Introduction :

- Since 1980s
- reliable, clean, cumbersome
- precisely and quickly
- Puma 260 , Scara, Speedy and Puma 560

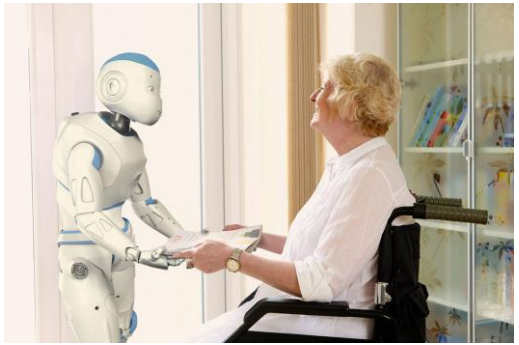
Different fields :

Surgical precision :

- better precision
- smaller accurate incisions

Robotic assistance :

- control with remote control
- interact and check
- reduce home visits



Telemedical Network :

- don’t access medical services
- use tablet to communicate
- better treatments

The powers of Exoskeletons :

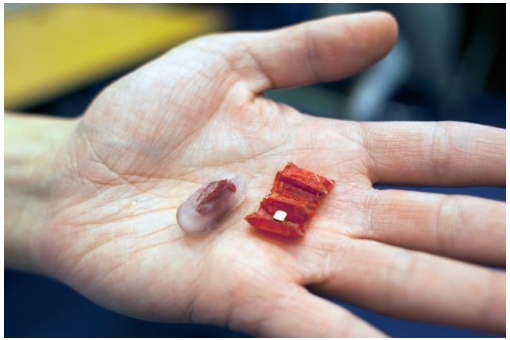
- help paralyzed people
- nurses lift elderly person

Disinfectant Robots in Healthcare :

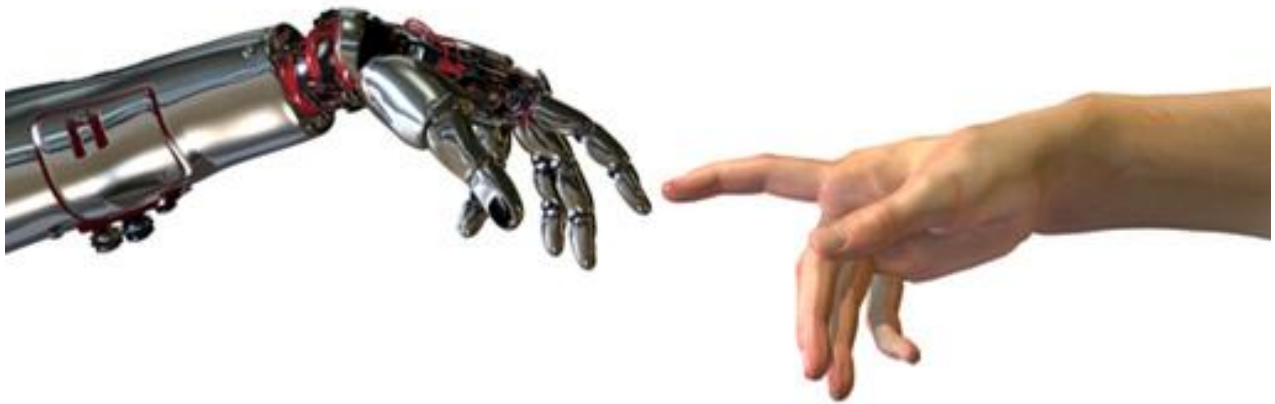
- infection during operation
- use the high intensity ultraviolet light
- reduce workload

Robots come in all shapes and sizes :

