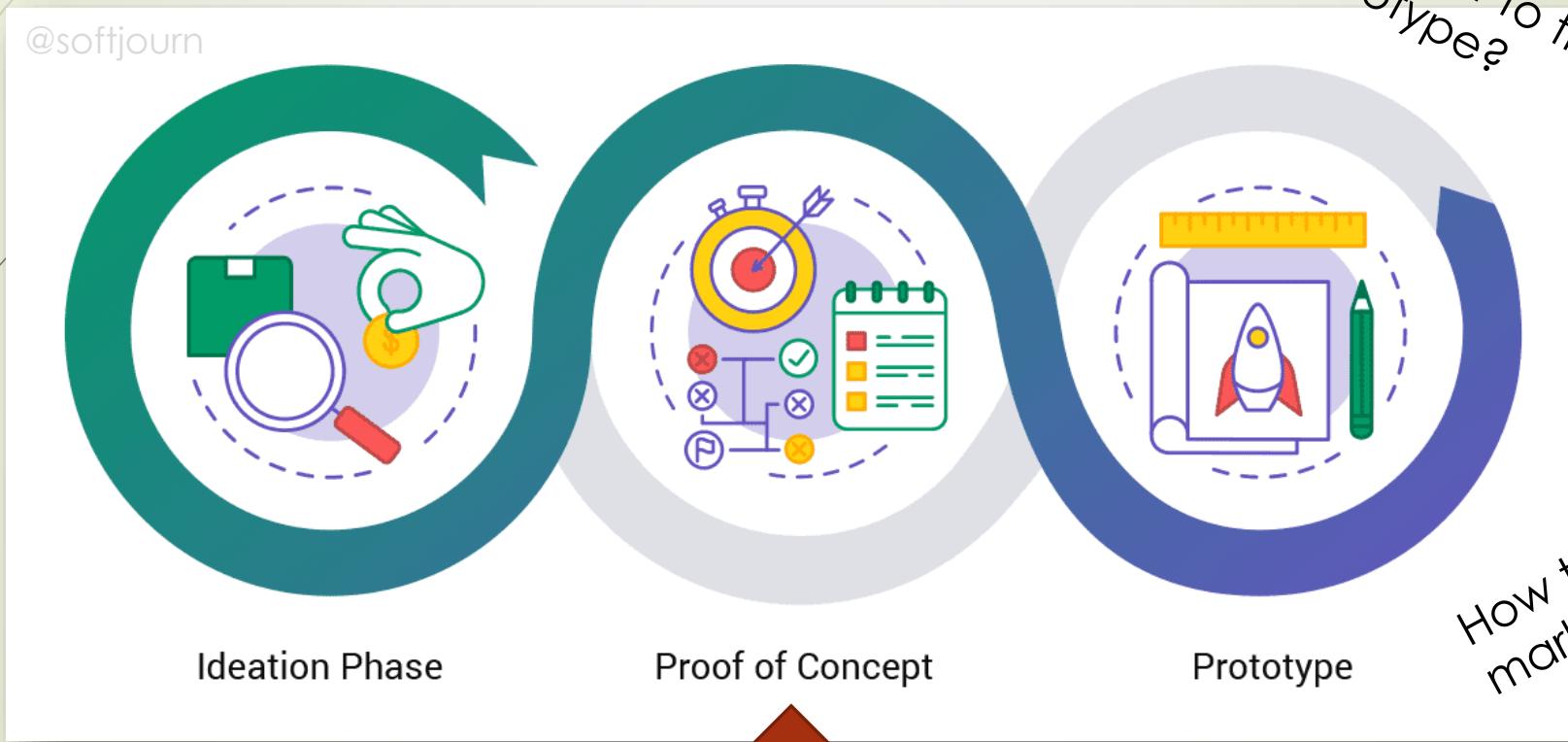


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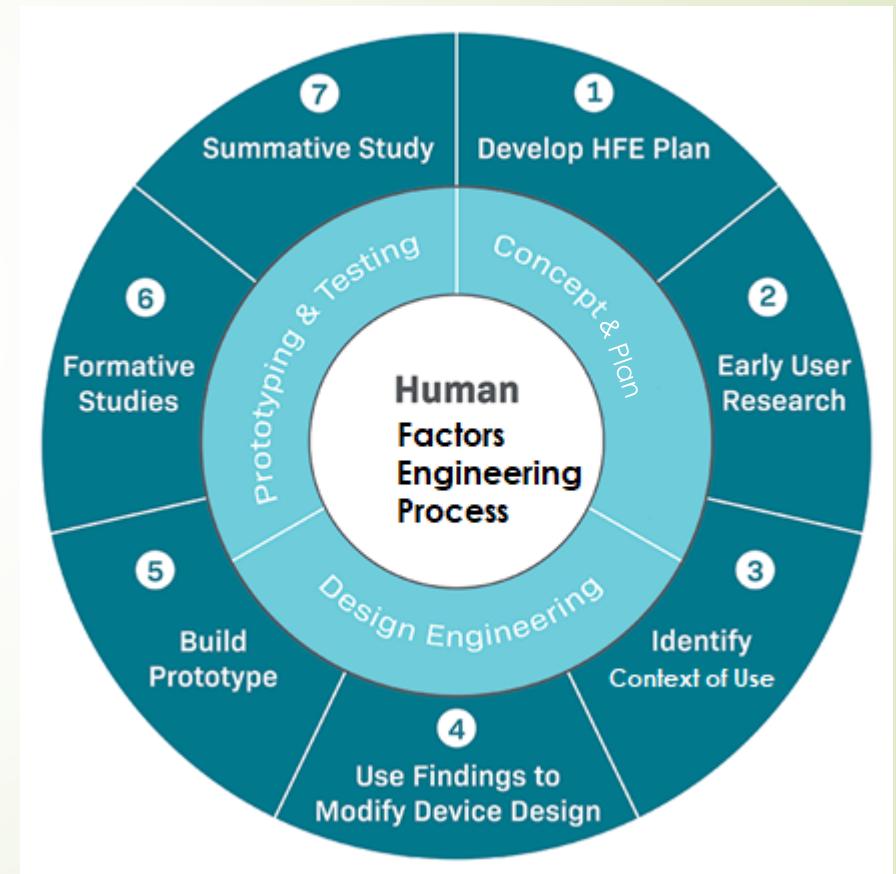
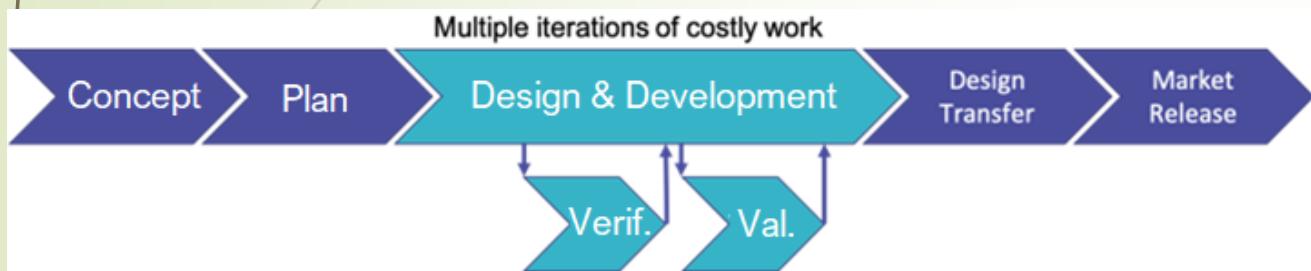
End of PhD! What's next?



