Schallware
ULTRASOUND SIMULATOR

INTERNAL MEDICINE
OBSTETRICS AND GYNAECOLOGY
CARDIOLOGY TTE, TEE
UROLOGY
PEDIATRICS, PREMATURE BIRTHS

Perfect training for perfect practice
Situated in Berlin, the Schallware company was founded in 2001 and it released its first ultrasound simulator in 2008 which works on the basis of real-patient clinical data. Over time we have added more features, more simulated patients and increased the intricacy of 3D representations in the areas of internal medicine, obstetrics and gynaecology as well as cardiology.

With our most recent release in 2017, we added a transesophageal echocardiogram (TEE) application and virtual models of the heart, abdomen and fetus and started also new modules for pediatrics, urology, CEUS, elastography. Besides Berlin, Schallware runs additional acquisition workplaces in Hanover, Erfurt, Paris and Hamburg. In September 2016 we have opened our own simulation center (SimCenter Berlin-Buch, 200qm, up to 12 simulators, 2 ultrasound devices) to offer and develop new course types, new intensive workshop ideas with access to 500 patients.

Schallware comprises software developers, 3D artists, hardware and dummy manufacturers, acquisition specialists in the field of 3D ultrasound volumes as well as ultrasound course managers. To date we have sold the Schallware simulator to 80 customers worldwide, for example to universities and simulation centres in Frankfurt, Vladivostok, Edmonton, Dubai, Stockholm, Paris, Beijing, Boston and many other locations. Furthermore we have run over 300 courses using up to 10 simulators in Germany, Switzerland, Austria, the Netherlands, Belgium and other countries. This means that over 7000 physicians have already benefited from a Schallware teaching event. Courses can be booked on www.schallware.de

If you have any queries, requests or ideas, please contact us at info@schallware.de or call on +49 30 29006110.

Yours sincerely

Gernot Jehle, GM
**Description of Schallware Ultrasound Simulator**

The Schallware Ultrasound Simulator allows your doctors to practice ultrasound diagnosis congruent with real conditions. Moving the tracked probe over the torso produces an exact B-mode image of the case chosen. In each module, the simulator offers a set of patients. Every one of these is represented by several 3D volumes, or more precisely six abdominal and two intercostal volumes (also see red lines in pictogram). When using the multi-volume mode, all these scans are available. To facilitate this we have acquired data of single patients’ entire abdomens, averaging around 6000 images per patient. The Schallware Pathology Database spans the fields of internal medicine, cardiology, obstetrics and gynaecology. You currently have access to 250 cases in internal medicine, 200 in obstetrics and gynaecology and about 60 in cardiology. For some simulated patients, additional data has been acquired showing differing characteristics such as varying dates, sources (colour doppler or linear probe (8 MHz)) etc. All documented cases include a medical history, questions leading to a diagnosis, comments on ultrasound diagnosis (i.e. what is visible with the simulator) and a pathological description. The simulator enables you to find physiological or pathological structures using regions of interest (ROI). More than 6000 ROIs have already been defined and you can add new ones if you wish. You can additionally take advantage of the simulator as an ultrasound device using a login mode for studies, measurements, storing of freeze-frame images, creating pdf reports or writing questions and answers for tutorials or examinations in a Q&A format.

**Acquisition**

Volume representation is based on the clinical data from real patients. The light area shows a fan volume of a right side intercostal scan. Reconstructed plane shows volume quality (green line).
The Schallware Simulator shows different image modi:

- B-Mode
- color doppler
- 4D B-Mode (fetal heart, heart)
- 4D color doppler mode
- 2/3/4D virtual data
- M-Mode

There is a list of ROIs available which directs you to images of related structures. For use in question-and-answers scripts (Q&A), our system enables you to create additional ROIs that can be seen as circles on the image concerned.
Provide your doctors with a revolutionary, easy-to-use system for hands-on practice in ultrasound diagnosis.

