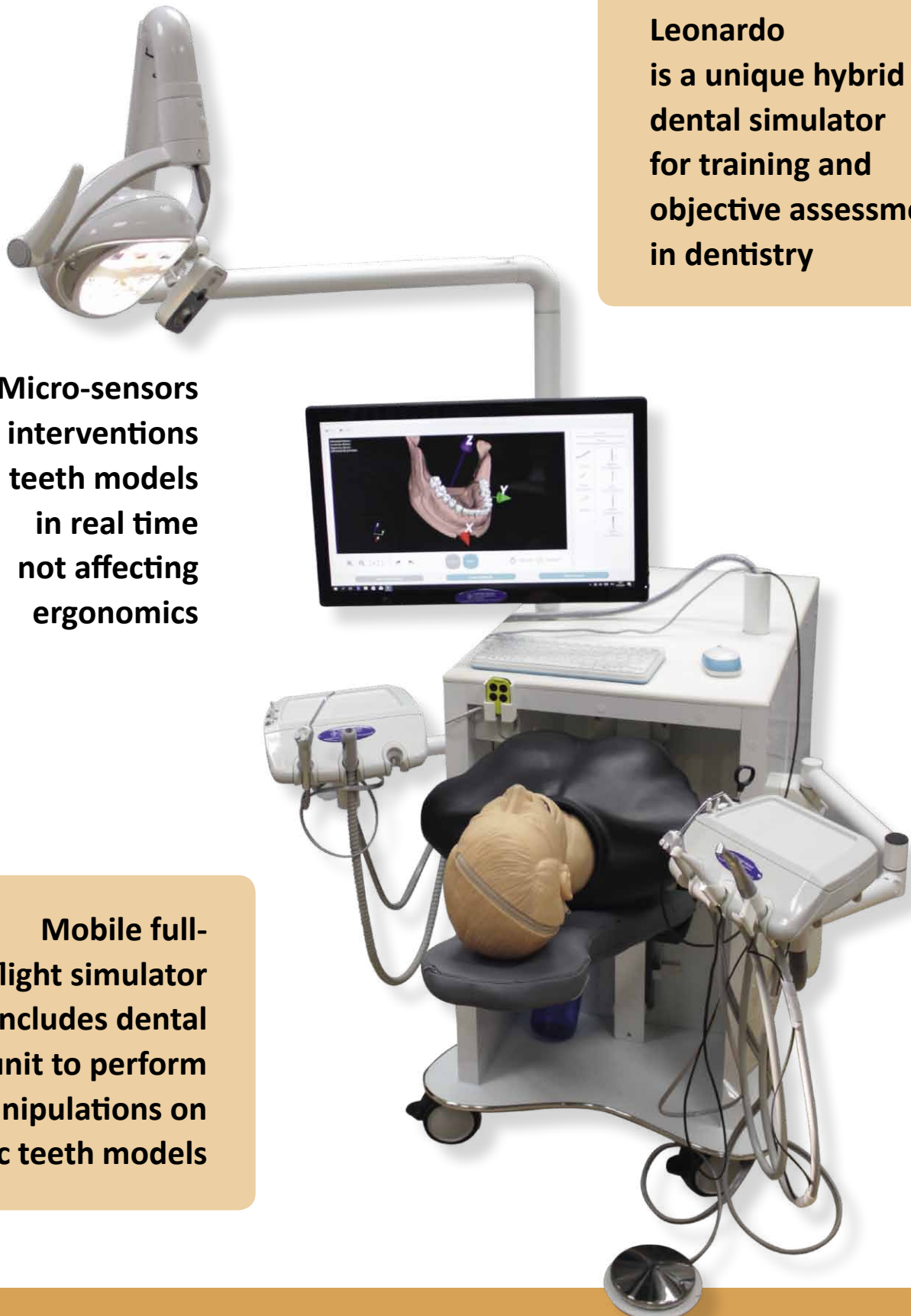# TOPFER
MEDICAL GmBH

Leonardo

HYBRID DENTAL SIMULATION

**Leonardo
is a unique hybrid
dental simulator
for training and
objective assessment
in dentistry**

**Micro-sensors
track interventions
on teeth models
in real time
not affecting
ergonomics**

**Mobile full-
flight simulator
includes dental
unit to perform
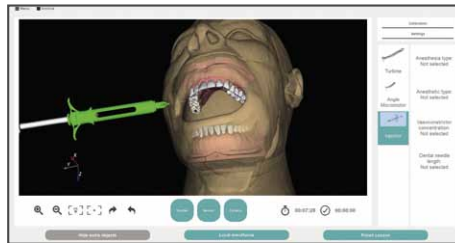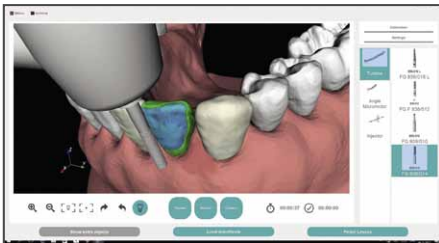manipulations on
realistic teeth models**

The unique software visualizes procedures on the virtual 3D-teeth models and tracks the accuracy of these procedures using electromagnetic tracking technology
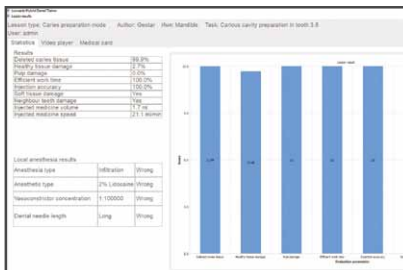
A user can practice the following skills:

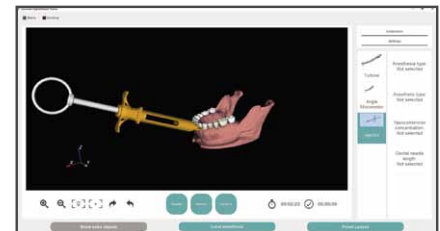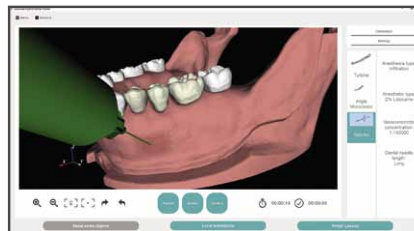- operative dentistry • local anesthesia • prosthetic dentistry

Assessment system:

- quantitative assessment of each performed manipulation
- detailed quantitative feedback on each task with bar diagrams
- debriefing with real-time 3D-player and video-playback after performing the exercise (annotation and comment features)

Comprehensive clinical case library includes

- complaints, medical history, data for physical examination of oral cavity, X-rays, photos, video-records on real patients, simulation tutorial videos

Anesthesia module:

- selection of anesthesia type
- selection of injection needle
- selection of anesthetic type
- selection of vasoconstrictor concentration
- automatic measurement of Injected anesthetic volume
- automatic measurement of injection speed
- injection site tracking

Preparation module:

- automatic measurement of removed carious tissue volume
- automatic measurement of removed healthy tissue volume
- automatic measurement of total time
- automatic measurement of useful time
- automatic measurement of excess movements
- automatic measurement of accuracy of anesthesia
- automatic measurement of dental pulp damage
- automatic measurement of adjacent tooth damage