How do I get from my Proof of
Concept to the first marketable
prototype?

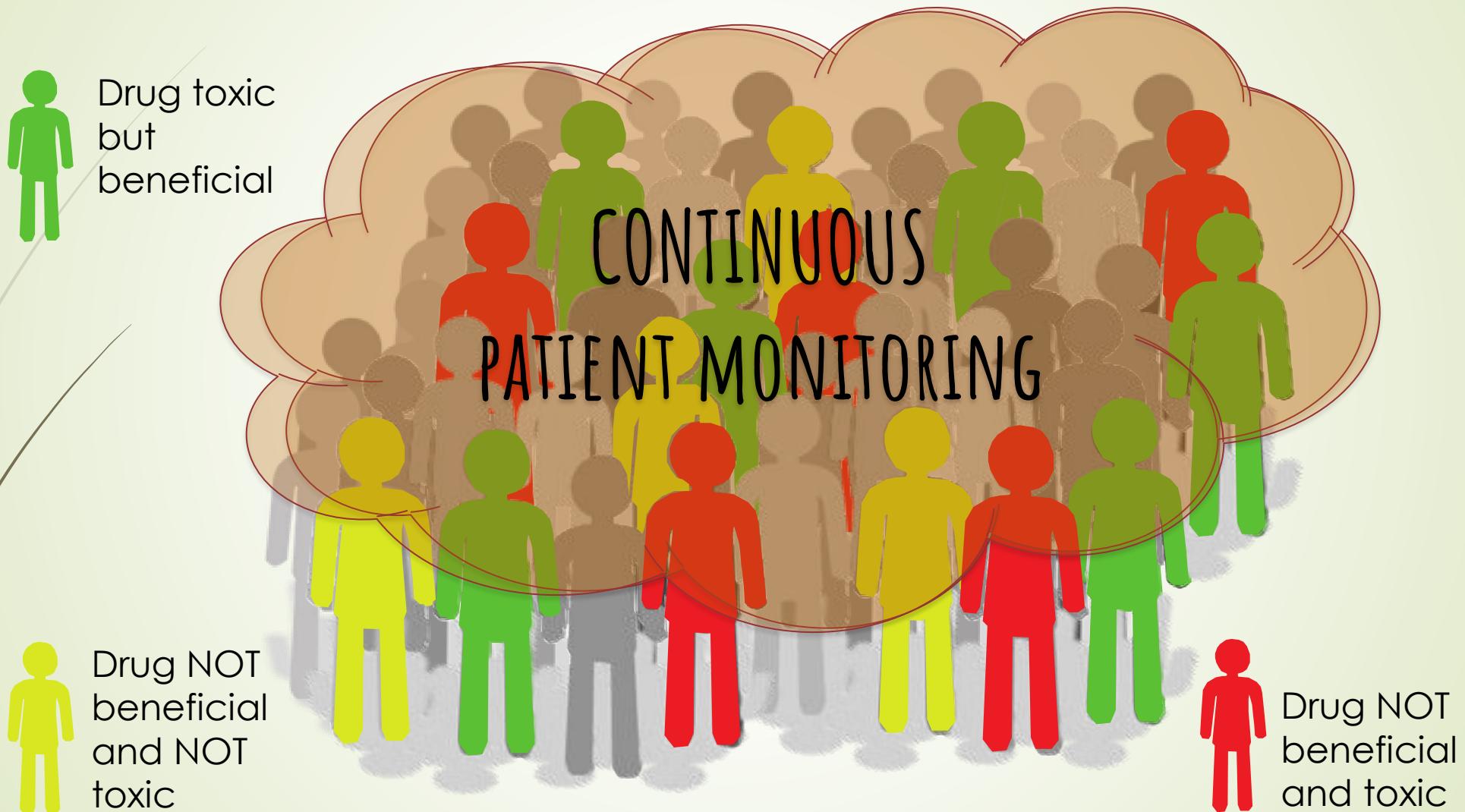
How to get on
markets?

