



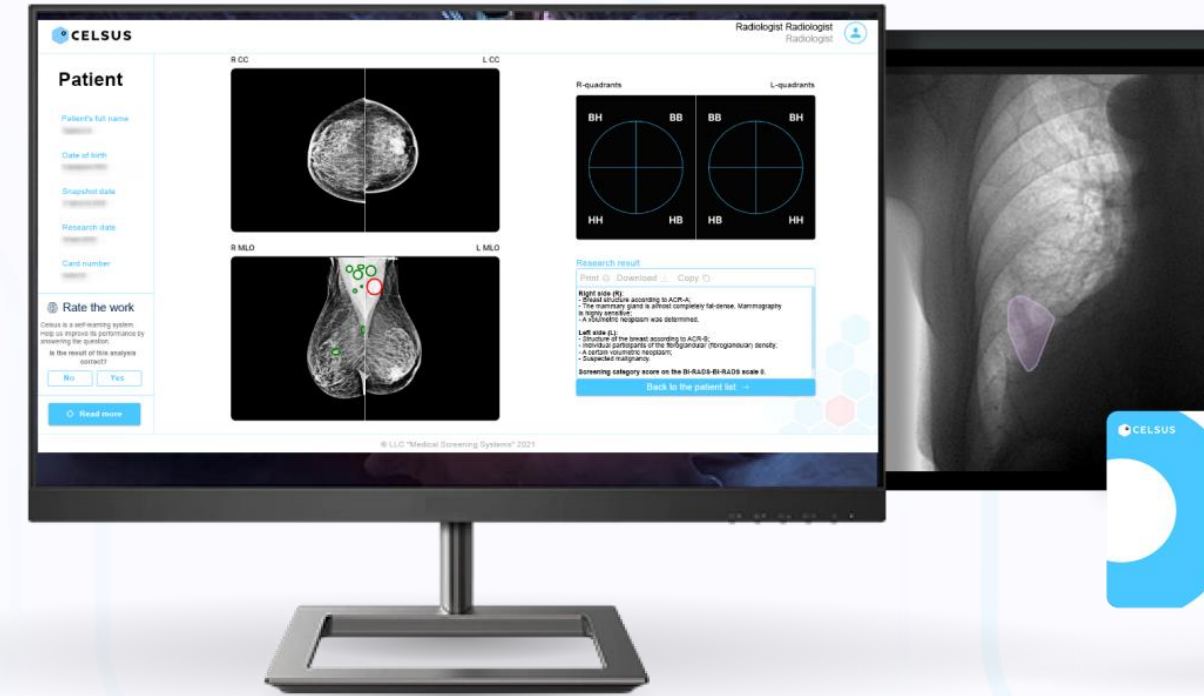
We help doctors to help their patients



# CELSUS - AI-SOFTWARE FOR ANALYSIS OF X-RAY AND CT STUDIES



Clinical decision support system (CDSS) based on AI technologies for analysis of the digital medical images, detection of the regions of interests, and automatic interpretation of the results.



## OUR SOFTWARE



**CELSUS®**  
Mammography



**CELSUS®**  
Brain CT



**CELSUS®**  
CXR and  
fluorography



**CELSUS®**  
Chest CT

# CELSUS - MEDICAL DEVICE



Confirmed and clinically proven:

- ✓ Efficiency
- ✓ Safety
- ✓ Quality

**Celsus®** Registration certificate No **RZN 2022/18855** submitted to the Unified Register of Russian Computer Software

**Celsus®** certified in EU **CE Mark SK-CA-001/DVC-SK-21-06-000018**

**Celsus®** meets the requirements of the industry for the production of medical devices according to the **ISO 13485:2016**



Ref. <b>SK-CA-001/DVC-SK-21-06-000018</b>	<b>MEDICAL DEVICE RE</b>
<b>DATA OWNER</b>	
<b>NCA name:</b>	<b>Address:</b>
<b>Contact person:</b>	
<b>REGISTRATION DATA</b>	
	<b>Version no.:</b> 1
	<b>Record creation date:</b> 20
<b>DEVICE DATA</b>	
<b>GMDN Term:</b> Full-body CT system	
<b>Make:</b> Softvér CELSUS	
<b>Class:</b> I	<b>Type:</b> CE marking
<b>English description:</b> The CELSUS® software is a medical decision-making aid system for interpreting radiological examinations, to carry out "double reading" and quality control with subsequent interpretation of the results. The CELSUS® software includes a server part, on which a pre-trained neural network is located, as well as a user part, which can be a desktop application or functionality integrated via API. The CELSUS® software is intended for professional use by health care professionals, specialists in the field of radiology in public and private medical organizations.	
<b>ACTOR DATA</b>	



# CELSUS MAMMOGRAPHY

**Celsus**<sup>®</sup> analyzes mammograms, detects and highlights malignant and benign masses, suspicious calcifications, lymph nodes, determines the density of breast tissue according to ACR.

