InterSim® III

Interactive Heart Simulator
Your virtual patient.

Ingenieurbüro Lang

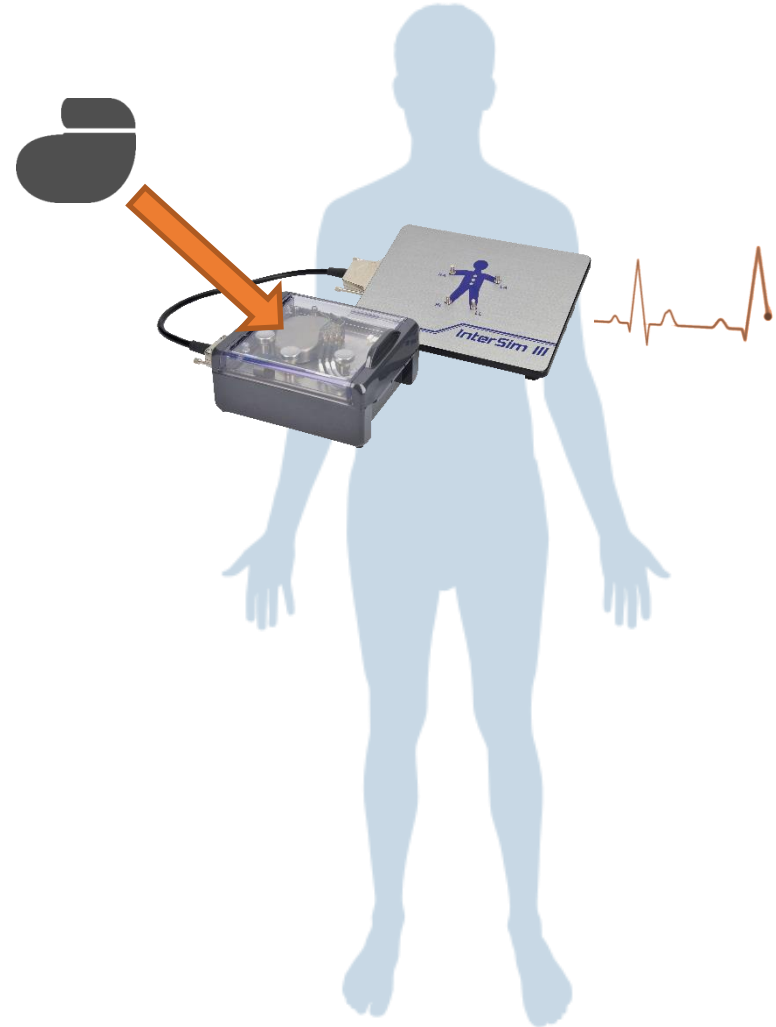**InterSim® III**

Show. Prove. Convince.

Ingenieurbüro Lang

What actually is InterSim®?

InterSim® is your virtual heart disease patient!

- Take a pacemaker or ICD

- Connect it to the InterSim® using the Adapter Box

- Define heart disease using the application software

- Set the pacemaker or ICD parameters on your programmer

Have fun in simulating the electrical and electrochemical properties of the cardiac system of humans.

Use cases and compatibility of InterSim®

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Use cases:

- Presentation of heart functions (normal as well as abnormal)
- Presentation of interaction between simulator (human heart) and pacemakers or defibrillators
- Training of clinical staff

  Note: InterSim® III is not for human use. So the product is not intended to diagnose, treat, cure or prevent any disease on humans.

Compatibility:

- InterSim® is compatible with implants of **Medtronic, Boston Scientific, Abbott, Biotronik and others**
- Also external pacemakers can be connected (e. g. Medtronic 5392, Biotronik Reocor, Osypka Pace)

Joint Venture InterSim®

InterSim® is a joint venture product between Ingenieurbüro Lang and TQ-Systems GmbH.

