Bentley
Advancing Infrastructure

Orbit 3DM Cloud

Lot 2 – Cloud Software

Services Definition

Prepared for UK Government G-Cloud 13

18 May 2022

Orbit 3DM Cloud Lot 2 – Cloud Software Services Definition

BENTLEY CONTRACTING ENTITY

Name: Bentley Systems UK Limited
Address: 20 Gracechurch St, London EC3V 0BG, United Kingdom
E-mail: gcloud@bentley.com

CONTENTS

EXECUTIVE SUMMARY

Digital context provided by Reality Data is frequently the greatest opportunity to get started on a digital twin journey by enabling visualization and analysis of digital infrastructure assets across the entire lifecycle.

Problem

Multiple acquisition devices such as cameras, laser scanners and drones are readily available. It has never been easier to digitize infrastructure. However, to be truly valuable all this data needs to be optimized into ready-to-use deliverables and managed in a way that promotes its consumption.

Solution

Bentley's Orbit 3DM Cloud solution covers the entire manage-to-consumption Reality Data lifecycle, including:

- Store and share Reality Data in the cloud
- Stream DSM/LiDAR point clouds, 360 and planar imagery
- View and share Street view, nadir, and oblique 3d mapping data
- Consume data via web and mobile devices

Value

Bentley's Orbit 3DM Cloud solution helps you manage, and share massive amounts of point cloud, imagery, reality mesh, and traditional GIS resources for use with reality modelling and digital twins.

Conclusion

The Orbit 3DM Cloud solution manages ready-to-use Reality Data that serves as digital context to help you get started in your digital twin journey.

1 SOLUTION OVERVIEW

Orbit 3DM Cloud enables you to efficiently share massive amounts of point cloud, imagery, textured mesh, and traditional GIS resources. The software can publish your aboveground, belowground, or indoor reality data acquired from terrestrial, mobile, UAS, oblique, and aerial mapping systems.

Hardware-neutral, Orbit 3DM Cloud give users a full 3D 360° view of the world by enabling the real-time fusion of various reality data resources of any size from any system

