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**Human Factors Consultant  
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# What to expect from today

- A quick gallop through what SEIPS is, what it can do for you and how to use it
- An email after the session containing:
  - a copy of these slides
  - copies of the four major journal papers about SEIPS – including one with tools to help you use it in real life

# What is Human Factors?

Enhancing human performance through an understanding of the effects of tasks, equipment, workspace, teamwork, culture and organisation on human behaviour and abilities...

...and an application of that knowledge in clinical settings.

Ken Catchpole

Professor of Human Factors at Medical University of South Carolina

Integrated design to improve life, wellbeing and performance

Chartered Institute of Ergonomics and Human Factors

Fitting the *system* to the *person*

# What is systems thinking?

None of us exist or act in isolation – we are all surrounded by and influenced by things like:

- the behaviour and beliefs of other people
- the society and laws we live within
- the resources we have available – money, time, energy, equipment, physical environment, etc

Taking these elements into account when looking at a situation is *systems thinking*

# And how does SEIPS help?

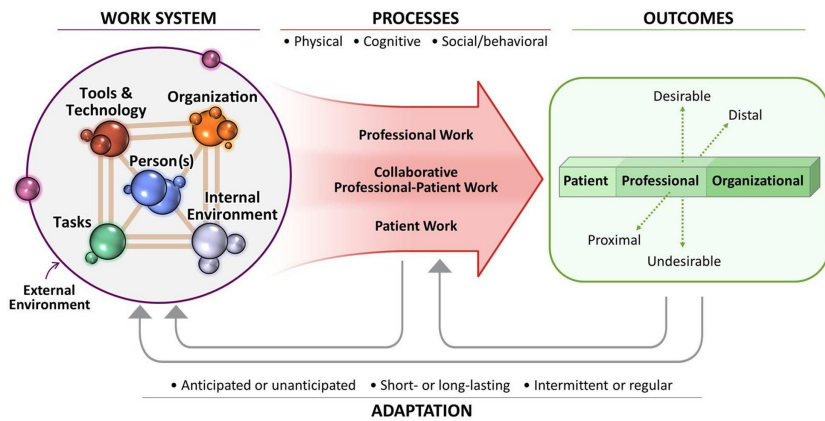
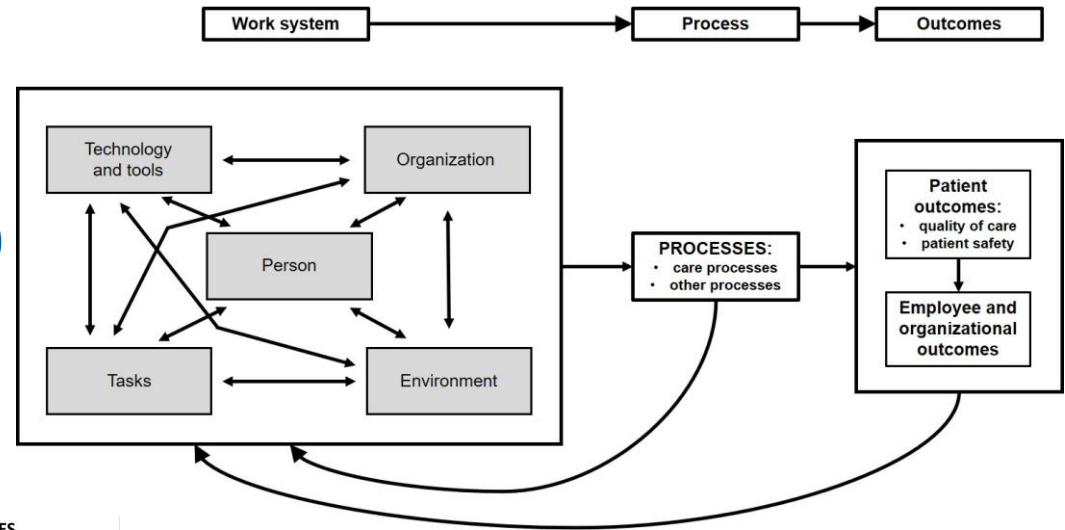
Most things that go wrong in patient care aren't caused by the actions of single individuals, but from the conflicting, incomplete or suboptimal systems which with they interact

SEIPS helps us identify these issues in systems and see how they interact with each other to lead to incidents