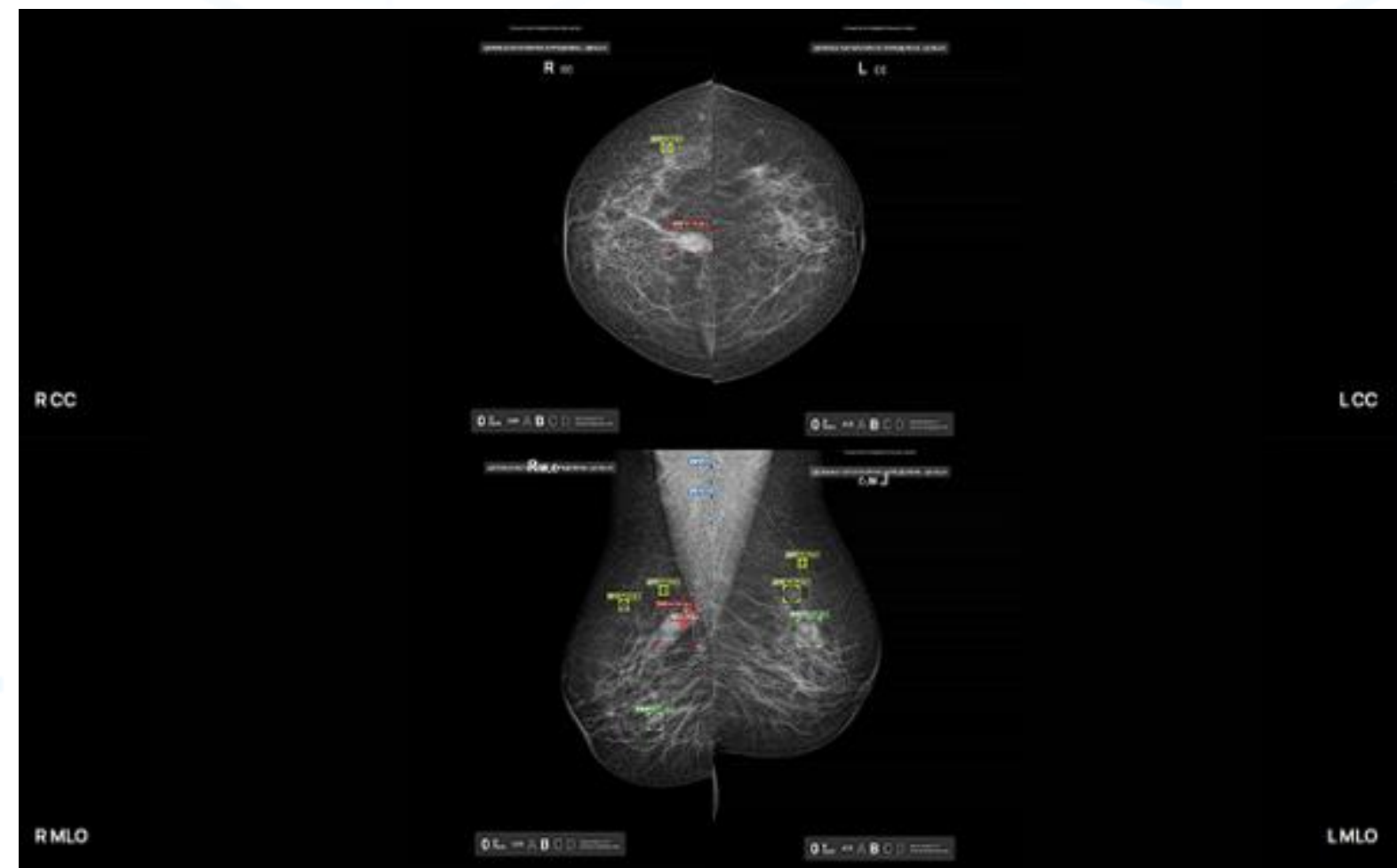
**Celsus**<sup>®</sup> forms a preliminary radiology report for the doctor.

AUC = 0.9+

The processing time of the study less than 1 minute

Sensitivity = 0.9+  
Specificity = 0.8+

**High-sensitivity scenario:**  
Sensitivity = 0.999+  
Specificity = 0.4+



# CELSUS CXR and FLUOROGRAPHY

Celsus® analyzes fluorograms and x-rays, detects and highlights pathological changes in the image