A case study



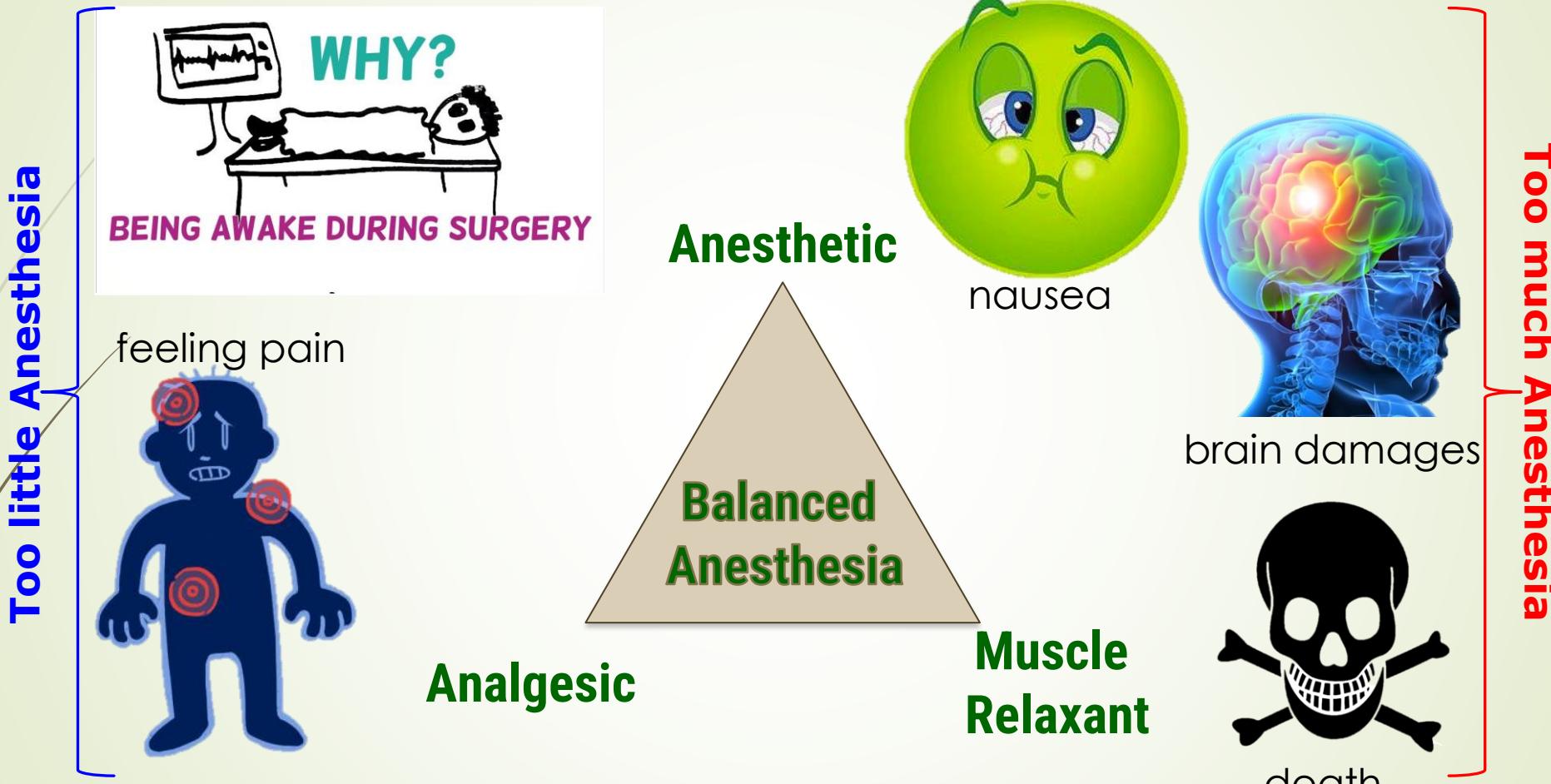
Precision medicine

Target product: Point of Care System for Personalized Anesthesia delivery



Sedation Cocktail

4

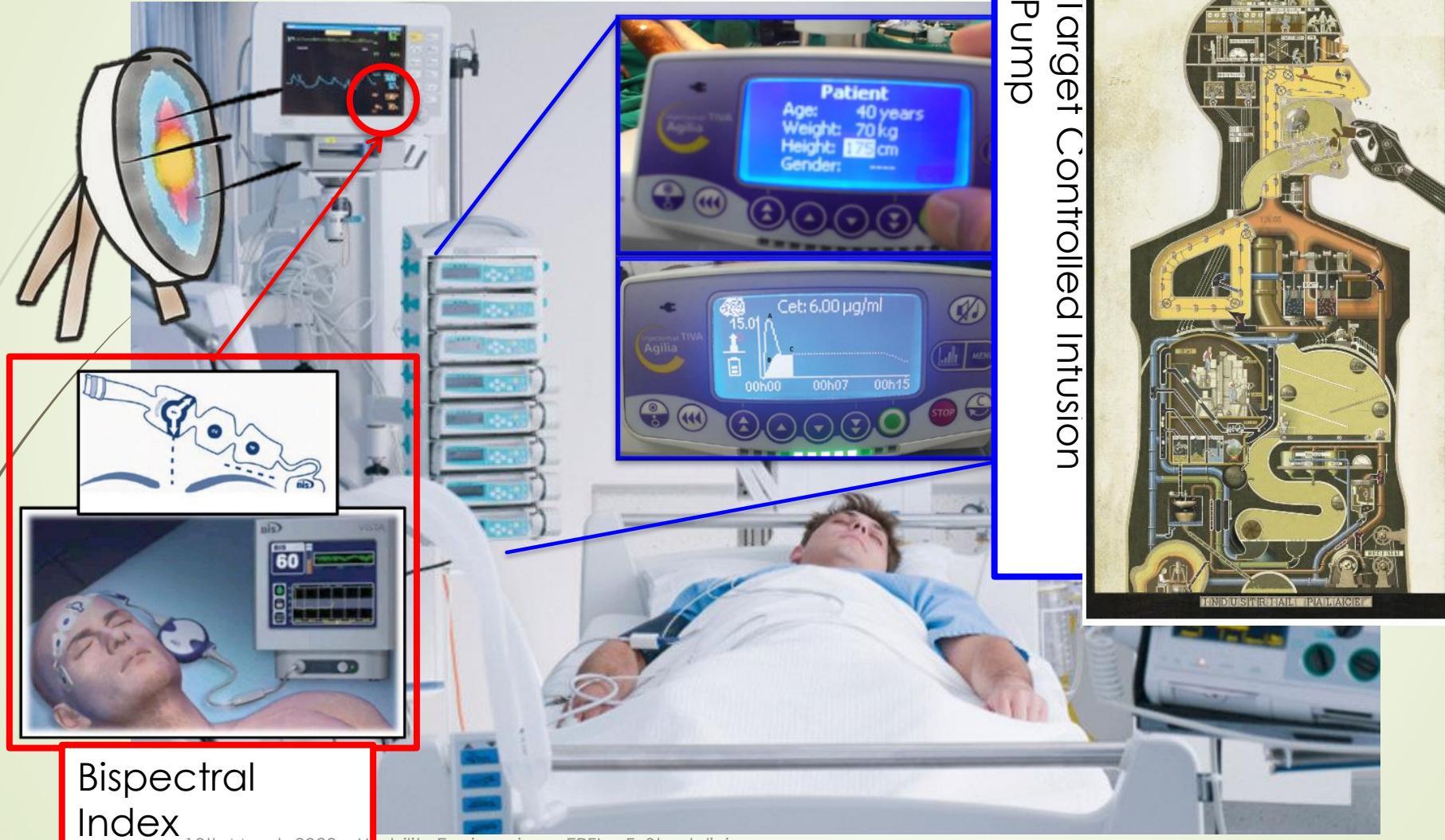


Vital Importance: the right personalized balance!

Nowadays Practices

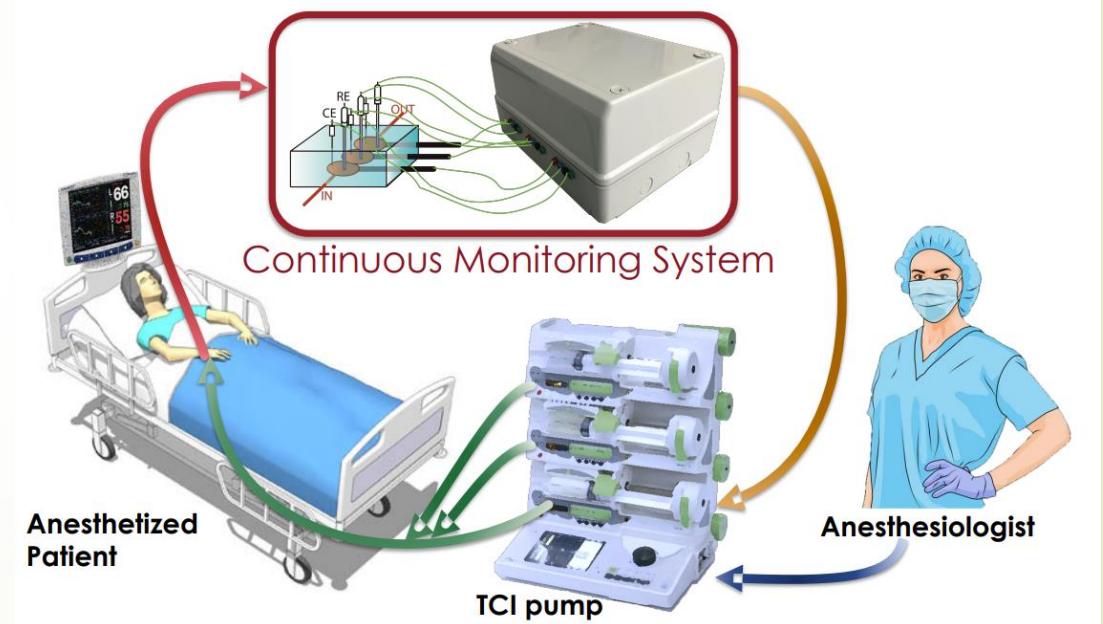
MEDICAL APPLICATION: SEDATION

5



Define the context of use

- What is the intended use?
 - ▶ Monitor the level of anaesthesia in the blood of the patient
- Who are the intended users?
 - ▶ Anaesthesiologists
- What is the intended use environment?
 - ▶ Operating Room



Collect the user needs

Early User Research

Different methods:

- ▶ Contextual Inquiry
- ▶ Interviews
- ▶ Surveys
- ▶ Focus Groups

To define:

- User needs
- Task analysis → workflow of use, what are easy tasks/what are the difficult ones? Where can we act to facilitate the flow?