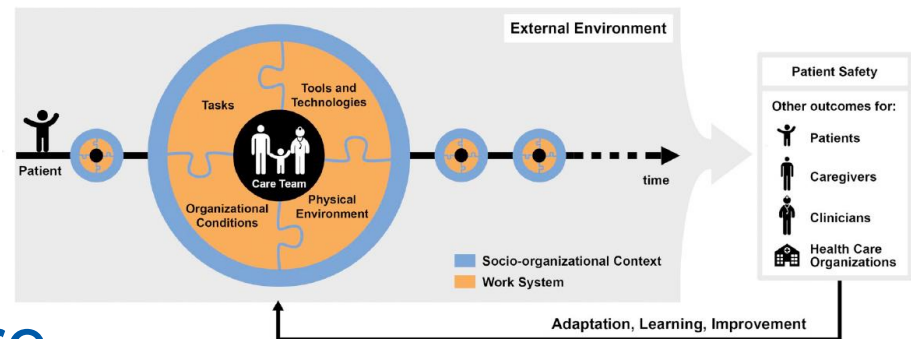
SEIPS gives us insight into what's *actually* happening in a situation, or could do in the future

# SEIPS development

## SEIPS 1.0 (2006) Basic



## SEIPS 2.0 (2013) Enhanced



## SEIPS 3.0 (2020) Ongoing patient care

# SEIPS

## Systems Engineering Initiative for Patient Safety

- Firstly breaks a situation down into different elements to see what contributes to the successful or unsuccessful completion of tasks
- Then looks at contributions to healthcare transactions between professionals and patients, outcomes for different stakeholders, and the effects of changes to the system
- Other similar models exist to do the first part of this, but SEIPS is the only one this comprehensive and specifically designed for healthcare

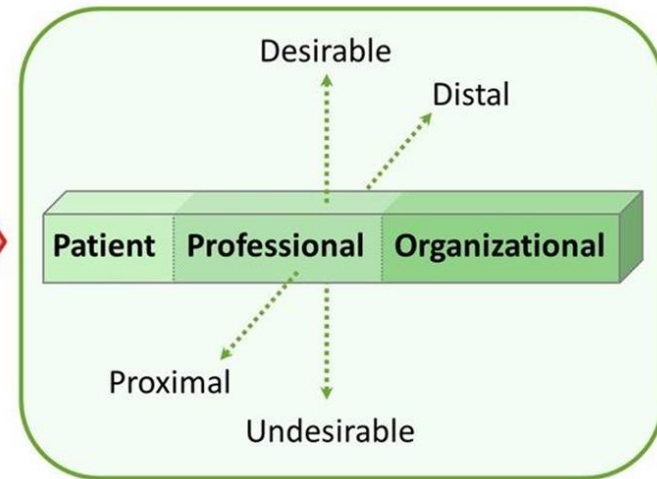
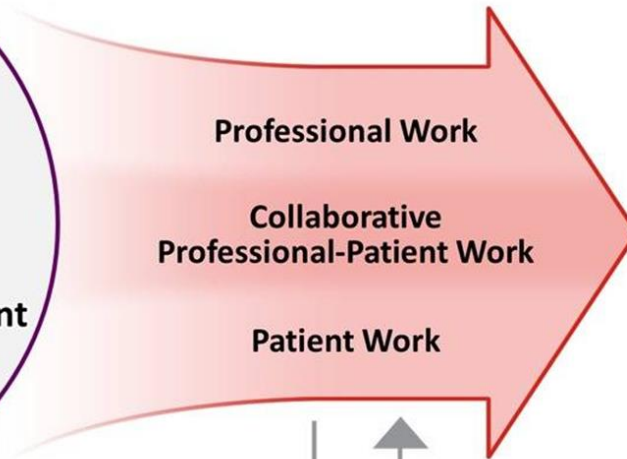
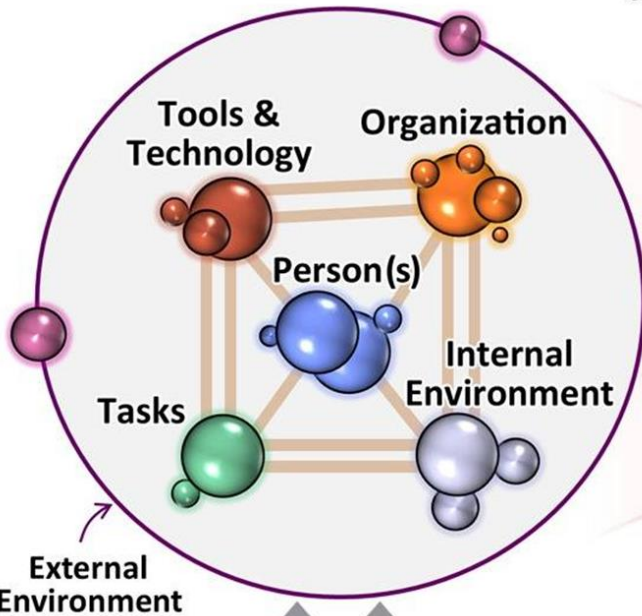
# SEIPS diagram