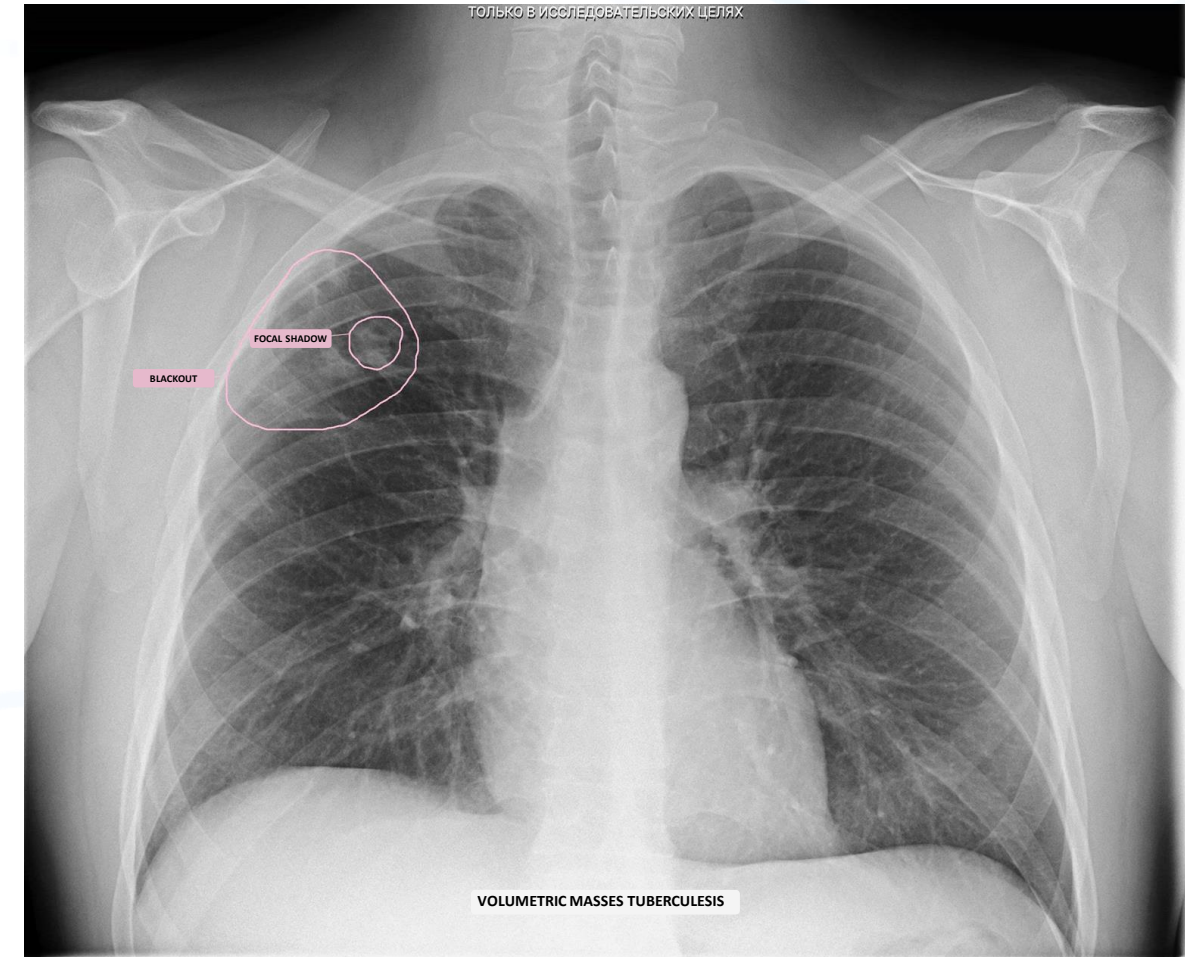
- > Nodule/mass
- > Dissemination
- > Annular shadows
- > Pleural effusion
- > Pneumothorax
- > Rib fractures
- > Enlarged mediastinum
- > Hilar enlargement
- > Infiltration/Consolidation
- > Cardiomegaly
- > Petrifications
- > Atelectasis
- > Fibrosis

AUC = 0.98

The processing time of the study less than 10 seconds

Sensitivity = 0.98  
Specificity = 0.92

**High-sensitivity scenario:**  
Sensitivity = 0.999+  
Specificity = 0.65+



# CELSUS CHEST CT

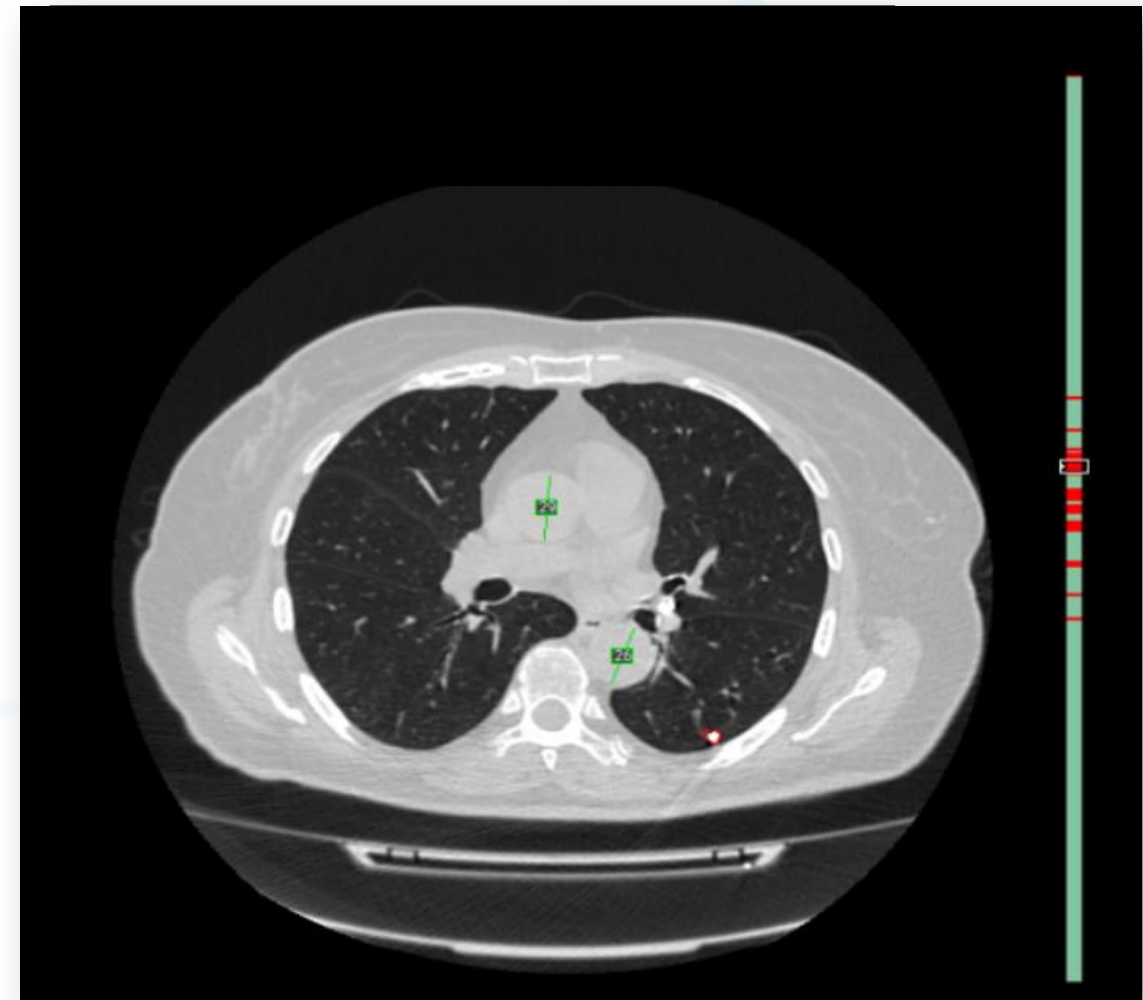
Celsus<sup>®</sup> analyzes chest CTs, detects and highlights pathological changes in the study, forms a preliminary conclusion for the doctor.

