

DO YOU CONTROL YOUR SCAN DATA?

Solve the challenges in
capturing as-built data with
a Trusted Living Pointcloud

WHITE PAPER

May 2018

AVEVATM



Engineering News-Record estimated that up to 15% of a brownfield project's cost is on rework alone, primarily due to incorrect or missing measurement data. ”

WHY DO YOU SCAN AND WHAT ARE THE CHALLENGES?

Over the life cycle of an asset, whether it is an onshore process plant, offshore platform or marine vessel, it is easy for differences to develop between engineering plans and the physical as-built conditions. This presents significant challenges to design engineers and asset owners alike, because such data gaps have wide-ranging consequences.

The foundation of any revamp project is knowing the precise as-built condition of an asset. This allows you to validate completed work and, furthermore, this data provides a 3D map that helps you to optimise operations and asset management throughout the asset life cycle.

For the last two decades the value of laser scanning has been widely recognised as reducing the cost of generating an as-built dataset by up to 80% and the subsequent reduction in rework this enables. Laser scanning is used by leading EPCs and Owner Operators the world over and there is a widely available supply chain for the delivery of point cloud data.



THE STATE OF THE TECHNOLOGY LANDSCAPE

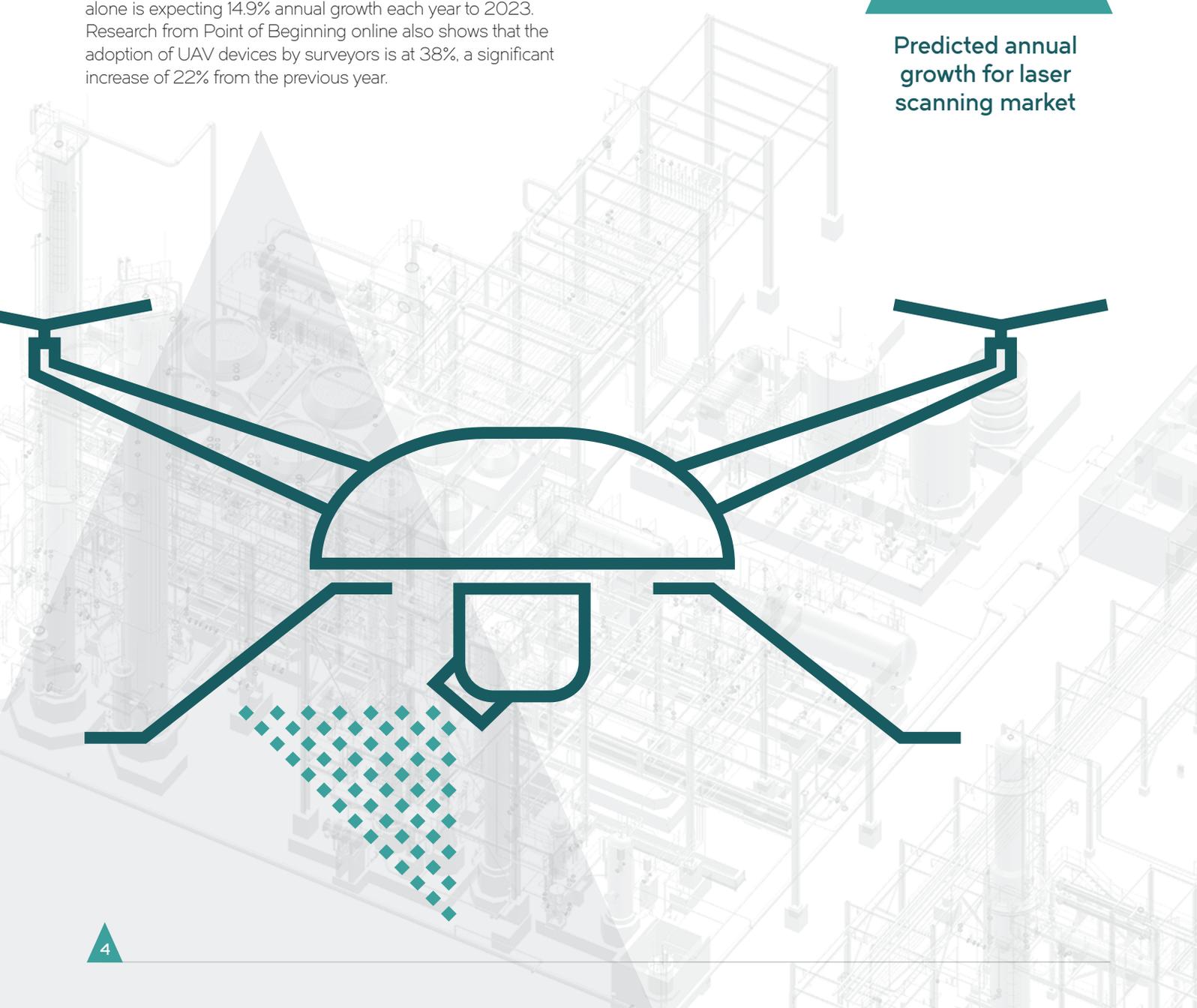
Over these two decisive decades, the 3D data capture technology landscape has expanded at a disruptive pace. There is a wide choice of scanning providers, devices and capture methods on the market. Terrestrial laser scanners are no longer the only string to a surveyor's bow. Handheld, mobile and unmanned aerial vehicle (UAV) devices have emerged, reducing the barriers to surveying and increasing the coverage of the captured data. This is especially true in high-risk and otherwise inaccessible areas.

