**Classification: Official** 

Publication approval reference: PAR 1465



# SEIPS quick reference guide and work system explorer

Version 1, August 2022

# Healthcare is a complex socio-technical system

Healthcare is complex because it is highly variable, uncertain, and dynamic.

Healthcare is a socio-technical system because it is characterised by multiple interactions between various components, both human and technological.:

# What is SEIPS?

SEIPS is a framework for understanding outcomes within complex socio-technical systems.

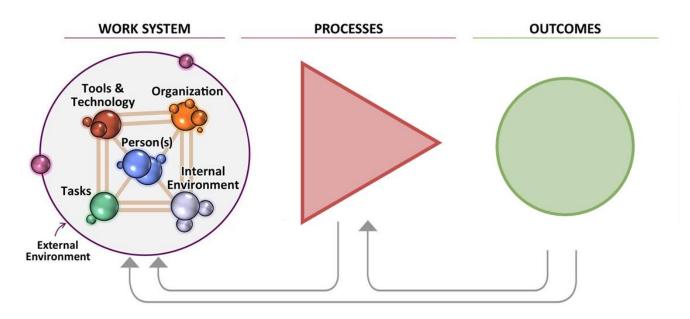
Figure 1 provides an overview of the System Engineering Imitative for Patient Safety (SEIPS) framework, combining SEIPS 2.0<sup>1</sup> and SEIPS 101<sup>2</sup>. The figure It describes how a **work system** (or socio-technical system, left) can influence **processes** (work done, middle), which in turn shapes **outcomes** (right).

The SEIPS framework acknowledges that work systems and processes constantly adapt (see arrows in Figure 1).

<sup>&</sup>lt;sup>1</sup> Holden, R.J., Carayon, P., Gurses, A.P., Hoonakker, P., Schoofs Hundt, A., Ozok, A.A. and Rivera-Rodriguez, A,J. (2013) SEIPS 2.0: a human factors framework for studying and improving the work of healthcare professionals and patients. Ergonomics, 56(11), 1669-1686.

<sup>&</sup>lt;sup>2</sup> Holden, R.J., Carayon, P. (2021). SEIPS 101 and seven simple SEIPS tools. BMJ Quality & Safety, 0, 1-10

## Figure 1. Overview of the SEIPS framework



# What are the different parts of the work system?

A 'work system' consists of six broad elements: external environment, organisation, internal environment, tools and technology, tasks and person(s). Figure 2 provides a brief overview of the different elements and potential contributory factors to consider during a learning response.

People cannot be separated from the work system; their deliberate placement at the centre emphasises that design should support – not replace or compensate for – people.

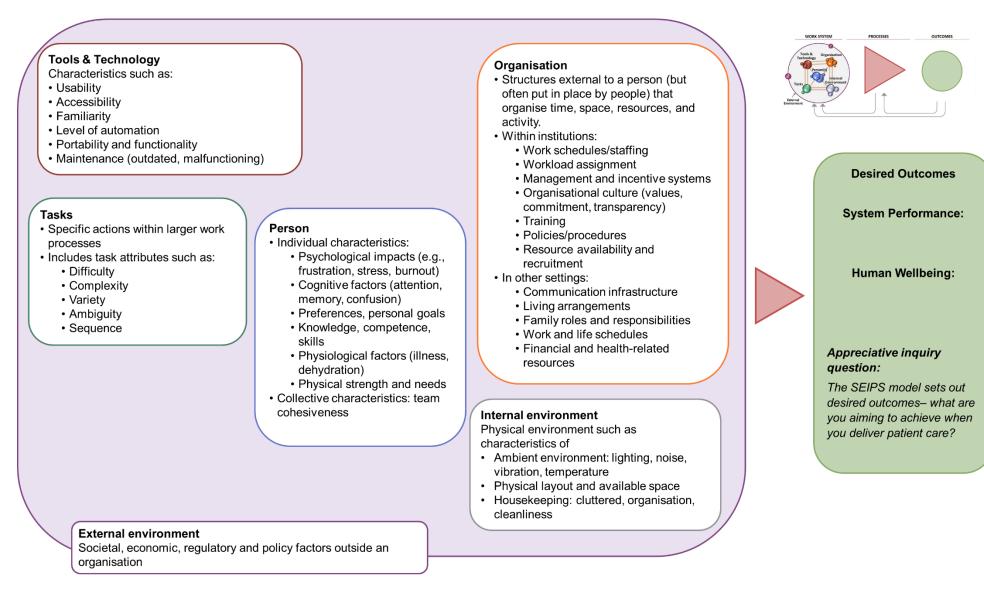
# Using SEIPS to learn from patient safety incidents

SEIPS can be used as a general problem-solving tool (eg to guide how we learn and improve following a patient safety incident, to conduct a horizon scan, and to inform system design).

Figure 3 (the work system explorer) provides questions to help explore different work system elements. Figure 4 provides a blank template; this is also available as a MS PowerPoint.

Patient safety incidents result from multiple interactions between work system factors. SEIPS prompts us to look for interactions rather than simple linear cause and effect relationships. When a learning response thoroughly examines the different work system components and their interactions safety actions can focus on wider system issues, not individuals.

## Figure 2. Overview of the SEIPS work system



## Figure 3. SEIPS work system explorer questions

#### **Tools & Technology**

- Describe the equipment/tools you use
- · Describe the equipment design
- Share your insights into equipment availability and appropriateness
- · Share your insights into equipment reliability
- · Describe how information is presented (eg records/IT systems)
- Describe alarms and alerts
- Are any tasks automated?
- · Describe where equipment is positioned. Is this optimal?
- Are tools/technology maintained and updated?
- · Are manuals, procedures and supports accessible?

#### Tasks

- · Tell me about the task demands you face
- Describe the tasks which are complex or challenging to carry out
- · Talk me through your experiences of the workload
- Are there time pressures? If yes please tell me more
- Does task repetition/monotony occur in this work system?
- Do you have to re-prioritise/reorganise?

#### **External environment**

- Describe any relevant national targets
- Tell me how the following impacts (if at all):
  - · Policy and regulatory demands
  - Accreditation standards
  - Political decision making
  - Global events

#### Organisation

Person

care

- · Tell me about how the patient pathways work
- · Describe the information flow (how information is communicated)
- · What is the communications workload like?
- Tell me how new information is flagged
- Where is new information held?

• Tell me about the patient mix

• Who else is part of the team

Describe the team who

(eq admin, domestic)?

How familiar are team

processes/pathways?

Are roles/responsibilities

Describe how training is

· Describe the impact of

morale, tiredness)

organised to support safe

Describe the team dynamics

personal factors (eg stress,

members with care

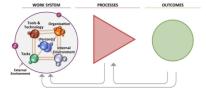
clearly defined?

deliver patient care

- · Describe the leadership and supervision arrangements
- · Describe how works is scheduled/allocated
- · Describe staffing levels and resourcing
- Describe the safety/organisational culture
- · Describe how change management works

#### Internal environment

- Does the workspace support safe patient care/task performance?
- Share your thoughts on the layout of the
- Is the workspace
- appropriate for the task?
- completed?
- · Describe any distractions you experience regularly
- · Do interruptions impact patient care/task
- performance? If yes, how?
- · Describe the impact of the ambient environment (eg lighting, noise, air quality)



## **Desired Outcomes**

#### **System Performance:**

#### **Human Wellbeing:**

#### Appreciative inquiry question:

The SEIPS model sets out desired outcomes- what are you aiming to achieve when you deliver patient care?

- environment
- · Where are tasks

## Figure 4. SEIPS work system template

