

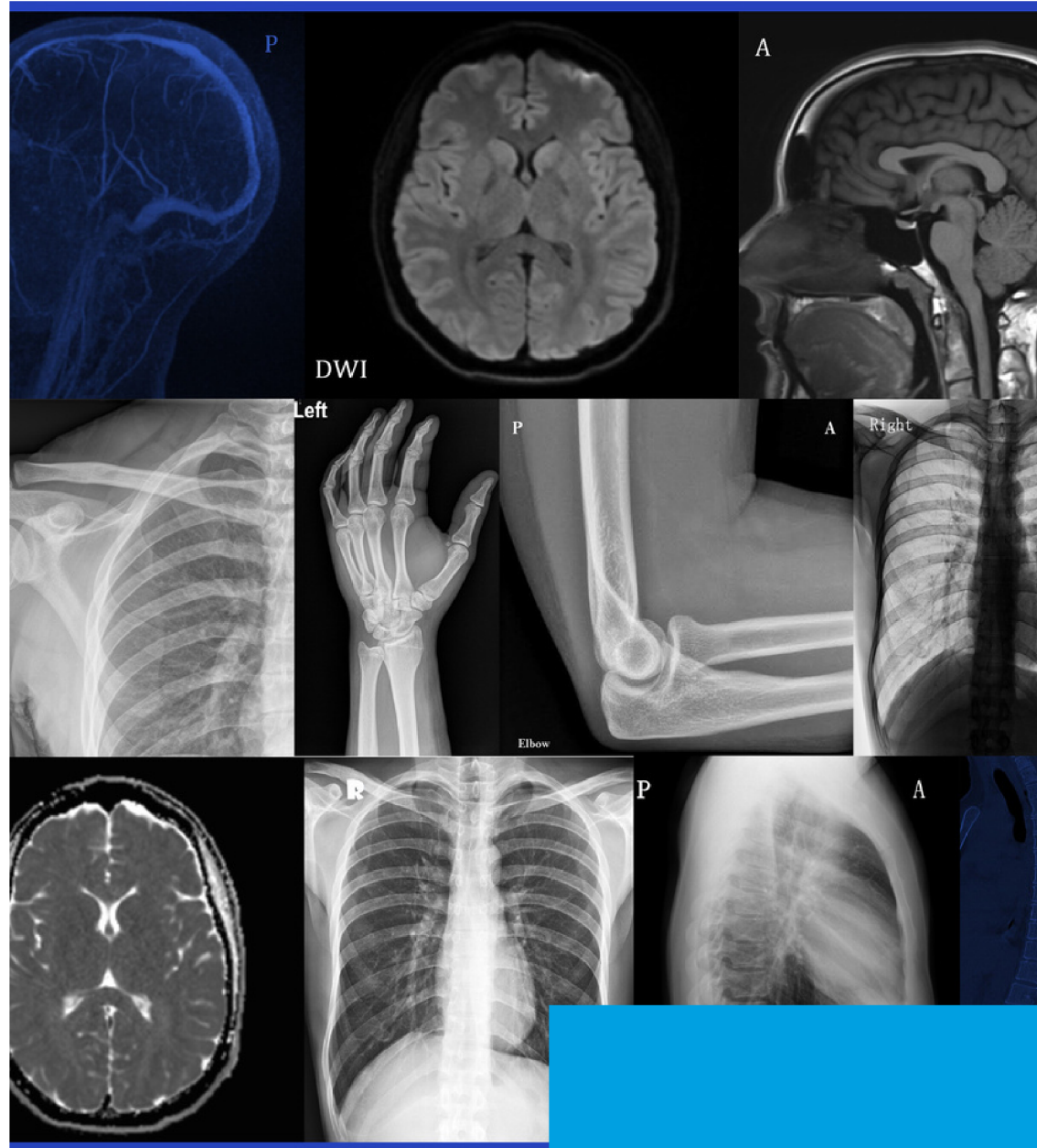


3Dnet™

Medical Cloud

Cloud-computing Solution
for Medical Imaging

Biotronics 3D™
Analyze - Collaborate - Discover



Biotronics3D

We strive to innovate medical imaging by creating a global company driven by a different technology and sales models for the healthcare professionals. We empower our customers to work with an alternative method, which is free from tired, traditional methods used in our industry.

The thirst for innovation and the desire to execute our vision will continue to drive us forward, far beyond the set standard in the industry. We provide cutting edge technologies to improve healthcare by better extracting diagnostic data and transforming it into usable information across the healthcare enterprise.

18+

years of experience
in multi-tenant
enterprise imaging

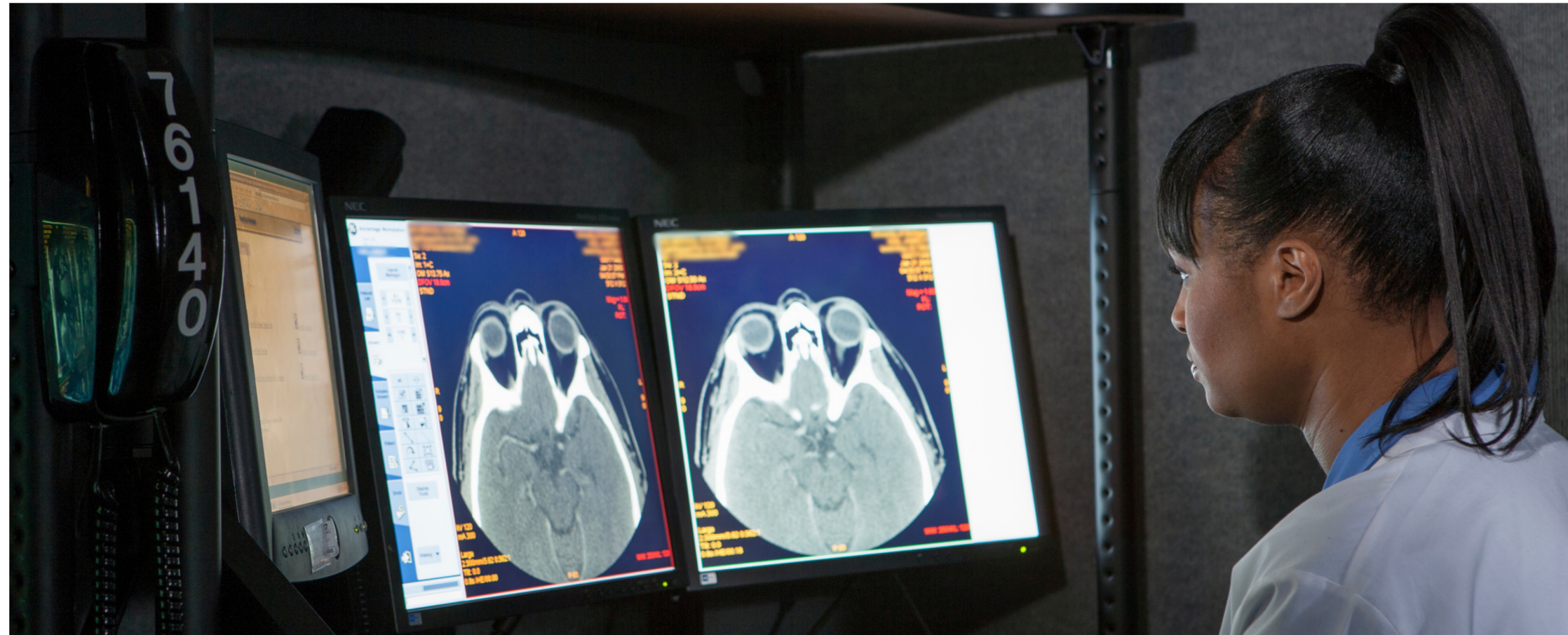
3Dnet Medical Cloud

3Dnet Medical is more than a PACS. It is the first cloud-based medical imaging offering through which physicians can share, analyse, and visualize medical images and collaborate with colleagues online. 3Dnet enables healthcare professionals to access their work at anytime and anyplace using a zero-footprint client, free of the previous necessity to restrict themselves to certain desktops.

