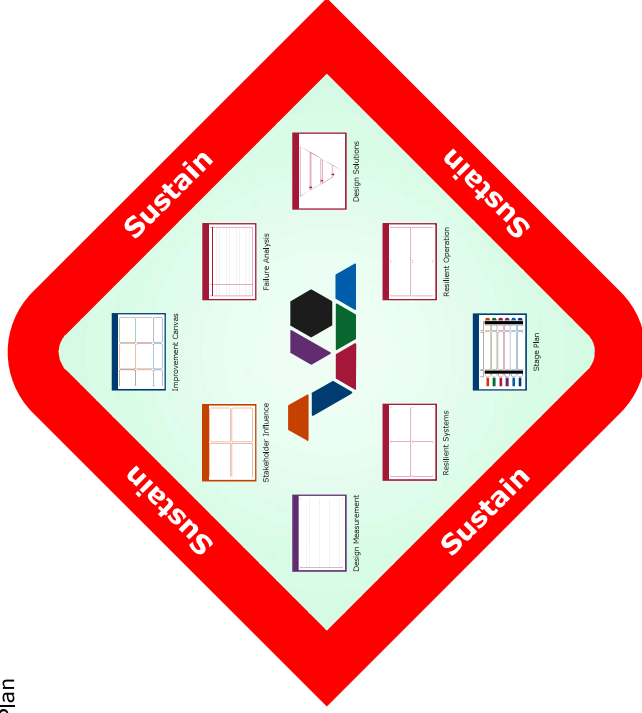


Stage Outputs

Activity Plan



Sustain Stage Guide



Sustain Output	Narrative Table to list key outputs from the sustain stage
✓ Agreed Scope	
✓ Stakeholder Needs	
✓ Performance Measures	
✓ Resilient Operation	
✓ Resilient Architecture	
✓ Design Details	
✓ Risk Assessment	
✓ Case for Sustain	
✓ Other	
✓ Other	

Summary

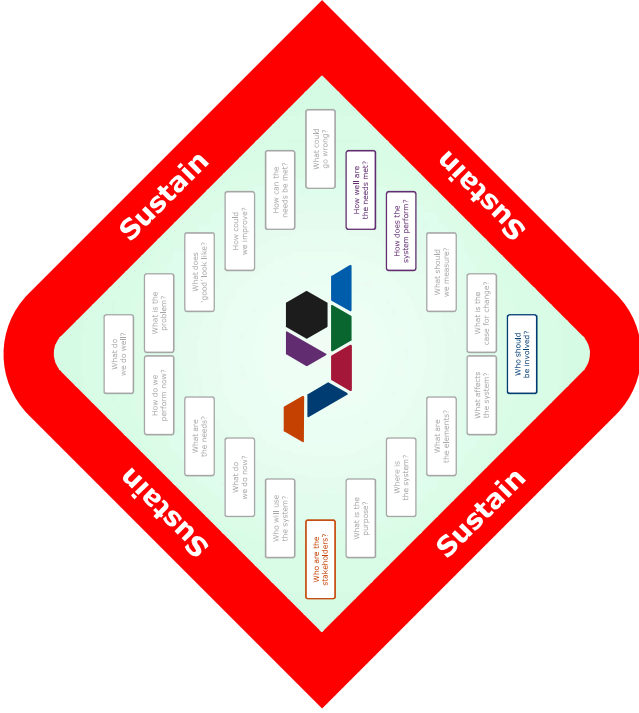
This guide provides a brief description of the application of a systems approach to the sustain stage of health and care design and continuous improvement.

Contents

- Introduction
- Improvement Canvas
- Stakeholder Influence
- Design Measurement
- Resilient Operation
- Resilient Systems
- Design Solutions
- Failure Modes and Effects Analysis
- Stage Plan
- Stage Outputs

Introduction

This guide is part of the University of Cambridge **Improving Improvement Toolkit**, which develops the approach presented in the Royal Academy of Engineering report titled **“Engineering Better Care** – a systems approach to health and care design and continuous improvement”.