## WORK SYSTEM

## PROCESSES

## OUTCOMES

- Physical
- Cognitive
- Social/behavioral



- Anticipated or unanticipated
- Short- or long-lasting
- Intermittent or regular

## ADAPTATION



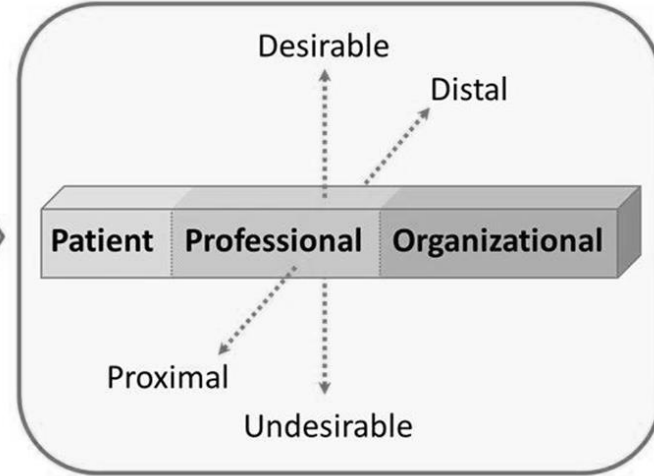
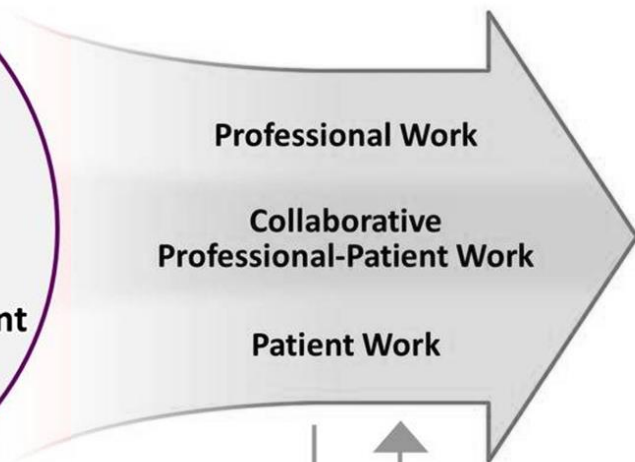
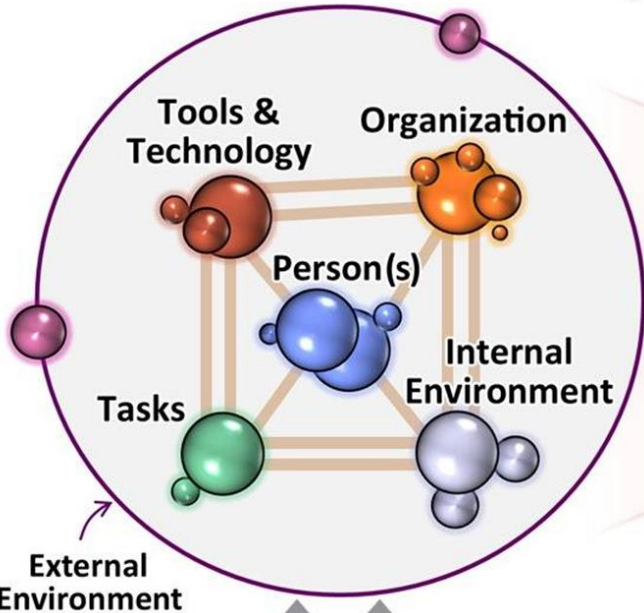
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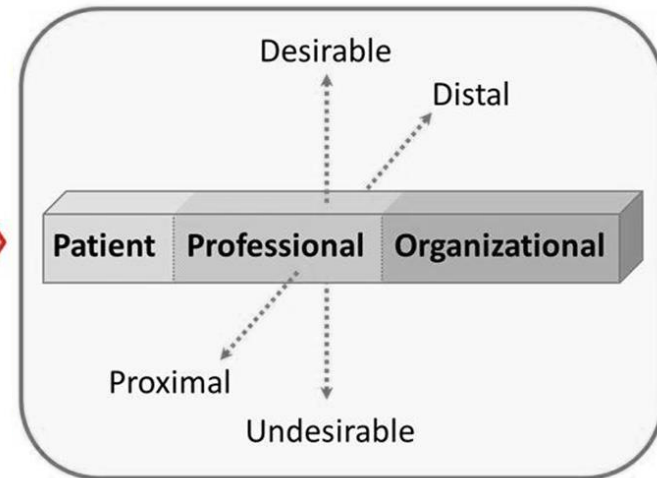
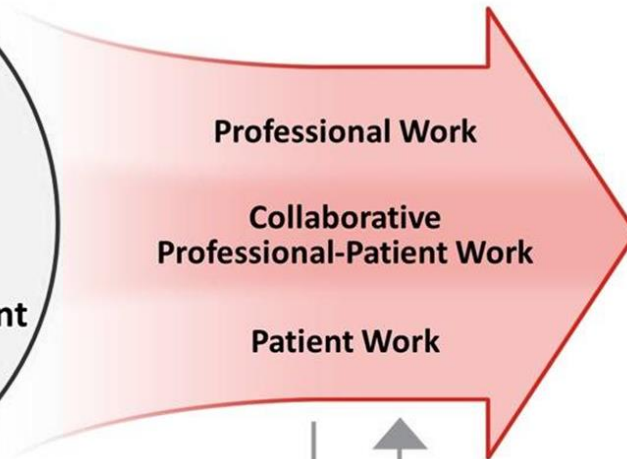
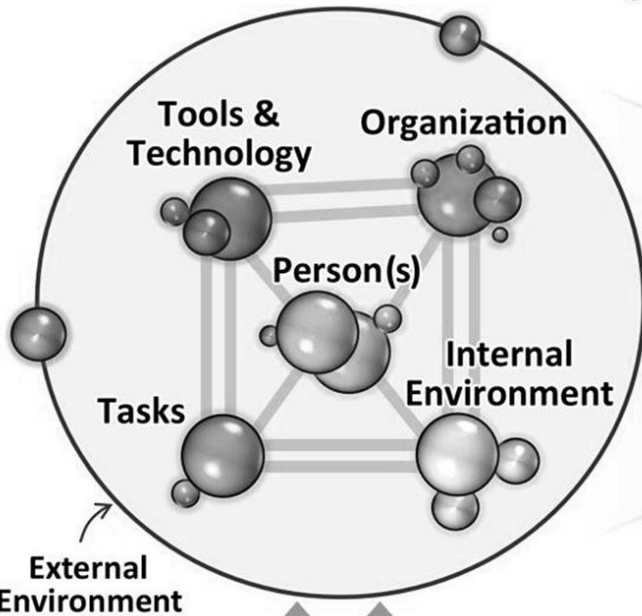
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## WORK SYSTEM

