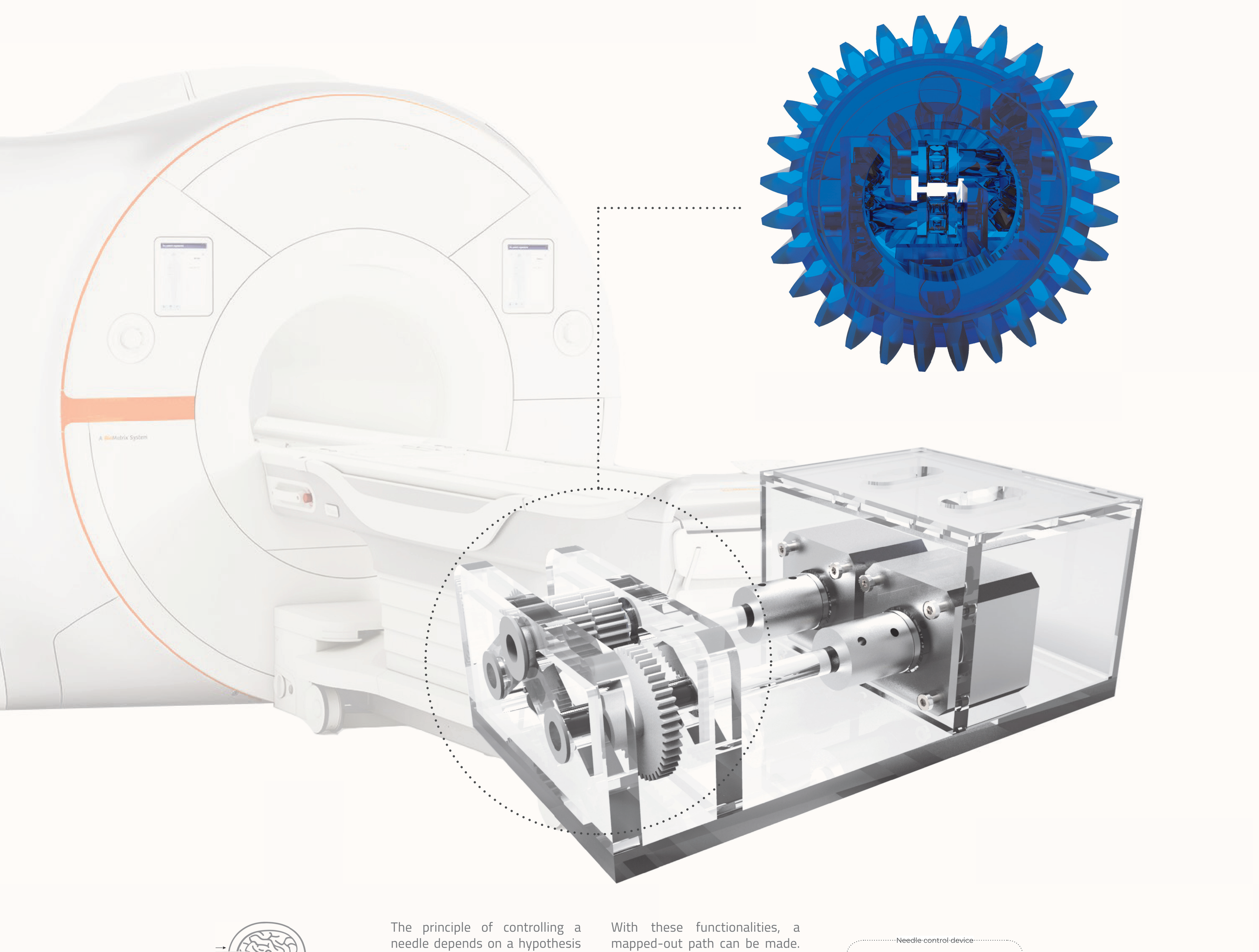
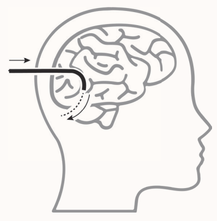
Design of a needle control device for MRI-guided intervention

A device that controls a needle remotely while the patient is scanned in an MRI
to ensure that the physician treats the targeted tissue
and therefore, increase the succes rate of the intervention



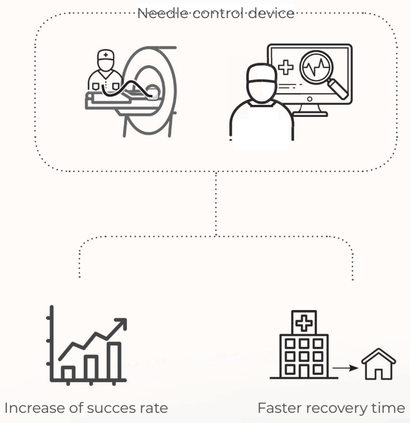


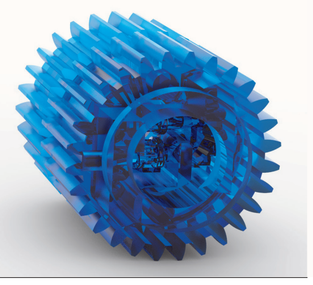
The principle of controlling a needle depends on a hypothesis which reads: "if the needle is pre-curved, the needle could be steered by translational and rotational movement towards a target."

It is illustrated in the figures on the left. If the pre-curved needle moves forwards, it will make a curve in the brain since it follows the path of least resistance. If the needle is rotating, it will move forward.

With these functionalities, a mapped-out path can be made. And so, the physician could steer a needle while the patient lays in the MRI and the physician is located in the control room. The needle is remote-controlled.

It enables the physician to treat tissue very precisely with less internal damage, which results in an increase in the success rate of the intervention and a faster recovery time for the patient.





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