Engineers routinely use a systems approach to address challenging problems in complex projects. This allows them to work through the implications of each change or decision they make for the project as a whole. They consider the layout of the system, defining all the elements and interconnections, to ensure that the whole system performs as required.

“Systems that work do not just happen — they have to be planned, designed and built”

This particular guide assists in the definition, visualisation, planning and execution of the **Sustain Stage** of the Improvement Programme. The questions and activities highlighted here provide a minimum suggested set for the stage and may be supplemented with other familiar activities.

Stage Plan

A sample of possible [Tools](#) which may be added to the sustain stage plan.

Expert Review

A systematic approach to identifying potential causes of difficulty when using a system

Exclusion Audit

A systematic approach to estimating potential levels of exclusion when using a system

Life Cycle Assessment

A systematic approach to estimating the environmental impact of a system

Bowtie Method

A systematic approach for visualising links between causes of an event and potential consequences

Failure Mode and Effects Analysis

Failure Mode	Failure Effect	Failure Cause	Failure Impact	Risk of Failure

A systematic approach for identifying the causes of all possible failures in a system and their consequent risk

Risk Matrix

A structured representation of the likelihood and impact of threats and opportunities in the system

Project Canvas

A dynamic summary of a programme of improvement to encourage team consensus

Stakeholder Analysis

An analysis of the potential for stakeholders to drive or block the outcome of a proposed change

Gantt Chart

A bar chart to illustrate the schedule required to deliver a programme of improvement

Stage Plan

A sample of possible [Activities](#) which may be added to the sustain stage plan.

Review Project Performance

Review risks present in the programme required to deliver an improved system

Review Project Progress

Review progress against the programme required to deliver an improved system

Review Safety

Identify safety concerns in the adoption of new concepts by their intended users

Review Effectiveness

Identify clinical and cost effectiveness risks in the adoption of new concepts by their intended users

Review Barriers

Identify potential barriers to the adoption of new concepts by their intended users

Review Sustainability

Identify sustainability concerns in the adoption of new concepts by their intended users

Synthesise Evidence

Provide evidence of evaluation of new concepts against the project requirements and quality targets

Identify Enablers and Blockers

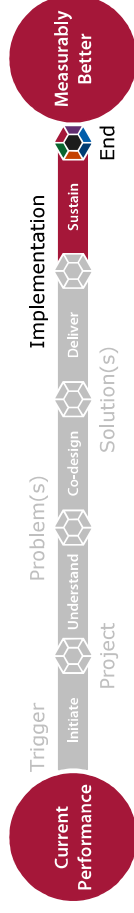
Identify stakeholders who are able to facilitate or block delivery of an improved system

Plan Future Activities

Plan the future activities in a clear and robust programme to deliver an improved system

Introduction

The following steps, described in more detail below, describe possible elements of a systems-based approach for planning the **Sustain Stage** of an improvement process — leading to a description of the current system (now), a common understanding of the problem, a consensus view of what the future system might look like (better) and a clear plan for sustaining the change to the system.



- (1) Improvement Canvas** – Describe the context and nature of the challenge and current ideas for sustaining improvement.
Agree the scope of the proposed improvement or decision-making process and identify the team required to deliver it.
- (2) Stakeholder Influence** – Identify key stakeholders, their interest in the system and potential to influence the outcome of the process.
- (3) Design Measurement** – List the full range of stakeholders’ prioritised needs and the corresponding means to measure performance.
- (4) Resilient Operation** – Determine those elements of the proposed system that are core and must be present in its operation.
- (5) Resilient Systems** – Determine those elements of a system that are critical to resilient operation in the presence of disturbance.
- (6) Design Solutions** – Translate the initial ideas into viable concepts and solutions that meet the system requirements.
- (7) Failure Modes and Effects Analysis** – Identify the causes of all possible failures in the system and their consequent risk.
- (8) Stage Plan** – Define the outputs or outcomes required for the each of the elements of the improvement or decision-making process.
Select the activities and tools required to deliver these outputs and the critical dependencies between them.