The Schallware Ultrasound Simulator provides the most comprehensive pathology database of simulated patients (500 in 2017) based on clinical data acquired in the form of individual original ultrasound modi. The representation of authentic pathological cases using our simulator enables you to perform teaching sessions for advanced physicians which can be repeated. You have the choice between providing a range of patients in a Q&A format, as a test with scores or simply a tutorial. Even self-study is feasible facilitated by image documentation of regions of interests (ROI) which automatically lead you to interesting physiological and pathological structures. Data relating to some patients has been acquired at several stages of their treatment, using either B mode, colour doppler or linear high frequency probes. We also offer virtual data models of an animated foetus, heart and abdomen to enable beginners to study their anatomy. The scanned data is organized into thematic modules which range in levels of difficulty from beginner to advanced. Our system consisting of three dummy torsos and five dummy probes covers ultrasound diagnosis scenarios in the fields of internal medicine, emergencies, cardiology and gynaecology. Our Core System includes one dummy torso, three modules and corresponding probes. Various add-on modules are available from our ever-growing library, produced by our affiliated clinics. Each module includes up to twelve documented patient cases.

"By providing these resources, you can set a consistent quality standard in ultrasound diagnosis throughout your clinic.

Ensure consistent quality and knowledge by allowing doctors to regularly revisit documented cases at any time.

With the use of our Simulator, your doctors can now regularly practice ultrasound diagnosis on both common cases and those which may only arise once a year. Doctors can test their knowledge by comparing their diagnosis to the documentation that comes with each module. In such a way, the simulator serves as a reference for your clinic, being available at any time. Providing these consistently accessible training and reference resources to your doctors sets a consistent quality standard in ultrasound diagnosis throughout your clinic.

Schallware pathology database contains more than 500 cases

Using our Schallware ultrasound simulator, you benefit from a huge case database. Schallware has developed its own recording technique (3D frehand). We run several acquisition labs that source data from affiliated clinics. The efficiency of our database continues to increase year by year. What distinguishes us from our competitors is the case quality, all of which reflects original ultrasound data – not virtual-world cartoon style. Our high-resolution simulator data covers both abdomen and flanks and every case is recorded with its own volumes.

On-site train-the-trainer courses
Internal medicine

With the pregnant female dummy normal, pathologic vaginal and abdominal cases are available. The obstetrics module allows foetometry of trimenon I, II and III including weight estimation. Different examination types such as 'abdominal' or 'vaginal' enable measurement of correct parameters. Foetal heart cases show several congenital heart defects in motion (4D).

Obstetrics, gynaecology, foetal echocardiography

The core of Schallware's pathology database is the internal medicine element consisting of original ultrasound data (3D volumes).

4D Cardiology

The cardiology modules are available as an add-on to the internal medicine simulator. They are equipped with an extra tool for left ventricle measurement in B and M modes (EF). All cardiac cases facilitate scans from a parasternal, apical or subcostal perspective. The case database includes the following: kinetics, right ventricle, hypertension in combination with mitral regurgitation and stenosis as well as aortic insufficiency combined with stenosis. What is more, all cases offer extra data in the form of colour cine loops and spectral doppler images.
Internal medicine training

About 250 cases are available for internal medicine, each ready for use with its own data set. This means that each patient represents a single case, consisting of up to 9 volumes. You have the option to switch from one volume to the next and scan the patient’s entire abdomen and flanks. All volumes are created with Schallware free-hand technology in high-resolution quality. Because you have access to full-patient data, each case can be used for different diagnostic tasks. You have the option to examine several pathologies in one case, find the cause of a patient’s pain or the initial disease that lead to pathological developments. The Schallware Simulator allows real diagnostic training for the entire range of possible pathologies. In addition to this, you can even define your own submodules. Your favourite cases can be found by means of a keyword search machine.
4. Emergency module