@JENNI DE LUCA, CAREERFOUNDRY

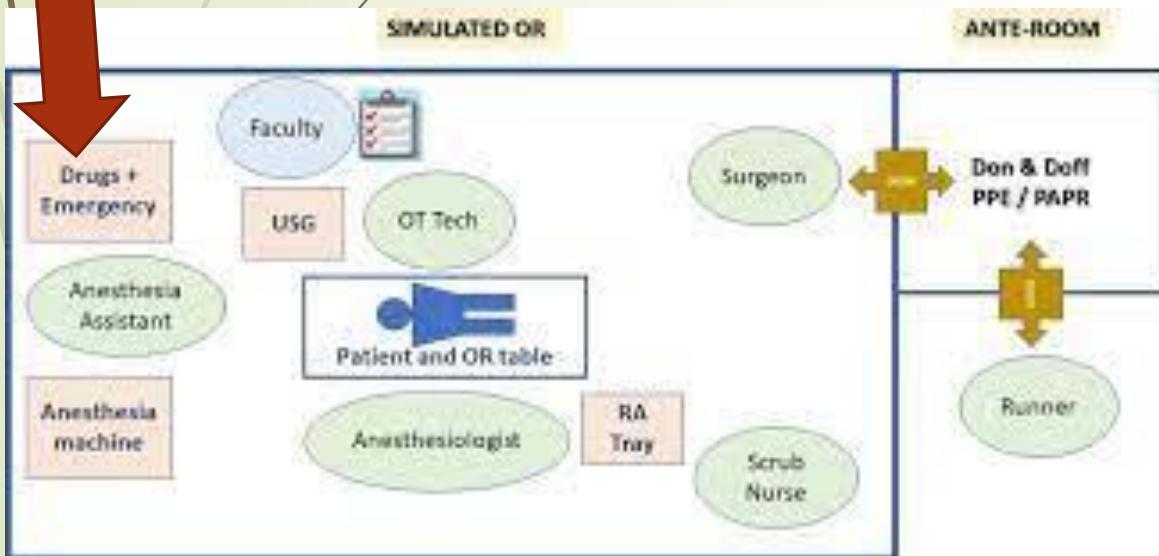
Example of anaesthesia task analysis



Some Anaesthesiologist Needs:

- As Anaesthesiologist I need to have free hands
- As Anaesthesiologist I need to keep under eyes parameters of different patients at same time

Example of simulated OR



Ashokka B, Chakraborty A, Subramanian BJ, et al
Reconfiguring the scope and practice of regional anesthesia in a pandemic: the COVID-19 perspective
Regional Anesthesia & Pain Medicine 2020;45:536-543.

EPFL

10th March 2023 – Usability Engineering – EPFL – F. Stradolini

Preoperative assessment

1. comorbidity evaluation
2. tumor location
3. PRFA approach and patient positioning

Anesthetic plan

1. premedication choice
2. general anesthesia vs. loco-regional technique
3. airway management plan
4. acquisition of the informed consent

Anesthesia and preparation

1. application of monitoring
2. general or loco-regional anesthesia delivery
3. patient positioning

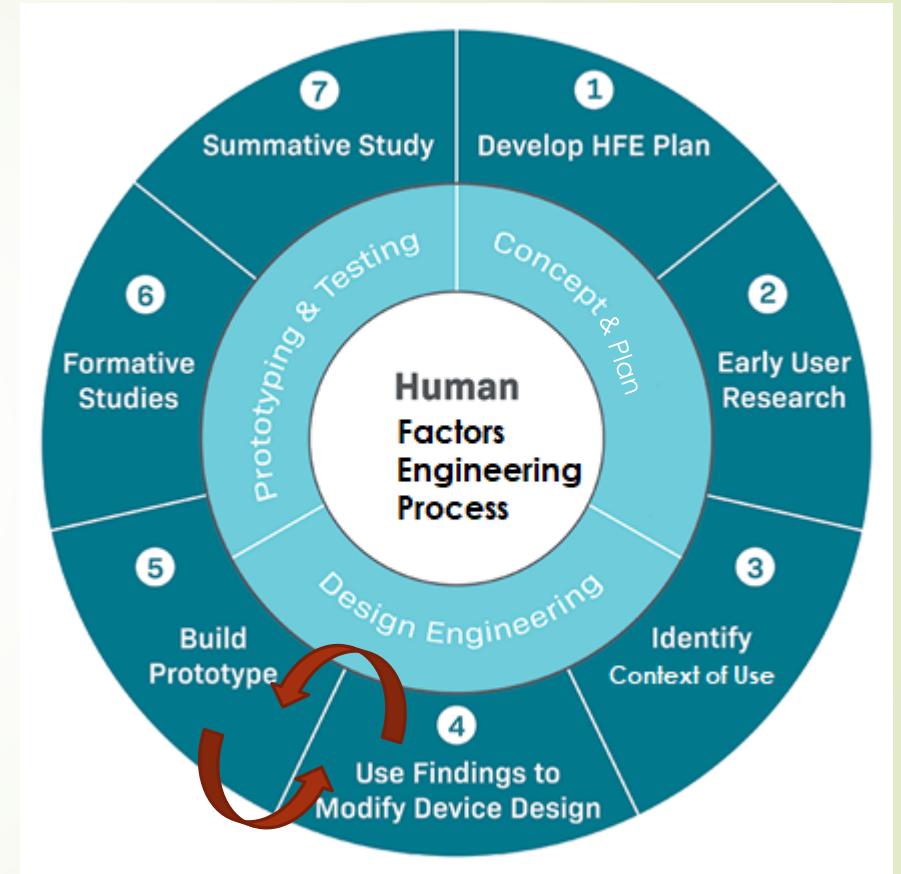
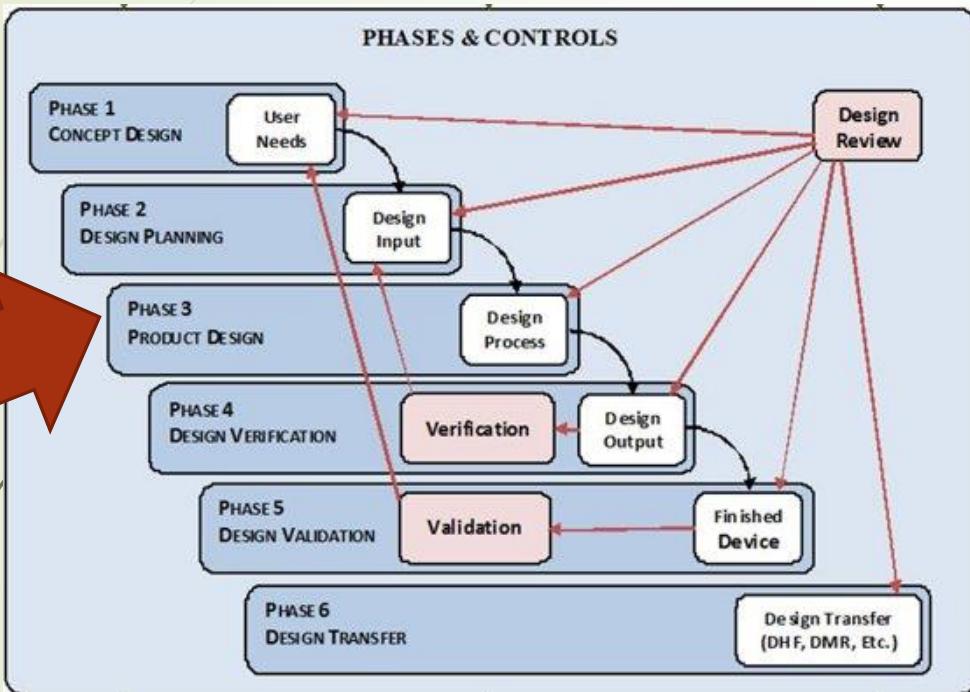
PRFA procedure