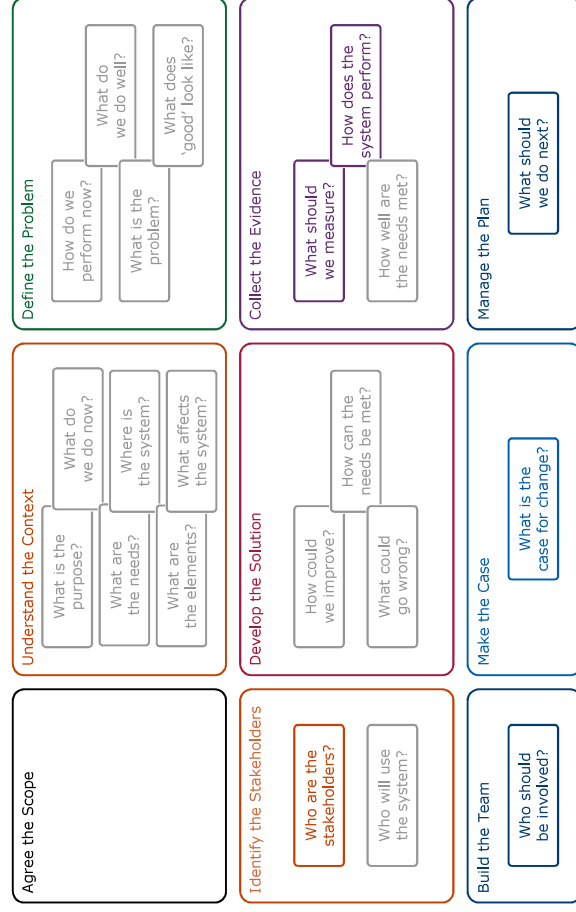
There is particular value in completing a preliminary Improvement Canvas and draft Stage Plan early in the stage to facilitate the building of an appropriate team for this and/or subsequent stages. Individual outputs for this stage can be recorded at the end of the guide and may then provide the basis for a stage-gate review.



Useful toolkit resources: printable PDFs for all of the **Stage Guides** are included in the [Stage guide PDFs](#) part of the [Resources](#) section.

Improvement Canvas

Use the [Improvement Canvas Poster](#) to investigate the team's current knowledge about the system and agree the scope of the change required.



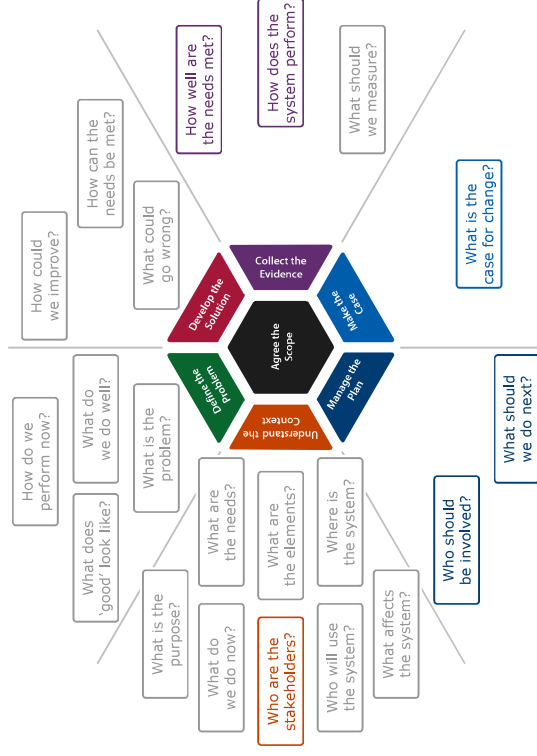
A clear articulation of the scope helps to define the boundary between what is in and what is out of the system of interest. It also reflects the prioritised needs of the stakeholders that should drive any improvement. The scope will also be influenced by the context of the system, primary focus of the challenge, core themes of possible solutions and level of detail required to describe the system and its stakeholders.

At the beginning of each stage of the improvement programme it is important to reaffirm the content of the canvas and scope of the challenge. This helps to define the gap between what is known at the start of the stage, the needs to be met by the end of the stage, and the plan to move between them.