1. FAST, E-FAST
2. abdominal aortic aneurysm (AAA)
3. biliary stones
4. bladder and renal congestion
5. deep-vein thrombosis
6. structure and function of heart

6. Small pelvis module

1. ascites
2. lymphomas
3. diverticulitis
4. tumour
5. bladder
6. enlarged bladder
7. enlarged prostate

5. Vascular and aorta module

1. normal aorta
2. aortic sclerosis
3. aneurysm
4. dissection

7. Neck module

1. transversal NAD
2. longitudinal NAD
3. thyroid adenoma
4. hemithyroidectomy
5. thyroiditis
6. cervical lymph nodes

ultrasound window shows pleural effusion
panel window shows tutorial and available data of case
ultrasound window with bladder
panel window with tutorial
ultrasound window aneurysma in aorta
ultrasound window with colour doppler aneurysma in aorta
ultrasound window tyroid check on neck
panel window with description of findings and screenshots
8. IBD (inflammatory bowel disease) module

1. normal appendix
2. diverticulitis
3. wall thickening
4. hypervascularisation
5. fistula
6. therapy progress (3 months)
7. abscess

1. Measurement example

9 volumes available, full abdomen with visible spleen measurement

2. Pathology example

left side abdomen, long volume with visible mechanical ileus

3. Pathology example

9 volumes, full abdomen with visible liver cirrhosis
4. Fusion window

US + CT/MRI of same patient

CT/MRI synchronized to ultrasound data

5. Customized modules

manikin in premature stage

premature head module, thrombosis

Schallware hands-on course in SimCenter Berlin-Buch

virtual Schallware model shows vascular tree
Obstetrics training

Pathological vaginal and abdominal cases are available with the use of a normal pregnant female dummy. The obstetrics module allows foetometry of trimenon I, II and III including weight estimation. Different examination types such as ‘abdominal’ or ‘vaginal’ enable measurement of correct parameters. Foetal heart cases show several congenital heart defects in motion (4D).

Various virtual foetus models are available for nuchal translucency measurement in the 12th week of gestation and foetometry as of the 20th week of gestation.

1. Obstetrics example trimenon I

- Long volume acquisition
- Triplet
- Measurement of CRL

2. Obstetrics foetometry example

- Long volume acquisition
- Foetus profile

3. Obstetrics foetometry example 20th week of gestation

- Measurement of abdominal diameter (ATD)
- Measurement of head (HC, BPD)
- Measurement of femur length (FL)
- Panel window with parameter list for weight estimation
Various virtual foetus models available for nuchal translucency measurement in the 12th week of gestation and foetometry as of the 20th week of gestation.

Ob/Gyn TV probe

In addition to abdominal convex probe the Schallware simulator provides also transvaginal probe. Besides virtual female model there are transvaginal cases available for obstetrics (trimenon I) and gynecology training.

Ob/Gyn TV probe

1. Obstetrics example trimenon I

2. Ob TV example

24

first trimester screening

list of regions of interest

tumor of right ovary

list of regions of interest

3. Gyn TV example

first trimester screening

list of regions of interest
Cardiology training TTE

The cardiology modules are available as an add-on to the internal medicine simulator. They are equipped with an extra tool for left ventricle measurements in B and M modes (EF). All cardiac cases facilitate scans from a parasternal, apical or subcostal perspective. The case database includes the following: kinetics, right ventricle, hypertension in combination with mitral regurgitation and stenosis as well as aortic insufficiency combined with stenosis. What is more, all cases offer extra data in the form of colour cine loops and spectral doppler images.

Right ventricle example

The image on the left shows a panel screen with additional data as colour doppler cine loops. The pictures below show different perspectives.

