

# System of Medical Teleconsultations

The system is developed in framework of International Science & Technology Center (ISTC) Project B-517 “**Telemedicine System for Image Analysis and Consultation in Radiation Induced Thyroid Cancer**”

## Project participants

- National Center of Information Resources and Technologies, National Academy of Sciences of Belarus;
- United Institute of Informatics Problems, National Academy of Sciences of Belarus;
- Pathologoanatomic Laboratory of Minsk City Hospital for Oncology (MCHO);
- Republican Clinical Hospital “Aksakovschina”, Laboratory of thyroidology;
- Lehrstuhl für Informatik V, University of Mannheim;
- Clinic and Polyclinic for Nuclear Medicine, University of Würzburg.

## Achieved Results

**System of medical teleconsultations “Teleconsult”** is developed for additional consultative support for physicians in difficult cases. System provides mechanisms for exchange of image files, shared discussion lists, textual information exchange, access to images and data exported from local data bases, voice and video transmission. The Teleconsultation software is written in the Java programming language and should be portable to different systems including Windows, Linux, Solaris or Mac OS.

The main windows of the Teleconsultation client are: Whiteboard, Chat, Connected users, Database, Phone, Service configuration, Database users, Phone. Images opened in the “Whiteboard” window by one client are automatically delivered to other participants of the conference. The following image formats are supported: BMP, DICOM, FPX, GIF, JPEG, PNG, PNM and TIFF. Special pointers (arrows and area selection tools) can be used to show regions of interest. The “Chat” window is used for text message exchange. The “Connected users” window shows the list of connected users, transfer of video in the slide show mode is also supported. With the help of Database window one can access to the server database where the information about patients is stored. Windows “Service configuration” and “Database users” are used for administration purposes. There is the possibility of voice transmission with the use of “Phone” window.

Teleconsultation server is installed on one or more dedicated servers connected to the Internet. Server software supports a server database (MS SQL Server) and a subsystem of interactive consultations (Java). Server DB stores information about patients, operations, results of histological studies, images. This information can be exported from local databases. Selected images can be automatically loaded from the DB server to “Whiteboard” window.

Currently the system uses one single server. It is planned that the system will provide data mirroring among several servers. It means that the same data are stored on more than one server to speed-up data access. Client computers may be connected to the nearest server. Big images will be sent between servers at night time.

**Database “MCHO DB”** was developed for storing textual, numerical and graphical information on histological analyses of thyroid gland of the patients, operated in MCHO, and also clinical information for these patients. This database has the following functions:

- export of medical data and images to the server database developed in Microsoft SQL Server. The teleconsultation system can access the exported data;
- export of medical data to Microsoft Excel for further data analysis;
- printing the report of epicrisis;

**Database “Aks DB”** was developed for storing textual, numerical and graphical information on thyroid diseases of patients, observed and cured in the Republican Clinical Hospital “Aksakovschina”. This database has the following functions:

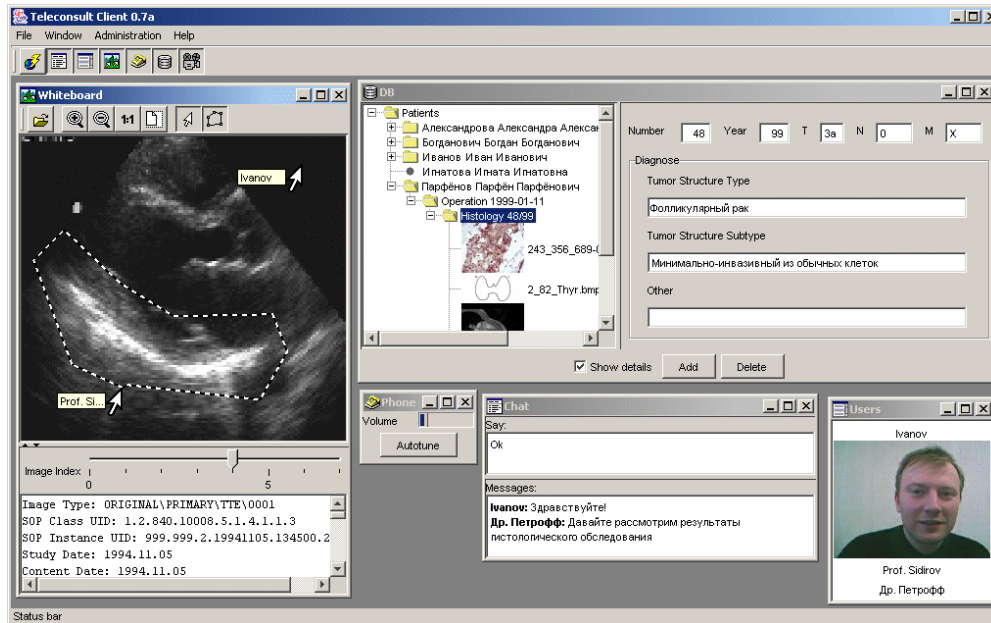
- storing of ultrasound thyroid images obtained from an ultrasound scanner;
- printing the report of epicrisis;

**Structure of the “Teleconsult” system:**

■ Teleconsultation server. It is installed on one or several dedicated servers (connected to the Internet) of Teleconsultation system. Server software includes the support of global database and subsystem of interactive consultation;

■ Teleconsultation client. It is installed on every computer used to work with this system.

### Main form of “Teleconsult”



### Main form of “MCHO DB” - “Registration Data”

№	Дата	Отдел	Учрежд.	T	N	M
1	07.03.2000	ОХ01		1	1a	x
2	18.03.2002	ОХ04				

Гист номер	Дата опции
267141/0	07.03.2000

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