Lengthening of the bone
The biological non-invasive growing modules of the MUTARS® system based on the FITBONE® principle of an expandable interlocking nail to initiate a callus distraction in order to lengthening the extremity while lengthening the bone instead of lengthening the prosthetic parts.

Design principle
A miniaturized, mechatronic actuator is integrated into the expandable stem. Expanding of the stem is initiated by an internal drive system which receives electric power through high frequency transmission from outside the skin. To start the lengthening the bone is separated into two segments. The lengthening with callus distraction (at a rate of approximately one millimeter per day) is followed by the period of consolidation, during which the newly built bone mass solidifies.

Invention
This new type of growing prosthesis based on an idea of PD Dr. R. Baumgart is developed by a co-operation between implantcast GmbH, Wittenstein intens GmbH together with the scientific centers of the university hospital, Münster, (Prof. Winkelmann, PD Dr. Gosheger) and the university hospital, Munich, PD Dr. Baumgart). Procedures can only performed in close co-operation with the two scientific centers.
Lengthening of the prosthesis
The mechanical non-invasive growing modules of the MUTARS® system based on
the FITBONE® principle of a telescope actuator in order to lengthen the prosthesis
non-invasive. It leads to a full modular system that can be combined during surgery.

Design principle
A miniaturized, mechatronic actuator is integrated into the MUTARS® growing
module. Expanding of the module is initiated by an internal drive system which
receives electric power through high frequency transmission from outside the skin.
Elongation is performed with 0.5mm/min.