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- Know how
- Application software development
- Support

TQ-Systems GmbH

- Hard- and firmware development
- Production
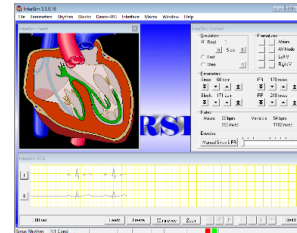- Sales, support, service

History of InterSim®

1982 Electronic Heart
developed at the University of Chemnitz

1993 InterSim I
2 intracardiac channels A and V
1 ICD channel

2000 Windows version

2006 InterSim II
3 intracardiac channels A, LV and RV
1 improved ICD channel

The story goes on - InterSim® III

What is new in InterSim® III?

▶ Two versions available:

   InterSim III Touch

   InterSim III Interface

▶ Full support of IS-4 (all pacing vectors)

▶ Support for all shock vectors and DF-4

▶ Additional adapter box for safe handling of ICDs

▶ High voltage resistant (up to 1500 V)

▶ Support for external pacemakers

▶ Plug & play classroom compatibility

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InterSim® III Touch

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▶ Self-contained device

▶ Based on a Windows® 10 tablet

▶ Battery mode
(operating time about 4-5 hours)

▶ CE and NRTL/FCC certified

InterSim® III Interface

▶ USB interface electronics

▶ Additional Windows computer, notebook or tablet with USB is necessary

▶ Application software for Windows® 10

▶ CE and NRTL/FCC certified
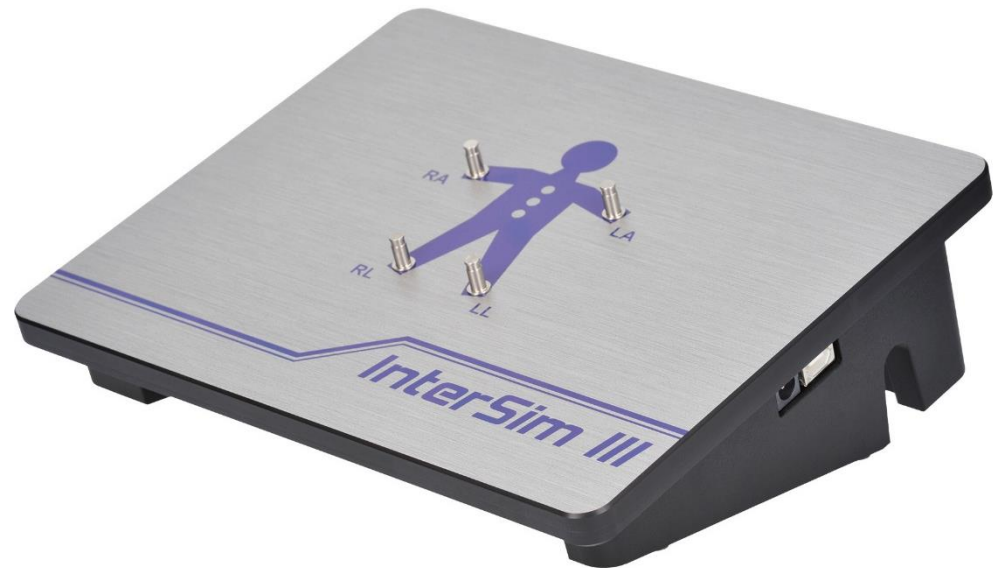
# InterSim® III Adapter Box

▶ Housing for implantable pulse generators

▶ Safe handling of ICDs

▶ Adapter boxes are interchangeable at InterSim® III - avoids stressing the pulse generator

▶ Shock resistant up to 80 J / 1500 V

▶ Connections: IS-1, IS-4, DF-1, DF-4

▶ ICD terminals DF-1 and DF-4 are optional (adapter system)

InterSim® III Adapter for Temporary Pacemakers

▶ Adapter for connecting external single- or dual-chamber pacemakers

▶ Bipolar operation as default

▶ Atrial (A) and right ventricular (RV) channel

▶ Connections:

  ▶ 2 mm plugs for temporary pacemakers with 2 mm sockets

  ▶ Round plug for temporary Medtronic pacemakers

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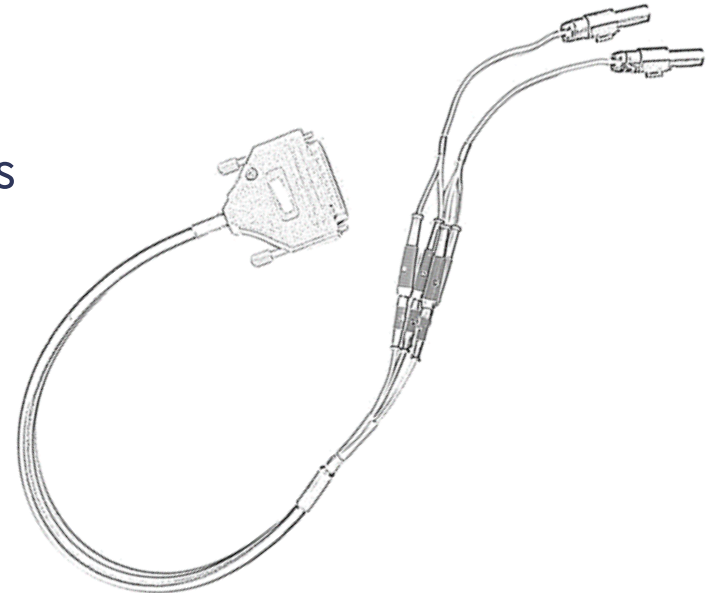
Features
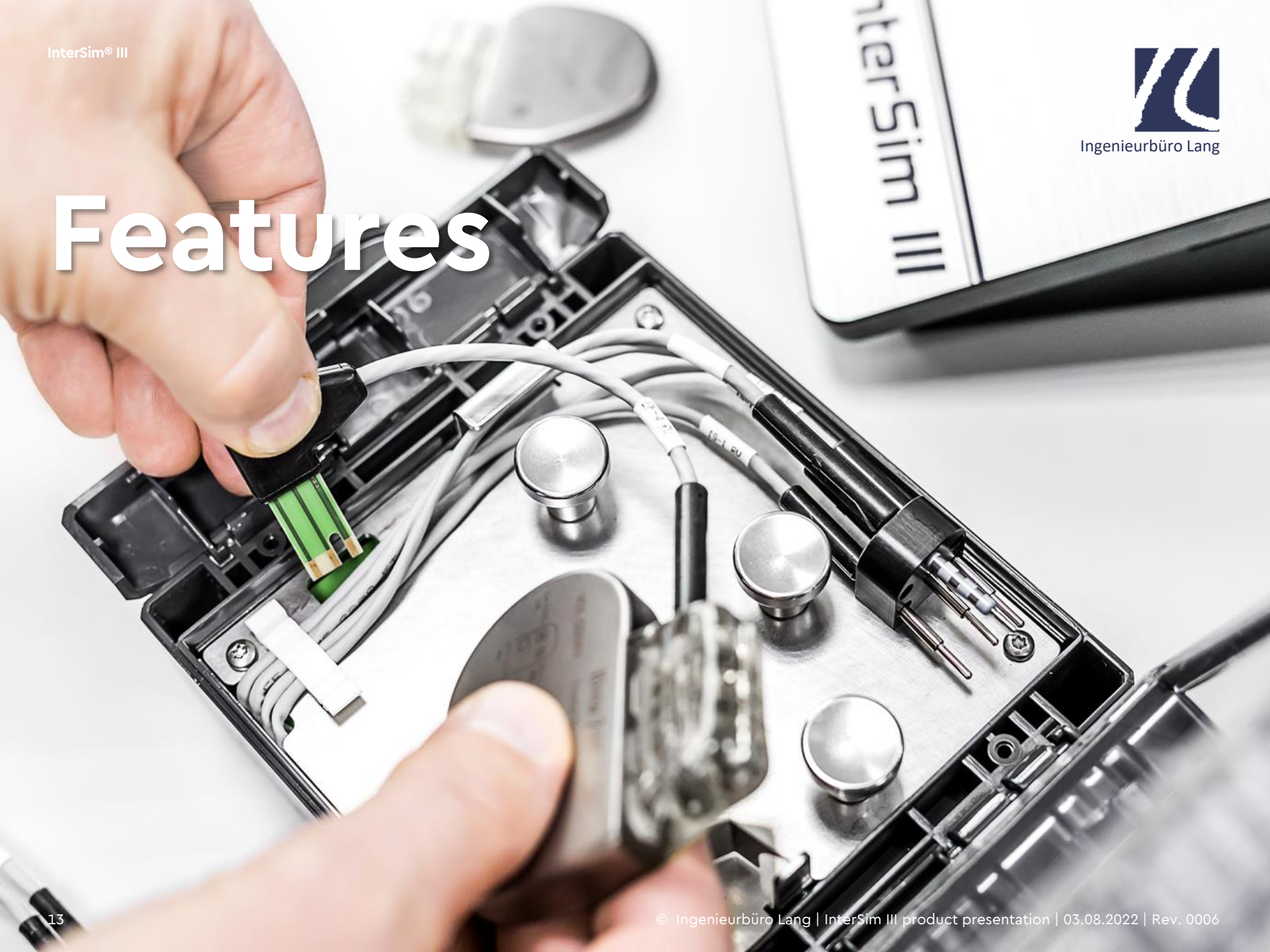
Pacemaker interface