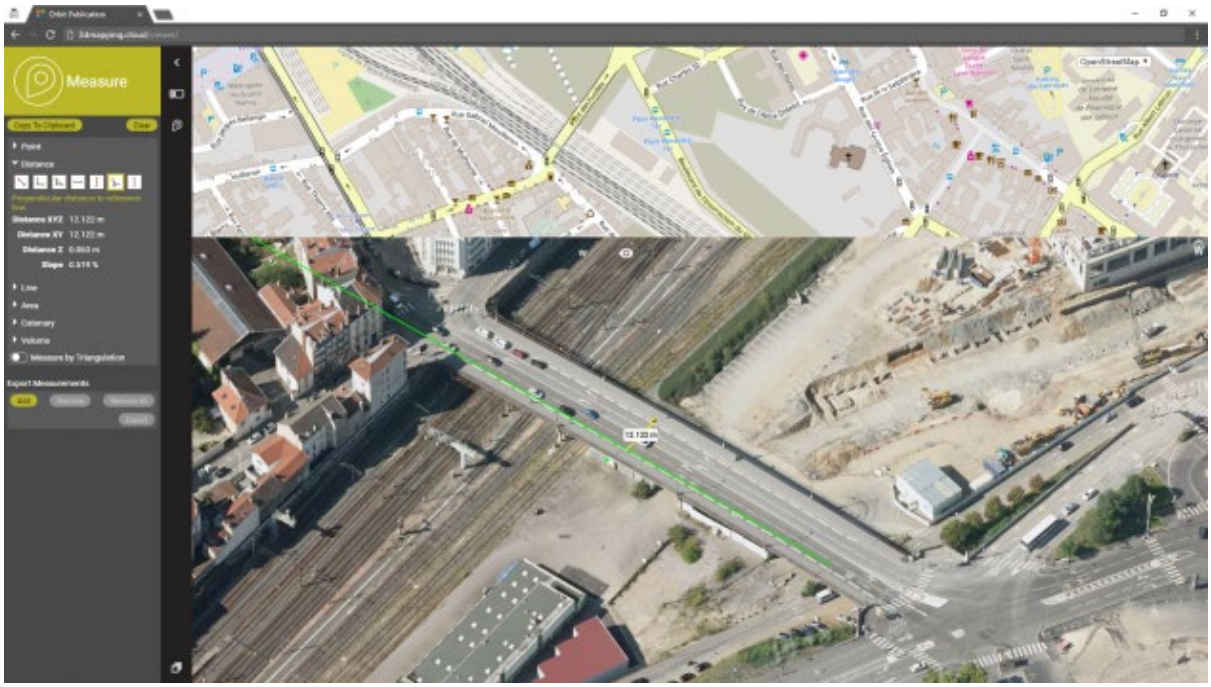

Figure 1 Orbit 3DM Cloud give users a full 3D 360° view of the world

2 KEY FEATURES

2.1 Catalogue and Manage Your Data and Publications

With Orbit 3DM Cloud, you'll receive a user-friendly console with fundamental catalogue tools to manage your 3D mapping content. These management capabilities include combining 3D mapping resources, base maps, and other reference resources into ready-to-use publications. The applications grant you full control to manage user credentials or publish your content in a login-free environment.

This application allows you to easily view login data, configure web pages, and generate direct web links. You can create a publication addressing the exact needs of your users by adding metadata, configuring the view compositions and resource presentation, and specifying available features.

2.2 3D Mapping Data in a Web Browser

You can share, view, and use your 3D mapping data on the web. Orbit 3DM Cloud produce the full 3D view in a browser and allow you to easily navigate through terabytes of point-cloud data and images. You can effortlessly publish geo-tagged spherical and planar images, captured ground-level images, aerial oblique images, or nadir images. These images can be combined with point clouds, textured mesh and overlay vector data, including web feature services.

Smart reference capabilities instantly grant insight with real-time indications of all view positions, view orientations, and resource footprints on top of your favorite base maps. The applications can dynamically switch layers on and off, adjust presentations, measure, annotate, and create 3D fly-through animations. Options include searching for objects or using the geocoding services. You can select objects and request attribute information or record a snapshot of information for a specific time with all metadata included.

2.3 Measure and Extract

With Orbit 3DM Cloud, you can accurately measure 2D and 3D coordinates from all mapping resources. Various point cloud measuring techniques, mesh and DEM intersections, reference planes, and triangulation measurements can all be combined. This application includes options such as measuring on images alone or on an image overlaid on a point cloud. You can quickly measure, attribute, and extract points, lines, and areas, and download the results for export.

2.4 Time as the Fourth Dimension

Orbit 3DM Cloud allows you to manage several years of 3D mapping data, combine and compare mapping data over time, display your time-lapses, and annotate the differences.

3 INTEGRATION POTENTIAL

3.1 SDK and Plug-ins to Integrate into Third-party Workflows

Our publishing solutions come with a standard web viewer, ready-to-use plug-ins, and an SDK to develop custom workflows and view integrations. Plug-ins for Esri, AutoCAD Map, and QGIS are also available. You can easily integrate plug-ins for your workflows via the available API/SDK or work via one of the available third-party software plug-ins for Esri, Autodesk, QGIS, or MicroStation.

APPENDICES

Bentley

APPENDIX 1 – SLA

Service Level Agreement

The following Service Level Agreement (SLA) supplements the SELECT Program Agreement, including Exhibit F Bentley Cloud Offerings. In the event there is a conflict between this SLA and the SELECT Program Agreement, this SLA shall prevail. This SLA shall apply to specific Bentley Cloud Offerings only when attached to or incorporated by reference to an applicable commercial offering document, such as a quotation, proposal, or order form. If a commercial offering document does not include this SLA as an attachment or by reference, it shall not apply to that Cloud Offering.

Availability Commitment

Bentley shall provide System Availability per Table 1 below.