By combining server-based rendering technologies with a feature-rich multimodality web viewer and progressive streaming, 3Dnet delivers unprecedented visualization performance of large datasets even over low internet bandwidths. The web client is platform-independent and can run on Windows, MacOS, iOS or Android operating systems.



The Platform



Biotronics3D is a best of breed solution that integrates a patient and referrer portal, a PACS and RIS, 3D native functionality and advanced visualization applications: CT Colonography, CT Lung Analysis, Automated CT Vessel Tracking, CT Calcium Scoring, CBCT Dental, DCE-MRI Perfusion, Breast MR, MRI ADC Modelling, and PET/CT Registration. It can scale from a single user to a multi-hospital enterprise solution supporting millions of exams. It includes a dedicated teleradiology solution to supports sub-specialty reporting, resource load balancing, and an enterprise worklist. Uniquely, the whole solution is multi-tenanted yet built on a single database platform and deployed on the Microsoft Azure Cloud. At a user level it can be accessed on any device via a hyper-fast true “thin” client application. Being thin-client we only stream pixels, no data is transferred to the client, meaning we are both totally secure and incredibly fast. Put simply, it is unique and no other vendor can match the breadth of capability or performance of the Biotronics3D solution.

Frequently Asked Questions

01

Who is 3Dnet for?

It's for regional hospitals, single hospitals, clinics, tele-radiology service providers, imaging centres and reporting radiologists. It is for clinicians and administrators who want a single cloud-based solution to support their end-to-end imaging workflow, that is fast, easy to use, and can be accessed via any device from anywhere.

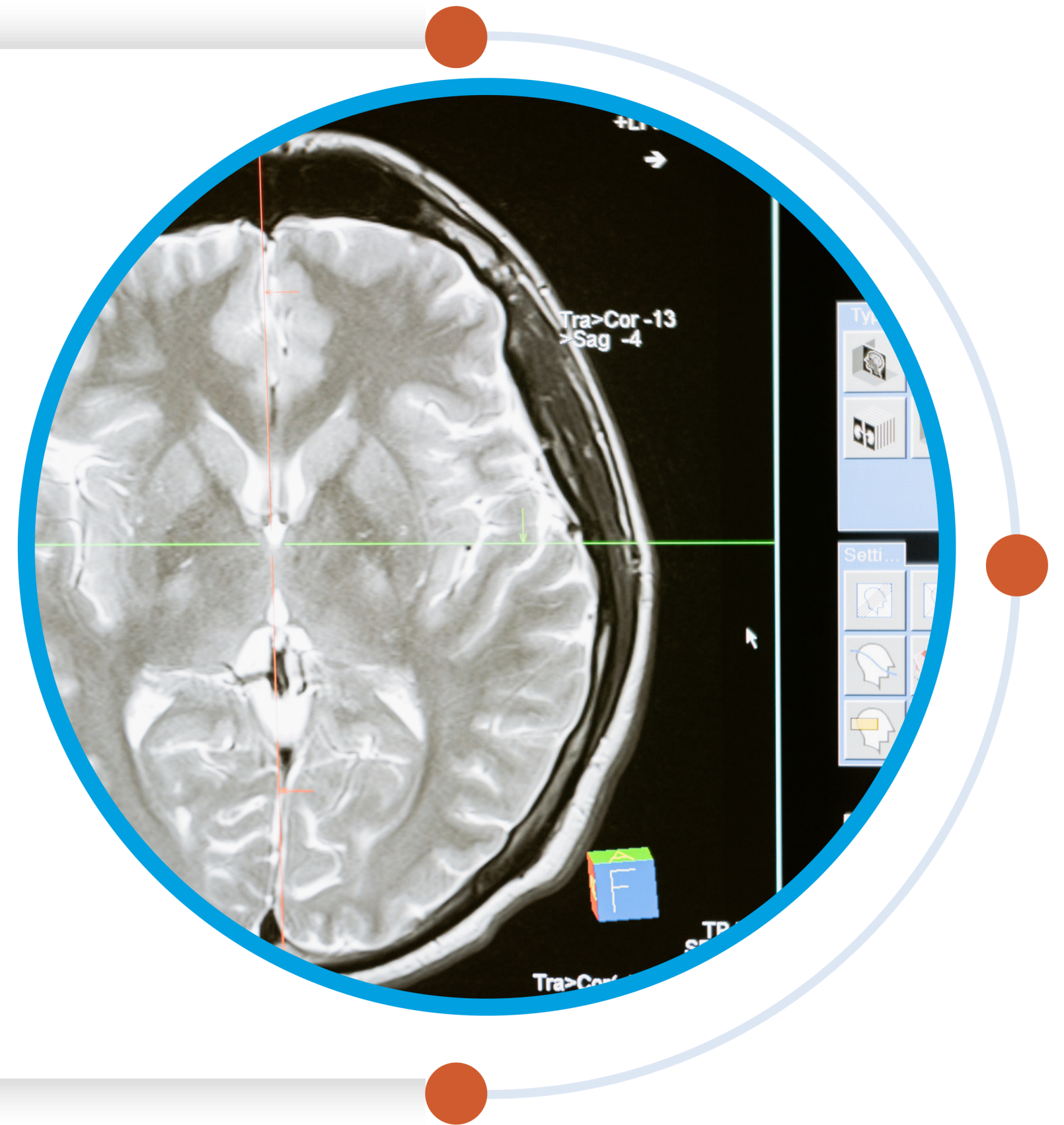
02

Why is 3Dnet different?

3Dnet is a SaaS solution, so there is no upfront investment in software or infrastructure and the solution is sold as a service via a single cost per exam model. It is also incredibly fast and far more comprehensive than any other product currently available. There is no limit to the number of users we can support and it does everything a hospital, clinic and reporting radiologist needs/wants via a single pane of glass. Unlike all other RIS/PACS solutions, 3Dnet is 100% a cloud native thin-client platform. We design and scale our offer based purely on how many exams you need to report. Finally, we consider 3Dnet to be a community imaging platform as resources, workload and access is truly democratic and can be adapted according to your needs. And because it is 100% cloud hosted, once you chose to become part of our community you can be live and reporting in a matter of hours.

Advanced Visualisation

- Web-based, thin-client visualization software accessible by anyone connected to a 3Dnet web server via Intranet or Internet over standard HTTP or a secure HTTPS (SSL) connection
- Zero footprint web portal for radiologists, clinicians, and patients with instant access to images, visualization tools and reports
- The portal is accessible even on mobile devices such as tablet PCs and smart phones, without downloading and installing software.
- HL7 & RIS/PACS desktop integration
- Collaboration tools: Share a study with a colleague by sending a web link via email.
- Unlimited on-line 24/7 customer support is available with immediate response to service tickets.



Technology

3Dnet Medical Cloud is a collection of software modules built on Microsoft technologies. The core system relies on five components: 1) web server; 2) database server; 3) pre-processing (volumizer) service; 4) rendering engine; 5) DICOM/HL7 service. Each of these components can run on different machines to improve performance.

3Dnet uses Microsoft Internet Information Server (IIS) as its web server. User authentication, images or other information are sent over standard web ports (80, 443). The system can be set up in a grid configuration to support multi-site organisations and to provide high availability of data using a single access point for users. The rendering engine module includes proprietary algorithms for advanced image processing, server-based rendering, and progressive streaming. 3Dnet can be accessed via a HTML5 interface.