1. antibiotic prophylaxis
2. sterile field set-up
3. radiofrequency ablation

Recovery

1. awakening of the patient
2. pain management
3. monitoring until complete recovery (at least 30 minutes)

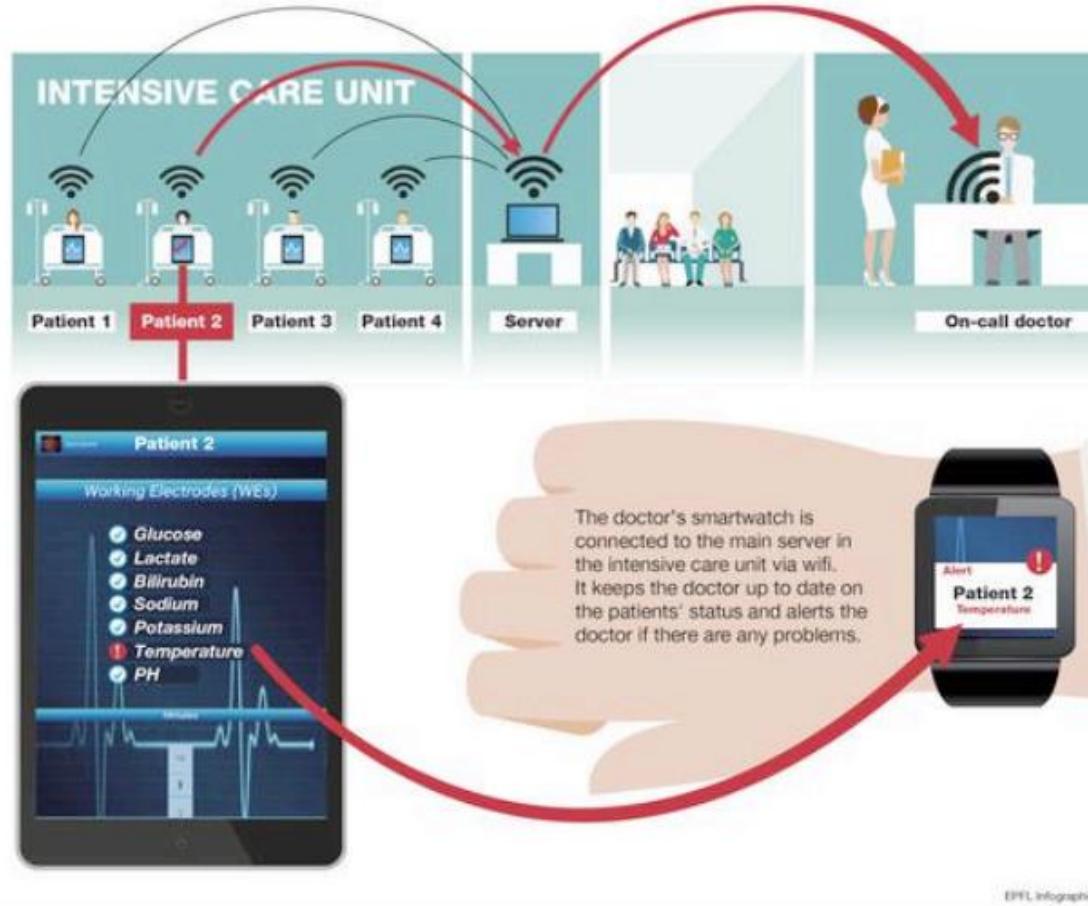
A case study



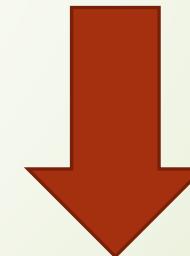
And yes...now you are again in design! ☺

Because you have to focus on the user needs & human factors aspects, differently from the technology focus only

