Technical Data

holo|one

# Technical Documentation

Structure

The holo|sphere consists of backend or server systems and the individual modules (frontend applications), with which the users interact.

The frontend applications are installed as known from other applications on the chosen operating systems. Updates are delivered through the same channels, namely:

- Windows: Windows Installer
- HoloLens: Microsoft Store
- Android: Google Play Store
- iOS: App Store

Alternatively, holo|one also offers the option of setting up all applications directly for our customers.

The server systems are provided, maintained and hosted by holo|one via Microsoft. These are 'invisible' to the customer and responsible for functions such as data storage, connection between different devices and carrying out complex calculations.


Customer — Systems Employees

Server — holo|sphere

Devices — TASK WORKSPACE EXPERT
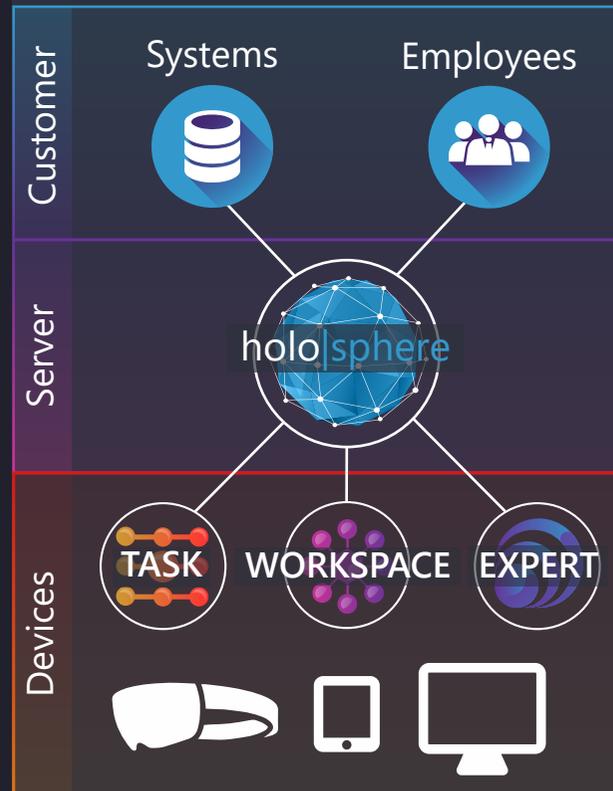
Standardised Integrations

Data integration stands for the connection of information systems already put to use in your company with the AR solution holo|one provides (and vice versa).

In order to keep the effort needed for integration as little as possible, holo|one offers a standardized integration process for a selection of common systems and applications.

These integrations are a part of the system, included in the licensing fees and only have to be configured by or for the customer.

Currently offered standard integrations:

Data Integration

User Administration

holo|sphere
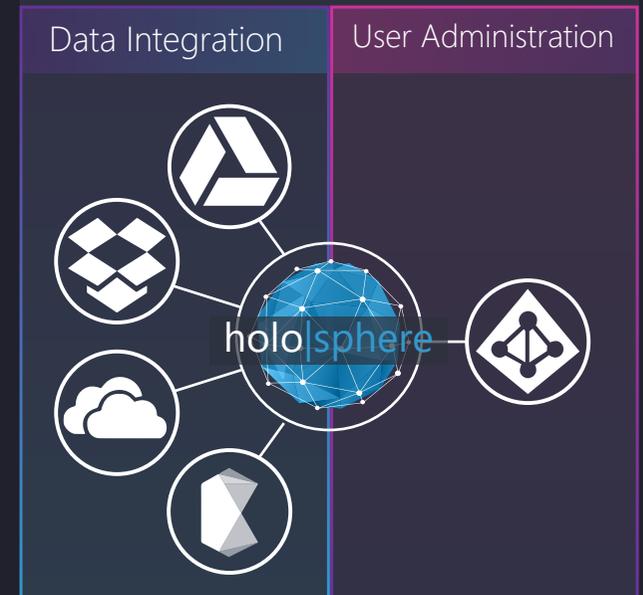
- *Google Drive*
- *Dropbox*
- *Microsoft OneDrive*
- *Autodesk BIM 360 (after 3. quarter 2018)*

- *Azure Active Directory*

Custom Integrations

Custom integration describes the integration of systems which are not supported in a standardised way and require to be specifically developed for a single company. Custom integrations are proviced by holo|one, but are not included in the licensing fees.