Interoperability

Our system fully supports the IHE profile together with DICOM 3.0 and HL7 standards. 3Dnet Gateway, a proprietary software node, can be configured with multiple DICOM and HL7 systems. Regardless of vendor or physical location, these systems can be integrated and consolidated to facilitate an automated workflow.

The Gateway provides direct DICOM Modality Worklists to modalities, responds to query/retrieve requests, or manages manual or automatic routing of studies to various DICOM targets.



Administration & Security

3Dnet includes an administrative panel, accessible from anywhere in a web browser. The admin tools are visible only to users with admin role assigned and include creation and management of user accounts (or group of users). You can create and manage worklists, create and manage folders, add/edit/remove DICOM nodes or film printers, define report templates. User administration supports Active Directory integration using the LDAP protocol.

3Dnet supports the current industry standards for security: HIPAA, UK DoH, FDA, IHE. Internet communication is protected with minimum 128 bit SSL encryption (with security certificate on the server). System access is permitted only by entering a valid username and password.



Language Support & Analytics

The Graphical User Interface is available in the following languages: English, German, French, Spanish, Portuguese, Romanian, Hungarian, Serbian, Russian, Ukrainian, Greek, Italian, Lithuanian, Polish, Georgian.

Our custom analytics is a tailored, web-based service designed to help imaging centres to gain insightful view of their data. Receive periodic feeds related to user activity, modality workload to improve effectiveness of your business and make better-informed decisions.



3Dnet Medical Cloud Modules

01

3Dnet Core System

- IIS web server
- MSSQL database
- Volumizer service
- Server-based rendering engine

02

3Dnet Gateway

- DICOM communication service: CStore (SCU/SCP), multi-frame image storage, Query/Retrieve (SCU/SCP), C-Find, C-Move, C-Get, Echo, Storage Commitment
- HL7 interface for connecting with other systems with support for ORM, ORU, ADT messages

03

3Dnet General Visualization Module

- Measurements & annotations
- Window/Level with pre-sets for CT
- Comparative mode & sync navigation
- Zoom, pan, invert, flip, cine mode
- MPR, MIP, VRT

04

3Dnet Clinical Software Applications

- CT Colonography
- CT Lung
- CT Vessel
- CT Calcium Scoring
- CBCT Dental
- DCE-MRI Perfusion
- Breast MRI
- MRI ADC Modelling
- PET/CT Registration

05

3Dnet DICOM Print

Advanced film printing tool

06

3Dnet Modality Worklist Service

HL7 to DICOM convertor delivers patient & exam information from the RIS to the modality.

07

3Dnet Analytics

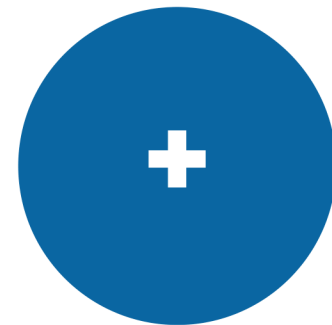
Business intelligence tool: qualitative and quantitative reports and metrics from the PACS database related to the medical imaging centre activity and performance

Public Cloud

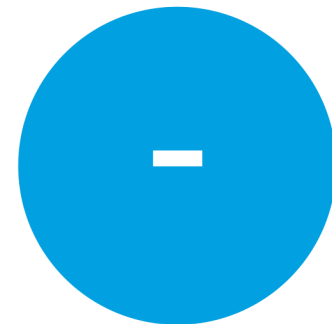
Datacentre infrastructure owned and support services delivered by Biotronics3D. Biotronics3D manages the provisioning and maintenance of the technology stack. Biotronics3D provides full technical support and user training. Costs are based on the number of studies ingested operating on a low-cost, pay-monthly approach to the provisioning of services.

Ideal for small to medium hospitals

No capital investment. Utility billing. Inexpensive, turnkey set-up. Incremental scalability. Meet fluctuating demand. Hardware, application and bandwidth costs covered.



- Infrastructure, software, security and compliance managed by Biotronics3D. Great level of efficiency for shared resources.
- Provides the best economies of scale. Single provider ensures rapid resolution of issues.
- Incurred costs are based on what resources are used.



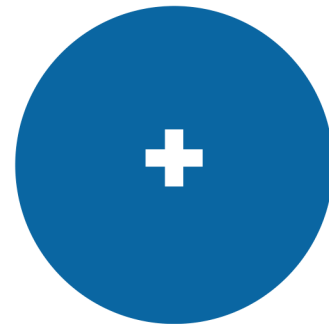
- Security & reliability outside of your own control
- Limited custom configuration
- Bound by general SLAs

Private Cloud

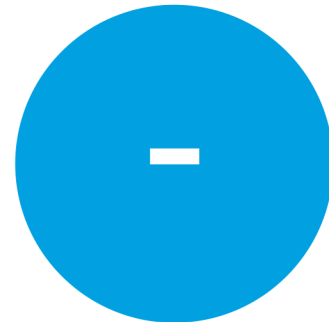
Choice of datacentre infrastructure ownership and hosting, as well as support services. Option of deploying a dedicated technology stack within Biotronics3D datacentre environment or within another datacentre of choice. Option of Biotronics3D or 3rd party providing maintenance services and first line of support. Costs for the provision of 3Dnet software, technology stack, consultancy services, hosting, support and necessary 3rd party applications.

Ideal for large enterprises

Keeping assets within the firewall to ensure security and compliance. Maintain control over data regulation and governance. Consolidate a large chunk of infrastructure duplicated across the network.



- Services & infrastructure maintained as a private network
- Gain benefits of cloud architecture without giving up the control of your data.
- Can be used in conjunction with the 3Dnet Public Cloud to offer a robust disaster recovery solution.



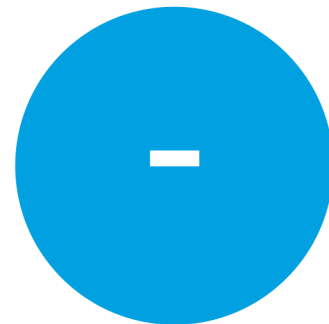
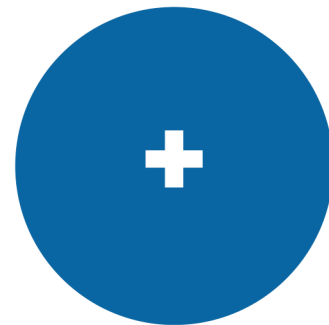
- Can be expensive.
- Requires purchasing and maintenance of all software and infrastructure.

Hybrid Cloud

Deployment uses primary datacentre and local cluster nodes. Option of a public or private cloud deployment or combination of both, for the primary datacentre and local cluster nodes to best leverage what each has to offer, and build a solution perfectly matched to your business needs. Option over hardware provision, maintenance and support.

Ideal for medium to large distributed networks

Customize the compute, storage and networking components to best suit requirements. Maintain components within private datacentre deployment and/or use the Biotronics3D public cloud for resources in the short-term. Maintain control and security over network.



- Best of both worlds: Achieve a highly flexible, highly agile and highly cost-effective solution.
- By spreading things out over a hybrid cloud, you keep each aspect of your business in the most efficient environment possible.
- Keep patient data secured within private cloud environment while utilizing the public cloud as needed.
- More complex than public or private clouds
- Nodes tailored to site—takes longer to implement.

Business Value Proposition

User centric

Once connected to 3Dnet, members can seamlessly store and access any patient data and diagnostic images, from any location. In effect any device that can access the internet becomes a valuable tool in the clinical workflow.

Collaborative & powerful

Our cloud service connects thousands of healthcare professionals with access to information rich content which can be shared with other members in a multidisciplinary environment. Patients also can participate in this service. Combined, this creates wealth of clinical power, impossible to achieve with traditional models based on single computers.