▶ Full support of IS-1 and IS-4

▶ Variable EGM amplitudes

▶ Simulates varying pacing thresholds

▶ Variable pacing impedances

▶ Capable of simulating lead defects

ICD interface

▶ Full support of DF-1 and DF-4

▶ Up to 80 J / 1500 V

▶ All shock vectors

▶ Far-field EGM

▶ Capable of simulating various defibrillation thresholds

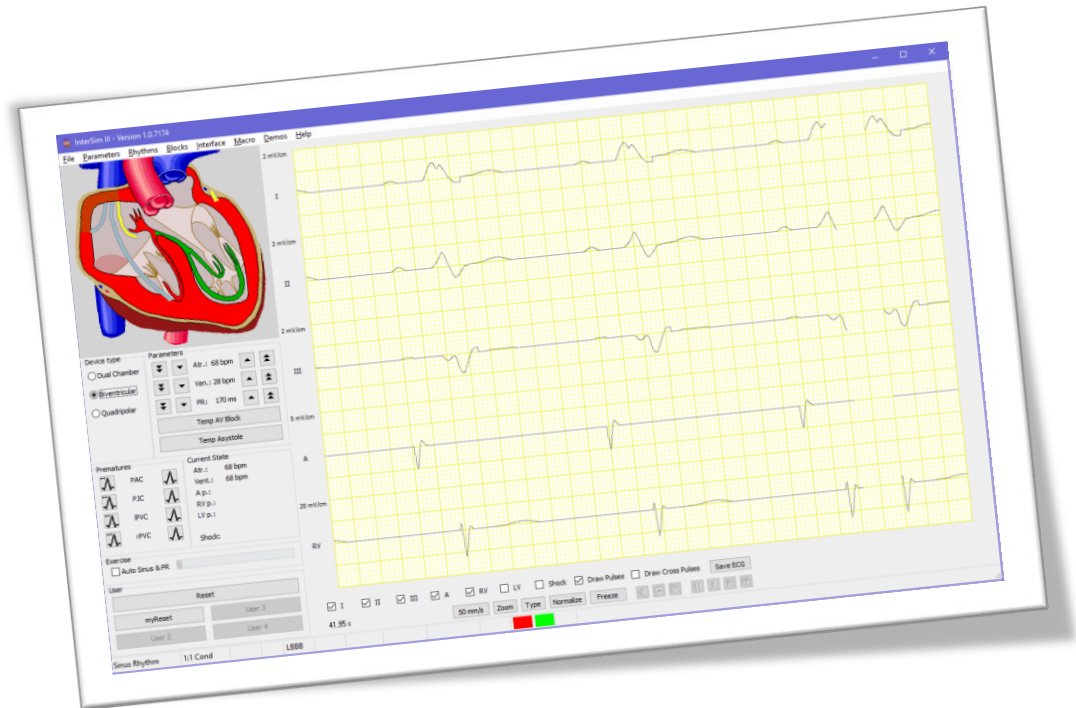▶ Capable of simulating RV coil defect

ECG/EGM interface

▶ 8 pacemaker channels

▶ Two high voltage channels

▶ aVR , aVL , aVF

Software - Graphical user interface

▶ Easy to learn and to use

▶ Professional design

