MedApp

We create
the future of medicine.

3D imaging system.

www.medapp.pl

A guide to the digital world of medicine.

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Find out more on Linkedin

Find out more on our website

Please visit our website or LinkedIn profile and feel free to contact us!

WE ARE A TECHNOLOGY COMPANY OPERATING IN THE FIELD OF MEDICINE.

Our innovative solutions are revolutionizing the ways lives can be saved and patients can be treated.

We develop technologies to support diagnostic imaging and next-generation digital medicine. We are continually expanding our service portfolio to match the needs of a changing world and new application areas.

MedApp offers unique solutions to support diagnostic imaging and next-generation digital offering. We are part of one of the fastest growing industries in the world!

Every day we work on developing our technologies based on artificial intelligence, Big Data analysis or 3D dimensioning. The two key technologies offered by our company are: **CarnaLife** Holo and **CarnaLife** System.

Our 3D medical data visualization solution for surgical interventions, **CarnaLife** Holo, is already being used successfully in cardiology, interventional cardiology, orthopedics, otorhinolaryngology, as well as oncology and vascular surgery. The technology is present in 18 medical centers in Poland and worldwide, and has been used in nearly 100 medical procedures of various specialties.

Our second flagship solution, **CarnaLife** System, is an advanced digital medicine platform that allows a physician to assess and monitor the health of patients and conduct consultations at any time of the day and at any place. The system is supported by more than 20 remote measurement devices.

Examination results are analyzed 24/7 using AI algorithms and Big Data analytics. The system has been implemented in 16 medical facilities. **CarnaLife** System is a module of the analytical telemedicine system **CarnaLife**, which is certified as a medical device supporting diagnostics, a notified body authorized by the Ministry of Health. Class IIb, by TÜV NORD Polska Sp. z o.o. a notified body authorised by the Ministry of Health. We also have a NATO Commercial and Government Entity Code (NCAGE).

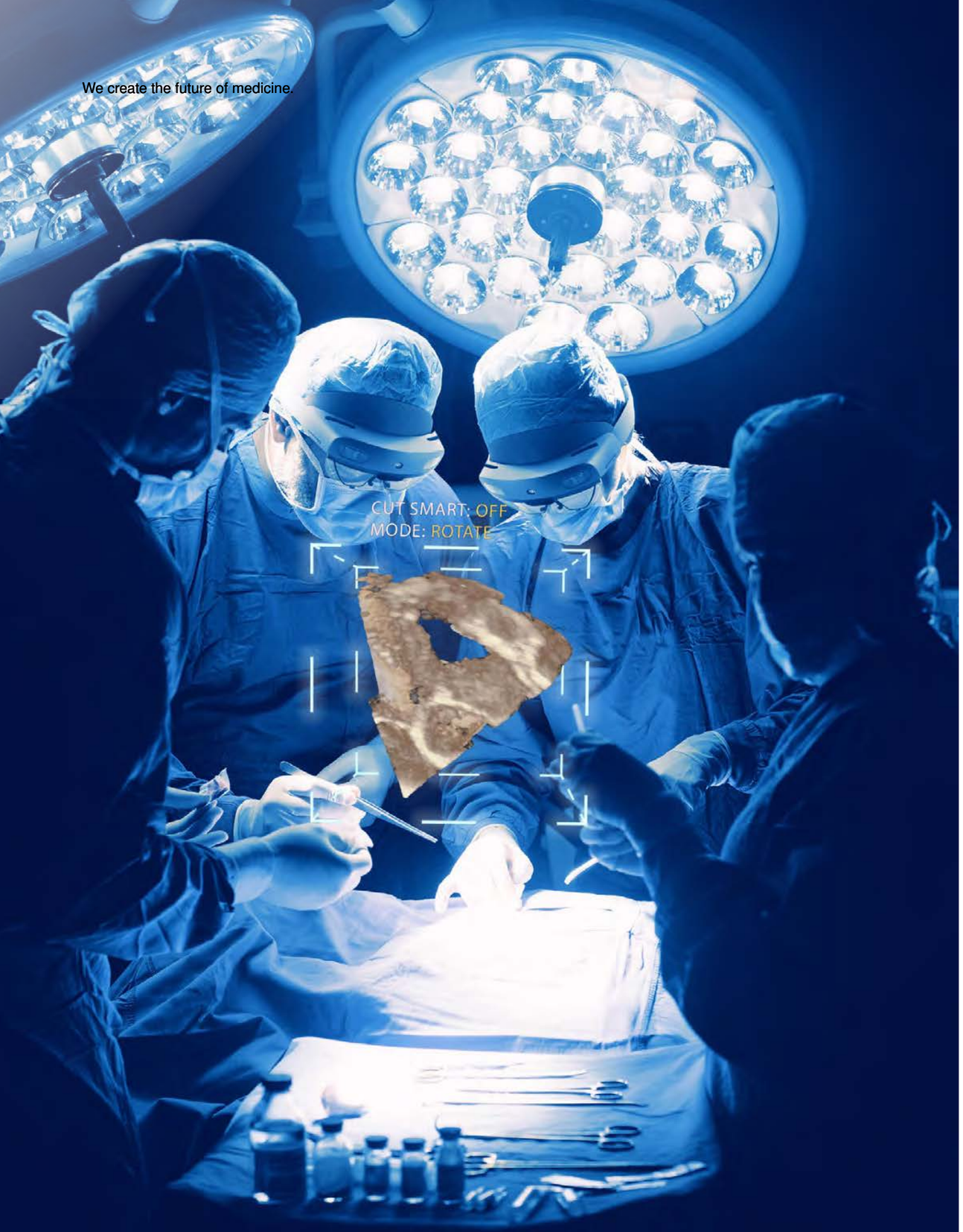
The development of MedApp S.A. products is possible thanks to the global business partners such as GE HealthCare, Johnson and Johnson or Microsoft. We believe that innovation in medicine is our common goal. Therefore we have a strong feeling that MedApp's solutions can add great value to your patients or business.