Business Value Proposition

Secure & reliable

We guarantee that your confidential information remain safe and secure. Whatever the preferred deployment model, Biotronics3D provides full technical support to ensure full integration with the existing environment, including third party DICOM and HL7 systems. Once deployed, Biotronics3D also offers an array of flexible support and training options to ensure rapid resolution of any issues and end-user satisfaction.



Business Value Proposition

Zero risk

Without the need to purchase hardware, software licenses or implementation services, you are able to get our 3Dnet cloud-computing arrangement off the ground in record time and for a fraction of the cost of an onpremise solution. Our cloud offering follows a utility model in which monthly service costs are based on consumption, you only pay a monthly membership, for as long as you want to use it, by simply subscribing to one of our affordable monthly payment plans.



Business Value Proposition

Assurance

Since the launch of 3Dnet in 2010, we have consistently exceeded our targets for reliance, uptime, and availability. Today, 22 NHS Trusts and 300+ private healthcare facilities in the UK use 3Dnet Public Cloud to support managing, archiving, visualisation, remote review, and reporting of diagnostic images. We are proud to state that over this period, 3Dnet has held a 98% retention rate of customers.





18+ years of innovation & market leadership

Why 3Dnet Medical Cloud?

For the healthcare professionals and the patients globally, 3Dnet Medical Cloud innovates the international market of medical imaging by delivering a cloud-based Software-as-a-Service solution that enables access to images and advanced visualization tools from any location and any device connected to the internet.

Our cloud service creates a wealth of clinical power impossible to achieve with the traditional models based on single, isolated computers. It gives you the potential to build a predictable and profitable business in the healthcare sector by harnessing Biotronics3D's unique technology, market expertise and outstanding support. With our industry-leading cloud-computing solution for medical imaging you have the most robust service portfolio to meet any needs and make your medical practice even more successful.

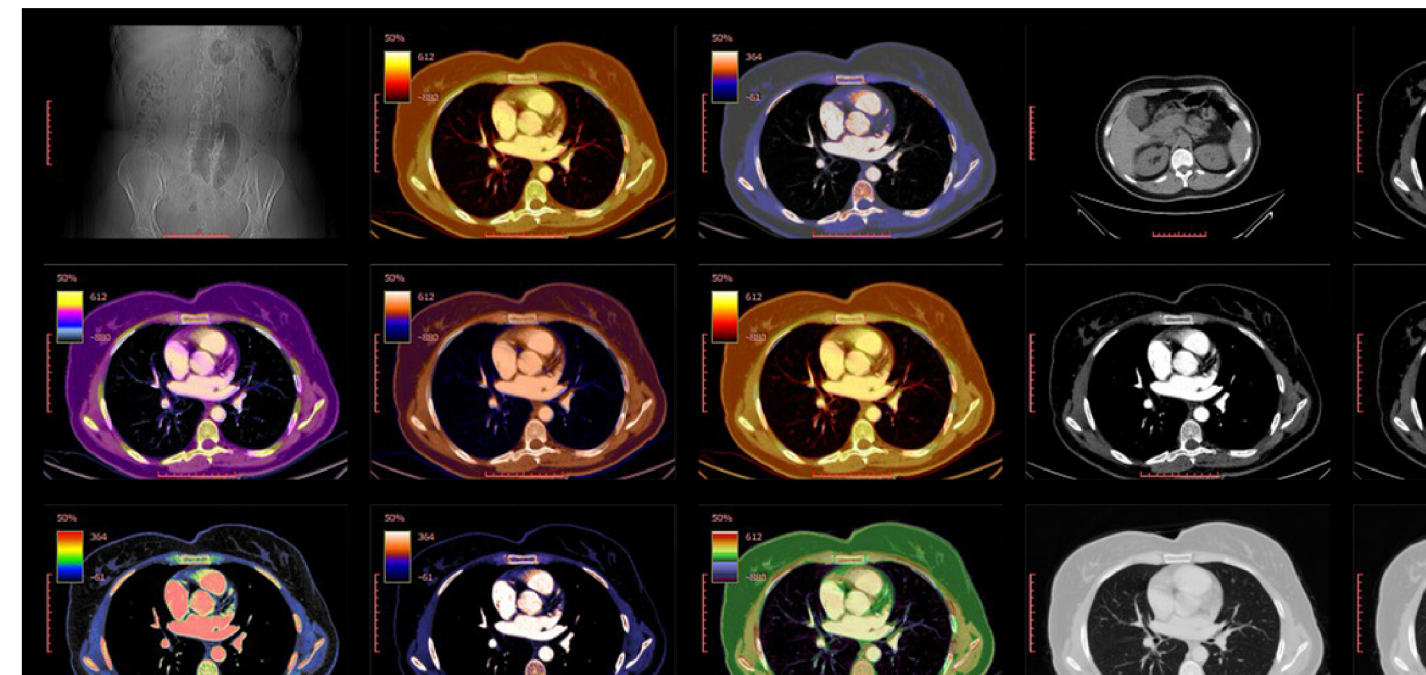
Workflow Features

- Highly configurable Hanging Protocols
- Assign a study with a user (manual and automatic) and create user-specific worklists.
- Route studies to folders using various pre-defined rules.
- Built-in text editor for reporting
- Suspend a study with possibility to preserve the state—the analysis can be resumed from where it was left.
- Import and attach documents or images to a study (supported formats: PDF, JPEG, BMP, TIFF, PNG).
- Export images as JPG, BMP or PNG.
- Lossless & lossy image compression
- Add text notes to a study.
- HL7 interface & RIS/PACS desktop integration
- User notifications (e.g. when a study is ready for reporting)



Operations with Series

- Study panel shows thumbnails of all the series of the loaded study together with a list of all other studies of that patient
- Button for displaying only the original series (thin-slices), only the reconstructions or only the localizers
- Add series to the viewing area using Drag&Drop from the study panel
- Swap series between two viewports using Drag&Drop
- Remove series from the viewport or remove the entire viewport
- Double-click to maximize a viewport and display one-up
- Keyboard or mouse driven image series navigation
- Cross-sectional reference lines (e.g. Sagittal vs. Axial)
- Synchronous scrolling
- Cursor cross-snap shows axial, sagittal and coronal slices corresponding to the current cursor position in the active viewport
- Pre-configured and customizable viewing layouts
- Comparative mode with side by side, synchronous visualization of two or more series