- capsule
- swallow
- dissolves in the patient's stomach



Bionic prosthesis



History

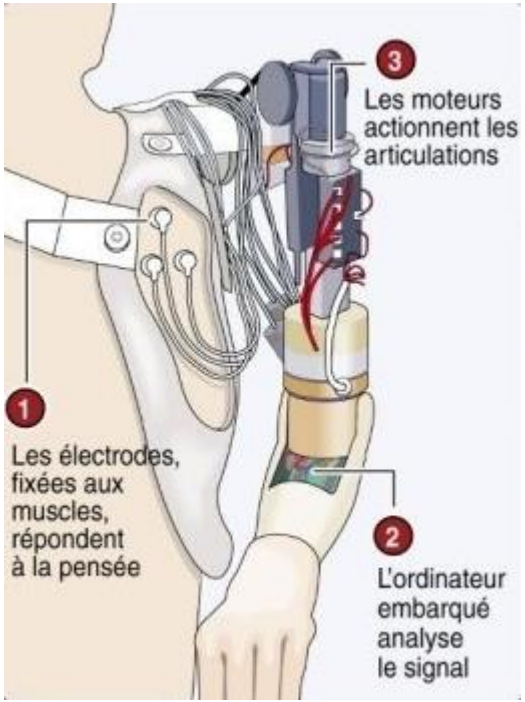
Prosthetics have not been invented recently, indeed the oldest is an Egyptian toe prosthesis.

Problem :

But these prostheses perform only limited functions.

Development

Principle of bionic prosthesis :



The bionic prosthesis is connected to the muscles and the nerves in the amputee member.
The contraction of muscle send electronic signals to the motors of the prosthesis.

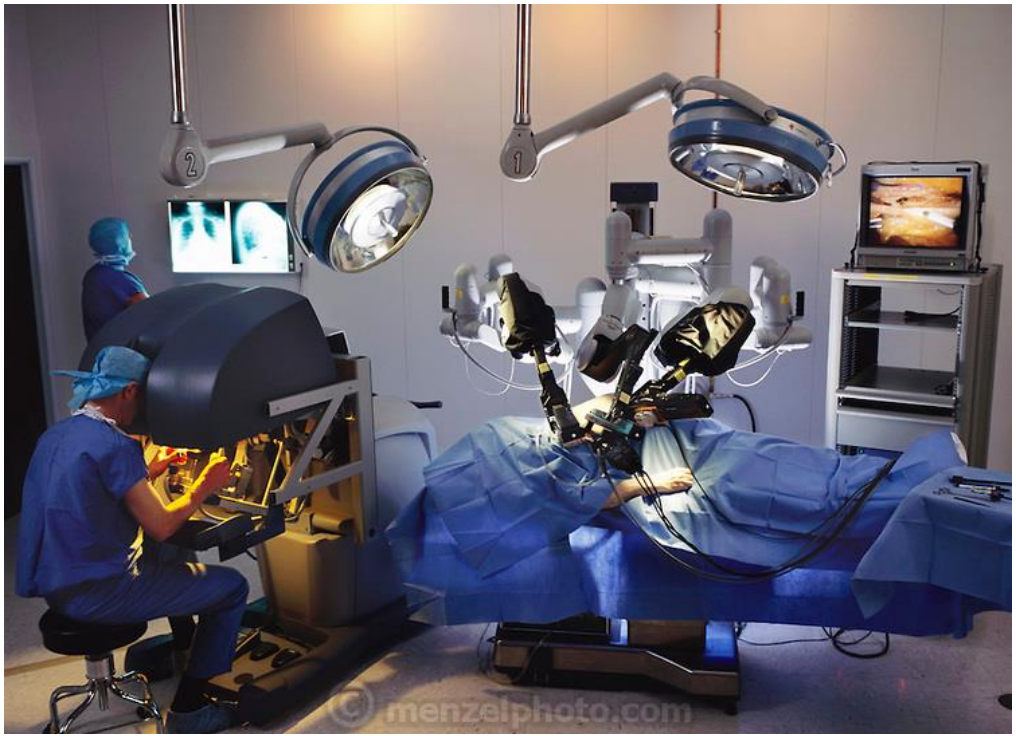
Other prostheses are controlled by mind, electrodes are placed on the muscles, they are activated and create the motion.