Pericardial effusion example

The left picture shows the panel screen displaying ultrasound device controls such as gain and brightness, position of volume, type of probe, freeze button and measurement tool. The two lower right pictures show the distribution of image slices on the ultrasound simulator's screen, reflecting the probe's position on the dummy and the type of probe used. This technology enables you to examine the heart, save cine loops and measure the ventricle's EF.
The Schallware Simulator has an inbuilt transesophageal echocardiogram (TEE) application comprising a real endoscope (translation, rotation, flexion and transducer-rotation wheels and buttons) and a dummy with chest and oesophagus. The endoscope allows for all familiar movements, thanks to its two wheels and two electronic buttons (plus and minus) for scanning plane rotation.

The TEE application is based on a virtual model of an animated heart. Pathology data is available in clinical form (4D volumes on fixed positions along oesophagus and stomach).

This shows a 3D screen of the human body with transparent anatomy so as to follow the current probe plane of the TEE endoscope.

The second screen shows the resulting plane of the virtual model or loaded clinical data.

Select patient and activate clinical data volumes, switch from model to real ultrasound data.
The configuration of your Schallware Simulator should meet your requirements. Select your dummies, probes, modules and your hardware design.

Two different systems available:

station 128 for scientific work, case implementation, documentation, studies, hands-on courses, multi manikins and probes, data acquisition upgrade

compact 128 for easy hands-on courses, dedicated ultrasound simulator for internal, obstetrics/gynecology or cardiology (TTE/TEE)

available product codes when ordering

- **Schallware128-1**: Emergency e-FAST, FEEL, internal medicine 40 cases, 12 cardiac cases TTE Manikin D, Probe convex, Probe sector, virtual heart, virtual abdominal organs
- **Schallware128-2**: Internal medicine (400 patients): Manikin A, Probe convex, Probe linear, virtual heart, virtual abdominal organs
- **Schallware128-3**: Ob/Gyn (200): Manikin D, Probe convex, Probe TV, virtual fetus, virtual small pelvis
- **Schallware128-4**: Cardiology TTE (40): Manikin B, Probe sector, virtual heart
- **Schallware128-5**: Internal medicine (250), cardio TTE (40): Manikin B, Probe convex, Probe sector, virtual heart, virtual abdominal organs
- **Schallware128-6**: Internal medicine (40), cardio TTE (40), ob/gyn (200): Manikin B, Manikin A, Probe convex, Probe sector, Probe linear, Probe TV, virtual heart, virtual abdominal organs, virtual fetus, virtual small pelvis
- **Schallware128-7**: TEE (30), TTE (40), internal emergency (25): Manikin C, Probe TEE endoscope, Probe sector, virtual heart
- **Schallware128-7a**: TEE (30): Manikin C, Probe TEE endoscope, virtual heart
- **Schallware128-8**: complete (550 cases): Manikin C, Manikin D, Probe convex, premature manikin, module internal medicine plus pediatrics, module ob/gyn, module TTE/TEE, Probe sector, Probe linear, Probe TV, Probe TEE endoscope, virtual heart, virtual abdominal organs, virtual fetus, virtual small pelvis
- **add-on pediatrics**: youth, children, premature births, premature manikin with palpable chest and scull (fontanelle), 30 pediatric cases (premature births, children and youth) of bowel, kidney, liver diseases, transplant and neonatology (only with modul internal medicine available)
- **add-on acquisition-optical**: workstation, optical tracking system, Schallware acquisition software, 2 probe calibrations, simulator interface, training 3 days on-site (requires ultrasound device)
station 128-1
Emergency e-FAST, FEEL, internal medicine 40 cases, cardiac
TTE 12 cases, D dummy, convex probe, sector probe, virtual
heart, virtual abdominal organs.

station 128
selection of internal medicine cases
male dummy, convex probe

or

compact 128

station 128-2
Internal medicine (250 patients): A dummy, convex probe,
linear probe, virtual heart, virtual abdominal organs.

station 128
complete internal medicine
male dummy, convex and linear probe

or

compact 128

station 128
female dummy, convex, linear, TV probe

or

compact 128

station 128-3
Obstetrics and gynaecology (200): D dummy, convex probe,
TV probe, virtual foetus, virtual small pelvis.