We encourage you to read the publication presenting key MedApp solutions.

We are looking forward towards potential cooperation!

Krzysztof Mędrala
CEO MedApp S.A.

3D imaging system



01.

WHAT IS **CARNALIFE** HOLO?

3D imaging system enhancing precision, **comfort and safety of medical procedures**

CarnaLife Holo is a breakthrough technology for 3D visualization of imaged medical data which supports the planning and performance of medical procedures. With the help of Microsoft's HoloLens 2, the physician can see in real space a three-dimensional hologram reflecting the structure of the imaged anatomical area. The user can interact with the displayed hologram using gestures and voice commands: rotate it, scale it, move it around, or even look inside the anatomical structures, without compromising sterility or having to work with an additional technician. The goggles provide an auxiliary interactive screen to be used during procedure planning as well as anywhere in the operating theater at any time during the procedure.

CarnaLife Holo is
a breakthrough technology
for 3D visualization of imaged
medical data which supports
the planning and performance
of medical procedures.

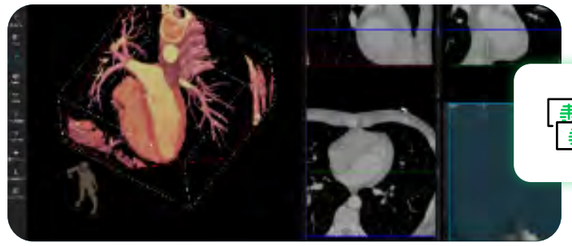
3D imaging system

02.

How does **it work?**

Visualisation of data stored in DICOM

Real time visualisation directly from imaging devices



PACS system support

Easy and sterile interaction with the hologram

Additional screen during the procedure

CarnaLife Holo is a groundbreaking 3D imaging system supporting precision, comfort and safety of medical procedures.

03. Mixed reality used **in modern healthcare.**

With the software and the help of Microsoft HoloLens 2 goggles, the doctor sees in real space a three-dimensional hologram depicting the patient's anatomy.

Efficient planning and preparation for surgery

Facilitated access to image data

Reduction of treatment time

04. CarnaLife Holo supports doctors during surgery.

CarnaLife Holo is a module of the analytical telemedicine system **CarnaLife**, which is certified as a medical device supporting diagnostics, class IIb, by TÜV NORD Polska Sp. z o.o., a notified body authorized by the Ministry of Health.