There appears to be no signs of this growth slowing, either. MarketsandMarkets reports that the laser scanning market alone is expecting 14.9% annual growth each year to 2023. Research from Point of Beginning online also shows that the adoption of UAV devices by surveyors is at 38%, a significant increase of 22% from the previous year.

Change in demand for surveying services is also higher, with 88% of those asked perceiving an increase in demand versus 69% the previous year. This demand is driven by reducing costs of data acquisition alongside the increased awareness of the value for Owner Operators of as-built data in an asset's life cycle.



Predicted annual growth for laser scanning market





INHERENT DATA CHALLENGES

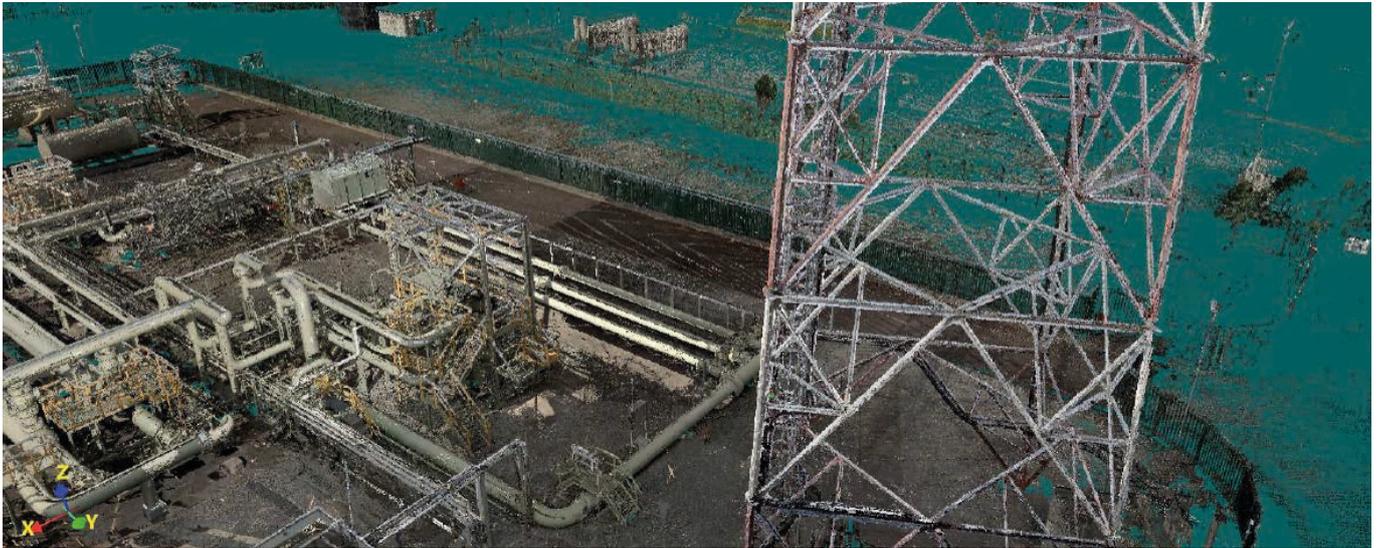
Although great news, rapid, sustained growth leads to challenges of its own. A wide choice of devices, lowering data acquisition costs and expanding data coverage can lead to fragmented datasets, in different formats and at a massive volume that is difficult to control.