Table 1 - Availability

Availability Commitment	System Availability Period
99.9%	24x7

Bentley shall measure performance against the Availability Commitment during a calendar month based on the following calculation:

$$\text{Availability \%} = \frac{\text{Available Minutes} - \text{Unscheduled Downtime Minutes}}{\text{Available Minutes}}$$

Users will be given notice of Maintenance Windows which will be used to apply required patches to the IT infrastructure to ensure the continued security, availability, and performance of the system. Wherever practical, Maintenance Windows will occur outside of Subscriber's core business hours.

- The Availability Commitment excludes downtime due to Scheduled Maintenance.
- Unscheduled Downtime is calculated from the minute it is clearly reported by the Subscriber to Bentley, until Bentley reports it fixed or mitigated. Bentley may subtract from the calculated downtime any time waiting for a response from the Subscriber
- Only "Critical" Incidents (Table 3 below) will be considered as Unscheduled Downtime in the above Availability calculation.
- Where Bentley provides multiple production services, identified by different Universal Resource Locators (URLs), the availability will be calculated for each URL.

Remedies

Bentley shall provide Subscriber remedies for any Bentley failure to meet the Availability Commitment during any single calendar month (the "Cover Period"). Upon the first instance per URL, Bentley shall make a good faith effort to understand the cause and make reasonable repairs to prevent the failure from occurring again. Upon any subsequent instance, in addition to the remedy set forth above, Bentley shall also provide a Service Credit to Subscriber as described in Table 2. If the Monthly Subscription covers multiple Fully Qualified Domain Names (FQDNs), the remedy will be based off a part of the Monthly Subscription proportional to the usage of that FQDN.

Table 2 – Remedies

Availability	Service Credit
98 % -- 99.8%	2% of Monthly Subscription for affected Service
95 % -- 97.9%	4% of Monthly Subscription for affected Service
Below 95%	5% of Monthly Subscription for affected Service

Bentley will apply any Service Credits only against future amounts due from Subscriber for Hosting Fees. Service Credits will not entitle Subscriber to any refund or payment from Bentley. Unless claimed within ninety (90) Days following the end of the Cover Period to which they correspond, all Service Credits are waived with respect to that period of service. Subscriber agrees that the Service Credits set forth herein are Subscriber's sole and exclusive remedy, and Bentley shall have no further liability, for any failure by Bentley to meet the Availability Commitment or System Availability Period.

In respect of all other claims, losses, or damages, whether arising from tort (including negligence), breach of contract, or otherwise under or in connection with this SLA, shall in no event exceed the applicable monthly subscription fees during which the event giving rise to the liability occurs.

Support Objectives

Bentley will, in consultation with the Subscriber, be responsible for classifying each reported, verifiable and reproducible incident per Table 3 and will use commercially reasonable efforts to resolve such incidents in accordance with the targets specified in Table 4.

Table 3 – Priority Classification

Name	Classification	Description	Example
Priority 1 (P1)	Critical	System Down A complete loss of cloud service – no user can interact with the service	Users at multiple sites cannot access the system and no workaround exists.
Priority 2 (P2)	High	Incident which impairs the users' ability to maintain business operation causing a severe degradation of service or resulting in some important functionality being unavailable. Operations can continue in a restricted fashion.	Users can access system however there is material degradation of functionality or performance
Priority 3 (P3)	Medium	Incident which causes a loss of some important functionality.	A service is not available causing inconvenience, however, business operations can continue without major disruption
Priority 4 (P4)	Low	Incident which has little or no significant impact on the business. Low impact & low urgency.	The behavior varies from user expectations, but normal business operations can continue.

The provision of a workaround or temporary fix will lower the Priority of an incident to reflect the residual impact.

Table 4 – Incident Response and Resolution Targets

Priority	Response Target	Resolution Target	Update Interval
P1 - Critical	1 Hour	See below*	1 Hour
P2 - High	2 Hours	1 Business Day	1 Business Day
P3 - Medium	4 Hours	10 Business Days	5 Business Days
P4 - Low	8 Hours	Mutually Agreed	Mutually Agreed

*Critical incidents will be forwarded immediately and worked continuously by qualified team members until it is resolved, or an acceptable workaround is delivered to reduce the priority.

