

# *Kobra Oral Surgery Simulator Benefits*

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Three things makes the Kobra Oral Surgery Simulator unique;

1. It is the only known simulator dedicated to simulating oral surgery procedures. The included patient cases are shown with complete jaw and head, giving a context to the surgical area. This helps instructors to demonstrate for students that there are limits in orientation and reach of their instruments and important anatomical structures that should be left intact when performing the operation. In addition, the cases show correct surgical flaps.
2. It has a custom-made haptic device, *Polhem*, which can provide high stiffness and high continuous forces. It can also support exchange of hand-piece, if it is desired by the teacher.
3. It is the only full-scale simulator running on completely open-source software, which has several benefits:
  1. The software can be improved and extended by clients or research consortiums without any additional fees, permissions or licenses
  2. General advancement in software can be incorporated without any additional cost
  3. Collaboration with other universities, including technical universities for extended technical abilities of the simulator, is not only allowed but encouraged

In addition, Forsslund Systems, the maker of Kobra, has *zero* required maintenance fees and include 2 year warranty and free support. If extended support or maintenance is desired Forsslund Systems allow third-parties to provide such services, or can offer support packages at reasonable rates. Forsslund Systems can also offer tailored software and hardware development services.

In general, the founder of Forsslund Systems come from a background of university research in Human-Computer Interaction, and the company provides consultancy in research and development, as well as university-level teaching. If conducting research in new teaching technologies is of interest it is possible to use Kobra as a springboard to the forefront.

The Kobra simulator has been bought by Riga Stradiņš University (Latvia), University of Erlangen (Germany) and Chung Shan Medical University (Taiwan). Both Riga and Chung Shan has chosen to purchase both Kobra and the Moog Simodont simulator, showing that they can in fact complement each other.

The disadvantage of Kobra is mainly that it yet only carries a limited set of built-in patient cases and dental instruments, as well as limited learning management software (recorded sessions and statistics on a per-user, per-case basis). The idea is the library of cases, tools and simulations will grow as the user bases grows, both by procured creation of new cases and by content created by users engaged in local research and development.

Below are attached some pictures from the latest installment of Kobra Simulator; in Chung Shan Medical University, Taiwan.