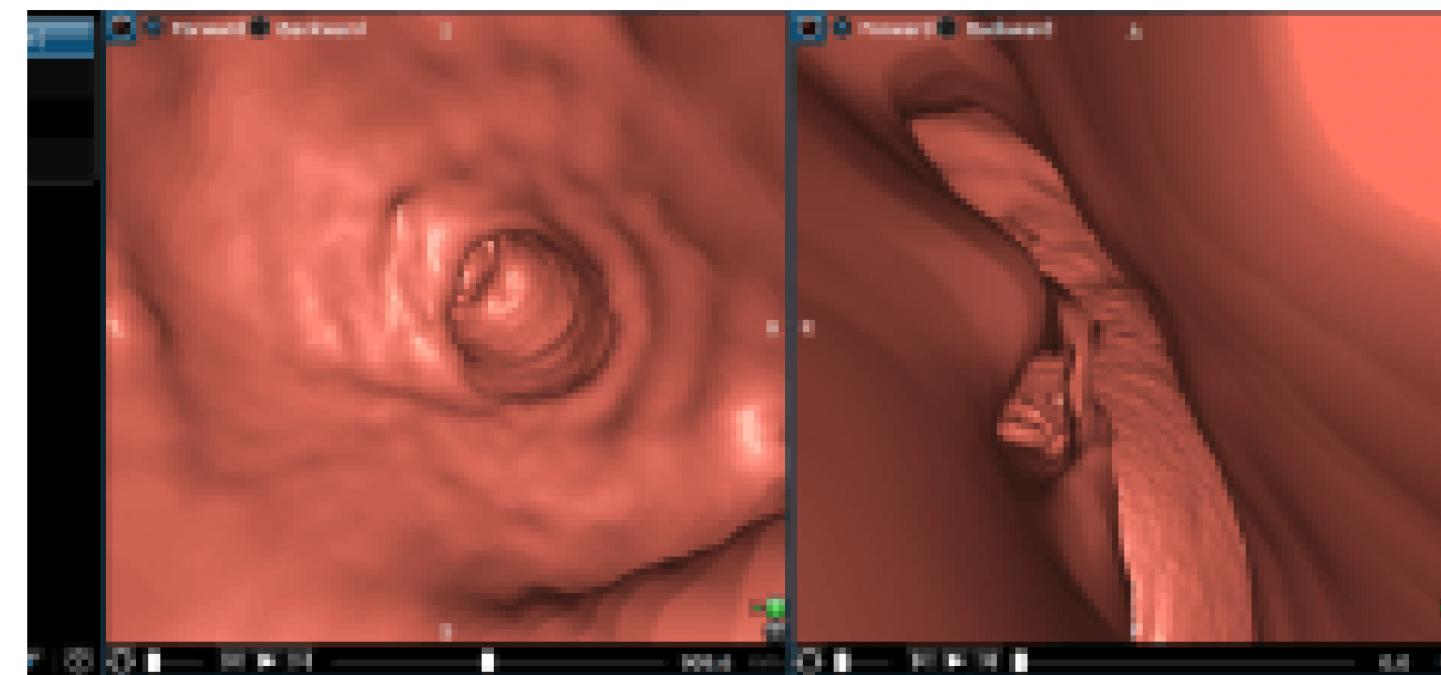
2D Image Processing

- Pixel calibration
- One-hand mouse operation using viewport hot-areas for common manipulation tools: window/level, zoom, pan, scroll
- 90 degrees clockwise & counter-clockwise image rotation
- Horizontal & vertical flip
- Image invert & image histogram
- Zoom, fit-to-window, zoom 1:1, magnifying glass
- Free rotation for volumetric series
- Measurements: Ruler, angle, Cobb angle, circle, polygon, polyline
- Hounsfield units probing & display, including ROI densities with statistics
- Annotations: arrow, free text
- Window/level pre-sets for various organs & tissues
- Edge enhancement, noise reduction, Gamma filter
- Cine display with speed & direction controls



3D Image Processing

- Interactive Multiplanar Reformats (MPR)
- Batch MPR: Reformat data to a new series with different slice thickness and new orientation.
- Curved Planar Reformats (CPR)
- Maximum Intensity Projection (MIP, MinIP, AvIP)
- Sliding slab MIP
- Volume Rendering (VR)
- Pre-defined VR transfer functions
- Free sculpting tool in VR & MIP mode
- Clipping tool with pre-defined shapes



CT Colonography

Automatic centreline extraction and segmentation of the colon. Endoluminal flythru and simultaneous display of prone and supine acquisitions. Polyp measurement tools. Record videoclips and generate colonoscopy reports.

CT Lung

One-click volumetric segmentation of pulmonary nodules. Automatic measurements of HU, volume, area, and diameters. Side by side current—prior study comparison and nodule growing rate report.

CT Calcium Scoring

One-click segmentation of the coronaries and full quantitative scoring: Volume, Agatston Score, max HU, Av HU and plaque data.

DCE-MRI Perfusion

Pharmaco-kinetic (PK) modelling to estimate kinetic parameters associated with the passage of the contrast agent, such as transfer and rate constants, extracellular space, which correlate to pathological findings of micro-vessel density growth factor.



Clinical Software Applications

CT Vessel

Two-click centreline extraction and segmentation of blood vessels. Curved planar reformats. One-click automatic bone and CT table removal. Display of vessel cross sectional diameters. Stenosis analysis.

PET/CT Fusion

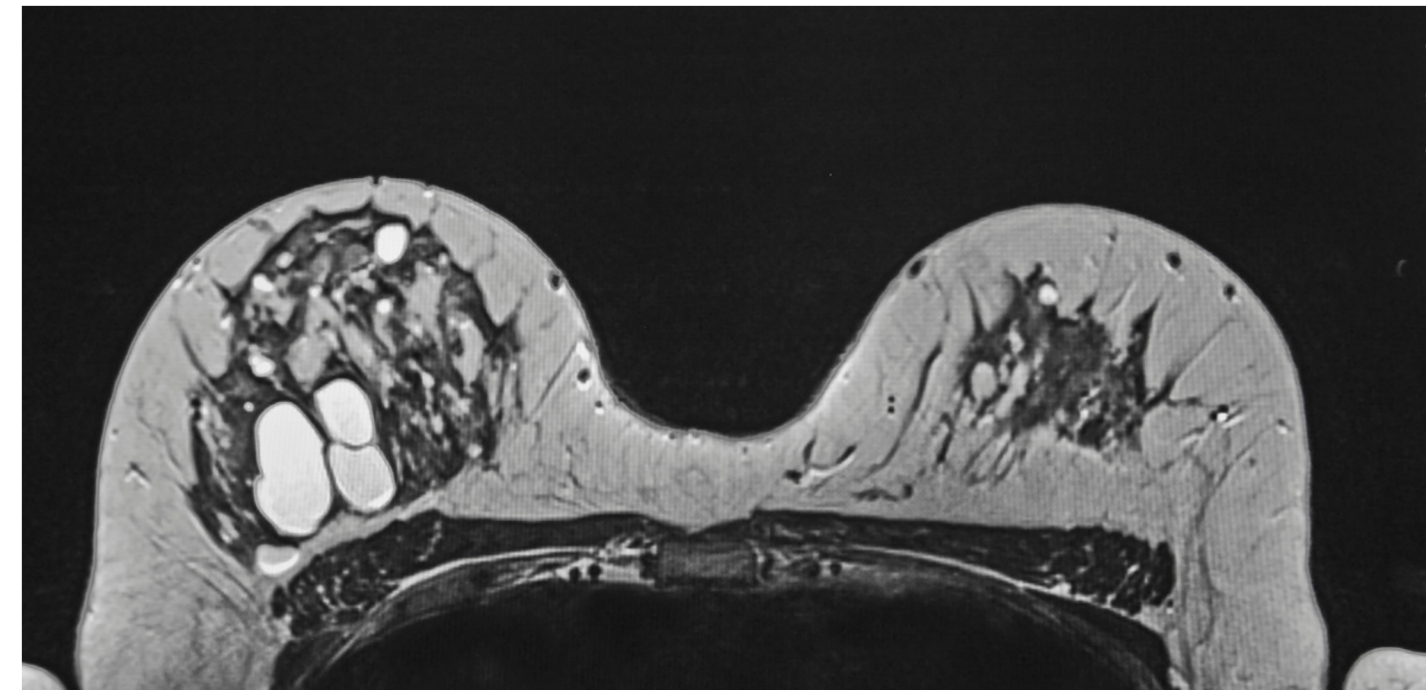
Automatic PET/CT image registration. One click lesion segmentation and SUV calculation. Customizable view layouts, including MPR and 3D MIP.