## PROCESSES

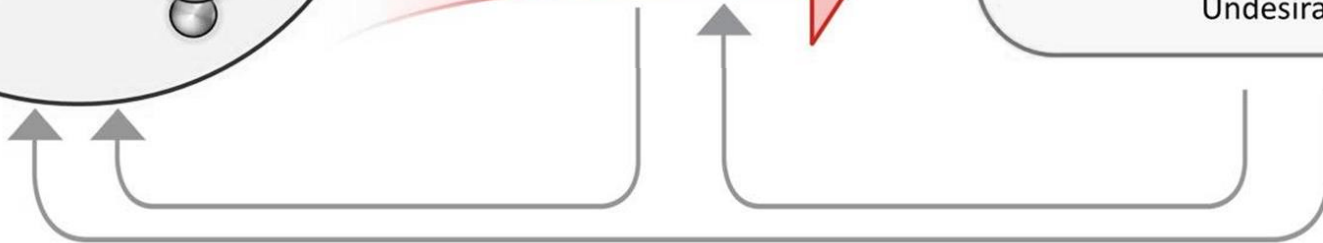
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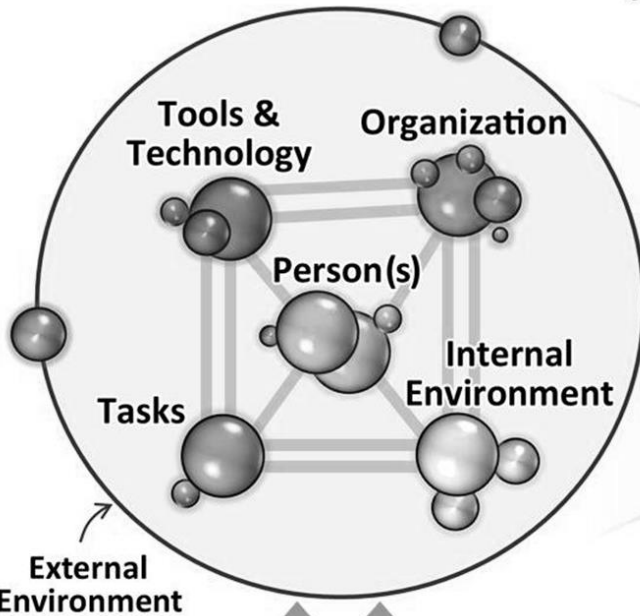
# SEIPS diagram

