The rate of evolution of surgical robotics has continuously

increased since its inception. Training and experience

with the robots is a key factor to successful operations but these

events are expensive, as the equipment used is expensive and has

a short lifetime, and time-consuming. To explore the possibility of

enabling alternative robot assisted surgery training methods, we

design and test a virtual reality simulation of team training practiced

in certified institutes. This study investigates regular training

and team training of nurses and surgeons in a user centered manner

to determine key objects and procedures in the context. This was   
done to ensure realism and accuracy of the simulation. Objects

such as the surgery robot, manual tools, robot instruments, and

surgical bed was designed and implemented the scene.

Using the Proteus template in Unreal Engine 4 for the multi user aspect,   
additional basic functions such as socketing instruments to the robot arm and   
moving the robot arm with and end effector was implemented.   
The inverse kinematics of the robot arms was solved using the cyclic  
coordinate descent algorithm.

Evaluating the simulation is done in cooperation with Minimal Invasive Education

Centre and with Jane Petersson, First Nurse Assistant and Nurse

specialist in Robot Surgery and Johan Poulsen, head surgeon at

Aalborg University Hospital. The experts were positive about the   
system’s future, however it was considered too incomprehensive   
to consider implementation at this stage. More scenarios and

features would be required in future implementations to allow

for near full training sessions to be performed in VR.