station 128
complete obstetrics
and gynaecology

or

compact 128

virtual model 12th week of gestation
virtual model 20th week of gestation
<table>
<thead>
<tr>
<th>Station 128-4</th>
<th>Station 128-5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiology TTE (40):</strong> B dummy, sector probe, virtual heart</td>
<td><strong>Internal medicine (250), Cardio TTE (40):</strong> B dummy, convex probe, probe sector, virtual heart, virtual abdominal organs.</td>
</tr>
</tbody>
</table>

### Station 128-4
- **Complete TTE**
- **Male dummy, sector probe**

### Station 128-5
- **Complete internal medicine**
- **Male dummy, convex, linear probe**

---

**Exhibit 1: Configurations / How to Order**

- **Station 128**
- **Compact 128**
- **Complete TTE**
- **Animated heart model for TTE**
- **Virtual model heart, abdomen**
- **Sector probe**
ultrasound simulator

station 128-6
Internal medicine (250), cardio TTE (40), obstetrics and gynaecology (200): B dummy, A dummy, convex probe, sector probe, linear probe, TV probe, virtual heart, virtual abdominal organs, virtual foetus, virtual small pelvis.

station 128-7
TEE (30), TTE (40), internal emergency (25): C dummy, probe TEE endoscope, sector probe, virtual heart.

© 2018/19 Schallware GmbH, Berlin Germany
station 128-8:
complete (500 cases): C dummy, D dummy, convex probe, probe sector, linear probe, TV probe, TEE endoscope probe, virtual heart, virtual abdominal organs, virtual foetus, virtual small pelvis.

complete TTE, TEE clinical data pathologies

female dummy and TV probe

male dummy, convex, linear probe

complete internal medicine

virtual model 12th week of gestation

virtual model 20th week of gestation

clinical data and pathology animated virtual heart model

TEE dummy (oesophagus, chest)

animated virtual heart model for TEE and TTE with lungs, abdomen, skeleton

TEE endoscope

complete obstetrics and gynaecology

station 128 male and female manikin
**Station 128-8-acquisition:**

- Complete (500 cases): C dummy, D dummy, convex probe, probe sector, linear probe, probe, TV, TEE endoscope probe, virtual heart, virtual abdominal organs, virtual foetus, virtual small pelvis, acquisition system

**TEE endoscope**

- Animated virtual heart model for TEE and TTE with lungs, abdomen, skeleton

- Virtual model 12th week of gestation
- Virtual model 20th week of gestation

**Clinical data and pathology animated virtual heart model**

**Free hand acquisition with your ultrasound device**

**Optically tracked probe creates freehand volume, implementation by Schallware postprocessing**

Acquire your own cases and create tutorial, mark regions of interest (ROI), write questionnaires, develop your module and share it!
1. Abdomen General
- Liver tumours, peritonitis
- Liver cysts, Crohn's disease, adenomyomatosis, cholecystolithiasis, nephrolithiasis, stenosis of ileocecal anastomosis
- Liver metastases
- Polycystis liver and kidneys
- LTX, NHL (non-Hodkin's lymphoma), gallbladder wall edema,
- Aerobilia, choledocholithiasis
- Pancreatic pseudocyst, chronic pancreatitis, pancreatic duct dilatation, necrotizing pancreatitis, hydronephrosis, renal pelvic stone, parapelvic cysts, ascites,
- Infected splenic cyst
- Ileus, peritoneal carcinosis, skin metastasis, necrotic liver metastasis
- Adrenal tumour
- Appendicitis

