Real hardware equipment is an integral part of technical training. Without experience of hardware, trainees have difficulties to handle practical tasks and solve real-world problems in industry. The DERIVE learning environment smoothly integrates equipment and supports full hardware-in-the-loop functionality.

Worlds as 3-dimensional interaction spaces on computers are one of the key issues of modern IT technology. In DERIVE, we utilise virtual mechatronic systems as a consistent and intuitive user interface to simulated parts or even real parts at remote sites.

Learning is not only a matter of assimilating fact knowledge. Social and organisational abilities are key qualifications especially if teamwork is required. The DERIVE learning environment is the appropriate tool to realise project-oriented technical training, providing a platform for self-managed and collaborative learning.

Connecting distributed groups of technical trainees in a constructive learning space is one challenge of the DERIVE project. The envisaged system will allow complex real and virtual mechatronic systems to work together wherever in the world they may be distributed.

The internet, virtual reality plus new kinds of sensor-actor couplings provide the technological basis.