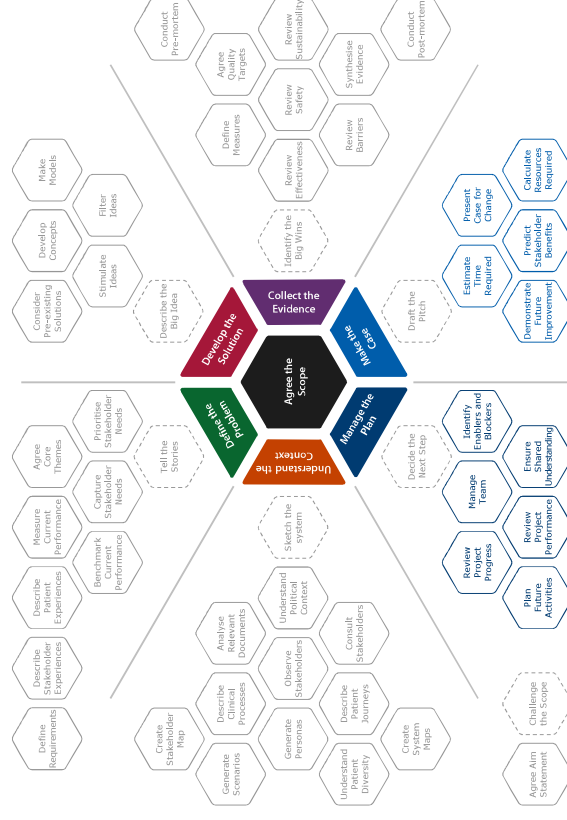
The questions of particular interest to the **Sustain Stage** of the Improvement Programme are highlighted in colour above.

Stage Plan

The [Questions Map](#) poster can be used to identify the key questions that would help to deliver the outputs required.

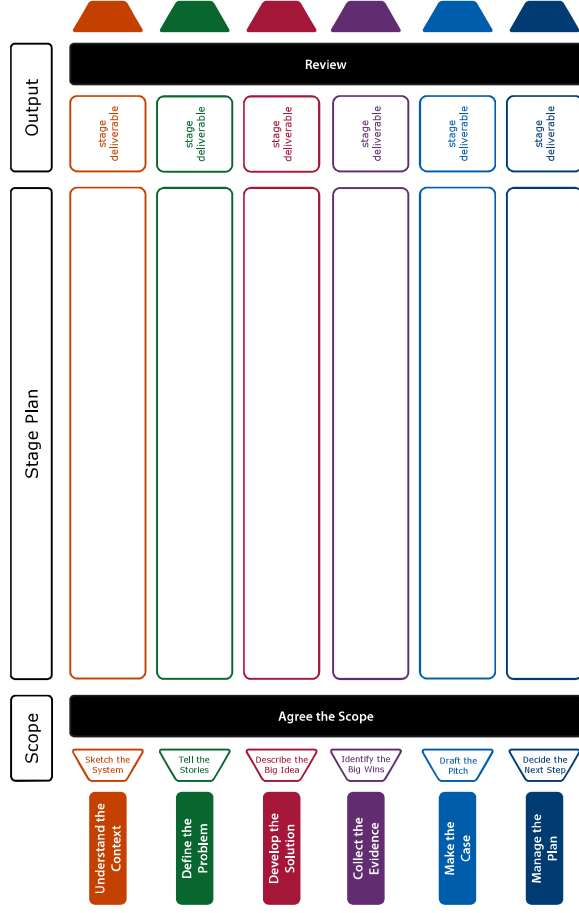


The [Stage Activities](#) poster can also be used to identify the improvement activities that would help deliver the outputs required.



Stage Plan

Use the [Stage Plan](#) worksheet to select the most important elements of the improvement process that are required to deliver the desired outputs.