Usage

Daily movements

Sport

The Prostatectomy by laparoscopy and Da Vinci robot

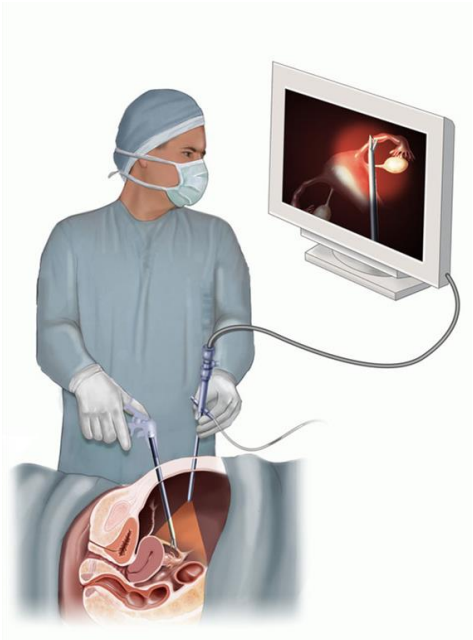


Definitions

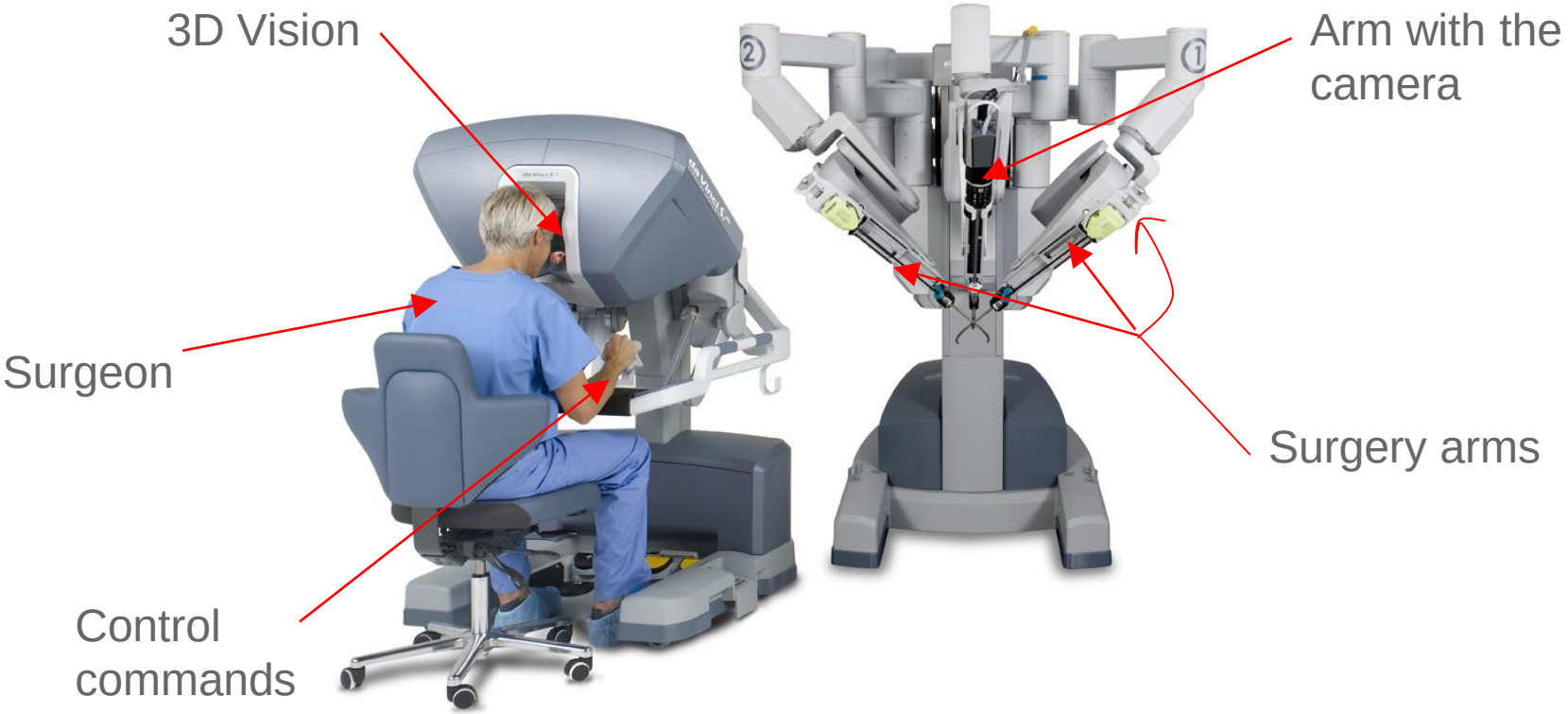
Prostatectomy :