- ✓ Lung cancer
- ✓ Thoracic aortic aneurism
- ✓ Compression fracture
- ✓ Pulmonary trunk dilatation
- ✓ Coronary calcium
- ✓ COVID-19
- ✓ Pneumonia
- ✓ Pleural effusion
- ✓ Pulmonary emphysema
- ✓ Paracardial fat (epicardial + pericardial)

AUC = 0.9+

The processing time of the study less than 3 minutes

Sensitivity = 0.9+  
Specificity = 0.9+



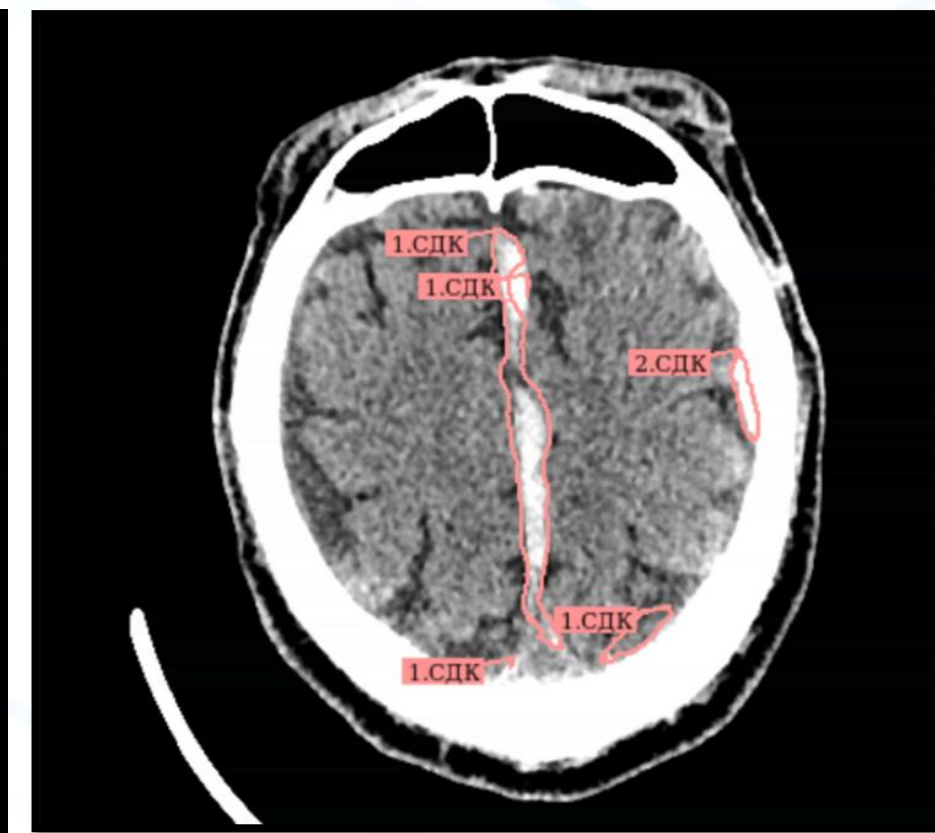
# CELSUS BRAIN CT

The software analyzes brain CTs, highlights the contours of pathologies, calculates the hemorrhage volumes and generates preliminary radiology report. The main goal of the service is detection of hemorrhagic and ischemic strokes.