Response, Resolution and Update target levels are indicators and serve as benchmarks for the Bentley Support teams.

"Response Times" and Resolution Times" commence from the point in time accurate and complete information regarding the incident or interruption is correctly entered in Bentley's Incident Tracking system.

If the resolution of any P2, P3 or P4 issue requires an update, fix or patch to the relevant Bentley commercial software product resulting in a modification of standard COTS or customized code, then additional development, testing and release tasks will be required to ensure the quality of the product release. Bentley's support obligations in these instances, including response times, shall not be governed by this SLA, but rather the SELECT Program Agreement or other relevant governing agreement executed by Subscriber and Bentley shall apply.

"Business Day" for support of P2 though P4 incidents is defined as Monday through Friday inclusive excepting Public Holidays in the location where support is provided.

Bentley has designed the systems to meet the recovery time and point objectives described in Table 5 and shall use commercially reasonable efforts meet them in the event of a system failure.

Table 5 – System Disaster Recovery Objectives

Recovery Time Objective (RTO)	Recovery Point Objective (RPO)
8 Hours	1 Hour

Limitations

This SLA and any applicable Service Levels do not apply to any performance or availability issues:

1. Due to factors outside our reasonable control (for example, natural disaster, war, acts of terrorism, riots, government action, or a network or device failure external to our data centers, including at Subscriber's site or between Subscriber's site and Bentley's data center);
2. That result from the use of services, hardware, or software provided by Subscriber, including, but not limited to, issues resulting from inadequate bandwidth or related to third-party software or services;
3. Caused by Subscriber's use of a Service after instruction from Bentley to modify use of the Service;
4. During or with respect to preview, pre-release, beta or trial versions of a Service, feature or software (as determined by Bentley);
5. That result from Subscriber's unauthorized action or lack of action when required, or from Subscriber's employees, agents, contractors, or vendors, or anyone gaining access to Bentley network by means of Subscriber's passwords or equipment, or otherwise resulting from Subscriber's failure to follow appropriate security practices;
6. That result from faulty input, instructions, or arguments (for example, requests to access files that do not exist);
7. That result from use of sandbox, proof of concept, development, QA, or other non-production systems unless explicitly included by Bentley Systems.

Service Termination and Subscriber's Data

Upon termination of the Service, Bentley will deactivate any remaining Subscriber accounts and upon written request provide an export of Subscriber's data in a standard, generally accepted electronic form within ten (10) business days, and places no restrictions on its use by the Subscriber. Unless otherwise requested, Bentley will delete all copies of Subscriber's data from its servers within two (2) weeks of being notified that the Subscriber has successfully read the files, or within four (4) weeks of the data being provided if no confirmation or associated Service Request is received.

Note: it may take up to an additional 30 days for back-ups of that data to expire.

About Bentley Systems

Bentley Systems (Nasdaq: BSY) is the infrastructure engineering software company. We provide innovative software to advance the world's infrastructure – sustaining both the global economy and environment. Our industry-leading software solutions are used by professionals, and organisations of every size, for the design, construction, and operations of roads and bridges, rail and transit, water and wastewater, public works and utilities, buildings and campuses, mining, and industrial facilities. Our offerings include MicroStation-based applications for modeling and simulation, ProjectWise for project delivery, AssetWise for asset and network performance, Seequent's leading geoprofessional software portfolio, and the iTwin platform for infrastructure digital twins. Bentley Systems employs more than 4,500 colleagues and generates annual revenues of approximately $1 billion in 186 countries.

www.bentley.com

Global Offices

BENTLEY WORLDWIDE HEADQUARTERS

Bentley Systems, Incorporated
685 Stockton Drive
Exton, PA 19341, United States
1-800-BENTLEY | +1-610-458-5000

BENTLEY EMEA

Bentley Systems International Limited
Charlemont Exchange
5th Floor, Charlemont Street
Dublin 2, D02VN88, Ireland
+353 1 436 4600

BENTLEY ASIA

Bentley Systems (Beijing) Co., Ltd.
Unit 1402-06, Tower 1
China Central Place, Beijing 100025, China
+353 1 436 4600