## WORK SYSTEM

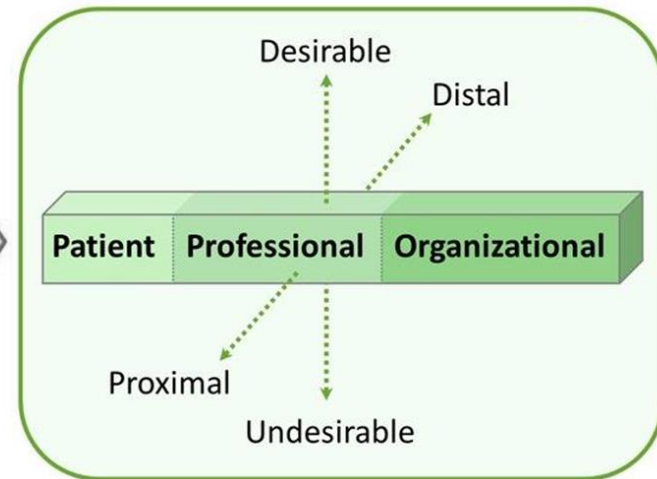
## PROCESSES

## OUTCOMES

- Physical
- Cognitive
- Social/behavioral



Professional Work  
Collaborative  
Professional-Patient Work  
Patient Work



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## ADAPTATION

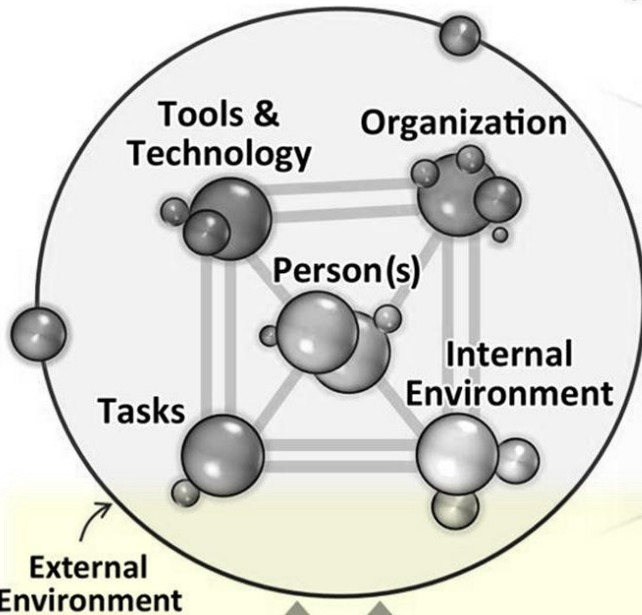
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## WORK SYSTEM