AUC = 0.94

The processing time of  
the study less than 2  
minutes

Sensitivity = 0.93  
Specificity = 0.90



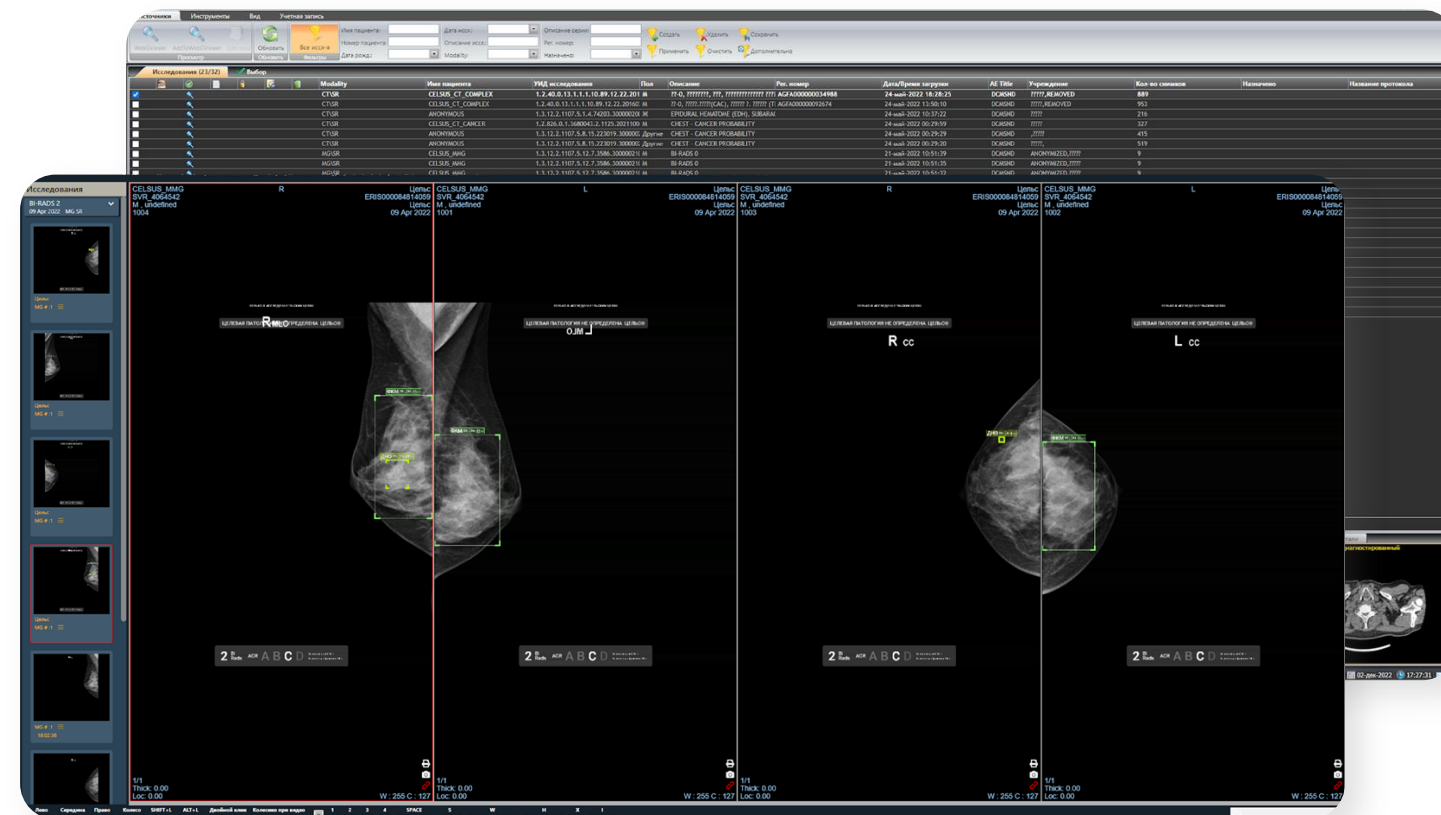
CDK - subdural hemorrhage  
BMK - intracerebral hemorrhage

# Seamless integration



**Celsus®** is a professional solution for integrating with the hospital's existing IT infrastructure, ensuring a user-friendly experience.

- ✓ **Maximum convenience and flexibility**
- ✓ **The ability to tailor user scenarios**
- ✓ **No limitations on the quantity of equipment**
- ✓ **Transparent pricing**