2. Abdomen Emergency
- Thrombus in vena cava (Budd-Chiari syndrome), Thrombus in middle hepatic vein (renal cell carcinoma)
- Steatohepatitis, Ascites decompensation, HCC (hepatocellular carcinoma)
- Budd-Chiari, Cruveilhier-Baumgarten syndrome, Common bile duct with stones
- Chronic sclerosing cholangitis (ITBL), LTX
- Aneurysm of portal and splenic vein with septic thrombus
- Acute edematous pancreatitis, cholecystolithiasis, biliary duct stones
- Splenic rupture and necrotizing pancreatitis, Intraperitoneal bleeding
- Splenic hydatid cyst, morbus Ormond, carcinoma stenosis
- Mechanical small bowel ileus
- Aortic dissection
- Acute appendicitis
- Peritoneal carcinosis by liposarcoma
- Alveolar echinococcosis

3. Liver Basic
- Budd-Chiari, Cruveilhier-Baumgarten syndrome, ascites
- Hepaticojunostomy, aerobilia, renal cyst, pancreatic pseudo cyst
- Liver cysts, bright liver tumours
- FHN (focal nodular hyperplasia)
- NHL (non-Hodkin's lymphoma) of liver
- Free fluid, renal cysts
- Fatty liver hepatitis, cirrhosis

4. Liver Advanced
- Alveolar echinococcosis, peritonitis
- Hepatic cysts, enlarged ductus choledochus
- Hydatid cyst WHO CE3a (WHO-IWGE classification)
- Extensive polycystic liver disease
- Hepatitis C, cholecystolithiasis, normal Lymph nodes in hepatoduodenal ligament
- Toxic liver cirrhosis, fatty degeneration of the liver, reopened umbilical vein
- Choleodocholithiasis, enlarged lymph nodes in hepatoduodenal ligament
- Space occupying lesions (breast cancer metastases), cavathrombus pars hepatica
- Budd-Chiari, Cruveilhier-Baumgarten syndrome

Cases are acquired as single volume (B-image, color doppler), multivolumes, different probes or even dates. The red bars in acquired examples show available patient data and the direction of the acquired sweep (not a plane). One volume may contain between 500 and 2000 images. All cases are published under www.schallware.de/cases. If you choose a module and select details, you can browse through all regions of interest (ROI) marked images of a case.
5. Liver Emergency
- Chronic cholecystitis, CBD stenosis, enlarged lymph nodes
- NET (neuroendocrine tumour), hepatomegaly
- Large thrombus in vena cava, ascites between liver and duodenum
- Steatohepatitis, ascites, HCC
- Acute cholecystitis with lithiasis, Fatty liver
- Thrombus in hepatic artery stump
- Hydatid cyst
- Bright tumours, strong dilatation of hepatic ducts, CBD stenosis, Stent implanted
- Peritoneal carcinoma by liposarcoma
- Thrombosis of portal and splenic vein
- Portal vein thrombosis, TIPS, hypertrophic additional spleen
- Budd-Chiari

6. Neck
- MTC (medullary thyroid carcinoma)
- Parathyroid gland adenoma
- Medullary hypeplasia
- MEN 2 (multiple endocrine neoplasia type 2)

7. Emergency / FAST
- Acute appendicitis
- Free fluid in Morison's pouch and Douglas space
- Perihelctic ascites
- Acute splenic rupture
- Massive left and right pleural effusion
- Aortic dissection type B, Aortic aneurysm and dissection, Marfan syndrome and HTX
- thrombosis, vascular tree, lymph nodes

8. IBD (Inflammatory bowel disease)
- Normal terminal ileum and appendix
- Ulcerative colitis with stenosis, pan-ulcerative colitis
- Diverticulitis
- Terminal ileum with stenosis and interloop abscess
- Crohn's disease (with many recordings within a 6 months treatment) with stenosis and fistula, with enteric-cutaneous fistula and with involvement of cecum, colon and ileum
- Infiltrated appendix
- Colon carcinoma

9. pediatrics
- gastroenterology: IBD, invagination, appendicitis
- kidney, lungs, liver transplants ...