▶ Animated heart graphic

▶ Customizable ECG

▶ Interactive setting of parameters

Software - Settings

▶ Parameters
Rates, Intervals, Amplitudes, Thresholds, …

▶ Rhythms
Brady Rhythm (Sinus, Rhythm, Idioventr. Rhythm, …)
Tachy Rhythms (Sinus, Tachy, Atrial, Flutter/Fibrillation, Ventricular Tachycardias,
Ventricular Flutter/Fibrillation, …)

▶ Blocks
AV Blocks (AV Block I, II, III)
BBB (LBBB, RBBB)
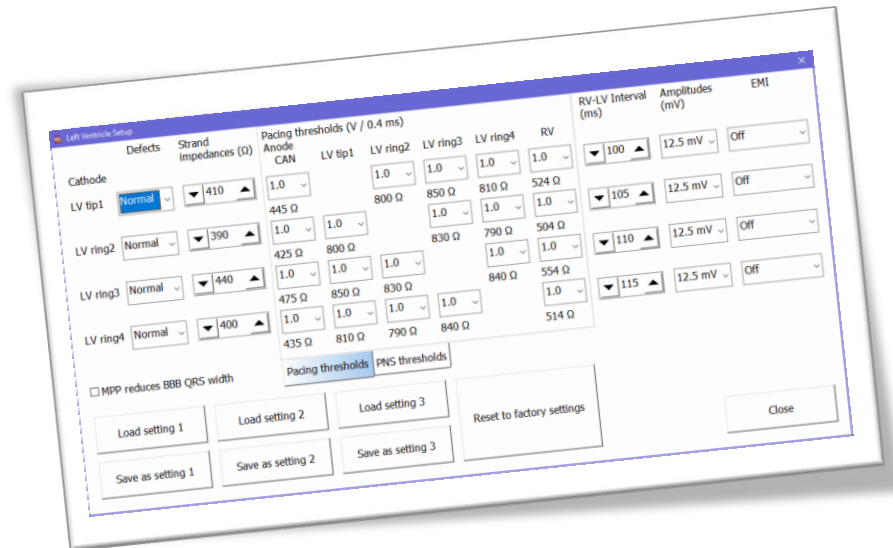
Software – States

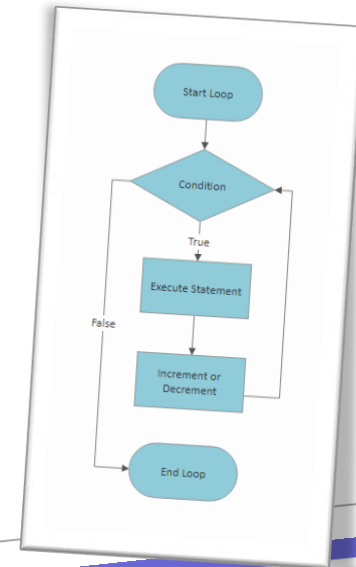**States are static snapshots of all parameters, rhythms, blocks etc.**