**DIGI PAX**  
RADIOLOGY AND PACS SOLUTIONS



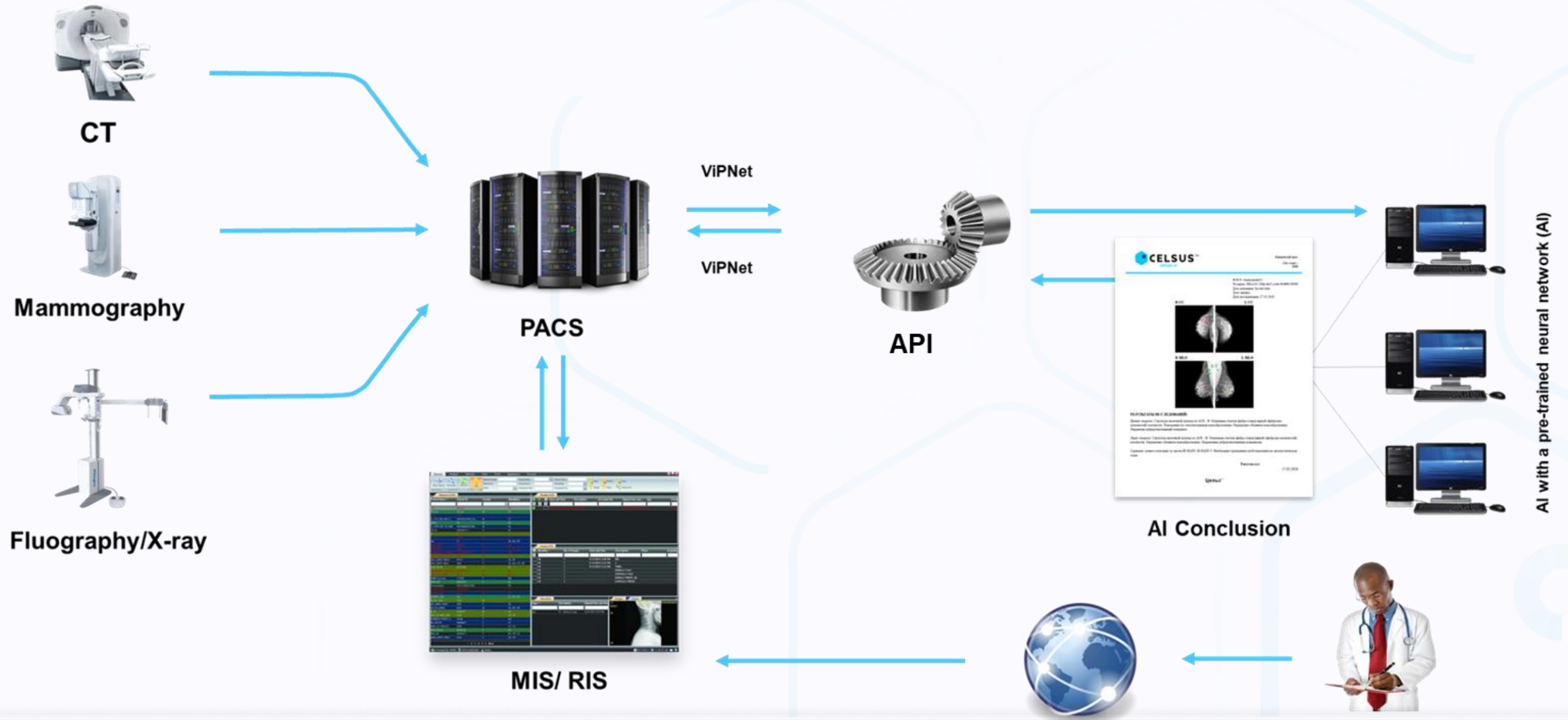
**AGFA** Agfa  
HealthCare

**SIEMENS**

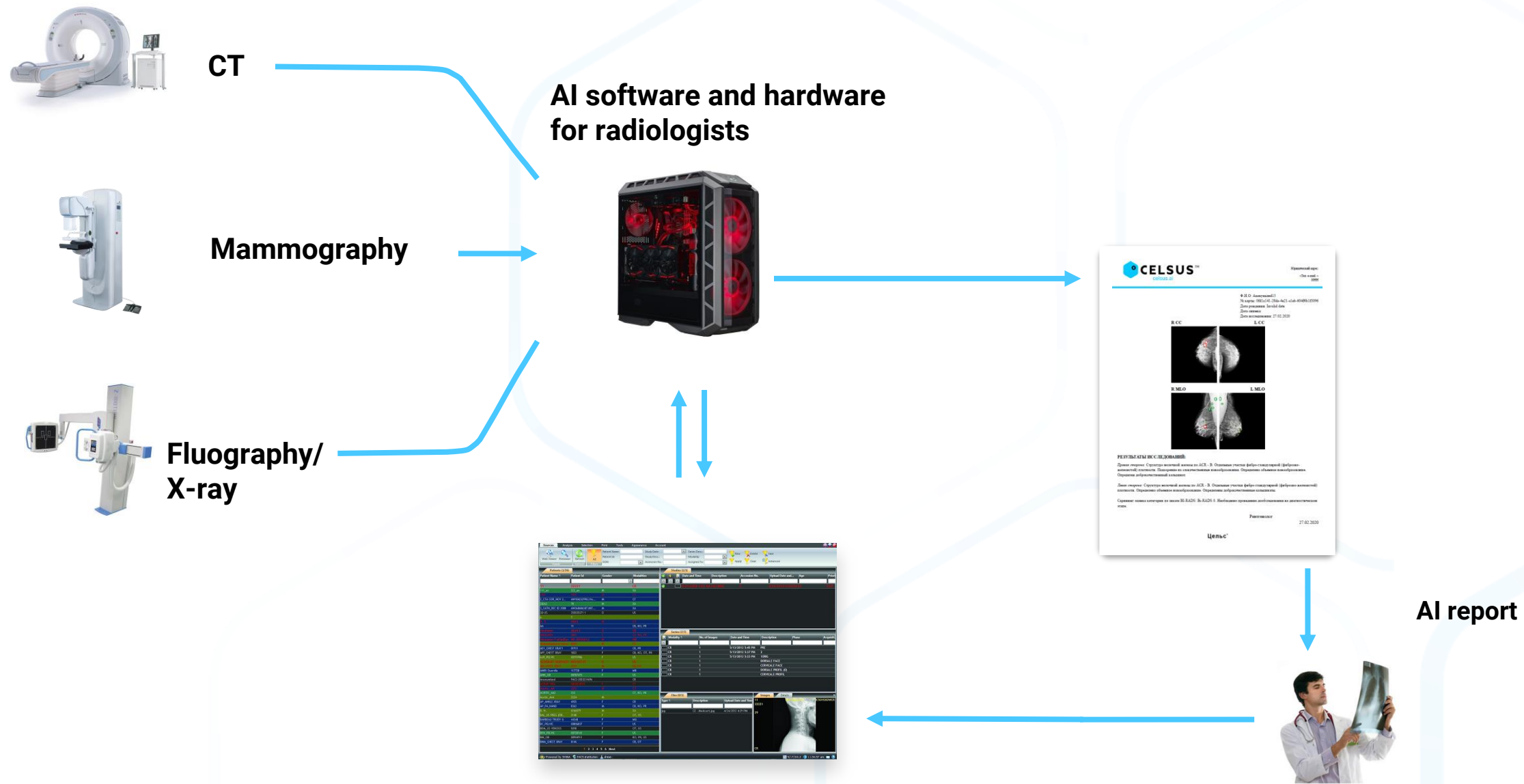
**PHILIPS**



# Cloud integration scheme



# On-premise integration scheme



# Centralized regional projects in Russian Federation (18 in 2023).



## The part of project sheet.

Region	Service	Deployment method	Deployed	Completed contract	Processed studies in production
<u>Kaluga</u>	Mammography	Cloud	26.12.2022	31.07.2023	5500
<u>Krasnoyarsk</u>	Mammography	Local	03.08.2023	31.08.2023	19300
<u>Tyva</u>	Mammography, CXR/flu	Cloud	23.06.2023	19.09.2023	7800
<u>Tula</u>	Mammography, CXR/flu	Cloud	28.08.2023	27.10.2023	22400
<u>Arkhangelsk</u>	Mammography, CXR/flu	Local	31.08.2023	18.11.2023	90400
<u>Chelyabinsk</u>	Mammography	Cloud	24.10.2023	22.12.2023	9700

# Geographical presence of Celsus



## 6 countries

Celsus ® has gained widespread adoption in hospitals across the world

Separate legal entity in Dubai

More than 3.5 million studies have been analysed by Celsus.

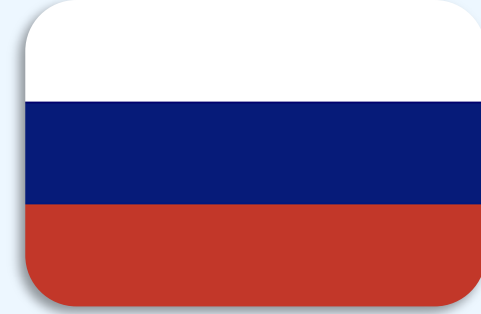
More than 300 hospitals are connected to Celsus