10. urology
- kidney, bladder, prostate

11. echo contrast liver, kidney, spleen, AA

2. Female manikin, convex and transvaginal probe
- normal / pathologic cases for 1st, 2nd and 3rd trimester obstetric ultrasound examination (abdominal, transvaginal, fetal heart)
- non-pregnant cases: abdominal and transvaginal
- Examples for obstetrics pathologies: total 100 obstetrics and gynaecology cases in database

1. Chapter Gemini
- Abortion
- Club feet
- NT (nuchal translucency)
- 2 to 12 multiples
- Dichorionic-diamnionic twins

2. Chapter umbilical cord, placenta
- Breus Mole (massive subchorial thrombohaematoma)
- Knot or looping
- Hernia
- Placenta bipratita, placenta vacuoles, placenta cysts
- Extrachoralesis
- Pro singular artery

3. Chapter neuro sonography
- Blake' Pouch Cyst
- Corpus-callosum-agenesie
- Plexus choroiodeus cyst
- Ventricle-megaly dangling plexus
- White spots
- Holoprosencephaloealy

4. Chapter skeleton
- Spina bifada
- Arthrogryposis multiplex congenita
- Pes equinovarus

5. Chapter urogenital:
- Potter 2A
- Kidney cysts
- Infiltrated appendix
- Colon carcinoma

6. Chapter echocardiography
- (4D stic volumes implemented in freehand high-resolution volumes)
- VSD (ventricular septum defect)
- Turner syndrome
- DORV (double outlet right ventricle)
- Aortic stenosis
- D-TGA

7. Liver Emergency
- Chronic cholecystitis, CBD stenosis, enlarged lymph nodes
- NET (neuroendocrine tumour), hepatomegaly
- Large thrombus in vena cava, ascites between liver and duodenum
- Steatohepatitis, ascites, HCC
- Acute cholecystitis with lithiasis, Fatty liver
- Thrombus in hepatic artery stump
- Hydatid cyst
- Bright tumours, strong dilatation of hepatic ducts, CBD stenosis, Stent implanted
- Peritoneal carcinoma by liposarcoma
- Thrombosis of portal and splenic vein
- Portal vein thrombosis, TIPS, hypertrophic additional spleen
- Budd-Chiari

8. Neck
- MTC (medullary thyroid carcinoma)
- Parathyroid gland adenoma
- Medullary hypeplasia
- MEN 2 (multiple endocrine neoplasia type 2)

9. Emergency / FAST
- Acute appendicitis
- Free fluid in Morison's pouch and Douglas space
- Perihelctic ascites
- Acute splenic rupture
- Massive left and right pleural effusion
- Aortic dissection type B, Aortic aneurysm and dissection, Marfan syndrome and HTX
- thrombosis, vascular tree, lymph nodes

10. IBD (Inflammatory bowel disease)
- Normal terminal ileum and appendix
- Ulcerative colitis with stenosis, pan-ulcerative colitis
- Diverticulitis
- Terminal ileum with stenosis and interloop abscess
- Crohn's disease (with many recordings within a 6 months treatment) with stenosis and fistula, with enteric-cutaneous fistula and with involvement of cecum, colon and ileum
- Infiltrated appendix
- Colon carcinoma

11. pediatrics
- gastroenterology: IBD, invagination, appendicitis
- kidney, lungs, liver transplants ...

12. urology
- kidney, bladder, prostate
3. TTE/TEE cardiac cases

- Virtual heart model
- Up to 40 volumes per phase
- Normal cases
- Up to 16 volumes per phase real colour doppler volumes
- Virtual heart for anatomy study

Case database TTE (40 cases)
- Normal cardiac cases
- Pericardial effusion
- Kinetics
- Hypertension
- Mitral stenosis and mitral regurgitation
- Aortic stenosis, regurgitation
- Right ventricle

Case database TEE (30 cases)
Besides virtual model you can switch on discrete positions and perspectives to real data volumes.
- Normal cardiac cases: mid-esophagus, transgastric, Aorta descendens ..
- Mitral stenosis and regurgitation
- Aortic stenosis and regurgitation
- Kinetics

