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Creating value from uncertainty

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Technical note: Designing good procedures

Organisations perform functions to achieve their objectives. The functions are usually defined in the form of a set of tasks, each with specific objectives, and the tasks themselves are usually specified in the form of procedures. This technical note outlines the process we recommend for developing good procedures.

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1 Introduction

Most organisations use procedures as part of their systems of management. Correctly drafted procedures can be an important form of control, but poorly designed procedures can expose the organisation to higher than necessary levels of risk to its business and employees.

Often procedures are written by someone who knows the work well and who has determined for themselves what is the best method of doing a job. This can create risks in that:

- Those who are required to follow the procedure subsequently may not have the skill base or experience of the procedure writer;
- The procedure may be ambiguous or liable to misinterpretation;
- The procedure may codify and pass-on undesirable practices to others.

This note outlines a generally accepted, three-stage process for the creation of low risk procedures.

- The first stage, establishing the need, is the process by which an organisation decides whether a procedure is required and what its purpose might be.
- The second stage, task analysis, is useful for all procedures. It can produce flow charts as well as written, step-by-step instructions. This stage is the focus of this technical note.
- The third stage, involving subjecting a draft procedure to a rigorous risk analysis, is justified for business-critical and safety-critical procedures. A procedural HAZOP process, the subject of a separate technical note, is the recommended approach for this.

In this note we use the following definitions:

- **Task** – the business purpose to be achieved by following a procedure;
- **Procedure** – the written sequence of instructions, usually set out as a series of steps, necessary to complete the task;
- **Step** – one component or element of a procedure or task.

2 Establishing the need

Organisations perform functions to achieve their objectives. The functions usually involve people and equipment. The effectiveness and efficiency of the functions, and the way they interact, determine the effectiveness and efficiency of the organisation itself, and they may be critical in determining whether and to what extent the organisation's objectives are achieved.

The functions that people perform in an organisational setting are usually defined in the form of a set of tasks, each with specific objectives. The tasks themselves are usually specified in the form of procedures.

Value management is the approach most commonly followed to ensure the set of functions an organisation performs is fit-for-purpose in terms of achieving its overall objectives. If the tasks that emerge from a value management activity are not currently undertaken by the organisation, or are undertaken in a different way, then new procedures must be created or old ones must be redesigned so the required functional outputs can be delivered.

For each task, value management should generate a clear statement of the purpose of the task, expressed in terms of its contribution to the function to be performed and the objectives to be achieved. It may also specify the available inputs, the key interactions and the necessary outputs that must be provided.

Value management is the subject of a separate technical note.

3 Hierarchical task analysis

After the purpose of the task has been established, task analysis sets out the procedure as a sequence of steps with an appropriate degree of information and detail. One useful form, hierarchical task analysis (HTA), involves starting at the highest-level task and decomposing it into secondary level steps, and then further decomposing steps into lower-level steps to whatever degree of detail is appropriate and necessary.

The level of decomposition depends on who is to perform the step, its importance and the working environment in which it is undertaken. For the most skilled employees, under good working conditions and with little time pressure to complete the work, the statement of the highest-level task may be sufficient. For others it might be necessary to go to far more detailed levels.

The level of decomposition, the degree of detail with which each step is described and the way in which information is presented should also reflect performance-shaping factors such as:

- The level of skill, knowledge, experience and familiarity required to complete the step successfully compared with that available;
- The level of training and supervision available;
- The working conditions and how conducive they are to error-free behaviour;

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- The stress and level of urgency associated with timely decision making during the procedure;
- Other activities that have to take place at the same time that might compete for the employee's attention.

Examples of hierarchical task analyses are shown in Figure 1, Figure 2 and Figure 3. Someone who is experienced may be able to respond to the request, 'Please make me two slices of toast with cumquat marmalade' without any elaboration, but others may require more detail, the level depending on their familiarity with toasting bread, the layout of the kitchen and so on.