New prototype

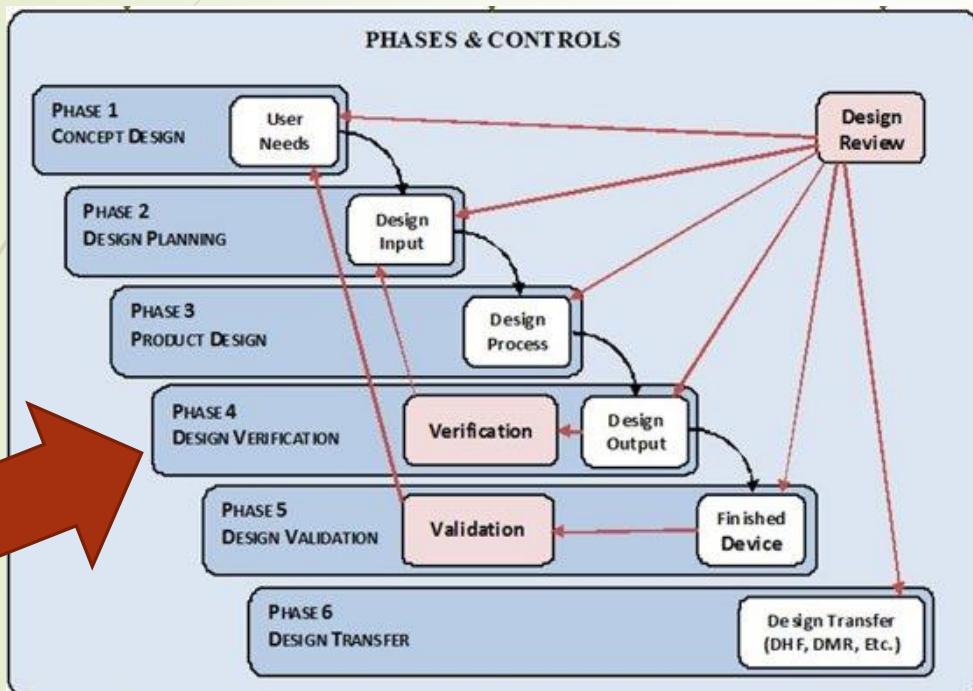


- Anaesthesiologist needs to have hands free
- No additional bulky device/monitors in the room
- Continuous monitoring of all patients connected to the network



You integrated your novel technology within a more usable scenario!

Plan verif testing



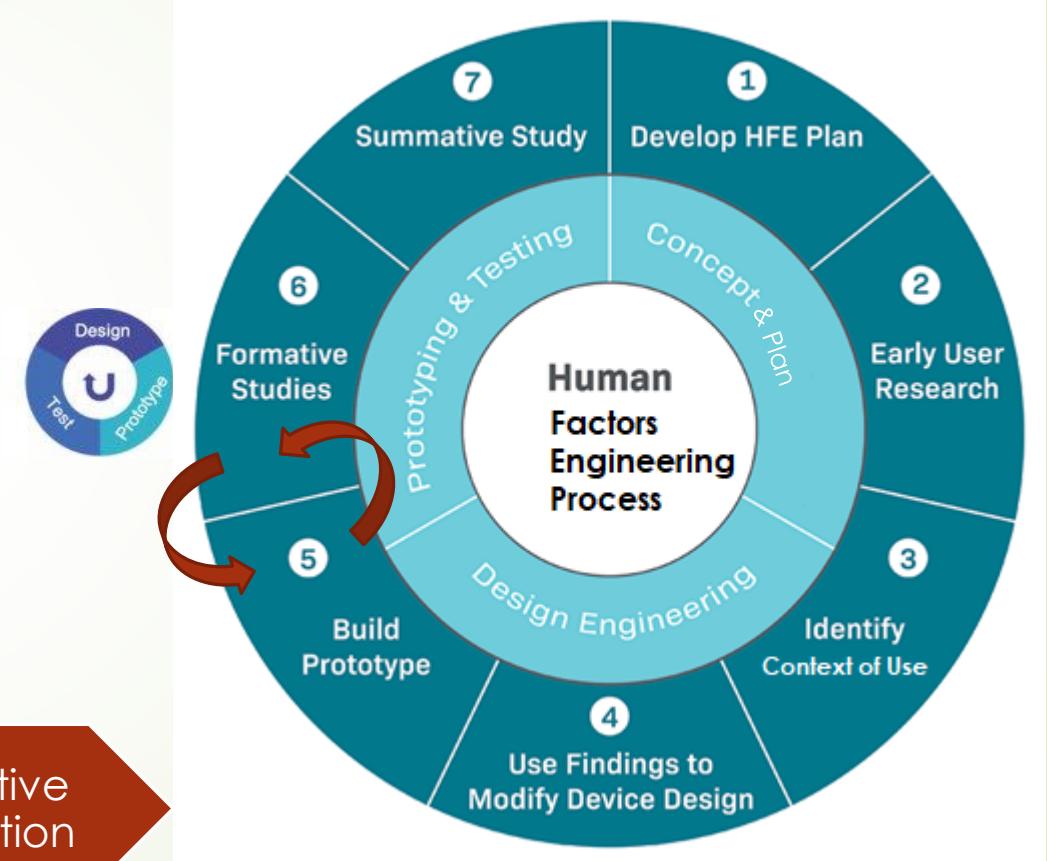
Task Analysis

Use related Risk analysis

Critical Tasks

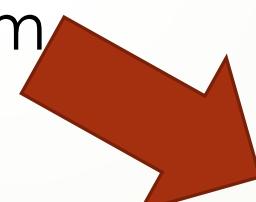
Formative Evaluation

Involve users to observe them interacting with your device



Summative test

- When confident of the design (use error occurrence reduced as far as possible by design)
- Therefore, ready for final validation → Summative
 - All user groups need to test the design
 - Larger user group (15-20 per each group)
 - All functionalities of the system