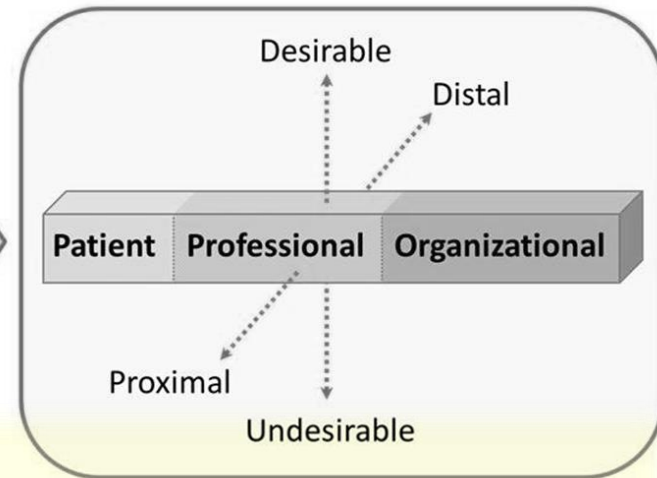
## PROCESSES

## OUTCOMES

- Physical
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Professional Work  
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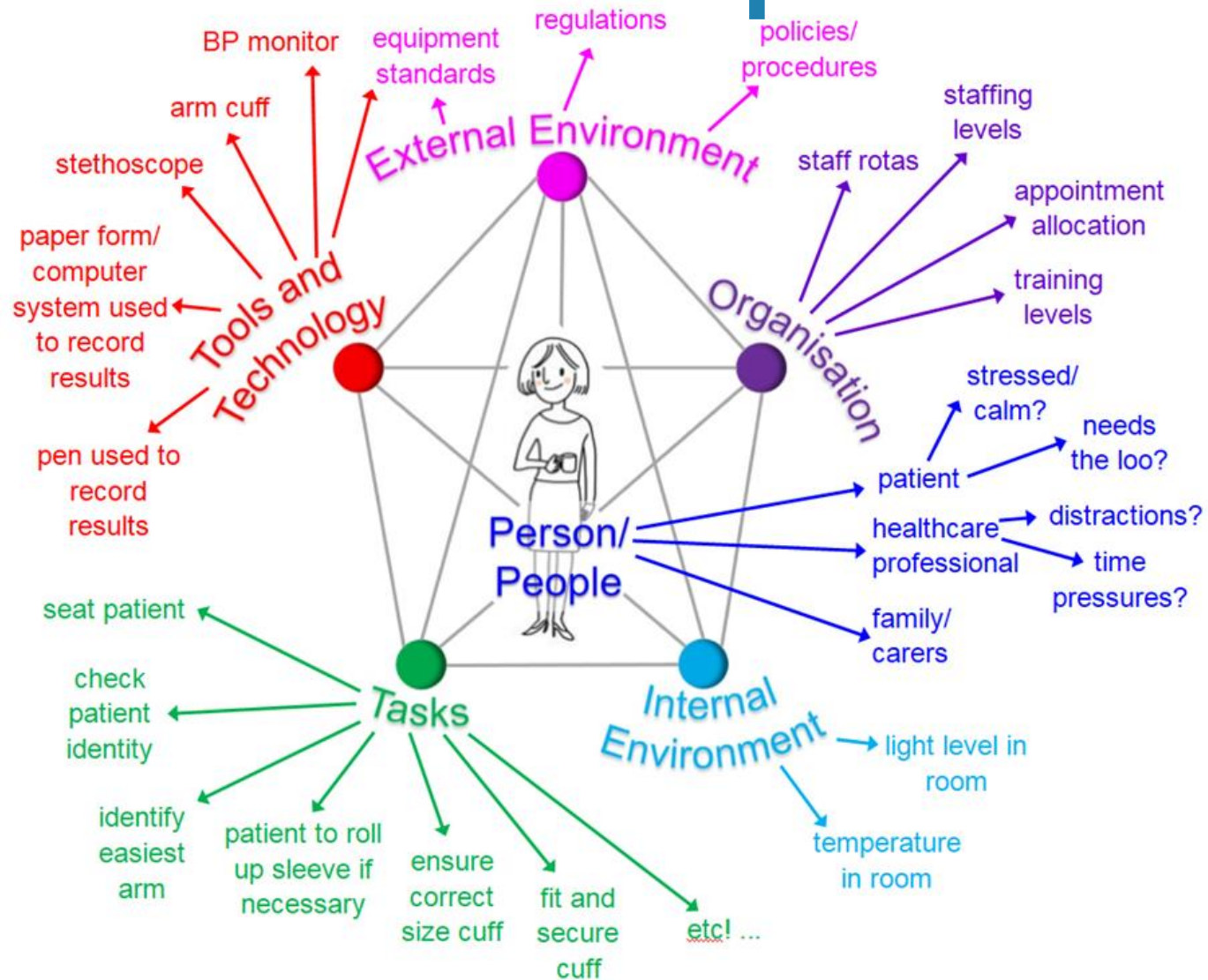
- Anticipated or unanticipated
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## ADAPTATION