Mammography

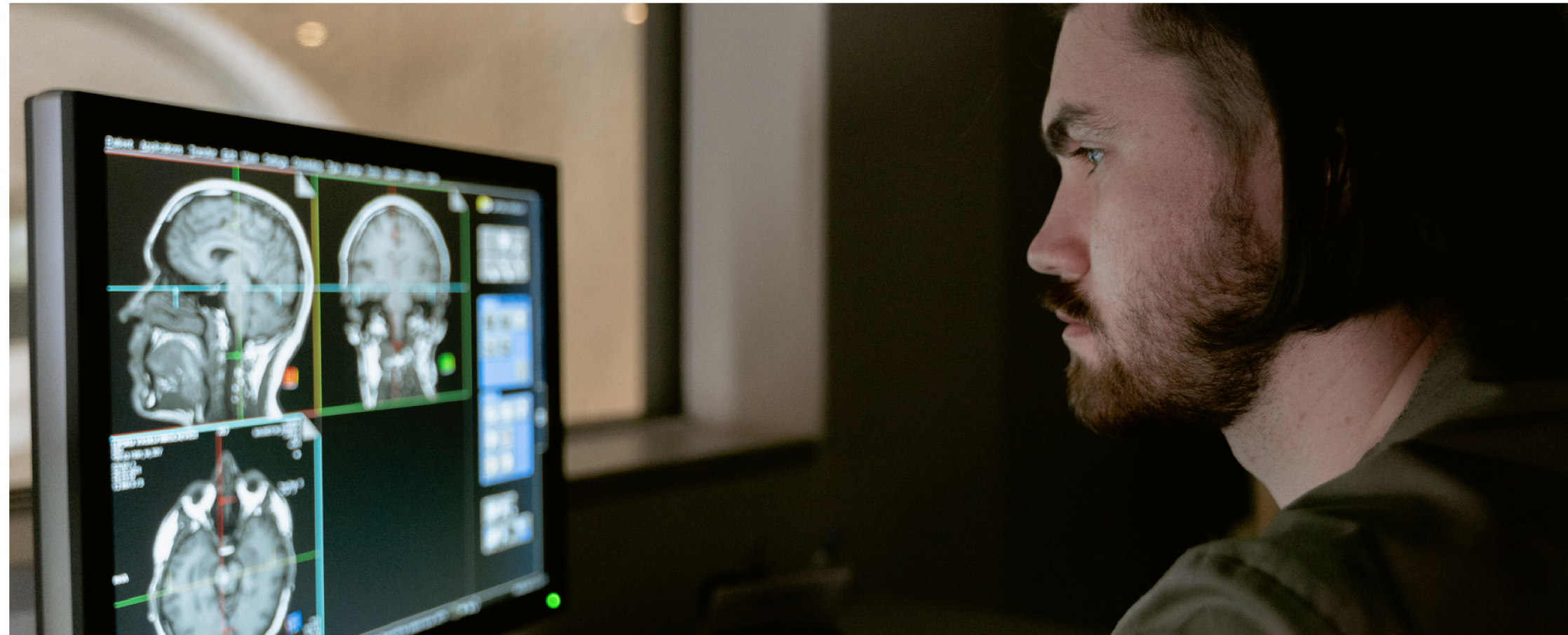
Customizable hanging protocols. Automatic back-to-back alignment. Synchronized zoom and window/level. Zoom with chest wall justification. Invert tissue. Measurement tools.

CBCT Dental

Fast generation of curvilinear reformats by marking points along the arch of the jaw. Generation of panoramic and paraxial views. Distance, angle, and ROI measurement tools. Nerve tracking.



Biotronics3D: Solution Design



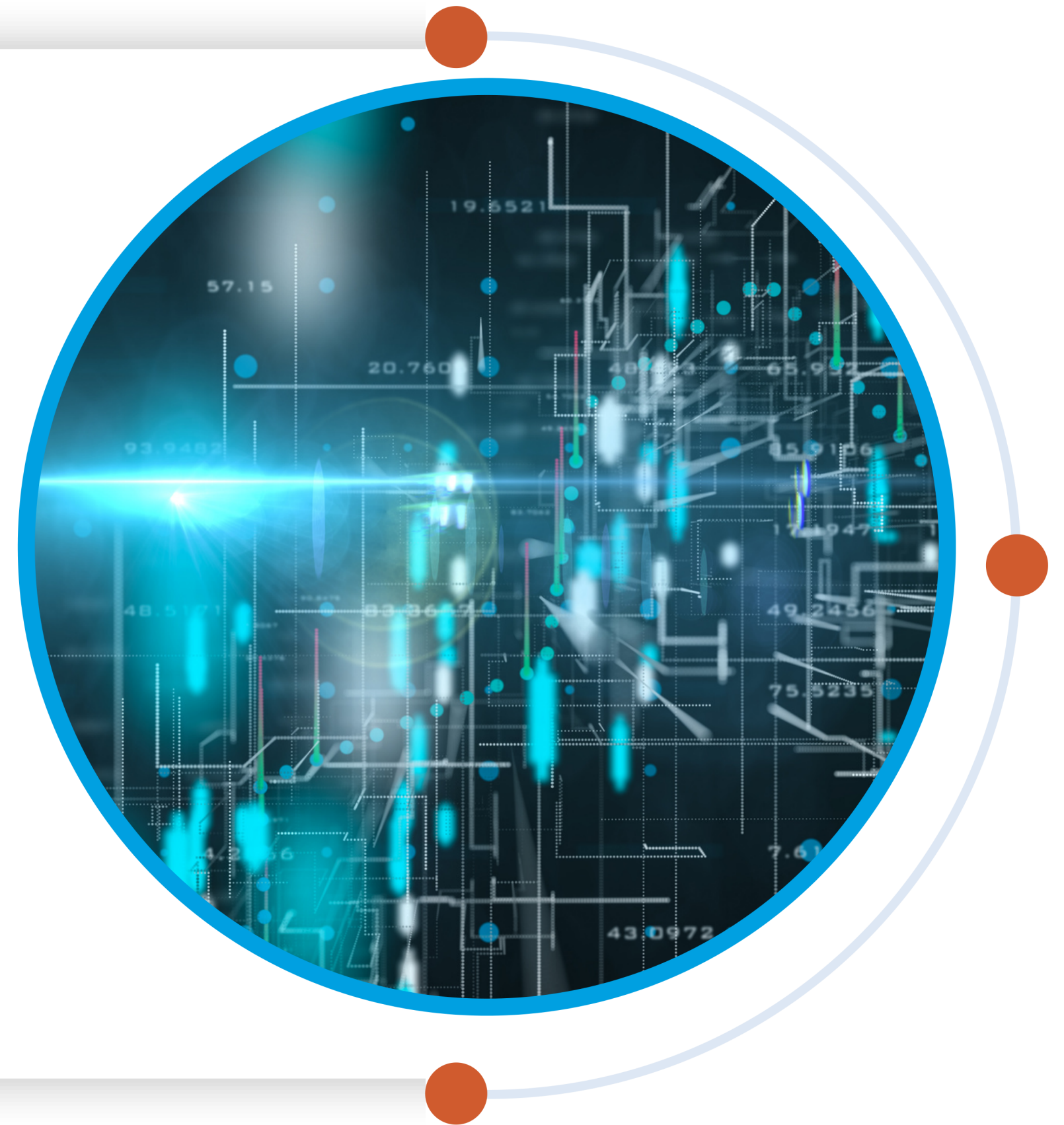
Our system fully supports the IHE profile together with DICOM 3.0 and HL7 standards. 3Dnet Gateway, a proprietary software node, can be configured with multiple DICOM & HL7 systems. Regardless of vendor or physical location, these systems can be integrated and consolidated to facilitate an automated workflow. The Gateway provides direct DICOM Modality Worklists to modalities, responds to query/retrieve requests, or manages manual or automatic routing of studies to various DICOM targets.