Conservatively, we estimate that, for all scanned survey data from an average single asset, there is a 30% overlap in repeated data. Data users have commented that this number could be much larger. This represents a significant waste in time acquiring data, causes unnecessary facility downtime and requires time to identify correct information. Furthermore, survey crews run unnecessary risks to themselves on site when capturing the data.

Another challenge is that capturing from different devices, registering and processing data into a single dataset is not always practical. Take an offshore production platform, for example. Asset data could include laser scans from a terrestrial scanner that captures topsides accessible areas, from a UAV used to capture the jacket and elevated structures such as a flare boom and, finally, from a handheld scanner that enables a surveyor to access an area of high density and complex piping. Immediately, the surveyor must process information in different formats, which can take weeks to synchronise into a single dataset. A common way to reduce this problem is to limit the types of scanner used or to decrease the coverage of a survey. This might remedy data inconsistencies, but it sacrifices the true value that the technology can potentially capture.

A data stakeholder is anyone in the life cycle of point cloud data who comes into any contact with that information. This includes surveyors, engineers, designers, contractors, etc. ”





Even more worrying, the spread of where captured data is stored makes pinpointing the relevant material a laborious and error-prone task. With data stakeholders based globally, the IT infrastructure that delivers the data is continually under pressure to meet the data demands. Data stakeholders are no strangers to scattered datasets – often external hard drives are used to transfer data between systems, despite the risks that such an approach poses. This leads to problems with data reliability, integrity and security. Additionally, transferring and storing this kind of data is a mammoth task, and a waste of time and money.

Common Data Challenges

- Fragmented point cloud data
- Reliability, integrity and security of captured data
- Storing and handling massive data
- Ownership of data
- Interoperability with scan hardware and CAD software

Data can be held, not just at various sources within a corporation, but by different entities. Owner Operators, for example, will commonly contract out the acquisition of 3D capture data to their engineering, procurement and construction consultancies and service providers, who will act as the custodians and the main consumers of the capture data. A full handover of this data is not always a seamless process – sometimes there is no handover at all! This can lead to data being scattered throughout a company's systems and removes the ability of the Owner Operator to make full use of this tremendously valuable resource.

Companies invest considerable amounts of time and money into the procurement of engineering software, as well as into training users. That means that any new technology must complement currently adopted solutions so it can enhance workflows rather than break them.



A TRUSTED LIVING POINTCLOUD

Maximise the value of your data and streamline the performance of your asset with detailed, accurate, as-built data

Owner Operators and their entire supply chain can benefit from access to a 3D map of their asset. To use 3D mapping effectively, however, companies need tools that help them to handle point cloud data better, improve reliability and ensure that information remains relevant to the ever-changing reality it reflects. At AVEVA, we call this a Trusted Living Pointcloud.

By maintaining an accurate and reliable Digital Asset that reflects the as-built reality, growing with the changes that are made, you can take both control and ownership of your data.