# **Example situation**

**Nurse taking and recording a patient's blood pressure**

# Nurse taking and recording a patient's blood pressure

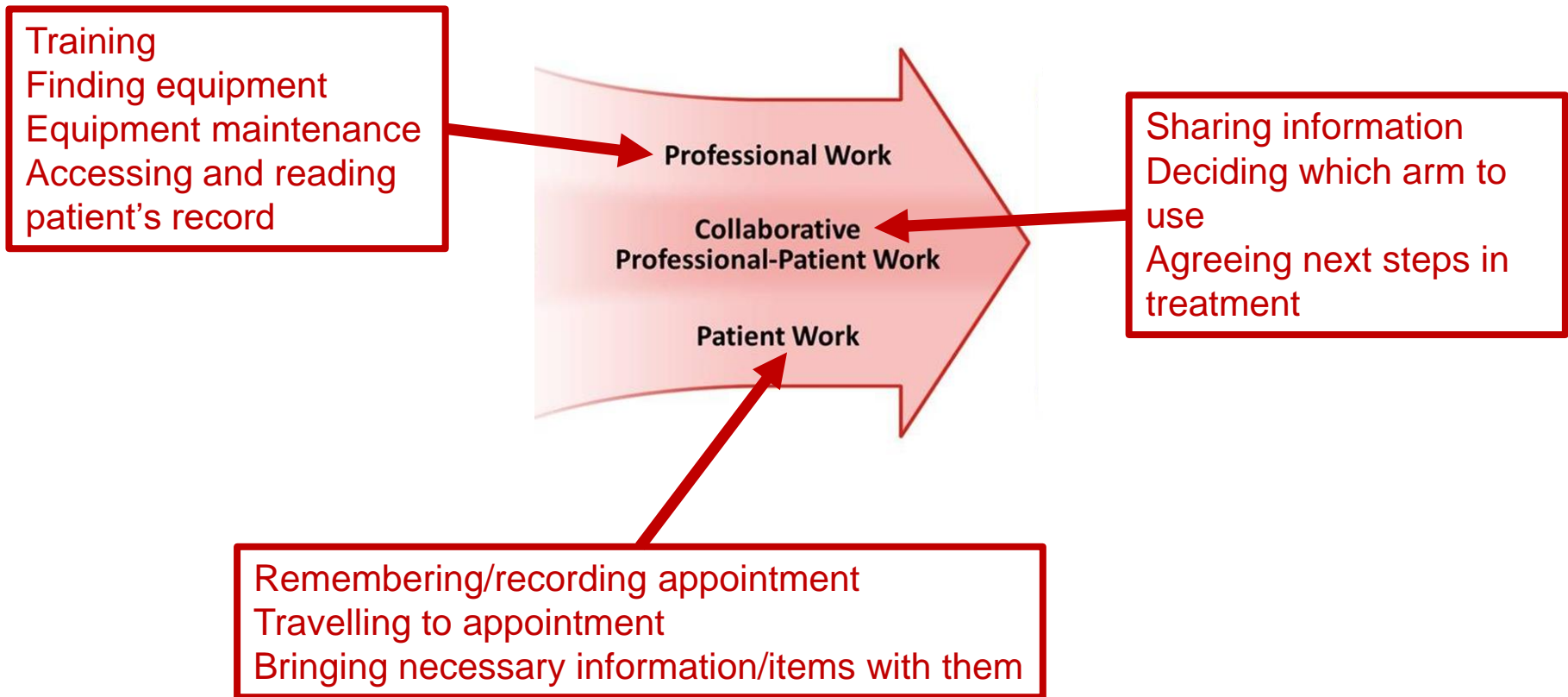




# Nurse taking and recording a patient's blood pressure

## PROCESSES

Physical • Cognitive • Social/behavioral



# Nurse taking and recording a patient's blood pressure

## Proximal:

To be seen on time  
For the appointment to go well

## Distal:

For any medication/follow up treatment to be easy and helpful

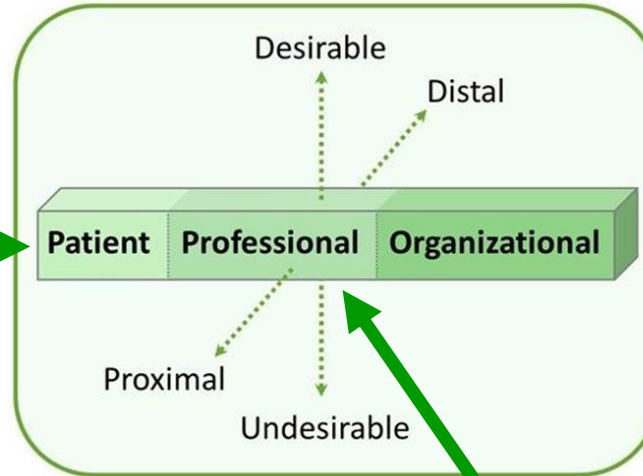
## Desirable:

For their blood pressure to be good

## Undesirable:

For them to find out their blood pressure is bad or that they are unwell

## OUTCOMES



## Proximal:

For the appointment to run to time

## Distal:

For the patient to require as few resources as possible in the future

## Desirable:

For the appointment to run smoothly and efficiently

## Undesirable:

For the patient to need complex/expensive treatment, be abusive, need additional resources

## Proximal:

For the appointment to go smoothly (e.g. patient on time, easy to communicate with, calm and friendly, equipment to function properly)

## Distal:

For any medication/follow up treatment to be easy to organise and to have the desired effect