▶ Can be easily saved and reloaded

▶ Number of states only limited by hard disk
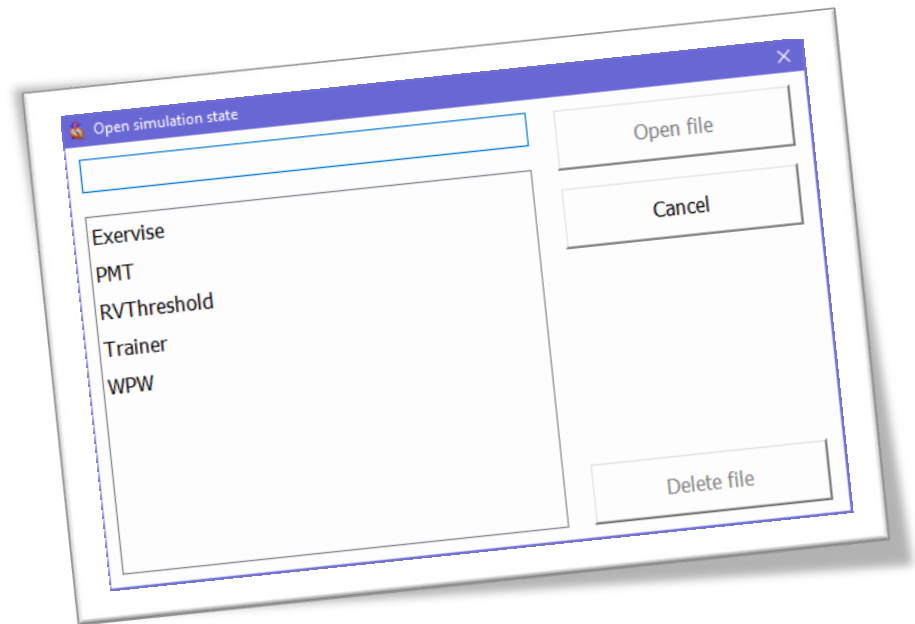
Software – Macros

Macros are dynamic scenarios

▶ Usage of a simplified programming language

▶ Can be easily saved and reloaded

▶ Number of macros only limited by hard disk

▶ Use the recording function to start

▶ Read and write access to every parameter

Impedance matching

Use the impedance plug (optional accessory) to provide impedance termination for the Adapter Box during storage or transport

▶ Ensures that the inputs of a pulse generator are correctly matched after disconnecting the Adapter Box from InterSim®