- DICOM communication service: C-Store (SCU/SCP), multi-frame image storage, Query/Retrieve (SCU/SCP), C-Find, C-Move, C-Get, Echo, Storage Commitment
- HL7 interface for connecting with other systems with support for ORM, ORU, ADT messages

B3D Gateway Specification

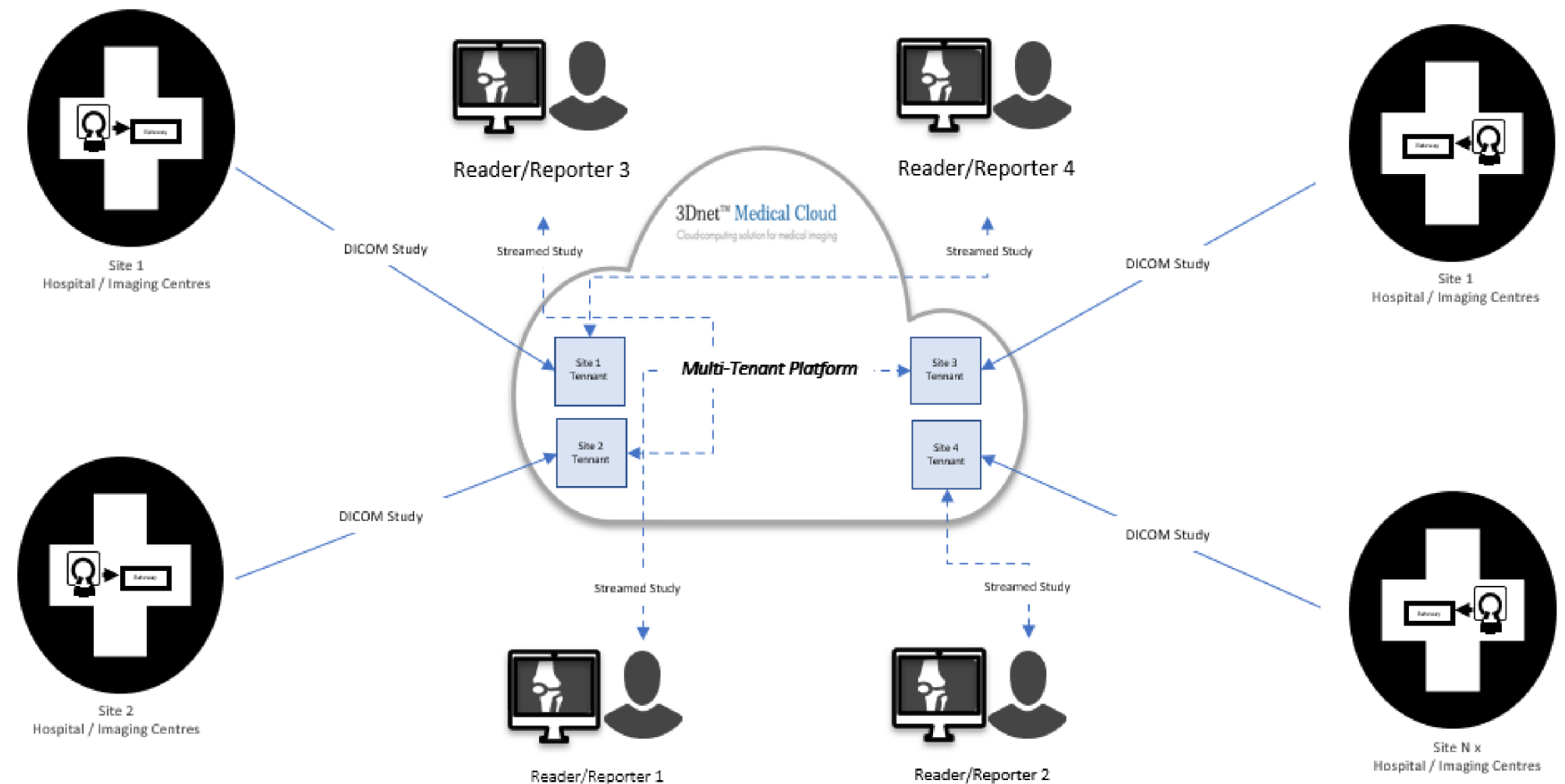
The B3D Gateway can be deployed as a physical device (PC) or Virtual Machine:

- Operating system: Microsoft Windows Server 2016 /2019 STD edition/Windows 10
- MS components: Install .NET 4.8 framework and the latest service pack/windows updates.
- Processor: 4/6 core processor
- RAM: 8 GB RAM
- Hard disk drive: 400 GB HDD
- Network interface Card: 1 Gb NIC
- Remote access: Install the latest version of TeamViewer from www.teamviewer.com/en.
- Windows account: Local administrative privileges
- We will also need the following exceptions on the firewall: See www.3dnetmedical.com and Port 443.



Biotronics3D: Cross Site & Subspecialty Reporting

The B3D platform supports cross-site community-based reporting. Based on the specific modules and features purchased, we can support a multi-site or multi-tenant environment. Via a top-level organisational structure, we can establish a dynamic subspecialty and load balanced reporting model. Each site can (if required) have its own tenant on the cloud and we provide hyper-fast access to studies via thin-client streaming. The reporting application is device agnostic, so the radiologist can use any device (PC, Mac, tablet). Further the client includes integrated advanced visualisation and can support AI and 3D volume rendering for speciality reads. Via our dedicated teleradiology module we can provide an enterprise worklist, load balancing and individual worklist.

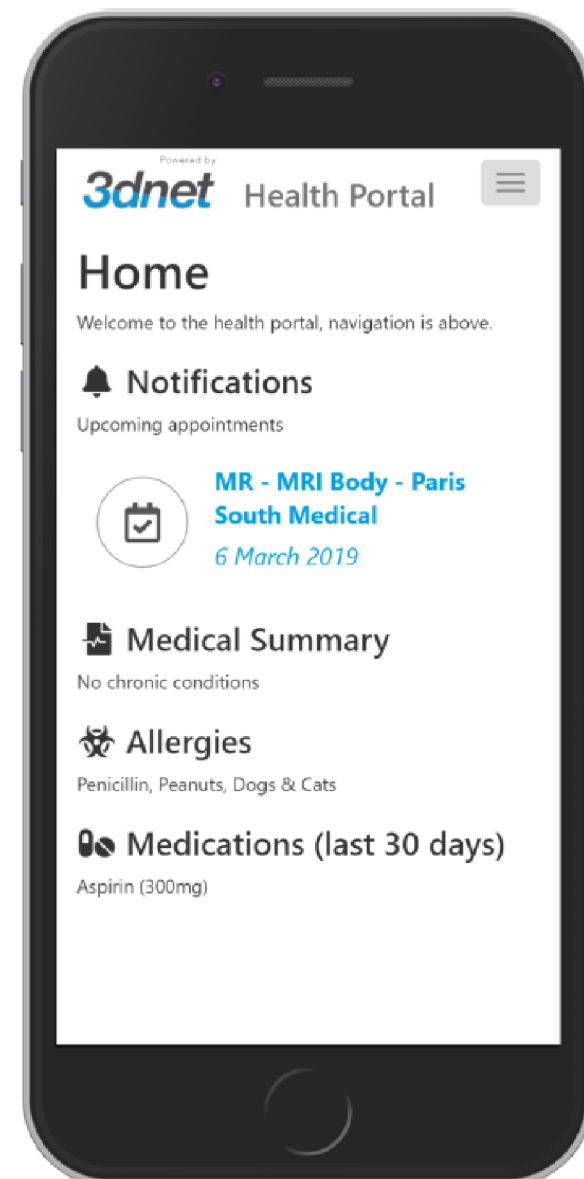


Biotronics3D: Cross Site & Subspeciality Reporting

Studies can be allocated to a worklist based on user availability or subspeciality. Individual sites or a multi-site organisation can use the built-in rules engine to set priorities on reads. Once an exam is ingested to the platform the study need never leaves the cloud. Via integrated business intelligence the platform tracks activity for cross-organisation billing. Our optional Integrated RIS provides web-based enterprise exam booking and HL7 messaging. Incredible scalability means there is no limit to the number of supported tenants or reporters, and the platform is totally secure as all data transferred is encrypted.