Figure 1: Example task analysis, high level

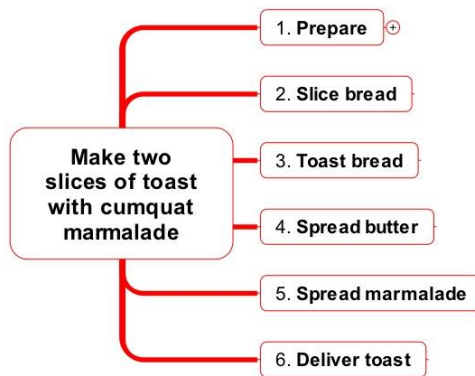


Figure 2: Example task analysis, more detail

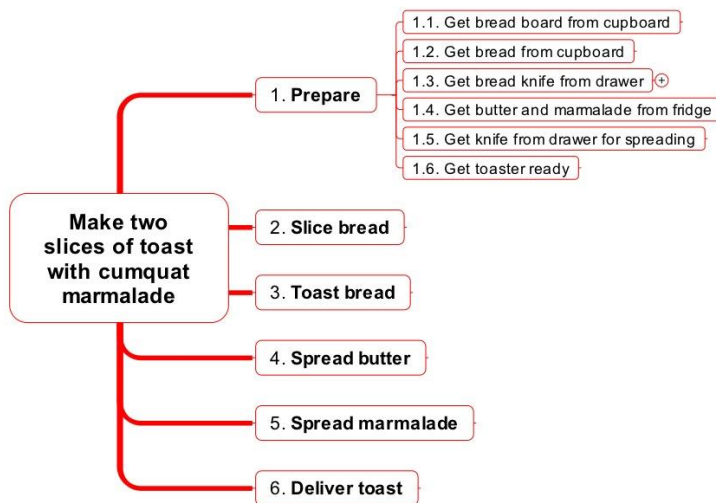
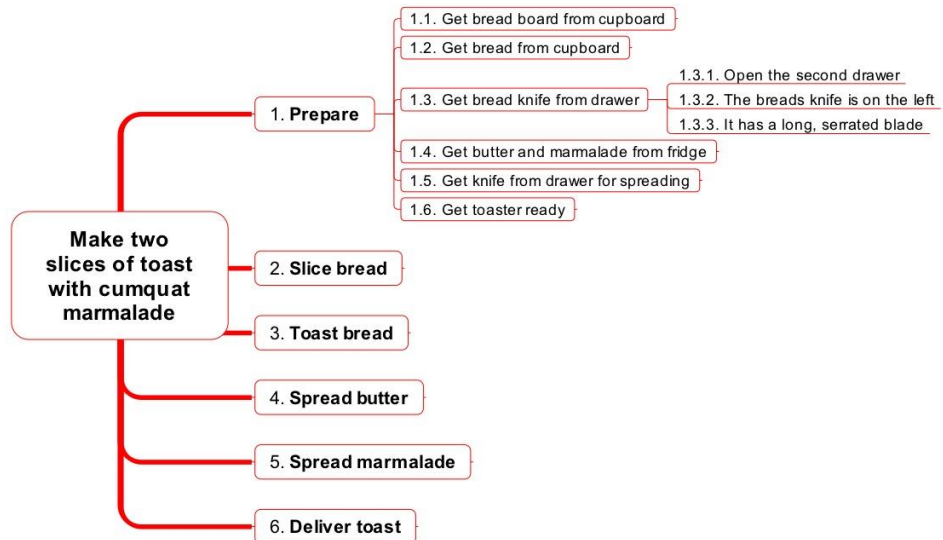


Figure 3: Example task analysis, fine detail



Making toast is a trivial, mechanistic task that does not require major decisions to be made, but most people can understand it and it does demonstrate the form of the analysis. In practice, this kind of hierarchical analysis can be applied to far more complicated and critical tasks that may require judgement and decision-making. Such tasks might involve interactions across several areas of a business, communications with customers and suppliers, negotiation with commercial counter-parties, compliance with governance or regulatory requirements, or administration of sensitive human resources matters.

Procedures can be written with the degree of detail that fits the performance shaping factors expected to be present. The assumed and required performance shaping factors should be specified as part of the procedure description.

4 Operational breakdown matrix

Additional detail should be created to complement the hierarchical task analysis and turn it into a procedure that can be used in business operations. A common form is an operational breakdown matrix.

An operational breakdown matrix normally contains, for each step, a description of:

- The actions to be carried out;
- The equipment requirements;
- The conditions in place at the start of the step;

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- What has to be achieved before the step has been completed successfully;
- The conditions in place at the end of the step;
- The communication channels needed to carry out the step (i.e. between which individuals and groups);
- The information needed to make correct decisions, including how tests are conducted and the criteria for decisions.

Table contains a draft layout for an operational breakdown matrix.

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Table 1: Operational breakdown matrix

Location: _____ **Task:** _____ **Date:** / /
Project: _____ **Page:** _____

No.	Step	Conditions at start	Information needed	Communication: who, why, when	Control points	Finish conditions

5 Procedural HAZOP

Procedures that are important should be stress-tested as part of the design process. Procedural HAZOP is the approach we recommend for this. This process can be time consuming, so it should only be considered for safety-critical or business-critical procedures; in many cases, it can be used for just for the most critical steps of such procedures.

Procedural HAZOP is described in detail in a separate technical note.

6 Contact

If you would like further information about this topic please contact us. We will endeavour to reply promptly.

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