Prostatectomy involves surgical removal of the prostate. This procedure is indicated for the treatment of localized or locally advanced prostate cancer.

Laparoscopy : 2D vision

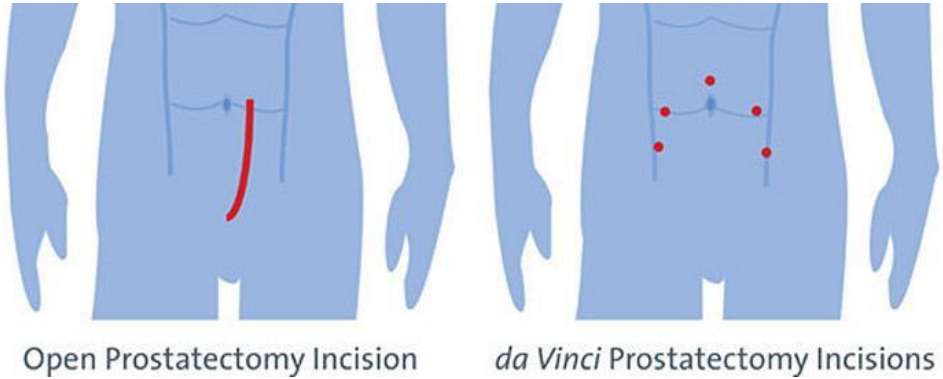


Description of the robot



Advantages

- Accuracy
- The articulation of the instruments, (7 degrees of freedom, against 2 without this robot)
- Elimination of the eventual tremor of the surgeon's hand
- 3D vision
- Fewer scars after operation



Disadvantage

Robot

2 000 000€

+

Maintenance

150 000€

+

Training

It’s expensive

= an increase of 2000 € per operation for the hospital center

Conclusion :

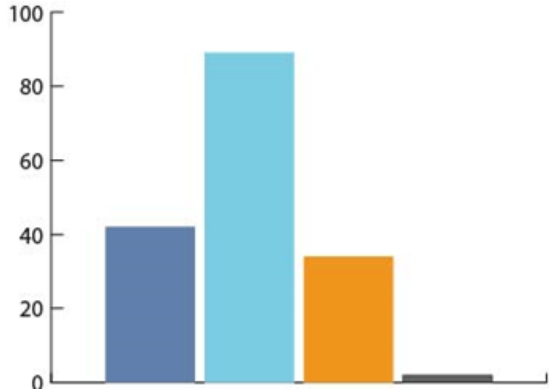
Ethical issue :

- If the machine arm has a problem and hits someone, who have wrong ?

  The arm or the person ?

Social issue :

- People don’t have complete confidence towards robots :



- The evolution of robots will increase the number of unemployment ?

Technological limitations :

- If there is a problem during surgery, robots don’t have the same reactions that humans. So they can be dangerous.

- For long surgery, robots have not a sufficient battery life yet.