7. Chapter abdomen:
- Gastrochisis
- Omphalocele

8. Chapter thorax:
- CCAML Type 1, 2
- Diaphragmatic hernia
Find current scientific publications with Schallware Simulator here: www.schallware.de/downloads
Schallware customers worldwide, more than 80 installations of ultrasound simulator station 128/64, also 50 courses yearly with up to 10 simulators (www.schallware.de/calendar)
University of Alberta
Department Name
116 St. and 85 Ave.
Edmonton, Alberta T6G 2R3

Klinikum Aschaffenburg
Am Hasenkopf
63739 Aschaffenburg

Universitätsmedizin Greifswald
Fleischmannstraße 8
17475 Greifswald

Fort Sam Houston
Santa Clara
USA

The Northern Alberta Institute of Technology
11762 106 Street Edmonton,
Alberta, Canada, T5G 2R1

Klinikum Nürnberg Nord
Prof.-Ernst-Nathan-Str. 1
90419 Nürnberg

Simulation Center SIMMERK
Istanbul / Tuerkei

Lokmany Tilak Municipal General Hospital and Lokmany Tilak Municipal Medical College, Sion Mumbai
Dr. Babasaheb Ambedkar Road,
Sion (West), Mumbai 400022

IVSMU
Pacific State Medical University, Vladivostok
Russia

Ministry of Health Care of Sakha (Yakutia) Republik, Russia

Kunming Medical University
191 Renmin West Road,
Xishan, Kunming, Yunnan
China

Southern Medical University
China

Third Military Medical University
No.30 Gaotanyan Street, Shapingba District, Chongqing 400038, China.

Tianjin Medical University
22 Qixiangtai Road, Hepeig, Tianjin, China

Harbin Medical University Nursing College
Tienan Hutong, Nangang, Harbin, Heilongjiang, China

Chinese People’s Armed Police Force Academy

Ultraschall-Akademie der DEGUM GmbH
Schiffbauerndamm 40
10117 Berlin

Accurate S.r.l.
Piazzale Gennaro Biguzzi, 20/1
47521 Cesena (FC)

Nederlands Vereniging voor Hepatologie
Postbus 657
2003 RR Haarlem

Krankenhaus Maria Hilf
Dahlenweg 3
53474 Bad Neuenahr-Ahrweiler

Beth Israel Deaconess Medical Center
P.O. Box 15704
Boston MA 02215-0014, USA

Tehnoplus Medical
Strada Odobești, nr. 1, sector 3, București
România

TÜLÜP TEL. PAZ. DAN. BİL. SAN. VE TİC. L TD. ŞTİ.
Ankara Teknoloji Gelitirme Böl. Cyberpark B Blok
B205 Bilkent/Ankara
UEC & Partners I Medical Education GmbH
Waldstr. 18
64405 Fischbachtal

Faculty of Medicine, Lund University
SE-221 00 Lund

РУДН Moscow
Russische Universität der Internationalen Freundschaft
117198, Moscow, Miklukho-Maklaya-Str. 6

Faculty of Medicine of Monastir
Tunisia

Faculty of Medicine of Sfax
Tunisia

UKE Hamburg
Kinderklinik

Prince Sattam bin Abdulaziz University
2017, 1438 H, KSA

HCT Sharjah Women’s College
University of Sharjah
27272 Sharjah, UAE

Gulf Medical University
in Ajman, UAE

Odense Universitetshospital
J.B. Winsløws Vej 4, Indgang 5 Penthouse/2,
5000 Odense C DENMARK

Republican clinical medical center
220030, Minsk, Krasnoarmeyskaya Str., 10
BELARUS
Where you can find Schallware development and SimCenter:

Schallware GmbH
Alt-Buch 45
13125 Berlin, Germany