Unifying data into a single, trustworthy source overcomes challenges, including data integrity, security and ownership. Furthermore, wasted data acquisition costs from duplicating survey work and loss of data can be greatly reduced.

Data collaboration is also key. Global businesses have design engineers and information managers working in remote locations worldwide. Data needs to be readily but securely available to each of them, wherever their worksite and operating facility. This kind of data is far easier to manage and share when it is not fragmented across remote corporate systems and devices.

A leading EPC commented that 'often it is the areas most in need of the data that are the least equipped to handle it'. A Trusted Living Pointcloud enables effective data sharing supported by in-built collaboration tools. This reduces the root causes of overlapping, redundant or surplus information, ultimately minimising costly data bloat.

Achieving the best, most flexible and useful project data stems from intelligent control and ownership of data. Instead of relying solely on contractors, the opportunity is for you as a plant owner to truly own your own data. This unlocks the freedom to use this valuable resource with contractors and service providers as you choose.

The Trusted Living Pointcloud is vendor agnostic, so that data can be captured from any device a surveyor has at their disposal and used downstream by a company's CAD solutions. Processing and handling point cloud data is a simple gateway that can enable data stakeholders to access a single platform for all their point cloud data needs.



The Trusted Living Pointcloud has helped reduce project rework from 15% to less than 1% across the board. ”



WHY USE A TRUSTED LIVING POINTCLOUD STRATEGY?

The Trusted Living Pointcloud has helped reduce project rework from 15% to less than 1% across the board. This represents savings of billions of dollars in brownfield projects and associated rework.

It also unlocks further savings and benefits throughout the whole life cycle of an asset.

Putting in place a Trusted Living Pointcloud strategy can transform your data experience of 3D capture data and improve data handling across your global team.

Benefits of a Trusted Living Pointcloud

- Maximise data value
- Mitigate unnecessary risks
- Minimise costs of both data acquisition and rework
- Minimise data bloat
- Own your own data

FINAL THOUGHTS

Achieving a Trusted Living Pointcloud



AVEVA LFM's suite of solutions and CAD integrations enables you to take control of your point cloud data. It can handle data from common 3D data capture devices and store it in a single accessible source ready to be used in downstream data workflows. AVEVA LFM integrates your data agnostically, working with a variety of CAD solutions, including those from our competitors.

AVEVA LFM's InfiniteCore™ technology enables the full resolution and integrity of acquired scans to be available and accessed without the detrimental compression of a single point of data. This data can be stored and served on premise or in the cloud, giving you the flexibility that your global network of data stakeholders requires.

Access this data on a variety of devices. Enable your teams to explore a Digital Asset live on site; flag gaps in the data or add intelligent mark-up to it. Work offline when network connection is unfeasible or inaccessible, then synchronise the data at the touch of a button when you are back online.

Visualisation technologies including BubbleView™, HyperBubble™ and Solid Pointcloud™ enable the clear and comprehensive consumption of asset data for a wide variety of users, as well as providing an immersive interface to interact with and process changes.

Registering and validating scan data is completed in hours rather than weeks. Any data gaps can be immediately recognised and rectified.

To read more about how AVEVA LFM and its technologies can support your 3D data capture needs, search online for “Trusted Living Pointcloud”.

For an evaluation visit www.aveva.com/3d-data-capture.

Serve point cloud data to users within the asset life cycle via AVEVA Connect™. AVEVA Connect is a SaaS platform. This allows you to manage rapid access to secure data via cloud technology. You can also offload storage and computational power to efficient data centres tailored to your enterprise needs. ”





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About AVEVA

AVEVA is a global leader in engineering and industrial software driving digital transformation across the entire asset and operational life cycle of capital-intensive industries.

The company's engineering, planning and operations, asset performance, and monitoring and control solutions deliver proven results to over 16,000 customers across the globe. Its customers are supported by the largest industrial software ecosystem, including 4,200 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 4,400 employees at 80 locations in over 40 countries.

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