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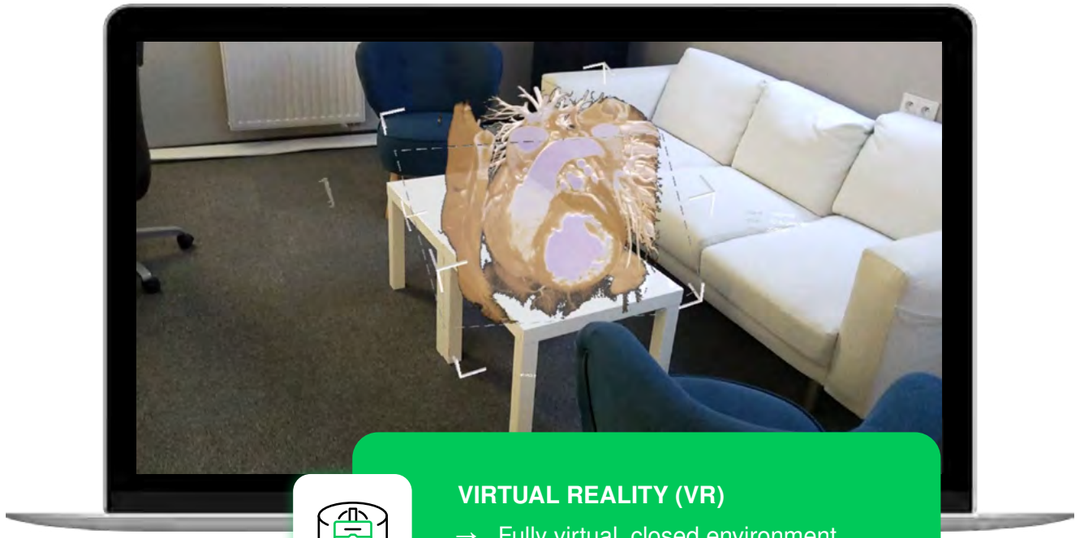
- Real-time visualization directly from imaging devices
- Sterile, intuitive interaction with the hologram
- Optimization of doctor's time and faster diagnostics
- Potential increase in treatment precision
- Increased comfort for the physician
- More effective cooperation and relationship with the patient

05. Three-dimensional **hologram.**



VIRTUAL REALITY (VR)

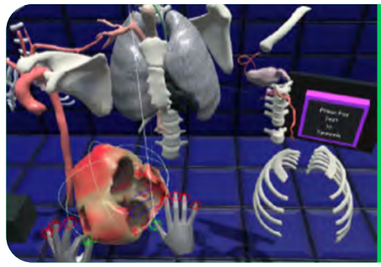
→ Fully virtual, closed environment

→ No interaction with the outside world

MIXED REALITY (MR)

→ Full ability to interact with elements of the real and virtual environment

06. Broad application of CarnaLife Holo.



Training of doctors and students

Visualization during procedures

Planning procedures

07.

CarnaLife Holo requirements.

The **CarnaLife** Holo application requires:

→ workstation with Windows and high-performance graphics card, a router with a secure local network

Data can be loaded:

→ from a workstation drive via the **CarnaLife** Holo application
→ by connecting the **CarnaLife** Holo application to PACS

Once the data is loaded, the operator puts on the Microsoft HoloLens 2 goggles and starts working

Creating a local secure network that includes a workstation or PACS and Microsoft HoloLens 2 goggles guarantees the security of data transmission (data do not leave the hospital)

08.

Tool tested in clinics in Poland and abroad.