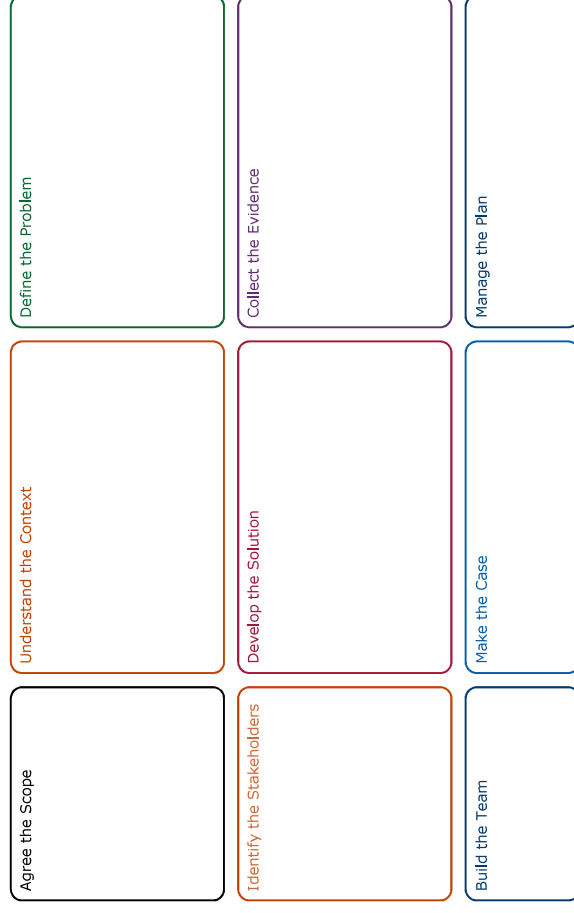
This model underpins the stage gates of an Improvement Programme, where progress is driven by clear objectives for each of the key elements at each stage of the programme.

The desired outputs or outcomes should be identified, based on the content of the Improvement Canvas for the **Sustain Stage** of the Improvement Programme and the particular objectives of this stage.

The stage plan should identify the questions and activities that are required to achieve the specific understand stage deliverables. They are more likely to focus on understanding the context of the challenge and on defining the problem. Later stages will see a shift in focus to developing the solution and collecting the evidence. All stages should reflect the need to make the case and manage the plan.

Improvement Canvas

Use the [Improvement Canvas Worksheet](#) to describe the team's current knowledge about the system and agree the scope of the change required.



The canvas may be completed in any order, with input from the stakeholder influence and stakeholder needs worksheets informing the stakeholder and team boxes, from the system boundaries and rich picture understanding the context, and from the design themes and persona descriptions defining the problem.

All entries are important in capturing the team's current knowledge about the challenge, and in determining a sensible starting point and scope of interest for improvement. Ideas of solutions inspire a deeper understanding of the problem, and

The questions of particular interest to the **Sustain Stage** of the Improvement Programme are highlighted in colour opposite and may be answered, in part, by completing some or all of the template that follow.

Resilient Operation

Use the [Resilient Operation](#) worksheet to determine those elements of a system that are core to its operation.

Adaptability – approach may be adjusted

Agility – approach can be changed rapidly

Robustness – approach must be the same

Flexibility – approach can be changed easily

Resilience is the process by which a system can face disturbance in such a way that it continues to perform in an acceptable manner. This can be reinterpreted to describe how a system needs to be constituted to ensure that its performance meets acceptable quality requirements.

Resilient operation is achieved when elements of a systems exhibit properties of robustness, adaptability, flexibility and agility in such a way that critical core elements are consistently delivered and variance is acceptable only where it does not impact these core elements.

Use the worksheet to identify those features of a process that are core to its operation, to determine which features must be delivered in common or related ways, and to understand where a degree of local variation is necessary.

Resilient Systems

Use the [Resilient Systems](#) worksheet to determine those elements of a system that are critical to its resilience.

Adaptability – approach may be adjusted

Agility – approach can be changed rapidly

Robustness – approach must be the same

Flexibility – approach can be changed easily

Resilience is the process by which a system can face disturbance in such a way that it continues to perform in an acceptable manner. This can be reinterpreted to describe how a system needs to be constituted to ensure that its performance meets acceptable quality requirements.

Resilient operation is achieved when elements of a systems exhibit properties of robustness, adaptability, flexibility and agility in such a way that the whole system performs consistently in the presence of likely and unforeseen disturbances, from planned change to unexpected shocks.

Use the worksheet to determine those features of a system that are critical to its resilient, to identify features that will be robust or adaptable in response to change, and to identify features that may be agile or flexible in response to change.