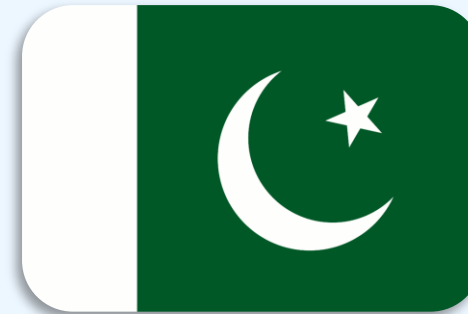
Saudi Arabia



India



Russia



Pakistan



Belarus



Uzbekistan

# Competition

**Celsus**® takes a leading position in the [Mosmed AI](#) (AI in radiology world largest experiment).

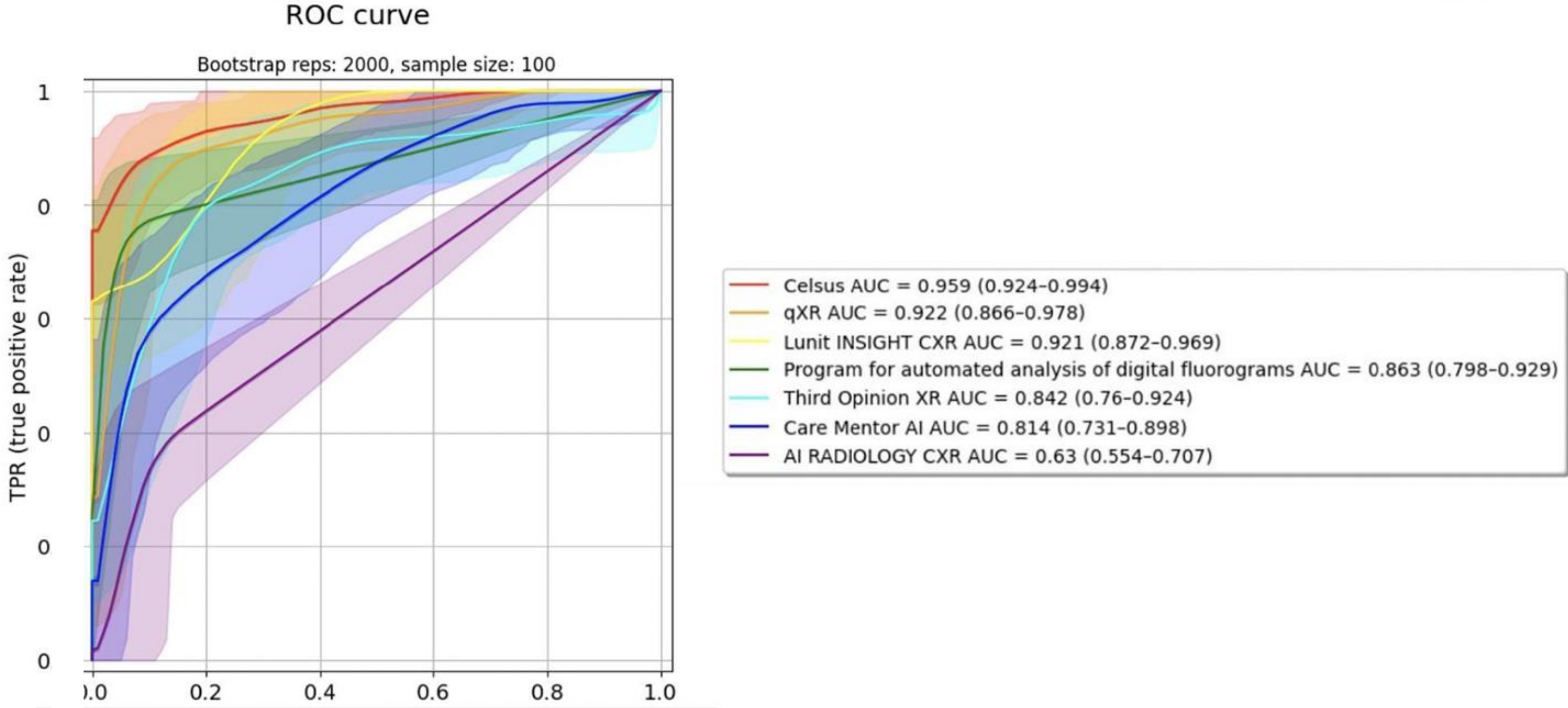
We demonstrated superior metrics in many external tests within Experiment and production use.

Current positions in rankings (prospective ROC-AUC + radiologists' feedback):

- Mammography - 1st place
- Chest X-ray and fluorography - 1st place
- Brain CT - 1st place
- Chest CT - 2nd place

Modality (MMG)	Celsus	Competitor1	Competitor2	Modality (Brain CT)	Celsus	Competitor1	Competitor2
AUC	<b>0.97</b>	0.84	0.90	AUC	<b>0.96</b>	0.87	0.91
Sensitivity	<b>0.96</b>	0.86	0.74	Sensitivity	<b>0.93</b>	0.85	0.82
Specificity	<b>0.97</b>	0.78	0.94	Специфичность	0.90	0.82	<b>0.98</b>
Accuracy	<b>0.97</b>	0.81	0.84	Accuracy	<b>0.92</b>	0.83	0.90
Processing time	<b>0,95 min</b>	1,7 min	2,4 min	Processing time	<b>0,99 min</b>	5 min	1,4 min

# External comparison of lung nodule detection on chest X-rays (mosmed.ai)



# Automatic interpretation of chest X-rays with no significant findings

Current prospective metrics in Moscow:

- 74.86% of chest X-rays can be automatically reported as normal
- No more than 1 missed pathology for every 10k exams



74,86%

25,14%

# Contact us



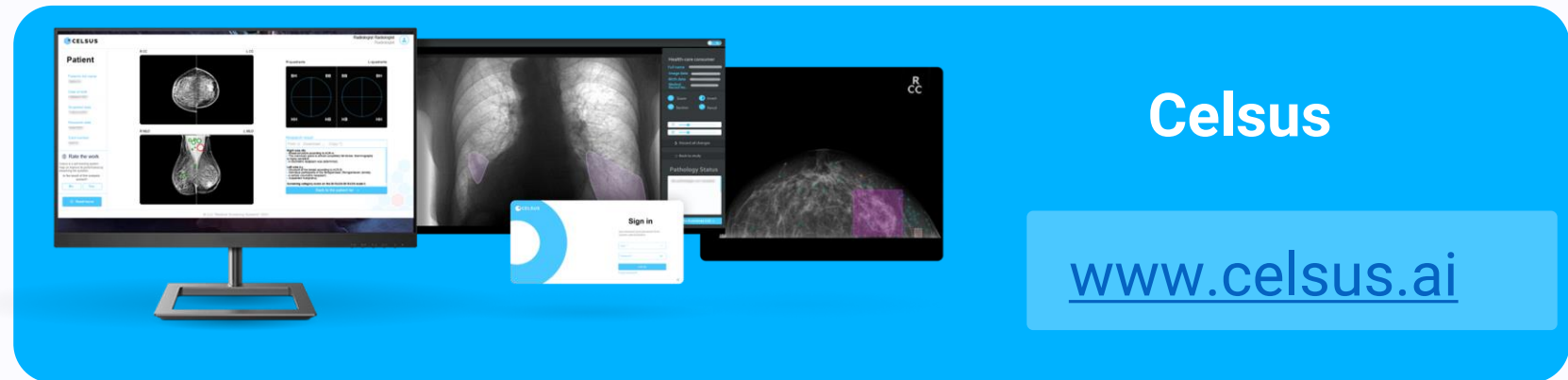
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Celsus

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Online demo