Examples are connections to Internet of Things (IoT) applications, other sources of sensory data or connections to the company-own ERP-System (such as SAP).

In order to guarantee quick and reliable integration of our data with specific company data of the customer, we work alongside the Swiss company JLS DIGITAL AG.

JLS specialises in data integration and consists of 70 trained experts. In partnership with JLS we are able conduct any custom integration quickly and reliably.

Possible individual Integration:

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Sensor Data

Personnel Management

Database System

Other Information Systems

SAP

Compatibility

Our applications are compatible with a wide range of operating systems and devices. It is possible to use our solution on nearly all mobile devices, computers and AR glasses. The use of different devices within a company does not pose a problem and can, depending on the use case, even
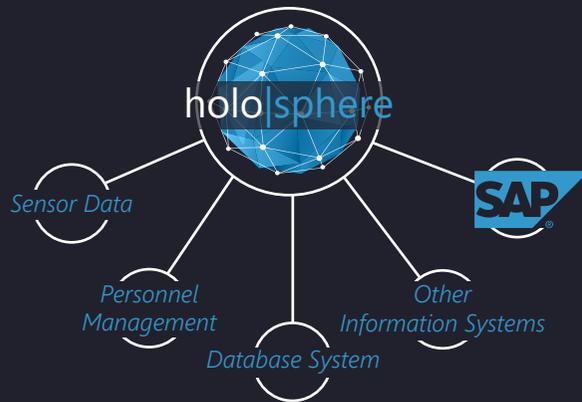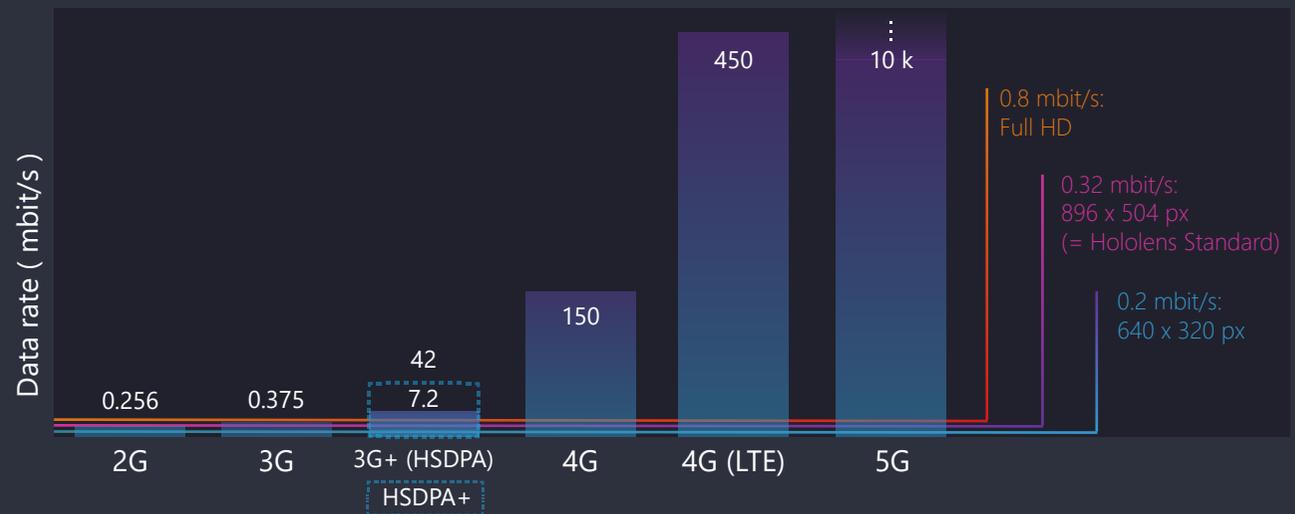
be a benefit. Currently, iOS, Android and Windows are supported with the support of MacOS being on the horizon. Independent from any platform, our software can also be used as a browser application.