- A cloud-based platform, without any frustrating software installs or a need for on-site data storage: Via the zero footprint client, all data is accessible to your readers, reporters and collaborators securely and from any location.
- Go live immediately: No equipment to purchase or install, no complicated VPNs or managing firewalls.
- Extremely low initial cost, no long-term contract, no per user fees
- Pay per study for only what you use.
- User-friendly: Very little user training required after set-up.
- Build in a library of flexible workflows
- We deliver massive datasets and examinations within one second at clinical quality, combined with all the advanced tools your radiologists need. All within a secure framework with GDPR, HIPAA compliance, CE and FDA accreditation.
- Access to the 3Dnet community of users to outsource reporting & manage peak of demands
- Easy to integrate with your customers' systems: Get their examinations and send back the results to them. We automate the process for you, so you only focus on delivering clinical excellence.
- Comes with a built-in full reporting system and peer review workflows.
- Intelligent study share, multi-site management, rule-based automatic study assignments & statistical analysis of your work

B3D Health Portal: Patient & Referrer



Patient Health Portal

Liberate your patients through the 3Dnet Health Portal, a system for patients to keep a record of their medical information, view their imaging examinations and much more. Patients can book appointments at any of your clinics at their convenience and collaborate better with your doctors.

The 3Dnet Health Portal implements a 'Personalized Timeline', where patients can track their health progress from diagnosis to recovery. Having the ability to upload relevant information along the way, which is then transformed into an easily manageable timeline. Save on time, costs, and resources through the 3Dnet Health Portal where patients can access their health information whenever they need and wherever they go.

B3D Health Portal: Patient & Referrer

Referrer Health Portal

The 3Dnet Health Portal enables you to communicate and provide medical images as well as reports to your patients securely, whilst improving efficiency overall. Save on time, costs, resources and eliminate the tiring process of CD burning.

Improving communication between patient and provider: Move forward together to achieve greater patient outcomes. Take advantage of the 3Dnet Healthcare platform and increase your competitiveness. Through offering this unique and patient-centred service.

Powered by
3dnet Referrer Portal







Home Refer Patient Shared to me

 CURIE, Marie

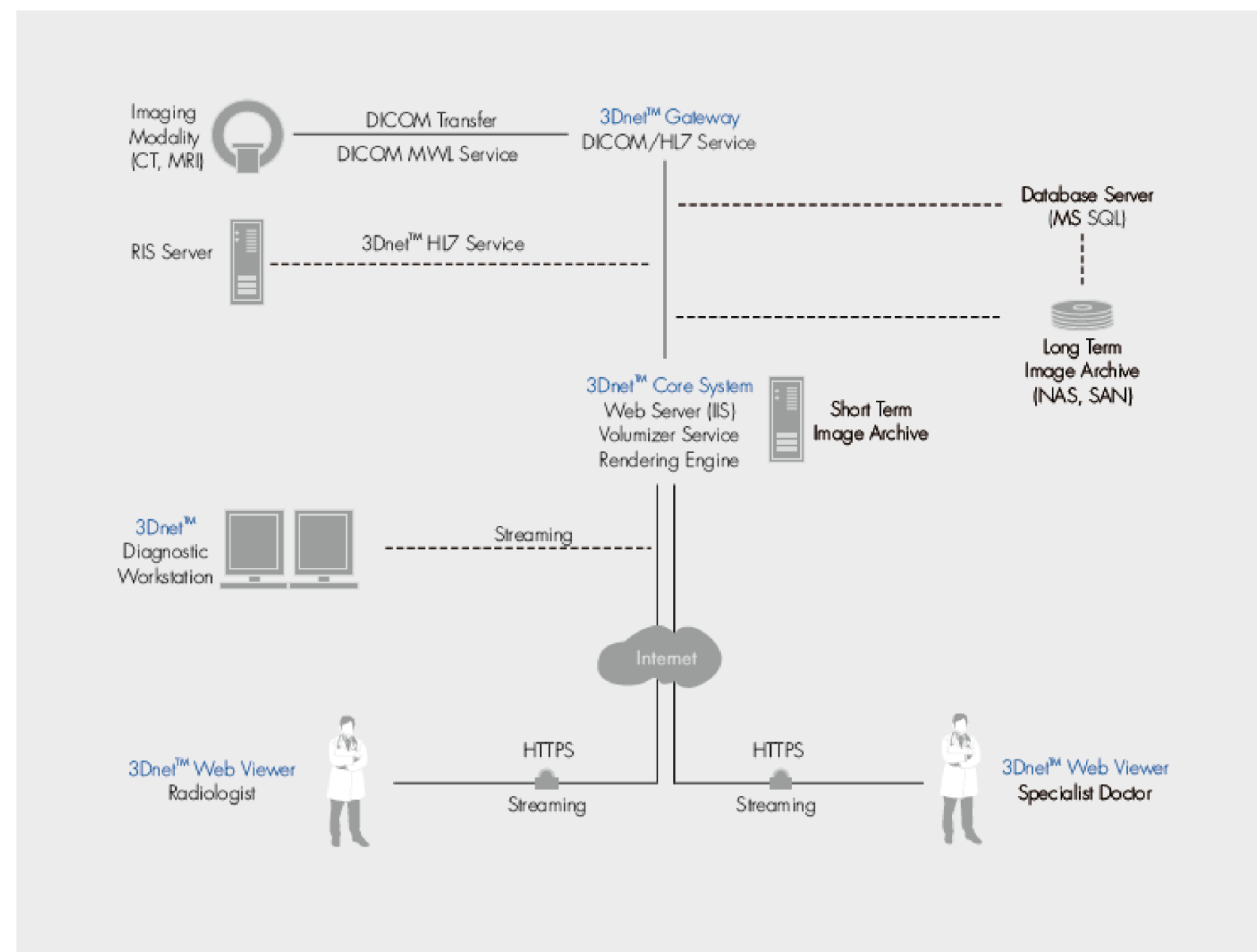
Provider	RIS Demo Org
Patient ID	U-ID00000436
Date of Birth	07/11/1867
Sex	F
Mobile Phone	+32497497128
Address	Panthéon, Paris, 75000, FR

[Refer Patient](#)

 Exams

Reference	Description	Date	
ACN00000941	CT Body		New
ACN00000941	CT Body		New
ACN00000942	CT Body		New
ACN00000941	CT Body	20/07/2021 15:00	New
ACN00000940	CT Body	16/07/2021 14:30	New
ACN00000939	MG Mammography (MG)	14/07/2021 16:15	Confirmed
ACN00000848	Abdomen	04/02/2021	  
ACN00000849	ECHOCARDIOGRAM	05/01/2021	  

3Dnet Medical Cloud: Typical configuration & data flow



3Dnet offers a zero footprint, HTML5 web portal for physicians and patients with features that make meaningful patient data (images, reports) ubiquitously available when and where it is needed, inside or outside the hospital, thus accelerating workflow and improving healthcare. The portal is easily accessible on any mobile devices, such as tablet, PCs and intelligent cell phones.

There is no need to download and install any software application on your device. Just open it in your preferred web browser and type your username and password. Images and reports are streamed to you in less than 5 seconds. The viewer includes basic image manipulation features such as window/level, zoom, pan, scroll.

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www.3dnetmedical.com