 3D Model Data

Euclidean Visual Miracle

“Euclidean’s technology not only shrunk the data to a much more manageable size, but also allows the display of the whole City at once!”

“By bringing fast access to the raw or processed scan data all across the city, Euclidean’s software has become an essential part of our data display and analysis tools to get an overview of the city’s assets and security”

– Michael Bleidistel, System Analyst, City of Richmond, British Columbia, Canada

Gold Coast, Australia

20mm accuracy, 57 billion points



Brisbane, Australia

75mm accuracy, 139 billion points



Hong Kong International Airport

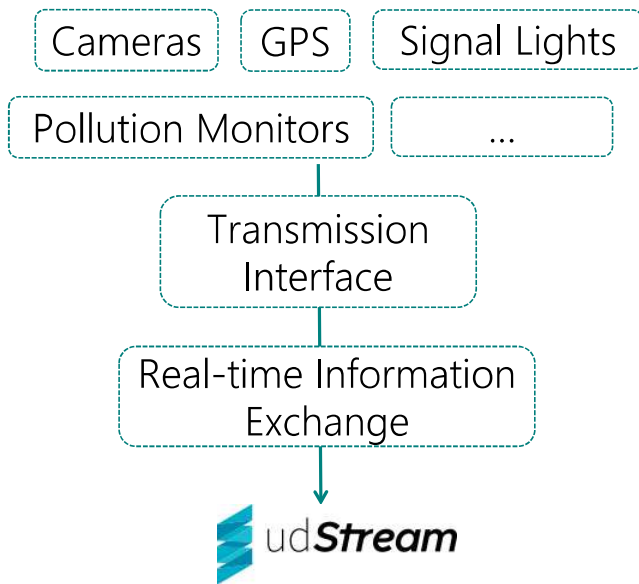
- Visualizing 3D polygon model data with a size of 230GB
- Tracking of planes in and around Airport
- Management of planes: - origin, destination, previous history





Merge IoT into 3D data

udStream supports IoT signal access. It can provide information transmission interfaces of IoT devices such as cameras, face recognition devices, signal lights, trackers, speedometers, and pollution monitors for users to use directly. Combined with other clients, the smart city can be realized.



Hong Kong, Siemens

Real-world 3D models of Hong Kong Science Park and Siemens offices were scanned and can be instantly displayed on the udStream platform. The system can access the sensor API of the Siemens smart device and realizes the fusion of 3D real-world model and real-time IOT data, which is convenient for asset and facility management, as a preliminary exploration





Digital Twins of Hong Kong

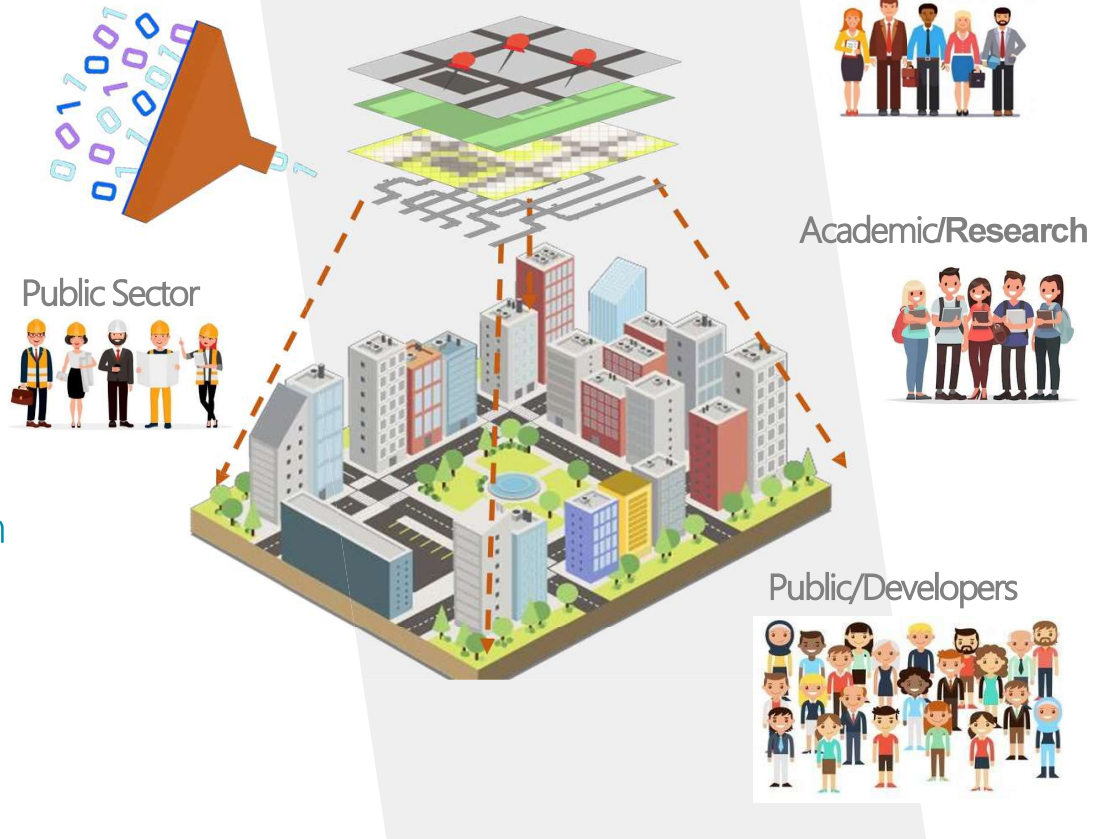
CSDI - Common Spatial Data Infrastructure




Promote the establishment of CSDI
Require contractors to use BIM
Implement Open Data Policy



Earmark \$300 million to develop a geospatial data sharing platform and 3D digital maps of the whole territory





A Spectacular New Way of Developing Smart City for HK

For more information, please visit

www.euclidean.com

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