▶ Avoids emergency mode for the pulse generator

▶ Easy to plug on the Adapter Box

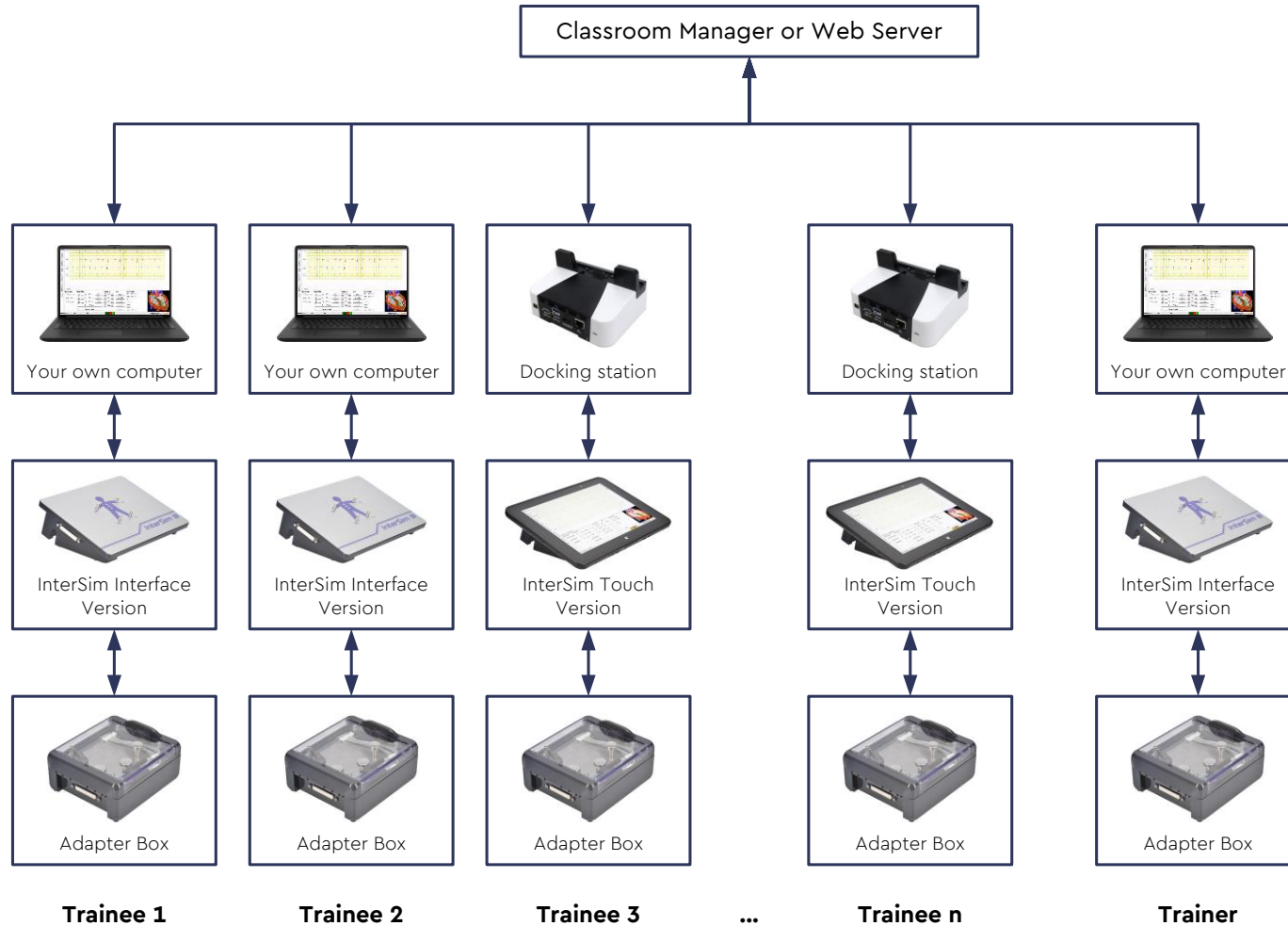▶ Transport case of InterSim® III offers the option to insert the Adapter Box with the impedance plug attached

Classroom Mode – Overview

One trainer unit controls several trainee units in a classroom

▶ Local and web solution are available

▶ Each InterSim® III can be part of a Classroom by software update

▶ InterSim® III Touch and InterSim® III Interface can be combined in a Classroom

▶ Classroom functionality is provided by the simulator software kernel

▶ Unlimited number of trainees in Web Classroom / Up to 20 trainees in Local Classroom

▶ Classrooms can be built dynamically

Classroom Mode – Configuration

Classroom Manager or Web Server

Your own computer	Your own computer	Docking station	Docking station	Your own computer
InterSim Interface Version	InterSim Interface Version	InterSim Touch Version	InterSim Touch Version	InterSim Interface Version
Adapter Box	Adapter Box	Adapter Box	Adapter Box	Adapter Box
Trainee 1	**Trainee 2**	**Trainee 3** ...	**Trainee n**	**Trainer**

You need more information?
Please visit our website or contact us.

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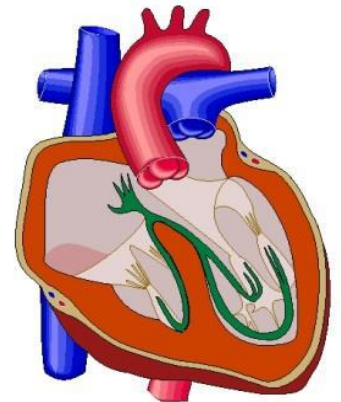
www.intersim3.com

InterSim® III is a joint venture product between Ingenieurbüro Lang and TQ-Systems GmbH. Production, sales and service for the product is carried out exclusively by TQ-Systems GmbH.