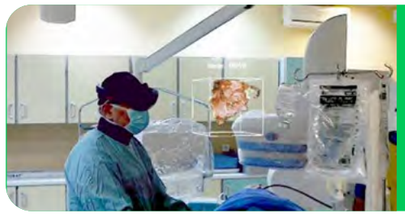
100+ procedures
using CarnaLife Holo

AKH Wien
Echocardiography navigated procedures

Intercard, Nowy Sacz
Teleconsultations

CM UJ, Kraków
3D echo in invasive cardiology

MSWiA, Rzeszów
Rotational angiography



UMED, Łódź
3D echo in real time

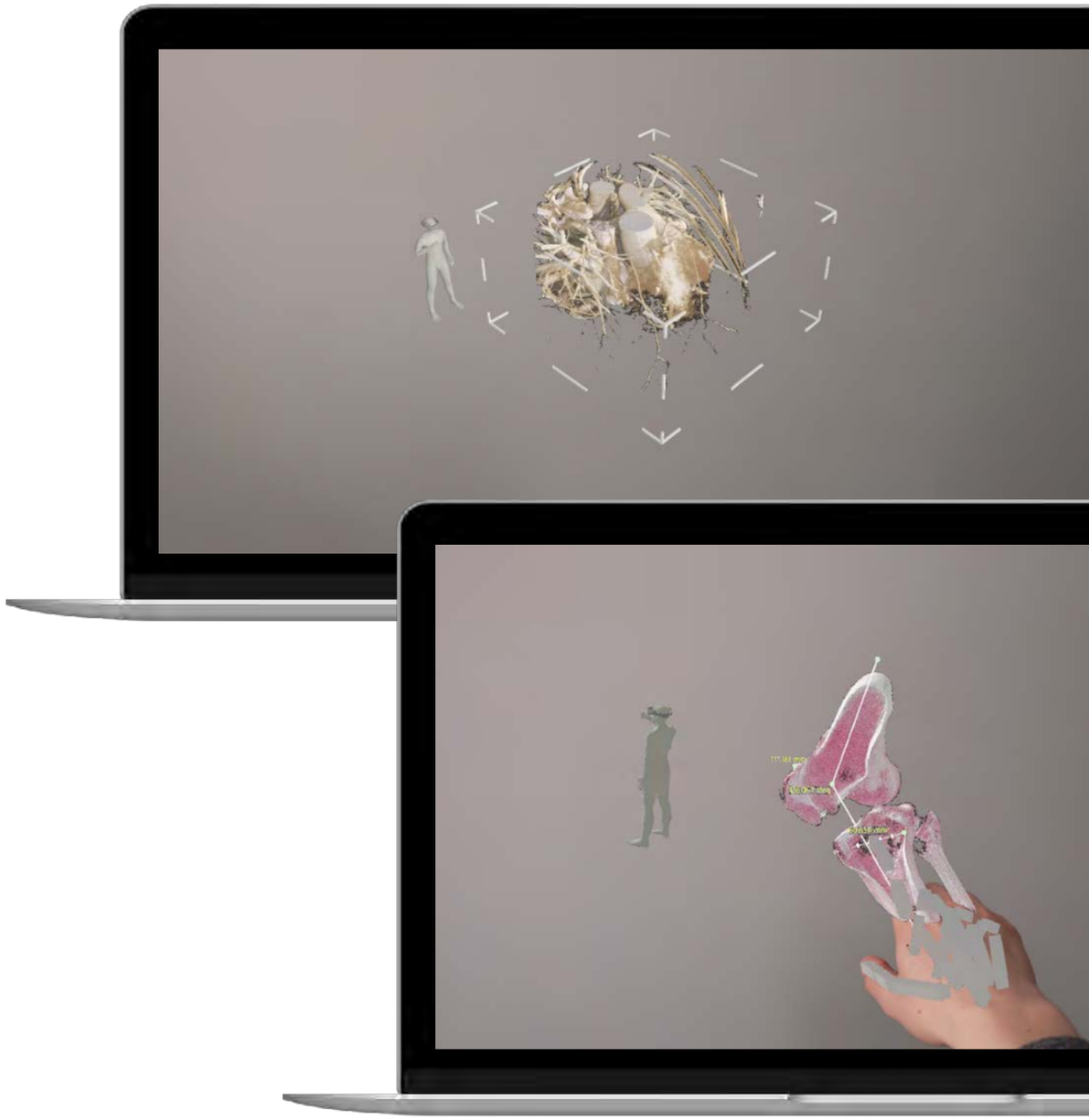
09. Features.

MAIN FEATURES:

- → Support for DICOM data
- → Holographic visualization of three-dimensional data
- → Interaction with the hologram using gestures, voice commands and virtual menus
- → MPR mode
- → Certified measurements, annotation

ADDITIONAL FEATURES:

- → Hospital PACS system support
- → Tools for defining areas of interest (scissors)
- → Easy and intuitive interaction with the hologram
- → Transfer function wizard, filters dedicated to specific tasks
- → Data filtering
- → Real-time data display with GE Vivid E95
- → Hologram can be placed anywhere



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10.
Oncological surgery.

Procedure examples.

- → Removal of liver tumor (NanoKnife)
- → Removal of pancreatic cancer with metastases to the liver (NanoKnife)
- → Removal of pancreatic cancer
- → Thermoablation of liver tumors

Holographic representation of cancerous lesions

Accelerated planning procedure

Reduction in treatment time*

Possibility to reduce errors thanks tonatural depth perception

Locating oncology lesions is 4 times faster**

Second opinion - possibility of remote consultation

*Wierzbicki, Ryszard, et al. "3D mixed-reality visualization of medical imaging data as a supporting tool for innovative, minimally invasive surgery for gastrointestinal tumors and systemic treatment as a new path in personalized treatment of advanced cancer diseases." *Journal of Cancer Research and Clinical Oncology (2021)*: 1-7.