## Desirable:

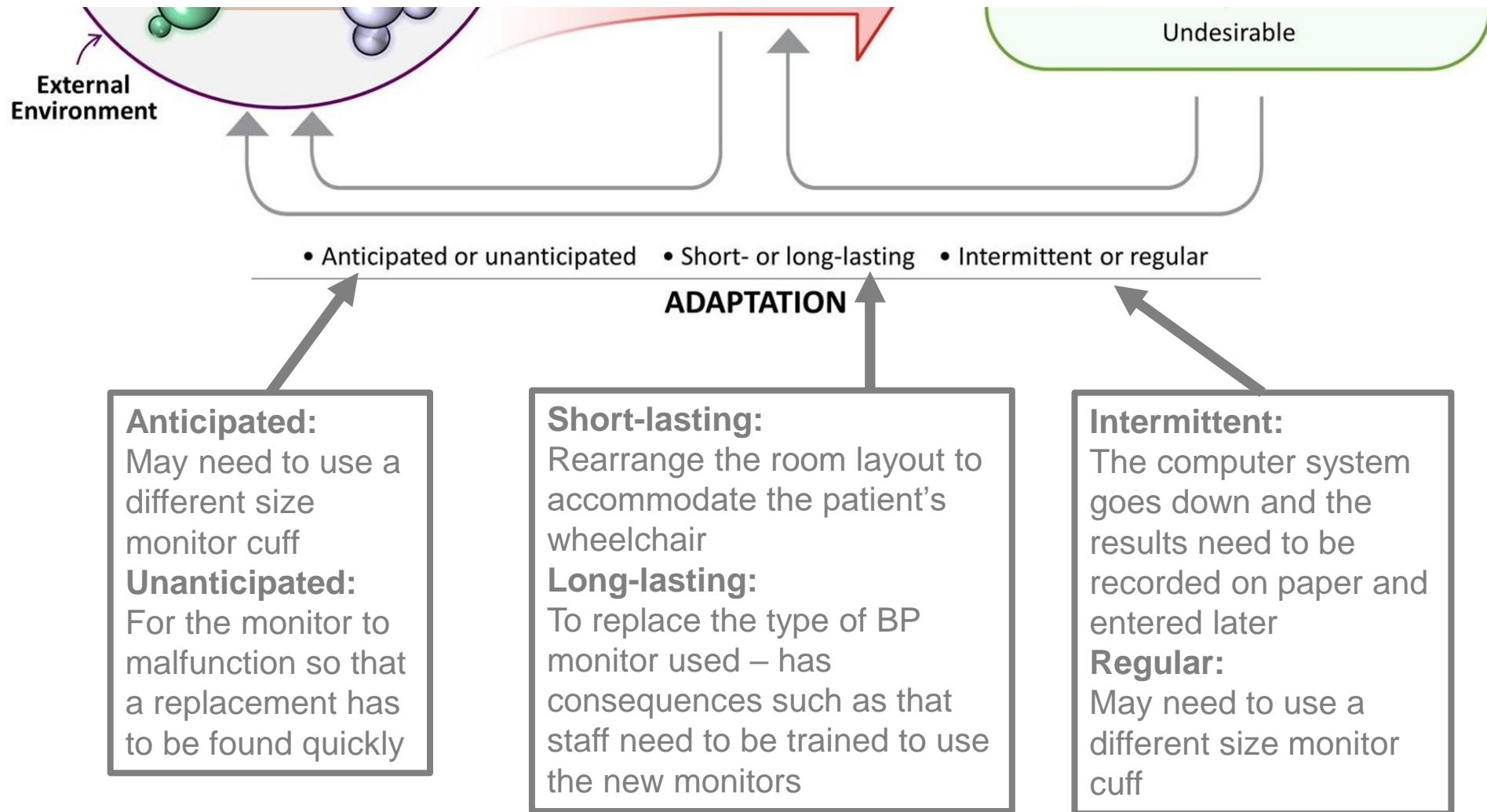
For the appointment to run smoothly and efficiently, to time

## Undesirable:

For the patient to be very unwell or have an acute episode during the appointment



# Nurse taking and recording a patient's blood pressure



# How can I use SEIPS in my work?

- When you are looking at how care is delivered, think in a systems way
- Use the SEIPS elements as points to consider while you are gathering information
- Think about the whole system the staff were operating within – did the system guide them to take those actions/decisions?
- When considering improvements, think using SEIPS again – what could help in reality, taking all the elements into account?

# SEIPS 101 and seven simple SEIPS tools

- 1) PETT scan
- 2) People map
- 3) Tasks and tools matrices
- 4) Outcomes matrix
- 5) Journey map
- 6) Interactions diagram
- 7) Systems story

# Summary

- SEIPS is all about thinking in a systems-inclusive way – not just focusing on an individual and their actions, but understanding why they took those actions based on the systems they were operating within
- Different elements will be more or less important in different situations
- Use the “SEIPS 101 and seven simple SEIPS tools” paper and its attached tools to help you think through the situations you’re looking at

# SEIPS papers

- Systems Engineering Initiative for Patient Safety
  - Link to the original paper (SEIPS 1.0): <https://bit.ly/3bdoODw>
  - Link to the paper for today's content (SEIPS 2.0): [bit.ly/2KNvCFu](https://bit.ly/2KNvCFu)
  - Link to SEIPS 3.0 paper: <https://bit.ly/3PKXxHv>
  - Link to paper giving practical tips for using SEIPS 2.0: <https://bit.ly/3Q5Sz84>
  - These papers will also be emailed to you with a copy of the slides

# Further help

- SEIPS Masterclass – 2 hour webinar replay from the Chartered Institute of Ergonomics and Human Factors (CIEHF) – me on theory, plus two examples from practice in healthcare (cost £18): <https://bit.ly/3bkw0Oc>
- More information on HF in general, HF in healthcare, events and accredited training courses – CIEHF: <https://ergonomics.org.uk/>