In order to optimally utilise the functions of our software, we recommend the use of specialised Augmented Reality glasses such as the Microsoft Hololens. These devices rely on depth sensors and powerful hardware in order to carry out even the most demanding tasks.

Furthermore, due to the lack of an eye-straining LCD display, they are more user friendly than earlier models and can put to use for a longer amount of time before the first signs of fatigue become apparent.

Bandwidth

For the connection of two or more devices when using holo|expert or holo|workspace a working internet connection is required. To ensure the effective use of our software even in remote areas, we value the usage of as little bandwidth as possible.

On minimal settings, our solutions require only 0.2mbit/s and are usable starting with 2G. For optimal usage, the software requires 1.0-1.5mbit/s, which is only a fraction of a common 3G+ bandwidth. Data rates exceeding these thresholds bring advantages when the download of larger files, such as videos or 3D models, is required.

Data rate (mbit/s)

0.256	0.375	42 / 7.2	150	450	10 k
2G	3G	3G+ (HSDPA) HSDPA+	4G	4G (LTE)	5G

0.8 mbit/s: Full HD

0.32 mbit/s: 896 x 504 px (= Hololens Standard)

0.2 mbit/s: 640 x 320 px

Servers and Hosting

All data is saved via Microsoft Azure. Microsoft serves a threefold role as a cloud computing platform: The platform serves as *Infrastructure as a Service*, *Platform as a Service,* and *Software as a Service* and is furthermore divided into six different functions, out of which two are relevant to us: **Computing** and **Storage**.

Computing describes the opportunity to carry out tasks which demand a lot of the CPU on external servers that are hosted by Microsoft. One of the possible use cases for this is the conversion of CAD-Models to AR-compatible models, should this feature be required by the customer. Carrying out the conversion on company-own devices is a viable solution, however.

Computing through Azure   Customised computing

Azure Server   *Customer Server*

Storage means that data can be permanently saved in databases which are on servers hosted by Microsoft.

Microsoft Azure is exceptional concerning Uptime as well as data security. Data is redundantly saved on several servers, which guarantees an uptime of 99.9% (which leads to a yearly downtime of only 8 hours and 46 minutes, which very little in comparison to competitors). This is valid for computing as well as storage.

Microsoft also owns more data security certificates than any other cloud provider. Microsoft Azure holds to a large number of international as well as industry specific data security standards, among them ISO 27001, HIPAAA, and many more. Several different impartial instances such as the British Standards Institute regularly check that these standards are upheld.

However, Microsoft's only role is the provision of physical server hardware on which holo|one's software is installed. If wished by the customer, all server systems can be set up on servers of choice, including company-owned servers and internal networks.

Data Security

In order to ensure absolute data security we take several measures:

Every data based communication is encrypted at all times. Encryption happens over the common-place Hypertext Transfer Protocol Secure (HTTPS), which ensures that no one is able to 'listen in' on the communication happening. Furthermore, all databases are set up behind an individually customizable firewall, which prevents external influence. Only internal communication is at all possible.

Our Expert module, which transfers audio and video data, utilizes peer-to-peer technology, which means that all data is transferred directly from one device to the other – there is no server in the middle at all, internal or external. There is no place where data could be saved or intercepted with malicious intent. This data transfer too is safely encrypted and not viewable by third parties.

As an additional security measure, sensitive data isn't saved in clear text format. Through *hashing* and *salting*, data such as passwords and other login data is encrypted and rendered unreadable by the human eye or unauthorized machines. Naturally, all such data is only viewable by the company to which it belongs.

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