**Pelanis , Egidijus, et al. "Use of mixed reality for improved spatial understanding of liver anatomy. *"Minimally Invasive Therapy & Allied Technologies (2019):* 1 7.

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11.

Cardiology and interventional cardiology.

Procedure examples.

- → Ductus Botalli closure procedure
- → In situ stent graft implantation procedure (for abdominal aortic aneurysm)
- → ASD
- → PFO
- → Left atrial appendage closure procedure
- → Basilica procedure
- → Implantation of a MitraClip device

Real-time holography

Possibility to move and place the hologram anywhere

Interaction with the hologram using gestures and voice commands

No loss of sterility during interaction with the hologram

Independent verification of data

Real-time transmission and visualization of echocardiograph data

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12.

Orthopedics.

Procedure examples.

- → Anterior cruciate ligament reconstruction
- → Hip acetabular replacement
- → Foot reconstruction and ankle endoprosthesis insertion

Possibility to move and place the hologram anywhere in the room

Interaction with the hologram using gestures and voice commands

No loss of sterility during interaction with the hologram

Independent verification of data

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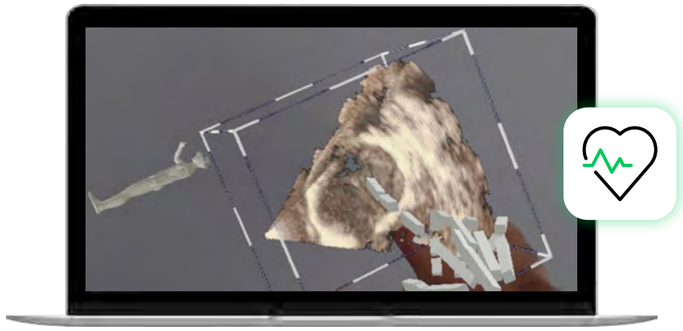
13.

Echocardiography.

→ Real-time transmission and visualization of echocardiograph data



14.

COVID - 19.

→ Visualization of lung lesions after COVID-19

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15.

Otolaryngology.

Procedure examples.

- → Surgery to remove frontal sinus osteoma
- → Procedure planning
- → Finding pathological lesions

Possibility to move and place the hologram anywhere in the room

Interaction with the hologram using gestures and voice commands

No loss of sterility during interaction with the hologram

Independent verification of data

16.

Key **Benefits.**

Preoperative diagnostics

- → Accurate three-dimensional visualization of examinations performed before surgery
- → Natural perception of anatomical structures
- → Facilitated procedure planning and preparation for both physician and patient
- → Measurement and visualization in holographic space

Intraoperative support

- → Possibility of changing the location of the hologram display
- → Full sterility when interacting with holograms
- → Access to tests as holograms throughout the operation
- → Real-time visualization of medical instruments with GE Vivid E95 echocardiography probe (in the case of echocardiography)

17.

Treatments with **the support of CarnaLife Holo.**

Procedure examples.

- → Left atrial appendage closure procedure
- → Transcatheter aortic valve implantation
- → Balloon angioplasty of the pulmonary arteries
- → Percutaneous closure of atrial septal defect
- → Ductus Botalli closure procedure
- → In situ stent graft implantation procedure (for abdominal aortic aneurysm)
- → Removal of liver tumor (NanoKnife)
- → Removal of pancreatic cancer with metastases to the liver (NanoKnife)

Szpital na Klinach
Kraków

WUM
Warsaw

CM UJ
Kraków

European Health Center
Otwock

3D imaging system

18.

Global potential in the dynamically **growing imaging and digital medicine markets.**

- The rapidly growing market for medical services and 3D diagnostic imaging using artificial intelligence
- Dynamic sales growth both in Poland and on foreign markets. Effect of scale to be achieved upon receipt of FDA certification
- Digital medicine an ideal answer to demographic changes and global increase in diseases of civilization
- A well-thought-out sales strategy to achieve dynamic organic growth through active expansion into foreign markets
- A team of experts supported by the experience and competence of the Scientific Council
- Unique products to secure the position of one of the global market leaders
- Technological and commercial cooperation with international corporations

Johnson&Johnson GE Microsoft

We create the future of medicine.

Explore other **MedApp products.**

CarnaLifeSystem

Advanced telemedicine platform

for collaboration between doctor
and patient at a distance

Find out more!

DigitalClinic

Digital Clinic

a one-stop-shop for consultation, diagnosis
and monitoring of patient's health

Find out more!

HoloComm

Mixed reality

the perfect solution for remote
3D product demonstration

Find out more!

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