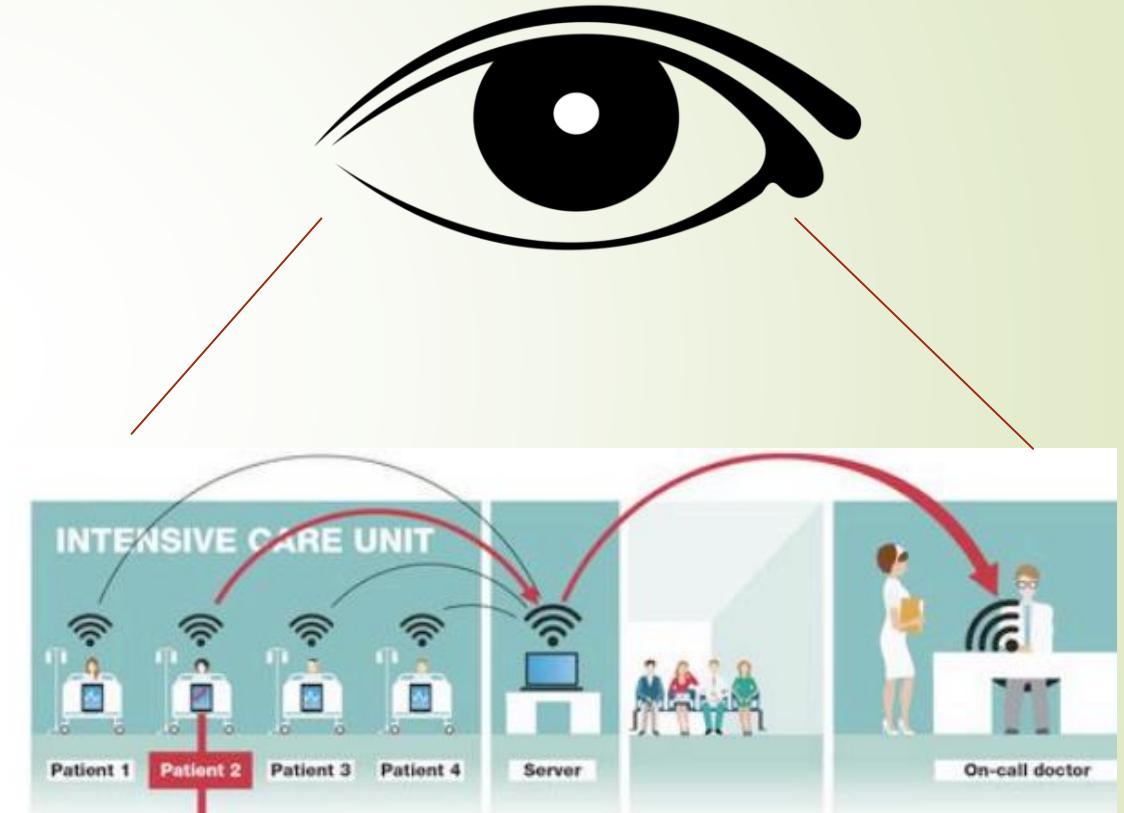


If the device is proven to be safe and effective, then it is ready for the market



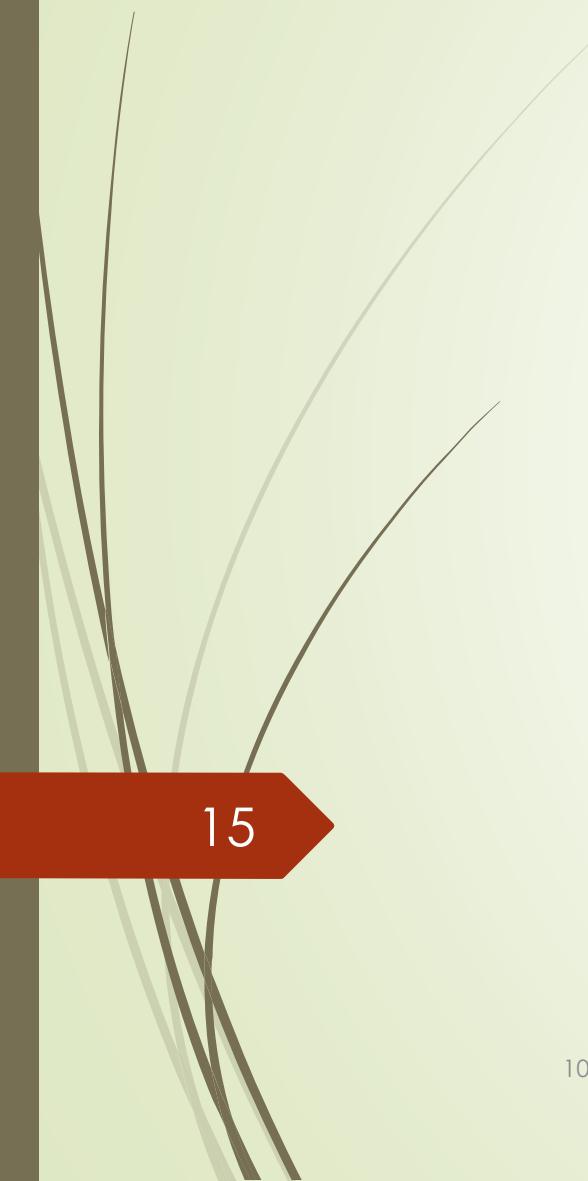
Post-Market activities

- ▶ Observe the device in the market in daily use to identify room for improvement
- ▶ Where one project “ends” a new one starts
;)



Backup slide

14



15

Goal: feedback monitoring system

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